

ANIMAL PRODUCTION NC II SMALL RUMINANTS

Content Standard	Performance Standard
The learner demonstrates an understanding of the concepts and underlying theories in small ruminant production.	The learner independently applies core competencies in small ruminant production as prescribed by TESDA Training Regulations.



INTRODUCTION

This lesson covers the overview of small ruminants raising; its concepts and relevance and the opportunities associated in practicing this enterprise.

OBJECTIVES



OBJECTIVES

After completing this module, you should be able to:

1. explain concepts in small ruminants production;
2. discuss the relevance of the course; and
3. explore opportunities in small ruminant production as a business.



PRE-ASSESSMENT

Direction: Read the questions carefully and write the letter of the correct answer in your activity notebook.

1. A small ruminant popular known for its wool.

a. carabao	c. goat
b. cattle	d. sheep
2. Goats and sheep are termed as small ruminants because of their _____.

a. color	c. odor
b. feeding habit	d. size and appearance
3. Goat meat: chevon; sheep meat: _____.

a. beef	c. mutton
b. carabeef	d. pork

4. The brand given to goat because of their becoming an asset to the farmer.
- a. father's best friend
 - b. farmer's livestock
 - c. man's best friend
 - d. poor man's cow
5. BAI is an agency under the Department of Agriculture. BAI is an acronym that stands for _____.
- a. Bureau of Agricultural Industry
 - b. Bureau of Animal Insemination
 - c. Bureau of Artificial Insemination
 - d. Bureau of Animal Industry
6. The following are the competitive advantages of raising small ruminants EXCEPT ONE.
- a. Source of income for the family
 - b. Risk of spread of diseases and parasites
 - c. Requires minimal initial investment, risk of loss is small
 - d. Women and children can easily participate in goat production
7. Goats can utilize farm by-products as their main source of feeds and subsist in marginal environment. The statement is an example of _____.
- a. business opportunity of goat raising
 - b. competitive advantage of goat raising
 - c. needed intervention in goat raising
 - d. weakness of goat raising
8. The following are examples of weaknesses of small ruminants raising EXCEPT ONE.
- a. Limited market outlets
 - b. Lack of market information
 - c. Lack of insufficient breeder base
 - d. Source of income for the family
9. The following are examples of products that can be sourced out from small ruminants EXCEPT _____.
- a. eggs
 - b. leather
 - c. meat
 - d. milk
10. Increasing demand for chevon as alternative source of meat, potential source of milk, hides and fiber, and export markets specifically in the Middle East are examples of _____.
- a. business opportunities of goat raising
 - b. competitive advantages of goat raising
 - c. needed interventions in goat raising
 - d. weakness of goat raising



KNOW

Goats and sheep are termed as small ruminants because of their size and appearance. They are being raised to provide meat (chevon for goat and mutton for sheep), milk, leather and wool which turns into supplemental cash for the family. With

these products from these ruminants, it is important to gain understanding on how to raise them.

Because of their size, they can easily be raised rather than large ruminants. They can be easily integrated with other farming system, too. Their manure can be used as organic fertilizer and thus improve the soil. It is imperative therefore to employ production techniques that are proven and best practices being practiced by farmers.

Goat production is one of the important livestock enterprises in the country today. Being termed as “poor man’s cow”, goats are recognized as one of the world’s living assets. It has become a good source of income to backyard and commercial raisers.

Goat production forms part of a typical farming system in rural areas. Compared to other ruminant species, goats mature earlier, have higher fertility, are capable of multiple births and have shorter gestation period.

Relevance of the Course

The very reason of offering this learning module to you, learner, is to inform you of the competencies necessary to know under small ruminants production. The learning competencies incorporated are basic fundamental and are based on the Bureau of Animal Industry (BAI) standards, experts from Commission on Higher Education (CHED) and academic institutions and Technical Education and Skills Development Authority (TESDA).

Supplementary to the objective of this course is to enrich and implement an industry responsive and harmonized curricular and entrepreneurship-based short term training courses to improve the technical and entrepreneurial skills towards enterprise development for you.

In support to this end, this module is intended for you as learning material to substantiate properly the needed content for small ruminants’ production. To make it up-to-date and relevant, the information and data are from current researches from journals, published and unpublished theses and magazines that were collectively, collaborated, and complemented to assure that the contents were correct and accurate.

Competitive Advantages

1. Source of income for the family
2. Requires minimal initial investment, risk of loss is small
3. Women and children can easily participate in goat production
4. Goats can be easily integrated with other crop-based farming systems
5. Goats can utilize farm by-products as their main sources of feed and subsist in marginal environment

6. Short gestation period allows meat and milk production in relatively short period
7. Farmers, in some cases, can use goats as an “insurance” against crop failure
8. Increasing demand for chevon
9. Technologies, facilities and inputs for increased productivity and efficiency are available

Weaknesses

1. Lack or insufficient breeder base
2. Risk of spread of diseases and parasites
3. Low priority compared to other livestock and poultry commodities
4. Limited market outlets
5. Lack of market information
6. Inadequate support services, i.e. market, extension, credit, research and development

Interventions Needed

1. Improvement of production and reproductive efficiency through biotechnological intervention and management manipulations
2. Undertaking, developing and disseminating research and production technologies through education/training and extension services
3. Intensifying market strategies, product development and promotion of goats
4. Strengthening tie-ups with the private sector and other government institutions in local and foreign countries
5. Improving existing facilities for demonstration purposes

Business Opportunities

1. Increasing demand from chevon as alternative source of meat
2. Need for breeders as more entrepreneurs venture in goat production because of its economic viability
3. Potential source of milk, hides and fiber
4. Export markets specifically in the Middle East



Activity 1

Enumerate the required information below. Write your answer in your activity notebook.

A. Competitive Advantages

1. _____
2. _____
3. _____
4. _____
5. _____

B. Weaknesses

1. _____
2. _____
3. _____
4. _____
5. _____

C. Business Opportunities

1. _____
2. _____
3. _____
4. _____
5. _____

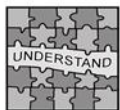
Interventions Needed

1. _____
2. _____
3. _____
4. _____
5. _____

Activity 2

Direction. Write the correct terms associated with the following Acronyms below. Write your answers in your activity notebook.

1. DepEd - _____
2. CHED - _____
3. TESDA - _____
4. BAI - _____
5. DA - _____



UNDERSTAND

1. Why do you need to study small ruminant production?

2. What are the things you want to learn from this module?



TRANSFER

Direction: Make a Poem entitled "The Economic Importance of Small Ruminant Production"

Personal Entrepreneurial Competencies (PECs)

Content Standards	Performance Standards
The learner demonstrates understanding of one's PECs in <u>Animal Production</u> .	The learner independently creates a plan of action that strengthens/ further develops his/her PECs in <u>Animal Production</u> .

Quarter I

Time Allotment: 4 hours

MODULE 1: PERSONAL ENTREPRENEURIAL COMPETENCIES



INTRODUCTION

In this module you will learn more about entrepreneurship and the entrepreneurial competencies related to **Animal Production**. You will have a first-hand experience in educational activities leading to personal assessment of your entrepreneurial competencies and assessment of entrepreneurial competencies of a successful **Animal Raiser** within your province. You will also have some activities to align your competencies with the competencies of successful practitioners. Moreover, this module is designed to stimulate your mind to think about entrepreneurship, its role in the business community in particular and to the economic and social development in general.

Now, to start with this module, let us first understand entrepreneurs and entrepreneurship.

Entrepreneurs are people with skills and capabilities to see and evaluate business opportunities. They are individuals that can strategically identify products or services needed by the community and deliver these at the right time and the right place.

Entrepreneurs are agents of economic change; they organize, manage and assume risks of a business. Some of the good qualities of entrepreneurs are: opportunity-seeker, risk-taker, goal-setter, excellent planner, confident problem-solver, hardworking, persistent and committed.

Entrepreneurship on the other hand is not just a simple business activity. It is a strategic process of innovation and new venture creation. Basically, entrepreneurship is both an art and science of converting business ideas into marketable products or services to improve the quality of living.

Now that you have a little background knowledge about entrepreneur and entrepreneurship, can you now walk through in assessing your Personal

Entrepreneurial Competencies (PECs)? Always remember that “**Successful entrepreneurs continuously develop and improve their PECs.**”



OBJECTIVES

To begin with, let us first try to find out the competencies you will master after finishing this module.

At the end of this module, you are expected to:

1. identify areas for improvement, development and growth;
2. align your PECs according to your business/career choice; and
3. create a plan of action that ensures success in your business/career choice.



PRE-ASSESSMENT

Now, try to take the first challenge in this module, the pre-assessment.

As part of your initial activity, try to assess your prior knowledge and experiences related to personal entrepreneurial competencies. Answer Activity 1.

Activity 1: Matching Type

Direction: Match the *entrepreneurial competencies* in column A with their *meaning* in column B. Write the letter of the correct answer on your activity notebook.

A

- ___1. Creative
- ___2. Profit Oriented
- ___3. Discipline
- ___4. Decision Making
- ___5. People Skill
- ___6. Planner
- ___7. Self-confidence
- ___8. Hardworking
- ___9. Ability to accept change
- ___10. Committed

B

- a. make a wise decision towards the set objectives
- b. strategic thinking and setting of goals
- c. trust in one's ability
- d. adoptable to change
- e. innovative to have edge over other competitors
- f. solid dedication
- g. skillful in record keeping
- h. always stick to the plan
- i. working diligently
- j. effective and efficient communication and relation to people
- k. always looking for income

Activity 2: Guide Questions

Direction: The following are guide questions which cover the entire module. Write your answers on your assignment notebook. Discuss these to class.

- A. Explain why entrepreneurial activities are important to social development and progress of economy.
- B. What entrepreneurial activities related to small ruminant production do you know and capable of doing?
- C. If given the opportunity to own a business related to small ruminant production, will you be confident to manage it? Explain your answer.
- D. What do you think are the most important competencies you must possess in order to succeed in managing your chosen business?
- E. Name successful small ruminant entrepreneurs from your province. Share to the class the PECs that made them successful

After all the guide questions are answered, share these with your classmates. You may also compare your insights, personal knowledge and relevant experiences on the topic to make the sharing more exciting and engaging.

LEARNING GOALS AND TARGETS

After understanding the objectives of this module; having gone through pre-assessment; and answering the guide questions, you will be asked to set your own personal goals. These goals will encourage you to achieve the ultimate objective of this module. At the end, these goals would further motivate you to improve and enhance your PECs.

Below is the process flow-chart of this Learning Module:



Figure 1: Strategic process to achieve the objectives of this module



READING RESOURCES AND INSTRUCTIONAL ACTIVITIES

Before setting your own personal goals and targets to achieve the objectives of this module, check first your prior or stocked knowledge of PECs. Try to answer the following guide questions with the help of your classmates.

Activity 3: Group Activity

Direction: Answer the following guide questions on a separate sheet of paper. Share your answers to the class.

1. Explain the importance of assessing one's PECs before engaging in a particular entrepreneurial activity.

2. Are there other strategies or approaches to assess PECs? Explain how these could help in selecting a viable business venture.

3. What are the desirable characteristics, attributes, lifestyles, skills, and traits of a prospective entrepreneur? Why are these important?

4. What helpful or significant insights can you draw from this activity?

5. How was your experience in answering the guide questions with your classmates? Were you able to benefit from them? What were the insights you have realized?

Now, you're going to learn the different topics on PECs. Read carefully all the important details in the succeeding topic so as to enrich your knowledge and enhance your skills.



KNOW

Assessment of Personal Entrepreneurial Competencies (PECs)

(Skills vis-à-vis a Practicing Entrepreneur/Employee)

Entrepreneurial competencies refer to the important characteristics possessed by an individual in order to perform entrepreneurial functions effectively. In this module, you will learn these important characteristics, attributes, lifestyle, skills and traits of a successful entrepreneur in order to be successful in a chosen career.

Below are some examples of these:

- **Hardworking.** An entrepreneur works diligently within a long period of time. A hardworking person keeps on improving his performance to produce good products and or provide good services.
- **Self-confident.** An entrepreneur has confidence in his own ability and judgment. He exhibits self-confidence to cope with all the risks of operating his own business.
- **Disciplined.** A successful entrepreneur always stick to his plans; avoid disruptions that affect implementation of such plans. Self-direction and determination to reach targeted goals are important.
- **Committed.** A good entrepreneur accepts full business responsibility. He gives full commitment and dedication as to time and effort to support his business; to make it successful and profitable.
- **Capable to accept change.** A person owning a business must be ready to meet changes which occur normally. He must be able to handle both positive and negative changes affecting his business and find remedies and adjustments so that such changes will contribute to the advancement of his business.
- **Creative:** An entrepreneur should be creative and innovative in order to have an edge over his competitors. His ability to create and innovate make a positive difference that sustain his business.

- **Initiatory.** An initiatory entrepreneur find ways to the solutions of failures in his business. He puts himself in a position where he is personally responsible for both the failure and success of his business.
- **Profit-Oriented.** An entrepreneur enters the world of business to generate profit or additional income. This shall become his source of “bread and butter” as well as for his family. He must therefore see to it that the business can generate income.

Below are the skills of a successful entrepreneur:

- **Planning Skills.** Planning is a strategic thinking and setting of goals. It is achieving objectives by carefully maximizing on all the available resources; developing and applying plans step-by-step to realize goals. Planning becomes effective when combined with action.
- **People-Oriented Skills.** This skill is important considering the fact that business depends on customers and clients. The ability of an entrepreneur to deal with people; effective and efficient communication with people in or even out of his business can spell out the difference between success and failure of the business.
- **Decision Making Skills.** This is the ability to think and make wise decisions. This is the ability to make sound decisions out from actual situations, facts or information. Thus, decisions must be made to benefit the common good.



In order to enhance and further appreciate what you have learned about the different entrepreneurial competencies, do the activity on PECs exercises presented below.

Activity 4: PECs Checklist

Directions: Using the PECs Checklist below, assess yourself by indicating a check (✓) marks on the appropriate column. After doing this, get the total number of check marks. Try to analyze the areas of your **STRENGTHS** and areas you have yet to **DEVELOP**. Share your insights from this experiences with a group of peers.

Table 1: PECs Checklist

Personal Entrepreneurial Competencies of an Entrepreneur	Personal Assessment in terms of:	
	Strength	Development Areas
Hardworking - Working diligently		
Self-confident - Confidence in one's ability		
Disciplined - Always stick to the plan		
Committed - Solid dedication		
Ability to accept change - Adoptable to change		
Creative - Innovative to have an edge over other competitors		
Profit-oriented - Always looking for income		
Planner - Strategic thinking and setting of goals		
People Skill - Effective and efficient communication and relation to people		
Decision Making - Make a wise decision towards the set objectives		
TOTAL		

Interpretation/Insights:



How was your experience in discovering your strengths and the areas to be developed? Did you gain valuable experience in exchanging insights with your classmates? To learn more and deepen your understanding of PECs, do the Task 5 below.

Activity 5: Interview

Interview a successful Goat and Sheep Raiser or entrepreneurs in your community. Focus your interview on PECs and other business-related attributes that help them become successful. Analyze the result of the interview and reflect on the similarities and/or differences. Write your answer on a separate sheet of paper.

Sample Interview Guide

Name of Proprietor/Practitioner: _____

Age: _____ Number of Years in Business: _____

Business Name: _____

Business Address: _____

1. What are your preparations before you engaged in this type business/job?
2. What are your special skills/characteristics that are related with your business/job?
3. How did you solve business-related problems during the early years of your business operation?
4. Did you follow the tips from a successful businessman/practitioner before you engaged in your business?
5. What are your best business practices that you can share with aspiring students?
6. What are the salient characteristics, attributes, lifestyle, skills and traits that made you successful in your business/job?

Direction: Cull out the needed information from the interview to fill Row 1 in the table below. Later, fill in the second row with your own PECs.

Personal Entrepreneurial Competencies	Characteristics	Attributes	Lifestyles	Skills	Traits
Successful					

Entrepreneur in the province					
My PECs					

Using the information on the table above, analyze, and reflect on the similarities and differences in the answers. Put your reflection on the table below. Write your conclusion on the space provided below.

Personal Entrepreneurial Competencies	Similarities	Differences
Characteristics		
Attributes		
Lifestyles		
Skills		
Traits		

Conclusion:



TRANSFER

After performing the activities on the importance of PECs, let's determine how much you have learned. Perform Activity 6 to determine how well you have understood the lesson.

Activity 6: Preparation of a Plan of Action

Directions: Using the table below and the information generated from Task 5 (Interview), prepare an action plan to align your PECs to the PECs of the successful entrepreneur in *Goat and Sheep Production*.

Objective	Area	Activities	Strategies	Time Frame	Expected Outcome
To align my PECs with the PECs of a successful entrepreneur in <u><i>Animal Production</i></u> .	Characteristics				
	Skills				
	Attributes				
	Traits				

Activity 7. Questions

Direction: Read the questions below. Use your activity notebook for your answers.

1. Why is there a need to compare and align your PECs with the PECs of a successful entrepreneur?

2. How does your action plan help sustain your strong PECs and/or address your development areas?

3. What plan of action would you do to address your development areas?

ENVIRONMENT AND MARKET (EM)

Content Standards	Performance Standards
The learner demonstrates understanding of environment and market in <u>Small Ruminants Production</u> in one's province.	The learner independently creates a business vicinity map reflective of potential market in <u>Small Ruminants Production</u> in a province.

Quarter I

Time Allotment: 4 hours

Module 2: ENVIRONMENT AND MARKET



INTRODUCTION

People who aspire to start a business need to explore the economic, cultural and social conditions prevailing in the area. Needs and wants of the people in a certain area that are not met may be considered as business opportunities. Identifying the needs of the community, its resources, available raw materials, skills, and appropriate technology can help a new entrepreneur in seizing a business opportunity.

To be successful in any kind of business venture, potential entrepreneurs should always look closely at the environment and market. They should always be watchful on the existing opportunities and constraints. The opportunities in the business environment are those factors that provide possibilities for a business to expand and make more profits. Constraints, on the other hand are those factors that limit the ability to grow, hence reduces the chance of generating profit. One of the best ways to evaluate the opportunities and constraints is to conduct Strengths, Weakness, Opportunities and Threats (SWOT) Analysis.

SWOT analysis is a managerial tool to assess the environment. This gathers important information, which in turn is used in strategic planning. Strengths and Weaknesses are internal in an organization. Basically they relate to resources owned by organization, things that you have control over, and as well as the extent of its marketing.

Opportunities and Threats exist in the external environment. Opportunities relate to the market, to the development of new technologies, and external factors such as government policies, climate, and trends. Threats relate to what the competition is doing as well as legal and other constraints.

Now that you have read some of the important considerations to look into to be successful in any business, you are now ready to explore more about the environment and market.



OBJECTIVES

To begin with, let's first try to find out the competencies that you will master after finishing this module.

At the end of this module, you are expected to:

1. identify what is “of value” to the customer;
2. identify the potential customers to provide needed services;
3. explain what makes a product unique and competitive;
4. apply creativity and innovative techniques to develop marketable product; and
5. employ a Unique Selling Proposition (USP) to products/services.

Now that you have an idea about the things you will learn, try to take the first challenge in this module, the pre assessment.



PRE-ASSESSMENT

Activity I: Multiple Choice

Direction: Choose the letter of the best answer. Write your answer on a separate sheet of paper.

1. This is generated by examining what goods and services are sold outside by the community.
 - a. Business Creation
 - b. Business Pricing
 - c. Business Concept
 - d. Business Idea
2. A process of making a new product to be sold to the customers.
 - a. Product Analysis
 - b. Product Conceptualization
 - c. Product Development
 - d. Product Implementation
3. These are luxuries, advantages and desires that every individual considers beyond necessary.
 - a. Wants
 - b. Desires
 - c. Requirements
 - d. Needs

4. This is the factor or consideration presented by a seller as the reason that one product or service is different from and better than that of the competitor.
 - a. Unique Selling Plan
 - b. Unique Selling Proposition
 - c. Unique Pricing Policy
 - d. Finding Value-Added
5. In this stage, the needs of the target market are identified, reviewed and evaluated.
 - a. Concept Development
 - b. Economic Analysis
 - c. Project Development
 - d. Refine Specification
6. This is the introduction of new idea to make the product and services more attractive and saleable to the target customers.
 - a. New Idea
 - b. Creativity
 - c. Product Development
 - d. Innovation
7. A managerial tool used to assess the environment to gather important information used for strategic planning.
 - a. Environmental Scanning
 - b. SWOT Analysis
 - c. WOTS Analysis
 - d. Survey Analysis
8. A marketing practice of creating name, symbol or designs that identifies and differentiate a product from the other products.
 - a. Product Naming
 - b. Unique Selling Proposition
 - c. Branding
 - d. Tagline
9. This is a meaningful and unforgettable statement that captures the essence of your brand.
 - a. Product Naming
 - b. Unique Selling Proposition
 - c. Branding
 - d. Tagline
10. These are the things that people cannot live without.
 - a. Wants
 - b. Desires
 - c. Requirements
 - d. Needs

Activity 2: Guide Questions:

Directions: Read and study the guide questions below. You may use a separate sheet of paper to write your responses.

1. How does one determine the product or services to be produced, offered or delivered to the target customers?
2. How does one select an entrepreneurial activity?
3. When can one say that a certain product has a “value”?
4. Is innovation and creativity in product/services important? Explain.
5. How can one effectively respond to the needs of the target customer?

6. From the viewpoint of a business owner, explain the importance of scanning the environment and market in generating business idea.
7. Using a self-assessment, explain your level of confidence in formulating a business idea.

After all the guide questions are answered and skills have been mastered, share these with your classmates. Discuss your insights, personal knowledge and relevant experiences on the topic to make it more exciting and engaging.

LEARNING GOALS AND TARGET

After reading and understanding the objectives of this module and having gone through pre-assessment and answering the guide questions, you will be asked to set your own personal goals. These are expected to encourage you to further achieve the ultimate objective of this module about Environment and Market.

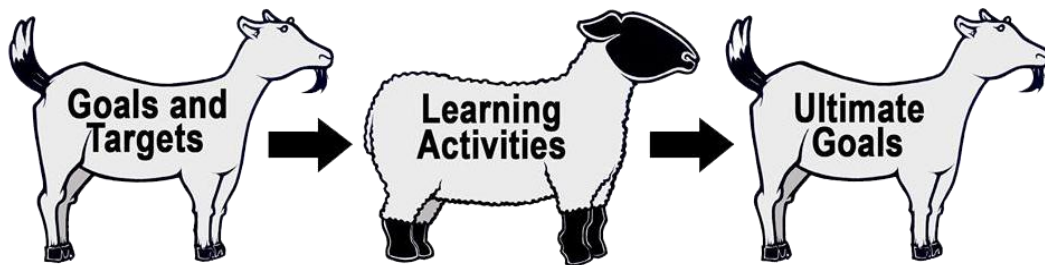


Figure 2: EM Module Strategic Process



READING RESOURCES AND INSTRUCTIONAL ACTIVITIES

After setting your own personal goals and targets to achieve the objectives of this module, you will have the opportunity to read and learn more about environment and market. You will also do practical exercises and activities to enhance your skills related to the topic.



KNOW

Product Development

When we talk of product development, we are referring to a process of making a new product to be sold by a business or enterprise to its customers. The product development may involve [modification](#) of an existing product or its [presentation](#), or formulation of an entirely [new product](#) that satisfies a newly defined customer's needs and/or [want](#) and/or a market place.

The term development in this module refers collectively to the entire process of identifying a market opportunity, creating a product to appeal to the identified market, and finally, testing, modifying and refining the product until this will be ready for production. This product can be any item to be sold to the consumers.

Below are basic, yet vital questions you can ask yourself. If you can give acceptable answers then you are ready to start the development of a product and services needed in your target area.

1. Who are the target/prospect customers of these products and services?
2. What benefits will the customers expect from these?
3. How will the products and services differ from the existing brand competitors?

Likewise, needs and wants of people within the area should be given consideration. Everyone has individual needs and wants. However, people have different needs and wants. In business, it is important to consider individual NEEDS and WANTS as well as the needs and wants as members of the society

These are the following:

1. Food and other basic commodities
2. Clothing and shelter
3. Health and medical needs
4. Education and advancement

Basic needs are essential to every individual he/she may be able to live with dignity and pride in the community of people. Knowing these needs can help you generate business ideas and subsequently provide concepts for product development.

Wants are desires; luxury and extravagance that signify wealth and expensive way of living. Wants or desires are above all the basic necessities in life. Some examples are the things and caprices out of eagerness and passion of an individual which are not his basic needs such as: fashion accessories, expensive jewelry, expensive perfume, shoes, and clothes. Others also would want to travel around the world; eat in exclusive/expensive restaurants; stay in luxurious hotels; watch movies frequently; pay high priced tickets to concerts and plays and prefer model electronic gadgets too.

Needs and wants of people are basic indicators of what kind of business you may engage in. These serve as the measure of your probable success. Some factors you may consider in business undertakings are the kind of people's lifestyle, culture, tradition, and their social orientation.

Product development depends on the needs and wants of consumers. Another important lesson to learn is on key concepts in developing a product. The succeeding topics shall enlighten you on the procedure to come up with a saleable product.

Concepts of Developing a Product

Concept development is critical in the development of a product. During this stage, the needs of the target market are identified; competitive products are reviewed and the product specifications are defined. A product concept is selected based on economic analyses. An outline is prepared to show how a product is developed.

Below is a figure that shows the stages of Product Development.

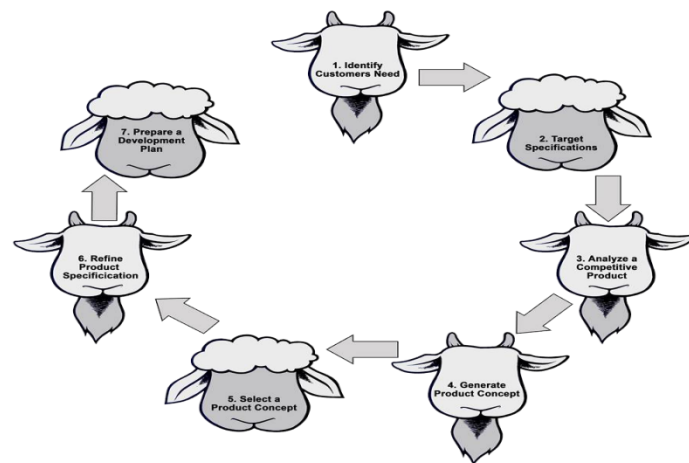


Figure 3: Concept Development Flowchart

The process of product development follows the following steps:

- A. **Identify Customer Needs** - Using a survey form, interviews, researches, focus group discussions, and observations an entrepreneur can easily identify customers' needs and wants. In this stage, the information to be gathered are product specifications (performance, taste, size, color, shape, life span of the product, etc.). This stage is very important because this would determine the product to be produced or provided.
- B. **Establish Target Specifications** - Based on customers' needs and reviews of competitive products, you may now establish target specifications of the prospective new product and/or services. Target specifications are essentially a "wish-list".

- C. Analyze Competitive Products** - It is imperative to analyze existing competitive products to provide important information in establishing product/services specifications. Other product design attributes could be improved upon in the new product/service.
- D. Generate Product Concepts** - Develop a number of product concepts to illustrate what types of product/service are both technically feasible and would best meet the requirements of the target specifications.
- E. Select a Product Concept** - Through the process of evaluation among attributes, a final concept is selected. After the final selection, additional market research can be conducted to obtain feedback from certain key customers.
- F. Refine Product Specifications** - In this stage, product/service specifications are refined on the basis of input from the foregoing activities. Final specifications are the result of extensive study and expected service life. Projected selling price are also being considered in this stage.
- G. Perform Economic Analysis** - Throughout the process of product development, it is very important to review economic implications; estimate development expenses, manufacturing costs, and selling price of the product/services to be marketed.
- H. Plan the Remaining Development Project** - In this final stage of concept development, you may prepare a detailed development plan which includes a list of activities, the necessary resources and expenses, and a development schedule with milestones for tracking progress.

Finding Value

People buy for a reason so there should be something in your product and services that would give consumers a good reason to come back and buy more. There must be options for your target customers. This implies further that your customers value and treasure the products and your services.

The value that you incorporate in your product is called value proposition. Value proposition is a collection of persuasive reasons to let people/customer notice the worth of your product and decide to purchase this. Value proposition gets the people moving, and spending for product/service considering the importance or usefulness of what they buy.

Innovation

Innovation is the introduction of something new in your product and services. This may be a new idea, a new method or a device. If you want to increase your sales

and profit you must innovate. Some of the possible innovations in your products are change of packaging, improve taste, color, size, shape and perhaps price. Some of the possible innovations in providing services are application of new improved methods, additional featured services and possibly freebies.

Unique Selling Proposition (USP)

Unique Selling Proposition is the factor or the reason presented by the seller that makes one product or service different and better than the competitor. Before you begin to sell your product or service to target customers, try “selling” it to yourself. This is especially important if your product or service is similar to the product or service offered by others in the community.

USP requires careful analysis of business ads and marketing messages. If you analyze what competitors say and how they sell their product or service, you will learn how companies distinguish themselves in competitions.

Here's how to discover your USP to increase your sales and profit:

- **Use empathy:** Always focus on the needs of the target customers so you can fit in your product or services. Always remember, you are making this product for the target customers that will meet their demands and eventually increase sales and earn profit. This is the answer to the essential question, “What could make them come back to buy from you?” This will focus on quality, availability, convenience and reliability. Adding the elements of cleanliness/safety of the products and friendliness in dealing with people in your services.
- **Identify what motivates your customers:** It is very important to understand and find out what factors drive your customers to buy your product/service. Make some to analyze and utilize this information to keep customers decide to purchase from you.
- **Discover reasons why customers buy your product instead of your competitors’:** Information is important in decision-making. Competitive entrepreneurs always improve their products/services to provide satisfaction and retain customers. As business grows, you should consider asking your customers important information that you can use to improve your products/services.



To enrich your understanding on the topic previously presented, you will form a group to interview a successful entrepreneur/practitioner. Document the interview and later present this to the whole class for reflection and appreciation.

Activity 3: Interview

Direction: Identify and interview a successful entrepreneur using the questions below:

1. What kind of business are you managing?
2. How did you identify your customers?
3. What were your basis in selecting your customers?
4. Explain how your product/services became unique as compared to other products.
5. Did you consult somebody before you engaged in this business? Cite insights you gained from the consultation.
6. What were your preparations before you started the actual business?
7. What creative and innovative techniques did you adopt to improve your products/services? What was the effect of these techniques to your sales and profits?
8. What strategy did you consider a unique selling proposition in your business?



Activity 4: Browsing/Surfing the Internet

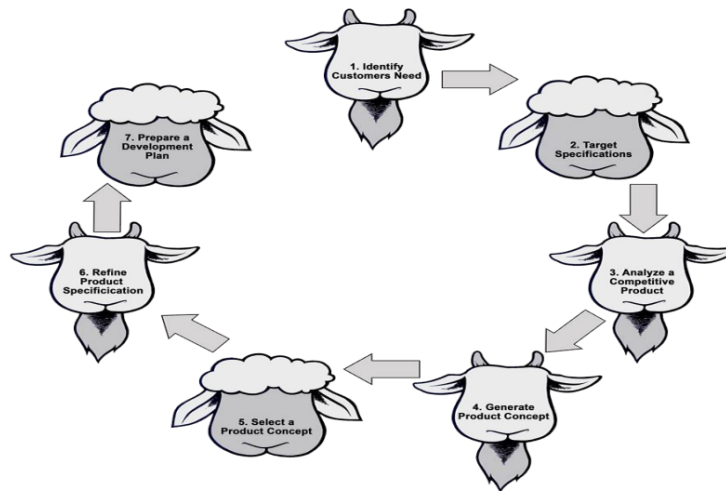
1. Browse the internet on topics related to:
 - a. Customers' needs and wants
 - b. Techniques in identifying customers' needs and wants
 - c. Creativity/innovations in products and services
 - d. Unique selling proposition
 - e. Product development
2. Prepare a short narrative report on the aforementioned topics. You may highlight the **information pertinent to product development**.



TRANSFER

Activity 5: Product Conceptualization

Direction: Make a product/service concept of your own; write details in your activity notebook following the format below:



KNOW

Generating Ideas for Business

Developing/generating a business idea is not a simple process. Some people just come up with bunch of ideas while some really lacks ideas. These are two problems that can arise along this concern. First is the excessive generated ideas and that more ideas remain in the “dreaming state” (not carried out in actual business). Second problem is the lack of ideas for those who want to become entrepreneurs (no ideas related to entrepreneurship).

It is important to have a systematic approach in generating and selecting appropriate business ideas that will be implemented on actual business. Here are some basic ideas in business.

1. **Examine existing goods and services.** As you examine/survey existing goods and services in a certain place ask the following:
 - Are you satisfied with the product?
 - What do other people/users say about it?
 - How can it be improved?

- Are there ways to improve the way it is packed and sold?

You can also improve the materials used in preparing the product; introduce new ways of using the products to suit to the customers' need. Improving or enhancing the product is innovation. You can also do an invention by producing an entirely new product to replace the old one.

Business ideas may also be generated by examining what products and services are sold outside the community. Very often, these products can still be improved in their form or appearance.

2. **Examine present and future needs.** Identify what the customers, institutions and communities lack in terms of goods and services. Present needs are already obvious while needs may be anticipated for the future aimed at for certain developments. For example, the need of a province to have electrification facilities in the next six months. By that time the entrepreneur can start a business operated by electricity such as photo/Xerox copier, computer service, digital printing, etc.

3. **Examine market demand.** Needs for the products and services are referred to as market demand. To satisfy this demand is to supply the products and services needed in the market. The term market refers to the people, institutions, businesses, establishments, organizations, and government agencies that will use or buy such products and services. There is good business opportunity where the supply is low to meet market demand.

Likewise, Business and industry in a locality may also need goods and services from other entrepreneurs. Need for raw materials, maintenance, and labor; selling and distribution. These are good sources of ideas for business.

4. **Examine available resources.** Survey what materials or skills are available or abundant in your area. A business can start on available raw materials. Buying and selling raw materials for processing and manufacturing into finished products can be done. For example, in a copra-producing town, coconut husks and shells available as "waste" products can be collected. These can be made into coco rags/doormat and charcoal bricks and sold profitably outside the community.

A group of people in your neighborhood may possess special skills that can be harnessed for business. For example, women in the Mountain Province who possess loom-weaving skills have passed such to their next generation thus in some communities, there are continuing business in weaving. Blankets and other woven items like decorations and souvenirs are sold to tourists and marketed to the lowlands

Business ideas can utilize your own skills too. The work experience you may have in agriculture and industrial arts, home economics, and ICT classes will help you find business opportunities. Your skills will help you earn extra income, should you decide to engage in income-generating activities.

Using your skills, you may also do beneficial activities in your spare time. Many products were invented this way.

5. **Read magazines, news articles, and other publications on new product techniques and advances in technology.** You can pick up new business ideas from suggested reference materials such as: Newsweek, Reader's Digest, Business Magazines, "Go Negosyo", Know About your Business materials, Small-Industry Journal and DOST Technical Assistance Magazines. You may also browse/surf the Internet which serves as the library of possible business. It will also guide you on how to handle the right product in the right place, right price, at the right time. List of possible businesses in an area may be available in banks or in local non-government organizations.

Key concepts on selecting a Business Idea

Once you have identified business opportunities, you will eventually see many possibilities for you. However, you may have resources around but could not be utilized at once.

You have to select the most probable one from among the ideas/concepts. It will be good to do these on stages. During the first stage, screen your ideas to narrow down maybe five (5) choices only. On the next stage, trim down the choices again into two (2) options. On the final stage, choose and decide between which of the options or business ideas is worth pursuing.

Screen your ideas in terms of the following factors:

1. Capital needed
2. Level of demand (people and time)
3. Resources/Supply and Market
4. Skills and experiences
5. Legal requirements
6. Expertise and skills

Branding

Branding is a marketing practice of creating name, symbol or design to identify and differentiate product/services from others. It is an assurance to customers of what to expect from the products and services; it differentiate your goods from other competitors. Your brand is your identity in the market. Branding is one of the most important aspects of any business. An effective brand strategy gives you a major edge in increasingly competitive markets

Branding is one important aspect of any business. An effective branding strategy gives an edge in an increasingly competitive market.

A good product brand can:

- deliver a message clearly;
- confirm credibility;

- connect target prospects;
- motivate buyers; and
- concretize user loyalty.

Here are some simple tips to publicize your brand:

- **Create a tagline.** Write a statement that is meaningful, impressive and easy to remember statement to capture the essence of your brand.
- **Design a logo.** Create a logo symbolic of your business and consistent with your tagline and display it strategically.
- **Write a brand message.** Select a key message to communicate your brand.
- **Sustain a brand quality.** Deliver a promise of quality through your brand.
- **Practice consistency.** Be reliable and consistent to what your brand means in your business.



In generating business idea, you should first identify what type of business is suited to your business idea. Survey and analyze the potential environment; study marketing practices and strategies of your competitors. Analyze the **Strengths, Weaknesses, Opportunities**, and the **Threats** in your environment. Ensure that the products/goods and services you are planning to offer will be patronized and are within easy reach by your target market/consumers.

How to Conduct the SWOT Analysis in business:

- Identify the Strengths and Weaknesses of your business.
- Analyze how your Strengths could help lessen your Weaknesses.
- List of both Strengths and Weaknesses must be specific and real.
- Conduct a survey on Opportunities and Threats prevailing in the locality.
- List both Opportunities and Threats surrounding your business.
- Analyze how the Opportunities could overcome the Threats.
- Use the information gathered, analyze and interpret the findings.
- Base business plan on the details of your SWOT Analysis

Activity 6: SWOT Analysis

Direction: In generating a business idea, environmental scanning is very important.

Utilize the SWOT strategy analysis table below to record your observations.

Strength (S)	Weaknesses (W)
- - - - - -	- - - - - -
Opportunities (O)	Threats (T)
- - - - - -	- - - - - -

Direction: Strategize by using acronyms as follows:

- SW** - Utilize the Strengths to overcome the Weakness
- OS** - Capitalize on the Opportunities to eliminate the Weakness
- ST** - Maximize on your Strengths to eliminate the external Threats
- OT** - Take advantage of the available Opportunities to eliminate the External threats.

Direction: List down the strategies and activities you will do in the SWOT strategy. Use your activity notebook.

Strategies/Activities:

Analysis:

My Best Business Idea:



Perform the following activities to enhance previous learning:

Activity 7: Additional Readings and Internet surfing

Reading books and internet surfing are considered as effective educational activities that help learners understand certain topics. In this particular activity, have extra readings and internet surfing on the following topics.

- Steps in selecting business idea
- Criteria of a viable business idea
- Benefits of a good brand
- Ways on developing a brand

After successfully performing the assigned task, make a narrative report and share it to the class.



Activity 9: Designing a Logo

Direction: Draw/Illustrate an appealing product logo and a tagline on your activity notebook.

Logo

Tagline

ANIMAL PRODUCTION NC II

SMALL RUMINANT

Content Standard	Performance Standard
The learner demonstrates an understanding in selecting ideal site and providing comfortable house to small ruminants.	The learner independently selects ideal site and provides comfortable house for small ruminants.

QUARTER 2

TIME ALLOTMENT: _____

MODULE NO. 1 PROVIDING COMFORTABLE HOUSING FOR SMALL RUMINANTS



INTRODUCTION

This module covers the knowledge, skills and attitudes required in providing a comfortable and safe housing system and other facilities for goats and sheep.



LEARNING COMPETENCIES/OBJECTIVES

After completing this module, you should be able to:

1. recognize the ideal site for housing the herd;
2. identify the different types of goat/sheep house;
3. name the materials needed in the construction of a goat/sheep house; and
4. estimate the recommended floor space requirement of goat/sheep at different physiological stages.



DIAGNOSTIC/PRE-ASSESSMENT FOR MODULE 1

Directions: Choose the right answer from the choices. Write only the letter of your answer in your activity notebook.

1. This refers to the contour/elevation of the area where the project will be situated.
 - a. Location
 - b. Site
 - c. Topography
 - d. Vegetation

2. Why is there a need to house animals?
 - a. It is popular in the locality.
 - b. It is an ordinance from the municipality.
 - c. It reduces internal parasite infestation.
 - d. It gives the caretaker a place to rest while herding the flock.
3. Why do farmers prefer to build an elevated house for the goats?
 - a. The animals get secured.
 - b. It is an ordinance of the barangay.
 - c. They follow the culture in their place.
 - d. It facilitates cleaning and provides ventilation.
4. What should be a raiser's priority when putting up a perimeter fence for the animals?
 - a. Cost of materials
 - b. Time to consume
 - c. Availability of the materials
 - d. Safety and well-being of the animals
5. This facility is necessary where sick animals are kept to control rapid spread of infectious diseases among animals.
 - a. Breeding stall
 - b. Isolation area
 - c. Kidding pen
 - d. Loafing area
6. What is the recommended floor space area for a breeding male (buck)?
 - a. 1.0 m²
 - b. 1.5 m²
 - c. 2.0 m²
 - d. 2.5 m²
7. What is the recommended housing space for bred ewes in a confinement (slatted floor)?
 - a. 8 – 10 sq. feet
 - b. 10 – 12 sq. feet
 - c. 12 – 16 sq. feet
 - d. 16 – 20 sq. feet
8. What factor is needed for cleaning the quarters, washing the animals and equipment and safe drinking purposes?
 - a. Inclement weather
 - b. Peace and order
 - c. Water supply
 - d. Windbreaks
9. Which of the following factors is described when a project is located near the market?
 - a. Distance from farm to market
 - b. Distance from populated area
 - c. Peace and order
 - d. Transportation
10. This factor considers the porosity of the soil since goats are not adapted to moistened ground.
 - a. Topography
 - b. Types of soil
 - c. Water supply
 - d. Windbreaks
11. Why is elevated flooring a requirement when constructing a house for goats?
 - a. It is the decision of the owner.
 - b. It is more economical in nature.
 - c. It facilitates the cleaning of manure.
 - d. It is an ordinance from the municipality.
12. What is the total area needed to house a pair of goat?
 - a. 4 sq. m
 - b. 5 sq. m
 - c. 6 sq. m
 - d. 7 sq. m

13. The following are used as roofing materials for small scale goat's house except:
- Anahaw
 - Cogon
 - Galvanized iron
 - Nipa
14. In constructing goat house, bamboo is mainly used as _____.
- partition
 - post
 - roof
 - sidings
15. Why is concrete post more preferable to use than wooden post in commercial scale farming?
- It provides durability.
 - It is the choice of the owner.
 - It facilitates proper ventilation.
 - It protects the building from soil-borne organisms.
16. It is an equipment that contains feeds for the animals.
- Feeding trough
 - Kid box
 - Hay rack
 - Waterer
17. These are materials which are cut into halves and holds water for the animals to drink in.
- Boxes
 - Pails or drums
 - Feeders
 - Racks
18. Why is it needed to provide kid box inside the rearing pen?
- To protect kids from buck
 - To maintain proper ventilation inside the pen
 - This is where the kids are confine when sick
 - This protects kid from catching pneumonia during cooler months
19. This is a feeding facility made from bamboo tube that contains ordinary salt for the goat to lick on.
- Feeding trough
 - Hay rack
 - Fodder rack
 - Mineral box
20. Which of the following is a place for sick animals to avoid spread of diseases?
- Buck pen
 - Kid box
 - Isolation area
 - Loafing area
21. What is the main function of a loafing area?
- A special area for diseased animals
 - An area where in-heat animals are kept before breeding
 - It is where pregnant does are confined before giving birth
 - An area for gathering all animals before and after letting them loose in pasture
22. The following are considered as a good fencing materials for goat, except one because it might cause bruise to the animals:
- Barbed wire
 - Ipil-ipil
 - Hog wire
 - Kakawate

23. A frame or stand where forages or fodders are stored under a shed adjacent to the goat shed.

- | | |
|---------------|----------------|
| a. Fence area | c. Kid box |
| b. Hay rack | d. Mineral box |

24. What is the ideal feeding space area for a mature goat?

- | | |
|----------|----------|
| a. 20 cm | c. 40 cm |
| b. 30 cm | d. 50 cm |

25. In a loafing area, how many heads can be accommodated into 100-150 sq. m?

- | | |
|-------------|-------------|
| a. 30 heads | c. 50 heads |
| b. 40 heads | d. 60 heads |

Lesson 1 SELECT SITE FOR GOAT/SHEEP PROJECT



INTRODUCTION

This lesson focuses on the selection of site for goat/sheep project. It also directs the learners to the different factors that should be considered during site selection.



OBJECTIVES

At the end of the lesson, you should be able to:

1. identify factors to consider in selecting site for goat/sheep project;
2. select ideal site for the project; and
3. appreciate the value of site selection.



PRE-ASSESSMENT

Directions: Choose the correct answer from the choices. Write your answers in your activity notebook paper.

1. This refers to the contour/elevation of the area where the project will be located.
 - a. Location
 - b. Site
 - c. Topography
 - d. Vegetation
2. Which should be considered when project should be accessible to any vehicle?
 - a. Housing
 - b. Peace and order
 - c. Topography
 - d. Transportation
3. What factor is needed for cleaning the quarters, washing the animals and equipment and safe drinking purposes?
 - a. Inclement weather
 - b. Peace and order
 - c. Water Supply
 - d. Windbreak
4. Which of the following factors is described when a project is located near the market?
 - a. Distance from farm to market
 - b. Distance from populated area
 - c. Peace and Order
 - d. Transportation

5. This factor considers the porosity of the soil since goats are not adapted to moistened ground.
- a. Topography
 - b. Types of soil
 - c. Water supply
 - d. Windbreaks



KNOW

Site Selection

Site is a piece of land or an area where a project is or will be situated. This is one of the vital aspects that a raiser should consider to ensure success in venturing small ruminant's enterprise.

Factors to consider in site selection for goat/sheep houses:

- a. **Topography** – This considers the contour/elevation of the area where the project will be located. The area must be gently or slightly sloping, has good drainage and aeration but should be safe from typhoons or strong winds.
- b. **Water supply** – The project should be located where there is a good supply of potable water; otherwise, water pumps should be properly installed within the project area. The animals need continuous supply of safe drinking water besides the ample supply needed for cleaning the quarters and washing of the animals and equipment.
- c. **Transportation** – The project should be accessible to any vehicle. Good road is considered in this factor.
- d. **Peace and order** – If possible, the project should be located in a community where peace and order is not a problem.
- e. **Types of soil** – Generally, the soil should be light and sandy. Goat and sheep are not adapted to moistened soil.
- f. **Distance from populous area** – The animal house should be far enough from the neighborhood due to the foul odor that the flock emits.
- g. **Distance from farm to market** – It is always advantageous to locate the project not only where there is forage grown but also must be near the market center for the following reasons:
 - Less cost of labor for forage crops and easy management of forage pasture;
 - Easy application Feeder stock waste and manure to the forage pasture;
 - Facility of learning changes/fluctuations in the market price;
 - Less injury, shrinkage, or death on the way to the market.

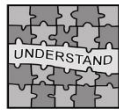
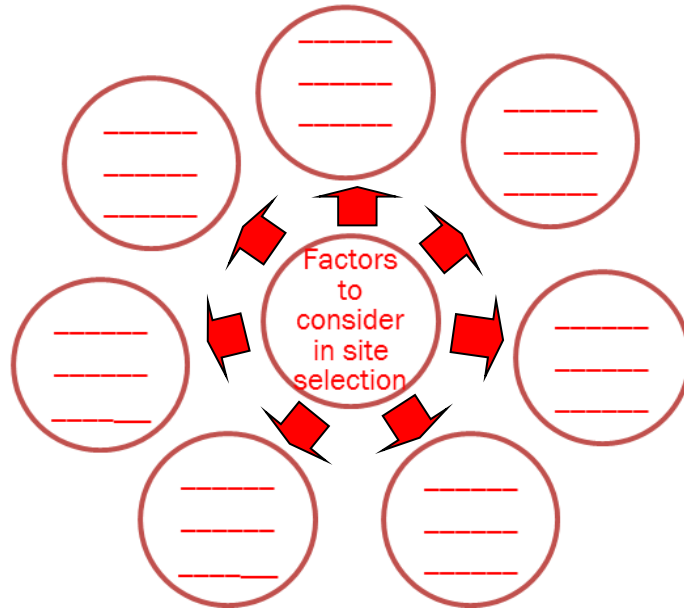


Directions: Identify the factor being described by each of the following sentences. Choose only the letter of your answer from the given choices in the box and write it on your activity notebook.

a. Topography	e. Types of soil	i. Benches
b. Water supply	f. Housing	j. Inclement weather
c. Windbreaks	g. Transportation	k. Peace and order
d. Distance from populated area	h. Distance from farm to market	l. Well-being

1. The project should be near the road which is well-constructed or developed for the delivery of the inputs and shipping out of the products to market.
2. This refers to the contour of the area.
3. It immediately provides changes or fluctuation of prices for the product and by-product.
4. It protects animals from inclement weather, diseases and predators.
5. This factor should be porous as goats are not adapted to moistened ground.
6. Its abundance is necessary for drinking, cleaning and washing of the quarters and equipment for the animals.
7. A facility that could satisfy the preference of goats since they prefer to stay elevated platforms.
8. The project should be situated and safe from burglars and thieves.
9. This project should be far enough from the neighborhood due to the foul odor that the flock emits.
10. Trees are barriers from strong winds and keep the freshness and coolness of the air during warm months.

Directions: Fill up each underline inside circles with the different factors that is considered when selecting a site for small ruminants.



UNDERSTAND

Directions: Explain each word or phrases briefly.

1. Topography _____

2. Water supply _____

3. Transportation _____

4. Peace and order _____

5. Types of soil _____

6. Distance from populous area _____

7. Distance from farm to market _____



TRANSFER

Directions: Ask the learners to survey a place in the vicinity or in your own school where goatery could be possibly put up. Use the table below as your reference. Put a check mark (✓) under Feasible, if it is so, put a check mark (✗) under Not Feasible, if it is not. Discuss your observations in front of the class.

Factors	Feasible	Not Feasible
Topography		
Water Supply		
Transportation		
Peace and Order		
Types of Soil		
Distance from populous area		
Distance from farm to market		



POST-ASSESSMENT

Directions: Choose the correct answer from the choices. Write your answer on your activity notebook paper.

- This refers to the contour/elevation of the area where the project will be located.
 - Location
 - Site
 - Topography
 - Vegetation
- Which should be considered when project should be accessible to any vehicle?
 - Housing
 - Peace and order
 - Topography
 - Transportation
- What factor is needed for cleaning the quarters, washing the animals and equipment and safe drinking purposes?
 - Inclement weather
 - Peace and order
 - Water supply
 - Windbreaks
- Which of the following factors is described when a project is located near the market?
 - Distance from farm to market
 - Distance from populated area
 - Peace and Order
 - Transportation
- This factor considers the porosity of the soil since goats are not adapted to moistened ground.
 - Topography
 - Types of soil
 - Water supply
 - Windbreak



Like any business enterprise, a goat/sheep raising project should be carefully planned to ensure success. Important factors such as topography, water supply, transportation, peace and order, types of soil, and the distance from the neighborhood and the market should be taken into consideration.

Lesson 2 HOUSING SMALL RUMINANTS



INTRODUCTION

This lesson presents the principles and recommendations concerning housing for small ruminants. It includes the different local materials that can be used in the construction of the house and the recommended space requirement for particular stage of growth of the animals.



OBJECTIVES

At the end of the lesson, you should be able to:

1. explain the importance of providing proper housing for the animals;
2. identify locally found materials needed in the project;
3. compute for the space requirement needed based on their classification;
4. construct a simple house for the animals; and
5. appreciate the value of providing house for goat/sheep.



PRE-ASSESSMENT

Directions: Choose the correct letter of your answer from the given choices and write it on your activity notebook.

1. Why is elevated flooring a requirement when constructing a house for goats?
 - a. It is the decision of the owner.
 - b. It is more economical in nature.
 - c. It facilitates the cleaning of manure.
 - d. It is an ordinance from the municipality.
2. What is the total area needed to house a pair of goat?
 - a. 4 sq. m
 - b. 5 sq. m
 - c. 6 sq. m
 - d. 7 sq. m
3. The following are used as roofing materials for small scale goat's house EXCEPT:
 - a. anahaw
 - b. cogon
 - c. galvanized iron
 - d. nipa
4. In constructing goat house, bamboo is mainly used as _____.
 - a. partition
 - b. post
 - C. roof
 - d. sidings

5. Why is concrete post more preferable to use than wooden post in commercial scale farming?
- It provides durability.
 - It is the choice of the owner.
 - It facilitates proper ventilation.
 - It protects the building from soil-borne organisms.



KNOW

Housing

One of the basic requirements in goat/sheep farming is to provide the ruminants a shelter. The house, primarily provided to ensure their security or protection must be durable and safe from rain, thieves, predators, and infectious diseases and parasitic infestation. Moreover, housing them properly affects the performance of the animals and eventually the outcome of the project.

Animal well-being is essential in the design and construction of housing. Hence, there are pointers to consider in constructing the house of Goats/Sheep:

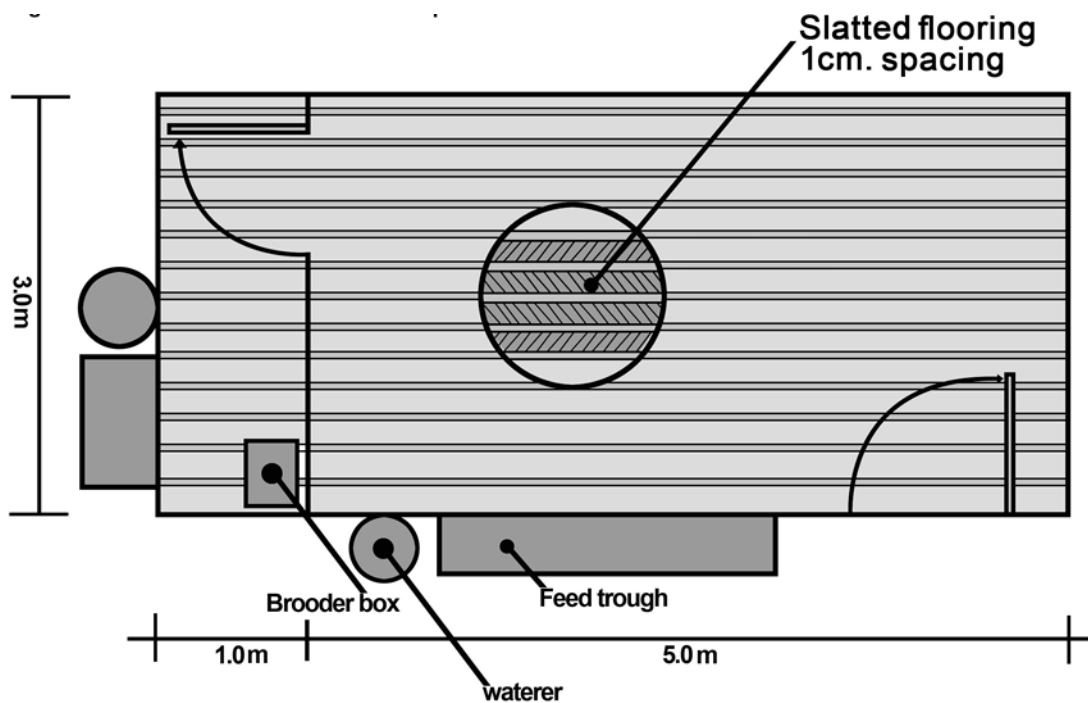
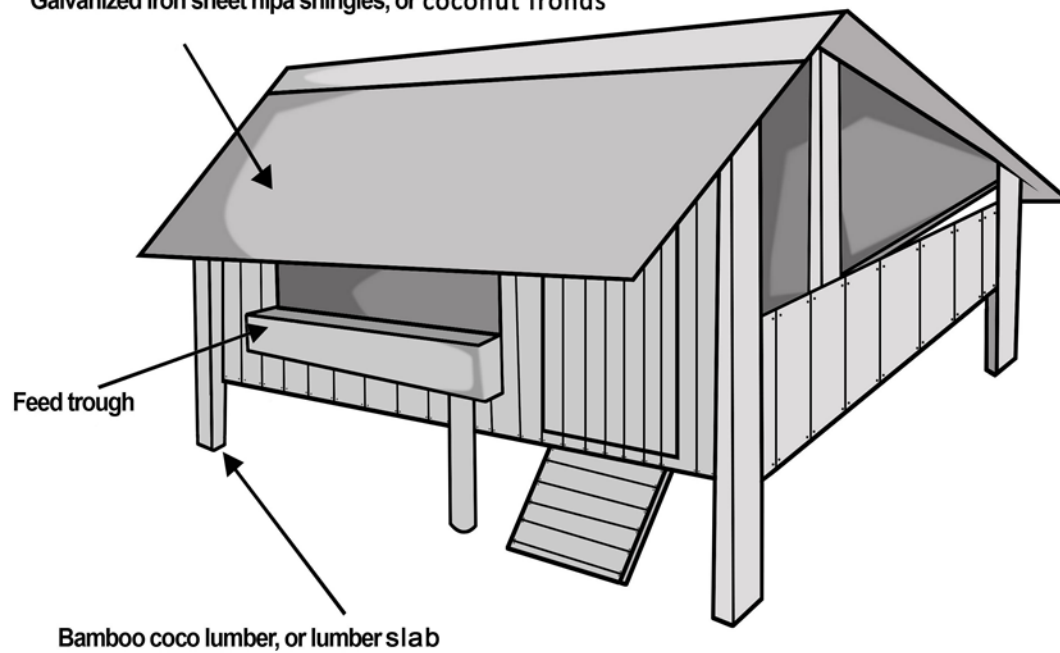
- ✓ Goats prefer to stay on an elevated platform that takes the form of stairs. Benches, steps of houses, or piled lumber will satisfy this preference.
- ✓ The area must be well-drained and easy to clean with a good supply of water.
- ✓ The materials to be used depend on the capability of the raiser.
- ✓ The materials must also be suitable to the climatic condition of the locality.
- ✓ The shelter should be accessible.
- ✓ It should be protected by natural windbreaks and has enough protection from inclement weather.



