Tennessee Agriscience Fair Award Program

National FFA Organization

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for the National FFA Agriscience Fair Program.

Refer to the Agriscience Fair Program webpage at FFA.org/participate/awards/agriscience-fair for the most up-to-date edition of the handbook.

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FFA Vision
Growing the next generation of leaders who will change the world.

FFA Mission
FFA makes a positive difference in the lives of students by developing their potential for premier leadership, personal growth, and career success through agricultural education.

FFA Code of Conduct
FFA members participating in National FFA programs understand and agree to abide by the National FFA Code of Conduct at: https://ffa.app.box.com/s/x6l21kovv4x9tgiegy73mei30zvlip5i

Guiding Principles

National FFA believes that awards and competitive events should:

1. Be inclusive and engaging for all students and FFA members.
2. Provide awards and recognition opportunities for students at all levels.
3. Inspire members to explore, learn, and be prepared for future careers related to the AFNR career pathways and FFA AFNR Value Chain.
4. Recognize achievements in skill development and knowledge, including:
    a. leveraging relevant technologies
    b. utilizing creative problem-solving
    c. meeting developmentally appropriate learning objectives (Bloom's Taxonomy)
    d. utilizing employability skills (teamwork, communication, collaboration)
5. Work with other groups to utilize or partner with existing experiences.
6. Provide feedback that promotes personal and professional growth.

Agriculture, Food, and Natural Resources (AFNR) Career Cluster Content Standards

The National Council for Agricultural Education has provided permission to the National FFA Organization to use the National AFNR Career Cluster Content Standards in the development of their educational resource materials. The National Council for Agricultural Education is the owner and developer of the National AFNR Career Cluster Content Standards © 2016 and reserves all rights to the original material used here with permission. In addition, the National Association of State Directors of Career and Technical Education/National Career Technical Education Foundation (NASDCTE/NCTEF) has provided permission to use the Common Career and Technical Core (CCTC) Standards in support of this Program. NASDCTE/NCTEF are the owners and developers of the Common Career and Technical Core (CCTC) Standards © 2012 and reserve all rights to the original material used here with permission.

The National AFNR Career Cluster Content Standards are a guide to developing a well-planned curriculum in agriscience education to be delivered to students throughout the country. For a complete set of the standards, please visit the 2016 AFNR Career Cluster Content Standards.

The National FFA Organization has adopted the AFNR Career Cluster Content Standards and integrated them into national award and recognition programs for the benefit of members, school administration, and agriculture as a whole.

Introduction

Program Purpose

The National FFA Agriscience Fair recognizes students engaged in outstanding experimental developed as a part of classroom instruction. Students in this award area use scientific principles and emerging technologies to solve complex problems related to agriculture, food, and natural resource systems. The agriscience fair is for students in grades 7-12. Participation begins at the local level and progresses to state and national levels.

Selecting a Topic and Developing a Project

The agriscience fair is designed to award outstanding experimental research projects. Outstanding experimental research projects are those that ask a question that cannot be answered by a quick internet search, apply the scientific method to answer the question, and come up with practical recommendations that have meaningful impact on those involved in the agriculture, food, and natural resource industries.

Developing a quality agriscience project includes and requires

- Focusing on an important agricultural issue, question, or principle.
- Specific research objectives.
- Using a number of steps.
- Following a scientific process to collect and analyze data.
- Student commitment to a moderate or substantial amount of time.
- Teacher supervision.

Pathway Descriptions

Student researcher(s) can compete in the national agriscience fair in one of six pathways:

- Animal Systems.
- Environmental Service/Natural Resource Systems.
- Food Products and Processing Systems.
- Plant Systems.
- Power, Structural and Technical Systems.
- Social Science.

Pathways are determined by which agricultural system would be most interested in the experiment's practical recommendations. For instance, if a student tests the width of buffer strips adjacent to corn fields to filter out sediments, the project would be in Environmental Service/Natural Resource Systems because the largest impact would be on the stream system and aquatic organisms living in the stream.

