

# Nebraska FFA Agriscience Fair

## 2019 Handbook

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# Nebraska FFA Agriscience Fair

The mission of the Nebraska FFA Agriscience Fair is to build awareness of science through research of current and diverse agricultural issues and to cultivate career readiness skills through the interaction of students, educators and the public research community.

Use this handbook to:

1. Guide the process of developing Supervised Agricultural Experience programs.
2. Supplement instruction provided by agriculture instructors and FFA advisors.
3. Seek suggestions and guidance in developing agriscience research projects, completing the application, and competing in the Nebraska FFA Agriscience Fair.

## Introduction

The Nebraska FFA Agriscience Fair recognizes student researchers studying the application of agricultural scientific principles and emerging technologies in agricultural enterprises. The Nebraska FFA Agriscience Fair is for middle and high school students. Participation begins at the local chapter level and progresses to state and national levels.

When selecting an agriscience research topic, consider the ongoing SAE program as a good place in which to begin. Quality experimental SAE projects/activities are well suited for all students and can be easily incorporated into any SAE program. Experimental SAE activities can provide valuable learning experiences for students with agriscience-related career goals (as well as those with other career interests).

Developing a high quality agriscience project includes or requires:

- Focusing on an important agricultural/scientific 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.

## Nebraska FFA Agriscience Fair Deadlines

March 1: Submit written report and supplemental documents to the state office for registration through an on-line system located on [www.neaged.org](http://www.neaged.org).

TBA: Complete the scheduling conflict process so that interviews may be scheduled. Process and deadlines will be posted on [www.neaged.org](http://www.neaged.org).

June 1: Advisors must notify Krystl Knabe, Nebraska State Director of Agricultural Education, via phone or email by noon if your national qualifying team will decline the opportunity to advance to the national level.

## Category Description

Student researcher(s) can compete in the state and national levels of the agriscience fair in one of six categories:

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

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 categories listed depending on the study conducted. Biotechnology Systems is not its own category.

The Environmental Services/Natural Resource Systems (ENR) category were combined beginning in 2017. Depending on participation, it may be split in the future.

### **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 (ENRS)\***

\*This category were combined in 2017. Depending on participation, they may be split in the future.

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.

*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 (FPPS)**

The study of product development, quality assurance, food safety, production, sales and service, 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 chemical energy stored in foods
- 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:*

- Determine rates of transpiration in plants
- Effects of heavy metals such as cadmium on edible 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 (PSTS)**

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:*

- Develop alternate energy source engines
- Create minimum energy use structures
- Compare properties of various alternative insulation products
- Investigation of light/wind/water energy sources

## **Social Systems (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 towards 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

## **Divisions within each Category**

Division 1: Individuals in grades 7 and 8

Division 2: Teams of two in grades 7 and 8

Division 3: Individuals in grades 9 and 10

Division 4: Teams of two in grades 9 and 10

Division 5: Individuals in grades 11 and 12

Division 6: Teams of two in grades 11 and 12

## **Rules**

### **Project Rules**

Questions regarding the state-level rules should be directed to Krystl Knabe, Nebraska State Director of Agricultural Education. Questions regarding the national-level rules should be directed to National FFA staff at [agriscience@ffa.org](mailto:agriscience@ffa.org).

### **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 institutes that utilize research animals that are not covered by the Animal Welfare Act but have been 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 presented and the project must be reviewed by the National FFA Organization prior to experimentation.
2. 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.
3. 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.
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 either 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 publically 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 that is 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 nonhuman vertebrates (including fish) at hatching or 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.
4. Student researcher(s) are prohibited from designing or participating in an experiment associated with the following types of studies on vertebrate animals:
  - a. 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.
  - b. Behavioral experiments using conditioning with aversive stimuli, mother/infant separation or induced helplessness.
  - c. Studies of pain.
  - d. Predator/vertebrate prey experiments.
5. Food and water cannot be used or withheld for more than 24 hours for maze running and other learning or conditioning activities.
6. 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.
7. No vertebrate animal deaths due to the experimental procedures are permitted in any group or subgroup.
  - a. Studies that are designed or anticipated to cause vertebrate animal death are prohibited. This includes euthanasia.
  - 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.