Photo courtesy of RDC Farm, Angat, Bulacan.

Fig. 1 Goat House, the essential fixtures, and materials

Galvanized iron sheet nipa shingles, or coconut fronds



The goat house design should suit the desired animal performance and vital management practices such as:

- | | |
|---------------------------|-----------------------|
| a. Feeding | d. kid rearing |
| b. breeding and selection | e. sanitation hygiene |
| c. reproductive events | |

Flooring Requirement

❖ Backyard or small scale project (a pair of goat with kids)

- Elevated flooring to allow periodic cleaning of manure
- Total floor area needed should be 3 m x 2 m (6 sq. m) for a pair of goats and additional 0.75 sq. m for every kid
- Cogon, nipa or anahaw leaves as roofing materials
- Bamboo as sidings and slats, which are evenly spaced to allow manure to pass down
- Provision of feed box for the salt, concentrates, forage, and watering trough



❖ Semi-commercial or commercial scale (25-doe level)

- Corrugated galvanized iron sheets, for a comfortable roofing material
- Wooden slats are for ideal flooring
- Concrete post will ensure durability since the duration of the operation is longer

- Provision of feed box for the salt, concentrates, or forage, and watering trough
- Provide at least 1.5 m elevation from the ground to flooring to allow ventilation and ease in cleaning the area underneath
- Underneath area must be compacted to avoid forming of mud when urine and feces drain from above

The estimation of the total floor area of the goat house should be based on the number of breeding females and their reproductive parameters.

ASSUMPTIONS:

- Conception rate of 80%
- Kidding interval of eight months for 1.5 kidding per year
- Average kidding size of 1.5 kids per kidding
- A disposal age of one year for grower animals
- Annual replacement rate of 18% for female breeders
- 80% livability rate from birth up to one year of age

Table1. The recommended floor space area for goats at different ages

Category	Floor Space (m ²)
Breeding female (doe)	1.5
Breeding male (buck)	2.0
Young stock (up to one year old kid)	1.0

For any expansion, you have to consider the layout of the goat house:

Here is a sample computation that a goat raiser can use when deciding to know the total floor area of the house if the doe population is 25. Please refer to the assumptions given and use Table 1 for the space requirement.

Example: 25-doe level

Breeder female (doe)	
25 does x 1.5 m ² doe	= 37.5 m ²
Breeder male (buck)	
1 buck x 2.0 m ² buck	= 2.0 m ²
Young stock	
25 x 80% conception x 1.5 kids/kidding x	
1.5 kidding/year x 80% livability rate	
= 36 offspring /year x 1.0 m ² animal	= 36.0 m ²
Total floor area	=75.5 m²
Total number of goat	=62 heads

Space Requirements for Sheep

Table 2. Recommended housing space (square feet) for sheep

	Dirty lot	Open Shed	Confinement (dirt floor)	Confinement (slatted floors)
Bred Ewe	20	8	12 – 16	8 – 10
Ewe with lambs	25	12	16 – 20	10 – 12
Ram	20	8	20 – 30	14 – 20
Feeder lamb	15 – 20	6	8 – 10	4 – 6

Source: Midwest Plan Service, Sheep Housing and Equipment Handbook, 1982

Less space is required if the sheep are raised on slatted floors or if they have access to an exercise area or pasture. Shearing before housing will also allow stocking rates in the barn to be increased by up to 20%.

Pens and Partitions (Goats)

The house is separated into four (pens) according to different physiological stages:

1. **Kidding and rearing pen** – This is a pen that is allocated for does that are ready to give birth. It should be located at the farther end of the barn to give the pregnant animals a quiet environment during kidding. It also accommodates newly-born kid/s for rearing.
2. **Buck pen** – It is located beside the pen of dry does and doeling for the presence of the buck near dry does has a positive effect on the occurrence of heat on them. However, the partition of this pen should be made of durable material and have a height of 1.35 – 1.5 m to discourage the buck from jumping over to prevent untimely breeding with doelings. This pen accommodates male breeders based on a male to female ratio of 1:20-25.
3. **Dry does and doeling pen** – This is a pen intended for non-lactating female, or a female that has kidded before and stopped and for female goat under 1 year old.
4. **Grower pen** – This accommodates all the male and female goats weaned at three (3) months old. If the male goats had not been castrated before weaning, they should be separated them the others to avoid untimely breeding.



Kidding Pen
(Photo courtesy of Solana Breeding Station, Solana, Cagayan)

Roof and Its Design

The design of the roof should be considered to ensure adequate ventilation.

- A goat house with a 2-3 meters high roof from floor, and sloping to 1.5 meter behind is suggested.

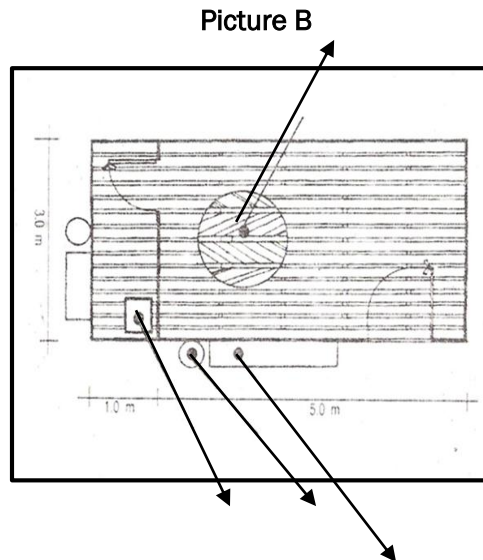
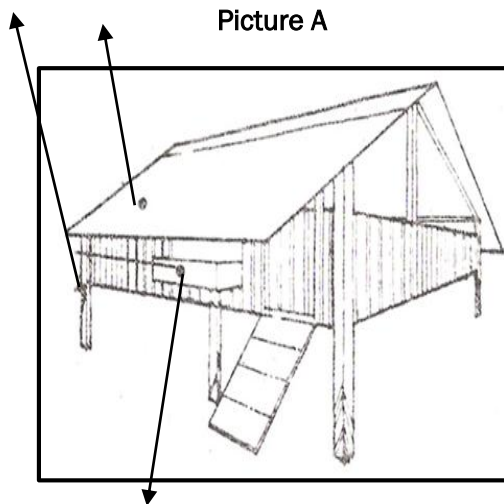
- Indigenous roofing materials, such as anahaw, nipa, or cogon leaves, may be used.
- If galvanized iron (G.I) sheets are to be used for roofing, these must be properly attached to provide maximum comfort for the animals.
- The open-roof type (monitor type) is recommended.

Under Philippine conditions, the open-roof type is recommended. This type allows the warm air inside to flow out of the building. The improved circulation of air inside the building provides fresh air to the goats and prevents build-up of odors from their waste.



Activity 1

Directions: Identify the parts of the two (2) pictures below. Choose the correct answer from the given choices below the pictures. Write the answers in your activity notebook.

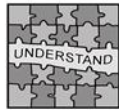


Galvanized iron roofing	Feed trough	Ladder	Brooder box	Lumber slabs
Slatted flooring	Hay rack	Waterer	Bench	Wire mesh

Activity 2

Directions: Require the students to go to the goat project and inspect if the goat house has the following fixtures or facilities. Write your corresponding remarks, if it is still in good condition or it needs a repair, opposite the fixtures.

Roof	<ul style="list-style-type: none">• _____• _____
Feeders	<ul style="list-style-type: none">• _____• _____
Slabs	<ul style="list-style-type: none">• _____• _____
Slatted flooring	<ul style="list-style-type: none">• _____• _____
Brooder boxes	<ul style="list-style-type: none">• _____• _____
Waterer	<ul style="list-style-type: none">• _____• _____



UNDERSTAND

Activity 1

Directions: Make a list of comparison and contrast between the following projects.

Backyard or small scale project	Semi-commercial or Commercial scale
1. <div style="border: 1px solid black; height: 20px; width: 100%;"></div>	1. <div style="border: 1px solid black; height: 20px; width: 100%;"></div>
2. <div style="border: 1px solid black; height: 20px; width: 100%;"></div>	2. <div style="border: 1px solid black; height: 20px; width: 100%;"></div>
3. <div style="border: 1px solid black; height: 20px; width: 100%;"></div>	3. <div style="border: 1px solid black; height: 20px; width: 100%;"></div>
4. <div style="border: 1px solid black; height: 20px; width: 100%;"></div>	4. <div style="border: 1px solid black; height: 20px; width: 100%;"></div>
5. <div style="border: 1px solid black; height: 20px; width: 100%;"></div>	5. <div style="border: 1px solid black; height: 20px; width: 100%;"></div>



TRANSFER

Activity 1

Directions: Guide the learners to construct or repair a simple goat house in your goatery project using durable and locally-found materials in the locality. This house is intended for a pair of native goats. Compute for the floor area by applying the formula.

The following is a rubric to score the outputs:

Criteria	RATINGS			
	Excellent	Very Satisfactory	Satisfactory	Fair
	100% - 94%	93%-87%	86%-81%	80%-75%
1. Use appropriate tools				
2. Use appropriate PPE				
3. Apply safety procedure				
4. Use durable materials				
5. Observes cooperation				
6. Cleaning and storing tools				
7. Provides proper disposal of waste materials				

PPE: Personal Protective Equipment



POST-ASSESSMENT

Directions: Choose the correct letter of your answer from the given choices and write on your activity notebook.

1. Why is elevated flooring a requirement when constructing a house for goats?
 - a. It is the decision of the owner.
 - b. It is more economical in nature.
 - c. It facilitates the cleaning of manure.
 - d. It is an ordinance from the municipality.
2. What is the total area needed to house a pair of goat?
 - a. 4 sq. m
 - b. 5 sq. m
 - c. 6 sq. m
 - d. 7 sq. m
3. The following are used as roofing materials for small scale goat's house except:
 - a. anahaw
 - b. b. cogon
 - c. c. galvanized iron
 - d. d. nipa
4. In constructing goat house, bamboo is mainly used as _____.
 - a. partition
 - b. b. post
 - c. c. roof
 - d. d. sidings
5. Why is concrete post more preferable to use than wooden post in commercial scale farming?
 - a. It provides durability.
 - b. It is the choice of the owner.
 - c. It facilitates proper ventilation.
 - d. It protects the building from soil-borne organisms.



Housing is a basic requirement in goat/sheep production. This protects animals from inclement weathers and predators. House for backyard scale does not need to be expensive. Locally-found materials like cogon, anahaw and bamboo are excellent resources for these ruminants. The design should be in accordance with the needs of the animals for them to be productive. Likewise, elevated house is preferable to construct to keep proper ventilation inside the house and to permit periodic cleaning of waste matter underneath. In constructing house, the welfare of the animals is the primary consideration.

Lesson 3 PROVIDE EQUIPMENT AND OTHER FACILITIES IN GOAT/SHEEP PROJECT



INTRODUCTION

This lesson deals with the different equipment and facilities in a goat/sheep project. Equipment such as feeding trough, waterer and mineral box are identified in this topic. It also gives an overview on various facilities like loafing and isolation areas and the significance of installing perimeter fence of the project.



OBJECTIVES

At the end of the lesson, you should be able to:

1. identify important equipment and facilities needed by goat/sheep;
2. discuss the importance of the different facilities in that goat/sheep project;
3. construct simple equipment for the animals; and
4. provide and install durable perimeter fence to enclose the project.



PRE-ASSESSMENT

Directions: Choose the letter of the correct answer and write it on your activity notebook.

1. It is an equipment that contains feeds for the animals.
 - a. Feeding trough
 - b. Hay rack
 - c. Kid box
 - d. Waterer
2. These are materials which are cut into halves and holds water for the animals to drink in.
 - a. Boxes
 - b. Feeders
 - c. Pails or drums
 - d. Racks
3. Why is it needed to provide kid box inside the rearing pen?
 - a. To protect kids from buck
 - b. To maintain proper ventilation inside the pen
 - c. This is where the kids are confined when sick
 - d. This protects kid from catching pneumonia during cooler months

4. This is a feeding facility made from bamboo tube that contains ordinary salt for the goat to lick on.
 - a. Feeding trough
 - b. Fodder rack
 - c. Hay rack
 - d. Mineral box
5. Which of the following is a place for sick animals to avoid spread of diseases?
 - a. Buck pen
 - b. Isolation area
 - c. Kid boxes
 - d. Loafing area
6. What is the main function of a loafing area?
 - a. A special area for diseased animals
 - b. An area where in-heat animals are kept before breeding
 - c. It is where pregnant does are confined before giving birth
 - d. An area for gathering all animals before and after letting them loose in pasture
7. The following are considered as a good fencing materials for goat except one because it might cause bruise to the animals:
 - a. Barbed wire
 - b. Hog wire
 - c. Ipil-ipil
 - d. Kakawate
8. A frame or stand where forages or fodders are stored under a shed adjacent to the goat shed.
 - a. Fence area
 - b. Hay rack
 - c. Kid box
 - d. Mineral box
9. What is the ideal feeding space area for a mature goat?
 - a. 20 cm
 - b. 30 cm
 - c. 40 cm
 - d. 50 cm
10. In a loafing area, how many heads can be accommodated into 100-150 sq. m?
 - a. 30 heads
 - b. 40 heads
 - c. 50 heads
 - d. 60 heads



KNOW

Feeding Equipment and Other Facilities in the goat project

1. **The feeding trough** can be constructed along the alleys and/or at the side of the house. Feed wastage minimization and contamination, and ease in feeding and cleaning the trough should serve as the guidelines in the construction.
 - The cross-sectional dimension of the feeding trough should follow a half-trapezoidal form measuring 20 cm at the bottom x 15 cm at the lower perpendicular side x 40 cm at the higher slanted side.
 - Provide a feeding space of about 40 cm for each mature animal.

- Its bottom should be made of wooden planks so that it can be utilized for concentrated feeding.
 - The bottom of the trough should be elevated off the floor to discourage the kids from jumping into it.
 - The lower perpendicular side of the trough that will be fastened at the outside of the wall will have partitions of vertical spacing enough for the goat to put its head through during the feeding.
2. For **drinking water**, water containers such as plastic basins, pails or drums cut into halves, can serve the purpose.
 - This should be located and attached outside the pen in such a way that the water remains clean, is not spilled, and it remains free from manure or urine contamination.
 3. Movable **kid boxes** measuring 20 cm deep x 30 cm wide x 45 cm long can be constructed and placed inside the rearing pen. This will provide them protection from catching pneumonia, especially during the cooler months.
 4. **Fodder rack** elevates the feeder 1 foot above the floor and is attached to the goat shed from outside.
 5. The **Mineral box** is a bamboo tube with two or more slits at the bottom to serve as container for the ordinary table salt for the goats to lick. The bamboo tube must be hanged inside the house.
 6. The **Hay rack** serves as a storage for fodder/forage. It is under a shed adjacent to the goat shed.

Isolation/Quarantine Area

It is necessary that a separate shelter measuring 3 m² be constructed for the isolation of sick animals. This should be located away from the main goat house to control the spread of a highly infectious disease. The provision for footbath should be located at the entrance of this facility.

Loafing Area

A fenced loafing area beside the animals' house must be provided (100-150 sq. meter/50 heads). This area functions as an exercise lot and an area for gathering all the animals in one place before letting the goats loose in the pasture or during the midday break of herding. It secures the animals during this idle time. Additionally, a semblance of animal control can be implemented when the goats are about to be driven back to their respective pens.

Fencing

Among the animals, goats are considered the hardest to confine because they have the ability to climb and walk on slopes, hence, provision for fencing is one way of controlling them in the pasture.

The height of the fence should be at least 1.5 meters to confine the animals successfully. Bamboo slats nailed to a wooden post at a distance of 0.15 meter (6 inches) or a circuited wire mesh nailed to wooden posts make good fences. If the

posts are concrete, mesh wire should be used. Bigger posts should be used in the corners to stand the pressure of the stretched mesh wire. The post base should be buried deep enough to prevent it from falling or sliding. The posts should be staked every 3 to 4 meters. Planting ipil-ipil or madre de cacao trees between wooden posts to serve as replacement when the posts rot and fall is a good practice.

Cassava plants also make good fences. These should be planted very close to one another. When the plants reach a desirable height, bamboo slats should be used as braces to keep the plants together. Before the goats are allowed inside the fence, the plants should be tall enough so that the leaves will not be eaten by the goats. During the dry season, when forage is scarce, coating the trunk of the plants with

carabao dung will discourage the goats from nibbling the barks of the plants.

Pasture lots inside the fenced area can also be divided into parts to allow the goats to browse on one section while forage grows in the other section.

Barbed wire is not recommended as fence or for any purposes in any place where you keep your goats/sheep. This may possibly cause wounds and bruises on the animal's body. Always consider the safety and well-being of the animals.



Simple Fencing of a goat ranch
(Photo courtesy of RDC Farm, Angat, Bulacan)



Directions: Rearrange the jumbled letter to form a word that is being asked in each item. Write the correct word on the space provided at the end of each statement.

1. DFEINEG RTOGUH – This equipment is used to minimize feed wastage. _____
2. LAPSCIT ASBIN – This is used as water container for the animal to drink.

3. DKI OBX – It is a movable facility that protects the kid during cooler months.

4. ROFDDE ARCK – It is a frame where fodder or silage are kept. _____
5. MENRIAL XOB – It is a container for the ordinary table salt for the goats to lick on.

6. YHA CARK – It is where the fodder/forage is being stored. _____
7. OISLTIAON EARA – This is a place where sick animals are kept. _____

8. FLOAGIN RAEA – It is an area or lot for the animals to exercise. _____
9. CEFNE – It is a facility that enclosed animals inside the project. _____



Directions: Discuss the function of the following equipment, materials and important facilities.

1. Feeding trough _____

2. Waterer _____

3. Kid boxes _____

4. Fodder rack _____

5. Mineral box _____

6. Hay rack _____

7. Isolation area _____

8. Loafing area _____

9. Fence _____



Activity 1

Directions: Divide the class into five groups and ask each group to construct one from the following feeding equipment:

- a. Feeding trough
- b. Waterer
- c. Kid boxes
- d. Fodder rack
- e. Mineral box

Scoring Rubric

Criteria	R A T I N G S			
	Excellent	Very Satisfactory	Satisfactory	Fair
	100% - 94%	93%-87%	86%-81%	80%-75%
1. Use of appropriate tools				
2. Use of appropriate PPE				
3. Application of safety procedure				
4. Use durable materials				
5. Observing cooperation				
6. Cleaning and storing tools				
7. Proper disposal of waste materials				

PPE: Personal Protective Equipment

Activity 2

Directions: Guide the students to repair or install a perimeter fence to enclose the project.

Scoring Rubric

Criteria	R A T I N G S			
	Excellent	Very Satisfactory	Satisfactory	Fair
	100% - 94%	93%-87%	86%-81%	80%-75%
1. Use of appropriate tools				
2. Use of appropriate PPE				
3. Application of safety procedure				
4. Use durable materials				
5. Observing cooperation				
6. Cleaning and storing tools				
7. Proper disposal of waste materials				

PPE: Personal Protective Equipment



POST-ASSESSMENT

Directions: Choose the letter of the correct answer and write it on your activity notebook.

1. It is an equipment that contains feeds for the animals.
 - a. Feeding trough
 - b. Hay rack
 - c. Kid box
 - d. Waterer
2. These are materials which are cut into halves and holds water for the animals to drink in.
 - a. Boxes
 - b. Feeders
 - c. Pails and drums
 - d. Racks
3. Why is it needed to provide kid box inside the rearing pen?
 - a. To protect kids from buck
 - b. To maintain proper ventilation inside the pen
 - c. This is where the kids are confine when sick
 - d. This protects kid from catching pneumonia during cooler months
4. This is a feeding facility made from bamboo tube that contains ordinary salt for the goat to lick on.
 - a. Feeding trough
 - b. Fodder rack
 - c. Hay rack
 - d. Mineral box
5. Which of the following is a place for sick animals to avoid spread of diseases?
 - a. Buck pen
 - b. Isolation area
 - c. Kid box
 - d. Loafing area
6. What is the main function of a loafing area?
 - a. A special area for diseased animals
 - b. An area where in-heat animals are kept before breeding
 - c. It is where pregnant does are confined before giving birth
 - d. An area for gathering all animals before and after letting them loose in pasture
7. The following are considered as a good fencing materials for goat except one because it might cause bruise to the animals:
 - a. Barbed wire
 - b. Hog wire
 - c. Ipil-ipil
 - d. Kakawate
8. A frame or stand where forages or fodders are stored under a shed adjacent to the goat shed.
 - a. Fence area
 - b. Hay rack
 - c. Kid box
 - d. Mineral box
9. What is the ideal feeding space area for a mature goat?
 - a. 20 cm
 - b. 30 cm
 - c. 40 cm
 - d. 50 cm

10. In a loafing area, how many heads can be accommodated into 100-150 sq. m?

- a. 30 heads
- b. 40 heads
- c. 50 heads
- d. 60 heads



Even considered as the hardest animal to confine, goats should also be provided the necessary equipment and facilities. These provisions are intended for the welfare of the animals especially during rainy season when animals should be confined because they are prone to pneumonia, a disease that usually occurs during wet months. A fence is also vital to safeguard the animals from predators like stray dogs.



POST-ASSESSMENT FOR MODULE 1

Directions: Choose the right answer from the choices. Write only the letter of your answer in your activity notebook.

1. This refers to the contour/elevation of the area where the project will be situated.
 - a. Location
 - b. Site
 - c. Topography
 - d. Vegetation
2. Why is there a need to house animals?
 - a. It is popular in the locality.
 - b. It is an ordinance from the municipality.
 - c. It reduces internal parasite infestation.
 - d. It gives the caretaker a place to rest while herding the flock.
3. Why do farmers prefer to build an elevated house for the goats?
 - a. The animals get secured.
 - b. It is an ordinance of the barangay.
 - c. They follow the culture in their place.
 - d. It facilitates cleaning and provides ventilation.
4. What should be a raiser prioritize when putting up a perimeter fence for the animals?
 - a. Cost of materials
 - b. Time to consume
 - c. Availability of the materials
 - d. Safety and well-being of the animals

5. This facility is necessary where sick animals are kept to control rapid spread of infectious diseases among animals.
 - a. Breeding stall
 - b. Isolation area
 - c. Kidding pen
 - d. Loafing area
6. What is the recommended floor space area for a breeding male (buck)?
 - a. 1.0 m²
 - b. 1.5 m²
 - c. 2.0 m²
 - d. 2.5 m²
7. What is the recommended housing space for bred ewes in a confinement (slatted floor)?
 - a. 8 – 10 sq. feet
 - b. 10 – 12 sq. feet
 - c. 12 – 16 sq. feet
 - d. 16 – 20 sq. feet
8. What factor is needed for cleaning the quarters, washing the animals and equipment and safe drinking purposes?
 - a. Inclement weather
 - b. Peace and order
 - c. Water supply
 - d. Windbreaks
9. Which of the following factors is described when a project is located near the market?
 - a. Distance from farm to market
 - b. Distance from populated area
 - c. Peace and order
 - d. Transportation
10. This factor considers the porosity of the soil since goats are not adapted to moistened ground.
 - a. Topography
 - b. Types of soil
 - c. Water supply
 - d. Windbreaks
11. Why is elevated flooring a requirement when constructing a house for goats?
 - a. It is the decision of the owner.
 - b. It is more economical in nature.
 - c. It facilitates the cleaning of manure.
 - d. It is an ordinance from the municipality.
12. What is the total area needed to house a pair of goat?
 - a. 4 sq. m
 - b. 5 sq. m
 - c. 6 sq. m
 - d. 7 sq. m
13. The following are used as roofing materials for small scale goat's house except:
 - a. Anahaw
 - b. Cogon
 - c. Galvanized iron
 - d. Nipa
14. In constructing goat house, bamboo is mainly used as _____.
 - a. partition
 - b. post
 - c. roof
 - d. sidings
15. Why is concrete post more preferable to use than wooden post in commercial scale farming?
 - a. It provides durability.
 - b. It is the choice of the owner.
 - c. It facilitates proper ventilation.
 - d. It protects the building from soil-borne organisms.
16. It is an equipment that contains feeds for the animals.
 - a. Feeding trough
 - b. Hay rack
 - c. Kid box
 - d. Waterer

17. These are materials which are cut into halves and holds water for the animals to drink in.
- Boxes
 - Feeders
 - Pails or drums
 - Racks
18. Why is it needed to provide kid box inside the rearing pen?
- To protect kids from buck
 - To maintain proper ventilation inside the pen
 - This is where the kids are confine when sick
 - This protects kid from catching pneumonia during cooler months
19. This is a feeding facility made from bamboo tube that contains ordinary salt for the goat to lick on.
- Feeding trough
 - Fodder rack
 - Hay rack
 - Mineral box
20. Which of the following is a place for sick animals to avoid spread of diseases?
- Buck pen
 - Isolation area
 - Kid box
 - Loafing area
21. What is the main function of a loafing area?
- A special area for diseased animals
 - An area where in-heat animals are kept before breeding
 - It is where pregnant does are confined before giving birth
 - An area for gathering all animals before and after letting them loose in pasture
22. The following are considered as a good fencing materials for goat, except one because it might cause bruise to the animals:
- Barbed wire
 - Hog wire
 - Ipil-ipil
 - Kakawate
23. A frame or stand where forages or fodders are stored under a shed adjacent to the goat shed.
- Fence area
 - Hay rack
 - Kid box
 - Mineral box
24. What is the ideal feeding space area for a mature goat?
- 20 cm
 - 30 cm
 - 40 cm
 - 50 cm
25. In a loafing area, how many heads can be accommodated into 100-150 sq. m?
- 30 heads
 - 40 heads
 - 50 heads
 - 60 heads



FOR MODULE 1: PROVIDING COMFORTABLE HOUSING

Housing is a basic necessity for goat/sheep. This secures the animals from inclement weather, stray animals and other predators, and from thieves. Housing goat/sheep is not necessarily constructed with expensive materials. Locally-found

materials as such cogon, nipa, and bamboo are good sources for a goat house. Equipment and materials are installed inside the house to serve the needs of these animals such as waterer, feeder, and hay rack. Other facilities that support the growth and efficiency of the animals should be considered. These are isolation area, loafing area, and fence.

**ANIMAL PRODUCTION NC II
SMALL RUMINANTS**

Content Standard	Performance Standard
The learner demonstrates an understanding of goat and sheep breeds based on industry specifications.	The learner independently selects breeds of small ruminants based on their characteristics.

QUARTER 2

TIME ALLOTMENT: _____

MODULE NO. 2 SELECTING AND MANAGING BREEDER GOATS AND SHEEP



INTRODUCTION

This module covers the knowledge, skills, and attitudes required to effectively select and manage breeding stocks.



OBJECTIVES

After completing this module, you should be able to:

1. identify suitable and superior breeds of goats and sheep based on industry standards;
2. detect signs of heat among sexually mature does and ewes;
3. detect signs of pre-heat, standing heat and post-heat states;
4. mate breeder does and ewes with genetically superior rams/bucks;
5. diagnose and confirm pregnant animals;
6. house breeder buck/rams and does/ewes;
7. feed bucks and rams;
8. perform regular grooming; and,
9. cull unproductive buck/ram and does/ewes.



DIAGNOSTIC/PRE-ASSESSMENT FOR MODULE 2

Directions: Choose the right answer from the choices. Write the letter of your answers on your activity notebook.

1. Breed is defined as _____

- a. a product of two animals that were bred.
 - b. a process of improving genetic make-up of an animal.
 - c. a procedure of eliminating undesirable breeder in the herd.
 - d. a stock of animals within species having a distinctive appearance.
2. This breed has originated from England and is believed to be one of the ancestors of the Philippine sheep.
 - a. Merino
 - b. Shropshire
 - c. Suffolk
 - d. Priangan
3. How are you going to select the best breeder from your stock?
 - a. Through body weight only
 - b. Through record or pedigree
 - c. Through the advice of your friend
 - d. Through the color and body markings
4. The following are guides on how selection is done, except:
 - a. Select kids that have undesirable traits.
 - b. Select kids that are found in the locality.
 - c. Select kids from does that breed regularly.
 - d. Select animals that are large for their ages among their herd mate.
5. Breeding is defined as _____.
 - a. the capacity to reproduce twins.
 - b. the reproduction or multiplication of animals.
 - c. the removal of animals with undesirable traits.
 - d. the process of choosing the best animal in the herd.
6. If you are going to cross a 100% Purebred Boer to a (75% Anglo Nubian x 25%Native), what is the probable bloodline of the produced progeny?
 - a. 50% Boer – (12.5% Anglo Nubian – 37.5% Native)
 - b. 50% Boer – (25.0% Anglo Nubian – 25.0% Native)
 - c. 50% Boer – (37.5% Anglo Nubian – 12.5% Native)
 - d. 50% Boer – (37.5% Anglo Nubian – 20.5% Native)
7. Which of the following is not a sign of estrous among breeder does?
 - a. Bleating
 - b. Vulva is swollen
 - c. Develops good appetite
 - d. Mucus discharge from the vulva
8. The following are breeds of goat, except:
 - a. Alpine
 - b. Anglo-Nubian
 - c. Saanen
 - d. Suffolk
9. This breed is known to have the longest milking period.
 - a. Alpine
 - b. b. Anglo-Nubian
 - c. Saanen
 - d. Toggenburg
10. It is a breed of sheep that is characterized by the black color on its under part that completely extends up to neck and the inside of the legs.
 - a. Barbados Blackbelly
 - b. Merino
 - c. Priangan
 - d. Shropshire
11. This breed is known to be the finest wool producer.
 - a. Barbados Blackbelly
 - b. Boer
 - c. Merino
 - d. Priangan

12. A breed of sheep that has originated from Merino breed.
 - a. Barbados Blackbelly
 - b. Philippine Sheep
 - c. Priangan
 - d. Suffolk
13. Selection is best defined as _____.
 - a. the process of sorting different breeds of goat.
 - b. the useful determinants to improve various traits.
 - c. the traits that can be achieved through proper breeding management.
 - d. the systematic way of choosing the desired characteristics of goat/sheep for breeding purposes.
14. What best defines pedigree?
 - a. The record about the eating habit of each animal.
 - b. The record that shows the growth rate of young animals.
 - c. It is the record of bloodlines of the ancestors of the animals.
 - d. The list of feed ingredients for each stages of growth of the animals.
15. The following are ideal characteristics of animal carcass except:
 - a. Minimum amount of bone
 - b. Maximum amount of muscle
 - c. Optimum amount of fat
 - d. Maximum amount of water
16. Which of the following does not directly affect the milk yield of a lactating does/ewes?
 - a. Body size
 - b. Color and other markings
 - c. Stage of lactation
 - d. Udder size
17. Which of the following is not an important trait for selection?
 - a. Carcass quality
 - b. Color and size of ears
 - c. Milk yield
 - d. Reproductive efficiency
18. It contains a systematic, brief and ideal description of the different body parts of the animal and their numerical values.
 - a. Journal
 - b. Health record
 - c. Record book
 - d. Score card
19. This is the cheapest breeding system that aims to increase the exotic bloodline of usually native breed.
 - a. Crossbreeding
 - b. Inbreeding
 - c. Purebreeding
 - d. Upgrading
20. When a 100% Anglo-Nubian buck is mated with a doe which is 50% Anglo Nubian – 50% Native, what is the probable bloodline of their offspring?
 - a. 100% Anglo-Nubian
 - b. 75%Anglo-Nubian – 25%Native
 - c. 50%Anglo-Nubian – 50%Native
 - d. 25%Anglo-Nubian – 75%Native
21. What is the primary aim of a breeder when he practices purebreeding system in his farm?
 - a. To produce hybrid animals
 - b. To produce improved bloodlines
 - c. To maintain the purity of his stock

- d. To avoid the occurrence of any abnormalities or deformities
- 22. This breeding system involves the mating of two animals belonging to different breeds.
 - a. Crossbreeding
 - b. Inbreeding
 - c. Purebreeding
 - d. Upgrading
- 23. Which of the following signs of estrous could give the best result in breeding?
 - a. Bleating
 - b. Restlessness
 - c. Swelling of the vulva
 - d. Standing still when being mounted
- 24. Which of the choices is not a sign of pregnancy?
 - a. Frequent urination
 - b. Develops good appetite
 - c. Enlargement of abdomen
 - d. Cessation of estrous period
- 25. This is the average gestation days of goats.
 - a. 140 days
 - b. 150 days
 - c. 160 days
 - d. 170 days

Lesson 1 IDENTIFYING DIFFERENT BREEDS OF GOAT/SHEEP



INTRODUCTION

This lesson focuses on the different breeds of goats and sheep that exist under local conditions. It also discusses the types of each breed and their prominent characteristics such as body conformation, colors and markings, mature weights, average milk production per day and average lactation days.



OBJECTIVES

At the end of the lesson, you should be able to:

1. identify suitable breeds of goats/sheep and describe each breeds' characteristics;
2. select breeding stocks based on industry standard; and
3. appreciate the value of proper selection.



PRE-ASSESSMENT

Directions: Choose the correct of your answer from the given choices.

1. The following are breeds of goat, EXCEPT:
a. Alpine b. Anglo-Nubian c. Saanen d. Suffolk
2. A breed of goat with long, wide and pendulous ear.
a. Alpine b. Anglo-Nubian c. Saanen. d. Toggenburg
3. This breed is known for their erect ears and a remarkable two white strips down to the muzzle.
a. Alpine b. Anglo-Nubian c. Saanen d. Toggenburg
4. This breed is known to have the longest milking period.
c. Alpine b. Anglo-Nubian c. Saanen d. Toggenburg
5. A breed of goat raised mainly for its meat.
a. Boer b. Philippine goat c. Saanen d. Toggenburg
6. It is a breed of sheep that is characterized by the black color on its under part that completely extends up to neck and the inside of the legs.
a. Barbados Blackbelly c. Priangan
b. Merino d. Shropshire

7. A breed of sheep known for the wool and meat that it produces.
 - a. Merino b. Philippine goat c. Priangan d. Suffolk
8. This breed is known to be the finest wool producer.
 - a. Barbados Blackbelly c. Merino
 - b. Boer d. Priangan
9. This breed has originated from Indonesia and primarily raised for ram fighting.
 - a. Barbados Blackbelly c. Merino
 - b. Boer d. Priangan
10. A breed of sheep that has originated from Merino breed.
 - a. Barbados Blackbelly c. Priangan
 - b. Philippine Sheep d. Suffolk



KNOW

Breed refers to the distinct characteristic of an animal within a specie which are transferred from one generation to generation. On the other hand, **Type** is defined as a group of animals raised to serve a certain purpose. A breed is a good guide in deciding the purpose of animals to be raised.

These are the Different Types of Goat

- Meat type – intended for the production of chevon.
Example: Boer
- Dairy type – intended for the production of milk
Examples: Saanen, Toggenburg, Alpine
- Dual purpose type – raised for both meat and milk
Examples: Anglo-Nubians

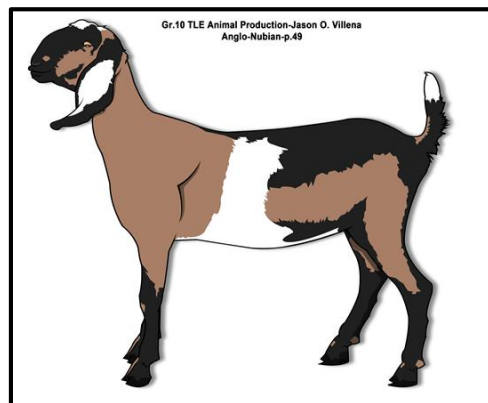
Different Breeds of Goats/Sheep and Their Characteristics

Here in the Philippines, several breeds and grades can be successfully raised by farmers.

1. Anglo-Nubian

Characteristics:

- Leggy and as tall as Saanen
- Long, wide and pendulous ears
- Convex roman nose
- Less tolerant of the cold but do well in hot climates



Color and markings:

- Black, gray, cream, white shades of tan, brown and rich, reddish brown; lighter ears, facial strips, muzzle, crown and/or undertrim; overall light or dark colored spots or patches of any size.

Approximate mature weight: 60 - 75 kg**Average lactation (days):** 165**Average milk production:**

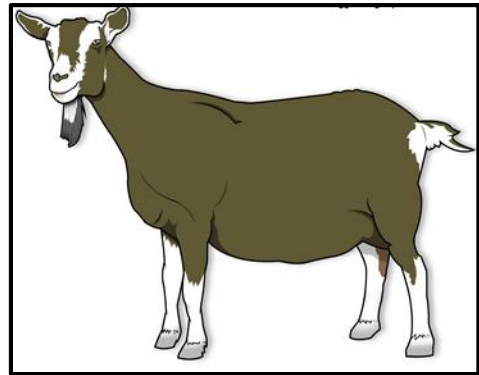
- 1.5 L/day
- 3.6 % fat

2. Toggenburg**Characteristics:**

- Sturdy, vigorous and long-life
- Ears are erect and are carried forward

Color and markings:

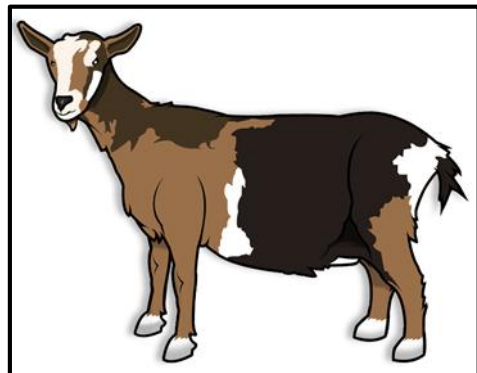
- Light fawn to dark chocolate with distinct white markings; white ears with dark spot in the middle; two white strips down the muzzle and hind legs from hock to hooves; forelegs white from knees downward; a white triangle on either side of the tail; white spot in the area of the wattles.

**Approximate mature weight:** 60 - 80 kg**Average lactation (days):** 220**Average milk production:** 1.5 – 1.75 L/day**3. Alpine****Characteristics:**

- Alert breed from medium to large size with upright ears
- Face is straight

Color and markings:

- Varies from black fawn to white but the preferred color is black; clear pure white markings at each side of the belly; white legs below the knees
- Hair is medium to short

**Approximate mature weight:** 60 kg**Average lactation (days):** 200**Average milk production:**

- 1.5 L/day
- 4.0% fat

4. Saanen

Characteristics:

- Well-built milky head and neck
- Known to have the longest milking period
- Straight nose and erect ears
- Known as “Queen of Dairy Goat”

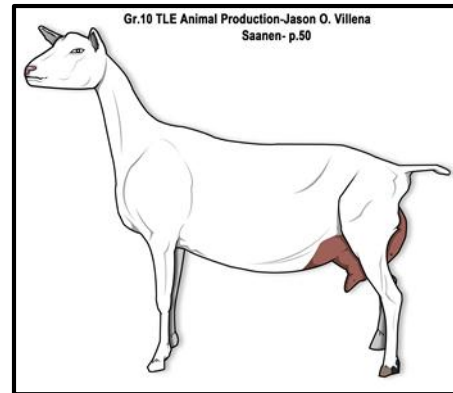
Color and markings:

- Cream to white

Approximate mature weight: 65 - 75 kg

Average milk production:

- 2.0 L/day
- 4.3% fat



Average lactation (days): 280

5. Boer

Characteristics:

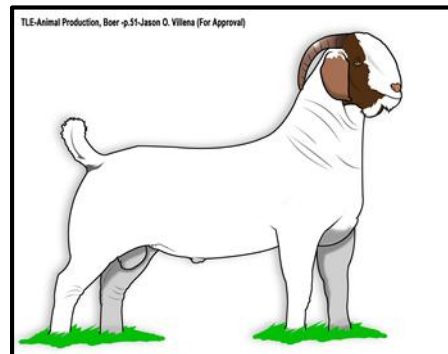
- With half-drooping ears
- Has distinct Roman nose and a prominent forehead
- A meat-type breed
- Thrives in a well-drained hilly to rolling areas.

Color and markings:

- Head, neck and the tip of tail are brown to reddish brown; rest of the coat is white

Approximate mature weight: 70 – 90 kg

Average milk production: 1.0 – 1.5 L/day



Average lactation (days): 200

6. Philippine Native Goat

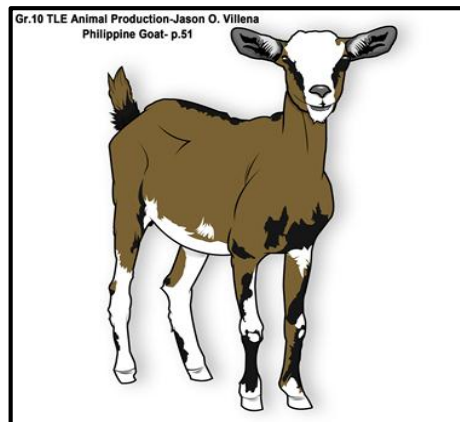
Characteristics:

- Small, stocky, and low-set
- Found throughout the country,
- Thrives in all Agro Economical Zone (AEZ).

Color and markings:

- Coat color is red, white or black or a combination of three colors.

Approximate mature weight: 18 - 20 kg



Average milk production:

- 0.4 kg/day
- 4.6% fat

Average lactation (days): 187

Different Breeds of Sheep and Their Characteristics

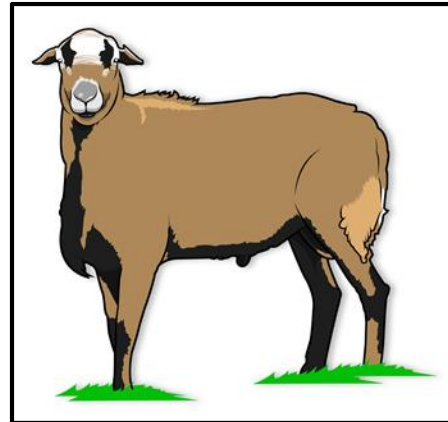
1. Barbados Blackbelly

Origin: Barbados Island with African ancestry

Characteristics:

- Adapted to a wide range of environment
- High reproductive efficiency (2 lambs/litter)
- Sweet mutton
- Black color covers under part completely and extend up to the neck and the insides of the legs

Type: Hair type



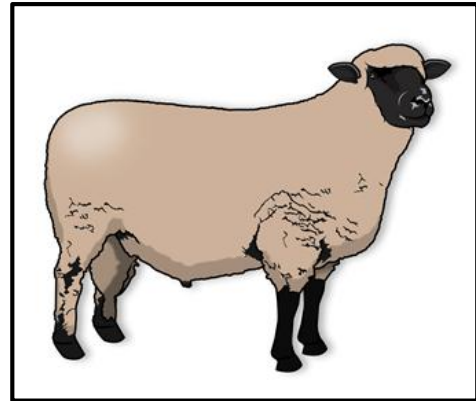
2. Shropshire

Origin: England

Characteristics:

- Believed to be one of the ancestors of the Philippine sheep

Type: Wool-type



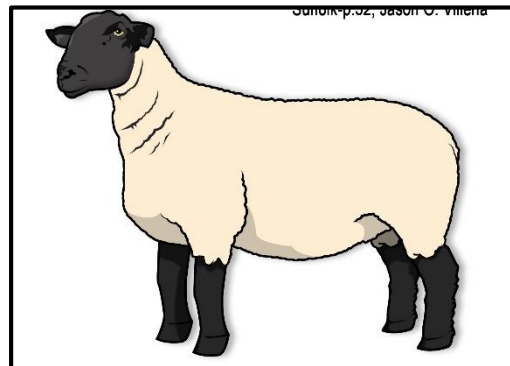
3. Suffolk

Origin: England

Characteristic:

- Dark colored faces and legs
- Used for meat production

Type: Wool-type



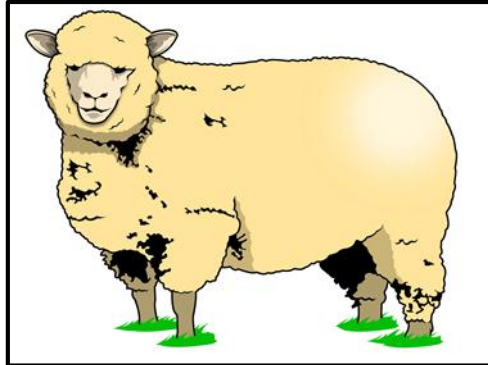
4. Merino

Origin: Spain

Characteristics:

- The other ancestor of Philippine sheep
- Finest wool producer

Type: Wool-type

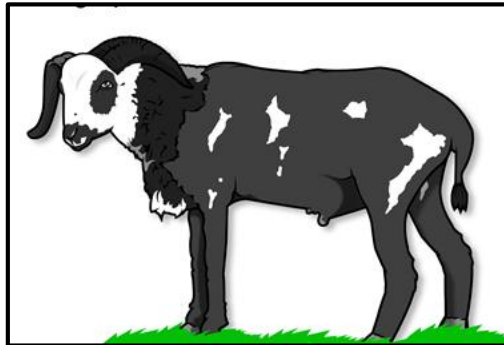


5. Priangan

Origin: Indonesia

Characteristic:

- Primary for ram fighting
- Used for meat production
- Thin-tailed
- Often lacks external ears

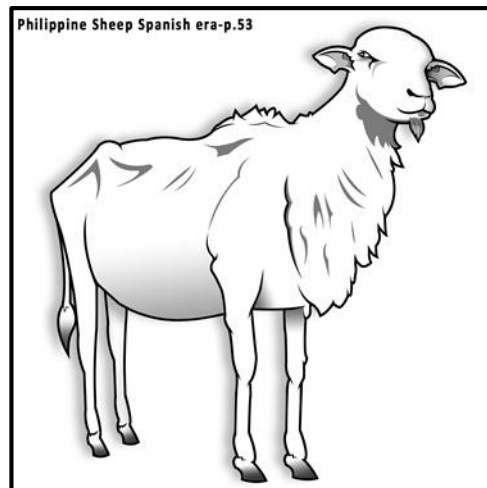


6. Philippine Sheep

Origin: Originated from the Merino breed which was imported during the Spanish era

Characteristics:

- Male is generally horned and Roman-nosed
- Female is either straight or Roman-nosed, polled and thin-tailed
- Pre-dominant color is white, although brown and brown-white are common
- Ears of both sexes are erect






Directions: Fill in the columns with specific breed under goat and sheep. The different breed of ruminants are listed inside the box below. You may write your answer on your activity notebook.

Anglo-Nubian	Shropshire	Suffolk	Toggenburg	Priangan	Alpine
Philippine Sheep	Barbados Blackbelly	Merino	Saanen	Native Goat	Boer

Breeds of Goat	Breeds of Sheep
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.
6.	6.




Directions: Identify the different breeds of goat and sheep. Indicate some of their special feature.



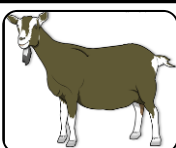
1. Name of breed:

-
-
-



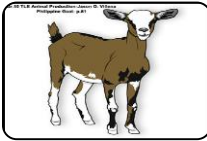
2. Name of breed:

-
-
-



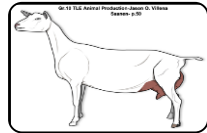
3. Name of Breed:

-
-
-



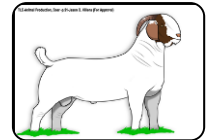
4. Name of Breed:

-
-
-



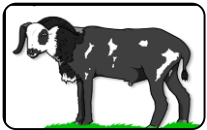
5. Name of Breed:

-
-
-



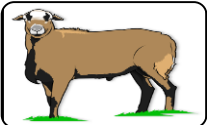
6. Name of Breed:

-
-
-



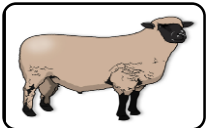
7. Name of Breed:

-
-
-



8. Name of Breed:

-
-
- /



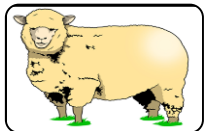
9. Name of Breed:

-
-
-



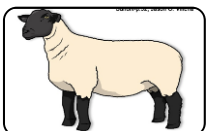
10. Name of Breed:

-
-
-



11. Name of Breed:

-
-
-



12. Name of Breed:

-
-
-



TRANSFER

Directions: Divide the class into five (5) group and require them to conduct a survey of backyard goat raisers in the community. Following the column below, fill up and jot down the breed, type and distinguishing features of each breed. Determine the most common breed raised in the community. You make a report and discuss it in front the class.

Breed	Distinguishing Features	Type



POST-ASSESSMENT

Directions: Choose the correct answer from the given choices.

- The following are breeds of goat EXCEPT:
 - Alpine
 - Anglo-Nubian
 - Saanen
 - Suffolk
- A breed of goat with long, wide and pendulous ear.
 - Alpine
 - Anglo-Nubian
 - Saanen
 - Toggenburg
- This breed is known for their erect ears and a remarkable two white strips down to the muzzle.
 - Alpine
 - Anglo-Nubian
 - Saanen
 - Toggenburg
- This breed is known to have the longest milking period.
 - Alpine
 - Anglo-Nubian
 - Saanen
 - Toggenburg
- A breed of goat raised mainly for its meat.
 - Boer
 - Philippine goat
 - Saanen
 - Toggenburg
- It is a breed of sheep that is characterized by the black color on its under part that completely extends up to neck and the inside of the legs.
 - Barbados Blackbelly
 - Merino
 - Priangan
 - Shropshire

7. A breed of sheep known for the wool and meat that it produces.
 - a. Merino
 - b. Philippine goat
 - c. Priangan
 - d. Suffolk
8. This breed is known to be the finest wool producer.
 - a. Barbados Blackbelly
 - b. Boer
 - c. Merino
 - d. Priangan
9. This breed has originated from Indonesia and primarily raised for ram fighting.
 - a. Barbados Blackbelly
 - b. Boer
 - c. Merino
 - d. Priangan
10. A breed of sheep that has originated from Merino breed.
 - a. Barbados Blackbelly
 - b. Philippine Sheep
 - c. Priangan
 - d. Suffolk



Breed is a good guide when choosing the type of animals to be raised. In raising goat, Boer is reared for meat production. Saanen, Toggenburg and Alpine are dairy type while the Anglo-Nubian breed serves as a dual purpose type. Likewise, sheep are also raised for different purposes. The Barbados Blackbelly and the Priangan are raised for their meat, while Shropshire, Suffolk and Merino are known for wool production.

Lesson 2 SELECTING ANIMALS FOR PARTICULAR PURPOSE



INTRODUCTION

This lesson presents the fundamentals in selecting animals to be raised. It focuses on the use of score card which considers mostly the good and weak points of the animal being judged. However, a brief description of the important economic traits and tips for selection were given as guide when choosing animal according to purpose.



OBJECTIVE

At the end of the lesson, you should be able to:

1. define selection;
2. enumerate and discuss important traits to be considered during selection; and
3. appreciate the importance of using score cards in the selection process.



PRE-ASSESSMENT

Directions: Choose the correct letter of your answer from the given choices. Write the answers on your activity notebook.

1. Selection is best defined as _____.
 - a. the process of sorting different breeds of goat.
 - b. the useful determinants to improve various traits.
 - c. the traits that can be achieved through proper breeding management.
 - d. the systematic way of choosing the desired characteristics of goat/sheep for breeding purposes.
2. What best defines pedigree?
 - a. The record about the eating habit of each animal
 - b. The record that shows the growth rate of young animals
 - c. It is the record of bloodlines of the ancestors of the animals
 - d. The list of feed ingredients for each stages of growth of the animals
3. The following are ideal characteristics of animal carcass, except:
 - a. Minimum amount of bone
 - b. Maximum amount of muscle
 - c. Optimum amount of fat
 - d. Maximum amount of water

4. Which of the following does not directly affect the milk yield of a lactating does/ewes?
 - a. Body size
 - b. Color and other markings
 - c. Stage of lactation
 - d. Udder size
5. Why birth weight is an important trait of animals?
 - a. Because it reduces feed cost
 - b. Because this is one basis for giving birth of twins
 - c. Because this gives the animal optimum protection against parasite infestations
 - d. Because this is directly related to the survival rate and growth performance of young animals
6. The following traits are considered to be low or not heritable at all except:
 - a. Birth weight
 - b. Estrus cycle
 - c. Gestation length
 - d. Litter size
7. Which of the following is not an important trait for selection?
 - a. Carcass quality
 - b. Color and size of ears
 - c. Milk yield
 - d. Reproductive efficiency
8. Which of the following characteristics of native does is not preferable for breeding purposes?
 - a. Teats are uniform
 - b. Lumps at the udder area
 - c. Has a complete set of teeth
 - d. Weight not less than 25 kilograms
9. The following choices are considered when selecting for breeder buck, except:
 - a. Heaviest among the herd
 - b. Active and ready to breed in-heat does
 - c. Most capricious based on feeding record
 - d. Capable to transmit good quality to its progeny
10. It contains a systematic, brief and ideal description of the different body parts of the animal and their numerical values.
 - a. Journal
 - b. Health record
 - c. Record book
 - d. Score card



KNOW

Selection of Stock

The systematic way of choosing goats/sheep with desirable characteristics for breeding purposes is called **selection**. This ensures the choice of the best animals for reproduction. Most of the productive and reproductive traits are greatly influenced by the kind of breeding stock in the herd, since everything will start from the parent animals. Moreover, pedigree or the record of bloodlines of the ancestors of the

animal, performance or production record, health and disposition should be given consideration.

