



MASTER GARDENER  
COLORADO STATE UNIVERSITY  
EXTENSION

COLORADO MASTER GARDENER  
**Green School**  
**Training Guide**  
2021 Edition

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Reading & Homework List  
Class Notes & Worksheets

# Readings, Homework & Worksheets

>> GARDENNOTES IS YOUR ONLINE, REFERENCE FOR THIS COURSE.

Go to <http://ColoradoMasterGardener.org> > Volunteer Resources > GardenNotes

TOPIC	GARDENNOTES READINGS – NOT REQUIRED, FOR REFERENCE	OPTIONAL HOMEWORK	WORKSHEETS – OPTIONAL, IN-CLASS
<b>Soils, Fertilizers &amp; Amendments</b> ONLINE CLASS	#211-251	#252 #253	#252
<b>Botany: How Plants Grow</b> ONLINE CLASS	#121,122, 131-137, #141-145	#155 #150	#151 #152
<b>Science of Planting Trees</b> ONLINE CLASS	#631 -#636		
<b>Care of Trees</b> ONLINE CLASS	#651; #653-659 #652		
<b>Lawn Care / Turf Management</b> ONLINE CLASS	#551- 556	Turf Crossword	#571
<b>Weed Management</b> ONLINE CLASS	#351, #352, #353		#356
<b>Colorado Gardening Challenges</b> LIVE CLASS	No readings, supplemental guides may be posted or emailed.		
<b>Entomology</b> ONLINE CLASS	#311-313	#318	
<b>IPM &amp; Diagnostics</b> ONLINE CLASS	#101, #102	#105 IPM Crossword	#103
<b>Plant Pathology</b> LIVE CLASS	#331-332	#332	#108 #333

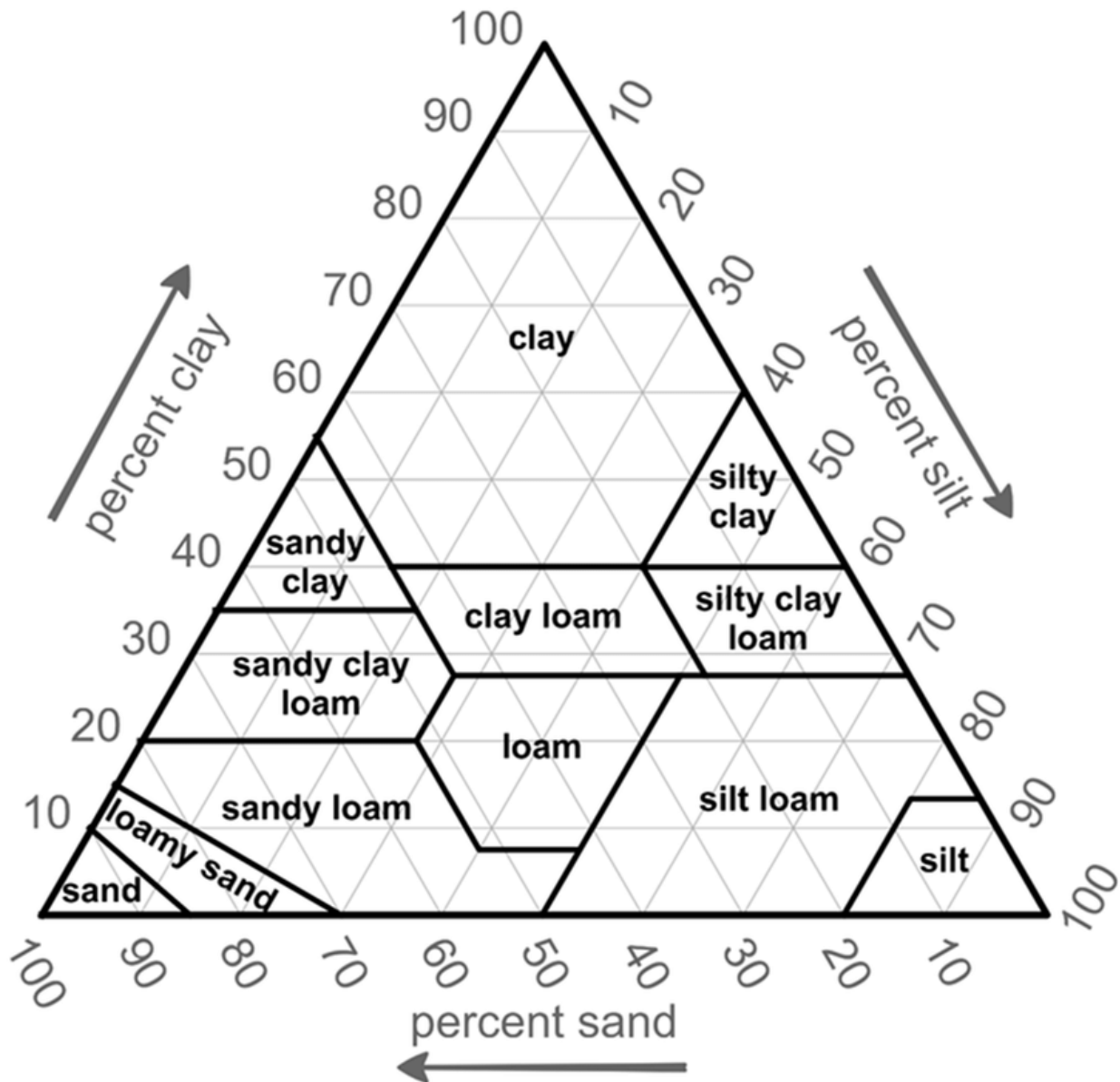
TOPIC	GARDENNOTES READINGS – NOT REQUIRED, FOR REFERENCE	OPTIONAL HOMEWORK	WORKSHEETS – OPTIONAL, IN-CLASS
<b>Vegetables</b> ONLINE CLASS	#711-724		
<b>Pruning</b> OPTIONAL ONLINE CLASS	#610-617		
<b>Irrigation Management</b> OPTIONAL ONLINE CLASS	#260-268		
<b>Small Fruit</b> OPTIONAL ONLINE CLASS	#760-764		
<b>Tree Fruit</b> OPTIONAL ONLINE CLASS	#770-771		
<b>CMG Program Overview</b> ONLINE CLASS	#011, #013, #014, #015, #017, #018	CMG Crossword	

