

# AGRI-21: SUSTAINABLE FARMING DEMONSTRATION

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## ABSTRACT

On-farm demonstrations were established in 1993 to demonstrate the technology required to conduct a profitable and sustainable farming operation into the 21st Century. These were part of a cooperative program between the Tennessee Valley Authority (TVA) and Land Grant Universities in the seven states of the TVA region. Four demonstrations were established in Kentucky. A beef farm in west Kentucky will be used to illustrate the project. This farm improved crop and livestock management, record keeping and environmental stewardship. Their goal is to increase farm profitability while improving the soil and water resources.

## KEYWORDS

Sustainable farming, beef, grazing, environment

## INTRODUCTION

Farmers face increasing demands regarding environmental protection. These add expense and sometimes limit their enterprise opportunities which makes it more difficult to remain profitable. In addition, farm families must deal with problems of health insurance, debt management, estate planning, etc. The AGRI-21 project (Tennessee Valley Authority, 1992) was designed to help farm families learn how to deal with these and other issues that determine farm sustainability.

Farm families cooperating in the program are assisted by a team of experts in developing plans for their farm and family for a five year period. As problems are identified, other resources can be brought in to deal with them. Experiences of the demonstration farm families are used to show others what can be done. News releases, newspaper and magazine article, farm tours and meeting allow others to learn from what they are doing.

The beef cattle industry is very important to farmers in Kentucky. In 1993 there were over 1.1 million beef cows on farms in the state (Williamson, 1993). Beef cattle producers face many challenges aside from the day-to-day problems of growing and selling calves such as environmental protection which is becoming more regulatory. For this reason, one of the AGRI-21 farms chosen was a beef farm.

## THE ROBERTS' FARM

Mr. Roberts is in his late fifties and retired from public work. He and his wife farm 950 acres of highly erodible land in west Kentucky. Their primary income is from a 175 cow beef enterprise. Their goal is to make the farm profitable while protecting the environment and making it a good place to live for their children and grandchildren.

They started with improved record keeping. This included the Kentucky Farm Business Analysis program for their overall financial records and the Cow Herd Appraisal Performance System (CHAPS) (Ringwall and Berg, 1994) for their beef herd. They did an environmental assessment through the KY-A-Syst program (Dravillas and Ilvento, 1994) (Rhodes, et al., 1996) to help identify potential environmental problems. They also did a family financial plan and estate planning.

As a result of assessment and planning, several specific projects were identified and scheduled for completion.

**Beef Enterprise Improvement:** Genetics of the commercial crossbred herd was improved through artificial insemination and selective culling. Steer calves were entered in a Certified Preconditioned for Health (CPH) (Johns, et al., 1990) program in which calves are weaned and treated to prepare them for finishing in a feedlot. They are then grouped with cattle from other farms to form uniform lots and sold in a special sale. The results are more pounds of beef sold at higher prices. Heifers are retained and sold as bred heifers through private sales.

An intensive rotational grazing system was established to improve pasture management and cattle performance. A field of bermudagrass was established to provide pasture during summer. Corn silage and broiler litter is used for winter feed along with hay. New handling facilities were constructed to make working cattle easier and faster.

**Environmental Improvements:** As a result of the environmental assessment using the Farm-A-Syst materials, several changes were made. More care was taken in handling and disposal of herbicide, pesticide and animal health containers and wastes. Pesticide storage was moved away from a water well area and made more secure. On-farm fuel storage was also moved from lots near the farmstead to pastures to avoid manure accumulation. Streams and ponds were fenced to exclude cattle and a new in-pasture water system was installed. The rotational grazing system resulted in a better distribution of manure in the pastures and reduced the chance of runoff reaching streams. A reservoir was constructed to provide water for cattle and prevent flooding of prime farmland downstream. This made it possible to grow silage corn on the level land instead of on highly erodible upland. The result was higher yields and less soil erosion.

## RESULTS

The changes made by the Roberts has resulted in improved production of a higher quality product - their beef steers and bred heifers. They have reduced the potential for contamination of surface and ground water and health hazards for the family. They are able to do a better job of managing the farm because things can be done faster and easier, which means they are more likely to be done on time. Perhaps the most important result to the Roberts is the satisfaction in knowing they are doing their part in protecting the environment and making their farm a better place to live.

## REFERENCES

- Dravillas, M. And T. Ilvento.** 1994. Assessing and Reducing the Risk of Groundwater Contamination. IP-40. University of Kentucky, College of Agriculture, Lexington, KY.
- Johns, John, Roy Burris, Nelson Gay, David Patterson and Duane Miksch.** 1990. Conditioning Cattle for Growing and Finishing. ASC-22. University of Kentucky, College of Agriculture, Lexington, KY.
- Rhodes, R., J.M. Howell, P. Lucas and C.W. Absher.** 1996. Expansion of the KY-A-Syst Home and Farmstead Water Quality Program to a Comprehensive Home and Farm Water Quality. Protection Plan. In: Thom, W.O. ed. 1996. Water Quality Research and

Education Progress Report, First Year. Univ. of Kentucky, Lexington, KY pp. 66-68.

**Ringwall, K. And P.M. Berg.** 1994. CHAPS. Cow Herd Appraisal Performance Software. North Dakota State University. Adapted by University of Kentucky. Department of Animal Sciences. Extension Series #1. Lexington, KY.

**Tennessee Valley Authority.** 1992. AGRI-21 Farming Systems. TVA Agricultural Institute. P. O. Box 1010, Muscle Shoals, AL.

**Williamson, D.D.** 1993. Kentucky Agricultural Facts. Kentucky Agricultural Statistics Service. Louisville, KY.