Important economic traits to be considered during selection:

- a. Feed Conversion Ratio (FCR) – this is the ability of a particular breed to efficiently convert feeds into meat.
 - b. Reproductive efficiency - can be measured by fertility, prolificacy, fecundity and survival (<http://ilri.org/infoserv/Webpub/fulldocs/X5460E/x5460e02.htm>, 10-06-14)
 - c. Growth rate – it is the capacity to make rapid gain, this varies among breeds
 - d. Carcass quality characteristics - The ideal carcass has a minimum amount of bone, a maximum amount of muscle and an optimum amount of fat. A certain proportion of fat is desirable to reduce drying out of the carcass. On the other hand, too much fat is undesirable. (<http://www.esgpip.com/Handbook/Chapter12.html> 11-15-14)
 - e. Milk yield – The amount of milk harvested from a milking doe/ewes. The volume varies due to different factors which affect the animal such as body size, weight, parity, stage of lactation, udder size, litter size, nutrition, breed and kidding/ lambing season. (<http://www.esgpip.com/Handbook/HandbookPDF/Chapter%2010%20Sheep%20and%20Goat%20Products%20and%20By-Products.pdf> 11-15-14)
 - f. Birth weight - Birth weight is an important trait and is related to survival and growth performance of young animals. (<http://www.esgpip.org/pdf/Technical%20Bulletin%20No.23.pdf> 11-15-14)
 - g. Structural traits such as heart girth, body length and withers size
- ❖ Moderate to Highly Heritable Traits
 - Birth weight
 - Growth rate
 - Structural traits, such as heart girth, body length, and withers size
 - ❖ Low or not Heritable Traits
 - Estrus cycle
 - Gestation length
 - Litter size
 - Incidence of multiple birth or twinning

Selection Tips:

- ❖ Select ruminants that are large for their age among their herd mates. They should grow rapidly from birth to weaning.
- ❖ Select kids from does that breed regularly and prefer does that kid at least 3 times in 2 years.
- ❖ Consider multiple birth as a criterion in selection. Choose breeding does that have given birth to twins or triplets.

- ❖ Where conditions are highly unfavorable, select goats for high fertility and viability rather than for rapid growth. However, if it is possible to provide high levels of feeding for the kids up to 6 months old, selection for growth rate would be justified.
- ❖ Select for high milk production and persistency of lactation.
- ❖ Select replacement stock on the basis of parental performance such as growth rate, high milk production, easy milkers, and others.
- ❖ Select a breed that is most common in the locality. There is no best breed in all conditions. An animal thrives in the existing local condition could give a better performance.
- ❖ Grades or native animals are more practical to start with. There is less investment involved and they are not as sensitive as the purebreds in their requirements such as feeding, housing, and rearing.

THE SCORE CARD

A score card is a method of judging which contains a systematic, brief, and ideal description of the different body parts of an animal with their numerical values based from industry standard. The total numerical point is always 100. For the beginners to use this effectively, an anatomy of external parts has been provided in each animal according to their purpose.

Steps:

1. Identify the animal to be scored or judged.
2. Stay near the animal for a better inspection and closer examination.
3. Examine each part thoroughly following the sequence appearing in the score card.
4. Use your hand to feel and inspect the parts to be judged.
5. Write the score next to the perfect score following its order and sequence.
6. Deduct from the perfect score the deficiency the judge may find in the specific parts of the animal.
7. Add the total score. This will be the final rate or score of the animal.

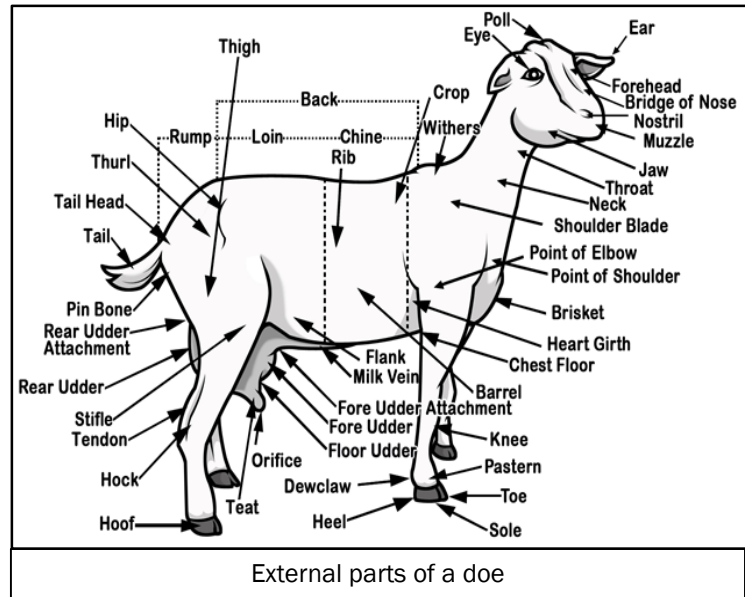
Through this, good and weak point can be evaluated, thus improves the whole herd by eliminating unproductive animals and retaining only the productive ones.

SELECTION CRITERIA

Dairy Goats

The doe largely determines the success of your dairy goat enterprise. Hence, it is very important that you select her with care. Here are some points to remember when choosing milking does.

- ✓ These should be purchased from a locality or area with similar climatic conditions;
- ✓ Native or graded does should not be less than 25 kilograms;
- ✓ Udder should be palpated for size, detection of lumps, and other abnormalities;
- ✓ Teats should be uniform in length, and large enough for easy milking;
- ✓ These must have good appetite, possess alert eyes and well-formed pupils;
- ✓ The middle of the doe should be long and the rib well-sprung, allowing room for roughage and 2 or more kids;
- ✓ The floor of the chest should be wide enough for the front legs to be set apart;
- ✓ They should have the capacity to reproduce and to mother kids; and
- ✓ They should have normal genitals, sound legs and a complete set of teeth.



SCORE CARD FOR DAIRY GOAT

Scale of Points	Perfect Score	Student's Score				Teacher's Score			
GENERAL APPEARANCE – 30 POINTS									
Breed Characteristics	10								
Head – medium in length, clean cut; broad muzzle with large, open nostrils; lean, strong jaws; full, bright eyes; forehead broad between the eyes; ears are medium size, alertly carried (except Nubians)									
Shoulder blades – set smoothly against the chest wall and withers, forming neat junction with the body									
Back – strong and appearing straight with vertebrae well-defined	8								
Loin – broad, strong, and nearly level									

<p>Rump – long, wide and nearly level hips – wide, level with back thurls – wide apart pin bones – wide apart, lower than hips, well- defined tail head – slightly above and nearly set between pin bones tail – symmetrical with body and carried upright</p> <p>Legs – wide apart, squarely set, clean cut and strong with forelegs straight hind legs – nearly perpendicular from hock to pastern, when viewed from behind, legs wide apart and nearly straight; bone flat and flinty; tendons well-defined; pasterns of medium length, strong and springy</p> <p>Feet – short and straight, with deep heel and level sole</p>	12								
<p>DAIRY CHARACTER – 20 POINTS</p> <p>Neck – long and lean, blending smoothly into shoulders and brisket, clean cut throat</p> <p>Withers – well-defined and wedge-shaped with the dorsal process of the vertebrae rising slightly above the shoulder blades</p> <p>Ribs – wide apart; rib bone wide, flat and long</p> <p>Flank – deep, arched and refined</p> <p>Thighs – incurving to flat from the side; apart when viewed from the rear, providing sufficient room for the udder and its attachments</p> <p>Skin – fine textured, loose, and pliable; hair fine</p>									

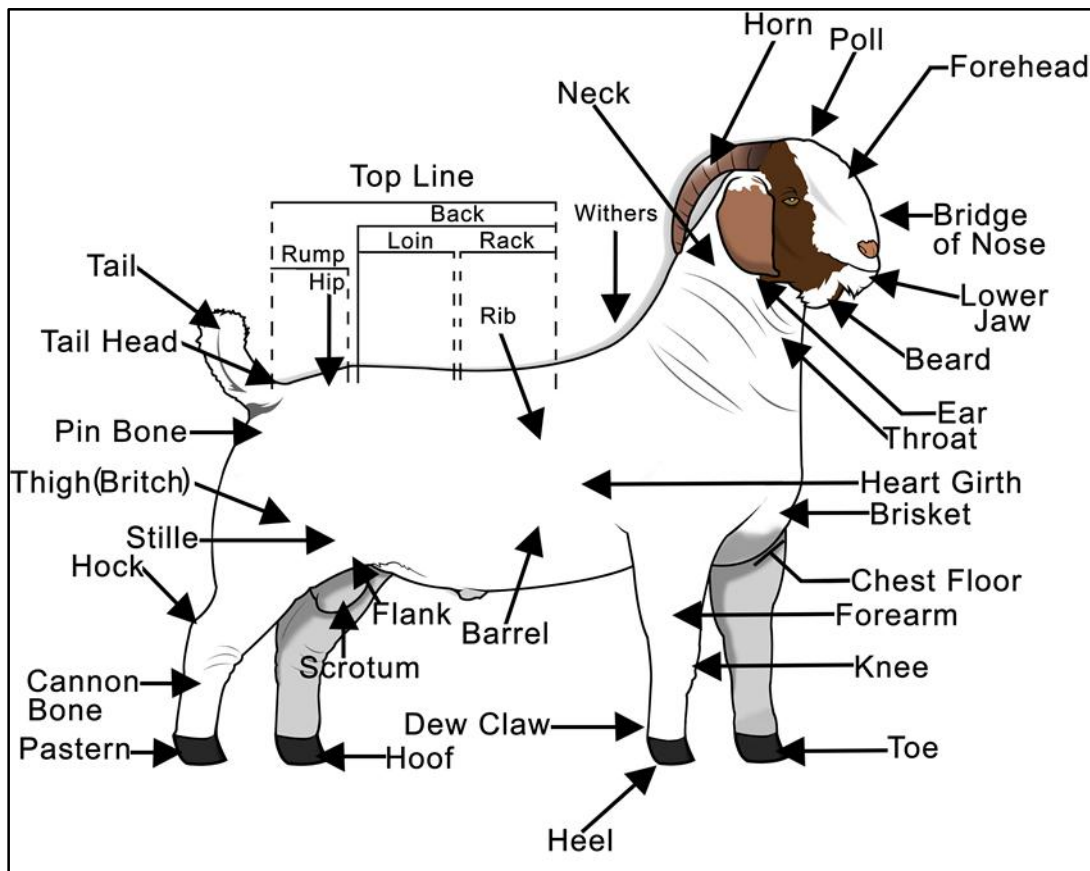
BODY CAPACITY – 20 points Relatively large in proportion to the size of the animal, providing ample digestive capacity, strength and vigor Barrel – deep, strongly supported; ribs wide apart and well-sprung, depth and wide tending to increase toward rear of barrel Heart girth – large, resulting from long, well-sprung fore ribs; wide chest floor between the front legs, and fullness at the point of elbow	12								
	8								
MAMMARY SYSTEM – 30 POINTS Udder – capacity and shape – long, wide and capacious; extended and well forward; strongly attached rear attachment – high and wide; halves evenly balanced and symmetrical fore attachment – carried well forward; tightly attached without pocket, blending smoothly into body texture – soft, pliable and elastic; free from scar tissue; well-collapsed after milking Teats – two, uniform, of convenient length and size, cylindrical in shape, free from obstructions, well apart, squarely and properly placed, easy to milk	10								
	5								
	6								
	5								
	4								
TOTAL	100								

The Philippines Recommends for Goat Farming PCARRD Technical Bulletin Series No. 24-A

Bucks

One half of the blood composition of the herd comes from the buck; the improvement of the herd depends much on it. Consider the following when selecting a breeder buck.

- ✓ One year old buck that has successfully mated once is desirable;
- ✓ Acquired bucks should be accompanied by a pedigree record;
- ✓ The buck should be the heaviest in the herd;
- ✓ It should be capable of transmitting its good qualities to its progeny;
- ✓ It must have a good producing line, based on farm record;
- ✓ Buck must come from a doe with high twinning rate;
- ✓ Buck must be active and ready to breed in-heat does.



External parts of a buck

SCORE CARD FOR BUCKS

Scale of Points	Perfect Score	Student's Score				Teacher's Score			
GENERAL APPEARANCE – 40									
Breed Characteristic – must conform with breed standards	10								
Head – medium in length, clean cut; broad muzzle with large, open nostrils, lean, strong jaw; full bright eyes; forehead broad between the eyes; ears, medium size									
Color – appropriate to breed	5								
Shoulder blade – set smoothly against the chest wall and withers	10								
Back – strong and appearing straight with vertebrae well-defined									
Loin – broad, strong and nearly level									
Rump – long, wide and nearly level									
hips – wide, level with back									
thurls – wide apart									
pin bones – wide apart, lower than hips									
tail head – slightly above and neatly set between pin bones									
tail – symmetrical with the body	15								
Legs – wide apart, squarely set, with forelegs straight									
Feet – short and straight, with deep heel and level sole									
DAIRY CHARACTER– 25									
Neck – medium length, strong and blending smoothly into shoulders and brisket	25								
Withers – well-defined and wedge-shaped with the dorsal process of the vertebrae rising slightly above the shoulder blade									
Ribs – wide apart; rib bone wide, flat and long									
Flank – deep, arched and refined									
Thighs – incurving to flat from the side; apart when viewed from the rear									
Skin – fine textured; loose; pliable; hair, fine									
BODY CAPACITY – 25									
Barrel – deep; strongly supported; ribs, wide apart and well-sprung	13								
Heart girth – large, resulting from long, well-	12								

sprung fore ribs; wide chest floor between the front legs, and fullness at the point of elbow									
MAMMARY AND REPRODUCTION SYSTEM – 10									
Mammary – two rudimentary teats of uniform size and showing no evidence of extra orifices; extra teats must be removed; teats should be squarely placed below a wide arched escutcheon	5								
Reproduction – two well-formed testicles of appropriate size for age of animal both showing evidence of being in a viable healthy condition; all visible parts of reproduction system showing no evidence of disease or disability	5								
Total	100								

SCORE CARD FOR MEAT – TYPE GOAT

Scale of Points	Perfect Score	Student's Score				Teacher's Score			
GENERAL APPEARANCE – 30									
Quality and condition	15								
Well-muscled, with smooth firm flesh;									
Clean, strong bone;									
Smooth, glossy hair and loose supple skin	15								
Size and development									
Size appropriate to age; fast grower preferred									
FORE QUARTERS – 25									
Shoulders	10								
Well-muscled, with smooth firm flesh;									
Withers barely defined									
Brisket	7								
Broad, deep, muscular									
Forelegs	8								
Heavily muscled, round, clean bone;									
Strong, straight legs with strong, flexible pasterns									
HIND QUARTERS – 25									
Rump	10								
Long and broad with smooth, firm flesh									

Twist and thighs Low, wide well-fleshed twist Deep, wide, firm and muscular thighs	10								
Hind legs Clean and strong bone	5								
BODY – 15									
Capacity Ample room for digestive system	2								
Heart girth Large girth with wide chest floor Fullness at point of elbow	2								
Barrel Deep and broad; well-supported	4								
Loin Broad and strong with full, deep flanks	7								
HEAD AND NECK – 5									
Head Clear bright eyes; large, open nostrils	2								
Neck Medium length, strong and thick, Blending smoothly into shoulder and brisket	3								
Total	100								

For both sexes of breeders, consider the large size, straight and strong legs, bright eyes, high feeding capacity, and resistance to diseases for these are desirable characteristics.



Activity 1

Directions: Write T if the statement is correct and O if incorrect. Write your answer on your activity note.

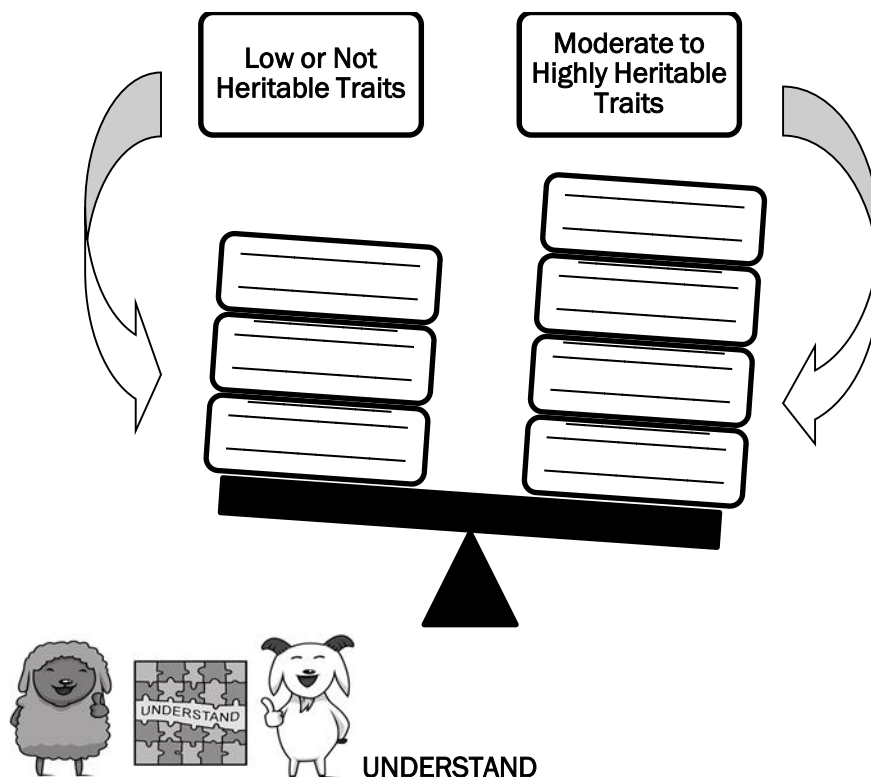
1. Selection is a way of choosing animals with desirable characteristics for breeding purposes.
2. The so-called Pedigree is also the market records of animals.
3. A good breeder could efficiently convert feeds into meat.
4. An animal that thrives in the existing local condition could give a better performance.

5. Purebreds are better to raise than grades or native animals.
6. Female breeders that have been detected for lumps at udders should be discarded from the breeding herd.
7. One of the criteria for selection of breeders is the completeness of teeth.
8. In crossing two breeds, one third ($1/3$) of the blood composition of the progeny will be inherited from the buck.
9. A good breeder has clear, bright eyes and a large open nostrils.
10. Resistance to diseases is not always considered when choosing an animal for breeding purposes.

Activity 2

Directions: Determine whether the following traits are considered to be Low or Not Heritable Traits or Moderate to Highly Heritable Traits:

- | | |
|-----------------|----------------|
| a. Birth weight | e. Heart girth |
| b. Estrus cycle | f. Twinning |
| c. Litter size | g. Growth rate |
| d. Body length | |



Directions: Show a picture of a slaughter type goat/a dairy goat/buck in the class and ask the learners to identify the body parts. Then briefly discuss the positive traits that the animal possesses.

Directions: Discuss briefly some of the important economic traits to be considered during selection:

1. Feed Conversion Ratio

2. Reproductive Efficiency

3. Growth Rate

4. Carcass Quality Characteristic

5. Milk Yield

6. Birth Weight

Activity 3

Directions: Visit a reliable breeder farm for goat/sheep and ask concerned personnel how they do the selection process. Ask permission from the owner to take pictures of the breeders they have. Make a report regarding the activity and present it to the class.



TRANSFER

Directions: Apply the knowledge by selecting at least one Boer buck as initial parent stock for the school goat project. Use the score card for the selection process. Select also a native doe from the project as the parent stock. Ask the pedigree record of the pure breed Boer you acquired.



POST-ASSESSMENT

Directions: Choose the correct letter of your answer from the given choices. Write the answers on your activity notebook.

1. Selection is best defined as _____.
 - a. the process of sorting different breeds of goat.
 - b. the useful determinants to improve various traits.
 - c. the traits that can be achieved through proper breeding management.
 - d. the systematic way of choosing the desired characteristics of goat/sheep for breeding purposes.
2. What best defines pedigree?
 - a. The record about the eating habit of each animal.
 - b. The record that shows the growth rate of young animals.
 - c. It is the record of bloodlines of the ancestors of the animals.
 - d. The list of feed ingredients for each stages of growth of the animals.
3. The following are ideal characteristics of animal carcass except:
 - a. Minimum amount of bone
 - b. Maximum amount of muscle
 - c. Optimum amount of fat
 - d. Maximum amount of water
4. Which of the following does not directly affect the milk yield of a lactating does/ewes?
 - a. Body size
 - b. Color and other markings
 - c. Stage of lactation
 - d. Udder size
5. Why birth weight is an important trait of animals?
 - a. Because it reduces feed cost
 - b. Because this is one basis for giving birth of twins
 - c. Because this gives the animal optimum protection against parasite infestations
 - d. Because this is directly related to the survival rate and growth performance of young animals
6. The following traits are considered to be low or not heritable at all, except:
 - a. Birth weight
 - b. Estrus cycle
 - c. Gestation length
 - d. Litter size
7. Which of the following is not an important trait for selection?
 - a. Carcass quality
 - b. Color and size of ears
 - c. Milk yield
 - d. Reproductive efficiency
8. Which of the following characteristics of native does is not preferable for breeding purposes?
 - a. Teats are uniform
 - b. Lumps at the udder area
 - c. Has a complete set of teeth
 - d. Weight not less than 25 kilograms

9. The following choices are considered when selecting for breeder buck, except:
- a. Heaviest among the herd
 - b. Active and ready to breed in-heat does
 - c. Most capricious based on feeding record
 - d. Capable to transmit good quality to its progeny
10. It contains a systematic, brief and ideal description of the different body parts of the animal and their numerical values.
- a. Journal
 - b. Health record
 - c. Record book
 - d. Score card



Good breeding stock is essential for the most profitable goat/sheep enterprise. This greatly influenced the production of the herd. This is the reason why a goat/sheep raiser aims to bring together the breeding stock that could produce a productive animal. In the selection of breeder animals, emphasis must be placed upon the productiveness of the animals in terms of prolificacy, growth rate, milk yield and the quality of carcass produce.

Lesson 3 BREEDING SYSTEMS



INTRODUCTION

This lesson deals with the different breeding systems employed in raising small ruminants. This guides the learners on how to improve the breed of goat in the herd through upgrading which is usually the practice of the backyard raisers. It also shows the important points of each system.



OBJECTIVES

At the end of the lesson, you should be able to:

1. identify the different breeding systems;
2. explain each breeding system; and
3. appreciate the value of improving the offspring of different breeds.



POST-ASSESSMENT

Directions: Choose the letter of the correct answer and write it on your activity notebook.

1. This is the cheapest breeding system that aims to increase the exotic bloodline of usually native breed.
 - a. Crossbreeding
 - b. Inbreeding
 - c. Purebreeding
 - d. Upgrading
2. When a 100% Anglo-Nubian buck is mated to a doe which is 50% Anglo-Nubian – 50% Native, what is the probable bloodline of their offspring?
 - a. 100% Anglo-Nubian
 - b. 5%Anglo-Nubian – 25%Native
 - c. 50%Anglo-Nubian – 50%Native
 - d. 25%Anglo-Nubian – 75%Native
3. What is the primary aim of a breeder when he practices purebreeding system in his farm?
 - a. To produce hybrid animals
 - b. To produce improved bloodlines
 - c. To maintain the purity of his stock
 - d. To avoid the occurrence of any abnormalities or deformities

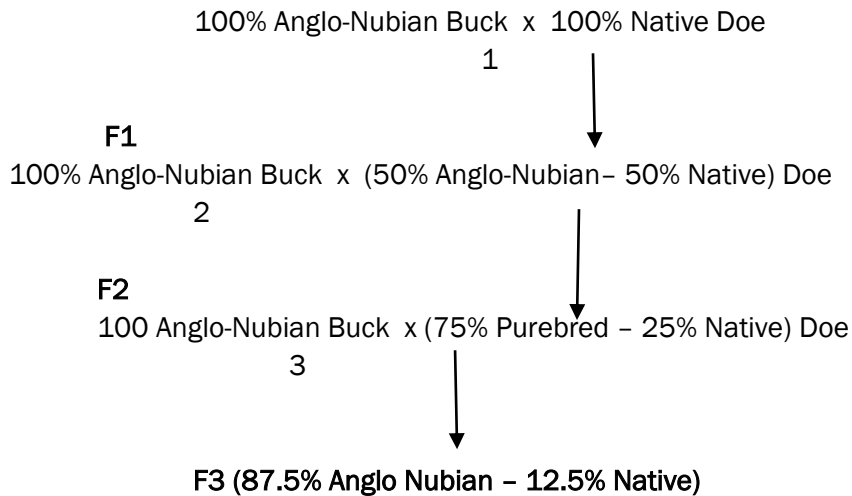
4. This breeding system involves the mating of two animals belonging to different breeds.
 - a. Crossbreeding
 - b. Inbreeding
 - c. Purebreeding
 - d. Upgrading
5. Crossbreeding is practiced mainly to produce _____.
 - a. hybrid
 - b. inbred
 - c. purebred
 - d. upgrade
6. The following are characteristics of a three-way cross animals, except:
 - a. It is comparable to Boer in terms of birth weight
 - b. It is superior over upgraded in terms of growth performance
 - c. It is comparable to Anglo-Nubian in terms of weaning weight
 - d. Its economic return has no significant effect over native breeds
7. If a Boer buck is mated to an Anglo-Nubian doe, the system used is _____.
 - a. crossbreeding
 - b. inbreeding
 - c. purebreeding
 - d. upgrading
8. A breeder farm wanted to develop new lines or breed. What system should be employed to pursue the objective?
 - a. Crossbreeding
 - b. Inbreeding
 - c. Purebreeding
 - d. Upgrading
9. Inbreeding is defined as _____.
 - a. mating of two different breeds
 - b. mating of non-related animals
 - c. mating of closely related animals
 - d. mating of three different breeds
10. When a 100% Anglo-Nubian buck is mated 100% Native doe, what is the probable bloodline of their offspring?
 - a. 100% Native kid
 - b. 50% Anglo-Nubian – 50% Native kid
 - c. 25% Anglo-Nubian – 75% Native kid
 - d. 75% Anglo-Nubian – 25% Native kid



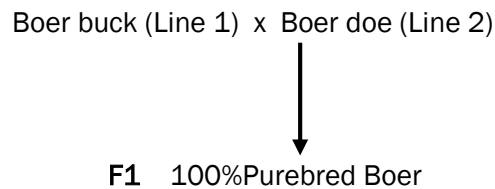
Breeding is concerned not only with the reproduction or multiplication of the animals, but also with the improvement of herd and project efficiency. The improvement may be secured in adapting any one from the four ways: (1) by upgrading, (2) purebreeding, (3) crossbreeding, and (4) inbreeding. The choice of which to employ is determined by the objectives that a raiser wants to realize and the technical know-what and know-how about the basic laws of breeding in his operation.

Breeding Systems

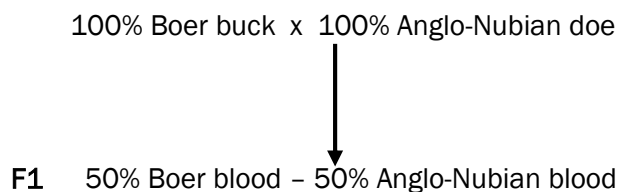
1. **Upgrading or Grading up** – This is the cheapest breeding system aimed at increasing the exotic bloodlines of usually native breed. It is the mating of a native, or unimproved female with a purebred or exotic buck (Anglo-Nubian or Boer). Since 99% of the country's goat population is comprised of native animals, upgrading is highly recommended to improve the parent stock. Theoretically, grading with a purebred buck will produce kids with the following blood compositions:



2. **Purebreeding** – In this system, a purebred buck is mated with a pure bred doe of the same breed. This mating is also called **straight breeding**. This is practiced when a raiser wants to maintain primarily the purity of his stocks. This mating mode is usually observed in the nucleus farm, which is mandated to produce breeders for the multiplier farms.



3. **Crossbreeding** – This is a mating of two animals belonging to different breeds. This is practiced to take advantage of **heterosis** or **hybrid vigor** and to elicit the desirable characteristics of parental breeds.



Three Way Cross (TWC) – This system of crossbreeding involves a three-breed, where Boer bloodline is mated to the terminal F3 of crossing Anglo-Nubian and Native goats (75% Anglo-Nubian x 25% Native).

The observed advantages show the breed:

- be superior over upgraded and native in terms of growth performance
- have comparable birth weight with the Boer
- have comparable weaning weight to that of the Anglo-Nubian and provides better economic returns than raising upgrade and native

100% Boer buck x F3 (75% Anglo-Nubian x 25% Native)



TWC (50% Boer - 37.5% Anglo-Nubian x 12.5 Native)

4. Inbreeding – This is the mating of closely-related animals. It is used by animal breeders in the production of seed stock, and in the development of new lines or breeds.

Boer buck (sire) x Boer doe (progeny)



F1 Inbred offspring



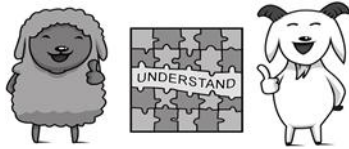
Directions: Match Column A to Column B. Write the letter of your choice on your activity notebook.

Column A

Column B

1. Crossbreeding
2. Three Way Cross
3. Inbreeding
4. Purebreeding
5. Upgrading

- a. the mating of a native female to a purebred buck
- b. a purebred buck is mated to a pure bred doe of the same breed
- c. a mating of two animals belonging to different breeds
- d. involves a three-breed where Boer bloodline is mated to the terminal F3 of crossing Anglo-Nubian and Native goats
- e. heterosis or hybrid vigor
- f. the mating of closely related animals



Activity 1

Directions: Explain the different breeding systems.

1. Upgrading or grading-up

2. Pure breeding

3. Inbreeding

4. Crossbreeding

5. Three-way cross

Activity 2

Directions: If it is accessible, proceed to a goat breeder farm and ask the Record-in-Charge or the Breeding-in-Charge for the pedigree record of their breeders and try to analyze its contents. Try to ask the following:

- a. What breeding system they presently practice?
- b. Why they continuously employ the system?
- c. What particular breeds are raised as their breeders?
- d. How they enable to preserve the efficiency of their breeders?
- e. What are the problems they usually encounter during the process?
- f. How did they to solve these?

Make a report regarding the interview undergone and discuss it in front the class.



Activity 1

Directions: Let learners discuss each breeding system using the diagram.

Scoring rubric:

Score	Criteria
5	Can discuss all 4 breeding systems clearly and accurately
4	Can discuss all 3 breeding systems clearly and accurately
3	Can discuss all 2 breeding systems clearly and accurately

2	Can discuss all 1 breeding systems clearly and accurately
1	No effort to discuss any breeding system

Directions: List the details on how to upgrade the native goat applying the method used in the farm visited.

1. Secure the pedigree of the purebred animal acquired.
2. Prepare the schedules for breeding.
3. List possible problems may be encountered during the process.
4. List possible solutions to solve the problems.



POST-ASSESSMENT

Directions: Choose the letter of the correct answer and write it on your activity notebook.

1. This is the cheapest breeding system that aims to increase the exotic bloodline of usually native breed.
 - a. Crossbreeding
 - b. Inbreeding
 - c. Purebreeding
 - d. Upgrading
2. When a 100% Anglo-Nubian buck is mated to a doe which is 50% Anglo-Nubian – 50% Native, what is the probable bloodline of their offspring?
 - a. 100% Anglo-Nubian
 - b. 75%Anglo-Nubian – 25%Native
 - c. 50%Anglo-Nubian – 50%Native
 - d. 25%Anglo-Nubian – 75%Native
3. What is the primary aim of a breeder when he practices purebreeding system in his farm?
 - a. To produce hybrid animals
 - b. To produce improved bloodlines
 - c. To maintain the purity of his stock
 - d. To avoid the occurrence of any abnormalities or deformities
4. This breeding system involves the mating of two animals belonging to different breeds.
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 - b. Inbreeding
 - c. Purebreeding
 - d. Upgrading

5. Crossbreeding is practiced mainly to produce _____.
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c. purebred
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6. The following are characteristics of a three-way cross animals, except:
a. It is comparable to Boer in terms of birth weight
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d. Its economic return has no significant effect over native breeds
7. If a Boer buck is mated to an Anglo-Nubian doe, the system used is _____.
a. crossbreeding
b. inbreeding
c. purebreeding
d. upgrading
8. A breeder farm wanted to develop new lines or breed. What system should be employed to pursue the objective?
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c. Purebreeding
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9. Inbreeding is defined as _____.
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b. mating of non-related animals
c. mating of closely related animals
d. mating of three different breeds
10. When a 100% Anglo-Nubian buck is mated 100% Native doe, what is the probable bloodline of their offspring?
a. 100% Native kid
b. 50% Anglo-Nubian – 50% Native kid
c. 25% Anglo-Nubian – 75% Native kid
d. 75% Anglo-Nubian – 25% Native kid



The four breeding systems have their own merit. The breeding program followed could be different from each other. However, the goal that breeders wanted to acquire is the improvement of the breed that they raise. Upgrading is considered as the cheapest system to develop exotic bloodline of the typically native breed.

Lesson 4 DIFFERENT MATING SYSTEMS



INTRODUCTION

This lesson focuses on the different mating systems applicable for goat/sheep. It discusses the advantages and disadvantages of hand and pasture mating. It also shows an insight for artificial insemination.



OBJECTIVES

At the end of the lesson, you should be able to:

1. Differentiate natural mating from artificial insemination;
2. Discuss the advantages and disadvantages of hand and pasture mating; and
3. Discuss artificial insemination in goat/sheep.



PRE-ASSESSMENT

Directions: Choose the answer from the options in each item and write it on your activity notebook.

1. In hand mating, the method of raising buck is _____.
 - a. semi-confinement
 - b. complete confinement
 - c. completely raised in range
 - d. completely range in pasture
2. The following are advantages of hand mating, except:
 - a. more accurate records
 - b. risk of abortion is lessened
 - c. buck does not waste energy in mounting
 - d. additional expenses for the separate pen for the buck
3. Which of the following best describes pasture mating?
 - a. The doe is brought to the buck for mating.
 - b. This mating involves the use of technology.
 - c. The buck is confined in a separate quarter before mating.
 - d. The mating season usually takes naturally in the pasture.
4. Artificial insemination is defined as _____.
 - a. introduction of buck to the doe for mating
 - b. process of introducing the doe to the buck before breeding
 - c. breeding that takes place naturally in pasture or range area
 - d. a reproductive technology in which semen is collected from the buck and used to breed does through artificial means

5. Which of the following materials is not used when performing AI?
 - a. Catheter
 - b. Needle
 - c. Speculum
 - d. Syringe
6. This substance is used to dilute newly-extracted semen from only one ejaculation to serve more does.
 - a. Extender
 - b. Lubricant
 - c. Mineral oil
 - d. Sanitizer gel
7. This is an equipment used to bred in-heat does.
 - a. Breeding stall
 - b. Buck stall
 - c. Doe pen
 - d. Kidding pen
8. It is an instrument used to evaluate the semen motility.
 - a. Hygrometer
 - b. Microscope
 - c. Stethoscope
 - d. Hygrometer
9. Which of the options below is the correct position of a doe while on stall to have a successful insemination?
 - a. Elevate its forelegs
 - b. Elevate its rear quarter
 - c. Elevate its fore quarter
 - d. Restrain firmly and lay the doe on its back
10. This is the estimated number of sperm cells in one dose.
 - a. 115-120 million
 - b. 120-125 million
 - c. 125-130 million
 - d. 135-140 million



MATING SYSTEMS

- **Natural Mating**

- **Hand Mating**

This type of breeding involves the complete confinement of the buck in a separate quarter; it is not allowed to be mixed with the rest of the herd. When a doe is “in-heat”, it is either brought to the buck or the buck is brought to the doe and they mate with or without the assistance of the caretaker. This is termed hand mating.

Advantages:

- Keeping record is easier and more accurate, ensuring better care for kidding does;
- Buck, energy in mounting is not wasted;

- Pregnant does are separated from others and are not disturbed; hence, the risk of abortion is lessened if not avoided.

Disadvantages:

- More time and effort are required in identifying doe in heat so as not to miss mating it with the buck.
- A separate pen for the buck is required.

○ **Pasture mating**

This permits the buck to run with the herd throughout the breeding season or throughout the year. Breeding naturally takes place in the area.

Advantages:

- Less labor in mating is involved;
- The service of the buck is available any time.

Disadvantages:

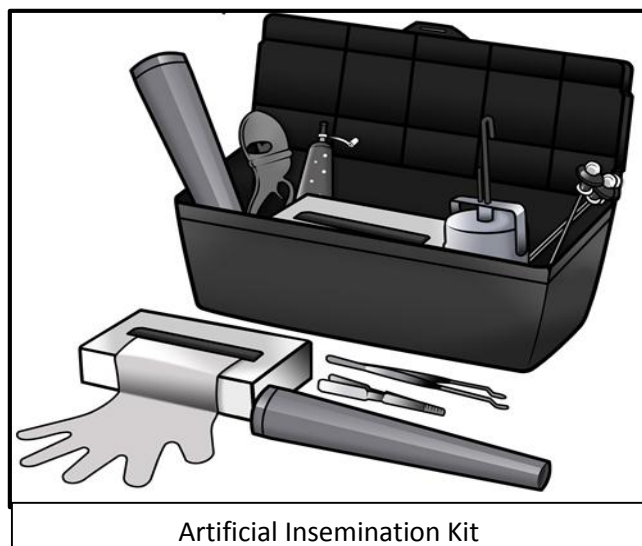
- It becomes difficult to determine the kidding period of the does/ewes;
- The buck/ram tends to be overused.

• **Artificial Insemination (AI)**

AI is a reproductive technology in which the semen is collected from bucks and then used in fresh or frozen form to breed does through artificial means. Artificial Insemination offers a great potential in accelerating the genetic improvement of the goat population because AI allows a size to produce potentially hundreds, if not thousands, of progenies.

Materials needed for AI

- Artificial vagina (7 cm in diameter and 15 cm long) for semen collection
- A microscope and a hemocytometer for semen evaluation
- Catheter for semen deposition including either a rubber bulb or a 2 ml syringe



- Speculum for opening the vagina
- Flashlight/penlight

Semen Evaluation

As soon as the semen is collected, it is evaluated for motility and concentration. Good quality semen can be used immediately as liquid or fresh undiluted semen, or it can be diluted to serve more does from only one ejaculation using extenders.

Steps in Artificial Insemination

- Place the doe in a breeding stall and restrain it properly. Hold the doe firmly and elevate its rear quarters. In the absence of a stall, support the doe by the knee just in front of her udder.
- Clean the vulva and the surrounding area with ordinary tap water.
- Lubricate the speculum with KY jelly-oil or Vaseline.
- Insert the speculum gently, through the vulva into the vagina.
- The insertion is usually followed by twisting motion with a slight amount of pressure. The speculum must be inserted following the angle of the rung.
- Using a flashlight, manipulate the speculum and locate the cervix.
- With the correct amount of semen previously loaded into the 1ml. pipette catheter, introduce the opened end through the speculum into the cervix.
- The catheter must be put gently through the cervical opening. Semen deposition must be made from 1 to 1.5 cm inside the cervix, releasing the semen behind. The first fold, approximately 0.6cm is permissible in virgin does.
- Deposit 1 - 2ml of semen containing 120-125 million sperm cells by pushing the syringe plunger or pressing the rubber slowly and holding it at the position, until it is withdrawn from the cervix. If a speculum is not available, a rubber



A properly restrained doe during Artificial Insemination

hose 2 cm in diameter and 15 cm long may be used. Both ends must be smooth. To get high conception rate, make technique of semen deposition as natural as possible. Use semen of high quality, inseminate the animal at the right stage of estrus and use only clean sanitized equipment.



Directions: Identify what is being described in each sentence. Choose only the letter of your answer from the given choices in the box and write it on your activity notebook.

a. microscope	e. pasture mating	i. extender
b. 1 – 2 ml	f. genetics	j. 120 – 125 million
c. semen evaluation	g. artificial insemination	k. breeding stall
d. hand mating	h. elevate its rear parts	l. speculum

1. It is a natural way of mating, and if a doe is in-heat, it is either brought to the buck or the buck is brought to the doe and mate, with or without the assistance of the caretaker.
2. A type of natural mating where bucks are permitted to run with the herd and breeding naturally takes place.
3. A reproductive technology in which semen is collected from the buck and used as fresh or in frozen form to inseminate doe through artificial means.
4. It is a term used to evaluate the semen motility and concentration.
5. An equipment used when mating a buck and a doe.
6. The amount of semen to be deposited into the cervix of a doe during insemination.
7. A material to be inserted first into the outer reproductive organ of a doe to locate the cervix.
8. The estimated number of sperm cells that is good for one dose of insemination.
9. It is the correct position of the doe to have a successful insemination.
10. An instrument used to evaluate the semen motility.

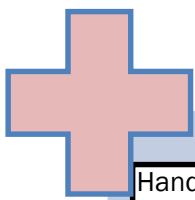

Activity 2

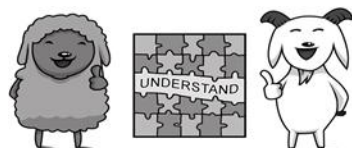
Directions: Answer the following briefly.

1. Differentiate natural mating from artificial insemination.
2. How is hand mating different from pasture mating?

Activity 3

Directions: List the advantages of hand and pasture mating under the positive sign and the disadvantages of the two systems under the negative sign.

	
Hand Mating	Hand Mating
1. _____	1. _____
2. _____	2. _____
3. _____	
Pasture Mating	Pasture Mating
1. _____	1. _____
2. _____	2. _____



Activity 1

Directions: Present a video clip or a power point presentation about the important details of two (2) systems of mating:

1. natural mating of goat/sheep which include the hand and pasture mating
2. artificial insemination

Activity 2

Directions: Visit a goat/sheep farm for field exposure. Divide the class into two (2) groups. One group is assigned to observe the actual mating of two animals and the other group will witness actual inseminating a doe. Important fine points during the process shall be noted by each group. Present the details during class interactive discussions.

The visitation also aims to open up the perception of the learners on what system is adaptable and suited to apply in the goat project.



TRANSFER

Directions: Proceed to the school goat project and evaluate the project as to what breeding system is suited to employ. Make a report that justifies the choice why a particular system is preferable to adapt than the other.



POST-ASSESSMENT

Directions: Choose the answer from the options in each item and write it on your activity notebook.

- In hand mating, the method of raising buck is _____.
 - semi-confinement
 - complete confinement
 - completely raised in range
 - completely raised in pasture
- The following are advantages of hand mating, except:
 - More accurate records
 - Risk of abortion is lessened
 - Buck does not waste energy in mounting
 - Additional expenses for the separate pen for the buck
- Which of the following best describes pasture mating?
 - The doe is brought to the buck for mating.
 - This mating involves the use of technology.
 - The buck is confined in a separate quarter before mating.
 - The mating season usually takes naturally in the pasture.
- Artificial insemination is defined as _____.
 - introduction of buck to the doe for mating
 - process of introducing the doe to the buck before breeding
 - breeding that takes place naturally in pasture or range area
 - a reproductive technology in which semen is collected from the buck and used to breed does through artificial means
- Which of the following materials is not used when performing AI?
 - Catheter
 - Needle
 - Speculum
 - Syringe
- This substance is used to dilute newly-extracted semen from only one ejaculation to serve more does.
 - Extender
 - Lubricant
 - Mineral oil
 - Sanitizer gel
- This is an equipment used to bred in-heat does.
 - Breeding stall
 - Buck stall
 - Doe pen
 - Kidding pen

8. It is an instrument to evaluate the semen motility.
- a. Hygrometer
 - b. Microscope
 - c. Stethoscope
 - d. Hygrometer
9. Which of the options below is the correct position of a doe while on stall to have a successful insemination?
- a. Elevate its forelegs
 - b. Elevate its rear quarter
 - c. Elevate its fore quarter
 - d. Restrain firmly and lay the doe on its back
10. This is the estimated number of sperm cells in one dose.
- a. 115-120 million
 - b. 120-125 million
 - c. 125-130 million
 - d. 135-140 million



The different mating systems have their own advantages and disadvantages. In hand mating, the raiser monitors the dates of kidding. The raiser has enough time to prepare for the kidding and lesser problem may be experienced but the systems needs additional expenses since a stall or pen should be provided for the buck. While in pasture mating, no extra pen is needed to separately confine the buck but an unexpected pregnancy of young does may occur.

Lesson 5 BREEDING PRACTICES AMONG BREEDER ANIMALS



INTRODUCTION

This lesson deals with breeding practices among breeder animals. It also discusses the signs of in-heat does and guides the learners to use the pregnancy table appropriately.

OBJECTIVES



OBJECTIVES

At the end of the lesson, you should be able to:

1. discuss the breeding practices for does and buck;
2. enumerate the signs of heat of estrous among female breeders;
3. assist animals for natural mating ;
4. perform artificial insemination;
5. compute for the kidding date based from the gestation table; and
6. appreciate the importance of proper management practices among breeder animals.



PRE-ASSESSMENT

Directions: Choose the letter of the correct answer and write it on your activity notebook.

1. At what age do puberty occurs to breeder does?
 - a. Between 3 – 4 months
 - b. Between 4 – 5 months
 - c. Between 5 – 6 months
 - d. Between 6 – 7 months
2. This is the period intervening between conception and kidding.
 - a. Estrous
 - b. Gestation
 - c. Ovulation
 - d. Puberty
3. What age should a doe be bred to attain the best result?
 - a. 9 months
 - b. 10 months
 - c. 11 months
 - d. 12 months
4. When mating is restricted, the doe should be bred at least 12 hours after the heat is first detected. If you observe that the doe is in-heat at 6:00 am, at what time should the animal be bred on that day?
 - a. 4:00 pm
 - b. 5:00 pm
 - c. 6:00 pm
 - d. 7:00 pm
5. The following are manifestations of estrous, except:
 - a. Restlessness
 - b. Mucus discharge
 - c. Redness of the vulva

- d. Develops good appetite
6. Which of the following signs of estrous could give the best result in breeding?
- | | |
|-----------------|--------------------------------------|
| a. Bleating | c. Swelling of the vulva |
| b. Restlessness | d. Standing still when being mounted |
7. Which of the choices is not a sign of pregnancy?
- | | |
|---------------------------|--------------------------------|
| a. Frequent urination | c. Enlargement of abdomen |
| b. Develops good appetite | d. Cessation of estrous period |
8. This is the average gestation days of goats.
- | | | | |
|-------------|-------------|-------------|-------------|
| a. 140 days | b. 150 days | c. 160 days | d. 170 days |
|-------------|-------------|-------------|-------------|
9. Which of the following is not a cause of low conception rate?
- | | |
|-----------------|----------------------------------|
| a. Malnutrition | c. Infertile sperm from buck |
| b. Abnormal egg | d. Proper timing of insemination |
10. A doe has been bred on January 07, 2014, based from the gestation table, when is the expected date to fresher?
- | | |
|------------------|------------------|
| a. June 06, 2014 | c. July 06, 2014 |
| b. June 07, 2014 | d. July 07, 2014 |



KNOW

Reproductive phenomena in sheep and goats

- **Puberty** or age of sexual maturity comes between 5 to 6 months among well-nourished animals.
- **Estrous cycle** means the period intervening between 2 successive heat periods in the absence of conception and ranges from 18 - 24 days, with an average of 21 days in does, and 13 - 19 days, with an average of 17 days in ewes.
- **Estrus or heat period** refers to the period when a doe shows interest in a buck and allows herself to be mounted. This period may last from 2 to 3 days, and may be observed at any time of the day in goats and 18- 48 hours in ewes.
- **Ovulation** or the shedding of the eggs from the ovary occurs 30 - 36 hours (does) and 20 - 30 hours (ewes) after the onset of their estrus.
- **Gestation** or pregnancy period is the period intervening between conceptions and kidding, and varies from 147 - 155 days, or an average of 5 months.
- **Kidding interval** for pure breed is 240 days and for native, 210- 260 days.
- Age at **first lambing/kidding** or the age of ewe/doe at the time of first parturition is 12-15 months.
- **Litter size** or the number of lambs/kids born per ewe/doe lambing or kidding is 1.0 - 2.0

Breeding Practices for Does (Natural Method)

- A healthy and well-grown doe may be bred for the first time at 8 months, but best result is obtained at 10 months of age to enable a caretaker to establish the duration of estrus, estrous cycle, and the degree of manifestation of estrus.
- The doe allows the buck to mount/serve her only if she is “in heat”.
- Two (2) services are advisable for the maiden does, although she could settle for one service.
- If mating is restricted, she should be bred at least 12 hours after the heat is first observed.

For example:

- A doe observe in-heat in the morning should be bred in the afternoon (of the same day)
- If in-heat in the afternoon the doe must be bred in the morning of the next day
- Does with estrous period of three (3) days can be bred on the third day.
- Does can be returned to the herd after breeding. If these return into heat after 21 days, these should be rebred.
- Failure to conceive after breeding with proven bucks for 2 cycles could be a good reason for culling.

Signs of Heat or Estrus Period

Detecting in-heat female animals is a critical job for goats/sheep raisers. He should be alert on the heat cycle of each female animal and sharply observe on the signs of heat or estrous that manifest among breeder does. Proper detection is effective in artificial insemination and hand mating, thus positively give a high conception rate.

Compare to doe, it is difficult to detect ewe in-heat when it is separated from the rams. Estrus behavior is reduce when ewe do not see, smell or hear the ram.

The table shows common signs of estrous:

Sheep	Goats
Redness and swelling of the vulva	Redness and swelling of the vulva
Mucus discharge	Mucus discharge
Restlessness	Restlessness
Frequent urination	Frequent urination
Going off feed	Going off feed
	Decreased milk production
Seeking out the ram and standing to be mounted by him or other ewes	Constant vocalization/bleating
Rapid tail movement	Occasionally mounting other does
Raised tail in the presence of the ram	Constant tail wagging from side to side termed as tail flagging
Standing still when being mounted by	Standing still when being mounted by buck

ram	
-----	--

Source: <http://www.esgpip.org/pdf/Technical%20bulletin%20No.36.pdf> 11-15-14

Signs of pregnancy:

1. Cessation of estrous period
2. Development good appetite and fast fattening
3. Gradual enlargement of the abdomen and udder
4. Prominence of the milk vein

Gestation period

The gestation covers the period from conception to kidding. Normally, it takes from 145 to 155 days or five months, or an average of 150 days. To determine expected kidding date, take breeding day and subtract the number indicated.

Gestation table for Goats (based on average gestation period of 150 days)

Month Bred	Expected Month to Kid	Number to be deducted from the breeding date
January	June	1
February	July	0
March	August	3
April	September	3
May	October	3
June	November	3
July	December	3
August	January	3
September	February	3
October	March	1
November	April	1
December	May	1

Source: CBLM, Animal Production NC II, Raise Small Ruminants

How to use the table?

On the first row can be found the months January and June and the number "1". So if a doe has been bred on the month of January, it is expected that the doe will kid on the month of June. What about the number 1 in the third row? If the recorded service is January 7, then the expected date for the doe to kid will be on June 6. How? The number "1" is subtracted from the date 7 that is $7-1 = 6$.

For checking:

January	$31 - 7 =$	24
February		28
March		31
April		30
May		31
June		<u>06</u>

150 days = gestation period in goats

Breeding Practices for Bucks

- Check the ram/buck for fertility before the breeding season.
- A buck is allowed to serve for the first time at the age of eight (8) months, but only of light service at this stage. It should not serve more than 20 does before one (1) year old. As it grows older, the service may be increased gradually.
- In controlled mating, a mature buck should not serve more than four times a week.
- In unrestricted mating, the breeding load should be 1:25 or one buck for every 25 does or fewer.
- Do not mate young buck with a large doe; it cannot mount high for service.
- Never allow a buck to run with the herd. Free mating may cause breeding of immature females that could impede their growth, shrink their vigor, and produce offspring of low birth weight, weaning, and in mature weights.

Some causes of low conception rate of bred does are as follows:

1. Infertile sperm from the buck
2. Abnormal egg
3. Disease, such as brucellosis and vibrosis
4. Hormone malfunction
5. Obesity
6. Very hot weather
7. Malnutrition
8. Infection of the genital tract
9. Improper timing of mating



Directions: Rearrange the jumbled letter to form a word that is being asked in each item. Write the correct word on the space provided at the end of each statement.

1. BEPURTY – This is the period of sexual maturity. _____
2. SUERTS CLYEC – The period intervening between two successive heat periods in the absence of conception. _____
3. ROSEUST – It is the period when doe shows interest to a buck and allows the animal to mount her. _____
4. NOVUATIOL – The shedding of the eggs from the ovary after the onset of their estrous. _____
5. STATIONGE – It is also termed as pregnancy period or the period intervening between conceptions and kidding. _____



Activity 1

Directions: Present a video clip or power point presentation showing details and important parameters about replacement breeder that shows sexual maturity up to its breeding period. The presentation will give the learners an idea on how they will accomplish the given sample record below. This record will enable the learners to follow the breeding practices applied to young does/ewes.

Sample Record for Replacement/Young Breeders (Does/Ewes)	
Ear Number/Ear Tag of the animal:	Date Born:
Date when first heat period observed:	Signs:
Date of in-heat period at 10 months old:	Signs:
Date and time of in-heat period:	Date and time first served:
	Date and time second served:
Expected date to kid:	
Date (after 21 days from breeding):	Signs of heat recurrence:
When there is no heat recurrence, observe for any signs of pregnancy to occur.	
Signs of pregnancy:	
<ul style="list-style-type: none"> • • • • 	

Note: The record is applicable in controlled or hand mating.

Sample Record of Boar Services		
Ear Number/Ear Tag of the Animal:	Breed:	
	Date Born:	
Date of First Service at 8 months:		
Controlled Mating – 4 matings only per week up to one year old	Date Served	Remarks (+ or -)

Succeeding services at 1 year old – onward.	Date Served	Remarks (+ or -)

Activity 2

Directions: Using the table of gestation, compute for the expected date of kidding of the following dates of breeding:

Breeding Date	Expected Date to Kid
1. January 14, 2015	_____
2. February 10, 2015	_____
3. June 22, 2015	_____
4. August 31, 2015	_____
5. December 31, 2015	_____



TRANSFER

Activity 1

Directions: Proceed to your goat project and observe if any of the animals is in heat. Assist the animal for mating. Record the breeding date for you to know the due date of the doe to kid. You will be assessed through the use of the rubric score.

Criteria	Points
Right time to breed (standing heat)	30
Proper breeding technique	30
Sanitation	20
Care for the animals	10
Proper recording	10

Total: 100



POST-ASSESSMENT

Directions: Choose the letter of the correct answer and write it on your activity notebook.

- At what age do puberty occurs to breeder does?
 - Between 3 – 4 months
 - Between 4 – 5 months
 - Between 5 – 6 months
 - Between 6 – 7 months

2. This is the period intervening between conception and kidding.
 - a. Estrous b. Gestation c. Ovulation d. Puberty
3. What age should a doe be bred to attain the best result?
 - a. 9 months c. 11 months
 - b. 10 months d. 12 months
4. When mating is restricted, the doe should be bred at least 12 hours after the heat is first detected. If you observe that the doe is in-heat at 6:00 am, at what time should the animal be bred on that day?
 - a. 4:00 pm b. 5:00 pm c. 6:00 pm d. 7:00 pm
5. The following are manifestations of estrous, except:
 - a. Restlessness c. Redness of the vulva
 - b. Mucus discharge d. Develops good appetite
6. Which of the following signs of estrous could give the best result in breeding?
 - a. Bleating
 - b. Restlessness
 - c. Swelling of the vulva
 - d. Standing still when being mounted
7. Which of the choices is not a sign of pregnancy?
 - a. Frequent urination c. Enlargement of abdomen
 - b. Develops good appetite d. Cessation of estrous period
8. This is the average gestation days of goats.
 - a. 140 days c. 160 days
 - b. 150 days d. 170 days
9. Which of the following is not a cause of low conception rate?
 - a. Malnutrition
 - b. Abnormal egg
 - c. Infertile sperm from buck
 - d. Proper timing of insemination
10. A doe has been bred on January 07, 2014, based from the gestation table, when is the expected date to fresher?
 - a. June 06, 2014
 - b. June 07, 201
 - c. July 06, 2014
 - d. July 07, 2014



Proper monitoring on the signs of estrus is very important in breeding goats/sheep. This is very useful in hand mating and artificial insemination. In addition, gestation table guides learners to compute for the expected date of kidding among pregnant does.

Lesson 6 PROPER FEEDING, GROOMING AND CULLING AMONG BREEDER ANIMALS



INTRODUCTION

This lesson presents proper feeding and grooming bucks/rams. It also gives insight in culling undesirable and unproductive breeders in the herd.

