

Agronomy Professionals Field School Aug. 2-3

BROOKINGS — South Dakota State University IPM Program and Plant Science Department along with South Dakota Agri-Business Association will host a hands-on in-field training for agronomy professionals August 2 and 3 at the Northeast Research Farm, South Shore. The Field School is being rescheduled from the July 7 date because of heavy rains and flooding at the research farm.

The two-day training provides agronomy professionals with Certified Crop Advisor credits in soil fertility, integrated pest management, crop production, and soil and water. Registration is \$175, the late registration fee is being waived because of the rescheduling. The training runs 9 a.m. to 7 p.m. on Aug. 2 and 8 a.m. to 3 p.m. on Aug. 3.

To register, visit the South Dakota Agri-Business Association Web site, www.sdaba.org or call 1-800-994-2445 or 605-224-2445.

Annual SDSU Sheep Sale Set For Aug. 9

BROOKINGS — The eleventh annual South Dakota State University Sheep Sale begins at 4:30 p.m. on Tuesday, Aug. 9, at the SDSU Animal Science Arena in Brookings.

One hundred commercial Polypay, Hampshire and Southdown sired crossbred ewes, yearlings to four year olds, will sell in groups of five head, sorted by age and breed type.

"For more than a decade the SDSU Animal and Range Science Sheep Unit has offered quality open commercial ewes at public auction each August, and more than 1,800 ewes have been added to flocks in South Dakota and surrounding states," said Jeff Held, SDSU Extension Sheep Specialist. "Another outstanding set of ewes will be available at the sale on Aug. 9."

Consignment viewing begins at 4:30 p.m. the sale starts at 6:30 p.m. A complete listing will be posted Aug. 5 at the SDSU Department of Animal and Range Sciences Web site <http://ars.sdstate.edu>.

Call Ann Kolthoff, (605) 693-3808, for more information, or e-mail her at Ann.Kolthoff@sdstate.edu. South Dakota Cooperative Extension Sheep Specialist Jeff Held can also answer questions on the sale. Call him at (605) 688-5433, or e-mail him at Jeffrey.held@sdstate.edu.

Directions: To reach the SDSU Animal Science Arena, take Exit 133 of Interstate 29, and then travel west 1.5 miles to the first stoplight. Take Medary Avenue south about one-quarter mile. The arena is on the east side of the road.

Century Farms, Quasiquicentennial Apps Sought

Farms and ranches have long been the cornerstone of South Dakota history. None more perhaps than those we honor as South Dakota Century Farms. The families that own and work these farms and ranches have done so for one hundred years or longer.

If your family has retained ownership of a farm or ranch for 100 years or more in South Dakota, and if the farm consists of a minimum of 80 acres of the original farmland, you may be interested in having your farm designated as a Century Farm.

If your family has owned at least 80 acres of the same farm or ranch for at least 125 years, you are eligible to apply for Quasiquicentennial Farm recognition.

The recognition ceremony is scheduled to start at 10 a.m. on Thursday, September 1, at the state fairgrounds in Huron.

Application forms are available online at the S.D. Farm Bureau website (www.sdfbf.org) or the South Dakota Department of Agriculture website (<http://sd.dakota.gov/Secretary/Century-Farms/default.aspx>), or by calling the SDFB office in Huron at 605-353-8052 to request an application.

Applications are due at the SDFB office by Aug. 12.

Century Farms have been recognized at the State Fair since 1984 by the South Dakota Department of Agriculture and S.D. Farm Bureau. Last year, in honor of the 125th anniversary of the State Fair, the two organizations began honoring Quasiquicentennial farms as well.

The 2011 Fair will run Sept. 1-5. For more information on State Fair events, visit www.sdstatefair.com.

Three-Story Inflatable From SDSU Set For Dakotafest

MITCHELL — The 16th annual Dakotafest is set for Aug. 16-18 at the Schlaffman Farm in Mitchell, and South Dakota State University's presence will be hard to miss — thanks in part to a three-story inflatable replica of SDSU's signature campanile.

The campanile is just one piece of a simulated SDSU campus that was unveiled at the 2010 Dakotafest and will return in 2011. The recreated campus features a SDSU tent with nearly 60 exhibitors and five separate pavilions representing plant science, seed technology, animal science, rural health, politics and the SDSU bookstore with logoed merchandise for sale.

"We are excited to partner with SDSU again this year at Dakotafest, and we have several activities planned," says Ray Bianchi, farm show director for Cygnus Farm Shows which hosts the annual event.

