

**Official Grain Grading Form**

Crops Contest:

Grain Grading Problem #1

Student Name \_\_\_\_\_

Contestant Number \_\_\_\_\_

FFA Chapter \_\_\_\_\_

Crop: Hard Red Spring Wheat \_\_\_\_\_

Information	Number or Percent	Grading Factor	Grade
Dockage	0.7%	N/A	
Dark hard vitreous kernels	80%		Dark Northern Spring
Test weight	59.8 lbs/bu	TWT	1
<b>Other Factors:</b>			
Hard white wheat	1.7%	Wheat of Other Classes (Total)	1
Shrunken and Broken kernels	2.3%	Shrunken and Broken Kernels	1
Sprouted hard red spring wheat	0.7%	DK	2
Scab (disease) damaged wheat	1.4%	DK	2
Foreign material	0.5%	FM	2
Ergot	0.06%		Ergoty
<b>Total defects</b>	<b>2.3 + 2.1 + 0.5 = 4.9%</b>	<b>Defects (Total)</b>	<b>2</b>

Final Grade: U.S. No. 2 Dark Northern Spring Wheat, Ergoty, Dockage 0.7%

Grading Factors:

Damaged kernels (Total)	_____
Foreign Material Defects (Total)	_____
Defects (Total)	_____
_____	_____
_____	_____

Official Grain Grading Form

Crops Contest: \_\_\_\_\_

Grain Grading Problem #2

Student Name \_\_\_\_\_

Contestant Number \_\_\_\_\_

FFA Chapter \_\_\_\_\_

Crop: Corn

Information	Number or Percent	Grading Factor	Grade				
The sample consists of more than 95% Yellow Corn							
Test Weight	55.7	TWT	2				
Moisture	13.8%	N/A					
Dockage	N/A						
<b>Other Factors:</b>							
Heat-damaged kernels	0.1%	HD	1				
Mold-damaged kernels	2.0%	Dam (TOT)	1				
Broken Corn and Foreign material	0.6%	BCFM	1				

Final Grade: U.S. No. 2 Yellow Corn

Grading Factors:

Test weight per bushel \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Official Grain Grading Form

Crops Contest: \_\_\_\_\_  
 Grain Grading Problem #3  
 Student Name \_\_\_\_\_  
 Contestant Number \_\_\_\_\_  
 FFA Chapter \_\_\_\_\_  
 Crop: Soybean

Information	Number or Percent	Grading Factor	Grade				
The sample consists of more than 95% Yellow Soybean							
Test Weight	60.0	N/A					
Moisture	11.6%	N/A					
Dockage	N/A						
<b>Other Factors:</b>							
Splits	1.3%	Splits	1				
Mold-damaged soybean	0.4%	Dam (tot)	1				
Foreign material	1.6%	FM	2				

Final Grade: U.S. No. 2 Yellow Soybeans

Grading Factors: \_\_\_\_\_  
 Foreign Material \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**2019 State FFA Crops Contest  
Insect Practicum Exam**

Name: \_\_\_\_\_  
FFA Chapter: \_\_\_\_\_  
Contestant No.: \_\_\_\_\_

Enter your answers in the "Exam 2" section of the bubble sheet, numbers 1-16. All questions are worth 3 points, except questions 7 and 9, which are worth 4 points.

1. Delayed planting is an example of which pest management strategy:
  - a. Biological control
  - b. Mechanical control
  - c. Preventative cultural control
  - d. Resistance management
  
2. Biological control agents of crop insect pests include all but which of the following:
  - a. Competitors
  - b. Herbivores
  - c. Parasitoids
  - d. Pathogens
  
3. For crop rotation to work well, the targeted insect pest must:
  - a. Do most of their damage to crops early in the season
  - b. Have a limited host range
  - c. Have a mobile feeding stage
  - d. Overwinter in soil
  
4. The type of crop damage caused by an insect pest with piercing and sucking mouthparts:
  - a. Defoliation
  - b. Root pruning
  - c. Stem clipping
  - d. Wilting
  
5. The type of damage to soybean from an insect pest with biting and chewing mouthparts:
  - a. Black mold on leaves and stems
  - b. Cupped leaves
  - c. Scarred pods
  - d. Stunted plants
  
6. The insect pest of alfalfa that does not have piercing and sucking mouthparts:
  - a. Alfalfa weevil
  - b. Cowpea aphid
  - c. Potato leafhopper
  - d. Spittlebug

