

Promoting Science Through the Food and
Agriculture Research Experiences for
Teachers (RET) Program

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The Need for Food & Agricultural Literacy

- Reasons:
 - By 2050 there will 2.4 Billion more people on earth...how will we continue to feed the world?
 - Confusion among consumers and voters about food, where it comes from and how it is produced.
 - In the U.S., less than 1.5% of people live on farms. Children think that milk comes from stores and that chickens are treated cruelly.
 - Few understand or appreciate the role of agriculture in the U.S. economy and trade.
 - In Nebraska, 1 in 3 jobs is agriculture-related.
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The Need for Science Literacy and Effective Pedagogy

- Most elementary teachers have not experienced “doing” science.
 - Most elementary teachers don’t understand that science is not simply a collection of facts, but an ongoing process of discovery.
 - Most elementary teachers have not been asked in their science experiences to develop a question, collect data, use data to make inferences, and apply new knowledge.
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Research & Discovery Learning

- Effective teachers understand and articulate the knowledge and practices of contemporary science.
 - Effective teachers of science understand how students learn and how to develop scientific knowledge through inquiry approaches.
 - Effective teachers engage students in collecting and interpreting data in order to develop and communicate concepts and understand scientific processes, relationships and natural patterns from empirical experiences.
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Goals of the Program

The program focuses on developing a trans-formative model of education and professional development for teacher.

Features of the program:

- Food and agriculture used as a vehicle for understanding concepts in science
 - Research and discovery – science practice
 - Systems-thinking
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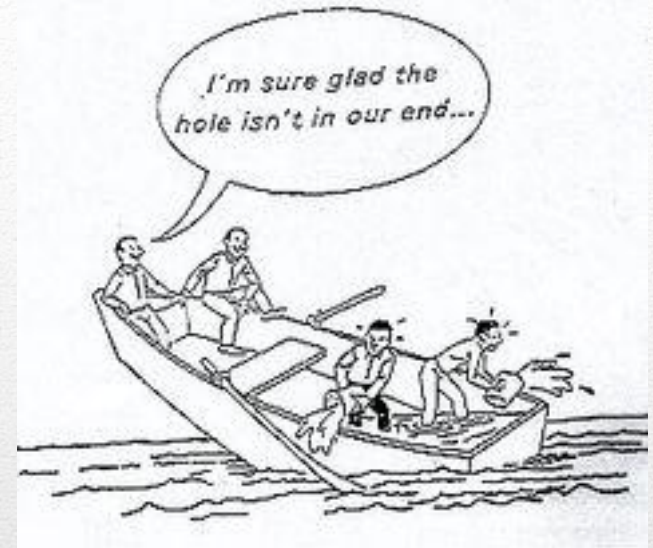
Soybeans as the vehicle for teaching science ...

- In schools, food and agriculture are the perfect vehicles for delivering the concepts of biology, chemistry, environmental and earth sciences, and other topics in the existing standards and curriculum.
- Historically, these science areas have been taught independently of each other, however, we now recognize that there is a need for a systematic and integrated understanding of systems among our students.



Systems Thinking

- Many important problems that our society faces are complex and require a systems approach for developing solutions
- Agricultural systems are an excellent model for integrating complex systems:
 - interactions between animals and their food
 - the influences of the physical and biological environment on the diverse organisms that live within it



How Does the Program Work?



Summer Soybean Institute (SSI)

- Soybean system
 - Research and discovery
 - Explore classroom connection – How to replicate this experience in the classroom?
 - Systems level inquiry approaches
 - National, state and local science standards
 - Overstuffed” curriculum, limitations on how much science is taught
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Classroom Implementation

- Lesson Plans - MySoybean.org
- Other Educational Resources
 - Ag in the Classroom
 - State Soybean Boards
- Program support
 - Scientists
 - Science educators
 - Master teacher



Impact of the Program



Impact of the Program

- Promotes science literacy
- Promotes food and agriculture literacy
- Provides teachers the tools and knowledge necessary to communicate and educate the youth of Nebraska on the role of science and soybeans in
 - their lives
 - the lives of their families
 - the impact soybeans on the state, region and nation

...by using food and agriculture as model systems for science instruction

Impact of the Program

- Approximately 100 teachers and 2500 students have participated in the program
 - Examples of success:
 - 390 Lincoln Public Schools K-2 classrooms use soybean as the model plant system
 - Ag Research Fairs – 4th grades
 - Soybean Tuesdays – LPS middle school
 - Expansion of model
 - Northeast Nebraska
 - Kansas
 - Minnesota
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Outcomes

- Strengthened partnerships:
 - Scientists, science educators, teachers
 - School districts in Nebraska
 - Department of Education
 - Agricultural-based commodities
 - Institution Initiatives
 - NebraskaScience
 - Science Literacy – food, energy, water
 - Discipline-based educational research
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Conclusions

- Using model systems – explore other plant systems, animal systems, etc.
 - Promoting science literacy using model systems that are local and important
 - Promoting food and agricultural literacy
 - Unique model – science educators and scientist working together
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Acknowledgments

- Nebraska Soybean Board
- United Soybean Board