### **Extension of Agriscience Fair Projects**

The completion of a research project can generate additional research questions that are worthy of investigation. Participants will have the opportunity to conduct this additional research as long as the current year's project could not have been done without what was learned from the past year's research. This project would now be considered an extension project for competition.

1. Student researcher(s) may use 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, of the current year, annually. Previous research and information should only be included in the Literature Review/ Other's Work and Discussions/Conclusions section.
2. Judging will be based on the current year of research, not the entire scope of the research project. The project must document that the additional research is an expansion based on findings of prior work (e.g., testing a new variable or new line of investigation, etc.) Repetition of previous experiments with the same methodology and research question or increasing sample size are examples of unacceptable extensions. The project display and project report must reflect the current year's work only.
3. Displays and application materials must reflect the current year's work only. The project title displayed in the finalist's booth should not mention years (e.g., "Year Two of an Ongoing Study").
4. Longitudinal studies are permitted 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 (e.g., 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 display board must be based on collective past data and its comparison to the current year data set. No raw data from previous years may be displayed.
5. All extension projects must be reviewed and approved each year and forms must be completed for each year.
6. Successive year projects must indicate change or growth in the project from the previous year(s) in the application where appropriate including completing the continuation form in the application. Displays must reflect the current year's work only.

• NOTE: For an extension project to be eligible for competition in the agriscience fair, documentation must include the project extension form, the current year's abstract and the abstract for all other prior years. The documentation should be clearly labeled in the upper right hand corner with the year (i.e., 2018-2019). Please retain all prior years' paperwork in case event officials request additional documentation.

### **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 7th Period Animal Science Class for their assistance in...).

## Eligibility

### Membership

Each participant must be a current dues paying FFA member in good standing with the local chapter and Nebraska FFA Association during the school year in which the member competes at the state level.

*\*National competition: Member must also be in good standing at the national level during the school year in which the participant qualified to participate at the national level.*

In the event that a participant's name is not on the official chapter roster for the year in which the dues were owed, a past due membership processing fee, in addition to the dues, must be paid prior to the national event. The National FFA Organization will set the processing fee amount annually.

Participants must be enrolled in the grade level in which he or she registers their project at the time of the state event. Members must also be enrolled in at least one agricultural education course during the school year in which the state event takes place and the course and/or program of study must include a Supervised Agricultural Experience program.

Each member and/or team may enter only one project. Exhibited projects and project reports will be the result of the students' own efforts. A team is a maximum of two members working cooperatively on the same project. Teams can be made up of two students in different grades but will compete in the division in which the older participant would qualify. Team members must be from the same chapter at the time of qualification.

Students will be eligible to compete in any given area an unlimited number of times over the course of their membership, regardless of their individual results in previous Nebraska FFA Agriscience Fair experiences. Students may not compete in more than one individual or one team category and division each year.

*\*National competition: Once a student places in the top three of a division and category,*

*he/she can no longer compete in that division and category regardless of the research subject. Students who wish to continue research on the same topic or who have won a division and category are encouraged to seek additional recognition using the proficiency award or star award, or they may compete in another agriscience research area within the agriscience fair.*

## **Divisions**

The National FFA Constitution provides flexibility to meet the needs of all students. Competition is open to all FFA members in grades 7-12. There are six divisions:

- Division 1: Individuals in grades 7 and 8
- Division 2: Teams of two in grades 7 and 8
- Division 3: Individuals in grades 9 and 10
- Division 4: Teams of two in grades 9 and 10
- Division 5: Individuals in grades 11 and 12
- Division 6: Teams of two in grades 11 and 12

Grade is determined by the grade level of the member at the time of participation at the state level. Nebraska FFA Association, along with other state associations, with qualifying competitions may have up to 36 entries - one in each category, in each division – represented at the national level. For example: An association may have an entry in Plant Systems in Division 1, 2, 3, 4, 5, and 6. Each state association may not submit more than one entry in a category/division. The first place winners in each category of each division will advance to the national level with the second place winner serving as the alternate.

