## Ranch Record Book Sheets

This version provides the camera-ready sheets to produce the Florida Ranch Record Book. This version was developed to save computer printer cartridges. The full Ranch Record Book is 212 pages. This version is only 53 pages. Below is the recommended number of pages to print for ranches with up to 12 pastures or fields and up to 100 cows. Each pasture or fields should have a set of four record sheets. This record book was set up for hole punching and insertion into a $21 / 2 "$ binder notebook. The beauty of this system, however is that ranchers can customize the record book to fit their own operation.

## Standard Pages

12 copies of all four pasture record pages
100 copies of the Cow Production History sheet
4 copies of the Breeding/AI sheet (25 entries per page)
4 copies of the Pregnancy Testing sheet (25 entries per page)
4 copies of the Cattle Sales sheet
4 copies of the Other Income sheet
6 copies of the Expenses sheet
The rest of the sheets are provided as single copies. Each section has a cover page, however for ease of use, labeled notebook dividers are recommended as well.

Replacement sheets are available online at: http://jackson.ifas.ufl.edu/ranch_record.htm

For more information on the Florida Ranch Record Book contact:

Doug Mayo
Jackson County Extension
2741 Pennsylvania Ave.
Marianna, FL 32448
850-482-9620
email: demayo@ifas.ufl.edu
Web page: http://jackson.ifas.ufl.edu


This Record Book was developed by Doug Mayo, Jackson County Extension to enhance beef cattle ranch management, meet pesticide application record requirements, meet the recommendations for Country-of -Origin Labeling records, and to compliment the Florida Cattlemen's Association's Water Quality Best Management Practice Manual.


First Edition March 2004

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This Record Book can be a valuable tool to help improve the management of your beef cattle operation. Registration is required so that updates can be sent to you. Since this is the first edition of this publication, University of Florida Extension will be contacting you in the future for your feed back on improving the usefulness, format and completeness of this record book.

## Registration forms should be mailed to:

Doug Mayo, Livestock Extension Agent
Jackson County Extension
2741 Pennsylvania Avenue, Suite 3
Marianna, FL 32448

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Please Return to:
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For Record Book Page Refills:
Contact: Doug Mayo
Livestock Extension Agent Jackson County Extension 2741 Pennsylvania Ave Marianna, FL 32448

850-482-9620
Email: demayo@ifas.ufl.edu
Web page: http://jackson.ifas.ufl.edu/livestock.htm

## About this Record Book



This record book was designed for field use (kept in truck), to record beef cattle and pasture records. The record sheets were designed for use in a loose-leaf binder, which can be customized to each individual operation. This record book does not take the place of business accounting and was not intended as a complete record list for tax preparation or loan application.

The standard record book comes with enough sheets to keep records on up to 12 fields and 100 cows. If additional fields are needed, simply print or copy all four pasture record sheets (pages 10-13) for each additional field. If an operation has more than 100 cows and heifers, additional copies of the individual cow production history sheet (page 58) should be added for each cow. The breeding and pregnancy testing sheets allow for 25 cows per sheet, so copies should be made for each additional 25 cows over the standard 100 head (pages $161 \& 165$ ).

The individual cow production and pasture record sheets were developed to keep for multiple years. All other sheets may need to be replaced for the next year. Any record sheets that do not apply for an operation can simply be removed. Additional record sheets can be developed based on the needs of each operation. If individual animal records are not maintained, then there is no need for printing off the cow production history sheets.

One final suggestion, record keeping is most valuable when used for decision making such as business analysis or cattle selection. In order to get the most value from the records kept in this book, profitability and herd performance measures should be developed for the year. However, with regulation and animal trace back, having a good set of records is becoming more and more important. So keep the records to be able to prove what you have done, but also use the records to analyze performance and profitability, to make your operation more efficient over the long haul.

## Ranch Planning Calendar

January

February

March

## Ranch Planning Calendar

April

May

June

## Ranch Planning Calendar

July

August

September

## Ranch Planning Calendar

October

November

December

## Pasture

## Records

Rainfall Record

| Day | Jan | Feb | Mar | Apr | May | June | July | Aug | Sep | Oct | Nov | Dec |
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Total for Year

