AGRONOMY
3 or 4 Member Team

The Agronomy contest is designed to create interest and promote understanding in agronomic sciences by providing opportunities for student recognition through the demonstration of knowledge and skills.

I. EVENT FORMAT

A. Team Make-up

Three or four individuals per school form a team. All four members will be scored and the top three scores will count towards the team total.

B. Equipment

Team members must provide their own compliant clipboard and/or clean folder with the following items: scan sheet, and/or copy of the scan sheet, optional Texas FFA CDE drop sheet, and/or 2 sheets of lined or unlined blank paper.

C. Component Descriptions

1. General Knowledge Exam – 150 points, 50 minutes

50 objective multiple choice questions will be given to each participant. Questions may include the following areas: cost sheets, seed tag information, tillage practices, pesticide labels, extension bulletins, fertility reports, tissue analysis, contract information, water management, seeding rates, variety information, trial data and application/calibration information for nozzle selection, chemication, fertigation and aerial application.

2. Identification – 150 points, 50 minutes

Students will identify 50 weed plant and/or seed, crop plant and/or seed specimens. Ideally this would be an equal assessment of both plants and seeds. Ideally, the plants should be live specimens and can represent any stage of development. However, they could be press mounts or photographs. The seed specimens must be a real seed, no photographs of seeds.

a. Identification specimens can only come from the reference list provide in the contest rules.
b. Each specimen will have a designated number on the reference list that will be used for scoring purposes.
c. Each response is worth three points each.
d. Answers will be recorded in the Identification section on the back of the scan sheet.

3. Soils and Soil Nutrient Management – 100 points, 50 minutes

This component will be no more than 50 question related to soils and soil nutrient management. The following is a list of possible content areas. The contest provider may create any question that relates to these content areas:

a. Soil textures and soil structures.
b. Analyze soil monoliths and answer questions relative to age (e.g., young, mature, old)
    i. drainage (e.g., poor, moderate, well)
    ii. soil color
    iii. horizons
    iv. structures
    v. etc.

c. Soil Color
d. Organic content
e. Capability
f. Land capability classes and problem solving questions related to various classes
g. Soil maps
h. Soil nutrients
i. Fertilizers
j. Soil nutrient management
k. Soil management

Each response is worth two points each**.** Answers will be recorded in the Soils Section of the scan sheet.

4. **Assessments and Solutions – 220 points, 50 minutes**

This section of the contest will be an activity based and questions component. The purpose of this component is to create some problems that participants will have to solve as well as possibly answer questions related to the problems. Additionally, there will be two crop judging classes that participants will evaluate.

a. **Solutions – 100 points**
   i. The solutions will be worth 10 points each and will be recorded in the solutions section of the scan sheet.
   ii. There will a possibility of up to 10 solutions.
   iii. The solutions can come from any of the following areas; seeding and fertilizer application rates, fertilizer calculations, acreage calculations, tillage rates, grain grading calculations (determine a grain grade from provide flow charts), crop diagnosis from crop reports, and soil diagnosis from soil survey reports.

b. **Assessments – 20 points**
   i. The assessments will be worth two points each and will be recorded in the assessment section of the scan sheet.
   ii. There will be a possibility of up to 10 assessments.
   iii. The assessments will be general knowledge type questions related to the solutions that the participant will be solving.

c. **Judging classes – 100 points**
   i. There will be two classes of four crop samples from the crops identification list. Students will rank the four samples in proper order for quality of samples.
   ii. The placings will be recorded in the judging class section of the scan sheet.

5. **Pest Identification – 200 points, 50 minutes**

This component will consist of identifying insects and plant disorders. Additionally students will have to identify characteristics related to the individual insect and plant disorder.

a. **Insect Identification- 100 points**
   i. Students will identify 10 insects worth four points each from the insect identification list.
   ii. Students will also have to identify the following characteristics related to each insect identified:
      a. Economic Impact – two points each
      b. Life Cycle – two points each
      c. Mouth Part – two points each
   iii. Response will be recorded on the back of the scan sheet in the insect

section.

b. **Plant Identification – 100 points**

Ten samples worth 10 points each will be identified according to causal category (worth 4 points), causal agent (worth 3 points) and damage location (worth 3 points). Refer to the Agronomic Disorders Page for the category, agent and damage location lists.

II. SCORING

General Knowledge Exam	150 pts
50 minute Identification: Plant and/or Seed	150 pts
50 minute Soils and Soil Nutrient Management	100 pts
50 minute Assessments and Solutions	220 pts
50 minute Pest Identification	200 pts
TOTAL INDIVIDUAL SCORE	**820 pts**
TOTAL TEAM SCORE	**2,460 pts**

III. TIE BREAKER

Individual ties will be broken using the following tiebreakers.

