

## 2017 KEY

<b>No.</b>	<b>ID</b>	<b>Name</b>	<b>No.</b>	<b>ID</b>	<b>Name</b>
<b>1</b>	618	Potassium deficiency	<b>39</b>	513	Kochia
<b>2</b>	519	Shepherds purse	<b>40</b>	204	Crownvetch
<b>3</b>	525	Wild oats	<b>41</b>	504	Common lambsquarter
<b>4</b>	406	Hoary alyssum	<b>42</b>	703	Asian lady beetle
<b>5</b>	405	Giant foxtail	<b>43</b>	213	Timothy
<b>6</b>	517	Redroot pigweed	<b>44</b>	116	Millet, proso
<b>7</b>	213	Timothy	<b>45</b>	409	Wild mustard
<b>8</b>	528	Wooly cupgrass	<b>46</b>	201	Alfalfa
<b>9</b>	125	Wheat, hard red spring	<b>47</b>	524	Wild buckwheat
<b>10</b>	305	Leafy spurge	<b>48</b>	529	Yellow foxtail
<b>11</b>	606	Crown rust on oats	<b>49</b>	117	Oat
<b>12</b>	408	Quackgrass	<b>50</b>	103	Buckwheat
<b>13</b>	109	Corn, sweet	<b>51</b>	205	Kentucky bluegrass
<b>14</b>	710	Potato leafhopper	<b>52</b>	524	Wild buckwheat
<b>15</b>	207	Red clover	<b>53</b>	513	Kochia
<b>16</b>	121	Sunflower	<b>54</b>	523	White campion
<b>17</b>	210	Sudan grass	<b>55</b>	611	Leaf rust
<b>18</b>	711	Wheat stem maggot	<b>56</b>	403	Eastern black nightshade
<b>19</b>	206	Orchard grass	<b>57</b>	108	Corn, Pop
<b>20</b>	123	Wheat (P)	<b>58</b>	405	Giant foxtail
<b>21</b>	121	Sunflower	<b>59</b>	515	Pennsylvania smartweed
<b>22</b>	511	Green foxtail	<b>60</b>	515	Pennsylvania smartweed
<b>23</b>	609	Goss wilt	<b>61</b>	112	Flax
<b>24</b>	303	Field bindweed	<b>62</b>	303	Field bindweed
<b>25</b>	209	Smooth brome	<b>63</b>	517	Redroot pigweed
<b>26</b>	212	Tall fescue	<b>64</b>	102	Barley, Six-Rowed
<b>27</b>	701	Alfalfa weevil	<b>65</b>	505	Common ragweed
<b>28</b>	103	Buckwheat	<b>66</b>	529	Yellow foxtail
<b>29</b>	707	European corn borer	<b>67</b>	302	Canada thistle
<b>30</b>	118	Rye	<b>68</b>	702	Aphid
<b>31</b>	404	Field pennycress	<b>69</b>	706	Corn rootworm
<b>32</b>	502	Common burdock	<b>70</b>	613	Nitrogen deficiency
<b>33</b>	521	Velvetleaf	<b>71</b>	505	Common ragweed
<b>34</b>	507	Dandelion	<b>72</b>	214	White clover
<b>35</b>	203	Birdsfoot trefoil	<b>73</b>	612	Loose smut
<b>36</b>	501	Barnyardgrass	<b>74</b>	514	Large crabgrass
<b>37</b>	305	Leafy spurge	<b>75</b>	401	Buckhorn plaintain
<b>38</b>	615	Phosphorous deficiency			

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	1.2%				
Dark hard vitreous kernels	70%				
Test weight	59.5 lbs/bu				
<b>Other Factors:</b>					
Shrunken and Broken kernels	2.7%				
Scab (disease) damaged wheat	1.0%				
Foreign material	0.3%				
Hard white wheat	2.5%				

Final Grade:

Grading Factors:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Official Grain Grading Form

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

Information	Number or Percent	Grading Factor	Grade		
Test Weight	40.0 lbs/bu				
Ergot	0.05%				
<b>Other Factors:</b>					
Other grains	0.5%				
Foreign Material	1.5%				
Wild oats	1.5%				

Final Grade:

Grading Factors:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Official Grain Grading Form**

<p>Crops Contest:</p> <p>Grain Grading Problem #3</p> <p>Student Name _____</p> <p>Contestant Number _____</p> <p>FFA Chapter _____</p> <p>Crop: Yellow Corn</p>
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Information	Number or Percent	Grading Factor	Grade			
Test Weight	55.8 lbs/bu					
Moisture	12.0%					
<b>Other Factors:</b>						
Broken Corn & Foreign Material	1.0%					
Mold-damaged corn	3.0%					
Heat-damaged corn	0.1%					

Final Grade:

Grading Factors:

_____
_____
_____
_____
_____

Key

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	1.2%	N/A			
Dark hard vitreous kernels	70%		Northern Spring		
Test weight	59.5 lbs/bu	TWT	1		
<b>Other Factors:</b>					
Shrunken and Broken kernels	2.7%	Shrunken and Broken Kernels	1		
Scab (disease) damaged wheat	1.0%	DK (total)	1		
Foreign material	0.3%	FM	1		
Hard white wheat	2.5%	Wheat of Other Classes (Total)	1		
Defects	$2.7 + 1.0 + 0.3 = 3.3\%$	Defects (Total)	2		

Final Grade: U.S. No. 2 Northern Spring Wheat, Dockage 1.2%

Grading Factors:

Defects \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Key

Official Grain Grading Form

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

Information	Number or Percent	Grading Factor	Grade		
Test Weight	40.0 lbs/bu	TWT	1		
Ergot	0.05%				
<b>Other Factors:</b>					
Other grains	0.5%				
Foreign Material	1.5%	FM	1		
Wild oats	1.5%	Wild Oats	1		
Sound oats	100-1.5- 1.5- .5=96.5%	Sound oats	2		

Final Grade: U.S. No. 2 Extra Heavy Oats

Grading Factors:

Sound oats \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Key

Official Grain Grading Form

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

Information	Number or Percent	Grading Factor	Grade		
Test Weight	55.8 lbs/bu	tw	2		
Moisture	12.0%	N/A			
<b>Other Factors:</b>					
Broken Corn & Foreign Material	1.0%	BCFM	1		
Mold-damaged corn	3.0%	Damage	1		
Heat-damaged corn	0.1%	Heat dam.	1		
Damaged kernels total	$3.0+0.1=3.1$	DK total	2		

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

Grading Factors:

Test weight per bushel \_\_\_\_\_  
Damaged kernels total \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**2017 State FFA Crops Contest  
Insect Practicum Exam**

**Name:** \_\_\_\_\_

**FFA Chapter:** \_\_\_\_\_

**Contestant No.:** \_\_\_\_\_

**Circle one answer for each question. All questions are worth 3 points, except questions 6 and 15 which are worth 4 points each.**

1. Which insect pest does not damage corn in the seedling stage:
  - a. Corn rootworm larvae
  - b. Cutworm
  - c. White grub
  - d. Wireworm
  
2. Which insect pest of corn does not have piercing and sucking mouth parts:
  - a. Bird cherry-oat aphid
  - b. Japanese beetle
  - c. Stink bug
  - d. Twospotted spider mite
  
3. 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
  
4. Corn rootworm adults damage corn by:
  - a. Feeding on root hairs causing premature termination of root development
  - b. Feeding and tunneling in the roots of the plant
  - c. Clipping silks, thereby reducing fertilization so ears don't completely fill
  - d. Direct feeding on kernels, decreasing the amount of harvestable grain
  
5. Economic damage to corn from European corn borer is due to:
  - a. Removal of plant fluids
  - b. Destruction of vegetative tissue
  - c. Flower destruction
  - d. Kernel feeding
  
6. Which 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



7. Which widespread and prolonged weather conditions enhance the capacity of twospotted spider mites to damage soybean:
  - a. Low air temperature and low precipitation
  - b. Low air temperature and high precipitation
  - c. High air temperature and low precipitation
  - d. High air temperature and high precipitation
  
8. The most economically important damage to soybean from soybean aphid is:
  - a. Defoliation
  - b. Disease transmission
  - c. Flower destruction
  - d. Sap feeding
  
9. Which insect pest does not chew on soybean leaves:
  - a. Bean leaf beetle
  - b. Green cloverworm
  - c. Stink bug
  - d. Woollybear caterpillar
  
10. Biological control of soybean aphid cannot be achieved with:
  - a. Asian lady beetles
  - b. Hessian flies
  - c. Parasitoids
  - d. Pathogens
  
11. Which is/are aphid pest(s) of wheat:
  - a. Corn leaf aphid
  - b. English grain aphid
  - c. Greenbug
  - d. All of the above
  
12. The greatest economic concern of aphid damage to wheat is:
  - a. Transmission of barley yellow dwarf virus
  - b. Sucking of plant fluids
  - c. Defoliation
  - d. Reduced tillering in wheat
  
13. Armyworms injure wheat by:
  - a. Scraping leaf tissue
  - b. Defoliation
  - c. Cutting stems, thereby causing wheat heads to fall off the plant
  - d. All of the above

14. Which insect pest of alfalfa does not have piercing and sucking mouth parts:
- Alfalfa caterpillar
  - Cowpea aphid
  - Potato leafhopper
  - Spittlebug
15. Which statement about alfalfa weevil is false:
- They are transported into Minnesota from the southern United States by prevailing winds
  - Larvae of this pest can shred and skeletonize alfalfa leaves
  - This pest does not threaten the first harvest of alfalfa in a given year
  - Parasitic wasps and fungal pathogens may regulate populations of this pest
16. Injury to alfalfa from potato leafhopper appears as:
- Defoliated leaves
  - V-shaped yellow discoloration on the tips of leaves
  - Feeding scars on stems
  - Sooty mold on leaves

