**Agri-Science Fair Projects / SAE in Agriscience**

Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Due in Class: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

***Reports All Must Be Typed, Double-Spaced, 12 point font.***

***Eligibility Requirements:***

1. *There are 2 divisions:*

*• Division 3 - individual member in grades 9 and 10.*

*• Division 4 - team of two members in grades 9 and 10.*

1. *There are 6 categories.*
* ***Animal Systems (AS)***

a. 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.

*b. 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)***

a. The study of systems, instruments and technology used in waste management; the study of the management of soil, water, wildlife, forests and air as natural resources and their influence on the environment.

*b. 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)***

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

*b. 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

* ***Plant Systems (PS)***

a. 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.

*b. 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 (PST)***

a. 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.

*b. 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 Science (SS)***

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

b. *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

1. *Each display must reflect the current year’s work only.*
2. *Each participant is required to meet with the judges (class) to explain their project. Explanation and questioning may not exceed 10 minutes.*
3. *Exhibited projects and project reports shall be the results of the student’s own efforts.*

***Safety Rules:***

1. *If an exhibit becomes unsafe or unsuitable for display, it will be removed and deemed ineligible for any grade or movement on in FFA competition.*
2. *Projects involving vertebrate animal subjects must conform with the following statement: Experiments on live animals involving surgery, the removal of parts, injection of harmful chemicals, and/or exposure to harmful environments, are not acceptable.*
3. *Toxic and hazardous chemicals are prohibited.*
4. *For final project/presentation, all necessary chemical glassware must be displayed in a stable manner. The items must be back from the edge of the table and may not be operational at any time. Students should substitute colored water, photographs, or drawings for chemicals.*
5. *It is critically important that no person be exposed to any bacteria that are considered pathogenic. Therefore, the following 2 rules are very important: No wild cultures incubated above room temperature, no cultures taken from humans or other warm-blooded animals may be used. This includes, but is not limited to skin, throat, and mouth.*
6. *Dangerous and combustible materials are prohibited. No exhibit shall have open flames. Any part of an exhibit that can get hotter than 100 degrees Celsius (boiling water temperature) must be adequately protected from its surroundings.*
7. *If an exhibit includes electrical wiring or devices, they must be safe. For voltages above 20 volts, special precautions must be taken. All connections must be secure and provide suitable protection against short circuits, etc.*
8. *All wiring carrying more than 20 volts must be well insulated. Also, the connection must either be soldered or secured by UL approved fasteners. The wire used must be insulated adequately for the maximum voltage that will be present and the wire must be of sufficient size to carry the maximum current you anticipate.*
9. *If the exhibit will be connected to 120 volt AC power (plugged into a wall outlet) fuses or circuit breakers must be provided to protect not only the exhibit but also others that may share the same sources of power. Exhibits requiring voltage in excess of 120 volts AC volts are not allowed.*

***Display Requirements***

1. *Each exhibit may consist of one or more panels of information and any objects the student wishes to display. The exhibit panels must be constructed so as to be stable and free standing. The exhibit panels may be of poster board or foam core construction.*
2. *The official maximum size for a project is 48 inches wide by 30 inches deep (the distance from front to back) by 78” high (from table top to the top of the projects).*
3. *All projects must have the following information attached to the* ***upper right******hand corner*** *of the exhibit:*
	* ***Your Name***
	* ***BRIGHTON FFA***
	* ***Title of category entered (Botany, Zoology, Etc.)***
	* ***Division entered Grade 9 or 10- Division III or IV***

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

***Make sure that it includes: Title, Photographs, Organization, and Eye Appeal.***

**PROJECT COMPONENTS**

***1. LOG BOOK***

*A log book is your most important piece of work. It will contain accurate and detailed notes of a well-planned and implemented project. Your notes should be a consistent and thorough record of your project. This will be one of your greatest aids when writing your paper. (Can use SAE log or keep own journal)*

***2. PROJECT REPORT***

*You will be required to submit a written project report. It must be typed, double-spaced, 12 point font. It must include the following:*

* **TITLE PAGE—***Include the project title, your name, address, and chapter.*
* **TABLE OF CONTENTS—***Reference each section of your paper.*
* **ABSTRACT—***the abstract should be a maximum of 1 page in length. It should include a brief statement of purpose, procedures used, data collected, and conclusions drawn. It may also include possible research applications of future records.*
* **INTRODUCTION—***this should include the problem statement, your hypothesis, and an explanation of what prompted your research and what you hoped to achieve.*
* **REVIEW OF LITERATURE—***this should include the literature review of what information currently exists concerning your research project. Information listed in you review should be materials used for your research. Material cited could include articles about similar studies, similar research methods, history of the research area, and any other items that support your current knowledge base for the research topic and where your project might complement existing information.*
* **MATERIALS AND METHODS—***describe the methodology used to collect your data or make your observations. This should be descriptive enough to allow someone else to replicate your experiment. Include a list of materials and equipment used.*
* **RESULTS—***A factual presentation of the outcomes of your study. They may be presented in tables and charts.*
* **DISCUSSION AND CONCLUSION—***Draw conclusions from the results of your study and relate them to your original hypothesis. Be thorough. Allow the reader to see your train of thought, compare your results to commonly held beliefs or expectations. Offer sound reasoning for your results. If your results were not expected, explain why in this section.*
* **ACKNOWLEDGEMENTS—***Credit those who assisted you in your investigations. These may be individuals or businesses that provided guidance or materials.*
* **LITERATURE CITED—***a list of published articles, books, or other communications cited in your text. Use an accepted style guide for proper reference listings and footnotes.*

