

# Collegiate Crops Contests 2023

Kansas City – November 14, 2023

Chicago – November 18, 2023

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# The Crops Contest Integrates Knowledge of Agronomy Into Three Basic Categories

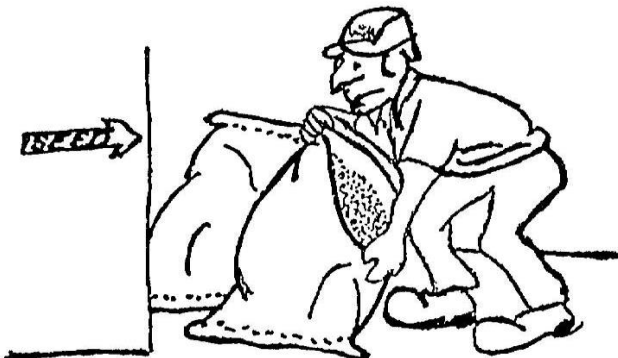
Preparation for crops contests teaches identification and evaluation of crops for quality relative to certification, viability and marketing. Students learn in great depth many skills that can be valuable regardless of their chosen profession in agronomy. A misconception of many is that you must want to be a grain grader to benefit from crops contest training. Such is not the case, as much can be learned which can supplement any field of crop sciences.

## GRAIN GRADING



Grain grading skills provide students with the ability to recognize crop products for their market worth and involves knowing defects that reduce quality. Grading provides a basis for marketing and provides quality control over grain products, thus determining their ultimate use.

## PLANT AND SEED IDENTIFICATION



Training for this section enables one to develop essential skills used for inspecting and evaluating crops. Weed control and crop production practices often require proper plant and seed identification for making good management recommendations.

## SEED ANALYSIS



Crops grown from pure seed maintain genetic purity and good quality. Seed analysis is a means of determining the value of seed for planting and for market, thus providing a guide for all using crop seed.

# Regional Contests

The following regional contests are planned for the fall of 2023:

**Upper Midwest Region, October 14th at UW Platteville**— Dawn Lee, Coordinator

**Central Region, October 14th at Kansas State** — Rachel Veenstra, Coordinator

If interest dictates, the location may change per the wishes of interested personnel in the respective regions. Additional schools are encouraged to participate. Contests are usually held about the end of October. Specific arrangements for each contest are left to the discretion of the coordinator. If you or your school are interested in a regional contest or the national contests, please contact the coordinator nearest your location or the secretary of the Coaches Committee whose address appears on the cover.

# American Royal Kansas City Collegiate Crops Contest Sponsored by Corteva Agriscience



**CORTEVA™**  
agriscience

**The contest will be held on Tuesday, November 14, 2023, at the National Grain Center, 10383 North Ambassador Drive, Kansas City, MO.**

Superintendent of the contest is Eric Fabrizius, Kansas Crop Improvement Association, Manhattan, KS. Assistant Superintendents are Jeri Geren, Geren Farms, Altamont, KS, and Hannah Glass, Sterling Seed, Garden City, KS.

Seed analysis samples are prepared by the South Dakota Seed Testing Laboratory. Grain grading samples are prepared by USDA-AMS-FGIS, Board of Appeals and Review, Kansas City.

A tour covering a variety of businesses in the Kansas City area provides an educational look at the agribusiness located there. Visits have included National Grain Center/Federal Grain Inspection Service, Best Harvest Bakery, Innerspace Storage/AGCO Equipment Co, The American Royal, Federal Reserve Bank, The Roasterie, Sporting KC Arena, Royals Stadium, Ingredion, DeLong Company, Guetterman Brothers Farms, Deveron, and others. Each firm provides an excellent program which explains their operation and function. Teams often visit additional agribusinesses and cultural sites on their trip to Chicago for the second contest.

The sponsors, whose names appear on this page, host the contestants and coaches at activities, support the tour, and provide the awards. All American Certificates are awarded to individuals scoring 95% or above by the American Society of Agronomy. Results are announced in CSA NEWS. Sponsors and the American Royal provide \$2000 in team scholarships to the top five teams.

## Sponsors:

- Corteva Agriscience
- American Royal Association
- American Society of Agronomy
- CHS Foundation
- South Dakota Crop Improvement
- Association of Official Seed Analysts



# Chicago Collegiate Crops Contest

## Sponsored by CME Group



**The contest will be held on Saturday, November 18, 2023, at the Loyola University Water Tower Campus, 25 E Pearson St., Chicago, IL.**

Superintendent of the contest is DaNell Jamieson, Syngenta, Wilson, WI. The Assistant Superintendent is Judy Sunvold, Loyola University, Chicago, IL.

Seed analysis samples are prepared by the South Dakota State Seed Testing Laboratory. Grain grading samples are prepared by USDA-GIPSA-FGIS Field Office Staff, Kansas City.

Team contestants and coaches meet for an educational tour in Chicago on Friday prior to the contest as arranged by the contest hosts and the Coaches' Committee. Teams often schedule their own agriculture industry tours during their travel from Kansas City to Chicago, and visit various historical and cultural sites in downtown Chicago during the days leading up to the contest.

The sponsors of this contest, whose names appear on this page, support costs associated with conducting the contest and the awards banquet, and provide suitable awards to team and individual winners. All American designation is given to individuals scoring 95% or above by the American Society of Agronomy. Results are announced in CSA NEWS. Scholarships in the amounts of \$2000, \$1500, \$1000, \$750 and \$500 are presented to the first through fifth place individuals, respectively, by CME Group.

### Sponsors:

- CME Group
- GROWMARK
- Syngenta
- Society of Commercial Seed Technologists (SCST)
- Crop Science Society of America



# General Rules

1. The plan of the contest and all rules included herein are official for the contest. They may not be modified or supplemented until at the next official coaches meeting. The secretary shall correct typographical errors.
2. Institutions entitled to send competing teams: Agricultural colleges and schools of similar rank and purpose in the United States and Canada. Other international teams may compete upon request and approval by the Coaches Committee.
3. Eligibility of students: Three regular members selected from undergraduate students of good standing shall represent an institution. Students who have a Bachelor's Degree in Agricultural or Biological Sciences are not eligible to participate in the contest. Alternate(s) may accompany the team if desired. A maximum of three alternates per team may participate in grain grading and seed analysis, providing space is available. Any number of alternates may participate in identification only. A contestant may compete another year provided he/she as an individual did not place fifth or higher in either entire contest. Students must be registered as full time students, i.e. 12 hours.
4. Certification by a responsible school official of the eligibility of the students from which the team will be selected must be in the hands of the superintendent of the contest on the day of the contest. The student's name, his/her classification, and the number of hours he/she is carrying must be included. Coaches should bring a copy for each contest.
5. The coaches shall meet at the site of the contest in both Kansas City and Chicago at 7:00 the morning of the contests for set up. Contestants shall report to the Superintendent at 8:00 the day of the contests in both Kansas City and Chicago.  

It shall be the duty of the Coaches Committee Vice-Chairman to supply all copies of the official forms (labeled A-1, A-2, A-3, B-1, etc.) for identification and seed analysis for both contests in Kansas City and Chicago. It shall be the duty of the Secretary to supply extra ID mounting sheets, and the Chairman to provide envelopes for seed analysis, if requested.
6. The contests will be divided into three groups: (a) commercial grain grading (8 samples); (b) seed analysis (10 samples); and (c) identification (200 samples).
7. A list of the plants, seeds, and diseases which may be included in the identification group is attached, and constitutes a portion of the rules and regulations.
8. The list of materials from which selections may be made for the seed analysis and grading groups follows and is a part of the rules and regulations.
9. It shall be the duty of the Coaches to supply, without charge, such materials as may be needed for the contest.
10. No communication with other contestants or anyone else except the superintendent and assistant superintendent will be permitted while the contest is underway, and at no time with other members of the team or the coach.
11. It is permissible for the contestant to take into the contest any ordinary equipment for making hand separations such as small containers, sheets or cards for picking surfaces,

and forceps. Any other equipment for making separations other than specially prepared boards for separation of soybean splits shall be approved by a majority of the Coaches Committee in attendance prior to the contest. Sieves of any type are prohibited. Copies of the Official Rules and Regulations shall not be taken into the contest. Only information pertaining to the grading of grain may be added to the Handbook of Official Grain Grading Standards for use by contestants during the contest. Grain grading worksheets are included with the official contest forms and will be supplied to the contestant. Students may design and bring their own grain grading worksheets. Electronic calculators may be used in the contest. Hand-held, battery-powered-illuminated magnifiers may be used by contestants. Timers are allowed in any event, but must not be set for intermittent warning beeps during the 1.5-hour official contest time or they will be confiscated. Timers may only beep at the end. Shielded desk lamps for seed analysis may be provided by schools. Schools must provide electronic balances for grain grading.