## Pasture/Field Record

Pasture I.D. $\qquad$ Number of Acres $\qquad$
Crop Record Planting Date

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Harvest Record

| Date | Crop | Yield and Comments (\# seed, \# bales) |
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Pasture I.D. $\qquad$ Number of Acres $\qquad$
Soil Test Record

| Test Results |  |  |  | Test Recommendations |  |  |  |  |
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| Date <br> Sampled | $\mathbf{p H}$ | P-range <br> or ppm | K-range <br> or ppm | \#N/acre | \#P/acre | \#K/acre | Lime/ac |  |
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## Fertilizer Record

| Date Applied | Fertilizer Type | Rate/Acre | \# Acres Applied | Total Applied | Area Applied |
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## Pasture Improvements or Repairs

| Date | Type of Improvement | Description of Improvement |
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Pasture I.D.
Pest Scouting \& Control Record

| Date <br> Pest Scouted | Pest Observed: Insect, Weeds, Disease | Pest Levels: \% damage, or light, medium, or heavy | Crop Affected | Product Used | Wind, Weather <br> \& Field <br> Conditions | Treatment Method: <br> Sprayer, nozzles, speed, pressure, gallons/acre etc. | Control: <br> Poor, Fair, <br> Good, <br> Excellent |
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## Pesticide Use Record

Licensed Applicator:
License Number: Property Owner:

| Date and <br> Time of <br> Treatment | Actual Applicator (if different from above) | Brand Name | Active Ingredient | Product EPA <br> Registration \# | Crop <br> Treated | Rate <br> Applied per <br> Acre | Size of Area Treated | Total Amount Applied | Restricted <br> Entry <br> Interval | Grazing or Hay Restriction |
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Grazing Record

| Date In | Grass Height In | Date Out | Grass <br> Height <br> Out | Total <br> Grazing Days | Herd ID | Number of Head |
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## Individual

Cow Records

## Cow Production History Card

## Cow ID

| Description (Breed/color) |  |
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| Cow's Sire | Sire Breed |
| Cow's Dam | Dam Breed |
| Cow's Birth Date | Weaning Weight |
| Purchase Date | Purchase Price |


| Date of <br> Sale or <br> Removal |  |
| :--- | :--- |
| Reason |  |
| Sale <br> Weight |  |
| Sale <br> Price/lb. |  |
| Total <br> Value |  |

Cow Production Record

| Calving |  |  |  |  |  |  |  |  |  | Weaning |  | Pregnancy Test |  |
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| Year | $\begin{aligned} & \text { Cow } \\ & \text { Age } \end{aligned}$ | $\begin{aligned} & \text { Bull ID \& } \\ & \text { Breed } \end{aligned}$ | Calf ID | $\begin{array}{\|l\|l} \text { Calf } \\ \text { Birth } \\ \text { Date } \end{array}$ | $\begin{aligned} & \text { Calf } \\ & \text { Sex } \end{aligned}$ | Birth Weight | BCS at Calving | Calving Problems | Calving Interval (Days) | $\begin{aligned} & \text { Weaning } \\ & \text { Weight } \end{aligned}$ | $\begin{gathered} \text { Replacement } \\ \text { Heifer Kept } \\ \text { yes/no } \\ \hline \end{gathered}$ | Pregnant or Open | $\begin{gathered} \text { BCS or } \\ \text { Other } \\ \text { Remarks } \\ \hline \end{gathered}$ |
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## Breeding Records

## Bull Breeding Soundness Exam Record

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| Bred | Feb | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 |  |  |  | Feb |
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| Bred | ec | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |  | Dec |
| Calve | Sep | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Oct |

## Breeding or A.I. Record

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Pregnancy Testing Record
Date
Herd I.D. Bull I.D. \&
Breed
Cow I.D.
Cow Age BCS Pregnancy Status

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## Feeding Records

## Supplementation Record



## Health

 Records
## Herd Vaccination/Treatment Record

| Herd | Date | Number of Head | Vaccine or Treatment | Company | Serial <br> Lot <br> Number | Dose Given | Exp. Date | $\begin{aligned} & \text { Withdrawal } \\ & \text { Date } \end{aligned}$ | $\begin{array}{\|l} \text { Route } \\ \text { (SQ, IM, } \\ \text { Oral, } \\ \text { Pour-on) } \end{array}$ | Injection or Treatment Site | Processor |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
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## Sick Cattle Treatment Record

| Herd | $\begin{aligned} & \text { Animal } \\ & \text { ID or } \\ & \text { Age } \end{aligned}$ | Diagnosis/ Comments | Treatment \& Dosage | Company | Serial Number | Lot Number | Length of Withdrawal | Withdrawal Date | $\begin{array}{\|l\|} \hline \text { Route } \\ \text { (SQ, IM, } \\ \text { Oral, } \\ \text { Pour-on) } \end{array}$ | Injection <br> Treatmen <br> t Site | Processor |
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Herd Records

