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January/February 2008

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Center for Advanced BioEnergy Research, University of Illinois

The new Center for Advanced BioEnergy Research (CABER) serves as an umbrella center for facilitating bioenergy research, education and outreach by various UIUC colleges and the Institute of Genomic Biology. Hans P Blascheck, has been named CABER Director. The “Aims and Scope” of CABER are outlined on their webpage. “CABER at the University of Illinois at Urbana-Champaign is well-positioned to take the lead on issues related to the management and use of bio-based resources to benefit society and environment. Significant research efforts already exist in the UIUC Colleges of Agricultural, Consumer and Environmental Sciences (ACES), Engineering, and Liberal Arts and Sciences and among Midwest collaborators, related to the use of wind, water, bio-based resources and biorefining to produce chemicals and materials.

UIUC researchers working under the CABER umbrella are focusing on overcoming limitations to making plant- and crop-based resources a viable alternative to petrochemical-based systems to generate chemicals and energy. Alternative Illinois resources include nuclear power, coal, wind, and renewable biomass.

Fuels derived from cellulosic biomass—the fibrous, woody and generally inedible portions of plant matter—offer an alternative to conventional energy sources that supports national economic growth, national energy policy and increasingly important environmental goals.

Using an Illini-centric “Apollo-Project”-like approach, CABER researchers, including collaborators at Northwestern University, the University of Chicago and Argonne National Laboratory, are utilizing plant and microbial genomic-based methods leading to translational bioengineering. With a focus on agricultural residues and energy-specific crops ideally suited for

the Midwest and building on existing expertise, the CABER team is at work to overcome technical barriers in the production of cellulosic ethanol and other biofuels.” Check out CABER’s website for current research at www.bioenergy.uiuc.edu. The Bioenergy Blog gives regular updates on biofuel issues at bioenergyuiuc.blogspot.com/

Understanding Wheat Quality Tests

Sally Sologuk and Brian Sorenson, Northern Crops Institute, <http://www.northern-crops.com/>, North Dakota State University, 701-231-7736, nci@ndsuxt.nodak.edu

Gone are the days when a farmer could just load his grain into a wagon and simply sell it at market. Today's grain marketing involves scientific tests and tools that prove the wheat's quality. Each year, Northern Crops Institute in Fargo, N.D., teaches processors, producers, elevator managers, and industry personnel how to better use and understand these tests.

“Protein and moisture are key quality tests for both grade and marketing price of wheat,” according to Brian Sorenson, Technical Director at Northern Crops Institute, Fargo, N.D. “Farmers are most familiar with these tests since almost all HRS wheat is purchased on protein content.”

Falling number is a test more recently introduced into country elevators. It gives an indication of the amount of sprout damage that has occurred within a wheat sample. Generally, a falling number value of 350 seconds or longer indicates low enzyme activity and very sound wheat. As the amount of enzyme activity increases, the falling number decreases. Values below 200 seconds indicate high levels of enzyme activity.

Why is this important? Sprouting can affect food made from wheat in many ways. It can reduce mixing strength, cause sticky dough, and affect loaf volume and shelf life. In pasta, sprouting can reduce shelf life, increase cooking loss, and produce softer cooked pasta.

“Often, the falling number test causes frustration and confusion,” says Sorenson. “The level and impact of sprout damage is not fully realized until it is processed into bread or pasta. The falling number test does not directly measure amylase enzyme activity, but measures changes in the physical properties of the starch portion of the wheat kernel caused by these enzymes during the test.”

Falling number tests can be run in remote locations like elevators or testing facilities and replicated anywhere in the world. This is important to importers who need to verify the quality of their purchases. Many buyers from export markets have written minimum tolerances of 300 to 350 seconds into their purchase contracts. In the past several years, grain buyers have discounted wheat for falling number values below 300 seconds.

AG FACTS

New USDA research says that the energy balance of corn ethanol is a return to the system of 165% ; meaning there is a 65% energy gain from using ethanol, which includes all energy costs from fertilizer, seed production, machinery production to farm fuel and transportation.

SOURCE: Illinois Corn Association Meeting, 2007, as reported by Mike Plumer, Extension Educator,

Resources

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Research center focusing on processing and marketing grains.

Other tests run on wheat at the elevator are:

Protein is a very important factor in HRS wheat since premiums or discounts are applied based on the protein content of the wheat. Most of our markets, both domestically and internationally, are purchasing HRS wheat with a target protein content of 14-15%. High protein HRS wheat is used for making high gluten bread flour and for blending with lower protein wheat to improve its baking quality and performance. Protein is very important for durum, also, because a minimum 13.5% protein is needed to produce premium pasta with 12.5% protein.