12. Legible writing is important and the judges will consider this factor in determining scores including the proper use of capitals, hyphens, apostrophe, and separation of words.
13. In case any contestant who competes in part of the contest is unable to continue and is replaced by an alternate, the team shall automatically be placed not higher than fourth. Any regular member of the team who makes a score which entitles him/her to individual awards shall receive such awards.
14. Infraction of the rules shall be followed by penalties varying from subtracting points to dismissal from the contest.
15. All identification specimens shall remain in place until all the contest papers are graded.
16. The Superintendent of the contest shall notify contestants of the time remaining at 45 minutes, 30 minutes, 15 minutes, 10 minutes, 5 minutes, and 2 minutes.
17. A university or college may participate as non-scored individual student or team participants in one, two, or three phases of the contest.
18. Each coach should leave ID samples (30 plants and 30 seeds) along with eligibility letters for the Kansas City contest at the hotel front desk by 8:00 am on Monday before the tour. Coaches should bring ID samples (30 plants and 30 seeds) along with eligibility letters for the Chicago contest to the Superintendent at the hotel on Thursday night. If you cannot provide samples on Thursday night, please leave them along with eligibility letters at the front desk of the hotel by 7:00 am Friday morning, or send them with another team.
19. No cell phones, smart watches, fitbits, IPads, or other wireless communication devices are allowed during the contest, **including during breaks between sections.**

# Commercial Grain Grading (Group A)

## Special Rules

1. Time — one and one-half hours. Value — 600 points. (Eight samples - 75 points per sample.) (No more than 75 points may be deducted per sample.)
2. Material — eight samples of grain shall be selected from barley, corn, wheat, oats, rye, sorghum, and soybeans. No more than three samples of any one grain may be included in the contest, e.g. 3 wheat samples, 3 corn samples, 3 soybean samples. A master sample of each grain shall be shown. Packets containing 30 grams for wheat, oats, rye, sorghum, and barley; 100 grams for soybeans; and 200 grams for corn shall be furnished each contestant in lieu of the amounts required for official grade determination. Grain in packets provided to students shall be dockage free. The kind of grain for each sample will be listed on packets and given information.
3. Information on test weight per bushel, moisture content and odor for each sample, and values which must be determined on samples larger than those supplied in the contest, such as for sieved quantities, special grades, sample grade factors, and dockage shall accompany the packets furnished to each contestant. Live insects found in the samples shall be disregarded. General appearance factors ordinarily determined by observations must also accompany the packets. Any material in the packets which might function as special grade or sample grade factors that are not kernels of the grain being graded must be picked and added to foreign material (i.e., ergot bodies, stones, crotalaria seeds, etc.), and shall not be considered in determining special grades or sample grade. Sample grade odors must be given only as musty, sour or commercially objectionable foreign odor.
4. Values for grading which must be determined by actual separation, including any factor which involves a hand-picked component and including class mixtures and subclass determinations in wheat, shall deviate from any limit by at least one-fourth of the interval between the adjacent limits. Percentages of hard and vitreous kernels may accompany the packets when desired. If information for any factor is given, then that factor will not be added to the hand-picked portion. For example, if heat damaged soybeans is given information, then heat damaged soybean seeds will not appear in the hand-picked portion.
5. Commercial grades shall be designated in the manner followed in commerce according to the Inspector's Manual. Abbreviations are not acceptable. The factor or factors which determine the numerical grade, excepting Grade No. 1 or special grades, must be stated. To record grading factors where more than one grade has the same percent limit e.g. (heat damaged wheat for grades 1 and 2 is 0.2% and contrasting classes is 10% for grades 4 and 5) record the lower grade only if another grading factor such as TW, FM, or DKT is also graded at the lower limit. Official FGIS standard abbreviations may be used for listing any factor(s) determining the grade (see p. 9), including sample grade factors and appearance factors. Each contestant will be permitted to make separations in the grading of grain. Each contestant must provide his/her own copy of the Grain Standards Handbook. Electronic or torsion balances will be provided by coaches. If a team travels by air, they may need to arrange with another coach to bring an extra balance for their use.
6. The sub-classes, White Club Wheat and Western White Wheat; and the class, Unclassed Wheat; and the special grades, Treated Wheat and Mixed Grain, shall not be included in Grain Grading. Tannin Sorghum and the special grades Flint Corn, Flint and Dent Corn,

Bleached Oats and Waxy Corn may be used as a given factor in Grain Grading. Wheat sub-class determinations must be made by the contestant, when percentages of hard and vitreous kernels do not accompany packets.

7. Optional grade designations will not be included in grain grading.
8. Triticale, Hard Red Spring, Hard Red Winter, and Soft Red Winter Wheat will not be mixed together in base samples of Rye, White Wheat and Durum Wheat, although each may be added individually. When triticale or any of the red vulgare wheats are to be considered as a class mixture in a base sample of another red vulgare wheat, the percentage will be given. The base samples of red vulgare wheat must be typical of the market class. Red durum wheat will not be used in grain grading. When Hard White Wheat is to be considered as a class mixture in a base sample of Soft White Wheat or Amber Durum Wheat, and vice versa, the percentages of the mixture will be given.
9. Heat damaged barley, heat damaged oats, heat damaged rye, sick wheat, sick rye, injured by mold, injured by heat, and injured by frost damage in barley, green soybeans, stink - bug stung kernels in soybeans, bicolored soybeans, excessive smut, large stones, wreckage, diatomaceous earth, and commonly recognized harmful or toxic substances will not be used as factors in grading. This does not prohibit the factor heat damage in barley, oats and rye when the damage is other grains. Two-rowed and six-rowed barley will not be mixed.
10. The following information will accompany the packets for barley grading: Suitable malting type, aleurone color, all barley damages, broken kernels, and skinned and broken kernels.
11. All oat damages must accompany the packets for oat grading.
12. Green damaged soybeans and soybeans damaged due to heating must be given for soybean grading.
13. A maximum of 4 factors may be used to determine the numerical grade in grain grading.
14. Other grains and foreign material added to the grain grading samples must be a suitable representation from the identification list.
15. Information in the Grain Inspection Handbook - Book II, Grain Grading Procedures from Tables on 1) Certifying Percentages and Test Weight, 2) Basis of Determination, 3) Insect Infestation, 4) Sample Grade Factors, 5) Contrasting Classes (wheat only), and 6) IDK determination (wheat only) should be added to student's Grain Grading books and will be used in the contest. Tables included are:  
Chapter 1 General Information - Table 5; Wheat - Tables 2, 4, 5, 7 and 8; Barley - Tables 4, 6 and 7; Corn, Sorghum, Soybeans, Oats, and Rye - Tables 2, 4, and 5.

Images of GG damages may be included in student's Grain Grading books and/or FGIS Grain Grading mats may be used during the Grain Grading portion of the contest.

**For References, the Grain Inspection Handbook - Book II, Grain Grading Procedures can be located at: <https://www.ams.usda.gov/sites/default/files/media/Book2.pdf>. The interactive resources site at: <https://www.ams.usda.gov/resources/interactive-resources> has both "eBooks" and "eLearning" sections with resources including Grain Grading Tutorials for grading each type of grain, with images of interpretive line slides. A complete book of Visual Reference Images can be located here. The abbreviated US Standards are located at <https://www.ams.usda.gov/grades-standards/grain-standards>**

# Scoring System for Grain Grading Score Cards (75 points each)

Grade	-10 for each grade off (max -30). Numerical grade must be written in grade designation area on answer card (if numerical grade is omitted but is correct in table -10; if numerical grade is omitted but one grade off in table -20)		
Crop	Omitted	-5	
Class	Wrong	-10 (except -5 for Durum Wheat, Hard Red Spring Wheat, and Barley)	
Subclass	Wrong	-5 (applies to Durum Wheat, Hard Red Spring Wheat, and Barley)	

Determining Factors - Must be written out (or use official FGIS standard abbreviations) in the determining factors area on answer card.

One factor .....	1 Wrong	-24			
Two factors .....	2 Wrong	-24	1 Wrong	-12	
Three factors .....	3 Wrong	-24	2 Wrong	-16	1 Wrong -8
Four factors .....	4 Wrong	-24	3 Wrong	-18	2 Wrong -12      1 Wrong -6

When more factors are given than are actual, score on the basis of number of factors given by the contestant. For example, if four factors are given by the contestant but two are actual, deduct 12. Standard abbreviations for table factors are listed below\*. Official abbreviations for sample grade and appearance factors may also be used (ANFL, BADW, CBUR, COFO, FSUB, HTG, IDK, SLW, TOM, etc.).

Table Factors – minus 3 points for each wrong box. Recorded by placing appropriate numerical grade in "Grade Box" at the bottom of each factor column on the answer card. All boxes must be filled in with appropriate grade, including number 1. Each box will be scored as correct or incorrect against the grade level on the key. The number of grades off does not matter. Area marked "Level" is for contestant to record data and make calculations. It will not be scored. Record sample grade factors as "SG," "Sample," or "Sample Grade." For grading factors disregarded if Mixed class (ie. SBOC, CCL, WOCL) record "N/A", "X", leave blank, or write "Mixed" in box. For WOCL in Durum wheat, record "N/A", "X", or leave blank.