OBJECTIVES



OBJECTIVES

At the end of the lesson, you should be able to:

1. feed the bucks/rams properly;
2. groom the animals for comfort;
3. discuss culling and its importance;
4. identify undesirable traits of animal for culling; and
5. appreciate the value of proper feeding, grooming and culling.



PRE-ASSESSMENT

Directions: Choose the letter of the correct answer and write it on your activity notebook.

1. This is the season when a buck is drained of its vitality and vigor.
 - a. Breeding season
 - b. Culling season
 - c. Feeding period
 - d. Selection period
2. Aside from green feeds, what are these concentrates offered to the buck to supplement its diet?
 - a. Corn and rice bran
 - b. Roughages
 - c. Silage
 - d. Table salt
3. Why do goats need grooming?
 - a. It affects the carcass quality of goats.
 - b. This enhances growth rate among slaughter type of goat.
 - c. It adds comfort to the animals and reduces lice infestation.
 - d. It has a positive effect on the breeding performance among breeder animals.
4. Culling is defined as _____.
 - a. process of producing quality breeders
 - b. process of selling slaughter goats in the market
 - c. process choosing the best among breeder animals

- d. process of eliminating undesirable and unproductive animals in the breeding herd
- 5. The following are considered as unwanted traits of breeder animals, except:
 - a. Poor mothering ability
 - b. Does with complicated kidding
 - c. Bucks that can no longer mount due to old age
 - d. Breeders that produce progenies with desirable traits



Feeding the Bucks/Rams

Because it is a breeding animal, the buck is usually drained of its vitality and vigor during breeding season. It needs special attention especially in its feeding. Besides green feeds that the buck gets from the barn or pasture, rice bran or ground corn is highly recommended as supplement to the animal's diet. To make the ration richer in protein, a fair amount of copra meal may be incorporated. If leguminous seeds, like monggo, are plentiful and cheap, they may be used in place of copra meal. Rice bran, which is cheaper than corn, may be used as long as the buck likes it. Mix common table salt and oyster shell powder with the grains- one part salt and one part oyster shell powder to 100 parts of the concentrate feeds.

Give the buck/ram roughage, like leguminous vines that are found in the place. Goats/sheep readily eat peanut hay. Whenever it is possible, allow the buck in the pasture, where he can eat the plants that he likes.

Grooming

Even goats raised purely as utility animals need grooming. Clip the hair of the buck, wash its face with soap and water to reduce odor and control lice. This management practice adds to their comfort, health, and good appearance. Give your goats also at least one good brushing a week, this will reduce dirt on the animal's body. A body brush used for horses may be used.

Culling

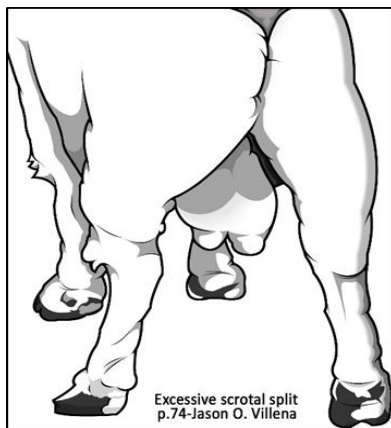
Culling is also an important way to improve production efficiency and complement selection method. It is the process of eliminating undesirable and unproductive animals in the breeding herd. Without culling, poorly performing animals may be bred and consequently produce undesirable offsprings. Culled animals should be recommended for market.

Guidelines in Culling

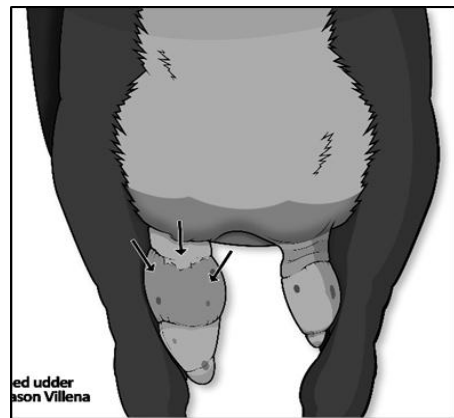
Removal of unwanted animals can be based on any of these traits or combination of these:

- Does/Ewes that do not settle in spite of repeated mating with a proven buck if that mating was properly timed.
- Does/Ewes with poor maternal instinct (mothering ability). They lose their kids from natural causes such as lack of milk or refusal to nurse their kids.
- Does/Ewes that have difficult or complicated kidding.
- Does/Ewes with bad udders, broken mouths, or those that did not raise a lamb or kid.
- Does/Ewes with prolapsed uteruses or ruptured abdomens.
- Breeders producing progenies with undesirable hereditary traits.
- Breeders that are found positive of infectious diseases, such as brucellosis.
- Sterile or old bucks/rams.
- Breeders that have deformities and abnormalities.

The following pictures show examples of typical deformities and abnormalities among goats:



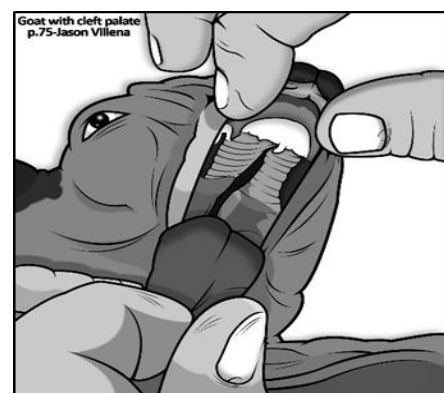
Excessive scrotal split



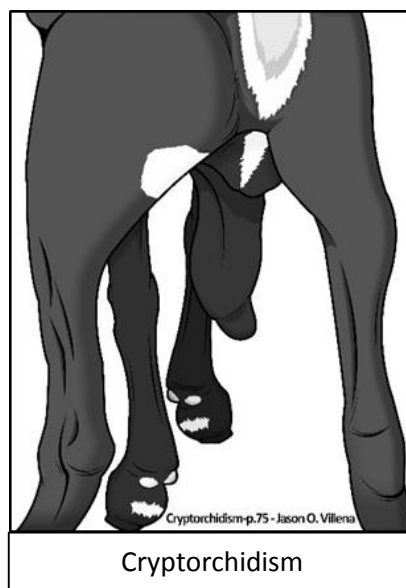
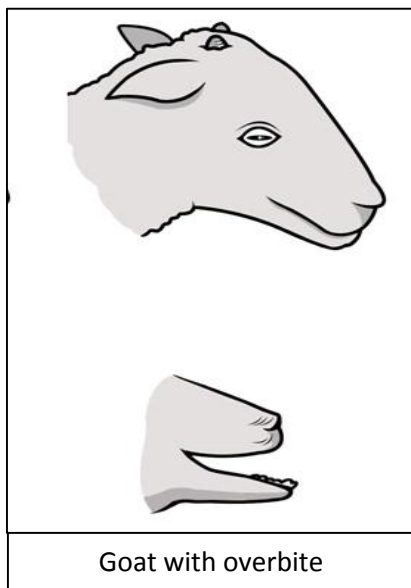
Inflamed udder



Sickle or cowhock legs

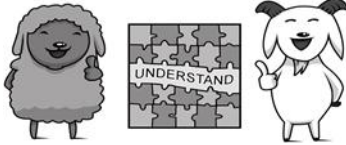


Goat with cleft palate



Directions: Write T if the statement is correct and O if it is wrong. Write your answers on your activity notebook.

1. The feeding of buck should be given special attention during breeding season.
2. Monggo and copra meal are best sources of carbohydrates for bucks.
3. Peanut hay is an example of leguminous vines that a buck can feed on.
4. Giving one good brushing per week is good to goats.
5. Culling is the process of eliminating undesirable and unproductive animals in the herd.
6. Culled animals should be retained in the project.
7. Does/ewes that do not settle in spite of repeated mating with a proven buck should be culled.
8. Breeders with deformities should be recommended for culling.
9. Does/ewes that have difficulty in kidding will be given a chance to stay in the herd.
10. Prolapse uterus in does/ewes is a good reason for culling.



Directions: Cite important points with regards to the following practices:

1. Feeding the buck/ram

2. Proper grooming

3. Culling

Directions: Enumerate some undesirable traits of breeder animals recommended for culling.

1.

2.

3.

4.

5.

6.

7.

8.



Directions: Visit a goat project in the vicinity and evaluate existing breeders and the available replacement breeders (young bucks/rams and does/ewes). Rate the animals individually. Use the following table and make a list of your observations with regards to the physical appearance and production record of each animal.

Ear number of the animal:	Reasons for culling
Date born:	
Breed:	

Present your work to the class for interactive discussion.



POST-ASSESSMENT

Directions: Choose the letter of the correct answer and write it on your activity notebook.

1. This is the season when a buck is drained of its vitality and vigor.
 - a. Breeding season
 - b. Culling season
 - c. Feeding period
 - d. Selection period
2. Aside from green feeds, what are these concentrates offered to the buck to supplement its diet?
 - a. Corn and rice bran
 - b. Roughages
 - c. Silage
 - d. Table salt
3. Why do goats need grooming?
 - a. It affects the carcass quality of goats.
 - b. This enhances growth rate among slaughter type of goat.
 - c. It adds comfort to the animals and reduces lice infestation.
 - d. It has a positive effect on the breeding performance among breeder animals.
4. Culling is defined as _____.
 - a. process of producing quality breeders
 - b. process of selling slaughter goats in the market
 - c. process choosing the best among breeder animals
 - d. process of eliminating undesirable and unproductive animals in the breeding herd
5. The following are considered as unwanted traits of breeder animals, except:
 - a. Poor mothering ability
 - b. Does with complicated kidding
 - c. Bucks that can no longer mount due to old age
 - d. Breeders that produce progenies with desirable traits



Culling is a continuous process. This is done based on the reproductive performance of the animals, physical appearance and health status of the breeders. It should be done periodically to maintain the farm efficiency.



POST-ASSESSMENT FOR MODULE 2

Directions: Choose the right answer from the choices. Write the letter of your answers on your activity notebook.

1. Breed is defined as _____.
 - a. a product of two animals that were bred.
 - b. a process of improving genetic make-up of an animal.
 - c. a procedure of eliminating undesirable breeder in the herd.
 - d. a stock of animals within species having a distinctive appearance.
2. This breed has originated from England and is believed as one of the ancestors of the Philippine sheep.
 - a. Merino
 - b. Shropshire
 - c. Suffolk
 - d. Priangan
3. How are you going to select the best breeders from your stock?
 - a. Through body weight only
 - b. Through record or pedigree
 - c. Through the advice of your friend
 - d. Through the color and body markings
4. The following are guides on how selection is done, except:
 - a. Select kids that have undesirable traits.
 - b. Select kids that are found in the locality.
 - c. Select kids from does that breed regularly.
 - d. Select animals that are large for their ages among their herd mate.
5. Breeding is defined as _____.
 - a. the capacity to reproduce twins.
 - b. the reproduction or multiplication of animals.
 - c. the removal of animals with undesirable traits.
 - d. the process of choosing the best animal in the herd.
6. If you are going to cross a 100% Purebred Boer to a (75% Anglo Nubian x 25%Native), what is the probable bloodline of the produced progeny?
 - a. 50% Boer – (12.5% Anglo Nubian – 37.5% Native)
 - b. 50% Boer – (25.0% Anglo Nubian – 25.0% Native)
 - c. 50% Boer – (37.5% Anglo Nubian – 12.5% Native)
 - d. 50% Boer – (37.5% Anglo Nubian – 20.5% Native)
7. Which of the following is not a sign of estrous among breeder does?
 - a. Bleating
 - b. Vulva is swollen
 - c. Develops good appetite
 - d. Mucus discharge from the vulva

8. The following are breeds of goat, EXCEPT:
 - a. Alpine b. Anglo-Nubian c. Saanen d. Suffolk
9. This breed is known to have the longest milking period.
 - a. Alpine b. Anglo-Nubian c. Saanen d. Toggenburg
10. It is a breed of sheep that is characterized by the black color on its under part that completely extends up to neck and the inside of the legs.
 - a. Barbados Blackbelly c. Priangan
 - b. Merino d. Shropshire
11. This breed is known to be the finest wool producer.
 - a. Barbados Blackbelly c. Merino
 - b. Boer d. Priangan
12. A breed of sheep that has originated from Merino breed.
 - a. Barbados Blackbelly c. Priangan
 - b. Philippine Sheep d. Suffolk
13. Selection is best defined as _____.
 - a. the process of sorting different breeds of goat.
 - b. the useful determinants to improve various traits.
 - c. the traits that can be achieved through proper breeding management.
 - d. the systematic way of choosing the desired characteristics of goat/sheep for breeding purposes.
14. What best defines pedigree?
 - a. The record about the eating habit of each animal.
 - b. The record that shows the growth rate of young animals.
 - c. It is the record of bloodlines of the ancestors of the animals.
 - d. The list of feed ingredients for each stages of growth of the animals.
15. The following are ideal characteristics of animal carcass except:
 - a. Minimum amount of bone c. Optimum amount of fat
 - b. Maximum amount of muscle d. Maximum amount of water
16. Which of the following does not directly affect the milk yield of a lactating does/ewes?
 - a. Body size c. Stage of lactation
 - b. Color and other markings d. Udder size
17. Which of the following is not an important trait for selection?
 - a. Carcass quality c. Milk yield
 - b. Color and size of ears d. Reproductive efficiency
18. It contains a systematic, brief and ideal description of the different body parts of the animal and their numerical values.
 - a. Journal c. Record book
 - b. Health record d. Score card
19. This is the cheapest breeding system that aims to increase the exotic bloodline of usually native breed.
 - a. Crossbreeding c. Purebreeding
 - b. Inbreeding d. Upgrading

20. When a 100% Anglo-Nubian buck is mated to a doe which is 50% Anglo-Nubian – 50% Native, what is the probable bloodline of their offspring?
 - a. 100% Anglo-Nubian
 - b. 75%Anglo-Nubian – 25%Native
 - c. 50%Anglo-Nubian – 50%Native
 - d. 25%Anglo-Nubian – 75%Native
21. What is the primary aim of a breeder when he practices purebreeding system in his farm?
 - a. To produce hybrid animals
 - b. To produce improved bloodlines
 - c. To maintain the purity of his stock
 - d. To avoid the occurrence of any abnormalities or deformities
22. This breeding system involves the mating of two animals belonging to different breeds.

a. Crossbreeding	c. Purebreeding
b. Inbreeding	d. Upgrading
23. Which of the following signs of estrous could give the best result in breeding?
 - a. Bleating
 - b. Restlessness
 - c. Swelling of the vulva
 - d. Standing still when being mounted
24. Which of the choices is not a sign of pregnancy?

a. Frequent urination	c. Enlargement of abdomen
b. Develops good appetite	d. Cessation of estrous period
25. This is the average gestation days of goats.

a. 140 days	c. 160 days
b. 150 days	d. 170 days



FOR MODULE 2: SELECTING AND MANAGING BREEDER GOATS AND SHEEP

There are several breeds of goats and sheep that could exist in Philippine condition. These different breeds of animals are based on the type of animal to raise. In selecting the stock to raise, feed conversion ratio, reproductive efficiency and growth rate are just several traits that are of economic importance in this venture. To meet a higher efficiency, native breeds are mated with purebreds to upgrade the bloodlines. The offsprings of these parent stocks are comparable to those purebreds in terms of birth weight and weaning weight. To maintain the productivity of the project, periodic culling is programmed to eliminate undesirable and unproductive animals in the herd.

**ANIMAL PRODUCTION NC II
SMALL RUMINANTS**

Content Standard	Performance Standard
The learner demonstrates understanding on the proper management of female breeders and their young.	The learner independently provides proper management to female breeders and their young.

QUARTER 3

TIME ALLOTMENT: _____

MODULE NO. 3 MANAGING DOES/EWES AND THEIR PROGENIES



INTRODUCTION

This module covers the knowledge, skills, and attitudes required in managing breeders and their progenies.



LEARNING COMPETENCIES/OBJECTIVES

After completing this module, you should be able to:

1. monitor signs of approaching kidding/lambing;
2. dispose placenta and dead kids/lambs properly;
3. assist kids/lambs to suckle colostrum;
4. identify kids/lambs through ear tags/notches;
5. disbud growing kids/lambs appropriately;
6. dehorn and castrate growing small ruminants;
7. wean lambs/kids properly at 3 months from birth;
8. keep lactating goats and sheep in a clean and quiet environment;
9. separate lactating goats from the breeder males; and
10. provide forage grasses, concentrates, other feed supplements, and adequate water supply.



DIAGNOSTIC/PRE-ASSESSMENT FOR MODULE 3

Directions: Read each item carefully. Choose the letter of your answer and write it in your activity notebook.

1. Kidding is the act of giving birth among _____.
a. goats b. sheep c. kids d. lambs
2. These are considered as good bedding materials for a newly-kidded doe.
a. Legumes and tree barks
b. Rice straw and fresh grasses
c. Tree barks and banana leaves
d. Dried rice straw and banana leaves
3. The following choices characterize an ideal and comfortable pen for a doe that is about to kid, except:
a. Damp stall c. Thoroughly cleaned
b. Disinfected d. Well-lighted
4. Which of the following options is not considered during the preparation of materials for the doe prior to kidding?
a. Clean cloth c. Germicidal soap
b. Sharp knife d. Anti-tetanus toxoid
5. What possible action should a raiser be done when he/she observes that a doe experiences difficulty in kidding?
a. Apply caesarian section
b. Send the doe to a clinic
c. Do the manual extraction
d. Inject Vitamin B complex to stimulate uterus contraction
6. The process of putting ear tag into the ear of a goat.
a. Ear cutting c. Ear notching
b. Ear docking d. Ear tagging
7. The process of removing testicles among male kids/lambs.
a. Castration c. Ear tagging
b. Ear notching d. Tail docking
8. Disbudding is best defined as _____.
a. removal of hoof. c. removal of horn bud.
b. removal of the tail. d. removal of the testes.
9. Which among the tools below is used in docking the tail of a lamb?
a. Dehorner c. Ear tagger
b. Ear notcher d. Elastrator with rubber band
10. Tail docking is usually done best at:
a. Day old c. 7 – 10 days old
b. 3 – 5 days old d. 10 – 15 days old

11. To identify animals, we need to _____.
a. disbud the kid.
b. hoof trim the goat.
c. castrate the animals.
d. put markings or ear tag.
12. Disbudding is done _____.
a. to tame the kid.
b. to identify the animals.
c. to facilitate record keeping.
d. to prevent injury among animals.
13. The following are tools that can be used in hoof trimming, except:
a. Chisel
b. Elastrator
c. Knife
d. Pruning shear
14. This is known as a “bloodless” method of castration through the use of an instrument that crushes the blood vessels in the spermatic cord.
a. Burdizzo Method
b. Chemical Method
c. Elastrator Method
d. Knife Method
15. Weaning is best defined as _____.
a. process of hand feeding the kid
b. separating the kids from the herd
c. separating kid from its mother doe
d. giving solid food to a kid at 3 months of age
16. Why is colostrum important to newly-born kid?
a. It reduces feed cost.
b. It is readily available when needed.
c. It is easy to prepare when kid is hungry.
d. It contains antibodies that protect kids from infections.
17. In case doe dies after kidding, what preparation should be given to the orphaned kid as substitute to colostrum?
a. Plenty of fresh water
b. Liberal feeding of skim milk
c. Little amount of milk with the white of fresh egg
d. Small amount of succulent grasses with molasses
18. Based on the dentition of a goat/sheep, how many permanent incisors should be seen in a 1year-old animal?
a. 2
b. 4
c. 6
d. 8

19. Why should a buck kid be separated from the kid herd?
- a. To minimize feed cost
 - b. To prevent cannibalism
 - c. To avoid bullying among the herd
 - d. To prevent doe kid from being bred too young
20. How much crude protein should be allotted to lactating does?
- a. 14 – 16%
 - b. 15 – 17%
 - c. 16 – 20%
 - d. 17 – 20%
21. Why should we separate the buck from the milking herd?
- a. To avoid tainting in the milk
 - b. It bullies the suckling kids in the pen
 - c. Bucks are capricious and difficult to herd
 - d. Bucks are carrier of ticks that might irritate the milking doe
22. Which is not considered if a raiser wants to get the best milking results?
- a. Aggressiveness
 - b. Gentleness
 - c. Quietness
 - d. Regularity of milking process
23. These are the main feeds for does or ewes.
- a. Concentrates
 - b. Leaf meals
 - c. Protein supplements
 - d. Roughages
24. Which of the following is not included in preparing the doe before milking?
- a. Comb or brush the goat well
 - b. Wash hand well before milking begins
 - c. Excite the doe before the process starts
 - d. Clean the udder using soap and lukewarm water
25. To increase the milk production, doe should be given concentrates containing
-
- a. 13% – 16% CP
 - b. 15% - 18% CP
 - c. 16% - 20% CP
 - d. 17% - 21% CP

Lesson 1 MONITORING AND ASSISTING KIDDING/LAMBING



INTRODUCTION

This lesson focuses on the proper management of kidding/lambing in doe/ewe. It includes the preparation of materials needed prior to kidding, care for the doe before and after kidding, correct procedure when the animal experiences difficulty in kidding and the care for the newly-born kid.



OBJECTIVES

At the end of the lesson, you should be able to:

1. identify the signs of animal that is about to kid;
2. assist the doe during kidding;
3. follow the correct procedure to be done when doe experiences difficulty in kidding; and
4. appreciate the importance of proper management for the doe and its young.



PRE-ASSESSMENT

Directions: Choose the correct answer from the given options and write it on your activity notebook.

1. Kidding is the act of giving birth among_____.
a. goats b. sheep c. kids d. lambs
2. These are considered as good bedding materials for a newly-kidded doe.
a. Legumes and tree barks
b. Rice straw and fresh grasses
c. Tree barks and banana leaves
d. Dried rice straw and banana leaves
3. The following choices characterize an ideal and comfortable pen for a doe that is about to kid, except:
a. Damp stall c. Thoroughly cleaned
b. Disinfected d. Well-lighted

4. Which of the following options is not considered during the preparation of materials for the doe prior to kidding?
 - a. Clean cloth
 - b. Sharp knife
 - c. Germicidal soap
 - d. Anti-tetanus toxoid
5. What possible action should be done by a raiser when he/she observes that a doe experiences difficulty in kidding?
 - a. Apply caesarian section
 - b. Send the doe to a clinic
 - c. Do the manual extraction
 - d. Inject Vitamin B complex to stimulate uterus contraction
6. Which of the options below is first to be considered when manual extraction is to be done?
 - a. Put oil or any lubricant into your hand.
 - b. Wash your hands thoroughly with soap and water.
 - c. Disinfect hands and arms up to the elbow with alcohol.
 - d. Trim nails to avoid tissue lacerations inside the birth canal.
7. What is the ideal length when cutting an umbilical cord?
 - a. 0.5 – 1.0 cm from the base of the navel
 - b. 1.0 – 1.5 cm from the base of the navel
 - c. 2.0 – 3.0 cm from the base of the navel
 - d. 3.0 – 3.5 cm from the base of the navel
8. This is the first milk that should be taken by the newly-born kid from its mother doe.
 - a. Colostrum
 - b. Creep feed
 - c. Meconium
 - d. Skim milk
9. How should a raiser keep the excess colostrum for future use?
 - a. Store it in freezer
 - b. Store it in a warm place
 - c. Store it in room temperature
 - d. Store it inside a sterilizing pan
10. The following are good management practices for the newly-born kids when lactating does are intended for milking purposes, except:
 - a. Individually hand-fed the kids with milk
 - b. Keep the beddings of the kids wet and muddy
 - c. Treat the kids with kindness during feeding time
 - d. Observe the health condition and development of the kids



KNOW

Kidding/Lambing

Kidding is the act of giving birth or parturition among does, while lambing is the term apply for parturition among ewes.

Management Practices during Kidding

Prior to the expected date of kidding, provide the pregnant doe a comfortable pen. This should be well-lighted and thoroughly cleaned and disinfected. You may use clean and dry rice straw or dried banana leaves for bedding materials.

Materials to be prepared prior to kidding/lambing:

- a piece of string
- clean cloth
- sharp knife or blade
- tincture of iodine and small bowl or cup in which to dip the umbilical cord
- oil/lubricant (petroleum jelly) if you need to insert your hand and arm to assist with the delivery
- germicidal soap
- drench for the doe
- sanitized milk bottles in case the doe won't allow the offspring to feed

Care for the doe before and during kidding

- Separate expectant does from the rest of the herd 1 week prior to delivery for close observation
- Observe the signs of approaching kidding to manifest, placing the doe in a bedded dry stall
- Check the doe every 30 minutes but allow it to kid without assistance if no problem is detected

The signs of approaching kidding are as follows:

- ✓ The water bag appears on the outside;
- ✓ The water bag expands until it ruptures;
- ✓ The appearance of second bag called amniotic bladder with the fetus appear;
- ✓ Straining causes amniotic bladder to break;
- ✓ Presentation follows next.

The kid/lamb should be born within an hour after the doe begins to have strong labor contractions. If this does not occur, examine the doe for any kidding/lambing difficulty.

Steps to undertake when the doe experiences difficulty in kidding through manual extraction:

- Trim your finger nails.
- Wash your hands with soap and water.
- Using, disinfect hands and arms up to the elbow.
- Put oil or any lubricant into your hand.

- Gently and slowly insert your hand into the birth canal and feel for the head, legs, and tail.

As soon as the kid/lamb is expelled, the following steps should be done:

- Wipe its body and remove mucus clogged in the nose of the newly born kid/lamb.
- Tie a string around the umbilical cords about 2-3 cm from the base of the navel.
- Cut cord after the knot and dip the navel in tincture of iodine.
- Place kids in a kidding box and if possible, expose them under the sunlight to dry-off.
- Assist newly-born kid to suck the first milk or colostrum which provides it antibodies.
- Dispose placenta and dead kids properly.
- Usually, the doe eats the expelled placenta. This contains nutrients and helps stop bleeding. If the doe does not eat the placenta, dispose it properly to keep the area clean.
- If in case, placenta (afterbirth) is not expelled within 24 hours after the delivery of the last kid, inject pitocin or oxytocin (a substance that hasten contraction of the uterus) as indicated to avoid uterine infection.
- Call a veterinarian whenever necessary.

Care of the kid

It is important for the kid/lamb to receive the first milk or colostrum. This milk is essential because it is not only a laxative; it also give nutrients and contains antibodies. After several hours, a full udder indicates that the kid/lamb has not yet suckled its first milk supply. Tie and lead the kid/lamb direct towards the teats.

If for any reason the kid/lamb cannot be fed colostrum or the mother died while kidding/lambing or suffered from mastitis, give the animal a liberal dose (from a teaspoonful to a tablespoonful) of any vegetable oil or a little milk mixed with the white of fresh egg. This is to start the bowels to function normally. It may become necessary at this time to give an enema by using a syringe.

In farms where the electricity and refrigeration are available, store excess colostrum in freezers. To feed the weak kids or those born from does with inadequate colostrum, thaw the frozen milk by slow heating, then feed the lukewarm to those kids.

Allow the kids to run with the does/ewe for 3-5 days. If the lactating mothers are intended for twice-a-day milking, keep the kids/lamb in the pen and individually hand feed with milk. The same person should care for the kids/lamb and supervise their daily feeding. Treat the kid/lamb with patience and kindness to enable them to react to friendly handling and to avoid excitement.

Observe their condition and development closely. Guard against wet bedding in pen. Beddings may seem dry on top but wet underneath. Change bedding two or three times daily.

In a less intensive production or if milking is only once-a-day, allow the kid/lamb to run with the older stocks. However, keep them in the night shelter where creep feeds and fresh water are available. Protect kids/lamb from predatory animals.

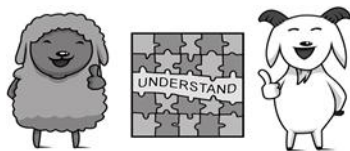


Activity 1

Directions. Identify the word being asked in each item. Choose the right word inside the boxes below and write it on your activity notebook.

lambing	water bag	amniotic bladder
colostrum	dried banana leaves	oxytocin

1. This is considered as good bedding material for newly-born kids.
2. When a doe is approaching to kid, this material usually appears on the outside of the rear part (vulva) of the animal.
3. This is the second bag which appear significantly with the fetus after the first bag ruptures.
4. This is the first milk that is very important to a newly-born kid to suckle because of its beneficial content.
5. It is the act of delivery in sheep.



Direction: Divide the class into 4 groups and assign each group with a sub-topic about the lesson. Research further and present the output to the class through power point presentation. The sub-topic are as follows:

- a. Signs of approaching kidding
- b. Step to undertake manual extraction
- c. Steps as soon as kid/lamb is expelled
- d. Care of the newly-born kid/lamb



TRANSFER

Direction: Proceed to the goat project of your school and ask the project-in-charge if there are does about to kid. The TLE teacher will guide the learners during the process. The following activities to be done by the learners are as follows:

- a. Prepare the materials needed
- b. Monitor and assist the doe before and after the kidding
- c. Do the manual extraction as needed
- d. Apply basic management for the newly-born kid

Scoring Rubric

Kidding

Criteria	Rating
1. Assisting the doe in a right way	35
2. Complete material for kidding	25
3. Appropriate use of instruments	10
4. Cleanliness	10
5. Speed	10
6. Proper use of biologic	5
7. Work habit	5

Care for the kid

Criteria	Rating
1. Assisting the kid in a right way	35
2. Complete material for the kid	25
3. Appropriate use of materials	10
4. Cleanliness	10
5. Speed	10
6. Proper use of biologic	5
7. Work habit	5



POST-ASSESSMENT

Directions: Choose the correct answer from the given options and write it on your activity notebook.

1. Kidding is the act of giving birth among_____.
 - a. goat
 - b. sheep
 - c. kid
 - d. lamb
2. These are considered as good bedding materials for a newly-kidded doe.
 - a. Legumes and tree barks
 - b. Rice straw and fresh grasses
 - c. Tree barks and banana leaves
 - d. Dried rice straw and banana leaves
3. The following choices characterizes an ideal and comfortable pen for a doe that is about to kid, except:
 - a. Damp stall
 - b. Disinfected
 - c. Thoroughly cleaned
 - d. Well-lighted
4. Which of the following options is not considered during the preparation of materials for the doe prior to kidding?
 - a. Clean cloth
 - b. Sharp knife
 - c. Germicidal soap
 - d. Anti-tetanus toxoid
5. What possible action should be done by a raiser when he/she observes that a doe experiences difficulty in kidding?
 - a. Apply caesarian section
 - b. Send the doe to a clinic
 - c. Do the manual extraction
 - d. Inject Vitamin B complex to stimulate uterus contraction
6. Which of the options below is first to be considered when manual extraction is to be done?
 - a. Put oil or any lubricant into your hand.
 - b. Wash your hands thoroughly with soap and water.
 - c. Disinfect hands and arms up to the elbow with alcohol.
 - d. Trim nails to avoid tissue lacerations inside the birth canal.
7. What is the ideal length when cutting an umbilical cord?
 - a. 0.5 – 1.0 cm from the base of the navel
 - b. 1.0 – 1.5 cm from the base of the navel
 - c. 2.0 – 3.0 cm from the base of the navel
 - d. 3.0 – 3.5 cm from the base of the navel
8. This is the first milk that should be taken by the newly-born kid from its mother doe.
 - a. Colostrum
 - b. creep feed
 - c. meconium
 - d. skim milk

9. How should a raiser keep the excess colostrum for future use?
- a. Store it in freezer
 - b. Store it in a warm place
 - c. Store it in room temperature
 - d. Store it inside a sterilizing pan
10. The following are good management practices for the newly-born kids when lactating does are intended for milking purposes, except:
- a. Individually hand-fed the kids with milk
 - b. Keep the beddings of the kids wet and muddy
 - c. Treat the kids with kindness during feeding time
 - d. Observe the health condition and development of the kids



Proper monitoring of does/ewes during kidding is a must although these animals do not need so much assistance at this phase. Support is only given when the kidding/lambing animal experiences difficulty. However, correct procedure should be followed to avoid complications to arise.

Lesson 2 PERFORM DIFFERENT PRACTICES FOR GROWING KIDS/LAMBS



INTRODUCTION

This lesson deals with the different practices for growing kids/lambs. It includes ear tagging, ear notching, dehorning, disbudding, hoof trimming, tail docking, weaning and castrating kids/lambs. It also shows how the age of an animal is determined through dentition.



OBJECTIVES

At the end of the lesson, you should be able to:

1. discuss the different practices involve for growing kids/lambs;
2. perform ear tagging, ear notching, dehorning, disbudding, hoof trimming, tail docking, weaning and castrating kids/lambs;
3. determine the age of goats through dentition; and
4. appreciate the importance of ear tagging, dehorning, disbudding, tail docking, hoof trimming, weaning and castrating kids/lambs.



PRE-ASSESSMENT

Direction: Choose the correct letter from the options and write it on your activity notebook.

1. The process of putting ear tag into the ear of a goat.
 - a. Ear cutting
 - b. Ear docking
 - c. Ear notching
 - d. Ear tagging
2. The process of removing testicles among male kids/lambs.
 - a. Castration
 - b. Ear notching
 - c. Ear tagging
 - d. Tail docking
3. The following are reasons why kids and lambs are castrated, except:
 - a. Castration prevents inbreeding
 - b. Castrates are docile, thus safe to herd
 - c. Castration preserves the bloodline of the breed
 - d. Castration eliminates undesirable odor in male animals
4. Disbudding is best defined as _____.
 - a. removal of hoof.
 - b. removal of the tail.
 - c. removal of horn bud
 - d. removal of the testes

5. Why is it needed to dehorn a mature animal?
 - a. It reduces the goaty smell of a buck
 - b. It facilitates identification of animals
 - c. To avoid injuries during fighting among animals
 - d. This is recommended by a licensed veterinarian
6. Which among the tools below is used in docking the tail of a lamb?
 - a. Dehorner
 - b. Ear notcher
 - c. Ear tagger
 - d. Elastrator with rubber band
7. The following are the positive results of trimming the hooves, except:
 - a. Prevent foot rot
 - b. Prevent abnormal gait
 - c. Prevent animal from moving
 - d. Prevent malformation of the toes
8. Weaned kids at the age of not less than three months should be given solid food such as:
 - a. Skim milk
 - b. Concentrate and roughage
 - c. Frozen colostrum
 - d. Mineral block
9. Based on the goat's dentition, a goat with four large front teeth is estimated to be a:
 - a. Less than a year
 - b. One year old
 - c. Two years old
 - d. Three years old
10. Tail docking is usually done best at:
 - a. Day old
 - b. 3 – 5 days old
 - c. 7 – 10 days old
 - d. 10 – 15 days old



KNOW

Care and Management Practices for Growing Kids/Lambs

Small ruminants are easy to raise because of their size, yet they must be managed to attain their potentials and produce profitably. Before any care practice is provided, be sure that all tools and instruments to be used are cleaned and disinfected.

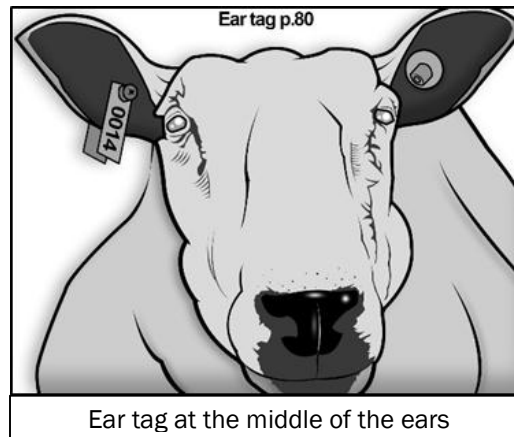
1. Marking/Identification

Each goat of the herd, when purchased or born into your herd, should be permanently marked for some reasons:

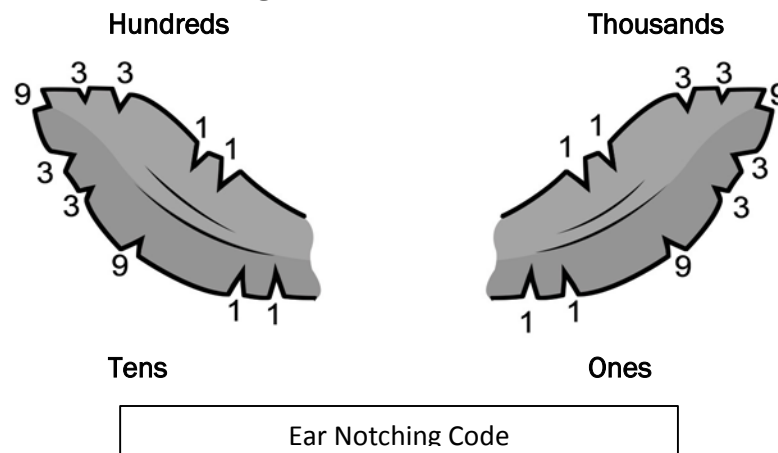
- To identify ownership.
- To distinguish animals of the herd for record-keeping purposes.
- To facilitate easy selection, medication, segregation, culling and disposal.

There are two modes of marking the goats: ear tagging and ear notching.

- ❖ **Ear tagging** – entails placing a marker into the ear. This ear tag is usually made up of plastic or light metal and is pre-numbered before it is placed into the ear.



- ❖ **Ear notching** is accomplished by providing a v-shaped cut on the edge of the ear by using an ear notcher. Each cut represents a number as indicated in the ear notching code.



2. Castration

Castration is the process of removing testicles among male kids/lambs through surgical procedure with the use of knife and through bloodless method with the use of Burdizzo and elastrator. This procedure is done when they are young, preferably at the age of 2 – 4 weeks to prevent stress and wound heals easily.

Why castrate goats and sheep?

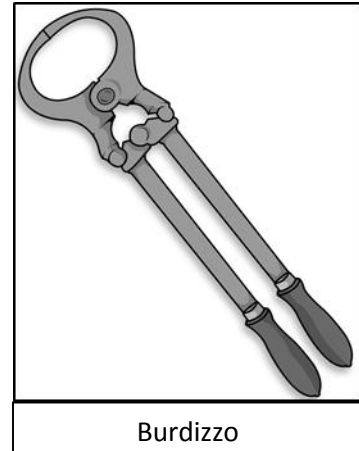
- Castration eliminates tainted or undesirable odor in male animals
- Castrates are docile thus safe to herd.

- Prevents inbreeding, because this breeding system contributes congenital defects and poor growth.
- Passing of undesirable traits from inferior breeders which may result to unproductive progenies is avoided.
- Prevents unwanted pregnancies among very young females.

Three (3) Methods of Castration:

I. Burdizzo Method

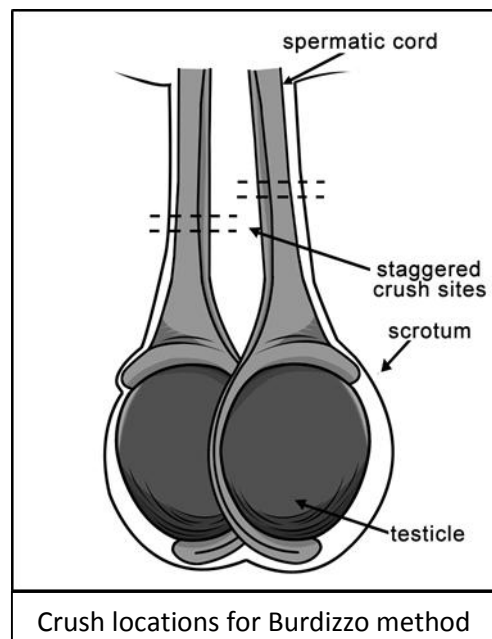
This is known as “bloodless” method because wounding or cutting is not applied, instead, the operation is done with the use of Burdizzo, an instrument designed to crush blood vessel in the spermatic cord preventing blood supply to descend in the testicle. Since no method in castration is absolutely painless, this technique is the least painful to apply.



Burdizzo

Steps:

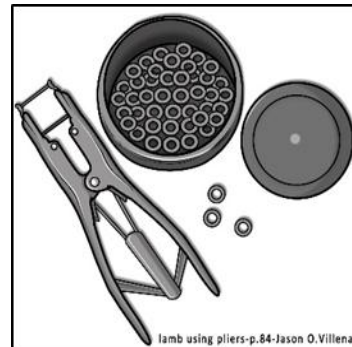
- Restrain the animal properly, let it lie in its back and firmly hold its four feet to refrain it from paddling.
- Hold and push its scrotum downward and then trace for the spermatic cord.
- Place the Burdizzo on the upper part of the scrotum and clamp the cord. A clicking sound can be heard as the cord has been crushed. Leave the instrument close at 20-25 seconds.
- After the given time, release the scrotum and locate the other side of it.
- Repeat the procedure as what you did with the first one.



II. Elastrator Method

This method includes the use of a heavy-duty rubber band and elastrator, an instrument intended to stretch the durable band and be placed on the neck of the scrotum or above the testes. Let the band stay on the testes for 2 – 4 weeks until it eventually fall off.

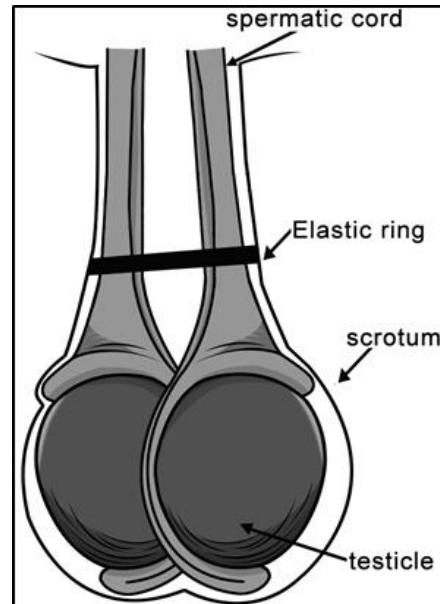
This procedure is effective for young animals specifically at 7 – 10 days up to 6 weeks from birth when scrotal materials are not yet developed. However, animals may suffer from stress due to intense pain and discomfort especially for the first 10 – 15 minutes after the band has tightly constricted the neck of the scrotum.



An elastrator with the heavy-duty bands

Steps:

- Use band or ring not more than 1 year from its manufacture to assure tight fit and strong enough to cut off blood flow, if not, scrotum will swell.
- Restrain the animal carefully by letting it lie on its back and properly hold its four feet to prevent it from paddling.
- Let the scrotum or testes pass through the stretched hole but not over the rudimentary teats.
- Displace the ring or band from the prong.
- Inject tetanus antitoxin. This prevents the tetanus organism to enter through the irritated tissue constricted by the ring or band.
- Check for the ring if it is still intact and properly placed, and for any signs of infection that may occur.



Proper sites for the heavy-duty band

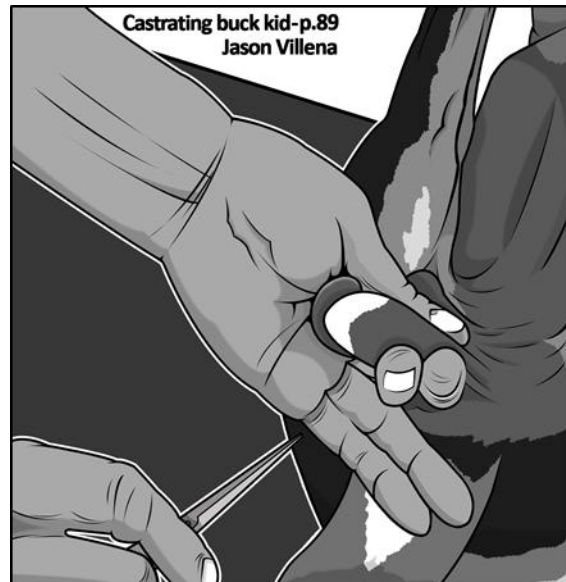
III. Knife Method

This method involves the removal of testicles through surgical operation. Materials needed include sterile and sharp knife, surgical blade, warm water, iodine or 3% creoline solution as disinfectant, syringe and needle, tetanus antitoxin, antibiotic and fly repellent.

While this method is the cheapest among the techniques, it is considered the most painful and has the greatest potential for infection and fly infestation.

Steps:

- a. Let an assistant restrain the animal properly
- b. Draw the hind legs forward.
- c. Wash your hand with soap and water.
- d. Wash the scrotum with soap and water thoroughly and disinfect it and its surrounding area with 3% creoline solution or tincture of iodine.



Cutting the tip of the scrotum

- e. Cut across the tip of scrotum carefully then slowly push the testicles out. Grasp the testis or spermatic cord tightly not to slip-up your hand and go back into the scrotum, once you touched it, avoid inserting your finger into the cut area because this increases the chance of infection to develop.
- f. Cut two connecting tissues with a sterilized knife or blade.
- g. If a tissue protrudes below the cut area, removed it with the knife. This is to avoid disease-causing organisms to adhere and cause infection.
- h. Apply tincture of iodine over the wound. In areas where tetanus is known to occur, a preventive dose of tetanus anti-toxin (TAT) is recommended.
- i. Inject the kid with antibiotic. Fig 2.
- j. Spray the wound with fly repellent.
- k. The cut area



Injecting penicillin to buck kid

should remain open to allow drainage after castration.

- I. Place the animal in a draft-free confinement.

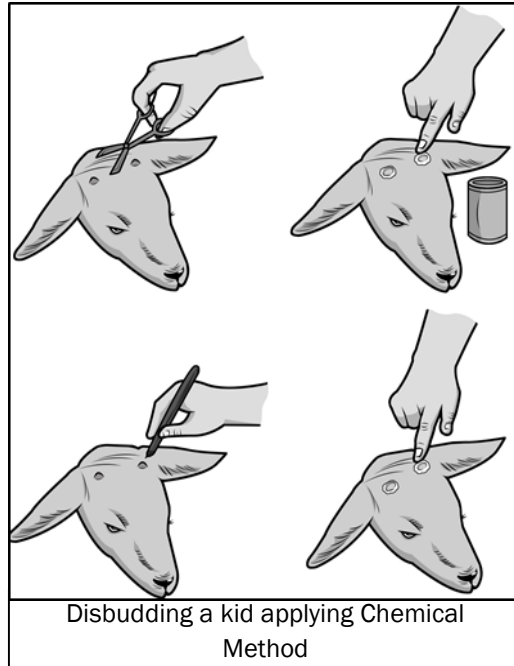
3. Disbudding

This process refers to the removal of horn-buds on kid as raiser decides to allow the animal to be hornless as it grows. The kid may be disbudded using the following method. It is advised to beginners that these be done by experienced hand since neither of the two method is easy.

A. Chemical Method (potassium hydroxide stick or caustic stick) – this is used only in 2-week old kids.

Steps:

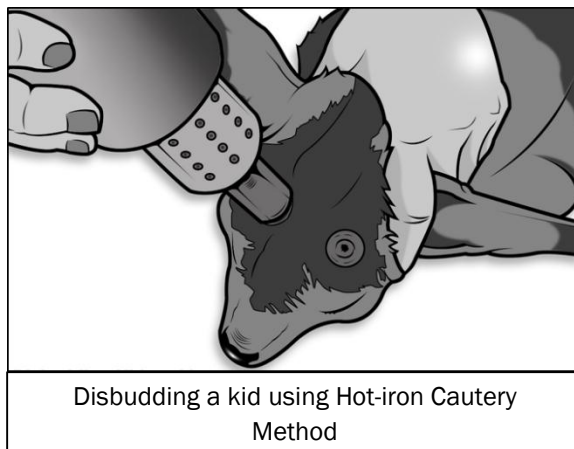
- a. Wrap the caustic stick with paper to protect hand from burn.
- b. Restrain the animal properly to lessen stress.
- c. Clip the hair around the base of the horn-bud.
- d. Apply Vaseline on the clipped area. This prevents the chemical from flowing down the eyes or burning the skin.
- e. Hold the pre-wrapped stick and dip one end tip in water.
- f. Apply the stick into one of the horn-buds in circular motion, about 2.5 cm in diameter until the horn tissue is burned-off. Do the same thing on the other horn-bud.
- g. After the process, rub ample amount of Vaseline to sooth the burnt spot and down the side of the head.



B. Hot-iron cautery Method

Steps:

- a. Heat the disbudding iron to a bright cherry-red.
- b. Restrain the animals properly and firmly to avoid unnecessary burning.



- c. Clip the hair around the base of the horn-bud.
- d. Hold the pre-heat disbudding iron and apply it exactly over the horn-bud. Let it stay on the area for six seconds-no more, no less. Do the same on the other bud.
- e. The iron may be reheated once or twice for each horn until they have disappeared completely.
- f. Cover the burnt area with Vaseline.

4. Dehorning

It is a process of removing horn among adult or mature animals since horned animals could possibly harm other animals during goat fighting as well as caretakers. This can be done on the first 2 to 4 months of age from birth. The procedure is a risky operation, so it is wise to consult a veterinarian or expert especially on the administration of anesthesia.

Steps:

- a. Heat the disbudding iron.
- b. Restrain the animal properly.
- c. Administer anesthesia.
- d. Use a dehorning instrument or a small-toothed sharp saw to cut the horn.
- e. Saw-off the horn very close the base.
- f. Cauterize the wound using the pre-heated disbudding iron to prevent excessive bleeding.
- g. If profuse bleeding occurs, dust the wound with iron sulfate until blood flow stops.

Illustration...

5. Docking in newly-born kids/lambs

Docking or cutting off part of the tail is one of the first management practices performed after lambing. This will keep the animal hygienic since droppings sticks to its tail and wool. The process is done between seven and ten days of age. The tail is cut off at the first or second joint or about 1 to 1.5 inches (2.5-3.8



Tail-docking in lamb using elastrator with rubber band

cm) from the body. This can be done with a knife, burdizzo, elastator, emasculator, or hot docking iron.

6. Hoof Trimming

This practice aims to prevent malformation of the toes, abnormal gait and to prevent foot rot that results from getting manure inside the untrimmed hoof. A sharp knife, pruning shears, or a broad sharp chisel can be used.

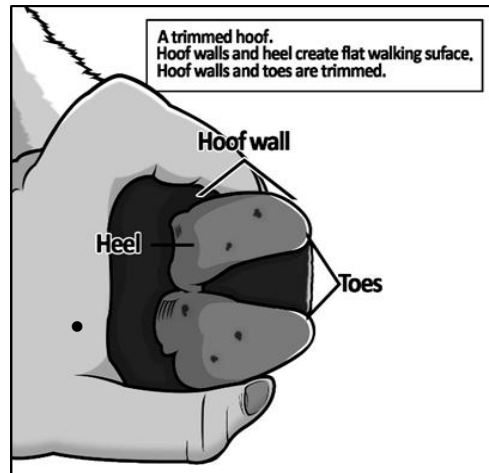
Trimming is easily done in damp cold weather when the hooves are more pliable. Brittle hooves need a hoof ointment, or else, these by letting the goat stand on damp floor for several hours before hoof trimming.

How to Trim the Hoof:

- Hold the feet of the goat between your knees.
- With a sharp-cutting object, trim down the excess hoof until the feet are like those of a newly born kid.
- The edges of the hoof must be of the same level as that of the frog (the soft part at the center).
- Whittle the frog with utmost care since this is the most sensitive part of the hoof.



Photo courtesy of Fortunato F. Halili
National Agricultural School, Sta.
Maria, Bulacan.



Hoof Trimming

7. Weaning

Weaning kids depends on the system of management and operation under which goats are raised. For dairy purposes, kids may be weaned or separated totally from does immediately or after colostrum feeding, and then raised by hand feeding.

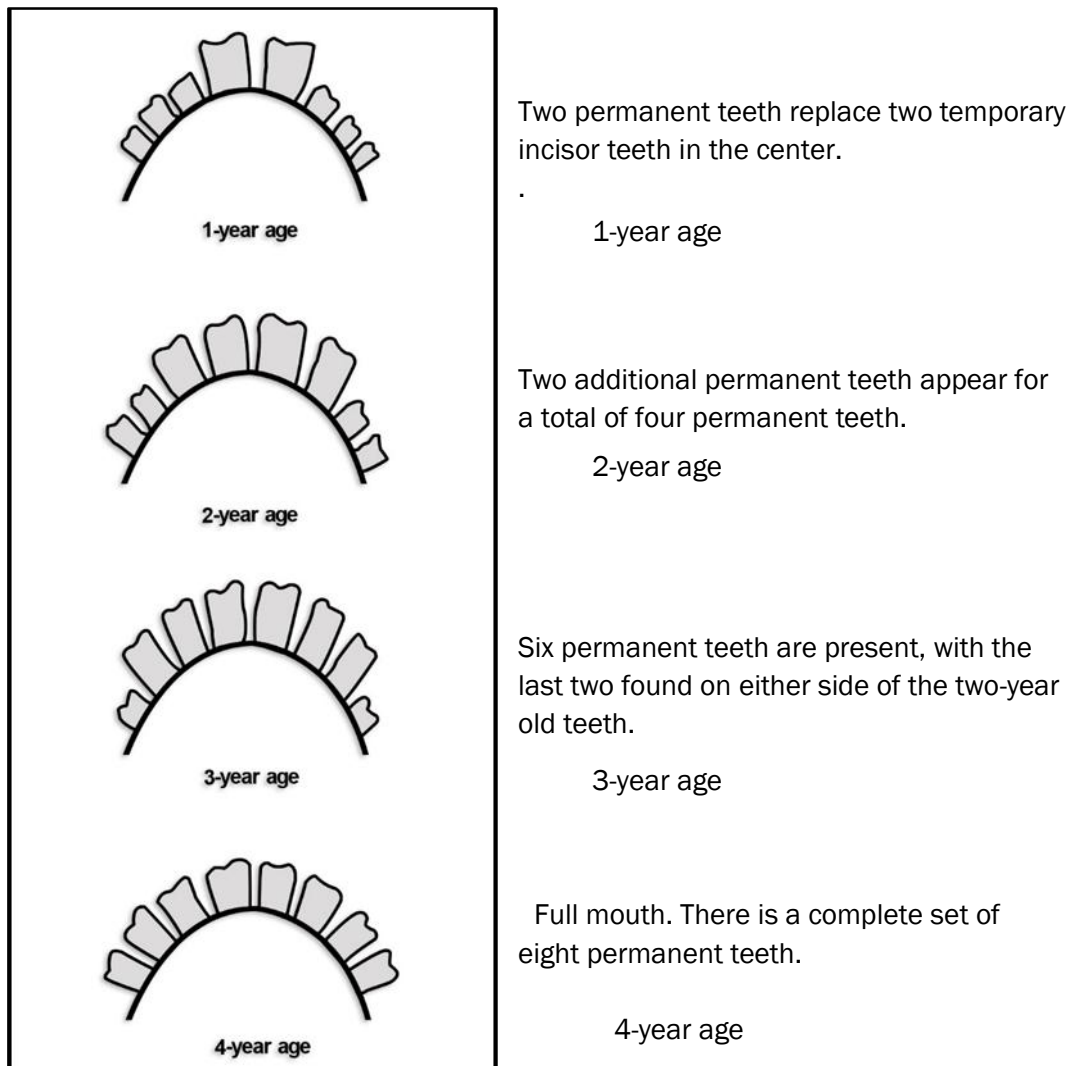
For the purpose of raising goat for its milk, wean the kids at the age of not less than three months. By this time, the kids must have experienced consuming solid foods, particularly concentrates and roughages. At weaning,

separate the buck kids from the kid herd. This would prevent some of the doe kids from being bred too young. Breeding those very young kids stunts growth.

Determining the Age of Goat/Sheep

Aside from the record kept, the age of a goat can be estimated by looking at the teeth. For animal younger than one year, the set is complete but these small, and sharp incisors are still temporary. Two permanent front incisors can be seen in yearlings but the rest are still temporary. A two-year old goat has four large front teeth while a three-year old goat has six teeth. At the age of four, a complete set of eight front incisors on the lower jaw can be seen. As goats grow older, teeth become worn out, spread far apart, become loose and finally drop off.