Biotechnology Systems is the study of using data and scientific techniques to solve problems concerning living organisms with an emphasis on applications to agriculture, food, and natural resource systems. Because of this, biotechnology research is incorporated into all pathways listed depending on the study conducted. Biotechnology Systems is not its own pathway.

Animal Systems (AS)

The study of animal systems, including life processes, health, nutrition, genetics, management, and processing, through the study of small animals, aquaculture, livestock, dairy, horses, and/or poultry.

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

Environmental Services/Natural Resource Systems (ENR)

- Environmental Service Systems: The study of systems, instruments and technology used to monitor and minimize the impact of human activity on environmental systems.
- Natural Resource Systems: The study of the management, protection, enhancement and improvement of soil, water, wildlife, forests, and air as natural resources.

- ENR research involves only non-invasive and non-intrusive methods that do not negatively affect a vertebrate animal's health or well-being. Studies that are designed or anticipated to cause vertebrate animal death are prohibited.

Examples

- Effect of agricultural chemicals on water quality
- Effects of cropping practices on wildlife populations
- Compare water movements through different soil types

Food Products and Processing Systems (FPP)

The study of product development, quality assurance, food safety, production, regulation and compliance and food service within the food science industry.

Examples

- Effects of packaging techniques on food spoilage rates
- Resistance of organic fruits to common diseases
- Determining if varieties of sweet corn have different chemical energy
- Control of molds on bakery products
- Effects of the amount of sucrose used in baked goods
- Use of a triangle test in sensory science

Plant Systems (PS)

The study of plant life cycles, classifications, functions, structures, reproduction, media, and nutrients, as well as growth and cultural practices, through the study of crops, turf grass, trees and shrubs and/or ornamental plants.

Examples

- Compare the rates of transpiration of plants in different locations in a landscape
- Effects of heavy metals such as cadmium on the growth rate of plants
- Compare GMO and conventional seed/plant growth under various conditions
- Effects of lunar climate and soil condition on plant growth
- Compare plant growth of hydroponics and conventional methods

Power, Structural and Technical Systems (PST)

The study of agricultural equipment, power systems, alternative fuel sources and precision technology, as well as woodworking, metalworking, welding, and project planning for agricultural structures.

Examples

- Compare the energy output of alternative fuel sources to traditional forms
- Create minimum energy use structures
- Compare properties of various alternative insulation products
- Examining the efficiency, the configurations of ventilation systems in a swine facility

Social Science (SS)

The study of agricultural areas including agricultural education, agribusiness, agricultural communication, agricultural leadership and sales in agriculture, food, and natural resources.

Examples

- Investigate perceptions of community members toward alternative agricultural practices
- Determine the impact of local/state/national safety programs upon accident rates in agricultural/natural resource occupations
- Comparison of profitability of various agricultural/natural resource practices
- Investigate the impact of significant historical figures on a local community
- Determine the economic effects of local/state/national legislation impacting agricultural/natural resources
- Consumer confidence and understanding of food labels
- Economic effect of employment rate and meat consumption

Understanding the Award Program

Eligibility of Participants

Membership

Each participant must be a current dues-paying FFA member in good standing with the local chapter, state FFA association and National FFA Organization during the school year in which the participant is qualified to participate at the national level.

The participant, at the time of their selection as a national participant, must be

- An FFA member in grades 7–12 during the school year in which the participant qualified to participate at the national level. A graduating senior is considered eligible to compete at the state and national level up to and including their first national convention following graduation.
- Enrolled in at least one agricultural education course during the school year in which the participant qualified to participate at the national level and/or follow a planned course of study. Either course must include a supervised agricultural experience program, the objective of which is preparation for an agricultural career.

Each member and/or team may enter into only one project. Exhibited projects and written reports will be the result of the student's own efforts. A team is a maximum of three members working cooperatively on the same project. Teams can be made up of two or three students in different grades but will compete at the grade level at which the older participant would qualify.

If a student moves to a different chapter or a different state once they have qualified as a state representative in the agriscience fair, that student may be allowed to compete in the national event with the school they qualified with during the qualifying year. Team members must be from the same chapter at the time of qualification.

Once a student is placed in the top six in the nation of a grade level and pathway, they can no longer compete in that grade level and pathway regardless of the research subject.

