

# 2007-2008

# AGRONOMY

Effective August 1, 2007

## **Purpose**

The agronomy career development event is designed to assess the student's knowledge of agronomic practices for the production of field and forage crops. A practical examination requires the student to identify specimens of crop and weed plants and seeds, diseases, and insects or their damage. An individual written test cover the use of soil test analysis and County Soil Surveys, current agronomic practices, and fertilizer, pesticide or sprayer calibration problems and their solution. A team evaluation will consist of an applied field management problem.

## **Date**

*State:* Set annually by the Agricultural Education Service

## **Location**

*State:* Spring State Contest Site

## **Contest Rules**

1. Each school may enter an unlimited number of dues-paid FFA members as participants, the highest placing 4 individuals will be considered the "team" and the top three individual scores added to the top team event score from their school will be the team score of record.

2. Each school may enter one team in the event.

3. Each contestant/team will be allotted sixty (60) minutes for each of the two (2) areas of the event.

The two areas will be broken down as follows:

1) Individual practicums

Plant Identification

Seed Identification

Insect Identification

Disease / disorder Identification

Written test Online Prior to the Event

2) Team event

4. Identification using live or mounted specimens on pins, specimens in vials, dried and mounted specimens, photographs or slides of the specimens, or any other similar presentation methods may be used.

5. Microscopes or magnifying viewing glasses are allowed where necessary for identification.

6. Non-programmable calculators are permitted for use during the written test and team event sections.

## **Event Format**

The event will consist of two areas.

1) Individual practicums

A. The identification of thirty (30) specimens to include 20 crop and weed plants and 10 insects or insect damages.

B. The identification of thirty (30) specimens to include 20 crop and weed seeds and 10 diseases/disorders and deficiencies.

C. A twenty-five question multiple choice test involving the following subjects:

Soil morphology

Nutrients and their role in plant development

Plant anatomy

Insect anatomy

Pesticide safety

Sprayer calibration

Crop species development (corn, soybean, wheat)

Calculations or questions from provided charts, seed tags, graphs, tables, soil test analysis or pesticide labels.

2) Team Event

3) Contestants will rotate through the two areas of the event.

4) Specimens for the event will come from the following lists:

## **PLANTS**

alfalfa

barley

barnyardgrass

bluegrass, Kentucky

bindweed (hedge or field)

canola

carrot, wild

chickweed, common

clover, red

clover, white

cocklebur, common

corn

crabgrass (large or smooth)

crownvetch

cucumber

dandelion

deadnettle, purple

dock, curly

dogbane, hemp  
 fescue, tall  
 foxtail (any)  
 garlic, wild  
 horsenettle  
 jimsonweed  
 johnsongrass  
 lambsquarters, common  
 horseweed / marestail  
 milkweed, common  
 morningglory (any *Ipomoea* sp.)  
 nightshade, black (eastern)  
 nutsedge, yellow  
 oats  
 orchardgrass  
 pennycress, field  
 pigweed (any *Amaranthus* sp.)  
 plantain, buckhorn  
 potato  
 quackgrass  
 ragweed, common  
 ragweed, giant  
 rye  
 ryegrass (annual or perennial)  
 shattercane  
 shepherd's-purse  
 smartweed (any)  
 soybean  
 squash  
 strawberry  
 sweetclover  
 thistle, Canada,  
 timothy  
 tomato  
 velvetleaf  
 wheat

## SEEDS

alfalfa  
 barley  
 barnyardgrass  
 bluegrass, Kentucky  
 buckhorn plantain  
 Canada thistle  
 canola  
 cocklebur, common  
 corn, dent  
 corn, pop  
 corn, sweet  
 crownvetch  
 cucumber  
 curly dock  
 dandelion  
 foxtail (any)  
 johnsongrass  
 jimsonweed

lambsquarters, common  
 morningglory (any)  
 oats  
 orchardgrass  
 pigweed (any *Amaranthus* sp.)  
 quackgrass  
 ragweed, common  
 ragweed, giant  
 red clover  
 red wheat  
 rye  
 ryegrass (annual or perennial)  
 shepherd's-purse  
 smartweed (any)  
 soybean  
 squash  
 sweetclover  
 tall fescue  
 timothy  
 tomato  
 velvetleaf  
 white clover  
 white wheat  
 wild carrot  
 wild garlic  
 yellow nutsedge

## INSECTS

Aphids  
 Armyworm (larvae or adult)  
 Beetle, bean leaf (adult)  
 Beetle, blister (adult)  
 Beetle, Colorado potato (larvae or adult)  
 Beetle, flea  
 Beetle, Japanese (adult)  
 Beetle, lady (adult or larvae)  
 Beetle, Mexican bean (larvae or adult)  
 Beetle, Spotted cucumber (southern corn rootworm) (adult )  
 Beetle, Striped cucumber (adult)  
 Cutworm (larvae or adult)  
 Damsel bug (adult)  
 European corn borer (larvae, adult or damage)  
 Grasshopper  
 Green lacewing (adult)  
 Leafhopper (adult or damage)  
 Rootworm, Northern corn (adult or damage)  
 Rootworm, Western corn (adult, larvae)  
 Stinkbug  
 Tarnished plant bug (adult)  
 Two-spotted spider mite (adult or damage)  
 Weevil, alfalfa (larvae, adult or damage)