# **Class Notes: Soils, Fertilizers, Amendments**

- Review GardenNotes for this class
- Complete online class
- Complete homework (optional)
- Attend one weekly live review
- Complete post-test online in Canvas

----- NOTES -----

# **Class Notes: Soils, Fertilizers, Amendments**



Source: USDA Soil Texture Triangle



CMG GardenNotes #253

## Homework: Soils Fertilizer and Soil Amendments

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### WEB SOIL SURVEY

1. Log onto the **Web Soil Survey** at [websoilsurvey.nrcs.usda.gov](http://websoilsurvey.nrcs.usda.gov) (or Google Web Soil Survey).
2. Click on the green button **Start WWS**.
3. Under the **Area of Interest (AOI)** tab, click on **Address**.
4. Enter Address
  - a) Enter your home street address, city, state in the box.
  - b) Make sure the **Show location marker** box is checked
  - c) Click on **View**
5. The Area of Interest Interactive Map will open.
  - With the mouse, **draw a box** around the general area of the property (marked on the map with a red +). The map will refresh with a closer view
6. Select Area of Interest
  - a) **Click** on the **AOI** button near the top of the window.
  - b) With the mouse drag a box around the property of interest. The map will refresh with a slash filled box of the property of interest.
7. Soils
  - a) **Click** on the **Soil Map** tab. This will open a listing of the **soil map unit names** on the property
  - b) **Click** on the **Map Unit Name** in blue in the box. This will open the description of the soils.



Note: If the address you entered is not found on the Web Soil Survey, please start over with the address of a friend or relative.

8. Answer the following questions about one of the soils on the property.

Address		
What is the name of the soil(s) at this address?		
What is the generic slope at this address?		
From <b>Map Unit Setting</b>	Elevation	
	Mean annual precipitation	
	Mean annual air temperature	
	Frost-free period	
From <b>Properties and Qualities</b>	Depth to restrictive feature	
	Drainage class	
	Depth of water table	
	Frequency of flooding	
	Frequency of ponding	
	Calcium carbonate content	
	Maximum salinity	
	Available water capacity	
From <b>Typical profile</b> , give depths of various soil textures.		



## **ANSWER THE FOLLOWING BASED ON WHAT YOU'VE LEARNED:**

### **1. Properties and challenges with your soil.**

- a. Describe the properties of your soil (or soil you have access to test). What are the good properties supporting plant growth? What are the properties limiting plant growth?
  