### Additional Deductions:

- Special grades deduct 5 points for each one omitted or wrongly added.
- Dockage deduct 5 points if omitted or wrong value. If dockage is 0.0% don't list for all crops except wheat and rye. If listed, deduct one point. For wheat and rye a measurable amount of dockage which rounds to 0.0% is listed as 0.0%. If not listed, deduct one point.
- When Light Garlicky is stated for Garlicky, or Light Smutty for Smutty, deduct only 5 points.
- Improper order of special grades (not alphabetical), deduct a maximum of 2 points.
- Special grades or dockage wrongly written, deduct 1 point for each infraction.
- Incorrectly written grade (commas, abbreviations, capitalization errors), deduct 1 point for each infraction (maximum of 2 points).
- Incorrectly written determining factors, deduct 1 point for each factor.
- No deduction is made with regard to the order of writing numerical and sample grade determining factors.
- For samples grading U.S. No. 1, the correct determining factor is "None" or the box is left blank.

### \*STANDARD ABBREVIATIONS FOR DETERMINING FACTORS ALLOWED ON SCORE CARDS

BCFM	Broken Corn and Foreign Material	SBLY	Sound Barley
BN	Broken Kernels	<b>SBOC</b>	<b>Soybeans of Other Colors</b>
BNFM	Broken Kernels and Foreign Material	SHBN	Shrunken and Broken Kernels
CCL	Contrasting Classes	SKBN	Skinned and Broken Kernels
DEF	Defects (Total)	SO	Sound Oats
DK	Damaged Kernels	SPL	Splits
DKT	Damaged Kernels (Total)	SMT	Suitable Malting Types
FM	Foreign Material	THIN	Thin Barley, Thin Rye
FMOW	Foreign Matter Other Than Wheat	TW	Test Weight Per Bushel
HT	Heat-damaged Kernels	WO	Wild Oats
OG	Other Grains	WOCL	Wheat of Other Classes

Official abbreviations for any sample grade factors and any other grade determining appearance factors may also be used, but must be written exactly per FGIS standards.

## List From Which Material Will Be Selected For Commercial Grain Grading (Group A)

- Wheat:** Hard Red Winter, Soft Red Winter, Hard Red Spring, Durum, Soft White, Hard White, and Mixed Wheat.
- Corn:** White, Yellow and Mixed Corn, excluding stripe corn.
- Oats:** Any variety or type of cultivated oat.
- Rye:** Any rye variety or type.
- Sorghum:** Sorghum, White Sorghum, Tannin Sorghum, and Mixed Sorghum.
- Soybeans:** Yellow or Mixed Soybeans, excluding bicolored soybeans.
- Barley:** Any variety or type of cultivated barley.

Correct form and order for writing grade, special grade and factors in grain grading is given below. Any deviation from these examples will result in points taken away. Only grain grading factors listed under the factors of each crop will be allowed in the contest. Special grades shall be written in alphabetical order.

### Wheat

- Example:** U.S. No. 2 Soft White Wheat, Ergoty, Garlicky, Infested, Light Smutty, Dockage 1.3%
- Example:** U.S. No. 3 Dark Northern Spring Wheat, Smutty, Dockage 0.0%

- |                 |                                |   |
|-----------------|--------------------------------|---|
| <b>Factors:</b> | Test Weight Per Bushel         | Heating                                 |
|                 | Heat-damaged Kernels           | Musty                                   |
|                 | Damaged Kernels (Total)        | Sour                                    |
|                 | Foreign Material               | Stones                                  |
|                 | Shrunken and Broken Kernels    | Castorbeans                             |
|                 | Defects (Total)                | Crotalaria                              |
|                 | Contrasting Classes            | Glass                                   |
|                 | Wheat of Other Classes (Total) | Animal Filth                            |
|                 | Insect Damaged Kernels         | Commercially Objectionable Foreign Odor |
|                 | Total Other Material           | Unknown Foreign Substance               |

(Wheat of Other Classes is not a factor in Durum wheat – in the box on the answer form write “N/A”, “X”, or leave blank)

### Corn

- Example:** U.S. No. 2 Mixed Corn, Flint, Infested, Waxy
- Example:** U.S. Sample Grade Yellow Corn, Flint and Dent, Flint Corn 15%, Infested

- |                 |   |              |
|-----------------|---|--------------|
| <b>Factors:</b> | Test Weight Per Bushel                  | Animal Filth |
|                 | Broken Corn and Foreign Material        | Glass        |
|                 | Damaged Kernels (Total)                 | Castorbeans  |
|                 | Heat-damaged Kernels                    | Cockleburs   |
|                 | Commercially Objectionable Foreign Odor | Crotalaria   |
|                 | Sour                                    | Heating      |
|                 | Unknown Foreign Substance               | Musty        |
|                 |   | Stones       |

## Oats

**Example:** U.S. No. 2 Bright, Extra-Heavy Oats, Bleached, Ergoty, Garlicky, Infested, Smutty

**Example:** U.S. No. 3 Heavy Oats, Thin

<b>Factors:</b>	Test Weight Per Bushel	Badly Stained
	Sound Oats	Musty
	Heat-damaged Kernels	Sour
	Foreign Material	Crotalaria
	Commercially Objectionable	Heating
	Foreign Odor	Stones
	Slightly Weathered	Glass
	Wild Oats	Castorbeans
	Materially Weathered	Cockleburs
	Animal Filth	Unknown Foreign Substance

## Rye

**Example:** U.S. No. 2 Plump Rye, Ergoty, Infested, Light Garlicky, Light Smutty, Dockage 1.2%

**Example:** U.S. No. 3 Rye, Garlicky, Smutty, Dockage 0.1%

<b>Factors:</b>	Test Weight Per Bushel	Sour
	Damaged Kernels (Total)	Musty
	Heat-damaged Kernels	Glass
	Foreign Material (Total)	Crotalaria
	Foreign Matter Other Than Wheat	Animal Filth
	Thin Rye	Heating
	Commercially Objectionable	Stones
	Foreign Odor	Castorbeans
	Unknown Foreign Substance	

## Sorghum

**Example:** U.S. No. 2 Tannin Sorghum, Infested, Smutty, Dockage 1.0%

**Example:** U.S. Sample Grade Sorghum, Infested, Smutty

<b>Factors:</b>	Test Weight Per Bushel	Musty
	Damaged Kernels (Total)	Sour
	Heat-damaged Kernels	Badly Weathered
	Commercially Objectionable	Stones
	Foreign Odor	Crotalaria
	Broken Kernels and Foreign Material	Glass
	Foreign Material	Castorbeans
	Heating	Cockleburs
	Distinctly Discolored	Animal Filth
	Unknown Foreign Substance	Total Other Material

## Soybeans

**Example:** U.S. No. 3 Mixed Soybeans, Garlicky, Infested, Purple Mottled or Stained

**Example:** U.S. Sample Grade Yellow Soybeans

<b>Factors:</b>	Damaged Kernels (Total)	Musty
	<del>Soybeans of Other Colors</del>	Heating
	Heat-damaged Kernels	Sour
	Splits	Animal Filth
	Foreign Material	Castorbeans
	Total Other Material	Crotalaria
	Commercially Objectionable	Stones
	Foreign Odor	Unknown Foreign Substance

## Barley

**Example:** U.S. No. 2 Six-rowed Malting Barley, Dockage 1.5%

**Example:** U.S. No. 2 Two-rowed Barley, Blighted, Ergoty, Garlicky, Infested, Smutty

**Example:** U.S. No. 3 Barley, Infested, Dockage 1.0%

<b>Factors:</b>	Test Weight Per Bushel	Broken Kernels
	Sound Barley	Damaged Kernels
	Suitable Malting Types	Other Grains
	Heat-damaged Kernels	Thin Barley
	Wild Oats	Crotalaria
	Foreign Material	Musty
	Skinned and Broken Kernels	Stones
	Commercially Objectionable	Glass
	Foreign Odor	Castorbeans
	Sour	Cockleburs
	Heating	Animal Filth
	Unknown Foreign Substance	

## Group B — Seed Analysis

1. Time — One and one-half hours. Value 600 points. (Ten samples - 60 points per sample.) (No more than 60 points may be deducted per sample.)
2. The samples will be selected from any pure cultivar of the following crops. Base sample weights will be as listed. No more than five base samples from small seeded crops listed below the line (base weight of 5 g or less) may be used in one contest.