## DISEASES and DEFICIENCIES

Spring Black Stem of Alfalfa  
 Corn Smut

## **DISEASES and DEFICIENCIES Cont.**

Corn Herbicide Damage Symptoms  
Gray Leaf Spot of Corn  
Nitrogen Deficiency on Corn (leaf only)  
Northern Corn Leaf Blight  
Phosphorus Deficiency on Corn (leaf only)  
Potassium Deficiency on Corn (leaf only)  
Powdery Mildew of Cucurbits  
Powdery Mildew of Red Clover  
Downy Mildew of Soybean  
Manganese Deficiency of Soybean (leaf only)  
Potassium Deficiency of Soybean (leaf only)  
Phytophthora Root Rot of Soybean  
Sclerotinia Stem Rot of Soybean  
Soybean Herbicide Damage Symptoms  
Sudden Death Syndrome of Soybean  
Ergot  
Fusarium Head Scab of Wheat or Barley  
Leaf Rust of Small Grains  
Loose Smut of Small Grains  
Powdery Mildew of Small Grains  
Septoria Leaf Blight of Wheat  
Tomato Spotted Wilt

## **Team Event**

### **Team Management Plan (75 points total, 60 minutes)**

125 points maximum for management plan  
Students will be provided a scenario of an agronomic situation in which they are to develop a management plan. Teams will be required to develop a written plan that addresses the question in the scenario. Teams will submit their written plan at the end of 60 minutes on the provided worksheet. This plan can include but is not limited to herbicide selection, fungicide selection, integrated pest management, rate calculations, field selection, variety selection, fertilizer and lime recommendations, drainage considerations and operating expenses and loans. The provided worksheet provided will have 20-25 questions that must be answered.

#### **Possible scenario:**

Your field measures 1500 ft. X 1750 ft. The field is a silt-loam soil type with a 3 percent slope and no previous drainage problems. You have all necessary equipment. The target plant population for this corn field is 24,000 plants per acre. The growing season is 120 days. Your current crop is a forage legume (i.e. alfalfa/red clover mix). You will rotate to a broadleaf crop following the

harvest of the corn. This field has the following weed problems: yellow foxtail, pigweed, velvetleaf, and field bindweed. Develop a management plan that includes but is not restricted to the following: the variety of corn, the amount of seed, projected yield, tillage system, weed control program, and fertilization plan. The following materials are provided as needed:

soil test analysis  
Ohio Agronomy Guide  
county soil survey  
seed tag information  
variety trial data  
herbicide, insecticide and fungicide labels  
seed, fertilizer, and herbicide costs  
plus any other pertinent information

## **Scoring Guide**

### **1. Individual**

Section 1 - 30 specimens (20 weed and crop - plants, 10 insects and damages) x 5 points = 150 points  
Section 2 - 30 specimens (20 weed and crop-seeds, 10 diseases and deficiencies) x 5 points = 150 points  
Section 3 - 25 question written test  
25 questions X 5 points = 125 points.  
**Total Possible** 425 points per individual.

### **2. Team**

Team evaluation worth 125 points  
There will be no more than 4 students making up a group for this team event.  
Schools may have more than one group.  
Schools having more than one group will have the highest score of all groups reported as the team event score.

Individual placings determined by individual practicum score.

Team placings determined by top three individual scores added to the team score.

**Total Possible** 1400 points

## **References**

*Applying Pesticides Correctly* and *Ohio Agronomy Guide*, Ohio Cooperative Extension.  
*County Soil Survey*  
[http://maize.agron.iastate.edu/corn\\_grows.html](http://maize.agron.iastate.edu/corn_grows.html)  
[http://www.extension.iastate.edu/pages/hancock/agriculture/soybean/bean\\_develop/](http://www.extension.iastate.edu/pages/hancock/agriculture/soybean/bean_develop/), Iowa State Extension.  
[www.cdms.net](http://www.cdms.net) (all pesticide labels)

**Other helpful resources...**

Weed Control Guide for Ohio and Indiana Field Crops pages 1-24. This guide has information that supports material covered in *Applying Pesticides Correctly*. It also has equations for pesticide application and sprayer calibration.

Study material for the disease and deficiency section can be found in the following references.

*Compendium of Corn Diseases*

*Compendium of Soybean Diseases*

*Compendium of Small Grain Diseases*

These are available from OSU bookstores and other bookstores in the Columbus campus area, or by contacting:

**The American Phytopathological Society**

3340 Pilot Knob Road

St. Paul, Minnesota 55121

*Wheat Disease Control in Ohio*, Ohio

Cooperative

Extension Bulletin 785

*Ohio Agricultural Education Curriculum*

*Materials Service Catalog*. Please consult this catalog for seed sets, insect sets, plant mounts as well as numerous quality slide series, filmstrips, pamphlets, computer software, student manuals and teacher guides covering many general and specific topics on field crops, insects, diseases and pests. Contact them at the following address:

**Ohio Agricultural Education**

**Curriculum Materials Service**

Room 254, 2120 Fyffe Road

The Ohio State University

Columbus, Ohio 43210-1067

Telephone: (614) 292-4848

FAX: (800) 292-4919 (24 hr/day)

Internet: [wwaideli@magnus.acs.ohio-state.edu](mailto:wwaideli@magnus.acs.ohio-state.edu)

**Web Site:** <http://ad254-5.ag.ohio-state.edu/OCMS>

**Special notes and helps!**

**Corn herbicide damage symptoms** may be prepared and usually are chosen from the following list:

Command, Balance and Callisto – turns corn white

Gramoxone Extra – burns and causes water-soaked spots

Banvel or 2,4D- fused brace roots

**Soybean herbicide damage symptoms** may be prepared and usually are chosen from the following list:

ALS Herbicide – turns veins red of some broadleaf species

Gramoxone Extra – burns and causes water-soaked spots

Balance – turns soybeans white

Banvel or 2,4D- twisted plants and cupped leaves.

Any questions about this Career Development Event should be directed to:

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