

Fishin' For Success

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Introduction

Today, more than ever before in our history, high school agriculture teachers are facing classes full of “non-traditional” students. Many of these students come from urban areas and have never experienced conventional farming enterprises. Traditional agriculture education programs must change if they are to meet the challenge of addressing the needs of this diverse student population. The Johnson County agriculture education program has met this challenge through the development of an innovative, state-of-the-art aquaculture and hydroponics program designed to increase interest and participation in its agriculture program. Not only are the students benefiting from this new program, but also the program itself has generated national attention and has lured thousands of visitors from more than forty states and eight foreign countries. The success of this innovative program has been featured several times by television, radio, newspapers, and magazines from all over the United States.

Steps and Program Development

The department grew from a struggling program in the early 1990's with less than 100 students and one teacher to a program with 340 students and four agriculture teachers. Well over half of Johnson County High School's 725 students are presently enrolled in agriculture classes. What happened in this program to create this drastic change?

Agriculture teachers, administrators, and community leaders came together with the specific purpose of developing a strategic plan to improve the quality of the agriculture program at Johnson County High School. As a direct result, a state-of-the-art alternative farming center was built as an intricate component of the schools' agriculture program. The center helps integrate classroom academics and hands-on vocational training by providing students an opportunity to apply subjects such as mathematics, chemistry, and biology in practical situations in the greenhouse and aquaculture center.

Floral plants and vegetables are cultivated in four state-of-the-art greenhouses. In addition to the greenhouses, the Alternative Farming Center, a 9,000 square foot multi-use center, provides students first hand knowledge and application in producing tilapia, a warm water fish cultivated for food, and koi, an ornamental carp used in water gardens. The fish are produced in four water-filled raceways that double as a habitat for floating garden plants. Bedding plants and lettuce are grown hydroponically using rolling tables on top of the raceways and hundreds of hanging baskets grow overhead. Hydroponic tomatoes and cucumbers are produced alongside the raceways. A symbiotic relationship exists among the fish and the hydroponic plants. Fish water circulates through the

hydroponic system and provides nutrients to the plants. The water is then returned to the fish tanks with less nitrogen and wastes, which benefits and supports the fish population.

In addition to the newly emphasized aquaculture and hydroponics programs, the department still maintains strong traditional agriculture classes such as agriculture mechanics, agriscience, forestry, and wildlife.

Results

Enrollment in the Johnson County agricultural program has increased approximately 200 percent since the addition of the alternative farming center in 1997. This enrollment explosion has served as the basis for the addition of three additional full-time teachers and two full-time technicians. FFA enrollment has also increased from 64 members in 1994 to more than 200 members in 2000. Mr. Kenneth McQueen, the aquaculture instructor stated, "Not only has the number of students enrolled in our agriculture classes increased, but the quality of these students has improved dramatically." He also believes that the alternative classes presently offered are raising the academic standard for the entire agriculture program.

Because of the local, state, and national attention, the Johnson County aquaculture facility is labeled a "model program of success" and is the most frequently visited public attraction in the county. This provides students with the opportunity to lead several tours each week. The tours help students develop poise, self-confidence, and responsibility. The teachers believe this activity has helped improve many students' public speaking ability. Three Johnson County FFA members having recently won state public speaking career development events document this belief. The winners credit their achievements to the public speaking skills they acquired while giving educational tours at the alternative-farming center.

Future Plans

A grant proposal is currently being developed to allow the school to build a processing plant to be attached to the aquaculture facility. After the completion of this facility, students will learn to harvest and hand process fish for market. Additional food science and technology classes will be offered to enable students to acquire proper food handling skills in order to ensure quality.

Presently many East and Middle Tennessee farmers are considering the feasibility of growing shrimp in confined facilities. Johnson County agriculture teachers have been requested to use one of the raceways in the aquaculture facility to conduct research on the feasibility of freshwater shrimp production. The teachers believe that the addition of freshwater shrimp will not only add to the quality of the school's program, but also provide an alternative enterprise for East Tennessee farmers searching for a replacement to burley tobacco production.

Costs

An aquaculture facility such as this does not come cheap. Several grants totaling more than \$500,000 were secured to build and maintain the facilities. The electricity bill alone totals more than \$20,000 per year and feed costs are estimated at \$12,000 annually. The student-run greenhouses and aquaculture facility generate almost 200 pounds of produce each week and 25,000 pounds of fish annually. All are marketed locally to a variety of merchants and restaurants. Fish and greenhouse sales, in addition to funds provided by the school system, are used to cover facility expenses.

References

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