## Cow Herd Inventory

| Herd or Group | Jan 1 | $\begin{aligned} & \mathrm{BCS} \\ & (1-9) \end{aligned}$ | Spring Working | $\begin{aligned} & \text { BCS } \\ & (1-9) \end{aligned}$ | Pregnancy <br> Testing | $\begin{aligned} & \text { BCS } \\ & (1-9) \end{aligned}$ | Prior to Calving | $\begin{aligned} & \text { BCS } \\ & (1-9) \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mature Cows Herd |  |  |  |  |  |  |  |  |
| Mature Cows <br> Herd |  |  |  |  |  |  |  |  |
| Mature Cows Herd |  |  |  |  |  |  |  |  |
| Mature Cows <br> Herd |  |  |  |  |  |  |  |  |
| Mature Cows Herd |  |  |  |  |  |  |  |  |
| Bred Heifers |  |  |  |  |  |  |  |  |
| Open Heifers |  |  |  |  |  |  |  |  |
| Mature Bulls |  |  |  |  |  |  |  |  |
| Bulls 1-2 Years Old |  |  |  |  |  |  |  |  |
| Yearling Stocker Cattle |  |  |  |  |  |  |  |  |
| Calves |  |  |  |  |  |  |  |  |
| Horses |  |  |  |  |  |  |  |  |
| Other Livestock |  |  |  |  |  |  |  |  |
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## Herd or Group Performance

| Group <br> or <br> Herd <br> I.D. | \# Cows Exposed to Bull | Total Calves Born | ${ }^{\#}$ Calves Dead | \# Calves Worked | \# Calves Weaned | Total Weight of Calves | Average Wean Weight | Total \# Steers Weaned | Total Steer Weight | $\begin{aligned} & \text { Average } \\ & \text { Steer } \\ & \text { Weight } \end{aligned}$ | Total \# Heifers Weaned | Total Heifer Weight | Average <br> Heifer <br> Weight | \# Cows Bred | $\begin{aligned} & \text { \# Cows } \\ & \text { Open } \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
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## Retained Ownership Record

| $\begin{array}{\|l\|} \hline \text { Date } \\ \text { Shipped } \end{array}$ | $\begin{aligned} & \text { Group } \\ & \text { I.D. } \end{aligned}$ | \# Head | Total Weight | $\begin{aligned} & \text { Avg. } \\ & \text { wt. } \end{aligned}$ | $\begin{aligned} & \text { Date } \\ & \text { Data } \end{aligned}$ | $\begin{aligned} & \text { \# Hd. } \\ & \text { Sold } \end{aligned}$ | $\begin{aligned} & \text { Days } \\ & \text { on } \\ & \text { Feed } \end{aligned}$ | $\begin{aligned} & \text { Feed } \\ & \text { Conversion } \end{aligned}$ | $\begin{aligned} & \text { Average } \\ & \text { Yield } \\ & \text { Grade } \end{aligned}$ | $\begin{aligned} & \text { \% } \\ & \text { Choice } \end{aligned}$ | Total Expenses | Total Income | $\begin{array}{\|l\|} \hline \text { Total } \\ \text { Profit/ } \\ \text { Loss } \\ \hline \end{array}$ | Profit/ <br> Loss <br> per Head |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
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Income Records

## Cattle Sales Record

Date Class of
ID Number Weight
Cattle

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## Other Income/Sales

| Date | Item Sold or <br> Service <br> Provided | Company or <br> Individual |  | Description of <br> Income | Income per <br> Unit |
| :--- | :--- | :--- | :--- | :--- | :--- |
|  |  |  |  | Total <br> Income |  |
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## Expense Records

## Expenses/Purchases

$\left.$| Date | Item or Service | Company | Reason for <br> Expense |  | Cost/Unit |
| :--- | :--- | :--- | :--- | :--- | :--- | | Total |
| :--- |
| Cost | \right\rvert\,

## Ranch

Analysis

## Cash Cost Analysis

| Category | Total Purchased | Total Expense |
| :--- | :--- | :--- |
| Feed |  |  |
| Fertilizer |  |  |
| Cattle |  |  |
| Pesticides |  |  |
| Pharmaceuticals |  |  |
| Fence Supplies |  |  |
| Fuel |  |  |
| Tractor <br> maintenance/repairs |  |  |
| Truck maintenance/repairs |  |  |
|  |  |  |
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Total Expenses

| Category | Number Sold | Total Income |
| :--- | :--- | :--- |
| Steer Calves |  |  |
| Heifer Calves |  |  |
| Cull Cows |  |  |
| Cull Bulls |  |  |
| Hay |  |  |
| Services |  |  |
|  |  |  |
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Total Income
Gross Profit/Loss