  
  
  
  
  
  
  
  
  
- b. What would you advise a neighbor moving into your neighborhood (same basic soil) about soil management when their yard is a new landscape (nothing currently on the property)?
  
  
  
  
  
  
  
  
  
  
- c. What would you advise a neighbor (same basic soil) about soil management for an existing landscape with lawns, trees, perennial flower and shrub beds, annual flower and vegetable beds?

### **2. List eight considerations in selecting an appropriate soil amendment.**

### **3. List eight considerations in selecting an appropriate mulching material.**

### **4. List five considerations in selecting an appropriate fertilizer.**



CMG GardenNotes #252

## Worksheet: Soil Texture and Free Lime Lab

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### SOIL TEXTURE BY FEEL LAB

Identifying the soil samples to coarse (sandy), medium or fine (clayey). Reference: *GardenNotes #214*

Soil Sample	Describe the feel: <ul style="list-style-type: none"><li>○ Gritty = sand</li><li>○ Silk smooth = silt</li><li>○ Sticky = clay</li></ul>	How long will it ribbon out?	What is the soil texture? <ul style="list-style-type: none"><li>○ Ribbons &lt;1",<ul style="list-style-type: none"><li>▪ Feels gritty = coarse texture (sandy soil)</li><li>▪ Not gritty = medium texture (high in silt)</li></ul></li><li>○ Ribbons 1-2 inches<ul style="list-style-type: none"><li>▪ Feels gritty = medium texture</li><li>▪ Not gritty = fine texture</li></ul></li><li>○ Ribbons &gt;2" = fine texture clayey soil</li></ul>
1			
2			
3			
Your soil (OPTIONAL)			

## FREE LIME TEST LAB

Using your soil sample(s), do a vinegar test for free lime (calcium carbonate).

Reference: *The Science of GardenNotes 222*

- a. Did it fizz (have high calcium carbonate)? Yes No
- b. What does this indicate about your soil being prone to iron chlorosis? Can you lower the pH?

### OPTIONAL HOMEWORK:

## SOIL TEXTURE BY MEASUREMENT LAB

Collect some soil from your home landscape, office or nearby open space. Using the jar method, what is the soil textural class for this sample with the following amounts of sand, silt, and clay?

Reference: *GardenNotes 214*

- a. How long do you shake the bottle of soil?
- b. When do you measure the sand, silt and clay levels?

Sand \_\_\_\_\_ Silt \_\_\_\_\_ Clay \_\_\_\_\_

- c. Determine the soil texture for the following sample:

		Depth of layer	Percent	Soil Textural Class <i>(from Soil Textural Triangle)</i>	Will this soil behave as a sandy or clayey soil?
Sample 1	Sand	3.0"			
	Silt	0.5"			
	Clay	1.5"			
	Total	5.0"			
Sample 2	Sand	3.5"			
	Silt	1"			
	Clay	0.5"			
	Total	5"			

# **Class Notes: Botany - How Plants Grow**

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- Review GardenNotes for this class
- Complete online class
- Complete homework (optional)
- Attend one weekly live review
- Complete post-test online in Canvas

----- NOTES -----

Module 1: Classification & Taxonomy

Module 2: Plant Structures

# **Class Notes: Botany - How Plants Grow**

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Module 3: Plant Growth



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CMG GardenNotes #155

# Homework: Botany

Answer the following questions based on content from the online class.

1. Why is it important to use scientific names for plants rather than just common names?
2. Why is it important for you as a Colorado Master Gardener to understand the importance of plant families?
3. Why is winter watering important in Colorado?
4. How can a late spring frost or freeze affect plant growth and development?
5. What resources would you utilize to assist with plant ID?