## **Disqualification**

A project will be disqualified if (not limited to this list):

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. The coordinator stops 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 he/she starts, unless prior permission from the coordinator 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 of the coordinator will be disqualified (examples include but are not limited to: iPads, tablets, computers, cell phones, WiFi devices, etc.).
6. If an advisor, coach, parent or fellow chapter member is in the judging area once judging officially begins. Any advisor, coach, parent or fellow chapter member found to do so may disqualify their participant.
7. Any participant, advisor or chapter member tampers with another participant's display.
8. The display fails to meet the requirements. See the "Display" section of this handbook for more information.
9. Participant fails to meet any rules or participation guidelines set forth in this handbook.
10. Participant fails to meet certification and form requirements specified in this handbook. Missing paperwork after published deadlines will result in disqualification.

11. Participants are found to have plagiarized information.
12. Unethical research practices were used.
13. The completed a study is unrelated to agriculture.
14. The project was entered in the wrong category.

### **Plagiarism**

An agriscience fair project must be the result of a student's own effort and ability. However, in securing information as direct quotes or phrases, specific dates, figures or other materials, that information must be marked in "quotes" in manuscripts and identified in the Literature Cited or Reference section of the written report in APA Style. Non-compliance represents plagiarism and will automatically disqualify a participant.

Student researcher(s) may not:

- In any way falsify a permission form, scientific paper or display.
- Use another person's results or thoughts as their own even with the permission of this person. This includes work done by a family member or a mentor.
- Use information or data obtained from the Internet without proper citation.
- Re-enter a project with only minor changes.

### **Ethics Statement**

Scientific fraud and misconduct is not condoned at any level of research or competition. Plagiarism, use of presentation of other researcher's work as one's own and fabrication or falsification of data will not be tolerated. Fraudulent projects will result in disqualification from the Nebraska FFA Agriscience Fair. Unethical behavior will result in notification to the student researcher(s) local school administration. Exhibited projects and project reports shall be the result of the student researcher(s) own effort.

### **Required Forms**

As a part of the Nebraska competition application process, the application and written report must submitted on-line to the Nebraska FFA Association by March 1 of the convention year. All forms must be generated from the AET Agriscience Fair Application. If the application and its supplemental documents listed above are not received by March 1, the participant(s) will be disqualified.

*\*National competition: National qualifying application and project report must be stapled and forwarded to the National FFA Organization by state staff. Watch [www.neaged.org](http://www.neaged.org) for when these documents need to be submitted to the state office. State staff will forward the documents on to the national office.*

*A maximum of 12 applicants in each category and division, as determined by a screening panel using the appropriate prequalifying rubric, will be certified to participate at the National FFA Agriscience Fair. Reference the National FFA Agriscience Fair Handbook, for complete details regarding the Prequalifying process.*

### **Agriscience Fair Prequalifying**

While National FFA uses a pre-qualifying process to determine participants, Nebraska FFA will not. However, in preparing your project, please refer to the prequalifying score sheet and rubric on of the National FFA Agriscience Fair Handbook.

## **Recognition**

State Level – Winners from each division in all categories may be selected annually in Nebraska. Each of these winning projects will be sent to the National FFA Center for prescreening before moving on to compete at the national level fair. See Agriscience Fair – Prequalifying (located at [www.ffa.org](http://www.ffa.org) in the National Agriscience Fair Handbook).

Each category winner in each division will be awarded a cash prize at the level to which it is available based on sponsorship and programming costs. First place cash prizes are estimated at approximately \$100 per student competitor.