<u>Wt. in grams</u>	<u>Base Samples</u>
100	large seeded legumes – soybean, cowpea, fieldpea, fieldbean, chickpea
50	small grains, lentil, rice, safflower, oil sunflower, grain sorghum, pop corn, hairy vetch
20	common buckwheat
15	flax, proso millet, annual canarygrass, pearl millet, daikon radish
5	crownvetch, foxtail millet, alfalfa, sweetclover, red clover, crimson clover, tall fescue, perennial ryegrass, smooth brome grass, crested wheatgrass
2	white clover, alsike clover, birdsfoot trefoil, orchardgrass, switchgrass (w/o glumes)
1	Kentucky bluegrass, reed canarygrass, timothy, bermudagrass

- |     |  |
|-----|--|
| 100 | large seeded legumes – soybean, cowpea, fieldpea, fieldbean, chickpea  |
| 50  | small grains, lentil, rice, safflower, oil sunflower, grain sorghum,<br>pop corn, hairy vetch  |
| 20  | common buckwheat   |
| 15  | flax, proso millet, annual canarygrass, pearl millet, daikon radish  |
| 5   | crownvetch, foxtail millet, alfalfa, sweetclover, red clover, crimson clover,<br>tall fescue, perennial ryegrass, smooth brome grass, crested wheatgrass |
| 2   | white clover, alsike clover, birdsfoot trefoil, orchardgrass,<br>switchgrass (w/o glumes)  |
| 1   | Kentucky bluegrass, reed canarygrass, timothy, bermudagrass  |
3. The contestant must classify and name, according to common name only, all seeds mixed with the base sample. The classification shall be (a) other crops and/or varieties, (b) prohibited noxious weeds, (c) restricted noxious weeds, and (d) common weeds. (See the official form on page 29, rule 6 below, and restrictions on the identification list.)
  4. In preparing samples, all admixtures will consist of four (4) or more mature seeds. Occasionally a single (1) contaminant seed may be present but will not be considered as an admixture. No single (1) contaminant seeds will be intentionally added to seed analysis samples. Contestants need not necessarily find these numbers to call an admixture, but it is their responsibility if they call an admixture but find less than four. Only impurities listed as permissible on the identification list may be used. Admixtures used in seed analysis must be in the same form as that acceptable for the identification phase of the contest.
  5. Scoring system — The total score per sample shall be 60 points. The following points shall be allotted to each impurity for proper classification: Other crops and/or varieties, 1; prohibited noxious weeds, 3; restricted noxious weeds, 2; and common weeds, 1. The deduction shall be according to the category where it belongs rather than where the contestant has placed it. The remaining points shall be allotted equally, rounding to the nearest whole number, for the proper identification of the impurities. The term approximately is used in order that scoring can be done in whole points. (Subtract the total points allotted to classification from 60 and divide the remainder by the number of impurities present.) When less than 4 are present, 15 points (total for classification and identification) shall be allotted to each. This allows a maximum deduction of 15 points for an impurity not called, and 7 points for listing an impurity not present.

The contestant who calls an impurity which is not present (extras) shall be penalized approximately one-half of the points allotted to the proper *identification* of an impurity

present. If a contestant calls an impurity in a sample which contains none, 15 points shall be deducted for a score of 45 points. Two impurities called in a pure sample will cause a loss of 30 points, etc. In case of incorrect identification by the contestant, such as mistaking tall morningglory for field bindweed, the above rules allow two penalties on the total score; one for not calling field bindweed and another for calling tall morningglory as extra. One point will be deducted for wrongly written names. The following examples are wrongly written: The following examples are wrongly written: pepperweed vs. greenflower pepperweed, common cocklebur vs. cocklebur, yellow oat or oat vs. white oat, red oat vs. Red Rustproof oat. When multiple varieties or types are possible but the crop is not identified correctly (ie. Corsoy fieldbean vs. Corsoy soybean), the full deduction for missing plus an extra is taken, not -1 for wrongly written. When the variety or type is not called (ie. soybean vs. Corsoy soybean, ragweed vs. giant ragweed), the full deduction for missing is taken, but no additional points for an extra. When two varieties or types are possible on the list, but the wrong one is called (Flyer soybean vs. Corsoy soybean, common ragweed vs. giant ragweed), deduct points for both missing and for an extra. Correctly identified admixtures listed more than once will not be counted as others. Classification points will be deducted for all extra placements of a correctly identified admixture.

### Calculating the Sample Score in Seed Analysis

The total score for a Seed Analysis sample is 60 points. Points are allotted to each impurity as follows: other crops and/or varieties = 1; prohibited noxious weeds = 3; restricted noxious weeds = 2; and common weeds = 1. The deduction shall be according to category where it belongs rather than where the contestant places it. Spelling errors are not discounted.

**Example:** A wheat sample contains:

**Crops and/or varieties**

white oat  
flax  
barley  
rye

**Restricted noxious weeds**

white campion  
curly dock  
cheat  
oxeye daisy

**Prohibited noxious weeds**

quackgrass  
field bindweed

**Common weeds**

rescuegrass  
wild sunflower

---

Multiply each admixture by the number assigned for proper classification and add totals:

Other crops and/or varieties	= 4 x 1 = 4
Prohibited noxious weeds	= 2 x 3 = 6
Restricted noxious weeds	= 4 x 2 = 8
<u>Common weeds</u>	<u>= 2 x 1 = 2</u>
<b>Totals</b>	<b>12      20</b>

60 - 20 = 40 to be divided by number of admixtures (12).  $40/12 = 3.3$ . Therefore, rounding down ( $3.3 = 3$ ) gives the proper identification points for each admixture. Thus,

- 3 + 1 = 4 for Crops and/or other varieties
- 3 + 3 = 6 for Prohibited noxious weeds
- 3 + 2 = 5 for Restricted noxious weeds
- 3 + 1 = 4 for Common weeds

If remainder had been 0.5 or more, one must round up which would give 4 instead of 3. (Therefore, 5, 7, 6 and 5 respectively would be the total points for each admixture.)

"The contestant who calls an impurity which is not present shall be penalized approximately 1/2 of points allotted to proper identification of an impurity present." In this case the proper identification is worth 3.3 points. Therefore, calling an impurity which is not present we divide  $3.3/2 = 1.65$ . Therefore, rounding up ( $1.65=2$ ) gives the proper deduction for extras.

## Seed Analysis Special Rules

6. All admixtures shall be named according to common names exactly as printed in the identification list, with its restrictions, except as indicated in the special rules that follow:
- A. **Wheat** — Base material shall be any pure sample of red wheat, white wheat, or durum wheat.
    - (1) Red wheats will not be used as mixtures in red wheat or two or more will not be used as admixtures in other wheat samples or other crop samples.
    - (2) No white wheat varieties will be used as mixtures in white wheat.
    - (3) Wheat types used as admixtures in other wheats and other crops, where permissible, will be identified as red wheat, white wheat, amber durum wheat, einkorn, emmer, spelt.
  - B. **Oat** — Base material shall be any pure sample of Red Rustproof type oat or white oat or yellow oat. Only white oat and Red Rustproof oat will be used as admixtures. Any variety of red oat used as a base sample or an admixture will exhibit partial sucker mouth, and shall be identified as Red Rustproof oat.
    - (1) Gray oat, black oat, and hulled oat varieties will not be used as admixtures in oat samples or other crop samples.
    - (2) White oat will not be used as an admixture in yellow oat base samples.
    - (3) White oat and Red Rustproof oat may be used as an admixture in each other, and both may be used as admixtures in other crops.
    - (4) Wild oat, if used as an admixture, will contain some gray and/or black color.
  - C. **Rye** — Base material shall be any pure sample of rye. Rye used as an admixture in other crops will be identified only as rye. Rye varieties or types will not be mixed in rye samples.
  - D. **Grain sorghums** — Base material shall be any pure cultivar of grain sorghum (white, yellow, red, brown).
    - (1) Only the following grain sorghum mixtures may be used: hegari and combine kafir in grain sorghum (brown, yellow, red) and other crops, and Dwarf Yellow milo in white grain sorghum, and other crops.
    - (2) All sudangrass and sorgo, except sumac sorgo, must be shown in the glumes.
  - E. **Flax** — Base material shall be any pure sample of flax.
  - F. **Barley** — Base material shall be any pure sample of barley except the hullless type.
    - (1) Two-rowed and six-rowed barley will not be mixed.
    - (2) Barley, when found as an admixture in any other crop sample, will be identified only as barley.
    - (3) Hullless barley types are not allowed in seed analysis.

**G. Large-seeded legumes** — Base material shall be any pure sample of cowpea, soybean, chickpea, fieldbean, or fieldpea variety found on the identification list. A replacement variety may be used only if similar to the characteristics of the variety listed on the identification list.

- (1) Flyer and KS 4694 soybean will not be used together in any combination but may be used singly in any other soybean variety, other large-seeded legumes, or any other crop sample.
- (2) Alaska 81 and Perfection fieldpea will not be used together in any combination but may be used singly in Austrian Winter fieldpea, other large-seeded legumes, or any other crop sample.

**H. Small-seeded legumes and grasses** — Base material shall be any pure sample of alfalfa, red clover, sweetclover, alsike clover, white clover, birdsfoot trefoil, crownvetch, crimson clover, reed canarygrass, timothy, tall fescue, perennial ryegrass, smooth brome grass, orchardgrass, Kentucky bluegrass, crested wheatgrass, switchgrass, bermudagrass, annual canarygrass, foxtail millet, proso millet or pearl millet.

- (1) The following will not be mixed in any combination:
  - (a) Black medic, alfalfa, and sweetclover;
  - (b) Alsike clover and white clover;
  - (c) Annual bluegrass and Kentucky bluegrass
- (2) Perennial ryegrass will not be mixed in a base sample of tall fescue and vice versa.
- (3) Crested wheatgrass will not be mixed in a base sample of orchardgrass and vice versa
- (4) Timothy will not be mixed in a base sample of bermudagrass.

**Rice** — Base material shall be any pure sample of rice [in the hull].

- (1) L-205 rice and S-102 rice will not be mixed. When either is found as an admixture, the admixture will be identified as rice.