**3. INTERVIEW**

*The interview will consist of a question and answer period between you and the rest of the class. The maximum time limit for the interview/presentation is 10 minutes. Judges are impressed with those students who can speak freely and confidently about their work.*

*Example Questions*

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 deal with 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 a project of this type?*
9. *What was the greatest challenge in your project?*
10. *What was your solution to your greatest challenge in your project?*

**JUDGING**

*Judges evaluate:*

* *How well the scientific method was followed.*
* *The Detail and accuracy of the log book and project report.*
* *Whether tools / equipment were used in the best possible way.*

**SUPPORTING MATERIALS**

***Photographs***

* *It is best to take pictures throughout your project.*
* *Take several shots of the same activity to ensure you get a good one.*
* *Before selecting a specific photograph and writing a caption, answer the following questions: What are the strengths of the completed application? What are the weaknesses? Can you improve your application the most by using photos to enhance its weaker aspects or to complement its strengths?*
* *Can be used on display and report.*

**AGRI-SCIENCE FAIR SCORING**

*Each category is scored from 0-10, with 10 being a perfect score. The total possible score is 100 points.*

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

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

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

\_\_\_\_\_**Conclusions –** Has the exhibitor started with known facts and drawn their own conclusions? Are the conclusions consistent with the date and/or observations?

\_\_\_\_\_**Written Project Report –** Are all components of the written report available? (Note: Exhibitor that does not submit their abstract by the national application deadline will be penalized. Points will be deducted from this score sheet category for each day past the national application deadline that the abstract is late. This means that an excessively late abstract could result in significant point loss, potentially costing you/your team top placement.) Has the exhibitor made thorough use of the data, literature cited, interviews, correspondence, etc., and noted them properly? Considering the age and experience of the exhibitor, doe the project make use of their abilities?

\_\_\_\_\_**Individual / Team Work –** Has material been gathered and cited from a variety of sources? Is the logbook present, for examination? If this was a team project, is their evidence of collaboration present? Identify the portions of the presentation representing the work of others.

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

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

\_\_\_\_\_**Interview –** Is the exhibitor able to communicate their knowledge of the project?

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

**TOTAL SCORE (\_\_\_\_\_\_\_\_\_\_\_\_\_)**

**Project Ideas**

<http://school.discoveryeducation.com/sciencefaircentral/>

<http://www.stemnet.nf.ca/sciencefairs/>

<http://www.all-science-fair-projects.com/>

<http://www.science-ideas.com/>

<http://www.sciencenewsforkids.org/pages/sciencefairzone/topics.asp>

<http://www.sciencebob.com/lab/sciencefair/ideas.html>

<http://k12pages.r8esc.k12.in.us/allen/swacs/sciencefair/ideas.html>

<http://earthquake.usgs.gov/learning/kids/sciencefair.php>

<http://parentingteens.about.com/cs/homeworkhelp/a/blscproindex.htm>

<http://www.energyquest.ca.gov/projects/index.html>

<http://www.ars.usda.gov/is/kids/fair/ideasframe.htm>

<http://www.ars.usda.gov/is/kids/fair/moreideas.htm>

<http://www.ars.usda.gov/is/kids/fair/story.htm>

<http://www.freesciencefairproject.com/>

<http://www.rossarts.org/naples/ideas.htm>

<http://www.juliantrubin.com/fairprojects/engineering/car.html>

<http://www.juliantrubin.com/sciencefairprojectsaz.html>

<http://www.ffa.org/index.cfm?method=c_programs.Agriscience>

<http://www.ffa.org/documents/agsci_handbook.pdf>

<http://wisconsinffa.org/>

<http://ffa.org>

[*http://www.sciencebuddies.com*](http://www.sciencebuddies.com)

To help you start a project, consider the questions below.

What topics are interesting to you? (food, animals, plants, etc.)

Is there anything you really want to know about your chosen topic? (food spoilage, etc.)

Can you ask a question about your topic? (What are ways the food spoilage can be halted or stopped completely?

Is your question testable? What can you test?

Can you follow the scientific method? What is the scientific method? (PLEASE LOOK THIS UP and RECORD YOUR ANSWER)

Now that you know the scientific method, can your question still work? Can you conduct an experiment? If you answer is no, go back to brainstorming. Use the links on the following page to help give you some ideas.

What materials are you going to need? Potential cost?

Develop a timeline of how long you think this will take start to finish.

**Check with Mrs. Ashley to approve your project! After approval, you need to start doing your literature review/research!**