Vitreous kernel count (Dark, Hard, and Vitreous or DHV) is a test performed on both HRS and durum wheat that indicates kernel hardness. Many buyers feel that high levels of DHV in HRS wheat will give them improved levels of bread making performance. In durum wheat, high levels of HVAC (hard vitreous amber color) produce a higher milling extraction of semolina and less flour production. Many of the domestic and international durum millers will specify HAD (hard amber durum) requiring 75% HVAC. Some may even purchase 85-90% HVAC as choice milling durum.

Test weight is important because it gives an indication of the milling yield. A low test weight tells a miller that he will get a lower production of usable flour or semolina. Wheat that is plump and has a high test weight is very valuable to the miller because it provides a high flour and semolina extraction.

Rural Route 2 is Available at 1-800-468-1834

<http://www.extension.uiuc.edu/ruralroute/>



The Rural Route 2 service is designed to help farm families get through tough times. This **confidential service** provides referrals for farm business and family financial advice; helps manage economic as well as personal situations; helps locate local support; and identifies assistance through the Illinois Farm Development Authority.

Research

Increasing Landowner Income Through Recreational Leases, C-Far Research Report

www.ilcfar.org/research/display.cfm?project_id=489

Phillip R. Eberle, *Agribusiness Economics*. Southern Illinois University at Carbondale

“Fifty-two farm managers out of 133 Accredited Farm Managers belonging to the ISPFMRA completed a recreational leasing survey. The respondents managed a total of 585,000 acres, of which 18,300 acres were under recreational leases. Twenty farm managers had clients with recreational leases. The analysis of the data from the survey provided the results for our objectives.

Objective 1: determining the extent of recreational leasing activity in Illinois indicated that 38% of the managers had property with recreational leases. For managers without recreational leases, 35% indicated they would likely have recreational leases in the next 5 years. This would add 12,500 acres with recreational leases assuming managers maintained 6% of their managed land in recreational leases.

Objective 2: determining lease terms and rents, lease rates ranged from \$1 to \$75 per acre. Average lease rates were \$8 an acre for median quality recreational property and \$31 per acre for high quality recreational property.

Objective 3: determining impact of factors on recreational lease rates, we found that location, land mix, and adoption of land management practices to enhance habitat positively impacted lease rates. For high-valued recreational property, property located in region 4 (western Illinois) added \$15 per acre to lease rates. Land management practices to enhance habitat increased lease rates by \$20 per acre. For median-valued property, 100% wood over 0% woods increased lease rates by \$12 per acre.

Objective 4: identifying reasons for not having recreational leases and problems of leasing, trespassing or poaching, boundary disputes, and farm tenant conflicts were the highest rated problems. One manager

commented that recreational leases were more time consuming for the income earned for client or manager.

We conclude that opportunities for recreational leasing provide a means to increase landowner income and enhance wildlife habitat.”

Ethanol Co-Products Used for Livestock Feed

www.nass.usda.gov/Statistics_by_State/Iowa/Publications/Annual_Statistical_Bulletin/2007/07_111.pdf

Ellen Dougherty, (202) 690-8122 or Scott Hollis (202) 720-4751

Roughly half of the cattle and hog operations in a 12-state region either fed ethanol co-products or considered feeding them to their livestock last year, according to a report published today by the U.S. Department of Agriculture’s National Agricultural Statistics Service (NASS) with the support and funding of the Nebraska Corn Board.

Among dairy operations, 38 percent indicated that they fed co-products during 2006 and another 22 percent considered doing so. Among cattle on feed operations, 36 percent fed co-products and 34 percent more considered it. Among beef cattle operations, 13 percent reported that they fed co-products and 30 percent considered it. For hog operations, 12 percent fed co-products and 35 percent considered it.

NASS contacted approximately 9,400 livestock operations in Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota and Wisconsin to determine whether they used co-products including distillers grains and corn gluten feed in their feed rations in 2006. NASS collected information regarding the types and amounts of co-products fed, how the co-products were procured and used, and what concerns and barriers may have prevented operations from feeding co-products.

Of the various types of co-products available to operations for feeding, corn gluten feed was used by

46 percent of beef cow operations and 38 percent of cattle on feed operations, while distillers dried grains were used by 45 percent of dairy cattle operations and 44 percent of hog operations. Other co-products that the survey looked at included distillers dried grains with solubles, condensed distillers solubles, brewers grains and distillers wet grains.