Dentition in goats



Estimated age for sheep and goats with different numbers of erupted permanent incisors

No. of permanent incisors	Estimated age range	
	Sheep	Goat
0 pair	Less than 1 year	Under 1 year
1 pair	1-1½ years	1-2 years
2 pairs	1½-2 years	2-3 years
3 pairs	2½-3 years	3-4 years
4 pairs	More than three years.	More than four years
Broken mouth	Aged	Aged

Dentition showing the estimated ages of sheep and goats (Adopted from Vatta et al. 2006) (<http://www.esgpip.org/pdf/Technical%20Bulletin%20No.23.pdf> 11-15-14)



Activity 1

Directions: Match Group A to Group B. Write the correct letter of your choice on your activity notebook.

Group A

- | | |
|-----------------|------------------|
| a. docking | f. selection |
| b. castration | g. weaning |
| c. dehorning | h. marking |
| d. ear notcher | i. hoof trimming |
| e. sharp chisel | j. disbudding |
| | k. ear tag |

Group B

- _____ 1. Identifies ownership
- _____ 2. A pre-numbered plastic as identification
- _____ 3. Used to make notches on the ear
- _____ 4. Removal of testicles of the male kids
- _____ 5. Removal of horn buds
- _____ 6. The removal of horn in mature goat
- _____ 7. The trimming of hoof to prevent foot rot
- _____ 8. A tool used to trim hoof
- _____ 9. Cutting part of the tail
- _____ 10. Separation of kid/lamb from the mother

Activity 2

Directions: Discuss the importance of the following management practices involved in growing kids/lambs.

1. Marking/Identification

2. Castration

3. Disbudding

4. Dehorning

5. Tail docking

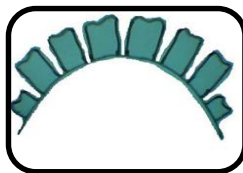
6. Hoof trimming

7. Weaning

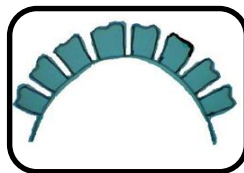
Activity 3

Directions: Estimate the age of a goat or sheep based on the dentition of the animal.

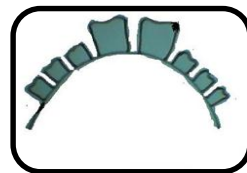
Write the answer on your activity notebook.



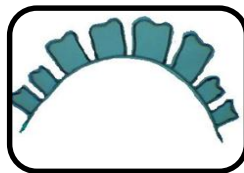
1. _____



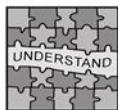
2. _____



3. _____



4. _____



UNDERSTAND

Activity 1

Directions: Visit the goat/sheep project of your municipality and ask for demonstration with regards to the following practices:

1. Marking/Identification
2. Castration
3. Disbudding
4. Dehorning
5. Tail docking
6. Hoof trimming
7. Weaning

Activity 2

Directions: Answer the following questions briefly.

1. State the difference between ear tagging and ear notching.
2. Compare and contrast the Burdizzo Method and the Knife Method of castration.
3. Determine the difference between the Burdizzo Method and the Elastrator Method of castration.
4. Compare and contrast disbudding and dehorning.
5. Determine the difference between the chemical method and hot-iron cautery method of disbudding.



TRANSFER

Activity 1

Directions: Proceed to the goat project of the school and perform the following practices based on the lectures and actual demonstrations by competent persons.

- a. Ear tagging and ear notching
- b. Castration using Burdizzo Method, Elastrator and Knife Method
- c. Dehorning
- d. Disbudding using chemical method and hot-iron cautery method
- e. Tail docking
- f. Hoof trimming

Score rubric

Criteria	Rating
Correct procedure	40
Proper use of instruments	20
Care for the animal	20
Workmanship	10
Speed	10

Activity 2

Directions: Choose at least five (5) animals from different stages of growth and estimate their age based on their dentition. Then compare the results of estimation from the record kept. Use the table below for reference.

Animal Number	Estimated Age Through Dentition	Record
1		
2		
3		
4		
5		



POST-ASSESSMENT

Directions: Choose the correct letter from the options and write it on your activity notebook.

- The process of putting eartag into the ear of a goat.
 - Ear docking
 - Ear cutting
 - Ear notching
 - Ear tagging
- The process of removing testicles among male kids/lambs.
 - Castration
 - Ear notching
 - Ear tagging
 - Tail docking
- The following are reasons why kids and lambs are castrated, except:
 - Castration prevents inbreeding
 - Castrates are docile thus safe to herd.
 - Castration preserves the bloodline of the breed
 - Castration eliminates undesirable odor in male animals
- Disbudding is best defined as _____.
 - removal of the testes.
 - removal of horn bud.
 - removal of the tail.
 - removal of hoof.
- Why is it needed to dehorn a mature animal?
 - To avoid injuries during fighting among animals
 - This is recommended by a licensed veterinarian
 - It facilitates identification of animals
 - It reduces the goaty smell of a buck

6. Which among the tools below is used in docking the tail of a lamb?
 - a. Dehorner
 - b. Ear notcher
 - c. Ear tagger
 - d. Elastrator with rubber band
7. The following are the positive results of trimming the hooves except:
 - a. Prevent foot rot
 - b. Prevent abnormal gait
 - c. Prevent animal from moving
 - d. Prevent malformation of the toes
8. Weaned kids at the age of not less than three months should be given solid food such as:
 - a. Skim milk
 - b. Concentrate and roughage
 - c. Frozen colostrum
 - d. Mineral block
9. Based on the goat's dentition, a goat with four large front teeth is estimated to be a:
 - a. Less than a year
 - b. One year old
 - c. Two years old
 - d. Three years old
10. Tail docking is usually done best at:
 - a. Day old
 - b. 3 – 5 days old
 - c. 7 – 10 days old
 - d. 10 – 15 days old



Goats/sheep are easier to raise because they are smaller in size compared to cattle and carabaos. Nevertheless, different practices such as hoof trimming, castration, dehorning, disbudding, ear marking, and tail docking should be done to attain their potentials and produce profitably. Always bear in mind that before doing the job, see to it that all instruments needed are thoroughly cleaned and sanitized to avoid infections.

Lesson 3 PROVIDE CARE AND MANAGE LACTATING DOES/EWES



INTRODUCTION

This lesson deals with the care and management of lactating does/ewes. It also provides insights on the hygiene and sanitation inside the lactating pen and proper milking procedure.



OBJECTIVES

At the end of the lesson, you should be able to:

1. feed the lactating does properly;
2. separate lactating does from the herd;
3. observe proper hygiene in lactating goat pen;
4. perform proper milking procedure; and
5. appreciate the importance of proper sanitation in the milking area.



PRE-ASSESSMENT

Directions: Choose the correct letter of your answer from the given choices.

1. Why should we separate the buck from the milking herd?
 - a. To avoid tainting in the milk
 - b. It bullies the suckling kids in the pen
 - c. Bucks are capricious and difficult to herd
 - d. Bucks are carrier of ticks that might irritate the milking doe
2. Which is not considered if a raiser wants to get the best milking results?
 - a. Aggressiveness
 - b. Gentleness
 - c. Quietness
 - d. Regularity of milking process
3. These are the main feeds for does or ewes.
 - a. Concentrates
 - b. Leaf meals
 - c. Protein supplements
 - d. Roughages
4. Which of the following is not included in preparing the doe before milking?
 - a. Comb or brush the goat well
 - b. Wash hand well before milking begins
 - c. Excite the doe before the process starts
 - d. Clean the udder using soap and lukewarm water

5. To increase the milk production, doe should be given concentrates containing

- | | |
|-----------------|-----------------|
| a. 13% - 16% CP | c. 16% - 20% CP |
| b. 15% - 18% CP | d. 17% - 21% CP |



KNOW

Feeding the doe/ewes

Roughage is the main feed for these animals. Pasture and good-quality legume or grass-legume hay are used for this purpose. One of these legumes is Centrosema. Guinea and Paragrass are also good for the does. Silage may be used in place of hay. Corn grain and sorghum are commonly used as concentrates. Protein supplements are not needed if good quality legume pasture or hay is available. If needed, protein supplements to use include soybean oil meal, cotton seed meal, linseed meal, and peanut meal.

Feeding Lactating Doe

Forage alone cannot increase milk production among lactating does. For milk production, the does should be fed with good quality forage and concentrates containing 16–20% crude protein at the rate of about 0.5 kilograms per liter of milk produced. Enough vitamin-minerals and salt are indispensable in their ration.

Care of Lactating Does

Keep lactating goats in a quiet environment before and during milking. Noise and the sight of strangers could cause extreme excitement that may adversely affect milk ejection.

Clip hair in the udder regularly. This prevents contamination of the milk during milking.

To get the best milking results, the following are important points to consider:

- quietness
- gentleness
- regularity of milking process

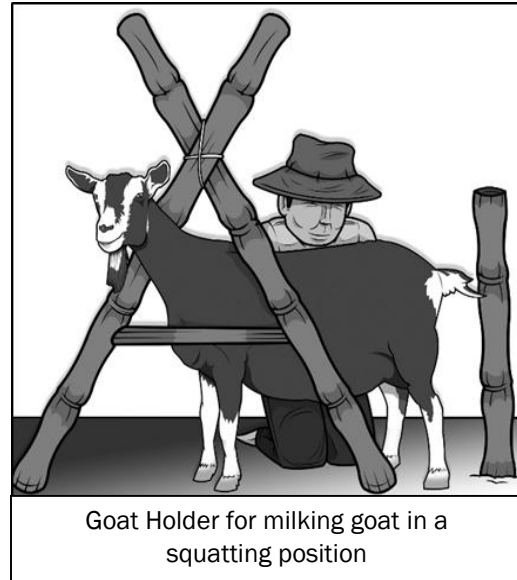
During milking, provide concentrate to minimize distraction/extreme excitement of the doe during the course of milk ejection.

Preparing the doe before milking

- To make the milking process easier, provide a milking stand or goat holder. A goat X – holder is used when milking goat in a squatting position. Use bamboo in making the holder.

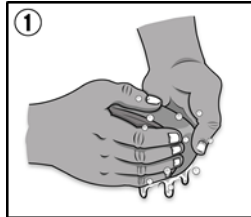
- Comb or brush the goat well.
- Clean the milk bucket thoroughly. A stainless steel or hard plastic bucket is preferred.
- Wash hands well.
- Clean the udder by using soap and lukewarm water just before milking.
- Dry the udder with clean towel or soft cloth.

Milking periods must be established and strictly adhered to. If milking is done twice a day, e.g. 6:00am and 6:00pm, the process should not be delayed or advanced. If possible, the same personnel should be used. Unnecessary changes in the routines should be avoided so that lactating does can sustain their ability to provide milk.



Goat Holder for milking goat in a squatting position

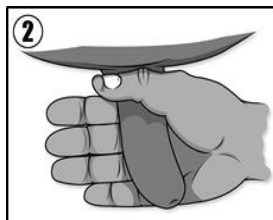
Proper Steps in Milking a Doe



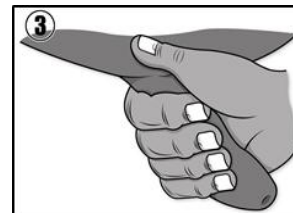
1. Wash hands with soap and water and dry them before starting to milk.



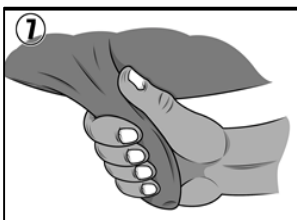
2. Do the same on the udder and parts around it.



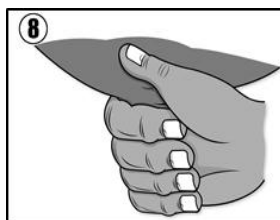
3. Grasp the teat with the thumb and first finger.



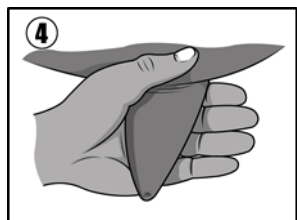
4. Close the second finger and milk will squirt out. Discard the first stream for it is high in bacteria.



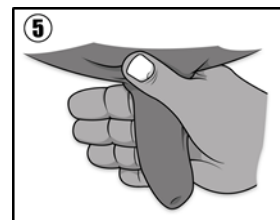
5. Close the forefingers and press a little steadily.



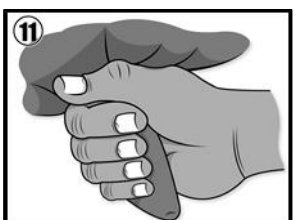
6. Close the little finger and tear with the whole hand.



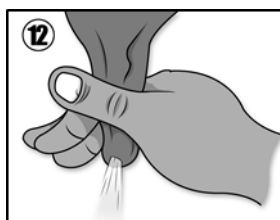
7. Release the teat so that it will be filled with milk.



8. Feel the teat again if it is already filled with milk



9. Again grasp the teat with your thumb and first finger.



10. Run your fingers down to the teat to force milk to come out.



Activity 1

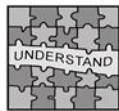
Directions: Copy the activity below in your activity notebook. Answer it by ticking ✓ to what classification does each feed belong.

Feed	Grass	Legume	Concentrate	Protein Supplement
1. Centrosema				
2. Guinea Grass				
3. Corn grain				
4. Soybean meal				
5. Paragrass				

Activity 2

Directions: Copy the following in your activity notebook. Read and understand each activities found at the middle column. If you think that the activity is supposed to be done, then mark ✓ under Do's opposite the activity, if the activity is not proper to do, then mark ✗ under Don'ts opposite the activity.

Do's	Routinely Activities for Lactating Does	Don'ts
	1. providing enough vitamins and mineral	
	2. clip hair in the udder regularly	
	3. noise and strangers are observed	
	4. irregularity of milking	
	5. gentleness of the milker	
	6. comb and brush the goat well	
	7. wash hand well before milking the doe	
	8. clean the udder with plain water	
	9. dry the udder with clean towel after washing	
	10. milking is not delayed or ahead of time	
	11. shifting of milkers is regularly observed	
	12. discard the first squirt of milk	

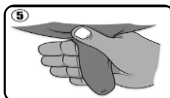


UNDERSTAND

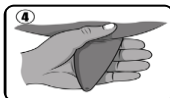
Directions: Rearrange the following milking procedure into proper sequence by putting the right number on the upper right corner of the picture.



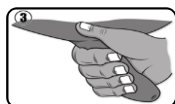
- Close the forefingers and press a little steadily.



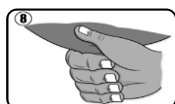
- Feel the teat again if it is already filled with milk



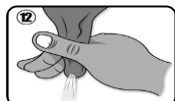
- Release the teat so that it will be filled with milk.



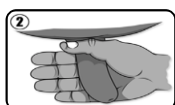
- Close the second finger and milk will squirt out. Discard the first stream for it is high in bacteria.



- Close the little finger and tear with the whole hand.



- Run your fingers down to the teat to force milk to come out.



- Grasp the teat with the thumb and first finger.



- Again grasp the teat with your thumb and first finger.



- Do the same on the udder and parts around it.



- Wash hands with soap and water and dry them before starting to milk.



TRANSFER

Directions: Coordinate with the Goat Project-in-Charge if there are a newly-kidded does that can be milked. Ask him/her to demonstrate the proper milking procedure then a return demonstration from anyone of the learner will perform following the procedure.

The learner will be rated using the rubric score:

Criteria	Rating
1. Assisting the doe in a right way	35
2. Completeness of material for milking	25
3. Appropriate use of materials	10
4. Cleanliness	15
5. Work habit	15



POST-ASSESSMENT

Directions: Choose the correct letter of your answer from the given choices.

1. Why should we separate the buck from the milking herd?
 - a. To avoid tainting in the milk
 - b. It bullies the suckling kids in the pen
 - c. Bucks are capricious and difficult to herd
 - d. Bucks are carrier of ticks that might irritate the milking doe
2. Which is not considered if a raiser wants to get the best milking results?
 - a. Aggressiveness
 - b. Gentleness
 - c. Quietness
 - d. Regularity of milking process
3. These are the main feeds for does or ewes.
 - a. Roughages
 - b. Concentrates
 - c. Leaf meals
 - d. Protein supplements
4. Which of the following is not included in preparing the doe before milking?
 - a. Comb or brush the goat well
 - b. Wash hand well before milking begins
 - c. Excite the doe before the process starts
 - d. Clean the udder using soap and lukewarm water
5. To increase the milk production, doe should be given concentrates containing _____.
 - a. 13% - 16% CP
 - b. 15% - 18% CP
 - c. 16% - 20% CP
 - d. 17% - 21% CP



Lactating does need proper feeding to increase their milk yield. During this phase, the animal should be separated from the rest of the herd because noise and other untoward incidence could affect the milk let down. Sanitation and hygiene should also be observed inside and vicinity area of the milking parlor.



POST-ASSESSMENT FOR MODULE 3

Directions: Read each item carefully and choose the letter of your answer. Write it on your activity notebook.

1. Kidding is the act of giving birth among _____.
 - a. goats
 - b. sheep
 - c. kids
 - d. lambs

2. These are considered as good bedding materials for a newly-kidded doe.
 - a. Legumes and tree barks
 - b. Rice straw and fresh grasses
 - c. Tree barks and banana leaves
 - d. Dried rice straw and banana leaves
3. The following choices characterizes an ideal and comfortable pen for a doe that is about to kid, except:
 - a. Damp stall
 - b. Disinfected
 - c. Thoroughly cleaned
 - d. Well-lighted
4. Which of the following options is not considered during the preparation of materials for the doe prior to kidding?
 - a. Clean cloth
 - b. Sharp knife
 - c. Germicidal soap
 - d. Anti-tetanus toxoid
5. What possible action should be done by a raiser when he/she observes that a doe experiences difficulty in kidding?
 - a. Apply caesarian section
 - b. Send the doe to a clinic
 - c. Do the manual extraction
 - d. Inject Vitamin B complex to stimulate uterus contraction
6. The process of putting ear tag into the ear of a goat.
 - a. Ear cutting
 - b. Ear docking
 - c. Ear notching
 - d. Ear tagging
7. The process of removing testicles among male kids/lambs.
 - a. Castration
 - b. Ear notching
 - c. Ear tagging
 - d. Tail docking
8. Disbudding is best defined as _____.
 - a. removal of hoof.
 - b. removal of the tail.
 - c. removal of horn bud.
 - d. removal of the testes.
9. Which among the tools below is used in docking the tail of a lamb?
 - a. Dehorner
 - b. Ear notcher
 - c. Ear tagger
 - d. Elastrator with rubber band
10. Tail docking is usually done at:
 - a. Day old
 - b. 3 – 5 days old
 - c. 7 – 10 days old
 - d. 10 – 15 days old
11. To identify animals, we need to _____.
 - a. disbud the kid.
 - b. hoof trim the goat
 - c. castrate the animals
 - d. put markings or ear tag.
12. Disbudding is done _____.
 - a. to tame the kid.
 - b. as identification.
 - c. to facilitate record keeping.
 - d. to prevent injury among animals.
13. The following are tools that can be used in hoof trimming, except:
 - a. Chisel
 - c. Knife

24. Which of the following is not included in preparing the doe before milking?
- a. Comb or brush the goat well
 - b. Wash hand well before milking begins
 - c. Excite the doe before the process starts
 - d. Clean the udder using soap and lukewarm water
25. To increase the milk production, doe should be given concentrates containing
-
- | | |
|-----------------|-----------------|
| a. 13% - 16% CP | c. 16% - 20% CP |
| b. 15% - 18% CP | d. 17% - 21% CP |



FOR MODUEL 3 MANAGING DOES/EWES AND THEIR PROGENIES

There are several care and management that should be provided to pregnant does as they near kidding until the time their young will be weaned to live on their own.

Pregnant does, though not needing close attention, still has to be given necessary management, especially before and after kidding. Newly-born kids are given enough attention especially on feeding management. As kids grow, several practices are provided for them to be productive. Lactating does should not be neglected especially when these animals are intended for milk production. Feeding them nutritious feedstuffs and giving them enough care make these animals more productive.

**ANIMAL PRODUCTION NC II
SMALL RUMINANT**

FEEDING SMALL RUMINANTS

Content Standards	Performance Standards
The learner demonstrates understanding on proper pasture management and feeding practices based on the recommended standards set by the Bureau of Animal Industry.	The learner independently practices proper pasture management and feeding practices according to industry standards.

QUARTER 3

TIME ALLOTMENT: _____

MODULE NO. 4 PROVIDING PROPER FEEDING MANAGEMENT



INTRODUCTION

This module will teach you how to feed small ruminants properly, particularly goats and sheep.

Likewise, it will help you understand how to establish and maintain pasture areas for the herd including distinguishing the different pasture grasses, legumes and fodder trees which are essential in feeding management and in the health and nutrition of goats and sheep.



LEARNING COMPETENCIES/OBJECTIVES

After completing this lesson, you should be able to:

1. establish a feeding guide following the animals' nutritional requirements;
2. determine the feeding system for small ruminants;
3. provide forages, concentrates, and feed supplements;
4. make water available to animals;
5. establish and maintain a pasture area for the herd; and
6. search for alternative feed resources.



DIAGNOSTIC/PRE-ASSESSMENT

Direction: Read the questions carefully and write the letter of the correct answer in your activity notebook.

1. This is the best, yet economical method of managing a herd and flock.
 - a. Constructing shed and houses
 - b. Consulting a veterinarian everyday
 - c. Providing the herd and flock with security
 - d. Providing herd and flock with fresh water, grasses and legumes
2. Ideally, how many heads of goats can be fed in a one-hectare well-developed pasture?
 - a. 15 to 25 goats
 - b. 25 to 35 goats
 - c. 35 to 45 goats
 - d. 45 to 55 goats
3. These are chemical compounds included in animal rations but which do not supply nutrients to the animals.
 - a. Concentrates
 - b. Feed Additives
 - c. Mineral Supplements
 - d. Vitamin Supplements
4. This is a by-product of rice milling that can be used as goat feed.
 - a. Corn bran
 - b. Copra meal
 - c. Rice bran
 - d. Soy bean Oil Meal
5. This first milk secreted by the goat after kidding that contains high antibodies.
 - a. Colostrum
 - b. Milk
 - c. Minerals
 - d. Vitamins
6. The following are examples of common grasses for goats EXCEPT ONE.
 - a. Alabang X
 - b. Para grass
 - c. Pinto peanut
 - d. Star grass
7. These microorganisms are present in the root nodules of legumes which enables them to manufacture their own nitrogen requirements.
 - a. Pseudomonas solanacearum
 - b. Rhizobium
 - c. Rhizoctonia solani
 - d. Xanthomonas vesicatoria
8. Ad libitum is a term given in feeding animals means _____.
 - a. feeding once a day
 - b. feeding three times a day
 - c. feeding in gradual manner
 - d. feeds available at all times
9. These forage species with narrow leaves and pointed apex grows in vacant lots and along road-sides and paddy fields.
 - a. Fodder trees
 - b. Grasses
 - c. Herbages
 - d. Legumes

10. Mang Jose is looking for economical yet nutritious fodder tree as supplement to grasses for goat feeds. Which among the tree species would be the best?
 - a. Acacia
 - b. Gmelina
 - c. Ipil-ipil
 - d. Papaya
11. The rate of weight gain per day of goat and sheep is _____.
 - a. 30-40 grams/day
 - b. 40-60 grams/day
 - c. 70-80 grams/day
 - d. 80-90 grams/day
12. These are feeds containing relatively large amount of fiber that provide bulk to fill up the rumen.
 - a. Concentrates
 - b. Feed Additives
 - c. Mineral Supplements
 - d. Roughages
13. These include all grains and many by-products of grains and animals such as rice bran, ground corn, soy bean oil meal, copra meal and bone meal and molasses.
 - a. Concentrates
 - b. Feed Additives
 - c. Mineral Supplements
 - d. Roughages
14. These are organic compounds needed by the animal's body in small amount for maintaining vigor, health, and productivity.
 - a. Concentrates
 - b. Feed additives
 - c. Mineral additives
 - d. Vitamin supplements
15. The following are examples of concentrates EXCEPT
 - a. Copra meal
 - b. Molasses
 - c. Napier
 - d. Rice bran
16. The function of this is to supply NH_2 for the rumen microbes to synthesize microbial protein for the animal
 - a. Cement
 - b. Rice bran
 - c. Salt
 - d. Urea
17. This ingredient improves palatability and source of sodium and chlorine.
 - a. Cement
 - b. Rice bran
 - c. Salt
 - d. Urea
18. It is the process of preservation of the succulent or high quality forage under anaerobic condition or the exclusion of air principally oxygen from the ensiled forages.
 - a. Concentrate Ration
 - b. Rapid Rotational Grazing
 - c. Silage
 - d. Urea-Molasses-Mineral Block
19. What is the quality of the silage if it has acid odor and taste; absence of molds, with green color, pH value of 3.5 – 4.2, and ammonia nitrogen is less than 10% of total nitrogen?
 - a. Fair
 - b. Good
 - c. Poor
 - d. Very Good

20. This feeding technology contains 30% more energy and twice more protein compared to untreated one.
- Rapid Rotational Grazing
 - Silage
 - Urea-Molasses-Mineral Block
 - Urea Treated Rice Straw
21. Pinto peanut, siratro and centrocema are examples of _____.
- grasses
 - legumes
 - shrubs
 - trees
22. The following are advantages of zero grazing EXCEPT ONE
- It facilitates manure handling.
 - It requires high management skills.
 - It maintains uniform growth and quality of grasses.
 - The goats are less exposed to communicable diseases and worm infestation.
23. These are broadleaf species, noted for their high protein content and these have root nodules with microorganisms known as rhizobium, which enable them to manufacture their own nitrogen requirements.
- Forages
 - Grasses
 - Legumes
 - Trees
24. In this system of pasture utilization, the goats are allowed to graze in the pasture area for at least eight hours a day and are only kept inside the house during the unfavorable hours of the day and during bad weather.
- Grazing system
 - Silage making
 - Tethering
 - Zero grazing
25. It is a coarse leafy deep rooted perennial with a typical stool forming habit and its leaves are long and broad and well distributed along the stem.
- Centrosema
 - Guinea grass
 - Napier
 - Para grass

Direction. Distinguish the following forages into pasture grasses or legumes

- _____ 1. Para grass
- _____ 2. Soybean
- _____ 3. Calopo
- _____ 4. Guinea grass
- _____ 5. Star grass
- _____ 6. Napier
- _____ 7. Pinto peanut
- _____ 8. Centrosema
- _____ 9. Alabang X
- _____ 10. Siratro

Lesson 1. FEEDS AND FEEDING



INTRODUCTION

This lesson focuses on the discussion of feeds and feeding small ruminants. Particularly, it will deal on feeding guides, common feed ingredients, feeding habits and feed requirements of small ruminants.



OBJECTIVES

After completing this lesson, you should be able to:

1. define feeds and feeding;
2. show and explain feeding guides;
3. characterize the common feed ingredients for goats and sheep;
4. explain the feeding habits of goats and sheep;
5. enumerate feeding habits of goat and sheep;
6. state practical feeding guides for goats and sheep; and
7. compute for feed requirements for goat and sheep.



PRE-ASSESSMENT

Direction: Read the questions carefully and write the letter of the correct answer in your activity notebook.

- _____1. The rate of weight gain per day of goat and sheep is _____.
a. 30-40 grams/day c. 70-80 grams/day
b. 40-60 grams/day d. 80-90 grams/day
- _____2. These are feeds containing relatively large amount of fiber that provide bulk to fill up the rumen.
a. Concentrates c. Mineral Supplements
b. Feed Additives d. Roughages
- _____3. These include all grains and many by-products of grains and animals such as rice bran, ground corn, soy bean oil meal, copra meal and bone meal and molasses.
a. Concentrates c. Mineral Supplements
b. Feed Additives d. Roughages

- _____4. These are organic compounds needed by the animal's body in small amount for maintaining vigor, health, and productivity.
- | | |
|-------------------|------------------------|
| a. Concentrates | c. Mineral additives |
| b. Feed additives | d. Vitamin supplements |
- _____5. The following are examples of concentrates EXCEPT
- | | |
|---------------|--------------|
| a. Copra meal | c. Napier |
| b. Molasses | d. Rice bran |
- _____6. The following are examples of green roughage EXCEPT
- | | |
|---------------|-----------|
| a. Banana | c. Guinea |
| b. Centrosema | d. Napier |
- _____7. Banana, kakawate, ipil-ipil are examples of _____.
- | | |
|-----------------|----------------|
| a. concentrates | c. roughages |
| b. minerals | d. tree leaves |
- _____8. These are practically all carbohydrates with only three percent (3%) of crude protein.
- | | |
|---------------|-------------|
| a. Copra meal | c. Molasses |
| b. Corn bran | d. Soy bean |
- _____9. It is a product of rice milling that contains an average crude protein of 10-12%.
- | | |
|---------------|--------------|
| a. Corn bran | c. Rice bran |
| b. Copra meal | d. Sorghum |
- _____10. Salt, oyster shell, limestone and wood ash are examples of _____.
- | | |
|-------------------|------------------------|
| a. concentrates | c. mineral supplements |
| b. feed additives | d. vitamin supplements |



KNOW

Feeds and feeding are important factors in raising small ruminants. Proper nutrition is essential for the health of all animals and is the basis of successful production system. The nutrition of the goat is of paramount importance for successful goat production. Goats require proper nutrition. They need six (6) groups of nutrients such as water, vitamins, minerals, fats, carbohydrates and protein to live and survive, to maintain body functions, to produce meat and milk, to grow and to have a healthful pregnancy.

Feeding is one of the largest expenses of any goat operation. For sustainable and profitable production, nutrients must also be provided in a cost effective manner. Goats raised for meat need feeds most of the time and require an optimum balance of many different nutrients in order to achieve maximum profit potential. Because of their unique physiology, meat-goat does not fatten like cattle or sheep. Rates of weight gain are smaller ranging from 40 to 60 grams per day. Therefore, profitable meat-goat production can only be achieved by optimizing the use of forages, grasses, and

strategically using expensive concentrate feeds. These can be achieved by developing a year-round forage program allowing as much grazing as possible throughout the year.

Suggested Feeding Guide for Goats

Age	Feed	Amount per Day
Birth – 3 days	Colostrum	Ad libitum(3 to 5x feeding)
4 days – 2 weeks	Whole milk (Goat milk)	0.5 – 1 L/kid divided into 3x feeding
	Vitamin-mineral	Ad libitum
	Water	Ad libitum
2 weeks – 16 weeks	Whole milk or milk replacer	0.5-1 L/kid divided into 2x feeding
	Grass-legume hay or quality fresh forages	Ad libitum
	Vitamin-mineral mix	Ad libitum
	Water	Ad libitum
	Starter (22% CP) ¹	Increasing amount without causing digestive upset
4 months to kidding	Forages, vitamin-mineral mix	Ad libitum
	Water	Ad libitum
	Concentrates (18-20% CP) ²	Up to 0.5 kg/head
Dry, pregnant, bucks	Forages, vitamin-mineral mix	Ad libitum
	Water	Ad libitum
	Concentrates (16-18% CP) ³	0.2-0.7 kg/head
Lactating	Forages, vitamin-mineral mix	Ad libitum
	Water	Ad libitum
	Concentrates (16-18% CP)	0.3-0.5 kg/L milk produced

¹Whole milk can be goat or cow milk. Milk replacer can be used after 2 weeks.

²Formula I. Ground corn-12, Rice bran-24, Copra meal- 40, Soybean oil meal- 8, Meat and bone meal-10, molasses- 5, and salt- 1kg.

³Formula II. Copra meal-50, Wheat pollard-32, Molasses-15, Bone meal-2, and salt-1kg.

Formula III. Coprameal-40, corn-25, soybean oil meal-15, rice bran-10, molasses-8, bonemeal-1, and salt-1kg.

Classification of Common Feed Ingredients for Goats

There are four types of goat feeds:

1. Roughage. These are feeds containing relatively large amounts of fiber that provide bulk to fill-up the rumen. This group of feeds includes freshly cut grasses and legumes, hay, silages fodder and other green herbage.

2. Concentrates. These are feeds with high digestibility. They are relatively low in fiber and include all grains and many by-products of grains and animals, such as rice bran, ground corn, soybean oil meal, copra meal, bone meal, and molasses.

3. Mineral Supplements. These supplements provide the goat with skeletal support. Salt, oyster shell, limestone and wood ash are examples of mineral supplements.

4. Vitamin Supplement. These are organic compounds needed to maintain vigor, health and productivity, such as Vitamins A, B, and C.

Commonly Used Ingredients for Goat Concentrates

The following are locally available concentrate ingredients for goats:

1. Corn. This is the second commonly used ingredient in formulating concentrate mixture. It contains about 8.9% crude protein and a high amount of energy (Total Digestible Energy) that makes it an ideal feed for fattening.

2. Rice bran. It is a by-product of rice milling that contains an average crude protein of 10-12%. Locally available rice bran is classified as first class (D₁), second class (D₂), and third class (D₃). Like corn, it is also a good source of energy for fattening animals.

3. Sorghum. This is very similar to corn in feed value with crude protein content ranging from 5-9%. It makes, therefore, a very good livestock feed and substitute for corn because its price is lower than corn.

4. Copra meal. It is a by-product of copra production. This is what is left of the coconut meat after the oil has been removed or extracted. It contains an adequate amount of carbohydrates but it is used mainly as protein supplement due to its high crude protein (20-22%).

5. Soybean oil meal. This by-product feed is produced after extracting oil from soybean seeds. It contains about 44% crude protein with very high feeding value.

6. Molasses. These are practically all carbohydrates with only three percent (3%) crude protein. It is a by-product of sugar milling and is sold in dark and semi-liquid (thick) state.

7. Ipil-ipil Leaf Meal. This protein supplement is produced after flesh leaves of ipil-ipil has undergone drying and grinding. Its crude protein content is about 19-21%.

List of Common Philippine Feedstuffs for Goat Production

Feedstuff	Dry matter (%)	Total Digestible Nutrients (TDN) (%)	Crude Protein (CP) (%)	Digestible Crude Protein (DCP) (%)
Concentrates				
Copra meal	89.6	78.5	20.6	14.50
Corn gluten feed	90.1	74.9	20.2	17.10
Corn, grain	88.8	84.2	08.1	07.70
Rice bran (Cono)	88.0	69.1	12.3	08.30
Rice bran (Kiskis)	89.0	46.6	06.2	04.50
Soybean oil meal	88.4	76.0	44.0	41.00
Molasses, cane	76.3	53.6	02.0	00.40
Corn bran	88.0	72.1	10.5	05.60
Green roughages				
Napier grass	27.5	12.6	----	1.60
Para grass	----	15.3	----	0.90
Guinea grass	20.4	16.0	----	1.40
Centrosema	24.2	11.8	----	3.16
Tree Leaf/ Browse Plant				
Banana	94.0	----	9.80	5.70
Kakawate	25.3	----	6.52	----
Ipil-ipil	13.30	----	27.80	22.50
Santan	27.68	----	4.02	----
Caimito	48.32	----	4.98	----
Camachile	34.78	----	9.96	----
Gumamela	19.10	----	4.14	----
Bamboo	42.00	----	7.60	3.54
Acacia	43.40	----	9.10	----
Sources of Ca and P	% Ca	% P		
Steamed bone meal	28.00	14.00		
Dicalcium phosphate	28.00	14.00		
Oyster shell powder	33.00	00.00		

Source: Goat Production and Entrepreneurship Training Manual, 2014

Goat Rations

List of Examples of Formula for 100 kg for Goat Concentrates

Kind of ration	Ingredients	Parts by weight (kg)
General purpose ration for all ages of goats (not for milking does) (not balanced)	First class rice bran	80.0
	Ipil-ipil leaf meal	0.0
	Molasses	0.0
	Salt	20.0
Homemade ration (General purpose) (not balanced)	First class rice bran	50.0
	Ipil-ipil leaf meal	30.0
	Salt	20.0
Milking ration # 1	Shelled corn	50.0
	Copra meal	29.0
	Rice bran	20.0
	Oyster meal	0.5
	Salt	0.5
Milking ration # 2	Ground yellow corn	33.0
	Fine rice bran	33.0
	Copra meal	33.0
	Salt	0.5
	Ground oyster shell	0.5
Milking ration # 3	Rice binlid	28.0
	Rice tiki-tiki	20.0
	Copra meal	30.0
	Molasses	8.0
	Ipil-ipil leaf meal	8.0
	Meat and bone meal	5.0
	Salt	1.0
Milking ration # 4	Tiki-tiki	18.0
	Rice binlid	11.5
	Ground corn	11.5
	Copra meal	21.0
	Ipil-ipil leaf meal	36.0
	Limestone	1.0
	Salt	1.0
Fattening ration	Tiki-tiki	77.0
	Ipil-ipil leaf meal	15.0
	Limestone	6.0
	Salt	2.0

Source: Philippine Recommends for Goat Production, 2011.

Feeding Habits of Goats and Sheep

Goats and sheep differ in their feeding habits. Selection and intake of forage depends not only on the available plant resources but also on the feeding behavior of animals. Knowledge of feeding habits that have nutritional implications is important in improving goat and sheep nutrition. A comparison of the feeding habits of goats and sheep is presented in the table below.

Goats prefer to consume a wide variety of feedstuffs. Goats are more selective and browse more, especially under extensive conditions, than sheep. The selectivity of goats is reduced under intensive management. Goats generally have better body condition compared to sheep under the same grazing conditions, mainly due to their ability to select a nutritious diet.

Goats prefer to eat feed at a height of 20–120 cm. They have the ability to stand on their hind legs for long periods and can even climb trees in order to reach parts of trees they prefer. They also have mobile upper lips and tongue that enable them to consume leaves between thorns.

The preference of goats for consuming browse can be used in the control of invasive species on grasslands. Keeping a mixture of browsers and grazers can maintain rangeland grazing areas rather than allowing them to become overgrown with brush. The mixed species of livestock kept by pastoralists enable simultaneous use of vegetation at different heights.

Additional observations regarding the feeding habits of goats:

- a) Goats will accept a wide variety of feeds, but what is acceptable to one goat is not always acceptable to others.
- b) Goats do not thrive well if kept on one feed for any length of time but prefer to select from many varieties of feeds and vegetation.
- c) Goats generally refuse anything which has been soiled by other animals.
- d) The appetite of the goat for any given concentrates or mixture of concentrates, fed in quantities of over 0.45 to 0.91 kg/day, often decreases within a short period.
- e) Goats have a higher tolerance to bitter taste as well as preference for a wide variety of chemical compounds. These characteristics enable them to consume a wider range of plant species than either sheep or cattle.

Comparison of Feeding Habits Between Goat and Sheep		
Parameter	Goat	Sheep
	Characteristic	
Activity	Can stand on its hind legs to access browse; Can walk longer distances	Walk shorter distances
Feeding pattern	Browser; more selective	Grazer; less selective
Variety in feeds	Preference greater	Preference limited
Salivary secretion rate	Greater	Moderate

Recycling of urea in saliva	Greater	Less
Dry matter intake: For meat production For milk production	3% of body weight 4–6% of body weight	3% of body weight 3% of body weight
Digestive efficiency	With coarse roughage higher	Less efficient
Retention time	Longer	Shorter
Water intake per unit dry matter	Lower	Higher
Water economy	More efficient	Less efficient
Water turnover rate	Lower	Higher
Dehydration: Feces Urine	Less water loss More concentrated	Higher water loss Less concentrated
Fat metabolism	Increased during periods of water shortages	Less evident

Source: Goat Production and Entrepreneurship Training Manual, 2014

Practical Feeding Guides for Goats

Goat nutrition is a requirement for good health and reproduction, high milk yield and fast growth rates.

Based on the technical assumption of the Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development, a 25-doe level needs ½ hectare of well-developed pasture to sustain their feeding.

The following are the feeding guides for goats in the different age group level:

- **Kids.** Young kids which are still nursing may begin to eat non-milk foods at about six weeks of age. They should be fed with high quality feeds to help them grow and get them used to eating food other than their mother's milk. The feeds need to be of high quality because kids can only eat a little. Kids should be fed with the following:
 - young forage with plenty of leaves, few stems
 - tree leaves
 - concentrate (adjust the amount needed according to how much the kids eat)

Moreover, the feeds should be in one partitioned part of the barn so that the kids can easily reach them. This prevents the adult animals from eating the feeds intended for the young animals.
- **Feeding the Weaners.** An offspring is weaned at three months of age. At this time, they can grow very fast with high quality diet. Weaners should be fed with the following:
 - Young forage with plenty of leaves
 - Tree leaves (all they want)

- Concentrate (all they want). They can start with 50 to 70 gm. /day and the amount increases as they grow.
- **Young replacement females.** After the animals have been weaned, select the best female young to use for breeding. They need extra food for growth. Feed them as much grass as they want. These animals need to receive tree leaves or legumes too. Some concentrates or by-products will also help them grow so that they will be large and in good shape for breeding at 9 to 10 months of age.
- **Feeding the dry doe.** A dry-pregnant doe should be adequately fed with quality feeds in order to build reserves and help in lactation. Good quality forage, whether fed cut and carry, or browsed in pasture area will normally be sufficient to support daily nutritional requirement of the dry doe. However, if the pregnant doe looks thin, she could be given about one-half to one kilo of concentrates every day.
- **Feeding the milking doe.** Provide *ad libitum* amount of good quality grasses and legumes. For every liter of milk that a doe gives, feed her with one kilo of concentrates. Fresh water and mineral lick-brick or loose coarse salt should be provided to the doe freely. If the doe does not consume all of her concentrates, reduce the next day's feeding by the amount she did not eat. From time to time increase her feed to see if she needs more than what you are giving her.
- **Feeding the buck.** Your buck for breeding should be fed properly. When it is not being used, *ad libitum* amount of good quality forage and 250-300 gram concentrate mix should be given daily. However, do not overfeed the buck with concentrates for this will make him fat and non-aggressive. But when he is scheduled for service, increase his concentrates to half kilo per day two weeks before and during the breeding period in order to keep him fertile and in good condition.
- **Feeding the young goats.** The goal of feeding yearlings or young goats is to provide them nutrients for maintenance and growth. Adequate space for exercise plus abundant quality grasses and legumes are important for yearlings. Feed them with concentrates that is at least 1% of their bodyweight. Bottle-feeding is recommended in these situations:
 - the amount of milk produced by the doe is not enough for her kids, especially for purebreds and upgraded animals;
 - there are more than two kids from a doe;
 - a doe cannot nurse her own kids due to sickness;
 - a doe dies after delivery;
 - goat's milk is preferred for consumption or for sale.

The baby goat to be bottle-fed should be separated from its mother three to four days after birth. Warm the milk to about 39.4°C- 40.6°C during the first week. Powdered milk may also be used to feed the kids.

Computation of Feed Requirements for Goats

Milk Offered = Animal bodyweight x 10% of body weight

Example:

$$= 10 \text{ kg} \times 0.10$$

$$= 1 \text{ kg of milk per day}$$

Fresh Roughages

*Determine Dry Matter (DM) requirement:

Animal bodyweight x 3% of body weight

$$= 30 \text{ kg} \times 0.03$$

$$= 0.9 \text{ kg DM per day}$$

Convert DM requirement into fresh roughage (20% DM)

DM requirement ÷ DM of fresh roughage

$$= 0.9 \text{ kg DM} \div 0.20$$

$$= 4.5 \text{ kg fresh roughage per day}$$

Roughages + Legumes

Roughage to Legumes Ratio = 75%:25%

Determine DM requirement (follow formula*): DM requirement at 3% of body weight

$$= 30 \text{ kg} \times 0.03 = 0.9 \text{ kg DM per day}$$

$$\text{DM (roughage)} = 0.9 \text{ kg DM} \times 0.75 = 0.675 \text{ kg DM}$$

$$\text{DM (legumes)} = 0.9 \text{ kg DM} \times 0.25 = 0.225 \text{ kg DM}$$

Convert DM requirement into fresh roughage + legumes:

$$\text{Roughage (20\%)} = 0.675 \text{ kg DM} \div 0.2 = 3.375 \text{ kg per day}$$

$$\text{Legumes (25\%)} = 0.225 \text{ kg DM} \div 0.25 = 0.9 \text{ kg per day}$$

Fresh Roughage + 200 g Concentrate

Determine DM Requirement (follow formula*):

$$30 \text{ kg} \times 0.03 = 0.9 \text{ kg DM per day}$$

$$\text{DM from concentrate (87\% DM)} = 200\text{g} \times 0.87 = 0.174 \text{ kg}$$

$$\text{DM from fresh roughage} = 0.9 \text{ kg} - 0.174 \text{ kg} = 0.726 \text{ kg DM}$$

Convert DM requirement into fresh roughage (20% DM):

$$0.726 \text{ kg DM} \div 0.2 = 3.63 \text{ kg fresh roughage per day}$$



Activity 1

Direction. Identify the correct term based on the given definition. Choose your answer from the box below.

- _____ 1. These are feeds with high digestibility and they are relatively low in fiber and include all grains and many by-products of grains and animals.
- _____ 2. It contains about 8.9% crude protein and high amount of energy (Total Digestible Energy) that makes it an ideal feed for fattening.
- _____ 3. This group of feeds includes freshly cut grasses and legumes, hay, silages, fodder, and other green herbage.
- _____ 4. It is a by-product of rice milling that contains an average crude protein of 10-12%.
- _____ 5. It is protein supplement produced after fresh leaves are dried and grounded and its crude protein content is about 19-21%.
- _____ 6. These provide skeletal support; Salt, oyster shell, limestone and wood ash are examples of these.
- _____ 7. These are organic compounds needed by the animal's body in small amount for maintaining vigor, health and productivity.
- _____ 8. This by-product feed is produced after extracting oil from soybean seeds. It contains about 44% crude protein with very high feeding value.
- _____ 9. This is what is left of the coconut meat after the oil has been removed or extracted. It contains an adequate amount of carbohydrates but it is used mainly as protein supplement due to its high crude protein (20-22%).
- _____ 10. These are practically all carbohydrates with only three percent (3%) crude protein. It is a by-product of the sugar industry and is sold in dark and semi-liquid (thick) state.

Concentrates	Ipil-ipil leaf Meal	Roughages
Copra Meal	Vitamin Supplements	Sorghum
Corn	Molasses	Soy Bean Oil Meal
Goat Ration	Rice Bran	Mineral supplements

Activity 2

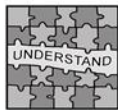
Directions: Differentiate feeding habits of goat and sheep. Write your answer in your activity notebook.

Comparison of Feeding Habits Between Goat and Sheep		
Parameter	Goat	Sheep
	Characteristic	
Activity		
Feeding pattern		
Variety in feeds		
Salivary secretion rate		
Recycling of urea in saliva		
Dry matter intake: For meat production For milk production		
Digestive efficiency		
Retention time		
Water intake per unit dry matter		
Water economy		
Water turnover rate		
Dehydration: Feces Urine		
Fat metabolism		

Activity 3

Direction: Compute the worded problems following the correct solution/s:

1. If the goat weighs 25 kg, how many kilos of milk it can offer per day?
2. How many kilograms of fresh roughages a goat will consume if it weighs 25 kg?



UNDERSTAND

1. Why is feeding small ruminant important?

2. In your own opinion, why is colostrum necessary for a kid whose age ranges from birth to three (3) days old?



TRANSFER

Activity 1

Direction: Collect samples of brands of vitamin, supplements and mineral supplements. Summarize them using the format below

Supplements	Brand/s	Ingredients
Vitamins		
Minerals		

Activity 2

Directions: List down farm/livestock suppliers located in your community town/municipality. Follow the format given below.

Business Name	Lists of available livestock supplies being sold	Address



POST-ASSESSMENT

Direction: Read the questions carefully and write the letter of the correct answer in your activity notebook.

- The rate of weight gain per day of goat and sheep is _____.
 - 30-40 grams/day
 - 40-60 grams/day
 - 70-80 grams/day
 - 80-90 grams/day
- These are feeds containing relatively large amount of fiber that provide bulk to fill up the rumen.
 - Concentrates
 - Feed Additives
 - Mineral Supplements
 - Roughages

3. These include all grains and many by-products of grains and animals such as rice bran, ground corn, soy bean oil meal, copra meal and bone meal and molasses.
 - a. Concentrates
 - b. Feed Additives
 - c. Mineral Supplements
 - d. Roughages
4. These are organic compounds needed by the animal's body in small amount for maintaining vigor, health, and productivity.
 - a. Concentrates
 - b. Feed additives
 - c. Mineral additives
 - d. Vitamin supplements
5. The following are examples of concentrates EXCEPT
 - a. Copra meal
 - b. Molasses
 - c. Napier
 - d. Rice bran
6. The following are examples of green roughage EXCEPT
 - a. Banana
 - b. Centrosema
 - c. Guinea
 - d. Napier
7. Banana, kakawate, ipil-ipil are examples of _____.
 - a. concentrates
 - b. minerals
 - c. roughages
 - d. tree leaves
8. These are practically all carbohydrates with only three percent (3%) of crude protein.
 - a. Copra meal
 - b. Corn bran
 - c. Molasses
 - d. Soy bean
9. It is a product of rice milling that contains an average crude protein of 10-12%.
 - a. Corn bran
 - b. Copra meal
 - c. Rice bran
 - d. Sorghum
10. Salt, oyster shell, limestone and wood ash are examples of _____.
 - a. concentrates
 - b. feed additives
 - c. mineral supplements
 - d. vitamin supplements



Knowledge in feeds and feeding is important for goat and sheep raisers. This is the basis of having healthy herd and flock which will lead to a successful production system.

There are four classifications of goat and sheep feeds namely: roughages, concentrates, mineral supplements and vitamin supplements. The locally available concentrate ingredients for goat and sheep are the following: corn, rice bran, sorghum, copra meal, soybean meal, molasses and ipil-ipil leaf meal.

Goats and sheep differ in their feeding habits on the following parameters: activity, feeding pattern, variety in feeds, salivary secretion rate, recycling of urea in saliva, dry matter intake digestive efficiency, retention time, water intake per unit dry matter, water economy, water turnover, rate dehydration and fat metabolism.

Goat and sheep nutrition is a requirement for good health and reproduction, high milk yield and fast growth rates. Thus, feeding guides for goats and sheep in the different age group level was given emphasis. The computation of feed requirements for goat was likewise included.

Lesson 2. FEEDING TECHNOLOGIES



INTRODUCTION

This lesson focuses on the discussion of different feeding technologies for small ruminants. It also deals with the importance of nutrients specifically minerals. Included also in this lesson is the recommended feed formulation for small ruminants.



OBJECTIVES

After completing this lesson, you should be able to:

1. enumerate and discuss the different feeding technologies for goats and sheep;
2. determine the effect of minerals in the development of the small ruminants; and
3. recommend feed formulation for goat and sheep.



PRE-ASSESSMENT

Direction: Read the questions carefully and write the letter of the correct answer in your activity notebook.

1. This involves dividing the pasture area into paddocks and allowing the animals to graze rotationally in different areas.
 - a. Concentrate Ration
 - b. Rapid Rotational Grazing
 - c. Silage
 - d. Urea-Molasses-Mineral Block
2. Some limitations of Rapid Rotational Grazing are the following EXCEPT
 - a. Large area is required
 - b. Intake of more nutrients
 - c. Lesser anthelmintic residues
 - d. Prevention of more damage to crops and neighboring farm
3. Concentrate ration tends to _____.
 - a. avoid parasitism
 - b. give protein and energy feeds
 - c. provide minerals
 - d. provide vitamins
4. In Urea-Molasses-Mineral Block, the highest percentage in the composition of ingredients is _____.
 - a. molasses and urea
 - c. salt and cement

- b. rice bran and molasses d. urea and cement
5. The following are the important features of Urea-Molasses-Mineral Block EXCEPT.
- Ingredients are expensive
 - Supply essential nutrients
 - Commercially feasible to produce
 - Increase microbial protein synthesis
6. The function of this is to supply NH_2 for the rumen microbes to synthesize microbial protein for the animal.
- Cement
 - Rice bran
 - Salt
 - Urea
7. This ingredient improves palatability and source of sodium and chlorine.
- Cement
 - Rice bran
 - Salt
 - Urea
8. It is the process of preservation of the succulent or high quality forage under anaerobic condition or the exclusion of air principally oxygen from the ensiled forages.
- Concentrate Ration
 - Rapid Rotational Grazing
 - Silage
 - Urea-Molasses-Mineral Block
9. What is the quality of the silage if it has acid odor and taste; absence of molds, with green color, pH value of 3.5 – 4.2, and ammonia nitrogen is less than 10% of total nitrogen.
- Fair
 - Good
 - Poor
 - Very Good
10. This feeding technology contains 30% more energy and twice more protein compared to untreated one.
- Rapid Rotational Grazing
 - Silage
 - Urea-Molasses-Mineral Block
 - Urea Treated Rice Straw



KNOW

Feeding small ruminants requires technologies in order to meet the required nutritional requirements intended for goats and sheep.

In this module, five feeding technologies will be presented for you to understand.

Feeding Technologies

1. Rapid Rotational Grazing (RRG)

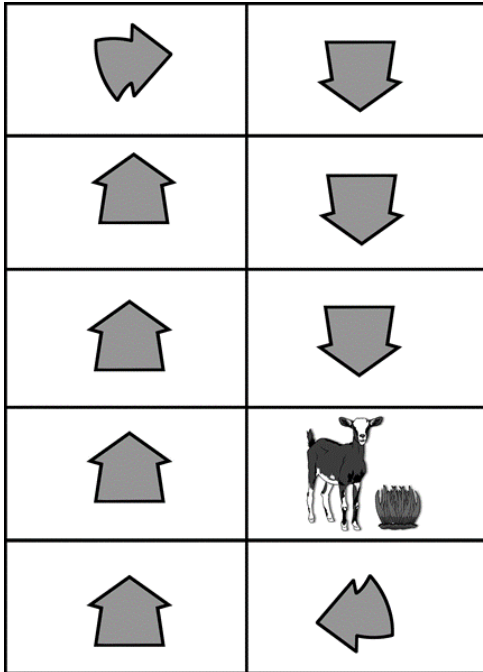
Rotational grazing or tethering involves dividing the pasture area into paddocks and allowing the animals to graze rotationally in different areas. Parasitic infection is minimized because the life cycle of the parasites is broken.

Recommended Practices

The concept of RRG can likewise be applied to tethering one to five goats. In this approach, tethered goats are transferred to 9 – 10 different paddocks in a month. The objective is not just to provide the daily requirement for forage but also to minimize parasitic infection.

A rope, about 5 m long, is tied around the neck of each mature goat in a way that allows it to move easily. All available and possible grazing areas are divided into 9 -10 paddocks. In dividing the pasture into paddocks, it is important to consider the amount of available forage more than the size of the area.

Start tethering the animals in the first paddock; move the pegs around during the day to allow them maximum access to forage. After 3 ½ days, move the animals to the next paddock and do not allow them to go back to the first paddock for 30 days. Continue moving the animals to other paddocks every 3 ½ days until they have returned to the first paddock. As earlier pointed out, this rotational grazing is done to minimize parasitic infestation among the goats and allow uniform grazing of pasture areas.



Requirement for Adoption

The minimum requirements for adoption are:

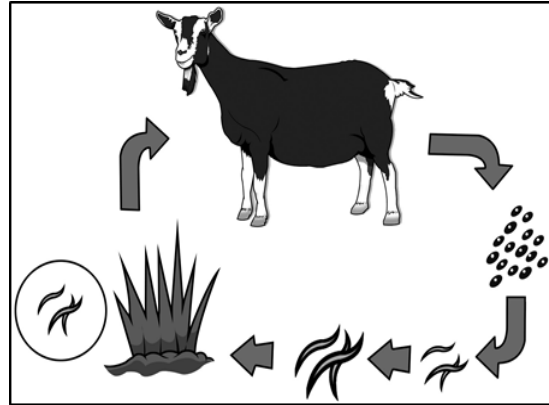
- Sufficient and appropriate space for grazing
- Availability of labor to transfer animals at least twice a day within the paddock and after every 3 ½ days to other paddocks
- Water for the goat
- A 5 m long rope

Benefits and Cost of Adoption

By applying the 3 ½ day-rotational tethering, the following benefits may be realized:

- Minimize exposure of goats to parasite
- Reduced dependence on anthelmintic chemical
- Less anthelmintic residues and resistance

- Decreased cost of parasite control
- Sustained pasture quality because of better utilization and prevention of overgrazing
- More intake of nutrients by the animals
- Heavier animals at market weight
- Ease in animal retrieval by the raiser at the end of the day, or during inclement weather, or when the heat of the sun is intense
- Prevention of damage to crops and neighboring farms



Reservations/Limitations of Use

- Raisers are not particular with the practice, as animals are allowed to graze on their own or tethered on the same spot for convenience of the owner.
- Labor availability must be considered
- Large area is required
- Expensive fencing materials
- This practice can be applied to mature goats only
- There is danger or exposure to thieves, predators (like dogs), and sudden changes of weather.

