



Research: Experimental, Analysis or Invention SAE



A student conducting a **RESEARCH SAE** is involved in an investigation of materials, processes and information to establish new knowledge or the validation of previous research. Research conducted must have applications within AFNR Technical Standards.

There are three variations of research SAE available that students may conduct:

EXPERIMENTAL: An Experimental Research SAE involves the application to the scientific method to control certain variables while manipulating others to observe the outcome. The student defines the hypothesis the experiment will test, determines the experimental design, conducts the research, collects the data, draws conclusions from the data and recommends further research that can be done.

ANALYTICAL: An Analytical Research SAE often begins with a question that asks why or how something occurs, followed by a period of data collection using qualitative and/or quantitative methodologies. The student then conducts analysis of data, facts and other information to determine the answer to the posed question.

INVENTION: An Invention Research SAE applies the engineering design process to create a new product or service. This type of research often begins with the identification of a need and the development of a product followed by an iterative process of prototyping and testing that results in a product that meets the identified need.

Research SAE Quality Indicators:

The student:

- Engages in identifying an ongoing program of research following an approved **Supervised Agricultural Experience (SAE) Research Plan**
- Follows scientific process and/or accepted best practices for conducting research to ensure reliability, validity and replicability of research
- Conducts peer reviews with supervising agriculture instructor and other professionals during multiple stages of the research cycle (e.g., proposal, report of findings, publications, etc.)
- Delivers a summary presentation to a local committee organized by the agricultural education instructor