"The SDSU campus format is very visible and offers a great opportunity for SDSU to share its wealth of knowledge on agricultural research, Extension outreach, and the variety of curriculums offered to students," Bianchi adds. Approximately 32,000 people visited the three-day event in Mitchell last year.

A fundraising auction to benefit the SDSU Cow-Calf Unit Expansion is also being planned for Thursday, Aug. 18 — the final day of the show. In 2010, an impromptu auction came to-

gether during the last day of Dakotafest to raise money for the SDSU Cow-Calf Unit, and it was such a success the intention is to build upon that this year.

"The auction was planned in just a few hours last year with vendors donating livestock equipment and items they had at the show. All total, \$3,200 was raised for SDSU. We will solicit donations well in advance this year — from ag products and services to trips — and hope to aid the University in raising significant funding for the Cow-Calf Unit," Bianchi explains.

Information about iGrow, the innovative web portal launched by SDSU's College of Agriculture and Biological Sciences this winter, will be available at SDSU exhibits throughout Dakotafest as well.

One of the things that hasn't changed at Dakotafest is the commitment to delivering pertinent information to attendees. Throughout this year's three-day event the SDSU pavilion will continue to host educational sessions- from coffee shop talks with Extension specialists each morning to forums on current industry and political topics. "We are planning to have a panel to discuss the next generation of the Farm Bill, as well as a forum on the budget pressures to education and how that impacts K-12 and collegiate curriculums," Bianchi says.

Farming: The Bio-Future?

Technology May Offer Markets For Bio-Oil, Biochar From Biomass

BROOKINGS — Rural landscapes of the future might have pyrolysis plants instead of grain elevators on every horizon — processing centers where farmers would bring bulky crops such as switchgrass to be made into crude oil.

Those pyrolysis plants would pass that crude "bio-oil" on to refineries elsewhere to be made into drop-in fuels and industrial chemicals; they would capture and use for their own energy needs a byproduct called syngas made up of hydrogen, carbon monoxide and perhaps carbon dioxide; and they would send farmers away with an important byproduct called biochar that could go back on the land to help rebuild damaged soils, sequester carbon and alter greenhouse gas emissions.

Sound futuristic? It's also a current research focus at South Dakota State University.

A major new study by South Dakota State University researchers working with a U.S. Department of Agriculture colleague explores how to get the most from such a production system. The USDA is funding the project with a grant of \$1 million — \$200,000 annually for the next five years — to help scientists design a feedstock production system for optimum energy production of "bio-oil," but also to explore the possible ecological benefits from the use of biochar.

The grant was selected by the USDA's National Institute of Food and Agriculture's flagship competitive grants program called AFRI, or the Agriculture and Food Research Initiative. It was selected in the sustainable bioenergy challenge area. Typically fewer than 10 percent of proposals are funded, with awards based on external peer reviews of a proposal's scientific merit.

"We're looking at this from a whole system approach, and we're looking at various components in this whole system," said SDSU professor Tom Schumacher, the project director. "Historically, the distributive nature of crop production gave rise to a network of grain elevators to separate and coordinate the flow of grain to the processing industry. A network of rail lines added new infrastructure to improve efficiency. For lignocellulosic feedstocks, a corollary to the grain elevator would be a collection point that would be within 10 to 30 miles of production fields."

Those collection points wouldn't be for long-term storage, but to receive, sort and pre-process or process feedstocks using pyrolysis to break them down into bio-oil, syngas and biochar. Making crude bio-oil would have the effect of densifying the material to a liquid form easier to transport for further processing. Meanwhile, the



South Dakota State University scientists are researching bio-oil and a co-product called biochar. Both are produced along with a product called syngas in a process called pyrolysis.

biochar would likely be used in fields in the service area of the pyrolysis plant.

Pyrolysis is a process that uses elevated temperatures in the absence of oxygen to break down organic materials. The SDSU study will more specifically use a technique called microwave pyrolysis that heats the feedstock by exciting the individual molecules, making it very accurate and easy to control.

Schumacher's co-principal investigators on the project include professors Sharon Clay, David Clay, Ronald Gelderman and Douglas Malo and research associate Rajesh Chintala, all of SDSU's Department of Plant Science; professor Jim Julson and assistant professor Lin Wei in SDSU's Department of Agricultural and Biosystems Engineering; and supervisory soil scientist Sharon Papiernik of the USDA Agricultural Research Service's North Central Agricultural Research Laboratory in Brookings.