All state level entries will be ranked Gold, Silver, or Bronze. The top three entries in each division of each area will be awarded Gold Medals on stage during the Nebraska FFA State Convention session. All other entries will receive a certificate in their chapter convention packet on Friday afternoon of convention.

National Level – Selected participants from each state may be forwarded for national competition. A maximum of 12 applicants in each category and division will be considered a national finalist and invited to compete in the National FFA Agriscience Fair to be held at the National FFA Convention & Expo. Each national finalist will be presented with a pin. The winner in each category and division will be presented with a pin and a plaque.

## **Project Components**

### **Logbook**

Logbooks are not required to be submitted with Agriscience Fair Projects at the Nebraska FFA State Convention effective begin in 2019.

### **Title Page**

The title should be a precise description of the work performed. The title page should include the project title, student name, student grade, school and school address and the agriscience category. This should be all that appears on this page. The title itself should be no more than three lines with a 15-word maximum. All numbers, chemical elements and compounds should be spelled out. All words should be capitalized except for articles (such as “a” and “the”), prepositions (such as “of,” “in,” “on,” “during” and “between”) and conjunctions (such as “and” and “but”) unless they are the first word of the title.

### **Written Report**

Students are required, beginning in 2019, to use the Report Template posted on [www.FFA.org/agrisciencefair](http://www.FFA.org/agrisciencefair). Failure to use Report Template, or alteration of template, posted on [www.FFA.org/agrisciencefair](http://www.FFA.org/agrisciencefair) will result in a medal-placing drop. The full written report must be submitted as a component of the Agriscience Fair Application as generated from AET. As developing student researchers, the expectations for the written report are slightly different for Divisions 1 and 2 (7th and 8th grade students) compared to Divisions 3, 4, 5 and 6. The purpose of the rubric for Divisions 1 and 2 is to introduce young student researchers to the process of scholarly thinking. As the student researcher ages, skills grow and advance to utilize the rubric for Divisions 3-6 (grades 9-12). See “Prequalifying Rubric: Divisions 1-2” and “Prequalifying Rubric: Divisions 3-6” in the National FFA Agriscience Fair Handbook for additional information.

### **Divisions 1-2**

#### **Importance**

The importance answers the question “Why was the work done?” Provide an explanation of:

- Why the research topic is important to the agriculture industry
- What problem the investigation attempts to solve

Each point should be addressed in a paragraph for a minimum of two paragraphs in the importance section.

#### **Others Work**

The other’s work section details the information that currently exists concerning the research topic. What other information did the student researcher(s) read before conducting the project? What information did student researcher(s) look up during the

investigation? Reference information regarding where the publication was found should be listed, then a brief summary should be written by the student researcher(s) for each publication. Publications 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.

### **Materials and Methods**

This section enables others to reproduce the results by duplicating the study. Write in first person, encompass all materials required and explain the study design by sharing the technical and experimental procedures used. If used, any statistical procedures are included here.

### **Hypothesis/Anticipated Results**

The student researcher(s) state the hypothesis and/or anticipated results. What are the expected results of the study?

### **Results**

This section is a summary of the results the project has produced, even if they were not what was expected. 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 not be added after the state level selection as it may alter the discussion and conclusions.

### **Discussion**

In this section, the student researcher(s) should include information about the meaning of the results, how the results relate to the Other's Work section and what impact the study has on the agriculture industry.

### **Conclusion**

In the conclusion the student researcher(s) should share recommendations on what should be done or what should change as a result of the research. 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. The student researcher(s) should share what the next steps are to continue the study.

### **Summary**

The summary should be two to three paragraphs describing the study conducted. Describes why the student researcher(s) chose to conduct the study, why the study is important to the agriculture industry, how the student researcher(s) conducted the study, what the student researcher(s) found by conducting the study, and how the results apply within the agriculture industry.

