

**2016-2020  
Edition**

**4-H/FFA Crops Evaluation CDE  
Indiana Agronomy Skills Development**



**Contest  
Coordinator  
Booklet**

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# Table of Contents

General Contest Rules	Page 2
Identification	
General guidelines	Page 3
Setting up	Page 4
ID lists	Page 6
Scoring	Page 9
Grain Grading	
General guidelines	Page 10
Setting up	Page 11
Scoring	Page 12
Agronomy Exam	
General guidelines	Page 16
Setting up	Page 17
Scoring	Page 18
References	Page 19
Handouts	
Identification answer sheets	Pages 21-23
Grain grading answer sheet	Pages 24-25
Grain grading junior handbook	Pages 26-42
Grain grading charts	Pages 43-44

# GENERAL RULES

1. The outline of the event and all rules included herein are official for the Area and State events.
2. There will be two levels of participation:
  - a. Junior- participates at the middle school or Jr. high level
  - b. Senior- participates at the high school level
3. The following sections will be included in the contest and will include the following point values:

## **Section I: Identification (600 points)**

25 weed and crop plant samples and seedlings (250 points)

25 weed and crop seed samples (250 points)

10 crop diseases, damages, and harmful insects either samples or pictures (100 points)

## **Section II: Grain Grading (200 points)**

4 corn samples (100 points)

2 soybean samples (50 points)

2 wheat samples (50 points)

## **Section III: Agronomy Exam (200 points)**

40 multiple choice questions

**Total for Contest: 1000 points**

4. Ties will be broken in the following order: Section I, Section II, Section III
5. A maximum of 60 minutes will be allowed for each section of the event. Twenty minutes will be allowed for each part of Section I.
6. Participants ***are required to use clipboards*** while participating in the event and should supply their own No. 2 pencils and non-scientific calculators. Students may also use a ***magnifying glass during the identification section*** and a ***Corn and Soybean Field Guide during the agronomy exam.***
7. **THERE WILL BE NO COMMUNICATION WITH OTHER PARTICIPANTS OR ANYONE ELSE BUT THE OFFICIALS. CELLULAR DEVICES ARE NOT PERMITTED AT ANY TIME DURING THE CONTEST.**

# IDENTIFICATION

## What is identification?

- Participants will identify the following during this portion of the contest:
  - Common crop plants and seeds grown in Indiana
  - Common weed plants, seeds and seedlings that are problematic in crop systems in Indiana
  - Common diseases and damages found in corn, soybeans, or cereal grains such as wheat and rye
  - Common insects that are problematic in Indiana crop systems

## What do participants need to provide?

- Participants will need the following tools for this portion of the contest:
  - Clipboard
  - Pencil (s)
  - Magnifying glass (optional)

## What are participants provided with by contest officials?

- Answer sheets that have a complete list of plants, seeds, diseases, damages, and insects included.

## Rules for this portion of the contest

- This portion of the contest is split into 3 separate areas:
  - 25 Plant specimens and seedlings (250 points)
    - Min 20 Adult plant mounts or live plants
    - Max 5 Seedling plant mounts, live plants or pictures
  - 25 Seed specimens (250 points)
  - 10 Diseases/Damages and Insects specimen or pictures (100 points)
- Participants will have 20 minutes per section. (total time: 60 minutes)
- Each specimen is worth 10 points, making this section worth 600 points of the total contest.
- Not all specimens will be used in the contest and some specimens may be repeated. Crops and weeds **will not** be separated in the contest.

Some specimens must have specific details provided to participants if they are used in a contest.

# Identification Set Up

## Seed Samples

- All samples must be presented as actual seed samples. If these cannot be used, then a clear, adequate picture may be used instead. Samples used must correlate with the description given of the seed (see References).
- 25 weed and crop samples will be presented
- Weed and crop samples will not be separated
- Samples may be repeated
- Specific instructions for some specimens if used in the contest:
  - **Canola**- a picture of the seed coat ridges or text stating “hilum has 3 ridges”
  - **Wild mustard**- a picture of the seed coat ridges or text stating “hilum has 3 ridges”
  - **Foxtails**
    - Samples must contain the following text with the seed sample
      - **Giant foxtail**- has lemma and palea attached
      - **Green foxtail**- has palea covering ½ the seed

## Plant Samples

- All samples must be presented as plant mounts OR live samples. If these cannot be used, then a clear, adequate picture may be used instead. Samples used must correlate with the description given of the plant (see References).
- 25 weed and crop samples will be presented
- The following list of weed plants will be eligible for identification as seedlings

common cocklebur  
common lambsquarters  
common ragweed

giant ragweed  
marestail  
ivyleaf morningglory  
jimsonweed

redroot pigweed  
velvetleaf  
wild carrot

The seedlings will be presented as live plants, mounts or pictures. A maximum of 5 seedlings will be used at any contest.

- Weed and crop samples will not be separated
- Samples may be repeated
- Specific instructions for some specimens if used in the contest:
  - **Tall waterhemp**- this plant cannot be used until the 2017 contest season
  - **Foxtails**
    - If the plant sample does not show the hair distribution clearly, then the following information must be provided as either text or a clear picture with the sample:
    - **Green foxtail**- the upper leaf surface contains no hairs
    - **Giant foxtail**- the upper leaf surface contains short hairs
    - **Yellow foxtail**- the upper leaf surface contains long, sparse hairs
    -

#### **Insect, Disease, and Damage Samples**

- All samples must be presented as photographs or specimens. Samples used must correlate with the description given of the insect, disease, or damage (see References).
- 10 insect, disease, and damage samples will be presented
- Samples may be repeated

**The next 3 pages outline the samples that may be used in the identification portion of the contest.**

# Seed, Plant, Disease, Damage, and Insect Lists for 2016-2020

## Crop Plants

alfalfa	Kentucky bluegrass	smooth bromegrass
alsike clover	Korean lespedeza	soybean
barley	oat	sudangrass
birdsfoot trefoil	orchardgrass red	sweetclover
canola	clover	tall fescue
corn	reed canarygrass	timothy
crownvetch	rye	wheat
grain sorghum	ryegrass	white clover
hairy vetch		

## Weed Plants

barnyardgrass	garlic mustard	Pennsylvania smartweed
buckhorn plantain	giant foxtail	perennial sowthistle
burcucumber	*giant ragweed	quackgrass
Canada thistle	green foxtail	*redroot pigweed
*common cocklebur	hedge bindweed	shepherdspurse
*common lambsquarters	hemp dogbane	tall morningglory
*common ragweed	horsenettle	tall waterhemp
curly dock	*ivyleaf morningglory	trumpetcreeper
dandelion	*jimsonweed	*velvetleaf
downy brome	johnsongrass	wild buckwheat
Eastern black nightshade	large crabgrass	*wild carrot
fall panicum	*maretail	wild garlic
field bindweed	oxeye daisy	wild mustard
field pennycress		yellow foxtail
		yellow nutsedge

Weed Plants with Asterisks can be displayed as Seedlings

## Seed, Plant, Disease, Damage, and Insect Lists for 2016-2020

### Crop Seeds

alfalfa	hairy vetch	Soybean
alsike clover	Kentucky bluegrass	sudangrass
barley	Korean lespedeza	sweetclover
birdsfoot trefoil	oat	tall fescue
canola <sup>3</sup>	orchardgrass	timothy
dent corn	red clover	triticale
sweet corn	reed canarygrass	durum wheat
popcorn	rice	hard red winter wheat
crownvetch	rye	soft red winter wheat
flax	ryegrass	white wheat
grain sorghum	smooth bromegrass	white clover