Where do livestock operators get their ethanol co-products? Most dairy cattle, beef cattle and hog producers purchase them through feed companies or co-ops, while a majority of cattle on feed operations purchase them directly from ethanol and other processing plants. Livestock operations that are not currently using ethanol co-products indicated that availability is the primary impediment. Infrastructure and handling issues are also a barrier as, to a lesser extent, is cost.

EDUCATIONAL OPPORTUNITIES

University of Illinois Agriculture Events

New programs are being confirmed every day. Keep in touch with your Extension Office for programs addressing the topics that interest you and are offered in your County. To find your counties website go to: <http://web.extension.uiuc.edu/state/findoffice.html>

Statewide University of Illinois Extension Calendar Website

<http://web.extension.uiuc.edu/state/calendar.cfm>

To search for programs throughout the state, check out Extension’s searchable calendar. Search by location, topic or date to find a program of your interest.

Internet Resources

Management of Urea Fertilizer to Minimize Volatilization, EB0173

<http://www.montana.edu/wwwwpb/pubs/EB0173.pdf>

2007 Water Quality Nutrient Standards Forum

<http://www.ilcfa.org/research/waterqualityforum.html>

The Illinois Council on Food and Agricultural Research (C-FAR) Water Quality Strategic Research Initiative sponsored an educational forum on the latest research in Illinois water quality on Tuesday, October 23 at the U of I at Springfield. The forum focused on the impact of multiple factors affecting Illinois surface waters.

- [Introduction](#) - Dr. George Czapar, Water Quality SRI Leader, University of Illinois Extension
- [Spatial and Temporal Relationships between Biotic Integrity of Illinois Streams, Dissolved Oxygen, and Nutrients](#) - Dr. Mark David, Natural Resources and Environmental Sciences, University of Illinois at Urbana-Champaign
- [Effects of Phosphorus Mediated Through Algal Biomass in Illinois Streams](#) - Dr. Walter Hill, Aquatic Ecology, Illinois Natural History Survey
- [Headwater Stream Primary Production Dynamics - Nutrient Limitation and the Potential Role of Sediment Derived Nutrients](#) - Dr. William Perry, Biological Sciences, Illinois State University
- [The Impact of Sediments on the Potential Bioavailability of Phosphorus in Illinois Streams](#) - Dr. Michael Machesky, Watershed Science, Illinois State Water Survey
- [Status of Nutrient Standards](#) - Mr. Paul Terrio, Illinois Water Science Center, U. S. Geological Survey and Nutrient Standards Coordinator, Illinois EPA

Corn-Based Ethanol in Illinois and the U.S

http://www.farmdoc.uiuc.edu/policy/research_reports/ethanol_report/index.html

The U.S. ethanol boom – what are the causes, attendant effects on Illinois and U.S. agriculture, and alternative futures? These are some of the issues addressed in this report from the Department of Agricultural and Consumer Economics and the College of Agricultural, Consumer, and Environmental Sciences, University of Illinois. The goal of this report is to provide objective information to Illinois stakeholders, cutting through the emotional, political and economic self-interests that often dominate discussions about ethanol production and use.

The Future of Biofuels: A Global Perspective

<http://www.ers.usda.gov/AmberWaves/November07/Features/Biofuels.htm>

Global biofuel production tripled between 2000 and 2007, but still accounts for less than 3 percent of global transportation fuel supply. Increased demand for biofuels has contributed to higher world food and feed prices. Biofuels will likely be part of a portfolio of solutions to high energy prices that includes conservation, more efficient energy use, and use of other alternative fuels.

Center for Integrated Agricultural Systems Publications

<http://www.cias.wisc.edu/>

CISA is a sustainable agriculture research center at University of Wisconsin-Madison.

- Life Satisfaction on Grazing Dairy Farms in Wisconsin <http://www.cias.wisc.edu/pdf/lifesatis.pdf>
- How is Cheese from Pastured Cows Unique? <http://www.cias.wisc.edu/pdf/rb73.pdf>

About the Ag Update Newsletter

The Ag Update Newsletter is a bi-monthly newsletter providing education and research support to the agricultural industry. Current and past issues may be found at the following website

<http://www.urbanext.uiuc.edu/agupdate/index.html>

Contact your county Extension office and request to be put on their agricultural mailing list to receive the local agricultural newsletter and notices about upcoming agricultural events near you. To find your counties location, phone and website go to <http://web.aces.uiuc.edu/ve/>

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