**J. Miscellaneous crops** — Base material shall be any pure sample of common buckwheat, lentil, safflower, oil sunflower, or daikon radish.

- (1) Confectionary sunflowers will not be mixed in a base sample of oil sunflowers.
- (2) Cultivated sunflowers found as admixtures in other crops will be identified as Mingren sunflower or Peredovik sunflower.

**K. Special rules for other permissible admixtures.**

- (1) Common vetch and hairy vetch will not be mixed. When either is found as an admixture, the admixture will be identified as vetch.

**L. Triticale** — No smooth seeded varieties will be used in seed analysis.

## Group C — Identification

1. Time — one and one-half hours. Value 600 points. The number of samples in this section shall be 200.
2. Contestants will record only the common name for the contest.
3. The broad leaf plants exhibited must be in post bud, flower and/or fruiting stages and display at least one leaf unless otherwise specified. The flower color of alfalfa may range from blue, to purple, to white, to yellow, to variegated.
4. All crop plant specimens of *Triticum*, *Hordeum*, *Avena*, *Secale*, *Triticale*, *Oryza*, *Sorghum*, and all millets must be mature and all seed samples must be mature to be used in the contests. Grasses must have full extension of the inflorescence out of the flag leaf sheath.
5. The correct identification of each specimen shall be worth 3 points.
6. Correct spelling will be required as given in the identification list. The contestant will be cut two-tenths of one point for each sample with one or more misspelled words. Incorrect usage of capitals, hyphens, periods, commas, spaces between or within words shall be considered as misspelled.  
e.g. leaving hyphen (-) out of two-rowed barley  
crown vetch vs. crownvetch
7. Common names which show proper identification but are improperly written shall be discounted one point as wrongly written. A common name can be wrongly written only once (i.e. Australian winter pea vs. Austrian winter fieldpea is only one writing error).  
e.g. morningglory instead of tall morningglory  
Canadian thistle instead of Canada thistle  
2-rowed barley instead of two-rowed barley
8. Names which show the incorrect crop or weed name will be considered incorrect and will be discounted 3 points.  
e.g. sorghum vs. sorgo  
Corsoy bean vs. Corsoy soybean  
purplehull fieldpea vs. purplehull cowpea  
Marshall wheat vs. Marshall barley  
field pennygrass vs. field pennycress  
Flyer vs. Flyer soybean  
amber durum vs. amber durum wheat
9. Disease samples will be labeled with the word "disease."
10. The canola plant specimen must have clasping upper leaves.

# Identification List

**Symbols:** (s) seed only                      (b) both plant and seed shown  
(p) plant only                                (e) either plant or seed or both shown

Common names must be written exactly as written below.

**NOTE:** Any variety, crop, or weed seed preceded by a double asterisk (\*\*) cannot be used as an admixture in any seed analysis sample. Plant only items cannot be used in seed analysis.

- 1) Crop common and scientific names derived from: Glossary of Crop Science Terms, Crop Science Society of America, Madison, WI, (1992).  
<https://www.crops.org/publications/crops-glossary>
- 2) Plant disease common and scientific names derived from: Common Names for Plant Diseases, Committee on standardization of common names for plant diseases of the American Phytopathological Society 1978-1993, APS Press, (1994).  
<http://www.apsnet.org/publications/commonnames>
- 3) Weed common names to be used in the contest are determined by vote of the Coaches Committee and must be written by the contestant as listed below. Since most references refer to multiple common names for a given species, there is not an official list of common names that provide a suitable reference. Common names used are those found in the USDA Germplasm Resources Information Network (GRIN) or USDA PLANTS Database.

## FIELD CROPS

1	Karl 92 wheat	(b)	<i>Triticum aestivum ssp. aestivum</i>
2	TAM 107 wheat	(b)	<i>Triticum aestivum ssp. aestivum</i>
3	Longhorn wheat	(b)	<i>Triticum aestivum ssp. aestivum</i>
4	Goldfield wheat	(b)	<i>Triticum aestivum ssp. aestivum</i>
5	Hopewell wheat	(b)	<i>Triticum aestivum ssp. aestivum</i>
6	Marshall wheat	(b)	<i>Triticum aestivum ssp. aestivum</i>
7	Thatcher wheat	(b)	<i>Triticum aestivum ssp. aestivum</i>
8	Arlin wheat	(b)	<i>Triticum aestivum ssp. aestivum</i>
9	Federation wheat	(b)	<i>Triticum aestivum ssp. aestivum</i>
10	Twin wheat	(b)	<i>Triticum aestivum ssp. aestivum</i>

11			
12	amber durum wheat	(s or b)	<i>Triticum turgidum ssp. durum</i>
13**	Paha wheat	(p)	<i>Triticum aestivum ssp. compactum</i>
14	einkorn	(e)	<i>Triticum monococcum</i>
15	emmer	(e)	<i>Triticum dicoccum</i>
16	spelt	(s or b)	<i>Triticum aestivum ssp. spelta</i>
17			
18			
19	rye	(e)	<i>Secale cereale</i>
20	triticale	(e)	<i>Triticosecale spp.</i>
21	L-205 rice	(e)	<i>Oryza sativa</i>
22	S-102 rice	(e)	<i>Oryza sativa</i>
23	wild rice	(s)	<i>Zizania aquatica</i>
24	dent corn	(s)	<i>Zea mays ssp. indentata</i> (more than 50 % dented kernels shown)
25	sweet corn	(s)	<i>Zea mays ssp. saccharata</i>
26	pop corn	(s)	<i>Zea mays ssp. everta</i>
28			
27	flint corn	(s)	<i>Zea mays ssp. indurata</i>
29	Morex barley	(p)	<i>Hordeum vulgare</i>
30**	Nepal barley (may be any two-rowed or six-rowed hooded, hulless variety)	(e)	<i>Hordeum vulgare</i>
31	Manker barley	(p)	<i>Hordeum vulgare</i>
32	six-rowed barley	(s)	<i>Hordeum vulgare</i>
33	two-rowed barley	(e)	<i>Hordeum distichon</i>
34	white oat	(s)	<i>Avena sativa</i>
35	yellow oat	(s)	<i>Avena sativa</i>

36	Red Rustproof oat	(s)	<i>Avena byzantine</i>
37**	Streaker oat	(s)	<i>Avena nuda</i>
38	oat	(p)	<i>Avena sativa</i>
101	Combine kafir	(e)	<i>Sorghum bicolor</i>
102	Dwarf Yellow milo	(e)	<i>Sorghum bicolor</i>
103	hegari	(s)	<i>Sorghum bicolor</i>
104**	feterita	(s)	<i>Sorghum bicolor</i>
105			
106	black amber sorgo	(e)	<i>Sorghum bicolor</i>
107	honey sorgo	(e)	<i>Sorghum bicolor</i>
108			
109	sumac sorgo	(e)	<i>Sorghum bicolor</i>
110	broomcorn	(p)	<i>Sorghum bicolor</i>
111			
112	Sweet sudangrass	(e)	<i>Sorghum bicolor var. sudanense</i>
201	big bluestem	(p)	<i>Andropogon gerardi</i>
202	little bluestem	(p)	<i>Schizachyrium scoparium</i>
203	blue grama	(p)	<i>Bouteloua gracilis</i>
204	sideoats grama	(p)	<i>Bouteloua curtipendula</i>
205**	buffalograss	(p or bur)	<i>Bouteloua dactyloides</i>
206	Canada wildrye	(p)	<i>Elymus canadensis</i>
207	Russian wildrye	(p)	<i>Psathyrostachys junceus</i>
208	Indiangrass	(p)	<i>Sorghastrum nutans</i>
209	sand lovegrass	(e)	<i>Eragrostis trichodes</i>

210	switchgrass	(e)	<i>Panicum virgatum</i>
211	crested wheatgrass	(e)	<i>Agropyron cristatum</i>
212	bermudagrass	(e)	<i>Cynodon dactylon</i>
213			
214	Kentucky bluegrass	(e)	<i>Poa pratensis</i>
215			
216	dallisgrass	(e)	<i>Paspalum dilatatum</i>
217	orchardgrass	(e)	<i>Dactylis glomerata</i>
218	perennial ryegrass	(e)	<i>Lolium perenne</i>
219	bentgrass	(e)	<i>Agrostis spp.</i>
220	reed canarygrass	(e)	<i>Phalaris arundinacea</i>
221	rhodesgrass	(e)	<i>Chloris gayana</i>
222	smooth brome grass	(e)	<i>Bromus inermis</i>
223	tall fescue	(e)	<i>Festuca arundinacea</i>
224			
225	timothy	(e)	<i>Phleum pratense</i>
226	foxtail millet	(e)	<i>Setaria italica</i>
227	proso millet	(e)	<i>Panicum miliaceum</i>
228	pearl millet	(e)	<i>Pennisetum glaucum</i>
229	annual canarygrass	(s)	<i>Phalaris canariensis</i>
301	alfalfa	(e)	<i>Medicago sativa</i>
302	sweetclover	(e)	<i>Melilotus spp.</i>
303	arrowleaf clover	(p)	<i>Trifolium vesiculosum</i>
304	alsike clover	(e)	<i>Trifolium hybridum</i>
305	large hop clover	(e)	<i>Trifolium campestre</i>