> ***Example #1:*** *If a student placed in the top 6 of the Animal Systems Pathway as a 7th grader, they can no longer participate in Animal Systems Pathway as an 8th grader. They can compete in Animal Systems Pathway as a 9th grader or even Animal Systems Pathway as an 11th grader.*
>
> ***Example #2:*** *If a 7th grader is on a team with a 9th grader, competes in Animal Systems Pathway for grades 9-10 and places in the top 6 of the Animal Systems Pathway as a 7th grader, the 7th grader can no longer participate in Animal Systems Pathway for grades 7-8 even when the member becomes an 8th grader. They can compete in Animal Systems Pathway as an 11th grader.*

- Students who wish to continue research on the same topic or who have won a grade level and pathway are encouraged to seek additional recognition using the National FFA Research SAE Award Program or the American Star Award Program.
- Students may compete in another agriscience fair grade level/pathway within the agriscience fair.
- Students may not participate in more than one grade level or pathway of the agriscience fair each year.

Team Projects

1. Team projects compete and are judged in the Pathway of their research. All team members must meet the eligibility requirements.
2. Teams must have no more than three members from the same FFA Chapter.
3. Each team is encouraged to appoint a team leader to coordinate the work and act as spokesperson. However, each member of the team should be able to serve as a spokesperson, be fully involved with the project, and be familiar with all aspects of the project. The final work should reflect the coordinated efforts of all team members and will be evaluated using the same judging criteria as individual projects.

Grade Levels

The National FFA Constitution provides flexibility to meet the needs of all students. The competition is open to all FFA members in grades 7–12. There are three Grade levels:

- **Grades 7 and 8**
- **Grades 9 and 10**
- **Grades 11 and 12**

- The grade is determined by the grade level of the member at the time of qualification at the state level. If a team is composed of two or three members that span two or three grade levels, the team must compete in the grade level in which the oldest student qualifies. For example, a team of two members in grades 10 and 11 must compete in Grade Level 11-12. One FFA chapter may have up to 18 entries, one in each pathway and each Grade Level. For example, a chapter may have an entry in Plant Systems in Grade Levels 7-8, 9-10, and 11-12. Chapters may not have more than one entry in a Grade Level/Pathway.

Submissions:
Chapters may submit up to 18 projects, one in each pathway and each Grade Level. FFA Chapters may not have more than one entry in a Grade Level/Pathway.

Rules

Project Rules

If you have any questions regarding policies and procedures, contact the National FFA Agriscience Fair program specialist at agriscience@ffa.org before beginning the research.

General

1. All studies not meeting the criteria of the National FFA Agriscience Fair, but are otherwise permissible, must be conducted in a Regulated Research Institution (RRI). A Regulated Research Institution is defined as a professional research/teaching institution that is regularly inspected by the USDA and is licensed to use animals covered by the Animal Welfare Act and may also be subject to U.S. Public Health Service Policy. Also included are federal laboratories such as National Institutes of Health and Centers for Disease Control. In addition, pharmaceutical and biotechnology companies and research institutions that utilize research animals that are not covered by the Animal Welfare Act but have been an operational Institutional Animal Care and Use Committee and are in compliance with U.S. federal laws are included in this definition. In these studies, proper documentation must be provided, and the project must be reviewed by the National FFA Organization prior to experimentation.
2. Student researcher(s) may use the findings of previous research to formulate their research hypothesis; however, the student researcher(s) will be evaluated on research they have conducted in the twelve months prior to June 15 annually.
3. A research project may be part of a larger study performed by professional scientists, but the project presented by the student researcher(s) must be only their own portion of the complete study.
4. Data may not be added to the research project after state-level selection. Projects may not have more than one year of data included. See “Extension of Agriscience Fair Projects” for additional information about extension projects.