**BONUS QUESTION:** A client wants to plant drought-tolerant, deer-resistant perennials in their landscape which has a full sun exposure. They've heard about Plant Select and would like to use these if possible. Utilize this website: <https://plantselect.org/?action=plants> to find 2-3 plants that might meet their needs. *What did you find and what additional information would you need from the client to help them make a right plant, right place decision?*

# Class Notes: Planting Trees

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- Review GardenNotes for this class
- Complete online class
- Complete homework (optional)
- Attend one weekly live review
- Complete post-test online in Canvas

----- NOTES -----

Module 1: Overview & References

Module 2: Why Trees Fail

Module 3: Tree Selection & Types of Nursery Stock

Module 4: Determine the Depth of the Planting Hole

Module 5: Dig a Saucer Shaped Hole

# **Class Notes: Planting Trees**

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Module 6: Set the Tree in Place

Module 7: Backfill

Module 8: Staking

Module 9: Water, Final Grade & Mulch

Module 10: Post-Planting Care of New Trees



# Class Notes: Care of Trees

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- Review GardenNotes for this class
- Complete online class
- Complete homework (optional)
- Attend one weekly live review
- Complete post-test online in Canvas

----- NOTES -----

Module 1: Overview & References

Module 2: Tree Size

Module 3: Mulch

Module 4: Staking

Module 5: Watering Trees

# **Class Notes: Care of Trees**

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Module 6: Tree Care During Drought

Module 7: Tree Wrap

Module 8: Trees & Turf

Module 9: Herbicide Use Around Trees

Module 10: Iron Chlorosis

Module 11: Fertilization & Review

# Class Notes: Lawn Care

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- Review GardenNotes for this class
- Complete online class
- Complete homework (optional)
- Attend one weekly live review
- Complete post-test online in Canvas

----- NOTES -----

Module 1: Turf Introduction

Module 2: Species Selection

Module 3: Turf & Weedy Grass Identification

Module 4: Mowing

# **Class Notes: Lawn Care**

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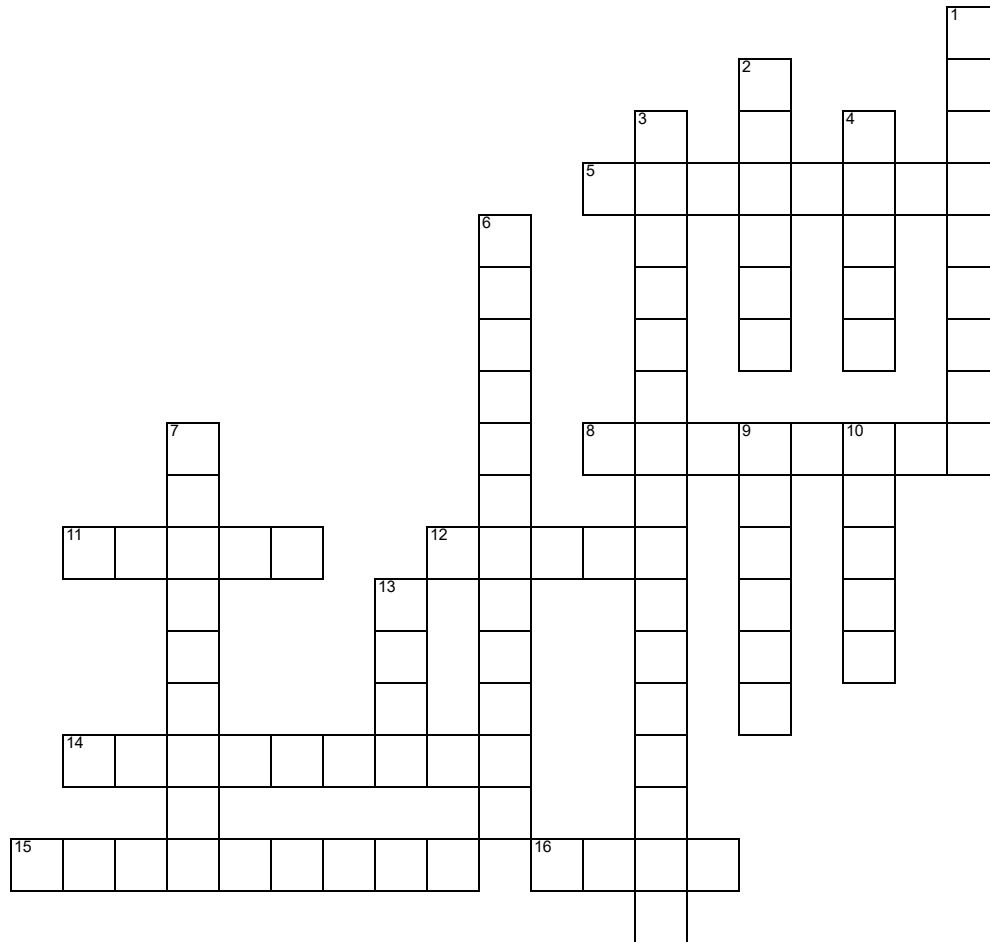
Module 5: Fertilization