7. How do northern corn rootworm and western corn rootworm differ?
  - a. Northern corn rootworm larvae have fewer pairs of legs
  - b. Northern corn rootworm larvae are darker colored
  - c. Northern corn rootworm larvae do not have a brown head
  - d. Northern corn rootworm adults do not have black stripes on their wing covers
8. Soybean aphid overwinters on:
  - a. Common buckthorn
  - b. Evergreen shrubs
  - c. Grassy vegetation
  - d. Soybean residue
9. The statement that is false for potato leafhopper, an insect pest of alfalfa:
  - a. It can overwinter in Minnesota
  - b. Some grandular-haired alfalfa varieties are resistant to this pest
  - c. It does not threaten the first harvest of alfalfa in a given year
  - d. Several generations of this pest appear throughout the growing season
10. The statement that is true of bean leaf beetle, an insect pest of soybean:
  - a. It can overwinter in Minnesota
  - b. Crop rotation effectively controls this pest
  - c. The injury it causes to soybean does not occur early in the growing season
  - d. The injury it causes to soybean does not include seed staining
11. European corn borer is most effectively controlled in corn production by:
  - a. A two-year corn-soybean rotation
  - b. Early planting of corn
  - c. Harvesting corn as grain rather than silage
  - d. Moldboard plowing after corn harvest
12. A two-year corn-soybean rotation has historically been used to control corn rootworm in corn production. This tactic is now less effective in some areas because corn rootworm developed the ability to:
  - a. Feed on alternate hosts
  - b. Overwinter in cysts for several years
  - c. Remain in the egg stage for two years
  - d. Travel to neighboring corn fields in the larval stage
13. The greatest economic concern of aphid damage to wheat is:
  - a. Defoliation
  - b. Reduced tillering
  - c. Transmission of barley yellow dwarf virus
  - d. Sucking of plant fluids

14. Which of the following is not an important insect pest of stored grain:
- a. Bruchid weevil
  - b. Indian meal moth
  - c. Sawtoothed grain beetle
  - d. Seedcorn maggot
15. The most effective pattern to use when scouting for grasshoppers in soybean in the spring is:
- a. Follow a W pattern across the field – entering at one end of the field and exiting at the same end
  - b. Follow an X pattern across the field – diagonally crossing the field in two directions
  - c. Follow a Z pattern across the field – entering at one end of the field and exiting at opposite corner
  - d. Follow the perimeter of the field
16. The most effective pattern to use when scouting for soybean aphids is:
- a. Follow a W pattern across the field – entering at one end of the field and exiting at the same end
  - b. Follow an X pattern across the field – diagonally crossing the field in two directions
  - c. Follow a Z pattern across the field – entering at one end of the field and exiting at opposite corner
  - d. Follow the perimeter of the field

## Land Capability Classification

The land capability classification of map units in the survey area is shown in this table. This classification shows, in a general way, the suitability of soils for most kinds of field crops (United States Department of Agriculture, Soil Conservation Service, 1961). Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for forestland, or for engineering purposes.

In the capability system, soils are generally grouped at three levels: capability class, subclass, and unit.

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

- Class 1 soils have slight limitations that restrict their use.
- Class 2 soils have moderate limitations that restrict the choice of plants or that require moderate conservation practices.
- Class 3 soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.
- Class 4 soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.
- Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.
- Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.
- Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.
- Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, e, w, s, or c, to the class numeral, for example, 2e. The letter e shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; w shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); s shows that the soil is limited mainly because it is shallow, droughty, or stony; and c, used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by w, s, or c because the soils in class 5 are subject to little or no erosion.

### Report—Land Capability Classification

Land Capability Classification--Rock County, Minnesota					
Map unit symbol and name	Pct. of map unit	Component name	Land Capability Subclass		
			Nonirrigated	Irrigated	
P4A—Calco silty clay loam, 0 to 2 percent slopes, frequently flooded	80	Calco, frequently flooded	5w	—	
P5A—Calco silty clay loam, 0 to 2 percent slopes, occasionally flooded	80	Calco, occasionally flooded	2w	—	
P16A—Graceville silty clay loam, 0 to 2 percent slopes	90	Graceville	1	—	
P19A—Alcester silty clay loam, cool, 0 to 2 percent slopes	90	Alcester	1	1	
P20B—Alcester silty clay loam, cool, 2 to 6 percent slopes	90	Alcester	2e	3e	
P24B—Moody silty clay loam, cool, 2 to 6 percent slopes	85	Moody	2e	—	
P24C2—Moody silty clay loam, cool, 6 to 11 percent slopes, eroded	90	Moody, eroded	3e	—	
P25C2—Nora silt loam, 4 to 10 percent slopes, eroded	85	Nora, moderately eroded	3e	—	
P26C2—Nora-Crofton complex, 6 to 12 percent slopes, eroded	50	Nora, moderately eroded	3e	—	
	30	Crofton, moderately eroded	3e	—	
P34B—Spiltrock silty clay loam, 2 to 5 percent slopes	82	Spiltrock	2e	—	
P34C2—Spiltrock silty clay loam, 5 to 9 percent slopes, eroded	80	Spiltrock, moderately eroded	3e	—	



