



# PLANT SCIENCE

## Merit Badge Requirements

- 1) Explain the nature and functions of the soil. Tell about its texture, structure, need for water, air, organic matter, and the relationship of plants to the soil. Tell how the soil may be improved. Select one soil type from your area. Describe it in relation to the above.
- 2) Describe how to prepare a seedbed for each of the crops in the options below. Submit a plan for planting an orchard crop. Describe the best type of site for such an orchard.
- 3) Make and use a germination seed tester to test 50 seeds of four of the following plants: corn, cotton, alfalfa, soybeans, clover, wheat, rice, rye, barley. Determine percent of live seeds.
- 4) Tell how to propagate plants by seeds, roots, cuttings, tubers, buds, and grafts.
- 5) Tell about one important insect pest and one important disease that damage each of the following: corn, small grains, cotton, and fruit trees. Collect and name five weeds that damage crops in your locality. Tell how to control these without harming people, wildlife, or useful insects.
- 6) On a map of the United States indicate the chief regions where the crops listed in the options are produced. Indicate a leading state in production of each crop. Tell how climate and location of these states makes them leaders.
- 7) Tell about three career opportunities in crop production.
- 8) Complete ONE of the following options:

### Corn Option

- A) Grow a plot of corn. Record seed variety or experimental code number.
- B) Have your plot inspected by your counselor. Tell about modern methods of commercial corn farming.
- C) Tell about the contributions corn makes to today's food supply.

### Cotton Option

- A) Grow a plot of cotton.
- B) Have your plot inspected by your counselor. Tell about modern methods of commercial cotton farming.
- C) Tell about an insect that causes serious damage. Tell how it affects cotton production. Tell how it is controlled.
- D) Tell how cotton is processed from the field to the finished product.

### Forage Crops Option

- A) Collect and mount for display three samples of each: perennial grasses, annual grasses, legumes, and broadleaf weeds. Label each grass and legume, indicating what use is made of it. Label each weed. Tell where each is most likely to be found.
- B) Explain how legumes can be used to enrich the soil. Tell how they may deplete it under certain conditions. Do the same for grasses.
- C) Describe five poisonous plants dangerous to livestock.
- D) Tell the different ways for using forage crops as feed for livestock.

### Fruit and Nuts Option

- A) Plant five fruit or nut trees, grapevines, or berry plants.
- B) Take full care of fruit or nut trees, grapevines, or berry plants through one crop season.
- C) Prune a tree, vine, or bush properly. Explain why pruning is necessary.
- D) Demonstrate how a graft is made.
- E) Describe how one fruit, nut or berry crop is processed for use.

### Small Grains Option

- A) Give production figures for the small-grain crops listed in the United States Statistical Report for the latest year available.
- B) Help in harvesting a crop of grain. Tell how to reduce harvesting losses.
- C) Visit a grain elevator, flour mill, cereal plant, feed or seed company. Talk with the operator. Take notes. Describe the processes uses.

### Oil Crops Option

- A) Grow a plot of soybeans.
- B) Have your plot inspected by your counselor.
- C) Tell about modern methods of soybean growing on a commercial site.
- D) Tell of the contributions soybeans make to our food supply.

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**Requirement 1**

Explain the nature and function of the soil: \_\_\_\_\_

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Tell about the texture of the soil: \_\_\_\_\_

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Tell about the structure of the soil: \_\_\_\_\_

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Tell about the soils need for water: \_\_\_\_\_

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Tell about the soils need for air: \_\_\_\_\_

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Tell about the soils need for organic matter: \_\_\_\_\_

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Tell about the relationship of plants to the soil: \_\_\_\_\_

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Tell how the soil may be improved: \_\_\_\_\_

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Describe one soil type from your area. Describe that soil in relation to the above: \_\_\_\_\_

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**Requirement 2**

Describe how to prepare a seed bed for corn: \_\_\_\_\_

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Scout Name: \_\_\_\_\_ Unit #: \_\_\_\_\_ Date: \_\_\_\_\_

Describe how to prepare a seed bed for cotton: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Describe how to prepare a seed bed for forage crops: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Describe how to prepare a seed bed for fruit and nuts: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Describe how to prepare a seed bed for small grains: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Describe how to prepare a seed bed for oil crops: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Plan a site for planting an orchard crop: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Describe the best type of site for such an orchard: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### Requirement 3

Make and use a germination seed tester to test 50 seeds of four of the following plants: corn, cotton, alfalfa, soybeans, clover, wheat, rice, rye, and barley.