Module 6: Irrigation & Watering

Module 7: Soil & Thatch

Module 8: Pest Problems

# CMG Turf Management Crossword Puzzle



## Across

- 5.** A management practice used to relieve soil compaction in lawns
- 8.** This fertilizer nutrient makes grass darker green - and it grows faster
- 11.** This type of irrigation head applies a large amount of water over a short time period
- 12.** There are 2 types of this lawn care implement: the rotary- or the reel-type
- 14.** You should leave these on your lawn when you mow
- 15.** This type of weed can grow back every year WITHOUT producing any seed
- 16.** You are more likely to "stripe" a lawn using this type of fertilizer spreader

## Down

- 1.** Used for grass ID - the arrangement of the youngest leaf in the grass shoot (rolled or folded)
- 2.** This is a layer of organic matter that can form in Kentucky bluegrass lawns
- 3.** This is a disease of over-watered lawns
- 4.** This insect-like pest can kill lawns in late winter/early spring (dry conditions)
- 6.** This native grass can be planted in Colorado home lawns
- 7.** This is a pesticide used to control WEEDS
- 9.** This wild animal can cause dead spots in lawns (from constant, close feeding and urine injury)
- 10.** These white larvae of beetles feed on turfgrass roots
- 13.** When this nutrient is deficient, turf can become chlorotic (yellow)

# **Class Notes: Weed Management**

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- Review GardenNotes for this class
- Complete online class
- Complete homework (optional)
- Attend one weekly live review
- Complete post-test online in Canvas

----- NOTES -----

# **Class Notes: Weed Management**

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# **Class Notes:**

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## **Colorado Gardening Challenges**

- Attend live webinar (zoom class)
- Complete post-test online in Canvas

----- NOTES -----



**Class Notes:**

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# **Colorado Gardening Challenges**

# Class Notes: Entomology

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- Review GardenNotes for this class
- Complete online class
- Complete homework (optional)
- Attend one weekly live review
- Complete post-test online in Canvas

----- NOTES -----

# **Class Notes: Entomology**

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*CMG GardenNotes #318*

## Homework: Entomology

1. How do you know if a creature in your garden is an insect?
2. What makes an insect "beneficial"?
3. Why can aphid populations increase so rapidly?
4. It is July. You have correctly diagnosed a large spider mite infestation on a customer's raspberry plants. What is the most important management strategy you can recommend to the customer?
5. Why do gardeners often report that ladybugs "disappear" shortly after releasing them in the garden?
6. List three factors contributing to pollinator decline.
7. Why is fall garden cleanup valuable to insect pest management? How would you advise a customer who would like to leave the leaves to protect overwintering insects/pollinators?"
8. You are working in your county Master Gardener helpdesk. A customer calls about her two-year old crabapple tree. There are "a lot" of holes in the leaves and she wants to know what could be chewing on them. She can't find any insects. How will you answer this question?

# Class Notes: IPM & Diagnostics

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- Review GardenNotes for this class
- Complete online class
- Complete homework (optional)
- Attend one weekly live review
- Complete post-test online in Canvas

----- NOTES -----

Module 1: Integrated Pest Management

# **Class Notes: IPM & Diagnostics**

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Module 2: The Diagnostic Process

Module 3: Understanding Pesticide Labels



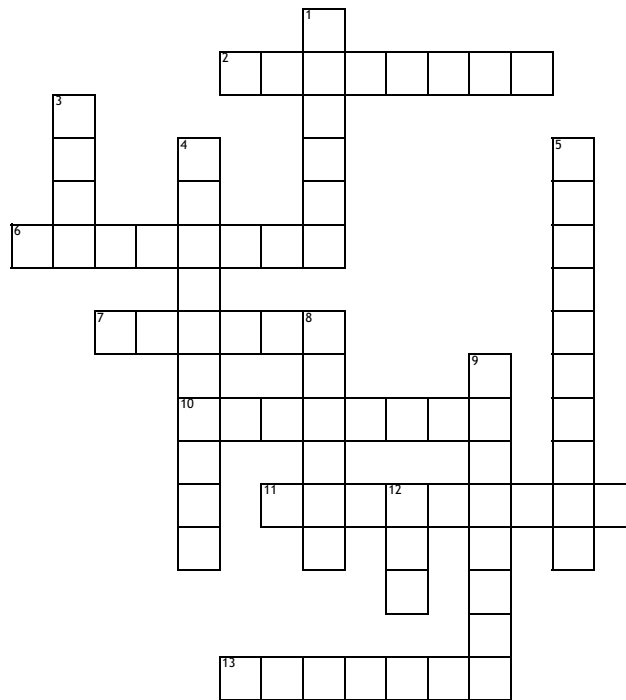
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*CMG GardenNotes #105*