306	crimson clover	(e)	<i>Trifolium incarnatum</i>
307	red clover	(e)	<i>Trifolium pratense</i>
308	white clover	(e)	<i>Trifolium repens</i>
309			
310	birdsfoot trefoil	(e)	<i>Lotus corniculatus</i>
311	Korean lespedeza	(e)	<i>Kummerowia stipulacea</i>
312	crownvetch	(e)	<i>Coronilla varia</i>
313	sainfoin	(e)	<i>Onobrychis viciifolia</i>
314			
315	common vetch	(e)	<i>Vicia sativa</i>
316	hairy vetch	(e)	<i>Vicia villosa</i>
400	black turtle fieldbean	(s)	<i>Phaseolus vulgaris</i>
401	blackeye cowpea	(s)	<i>Vigna unguiculata</i>
402	Iron Clay cowpea	(s)	<i>Vigna unguiculata</i>
403	purplehull cowpea	(s)	<i>Vigna unguiculata</i> (must be purple/pink eye type)
403 b	cowpea	(p)	<i>Vigna unguiculata</i>
404	great northern fieldbean	(s)	<i>Phaseolus vulgaris</i>
405	navy fieldbean	(s)	<i>Phaseolus vulgaris</i>
406	pinto fieldbean	(s)	<i>Phaseolus vulgaris</i>
407	red kidney fieldbean	(s)	<i>Phaseolus vulgaris</i>
407 b	fieldbean	(p)	<i>Phaseolus vulgaris</i>
408	green mungbean	(e)	<i>Vigna radiata</i>
409	Alaska 81 fieldpea	(s)	<i>Pisum sativum</i>
410	Austrian winter fieldpea	(s)	<i>Pisum sativum</i>
411	Umatilla fieldpea	(s)	<i>Pisum sativum</i>

412	Perfection fieldpea	(s)	<i>Pisum sativum</i>
412 b	fieldpea	(p)	<i>Pisum sativum</i>
413	Flyer soybean	(s)	<i>Glycine max</i>
414	Corsoy soybean	(s)	<i>Glycine max</i>
415	KS 4694 soybean	(s)	<i>Glycine max</i>
416	Laredo soybean	(s)	<i>Glycine max</i>
417	Virginia soybean	(s)	<i>Glycine max</i>
417 b	soybean	(p)	<i>Glycine max</i>
418	Spanish peanut	(pod)	<i>Arachis hypogaea</i>
419	Valencia peanut	(pod)	<i>Arachis hypogaea</i>
419 b	peanut	(p)	<i>Arachis hypogaea</i>
420	chickpea	(s)	
421	white lupine	(s)	<i>Lupinus albus</i>
422			
423	lentil	(s)	<i>Lens culinaris</i>
501	common buckwheat	(e)	<i>Fagopyrum esculentum</i>
502	castor	(s)	<i>Ricinus communis</i>
503**	Egyptian cotton	(s)	<i>Gossypium barbadense</i>
504**	upland cotton	(s)	<i>Gossypium hirsutum</i>
504 b	cotton	(p) (okra leaf type disallowed)	
505	yellow mustard	(s)	<i>Brassica hirta</i>
506	flax	(e)	<i>Linum usitatissimum</i>
507	hop	(p)	<i>Humulus lupulus</i>
508	crambe	(e)	<i>Crambe abyssinica</i>
509	safflower	(e)	<i>Carthamus tinctorius</i>

510	sesame	(e)	<i>Sesamum indicum</i>
511	sugarbeet	(s)	<i>Beta vulgaris</i>
512	tobacco	(s)	<i>Nicotiana tabacum</i>
513	Mingren sunflower	(s)	<i>Helianthus annuus</i>
514	Peredovik sunflower	(s)	<i>Helianthus annuus</i>
515	guar	(e)	<i>Cyamopsis tetragonoloba</i>
516	crotalaria	(s)	<i>Crotalaria spp.</i>
517**	canola	(e)	<i>Brassica napus</i>
518.	daikon radish	(s)	<i>Raphanus sativus ssp. longipinnatus</i>

## CROP DISEASES

601

602

603    common bean blight                    (s)                    *Xanthomonas campestris pv. phaseoli*  
(fieldbean only)

604    black point of wheat                    (s)                    *Fusarium spp.*

605

606

607

608    common bunt                                (s)                    *Tilletia caries, Tilletia foetida*

609    ergot    (e)                    *Claviceps purpurea*

610    common corn smut                        (p)                    *Ustilago maydis*

611

612

613    loose smut\*                                  (p)                    *Ustilago tritici*

614    purple stain of soybean                    (s)                    *Cercospora kikuchii*

615

616

617    wheat scab                                    (s)                    *Gibberella zeae*

618

619

620    Phomopsis seed rot                        (s)                    *Phomopsis spp.* (soybean only)

621

\*Shall have a non-diseased head shown with diseased specimen.

## WEEDS

NOTE: Identification includes either plant, seed or both, unless otherwise indicated.

The following criteria were used to classify a weed as prohibited, restricted, or common (excluding Alaska and Hawaii):

Prohibited — must be classified as prohibited by two or more states.

Restricted — classified as restricted by two or more states or classified as prohibited by one state and restricted by another state.

### Prohibited Noxious Weeds

701	quackgrass		<i>Elymus repens (Elytrigia repens)</i>
702	johnsongrass		<i>Sorghum halepense</i>
703	hoary cress		<i>Cardaria draba</i>
704	leafy spurge		<i>Euphorbia esula</i>
705	field bindweed		<i>Convolvulus arvensis</i>
706	dodder <sup>1/</sup>		<i>Cuscuta spp.</i>
707	Canada thistle		<i>Cirsium arvense</i>
708	Russian knapweed		<i>Acroptilon repens</i>
709	perennial sowthistle		<i>Sonchus arvensis</i>
710	jointed goatgrass		<i>Aegilops cylindrica</i>
711	bull thistle	(p)	<i>Cirsium vulgare</i>
712	wild garlic	(p or bulblets)	<i>Allium vineale</i>
713			
714	St. Johnswort	(p)	<i>Hypericum perforatum</i>
715	tall morningglory		<i>Ipomoea purpurea</i>
716	hedge bindweed	(p)	<i>Calystegia sepium</i>
717	horsenettle		<i>Solanum carolinense</i>
718	silverleaf nightshade	(p)	<i>Solanum elaeagnifolium</i>
719	cocklebur		<i>Xanthium spp.</i>
720	spotted knapweed		<i>Centaurea stoebe</i>

<sup>1/</sup> Dodder may be allowed on any plant and shall be called regardless of the plant on which it is found. The dodder must represent at least 25% of the identification specimen.

## Restricted Noxious Weeds

801	cheat		<i>Bromus secalinus</i>
802	wild oat		<i>Avena fatua</i>
803	large crabgrass		<i>Digitaria sanguinalis</i>
804	yellow nutsedge	(p)	<i>Cyperus esculentus</i>
805	curly dock		<i>Rumex crispus</i>
806	red sorrel		<i>Rumex acetosella</i>
807	Russian thistle		<i>Salsola tragus</i>
808	white campion		<i>Silene latifolia ssp. alba</i>
809	field pennycress		<i>Thlaspi arvense</i>
810	wild mustard		<i>Sinapis arvensis</i>
811	puncturevine		<i>Tribulus terrestris</i>
812	wild carrot		<i>Daucus carota (Daucus pusillus)</i>
813	blackseed plantain		<i>Plantago rugelii</i>
814	buckhorn plantain		<i>Plantago lanceolata</i>
815	bracted plantain		<i>Plantago aristata</i>
816	oxeye daisy		<i>Leucanthemum vulgare</i>
817	eastern black nightshade		<i>Solanum ptycanthum</i>
818	annual bluegrass	(s)	<i>Poa annua</i>
819	sericea lespedeza	(p)	<i>Lespedeza cuneata</i>

## Common Weeds

901	rescuegrass		<i>Bromus catharticus</i>
902	goosegrass	(p)	<i>Eleusine indica</i>
903	barnyardgrass		<i>Echinochloa crus-galli</i>
904	yellow foxtail		<i>Setaria pumila</i>
905	green foxtail		<i>Setaria viridis</i>
906	kochia		<i>Kochia scoparia</i>

907	common lambsquarters		<i>Chenopodium album</i>
908	redroot pigweed		<i>Amaranthus retroflexus</i>
909	chickweed		<i>Stellaria spp.</i>
910	greenflower pepperweed		<i>Lepidium densiflorum</i>
911	shepherdspurse		<i>Capsella bursa-pastoris</i>
912	black medic		<i>Medicago lupulina</i>
913	giant ragweed		<i>Ambrosia trifida</i>
914	common ragweed		<i>Ambrosia artemisiifolia</i>
915	wild sunflower		<i>Helianthus annuus</i>
916	chicory		<i>Cichorium intybus</i>
917	dandelion		<i>Taraxacum officinale</i>
918	downy brome		<i>Bromus tectorum</i>
919	foxtail barley	(p)	<i>Hordeum jubatum</i>
920	little barley		<i>Hordeum pusillum</i>
921	prostrate knotweed	(p)	<i>Polygonum aviculare</i>
922	Pennsylvania smartweed		<i>Polygonum pennsylvanicum</i>
923	wild buckwheat		<i>Polygonum convolulus</i>
924	pinnate tansymustard	(p)	<i>Descurainia pinnata</i>
925	velvetleaf		<i>Abutilon theophrasti</i>
926	buffalobur		<i>Solanum rostratum</i>
927	common burdock		<i>Arctium minus</i>
928	jimsonweed		<i>Datura stramonium</i>
929	Venice mallow		<i>Hibiscus trionum</i>
930	henbit		<i>Lamium amplexicaule</i>
931	prickly sida		<i>Sida spinosa</i>
932	woolly cupgrass		<i>Eriochloa villosa</i>
933	horseweed	(p)	<i>Conyza canadensis</i>
934	Palmer amaranth	(p)	<i>Amaranthus palmeri</i>
935	kudzu	(stems & leaves)	<i>Pueraria montana</i>

# Historic Varieties

Several varieties or types listed in the identification list are included because of their historical importance in crop breeding or their distinctive morphological characteristics.