Describe the germination seed tester you used: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Name the seeds that you tested and the percent of live seeds for each type:

Seed Type: \_\_\_\_\_ % of Live Seeds: \_\_\_\_\_ Seed Type: \_\_\_\_\_ % of Live Seeds: \_\_\_\_\_

Seed Type: \_\_\_\_\_ % of Live Seeds: \_\_\_\_\_ Seed Type: \_\_\_\_\_ % of Live Seeds: \_\_\_\_\_

### Requirement 4

Tell how to propagate plants by seeds: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Tell how to propagate plants by roots: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Tell how to propagate plants by cuttings: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Tell how to propagate plants by tubers: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Tell how to propagate plants by buds: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Tell how to propagate plants by grafts: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### Requirement 5

For each of the following plants, describe one important insect pest and one important disease that damages the plant:

*CORN* -

Insect/Pest: \_\_\_\_\_  
\_\_\_\_\_

Disease: \_\_\_\_\_

Scout Name: \_\_\_\_\_ Unit #: \_\_\_\_\_ Date: \_\_\_\_\_

*SMALL GRAINS -*

Insect/Pest: \_\_\_\_\_

Disease: \_\_\_\_\_

*COTTON -*

Insect/Pest: \_\_\_\_\_

Disease: \_\_\_\_\_

*FRUIT TREES -*

Insect/Pest: \_\_\_\_\_

Disease: \_\_\_\_\_

Collect and name five weeds that damage crops in your locality. Show your samples to your counselor. List the names of the weeds you collected and explain how they cause damage. Also, tell how each of these weeds can be controlled without harming people, wildlife, or useful insects:

Weed: \_\_\_\_\_

Damage: \_\_\_\_\_

How is this weed controlled? \_\_\_\_\_

Weed: \_\_\_\_\_

Damage: \_\_\_\_\_

How is this weed controlled? \_\_\_\_\_

Weed: \_\_\_\_\_

Damage: \_\_\_\_\_

How is this weed controlled? \_\_\_\_\_

Weed: \_\_\_\_\_

Damage: \_\_\_\_\_

How is this weed controlled? \_\_\_\_\_

Weed: \_\_\_\_\_

Damage: \_\_\_\_\_

How is this weed controlled? \_\_\_\_\_

### Requirement 6

Use colored pencils on the map below to indicate the chief regions where the following crops are produced.

\_\_ Color the chief corn producing region with yellow.

\_\_ Color the chief cotton producing region with brown.

\_\_ Color the chief forage crop producing region with green.

\_\_ Color the chief fruit & nut producing region with red.

\_\_ Color the chief small grains producing region with blue.

\_\_ Color the chief oil crop producing region with orange.



Indicate a leading state in production of each of the following crops:

Corn: \_\_\_\_\_

How does the climate and location of this state help make it the leader? \_\_\_\_\_

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Forage Crops: \_\_\_\_\_

How does the climate and location of this state help make it the leader? \_\_\_\_\_

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Scout Name: \_\_\_\_\_ Unit #: \_\_\_\_\_ Date: \_\_\_\_\_

Fruits & Nuts: \_\_\_\_\_ How does the climate and location of this state help make it the leader? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Cotton: \_\_\_\_\_ How does the climate and location of this state help make it the leader? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Small Grains: \_\_\_\_\_ How does the climate and location of this state help make it the leader? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Oil Crops: \_\_\_\_\_ How does the climate and location of this state help make it the leader? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### Requirement 7

Tell about three career opportunities in crop production:

Career: \_\_\_\_\_ Details: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Career: \_\_\_\_\_ Details: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Career: \_\_\_\_\_ Details: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### Requirement 8

You have been given six options for this requirement. Select and complete the requirements for one option.

