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## Agricultural Awareness Days: Integrating Agricultural Partnerships and STEM Education

Brian T. Campbell

Virginia Tech Southern Piedmont AREC, brian3@vt.edu

Carol A. Wilkinson

Virginia Tech Southern Piedmont AREC, wilki@vt.edu

Pamela J. Shepherd

Virginia Tech Southern Piedmont AREC, pjshep@vt.edu



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## Agricultural Awareness Days: Integrating Agricultural Partnerships and STEM Education

### Abstract

In the United States there is a need to educate young children in science, technology, and agriculture. Through collaboration with many agricultural groups, the Southern Piedmont Agricultural Research and Education Center has set up a program that works with 3rd grade students and teachers to reinforce the science that has been taught in the classroom in a hands-on environment. This program has grown in size and scope over the years that it has been in place, but the partnerships that come together from Extension, Virginia Tech, USDA, and many others is what makes this program such a success.

**Brian T. Campbell**  
Ruminant Livestock  
Specialist  
[brian3@vt.edu](mailto:brian3@vt.edu)

**Carol A. Wilkinson**  
Director  
[wilki@vt.edu](mailto:wilki@vt.edu)

**Pamela J. Shepherd**  
Lab and Research  
Specialist II  
[pjshep@vt.edu](mailto:pjshep@vt.edu)

Virginia Tech  
Southern Piedmont  
AREC  
Blackstone Virginia

### Introduction

Integrating agricultural education and science education is not a new idea and has been supported by many sources for over 20 years (Balschweid & Thompson, 2002). It has been recommended to connect what students learn in the classroom with real-world experiences and interdisciplinary programs (American Association for the Advancement of Science, 1993). Science, Technology, Engineering and Mathematics education (STEM) has become a major push in the educational system due to our ever-expanding technological world. This has been increased by the discovery that young students are more able to understand science than previously believed (Horton, Kreiger, & Halasa, 2013).

It is with these things in mind that the Virginia Tech Southern Piedmont Agricultural Research and Extension Center (SPAREC) developed Agricultural Awareness Days. These focus on integrating agricultural education with science and the Virginia Standards of Learning. This program is for 3rd grade students, and it is conducted shortly before the standardized tests at the end of the school year as a refresher to what they have learned throughout the year. Agricultural Awareness Days also introduce agriculture to students who would not otherwise be exposed to any agricultural education.

### Activities

The 3rd grade students rotate through 13 different stations covering plants, animals, simple machines, earth's resources, and many other aspects of science. All stations are designed to combine hands on learning, STEM education, and agriculture along with Virginia Standards of

Learning for 3rd grade.

Poultry—Students learn about different types of poultry and eggs. They handle chicks and learn where their food comes from.

Vermicomposting—Students learn about composting with red wiggler worms and decomposers as part of their science standards of learning.

Soil Tunnel—Students learn what makes up the soil profile and what makes good soil. They then crawl through a soil tunnel to see a 3D representation of the soil profile.

Soil Erosion Boxes—The erosion box demonstrates the amount of soil that is washed off the land by rainfall events and the importance of a strong plant community to maintain topsoil.

Water cycle—The students learn about the water cycle and make bracelets out of colored beads to represent the different parts of the water cycle.

Wildlife—The students learn about the interdependency of plants and animals and are able to touch pelts of local wildlife.

Dairy—The students learn the difference between humans and animals, have the opportunity to pet a calf, and milk a no-kick cow (a model cow with an artificial udder).

Apple earth—Students review fractions while learning about land resources for agriculture using an apple as a model.

Horses—Students learn about horses, management, and their tack.

Field crops—Students match field crops with their seeds and review the plant life cycle.

Sheep—Students learn about sheep and the products produced with wool.

Forestry—Students learn about natural resources, both renewable and non-renewable. They also review the uses of wood products and make a sheet of paper out of wood pulp.

Simple Machines—Students review the simple machines and demonstrations be given of several of the simple machines.

## Stations

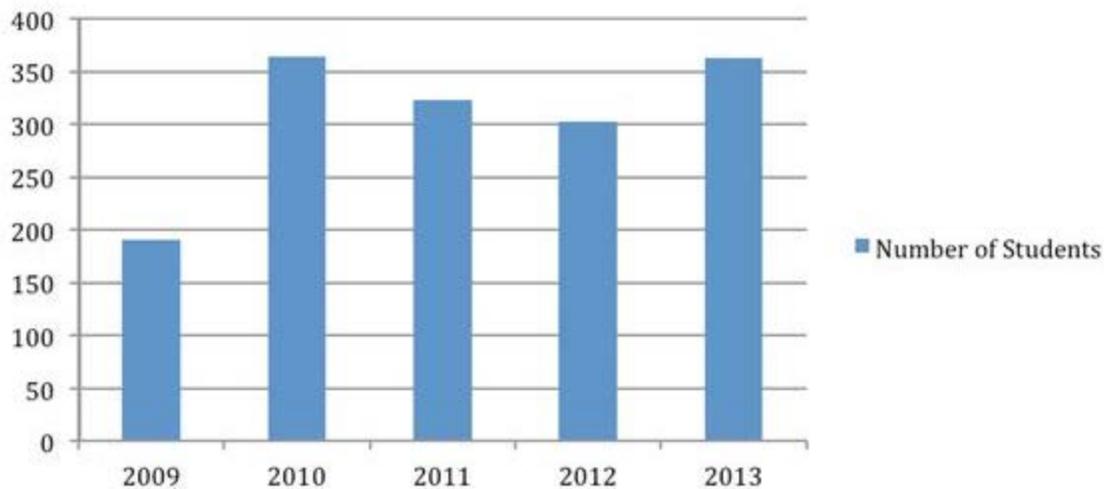
The students rotate through the stations, having 15 minutes at each station. This program is conducted in the spring of the year and has been greatly successful as a review of what was learned during the school year before they take their end-of-the-year standardized tests. The stations are staffed by a combination of agricultural organizations (Soil and Water Conservation Districts, Natural Resources Conservation Service, Department of Game and Inland Fisheries, Department of Forestry, Future Farmers of America, and Farm Bureau), Extension professionals, station employees, and agricultural producers from the local community. Without this integration of people, the program would not be as successful as it has become.

## Results and Discussion

Agricultural Awareness Days have been a great success for Southside Virginia and the Southern Piedmont AREC. This program has been in place for several years now and has grown to include over 300 students from three counties (Figure 1) each year. Because of the hands-on nature of most of the stations and the short time of the stations, this maintains the attention span of the students. Faculty and administrators from the schools have commented that the combination of their teaching and the review provided by this program have improved the test scores of students who participated in the program.

**Figure 1.**

Number of Students Who Have Participated in Agricultural Awareness Days by Year



Agricultural Awareness Days are an integrated program that combines Extension, the local community, schools, and producers to integrate agriculture and STEM education to improve the education and test scores of students who would otherwise not be involved with agricultural education. This program is an excellent way to introduce students to science, math, and agriculture while maintaining a fun environment to encourage learning. The basic premise and design of this program could be modified for other grade levels and education goals, which would be helpful in the future, or for other locations to begin their own programs to incorporate Extension and science into education.

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