Human Vertebrate

The following policies will govern the use of human beings in agriscience fair research projects:

1. No projects involving human cultures of any type (mouth, throat, skin or otherwise) are allowed. However, tissue cultures purchased from reputable biological supply houses or research facilities are suitable for the student researcher(s)’ use. Researchers should not use animals (including insects, birds, fish etc.) to represent human tissue. Research in health systems related to humans is beyond the scope of the agriscience fair.
2. Projects that involve taste, color, texture, or any other choice are allowed but are limited to preference only. Quantities of normal food and non-alcoholic beverages are limited to normal serving amounts or less. No project may use drugs, food, or beverages in order to measure their effect on a person.
3. The only human blood that may be used is that which is obtained through a blood bank, hospital, or laboratory. No blood may be drawn by any person or from any person specifically for an agriscience project. This rule does not preclude student researcher(s) making use of the data collected from blood tests not made exclusively for an agriscience project.
4. Psychological, educational and opinion studies are allowed. Projects that involve learning, ESP, motivation, hearing, and vision are also permitted (examples might include surveys, questionnaires, tests, etc.).
5. Data/record review studies in which the data is taken from preexisting data sets that are publicly available and/or published and do not involve any interaction with humans or the collection of any data from a human participant for the purpose of the research project are allowed.

6. No project will be allowed in violation of these rules. No person may perform any experiment for student researcher(s) that violates any of the rules.

Non-Human Vertebrate

The following policies will govern the use of non-human vertebrates in agriscience fair research projects:

1. The use of vertebrate animals in agriscience projects is allowable under the conditions and rules below. Vertebrate animals are defined as
    a. Live, nonhuman vertebrate mammalian embryos or fetuses.
    b. Tadpoles.
    c. Bird and reptile eggs within three days (72 hours) of hatching.
    d. All other non-human vertebrates (including fish) hatching or giving birth.
2. Vertebrate animal studies may be conducted at a home, school, farm, ranch, in the field, etc. This includes
    a. Studies of animals in their natural environment.
    b. Studies of animals in zoological parks.
    c. Studies of livestock that use standard agricultural practices.
    d. Studies of fish that use standard aquaculture practices.
3. Intrusive techniques used cannot exceed momentary pain and must comply with commonly accepted agriculture and livestock management procedures.
    a. Student researcher(s) are prohibited from designing or participating in an experiment associated with the following types of studies on vertebrate animals:
    b. Induced toxicity studies with known toxic substances that could cause pain, distress, or death, including but not limited to alcohol, acid rain, harmful chemicals, or heavy metals.
    c. Behavioral experiments using conditioning with aversive stimuli, mother/infant separation, or induced helplessness.
    d. Studies of pain.
    e. Predator/vertebrate prey experiments.
4. Food and water cannot be used or withheld for more than 24 hours for maze running and other learning or conditioning activities.
5. The student researcher(s) and advisor have the responsibility to see that animals are properly cared for in a well-ventilated, lighted, and warm location with adequate food, water, and sanitary conditions. Care must be taken to see that organisms are properly cared for during weekends and vacation periods.
6. Livestock or fish raised for food using standard agricultural/aquacultural production practices may be euthanized by a qualified adult for carcass evaluation.
7. No vertebrate animal deaths due to the experimental procedures, including hunting or harvesting animals are permitted in any group or subgroup.
    a. Studies that are designed or anticipated to cause vertebrate animal death are prohibited.
    b. Any death that occurs must be investigated by a veterinarian or another professional qualified to determine if the cause of death was incidental or due to the experimental procedures. The project must be suspended until the cause is determined and then the results must be documented in writing.
    c. If death was the result of the experimental procedure, the study must be terminated, and the study will not qualify for the National FFA Agriscience Fair.
8. Projects that involve behavioral studies or newly hatched chickens or other birds will be allowed, provided no change has been made in the normal incubation and hatching of the organism and all vertebrate rules are followed.

Hazardous Material

1. Material Safety Data Sheets (MSD Sheets) are required and must be included for all substances other than Water (H_2O) and Table Salt (NaCl).

2. All Hazardous substances used in the current year's research must be listed in the Hazardous Materials Form of the application.

Skills, Competencies and Knowledge

This section of the application is linked to the 2016 AFNR Career Cluster Content Standards (AFNR Standards) established by the National Council for Agricultural Education. This section of the application requires applicants to show how the included project meets AFNR Standards.