2. Concentrate Ration

Concentrate feeding is seldom practiced because it increases farm inputs. However, it is important to give high protein and energy feeds during late pregnancy finishing stage. Concentrate improves the condition of the microbes in the rumen and provides the goat with bypass nutrients (nutrients that pass through the rumen without microbial digestion). Therefore, concentrate supplementation will improve the level of productivity.

Ingredients	Parts by wt (kg)	Cost/kg (Php)	Total Cost (Php)
Rice Bran	35	6 (5)	210 (175)
Corn	14	14 (5)	196 (70)
Copra Meal	34	7.50	255
SBOM	5 (7.4)	18 (5.5)	90 (44)
Molasses	10	6	60
Salt	1	20	20
Dicalphos	1	16	16
Total	100	87.5	847 (289)

Source: Goat Production and Entrepreneurship Training Manual, 2014

3. Use of Urea in Goat Diets

Under a confined feeding program, mineral deficiencies usually occur in farms. Salt blocks intended for cattle have been used. Because goats have shorter tongues they can lick smaller amounts of salt. Hence, a loose form of vitamin-mineral supplement is recommended to satisfy the goat requirement from the few grabs. The following is an example of a loose form of vitamin-mineral mix:

- 5 parts salt
- 1 part lime or oyster shell
- ½ part commercial vitamin-mineral mix

Likewise, occurrence of urinary calculi or stones has been traced to low salt-mineral intake and subsequent low water intake. The loose form of supplementation can solve the problem. Addition of iodine to the diet especially in highland areas is recommended.

Goats are efficient in utilizing the non-protein nitrogen in the diet. The capacity of microorganisms to transform nitrogen into microbial protein makes it possible to incorporate a small amount of urea in the ration of goats, primarily to increase utilization of low-quality roughages. Urea as supplement for goats must be used with caution. For a high concentration of ammonia in the blood is toxic and fatal to ruminants. For efficient utilization of urea as non-protein nitrogen source, adequate amount of energy (molasses, corn, etc.) and minerals, particularly sulfur, in case molasses are used, should be made available to the animal. If possible, provide a daily allowance of urea in small amounts throughout the day, instead of just one feeding.

Urea is equivalent to 281% CP (45% N x 6.25).

Safe usage of urea in the diet can be achieved following any of these restrictions:

- 1% of the ration (DM basis), or
- 2-3% of the concentrate mixture (air-dry basis), or
- 25-30% of the total dietary protein (one third of the protein in the ration)

The use of Urea-Molasses-Mineral Block (UMMB) is highly recommended during lean month feeding or when goats are fed with low quality forage materials. The UMMB is a cheap source of mineral supplement in the form of lick-block. Aside from mineral elements, the UMMB provides non-protein nitrogen and energy due to the presence of urea and rice bran, respectively.

The UMMB has the following composition:

Ingredient	Part by Weight (kg)	Cost/kg (Php)	Total Cost (Php)
Rice bran (D ₁)	38	5	190
Molasses	38	7	266
Urea	10	7	70
Cement	10	3	30
Salt	1	20	20
Dicalcium phosphate	3	15	45

Total	100.00	6.31	631
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Source: Goat Production and Entrepreneurship Training Manual, 2014

Important Features of the UMMB

- Increases microbial protein synthesis
- Supplies essential nutrients
- Causes no toxicity
- Easy to handle and transport
- Commercially feasible to produce

Functions of the Ingredients

- Molasses. A source of readily available energy; makes the block palatable to the animal.
- Urea. Supplies NH_3 needed by the rumen microbes to synthesize microbial protein for the animal.
- Cement, calcite powder, Sodium (Na) bentonite. Serve as binder for the block; source of calcium and sodium.
- Rice bran. Provides by-pass protein and fermentable energy; serves as carrier of other ingredients.
- Salt. Improves palatability; source of sodium and chlorine.
- Trace Minerals. These are sources of macro and micro minerals.

Mixing Procedure

1. Place the weighed individual ingredients into the bucket.
2. Mix urea and molasses into the cement mixer until the urea is dissolved.
3. Dissolve cement in a little water and mix with urea-molasses solution through continuous mixing.
4. Add salt, trace minerals, and bone meal one after the other into the solution, and allow mixing for 15 minutes.
5. Add the rice bran gradually until a homogenous mixture is attained. Allow another 10 minutes mixing until the mixture forms a dough-like product.
6. Unload the mixture and put into the molder with the tamper.
7. Allow the product to cure for two weeks before packing and selling.

Feeding the Block

The UMMB can be fed *ad libitum* to goats. Mature goats can lick 50-80 grams per day.

Precautions

- Do not offer the UMMB to animals younger than 6 months old, and to those pregnant animals on their last trimester of pregnancy.
- Drinking water should be available (free choice) when feeding with UMMB.
- Avoid feeding the block along with rain water.

4. Silage

Feeds used by the commercial raiser are based largely on the silage, or sugar cane tops and chopped sugar cane with rice bran and copra meal tapioca, pine apple pulp, local cottonseed meal, wheat pollard, and brewery spent grain.

Plant materials that can be made into silage:

- a. sugar cane tops
- b. grasses
- c. corn
- d. sorghum
- e. farm by-product
- f. mixture of grasses and legumes



Sorghum Plant

Goat Project: Fortunato F. Halili National
Agricultural School

The basic process of silage making or ensiling is the preservation of the succulent or high quality forage under the anaerobic condition or the exclusion of air, principally oxygen, from the ensiled forages. The transformation of the green forage into silage takes place in the silo where the green forage is placed in a compact mass. The plant cells and the aerobic organisms continue to respire, thus, rapidly consuming the oxygen in the entrapped air and in turn giving carbon dioxide. When the oxygen is totally consumed by the bacteria, aerobic activities stop creating oxygen-free atmosphere inside the silo.

Steps in Silage Making

1. Harvest grass just before the flowering stage. Corn and sorghum should be cut at the semi-dough stage.
2. If moisture content of the harvested plant is higher than 70%, reduce moisture by wilting from 60-70% to minimize or reduce nutrient loss through seepage.
3. Chop plant materials into 1-2.5 cm length.
4. Fill up the silo in one continuous operation; press the materials well to form a compact mass. Exclusion of much of oxygen is essential. Rapid filling and packing in the silo is essential for good silage.
5. Add silage conditioner (molasses, by-product concentrate) if the original plant material is of poor quality. Molasses diluted 1:1 with water can be sprinkled over the prepared material before loading at 2-4% by weight.
6. Cover the silage with plastic sheet to protect it from rain, and place some weight on top. The silo must have a roof to prevent entry of rain water.
7. After one month, silage is ready for feeding.
8. Continuous feeding of silage should be followed after opening the silo to avoid excessive spoilage of the exposed materials.

Qualities of Silage

- ✓ Very Good : has acid odor and taste; has no molds; shows green color; has no butyric acid; has a pH value of 3.5-4.2; has ammonia nitrogen less than 10% of total nitrogen.
- ✓ Good : has acid odor and taste; exhibits trace amounts of butyric acid; has a pH value of 4.2-4.5; has ammonia nitrogen equivalent to 10-15% of total nitrogen.
- ✓ Fair : shows presence of butyric acid; shows presence of molds; has a pH value of 4.5-4.8; has ammonia nitrogen equivalent to 15-20% of total nitrogen.
- ✓ Poor : has an amount of butyric acid; is slimy; shows presence of molds; has pH value of 4.8; has ammonia nitrogen equivalent to 20% higher.

5. Urea-Treated Rice Straw

Rice straw can be better utilized by goats when treated with urea. For urea-treated rice straw contains 30% more energy and twice more protein, compared to untreated rice straw (CASREN, 2003). This is prepared by mixing 10 kg dissolved rice straw with a solution 600 g of urea into 10 liters of water. The mixture should then be stored in anaerobic condition for 7 to 14 days. Before feeding, expose the treated straw for one day.



Activity 1

Direction. Select the words in Column B that are associated with the words in Column A. Write the answers in your activity notebook.

Column A	Column B
1. Rapid Rotational Grazing	a. 9-10 paddocks b. 5m rope c. Space for grazing d. Cement
2. Concentrate Ration	a. Rice Bran b. Corn c. Copra Meal d. Ipil-Ipil
3. Urea-Molasses Mineral Block	a. Rice bran (D ₁) b. Molasses c. Vitamin A

	d. Cement
4. Silage	a. Corn b. Grasses c. sugar cane tops d. 5 m long rope
5. Urea-treated Rice Straw	a. Urea b. Rice straw c. Water d. Molasses

Activity 2

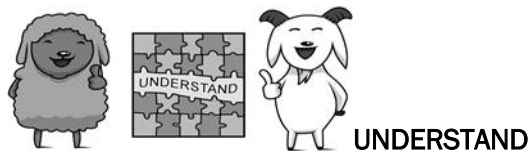
Direction. Arrange the proper mixing procedure of Urea-Molasses Mineral Block using numerical symbol (1 – for the first step; 7 – for the last step).

- _____ Unload the mixture and put into the molder with the tamper.
- _____ Mix urea and molasses into the cement mixer until urea is dissolved.
- _____ Allow the product to cure for two weeks before packing and selling.
- _____ Dissolve cement in a little water and mix with urea-molasses solution with continuous mixing.
- _____ Weigh the individual ingredient into the bucket.
- _____ Add salt, trace minerals and bone meal one after the other into the solution, and allow mixing for 15 minutes.
- _____ Add the rice bran gradually until homogenous mixture is attained. Allow another 10 minutes mixing until the mixture form a dough-like product.

Direction. Arrange the steps in Silage Making using numerical symbol (1 – for the first step; 8 – for the last step).

- _____ After one month, silage is ready for feeding.
- _____ Chop plant materials into 1-2.5 cm length.
- _____ Fill up the silo in one continuous operation, pressing the materials well to form a compact mass. Exclusion of much of oxygen is essential. Rapid filling and packing in the silo is essential for good silage.
- _____ Continuous feeding of silage should be followed after opening of the silo to avoid excessive spoilage of the exposed materials.
- _____ If moisture content of the harvested plant is higher than 70%, reduce moisture by wilting from 60-70% to minimize or reduce nutrient loss through seepage.
- _____ Harvest grass just before the flowering stage. Corn and sorghum should be cut at the semi-dough stage.
- _____ Add silage conditioner (molasses, by-product concentrate) if the original plant material is of poor quality. Molasses diluted 1:1 with water can be sprinkled over the prepared material before loading at 2-4% by weight.

_____ Cover the silage with plastic sheet to protect from rain and place weight on top.
The silo must have a roof to prevent entry of rain water.

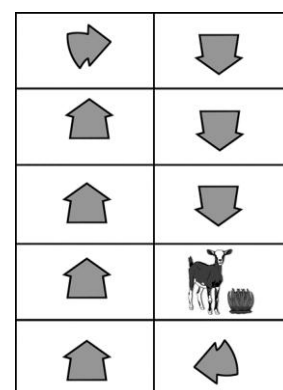


1. If you are a goat raiser, what feeding technologies will you adopt? Why?

2. Discuss the illustration presented adjacent to items 2 and 3. (Rapid Rotational Grazing)

What is your idea about the presented illustration?

3. What is the main purpose of Rapid Rotational Grazing?



You should be able to perform the following activities:

A. Silage making

1. Harvest grass just before the flowering stage. Corn and sorghum should be cut at the semi-dough stage.
2. If moisture content of the harvested plant is higher than 70%, reduce moisture by wilting from 60-70% to minimize or reduce nutrient loss through seepage.

3. Chop plant materials into 1 – 2.5 cm length.
4. Fill up the silo in one continuous operation, pressing the materials well to form a compact mass. Exclusion of much of oxygen is essential. Rapid filling and packing in the silo is essential for good silage.
5. Add silage conditioner (molasses, by-product concentrate) if the original plant material is of poor quality. Molasses diluted 1:1 with water can be sprinkled over the prepared material before loading at 2-4% by weight.
6. Cover the silage with plastic sheet to protect from rain and place weight on top. The silo must have a roof to prevent entry of rain water.
7. After one month, silage is ready for feeding.
8. Continuous feeding of silage should be followed after opening of the silo to avoid excessive spoilage of the exposed materials.

B. UMMB Making

1. Weigh the individual ingredient into the bucket.
2. Mix urea and molasses into the cement mixer until urea is dissolved.
3. Dissolve cement in a little water and mix with urea-molasses solution with continuous mixing.
4. Add salt, trace minerals and bone meal one after the other into the solution, and allow mixing for 15 minutes.
5. Add the rice bran gradually until homogenous mixture is attained. Allow another 10 minutes mixing until the mixture form a dough-like product.
6. Unload the mixture and put into the molder with the tamper.
7. Allow the product to cure for two weeks before packing and selling.

C. Make a Salt Lick For Meeehhhh!

Materials:

Bamboo (with node and internodes)
Cross-cut Saw

Ingredients:

Salt
Molasses

Steps:

1. Choose a bamboo. Make an open portion of the bamboo enough to put ingredients inside it.
2. Make an opening below near the bottom node.
3. Hang the salt lick in the goat shed where goats can lick on it.

***Format and Guidelines in making your Narrative Report about your experiences in doing the activities

Title of the Activity: _____
Venue: _____
Teacher/Instructor: _____

Date: _____
Time: _____

Guide Questions:

1. What are the learning experiences you gained from doing the activity?
2. What are some of the problems you have encountered?
3. How do you cope up with these problems?
4. Do you think that the knowledge you gained will be helpful to you? Why?



POST ASSESSMENT

Direction: Read the questions carefully and write the letter of the correct answer in your activity notebook.

1. This involves dividing the pasture area into paddocks and allowing the animals to graze rotationally in different areas.
 - a. Concentrate Ration
 - b. Rapid Rotational Grazing
 - c. Silage
 - d. Urea-Molasses-Mineral Block
2. Some limitations of Rapid Rotational Grazing are the following EXCEPT
 - a. Large area is required
 - b. Intake of more nutrients
 - c. Lesser anthelmintic residues
 - d. Prevention of more damage to crops and neighboring farm
3. Concentrates ration tends to _____.
 - a. avoid parasitism
 - b. give protein and energy feeds
 - c. provide minerals
 - d. provide vitamins
4. In Urea-Molasses-Mineral Block, the highest percentage in the composition of ingredients is _____.
 - a. molasses and urea
 - b. rice bran and molasses
 - c. salt and cement
 - d. urea and cement
5. The following are the important features of Urea-Molasses-Mineral Block EXCEPT.
 - a. Ingredients are expensive
 - b. Supply essential nutrients
 - c. Commercially feasible to produce
 - d. Increase microbial protein synthesis
6. The function of this is to supply NH_2 for the rumen microbes to synthesize microbial protein for the animal
 - a. Cement
 - b. Rice bran
 - c. Salt
 - d. Urea

7. This ingredient improves palatability and source of sodium and chlorine.
 - a. Cement
 - b. Rice bran
 - c. Salt
 - d. Urea
8. It is the process of preservation of the succulent or high quality forage under anaerobic condition or the exclusion of air principally oxygen from the ensiled forages.
 - a. Concentrate Ration
 - b. Rapid Rotational Grazing
 - c. Silage
 - d. Urea-Molasses-Mineral Block
9. What is the quality of the silage if it has acid odor and taste; absence of molds, with green color, pH value of 3.5 – 4.2, and ammonia nitrogen is less than 10% of total nitrogen.
 - a. Fair
 - b. Good
 - c. Poor
 - d. Very Good
10. This feeding technology contains 30% more energy and twice more protein compared to untreated one.
 - a. Rapid Rotational Grazing
 - b. Silage
 - c. Urea-Molasses-Mineral Block
 - d. Urea Treated Rice Straw



There are five feeding technologies introduced in the lesson that can be followed by small ruminant raisers to meet the nutritional requirements of goat and sheep. These are: rapid rotational grazing, concentrate ration, urea in goat diets, silage and urea-treated rice straw.

Lesson 3. FORAGE AND PASTURE MANAGEMENT



INTRODUCTION

This lesson provides information on forage and pasture management. Basically, this lesson is included because of its importance in small ruminant production. Knowledge of this will help sustain source of feeds for your livestock.



OBJECTIVES

After completing this lesson, you should be able to:

1. enumerate and discuss different forages and pasture species;
2. characterize forages and pasture;
3. bring to the class different forages and pasture species;
4. explain the needs of managing pasture/forage area;
5. discuss pasture/forage area utilization;
6. compare and contrast the three (3) systems of feeding; and
7. establish own pasture/forage as source of feeds for small ruminants.



PRE-ASSESSMENT

Direction: Read the questions carefully and write the letter of the correct answer in your activity notebook.

1. These are narrow leaf species that easily grow on vacant lots and denuded areas where the topsoil is very thin, with mechanism of adaptation to high temperature and high light intensity.
 - a. Forages
 - b. Grasses
 - c. Legumes
 - d. Trees
2. It is a coarse leafy deep-rooted perennial with a typical stool forming habit and its leaves are long and broad and well distributed along the stem.
 - a. Centrosema
 - b. Guinea grass
 - c. Napier
 - d. Para grass
3. It is a creeping perennial plant with stout above the ground runners which root fully at the nodes and grows well under the warm moist conditions thus, it is most suitable for the lower flat lands and any area where poor drainage is a problem.
 - a. Centrosema
 - b. Guinea grass
 - c. Napier
 - d. Para grass

4. It is a robust perennial species reaching the height 2-5 meters when mature and it is spread by short stout underground stem to give stool up to 1 meter across.
 - a. Centrosema
 - b. Guinea grass
 - c. Napier
 - d. Para grass
5. These are broadleaf species, noted for their high protein content and these have root nodules with a microorganisms known as rhizobium, which enable them to manufacture their own nitrogen requirements.
 - a. Forages
 - b. Grasses
 - c. Legumes
 - d. Trees
6. In this system of pasture utilization, the goats are allowed to graze in the pasture area for at least eight hours a day and are only kept inside the house during the unfavorable hours of the day and during bad weather.
 - a. Grazing system
 - b. Silage making
 - c. Tethering
 - d. Zero grazing
7. In this system of pasture utilization, the goats are tied each to a rope about 6 to 10-meter long.
 - a. Grazing system
 - b. Silage making
 - c. Tethering
 - d. Zero grazing
8. In this system of pasture utilization, the forage is cut and chopped in the field each day by a farmer and hauled to the goats and sheep. The house for this system could be designed in such a way that the goats could be classified according to their production of milk, condition, age, etc.
 - a. Grazing system
 - b. Silage making
 - c. Tethering
 - d. Zero grazing
9. Pinto peanut, siratro and centrocema are examples of _____.
 - a. grasses
 - b. legumes
 - c. shrubs
 - d. trees
10. The following are advantages of zero grazing EXCEPT ONE
 - a. It facilitates manure handling.
 - b. It requires high management skills.
 - c. It maintains uniform growth and quality of grasses.
 - d. The goats are less exposed to communicable diseases and worm infestation.



KNOW

Forage and Pasture Management

With the demand of fresh roughages and legumes and with the necessities of these in the different feeding technologies for small ruminants, forage and pasture management is essential task of a goat farmer.

Likewise, it is a fact that successful goat and sheep enterprise lies in the sustainable supply of abundant and high quality forage.

Forage refers to grasses, herbaceous legumes and shrubs/trees legumes that can be used for feeding animals (Cruz, E., 2014).

According to Beltran (2014), the development of forage crop is one way of making affordable improvements to the quantity and quality of feeds available to goats. Forage crop may:

- ✓ improve the total supply of bulk feed available to goats
- ✓ improve the quality (digestibility and protein of feed)
- ✓ compensate for seasonal fluctuations in quality and quantity of feed.

Moreover, growing forage crops is beneficial for it may:

- ✓ reduce soil erosion
- ✓ provide a source of green manure for food crops
- ✓ provide firewood and building materials
- ✓ reduce the labor required to feed goats
- ✓ provide shade

The areas that may be considered for forage production are:

- ✓ around the house
- ✓ along edge of a field, including bunds in a rice field
- ✓ a strip of land in the field area
- ✓ underneath an established annual crop
- ✓ underneath a perennial crop
- ✓ communal grazing areas

The following are the consideration when growing forage species:

- ✓ desired characteristics: annual/perennial; tree, bush, grass, creeping
- ✓ availability of planting material: seed, cutting, splits
- ✓ rainfall
- ✓ temperature
- ✓ soils

Features of Major Types of Forage

Forage Type	Quantity	Digestibility	Protein	Other Uses
Tree legumes	Low	High	High	Firewood Timber Green manure Shade
Herbaceous legumes	Medium	High	High	
Grasses	High	Medium	Low	Thatching Weaving

Source: Goat Production and Entrepreneurship Training Manual, 2014

Common Forage Species and their Characteristics

Scientific Name	Common Name	Seeding Rate (kg/ha)	Tolerance to Drought	Tolerance to Waterlogging	Establishment Method	Nutritive Value
Grasses						
<i>Panicum maximum</i>	Guinea grass	2-6	Good	Poor	Seed	Good
<i>Pennisetum purpureum</i>	Elephant Napier grass	Splits	Good	Poor	Splits	Good
<i>Brachiara mutica</i>	Para grass	2-6	Fair	Very good	Seed/splits	Fair
Herbaceous Legumes						
<i>Centrosema pubescens</i>	Centro	3-5	Fair	Fair	Seed	Very good
<i>Desmanthus virgatus</i>	Desmanthus	1-2	Good	Fair	Seed	Good
<i>Desmodium intortum</i>	Desmodium	1-2	Fair	Good	Seed	Very good
<i>Stylosanthes guianensis</i>	Graham stylo	3-6	Fair	Fair	Seed	Good
Tree Legumes						
<i>Gliricidia sepium</i>	Gliricidia; kakawate	Cutting/seed	Fair	Fair	Cutting/seed	Good
<i>Leucaena leucocephala</i>	Leucaena; ipil-ipil	20-50 seeds/m	Very good	Poor	Seed/seedling	Good
<i>Sesbania grandiflora</i>	Sesbania; katuray	20-50 seeds/m	Good	Good	Seed	Good

Source: Goat Production and Entrepreneurship Training Manual, 2014

A. Common Forage and Pasture Species

1. Grasses. Grasses are narrow leaf species that easily grow on vacant lots and denuded areas where the topsoil is very thin, with mechanism of adaptation to high temperature and high light intensity (Roxas, 2006).

- Guinea grass (*Panicum maximum*)

It is a coarse leafy, deep rooted perennial with a typical stool-forming habit. The leaves are long and broad and well distributed along the stem. It can survive long droughts but shows best performance in a humid environment. It is adaptable to a wide variety of soil but will not tolerate poorly drained soil.



Retrieved from www.tropseeds.com

- Para grass (*Brachiaria mutica*)

It is a creeping perennial plant with stout above the ground runners which root fully at the nodes. Because it grows well under the warm, moist conditions, it is most suitable for the lower flat lands and any area where poor drainage is a problem.



Photo courtesy of Birbira High School,
Camiling, Tarlac

- Napier (*Pennisetum purpureum*)

It is a robust perennial species, reaching a height of 2-5 meters when mature. It is spread by short, stout underground stem that gives stools up to 1 meter across. Its leaves are broad and tapering with a strong midrib; its flower is cylindrical, golden yellow and grows from 10-25cm long. It is advisable that the grazing frequency be adjusted so that the Napier stands are grazed whenever the grasses reach 75-100 cm long. A month of interval would assure production of forage of desired quality.



Photo courtesy of Tarlac College of Agriculture,
Camiling, Tarlac

2. **Legumes.** Legumes are broadleaf species noted for their high protein content. Their root nodules have a microorganism known as rhizobium, which enable them to manufacture their own nitrogen requirements. Legumes dominate pasture in partly shaded areas such as coconut and other fruit tree plantations.

Creeping Legumes

- a. Pinto peanut (*Arachis pinto*)
- b. Centrosema (*Centrosema pubescens*)
- c. Siratro/Purple Bean (*Macroptilium atropurpureum*)
- d. Calopo (*Calopogonium mucunoides*)



Centrosema (*Centrosema pubescens*)



Pinto peanut (*Arachis pintoï*)

Photos courtesy of Birbira High School, Camiling, Tarlac

Tree Legumes



Ipil –Ipil (*Leucaena leucocephala*)



Flemingia (*Flemingia macrophylla*)



Acacia (*Samanea saman*)



Malunggay (*Moringa oleifera*)



Kakawate (*Gliricidia sepium*)



Camachile (*Pithecellobium dulce*)

Photos courtesy of J. Francisco of FFHNAS, Sta. Maria, Bulacan.

B. Pasture/Forage Area Establishment and Management

Managing Pasture and Forage Crops

It is easier and cheaper to establish pasture and forage crops by using seeds than by using vegetative planting materials. Production of pasture and forage seed crops is comparable with other crops in terms of return and economic investment.

- **Preparing the seed beds**
 - Choose areas with well-drained soil of moderate fertility to prevent problems with weeds. Thoroughly prepare seedbeds to kill existing vegetation.
 - Sow seeds in rows, 0.74 – 1.0 m apart. For broadcast sowing, use 3-5 kg pure live seeds (PSL)/ha for small seeds; for large seeds, use 6-10kg PSL/ha. Spray with pre-emergence herbicide.
- **Fertilization**
 - Fertilize grasses with 50kg N/ha. Apply phosphorous and potassium as required. For legumes, fertilize with 30-60kg P₂O₅/ha. Add lime if needed.
- **Control of weeds and pests**
 - Hand weed during the first 60 days after sowing legumes.
 - Control insects and diseases by the judicious use of insecticides, and by crop hygiene.
 - Encourage dense tillering by early mowing or grazing, and by careful use of nitrogen fertilizer to promote the development of reproductive shoots.

C. Pasture/Forage Utilization

- **Grazing system**

As the term implies, the goats are allowed to graze in the pasture area for at least eight hours a day. They are kept inside the house only during the unfavorable hours of the day and during bad weather. This system can be used for both milk and meat production.

Advantages:

- a. Feeding in the pasture is more natural for the goats and will also provide them desirable exercise.
- b. Feeding is not laborious as in zero grazing because the goat themselves are the ones going to the pasture area to look for their feeds.
- c. The forage area is less expensive to prepare because there is no need to provide partitions as in the case of zero grazing system.

Disadvantages:

- a. The goats will be more exposed to internal parasite infestation, especially when they are allowed to graze continuously on contaminated pasture areas.
- b. Since goats do not like rain, they go hungry when there is rain for a day or two unless supplementary grasses are provided.
- c. The space requirement will be larger, approximately $\frac{1}{2}$ hectare for every 6 does and one buck.
- d. If goats are being used for milk, the amount of milk produced is less than by zero grazing goats.
- e. Goats are exposed to dogs and are easily stolen.
- f. Fencing is very expensive.

- **Tethering or staking**

When only one or two goats are being raised, this system can be utilized. Goats are tied to a rope about 6 to 10-meter long. Always make it a point to reduce the discomfort of the animal. Make the collar fit the goat's neck comfortably so that it does not irritate the neck. Tether the goat in such a way that it can roam around the tethering pin without winding itself short up to the pin by the rope itself. Likewise, do not tether it



Photo courtesy of RDC Farm,
Angat, Bulacan



Photo courtesy of P. Francisco of Sta.
Maria, Bulacan

within the reach of obstructing trees or bushes.

- **Zero Grazing (Cut and Carry)**

The forage is cut and chopped in the field each day by a farmer and hauled to the goats. The house for this system could be designed in such a way that the goats could be classified according to their production of milk, condition, age, etc. This is especially true when you already have a quite large herd of animals.

Advantages of zero grazing:

- a. It facilitates manure handling.
- b. It maintains uniform growth and quality.
- c. The goats/sheep do not require high management skills.
- d. The goats are less exposed to communicable diseases and worm infestation for they can conserve their energy due to their limited movements.
- e. The animals are generally heavier and produce more milk for they can conserve their energy due to their limited movements.
- f. The land space requirement is minimal, estimated to be one-fourth hectare (1/4) of improved pasture for six does and one buck. But with good varieties of forages, which are well-managed, the number could reach fifteen does and one buck.
- g. Close attention can be given to animals because they can be easily observed in pens.



Photo courtesy of RDC Farm,
Angat, Bulacan



1. List down available common feed ingredients available in your community.

2. Fodder trees are alternative feeds for goats. What are the economic values of these to the goat raisers?

3. List down available pasture grasses, legume crops, fodder trees and herbages in your community.



Activity 1

Research Activity

- a. Download an article in an on-line Agricultural Magazine
- b. Research and Read Agriculture Research Journal about Goat and Sheep Production.
 - ex. The Effects of Confined Feeding to Goats
- c. Reflect on what learning you have gained from reading the article.

Guide Questions:

 1. Who is the author of the article?
 2. What is the article all about?
 3. What are the management practices and feeding programs being followed by the goat or sheep raiser as stated in the article?
 4. Did the practices followed by the farmers help in the success of the business venture?
- d. Submit your papers to your teacher on the date he/she prescribed.

Activity 2

Direction: Observe a goat that is confined and a goat in a free range system. As much as possible, take photos/pictures for this activity. Describe how they differ in their physical characteristics.

DESCRIPTION OF GOATS (Physical Appearance)	
Pasture	Confined
1.	
2.	
3.	
4.	



TRANSFER

Activity 1

Directions: Collect and bring to the class 5 planting materials (cuttings and seedlings) of each classification. Use the table below for reporting in front of your class.

Fodder/Shrub Trees	Grasses	Legumes

Use the rubric as your guide in doing the activity.

CRITERIA	4	3	2	1	POINTS
Participation	Student volunteered Several times during class	Student volunteered a few times during class	Student participated only when called on	Student refused to participate	
Remains on task	Student was very focused and remained on task	Student was somewhat focused and was mostly on task	Student needed a few reminders to get back on task	Student needed several reminders or redirection to get back on task	
Respects personal space of classmates	Student always respected personal space by keeping hands and feet to self	Student usually respected personal space by keeping hands and feet to self	Student needed a few reminders to respect personal space	Student needed several reminders or teacher intervention	
Uses materials properly	Student always used materials appropriately	Student usually used materials appropriately	Student needed a few reminders to use materials appropriately	Student needed several reminders or had materials removed	
Cleans area before leaving	Student always cleaned up and kept area neat.	Student usually cleaned up and kept area neat	Student needed a few reminders to clean up.	Student needed several reminders or teacher intervention	
Respectful of others	Student was always respectful of others	Student was usually respectful of others	Student needed a few reminders to be respectful	Student needed several reminders or was very disrespectful	
TOTAL					

Activity 2. Forage Gardening

Given the importance of pasture grasses, legume crops, fodder trees and the knowledge and skills in planting, plant these samples in the school yard to maintain grassland and feed sources for herd and flock. Prepare forage garden in an area available in your school.

Instructions:

1. The teacher will divide the class into five groups.
2. Each group will be assigned a land area to be planted with forages and legumes.
3. Students will select the forages to be planted.

Activity 3. Look! Smile! Click! Photos....

Direction: Take photos of different forages, legumes, field crops, fodder trees and shrub species for small ruminants. Have these photos compiled in a portfolio type using recycled materials. Submit your output to your teacher on the date he/she will be requiring you.

Activity 4. Forages in Slides (PowerPoint Presentation Making)

Directions: The students should use PowerPoint Presentation in presenting the different forages and/or if possible bring the actual specimens of the forages.



POST-ASSESSMENT

Directions: Read the questions carefully and write the letter of the correct answer in your activity notebook.

- _____ 1. These are species with narrow leaves that easily grow on vacant lots and denuded areas where the topsoil is very thin, with mechanism of adaptation to high temperature and high light intensity.
- | | |
|------------|------------|
| a. Forages | c. Legumes |
| b. Grasses | d. Trees |
- _____ 2. It is a coarse leafy deep rooted perennial plant with a typical stool-forming habit and its leaves are long, broad and well distributed along the stem.
- | | |
|-----------------|---------------|
| c. Centrosema | c. Napier |
| d. Guinea grass | d. Para grass |

- ____ 3. It is a creeping perennial plant with stout above the ground runners which root fully at the nodes and grows well under the warm moist conditions thus most suitable for the lower flat lands and any area where poor drainage is a problem.
- a. Centrosema
 - b. Guinea grass
 - c. Napier
 - d. Para grass
- ____ 4. It is a robust perennial species reaching a height 2-5 meters when mature and is spread by short stout underground stem to give stool up to 1 meter across.
- a. Centrosema
 - b. Guinea grass
 - c. Napier
 - d. Para grass
- ____ 5. These are species with broad leaves noted for their high protein content and have root nodules with microorganisms known as rhizobium, which enable them to manufacture their own nitrogen requirements.
- a. Forages
 - b. Grasses
 - c. Legumes
 - d. Trees
- ____ 6. The goats are allowed to graze in the pasture area for at least eight hours a day and are only kept inside the house during the unfavorable hours of the day and during bad weather.
- a. Grazing system
 - b. Silage making
 - c. Tethering
 - d. Zero grazing
- ____ 7. The goats are tied each to a rope about 6 to 10-meter long.
- a. Grazing system
 - b. Silage making
 - c. Tethering
 - d. Zero grazing
- ____ 8. The forage is cut and chopped in the field each day by a farmer and hauled to the goats and sheep. The house for this system could be designed in such a way that the goats could be classified according to their production of milk, condition, age, etc.
- a. Grazing system
 - b. Silage making
 - c. Tethering
 - d. Zero grazing
- ____ 9. Pinto peanut, siratro and centrocema are examples of _____.
- a. grasses
 - b. legumes
 - c. shrubs
 - d. trees
- ____ 10. The following are advantages of zero grazing EXCEPT ONE
- a. It facilitates manure handling.
 - b. It requires high management skills.
 - c. It maintains uniform growth and quality of grasses.
 - d. The goats are less exposed to communicable diseases and worm infestation.



In order to sustain the feed requirements, forage and pasture management are very essential and necessary tasks of small ruminant raisers. Management of these is a way of improving quality and quantity of feeds available for goats and sheep.

The major types of forage are tree legumes, herbaceous legumes and grasses. Tree legumes include gliricidia, leucaena and sesbania. Herbaceous legumes include centro, desmanthus, desmodium and graham stylo. Grasses include guinea grass, napier grass and paragrass.

Managing pasture and forage crops include preparing the seedbed, fertilization, and controlling of weeds and pests.

Grazing system, tethering or staking and zero-grazing are examples of forage and pasture utilization.



POST ASSESSMENT MODULE 4 PROVIDING PROPER FEEDING MANAGEMENT

Direction: Read the questions carefully and write the letter of the correct answer in your activity notebook.

- ____ 1. This is the best, yet economical method of managing a herd and flock.
 - a. Constructing shed and houses
 - b. Consulting a veterinarian everyday
 - c. Providing the herd and flock with security
 - d. Providing herd and flock with fresh water, grasses and legumes
- ____ 2. Ideally, how many heads of goats can be fed in a one-hectare well-developed pasture?
 - a. 15 to 25 goats
 - b. 25 to 35 goats
 - c. 35 to 45 goats
 - d. 45 to 55 goats
- ____ 3. These are chemical compounds included in animal rations but do not supply nutrients to the animals.
 - a. Concentrates
 - b. Feed Additives
 - c. Mineral Supplements
 - d. Vitamin Supplements
- ____ 4. This is a by-product of rice milling that can be used as goat feed.
 - a. Corn bran
 - b. Copra meal
 - c. Rice bran
 - d. Soy bean Oil Meal

- _____ 5. This first milk secreted by the goat after kidding contains high antibodies.
- | | |
|--------------|-------------|
| a. Colostrum | c. Minerals |
| b. Milk | d. Vitamins |
- _____ 6. The following are examples of common grasses for goats EXCEPT ONE.
- | | |
|---------------|-----------------|
| a. Alabang X | c. Pinto peanut |
| b. Para grass | d. Star grass |
- _____ 7. These microorganisms are present in the root nodules of legumes which enable them to manufacture their own nitrogen requirements.
- | | |
|-----------------------------|----------------------------|
| a. Pseudomonas solanacearum | c. Rhizoctonia solani |
| b. Rhizobium | d. Xanthomonas vesicatoria |
- _____ 8. Ad libitum, a term given in feeding animals means _____
- | | |
|------------------------------|-------------------------------------|
| a. feeding once a day | c. feeding in gradual manner |
| b. feeding three times a day | d. feeds are available at all times |
- _____ 9. These forage species with narrow leaves and pointed apex grow in vacant lots, along road-sides and paddy fields.
- | | |
|-----------------|-------------|
| a. Fodder trees | c. Herbages |
| b. Grasses | d. Legumes |
- _____ 10. Mang Jose is looking for economical yet nutritious fodder tree as supplement to grasses for goat feed. Which among the tree species would be best?
- | | |
|------------|--------------|
| a. Acacia | c. Ipil-ipil |
| b. Gmelina | d. Papaya |
- _____ 11. The rate of weight gain per day for goat and sheep is _____.
- | | |
|--------------------|--------------------|
| a. 30-40 grams/day | c. 70-80 grams/day |
| b. 40-60 grams/day | d. 80-90 grams/day |
- _____ 12. These are feeds containing relatively large amount of fibers that provide bulk to fill up the rumen.
- | | |
|-------------------|------------------------|
| a. Concentrates | c. Mineral Supplements |
| b. Feed Additives | d. Roughages |
- _____ 13. These include all grains and many by-products of grains and animals such as rice bran, ground corn, soy bean oil meal, copra meal and bone meal and molasses.
- | | |
|-------------------|------------------------|
| a. Concentrates | c. Mineral Supplements |
| b. Feed Additives | d. Roughages |
- _____ 14. These are organic compounds needed by the animal's body in small amount for maintaining vigor, health, and productivity.
- | | |
|-------------------|------------------------|
| a. Concentrates | c. Mineral additives |
| b. Feed additives | d. Vitamin supplements |
- _____ 15. The following are examples of concentrates EXCEPT
- | | |
|---------------|--------------|
| a. Copra meal | c. Napier |
| b. Molasses | d. Rice bran |

- _____16. The function of this material is to supply NH_2 for the rumen microbes to synthesize microbial protein for the animal
- a. Cement
 - b. Rice bran
 - c. Salt
 - d. Urea
- _____17. This ingredient improves palatability and serves as source of sodium and chlorine.
- a. Cement
 - b. Rice bran
 - c. Salt
 - d. Urea
- _____18. It is the process of preservation of the succulent or high quality forage under anaerobic condition or the exclusion of air principally oxygen from the ensiled forages.
- a. Concentrate Ration
 - b. Rapid Rotational Grazing
 - c. Silage
 - d. Urea-Molasses-Mineral Block
- _____19. What is the quality of the silage if it has acid odor and taste; absence of molds, with green color, pH value of 3.5 – 4.2, and ammonia nitrogen is less than 10% of total nitrogen.
- a. Fair
 - b. Good
 - c. Poor
 - d. Very Good
- _____20. This feeding technology contains 30% more energy and twice more protein compared to untreated one.
- a. Rapid Rotational Grazing
 - b. Silage
 - c. Urea-Molasses-Mineral Block
 - d. Urea Treated Rice Straw
- _____21. Pinto peanut, siratro and centrocema are examples of _____.
- a. grasses
 - b. legumes
 - c. shrubs
 - d. trees
- _____22. The following are advantages of zero grazing EXCEPT ONE
- a. It facilitates manure handling.
 - b. It requires high management skills.
 - c. It maintains uniform growth and quality of grasses.
 - d. The goats are less exposed to communicable diseases and worm infestation.
- _____23. These are species with broad leaves noted for their high protein content and have root nodules with microorganisms known as rhizobium which enable them to manufacture their own nitrogen requirements.
- a. Forages
 - b. Grasses
 - c. Legumes
 - d. Trees
- _____24. The goats are allowed to graze in the pasture area for at least eight hours a day and are only kept inside the house during the unfavorable hours of the day and during bad weather.
- a. Grazing system
 - b. Silage making
 - c. Tethering
 - d. Zero grazing
- _____25. It is a coarse leafy deep-rooted perennial plant with a typical stool forming habit. Its leaves are long, broad and well distributed along the stem.

- a. Centrosema
- b. Guinea grass

- c. Napier
- d. Para grass

Direction: Identify the following forages whether pasture grass or legume.

- | | |
|-----------------------|-----------------------|
| _____ 1. Para grass | _____ 6. Napier grass |
| _____ 2. Soybean | _____ 7. Pinto peanut |
| _____ 3. Calopo | _____ 8. Centrosema |
| _____ 4. Guinea grass | _____ 9. Alabang X |
| _____ 5. Star grass | _____ 10. Siratro |



FOR MODULE 4 PROVIDING PROPER FEEDING MANAGEMENT

Feeds and feeding are essential management practices in a goat and sheep raising project. Primarily, feeds are essential in the growth and development of goats and sheep because of their nutrients. There are lots of available feed sources in the community that can be consumed by our goats and sheep. The different systems of feeding goats and sheep may be applied, depending on the various factors such as number of heads, size and area of the land, and others.

**ANIMAL PRODUCTION NC II
SMALL RUMINANT**

Content standard	Performance standard
The learner demonstrates understanding on the various diseases and parasites that attack goats and sheep.	The learner independently identifies and applies preventive measures with respect to the different diseases and parasites that attack goats and sheep.

QUARTER 4

TIME ALLOTMENT: _____

MODULE NO. 5 IMPLEMENTING HERD HEALTH PROGRAM



INTRODUCTION

This module covers the knowledge, skills and attitudes to help the learners understand the correct practices regarding herd health programs and their strict implementation.



OBJECTIVES

After completing this lesson, you should be able to:

1. identify the different diseases and parasites attacking the goats;
2. apply preventive measures for the different diseases and parasites;
3. follow the medication and vaccination program designed by the Bureau of Animal Industry and/or as prescribed by veterinarians;
4. appreciate the importance of keeping the animals healthy;
5. properly dispose dead animals and manure; and
6. treat sick animals.



PRE-ASSESSMENT

Direction: Read the questions carefully and write the letter of the correct answer in your activity notebook.

1. This is the term for any departure from normal state of health that may bring abnormal condition of any or all tissues of the body.
 - a. Bacteria
 - b. Disease
 - c. Health
 - d. Microorganism

2. This is a classification of disease wherein it is readily communicable to susceptible individuals.
 - a. Acute
 - b. Contagious
 - c. Non-contagious
 - d. Peracute
3. The following are signs of unhealthy goats and sheep EXCEPT _____.
 - a. shiny skins
 - b. runny eyes
 - c. lack of appetite
 - d. pale mucous around eyes and in mouth
4. A professional that gives service when it comes to animal health.
 - a. Dermatologist
 - b. Ophthalmologist
 - c. Physician
 - d. Veterinarian
5. The normal pulse rate of an adult goat ranges from _____.
 - a. 60-70 beats/minute
 - b. 70-80 beats/minute
 - c. 90-100 beats/minute
 - d. 100-110 beats/minute
6. Why is herd health management important?
 - a. It recognizes diseases
 - b. It keeps the herd healthy
 - c. It prioritizes treatment of sick animals
 - d. It minimizes loss due to disease and parasites
7. Under what physical symptoms do coughing and difficulty in breathing associated?
 - a. Attitude
 - b. Appetite
 - c. Respiratory signs
 - d. Reproductive organ
8. This is caused by direct infection by ingestion of infective stage (oocyst) that thrives in moist, damp and unsanitary areas.
 - a. Coccidiosis
 - b. Liverfluke
 - c. Pneumonia
 - d. Tapeworm
9. Parasitic gastroenteritis, parasitic pneumonia, tapeworm and liver fluke are examples of _____.
 - a. external parasites
 - b. infectious diseases
 - c. internal parasites
 - d. metabolic diseases
10. The symptoms of this disease are signs of colic such as uneasiness, difficult breathing, bloating and rumen movements.
 - a. Anemia
 - b. Bloat
 - c. Milk fever
 - d. Urinary calculi
11. To prevent the goat from urinary calculi, what should be done?
 - a. Feed straw or fibrous diets
 - b. Give Commercial anti bloat
 - c. Puncture the rumen with large needle
 - d. Give prophylactic Vitamin A supplement
12. Constant scratching and rubbing of skin is a sign of _____.
 - a. Anthrax
 - b. Lice infestation
 - c. Tetanus
 - d. Urinary calculi

13. Because of these external parasites, the goat or sheep may terminate in death due to systemic toxemia, gangrene or septic absorption.
- Bow flies
 - Lice
 - Mites
 - Ticks
14. Removing and disposing manure and garbage will prevent _____
- foot rot
 - flies and maggot build-up
 - spreading of disease
 - damp and wet condition
15. What should be done to animals where there is an outbreak of disease?
- Keep astray/free
 - Kill all animals
 - Quarantine
 - Vaccinate
16. Regular grooming of animals is an opportunity to the following EXCEPT ONE.
- Smell goaty odor
 - Remove dirt and unnecessary hairs
 - Check the teeth and gums abnormalities
 - Examine closely the condition of the animals
17. These are parasites found on the external surface of the animal body such as skin and hairs.
- Caterpillars
 - Ectoparasites
 - Endoparasites
 - Worms
18. These are parasites found in the internal parts of the animal body
- Caterpillars
 - Ectoparasites
 - Endoparasites
 - Worms
19. The following are sources of safe drinking water for the animals EXCEPT ONE.
- Sanitary wells
 - Flowing water
 - Sanitary stream
 - Stagnant ponds and pools
20. Among the following examples, what is the most reliable material as disinfectant?
- cold water
 - lukewarm water
 - hot water
 - tap water
21. The following are the properties of disinfectant EXCEPT ONE.
- High toxicity to animal
 - Broad antimicrobial activity
 - High stability and permeability
 - Readily available at reasonable cost
22. How often should be the collection of animal waste/manure?
- Once a week
 - Once a month
 - Once a year
 - Twice a year
23. Rapid Rotational Grazing is recommended in order to minimize parasitism among goats. This explains the importance of _____.
- Quarantine program
 - Practicing sanitation
 - Parasite control program
 - Provision of adequate housing

24. If the goat's waste is intended as manure for crops, what should be done?
- Soak it in water
 - Allow it to decompose solid
 - Ferment it for two weeks
 - Let it dry until it becomes solid
25. When the area is not possible for scrubbing, what should be done to disinfect it?
- Use pail to wet the area
 - Use sprinkler to rinse it
 - Use high pressured water
 - Use water hose to rinse the area

Directions: Identify the term being described in each statement by writing the answer on the space provided before each item. Choose the answer in the box below. (1 point each)

- _____ 1. The state of complete physical well-being and the absence of disease or infirmity.
- _____ 2. The field relating to leadership management of health for the animals.
- _____ 3. This is the hygienic means of promoting health.
- _____ 4. This is the process of giving an anthelmintic drug to an animal to get rid of it of intestinal parasite, such as roundworm or tapeworm.
- _____ 5. A disease characterized by infertility abortion.

Nutrition	Nutrients	Health Management
Health	Sanitation	Brucellosis

B. Enumerate five common diseases of goats and give symptoms of each disease.

Disease	Symptoms

Lesson 1. HEALTH MANAGEMENT



INTRODUCTION

This lesson includes the importance of keeping the herd healthy. It focuses on the discussion of parasites and diseases prevention and classification of diseases of small ruminants.



OBJECTIVES

After completing this lesson, you should be able to:

1. define health, nutrition and management;
2. discuss the program of diseases and parasites prevention;
3. define a disease; and
4. classify the different diseases of small ruminants.



PRE-ASSESSMENT

Direction: Read the questions carefully and write the letter of the correct answer in your activity notebook.

- _____ 1. This is the term for any departure from normal state of health that may bring abnormal condition of any or all tissues of the body.
- | | |
|-------------|------------------|
| a. Bacteria | c. Health |
| b. Disease | d. Microorganism |
- _____ 2. This is a classification of diseases wherein it is readily communicable to susceptible individuals.
- | | |
|---------------|-------------------|
| a. Acute | c. Non-contagious |
| b. Contagious | d. Peracute |
- _____ 3. The following are signs of unhealthy goats and sheep EXCEPT _____.
- | |
|---|
| a. shiny skins |
| b. runny eyes |
| c. lack of appetite |
| d. pale mucous around eyes and in mouth |
- _____ 4. A professional that gives service when it comes to animal health.
- | | |
|------------------|--------------|
| a. Dermatologist | c. Physician |
|------------------|--------------|

- 

may need professional help to prevent deterioration in the condition of the animals. For the serious ailments, this can be prevented or minimized if timely preventive health care is adopted.

A Program of Disease and Parasite Prevention

The following steps are important for you to ensure a disease-free and parasite-free herd:

1. Bring only healthy animals into the herd. Many serious diseases can be detected through a test for the diseases. A veterinarian may prevent serious losses if he/she is asked to examine the animals before they join the herd.
2. Keep the area dry and free of stagnant water. Paved lots aid in keeping animals out of the mud and filth.
3. Isolate all animals that are known to have a contagious disease. Animals that have been purchased or acquired later than the herd should be isolated until they are certified to be free from diseases.
4. Have the breeding herd tested at least once a year for brucellosis and other diseases for which tests have been developed.
5. Vaccinate the animals for any disease prevalent in the community if such vaccines exist.
6. Disinfect housing and equipment regularly.
7. Treat open wounds and navels of newly-born animals with reliable disinfectants.
8. Provide plenty of exercise for the breeding herd.
9. Spray or dust animals against external parasites such as flies and mites. Eliminate manure piles and other filth accumulations where flies breed.
10. If animals give birth in a place other than clean pastures, be sure that the area is well bedded and disinfected.
11. Avoid cold floors and drafty housing quarters for young animals delivered during the cold weather.

Disease

Disease is defined as any departure from the normal state of health. Anything that they may bring about an abnormal condition of any or all tissues of the body is a disease-producing agent.

Classification of Diseases

A. According to Cause

1. Bacterial disease – caused by bacteria.
2. Viral disease – caused by virus.
3. Protozoan disease – caused by protozoa.
4. Parasite – caused by parasites.

B. According to infectiousness

1. Infectious – caused by the entrance of infectious agents and which may spread the disease.
2. Noninfectious – those induced by poor nutrition.

C. According to Transmissibility

1. Contagious – diseases readily communicable to susceptible individuals.
2. Non-contagious – those that are not readily transmitted to others.

D. According to Duration

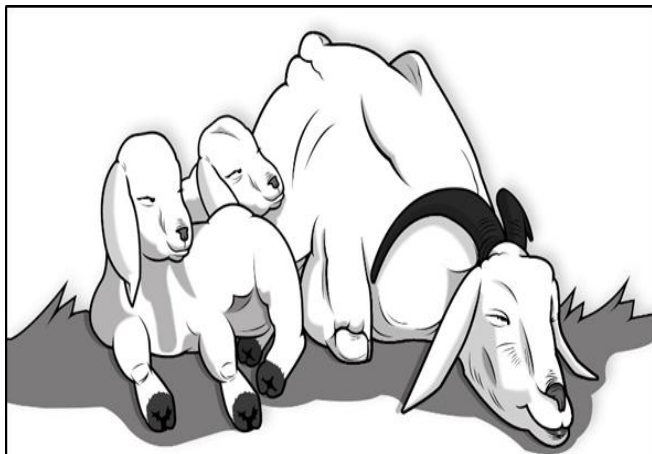
1. Peracute – the brief duration of a disease condition characterized by death within a very short period.
2. Acute – a disease with violent symptoms terminating either in death or recovery after a brief period.
3. Subacute – disease that runs for a longer period, like tuberculosis.

E. According to Occurrence

1. Sporadic – occurrence of an epidemic in which the disease is not widespread but is found only in a few isolated places.
2. Endemic – occurrence of an epidemic in which the disease is spread throughout a district or locality.
3. Epizootic – occurrence of a widespread epidemic disease.

Signs of poor health in your goats/sheep:

- Isolates itself from the group
- Lacks appetite
- Decline milk production (for milking does)
- Shows dehydration
- Manifests above or below normal temperature
- Has pale mucous around eyes and in mouth
- Has runny eyes
- Limp when walking
- Shows an abnormal general posture and manner of walking
- Hair falls out or has rough appearance
- External changes in the different parts of the body
- Is emaciated (in advanced cases)



An example of lactating doe suffering from Anemia

Normal pulse rate, respiration rate, and body temperature of sheep and goat

Animal	Pulse rate (beats/minute)	Respiration rate (beats/minute)	Temperature (°C)
Goat – adult	70 – 80	12 – 16	38.5 – 40.0
Kid – 1 month to 6 months	100 – 120	12 – 20	38.5 – 41.0
Sheep – adult	70 – 80	12 – 16	38.5 – 40.0
Lamb – 1 month to 6 months	95 – 115	16 – 18	38.5 – 40.5



Activity 1

Direction. Write **TRUE** if the statement conforms to disease and parasite prevention otherwise **FALSE** if it does not.

- _____ 1. Always provide exercise for the animals.
- _____ 2. Vaccinate prevalent diseases in the community.
- _____ 3. Contagious disease should be given attention.
- _____ 4. Disease-infected herd has no effect on the production.
- _____ 4. Be a keen observer at all times especially to the herds.
- _____ 6. A veterinarian's advice is important in herd health management.
- _____ 7. The kidding or lambing area must be disinfected and bedded properly.
- _____ 8. Cold floors are essential for young animals especially during cold season.
- _____ 9. Newly purchased animals should be mixed with the herd at a later time after buying.
- _____ 10. The house of the goats and sheep should be clean and free from mud and wilt.

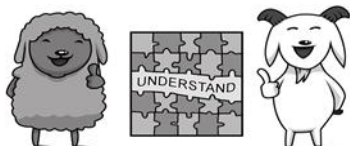
Activity 2

Direction. Identify the definition in Column A with its correct terminology in Column B. Write only the correct letter in your activity notebook.

Column A	Column B
_____ 1. The duration of a disease condition characterized by death within a very short period.	a. Acute
_____ 2. An abnormal condition manifested by violent symptoms terminating either in death or recovery after a brief period.	b. Peracute
_____ 3. An abnormal condition of the body in which the disease runs for a longer period like tuberculosis.	c. Subacute

Direction. Identify the definition in Column A with its correct terminology in Column B. Write only the correct letter in your activity notebook.

Column A	Column B
<p>_____ 1. This is occurrence of an epidemic in which the disease is not widespread but is found only in a few isolated places.</p> <p>_____ 2. This is occurrence of an epidemic in which the disease is spread throughout a district or locality.</p> <p>_____ 3. This is occurrence of an epidemic in which the disease is widespread because it spreads fast.</p>	<p>a. Endemic</p> <p>b. Epizootic</p> <p>c. Sporadic</p>



Activity 1

1. Why is setting of standards in herd health management important to small ruminant production?

2. What are the importance of having knowledge in vital signs of goat and sheep?



Activity 1. Ready... CLICK... Go!

Directions: Capture photos of a healthy and sickly goats and sheep. Compile these in a portfolio. Differentiate the goats and sheep by characterizing them in their physical appearances.

Activity 2. Download Meeh Now!

Directions: Download articles about the importance of Herd Health Management. Always remember to cite the source/s of the information.



POST ASSESSMENT

Direction: Read the questions carefully and write the letter of the correct answer in your activity notebook.

