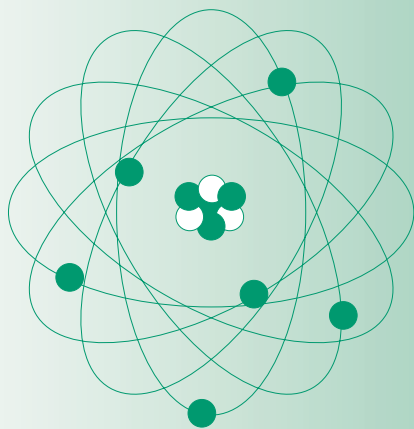


# National FFA Agriscience Fair

NATIONAL FFA AGRISCIENCE FAIR  
GUIDELINES AND PROCEDURES



*Ford Motor Company  
Fund*

# Award Objective

The National FFA Agriscience Fair recognizes middle and high school students who are studying the application of scientific principles and emerging technologies in agricultural enterprises. Participation begins at the local chapter level and progresses to the state and national levels. Areas of participation closely mirror those of the International Science and Engineering Fair but reflect an agricultural theme.

## GOALS

- Provide students with an opportunity to use the scientific process.
- Provide students an opportunity to achieve local, state and national recognition for their accomplishments in agriscience.
- Reinforce skills and principles learned in agriscience courses.

- Provide an opportunity for students to demonstrate and display agriscience projects that are products of their agriscience courses.
- Provide recruiting and promotional opportunities for agriscience programs

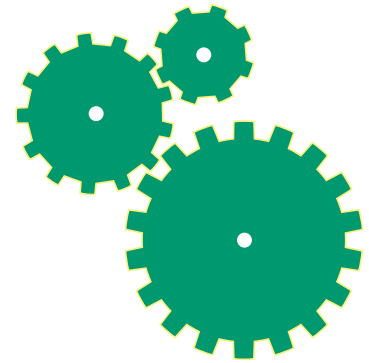
## RECOGNITION

**Chapter Level** - Winners may be selected annually in each FFA chapter. The winner may represent any of the agriscience category areas (based on state rules for competitions). Medals and certificates are available from the National FFA on the Medal Distribution Request form included in the Free Chapter Materials packet.

**State Level** - Winners from each division in all five categories may be selected annually in each of the chartered state associations. Each of those winners may then participate in the appropriate areas on the national level.

**National Level** - Winners from each state may be forwarded for national competition. A national winner will be selected in each division. National winners will be presented with ribbon rosettes and plaques.

Additional awards may become available as funded by special project sponsors above and beyond the core sponsorship for the National FFA Agriscience Fair. They may include, but are not limited to, scholarships and cash awards to division winners in each category. These awards will be **appropriate** for each division, not necessarily equal or identical.



# Categories

The following are the categories for the National FFA Agriscience Fair:

## I. BIOCHEMISTRY/ MICROBIOLOGY/FOOD SCIENCE

This involves the biology of microorganisms such as bacteriology, virology, protozoology, fungi bacterial genetics, and yeast. This area can also include the following: Chemistry of life processes such as molecular biology; molecular genetics; enzymes; photosynthesis; protein chemistry; food chemistry; hormones, etc.

### Examples:

- Compare yeast fermentation techniques for converting sugars to alcohol
- Resistance of organic fruits to common diseases
- Control of molds on bakery products

## II. ENVIRONMENTAL SCIENCES

The study of pollution (air, water and land) sources and their control. Other areas of ecology would be applied here.

### Examples:

- Effect of agricultural chemicals on water quality
- Effects of cropping practices on wildlife populations
- Compare irrigation systems for energy efficiency
- Research uniform water quality standards
- Compare water movements through different soil types

## III. ZOOLOGY (ANIMAL SCIENCE)

The study of animals including animal genetics, ornithology, ichthyology, entomology, animal ecology, paleontology, cellular physiology, animal husbandry, cytology, histology, animal physiology, invertebrate neurophysiology, studies of invertebrates, etc.

### Examples:

- Compare nutrient levels on animal growth
- Research new disease control mechanisms
- Effects of estrous synchronization on ovulation
- Compare effects of thawing temperatures on livestock semen
- Effects of growth hormone on meat/milk production

#### IV. BOTANY (PLANT/SOIL SCIENCE)

The study of plant life such as agriculture, agronomy, horticulture, forestry, plant taxonomy, plant physiology, plant pathology, plant genetics, hydroponics, algae, etc.