### Weed Seeds

barnyardgrass	field pennycress	Pennsylvania smartweed
bindweed	giant foxtail	perennial sowthistle
buckhorn plantain	giant ragweed	quackgrass
burcucumber	green foxtail	redroot pigweed
Canada thistle	hedge bindweed	shepherdspurse
common cocklebur	hemp dogbane	trumpetcreeper
common lambsquarters	horsenettle	velvetleaf
common milkweed	jimsonweed	wild buckwheat
common ragweed	johnsongrass	wild carrot
curly dock	large crabgrass	wild garlic
dandelion	maretail	wild mustard
downy brome	morningglory	
Eastern black nightshade	oxeye daisy	
fall panicum		



## Seed, Plant, Disease, Damage, and Insect Lists for 2016-2020

<b><u>Disease or damage</u></b>	<b><u>Crop</u></b>	<b><u>Type of Sample</u></b>
blacktip	wheat	grain sample
blue eye mold	corn	grain sample
ergot	cereal grains	grain sample
green damage	soybean	grain sample
heat damage	all	grain sample
insect damage	all	grain sample
purple seed stain	soybean	grain sample
smut	wheat	grain sample
sprout damage	all	grain sample
wheat scab	wheat	grain sample
sound	all	grain sample
nitrogen deficiency	corn	photo
phosphorus deficiency	corn	photo
potassium deficiency	corn	photo
manganese deficiency	soybean	photo
gray leaf spot	corn	photo
northern corn leaf blight	corn	photo
white mold	soybean	photo
brown spot	soybean	photo
sudden death syndrome	soybean	photo
brown stem rot	soybean	photo
common rust	corn	photo

### **Insects**

army worm	adult
Japanese beetle	grub and adult
soybean aphid	adult
Western corn rootworm	larvae and adult
wireworms	adult

## Identification-Scoring

- Plant Identification
  - Total: 250 points
  - Each specimen is worth 10 points
  - Participants will write the correlating number to the correct specimen. Incorrect number correlation results in a wrong answer and a subtraction of 10 points.
  
- Seed Identification
  - Total: 250 points
  - Each specimen is worth 10 points
  - Participants will write the correlating number to the correct specimen. Incorrect number correlation results in a wrong answer and a subtraction of 10 points.
  
- Insect, Damage, and Disease Identification
  - Total: 100 points
  - Each specimen is worth 10 points
  - Participants will write the correlating number to the correct specimen. Incorrect number correlation results in a wrong answer and a subtraction of 10 points.

# GRAIN GRADING

## What is grain grading?

- Contestants will be given 8 written scenarios of possible grain samples to be graded according to USDA standards. These descriptions will give grain type, weight, moisture, damages, foreign material, and other important information that is normally considered for the grain grading procedure.

## What do contestants need to provide?

- Contestants will need the following tools for this portion of the contest:
  - Clipboard
  - Pencil(s)
  - A non-scientific calculator

## What are contestants provided with by contest officials?

- Grain grading problems
- Official grain grading answer sheet
- **Juniors contestants:** Grain grading handbook

## Rules for this portion of the contest

- This portion of the contest will have the following 8 grain samples:
  - 4 Corn samples
  - 2 Soybean samples
  - 2 Wheat samples
- Contestants will have 60 minutes to complete all 8 samples.
- Each sample is worth 25 points.
- Contestants will grade samples based on the official standards. This set of standards will be provided to junior contestants to use during this portion of the contest. Senior contestants are not permitted a copy of the standards during the contest at any time.

# Grain Grading Set-up

## Problem Set

- Problem sets can be provided by the Purdue Collegiate Crops Judging Team by calling (765)-494-4773.
- If writing a problem set, please refer to the grain grading section of the “2016-2020 4-H/FFA Crops Evaluation CDE: Indiana Agronomy Skills Development” for rules and regulations.
- When making the key for problem sets
  - the year and contest should be clearly marked at the top
  - All required answers on the answer sheet should be bolded, underlined, or have an asterisk mark

## What to provide participants

- Problem set
- Answer sheet
- Charts
- Grain grading booklet (Juniors only)

# Grain Grading-Scoring

- *The Official Grain Standards of the United States*, published by the U.S. Department of Agriculture, Federal Grain Inspection Service, will be the official manual for completing the answer sheet which resembles an official grain grading certificate. If, however, the rules of the grading change during the five year coverage of this document, the rules spelled out within will have presidency.
- Some customers request that information in addition to grading factors be recorded on the grain certificate. If extra information (other than factors which affect grade) is recorded on the answer sheet, the information **MUST** be correct. **If the additional information is not correct, then 1 point is deducted for each incorrect factor box.**
  - Example: If a participant incorrectly records Damage Kernels (Total) Information and that information is not a grading factor, the participant would lose 1 of their 12 points possible for that line. See examples of correctly written grades.
- Incorrectly written percentages will result in an incorrect answer.
  - Numbers less than 1 should be written to include a zero before the decimal
    - Ex. .8% should be recorded at 0.8%
- Extraneous marks, such as zeros or dashes, put in factor boxes will be counted as wrong answers. This is for the benefit of graders in that they do not have to sift through an over amount of extra information.
- The sample will be scored on the basis of grade line, grading factors line, and remarks section for a total of 25 points per sample (200 points total).
- Negative score for any line will be scored as zero points

The diagram shows a grain grading certificate form with the following fields and callouts:

- Grain grade (required)**: Points to the "GRADE AND KIND" field.
- Grain class (required)**: Points to the "U.S. No. 1 Yellow Corn" field.
- Special grade factors**: Points to the "Special grade factors" field.
- Grade factors line**: Points to the "GRADE FACTORS LINE" field.
- Sample #1**: Points to the "TEST WEIGHT PER BUSHEL" field.
- Test weight (given) (required)**: Points to the "56.0" value.
- Moisture (given) (required)**: Points to the "12.4" value.
- Other remarks and information needed**: Points to the "REMARKS" field.

TEST WEIGHT PER BUSHEL		MOISTURE		HEAT DAMAGED KERNELS	DAMAGED KERNELS (TOTAL)	FOREIGN MATERIAL	SPLITS	BROKEN CORN AND FOREIGN MATERIAL	SPLINEN AND BROKEN KERNELS	DEFECTS (TOTAL)
LBS.	%	%	%	%	%	%	%	%	%	%
56.0		12.4								

REMARKS

## How to grade corn and soybean problems

- Grade Line-10 points total
  - Grade-6 points
    - Incorrect by 1 grade: 2 points off
    - Incorrect by 2 grades: 4 points off
    - Incorrect by 3 or more grades: 6 points off
  - Correct Class- 4 points
    - Yellow, White, or Mixed Corn
    - Yellow or Mixed Soybeans
  - Special Factors- 3 points
    - Specific for each grain type
- Grading Factors Line-12 points total
  - All correct: 12 points
  - 2 factors required with 1 correct: 6 points off
  - 3 factors required with 2 correct: 4 points off
  - 3 factors required with 1 correct: 8 points off
  - 4 factors required with 3 correct: 3 points off
  - 4 factors required with 2 correct: 6 points off
  - 4 factors required with 1 correct: 9 points off
  - No factors correct: 12 points off
- Remarks section- 3 points total
  - Specific for each grain type