The application provides the opportunity to select 5 different indicators from the primary pathway you selected.

1. **A. Select up to 5 different primary pathway performance indicators you have gained skills, competencies, or knowledge in through your project. –** This table in the application is controlled by the primary pathway selected on the application's Basic Setup page. If you decide the offered indicators do not match your project well, consider returning to the Basic Setup page and choosing a more appropriate primary pathway.

   If you find that no AFNR Indicators match your project well, you should consider whether your project is actually within any agriculture, food, or natural resource pathway.

   a) **AFNR Performance Indicator from Primary Pathway—**From the drop-down menus, select up to five indicators that match your project.

   b) **Specifically describe the activities performed to learn or demonstrate the performance indicator selected. –** Concisely and clearly explain what you did that directly and clearly relates to the selected indicator. Describe how the activity contributed to the success of the included project and how it demonstrates performing the selected indicator.

TIP: The written description needs to match the selected indicator directly and closely.

TIP: Do not be repetitive. Do not select the same indicator more than once and do not describe the same activity more than once.

Checklist

The application includes an automated checklist to help find errors or information missing from the application. It will not find every possible error. A clean checklist does not guarantee that the application will not be penalized.

1. NOT MET, MISSING or ERROR **–** The application cannot be submitted for national-level competition if there are any "Not Met," “Missing” or “Error” items in red font on the checklist. This signifies incorrect or missing information that may prevent the application from qualifying.

2. REVIEW **–** A checklist item that says “Review” in red font is not an error and may be fine. The checklist is simply calling attention to information in the application that should be double-checked. Applicants are advised to make sure the information the item points to is clearly explained in the application.

3. **MET –** Ideally, all items on the checklist should say “Met” in green font. This does not mean the application is perfect and without errors. It does mean everything the computer can automatically check for has been cleared.

TIP: Computers are not as smart as people. The computer can check whether or not a box contains text or numbers; it cannot determine if the text or numbers are correct information. A clean checklist does not guarantee that the application has no errors.

Electronic Signatures

Carefully read the signature statements before electronically signing the application. Commitments are being made for all signatories — know what you are signing.

1. **Student Approval –** This is the signature of the applicant. Information can only be entered when the applicant is correctly signed into their electronic account.

1. **Advisor Approval –** This is the signature of the supervising agricultural education teacher/FFA advisor. The advisor’s signature is required to verify and certify the application. The advisor must sign in to their electronic account to enter information here.

2. **Request for Parent/Guardian Approval –** This area is for the parent/guardian to certify the information in the application and give permission for information to be used.
   a) Enter the email address of the parent/guardian whose signature is being requested and click the "Request Signature" button. The application will send an email to that address.
      The parent/guardian must open the email message, click the link, and follow the instructions to sign the application electronically.

   b) **Adult Sponsor –** This signature is for the adult sponsor or supervisor to verify that the application information is accurate.
      Enter the email address of the "Adult Sponsor" whose signature is being requested and click the "Request Signature" button. The application will send an email to that address.

      The Adult Sponsor must open the email message, click the link, and follow the instructions to sign the application electronically.

Save Your Application

Judges do not access the live online application. The live application can be constantly accessed by applicants and is ever-changing. The document that judges review is the specific, time-stamped PDF version of the application that is generated and submitted. If no PDF of the application is generated by completing the following steps, there is nothing to be submitted or judged.

1. **Complete/Save Your App –** The button labeled "Complete/Save Your App" is how application PDF versions are generated (created). This generated PDF is what is submitted and judged. As versions are generated, they are listed in the table on the screen. Which version to submit is chosen by the applicant.

1. **Get PDF –** To view the generated application, click the "Get PDF" button next to each listed version. What you see when you open this file is what is being submitted for the judges to review, possibly minus some pages depending on your state *(see details below in the Application Submission and Judging sections).*

Application Submission

Applications and manuscripts are due on theAET website or the National FFA application center by March 1st. A video instructions is on the tnffa.org website.

Extension of Agriscience Fair Projects

The completion of a research project can generate additional research questions that are worthy of investigation. Research projects lasting more than 12 months should consider submitting the multi-year research projects to the National FFA SAE Awards Program.