##### Examples:

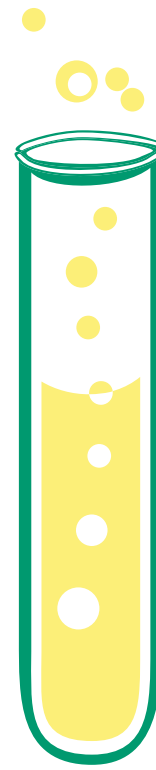
- Effect of substrate particle size on shiitake mushroom growth
- Effects of heavy metals such as cadmium on edible plants
- Effect of ultraviolet light on soil microbes
- Effects of lunar climate and soil condition on plant growth
- Compare plant growth between hydroponics and conventional methods

#### V. ENGINEERING (MECHANICAL/ AGRICULTURE ENGINEERING SCIENCE)

This area includes technology and projects that directly apply scientific principles to manufacturing and practical uses such as mechanical, chemical, electrical, environmental engineering, etc.

##### Examples:

- Develop alternate energy source engines
- Absorption media for plant materials
- Compare various tillage methods for energy efficiency
- Investigation of light energy sources



## Eligibility Requirements

1. Competition is open to all FFA members in grades 7-12. There are four divisions. Division I is open to individual members in grades 7, 8 and 9. Division II is open to individual members in grades 10, 11, and 12. Division III is for teams of two members in grades 7, 8, and 9. Division IV is for teams of two members in grades 10, 11 and 12. The students grade level is determined by the age of the member at the time of qualification at the state level. States with qualifying competitions may have up to 20 entries, one in each category, in each division. For example: A state may have an entry in Zoology in Divisions I, II, III and IV. You may not have more than one entry in a division. Participant must be an FFA member.
2. There are five categories. They are Biochemistry/Microbiology/Food Science; Environmental Sciences; Zoology; Botany; and Engineering. See previous explanations for more information.

3. Each member and/or team may enter only one project. A team is a maximum of two members working cooperatively on the same project. Students participating in the Agriscience Student Scholarship and Recognition Program may participate in the National FFA Agriscience Fair. Successive year projects must indicate change or growth in the project from the previous year(s) in the log books. Displays must reflect the current year's work only.
4. Each participant is required to meet with the judges to explain their project. Explanation and questioning may not exceed fifteen minutes. Students with conflicts due to participation in other national events will need to choose only one event in which to participate. No exceptions will be made due to participation in other events (i.e. National Band or Chorus, Career Development Events).

5. States may enter one project in each area that they have a state winner, this is a maximum of twenty entries for states with a qualifying competition. In the case that a state does not have a state qualifying competition, the maximum number of entries will be ten. No entries from a state may compete against each other in the same division at the national level.
6. Exhibited projects and project reports shall be the result of the student(s) own efforts.

#### SAFETY RULES\*

1. If an exhibit becomes unsafe or unsuitable for display, it will be removed and deemed ineligible for any awards.
2. Projects involving vertebrate animal subjects must conform with the following statement: Experiments on live animals involving surgery, the removal of parts, injection of harmful chemicals, and/or exposure to harmful environments, are

not acceptable at the National FFA Agriscience Fair. Live vertebrates are not permitted at the fair.

3. Toxic and hazardous chemicals are prohibited.
4. All necessary chemical glassware must be displayed in a stable manner. The items must be back from the edge of the table and may not be operational at any time.
5. Students should substitute colored water, photographs or drawings for chemicals.
6. Crystals, other than sucrose (sugar) and sodium chloride (salt), may not be displayed. Projects involving crystals can be represented by pictures or other three-dimensional models.
7. Hypodermic needles and syringes may not be displayed in any exhibit at the National FFA Agriscience Fair.
8. It is critically important that no person be exposed to any bacteria that are considered pathogenic. Therefore, the following two rules are very important: No wild cultures incubated above room temperature; no cultures taken from humans or other warm blooded animals may be used. This includes, but is not limited to skin, throat and mouth.
9. Plastic petri dishes must be used and must be sealed.
10. Lasers may not be used in any exhibit.