GRADE AND KIND		CLASS		SPECIAL FACTOR		GRADE FACTORS LINE		
U.S. No. 3		Yellow Corn		Infested		Grade line (includes grade, class, and special factors) (10 points total)		
TEST WEIGHT PER BUSHEL	MOISTURE	HEAT DAMAGED KERNELS	DAMAGED KERNELS (TOTAL)	FOREIGN MATERIAL	SPLITS	BROKEN CORN AND FOREIGN MATERIAL	SHRUNKEN AND BROKEN KERNELS	DEFECTS (TOTAL)
*56.0 lbs	* 13.2 %	*0.3 %	0.3 %	%	%	*3.6%	%	%
Sample #1						REMARKS		
						Remarks line (3 points)		

**\*\*Note:** The grade line is a total of 10 points and includes grade, class, and special factors. Students cannot miss more than 10 points on this line. (see examples)

## How to grade wheat problems

- Grade Line-10 points total
  - Grade-6 points
    - Incorrect by 1 grade: 2 points off
    - Incorrect by 2 grades: 4 points off
    - Incorrect by 3 or more grades: 6 points off

- Correct Class- 1 point
  - Soft Red Winter Wheat
- Special Factors- 3 points
  - Specific for each grain type
- Dockage correctly recorded- 3 points
- Grading Factors Line-12 points total
  - See “how to grade corn and soybean problems”
- Remarks section- 3 points total
  - Specific for each grain type

Grade (6 points)		Class (1 point)		Special Factor (3 points)		Grade line (includes grade, class, dockage, and special factors) (10 points total)			
GRADE AND KIND		Dockage (3 points)		Grade factors line (12 points)					
U.S. No. 3		Soft Red Winter Wheat, Infested, Dockage 2.4%							
TEST WEIGHT PER BUSHEL	MOISTURE	HEAT DAMAGED KERNELS	DAMAGED KERNELS (TOTAL)	FOREIGN MATERIAL	SPLITS	BROKEN CORN AND FOREIGN MATERIAL	SHRUNKEN AND BROKEN KERNELS	DEFECTS (TOTAL)	
*56.0 lbs	* 13.2 %	*0.3 %	0.3 %	%	%	*3.6%	%	%	
Sample #1				Remarks line (3 points)		REMARKS			

**\*\*Note:** The grade line is a total of 10 points and includes grade, class, dockage, and special factors. Students cannot miss more than 10 points on this line. (see examples)

**Samples that are U.S. No. 1 do not require factors listed except the test weight, moisture, and special factors that do not contribute to the grade designation.**

# Grain Grading Examples

## Example 1: Answer

GRADE AND KIND								
U.S. No. 3 Yellow Corn								
TEST WEIGHT PER BUSHEL	MOISTURE	HEAT DAMAGED KERNELS	DAMAGED KERNELS (TOTAL)	FOREIGN MATERIAL	SPLITS	BROKEN CORN AND FOREIGN MATERIAL	SHRUNKEN AND BROKEN KERNELS	DEFECTS (TOTAL)
*56.0 lbs	*13.2 %	*0.3 %	0.3 %	%	%	*3.6%	%	%
Sample #1	REMARKS							

## Example 1: Student Response

Incorrectly written, not needed: -1 point

GRADE AND KIND								
U.S. No. 4 Yellow Corn								
TEST WEIGHT PER BUSHEL	MOISTURE	HEAT DAMAGED KERNELS	DAMAGED KERNELS (TOTAL)	FOREIGN MATERIAL	SPLITS	BROKEN CORN AND FOREIGN MATERIAL	SHRUNKEN AND BROKEN KERNELS	DEFECTS (TOTAL)
56.0 lbs	13.2 %	0.3 %	0.28 %	%	%	3.6%	%	%
Sample #1	REMARKS							

Incorrect by 1 grade: -2 points

Score: 22/25

## Example 2: Answer

GRADE AND KIND								
U.S. Sample Grade Yellow Soybeans, Infested								
TEST WEIGHT PER BUSHEL	MOISTURE	HEAT DAMAGED KERNELS	DAMAGED KERNELS (TOTAL)	FOREIGN MATERIAL	SPLITS	BROKEN CORN AND FOREIGN MATERIAL	SHRUNKEN AND BROKEN KERNELS	DEFECTS (TOTAL)
*59.0 lbs	*13.7%	%	0.8%	*3.2 %	*19.2 %	%	%	%
Sample #5	REMARKS							

\*Stones

## Example 2: Student Response

Incorrect by more than 3 grades, incorrect class, and missing special factor: -13 points, but participants cannot miss more than 10 points in this section

GRADE AND KIND								
U.S. No. 2 Mixed Soybeans								
TEST WEIGHT PER BUSHEL	MOISTURE	HEAT DAMAGED KERNELS	DAMAGED KERNELS (TOTAL)	FOREIGN MATERIAL	SPLITS	BROKEN CORN AND FOREIGN MATERIAL	SHRUNKEN AND BROKEN KERNELS	DEFECTS (TOTAL)
59.0 lbs	13.7 %	%	0.8 %	3.2 %	19.2 %	%	%	%
Sample #5	REMARKS							

Missing factor: -3

Score: 12/25



# AGRONOMY EXAM

## What is the agronomy exam?

- Exam questions will test general agronomic knowledge of the participant.
- Suggested objectives should be considered when studying for the exam.
- A list of references that will be used to write examinations can be found in the contest manual

## What do participants need to provide?

- Clipboard
- No. 2 Pencil(s)
- Non-scientific calculator
- Purdue Extension Corn and Soybean Field Guide
  - **Note:** Questions written from this source will be based on information provided in the **2015 Corn and Soybean Field Guide**. Participants may, if they wish, use another book, but there will be no guarantee that all questions can be answered using a different year book. To receive copies of the 2015 field guide, contact the Purdue Agronomy Club

## What are participants provided with by contest officials?

- Agronomy exam
- Scantron form

## Rules for this portion of the contest

- The exam will consist of 40 multiple choice questions (200 points).
- Participants will have 60 minutes to complete the exam.
- Each question is worth 5 points and will be counted wrong if omitted or incorrectly answered.

# Agronomy Exam Set-up

## Test

- Tests can be provided by the Purdue Collegiate Crops Judging Team by calling (765)-494-4773.
- If writing a test, please refer to the agronomy exam section of the “2016-2020 4-H/FFA Crops Evaluation CDE: Indiana Agronomy Skills Development” for rules and regulations.
- When making the key for tests
  - the year and contest should be clearly marked on the front page
  - All correct answers on the answer sheet should be bolded, underlined, or have an asterisk mark

## What to provide participants

- Exam
- Scantron

## **Agronomy Exam Grading**

- Each exam question is worth 5 points
- Exams can be graded by hand or with scantron machine

# REFERENCE MATERIALS FOR CONTEST

**Purdue Contact:** Sherry Fulk-Bringman, Purdue Agronomy  
[sherryfb@purdue.edu](mailto:sherryfb@purdue.edu)

## **Purdue Extension Corn and Soybean Field Guide-2015**

Contact: Purdue Agronomy Club (765-494-4773)

\*\*Copies are also handed out each year at the Purdue Crops CDE Invitational

## **Identification kits**

Plant mounts and seed samples: Purdue Agronomy Club (765-494-4773). Check the drop down box for Order forms located at <https://ag.purdue.edu/agry/agryclub/Pages/default.aspx>

### **1. Publications for agronomy exam assistance**

Forage Field Guide, Third Edition ID-317

[https://mdc.itap.purdue.edu/item.asp?Item\\_Number=ID-317#.VnFkXE\\_lu1s](https://mdc.itap.purdue.edu/item.asp?Item_Number=ID-317#.VnFkXE_lu1s)