## **Homework: IPM & Diagnostics**

1. Why is Integrated Pest Management (IPM) the best approach to managing pest problems?
2. Why is it important to discuss tree care issues as they relate to growth phases?
3. What is the first step in the diagnostic process?
4. Why is it important to know what is "normal" for a given plant?

# Integrated Pest Management & Diagnostics



## Across

2. Siting/locating the plant correctly is an example of this IPM strategy.
6. Symptom name for dead plant tissue.
7. A random pattern of damage usually points to this general disease category.
10. The first step in diagnosis is to \_\_\_\_\_ the plant.
11. When pests are no longer affected by a pesticide they are said to be this
13. A uniform pattern of damage usually points to this general disease category.

## Down

1. A natural botanical pesticide is derived from these.
3. Name of the sign describing slimy droplets.
4. Planting small-throated flowers to attract beneficial insects is an example of this IPM strategy.
5. Checking plants on a regular basis for pests is called this
8. Sunken, usually discolored area on a plant.
9. Type of pesticide absorbed and spread throughout the plant.
12. A multi-prong approach to managing pests (initials)



# **Class Notes: Plant Pathology**

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- Review GardenNotes for this class
- Attend live webinar (zoom class)
- Complete post-test online in Canvas

----- NOTES -----

# **Class Notes: Plant Pathology**

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CMG Garden Notes #332

## Homework: Plant Pathology

1. What 4 components must be present for biotic disease to develop?
2. Another name for the living cause of disease\_\_\_\_\_
3. Another name for the non-living cause of disease\_\_\_\_\_
4. List 3 ways to manage powdery mildew on a shrub.
5. A customer brings you a foot-long branch of an aspen tree. The leaves on the branch tips are dark brown and wilted; the branch tip is bent over. Could this be fire blight? Why or why not?
6. List 2 general management strategies for Cytospora canker disease on an aspen.
7. How are leaf scorch and winter desiccation similar in terms of how they develop? In symptom expression?
8. A ten-foot row of low growing junipers is planted between the west facing side of an apartment building and a sidewalk. By mid-winter the sidewalk side of the junipers begins to turn completely brown. What symptom supports an abiotic diagnosis? State a possible cause of the juniper symptoms.

# **Class Notes: Vegetables**

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- Review GardenNotes for this class
- Complete online class
- Complete homework (optional)
- Attend one weekly live review
- Complete post-test online in Canvas

----- NOTES -----

# **Class Notes: Vegetables**

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# Class Notes: Pruning

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- Review GardenNotes for this class
- Complete online class
- Attend live review
- Complete post-test online in Canvas

----- NOTES -----

# Class Notes: Small Fruits

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- Review GardenNotes for this class
- Complete online class
- Attend live review
- Complete post-test online in Canvas

----- NOTES -----

# Class Notes: Tree Fruits

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- Review GardenNotes for this class
- Complete online class
- Attend live review
- Complete post-test online in Canvas

----- NOTES -----



# Class Notes: Irrigation

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- Review GardenNotes for this class
- Complete online class
- Attend live review
- Complete post-test online in Canvas

----- NOTES -----

# Class Notes: CMG Introduction

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- Review GardenNotes for this class
- Print &/or Save the *Colorado Master Gardener Volunteer Handbook*
- Complete online course
- Complete CMG Crossword puzzle (optional)
- Complete post-test online in Canvas