Land Capability Classification--Rock County, Minnesota				
Map unit symbol and name	Pct. of map unit	Component name	Land Capability Subclass	
			Nonirrigated	Irrigated
P42A—White wood silty clay loam, 0 to 2 percent slopes	70	White wood	2w	—
P44E—Shindler clay loam, 15 to 45 percent slopes	85	Shindler	7e	—
P46—Trent silty clay loam, 0 to 3 percent slopes	80	Trent	1	1
P47A—White wood silty clay loam, overwash, 0 to 2 percent slopes	80	White wood, overwash	2w	—

**Data Source Information**

Soil Survey Area: Rock County, Minnesota  
 Survey Area Data: Version 13, Sep 19, 2016

**2019 State FFA Crops Contest  
Soils Practicum Exam**

Name: \_\_\_\_\_  
FFA Chapter: \_\_\_\_\_  
Contestant No.: \_\_\_\_\_

Enter your answers in the “Assessment and Solution” section of the bubble sheet, numbers 1-14. Questions 1–8 are worth 4 points each. Questions 9–14 are worth 3 points each.

**For all questions, use the provided document titled “Land Capability Classification---Rock County, Minnesota”**

1. There are \_\_\_\_\_ limitations that restrict crop production on Splitrock silty clay loam, 2 to 5 percent slopes (map unit symbol P34B).
  - a. Slight
  - b. Moderate
  - c. Severe
  - d. Very severe
  
2. The map unit symbol representing soil with the greatest limitations restricting the type of vegetation grown on it:
  - a. P24B
  - b. P26C2
  - c. P44E
  - d. P47A
  
3. The map unit symbol representing soil with the fewest limitations restricting crop production:
  - a. P5A
  - b. P34B
  - c. P34C2
  - d. P46
  
4. Limitations to corn and soybean production on Alcester silty clay loam, cool, 2 to 6 percent slopes (soil map unit symbol P20B) are primarily due to:
  - a. Risk of soil erosion
  - b. Shallow, droughty, or stony soils
  - c. The soil occurring in a climate that is very cold or very dry
  - d. Water in or on the soil interfering with crop growth

5. In the USDA Land Capability Classification system, possible limitations to crop production on soils within land capability class 5 do not include:
  - a. Risk of soil erosion
  - b. Shallow, droughty, or stony soils
  - c. The soil occurring in a climate that is very cold or very dry
  - d. Water in or on the soil interfering with crop growth
6. The main difference between soils represented by map unit symbols P25C2 and P34C2 is:
  - a. Depth of topsoil
  - b. Frequency of flooding
  - c. Soil texture
  - d. Suitable vegetation
7. The main difference between soils represented by map unit symbols P5A and P19A is:
  - a. Depth of topsoil
  - b. Frequency of flooding
  - c. Slope
  - d. Soil texture
8. The map unit symbol representing soil with the coarsest texture:
  - a. P24B
  - b. P25C2
  - c. P44E
  - d. P47A
9. The number of soils represented by map unit symbol P26C2:
  - a. 1
  - b. 2
  - c. 3
  - d. 4
10. The map unit symbol representing soil that is better suited to wildlife habitat than row crop production:
  - a. P4A
  - b. P20B
  - c. P42A
  - d. P47A
11. The map unit symbol representing soil with the greatest corn yield potential across a range of growing conditions:
  - a. P16A
  - b. P20B
  - c. P24C2
  - d. P42A

12. The map unit symbol representing soil that would likely show the greatest improvement in corn and soybean yields with the addition of artificial drainage:
- P19A
  - P24B
  - P25C2
  - P47A
13. Use of contour strip cropping in row crop production would be most beneficial to soil represented by which map unit symbol:
- P5A
  - P19A
  - P24B
  - P24C2
14. In the USDA Land Capability Classification system, the subclass "s" denotes soils on which crop production is limited by:
- A climate that is very cold or very dry
  - Excessive wetness
  - Risk of soil erosion
  - Shallow, droughty, or stony soils