Cover Crop Field Guide, Second Edition ID-433

[https://mdc.itap.purdue.edu/item.asp?Item\\_Number=ID-433#.VnFIRE\\_lu1s](https://mdc.itap.purdue.edu/item.asp?Item_Number=ID-433#.VnFIRE_lu1s)

Wheat Field Guide, ID-448

[https://mdc.itap.purdue.edu/item.asp?Item\\_Number=ID-448#.VnFIIU\\_lu1s](https://mdc.itap.purdue.edu/item.asp?Item_Number=ID-448#.VnFIIU_lu1s)

Improving Pastures by Renovation <http://www.agry.purdue.edu/ext/forages/publications/ay251.htm>

Estimating Crop Residue Cover <http://www.extension.purdue.edu/extmedia/AY/AY-269-W.pdf>

## **Contest teaching tools**

<http://www.four-h.purdue.edu/cde/index.cfm>

Site includes

- Crop and weed identification power points
- Disease/damage identification power points
- Insect identification power points
- Grain grading step by step assistance
- Old state agronomy exams and keys
- Order forms for identification kits

# **Contest Handouts**

- 1. Identification Answer Sheets**
- 2. Grain Grading Answer Sheet**
- 3. Grain Grading Junior Handbook**
- 4. Grain Grading Charts**

# **Junior Participant 2016-2020 Grain Grading Handbook**

**This book is for Junior participants *only* during a  
4-H/FFA Crops Evaluation Contest.**

# 2016-2020 Grain Grading Book

## Corn Grading

### What is corn?

Corn is defined as any grain which consists of 50 percent or more of whole kernels of shelled dent corn and/or flint corn. It may not contain more than 10 percent of other grains for which grading standards have been established. If it does not meet these standards, the lot is considered mixed grain. However, in this event there will be no mixed grain so any grain other than dent or flint corn is foreign material. ***Popcorn, sweet corn, and blue corn in corn grading are foreign material.***

Class and damaged kernels are determined after the removal of foreign material. All percentages shall be determined on the grain as a whole.

### Corn Grain Class

There are three possible classes of corn, Yellow Corn, White Corn and Mixed Corn. Percentage of corn classes should be rounded to the nearest tenth.

**Yellow Corn** - Yellow-kernelled corn that does not contain **more than 5 percent** corn of other colors. In other words, 95.0% or more Yellow Corn. Yellow kernels with red streaks **covering less than 50.0%** of the kernel are considered yellow corn.

**White Corn** - White-kernelled corn that does not contain **more than 2 percent** corn of other colors. In other words, 98.0% or more White Corn. White corn with a slight tinge of pink is white corn.

**Mixed Corn** - Corn that does not meet the color requirements of white or yellow corn. When completing the grain inspection certificate (answer sheet) record the percent of each corn (class) from greatest to least in percentage to nearest tenth within the "Remarks" section. If more than 50.0% of the kernel is red streaked, then the corn is considered Red Corn. Students should write "**Red Corn**" in the remarks section if it is a determining factor for corn grain class.

### Moisture

Moisture is not a grading factor in commercial grain; nevertheless, a loss of quality in stored corn hinges largely on the amount of moisture present in the grain. Moisture is an important factor in most discount schedules.

Moisture is recorded to the nearest tenth of a percent.

- Example: **16.27% is recorded as 16.3%**

### Test Weight

Test weight is the amount of weight the grain must have to make up a bushel. Good quality corn of low moisture content can be expected to have a good test weight.

Test weight is recorded to the nearest tenth.

- Example: **52.34 lbs/bu is recorded as 52.3 lbs/bu**

### **Broken Corn and Foreign Material**

Broken corn and foreign material is normally determined by the use of a sieve; broken corn and all matter other than corn that pass through a sieve having round openings 12/64th of an inch in diameter, and all matter other than corn that remain on the sieve after screening are included in this factor.

Examples of foreign material

- Sweet corn
- Popcorn
- Blue corn
- Soybeans not passing through the sieve
- Grains or weeds dropping through the sieve
- Rodent excreta and stones (cinders are stones)
  - *Note:* If the total weight of stones in a 1-1/4 quarts (1,000 gm.) sample **exceeds** 1.1 percent of the sample weight the sample must be graded "U.S. Sample Grade". When applicable, record "**Stones**" in the Remarks section of the certificate.

**Do not enter this percentage in the foreign material column on the answer sheet.** There is a column for broken corn and foreign material.

Broken corn and foreign material is recorded to nearest tenth of a percent.

### **Heat Damaged Kernels**

Heat damaged corn is **severely** discolored (brown to black) either from external heating, such as improper drying, or from heating as a result of excessive moisture in storage and spoilage. Kernels in this category will be included in heat damage **AND** damaged kernels (total).

Slightly damaged corn shows some discoloration (light to dark tan) and therefore is not as severely damaged. The two are **not** added together to determine heat damaged kernels. Slight damaged corn will only be included in damaged kernels (total).

Record to the nearest tenth of a percent.

### **Damaged Kernels (Total)**

Damaged kernels (total) includes **all** types of damage found in corn. Darkening of the germ is one of the first indicators of corn declining in quality or that the amount of damage is increasing.

Examples of damaged kernels

- mold damage
- heat damage
- sprout damage
- frost damage
- badly ground-damaged
- badly weather-damaged
- insect damage (not chewed)
- kernels that have become slightly discolored from heat

Note that the percent of heat damage is added to other types of damage to obtain the percent of Damaged Kernels (Total).

Record to the nearest tenth of a percent.



### **Musty, Sour, or Heating**

A sample in any of these conditions is "U.S. Sample Grade."

Musty- Musty, ground, or moldy odor

Sour- Sour, fermenting, or pigpen odor

Heating- Corn developing a high temperature from excessive respiration. Corn will usually have a musty or sour odor. For this contest, samples that are affected by heating will state "corn affected by high temperature" OR "heating."

Record the applicable words in the "Remarks" section of the grading certificate.

### **Commercially Objectionable Foreign Odor**

If the corn carries an odor which does not normally occur in grain and which, for this reason, would render the corn unfit for its normal commercial use, then it is graded "U.S. Sample Grade."

This includes animal hides, decaying animal or vegetable parts, fertilizer, skunk, smoke, strong weed, oil, etc.

Record the words "Commercially Objectionable Foreign Odor" in the "Remarks" section of the certificate.

### **Distinctly Low Quality**

The Federal Grain Inspection Service reserves the use of this term to describe corn when it is obviously of inferior quality and the existing grading factors or guidelines do not accurately reflect the inferior condition.

When a sampler is collecting corn from a rail car, he/she can notice whether the grain also includes two or more large stones, pieces of glass, pieces of concrete, sticks of lumber, or scrap metal or debris which are visible to the sampler but are too large to enter the sampling device, such as a grain probe.

This grading factor **should not** be confused with the other conditions which can also cause corn to be "Sample Grade," such as animal filth, cocklebur, crotalaria seed, etc.

Record the words Distinctly Low Quality (Reason).

### **Sample Grade Factors**

There is a list of factors that does not meet U.S. number standards and make the sample "Sample Grade" listed on the bottom of the grading chart. These include animal filth, cocklebur, crotalaria seed. If any of these are reported in the sample, participants should grade the sample "Sample Grade" and write the word in the Remarks box.

How to record in the "Remarks" box (see chart for details)

- Stones
- Glass
- Crotalaria
- Castor Beans
- Unknown Foreign Substance
- Commonly Recognized Harmful or Toxic Substance
- Cocklebur
- Animal Filth (Includes bird droppings and rodent pellets)
- Heating
- Distinctly Low Quality (Reason)

## **Special Factors, Special Grade Requirements, Special Grade Designations**

Special grades are conditions which should be noted but **do not** affect the numerical grade.