## Total Cattle Performance Analysis

| Year: | Beginning Date | Ending Date | \# Head |
| :---: | :---: | :---: | :---: |
| Breeding |  |  | XXXXXXXXXX XXXXXXXXXX |
|  |  | Cows Exposed |  |
| Calving |  |  | XXXXXXXXXX XXXXXXXXXX |
|  |  | Total Calves Born |  |
|  |  | Live Calves |  |
|  |  | Dead Calves |  |
| Weaning |  |  | XXXXXXXXXX <br> XXXXXXXXXX |
|  |  | Total Calves Weaned |  |
|  |  | Steers Weaned |  |
|  |  | Heifers Weaned |  |
|  |  | Bulls Weaned |  |
|  |  | Average Wwt. |  |
|  |  | Avg. Steer Wwt. |  |
|  |  | Avg. Heifer Wwt. |  |
|  |  | Avg. Bull Wwt. |  |
| Pregnancy Check |  |  | XXXXXXXXXX XXXXXXXXXX |
|  |  | Bred Cows |  |
|  |  | Open Cows |  |
|  |  | Cows Culled |  |

Pregnancy Percentage $=$ \# Bred Cows $\qquad$ divided by \# Cows Exposed
$\qquad$ = $\qquad$
$\overline{\text { Calving Percentage }=\# \text { Calves Born }}$ $\qquad$ divided by \# Cows Exposed $\qquad$ $=$ $\qquad$
Weaning Percentage $=$ \# Calves Weaned $\qquad$ divided by \# Cows Exposed $\qquad$ $=$ $\qquad$
Lbs. Weaned/Cow Exposed Avg. Weaning Wt. $\qquad$ multiplied by Weaning \% $\qquad$ $=$ $\qquad$

## Useful

## Information

## Useful Extension Publications available Online from the University of Florida and other Universities

Pastures

| Planting Dates, Rates, and Methods of Agronomic Crops | http://edis.ifas.ufl.edu/AA127 |
| :--- | :--- |
| UF/IFAS Standardized Fertilization Recommendations for <br> Agronomic Crops | http://edis.ifas.ufl.edu/SS163 |
| Weed Management in Pastures and Rangeland | http://edis.ifas.ufl.edu/WG006 |
| Insect Management in Pasture | http://edis.ifas.ufl.edu/IG061 |
| Bahiagrass | http://edis.ifas.ufl.edu/AA184 |
| Bermudagrass Production in Florida | http://edis.ifas.ufl.edu/AA200 |
| Annual Ryegrass | http://edis.ifas.ufl.edu/AG104 |
| Hay Production in Florida | http://edis.ifas.ufl.edu/AA251 |
| Forage Planting and Establishment Methods | http://edis.ifas.ufl.edu/AG107 |
| Soil Testing | http://edis.ifas.ufl.edu/SS156 |

Beef Cattle

| Keep Herd Health Simple and Make it Fit the Beef <br> Cattle Operation | $\mathrm{http}: / / e d i s . i f a s . u f l . e d u / A N 002$ |
| :--- | :--- |
| Different Health Scenarios to Prepare Calves for <br> Shipping and for Receiving Yearling Cattle | $\mathrm{http}: / / e d i s . i f a s . u f l . e d u / V M 081$ |
| External Parasites on Beef Cattle | $\mathrm{http}: / /$ edis.ifas.ufl.edu/IG130 |
| Nutrient Requirements of Beef Cattle | $\mathrm{http}: / / w w w . a c e s . e d u / d e p a r t m e n t / a a w m / a n r-~$ <br> $60 . p d f ~$ |
| Strategies for Cost Effective Supplementation of <br> Beef Cattle | $\mathrm{http}: / / e d i s . i f a s . u f l . e d u / A N 085$ |
| Using By-Product Feeds in Beef Supplementation <br> Programs | $\mathrm{http}: / / e d i s . i f a s . u f l . e d u / A N 101$ |
| Strategies for Successful Development of Beef <br> Heifers | $\mathrm{http}: / / e d i s . i f a s . u f l . e d u / A N 100$ |
| Effects of Body Condition on Productivity in Beef <br> Cattle | $\mathrm{http}: / / e d i s . i f a s . u f l . e d u / A N 004$ |
| Crossbreeding Programs for Beef Cattle in Florida | $\mathrm{http}: / / e d i s . i f a s . u f l . e d u / A N 055$ |
| Selecting Beef Bulls | $\mathrm{http}: / / e d i s . i f a s . u f l . e d u / A N 024$ |