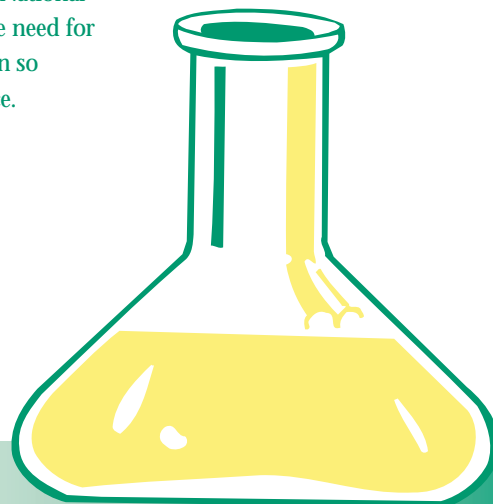
11. Dangerous and combustible materials are prohibited.
12. No exhibit shall have open flames. Any part of an exhibit that can get hotter than 100 degrees Celsius (boiling water temperature) must be adequately protected from its surroundings.
13. If an exhibit includes electrical wiring or devices, they must be safe. For voltages above 20 volts, special precautions must be taken. All connections must be secure and provide suitable protection against short circuits, etc.
14. All wiring carrying more than 20 volts must be well insulated. Also, the connections must either be soldered or secured by UL approved fasteners. The wire used must be insulated adequately for the maximum voltage that will be present and the wire must be of sufficient size to carry the maximum current you anticipate. Open knife switches or doorbell-type push buttons in circuits using more than 20 volts may not be used.
15. If the exhibit will be connected to 120 volt AC power (plugged into a wall outlet) fuses or circuit breakers must be provided to protect not only the exhibit but also any others that may share the same sources of power. The power cord used must be UL approved for the voltage and current it will be carrying, and it must be at least 1.8 meters (6 feet) long. National FFA staff must be notified of the need for power at the time of certification so power can be ordered in advance.

16. Exhibits requiring voltage in excess of 120 volts AC are not allowed.

\* See Agriscience Handbook for additional safety recommendations.

## DISPLAY REQUIREMENTS

1. Each exhibit may consist of one or more panels of information and any objects the student wishes to display. The exhibit panels must be constructed so as to be stable and free standing. The exhibit panels may be of poster board or foam core construction.
2. The official maximum size for a project is 48 inches wide by 30 inches deep (the distance from front to back) by 108 inches high (from floor to top, includes table if project is on table top).
3. All projects must have the following information attached to the upper right hand corner of the exhibit:
  - Name of person(s) responsible for developing project
  - Chapter Name, State
  - Title of category entered
  - Division entered (I, II, III, or IV)



# Agriscience Fair Application Form

This form may be used by states to identify individuals who are interested in participating in the National Agriscience Fair. This application form should be completely filled out and submitted to the state FFA office by the appropriate due date for your state. This form does not guarantee entry in the National Agriscience Fair. Each state may set its own standards or qualifications for participation.

## ONE ENTRY PER FORM. COPY FOR ADDITIONAL ENTRIES AS NEEDED.

Name \_\_\_\_\_ Career Goal \_\_\_\_\_

Parent or guardian name \_\_\_\_\_

Home Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Home Telephone (    ) \_\_\_\_\_ School Telephone (    ) \_\_\_\_\_

FFA Chapter \_\_\_\_\_

Chapter Number \_\_\_\_\_

Ag Instructor(s) \_\_\_\_\_

Year in School:    7    8    9    10    11    12    (at time of qualification)

School \_\_\_\_\_

School Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Project Title \_\_\_\_\_

- Category:     Biochemistry/Microbiology/Food Science  
               Environmental Sciences  
               Zoology  
               Botany  
               Engineering

- Division:     One (Individuals in grades 7-8-9)  
               Two (Individuals in grades 10-11-12)  
               Three (Team of two in grades 7-8-9) \*Please fill in information below  
               Four (Teams of two in grades 10-11-12) \*Please fill in information below

Fill in information below for second member of team: (Leave blank if individual)

Name \_\_\_\_\_ Career Goal \_\_\_\_\_

Parent or guardian name \_\_\_\_\_

Home Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Home Telephone (    ) \_\_\_\_\_

Year in School:    7    8    9    10    11    12    (at time of qualification)

# Agriscience Fair Score Sheet

Each category is to be scored from 0-10, with 10 being a perfect score. The total possible score for the entire sheet is 100 points.

Participant \_\_\_\_\_

Category \_\_\_\_\_ Division \_\_\_\_\_

## SCORE CATEGORY

\_\_\_\_\_ **Knowledge Gained**- Is there evidence the student has acquired scientific skills and/or knowledge by doing this project? Does the exhibitor recognize the scope and limitation of the problem he or she has selected?

\_\_\_\_\_ **Scientific Approach**- Has a scientific approach been made to the problem? Has the exhibitor solved the problem by using scientific facts as a basis for new conclusions? Is the exhibitor aware of the basic scientific principles that lend support to the methods used and the conclusions reached?