## SEED ANALYSIS PRACTICUM

Contestant Name \_\_\_\_\_ Contestant No. \_\_\_\_\_ FFA Chapter \_\_\_\_\_

Answer the following questions about the sample. Enter your answers in the "Assessment and Solution" section of the bubble sheet, numbers 16-25. 5 points per question (50 points Total)

16. Identify the base sample
- a. Durum wheat
  - b. Hard Red Spring wheat
  - c. Oats
  - d. Six-rowed barley
17. How many other crops are in the sample?
- a. None
  - b. One
  - c. Two
  - d. Three
18. An add mixture is:
- a. Buckwheat
  - b. Oat
  - c. Rye
  - d. None of the above
19. An add mixture is:
- a. Field bindweed
  - b. Kochia
  - c. Quackgrass
  - d. Redroot pigweed
20. An add mixture is:
- a. Giant foxtail
  - b. Yellow foxtail
  - c. Both of these
  - d. Neither of these
21. An add mixture is:
- a. Curly dock
  - b. Dandelion
  - c. Wild mustard
  - d. Wild buckwheat
22. An add mixture is:
- a. Birdfoot trefoil
  - b. Common lambsquarters
  - c. Kochia
  - d. None of the above
23. An add mixture is:
- a. Alfalfa
  - b. Canada thistle
  - c. Pennsylvania smartweed
  - d. Shepherds purse
24. How many Prohibited weeds are in the sample?
- a. None
  - b. One
  - c. Two
  - d. Three
25. How many Restricted weeds are in the sample?
- a. None
  - b. One
  - c. Two
  - d. Three

Official Grain Grading Form

Crops Contest: \_\_\_\_\_

Grain Grading Problem #1

Student Name \_\_\_\_\_

Contestant Number \_\_\_\_\_

FFA Chapter \_\_\_\_\_

Crop: Hard Red Spring Wheat \_\_\_\_\_

Information	Number or Percent	Grading Factor	Grade
Dockage	0.7%		
Dark hard vitreous kernels	80%		
Test weight	59.8 lbs/bu		
<b>Other Factors:</b>			
Hard white wheat	1.7%		
Shrunken and Broken kernels	2.3%		
Sprouted hard red spring wheat	0.7%		
Scab (disease) damaged wheat	1.4%		
Foreign material	0.5%		
Ergot	0.06%		

Final Grade: \_\_\_\_\_

Grading Factors:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Official Grain Grading Form

Crops Contest: \_\_\_\_\_  
 Grain Grading Problem #2  
 Student Name \_\_\_\_\_  
 Contestant Number \_\_\_\_\_  
 FFA Chapter \_\_\_\_\_  
 Crop: Corn

Information	Number or Percent	Grading Factor	Grade				
The sample consists of more than 95% Yellow Corn							
Test Weight	55.7						
Moisture	13.8%						
Dockage	N/A						
<b>Other Factors:</b>							
Heat-damaged kernels	0.1%						
Mold-damaged kernels	2.0%						
Broken Corn and Foreign material	0.6%						

Final Grade: \_\_\_\_\_

Grading Factors:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Official Grain Grading Form

Crops Contest: \_\_\_\_\_  
 Grain Grading Problem #3  
 Student Name \_\_\_\_\_  
 Contestant Number \_\_\_\_\_  
 FFA Chapter \_\_\_\_\_  
 Crop: Soybean

Information	Number or Percent	Grading Factor	Grade				
The sample consists of more than 95% Yellow Soybean							
Test Weight	60.0						
Moisture	11.6%						
Dockage	N/A						
<b>Other Factors:</b>							
Splits	1.3%						
Mold-damaged soybean	0.4%						
Foreign material	1.6%						

Final Grade: \_\_\_\_\_

Grading Factors: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



## Crops Practicum Keys

### Insect Practicum

1. C
2. B
3. B
4. D
5. C
6. A
7. D
8. A
9. A
10. A
11. D
12. C
13. C
14. D
15. D
16. A

### Soils Practicum

1. B
2. C
3. D
4. A
5. A
6. C
7. B
8. B
9. B
10. A
11. A
12. D
13. D
14. D

### Seed Analysis

16. B
17. B
18. D
19. D
20. A
21. A
22. A
23. C
24. A
25. C