## Business Management

| The Essential Financial Tools for Running a Firm | http://edis.ifas.ufl.edu/FE024 |
| :--- | :--- |
| Custom Rates for Farm Machinery | http://edis.ifas.ufl.edu/FE268 |
| Beef Cattle and Forage Budgets | http://www.ag.auburn.edu/dept/aec/pubs/ <br> budgets/ |
| Cow-calf Production Record Software | http://www.ansi.okstate.edu/exten/beef/ <br> WCR-3279/WCR-3279.pdf |

## Pesticide Information

| Application Equipment and Techniques | http://edis.ifas.ufl.edu/WG012 |
| :--- | :--- |
| Broadcast Boom Sprayer Nozzle Uniformity Check | http://edis.ifas.ufl.edu/PI015 |
| Broadcast Boom Sprayer Calibration | http://edis.ifas.ufl.edu/PI016 |
| Maintenance, Care and Cleaning of Application Equipment | http://edis.ifas.ufl.edu/AG006 |

## Conversion Factors

## Larry Halsey, Jefferson County Extension

## WEIGHTS

| 28.4 grams | 1 ounce $(\mathrm{oz})$ |
| :--- | :--- |
| 16 ounces | 1 pound $(\mathrm{lb})$ |
| 1 pound | 0.45 kilograms |
| 2.2 pounds | 1 kilogram |
| 1 gallon-water | 8.345 pounds |

## LINEAR MEASURES - LENGTHS

| 1 inch | 2.54 centimeters |  |
| :--- | :--- | :--- |
| 12 inches | 1 foot | 30.48 centimeters |
| 36 inches | 3 feet | 1 yard |
| 1 yard | 0.9144 meter |  |
| 1 meter | 39.37 inches |  |
| 1 mile | 5,280 feet | 1.609 kilometers |
| 1 kilometer | 1,000 meters | 0.6217 mile |
| $1 / 4$ mile | 1,320 feet |  |

## VOLUMES, CUBIC MEASURES

| 1 tablespoon | 3 teaspoons | 14.8 ml | 0.5 fl oz |
| :---: | :---: | :---: | :---: |
| 1 pint | 2 cups | 16 fl oz | 32 Tablespoons |
| 1 quart | 32 ounces | 2 pints | 0.95 liters |
| 1 liter | 1.06 quarts | 1,000 ml | 33.8 fl oz |
| 1 gallon | 4 quarts | 8 pints | 128 ounces |
| 1 gallon (liquid) | 231 cu inches | 16 cups | 3.8 liters |
| 1 cubic foot | 1728 cu in | 7.48 gallo | s (liquid) |
| 1 cubic yard | 27 cu feet | 0.77 cu m | meters |
| 1 acre-inch, water | 27,154 gallons | 3,630 cubic | c feet |
| A box $81 / 4 " \times 7{ }^{\prime \prime} \times 4$ " holds 1 gallon |  |  |  |
| A box 16" $\times 12$ " $\times 11$ 1/4" hold 1 bushel |  |  |  |
| A cylinder 6" deep x 7 " diameter (3 1/2" radius) holds 1 gallon |  |  |  |


| 1 sq foot | 144 square inches |  |
| :--- | :--- | :--- |
| 1 sq. yard | 9 sq. feet | 0.836 sq. meters |
| 1 acre | 43,560 sq. ft | 0.42 hectares |

## RATES, EQUIVALENTS AND CONVERSIONS

| 1 ounce per square foot | 2,775 pounds per acre | 62.5 pounds per 1,000 sq ft |
| :---: | :---: | :---: |
| 1 ounce per square yard | 300 pounds per acre | 7 pounds per 1,000 sq ft |
| 1 ounce per 100 sq ft | 27 pounds per acre | 0.62 pounds per 1,000 sq ft |
| 1 pound per 100 sq ft | 436 pounds per acre | 10 pounds per 1,000 sq ft |
| 2.5 gallons per $1,000 \mathrm{sq} \mathrm{ft}$ | 100 gallons per acre |  |
| 1 quart per 100 sq ft | 100 gallons per acre |  |
| 1 acre-inch per hour | 450 gallons per minute |  |
| 1 part per million (ppm) | 0.013 fl oz per 100 gallons of water |  |
| 1 percent solution (by weight) | 1.33 fl oz per gallon |  |
| $1 \mathrm{foot} / \mathrm{second}$ | 1.47 miles per hour (fps $=22 / 15 \mathrm{mph}$ ) |  |