### **Acknowledgements**

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

### **Skills Development**

The student researcher(s) select three appropriate competencies based on the study conducted. Two competencies must be from the study's primary pathway and the third can be from any pathway. The student researcher(s) demonstrate skills that are appropriate for the scope of the project. The project demonstrates application of skill attainment with measurable impact on the overall study.

### **Spelling/Grammar**

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

### **Format of Report**

The report should be printed on 8 1/2" x 11" white paper. The report will have 1" margins. Font size must be 12 using Arial, Courier or Times New Roman font. A project report template is required and is available on [www.FFA.org/agrisciencefair](http://www.FFA.org/agrisciencefair) by division.

## **Divisions 3-6**

### **Abstract**

An abstract is a brief summary of your paper, which concisely describes your purpose, methods, results and conclusion. Do not include the title in the abstract. Your 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 your project report, it will be where the reader forms an opinion on your work. In your abstract, arrange your points as:

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

These sections 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 or methods.

### **Introduction**

The introduction answers the question "Why was the work done?" Provide background on your 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 to the reader what information currently exists concerning your research project. Information in the review should be written in APA style and should be 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 your project might complement existing information.

## **Materials and Methods**

A well-written materials and methods section enables others to reproduce the results by replicating your study. Write in past tense, third person, encompassing all materials required, state the hypothesis, and explaining the study design by sharing the technical and experimental procedures employed. With fieldwork, describe the study site. Include any statistical procedures employed.

## **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 Conclusion**

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.

## **Acknowledgements**

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

## **Skills Development**

The student researcher(s) select five appropriate competencies based on the study conducted. Three competencies must be from the study's primary pathway and the other two can be from any pathway. The student researcher(s) demonstrate skills that are appropriate for the scope of the project. The project demonstrates application of skill attainment with 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.

### **Format of Report**

The report should be printed on 8 1/2" x 11" white paper. The report will have 1" margins. Font size must be 12 using Arial, Courier or Times New Roman font. A project report template is required and is available on [www.FFA.org/agriciencefair](http://www.FFA.org/agriciencefair) by division.

## **Display**

### **Display Requirements**

Each exhibit should include information relevant to the study and any objects the student wishes to display. All projects must have the following information attached to the exhibit:

- Name of agriscience fair participant(s) responsible for developing the project
- Chapter name
- Title of category
- Division (1, 2, 3, 4, 5 or 6)

Nebraska Agriscience Fair participant(s)' display shows the results of their study utilizing a display board not to exceed the dimensions of:

- 36 inches high (from top of table to top of display)
- 48 inches (width)
- 30 inches deep (the distance from front to back)

The complete display, which includes methods of attaching as needed (easel, stand, etc.) cannot exceed the dimensions of:

- 38 inches high (from top of table to top of display)
- 50 inches wide
- 30 inches deep (the distance from the front to the back)

Nebraska FFA Association will provide tables and will not exceed the height of 36 inches. Failure to meet these requirements will result in disqualification.

The display must consist of a stable, free-standing display board on the provided table top not to exceed the sizes outlined above. **No additional props, logbooks, handouts or electronics will be permitted.** No tablets, iPads, cell phones or other electronic devices will be permitted. Internet access will not be provided. Failure to meet these requirements will result in disqualification.

Posters can be created utilizing Microsoft PowerPoint slide format; however, this is not required. Participant(s) are responsible for providing backing for the poster if needed.

### **Display Safety Rules**

1. If an exhibit becomes unsafe or unsuitable for display, it will be removed and deemed ineligible for any awards.
2. Electricity will not be provided or permitted as part of a display at the Nebraska FFA Convention.
3. Displays will consist of:
  - A free standing display board not to exceed the dimensions listed in the "Display

- Requirements” section of this handbook.
- No additional props, logbooks, handouts or electronics are permitted in project displays.
  - If Display Requirements fail to be met project will be Disqualified.