### **Flint**

Corn of any class which consists of **95 percent or more** of flint corn; flint corn is graded and designated according to the grade requirements of the standards applicable to such corn if it were not flint, and the word "Flint" is added to and made a part of the grade designation, immediately following the class name.

Flint corn is a different subspecies of corn with hard starch rather than soft starch as in dent corn.

### **Flint and Dent**

Corn of any class which consists of a mixture of flint and dent corn containing **more than 5 percent but less than 95 percent of flint corn**. The words "Flint and Dent" **and** the percentage of flint corn rounded to the tenth are added to and made a part of the grade designation immediately following the special grade.

### **Infested**

Any corn sample 1-1/4 quarts or 1000 g that contains one of the following:

- 2 or more live weevils
- 1 live weevil and 5 or more other live insects injurious to stored grain
- 10 or more other live insects injurious to stored grain

Infested is the condition of live weevils or grain-damaging insects in the grain.

Infested corn is graded and designated according to the grade requirements of the standards applicable to such corn if it was not infested. The word "Infested" is added to and made a part of the grade designation.

### **Waxy Corn**

Corn that consists of **95% or more waxy corn**. When applicable, the word "Waxy" will be last within the grade designation.

## Soybean Grading

### What are soybeans?

Soybeans are any grain that consists of 50 percent or more of whole or broken soybeans which will not pass readily through an 8/64 sieve and not more than 10 percent of other grains for which grading standards have been established.

Class, splits, and damaged kernels are determined after foreign material is removed.

### Soybean Grain Class

There are two possible classes of soybeans, Yellow Soybeans or Mixed Soybeans. Percentage of soybean classes should be rounded to the **nearest tenth**.

**Yellow Soybeans** - Soybeans that have a yellow seed coat and are yellow in cross-section. Sample does not contain more than 10 percent of other colors.

**Mixed Soybeans** - Any mixture of soybeans that does not meet the requirements of yellow soybeans (See Soybeans of Other Colors). When completing the grain inspection certificate, record the percent of each color of soybeans from greatest to least to the nearest tenth within the Remarks section.

**Soybeans of Other Colors**- These colors serve as a **grading factor** in yellow soybeans. When soybeans of other colors (black, brown, and bi-colored) **occur in quantities of 10 percent or less**, the percentage is a factor in determining the grade of yellow soybeans. **When other colors exceed 10 percent, the sample is then classified as Mixed Soybeans** (see above). Soybeans of other colors is listed in the Remarks section.

### Example

Yellow Soybeans	85.0%	Mixed Soybeans
Bi-color Soybeans	15.0%	
Yellow Soybeans	95.0%	Yellow Soybeans
Bi-color Soybeans	5.0%	Soybeans Of Other Colors

### Test Weight

Test weight is the amount of weight the grain must have to make up a bushel. Good quality seed of low moisture content can be expected to have a good test weight. **Test weight has no effect on the grade of soybean samples.**

Record test weight rounded to the nearest tenth.

### Moisture

The moisture content of soybean seed is extremely important but it is no longer used as a grading factor. Loss of quality of stored seed hinges largely on the amount of moisture present in the sample. Moisture is an important factor in most discount schedules.

Record moisture to the nearest tenth of a percent.

## Splits

Any soybean having **more than** 1/4 of the seed missing is considered a split. Splits are determined on a portion of approximately 125 grams after the removal of all foreign material.

This factor includes only **sound splits** - those free from damage.

Damaged splits are **only** recorded in Damaged Kernels (Total).

Splits are recorded to the nearest tenth of a percent.

## Heat Damage

Heat damaged soybeans are **severely** discolored (black or dark brown) either from external heating, such as improper drying, or from heating as a result of excess moisture and spoiling. Almost all heat damage is the result of storing grain too wet. Soybeans in this category will be included in heat damage **AND** Damaged Kernels (Total).

Slightly damaged soybeans show some discoloration (light to dark tan) and therefore are not as severely damaged. The two are **not** added together to determine heat damaged kernels. Slight damaged soybeans will only be included in Damaged Kernels (Total).

Record heat-damaged kernels to the nearest tenth of a percent.

## Damaged Kernels (Total)

This factor includes **all** types of damage found in whole and pieces of soybeans.

### Examples of Damaged Kernels

- heat damage
- sprout damage
- frost damage
- immature seed
- ground-damage
- mold damage
- insect damage (not chewed)
- kernels that have become slightly discolored from heat
- heat damage
- stink bug stung kernels\*\*

\*\*Stink bug stung kernels are considered damaged kernels at the rate of 1/4 of actual total percentage of stung kernels

Example: 12 grams is considered as 3 grams of damage

Record Damage Kernels (Total) to the nearest tenth of a percent.

## **Foreign Material**

Foreign material is normally determined by the use of a sieve and separated into coarse and fine foreign material.

Coarse foreign material includes material that does not pass through an 8/64 inch sieve and made on 1000 grams.

Fine foreign material includes material that passes through an 8/64 inch sieve and material and pieces of soybean that remains on top of the sieve after sieving. This test is made on 125 grams.

Examples of foreign material

- corn
- cockleburs
- sticks
- stalks
- rodent excreta
- stones
- other grains

Record to the nearest tenth of a percent.

## **Distinctly Low Quality**

The Federal Grain Inspection Service reserves the use of this term to describe soybeans when it is obviously of inferior quality and the existing grading factors or guidelines do not accurately reflect the inferior condition.

When a sampler is collecting soybeans from a rail car, he/she can notice whether the grain also includes two or more large stones, pieces of glass, pieces of concrete, sticks of lumber, or scrap metal or debris which are visible to the sampler but are too large to enter the sampling device, such as a grain probe.

This grading factor **should not** be confused with the other conditions which can also cause soybeans to be "Sample Grade", such as animal filth, cockleburs, crotalaria seed, etc. Record the words Distinctly Low Quality (Reason).

*(See corn for example of how to record).*

## **Musty, Sour or Heating**

A sample in any of these conditions is "U.S. Sample Grade".

Musty- Musty, ground, or moldy odor

Sour- Sour, fermenting, or pigpen odor

Heating- Soybeans developing a high temperature from excessive respiration. Soybeans will usually have a musty or sour odor. For this contest, samples that are affected by heating will state "Soybeans affected by high temperature" OR "heating."

Record the applicable words in the "Remarks" section of the grading certificate.

*(See corn for example of how to record)*

### **Commercially Objectionable Foreign Odor**

If the soybeans carry an odor which does not normally occur in grain and which, for this reason, would render the soybeans unfit for its normal commercial use, then it is graded "U.S. Sample Grade."

This includes animal hides, decaying animal or vegetable parts, fertilizer, skunk, smoke, strong weed, oil, etc.

Record the words "Commercially Objectionable Foreign Odor" in the "Remarks" section of the certificate.

*(See corn for example of how to record)*

### **Sample Grade Factors**

There is a list of factors that automatically make the sample "Sample Grade" listed on the bottom of the grading chart. These include animal filth, cockleburs, crotalaria seed. If any of these are reported in the sample, participants should grade the sample "Sample Grade" and write the word in the "Remarks" box.

How to record in the "Remarks" box (see chart for details)

- Stones
- Glass
- Crotalaria
- Castor Beans
- Unknown Foreign Substance
- Commonly Recognized Harmful or Toxic Substance
- Cockleburs
- Animal Filth (Includes bird droppings and rodent pellets)
- Heating
- Distinctly Low Quality (Reason))

### **Cumulative Total**

If a cumulative total of 11 or more sample grade factors are found, the sample is graded "U.S. Sample Grade."