1 cup of dry fertilizer weighs approximately $1 / 2$ pound

1 quart of dry fertilizer weighs approximately $13 / 4$ pounds
1 quart of dolomitic limestone weighs just over 1 1/2 pounds
1 pound of ryegrass will overseed about $100 \mathrm{sq} \mathrm{ft}(10 \# / 1,000 \mathrm{sq} \mathrm{ft})$
1 pound of bahiagrass seed will cover about 750-1,000 sq ft (25-30 \#/acre)

| 1 flat of 100 bedding plants will cover: |
| :--- |
| 11 sq ft when spaced 4 inches apart |
| 44 sq ft when spaced 8 inches apart |
| 100 sq ft when spaced 12 inches (1 foot) apart |
| 156 sq ft when spaced 15 inches apart |


| Dimension of a Square Field: | Acres | Diameter of a Circular Field or Pond |
| :---: | :---: | :---: |
| $208.7^{\prime} \times 208.7^{\prime}$ | 1 acre | 235.5' (radius $\left.=117.7^{\prime}\right)$ |
| $466.7^{\prime} \times 466.7^{\prime}$ | 5 acres | 526.6' (radius $\left.=263.3^{\prime}\right)$ |
| $660.0^{\prime} \times 660.0^{\prime}$ | 10 acres | 744.7' (radius $=372.4^{\prime}$ ) |
| $933.3^{\prime} \times 933.3^{\prime}$ | 20 acres | 1,053.2' (radius $=526.6^{\prime}$ ) |

## Temperature

| ${ }^{\circ} \mathrm{F}$ (Fahrenheit) $=\left({ }^{\circ} \mathrm{C} \times 1.8\right)+32$ |
| :--- |
| ${ }^{\circ} \mathrm{C}$ (Celsius) $)=\left({ }^{\circ} \mathrm{F}-32\right) \times .56$ |


| C | Equivalent <br> Temperature | F |
| :---: | :---: | :---: |
| -40 | (same) | -40 |
| 0 | Water Freezes | 32 |
| 16 | (reciprocals) | 61 |
| $20-25$ | Comfortable Room Temp | $68-77$ |
| 37 | Human Body | 99 |
| 100 | Water Boils | 212 |

## DILUTION RATES

| LIQUID MEASURE <br> approximate conversion rates |  |
| :---: | :---: |
| Amount per 100 gallons | Amount per gallon |
| $1 / 4$ pint | $1 / 4 \mathrm{tsp}$ |
| 1 pint | 1 tsp |
| 1 quart | 2 tsp |
| 1 gallon | $2.5 \mathrm{Tbsp}(1 \mathrm{fl} \mathrm{oz})$ |
| 2 gallons | $5 \mathrm{Tbsp}(2.5 \mathrm{fl} \mathrm{oz})$ |
| 4 gallons | $1 / 3$ pint $(5 \mathrm{fl} \mathrm{oz})$ |
| 10 gallons | $3 / 4$ pint $(13 \mathrm{fl} \mathrm{oz})$ |


| DRY WEIGHT MEASURE <br> approximate conversion rates |  |
| :---: | :---: |
| Amount per 100 gallons | Amount per gallon |
| $1 / 2$ pound | $1 / 12 \mathrm{oz}$ |
| 1 pound | $1 / 6 \mathrm{oz}$ |
| 2 pounds | $1 / 3 \mathrm{oz}$ |
| 3 pounds | $1 / 2 \mathrm{oz}$ |
| 5 pounds | $3 / 4 \mathrm{oz}$ |


| Number of Plants Required for an Area of: |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Spacing (inches) | $\begin{gathered} 10 \\ \mathrm{sq} \mathrm{ft} \end{gathered}$ | $\begin{gathered} 15 \\ \text { sq ft } \\ \hline \hline \end{gathered}$ | $\begin{gathered} \hline 25 \\ \mathrm{sq} \mathrm{ft} \end{gathered}$ | $\begin{gathered} \hline \hline 50 \\ \text { sq ft } \\ \hline \hline \end{gathered}$ | $\begin{aligned} & \hline 100 \\ & \text { sq ft } \\ & \hline \hline \end{aligned}$ |
| 5" x 6" | 48 | 72 | 120 | 240 | 480 |
| 5" x 8" | 36 | 54 | 90 | 180 | 360 |
| $6{ }^{\prime \prime} \times 6$ | 40 | 60 | 100 | 200 | 400 |
| 6" x 8" | 30 | 45 | 75 | 150 | 300 |
| 8" $\times 8$ " | 22 | 33 | 56 | 112 | 225 |
| $10^{\prime \prime} \times 10$ " | 14 | 22 | 36 | 72 | 144 |
| $12^{\prime \prime} \times 12$ " | 10 | 15 | 25 | 50 | 100 |
| $15^{\prime \prime} \times 15$ " | 6 | 10 | 16 | 32 | 64 |