## Interview

The interview is an opportunity for judges to ask students questions about the research project. The interview will be a maximum of 10 minutes during the time assigned to the participant(s) prior to the convention. A team project must be presented by a team of two. If only one team member is present, the team cannot rank higher than 3<sup>rd</sup> overall and will not have the opportunity to advance to the national level if the 1<sup>st</sup> and 2<sup>nd</sup> place teams choose not to advance.

Judges will ask questions to determine the extent of the knowledge gained, understanding of the project, how it relates to the student’s SAE and possibly how the 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 your project?
6. What kept you from being discouraged?
7. How did you manage time for this project in relation to your other activities?
8. What 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?

This list of questions is not conclusive, but is meant to offer a guide to students as they prepare for their interview.

*\*National competition: The interview will be a maximum of 15 minutes in length. If only one team member is present, the team cannot rank higher than 4<sup>th</sup> overall at the national competition.*

## Interview Schedule Conflicts

Participants/teams unable to meet with judges during the allotted time will be disqualified. No exceptions will be made. Members who have a scheduling conflict due to participation in another Nebraska FFA award area must contact Krystl Knabe, Nebraska State Director of Agricultural Education, prior to the established schedule conflict resolution deadline of each convention year so that a scheduling accommodation may be made. Scheduling accommodations will be made to the best of the staff’s ability.

## Add/Delete Policy

If one individual on a team submission is unable to attend the convention, another

individual who worked on the project may take their place. If the absence is a result of an emergency, the individual present may represent the team solely. If the absence is identified prior to the established schedule conflict resolution deadline of each convention year, the advisor must notify the Agriscience Fair coordinator if a substitution will occur.

*\*National competition: No Add/Delete policy in place (no substitution permitted).*

## Scoresheet and Rubric

### Convention Scoresheet: Divisions 1-6 (Grades 7-12)

Student(s): \_\_\_\_\_ State: \_\_\_\_\_  
 Category: \_\_\_\_\_ Division: \_\_\_\_\_

Area		Points Possible	Points Earned
<b>Knowledge Gained</b>	Is there evidence the student researcher(s) have acquired scientific skills and/or knowledge by doing this project? Do the student researcher(s) recognize the scope and limitation of the problem he/she has selected?	15	
<b>Scientific Research</b>	Has the problem been clearly stated? Have the student researcher(s) used scientific facts as a basis for new conclusions? Are the student researcher(s) aware of the basic scientific principles that lend support to the methods used and conclusions reached?  Can the research be the basis for further study? Have the appropriate methods and scientific design been applied? Are the student researcher(s) aware of the empirical method (the necessity of repeating trials) and the importance of controlling the variables in order to reach valid conclusions?	30	
<b>Collaboration</b>	Is there evidence of collaboration present? Identify the portions of the project representing the work of others. Others include student researchers, teachers, specialists in the field of study, etc.	15	
<b>Thoroughness/ Information</b>	How successfully was the original plan carried through to completion? Were adaptations to the study made? If so, were they made in a way that upholds the integrity of the study? 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? Did the student researcher(s) identify areas of weakness in the study?	30	
<b>Results/ Conclusions</b>	Have the student researcher(s) started with known facts and drawn their own conclusions? Are the conclusions consistent with the data and/or observations? Did the student researcher(s) share what was learned as a result of the research? Can student researcher(s) effectively communicate the results and impact of the study?	15	
<b>Visual Display</b>	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	15	

	neatness and attractiveness? Is the display presented in a logical and interesting manner?		
<b>TOTAL SCORE (120 POINTS POSSIBLE)</b>			
This constitutes 75% of the overall score to determine final ranking			

In the event of a tie, winner will be determined based on the score of the written report. If a tie still exists, the tie will be broken on scores received in the following sections: Knowledge Gained, Thoroughness/Information, Results/Conclusion.