Historic varieties include:

Karl 92 wheat	Combine kafir
TAM 107 wheat	Dwarf Yellow milo
Longhorn wheat	sumac sorgo
Goldfield wheat	black amber sorgo
Hopewell wheat	honey sorgo
Marshall wheat	Sweet sudangrass
Thatcher wheat	hegari
Arlin wheat	feterita
Federation wheat	Iron Clay cowpea
Twin wheat	Austrian winter fieldpea
einkorn	Umatilla fieldpea
emmer	Alaska 81 fieldpea
spelt	Perfection fieldpea
Paha wheat	Flyer soybean
L-205 rice	Corsoy soybean
S-102 rice	KS 4694 soybean
Morex barley	Laredo soybean
Nepal barley	Virginia soybean
Manker barley	Mingren sunflower
Red Rustproof oat	Peredovik sunflower
Streaker oat	

# CORN

Contestant No. \_\_\_\_\_

Sample No. \_\_\_\_\_

Notes

Factor	TW	HT	DKT	BCFM
Level				
Grade (3 pts.)				

Complete Grade Designation	Factor or Factors for Determination Grade

# SORGHUM

Sample No. \_\_\_\_\_

Notes

Factor	TW	HT	DKT	FM	BNFM
Level					
Grade (3 pts.)					

Complete Grade Designation	Factor or Factors for Determination Grade

# SOYBEANS

Contestant No. \_\_\_\_\_

Sample No. \_\_\_\_\_

Notes

Factor	HT	DKT	FM	SPL
Level				
Grade (3 pts.)				

Complete Grade Designation	Factor or Factors for Determination Grade

# OATS

Sample No. \_\_\_\_\_

Notes

Factor	TW	SO	HT	FM	WO
Level					
Grade (3 pts.)					

Complete Grade Designation	Factor or Factors for Determination Grade

# WHEAT

Contestant No. \_\_\_\_\_

Sample No. \_\_\_\_\_

Notes

Factor	TW	HT	DKT	FM	SHBN	DEF	CCL	WOCL
Level								
Grade (3 pts.)								

Complete Grade Designation	Factor or Factors for Determination Grade

# RYE

Sample No. \_\_\_\_\_

Notes

Factor	TW	FMOW	FM	HT	DKT	THIN
Level						
Grade (3 pts.)						

Complete Grade Designation	Factor or Factors for Determination Grade

Contestant No. \_\_\_\_\_

# BARLEY

Sample No. \_\_\_\_\_

## SIX-ROWED MALTING BARLEY

Notes

Factor	TW	SMT	SBLY	DK	WO	FM	OG	SKBN	THIN
Level									
Grade (3 pts.)									

## TWO-ROWED MALTING BARLEY

Factor	TW	SMT	SBLY	DK	WO	FM	OG	SKBN	THIN
Level									
Grade (3 pts.)									

## NON-MALTING BARLEY

Factor	TW	SBLY	DK	HT	FM	BN	THIN
Level							
Grade (3 pts.)							

Complete Grade Designation	Factor or Factors for Determination Grade



# Official Form — Collegiate Crops Contest Identification

Contestant No. \_\_\_\_\_

Total Score \_\_\_\_\_

Sample Number	Name	Sample Number	Name
1.	_____	26.	_____
2.	_____	27.	_____
3.	_____	28.	_____
4.	_____	29.	_____
5.	_____	30.	_____
6.	_____	31.	_____
7.	_____	32.	_____
8.	_____	33.	_____
9.	_____	34.	_____
10.	_____	35.	_____
11.	_____	36.	_____
12.	_____	37.	_____
13.	_____	38.	_____
14.	_____	39.	_____
15.	_____	40.	_____
16.	_____	41.	_____
17.	_____	42.	_____
18.	_____	43.	_____
19.	_____	44.	_____
20.	_____	45.	_____
21.	_____	46.	_____
22.	_____	47.	_____
23.	_____	48.	_____
24.	_____	49.	_____
25.	_____	50.	_____

\_\_\_\_\_ x -3 = \_\_\_\_\_      \_\_\_\_\_ x -1 = \_\_\_\_\_      \_\_\_\_\_ x -0.2 = \_\_\_\_\_      Total = \_\_\_\_\_

# Official Form — Collegiate Crops Contest Identification

Contestant No. \_\_\_\_\_

Total Score \_\_\_\_\_

Sample Number	Name	Sample Number	Name
51.	_____	76.	_____
52.	_____	77.	_____
53.	_____	78.	_____
54.	_____	79.	_____
55.	_____	80.	_____
56.	_____	81.	_____
57.	_____	82.	_____
58.	_____	83.	_____
59.	_____	84.	_____
60.	_____	85.	_____
61.	_____	86.	_____
62.	_____	87.	_____
63.	_____	88.	_____
64.	_____	89.	_____
65.	_____	90.	_____
66.	_____	91.	_____
67.	_____	92.	_____
68.	_____	93.	_____
69.	_____	94.	_____
70.	_____	95.	_____
71.	_____	96.	_____
72.	_____	97.	_____
73.	_____	98.	_____
74.	_____	99.	_____
75.	_____	100.	_____

\_\_\_\_\_ x -3 = \_\_\_\_\_

\_\_\_\_\_ x -1 = \_\_\_\_\_

\_\_\_\_\_ x -0.2 = \_\_\_\_\_

Total = \_\_\_\_\_

# Official Form — Collegiate Crops Contest Identification

Contestant No. \_\_\_\_\_

Total Score \_\_\_\_\_

Sample Number	Name	Sample Number	Name
101.	_____	126.	_____
102.	_____	127.	_____
103.	_____	128.	_____
104.	_____	129.	_____
105.	_____	130.	_____
106.	_____	131.	_____
107.	_____	132.	_____
108.	_____	133.	_____
109.	_____	134.	_____
110.	_____	135.	_____
111.	_____	136.	_____
112.	_____	137.	_____
113.	_____	138.	_____
114.	_____	139.	_____
115.	_____	140.	_____
116.	_____	141.	_____
117.	_____	142.	_____
118.	_____	143.	_____
119.	_____	144.	_____
120.	_____	145.	_____
121.	_____	146.	_____
122.	_____	147.	_____
123.	_____	148.	_____
124.	_____	149.	_____
125.	_____	150.	_____

\_\_\_\_\_ x -3 = \_\_\_\_\_

\_\_\_\_\_ x -1 = \_\_\_\_\_

\_\_\_\_\_ x -0.2 = \_\_\_\_\_

Total = \_\_\_\_\_

# Official Form — Collegiate Crops Contest Identification

Contestant No. \_\_\_\_\_

Total Score \_\_\_\_\_

Sample Number	Name	Sample Number	Name
151.	_____	176.	_____
152.	_____	177.	_____
153.	_____	178.	_____
154.	_____	179.	_____
155.	_____	180.	_____
156.	_____	181.	_____
157.	_____	182.	_____
158.	_____	183.	_____
159.	_____	184.	_____
160.	_____	185.	_____
161.	_____	186.	_____
162.	_____	187.	_____
163.	_____	188.	_____
164.	_____	189.	_____
165.	_____	190.	_____
166.	_____	191.	_____
167.	_____	192.	_____
168.	_____	193.	_____
169.	_____	194.	_____
170.	_____	195.	_____
171.	_____	196.	_____
172.	_____	197.	_____
173.	_____	198.	_____
174.	_____	199.	_____
175.	_____	200.	_____

\_\_\_\_\_ x -3 = \_\_\_\_\_      \_\_\_\_\_ x -1 = \_\_\_\_\_      \_\_\_\_\_ x -0.2 = \_\_\_\_\_      Total = \_\_\_\_\_

# COLLEGIATE CROPS CONTEST

		COMMERICAL GRADING										SEED ANALYSIS										IDENTIFI- CATION		GRAND TOTAL SCORE	INDIVIDUAL RANK	TEAM RANK
		1	2	3	4	5	6	7	8	TOTAL SCORE	RANK	1	2	3	4	5	6	7	8	9	10	TOTAL SCORE	RANK			
SCHOOL	CONTESTANT																									
A	1																									
	2																									
	3																									
B	1																									
	2																									
	3																									
C	1																									
	2																									
	3																									
D	1																									
	2																									
	3																									
E	1																									
	2																									
	3																									
F	1																									
	2																									
	3																									
G	1																									
	2																									
	3																									
H	1																									
	2																									
	3																									
I	1																									
	2																									
	3																									
J	1																									
	2																									
	3																									

## Base Samples/Admixtures for 2017 Contests

### Seed Analysis:

Please send the requested amounts of item, if requested, to Brent Turnipseed, Attn: Crops Judging, Seed Testing Lab, South Dakota State University, PO Box 2207-A, Brookings, SD 57006, at your earliest convenience, but no later than April 30. If you cannot provide any of those assigned, please contact Brent so we can secure them from another source.