These factors include any combination of animal filth, castor beans, crotalaria seeds, glass, stones, and any unknown foreign substance.

When applicable, record "**Cumulative Total**" in the "Remarks" section. You are **not required** to list the factors that cumulate to this total.

### **Special Factors, Special Grade Requirements, Special Grade Designations**

Special grades are conditions which should be noted but **do not** affect the numerical grade.

#### **Garlicky**

Specific types of garlic bulbs found in the sample may be considered a special factor.

Green bulbs- husk is still intact, contains **three or more** green bulblets in 1000 grams

Dry bulbs- husk is dry or missing, **3 dry bulbs= 1 green bulb**

The word "Garlicky" is added to and made a part of the grade designation. A garlic odor is not a basis for "Garlicky."

**Infested**

Any soybean sample that contains one of the following:

- two or more live weevils
- one live weevil and 5 or more other live insects injurious to stored grain
- 10 or more other live insects injurious to stored grain

Infested is the condition of live weevils or grain-damaging insects in the grain.

Infested soybeans are graded and designated according to the grade requirements of the standards applicable to such soybeans if it was not infested. The word "Infested" is added to and made a part of the grade designation.

**Purple Mottled or Stained**

Soybeans that are discolored with pink or purple seed coats, dirt or dirt-like substance, or pokeberry stains, as determined on a portion of 400 grams with the use of an FGIS Interpretive Line Print. The Interpretive Line Prints are help tools for inspectors to judge whether or not a kernel is damage or not.

Samples with this condition will state "Purple Mottled or Stained" as the description.

The words "Purple Mottled or Stained" are added to and made part of the grade designation.

# Wheat Grading

## What is Wheat?

Wheat is any grain of common wheat, club wheat, and durum wheat, which before the removal of dockage, consists of 50 percent or more of these wheats and not more than 10 percent of other grains for which standards have been established and which, after the removal of dockage, contains 50 percent or more of whole kernels of one or more of these wheats.

Wheat is divided into the following seven classes: Hard Red Spring Wheat, Durum Wheat, Soft Red Winter Wheat, Hard Red Winter Wheat, Hard White Wheat, Soft White Wheat, Unclassed Wheat, and Mixed Wheat.

**Soft Red Winter Wheat is the only wheat class that will be graded in this event**, and the following discussion will pertain **only** to Soft Red Winter Wheat. The class Soft Red Winter Wheat includes all varieties of Soft Red Winter Wheat. There are no subclasses in this class.

## Basis of Determination

Each determination of dockage, moisture, temperature, odor, garlic, live weevils or other insects injurious to stored grain, and distinctly low quality completed on the grain as received when taken from an incoming truck, rail car, etc. All other "tests" are conducted after dockage has been removed.

## Test Weight

Test weight is the amount of weight the grain must have to make up a bushel. Good quality wheat of low moisture content can be expected to have a good test weight.

Record test weight rounded to the nearest tenth of a percent.

## Moisture

The moisture content of wheat seed is extremely important but it is no longer used as a grading factor. Loss of quality of stored seed hinges largely on the amount of moisture present in the sample. Moisture is an important factor in most discount schedules.

Moisture is recorded to the nearest tenth of a percent.

## Dockage

The word "dockage" means weed seed, weed stems, chaff, straw, grain other than wheat, sand, soil, and any other material other than wheat, that can be removed readily from the wheat by the use of appropriate sieves and cleaning devices. Also, the underdeveloped, shriveled, and small pieces of wheat kernels removed in properly separating the material other than wheat plus that which cannot be recovered by properly rescreening or re-cleaning is also a part of dockage.

Determination of dockage is made in the initial sieving. Shrunken and broken kernels and foreign material are determined after the dockage has been removed. Dockage is determined from a 1,000 gram sample.

The percent dockage is rounded and reported to the nearest tenth percent. Always list dockage last of all of the special factors. See example on the special factors page.



## **Foreign Material**

Foreign material refers to all matter other than wheat, including stones, that is not separated from the wheat in the proper removal of dockage.

Examples of foreign material

- corn
- cockleburs
- sticks
- stalks
- rodent excreta
- stones
- other grains
- ergoty wheat

Record to the nearest tenth of a percent.

## **Contrasting Classes**

A contrasting class in soft red winter wheat is durum wheat.

Soft red winter wheat flour is especially suited for cake mixes while flour from durum wheat is required for pasta production. Thus, there is a "contrast" in use. Each wheat has its own "Contrasting Classes."

Record in Remarks area of certificate "Contrasting Classes" and state to the nearest tenth of a percent.

## **Wheat of Other Classes (Total)**

This factor spotlights the presence of other wheats in a sample. Some mixtures may be of minor importance. For example, if a soft red winter wheat contained 8.0% hard red winter wheat, the flour from such a mixture might be acceptable, but not the most desirable for cake mixes when compared to flour from 100.0% soft red winter wheat.

Wheat of Other Classes (Total) also includes percent of Contrasting Classes.

Record "Wheat of Other Classes (Total)" and state to the nearest tenth of a percent in the "Remarks" section.

## **Other Grains**

Other grains as used in this discussion are:

- rye
- oats
- corn
- grain sorghum
- barley
- flax
- emmer
- spelt
- einkorn
- polish wheat
- poulard wheat
- cultivated buckwheat
- soybeans

These grains are also considered foreign material, even when damaged.

### **Heat Damage**

Heat damage in wheat is **severely** discolored (black or dark brown) kernels and pieces of kernels of **wheat and other grains** caused either from external heating, such as improper drying, or from heating as a result of excess moisture and spoiling. Almost all heat damage is the result of storing grain too wet. All grains listed in Other Grains above that are severely heat damaged **in Wheat** will be included in heat damage, damaged kernels (total), **and** Foreign Material.

Slightly damaged wheat and other grains show some discoloration (light to dark tan) and therefore are not as severely damaged. The two are **not** added together to determine heat damaged kernels. Slight damaged wheat and other grains will only be included in damaged kernels (total).

Record heat-damaged kernels to the nearest tenth of a percent.

### **Insect Damaged Wheat Kernels**

Wheat is determined to be "U.S. Sample Grade" when 32 or more insect damaged kernels per 100 grams are found. This is up to a 3 stage process. For simplicity in this event, the number of kernels per 100 gram will be given.

Do not confuse insect chewed with insect damage. Insect damage includes drill holes, pin holes, bored, tunneling and webbing in description.

When applicable, include in the "Remarks" section of the certificate "**Insect Damaged Kernels.**"

### **Damaged Kernels (Total)**

This factor includes all types of damage found in wheat. It is very inclusive in that kernels and pieces of kernels of **wheat plus other grains (Ex. Sprout-damaged Oats)** are also included.

#### Examples of Damaged Kernels

- heat-damage
- sprout damage
- frost damage
- badly ground-damage
- badly weather-damage
- mold damage
- insect damage (not chewed)
- disease or otherwise materially damaged

Damaged Kernels (Total) is recorded to the nearest tenth of a percent.

### **Shrunken and Broken Kernels**

These are kernels and pieces of kernels of wheat and other matter that will pass readily through a .064 x 3/8 inch oblong hole sieve after the dockage has been removed.

Record to the nearest tenth of a percent.

### **Defects (Total)**

This factor is determined by adding the percentages of Damaged Kernels (Total), Foreign Material, and Shrunken and Broken Kernels.