However,

1. As in the professional world, research projects may build on work performed previously. A valid continuation project is a sound scientific endeavor. Students will be judged only on laboratory experiment/data collection performed over 12 continuous months.
2. Any project based on the student's prior research could be considered an extension project. These projects must document that additional research is a substantive expansion from prior work (e.g., testing a new variable or new line of investigation). Repetition of previous experimentation with the same methodology and research question, even with an increased sample size, is an example of an unacceptable continuation.
3. The report and abstract must reflect the current year's work only.
4. Longitudinal studies are permitted as acceptable continuations under the following conditions:
   a. The study is a multi-year study testing or documenting the same variables in which time is a critical variable. (Examples: Effect of high rain or drought on soil in a given basin, return of flora and fauna in a burned area over time.)
   b. Each consecutive year must demonstrate time-based change.
   c. The report must be based on collective past conclusionary data and its comparison to the current year data set. No raw data from previous years may be reported.
   d. All projects must be reviewed and approved each year, and forms must be completed for the new year.

Multiple Research Projects from a Chapter

If more than one agriscience project is entered from the same chapter and/or school, then projects must differ in

- Research hypotheses (questions or objectives).

- Findings related to the research hypothesis (questions or objectives).
- Conclusions.
- Recommendations.
- Student researcher(s) (each student researcher may only participate in one project).

Each of the published authors must have made a unique and substantial contribution to the research endeavor. It is standard that peripheral contributions be acknowledged (i.e., the student researchers would like to thank Mrs. Smith's Seventh Period Animal Science Class for their assistance in…).

Disqualification

A project will be disqualified if

1. Teams or participants arrive after the designated interview time.
2. Any assistance is given to a team or participant from any source other than the Agriscience Fair officials or assistants once judging has begun.
3. Agriscience Fair officials stop any participants for manners they deem to be hazardous to themselves or others. Such removal will constitute immediate disqualification.
4. The participant does not complete the event they start unless prior permission from the event officials has been obtained.
5. Participants access and/or utilize personal electronic communication devices during the entire course of the event. Participants who access personal electronic communication devices without prior approval will be disqualified (examples include iPads, tablets, computers, cell phones, Wi-Fi devices, etc.).
6. An advisor, coach, parent, or fellow chapter member is in the interview area once judging officially begins. Any advisor, coach, parent, or fellow chapter member found in the interview area may disqualify their participant.
7. A student substitution is made. See the "Interview" section of this handbook for more information.
8. The participant fails to meet any rules or participation guidelines set forth in this handbook.
9. Participants commit plagiarism.
10. Participants conduct unethical research.
11. The student(s) have previously placed in the top six of a Grade Level/Pathway at the national level and compete again in the same Grade Level/pathway.
12. Participants alter the application and/or written report template.

Professional Integrity

FFA members participating in national FFA programs and events understand and agree that all work must result from their own effort and ability, created, and completed alone (except for partner or chapter applications). When outside sources (direct quotes or phrases, specific dates, figures, or other materials) are used for a project, document, or application, the required reference citation must be completed according to the rules specified by the applicable handbook.

While participating in National FFA programs, FFA members are prohibited from:

- Plagiarizing
- Violating copyright
- Cheating
- Falsifying information
- Using another person's results or thoughts as their own, even with this person's permission. This includes work done by a family member or a mentor.
- Using information or data obtained from the internet without proper citation.

Any attempt to gain an unfair advantage will not be tolerated. Non-compliance represents plagiarism and will automatically disqualify a member.

Use of Artificial Intelligence (AI) for National Programs and Events

Artificial intelligence (AI) refers to computer systems capable of performing complex tasks that historically only a human could do, such as reasoning, making decisions, or solving problems. As AI continues to evolve, it can be a tremendous tool to help companies, organizations and individuals enhance their productivity and work. Therefore, the

National FFA Organization allows the use of AI tools. FFA members may use AI tools, such as ChatGPT, Gemini, and CoPilot, to assist them in their learning.

