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**“Agribusiness Essential for Food Security: Empowering Youth and Enhancing  
Quality Products”**

**Proceedings of the  
30<sup>th</sup> West Indies Agricultural Economics Conference  
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# Youth Awareness and Nutrition: Real Fruits and Vegetables = Real Results

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## Abstract

*Educating youth on the relevance of agriculture to their daily lives is imperative to food security, as these future adults will be faced with land use decisions which call upon their perception of the value of agriculture. Though their food comes first from a farm, without opportunity to connect, students are often ignorant of their reliance on farms for food. Polk County, Florida, is fortunate to have abundant agriculture, yet many students, particularly those in urban areas, are unaware of the importance of agriculture to their daily lives.*

*In 2011, Agrifest, a long standing agricultural awareness program for Polk County fourth graders, incorporated a new station to improve student perception of fruits and vegetables and increase the likelihood they would risk trying new ones. The station, highlighting the diversity and scope of Florida farms, emphasized the importance and excitement of eating fruits and vegetables using two enormous displays of more than 40 different kinds of real fruits and vegetables.*

*More than 6,000 students experienced, touched and smelled new fruits and vegetables as a result of the Florida Farms station from 2011-2012. Teacher surveys showed the station was educationally relevant (80%, n= 82) and improved student awareness of Florida grown agricultural products (87%, n= 47). More than half of the teachers (53%, n=47) thought students were more likely to try new fruits and vegetables following the experience.*

*Key words: Youth, Nutrition, Fruits, Vegetables, Agriculture*

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## Introduction

Located in central Florida, Polk County enjoys abundant land and agriculture, primarily in the traditional commodities of citrus and cattle. Even with abundant agricultural infrastructure, however, a majority of the county's population, particularly urban youth, have little connection to agriculture and remain unaware of their dependence on its productivity for the food they eat every day. Though home to 2,700 farms and 550,000 farmed acres, primarily in citrus and beef cattle production, many urban Polk County students are unaware of the

relevance of agriculture and lack access to fresh fruits and vegetables. (USDA 2007)

In addition to lacking agricultural awareness, many Polk County students are in need of a healthy eating jump start. Nationwide trends indicate nearly one third (32%) of American youth are overweight and 17% are considered obese. (Meyer et al. 2013) Limited access to fresh fruits and vegetables and poverty are cited as primary risk factors for obesity and according to US Census Bureau estimates, more than 26% of those under 18 in Polk County live in poverty. (US Census Bureau 2011) A recent US News and World Report article listed the

Lakeland-Winter Haven Area as one of the most obese areas of the Country, with a 33.5 % obesity rate. (Haupt 2012)

Agrifest is an annual two week program for Polk County fourth graders, conducted at the UF/IFAS Polk County Extension office in cooperation with the Polk County Farm Bureau, Polk County Schools and local agricultural businesses. The program recently celebrated 25 years and seeks to inform the next generation of the importance of agriculture to Polk County and to their daily lives. The program instructs 6,000 students each year, bussed to the Extension office by the school system. Reaching youth through school based programs and activities allows for reaching a large number of youth in a coordinated manner. Polk County is fortunate to offer agricultural education programs at both the middle and high school levels at select schools around the county. In addition, 4-H Youth Development is open to school aged youth from elementary through young adulthood.

In 2011, a new station highlighting the diversity of Florida farms based on a Florida Agriculture in the Classroom book was incorporated into Agrifest. The Florida Farms station was designed to provide a highly interactive educational experience for students, stimulating the senses as well as the mind. The teaching method was very well received and the station was repeated with an added taste test in 2012. The objectives of the station were to increase the agricultural awareness of students and improve their perception of fresh fruits and vegetables.

## Materials and Methods

Agrifest has celebrated 25 successful years as the result of strong partnership and coordination between UF/IFAS Polk County Extension, the Polk County Farm Bureau, the Polk County School Board and Polk County agricultural businesses. The overall scheduling and organization of the program is provided by the Polk County Farm Bureau.

Students spend one half day at the program held over the course of two weeks in the spring. Students experience one of two rotations through four stations featuring significant components of Polk County agriculture: beef, citrus, blueberries and forestry; or phosphate, water, horticulture and Florida Farms. The program relies heavily on volunteers to assist with and move students through the twenty minute stations.

The Florida Farms station was incorporated into Agrifest in 2011 and repeated in 2012. Designed to provide a highly interactive educational experience, the station curriculum was based on These Florida Farms, a twenty-eight page Florida Agriculture in the Classroom book, highlighting the diversity of Florida farms. The story begins in a grocery store and then sets off on a tour of the various farms that produced the products found there. Strawberries, peppers, root vegetables, and tropical fruit are select examples, though the book highlights an extensive range of farms including seafood, equestrian operations and such unique operations as alligator farms. The station was setup in two rooms due to a lack of available rooms large enough to accommodate the average group size of eighty students, resulting in group sizes of forty students in each room. Vocabulary words correlating to upcoming standardized testing were highlighted from the text and repeated by students during the session to increase the impact of the educational experience relative to standardized benchmarks.