1. Highest score on the General Knowledge Exam
2. Highest score on the Identification
3. Highest score on the Soils
4. Highest score on the Assessment and Solutions
5. Highest score on the Pest Identification
6. If individuals are still tied, they will be accompanied by their coach and will meet with contest officials who will conduct a coin toss to determine the higher placing individual

Team ties will be broken using the following tiebreakers.

1. Highest score on the General Knowledge Exam
2. Highest score on the Identification
3. Highest score on the Soils
4. Highest score on the Assessment and Solutions
5. Highest score on the Pest Identification

IV. References

Texas Agronomy Insect List, Crop Plant/Seed List, and Weed/Plant/Seed Lists can be found on JudgingCard at this link:
www.judgingcard.com/resources/list.aspx

POSSIBLE ANSWERS FOR INSECT IDENTIFICATION

Economic Impact

- None or predatory
- Fruit/flower destruction
- Vegetative part destruction
- Removal of plant fluid

Mouth Parts

- Chewing

- Chewing-lapping
- Rasping-sucking
- Piercing-sucking
- Siphoning

Life Cycle

- Complete
- Incomplete
- None

POSSIBLE ANSWERS FOR AGRONOMIC DISORDERS

Casual Category

- Cultural
- Biological
- Environmental

Agents

- Fungus
- Chemical
- Mechanical
- Nematodes
- Virus
- Bacterial
- Insect
- Nutritional
- Frost damage
- Wind or hail damage
- Drought or heat damage
- Moisture

Parts of Plant Damaged

- No damage
- Fruit or flower
- Vegetative parts
- Vascular bundles
- More than one area

- The following references are not intended to be all inclusive. Other sources may be utilized, and teachers are encouraged to make use of the very best instructional materials available. Make sure to use discretion when selecting website references by only using reputable, proven sites. The following list contains references that may prove helpful during event preparation. The most current edition of resources will be used.
- Past CDE materials and other resources are available by logging in to https://www.ffa.org/participate/cdes/agronomy
    - Plant Identification
        - Flash cards for both seeds and plants are available through Wards Natural Science Establishment at wardsci.com.
        - Weeds of the Northeast, Comstock Books, by Richard H. Uva (Author), Joseph C. Neal (Author), Joseph M. Ditomaso (Author).
        - Weeds of the Great Plains, Nebraska Department of Agriculture by James

L Stubbendieck (Author)
        - Weeds of the West**,** University of Wyoming Extension, by Tom D. Whitson (Editor)
        - Common Weed Seedlings of the North Central States**,** Michigan State University Extension
        - Sunset Western Garden Book
    - An Illustrated Guide to Arizona Weeds**,** University of Arizona, uapress.arizona.edu
    - Weeds of California and Other Western States University of California
    - Interactive Encyclopedia of Weeds of North America**,** North Central Weed Science Society
    - http://www.weeds.iastate.edu/reference/default.htm
    - http://plants.usda.gov/
    - http://weeds.cropsci.illinois.edu/weedid.html
    - http://www.ppws.vt.edu/weedindex.html
    - http://www.ipm.ucdavis.edu/PMG/weeds_multi.html
    - http://wssa.net/weed/weed-identification/
- Seed Identification
    - Illustrated Taxonomy Manual of Weed Seeds, North Central Weed Science Society
    - Weed Seeds of the Great Plains, University Press of Kansas
    - http://www.kscrop.org/resources/2009%20Weed%20Seed%20Photos.pdf
    - http://www.oardc.ohio-state.edu/seedid/
    - http://plants.usda.gov/
- Hay Evaluation
    - http://pods.dasnr.okstate.edu/docushare/dsweb/Get/Document-2556/PSS-2588web.pdf
- Vegetable / Seed Evaluation and Placing
    - http://www.gov.ns.ca/agri/4h/manuals/garden/unit6.pdf
- Disease / Disorder
    - http://plant-disease.ippc.orst.edu/image_index.cfm
    - http://plantpathology.tamu.edu/Texlab/index.html
- Insects:
    - http://pest.ca.uky.edu/EXT/master_gardener/entbasics/mouthparts/mouthparts.shtml
    - http://en.wikipedia.org/wiki/Insect_mouthparts
    - http://cals.arizona.edu/crops/images/insectidaz/index.html
- Soils:
    - http://www.nrcs.usda.gov/wps/portal/nrcs/soilsurvey/soils/survey/state/
    - http://websoilsurvey.nrcs.usda.gov/app/HomePage.html
    - http://www.nrcs.usda.gov/wps/portal/nrcs/soilsurvey/soils/survey/state/
    - http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/edu/?cid=nrcs142p2_054279
- Written Exam:
    - The best resource for the written exam is old exams available from the National FFA Organization. There is no one resource for the exam.
    - http://ohioline.osu.edu/b472/
    - http://www.extension.iastate.edu/Publications/SR48.html
    - http://extension.agron.iastate.edu/soybean/topicpage1.html
    - http://ams.usda.gov/gapghp
    - http:gaps.cornell.edu