### **Distinctly Low Quality**

The Federal Grain Inspection Service reserves the use of this term to describe wheat when it is obviously of inferior quality and the existing grading factors or guidelines do not accurately reflect the inferior condition.

When a sampler is collecting wheat from a rail car, he/she can notice whether the grain also includes two or more large stones, pieces of glass, pieces of concrete, sticks of lumber, or scrap metal or debris which are visible to the sampler but are too large to enter the sampling device, such as a grain probe.

This grading factor **should not** be confused with the other conditions which can also cause wheat to be "Sample Grade," such as animal filth, cocklebur, crotalaria seed, etc.

Record the words Distinctly Low Quality (Reason).

### **Musty, Sour or Heating**

A sample in any of these conditions is "U.S. Sample Grade."

Musty- Musty, ground, or moldy odor

Sour- Sour, fermenting, or pigpen odor

Heating- Wheat developing a high temperature from excessive respiration. Wheat will usually have a musty or sour odor. For this contest, samples that are affected by heating will state "Wheat affected by high temperature" OR "heating."

Record the applicable words in the "Remarks" section of the grading certificate.

### **Commercially Objectionable Foreign Odor**

If the wheat carries an odor which does not normally occur in grain and which, for this reason, would render the wheat unfit for its normal commercial use, then it is graded "U.S. Sample Grade."

This includes animal hides, decaying animal or vegetable parts, fertilizer, skunk, smoke, strong weed, oil, etc. **This does not include smutty or garlicky odor.**

Record the words "Commercially Objectionable Foreign Odor" in the "Remarks" section of the certificate.

## Sample Grade Factors

There is a list of factors that automatically make the sample "Sample Grade" listed on the bottom of the grading chart. These include animal filth, cockleburs, crotalaria seed. If any of these are reported in the sample, participants should grade the sample "Sample Grade" and write the word in the "Remarks" box.

How to record in the "Remarks" box (see chart for details)

- Stones
- Glass
- Crotalaria
- Castor Beans
- Unknown Foreign Substance
- Commonly Recognized Harmful or Toxic Substance
- Cockleburs
- Animal Filth (includes rodent pellets and bird droppings)
- Heating
- Distinctly Low Quality (Reason)

## Cumulative Total

If a cumulative total of 5 or more sample grade factors (e.g. 3 stones + 1 animal filth + 1 unknown = 5 or more sample grade factors) are found, the sample is graded "U.S. Sample Grade." Record "**Cumulative Total**" in the "Remarks" section.

## Special Factors, Special Grade Requirements, Special Grade Designations

Special grades are conditions which should be noted but **do not** affect the numerical grade.

### Ergoty

Wheat that contains **more than 0.05 percent** per 1000 grams ergot is considered Ergoty.

The word "Ergoty" is added to and made part of the grade designation.

Note that **ergot also fits the definition of foreign material** in wheat and must be included as such.

### Garlicky

Specific types of garlic bulbs found in the sample may be considered a special factor.

Green bulbs- husk is still intact, contains **three or more** green bulblets in 1000 grams

Dry bulbs- husk is dry or missing, **3 dry bulbs= 1 green bulb**

The word "Garlicky" is added to and made a part of the grade designation. A garlic odor is not a basis for "Garlicky."

**Infested**

Any wheat sample that contains one of the following:

- two or more live weevils
- one live weevil and 1 or more other live insects injurious to stored grain
- 2 or more other live insects injurious to stored grain

Infested is the condition of live weevils or grain-damaging insects in the grain.

Infested wheat is graded and designated according to the grade requirements of the standards applicable to such wheat if it was not infested. The word "Infested" is added to and made a part of the grade designation.

**Smutty**

There are two special grades of smutty wheat -- Light Smutty and Smutty.

- Light Smutty - Applies to wheat with a smutty odor, or when wheat contains 6-30 smut balls in 250 grams of grain; the term "Light Smutty" is added to and made part of the grade designation.
- Smutty - Applies to wheat that contains 31 or more smut balls per 250 gram sample; the word "Smutty" is added to and made part of the grade designation.

**Treated Wheat**

Treatments of wheat include:

- Scoured
- Limed
- Washed
- Sulphured

# 4-H/FFA Crops Evaluation CDE

## Seeds List (250 points)

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

Score: \_\_\_\_\_/250

Contestant Name: \_\_\_\_\_

Contestant School: \_\_\_\_\_

**Directions:** Write in the correct number of the plant that correlates to the correct seed example. Each specimen is worth 10 points.

- |          |           |           |
|----------|-----------|-----------|
| 1. _____ | 10. _____ | 19. _____ |
| 2. _____ | 11. _____ | 20. _____ |
| 3. _____ | 12. _____ | 21. _____ |
| 4. _____ | 13. _____ | 22. _____ |
| 5. _____ | 14. _____ | 23. _____ |
| 6. _____ | 15. _____ | 24. _____ |
| 7. _____ | 16. _____ | 25. _____ |
| 8. _____ | 17. _____ |           |
| 9. _____ | 18. _____ |           |

- 
- |                              |                            |                           |
|------------------------------|----------------------------|---------------------------|
| 1. alfalfa                   | 25. field pennycress       | 48. redroot pigweed       |
| 2. alsike clover             | 26. grain sorghum          | 49. reed canarygrass      |
| 3. barley                    | 27. giant foxtail          | 50. rice                  |
| 4. barnyardgrass             | 28. giant ragweed          | 51. rye                   |
| 5. bindweed                  | 29. green foxtail          | 52. ryegrass              |
| 6. birdsfoot trefoil         | 30. hairy vetch            | 53. shepherdspurse        |
| 7. bitter wintercress        | 31. hard red winter wheat  | 54. smooth brome          |
| 8. buckhorn plantain         | 32. horsetail              | 55. soft red winter wheat |
| 9. burcucumber               | 33. jimsonweed             | 56. soybean               |
| 10. Canada thistle           | 34. johnsongrass           | 57. sudangrass            |
| 11. canola                   | 35. Kentucky bluegrass     | 58. sweet corn            |
| 12. common cocklebur         | 36. Korean lespedeza       | 59. sweetclover           |
| 13. common lambsquarters     | 37. large crabgrass        | 60. tall fescue           |
| 14. common milkweed          | 38. maretail               | 61. timothy               |
| 15. common ragweed           | 39. morningglory           | 62. triticale             |
| 16. crownvetch               | 40. oat                    | 63. trumpet creeper       |
| 17. curly dock               | 41. orchardgrass           | 64. velvetleaf            |
| 18. dandelion                | 42. oxeye daisy            | 65. white wheat           |
| 19. dent corn                | 43. Pennsylvania smartweed | 66. white clover          |
| 20. downy brome              | 44. Perennial sowthistle   | 67. wild buckwheat        |
| 21. durum wheat              | 45. popcorn                | 68. wild carrot           |
| 22. eastern black nightshade | 46. quackgrass             | 69. wild garlic           |
| 23. fall panicum             | 47. red clover             | 70. wild mustard          |
| 24. flax                     |                            |                           |

# 4-H/FFA Crops Evaluation CDE

## Plants List (250 points)

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

Score: \_\_\_\_\_/250

Contestant Name: \_\_\_\_\_

Contestant School: \_\_\_\_\_

**Directions:** Write in the correct number of the plant that correlates to the correct plant mount. Each specimen is worth 10 points.