The station featured a companion teaching display set up as a farmers' market to foster curiosity and stimulate the senses with more than forty different kinds of fruits and vegetables. See Figure 1. and Table 1. The fruits and vegetables were procured from wholesale markets with the help of local produce stands and the colorful variety helped to convey the vitality and excitement of fresh fruits and vegetables. Items were selected based on if they could be grown in

Florida and if they were exciting and unusual. Each item was labeled clearly so students, teachers and parents could learn to identify them even if there was not time to highlight them specifically. The rooms were decorated with nutrition and horticulture posters featuring unusual arrangements and varieties of fruits and vegetables. The station also featured a display from the University of Florida IFAS Tropical Aquaculture Research and Extension Lab, Ruskin FL, as aquaculture is a significant industry in Polk County.

The station required two presenters and a local farmer helped to present in the second year. The experience began by reciting select vocabulary words followed by reading through the book as it was projected to a screen in the front of each room. As different groups of fruits and vegetables were cited in the book, the presenter would pick up or point them out in the display. The presenter would also ask students to identify or point to different fruits and vegetables to involve students further. Some fruits and vegetables were also passed around to allow students to experience them individually. These were selected based on their ability to withstand handling and if students were disruptive, this activity was not included. Items passed around included sweet potatoes, cassava, and mélange in addition to some large pumelo, which the students found particularly exciting. Fruits and vegetables were periodically cut open so students could see the inside. The display was put away in a commercial sized refrigerator each day after the program and setup again in the morning to keep it as fresh as possible for the duration of the program. Fact sheets on local farms and farmers' markets were also included in the teacher resource bags to help students connect with farms after the program.

Based on feedback from the 2011 program, the 2012 program incorporated a taste test. A local citrus and blueberry packing house contributed tangerines for one week and blueberries for the second week.

Though the Florida Farms station was not conducted in 2013 due to a special celebration of 500 years of European history in Florida, it is expected that the station will return to the program in 2014.

## **Results and Discussion**

More than 6,000 students, many lacking exposure to fresh fruits and vegetables, touched and smelled new fruits and vegetables as a result of the Florida Farms station from 2011-2012. Teacher surveys conducted online and distributed via email after the program showed the station was educationally relevant (80%, n= 82). The 2012 survey found that the station improved student awareness of Florida grown agricultural products (87%, n= 47) and more than half of the teachers (53%, n=47) thought students were more likely to try new fruits and vegetables following the experience. Comments provided also showed some teachers believed their students may not otherwise have opportunity to try these fruits, especially blueberries, a costly produce item.

Programming to address the public health threat posed by obesity and poor nutrition has expanded in recent years. While the considerable resources required to update awareness and nutrition curriculum may be justified, the simple experience of interacting with new fresh fruits and vegetables does not require such cerebral exercise, yet may result in a measurable impact on the behavior of students. Appealing to the senses, with the colorful range of textures, shapes and sizes, combined with the touch and smell of the real thing, engaged students at a basic level and naturally led to discussions of preparation of food at home. Students also learned more about what fruits and vegetable are grown in Polk County, in Florida, and which foods are not grown in Florida at all, the number one food mentioned being apples.

## **Conclusions**

Preying upon the senses using fresh fruits and vegetables helped students to connect with the excitement and benefits of agriculture and healthy eating. This was an effective teaching method and has a great potential to influence behavior rather than simply reading about fruits and vegetables or using the limited range of plastic examples available. Others interested in conducting similar programs should consider their access to fresh fruits and vegetables and also to refrigeration. Selecting unusual varieties will help to engage students, should they already be familiar with how fruits and vegetables grow. Labeling will help even timid students identify items. The display could be used as a beginning point for teaching solely on nutrition if desired. The taste test in this program was limited by our ability to procure enough samples for 3,000 students. Programs with smaller groups of students could feature a wider selection of fruits and vegetables for sampling and may increase student risk taking in trying new fruits and vegetables even further. Alternatively appealing to the sense of smell rather than taste, using herbs and spices, for example, may be a cost effective method of encouraging curiosity and interest.

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**Figure 1: An extensive variety of fruits and vegetables created colorful excitement and interest in learning more**



**Figure 2: Labels helped students (and accompanying adults) identify and learn more about unusual items.**

**Table 1: Fresh Fruits and Vegetables Featured**

Fruit	Strawberry, blueberry, peaches, cantaloupe, watermelon, citrus: lime, tangerine, lemon, orange, pumelo, grapefruit, and kumquat
Tropical Fruit	Pineapple, papaya, banana, plantain, guava, kiwi, mango (2 kinds), avocado (2 kinds), and carambola
Vegetables	Red and green cabbage, eggplant, tomato, cucumbers, squash: butternut, acorn, zucchini, summer; onions: green and bulb; leeks, colored sweet peppers, and various hot peppers: red hots, jalapeno and chilli
Root crops	Carrots, potatoes, ginger, cassava, garlic, and sweet potato
Other	Peanuts, sugar cane, honey, fresh herbs: cilantro and basil; and fennel