Scout Name: \_\_\_\_\_ Unit #: \_\_\_\_\_ Date: \_\_\_\_\_

If you selected the **CORN** option:

Grow a plot of corn. Give a brief description of your plot: \_\_\_\_\_

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List the varieties of seed used or experimental code number:

\_\_\_\_\_

Have your plot inspected by your counselor. What did your counselor say about it? \_\_\_\_\_

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Tell about modern methods of commercial corn farming: \_\_\_\_\_

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Tell about the contribution corn makes to today's food supply: \_\_\_\_\_

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If you selected the **COTTON** option:

Grow a plot of cotton. Give a brief description of your plot: \_\_\_\_\_

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Have your plot inspected by your counselor. What did your counselor say about it? \_\_\_\_\_

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Tell about modern methods of commercial cotton farming: \_\_\_\_\_

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Scout Name: \_\_\_\_\_ Unit #: \_\_\_\_\_ Date: \_\_\_\_\_

Tell about an insect that causes serious damage to cotton: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Tell how the insect affects cotton production: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Tell how the insect can be controlled: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Tell how cotton is processed from the field to the finished product: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

If you selected the **FORAGE CROPS** option:

Collect and mount for display three samples of each: perennial grasses, annual grasses, legumes, and broadleaf weeds. Label each of them.

For each grass and legume listed, indicate its primary use:

Perennial Grasses:

Grass: \_\_\_\_\_ Primary Use: \_\_\_\_\_

Grass: \_\_\_\_\_ Primary Use: \_\_\_\_\_

Grass: \_\_\_\_\_ Primary Use: \_\_\_\_\_

Scout Name: \_\_\_\_\_ Unit #: \_\_\_\_\_ Date: \_\_\_\_\_

Annual Grasses:

Grass: \_\_\_\_\_ Primary Use: \_\_\_\_\_

Grass: \_\_\_\_\_ Primary Use: \_\_\_\_\_

Grass: \_\_\_\_\_ Primary Use: \_\_\_\_\_

Legumes:

Legume: \_\_\_\_\_ Primary Use: \_\_\_\_\_

Legume: \_\_\_\_\_ Primary Use: \_\_\_\_\_

Legume: \_\_\_\_\_ Primary Use: \_\_\_\_\_

For each broadleaf weed, tell where each is most likely to be found:

Broadleaf Weeds:

Weed: \_\_\_\_\_ Location Found: \_\_\_\_\_

Weed: \_\_\_\_\_ Location Found: \_\_\_\_\_

Weed: \_\_\_\_\_ Location Found: \_\_\_\_\_

Explain how legumes can be used to enrich the soil: \_\_\_\_\_

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Tell how legumes may deplete the soil under certain conditions: \_\_\_\_\_

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Explain how grasses can be used to enrich the soil: \_\_\_\_\_

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Tell how grasses may deplete the soil under certain conditions: \_\_\_\_\_

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Scout Name: \_\_\_\_\_ Unit #: \_\_\_\_\_ Date: \_\_\_\_\_

Demonstrate how a graft is made. Give a brief description: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Describe how one fruit, nut or berry crop is processed for use: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

If you selected the *SMALL GRAINS* option:

Give production figures for the small-grain crops listed in the United States Statistical Report for the latest year available: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Help in harvesting a crop of grain. Explain the process: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Tell how to reduce harvesting losses: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Visit a grain elevator, flour mill, cereal plant, feed or seed company. Talk with the operator. Take notes. Describe the processes used: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

If you selected the *OIL CROPS* option:

Grow a plot of soybeans. Give a brief description of your plot: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Scout Name: \_\_\_\_\_ Unit #: \_\_\_\_\_ Date: \_\_\_\_\_

Have your plot inspected by your counselor. What did your counselor say about it? \_\_\_\_\_

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Tell about modern methods of soybean growing on a commercial scale: \_\_\_\_\_

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Tell of the contributions soybeans make to our food supply: \_\_\_\_\_

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