\_\_\_\_\_ **Experimental Research**- Has data been gathered from work done by the student, rather than the results from the work of others? Is the exhibitor's equipment effective? Does it do what it was intended to do? Can the research be the basis for further experimentation? Is the project actually a model or demonstration?

\_\_\_\_\_ **Individual/Team Work**-Has material been gathered from a variety of sources and cited? Is the log book present for examination? If a team, is evidence of collaboration present? Can the portions of the presentation representing the work of others be identified?

\_\_\_\_\_ **Thoroughness**-Is the exhibitor aware of the empirical method (the necessity of repeating trials) and the importance of controlling the variables in the experimentation in order to reach valid conclusions? Has the analysis of the problem been orderly? How successfully was the original plan carried through to completion?

## SCORE CATEGORY

\_\_\_\_\_ **Information**-Are known facts and principles stated correctly and used accurately? Have the results of experiments been reported accurately even though faulty experimental methods or conditions may have made the data unreliable? If so, have these errors been noted? Is the data complete or at least based on random, rather than selected sampling?

\_\_\_\_\_ **Conclusions**-Has the student started with known facts and drawn their own conclusions? Are the conclusions consistent with the data and/or observations?

\_\_\_\_\_ **Written Project Report**- Are all components of the written report available? Has the exhibitor made thorough use of the data, literature cited, interviews, correspondence, etc. and noted them properly? Considering the age and experience of the exhibitor, does the project make use of their abilities?

\_\_\_\_\_ **Interview**-Is the exhibitor able to successfully communicate their knowledge on the project?

\_\_\_\_\_ **Visual Display**-Has the data been presented in the best manner for the particular type of information involved? Are spelling errors present? Does the exhibit demonstrate a general neatness and attractiveness? Is the display presented in a logical and interesting manner?

\_\_\_\_\_ **Total score**

Final Placing \_\_\_\_\_

# Project Components

## LOG BOOK

A log book is your most important piece of work. It will contain accurate and detailed notes of a well-planned and implemented project. Your notes should be a consistent and thorough record of your project. This will be one of your greatest aids when writing your paper.

## PROJECT REPORT

You will be required to submit a written project report. It must include the following:

- **Title Page.** Include the project title, your name, address and chapter.
- **Table of Contents.** Reference each section of your paper.
- **Abstract.** The abstract should be a maximum of one page in length. It should include a brief statement of purpose, procedures used, data collected and conclusions drawn. It may also include possible research applications or future research.
- **Introduction.** This should include the problem statement, your hypothesis, and an explanation of what prompted your research and what you hoped to achieve.
- **Materials and Methods.** Describe the methodology used to collect your data or make your observations. This should be descriptive enough to allow someone else to replicate your experiment. Include a list of materials and equipment used.
- **Results.** A factual presentation of the outcomes of your study. These may be presented in tables and charts.
- **Discussion and Conclusion.** Draw conclusions from the results of your study and relate them to your original hypothesis. Be thorough. Allow the reader to see your train of thought, compare your results to commonly held beliefs or expectations. Offer sound reasoning for your results. If your results were not as expected, explain why in this section.
- **Acknowledgements.** Credit those who assisted you in your investigations. These may be individuals or businesses that provided guidance or materials.
- **Literature cited.** A list of published articles, books or other communications cited in your text. Use an accepted style guide for proper reference listings and footnotes.

## INTERVIEW

The interview will consist of a question and answer period between the student and judge(s). The maximum time limit for the interview is 15 minutes. Judges are impressed with those students who can speak freely and confidently about their work. They are not interested in memorized speeches, they simply want to talk about the research to see if the competitor(s) have a good grasp of the project from start to finish. Besides asking the obvious questions, judges often ask questions to test insight into the project such as “What wasn’t done?” and “What would be the next step?”

## DISPLAY

Your display should be eye-catching and informative. Keep it simple so judges and others can quickly assess and understand your project and the results you achieved. Use clear language and captions to explain photos, graphs and other items. Make the headings stand out. Draw and clearly label graphs and diagrams. Use photographs to show the stages of your project or to depict items that may not be safe to exhibit or would be costly to transport or replace if lost or damaged.

Be sure to follow all rules relating to display requirements. Projects may be removed from competition if the guidelines are not followed.

## JUDGING

Judges evaluate 1) how well the scientific method was followed; 2) the detail and accuracy of the log book and project report; and 3) whether tools/equipment were used in the best possible way. Judges look for well thought-out research. They look at how significant the project is in its field as well as how thorough the research is. The three components of the project: written report, interview and display, are all evaluated to determine the final placing of the exhibits.