- _____ 1. This is the term for any departure from normal state of health that may bring abnormal condition of any or all tissues of the body.
 - a. Bacteria
 - b. Disease
 - c. Health
 - d. Microorganism
- _____ 2. This is a classification of diseases wherein it is readily communicable to susceptible individuals.
 - a. Acute
 - b. Contagious
 - c. Non-contagious
 - d. Peracute
- _____ 3. The following are signs of unhealthy goats and sheep EXCEPT _____.
 - a. shiny skins
 - b. runny eyes
 - c. lack of appetite
 - d. pale mucous around eyes and in mouth
- _____ 4. A professional that gives service when it comes to animal health.
 - a. Dermatologist
 - b. Ophthalmologist
 - c. Physician
 - d. Veterinarian
- _____ 5. The normal pulse rate of an adult goat ranges from _____.
 - a. 60-70 beats/minute
 - b. 70-80 beats/minute
 - c. 90-100 beats/minute
 - d. 100-110 beats/minute
- _____ 6. Why is herd health management important?
 - a. It recognizes diseases
 - b. It keeps the herd healthy
 - c. It prioritizes treatment of sick animals
 - d. It minimizes loss due to disease and parasites
- _____ 7. Under what physical symptoms do coughing and difficulty in breathing associated?
 - a. Attitude
 - b. Appetite
 - c. Respiratory signs
 - d. Reproductive organ
- _____ 8. The following are symptoms associated with vital signs EXCEPT
 - a. Heart Rate
 - b. Rectal temperature
 - c. Respiration
 - d. Weight
- _____ 9. The following are factors involved in the occurrence of a disease EXCEPT ONE.
 - a. Agents of disease
 - b. Animal host
 - c. Environment
 - d. Feeds

- _____10. The term associated with disease which is caused by virus.
- a. Bacterial disease
 - b. Viral disease
 - c. Protozoan Disease
 - d. Parasite



It is an important task for a goat and sheep raisers to prevent the affliction of diseases to the animals. To make this possible, program for diseases and parasites prevention is a must.

Disease is defined as any departure from the normal state of health. It is classified according to cause, infectiousness, transmissibility, duration and occurrence.

Likewise, knowledge in the vital signs is essential such as the pulse rate, respiration rate and body temperature of sheep and goat.

Lesson 2. COMMON DISEASES OF GOATS



INTRODUCTION

This lesson broadly discusses the causes of diseases, their signs, modes of transmission, prevention and treatments. Likewise, information regarding parasites of goats and sheep are included.



OBJECTIVES

After completing this lesson, you should be able to:

1. enumerate the different diseases of small ruminants based on their categories;
2. explain the cause/s, mode/s of transmission, symptom/s and prevention of the different diseases of small ruminants; and
3. realize the importance of knowing the common diseases of goats and be able to prevent them.



PRE-ASSESSMENT

Directions: Read the questions carefully and write the letter of the correct answer in your activity notebook.

_____1. Parasitic gastroenteritis, parasitic pneumonia, tapeworm and liver fluke are examples of _____.

- | | |
|------------------------|-----------------------|
| a. external parasites | c. internal parasites |
| b. infectious diseases | d. metabolic diseases |

_____2. The symptoms of this disease are signs of colic such as uneasiness, difficult breathing, bloating and rumen movements.

- | | |
|-----------|--------------------|
| a. Anemia | c. Milk fever |
| b. Bloat | d. Urinary calculi |

_____3. To prevent the goat from urinary calculi, what should be done?

- a. Feed straw or fibrous diets
- b. Give Commercial anti bloat
- c. Puncture the rumen with large needle
- d. Give Prophylactic Vitamin A supplement

- _____4. Constant scratching and rubbing of skin is a sign of _____.
- | | |
|---------------------|--------------------|
| a. Anthrax | c. Tetanus |
| b. Lice infestation | d. Urinary calculi |
- _____5. Because of these external parasites, the goat or sheep may terminate in death due to systemic toxemia, gangrene or septic absorption.
- | | |
|--------------|----------|
| a. Bow flies | c. Mites |
| b. Lice | d. Ticks |
- _____6. This is caused by direct infection by ingestion of infective stage (oocyst) that thrives in moist, damp and unsanitary areas.
- | | |
|----------------|--------------|
| a. Coccidiosis | c. Pneumonia |
| b. Liverfluke | d. Tapeworm |
- _____7. Aulinol, Tympanol, and Bloat guard are examples of _____.
- | | |
|-------------------------|-------------------------|
| a. commercial antibloat | c. potassium |
| b. minerals | d. Vitamin A supplement |
- _____8. Hemorrhagic septicemia can be treated with _____.
- | | |
|---|--|
| a. blood tests | |
| b. application of antiseptics | |
| c. application of action guard lotion | |
| d. parenteral antibiotics and sulfa drugs | |
- _____9. To prevent milk fever, this should be injected to the affected animal.
- | | |
|---------------|--------------|
| a. Calcium | c. Potassium |
| b. Phosphorus | d. Zinc |
- _____10. This disease is caused by low-level hemoglobin or red blood cells.
- | | |
|------------|--------------------|
| a. Anemia | c. Bloat |
| b. Anthrax | d. Urinary calculi |



KNOW

Knowledge of common infectious and metabolic diseases and parasites is very important. In this module, causes, mode of transmissions, symptoms and preventions will be presented to you.

A. Common Infectious Diseases of Goats

1. Bacterial scours in kids

- Cause:** Enteropathogens
- Transmission:**
- Direct infection from infected or contaminated udders.
 - Navel infection;
 - Genital or intrauterine infection of dam.
 - Contaminated environment.

- Symptoms:**
- (Occurs as early as 24 hours after birth)
 - Pasty yellowish white feces later becoming more liquid with fermented or pungent odor
 - Kid weak with sunken eyeball
 - Unsteady gait
 - Rough hair coat
 - Mortality due to dehydration
- Prevention:**
- Proper nursing in clean dry environment Colostrum especially for newborn kids.
 - Antibiotic treatment.
 - Fluid replacement by parenteral means for early cases (requires technical assistance)

2. Pneumonia

- Cause:**
- Pneumopathogens
- Transmission:**
- Maybe in the bacterial scours.
- Symptoms:**
- Fever
 - Inability to suckle
 - Nasal discharge
 - Coughing
 - Respiratory distress
 - Gradual emaciation (may terminate as that leads to pneumonia-enteritis)
- Prevention:**
- Proper nursing in clean, dry environment
 - Antibiotic.

3. Infectious Arthritis

- Cause:**
- Multiple bacterial agents
 - Dirty or unsanitary pens and areas of confinement.
- Transmission:**
- Direct-through mouth, skin.
 - Open wounds.
 - Via Umbilicus.
- Symptoms:**
- Swollen knees; swollen joints like the hock, knee, elbow, stifle; lameness, and pain if pressure is applied on affected joint;
 - Fever
 - Being recumbent.
 - Loss of appetite
- Prevention:**
- Minimize infection by treating wounds (castration) and dressing the navel
 - Hygienic management especially in areas of confinement.

- Treat with wide spectrum anti-biotic and sulfa drugs.

4. Mastitis

Cause:

- Multiple bacterial agents
Mycoplasma; Streptococcus; Pasteurella; Corynebacteria; Nocardia; Candida; Escherichia spp.
- Sores or wounds on the teat, physical damage to the udder, oral infection in kids, such as sore mouth or scabby mouth, unsanitary milking.

Transmission:

- Direct or indirect.

Symptoms:

- Hot, painful and swollen udder becoming red due to inflammation; changing to dark reddish-blue indicating necrosis of udder tissue
- Sometimes blood stained milk, with flakes or clots
- Fever
- Loss of appetite
- Depression
- Dehydration
- Unsteady gait or movement is affected

Prevention:

- Intramammary infusion of antibiotics. (Early and repeated treatment needed to prevent complications such as gangrene and toxemia)
- Proper treatment of injured teats with antiseptics.
- Disinfecting udders for milking and proper milking technique.
- Surveillance to detect early cases for immediate isolation and treatment.

5. Contagious Ecthyma/Sore Mouth (Orf)

Cause:

- Virus

Transmission:

- Direct contact, indirect through contact with fomites

Symptoms:

- Scabby lesions in the lips, muzzle, eyelids, udder, teats and feet
- Warty growth in some areas which maybe deep and may become necrotic or ulcerous

Prevention:

- Vaccination.
- Application of astringent lotions (alum)
- Application of antibiotic ointments to prevent secondary complications.

6. Foot and Mouth Disease (FMD)

Cause:

- Virus. Types identified in the Philippines are A, O, C

- Transmission:**
- Direct and indirect contact with naturally infected animals, carriers, implements and other infected materials.
 - Blister fluid, saliva and other highly infectious bodily discharges
- Symptoms:**
- Fever
 - Vesicles, erosion in between hooves, coronary band (junction between skin and hoof), teats and udders, oral mucosa and tongue
 - Raw ulceration following rupture of vesicles
 - Stringy or foamy salivation
 - Smacking of the lips
 - Difficulty in feed ingestion
 - Staggering gait and lameness
 - Abortion in pregnant animals
- Prevention:**
- Immediate notification of the authorities.
 - Designation of quarantine areas and restricted movement of animals.
 - Disinfecting areas with virucidal agents (commercial disinfectant or lye caustic soda).
 - Keeping animal on dry ground and treating lesions with mild antiseptic (5% formalin).
 - Mass immunization and effective restriction in movement of animals and carriers is necessary.

7. Brucellosis

- Cause:**
- Bacteria
- Transmission:**
- Ingestion of contaminated feed and water.
 - Infection from aborted fetus, fetal membrane, placenta, urine, and uterine discharge
 - Natural/artificial breeding with infested males.
- Symptoms:**
- Infertility
 - Abortion
 - Retained placenta
 - Persistent vaginal discharge
 - In males, swollen and painful testicles with subsequent infertility/sterility
- Prevention:**
- Blood tests
 - Removal of infected animals
 - Vaccination may be tried

8. Hemorrhagic Septicemia

- Cause:**
- Bacteria (*Pasteurella multocida*)
 - Climatic stress

- Fatigue
- Transport
- Nutritional and Parasitic stress
- Transmission:**
 - Ingestion or inhalation of infective agent
 - Maybe normally present in the nasopharyngeal area but predisposition causes flare-up of infection
- Symptoms:**
 - High fever
 - Loss of appetite
 - Respiratory distress
 - Salivation
 - Nasal discharges
 - Swelling of the throat
 - Brisket congestion of mucous membrane,
 - Bloody diarrhea
- Prevention:**
 - Prophylactic vaccination.
 - Removal of predisposition when possible.
 - Early treatment with parenteral antibiotics and sulfa drugs.

9. Anthrax

- Cause:**
 - Bacteria (*Bacillus anthracis*)
- Transmission:**
 - Biting flies;
 - Direct ingestion of infected material.
 - Indirect transmission through contact with materials and carriers.
- Symptoms:**
 - Sudden onset of fever
 - Depression
 - Loss of appetite
 - Swelling of chest, head, belly, and legs
 - Bloody diarrhea
 - Death common in early stages
 - Colic
 - Abortion in pregnant animals
 - Blood-stained discharges
 - Convulsions
- Prevention:**
 - Vaccination in areas where anthrax is endemic.
 - Dead animal should be cremated or buried deeply under a layer of lime.
 - Antibiotic treatment is effective only in early and less acute cases.

10. Tetanus

- Cause:**
 - Bacteria (*Clostridium tetani*)

Transmission:	<ul style="list-style-type: none"> - Direct infection due to introduction of organism in wounds. - Castration, old ulcerating wounds, dehorning complications - Not contagious to other animals
Symptoms:	<ul style="list-style-type: none"> - Early stages characterized by: <ul style="list-style-type: none"> ➤ Rigidity and stiffness of muscles ➤ Stilthy gait - Late stages: <ul style="list-style-type: none"> ➤ Titanic convulsions ➤ Prolapse of third eyelid ➤ Stiff tail ➤ Head and neck thrown back ➤ Hyperexcitability ➤ Tendency to be bloated
Prevention:	<ul style="list-style-type: none"> - Treat wound with oxidizing antiseptic (hydrogen peroxide) until completely healed.

B. Metabolic Diseases of Goats

1. Bloat

Cause:	<ul style="list-style-type: none"> - Occurs under ordinary condition of management especially when fed lush herbage
Transmission:	<ul style="list-style-type: none"> - Non-contagious
Symptoms:	<ul style="list-style-type: none"> - Swollen left flank which is resonant when tapped - Colic signs such as uneasiness, difficult respiration, bloating - Absence of rumen movements
Prevention:	<ul style="list-style-type: none"> - Feed straw or fibrous diets before turning loose on lush pasture. - Puncture rumen with large needle (gauge 15-16) or trocar and canula. - Oils and fats (mineral oil, vegetable oil or tallow) are satisfactory to prevent foaming in the rumen. - Commercial antibloat preparations are Avlinox, Tympanol, Bloatguard.

2. Urinary calculi

Cause:	<ul style="list-style-type: none"> - Associated with faulty mineral nutrition, confinement, and concentrate feeding - Inadequate water intake - Vitamin A deficiency - Infections of the urinary tract with <i>Mycoplasma</i> and <i>Ureaplasma</i>
---------------	---

- Transmission:** - Non-infectious except when due to urinary tract infections
- Symptoms:** - Observed in adult male goats
 - Animal is uneasy or restless
 - Shows still gait when moving with hind legs under the body
 - Making frequent but unsuccessful urination
 - Painful urination
- Prevention:** - Ensure ample water supply.
 - Give prophylactic Vitamin A supplements.
 - Correct mineral in the diet.
 - Provide 3-5% salt in the concentrate to decrease magnesium and phosphate deposition.

3. Milk fever

- Cause:** - Mineral deficiency specifically calcium and magnesium
- Transmission:** - Non-transmissible
- Symptoms:** - Loud breathing
 - Temperature of affected animals declines and collapses suddenly
 - Sometimes coma is followed by death
 - For calcium, appears few days after kidding
 - For magnesium, occurs month after kidding
- Prevention:** - Animal should be given feeds rich in minerals
 - Inject correct dose of calcium to the animal

4. Anemia

- Cause:** - low-level hemoglobin or red-blood cells
 - Iron and copper deficiency
 - Blood loss due to internal bleeding or external bleeding caused by external wounds
- Transmission:** - Non-transmissible
- Symptoms:** - Lack of appetite
 - Weakness
 - Tiredness
 - Pale mucus membranes in the eye
- Prevention:** - Balanced diet especially the needed copper and iron
 - Periodic deworming to eradicate blood-sucking parasite
 - Inject appropriate dose of Vitamin B₁₂

C. Common External Parasites in Goats and Sheep

1. Lice

- ✚ Biting louse (*Damalinia limbata*)
- ✚ Biting louse (*Damalinia caprae*)
- ✚ Sucking louse (*Linognathus africanus*)

- Cause:** - Unthriftiness; poor coat
- Symptoms:** - Constant scratching and rubbing to relieve itching and irritation
- Scurfy coat (dandruff) and encrustation
- Exudation of scabby deposits
- Loss of hair, raw skin, and bruises in severe infestations
- Becoming unthrifty, poor thriving, weak and anemic
- Prevention:** - Use insecticide (Asuntol, Ciodrin, Neguvon, etc.) In dust form or solution.
- Treat within 10-14 days to kill all nymphs which hatch out.
- Spray pens and litter.
- Isolate treated from untreated animals.

2. Mites

- ✚ Mange Mite (*Psoroptes communis var caprae*)
- ✚ Mange Mite (*Psorochorioptes sp. and Thrombidid sp*)
- ✚ Mange Mite (*Sarcoptes scabiei var caprae*)

- Cause:** - Mange or scabies
- Symptoms:** - Marked itchiness and irritation with animals constantly - rubbing or licking affected areas; maybe patchy or generalized
- Skin becomes hairless, thickened or scabby
- Prevention:** - Periodic examination to detect early cases.
- Regular spraying with effective acaricides such as Malathion, Trichlorfon, Fenthion; Interval of treatment should be 7- 10 days with 2-3 applications to destroy mites that have hatched after each treatment.

3. Bowfly or Cutaneous myiasis

- Symptoms:** - Open wounds or sores with squirming maggots
- May terminate in death due to systemic toxemia gangrene or septic absorption
- Prevention:** - Proper cleaning and dressing of all wounds with antiseptics or with fly repellants.
- For treatment, scraping to refresh old wounds and kill maggots. Applying dressing as spray, ointments or solution on wounds. (Negasunt, Malathion, Lindane, etc.).

4. Ticks

- Cause:** - Tick worry

D. Common Internal Parasites in Goats and Sheep

1. Parasitic gastroenteritis

- Cause:** - Various species of parasitic nematodes in the digestive tract. (Young animals most susceptible)
- Transmission:** - Commonly through direct infection with parasitic larval stages through herbage.
Less commonly through skin penetration and intrauterine infection in some cases.
- Symptoms:** - Poor body condition
- Anemia
- Diarrhea
- Potbelly and weakness
- Prevention:** - Regular deworming with effective anthelmintics (tetramisole, parbendazole, thibendazole, pyrantel, etc.).
- Pasture rotation and improved feeding practices.

2. Parasitic Pneumonia

- Cause:** - *Dictyocaulus* spp. (adult stages in the bronchioles of lungs)
- Transmission:** - Infection with the parasite in the larval stage through herbage
- Symptoms:** - As in parasitic gastroenteritis for general signs
- Persistent husky coughing
- Respiratory distress
- Prevention:** - Regular deworming with Tetramisole, Albendazole or Oxfendazole.
- Pasture rotation and improved feeding practices.

3. Tapeworm infection

- Cause:** - *Moniezia* spp.
- Transmission:** - Through ingestion of plant mites which are intermediate hosts.
- Symptoms:** - Parasitic gastroenteritis
- Passage of tapeworm segments in the feces
- Prevention:** - Regular deworming with Tetramisole, Albendazole or Oxfendazole

4. Liverfluke infection

- Cause:** - *Fasciola gigantica* and *F. hepatica*. Requires intermediate host (*Lymnea auricularia*)
- Transmission:** - Direct infection through ingestion of parasitic stage (metacercaria) attached in grasses. Presence of this stage related to availability of snail host.
- Common in low-lying communities with water logged areas, rivers, streams and stagnant pools.

- Symptoms:**
- Poor body condition
 - Anemia
 - Diarrhea
 - Potbelly and weakness
- Prevention:**
- Regular deworming with flukicides at proper intervals (3-4 times a year);
 - Consultation with veterinarian for proper drug, dosage, and intervals
 - Control of snail hosts
 - Pasture improvements
 - Keeping animals away from known infected sources of herbage

5. Coccidiosis

- Cause:**
- Protozoa (*Eimeria spp.*) generally not a primary condition but exist with other enteric diseases.
- Transmission:**
- Direct infection by ingestion (oocyst).
 - Thrives in moist or damp and unsanitary areas.
- Symptoms:**
- Common only in kids
 - Profuse and bloody diarrhea
 - Dehydration
 - Anemia
- Prevention:**
- Cleaning environment and maintaining general sanitation.
 - Treating with sulfa drugs only.
 - Proper nursing and supportive treatment with injectable electrolytes.



Direction. Fill in the missing letters to form the correct terminology. Write your answers in your activity notebook.

1. B _ C T _ R _ A L S _ O _ _ S
This is caused by genital or intrauterine infection of dam.
2. P _ E _ M _ N _ A
The symptoms of this disease are fever, coughing and nasal discharge.
3. I _ F _ C _ I O U _ A _ T H _ I T I S
This is caused by dirty pens and areas of confinement and the symptoms are swollen knees, lameness and fever.

4. **M_S_I_I_S**

The causative agent is mycoplasma and is characterized by sores or wounds on the teat.

5. **C_N_AG_O_S E_T_Y_A**

This disease is characterized by scabby lesions in the lips, muzzle, eyelids, udder, teats and feet.

6. **F_T A_D M_U_H**

This disease is caused by types A, O and C viruses characterized by fever and erosion in between hooves.

7. **B_U_E_L_S_S**

This disease is caused by bacteria and is characterized by infertility, abortion and retained placenta.

8. **H_M_RRH_G_C S_PT_C_M_**

This is caused by bacteria *Pasteurella multocida* and is characterized by high fever, loss of appetite and respiratory distress.

9. **_NTHR_X**

This is caused by bacteria *Bacillus anthracis* and is characterized by sudden onset of fever, swelling of chest, head, belly and legs.

10. **T_T_N_S**

This is caused by bacteria *Clostridium tetani* and is characterized by rigidity and stiffness of muscles and prolapsed of third eyelid.

Activity 2

Direction: Identify the term being described in each statement. Choose the answer in the box below and write it in your activity notebook. (1 point each)

- _____ 1. The state of complete physical well-being and the absence of disease or infirmity.
- _____ 2. The field relating to leadership management of health for the animals.
- _____ 3. This is the hygienic means of promoting health.
- _____ 4. This is the process of giving an anthelmintic drug to an animal to rid of intestinal parasites such as roundworm and tapeworm.
- _____ 5. A disease as characterized by infertility abortion.

Nutrition	Nutrients	Health Management
Health	Sanitation	Brucellosis

B. Enumerate five common diseases of goats and give symptoms of each disease.

Disease	Symptoms



1. Explain the adage “Prevention is better than cure”. Relate this statement in herd health management.

2. How are the following be prevented:

- a. Bloat: _____
- b. Urinary Calculi: _____
- c. Milk fever: _____
- d. Anemia: _____



Visit the city/municipal agriculture office and secure information and statistics about the most common diseases of goats and sheep.

- a. City/Municipality: _____
- b. Statistics of Diseases of Goats and Sheep
 - Most Prevalent Disease
 - Data to support the information

Likewise, be able to acquire the following information:

- a. Name of the Municipal Agricultural Officer: _____
- b. Area of Specialization/Major: _____
- c. No. of Years as Agricultural Officer: _____
- d. Name of Municipal Veterinarian: _____
- e. No. of Years as Municipal Veterinarian: _____



POST-ASSESSMENT

Directions: Read the questions carefully and write the letter of the correct answer in your activity notebook.

- ____ 1. Parasitic gastroenteritis, parasitic pneumonia, tapeworm and liver fluke are examples of _____.
 - a. external parasites
 - b. infectious diseases
 - c. internal parasites
 - d. metabolic diseases
- ____ 2. The symptoms of this disease are signs of colic such as uneasiness, difficult breathing, bloating and rumen movements.
 - a. Anemia
 - b. Bloat
 - c. Milk fever
 - d. Urinary calculi
- ____ 3. To prevent the goat from urinary calculi, what should be done?
 - a. Feed straw or fibrous diets
 - b. Give Commercial anti bloat
 - c. Puncture the rumen with large needle
 - d. Give Prophylactic Vitamin A supplement
- ____ 4. Constant scratching and rubbing of skin is a sign of _____.
 - a. Anthrax
 - b. Lice infestation
 - c. Tetanus
 - d. Urinary calculi
- ____ 5. Because of these external parasites, the goat or sheep may terminate in death due to systemic toxemia, gangrene or septic absorption.
 - a. Bow flies
 - b. Lice
 - c. Mites
 - d. Ticks
- ____ 6. This is caused by direct infection by ingestion of infective stage (oocyst) that thrives in moist, damp and unsanitary areas.
 - a. Coccidiosis
 - b. Liverfluke
 - c. Pneumonia
 - d. Tapeworm
- ____ 7. Aulinol, Tympanol, and Bloat guard are examples of _____.
 - a. commercial antibloat
 - b. minerals
 - c. potassium
 - d. Vitamin A supplement
- ____ 8. Hemorrhagic septicemia can be treated with _____.
 - a. blood tests
 - b. application of antiseptics
 - c. application of action guard lotion
 - d. parenteral antibiotics and sulfa drugs
- ____ 9. To prevent milk fever, this should be injected to the affected animal.
 - a. Calcium
 - b. Phosphorus
 - c. Potassium
 - d. Zinc

- _____10. This disease is caused by low-level hemoglobin or red blood cells.
- a. Anemia
 - b. Anthrax
 - c. Bloat
 - d. Urinary calculi



Proper information about the diseases and parasites of goats and sheep is of equal importance. Causes, mode of transmissions, symptoms and preventions of diseases and parasites are likewise necessary competencies to be acquired by the farmer to control or prevent these health problems.

Diseases are divided into two: infectious and metabolic. Parasites are either internal or external.

Lesson 3. HYGIENIC MEASURE TO MINIMIZE HEALTH DISEASE PROBLEMS



INTRODUCTION

This lesson deals primarily on the importance of hygiene of the livestock with the aim of minimizing or preventing the disease problems of the small ruminants.



OBJECTIVES

After completing this lesson, you should be able to:

1. suggest ways on how to minimize health disease problems;
2. recall measures on minimizing health problems; and
3. define and discuss parasites; modes of transmission and methods of control.



PRE-ASSESSMENT

Direction: Read the questions carefully and write the letter of the correct answer your activity notebook.

- ____ 1. Removing and disposing manure and garbage will prevent ____
 - a. foot rot
 - b. flies and maggot build-up
 - c. spreading of disease
 - d. damp and wet condition
- ____ 2. What should be done to animals where there is an outbreak of disease?
 - a. Keep astray/free
 - b. Kill all animals
 - c. Quarantine
 - d. Vaccinate
- ____ 3. Regular grooming of animals is an opportunity to the following EXCEPT ONE.
 - a. Smell goaty odor
 - b. Remove dirt and unnecessary hairs
 - c. Check the teeth and gums abnormalities
 - d. Examine closely the condition of the animals
- ____ 4. These are parasites found on the external surface of the animal body such as skin and hairs.
 - a. Caterpillars
 - b. Ectoparasites
 - c. Endoparasites
 - d. Worms

- ____ 5. These are parasites found in the internal parts of the animal body
- | | |
|------------------|------------------|
| a. Caterpillars | c. Endoparasites |
| b. Ectoparasites | d. Worms |
- ____ 6. The following are sources of safe drinking water for the animals EXCEPT ONE.
- | | |
|-------------------|-----------------------------|
| a. Sanitary wells | c. Sanitary stream |
| b. Flowing water | d. Stagnant ponds and pools |
- ____ 7. The following are guidelines for vaccination EXCEPT ONE.
- | |
|---|
| a. Vaccinate only healthy animals |
| b. Vaccinate during very hot or wet weather |
| c. Sterilize syringes and needles in advance |
| d. Avoid stressing on the animals during vaccinations |
- ____ 8. The entry point of this type of injection is in the muscles on the neck behind and below the ear.
- | | |
|------------------|-----------------|
| a. Intramuscular | c. Intravenous |
| b. Intranasal | d. Subcutaneous |
- ____ 9. The entry point of this type of injection is in the vein.
- | | |
|------------------|-----------------|
| a. Intramuscular | c. Intravenous |
| b. Intranasal | d. Subcutaneous |
- ____ 10. Control of immediate host, destruction of their environment, and breaking their life cycle will fall under what method of controlling parasites?
- | | |
|--------------------------|--------------------|
| a. Breeding control | c. Feeds Control |
| b. Environmental control | d. Grazing control |



KNOW

Like humans, goat and sheep need proper attention to prevent or minimize health problems.

Hygienic Measures to Minimize the Occurrence of Diseases

In cases where a disease is already present, hygienic measures can minimize the number of animals that maybe infected and the number of deaths in the herd.

- Clean and disinfect the house between batches.
 - Remove the manures after vacating the house.
 - Brush the floor, walls, and feeder with soapsuds to remove all dirt and rinse thoroughly with water.
 - Keep the house empty for at least two days before putting the next batch.
- Drain holding area thoroughly.

- Night shed or holding area should be elevated to minimize damp and wet condition thus prevent foot rot.
- Remove and properly dispose manures and garbages within premises.
 - This prevents flies and maggots build up.
- Dispose dead animals properly.
 - Proper disposal of dead animals prevents spreading of diseases especially those infectious diseases that may cause death to animals.
 - Bury the animals at least 6 ft. under the ground. Pour strong creoline solution over the dead body. Put soil, rock or other heavy objects to keep stray dogs from digging it.
 - Incineration is also applicable when materials are present in this process.
- Availability of clean drinking water.
 - Water should be potable and free from contamination like pathogenic microorganisms.
 - Sources of drinking water should be from sanitary wells, streams, and flowing water, not stagnant ponds and pools.
- Quarantine animals during disease outbreaks.
 - Confine sick animals to avoid contact with healthy ones to avoid spread of diseases.
- Regular grooming of animals.
 - To remove dirt and unnecessary hairs, groom the ruminants regularly.
 - Grooming provides the farmer an opportunity to examine more closely especially for lice and tick infestation.
 - Teeth and gum abnormalities can be checked also because these can cause poor appetite.

Regular Vaccination Program

Vaccines are preparations of live/dead/inactivated/modified/attenuated organisms designed to induce immunity to a particular disease.

A. Live vaccine

Advantages of live vaccine:

- Strong and long-lasting immunity
- Convenience in administration for it can be given by non-parenteral route

- Stimulation of the best immune response

Disadvantage:

- The potential to engender disease because of residual virulence.

B. Killed vaccine:

Advantage of killed vaccine:

- Unlikeliness of the antigens to cause disease

Disadvantage of killed vaccine:

- Relatively poor immunogens

Guidelines for Vaccination/Use of Vaccines:

1. Vaccinate only healthy animals.
2. Do not vaccinate during very hot or wet weather.
3. Avoid stress on the animals during vaccination.
4. Do not buy or use expired vaccines.
5. Store vaccines ("live" or "killed") in the refrigerator or at cold temperature (2°C – 6°C).
6. Transport vaccines in ice chest or styrofoam containers packed with ice.
7. Prepare sterilized syringes and needles in advance.
8. Clean and wipe dry the surface of the rubber stopper of vaccine vial with sterile cotton before inserting needle.
9. Use only approved diluents for vaccines.
10. Dispose and burn vaccine containers.
11. Be ready against allergic reactions.

Schedules for vaccination against common diseases of sheep and goat

Diseases	Causative agent	Vaccine type	Route of administration	1 st dose	2 nd dose	Subsequent dose	Remarks
Foot and mouth disease	Aphthovirus types A, O, C Phil.	Inactivated	(IM) Intramuscular	2 months	4-5 months	Every six months	In FMD affected areas
Hemorrhagic septicemia	<i>Pasteurella multocida</i>	Bacterin	(IM) Intramuscular	2 months	4 months	annually	---
Anthrax	<i>Bacillus Anthracis</i>	Spore vaccine	(IM) Intramuscular	4 months	--	annually	In anthrax zones

Injection types for sheep and goat.

Type of Injection	Placement	Placement Tips
Intramuscular (IM)	Into the muscle	<ul style="list-style-type: none">• Use a spot on the neck behind and below the ear.• Use proper needle size to ensure medication is deposited in the muscles.
Subcutaneous (SQ)	Under the skin	<ul style="list-style-type: none">• Inject only into clean, dry areas.• Use the loose flaps of skin in the flank of young animals.• Use the loose skin behind the ear of adults.• Slide needle under the skin away from the site of skin puncture before depositing the compound.
Intravenous (IV)	In the vein	<ul style="list-style-type: none">• Use only upon veterinary instruction and guidance because serious injury to the animal can occur.

Regular Parasite Control Program

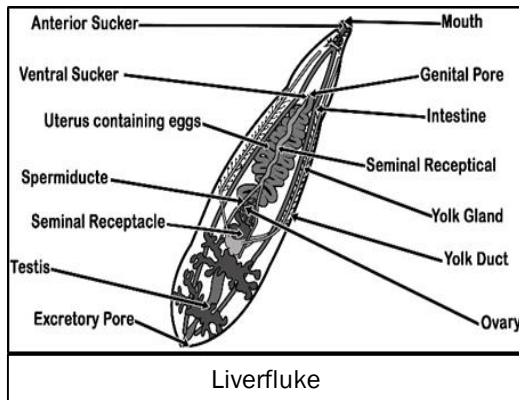
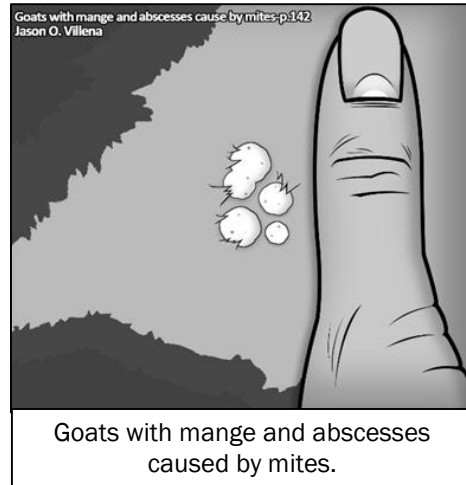
Parasitism is claimed as the primary problem by farmers in the rural areas.

Factors contributing to the survival of parasites:

- Distribution of rainfall and the humid environment are conducive to the growth, multiplication, and perpetuation of parasites in the animals.
- A wide range of possible intermediate hosts coexisting with animal parasites permits the continuity of the parasites' lifecycle.
- Tethering or staking system allows seeding of pasture with parasite eggs and eventual direct infection through the soil, grass, and the animals themselves may carry the infective stage of the parasite.
- The upgrading of indigenous breed in the country resulted in increased susceptibility of animals to parasites and diseases. Native breeds are observed to be resistant to parasitism.
- Improper housing, grazing management, and stock movement may allow the growth of parasites.

Types of Parasites and their Effects on the Host

- Ectoparasites - these are found on the external surface of the animal's body, such as skin and hairs.
Ex. lice, ticks, mites, and flies



- Endoparasites - these are parasites which affect the internal body organs.

Ex. lungworms, liver flukes, kidney worms, and intestinal worms

Modes of Transmission

1. Ingestion of parasites in the infective stage through food and water
2. Ingestion of parasites in the infective stage through arthropods (mites, beetle, ants and grasshoppers).
3. Ingestion of parasites in the infective stage through snails, slugs, and earthworms
4. Introduction of parasites in the infective stage through bites of arthropods (ticks and flies)
5. Penetration of parasites in the infective stage through the skin
6. Ingestion of infective larvae through the milk
7. Transplacental transmission

Methods to Control Parasites

- Environmental Control
 1. Control of immediate transport host

Destruction of these intermediate hosts and their breeding places reduces their population and break the life cycle of these parasites.

2. Sanitation and hygienic measures

Management Schemes

1. Housing and stall feeding

- Confine animals and provide cut-and-carry grasses that are wilted first under the sun prior to feeding so that attached larvae fall off and die.
- Limit access to the infective forms of parasite which are usually found in the ground or in grasses.
- Protect the animals from inclement weather which may indirectly lower the animals' defenses against the effects of parasitism.

2. Grazing management

The grazing area is the main source of parasite infection in ruminants. An effective management will control the life cycle of strongyles in goats. Goats and sheep pasture must:

- be divided into 10 paddocks and the animals should be moved every 3.5 days
- tether the animals in specific areas and allow for rotational grazing.

3. Controlled breeding

It is recommended that the does/ewes be bred in the months when the kidding time would fall within the dry months. The kid/lamb to be born during rainy season maybe vulnerable to heavy infestation of parasites.

4. Feed supplementation

Providing feed supplements boosts the animal's body defenses against diseases. A mineral block with dewormer, or known as medicated urea molasses mineral block (MUMMB) has proven to improve nutrition while reducing the parasite load in small ruminants.

5. Stock movement

The arrival and transfer of animals may lead to the introduction and spread of parasite infection. It is recommended that the newly purchased animals be quarantined first before introduction to the herd.

6. Management structure

Studies show that the susceptibility of animals to parasitic disease varies among different age groups. Therefore, it may be beneficial to separate the animals according to their ages.

7. Stocking rate

To control overstocking, the space requirement of the animal must be followed. Overstocking forces the animals to come in contact with grasses contaminated by feces and may result in higher vulnerability to infective parasites.

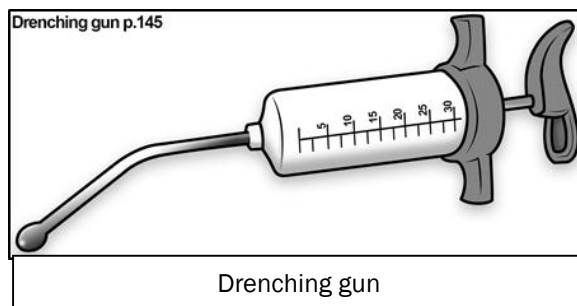
Recommended Deworming Schedules

1. Kids and lambs should receive their first anthelmintic dose at 2 weeks – 1 month of age if threadworm is a problem in the herd. This must be repeated 3 months after against almost all internal parasites except liver flukes.
2. Animals more than one year of age should be dewormed with an anthelmintics that is effective against all stages of the parasites a month before the onset of the rainy season.
3. Pregnant animals should be dewormed two weeks before the expected date of kidding.
4. In areas where fluke infection is high, breeders should be dewormed two weeks before they are bred. An effective flukeicide should be given every three months on the first year, every six months on the second year, and yearly thereafter.

Proper Way of Drenching Animals:

Drenching the goats to expel internal parasites is a routine management practice that should be done once or twice a year. Here is how it is done:

1. First, tie the goat, or get it in a corner. Hold its head towards your chest, tilted a little sideways and back to allow the medicine to run slowly down its throat.
2. Put the mouth of the bottle into the corner of its lips and pour the liquid down slowly so that it will drop down the throat.
3. If the goat coughs, stop at once and let the head free. When it has stopped coughing, continue drenching it. Be careful that you do not pour the liquid into the wind pipe because this could cause pneumonia.
4. If you are drenching a small unruly goat, it will help if you stand across it and hold it in place with your knees. It will soon resign itself and give only a little trouble. You can then drench the whole herd in a few minutes.
5. It would also help to make drenching easy if the person who does the drenching talks quietly and handles the animal gently. The goat will become submissive after sometime.



Indigenous Worm Control Options for Goats

In view of the cost of chemical dewormers and the preference of consumers for organically produced goats, most farmers resort to traditional ways of tackling worm problems.

- ✓ **Drench of soy sauce.** This drench is the common soy sauce made from the mixture of soybean extract, water, iodized salt, natural caramel color and 0.1% sodium benzoate. If animal raisers observe signs of parasitism in their animals, they may apply as a drench a bottle of about 350ml soy sauce (per animal) to cattle and buffaloes. Goats are given about half of this amount.
- ✓ **Tree leaves and shrubs.** The fresh leaves of jackfruit (*Artocarpus heterophyllus*), ipil-ipil (*Leucaena leucocephala*), madre de cacao (*Gliricidia sepium*), camachile (*Pithecellobium dulce*), and sow thistle (*Streblus asper*) are fed *ad libitum* for at least one (1) week. Sow thistle stems are also used but are boiled first and the liquid is applied as a drench once a day. In the same way, jackfruit leaves are also boiled and the liquid is given orally. The jackfruit preparation is given again after a week. Young pods of *Leucaena* may also be given *ad libitum* when they are available.

Effectiveness

According to farmers in the Philippines, all these methods help to reduce if not control parasite loads in their animals especially in goats. For one thing, leaves from shrubs and trees are often free from infective larvae since they grow too high and are too dry to allow larval survival. Moreover, leaves of the plants listed above are known to have anthelmintic properties.

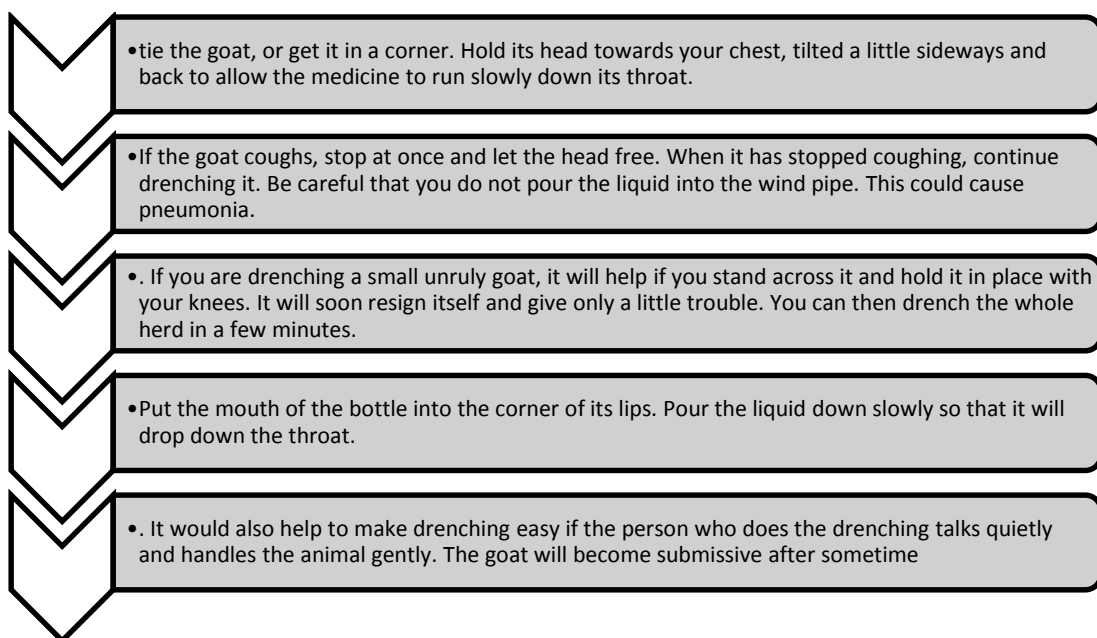
An analysis of goat manure carried out by a diagnostic laboratory in Cebu, Philippines, showed zero worms (eggs per gram) after the tree leaves and shrubs were given to the goats. Whether the effect is due to better nutrition or the actual effect of the practice on the parasite is difficult to know. But one thing is sure – these practices certainly helped reduce parasite infections in goats.

Source: PCARRD, MARID AGRIBUSINESS, Vol.22 No. 10, Feb.2012, p 38



Activity 1

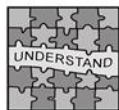
Directions: Arrange the correct process in drenching animals. Use numerical symbol (1 for the first step; 5 for the last step).



Activity 2.

Directions: Write “DO THIS” in the box opposite the statement that tells hygienic measure for goat and sheep otherwise, write “DON’T DO THIS” if the statement tells wrong practice of managing the health of goat and sheep.

No.	Your Answer	Statement
1		Kids and lambs should receive their first anthelmintic only when threadworm is prevalent in the herd.
2		It is recommended that the newly purchased animals be quarantined first before introduction to the herd.
3		Clean and wipe dry the surface of the rubber stopper of vaccine vial with sterile cotton before inserting needle to the goat and sheep.
4		Drenching the goats to expel internal parasites is a routine management practice and should be done every month.
5		Confine animals and provide cut-in-carry grasses that are wilted first under the sun prior to feeding so that attached larvae falls off and die.



UNDERSTAND

1. Why is drenching done to animals?

2. Cite two management schemes that deals primarily in controlling parasites and be able to discuss each:

- a.

- b.



TRANSFER

Activity 1

Direction: Visit a Goat and Sheep Production Area. Look for a goat infested with lice. Delouse it with recommended solutions. Use Personal Protective Equipment in doing this activity.

- Document this by taking photographs.
- Make a narrative report indicating the experiences you had in doing the activity.

Activity 2

Direction: Research on the current studies pertaining to indigenous worm and parasite control for goat and sheep. Be able to cite the authors/contributors as well as the title of the book/s/magazines/journals.

Activity 3

Direction: Watch the following videos on the Internet by downloading them or watching them directly on the Internet.

Guide Questions:

1. What are the movies all about?
2. Cite the knowledge you have gained from watching the clips

- a.

- b.

- c.

3. Do clips presented help you in understanding the concepts especially in goat and sheep production? Why?



POST-ASSESSMENT

Direction: Read the questions carefully and write the letter of the correct answer in your activity notebook.

- ____ 1. Removing and disposing manure and garbage will prevent ____
- a. foot rot
 - b. flies and maggot build-up
 - c. spreading of disease
 - d. damp and wet condition
- ____ 2. What should be done to animals where there is an outbreak of disease?
- a. Keep astray/free
 - b. Kill all animals
 - c. Quarantine
 - d. Vaccinate
- ____ 3. Regular grooming of animals is an opportunity to the following EXCEPT ONE.
- a. Smell goaty odor
 - b. Remove dirt and unnecessary hairs
 - c. Check the teeth and gums abnormalities
 - d. Examine closely the condition of the animals
- ____ 4. These are parasites living in the outer surface of the animal such as skin and hairs.
- a. Caterpillars
 - b. Ectoparasites
 - c. Endoparasites
 - d. Worms
- ____ 5. These are parasites found in the internal parts of the animal body
- a. Caterpillars
 - b. Ectoparasites
 - c. Endoparasites
 - d. Worms
- ____ 6. The following are sources of safe drinking water for the animals EXCEPT ONE.
- a. Sanitary wells
 - b. Flowing water
 - c. Sanitary stream
 - d. Stagnant ponds and pools
- ____ 7. The following are the guidelines for vaccination EXCEPT ONE.
- a. Vaccinate only healthy animals
 - b. Vaccinate during very hot or wet weather
 - c. Sterilize syringes and needles in advance
 - d. Avoid stressing on the animals during vaccinations

- _____8. The entry point of this type of injection is in the muscles on the neck behind and below the ear.
- | | |
|------------------|-----------------|
| a. Intramuscular | c. Intravenous |
| b. Intranasal | d. Subcutaneous |
- _____9. The entry point of this type of injection is in the vein.
- | | |
|------------------|-----------------|
| a. Intramuscular | c. Intravenous |
| b. Intranasal | d. Subcutaneous |
- _____10. Control of immediate host, destruction of their environment and breaking their life cycle will fall under what method of controlling parasites?
- | | |
|--------------------------|--------------------|
| a. Breeding control | c. Feeds Control |
| b. Environmental control | d. Grazing control |



Hygienic measures can minimize the occurrence of disease problems. Common practices related to these are cleaning and disinfecting the house between batches, keeping the area well-drained, removing and disposing manures and garbages within premise, disposing dead animals properly, assuring availability of clean drinking water, quarantining animals during disease outbreaks and regular grooming of animals.

Regular vaccination program is also advised following the guidelines in doing it. Likewise, the farmers should also consider regular parasite control program by knowing the types of parasites, mode of transmission and methods to control parasites such as environmental control and management schemes.

If goats and sheep are infested with internal parasites, they are recommended for deworming schedules. One method is through drenching the goat or sheep. Indigenous worm control is also a good option of deworming small ruminants.

Lesson 4. DISINFECTION, WASTE MANAGEMENT AND BIOSECURITY MEASURE



INTRODUCTION

This lesson deals on the important measures on how to control or prevent occurrence of biological threats caused by small ruminants.



OBJECTIVES

After completing this lesson, you should be able to:

1. discuss disinfection, waste management and biosecurity measures;
2. relate processes about the recommended procedure in disinfection and disease prevention; and
3. research and suggest ways on how to improve disease prevention.



PRE-ASSESSMENT

Direction: Read the questions carefully and write the letter of the correct answer your activity notebook.

- ____ 1. Among the following examples, what is the most reliable material as disinfectant?
- | | |
|-------------------|--------------|
| a. cold water | c. hot water |
| b. lukewarm water | d. tap water |
- ____ 2. The following are the properties of disinfectant EXCEPT ONE.
- | | |
|---------------------------------|---|
| a. High toxicity to animal | c. High stability and permeability |
| b. Broad antimicrobial activity | d. Readily available at reasonable cost |
- ____ 3. How often should be the collection of animal wastes/manures?
- | | |
|-----------------|-----------------|
| a. Once a week | c. Once a year |
| b. Once a month | b. Twice a year |
- ____ 4. Rapid Rotational Grazing is recommended in order to minimize parasitism among goats. This explains the importance of ____.
- | | |
|--------------------------|----------------------------------|
| a. Quarantine program | c. Parasite control program |
| b. Practicing sanitation | d. Provision of adequate housing |

- _____ 5. If the goat's waste is intended as manure for crops, what should be done?
- a. Soak it in water
 - b. Allow it to decompose
 - c. Ferment it for two weeks
 - d. Let it dry until it becomes solid
- _____ 6. When the area is not possible for scrubbing, what should be done to disinfect it?
- a. Use pail to wet the area
 - b. Use sprinkler to rinse it
 - c. Use high pressured water
 - d. Use water hose to rinse the area
- _____ 7. Rinse all residues of the disinfectant thoroughly before repopulating the pen/area. The statement implies what principle of disinfection?
- a. Time to act of the disinfectant
 - b. Heat as the most reliable disinfectant
 - c. Recommended dosage of the disinfectant
 - d. Thoroughly application of the disinfectant
- _____ 8. The following are the examples of practicing sanitation EXCEPT ONE.
- a. Cleaning the walls
 - b. Brushing the floors
 - c. Cleaning the house regularly
 - d. Dumping trashes and wastes anywhere
- _____ 9. The following are examples of practices in eliminating hazards EXCEPT ONE.
- a. Isolating sick animals
 - b. Quarantining newly acquired stocks
 - c. Scheduling of newly acquired stocks
 - d. Allowing any person to enter the goat/sheep shed
- _____ 10. Why is it important to dispose dead animals?
- a. They are potent sources of disease agent
 - b. They are viable source of food for scavengers
 - c. They are eyesore to the people who might see them
 - d. They create foul smell during the process of decomposition



KNOW

Disinfection

Recommended Procedure in Disinfection

1. Remove all loose dirt, litter, and other organic materials from the area to be disinfected. Use hot water containing detergent or soap. Scrub the dirt is necessary. High pressured water is recommended in areas where scrubbing is not possible.

2. Use the recommended usage of disinfectant as prescribed by the manufacturers. Use it warm if possible.
3. Apply the disinfectant thoroughly. Give attention to the feeding troughs, drainage and waste containers.
4. Allow the disinfectant time to act. Rinse all residues of the disinfectant thoroughly before repopulating the area/pen.
5. Heat is the most reliable disinfectant. Where practical, burn all contaminated materials. Using boiling water is also effective.

Properties of an Ideal Disinfectant

- ✓ Must have broad antimicrobial activity
- ✓ Must have high stability and permeability
- ✓ Must be of low toxicity to the animals
- ✓ Must not irritate the skin and free from corrosive property and offensive odor
- ✓ Must not cause pollution and disturb the ecology of the environment
- ✓ Must not interfere with the normal healing process, and must act in the presence of pus and necrotic tissues
- ✓ Must be readily available at reasonable cost

Waste Management

Once every month, collect the manures under the animal sheds and spread in the field or at the base of the trees. If the manures are intended to be used in paddies or in cash crop, allow the manure to decompose before their application. The manure could also be mixed during land preparation.

Disease Prevention and Biosecurity Measures

A successful herd or flock health program requires rigid biosecurity measures to prevent the risk of outside diseases being introduced into the home, farm, and/or production unit from outside sources. This means that all animals should be protected from the risks of diseases possibly spread by people, equipment, or vehicles. Essential disease prevention and biosecurity practices are as follows:

1. Always buy and select animals from a reliable source preferably from one known to have animals with minimal disease problems.
2. Practice sanitation. Clean the house regularly. Brush-clean the floors, walls, waterers, and feeders. Disinfect also the house and premises.
3. Provide safe pasture.
4. Provide adequate housing.
5. Minimize entry of people and other animals within the farm.
6. Allow only farm personnel in animal units.

7. Require personnel caring for the animals in isolation or in other multi-site facilities to follow an approved procedure before entering other animal barns in the farm.
8. Require requested or invited visitors to wear durable plastic boots.
9. Wash and disinfect equipment from isolation units thoroughly as well as other multi-site units or outside sources before and after use.
10. Instruct all personnel responsible for service truck deliveries on biosecurity procedures upon entering the farm.
11. Quarantine newly acquired stocks.
12. Quarantined premises during outbreaks of disease is a must.
13. Have a vaccination program.
14. Schedule your parasite control program.
15. Eliminate hazards.
16. Isolate sick animals.
17. Dispose of dead animals (burying; incineration) properly. Animals died of an infectious disease are potent sources of disease. Dispose them off properly to prevent spreading the disease.



Directions. Write **TRUE** if the statement conforms to disease prevention and biosecurity measures otherwise **FALSE**, if it does not.

- ____ 1. Isolate sick animals.
- ____ 2. Provide safe pasture
- ____ 3. Have a vaccination program.
- ____ 4. Quarantine newly acquired stocks.
- ____ 5. Schedule your parasite control program.
- ____ 6. Allow only farm personnel in animal units.
- ____ 7. Dispose of dead animals (burying, incineration) properly.
- ____ 8. Minimize entry of people and other animals within the farm.
- ____ 9. Wash and disinfect equipment from isolation units thoroughly.
- ____ 10. Instruct all personnel responsible for service truck deliveries on biosecurity procedures upon entering the farm.



1. If you were a goat raiser, write the ways to manage the health and nutrition of your goats or sheep.

2. If the health of the goats has not been secured, what might happen to the herd?



Invite the municipal veterinarian to talk to the class about health and health related problems of goats and sheep.

- a. status of goat and sheep raising in the Philippines
- b. future of goat and sheep raising
- c. health problems of goats and sheep
- d. management practices
- e. feeding management



Direction: Read the questions carefully and write the letter of the correct answer your activity notebook.

____1. Among the following examples, what is the most reliable material as disinfectant?

- a. cold water
- b. lukewarm water
- c. hot water
- d. tap water

____2. The following are the properties of disinfectant EXCEPT ONE.

- a. High toxicity to animal
- b. Broad antimicrobial activity
- c. High stability and permeability
- d. Readily available at reasonable cost

____3. How often should be the collection of animal wastes/manures?

- a. Once a week
- b. Once a month
- c. Once a year
- b. Twice a year

- ____4. Rapid Rotational Grazing is recommended in order to minimize parasitism among goats. This explains the importance of ____.
- a. Quarantine program
 - b. Practicing sanitation
 - c. Parasite control program
 - d. Provision of adequate housing
- ____5. If the goat's waste is intended as manure for crops, what should be done?
- a. Soak it in water
 - b. Allow it to decompose
 - c. Ferment it for two weeks
 - d. Let it dry until it becomes solid
- ____6. When the area is not possible for scrubbing, what should be done to disinfect it?
- a. Use pail to wet the area
 - b. Use sprinkler to rinse it
 - c. Use high pressured water
 - d. Use water hose to rinse the area
- ____7. Rinse all residues of the disinfectant thoroughly before repopulating the pen/area. The statement implies what principle of disinfection?
- a. Time to act of the disinfectant
 - b. Heat as the most reliable disinfectant
 - c. Recommended dosage of the disinfectant
 - d. Thoroughly application of the disinfectant
- ____8. The following are the examples of practicing sanitation EXCEPT ONE.
- a. Cleaning the walls
 - b. Brushing the floors
 - c. Cleaning the house regularly
 - d. Dumping trashes and wastes anywhere
- ____9. The following are examples of practices in eliminating hazards EXCEPT ONE.
- a. Isolating sick animals
 - b. Quarantining newly acquired stocks
 - c. Scheduling of newly acquired stocks
 - d. Allowing any person to enter the goat/sheep shed
- ____10. Why is it important to dispose dead animals?
- a. They are potent sources of disease agent
 - b. They are viable source of food for scavengers
 - c. They are eyesore to the people who might see them
 - d. They create foul smell during the process of decomposition



The three measures such as disinfection, waste management and biosecurity are necessary for small ruminant raisers. These are recommended procedures to

follow to ensure health among herds and flocks. Likewise, when doing it, it is important to consider the properties of an ideal disinfectant.

Waste management and biosecurity measures are very necessary especially in the avoidance of potential disease and parasite agents for goat and sheep.



POST ASSESSMENT

Direction: Read the questions carefully and write the letter of the correct answer in your activity notebook.