**Convention Rubric: Divisions 1-6 (Grades 7-12)**

Area	High points 5-4 points	Medium points 3-2 points	Low points 1-0 points	Points Possible	Points Earned
<b>Knowledge Gained</b>	There is evidence the student researcher(s) have acquired scientific skills and/or knowledge by doing the project. The student researcher(s) exhibit knowledge of the scope and limitations of the problem selected.	There is some evidence that the student researcher(s) have acquired scientific skills and/or knowledge by doing this project. The student researcher(s) have limited knowledge of the scope and limitations of the problem selected.	There is no evidence that the student researcher(s) have acquired scientific skills and/or knowledge by doing this project. The student researcher(s) do not recognize the scope and limitations of the problem selected.	15	<hr/> x 3 = <hr/>
<b>Scientific Research</b>	The problem is clearly stated. The student researcher(s) use scientific facts as a basis for new conclusions. The student researcher(s) are aware of the basic scientific principles that lend support to the methods used and conclusions reached. The research is the basis for further study. The appropriate methods and scientific design has been applied. The student researcher(s) are aware of the empirical method and the importance of controlling the variables in order to reach valid conclusions.	The problem is not clearly stated. The student researcher(s) use some scientific facts as a basis for new conclusions. The student researcher(s) have limited knowledge of the basic scientific principles that lend support to the methods used and conclusions reached. With some modification, the research could be the basis for further study. Some of the appropriate methods and scientific design have been applied. The student researcher(s) are partially aware of the empirical method and the importance of controlling the variables in order to reach valid conclusions.	The problem is not stated. The student researcher(s) do not use scientific facts as a basis for new conclusions. The student researcher(s) are unaware of the basic scientific principles that lend support to the methods used and conclusions reached. The research cannot be the basis for further study. Inappropriate methods and a flawed scientific design have been applied. The student researcher(s) are unaware of the empirical method and do not recognize the importance of controlling the variables in order to reach valid conclusions.	30	<hr/> x 6 = <hr/>
<b>Collaboration</b>	There is clear evidence of collaboration. The student researcher(s) identified portions of the project representing the work of others.	There is lack of clear evidence of collaboration or the student researcher(s) do not identify portions of the project representing the work of others.	There is lack of clear evidence of collaboration and the student researcher(s) do not identify portions of the project representing the work of others.	15	<hr/> x 3 = <hr/>
<b>Thoroughness/ Information</b>	Student researcher(s) clearly communicate the original plan and adaptations that may have been made to the study. Any adaptations made uphold the integrity of the study. Facts and principles the student researcher(s) state are correct and accurate. All results of the experiments are reported accurately	Student researcher(s) partially communicate the original plan and adaptations that may have been made to the study. Any adaptations made may uphold the integrity of the study. Facts and principles the student researcher(s) state are partially correct and accurate. Most results of the	Student researcher(s) do not communicate the original plan and adaptations that may have been made to the study. Adaptations made do not uphold the integrity of the study. Facts and principles the student researcher(s) state are inaccurate. Results of the experiments are not	30	<hr/> x 6 = <hr/>

	based on methodology used. Any errors and weaknesses in the study are identified, if applicable.	experiments are reported accurately based on methodology used. Most errors and weaknesses in the study are identified, if applicable.	reported accurately based on methodology used. Errors and weaknesses in the study are not identified.		
<b>Results/ Conclusion</b>	The student researcher(s) use known facts to draw conclusions. Conclusion are consistent with the data and/or observations presented. The student researcher(s) clearly share what was learned as a result of the research. The student researcher(s) effectively communicate the results and impact of the study.	The student researcher(s) use known facts to draw conclusions. Conclusions are inconsistent with the data and/or observations presented. The student researcher(s) ineffectively share what was learned as a result of the research. The student researcher(s) ineffectively communicate the results and impact of the study.	The student researcher(s) do not use known facts to draw conclusions. Conclusions are inconsistent with the data and/or observations presented. The student researcher(s) do not share what was learned as a result of the research. The student researcher(s) do not communicate the results and impact of the study.	15	<hr/> x 3 = <hr/>
<b>Visual Display</b>	The data is presented in the best manner for the particular type of information involved. No spelling errors are present. The exhibit demonstrates general neatness and attractiveness. The display is presented in a logical and interesting manner.	The data is presented in a logical manner for the particular type of information involved. Some spelling errors are present. The exhibit lacks general neatness and attractiveness. The display is presented in a logical yet uninteresting manner.	The data is not presented in a rational manner for the particular type of information involved. Several spelling errors are present. The exhibit lacks general neatness and attractiveness. The display lacks logic and appears uninteresting.	15	<hr/> x 3 = <hr/>
<b>TOTAL SCORE (120 POINTS POSSIBLE)</b>					
This constitutes 75% of the overall score to determine final ranking					

