

# ARS scientists continue biofuel production studies

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**Quingwu Xue shows miscanthus grass that he just transplanted.**

Friends and Neighbors Day celebrates 95th anniversary of NGPRL

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MANDAN, N.D. - Biofuels and biomass production continue to be top priorities at the USDA-ARS Northern Great Plains Research Lab (NGPRL) in Mandan.

As the nation gears up to meet renewable energy goals in the next decade and beyond, the Mandan lab is one of the top facilities in the country to help farmers be able to take part in the venture.

Biofuels was one of the presentations at the annual Friends and Neighbors Day July 16. The lab opens its campus to the community and has several types of presentations, both for the general public and for producers in the area.

"We had more than 800 visitors last week," said John Hendrickson, range scientist, who organized the presentations this year. Hendrickson said it is their 59th year as a research center and they held a unique history tour for the

public. "I think it was very successful We had more people on the field tour than we've had for 10 years, and people really enjoyed the history tour."

Some of the field tour presentations included forage finished beef, global change, sustainable corn production in western North Dakota and cover crops in the Northern Plains.

Quingwu Xue, an NDSU agronomist who is stationed at the ARS lab, said they are doing several research studies on bioenergy crops, and gave a presentation on the studies at Friends and Neighbors Day.

"We're focusing on the production aspect of it here at Mandan. Other ARS stations are looking at other aspects of biomass," Xue said.

One study he is conducting along with other scientists focuses on the crop miscanthus, which would provide an excellent biomass for cellulosic ethanol.

They were sent the material from Iowa State University where it is able to grow well. But scientists are unsure if it will grow here in the upper Northern Plains region.

He transplanted the plant in the field plots last week after starting it in a rain-controlled environment, called a rain-out shelter.

"It grows much taller than switchgrass, up to 10 feet," Xue said. "They say the stands are like bamboo."

One problem it has is it produces no seed so it has to be transplanted which can be labor intensive, he added.

The study will look at how much precipitation it requires for growth, its survival rate, nitrogen requirements and other agronomic factors.

Hendrickson said miscanthus looks very promising as a biomass with two to three times more productivity than switchgrass.

Another biofuel study they are doing in conjunction with other sites in North Dakota includes growing switchgrass and other grasses. It is a long-term study.

Out in the field, they are growing various perennials including switchgrass, intermediate wheatgrass, prairie cord grass and other varieties of grasses that could be used for biofuel.

Other sites that have been set up are at Streeter, Carrington, Hettinger, Williston and Minot. In Williston, they are looking at growing the biomass crops under irrigation, as well as dryland.

"If biofuels become a reality, people need to know how to grow it, how to fit it into what they already have," Hendrickson said.

They will look at the grasses as a part of the farmer's rotation.

In one study, Hendrickson said they are evaluating the best way to fit biofuels into a rotation.

In one study, they are evaluating the best way to fit biofuels into the rotation. they seeded switchgrass, intermediate wheatgrass, and alfalfa grasses, and switchgrass/alfalfa, and intermediate wheatgrass/alfalfa mixtures.

A portion of each plot is converted to continuous wheat every year. This allows the scientists to see which grasses or mixtures provide the most benefit to the wheat and how long they need to be in the rotation. Total yield is collected from the grasses and alfalfa every year, Hendrickson said.

In one study, they are conducting a weed control study because weeds are always aggressive when farmers try to establish switchgrasses or other forages.

"Weed control is the number one issue in forage in the establishment year," he said.

Since switchgrass is not a well-studied crop, there is little work done on weed control. So they are trying various herbicides at different rates and will also look at seeding rates.

The herbicides they are using in this trial include Paramount, Accent and PrePare, Xue said.

Hendrickson said, "A lot of what we are doing here is how do you manage these biofuel crops on the farm in a rotation."