Process engineers and soil scientists are collaborating in the research project to learn what happens to bio-oil and biochar production when they vary the pyrolysis processing parameters.

Researchers hypothesize that biochar has different physical and chemical properties depending on the feedstock and the way it is processed. That could affect its usefulness as a soil amendment. They'll examine the characteristics of biochar from three

feedstocks: corn stover, switchgrass, and woody biomass.

"There's a lot that's unknown about specific types of biochar. There is no single characteristic that can be used to evaluate the effectiveness of biochars," Schumacher said.

Biochar's pH and other characteristics can vary widely depending on what feedstock and process was used to produce it, Schumacher said. That could

"There's some indication that some biochars can improve water-holding capacity. Biochar also interacts with soil nutrients, holding them, keeping them from leaching."

TOM SCHUMACHER

make biochar beneficial to the environment, neutral, or possibly even harmful depending on its characteristics. But scientists are excited about the possibility of finding beneficial uses for a consistent, well-characterized biochar product.

"In particular, we're interested in it as a soil amendment for soils that have erosion and degradation problems, with the idea that the biochar could be used to improve those soils," Schumacher said. "There's some indication that some biochars can improve water-holding capacity. Biochar also interacts with soil nutrients, holding them, keeping them from leaching. At least there's some indication that some biochars will do it — others may not."

Microbial activity may improve with the use of some particular kinds of biochar. And importantly, biochar is thought to have the ability to tie up carbon for centuries or even for thousands of years, meaning it could be used as a tool to slow global warming.

"We also want to explore the effects of the biochar on herbicide absorption and leaching, and how it interacts with herbicides. Does it tie it up so it's not as effective? Does it make it more active? It may have some potential to be used in certain environmentally sensitive areas as a filter, if you would, that would tie up certain chemicals or keep them from moving," said professor Jim Julson in SDSU's Department of Agricultural and Biosystems Engineering.

Some types of biochar might also play a similar role in helping to tie up phosphorus to prevent it from washing out of a field with runoff — an important consideration for managing nutrients such as manure.

Researchers will do laboratory and greenhouse studies, and ultimately field studies as well, to characterize different types of biochar in order to build a better picture of how a pyrolysis treatment plant could produce both bio-oil and biochar, in addition to the syngas that would be used for helping to supply the plant's energy needs.

Help Keep Cattle Herds Comfortable In High Heat

PIERRE — Recent prolonged high temperatures and above-average humidity have created unfavorable conditions for South Dakota livestock. Livestock owners are encouraged to continue efforts to keep cattle and other livestock comfortable using all available resources. Cattle with dark hides, fat cattle, and ill animals are all at greater risk of heat stress. Once heat stress sets in, preventative measures are less effective.

"Producers should be on the lookout for signs of heat stress, such as elevated breathing rate, open-mouth breathing, and excessive drooling or foaming," said Dustin Oedekoven, state veterinarian. "Producers should contact the Animal Industry Board or their local veterinarian if they have increased death loss or have questions regarding heat stress."

The South Dakota Department of Agriculture, the Animal Industry Board and South Dakota State University recommend the following measures:

- Avoid moving livestock unless absolutely necessary. If cattle must be handled, plan to complete the work as early in the morning as possible.

- Ample water should be made available under shaded areas, when possible. Cattle may consume as much as 50 percent more water during hot weather to regulate their body temperatures. Cattle will drink more water if the water temperature can be maintained below 80 degrees. Sprinklers may also help keep cattle cool and producers should use large droplets, because a fine mist can add to the humidity. In addition, pen mounds in the feedlot should be

wet down in the evening to allow cattle a cool place to lie down and dissipate body heat.

- Shade should be provided in well-ventilated areas. It is important that a sufficient area of shade is available so the cattle don't bunch up while competing for cool spots. Airflow may be obstructed by vegetation, buildings, haystacks or windbreaks. Biting insects also should be controlled to reduce stress.

- Cattle produce metabolic heat from digestion. Changing feeding patterns so that a majority of the feed is provided after the heat of the day will assist in keeping cattle cool.

"By taking the appropriate

measures, cattle producers can help their cattle make it through this heat spell with minimal stress. Keeping a close eye on their cattle will also alert producers if cattle start experiencing heat stress," added Walt Bones, South Dakota secretary of agriculture.

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