| Row Width (inches) | Distance to Equal |  |  |  |  | Lenght for $1 / 100$ Acre |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 1 Acre | 1/100 A |  | 1/1000 A |  | $2$ <br> Rows | 4 <br> Rows | 6 <br> Rows |
|  | ft | ft | in | ft | in | ft | ft | ft |
| 18" | 29,040' | 290' | 5" | 29' | 0" | 145' | 73' | 48' |
| 20" | 26,136' | 261' | 5" | 26' | 11" | 131' | 65' | 44' |
| 24" | 21,780' | 217' | 10" | 21' | 9" | 109' | 55' | 36' |
| 28" | 18,669' | 186' | 8" | 18' | 7" | 93' | 47' | 31' |
| 30" | 17,424' | 174' | 2" | 17' | 5" | 87' | 44' | 29' |
| 32" | 16,355' | 163' | 4" | 16' | 4" | 82' | 41' | 27' |
| 36" | 14,520' | 145' | 2" | 14' | 6" | 73' | 36' | 24' |
| 38" | 13,756' | 137' | 7" | 13' | 10" | 69' | $34^{\prime}$ | 23' |
| 40" | 13,068' | 130' | 8" | 13' | $1{ }^{1}$ | 65' | 33' | 22' |
| 48" | 10,890' | 108' | $11 "$ | 10' | 11" | 54' | 27' | 18' |
| 60" | 8,712' | 87' | $1{ }^{\prime \prime}$ | 8' | 8" | 44' | 22' | 15' |
| 72" | 7,260' | 72' | 7" | $7{ }^{\prime}$ | 4" | 36' | 18' | 12' |


| Equivalent <br> Travel Rate | Miles per hour |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 1 mph | 2 mph | 3 mph | 4 mph | 5 mph | 6 mph |
| = Ft $/$ Minute | 88 | 176 | 264 | 352 | 440 | 528 |
| $\begin{aligned} & =1000 \text { inch } \\ & / \text { min \& sec } \end{aligned}$ | $\begin{aligned} & 11 \mathrm{~min} \\ & 22 \mathrm{sec} \end{aligned}$ | $\begin{aligned} & 5 \mathrm{~min} \\ & 41 \mathrm{sec} \end{aligned}$ | $\begin{aligned} & 3 \mathrm{~min} \\ & 47 \mathrm{sec} \end{aligned}$ | $\begin{aligned} & 2 \mathrm{~min} \\ & 50 \mathrm{sec} \end{aligned}$ | $\begin{aligned} & 2 \mathrm{~min} \\ & 16 \mathrm{sec} \end{aligned}$ | $\begin{aligned} & 1 \mathrm{~min} \\ & 54 \mathrm{sec} \end{aligned}$ |


| In-Row Spacing (inches) | Thousands of Plants per Acre at Row Widths of: |  |  |  |  |  |  |  | Plants per 100 feet |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 8" | 12" | 18" | 24" | 28" | 32' | 36" | 40' |  |
| 1 | 784 | 523 | 349 | 261 | 224 | 196 | 174 | 157 | 1200 |
| 2 | 392 | 261 | 174 | 131 | 112 | 98.0 | 87.1 | 78.4 | 600 |
| 4 | 196 | 131 | 87.1 | 65.3 | 56.0 | 49.0 | 43.6 | 39.2 | 300 |
| 6 | 131 | 87.1 | 58.1 | 43.6 | 37.3 | 32.7 | 29.0 | 26.1 | 200 |
| 8 | 98.0 | 65.3 | 43.6 | 32.7 | 28.0 | 24.5 | 21.8 | 19.6 | 150 |
| 10 | 78.4 | 52.3 | 34.8 | 26.1 | 22.4 | 19.6 | 17.4 | 15.7 | 120 |
| 12 | 65.3 | 43.6 | 29.0 | 21.8 | 18.7 | 16.3 | 14.5 | 13.1 | 100 |
| 18 | 43.6 | 29.0 | 19.4 | 14.5 | 12.4 | 10.9 | 9.7 | 8.7 | 67 |
| 24 | 32.7 | 21.8 | 14.5 | 10.9 | 9.3 | 8.2 | 7.3 | 6.5 | 50 |

