

Summer CATA 2020 Session: Creating a University Worthy Agriscience Fair Project

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Animal Sciences and
Agricultural Education



Divisions and Categories for Agriscience Fair Competition

- Divisions
 - Division I - Individuals in grades 7, 8 and 9
 - Division II - Individuals in grades 10, 11 and 12
 - Division III - Teams in grades 7, 8 and 9
 - Division IV - Teams in grades 10, 11 and 12
- Categories
 - Animal Systems
 - Environmental Services/Natural Resource System
 - Food Products and Processing Systems
 - Plant Systems
 - Power, Structural and Technical Systems
 - Social Systems



Purpose of Agriscience Fair Project

- First and foremost, expose students to science and sound research!
 - Not about obtaining the BLUE RIBBON
- Give them hands on experience in this area
- Allow them to utilize technology and sound scientific principles to address and potentially solve problems relating to Agriculture, food and natural resources (FFA.org)

Deciding on a Topic/Problem to Address

- It needs to excite the student
- Teacher/Mentor/Advisor should have some knowledge on topic
 - If not, seek out someone in the community that does
- University/Community College/Industry Personnel may be willing to assist



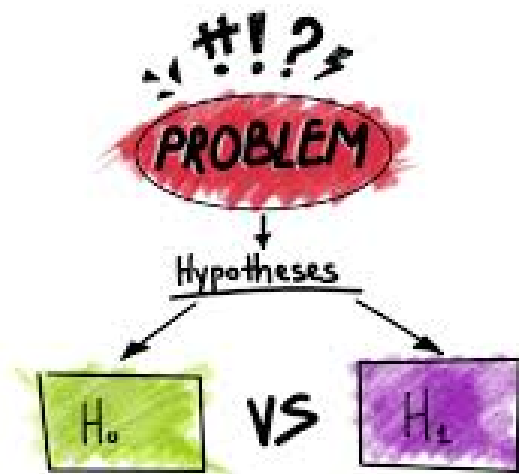
Literature Review

- Important to give background information on the topic being researched
- Allows the judge to understand the importance and context of the problem/question being addressed
 - Make sure to use scientific journals and appropriate popular press articles
 - If you do not have access to scientific journals, partner with UC Extension personnel or with university personnel
 - Try to use the most current information available.



Hypothesis of Research Project

- What does the student think is going to be the outcome of the experiment?
 - Ok, if the hypothesis is wrong in the end
 - Null hypothesis → No difference
- Hypothesis should be clearly written and easy to understand



Materials and Methods

- Control Group
- Negative Control Group
- Treatment Group(s)
- Experiment Replication
 - Feeding 2 animals in the same pen is NOT replication
- Every step of the experiment needs to be explained in detail
 - Someone should be able to repeat the experiment based on the materials and methods your student writes
 - Many times the Materials and Methods are written in a way that they are not easily repeatable (vague or unclear)



Materials and Methods – Statistical Analysis

- Every research project should include some data analysis
 - Try to include multiple replications, if possible?
 - Will strengthen your experiment with more data points to analyze
- Subjective vs Objective Measurements
 - Objective Measurements – Something that can be measured consistently
 - Subjective Measurements – Something that measures what people say/interpret
- Both are valuable data to collect
 - Data analysis is easier/cleaner with Objective Measurements



Materials and Methods – Statistical Analysis

- Conduct a simple ANOVA and T-Test to analyze for significant differences ($p < 0.05$)
- Myriad of software programs to use
 - Microsoft Excel – User friendly (Excel has tons of capabilities these days)
 - JMP – User Friendly but costs money. Free 30-day trial
 - <https://www.jmp.com>
 - Free and Open source Statistical Software on the Internet
 - <https://www.goodfirms.co/blog/10-best-free-and-open-source-statistical-analysis-software>
- Again if you are lost, ask for help

Results

- Results and Discussion can either be written co-mingled or separate in Scientific Journal Publications
 - There are pros and cons to each way
 - Follow the rules for the Agriscience Project Format
- Best to present results in written form, as well as table and graphs
 - Some people can understand data better in one form than the other
 - Scientific minded people like seeing the data
 - For the most part tables work great for written documents, while graphs or figures work great for presentations



Discussion

- Sometimes the most difficult part of the Agriscience Fair Project to write
- Need to convey what your results mean
 - Boil down to why is this data important for people to know
- Does it support or negate previous research already published
 - If it negates previous research, why do you think your results are different
 - Can hypothesize why your results are different

Conclusions and Summary

- Summary
 - Summarize your study briefly
 - What were the results of the study being conducted
- Conclusion
 - What should be done or changed as a result of the research (FFA.org).
 - Need to discuss potential further research if necessary
 - Conclusion is NOT a summary of your results...think what does it mean to/for the industry



Poster Tips

- Color
 - Keep professional
 - Use a couple colors, avoid colors that are too loud, avoid text in red (hurts eyes)
- Pictures
 - Great for conveying materials & methods
 - Don't enlarge too much – pixilation when enlarged
- Graphs & Figures
 - Excellent way to present results
- Print it out large before printing final version
 - Easier to find mistakes

Importance of Spelling, Grammar, and Work Cited

- Scientists are taken more credible if spelling, grammar, and punctuation are correct
 - Have a few different credible adults proof-read the research paper
 - The more eyes you have read it, the more likely you will find mistakes
 - This includes your poster...it is amazing the mistakes you'll find once in large print
- Internal and External Citations
 - Important when borrowing information that is not original to the author
 - If not properly cited, the author is plagiarizing

Final Thoughts

- Make sure it is an enjoyable experience for the student
 - They can compete multiple years in Agriscience Fair Project Contest
- Teachers, utilize industry/experts when you feel uncomfortable with a certain subject area
 - Very difficult to be experts in all aspects of Agriculture
- Lastly, have fun solving real-world problems in agriculture