Appropriate uses of AI may include:

- generating ideas for any FFA-related assignments, projects, contests, and award applications
- checking facts of a phenomenon
- checking for and correcting grammatical errors in a paper written by a member

For more information, please see the Standard Operating Procedures on the Use of Artificial Intelligence (AI) for National Program and Events document.

Code of Conduct

FFA members participating in National FFA programs understand and agree to abide by the National FFA Code of Conduct.

Required Forms

As a part of the state competition application process, the application and written report must be submitted online through the AET website by March 1. This date serves as the state agriscience fair application and certification deadline. The required forms are located in the Application Center on FFA.org.

Agriscience Fair Prequalifying

All students qualified to participate in the Tennessee FFA Agriscience Fair must have completed their written report, entry form and all supporting forms submitted online on theAET by March 1. Incomplete submissions will be marked as participants only and not ranked.

All written reports will be judged virtually using the appropriate prequalifying rubric. Please review the Scoresheets and Rubrics on the Tennessee FFA website.

Scores from the written report submitted for prequalifying will count as 50 percent of the overall score. Interview judges will not see the scores from the written report, and the interview score will account for 50 percent of the overall score.

If a project is missing a report component, for example the Acknowledgements, this section of the scorecard at the prequalifying judging event will be marked as a zero and will be taken into account for the prequalifying score.

NOTE: If an application project is entered in the wrong pathway, the Skill Development section on the rubric will receive zero (0) points.

Recognition

Chapter level: Winners may be selected annually in each FFA chapter. The winner can represent any of the agriscience pathway areas (based on state rules for competition).

State level: Winners from each Grade Level in all pathways may be selected annually in each of the chartered state FFA associations. The interviews will take place at the Tennessee State FFA Convention and Expo. Each of those winners' applications and reports should be sent to the National FFA Center for pre-qualifying judging. See the "Agriscience Fair Prequalifying" section of this handbook for more information.

National level: Selected participants from each state may be forwarded for national competition. A maximum of 6 applicants in each pathway and Grade Level will be considered national finalists and invited to compete in the National FFA Agriscience Fair interview to be held virtually each September. All national finalists are expected to participate in scientific career exploration, networking, and immersion experience at the National FFA Convention & Expo. During this time, students will present their research and engage/network with universities and sponsors about their research. The orientation packet will release more details, including project submission and schedules, mid-year.

Project Components

Written Report

The full written report and application must be submitted by chapters on the AET by March 1 for the manuscripts to be judged. As student researchers, the expectation for the written report is the same for all Grade Levels.

Format of Report

The report should be printed on 8 ½ x 11-inch white paper. The report will have 1-inch margins. Font size must be 12 using Arial, Courier, or Times New Roman font. The written report template is required and is available on ffa.org/participate/awards/agriscience-fair/.

ABSTRACT

A brief summary of the paper, which concisely describes the purpose, methods, results, and conclusions. The abstract may include potential research applications or future research. The abstract should not contain cited references.

It should be no longer than one page and in paragraph form. Because this is the first page of the project report, it will be where the reader forms an opinion on the study. In the abstract, arrange the points in this order:

1. Purpose.
2. Procedure.
3. Results.
4. Conclusions.

This section would include methods, primary results/effects of major treatments and main conclusions. Do not include discussion, citations and footnotes, or references to tables and figures.

INTRODUCTION

The introduction answers the question, "Why was the work done?" It provides background on the subject in several paragraphs. The introduction should clearly state the problem that justifies conducting the research, the purpose of the research, its impact on agriculture, the findings of earlier work, and the general approach and objectives. You must cite sources for statements that are not common knowledge. The last paragraph of the introduction includes the objectives of the study.

LITERATURE REVIEW

The literature review should detail what information currently exists concerning the research project. Information in the review should be written in APA style and should include publications used for the research. Publications cited could include articles about similar studies, similar research methods, history of the research area, and any other items that support the current knowledge base for the research topic and how the project might complement existing information.