- |          |           |           |
|----------|-----------|-----------|
| 1. _____ | 10. _____ | 19. _____ |
| 2. _____ | 11. _____ | 20. _____ |
| 3. _____ | 12. _____ | 21. _____ |
| 4. _____ | 13. _____ | 22. _____ |
| 5. _____ | 14. _____ | 23. _____ |
| 6. _____ | 15. _____ | 24. _____ |
| 7. _____ | 16. _____ | 25. _____ |
| 8. _____ | 17. _____ |           |
| 9. _____ | 18. _____ |           |

- 
- |                              |                            |                       |
|------------------------------|----------------------------|-----------------------|
| 1. alfalfa                   | 24. giant ragweed          | 47. reed canarygrass  |
| 2. alsike clover             | 25. grain sorghum          | 48. rye               |
| 3. barley                    | 26. green foxtail          | 49. ryegrass          |
| 4. barnyardgrass             | 27. hairy vetch            | 50. shepherdspurse    |
| 5. birdsfoot trefoil         | 28. hedge bindweed         | 51. smooth brome      |
| 6. buckhorn plantain         | 29. hemp dogbane           | 52. soybean           |
| 7. burcucumber               | 30. horsenettle            | 53. sudangrass        |
| 8. Canada thistle            | 31. ivyleaf morningglory   | 54. sweetclover       |
| 9. canola                    | 32. Jerusalem artichoke    | 55. tall fescue       |
| 10. common cocklebur         | 33. jimsonweed             | 56. tall morningglory |
| 11. common lambsquarters     | 34. johnsongrass           | 57. tall waterhemp    |
| 12. common ragweed           | 35. Kentucky bluegrass     | 58. timothy           |
| 13. corn                     | 36. Korean lespedeza       | 59. trumpetcreeper    |
| 14. crownvetch               | 37. large crabgrass        | 60. velvetleaf        |
| 15. curly dock               | 38. mare's tail            | 61. wheat             |
| 16. dandelion                | 39. oat                    | 62. white clover      |
| 17. downy brome              | 40. orchardgrass           | 63. wild buckwheat    |
| 18. eastern black nightshade | 41. oxeye daisy            | 64. wild carrot       |
| 19. fall panicum             | 42. Pennsylvania smartweed | 65. wild garlic       |
| 20. field bindweed           | 43. perennial sowthistle   | 66. wild mustard      |
| 21. field pennycress         | 44. quackgrass             | 67. yellow foxtail    |
| 22. garlic mustard           | 45. red clover             | 68. yellow nutsedge   |
| 23. giant foxtail            | 46. redroot pigweed        |                       |

# 4-H/FFA Crops Evaluation CDE

## Disease, Damage, and Insect List (100 points)

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

Score: \_\_\_\_/100

Contestant Name: \_\_\_\_\_

Contestant School: \_\_\_\_\_

**Directions:** Write in the correct number of the plant that correlates to the correct plant mount. Each specimen is worth 10 points.

1. \_\_\_\_\_

6. \_\_\_\_\_

2. \_\_\_\_\_

7. \_\_\_\_\_

3. \_\_\_\_\_

8. \_\_\_\_\_

4. \_\_\_\_\_

9. \_\_\_\_\_

5. \_\_\_\_\_

10. \_\_\_\_\_

1. armyworm

15. nitrogen deficiency

2. blacktip

16. phosphorus deficiency

3. blue eye mold

17. potassium deficiency

4. brown spot

18. purple seed stain

5. brown stem rot

19. smut

6. common rust

20. sprout damage

7. ergot

21. soybean aphid

8. gray leaf spot

22. sound

9. green damage

23. sudden death syndrome

10. heat damage

24. western corn rootworm

11. insect damage

25. wheat scab

12. Japanese beetle

26. white mold

13. manganese deficiency

27. wireworm

14. northern corn leaf blight



Name \_\_\_\_\_ School \_\_\_\_\_ Contestant Number \_\_\_\_\_

## Grain Grading Answer Sheet

_____/25
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<b>GRADE AND KIND</b> U.S. No.
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TEST WEIGHT PER BUSHEL	MOISTURE	HEAT DAMAGED KERNELS	DAMAGED KERNELS (TOTAL)	FOREIGN MATERIAL	SPLITS	BROKEN CORN AND FOREIGN MATERIAL	SHRUNKEN AND BROKEN KERNELS	DEFECTS (TOTAL)
lbs	%	%	%	%	%	%	%	%

Sample #1

REMARKS
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<b>GRADE AND KIND</b> U.S. No.
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_____/25
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TEST WEIGHT PER BUSHEL	MOISTURE	HEAT DAMAGED KERNELS	DAMAGED KERNELS (TOTAL)	FOREIGN MATERIAL	SPLITS	BROKEN CORN AND FOREIGN MATERIAL	SHRUNKEN AND BROKEN KERNELS	DEFECTS (TOTAL)
lbs	%	%	%	%	%	%	%	%

Sample # 2

REMARKS
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<b>GRADE AND KIND</b> U.S. No.
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_____/25
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TEST WEIGHT PER BUSHEL	MOISTURE	HEAT DAMAGED KERNELS	DAMAGED KERNELS (TOTAL)	FOREIGN MATERIAL	SPLITS	BROKEN CORN AND FOREIGN MATERIAL	SHRUNKEN AND BROKEN KERNELS	DEFECTS (TOTAL)
lbs	%	%	%	%	%	%	%	%

Sample # 3

REMARKS
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<b>GRADE AND KIND</b> U.S. No.
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_____/25
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TEST WEIGHT PER BUSHEL	MOISTURE	HEAT DAMAGED KERNELS	DAMAGED KERNELS (TOTAL)	FOREIGN MATERIAL	SPLITS	BROKEN CORN AND FOREIGN MATERIAL	SHRUNKEN AND BROKEN KERNELS	DEFECTS (TOTAL)
lbs	%	%	%	%	%	%	%	%

Sample # 4

REMARKS
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# Grain Grading Answer Sheet

GRADE AND KIND U.S. No.								____/25
TEST WEIGHT PER BUSHEL	MOISTURE	HEAT DAMAGED KERNELS	DAMAGED KERNELS (TOTAL)	FOREIGN MATERIAL	SPLITS	BROKEN CORN AND FOREIGN MATERIAL	SHRUNKEN AND BROKEN KERNELS	DEFECTS (TOTAL)
lbs	%	%	%	%	%	%	%	%

Sample # 5

REMARKS
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GRADE AND KIND U.S. No.								____/25
TEST WEIGHT PER BUSHEL	MOISTURE	HEAT DAMAGED KERNELS	DAMAGED KERNELS (TOTAL)	FOREIGN MATERIAL	SPLITS	BROKEN CORN AND FOREIGN MATERIAL	SHRUNKEN AND BROKEN KERNELS	DEFECTS (TOTAL)
lbs	%	%	%	%	%	%	%	%

Sample # 6

REMARKS
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GRADE AND KIND U.S. No.								____/25
TEST WEIGHT PER BUSHEL	MOISTURE	HEAT DAMAGED KERNELS	DAMAGED KERNELS (TOTAL)	FOREIGN MATERIAL	SPLITS	BROKEN CORN AND FOREIGN MATERIAL	SHRUNKEN AND BROKEN KERNELS	DEFECTS (TOTAL)
lbs	%	%	%	%	%	%	%	%

Sample # 7

REMARKS
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GRADE AND KIND U.S. No.								____/25
TEST WEIGHT PER BUSHEL	MOISTURE	HEAT DAMAGED KERNELS	DAMAGED KERNELS (TOTAL)	FOREIGN MATERIAL	SPLITS	BROKEN CORN AND FOREIGN MATERIAL	SHRUNKEN AND BROKEN KERNELS	DEFECTS (TOTAL)
lbs	%	%	%	%	%	%	%	%

Sample # 8

REMARKS
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