## Abbreviations (in alphabetical order)

A = acre
atm = atmospheres
bu = bushel
$\mathrm{C}=\mathrm{cups}$
${ }^{\circ} \mathrm{C}=$ Degrees Celcius
$\mathrm{cc}=$ cubic centimeters
$\mathrm{cm}=$ centimeter
$\mathrm{cm} 2=$ square centimeters
${ }^{\circ} \mathrm{F}=$ Degrees Fahrenheit
$\mathrm{fl} \mathrm{oz}=$ fluid ounces
$\mathrm{ft}=$ foot
$\mathrm{ft} 2=$ square feet
$\mathrm{g}=\mathrm{gram}$
gal $=$ gallon
ha = hectare
$\mathrm{Hg}=$ mercury
$\mathrm{hr}=$ hour
in $=$ inch
in2 $=$ square inches
in3 $=$ cubic inches
${ }^{\circ} \mathrm{K}=$ Degrees Kelvin
$\mathrm{kg}=$ kilogram
$\mathrm{km}=$ kilometer
$\mathrm{Kpa}=$ kilopascals
$\mathrm{L}=$ liter
$\mathrm{lb}=$ pound
$\mathrm{m}=$ meter
$\mathrm{m} 2=$ square meters
$\mathrm{mi}=$ mile
$\min =$ minute
$\mathrm{ml}=$ milliliter
$\mathrm{mm}=$ millimeter
$\mathrm{mph}=$ miles per hour
$\mathrm{oz}=$ ounce
$\mathrm{psi}=$ pounds per square inch
$\mathrm{pt}=$ pint
$\mathrm{qt}=$ quart
${ }^{\circ} \mathrm{R}=$ Degrees Rankin
$\mathrm{sec}=$ second
$\mathrm{sq}=$ square
tbsp = tablespoon
tsp $=$ teaspoon
yd = yard
$y d 2=$ square yards

## Body Condition Scoring Reference Guide

William E. Kunkle, Robert S. Sand, Owen Rae, and Doug Mayo
Good reproductive performance requires a Body Condition Score (BCS) of 5 or higher at calving and through breeding. Proper stocking rates, a good mineral supplementation program, and timely use of protein supplements offer the most potential for economically improving body condition and pregnancy rates. Separating cows by condition at pregnancy testing or two to three months prior to calving and feeding both groups to calve in BCS 5 or above will maintain high reproductive performance while holding supplemental feed costs to a minimum. The routine use of BCS in each herd will provide needed information to manage the cow herd for a high calf crop and profitability.

Key areas to observe fat cover for body condition scoring.


1. BACK 3.PINS 5.RIBS
2. TAIL HEAD 4. HOOKS 6. BRISKET

## Description of Body Condition Scores (BCS)

BCS 1—Emaciated - Bone structure of shoulder, ribs, back, hooks and pins sharp to touch and easily visible. Little evidence of fat deposits or muscling.

BCS 2-Very Thin - Little evidence of fat deposits but some muscling in hindquarters. The spinous processes feel sharp to the touch and are easily seen, with space between them.
BCS 3-Thin - Beginning of fat cover over the loin, back and foreribs. Backbone still highly visible. Processes of the spine can be identified individually by touch and may still be visible. Spaces between the processes are less pronounced.

BCS 4-Borderline - Foreribs not noticeable; 12th and 13th ribs still noticeable to the eye, particularly in cattle with a big spring of rib and ribs wide apart. The transverse spinous processes can be identified only by palpation (with slight pressure) to feel rounded rather than sharp. Full but straightness of muscling in the hindquarters.
BCS 5-Moderate - 12th and 13th ribs not visible to the eye unless animal has been shrunk. The transverse spinous processes can only be felt with firm pressure to feel rounded - not noticeable to the eye. Spaces between the processes not visible and only distinguishable with firm pressure. Areas on each side of the tail head are fairly well filled but not mounded.

BCS 6-Fleshy - Ribs fully covered, not noticeable to the eye. Hindquarters plump and full. Noticeable sponginess to covering of foreribs and on each side of the tail head. Firm pressure now required to feel transverse processes.
BCS 7—Smooth - Ends of the spinous processes can only be felt with very firm pressure. Spaces between processes can barely be distinguished at all. Abundant fat cover on either side of tail head with some patchiness evident.

BCS 8-Fat - Animal taking on a smooth, blocky appearance; bone structure disappearing from sight. Fat cover thick and spongy with patchiness likely.

BCS 9—Very Fat - Bone structure not seen or easily felt. Tail head buried in fat. Animal's mobility may actually be impaired by excess amount of fat.

## Body Condition Score Examples



BCS 2
BCS 3


BCS 4
BCS 5


## BCS 6

BCS 7
Body condition affects the amount and type of supplements needed during the winter. Fat cows can lose body reserves, and 1 to 2 pounds per head per day of a 30 to 40 percent protein supplement plus minerals and vitamins is sufficient to maintain adequate body condition in many situations. In contrast, thin cows have little body reserves and often need 4 to 6 pounds per head per day of a high-energy supplement with 12 to 16 percent protein plus minerals and vitamins to avoid significant flesh losses and reductions in pregnancy rates.

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