MATERIALS AND METHODS

A well-written materials and methods section enables others to reproduce the results by replicating the study. Write in past tense, third person, encompass all materials required, state the hypothesis/research questions, and explain the study design by sharing the technical and experimental procedures employed. With fieldwork, describe the study site. Include any statistical procedures employed. This section should be a narrative rather than a list of steps on how to do the process.

RESULTS

This section is a summary of the results, even if they are not what was hypothesized. Do not include discussion or conclusions about the data. Tell the reader exactly what was discovered and what patterns, trends or relationships were observed. Decide on the most meaningful way to present the data (tables, figures), and refer to them in the text. Data should be able to stand alone in the form of tables and/or figures. Data should not be added after the state level selection as it may alter the discussion and conclusions.

DISCUSSION AND CONCLUSIONS

In this section, draw conclusions from the results of the study and relate them to the original hypothesis. It is helpful to briefly recap the results and use them as a foundation for the conclusions. If the results were not what was expected, take this opportunity to explain why. Give details about the results and observations by elaborating on the mechanisms behind what happened. Tie the study in with the literature, but do not hesitate to offer sound reasoning of your own. Discussion should refer to facts and figures in the results section and provide recommendations for practice and future research. Discussion and conclusions should also address the impact the research has on the agriculture industry.

REFERENCES

Only significant, published, and relevant sources accessible through a library or an information system should be included. All citations in the text must be included in the reference section. When information or facts are used that are not common knowledge, give credit to the source of that information by citing a reference. Use the APA style recognized citation system throughout the report.

See the Abstract Area of the Written Report section of this handbook.

ACKNOWLEDGMENTS

Acknowledge anyone who helped in any aspect of the project in this section.

SKILL DEVELOPMENT

The student researcher(s) select five different competencies based on the study conducted. All five competencies must be from the study's primary pathway. The student researcher(s) demonstrate skills that are appropriate for the scope of the project. The project demonstrates the application of skill attainment with a measurable impact on the overall study.

APA STYLE/SPELLING

The student researcher(s) should use correct spelling, complete sentences, proper grammar, and appropriate APA-style writing throughout the report.

Framework of Report

Student(s) must use the written report template available on ffa.org/participate/awards/agriscience-fair/ or the following headings to create a research report. All reports must meet the additional criteria listed in the *Format of Report* section.

- A short title
  - 50 character or less
- Title Page
  - Project Title
    - Maximum 3 lines/15 words
  - Includes student's name(s), chapter, state, pathway, Grade Level
- Abstract
  - No longer than one page
- Introduction
- Literature Review
- Materials and Methods
- Results
- Discussions and Conclusions
- Acknowledgements
- References

Interview
All state finalists are required to meet with the judges at the Tennessee FFA Convention to explain their projects. Explanation and questioning may not exceed 15 minutes. The interview is an opportunity for judges to ask questions about the project. Judges will ask questions to determine the extent of the knowledge gained, your understanding of your project and possibly how your project relates to other FFA activities. The following is a list of example questions that may be asked:

1. How and why was the project selected?
2. What was your goal? What did you plan to accomplish in your project?
3. Were there any surprises in your project? How did you handle them?
4. What did you learn from the experience?
5. How much time did you devote to the project?
6. What kept you from being discouraged?
7. How did you manage time for this project in relation to your other activities?
8. How would you advise others doing a project? What is the value of completing an agriscience fair project?
9. How can your findings and conclusions be applied in the agriculture, food, and natural resources industry?

Interview Schedule Conflicts
All state finalists are required to interview with the judges to explain their projects at the Tennessee State FFA Convention. Participants/teams unable to meet with judges during the allotted time will be disqualified. The interview schedule will be released prior to the start of the first interview. Substitutions are not permitted. No exceptions will be made due to participation in other events.

Official Dress
Participants are expected to observe the National FFA Code of Ethics and the proper use of the FFA jacket during the agriscience fair. (Please reference the latest edition of the Official FFA Manual.) Official dress is highly recommended for the interview and awards presentation and recognition.

Scoresheets and Rubrics
The scoresheets and rubrics can be found on the Tennessee FFA website under teacher downloads. These will be utilized by judges to evaluate written reports and interviews. As developing student researchers, the expectations for the written report are the same for all Grade Levels.