- ____ 1. This is the term for any departure from normal state of health that may bring abnormal condition of any or all tissues of the body.
 - a. Bacteria
 - b. Disease
 - c. Health
 - d. Microorganism
- ____ 2. This is a classification of disease wherein it is readily communicable to susceptible individuals.
 - a. Acute
 - b. Contagious
 - c. Non-contagious
 - d. Peracute
- ____ 3. The following are signs of unhealthy goats and sheep EXCEPT _____.
 - a. shiny skins
 - b. runny eyes
 - c. lack of appetite
 - d. pale mucous around eyes and in mouth
- ____ 4. A professional that gives service when it comes to animal health.
 - a. Dermatologist
 - b. Ophthalmologist
 - c. Physician
 - d. Veterinarian
- ____ 5. The normal pulse rate of an adult goat ranges from _____.
 - a. 60-70 beats/minute
 - b. 70-80 beats/minute
 - c. 90-100 beats/minute
 - d. 100-110 beats/minute
- ____ 6. Why is herd health management important?
 - a. It recognizes diseases
 - b. It keeps the herd healthy
 - c. It prioritizes treatment of sick animals
 - d. It minimizes loss due to disease and parasites
- ____ 7. Under what physical symptoms do coughing and difficulty in breathing associated?
 - a. Attitude
 - b. Appetite
 - c. Respiratory signs
 - d. Reproductive organ
- ____ 8. This is caused by direct infection by ingestion of infective stage (oocyst) that thrives in moist, damp and unsanitary areas.

- a. Coccidiosis
 - b. Liverfluke
 - c. Pneumonia
 - d. Tapeworm
- _____9. Parasitic gastroenteritis, parasitic pneumonia, tapeworm and liver fluke are examples of _____.
- a. external parasites
 - b. infectious diseases
 - c. internal parasites
 - d. metabolic diseases
- _____10. The symptoms of this disease are signs of colic such as uneasiness, difficult breathing, bloating and rumen movements.
- a. Anemia
 - b. Bloat
 - c. Milk fever
 - d. Urinary calculi
- _____11. To prevent the goat from urinary calculi, what should be done?
- a. Feed straw or fibrous diets
 - b. Give Commercial anti bloat
 - c. Puncture the rumen with large needle
 - d. Give Prophylactic Vitamin A supplement
- _____12. Constant scratching and rubbing of skin is a sign of _____.
- a. Anthrax
 - b. Lice infestation
 - c. Tetanus
 - d. Urinary calculi
- _____13. Because of these external parasites, the goat or sheep may terminate in death due to systemic toxemia, gangrene or septic absorption.
- a. Bow flies
 - b. Lice
 - c. Mites
 - d. Ticks
- _____14. Removing and disposing manure and garbage will prevent _____.
- a. foot rot
 - b. flies and maggot build-up
 - c. spreading of disease
 - d. damp and wet condition
- _____15. What should be done to animals where there is an outbreak of disease?
- a. Keep astray/free
 - b. Kill all animals
 - c. Quarantine
 - d. Vaccinate
- _____16. Regular grooming of animals is an opportunity to the following EXCEPT ONE.
- a. Smell goaty odor
 - b. Remove dirt and unnecessary hairs
 - c. Check the teeth and gums abnormalities
 - d. Examine closely the condition of the animals
- _____17. These are parasites found on the external surface of the animal body such as skin and hairs.
- a. Caterpillars
 - b. Ectoparasites
 - c. Endoparasites
 - d. Worms
- _____18. These are parasites found in the internal parts of the animal body
- a. Caterpillars
 - b. Ectoparasites
 - c. Endoparasites
 - d. Worms
- _____19. The following are sources of safe drinking water for the animals EXCEPT ONE.
- a. Sanitary wells
 - b. Flowing water
 - c. Sanitary stream
 - d. Stagnant ponds and pools

- ____20. Among the following examples, what is the most reliable material as disinfectant?
- a. cold water
 - b. lukewarm water
 - c. hot water
 - d. tap water
- ____21. The following are the properties of disinfectant EXCEPT ONE.
- a. High toxicity to animal
 - b. Broad antimicrobial activity
 - c. High stability and permeability
 - d. Readily available at reasonable cost
- ____22. How often should be the collection of animal waste/manure?
- a. Once a week
 - b. Once a month
 - c. Once a year
 - d. Twice a year
- ____23. Rapid Rotational Grazing is recommended in order to minimize parasitism among goats. This explains the importance of _____.
- a. Quarantine program
 - b. Practicing sanitation
 - c. Parasite control program
 - d. Provision of adequate housing
- ____24. If the goat's waste is intended as manure for crops, what should be done?
- a. Soak it in water
 - b. Allow it to decompose
 - c. Ferment it for two weeks
 - d. Let it dry until it becomes solid
- ____25. When the area is not possible for scrubbing, what should be done to disinfect it?
- a. Use pail to wet the area
 - b. Use sprinkler to rinse it
 - c. Use high pressured water
 - d. Use water hose to rinse the area



A Health Program for the herd and flock is very essential. This is very critical for the goat and sheep raiser. If not managed properly, it will cause the downfall of production and the business. The strict implementation of the herd health program is crucial alongside a feeding regimen for it will ensure efficiency of the project.

ANIMAL PRODUCTION NC II
SMALL RUMINANTS

Content Standard	Performance Standard
The learner demonstrates understanding on how to keep and analyze updated records of raising small ruminants based on organization standards.	The learner independently keeps and analyzes updated records of raising small ruminants based on organization standards.

QUARTER 4

TIME ALLOTMENT: _____

MODULE NO. 6 ANALYZING RECORD



INTRODUCTION

This learning module covers the knowledge, skills, and attitudes required in keeping essential records of small ruminants production. It will give you needed information regarding recording activity in the project from production up to marketing based on organization standards.



OBJECTIVES

After completing this module, you should be able to:

1. keep/ update records regarding raising small ruminants according to organization standards;
2. analyze the viability of the project based on your records; and
3. make sound management decisions based on your records.



DIAGNOSTIC/PRE-ASSESSMENT: MODULE NO. 6 ANALYZING RECORD

Direction: Answer these questions. Write letter of your chosen answer in your activity notebook.

- ____1. This refers to management practices of maintaining history of one's activity by entering data on documents in files.
- a. Bank Accounts
 - b. Liability Report
 - c. Photo Documentation
 - d. Record Keeping
- ____2. This type of record includes the records of diseases and sickness observed from the ruminants.
- a. Feed Records
 - b. Health Records
 - c. Production Records
 - d. Records of Loss
- ____3. This record includes records incurred in feeding and the expenses relative to it.
- a. Feed Records
 - b. Health Records
 - c. Production Records
 - d. Records of Loss
- ____4. Record of the original number of stocks, newly purchased animals, goats sold, and deaths.
- a. Good Health Record
 - b. Income Record
 - c. Livestock Inventory
 - d. Record of Project Expense
- ____5. Which of the following is the list of information or activities gathered over a certain period?
- a. Cost and Return Analysis
 - b. Financial Report
 - c. Project Proposal
 - d. Record
- ____6. What is left after deducting the expenses from the gross sales?
- a. Input
 - b. Liability
 - c. Output
 - d. Profit
- ____7. Which of the following is not a quality of a good record?
- a. Accuracy
 - b. Details
 - c. Incomplete data
 - d. Simplicity
- ____8. Which record reflects the total number of stock in the project?
- a. Individual record
 - b. Production record
 - c. Record of inventory
 - d. Sales record
- ____9. This is a kind of record that reflects all inputs.
- a. Individual record
 - b. Production record
 - c. Record of inventory
 - d. Sales record
- ____10. Mang Jun is very keen on recording all the expenses he incurred in his small ruminants production. What objective of record keeping is he observing?
- a. Monitor project expenses
 - b. Find out the status of the business
 - c. Analyze the individual performance of the ruminants
 - d. Formulate appropriate measures when needed
- ____11. Repair, maintenance and labor fall under what type of expenses?
- a. Fixed investment
 - b. Operating Expenses
 - c. Production Expenses
 - d. Purchase of stock
- ____12. Fixed investment includes the following EXCEPT _____.
- a. Farm Tools
 - b. Goat house
 - c. Land
 - d. Veterinary drugs

Identify the following record.

____13. What record is shown below?

Particulars	Quantity	Unit	Unit Cost	Total Cost
TOTAL				

- a. Feed Record
b. Records of Expenses
c. Production Record
d. Sale disposal record

____14. What record is shown below?

Kind of Feeds/Feedstuffs	Quantity	Unit	Unit Cost	Total Cost
TOTAL				

- a. Feed Record
b. Records of Expenses
c. Production Record
d. Sale disposal record

Review the table below and answer the questions that follow:

Technical Assumptions

Parameter	Assumption
Production System	Full Confinement
Stocks	
Doe	Upgraded
Buck	Purebred Boer
Buck-to-doe ratio	1:25
Male-to-female ratio	1:1
Land Area for pasture (ha for 25-doe level)	0.5
Number of laborers per 50-doe level	1
Number of days of labor per year	183
Housing (m ² per head)	
Doe	1.5
Buck	2
Fattener	1
Type of housing	Semi-permanent
Useful life of housing (in years)	5
Conception rate	
First two months of breeding	90%
Succeeding breedings	95%

____15. What type of goat production system the farmer would like to follow?

- a. Intensive system
b. Semi-intensive
c. Full confinement
d. Semi-permanent

- ## Financial Assumptions

_____20. If a goat project will need two Boer bucks, how much amount will you prepare?

a. 40, 000.00 c. 60, 000.00

b. 50, 000.00 d. 70, 000.00

_____21. How much is the cost of permits and registration of business?

a. 10, 000.00 c. 20, 000.00

b. 15, 000.00 d. 30, 000.00

_____22. With the given 25-doe level, how much will the farmer spend in buying the does?

a. 75, 000.00 c. 85, 000.00

b. 80, 000.00 d. 90, 000.00

- ____23. How much is the total Farm establishment Cost?
- a. 58, 200.00
 - b. 58, 000.00
 - c. 60, 000.00
 - d. 70, 000.00
- ____24. In 183 days of working in the farm, what will be the total labor cost?
- a. 36, 600.00
 - b. 36, 800.00
 - c. 36, 900.00
 - d. 37, 000.00
- ____25. In marketing, this may be in the form of live goat whether for slaughter or for breeding, chevon, milk or other goat products.
- a. Place
 - b. Price
 - c. Promotion
 - d. Pro

Lesson 1. RECORD KEEPING



INTRODUCTION

This lesson primarily deals on record keeping: its parts and types. This includes samples of different records being used in small ruminant production.



OBJECTIVES

After completing this module, you should be able to:

1. define record keeping;
2. state the importance of keeping farm records;
3. enumerate the different inclusions of a record;
4. recall the types of records; and
5. show examples of individual animal record and examples of records to keep.



PRE-ASSESSMENT

Direction: Read the following questions. Choose the correct letter of your answer and write your answer in your activity notebook.

- _____ 1. Production records include the following EXCEPT ONE.
- | | |
|-----------------------|--------------------|
| a. Average Daily Gain | c. Date of birth |
| b. Birth weight | d. Date of Kidding |
- _____ 2. In this type of record, date of kidding, date of service and buck used, and pregnancy diagnosis are included.
- | | |
|------------------|---------------------------------|
| a. Feed Record | c. Production record |
| b. Health Record | d. Reproduction/breeding record |
- _____ 3. Included in this kind of record are amount and kind of grain, roughage or forage feed consumed, estimated composition of feeds and relative cost.
- | | |
|------------------|---------------------------------|
| a. Feed Record | c. Production record |
| b. Health Record | d. Reproduction/breeding record |
- _____ 4. Repair, maintenance and labor fall under what type of expenses?
- | | |
|-----------------------|------------------------|
| c. Fixed investment | c. Production Expenses |
| d. Operating Expenses | d. Purchase of stock |

____ 5. Fixed investment includes the following EXCEPT _____.

- c. Farm Tools
- d. Goat house
- c. Land
- d. Veterinary drugs

Identify the following records

____ 6. What record is shown below?

Particulars	Quantity	Unit	Unit Cost	Total Cost
TOTAL				

- a. Feed Record
- b. Records of Expenses
- c. Production Record
- d. Sale disposal record

____ 7. What record is shown below?

Kind of Feeds/Feedstuffs	Quantity	Unit	Unit Cost	Total Cost
TOTAL				

- a. Feed Record
- b. Records of Expenses
- c. Production Record
- d. Sale disposal record

____ 8. What record is shown below?

Goat No. or name _____ Date of Birth _____
 Sire _____ Birth weight (kg) _____
 Dam _____ Color _____
 Sex _____ Littermates: __Single__ Twins__ Triplets
 Method of Disposal _____ Weight at Disposal (Kg) _____

Date of Breeding	Sire	Date of Kidding	Kid No. and Sex	Birth Weight	Milk Prod.	Lact. Days	Ave. Prod.	Remarks

- a. Feed Record
- b. Individual Record
- c. Production Record
- d. Sale disposal record

____ 9. What record is shown below?

Product	Unit	Quantity	Standard/appraised Value

- a. Individual Record
- b. Production Record
- c. Records of Expenses
- d. Sale disposal record

____10. What record is shown below?

		(kg)	Unit Cost	Total	Consumer's Name	Mode of Sale		
						Cash		Amount
						Amt.	O.R. No.	
Total				_____		_____		_____

- a. Production Record
- b. Records of Sale

- c. Records of Expenses
- d. Individual Record



KNOW

Record Keeping

Good Record Keeping is the key to the success of any business operation. It keeps you informed of the overall status of the project. These management practices are very important because most decisions in the farm are based on records.

Record Keeping usually accounts for the success or failure of the farm enterprise. It should always be simple, complete, and accurate.

Farm records help you:

- a. analyze the individual performance of the goats;
- b. formulate appropriate measures when needed;
- c. monitor project expenses; and
- d. find out the status of the business.

The records should include:

- | | |
|---------------------------------|-----------------------------------|
| 1. Animal Identification | 5. Record of Management Practices |
| 2. Daily/weekly Milk Production | 6. Livestock Inventory |
| 3. Breeding/Kidding Record | 7. Expenses |
| 4. Health Record | 8. Income |

Types of Records to be kept:

- Production records
These may be growth records or lactation records. Growth records include date of birth, birth weight, weight at three and eight months old, average daily gain (ADG), and mortality. Lactation records include records of daily, weekly, or monthly milk and fat production of individual does, number of days of milking, other information, such as permanent identification of doe, date of birth, its sire and dam, the number and sex of its kids, and its dry dates.
- Reproduction and/or breeding records
Include the date of kidding, date of service and buck used, pregnancy diagnosis and expected kidding date, estrous period, birth type (single, twins, or triplets), and kidding interval.
- Herd health and disease control records.
Include observations on incidence of mastitis, brucellosis, kidding trouble, foot rot, scours, and parasitic infestation. Also included are date and frequency of treatment and vaccination given.
- Feed records.
Include the amount and kind of grain, roughage, or forage fed and consumed, estimated composition of feeds, and their relative cost.
- Herd inventory record
Displays the total population of animals in each classification, the beginning and ending balance in each month, the number of animals acquired and sold out.
- Others
Includes pasture production records, which cover harvesting, rotation period, the animal dispersal record; monthly weights of animals in the herd; and expenses records.

PRODUCTION INPUTS

A. Backyard Operations

1. Investment
 - a. Goat House
 - b. Breeding Stock
2. Operating Expenses
 - a. Veterinary Medicines, Vaccines
 - b. Concentrates
 - c. Additional Feed Supplements

B. Commercial or Large-Scale Operation

1. Fixed Investment
 - a. Land
 - b. Goat house and fences
 - c. Farm tools (like spade, wheelbarrow, and ropes)
 - d. Pasture area and planting materials
 - e. Water pump
 - f. Feeding trough
2. Purchase of stock
 - a. Breeding does
 - b. Breeding bucks
3. Operating Expenses
 - a. Concentrate Feeds
 - b. Labor
 - c. Veterinary drugs, vaccines, supplements
 - d. Farm tools such as grass cutter/chopper, wheel barrow, trailer
 - e. Light and water
 - f. Supplies (like packaging materials, stainless steel, milk containers, ear tags and ear tagger, dehorner, and castration kit)
 - g. Repair and maintenance

Individual Animal Record Form

Name: _____ Breed: _____ With Horn ☐
 I.D. No.: _____ Color: _____ Markings: _____ No Horn ☐
 Date of Birth: _____ Date Acquired: _____ Disposal Date: _____
 Pedigree:
 Sire: _____ Dam: _____

Type of Birth: Single ☐ Twin ☐ Triplet ☐ Siblings: _____, _____
 Birth Weight ___ 30-day ___ 3 months ___ 6 months ___ 1 year ___ 2 years ___

Date	Events/Medication	Deworming	Vitamins	Hoof Trim

Other examples of farm records to keep:

Sample of Individual Record Form

Goat No. or name _____ Date of Birth _____
 Sire _____ Birth weight (kg) _____
 Dam _____ Color _____
 Sex _____ Littermates: __Single__ Twins__ Triplets
 Method of Disposal _____ Weight at Disposal (Kg) _____

Date of Breeding	Sire	Date of Kidding	Kid No. and Sex	Birth Weight	Milk Prod.	Lact. Days	Ave. Prod.	Remarks

A Sample Lactation Record Form

Form1. INDIVIDUAL LIFETIME DAIRY DOE RECORD SUMMARY															
Doe No.: _____				Date of Disposal: _____											
Breed : _____				Reasons for Disposal: _____											
Date of Birth : _____															
Production Record Form of Doe															
Lactation No.	Age year/month	Date of Kidding	Days in milk	Total Actual Production			Weaning Date								
				Milk (liters)	%	Fat									
Remarks About the Doe															
BREEDING AND KIDDING INFORMATION ON DOE															
Mature body wt. _____ Days of Milking _____ Misc	Non service heat dates	Breeding dates						Date Conceived	Sire	Date Due	Date Kided	Sex	Kid No.	Disposal	
		Bred	Sire	Bred	Sire	Bred	Sire								

Doe No. _____ Date Born _____ <div style="display: flex; align-items: center; margin-top: 10px;"> <div style="width: 20px; height: 20px; border: 1px solid black; margin-right: 5px;"></div> <div style="border-bottom: 1px solid black; width: 100px; margin-bottom: 2px;"></div> <div style="border-bottom: 1px solid black; width: 100px; margin-bottom: 2px;"></div> <div style="border-bottom: 1px solid black; width: 100px;"></div> </div>		DAUGHTER RECORDS				
		Daughter No.	No. Rec.	Milk	%	Fat
HEALTH RECORD						
Reproductive	Others					

Sample Forms for Monthly Production and Sales Reports

A. PRODUCTION

Date: _____

Product	Unit	Quantity	Standard/appraised Value

B. SALES/DISPOSAL

Product	PR/INV. No.	Unit	Qty.	Unit Cost	Total Cost

Sample Form for Records of Sales

For the Month of _____

		(kg)	Unit Cost	Total	Consumer's Name	Mode of Sale		
						Cash		Amount
						Amt.	O.R. No.	
Total								

Sample Form for Record of Expenses

Particulars	Quantity	Unit	Unit Cost	Total Cost
TOTAL				

Sample Form for Feed Record

Kind of Feeds/Feedstuffs	Quantity	Unit	Unit Cost	Total Cost
TOTAL				

Form for Project Inventory

Name of Project: _____ For the month of _____

Particulars	Beginning Balance for the Month	Production	Sales	Mortality	Cause of Mortality

**Suggested Form for Record of Special Care Program
(Endoparasite Control)**

Date: _____

Classes of Animal	Name of Disease	Medicines Administered	Route of Administration	Date of Administration	Reactions	Remarks

Suggested Form for Records of Medication Program

Date: _____

Classes of Animal	Name of Disease	Medicines Administered	Route of Administration	Date of Administration	Reactions	Remarks

Record keeping is an indispensable management tool in evaluating production, farm inputs and outputs, and the overall efficiency of the small ruminant raising enterprise. However, these records are useless unless they are critically-analyzed and properly interpreted. It should be remembered that records are the key to an efficient management of any enterprise.



Activity 1

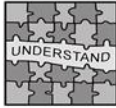
Direction: Write the inclusions of a record for small scale goat and sheep production.

1.	
2.	
3.	
4.	
5.	
6.	
7.	

Activity 2

Direction: Write the examples of the following investments and expenses on your activity notebook following the tabular format below:

Fixed Investments	Operating Expenses
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.



UNDERSTAND

1. What is the importance of record keeping in small ruminant production?

2. What do you think will happen if the small ruminant raiser does not keep records pertaining to the business?

3. How important is an income record?



TRANSFER

Activity

Visit a goat production in your community and secure different records in production and analyze the data entered.

Guide Questions:

1. What type of record did you secure?
2. Are the records useful in the operation of the goat production?
3. What are the inconsistencies or inaccuracies manifested in the records?

Submit your analysis paper to your teacher on the day he/she requires you.



POST ASSESSMENT

Direction: Read the following questions. Choose the correct letter of your answer and write your answer in your activity notebook.

- _____ 1. Production records include the following EXCEPT ONE.

- | | |
|-----------------------|--------------------|
| a. Average Daily Gain | c. Date of birth |
| b. Birth weight | d. Date of Kidding |

____ 2. In this type of record, date of kidding, date of service and buck used, and pregnancy diagnosis are included.

- a. Feed Record
- b. Health Record
- c. Production record
- d. Reproduction/breeding record

____ 3. Included in this kind of record are amount and kind of grain, roughage or forage feed consumed, estimated composition of feeds and relative cost.

- a. Feed Record
- b. Health Record
- c. Production record
- d. Reproduction/breeding record

____ 4. Repair, maintenance and labor fall under what type of expenses?

- a. Fixed investment
- b. Operating Expenses
- c. Production Expenses
- d. Purchase of stock

____ 5. Fixed investment includes the following EXCEPT _____.

- a. Farm Tools
- b. Goat house
- c. Land
- d. Veterinary drugs

Identify the following records

____ 6. What record is shown below?

Particulars	Quantity	Unit	Unit Cost	Total Cost
TOTAL				

- a. Feed Record
- b. Records of Expenses
- c. Production Record
- d. Sale disposal record

____ 7. What record is shown below?

Kind of Feeds/Feedstuffs	Quantity	Unit	Unit Cost	Total Cost
TOTAL				

- a. Feed Record
- b. Records of Expenses
- c. Production Record
- d. Sale disposal record

____ 8. What record is shown below?

Goat No. or name _____ Date of Birth _____
 Sire _____ Birth weight (kg) _____
 Dam _____ Color _____
 Sex _____ Littermates: __Single__ Twins__ Triplets
 Method of Disposal _____ Weight at Disposal (Kg) _____

Date of Breeding	Sire	Date of Kidding	Kid No. and Sex	Birth Weight	Milk Prod.	Lact. Days	Ave. Prod.	Remarks

- a. Feed Record
- b. Individual Record
- c. Production Record
- d. Sale disposal record

9. What record is shown below?

Product	Unit	Quantity	Standard/appraised Value

- a. Individual Record
- b. Production Record
- c. Records of Expenses
- d. Sale disposal record

10. What record is shown below?

		(kg)	Unit Cost	Total	Consumer's Name	Mode of Sale		
						Cash		Amount
						Amt.	O.R. No.	
Total				—		—		—

- a. Production Record
- b. Records of Sale
- c. Records of Expenses
- d. Individual Record



Record keeping is a key to success in any business operation. The importance of farm records include analyzing the individual performance of goat and sheep, formulating appropriate measures when needed, monitoring project expenses and finding out the status of the business.

A record should include: animal identification, daily/weekly milk production, breeding/kidding record, health record, and management practices record, livestock inventory, and expenses and income record.

Lesson 2. TECHNICAL and FINANCIAL ASSUMPTIONS



INTRODUCTION

This lesson deals on technical and financial data which are important in putting up an agricultural enterprise. Included are the analytical tools that can be used in project planning and in predicting how the business would operate and generate income under a set of assumptions.



OBJECTIVES

After completing this module, you should be able to:

1. explain the importance of technical assumptions in small ruminants enterprise ;
2. explain the importance of financial assumptions in small ruminants enterprise;
3. interpret the data provided in the assumptions; and
4. analyze the assumption given.



PRE-ASSESSMENT

Direction: Read the following questions. Choose the correct letter of your answer and write your answer in your activity notebook.

For items 1-5. Review the table below and answer the questions that follow:

Technical Assumptions

Parameter	Assumption
Production System	Full Confinement
Stocks	
Doe	Upgraded
Buck	Purebred Boer
Buck-to-doe ratio	1:25
Male-to-female ratio	1:1
Land Area for pasture (ha for 25-doe level)	0.5
Number of laborers per 50-doe level	1
Number of days of labor per year	183
Housing (m ² per head)	
Doe	1.5
Buck	2

Fattener	1
Type of housing	Semipermanent
Useful life of housing (in years)	5
Conception rate	
First two months of breeding	90%
Succeeding breedings	95%

- ____ 1. What type of goat production system the farmer would like to follow?
- Intensive system
 - Semi-intensive
 - Full confinement
 - Semi-permanent
- ____ 2. How many goats will the farmer raise including the buck?
- 24
 - 25
 - 26
 - 27
- ____ 3. If the number of goats exceeds 100, how many laborer/s will the farmer hire?
- 1
 - 2
 - 3
 - 4
- ____ 4. With 25 does, what is the total measurement of their space requirement?
- 37.5 m²
 - 38.5 m²
 - 39.5 m²
 - 40.5 m²
- ____ 5. What is the type of housing?
- Intensive system
 - Semi-intensive
 - Full confinement
 - Semi-permanent

For items 6-10. Review the table below and answer the questions that follow:

Financial Assumptions

Items	Amount (Php.)
Farm Establishment Costs	
Cost of permits and registration of business	10,000
Cost of one purebred boer buck	20,000
Cost of one upgraded doe	3,000
Cost per m ² of housing	200
Cost per area of fencing	20,000
Cost of pasture establishment per ha	5,000
Direct Production Costs	
Cost of concentrate feeds per kg	17
Cost of UMMB per kg	20
Cost of veterinary drugs and supplies/animal per month:	
Kid	5
Growing	7
Breeder doe	15
Breeder buck	7
Labor cost/day	200
Cost of pasture maintenance/ha per year	1,000

- ____ 6. If the goat project will need two Boer bucks, how much will you prepare?
- 40, 000.00
 - 50, 000.00
 - 60, 000.00
 - 70, 000.00

-

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Fattener	1
Type of housing	Semi-permanent
Useful life of housing (in years)	5
Conception rate	
First two months of breeding	90%
Succeeding breedings	95%
Kidding Size	
First kidding	1.5
Succeeding kiddings	1.75
Kidding per year	1.5
Culling rate	20%
Mortality Rate	
Matured	
First year	5%
Succeeding years	3%
Growing	
First batch	7%
Succeeding batches	5%
Kid	
First batch	10%
Succeeding batches	7%
Forage consumption (kg/day)	5
Kinds of forage	Napier and Legumes
Concentrate feeds consumption	
Kid (g/head/day for 60 days)	20
Growing (g/head/day for 150 days)	50
Breeder doe (g/head/day for 60 days per year)	200
Breeder buck (g/head/day for 60 days per year)	250
Urea molasses mineral block (UMMB)consumption (g/head/day for March and April)	
Breeder does and bucks	65
Average liveweight at marketing (kg)	
Fattener	
Year 2	25
Year 3	27
Succeeding years	30
Culled breeder doe	35
Culled breeder buck	50

Financial Assumptions

Items	Amount (Php.)
Farm Establishment Costs	
Cost of permits and registration of business	10,000
Cost of one purebred boer buck	20,000
Cost of one upgraded doe	3,000
Cost per m ² of housing	200
Cost per area of fencing	20,000
Cost of pasture establishment per ha	5,000

Direct Production Costs	
Cost of concentrate feeds per kg	17
Cost of UMMB per kg	20
Cost of veterinary drugs and supplies/animal per month:	
Kid	5
Growing	7
Breeder doe	15
Breeder buck	7
Labor cost/day	200
Cost of pasture maintenance/ha per year	1,000
Overhead Costs	
Land rent/year (based on the net income from a hectare rainfed rice farm)	15,000
Transportation cost to the market per animal	50
Cost of electricity per month	75
Maintenance cost of housing/m ² per year	25
Selling price/kg liveweight	
Fattener	150
Culled breeder does and buck	120
Taxes, inflation, and cost of capital	
Depreciation Method	Straight line
Tax rate	20.00%
Cost of debt	14.00%
Cost of equity	18.00%
Weighted average cost of capital (WACC)	15.55%
Inflation rate	4.10%

Total Investment Costs (Php.)

Capital Expenditures	
Housing	17,100.00
Fencing	20,000.00
Stocks:	
Does	75,000.00
Buck	20,000.00
Pasture development	2,5000.00
Working capital (based on 2-month cash conversion cycle)	
Labor	6,100.00
Concentrate feeds	2,021.30
Veterinary drugs and supplies	1,124.00
UMMB	2,028.00
Forage and pasture maintenance	166.67
Transportation	350.00
Housing maintenance	356.25
Land rent	1,271.38
Utilities	150.00
Contingencies	330.71
Development expenses	

Permits and registrations	10,000.00
Herd development (first 14 months of operation)	105,369.71
Total Investment	263,268.02

Projected Income Statement, Years 1-5 (Php)

	Year 1	Year 2	Year 3	Year 4	Year 5
Revenues					
Sale of fattener	-	89,786.25	263,334.48	182,754.13	327,647.70
Sale of culled does	16,800.00	26,233.20	18,205.84	28,428.42	19,729.32
Sale of culled buck	-	-	-	-	7,046.19
Total Revenues	16,800.00	116,019.45	281,540.32	211,182.55	354,423.21
Less: Direct Production Costs					
Labor	36,600.00	38,100.60	39,662.72	41,288.90	42,981.74
Concentrate feeds	5,661.00	13,322.30	15,483.12	16,473.82	16,573.34
Veterinary drugs and supplies	4,402.00	7,361.95	8,308.58	8,600.73	8,982.71
UMMB	2,028.00	2,111.15	2,197.71	2,287.81	2,335.81
Forage and pasture maintenance	1,000.00	1,041.00	1,083.68	1,128.11	1,174.36
Total direct production costs	49,691.00	61,937.00	66,690.81	69,779.36	72,011.97
Gross Profit	(32,891.00)	54,082.45	214,849.51	141,403.19	282,411.24
Less: Overhead Costs					
Transportation	200.00	1,457.40	2,763.39	3,215.12	2,055.14
Housing maintenance	2,137.50	2,225.14	2,316.37	2,411.34	2,510.20
Land rent	7,628.25	7,941.01	8,266.59	8,605.52	8,958.35
Utilities (water and electricity)	900.00	936.90	975.31	1,015.30	1,056.93
Depreciation	26,920.00	26,920.00	26,920.00	26,920.00	26,920.00
Contingencies (5% of overhead costs)	1,889.29	2,029.21	2,174.72	2,280.80	2,309.73
Total overhead costs	39,675.04	41,509.65	43,416.37	44,448.08	43,810.34
Operating Profit	(72,566.04)	12,572.79	171,433.14	96,955.11	238,600.89
Less: Interest	13,300.00	11,287.93	8,994.17	6,379.28	3,398.31
Taxable Profit	(85,866.04)	1,284.87	162,438.97	90,575.83	235,202.59
Less: Tax	(17,173.21) *	256.97	32,487.79	18,115.17	47,040.52
Net Profit	(68,692.83)	1,027.89	129,951.18	72,460.66	188,162.07
Average ROI	27.24%				

*Tax loss carry-forward due to net operating loss.

Goat herd projections (Years 1 -5)

Year 1												
	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Fatteners												
Kid (0-3 mos.)	0	0	0	0	0	0	4	10	16	18	18	14
Growing (3-8 mos.)	0	0	0	0	0	0	0	0	0	3	8	13
Mature (8 mos.- up) -for selling	0	0	0	0	0	0	0	0	0	0	0	0
Does (breeder)												
Productive does	5	10	15	20	25	25	25	25	25	25	25	25
Culled does	0	0	0	0	0	0	0	0	1	1	1	1
Buck (breeder):												
Productive buck	1	1	1	1	1	1	1	1	1	1	1	1
Culled buck	0	0	0	0	0	0	0	0	0	0	0	0
Total	6	11	16	21	26	26	30	36	43	48	53	54

Year 2												
	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Fatteners												
Kid (0-3 mos.)	8	2	4	12	20	23	23	19	11	3	4	13
Growing (3-8 mos.)	18	23	22	18	13	12	14	19	25	32	32	26
Mature (8 mos.- up) -for selling	0	0	1	3	3	3	3	2	0	0	3	5
Does (breeder)												
Productive does	25	25	25	25	25	25	25	25	25	25	25	25
Culled does	1	0	0	0	1	1	1	1	1	0	0	0
Buck (breeder):												
Productive buck	1	1	1	1	1	1	1	1	1	1	1	1
Culled buck	0	0	0	0	0	0	0	0	0	0	0	0
Total	53	51	53	59	63	65	67	67	63	61	65	70

Year 3												
	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Fatteners												
Kid (0-3 mos.)	22	26	26	22	13	4	4	11	18	21	21	17
Growing (3-8 mos.)	19	17	19	24	32	41	40	32	23	17	14	16
Mature (8 mos.- up) -for selling	7	7	7	4	1	0	4	7	7	7	7	2
Does (breeder)												
Productive does	25	25	25	25	25	25	25	25	25	25	25	25
Culled does	0	0	0	0	0	0	0	0	1	1	1	1
Buck (breeder):												
Productive buck	1	1	1	1	1	1	1	1	1	1	1	1
Culled buck	0	0	0	0	0	0	0	0	0	0	0	0
Total	74	76	78	76	72	71	74	76	75	72	69	62

Year 4												
	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Fatteners												
Kid (0-3 mos.)	10	3	4	13	22	26	26	22	13	4	4	13
Growing (3-8 mos.)	21	27	28	23	17	16	19	24	32	41	40	32
Mature (8 mos.- up) -for selling	0	0	2	5	5	5	5	3	0	0	4	7
Does (breeder)												
Productive does	25	25	25	25	25	25	25	25	25	25	25	25
Culled does	1	0	0	0	1	1	1	1	1	0	0	0
Buck (breeder):												
Productive buck	1	1	1	1	1	1	1	1	1	1	1	1
Culled buck	0	0	0	0	0	0	0	0	0	0	0	0
Total	58	56	60	67	71	74	77	76	72	71	74	78

Year 5												
	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Fatteners												
Kid (0-3 mos.)	22	26	26	22	13	4	4	12	20	23	23	19
Growing (3-8 mos.)	23	19	18	22	29	37	36	29	21	17	16	19
Mature (8 mos.- up) -for selling	9	9	9	5	1	0	3	6	6	6	6	2
Does (breeder)												
Productive does	5	10	15	20	25	25	25	25	25	25	25	25
Culled does	0	0	0	0	0	0	0	0	1	1	1	1
Buck (breeder):												
Productive buck	1	1	1	1	1	1	1	1	1	1	1	0
Culled buck	0	0	0	0	0	0	0	0	0	0	0	1
Total	80	80	79	75	69	67	69	73	74	73	72	67



Direction: Write whether the following parameters are part of Technical Assumption or Financial Assumption.

No.	Your Answer	Parameters
1		Production System
2		Farm Establishment Costs
3		Kidding Size
4		Direct Production Costs
5		Concentrate feeds consumption
6		Overhead Costs

7		Housing
8		Selling price/kg liveweight
9		Mortality Rate
10		Taxes, inflation, and cost of capital



UNDERSTAND

1. Why is technical assumption important in small ruminant production?

2. Why is financial assumption important in small ruminant production?

3. Is registering your goat and sheep production business important? Why?



TRANSFER

Activity

Directions: Given 50 doe-level, make a technical and financial assumption. Use the format below.

A. Technical Assumption

Parameter	Assumption
Production System	
Stocks	
Doe	
Buck	
Buck-to-doe ratio	
Male-to-female ratio	
Land Area for pasture (ha for 50-doe level)	
Number of laborers per 50-doe level	
Number of days of labor per year	
Housing (m ² per head)	
Doe	

Buck
Fattener
Type of housing
Useful life of housing (in years)
Conception rate
First two months of breeding
Succeeding breedings
Kidding Size
First kidding
Succeeding kiddings
Kidding per year
Culling rate
Mortality Rate
Matured
First year
Succeeding years
Growing
First batch
Succeeding batches
Kid
First batch
Succeeding batches
Forage consumption (kg/day)
Kinds of forage
Concentrate feeds consumption
Kid (g/head/day for 60 days)
Growing (g/head/day for 150 days)
Breeder doe (g/head/day for 60 days per year)
Breeder buck (g/head/day for 60 days per year)
Urea molasses mineral block (UMMB)consumption (g/head/day for March and April)
Breeder does and bucks
Average liveweight at marketing (kg)
Fattener
Year 2
Year 3
Succeeding years
Culled breeder doe
Culled breeder buck

B. Financial Assumption

Items	Amount (Php.)
Farm Establishment Costs	
Cost of permits and registration of business	
Cost of one purebred Boer buck	
Cost of one upgraded doe	
Cost per m ² of housing	

Cost per area of fencing	
Cost of pasture establishment per ha	
Direct Production Costs	
Cost of concentrate feeds per kg	
Cost of UMMB per kg	
Cost of veterinary drugs and supplies/animal per month: Kid Growing Breeder doe Breeder buck	
Labor cost/day	
Cost of pasture maintenance/ha per year	
Overhead Costs	
Land rent/year (based on the net income from a hectare rainfed rice farm) Transportation cost to the market per animal Cost of electricity per month Maintenance cost of housing/m ² per year	
Selling price/kg liveweight	
Fattener	
Culled breeder does and buck	
Taxes, inflation, and cost of capital	
Depreciation Method	
Tax rate	
Cost of debt	
Cost of equity	
Weighted average cost of capital (WACC)	
Inflation rate	



POST ASSESSMENT

Direction: Read the following questions. Choose the correct letter of your answer and write your answer in your activity notebook.

For items 1-5. Review the table below and answer the questions that follow:

Technical Assumptions

Parameter	Assumption
Production System	Full Confinement

Stocks

Doe
Buck

Upgraded
Purebred Boer

Buck-to-doe ratio	1:25
Male-to-female ratio	1:1
Land Area for pasture (ha for 25-doe level)	0.5
Number of laborers per 50-doe level	1
Number of days of labor per year	183
Housing (m ² per head)	
Doe	1.5
Buck	2
Fattener	1
Type of housing	Semipermanent
Useful life of housing (in years)	5
Conception rate	
First two months of breeding	90%
Succeeding breedings	95%

- ____1. What type of goat production system the farmer would like to follow?
- a. Intensive system c. Full confinement
- b. Semi-intensive d. Semi-permanent
- ____2. How many goats will the farmer raise including the buck?
- a. 24 c. 26
- b. 25 d. 27
- ____3. If the number of goats exceeds 100, how many laborer/s will the farmer hire?
- a. 1 c. 3
- b. 2 d. 4
- ____4. With 25 does, what is the total measurement of their space requirement?
- a. 37.5 m² c. 39.5 m²
- b. 38.5 m² d. 40.5 m²
- ____5. What is the type of housing?
- a. Intensive system c. Full confinement
- b. Semi-intensive d. Semi-permanent

For items 6-10. Review the table below and answer the questions that follow:

Financial Assumptions

Items	Amount (Php.)
Farm Establishment Costs	
Cost of permits and registration of business	10,000
Cost of one purebred boer buck	20,000
Cost of one upgraded doe	3,000
Cost per m ² of housing	200
Cost per area of fencing	20,000
Cost of pasture establishment per ha	5,000
Direct Production Costs	
Cost of concentrate feeds per kg	17
Cost of UMMB per kg	20
Cost of veterinary drugs and supplies/animal per	

month:	5
Kid	7
Growing	15
Breeder doe	7
Breeder buck	
Labor cost/day	200
Cost of pasture maintenance/ha per year	1,000

- ____ 6. If the goat project will need two Boer bucks, how much will you prepare?
- a. 40, 000.00 c. 60, 000.00
b. 50, 000.00 d. 70, 000.00
- ____ 7. How much is the cost of permits and registration of business?
- a. 10, 000.00 c. 20, 000.00
b. 15, 000.00 d. 30, 000.00
- ____ 8. With the given 25-doe level, how much will the farmer spend in buying the does?
- a. 75, 000.00 c. 85, 000.00
b. 80, 000.00 d. 90, 000.00
- ____ 9. How much is the total Farm establishment Cost?
- a. 58, 200.00 c. 60, 000.00
b. 58, 000.00 d. 70, 000.00
- ____ 10. In 183 days of working in the farm, what will be the total labor cost?
- a. 36, 600.00 c. 36, 900.00
b. 36, 800.00 d. 37, 000.00



Two assumptions are important to be known and practiced by goat and sheep raisers. These are Technical Assumptions and Financial Assumptions. This is done to estimate the revenues and cost of the animals to raise in a given time frame.

Lesson 3. Marketing and Enterprise



INTRODUCTION

This lesson deals with the importance of marketing small ruminant products. This includes marketing strategies and plans to ensure the success of the activity to earn more profit.



OBJECTIVES

After completing this lesson, you should be able to:

1. discuss marketing;
2. cite different marketing strategies;
3. explain niche marketing;
4. explain marketing plan; and
5. enumerate the parts of marketing plans.



PRE-ASSESSMENT

Directions: Read the questions carefully and write the letter of the correct answer in your activity notebook.

- ____ 1. This is the term for goat meat.
 - a. Beef
 - b. Chevron
 - c. Mutton
 - d. Veal
- ____ 2. This is the term for sheep meat.
 - a. Beef
 - b. Chevron
 - c. Mutton
 - d. Veal
- ____ 3. This is the process of planning and executing the conception, pricing, promotion and distribution of ideas, goods and services to create exchanges that satisfy individual and organizational goals.
 - a. Advertising
 - b. Branding
 - c. Marketing
 - d. Pricing
- ____ 4. It is a meeting place of buyers and sellers who transact business over a particular product or product class.
 - a. Grocery
 - b. Hardware
 - c. Market
 - d. Store

- _____5. In marketing, this may be in the form of live goat whether for slaughter or for breeding, chevon, milk or other goat products.
- | | |
|----------|--------------|
| c. Place | c. Promotion |
| d. Price | d. Product |
- _____6. It is the amount of money that customers are willing to pay for the product.
- | | |
|----------|--------------|
| a. Place | c. Promotion |
| b. Price | d. Product |
- _____7. These refer to the various activities that a company or a farm undertakes to communicate its products' merits and to persuade target customers to buy them.
- | | |
|----------|--------------|
| a. Place | c. Promotion |
| b. Price | d. Product |
- _____8. These stand for the various activities that the farmer or processor undertakes to make the product accessible and available to target consumers.
- | | |
|----------|--------------|
| a. Place | c. Promotion |
| b. Price | d. Product |
- _____9. This occurs when specialized markets are chosen and the farmer moves away from competing in the commodity markets of bulk buying and undifferentiated products.
- | | |
|--------------------|-------------------------|
| a. Advertising | c. Retail Marketing |
| b. Niche Marketing | d. Whole Sale Marketing |
- _____10. The key questions to answer in the marketing plan are the following EXCEPT
- | |
|--|
| a. How big is the market? |
| b. Which market to target or serve? |
| c. How much is the price of gasoline? |
| d. Is there a market for goat and sheep? |



KNOW

Goat meat or chevon and sheep meat or mutton used to be consumed only during special occasions. However, increasing consumers' awareness on its health benefits has expanded the products' market. In this regard, marketing is necessary to carry out by a farmer.

Kotler (2003) defined marketing as the process of planning and executing the conception, pricing, promotion and distribution of ideas, goods and services to create exchanges that satisfy individual and organizational goals. It is a business function that identifies current unfilled needs and wants of consumers, identifies and measures the magnitude, determines which target markets and organization can best serve, and determines the appropriate products services and programs that serve the market. Market, as defined by economists, is a collection of buyers and sellers who transact business over a particular product or product class.

The Philippine market setting has to contend with two things in terms of marketing agricultural products and services: (a) the peculiarities of the production process and characteristics of their products; and (b) the market structure where they belong (Beltran, 2014).

In the case of goat and sheep production, it is complicated and tedious. Their products such as live goats and sheep, chevon and mutton, goat's milk and wool, are characterized as:

- seasonal – long production of time and biological nature of the production process
- perishable – shelf-life constraints for raw materials, good in process and finished products
- bulky – size of products require special storage and transport facilities
- variable in quality and quantity – variable process yield is due to biological variations, seasonality, weather, pests and other biological hazards.

Marketing Strategy

Crafting marketing strategy for goats and sheep entails using the four Ps of marketing:

1. Product stands for the tangible things offered to the market including product features, packaging, branding, and servicing policies. In goat and sheep production, this refers to the output of the farmer or processor's offer to the market. This may be in the form of live goat whether for slaughter or for breeding, chevon, mutton, milk or other goat and sheep products.
2. Price is the amount of money that customers are willing to pay for the product. This represents a measure of the value a customer sees in the product. Goat buyers may pay breeder goats for Php. 15,000.00 or live slaughter goats for Php. 3,000.00. Consumers may pay Php 120 per kilogram live weight for slaughter goats and Php 250 per kilogram of chevon.
3. Promotion refers to the various activities that a company or a farm undertakes to communicate its products' merits and to persuade target customers to buy them. For example, goat breeders undertake marketing activities like making posters or leaflets informing the qualities of their breeder stocks for sale.



4. Place stands for the various activities that the farmer or processor undertakes to make the product accessible and available to target consumers. Thus, successful goat farmers identify, recruit, and link with various middlemen and marketing facilitators in a goat supply chain so that their products and services are efficiently supplied to the target market.

Niche Marketing

Niche marketing occurs when specialized markets are chosen and the farmer moves away from competing in the commodity markets of bulk buying and undifferentiated products. A market niche would usually occur when the product or service marketed is so differentiated that it appears to have little competition. Thus, a market niche could be in the area of:

- uniqueness of the product
- quality of the product
- service quality
- seasonal difference
- specialized knowledge, or
- superior product design

Niche markets for goats and sheep include:

- superior breeder goats and sheep
- well packaged frozen chevon and mutton
- specialty or exotic goat and sheep recipes
- milk production
- cosmetics from milk products
- cashmere cloth from goat hair
- wool from sheep

Marketing Plan

The key questions to answer in the marketing plan are:

- Is there a market for goat and sheep?
- How big is the market?
- Which market to target or serve?

The parts of a marketing plan include:

1. Product features and characteristics
2. Market segmentation and targeting
3. Market requirements
4. Demand and supply analysis
5. Production volume and market share
6. Competition
7. Pricing
8. Projected sales
9. Promotion
10. Distribution

11. Sales channels and services
12. Marketing and selling experiences

Additional Value from slaughtering one mature goat

	Weight (kg)	Price (Php/kg)	Total
Revenue from selling:			
Prime cuts (e.g., breast, loin, foreshank, etc.)	19.5	270.00	5,265.00
Head and feet	4.7	220.00	1,026.30
Internal organs	4.0	150.00	599.85
Total revenue			6,891.15
Less: Direct Costs			
Cost of animal for slaughter			4,500.00
Cost of slaughtering			300.00
Total Cost			4,800.00
Value added from Slaughtering			2,091.15



In your own point of view, discuss briefly the Four (4) P's of Marketing

Product	
Price	
Promotion	
Place	



1. What are the importance of having the knowledge in marketing goat and sheep products?

2. Cite what goat menu would you like most and justify your answer.

Transfer

Activity 1

Directions: Visit the market and survey the price of the chevon or goat meat and mutton or sheep meat. Be able to fill-up the following information:

Name of Market: _____

Address: _____

Name of Vendor: _____

Prevailing Price of Chevon: _____ Mutton: _____

Activity 2

Directions: Research at least five (5) menus of chevon and mutton. Be able to include the title of the recipes, their ingredients, materials to be used and the process of preparation and cooking. Cite also the sources/references of the recipes.

Name of Recipe: _____

Ingredients: _____

Materials: _____

Procedures: _____

Activity 3

Directions: Suggest an experimental menu out of mutton and chevon meat. Be able to follow the format below:

Name of Recipe: _____

Ingredients: _____

Materials: _____

Procedures: _____



POST ASSESSMENT

Directions: Read the questions carefully and write the letter of the correct answer in your activity notebook.

- ____ 1. This is the term for goat meat.
 - a. Beef
 - b. Chevron
 - c. Mutton
 - d. Veal
- ____ 2. This is the term for sheep meat.
 - a. Beef
 - b. Chevron
 - c. Mutton
 - d. Veal
- ____ 3. This is the process of planning and executing the conception, pricing, promotion and distribution of ideas, goods and services to create exchanges that satisfy individual and organizational goals.
 - a. Advertising
 - b. Branding
 - c. Marketing
 - d. Pricing
- ____ 4. It is a meeting place of buyers and sellers who transact business over a particular product or product class.
 - a. Grocery
 - b. Hardware
 - c. Market
 - d. Store
- ____ 5. In marketing, this may be in the form of live goat whether for slaughter or for breeding, chevon, milk or other goat products.
 - a. Place
 - b. Price
 - c. Promotion
 - d. Product
- ____ 6. It is the amount of money that customers are willing to pay for the product.
 - a. Place
 - b. Price
 - c. Promotion
 - d. Product
- ____ 7. These refer to the various activities that a company or a farm undertakes to communicate its products' merits and to persuade target customers to buy them.
 - a. Place
 - b. Price
 - c. Promotion
 - d. Product
- ____ 8. These stand for the various activities that the farmer or processor undertakes to make the product accessible and available to target consumers.
 - a. Place
 - b. Price
 - c. Promotion
 - d. Product
- ____ 9. This occurs when specialized markets are chosen and the farmer moves away from competing in the commodity markets of bulk buying and undifferentiated products.
 - a. Advertising
 - b. Niche Marketing
 - c. Retail Marketing
 - d. Whole Sale Marketing

- _____10. The key questions to answer in the marketing plan are the following EXCEPT
- How big is the market?
 - Which market to target or serve?
 - How much is the price of gasoline?
 - Is there a market for goat and sheep?



Marketing is very necessary to carry out by a farmer. It is defined as the process of planning and executing the conception, pricing, promotion and distribution of ideas, goods and services to create exchanges that satisfy individual and organizational goals.

Marketing goats and sheep entails the four (4) Ps of marketing which include product, price, promotion, and place.

Marketing plan is also necessary to be executed by the farmers.



POST ASSESSMENT: MODULE NO. 6 ANALYZING RECORD

Direction: Answer these questions. Write letter of your chosen answer in your activity notebook.

- _____1. This refers to management practices of maintaining history of one's activity by entering data on documents in files.
- | | |
|---------------------|------------------------|
| a. Bank Accounts | c. Photo Documentation |
| b. Liability Report | d. Record Keeping |
- _____2. This type of record includes the records of diseases and sickness observed from the ruminants.
- | | |
|-------------------|-----------------------|
| a. Feed Records | c. Production Records |
| b. Health Records | d. Records of Loss |
- _____3. This record includes records incurred in feeding and the expenses relative to it.
- | | |
|-------------------|-----------------------|
| a. Feed Records | c. Production Records |
| b. Health Records | d. Records of Loss |
- _____4. Record of the original number of stocks, newly purchased animals, goats sold, and deaths.
- | | |
|-----------------------|------------------------------|
| a. Good Health Record | c. Livestock Inventory |
| b. Income Record | d. Record of Project Expense |

- ____ 5. Which of the following is the list of information or activities gathered over a certain period?
- Cost and Return Analysis
 - Financial Report
 - Project Proposal
 - Record
- ____ 6. What is left after deducting the expenses from the gross sales?
- Input
 - Liability
 - Output
 - Profit
- ____ 7. Which of the following is not a quality of a good record?
- Accuracy
 - Details
 - Incomplete data
 - Simplicity
- ____ 8. Which record reflects the total number of stocks in the project?
- Individual record
 - Production record
 - Record of inventory
 - Sales record
- ____ 9. This is a kind of record that reflects all inputs.
- Individual record
 - Production record
 - Record of inventory
 - Sales record
- ____ 10. Mang Jun is very keen on recording all the expenses he incurred in his small ruminants production. What objective of record keeping is he observing?
- Monitor project expenses
 - Find out the status of the business
 - Analyze the individual performance of the ruminants
 - Formulate appropriate measures when needed
- ____ 11. Repair, maintenance and labor fall under what type of expenses?
- Fixed investment
 - Operating Expenses
 - Production Expenses
 - Purchase of stock
- ____ 12. Fixed investment includes the following EXCEPT ____.
- Farm Tools
 - Goat house
 - Land
 - Veterinary drugs

Identify the following records

- ____ 13. What record is shown below?

Particulars	Quantity	Unit	Unit Cost	Total Cost
TOTAL				

- Feed Record
- Records of Expenses
- Production Record
- Sale disposal record

- ____ 14. What record is shown below?

Kind of Feeds/Feedstuffs	Quantity	Unit	Unit Cost	Total Cost

TOTAL				

a. Feed Record

b. Records of Expenses

c. Production Record

d. Sale disposal record

Review the table below and answer the questions that follow:

Technical Assumptions

Parameter	Assumption
Production System	Full Confinement
Stocks	
Doe	Upgraded
Buck	Purebred Boer
Buck-to-doe ratio	1:25
Male-to-female ratio	1:1
Land Area for pasture (ha for 25-doe level)	0.5
Number of laborers per 50-doe level	1
Number of days of labor per year	183
Housing (m ² per head)	
Doe	1.5
Buck	2
Fattener	1
Type of housing	Semipermanent
Useful life of housing (in years)	5
Conception rate	
First two months of breeding	90%
Succeeding breedings	95%

____15. What type of goat production system the farmer would like to follow?

a. Intensive system

b. Semi-intensive

c. Full confinement

d. Semi-permanent

____16. How many goats will the farmer raise including the buck?

a. 24

b. 25

c. 26

d. 27

____17. If the number of goats exceeds 100, how many laborer/s will the farmer hire?

a. 1

b. 2

c. 3

d. 4

____18. With 25 does, what is the total measurement of their space requirement?

a. 37.5 m²

b. 38.5 m²

c. 39.5 m²

d. 40.5 m²

____19. What is the type of housing?

- a. Intensive system
- b. Semi-intensive
- c. Full confinement
- d. Semi-permanent

Financial Assumptions

Items	Amount (Php.)
Farm Establishment Costs	
Cost of permits and registration of business	10,000
Cost of one purebred boer buck	20,000
Cost of one upgraded doe	3,000
Cost per m ² of housing	200
Cost per area of fencing	20,000
Cost of pasture establishment per ha	5,000
Direct Production Costs	
Cost of concentrate feeds per kg	17
Cost of UMMB per kg	20
Cost of veterinary drugs and supplies/animal per month:	
Kid	5
Growing	7
Breeder doe	15
Breeder buck	7
Labor cost/day	200
Cost of pasture maintenance/ha per year	1,000

- ____ 20. If the goat project will need two Boer bucks, how much will you prepare?
- a. 40, 000.00
 - b. 50, 000.00
 - c. 60, 000.00
 - d. 70, 000.00
- ____ 21. How much is the cost of permits and registration of business?
- a. 10, 000.00
 - b. 15, 000.00
 - c. 20, 000.00
 - d. 30, 000.00
- ____ 22. With the given 25-doe level, how much will the farmer spend in buying the does?
- a. 75, 000.00
 - b. 80, 000.00
 - c. 85, 000.00
 - d. 90, 000.00
- ____ 23. How much is the total Farm establishment Cost?
- a. 58, 200.00
 - b. 58, 000.00
 - c. 60, 000.00
 - d. 70, 000.00
- ____ 24. In 183 days of working in the farm, what will be the total labor cost?
- a. 36, 600.00
 - b. 36, 800.00
 - c. 36, 900.00
 - d. 37, 000.00
- ____ 25. In marketing, this may be in the form of live goat whether for slaughter or for breeding, chevon, milk or other goat products.
- a. Place
 - b. Price
 - c. Promotion
 - d. Product



MODULE NO. 6 ANALYZING RECORD

Record keeping is another important aspect of small ruminants raising. It keeps track of the status and progress of the endeavor. Once a farm record-keeping system has been established, analyzing the records begins. After analysis, the raiser makes decisions on both production and finances and their impact on profitability. A number of financial analysis tools can be used when accurate and complete farm records are available. These tools include the **balance sheet**, **income statement** and **projected monthly cash flow statement**. These three financial statements provide information for making short and long term financial decisions.