**Base Samples Needed:** Each coach is asked to provide at least three clean base samples. Amount required is 450 g for grasses and legumes, 4500 g for small grains and sorghum, and 9000 g for fieldbeans and fieldpeas.

**Admixtures Needed:** As requested by Brent Turnipseed. He will contact coaches as listed on the exchange list.

### Grain Grading:

Grain Grading Base Sample Assignments. These are due June 1 each year. Send clean, undamaged samples for both Kansas City and Chicago contests to the Technology and Science Division Office at the National Grain Center in Kansas City. Also, please send any good, uniform damaged kernels of any crops that you may have available for admixtures. See shipping addresses on last page of the rule book.

Crop	Kansas City	Chicago
Oats (1500 gm)	UMC	Wisconsin
Barley (1500 gm)	UMC	Wisconsin
Rye (1500 gm)	Wisconsin	OSU
Sorghum (1500 gm)	KSU	OSU
Soybeans (4500 gm)	Wisconsin	Iowa State
Corn (9000 gm)	Iowa State	Iowa State (white)
Hard red winter wheat (1500 gm)	KSU	OSU
Hard red spring wheat (1500 gm)	SDSU	UMC
Soft red winter wheat (1500 gm)	Virginia Tech	Wisconsin
Durum wheat (1500 gm)	SDSU	UMC
Hard white wheat (1500 gm)	KSU	OSU
Soft white wheat (1500 gm)	KSU	SDSU

### Contest Forms Needed:

45 sets per contest (seed analysis and identification) - The Vice President is responsible for bringing copies.

## Exchange List – Collegiate Crops Contests

Numbers correspond to specimens on the identification list.

**Kansas State:** 1, 2, 3, 8, 14, 16, 19, 20, 101, 102, 103, 104, 106, 107, 108, 109, 110, 112, 201, 202, 203, 204, 205, 206, 208, 209, 210, 211, 212, 213, 214, 217, 218, 220, 222, 223, 225, 226, 227, 228, 229, 301, 302, 307, 308, 310, 311, 312, 313, 316, 408, 412, 413, 414, 415, 418, 423, 501, 502, 506, 508, 509, 510, 513, 514, 515, 516, 517, 604, 606, 607, 613, 614, 617, 701, 702, 705, 710, 714, 715, 716, 717, 718, 719, 801, 803, 804, 805, 807, 809, 811, 816, 817, 819, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 933, 934.

**Purdue:** 4, 24, 25, 26, 201, 202, 214, 217, 218, 219, 220, 222, 223, 225, 301, 302, 303, 304, 307, 308, 310, 311, 312, 414, 508, 610, 701, 707, 712, 713, 716, 717, 719, 803, 806, 809, 812, 813, 814, 816, 902, 903, 904, 905, 907, 908, 909, 911, 912, 913, 914, 916, 917, 918, 919, 925, 927, 928.

**Minnesota - Crookston:** 6, 12, 24, 29, 31, 32, 201, 202, 214, 220, 225, 229, 302, 304, 307, 310, 501, 505, 506, 513, 514, 517, 605, 609, 611, 612, 613, 701, 704, 707, 709, 719, 802, 805, 808, 809, 810, 813, 903, 904, 905, 906, 907, 908, 909, 911, 912, 915, 917, 919, 921, 922, 923, 927.

**Iowa State:** 24, 25, 26, 201, 202, 208, 210, 214, 217, 220, 222, 225, 301, 302, 307, 308, 310, 413, 414, 610, 614, 618, 701, 707, 716, 719, 803, 805, 813, 903, 904, 905, 907, 908, 913, 914, 917, 918, 921, 922, 925.

**South Dakota State:** 6, 7, 12, 14, 15, 19, 20, 24, 27, 29, 31, 32, 33, 34, 35, 37, 202, 203, 204, 205, 210, 211, 214, 217, 219, 220, 222, 225, 226, 227, 301, 302, 307, 308, 310, 313, 414, 505, 506, 508, 509, 514, 606, 607, 617, 701, 704, 705, 707, 709, 716, 719, 802, 803, 807, 809, 810, 813, 816, 903, 904, 905, 906, 907, 908, 910, 911, 912, 913, 914, 915, 917, 918, 919, 923, 925, 926, 929, 930.

**Wisconsin - Platteville:** 5, 13, 19, 24, 25, 26, 32, 34, 35, 201, 202, 206, 208, 210, 214, 217, 218, 219, 220, 222, 225, 301, 302, 304, 307, 310, 312, 316, 400, 406, 407, 409, 412, 423, 507, 514, 516, 603, 607, 609, 611, 612, 614, 617, 618, 619, 701, 704, 705, 707, 709, 711, 714, 716, 717, 719, 803, 804, 805, 806, 808, 809, 812, 817, 902, 903, 904, 905, 907, 908, 911, 913, 914, 917, 922, 923, 925, 927, 928, 932.

**Minnesota - St. Paul:** 6, 7, 11, 12, 14, 15, 16, 18, 23, 24, 25, 26, 27, 29, 30, 31, 32, 34, 35, 37, 201, 202, 207, 211, 213, 214, 217, 218, 219, 220, 222, 223, 229, 301, 302, 304, 305, 307, 308, 310, 313, 405, 501, 506, 511, 513, 514, 517, 601, 603, 604, 605, 606, 607, 609, 610, 611, 612, 613, 617, 640, 701, 704, 707, 709, 716, 802, 803, 808, 809, 810, 813, 816, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 917, 918, 919, 921, 922, 923, 925, 927.

**Oklahoma State:** 2, 19, 24, 25, 26, 109, 201, 202, 203, 204, 205, 206, 208, 210, 212, 216, 221, 223, 228, 301, 302, 303, 308, 311, 315, 316, 408, 410, 418, 504, 614, 702, 706, 710, 713 (seed), 718, 719, 801, 804, 805, 811, 815, 901, 902, 903, 904, 905, 907, 908, 913, 917, 918, 920, 922, 923, 926, 929.

**Virginia Tech:** 210, 212, 214, 216, 217, 218, 220, 222, 223, 225, 301, 302, 304, 305, 306, 307, 308, 310, 311, 312, 314, 315, 316, 401, 405, 406, 419, 423, 504, 512, 701, 702, 705, 715, 716, 717, 719, 803, 804, 805, 806, 809, 812, 813, 814, 815, 901, 902, 903, 904, 905, 906, 907, 908, 909, 911, 913, 914, 916, 917, 921, 922, 925, 927, 928, 930.

**Colorado State University:** 2, 14, 15, 16, 19, 29, 33, 201, 202, 203, 204, 205, 206, 207, 208, 211, 217, 218, 222, 226, 227, 228, 301, 302, 307, 308, 310, 313, 404, 509, 603, 703, 704, 705, 706, 707, 708, 710, 717, 719, 802, 805, 806, 807, 812, 906, 908, 911, 915, 916, 917, 918, 919, 921, 922, 923, 924, 928, 929.

Schools with new teams that attend the national contest may take home all of the identification.

## Booklet Updates for 2023 Contests

### Page Update

- Cover.....Dates, officers, and contest locations updated. Donnelly and DeVries to serve as Co-Secretary/Contest Coordinators for 2023 transition year. Frye to serve as new Vice-President.
- 2.....Updated regional contest coordinators.
- 3.....Updated sponsors, dates, and details of Kansas City contest.
- 4.....Updated sponsors, dates, and details of Chicago contest.
- 9 and 12...Grain Grading – Soybeans of Other Colors (SBOC) is no longer a grade determining factor and has been removed from the table on page 32. Note that if SBOC is greater than 10% (10.1% according to the rounding rules) then the soybean sample will be called "Mixed Soybeans". This change is to stay aligned with changes to the Grain Inspection Standard going into effect in September.
- 14.....Seed Analysis. Section 5. Clarification for scoring when species are listed more than once. Correctly identified admixtures listed more than once will not be counted as others. Classification points will be deducted for all extra placements of a correctly identified admixture.
- 18.....Identification. Section 3. Broadleaf plant samples need to display at least one leaf.
- 30.....Historic Varieties – Added all varietal samples with intent of describing the characteristics of each in the next rule update.
- 32.....Soybean table updated to remove SBOC column.
- 43.....Booklet updates for 2023 Contests.
- 44-46.....Updated coaches, coordinators, and assistants addresses and contact information.

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