In the event of a tie, winner will be determined based on the score of the written report. If a tie still exists, the tie will be broken on scores received in the following sections: Knowledge Gained, Thoroughness/Information, Results/Conclusion.

## **Frequently Asked Questions**

*The mission of the Nebraska FFA Agriscience Fair is to build awareness of science through research of current and diverse agricultural issues and to cultivate career readiness skills through the interaction of students, educators, the public and the research community.*

### **Who can participate in the Nebraska FFA Agriscience Fair?**

Each chapter may submit two entries in each of the six categories in each of the six divisions.

- Division 1: Individuals in grades 7 and 8
- Division 2: Teams of two in grades 7 and 8
- Division 3: Individuals in grades 9 and 10
- Division 4: Teams of two in grades 9 and 10
- Division 5: Individuals in grades 11 and 12
- Division 6: Teams of two in grades 11 and 12

Each participant may only be involved in one category and division.

### **What are the categories of the Agriscience Fair?**

See page 4 through 6 of this handbook for category descriptions.

### **What deadlines apply to this event?**

March 1 – Registration is due! Registration is completed by submitting the materials specified in this handbook. Application, as generated by AET, and Written Report, using the report template on FFA.org, will be submitted through a link on the [www.neaged.org](http://www.neaged.org) website under the Teacher Password Protected Page.

### **What is the registration fee?**

There is no registration fee for the Nebraska FFA Agriscience Fair.

### **What are the size requirements of the displays?**

See page 18 of this handbook for display requirements.

### **When and where will the event be held during state convention?**

Information about the time and location will be available on [www.neaged.org](http://www.neaged.org) prior to the convention and information will also be included in registration updates via the listerv.

### **What can participants expect the format of the event to be?**

Advisors must register students by March 1. The application, as generated by AET, and Written Report, using the report template on FFA.org, must be submitted through an on-line link, located on the [www.neaged.org](http://www.neaged.org) website, by March 1.

The Nebraska FFA Agriscience Fair will be comprised of the following designated times:

Written Report and Application Review- This will be done by a panel of judges prior to the convention.

Judge Review – During this time, only the judges will be allowed to enter the competition area and they will review each display.

Interview – Students should be prepared for a ten-minute interview with the judges. Students may prepare a 2-minute overview of their project, which judges may or may not ask to hear. The majority of the interaction time will involve questions and answers between the judges and competitors.

**What are the awards for the Nebraska FFA Agriscience Fair?**

The top three award winners in each division of each category will be recognized on the convention stage. Each division winner in each category will be awarded a cash prize at the level to which it is available based on sponsorship and programming costs. First place cash prizes are estimated at \$100 per student competitor. Finalists will be announced and directed to report to the staging area prior to the session in which they will be recognized.

All state level entries will be ranked Gold, Silver, or Bronze. The top three entries in each division of each area will be awarded Gold Medals on stage during the Nebraska FFA State Convention session. All other entries will receive a certificate in their chapter convention packet on Friday afternoon of convention.

Please reference the post-convention sponsor list for businesses sponsoring this event.