----- NOTES -----

Module 1: Overview of the CMG Program & CSU

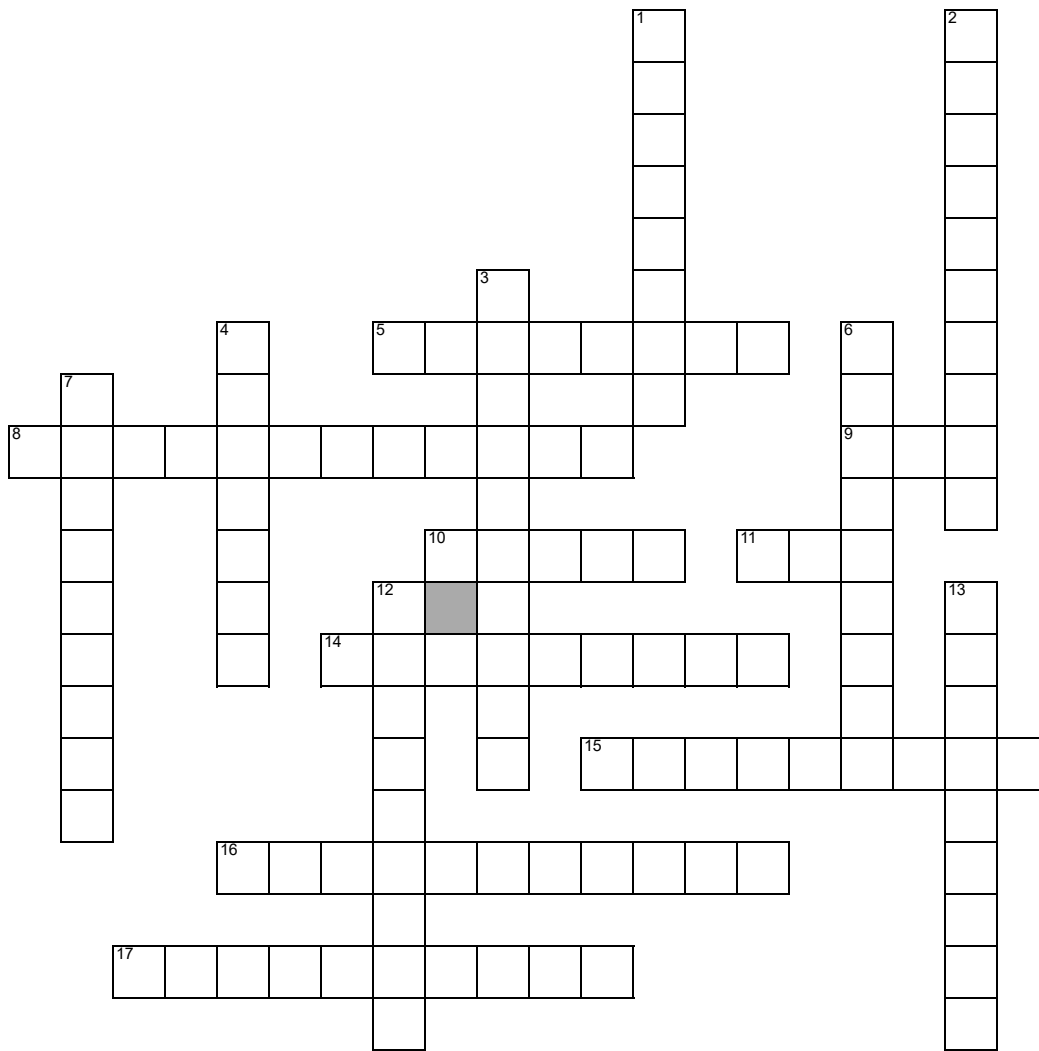
Module 2: Empowering People Through Plants

Module 3: Volunteering as a Colorado Master Gardener

Module 4: The Power of Community

Module 5: Tools & Resources for CMG Volunteers

# CMG Program Introduction



## Across

- 5. Resource for CMG volunteers covering program details
- 8. When to use the title 'Colorado Master Gardener'
- 9. Initials of Colorado's land grant institution
- 10. Apprentice volunteer hours required
- 11. Initials of the CMG reporting website
- 14. Topic that cannot be handled by volunteers
- 15. Primary purpose of Extension programs
- 16. Whom to refer legal questions
- 17. Title of CMG in training/trainee

## Down

- 1. Primary role of CMG
- 2. CMG volunteer hours required
- 3. One of the grounds for dismissal
- 4. Pesticides CMGs can apply while volunteering
- 6. CSU materials with information on a topic
- 7. Protects authors and photographers
- 12. University system founded in 1860s
- 13. Password-protected website specifically for CMG volunteers