## SEED ANALYSIS PRACTICUM

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

Answer the following questions about the sample. Put your answers on the answer sheet provided. 5 points per question (50 points Total)

1. Identify the base sample

- a. Durum wheat
- b. Hard Red Spring wheat
- c. Flax
- d. Oats
- e. Six-rowed barley

2. How many other crops are in the sample?

- a. None
- b. One
- c. Two
- d. Three
- e. Four

3. An add mixture is:

- a. Buckwheat
- b. Oat
- c. Rye
- d. Six-rowed barley
- e. None of the above

4. An add mixture is:

- a. Field bindweed
- b. Field pennycress
- c. Quackgrass
- d. Wild sunflower
- e. None of the above

5. An add mixture is:

- a. Giant foxtail
- b. Yellow foxtail
- c. Both of these
- d. Neither of these

6. An add mixture is:

- a. Common ragweed
- b. Dandelion
- c. Wild mustard
- d. Wild buckwheat
- e. None of these

7. An add mixture is:

- a. Birdsfoot trefoil
- b. Common lambsquarters
- c. Kochia
- d. Redroot pigweed
- e. None of the above

8. An add mixture is:

- a. Alfalfa
- b. Canada thistle
- c. Shepherds purse
- d. Triticale
- e. None of the above

9. How many Prohibited weeds are in the sample?

- a. None
- b. One
- c. Two
- d. Three
- e. Four

10. How many Restricted weeds are in the sample?

- a. None
- b. One
- c. Two
- d. Three
- e. Four

## 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—Splitrock silty clay loam, 2 to 5 percent slopes				
	82	Splitrock	2e	—
P34C2—Splitrock silty clay loam, 5 to 9 percent slopes, eroded				
	80	Splitrock, 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—Whitewood silty clay loam, 0 to 2 percent slopes				
	70	Whitewood	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—Whitewood silty clay loam, overwash, 0 to 2 percent slopes				
	80	Whitewood, overwash	2w	—

### Data Source Information

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

**2017 State FFA Crops Contest  
Soils Practicum Exam**

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

**Circle one answer for each question. All questions are worth 4 points, except questions 6 and 7 which 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 Trent silty clay loam soil (map unit symbol P46).
  - a. Slight
  - b. Moderate
  - c. Severe
  - d. Very severe
  
2. The map unit symbol representing soil with the greatest limitations restricting the choice of plant grown on it:
  - a. P4A
  - b. P20B
  - c. P25C2
  - d. P42A
  
3. The map unit symbol representing soil with the greatest limitations restricting crop production:
  - a. P5A
  - b. P16A
  - c. P20B
  - d. P25C2
  
4. Limitations to corn and soybean production on Whitewood silty clay loam, 0 to 2 percent slopes (soil map unit symbol P42A) are primarily due to:
  - a. Risk of erosion
  - b. Water in or on the soil interfering with crop growth
  - c. Shallow soil
  - d. The soil occurring in a climate that is very cold or very dry

5. Primary limitations to use for soils within land capability class 5 do not include:
  - a. Risk of erosion
  - b. Water in or on the soil interfering with crop growth
  - c. Shallow soil
  - d. The soil occurring in a climate that is very cold or very dry
  
6. The main difference between soils represented by map unit symbols P19A and P20B is:
  - a. Depth of topsoil
  - b. Frequency of flooding
  - c. Slope
  - d. Soil texture
  
7. The main difference between soils represented by map unit symbols P4A and P5A is:
  - a. Depth of topsoil
  - b. Frequency of flooding
  - c. Slope
  - d. Soil texture
  
8. The map unit symbol representing soil with the finest texture:
  - a. P25C2
  - b. P26C2
  - c. P44E
  - d. P46
  
9. The number of soils represented by map unit symbol P25C2:
  - a. 1
  - b. 2
  - c. 3
  - d. 4
  
10. The map unit symbol representing soil that is better suited to pasture than corn and soybean production:
  - a. P4A
  - b. P19A
  - c. P24C2
  - d. P47A
  
11. The map unit symbol representing soil with the greatest corn yield potential across a range of growing conditions:
  - a. P5A
  - b. P19A
  - c. P24B
  - d. P25C2



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:

- a. P4A
- b. P5A
- c. P24C2
- d. P34B

13. The map unit symbol representing soil that would benefit the most from conservation tillage:

- a. P4A
- b. P19A
- c. P20B
- d. P26C2

## 2017 Crops Practicum Keys

### Insect Practicum

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

### Seed Analysis

1. B
2. C
3. D
4. E
5. B
6. C
7. A
8. B
9. B
10. A

### Soils Practicum

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