Research Update

▶ **Summaries** of current **beef cattle** research

Research highlights and trends

The following research highlights are presented by Harlan Ritchie, Steven Rust and Daniel Buskirk, beef cattle specialists at Michigan State University, East Lansing. The reviews summarize studies and trends reported at scientific meetings or in scientific and industry publications, which are cited at the end of each item.

Faster forage option for growers

A new Bahia grass may provide forage growers with a better shot at beating back weeds before they gain a stranglehold on forage pastures. Agricultural Research Service (ARS) scientists in Tifton, Ga., have developed a cultivar called "TifQuik" that would do just that.

Geneticist Bill Anderson and colleagues in the ARS Crop Genetics and Breeding Research Unit in Tifton developed TifQuik, a Bahia grass with great potential as a forage grass in the Southeast. ARS is the U.S. Department of Agriculture (USDA) chief scientific research agency.

Released by the USDA and the University of Georgia (UGA), TifQuik provides faster germination and field establishment than Tifton 9, another USDA/UGA variety that's widely grown for forage.

Most Bahia grass cultivars currently available require two to three weeks to establish a full stand. During this time, weeds may infest the pasture, and moisture for forage seed germination may be restricted.

The sole criterion for selection of plants to develop TifQuik was fast germination. Former ARS agronomist Roger Gates and retired geneticist Wayne Hanna performed four selection cycles, beginning with Tifton 9. Plants were allowed to cross-pollinate, seed was hand-harvested, and that seed was then used to start the final selection cycle in a greenhouse.

In greenhouse studies, the germination rate of TifQuik averaged five times greater than that of Tifton 9 after six days and three times greater after eight days. One week after planting, TifQuik emerged about 75% faster than Tifton 9 and Pensacola, another commonly used forage Bahia grass. Four weeks after planting, TifQuik plants were taller than those of both Tifton 9 and Pensacola.

TifQuik will be particularly valuable to growers wanting to include Bahia grass in a sod-based rotation system with row crops such as peanut and cotton in the Southeast. Bahia grass has been shown to reduce nematode and disease problems in subsequent crops, and it should provide

CONTINUED ON PAGE 186

CONTINUED FROM PAGE 185

many forage growers with another tool to make their operations more efficient and perhaps more profitable.

Read more about this research in the April 2008 issue of *Agricultural Research* magazine, available online at *www.ars.usda.gov/is/AR/archive/apr08/forage0408.htm.*

— by Sharon Durham, ARS News Service

Scientists determine farm costs of producing switchgrass for ethanol

Following up on a net-energy study published in the January *Proceedings of the National Academy of Sciences* (PNAS), a team of ARS and University of Nebraska-Lincoln (UNL) scientists reported in March the on-farm economic costs of producing switchgrass for cellulosic ethanol.

In their PNAS energy-analysis paper, the team reported that switchgrass, when used for cellulosic ethanol, yielded more than five times more energy than required to produce the fuel. In the March edition of *BioEnergy Research* the team describes their study's second part, which examined the farm-scale production costs of switchgrass. Richard Perrin of UNL; and Ken Vogel, Marty Schmer and Rob Mitchell, all of the ARS Grain, Forage and Bioenergy Research Unit at Lincoln, conducted the studies.

According to Perrin and Vogel, this study is the most comprehensive one completed to date assessing the economic costs of producing switchgrass biomass on commercial fields. The team contracted with 10 farmers in Nebraska, North Dakota and South Dakota to commercially grow switchgrass for five years, starting in 2000 and 2001. Throughout the study, the farmers recorded all costs for producing switchgrass biomass, from seed and fertilizer expenses to equipment and labor costs. Total baled biomass yields were recorded for each farm.

On average, switchgrass production costs were $60 per ton. Two farmers with previous experience growing switchgrass were able to limit production costs to $39 a ton. They were among a group of five farmers whose production costs were $50 or less per ton. That's something farmers elsewhere could probably achieve as they, too, gain production experience with switchgrass, the researchers suggest. Based on the $50-per-ton figure, and assuming a conversion efficiency of 80-90 gallons (gal.) per ton, the farmgate production cost of cellulosic ethanol from switchgrass would be about 55¢-62¢ per gal.

Perrin and the ARS agronomists expect production costs will also decline as new, "ethanol-friendly" cultivars are developed.

You can view this report online, plus photos and related stories, at *www.ars.usda.gov/is/pr.*

— by Jan Suszkiw, ARS News Service.

Oilseed crop may sprout new life as biodiesel source

During the early 1950s, more than a quarter of a million acres of flax, an oilseed crop, could be found growing from Waco southward in Texas. Grown primarily for the vegetable oil market, it may have new potential as a biodiesel crop as determined in part by a Texas AgriLife Research field trial experiment, according to researchers.

Four varieties of flax pioneered by the agency formerly known as the Texas

CONTINUED ON PAGE 188

CONTINUED FROM PAGE 186

Agricultural Experiment Station during that time are part of a recently developed research trial funded by Chevron Energy Technology Ventures.

"It's kind of like we're coming full circle," said Gaylon Morgan, small grains researcher and member of the Texas A&M AgriLife project team. "Flax was grown on about 400,000 acres during that time and Texas AgriLife Research had an active flax breeding program.

"Those varieties were known nationwide for having good cold tolerance. That's what we needed; a flax variety was something you could plant in the fall, survive the winter, avoid late freezes, and produce seed in the spring. Now we're evaluating this as a possible biodiesel product or [one which] could be used in the vegetable oil industry."

Canola, rapeseed, winter-hearty safflower and camelina can be found growing in the field trials near College Station.

"This project is funded by Chevron Technology Ventures, and there is another (camelina) trial funded by Targeted Growth International," Morgan said.

Results from this trial, as well as some spring types, were to be harvested in April and May, Morgan said. Winter types will be harvested around June, he said.

The project does have its challenges, Morgan said, such as stand establishment.

"Most of these crops have small seeds and

must be planted very shallow compared to our traditional crops," he said. "Therefore, good stand establishment is highly dependent on a rainfall following planting. Some other things we are running into now are weed control problems. There's not a whole [lot] of herbicides labeled for these crops."

Harvesting has some challenges, too, Morgan added. "Again, these are small seeds, and some varieties are worse about shattering and require a timely harvest."

There are 51 entry trials at the College Station plot that have been repeated at nine locations across the state at different Texas A&M AgriLife Research and Extension Centers.

"We're trying to get a good idea of where these species and varieties fit in specific growing regions across Texas," Morgan said. The data collected on the different varieties will be used in determining which type of crop is best-suited for either the biodiesel or vegetable oil industry, Morgan said.

"If it's biodiesel we're considering, we want the highest oil yield per acre. The majority of the crops being evaluated have an oil content of about 40%. However, if some of these varieties have vegetable oil potential, then oil characteristics may be more important."

— Blair Fannin, Texas A&M University