Research team studies alternative farming methods

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Issue date: 9/6/02 **Section:** Campus News

Lubbock is well known for its extensive cotton fields and dusty weather. However, a research team primarily from Texas Tech may have found a way to change all that by studying the effects of implementing an alternative integrated crop/forage/livestock system.

Cotton is grown all year in much of the West Texas region. This constant growth of one crop is called a monoculture and contributes to wind induced erosion and depletion of ground water resources, said Vivien Allen, Thornton Distinguished chair in the Department of Plant and Soil Sciences.

A group of faculty and students from Tech and surrounding areas, along with a researcher from Texas A&M, are researching the possibilities of integrating beef cattle and grain into cotton crops, said Allen, who heads up the team of researchers.

The project studies the effects of planting grains such as wheat, rye and grasses for beef cattle consumption along with cotton, then allowing cattle to graze over the integrated crops.

"This area produces around 25 percent of the cotton and beef cattle used in the United States. About 70 percent of the cotton grown is supported by irrigation," Allen said. "We wanted to find out what

happened if we combined these two industries, to see if we could use less resources."

Most of the water used for irrigating crops comes from the Ogallala Aquifer, said Dewayne Hovey, with the High Plains Underground Water Conservation District No. 1. In the last 10 years, the water level in the 15 counties surrounding Lubbock has dropped an average of about a foot a year.

Finding ways to conserve natural resources such as water was the incentive for the project and was made possible by a grant from the U.S. Department of Agriculture Sustainable Agriculture Research and Education Program, Allen said.

Research for the project completes its fifth year in November.

However, researchers will be able to continue their study with another grant from the USDA-SARE they received in April.

"We found that the new system reduced water use by 21 percent and nitrogen fertilizer use by 40 percent," Allen said. "At the same time it was more profitable than the cotton monoculture."

Reducing the amount of fertilizer and water used is significant because it allows farmers to save money spent on their crops while still harvesting the same amount of cotton.

These were only a few portions of the research results, said Matt Baker, chair of the department of Agricultural Education and Communication.

"We're examining many aspects of the new system," Baker said. "There's the economic side and the environmental side, which has to do with reducing the use of water for irrigation and slowing soil erosion."

The research site is located at the Tech Agricultural Field Laboratory near New Deal. Half of the land in use is allocated for grass, said Allen. The other half is divided into two parts where cotton, rye and wheat are grown throughout the year.

The fields are designed so cattle can continuously graze different grains throughout the year.

Graduate students conduct research related to the project, such as, studying the adaptation potential of different grass varieties and water use on forages.

"Anytime there is a monoculture system, it isn't that great," said Mark A. Marsalis, a graduate research assistant studying the adaptation of varieties of Bermuda grass. "We're not trying to eliminate the cotton monoculture system, we're just trying to find ways to diversify it."

There are a few slight drawbacks with the new system, said Allen.

"Something like this usually requires management to take a step up," Allen said. "Now instead of only knowing about cotton, farmers have to know about cattle and forages as well."

The results of this research project will be used primarily to educate farmers on the potential of this alternative farming method, said Allen.

Other departments involved in this multi-disciplinary research include Agricultural Economics, Agricultural Communications and Education, the High Plains Underground Water District as well as researchers from Texas A&M and co-op producers.

"That's what a project like this takes," Allen said. "You just build a platform and let the players unravel the puzzle."

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