

BioEconomy *Update*

Summer 2005

<http://www.valuechains.org/> • <http://www.biowa.us/>

Volume 3.3

Subscribe Today...

To lower printing and mailing costs, the BioEconomy *Update* is now available online and by email.

Register your email address today to keep up-to-date with news from Iowa's BioEconomy Initiative.

To sign up, send an email to: owner-bioindustry@iastate.edu

On the inside...

SBIRs Can Help Small Businesses	2
ISU Spin-off Company Wins SBIR Grant	2
A Closer Look: ICM, Inc.	3
AMRCC Hosts Natural Fibers Tour at 2005 Conference	4

2005 Conference a Success

The 2005 Biobased Industry Outlook Conference held August 29-30, 2005, in Ames, Iowa, has been deemed successful. Over 400 people attended the two-day event which focused on growing the bioeconomy through developing partnerships, business opportunities, and new ideas.

This year's conference, which built on the 2004 conference held in March 2004, focused on new research and ideas for individuals and groups who are interested in opportunities in the areas of renewable energy and biobased products. "We were able to plan numerous breakout sessions in order to meet our participants needs," Jill Euken, conference chair and Iowa State University Extension specialist, said.

The conference opened with remarks from Iowa State University President Gregory Geoffrey. President Geoffrey recognized the state and also the work that Iowa State University has done to begin building the bioeconomy. "This is a very, very important topic for our country, certainly for Iowa and for Iowa State," he said. Additionally, Geoffrey encouraged private sector support for higher education.

Iowa Governor Thomas Vilsack echoed Geoffrey's sentiments about the importance of biotechnology within the state of Iowa and encouraged participants to look at new ideas for building the industry. He emphasized that Iowa is positioned at the forefront of the bioeconomy and the biotechnology industry with productive farmers, productive soil, and a strong university system.

Following Vilsack's speech, Author and Journalist Paul Roberts spoke about why the United States and the world are suffering

from oil shortages and high gas prices. In order to curb the problem of high energy prices, Roberts suggests that the government should boost natural gas supplies, implement a "carbon penalty" in the form of a carbon trading system, and launch a drive to reduce consumption of oil and energy.

Dartmouth College Professor Lee Lynd then spoke on the capabilities of producing

biorenewable fuels, energy, and products. He stressed the importance of crop rotation and the introduction of new crops in order for biomass to sustain a bioeconomy. "I believe we could rapidly develop cost-competitive, efficient conversion technology," Lynd said.

Congressman Tom Latham (R-Iowa) also presented information during the conference.

During his luncheon speech, Latham gave

five reasons to build the bioeconomy and the biorenewable fuels sector of the economy. Those reasons are: national security, the surplus of agricultural products, environmental concerns, the rising price of oil, and rural development. "Iowa has the potential to be the new Middle East," Latham said. "We are just in the infancy."

The afternoon sessions on Monday focused on a variety of areas. Participants chose to attend sessions about SBIRs, biobased products, new research developments, or opportunities within biorefineries. The session, "Developing Market Pull for Biobased Products," highlighted not only the Federal Biobased Products Preferred Procurement Program, but also encouraged manufacturers to look at new ideas for marketing biobased products to the public.

see CONFERENCE page 4



Iowa State University President Gregory Geoffrey (left) speaks with Iowa Governor Tom Vilsack at the 2005 Biobased Industry Outlook Conference.

SBIRs Can Help Small Businesses

Randy Dipner, a consultant for PBC, Inc., spoke to the attendees at the 2005 Biobased Industry Outlook Conference about the Small Business Innovation Research (SBIR) and the Small Business Technology Transfer (STTR) programs and how they can be a funding source for commercializing new bioproduction technologies. The two programs award over



Craig Shore (left), President of Creative Composites, examines natural fiber board that resulted in a SBIR Phase II grant with Carey Novak (right).

two billion dollars annually to applicants who meet the requirements and are then selected by grant committees.

The SBIR program was established in 1982 to support high-payoff research conducted by small, for-profit businesses. The SBIR program was renewed through September of 2008.

Dipner has been involved in SBIR proposals for many years, and started his own company called Meeting the Challenge. Dipner's company has won over 13 Phase I

and Phase II SBIRs, and throughout his career has participated in over 350 SBIR proposals. Dipner criticized the importance of understanding what the SBIR and STTR programs are.

"Do not swim in unknown waters. It is more than just a research and development program; increasing commercialization is a key point," Dipner said.

Both funding programs offer a number of different solicitations that are available for those who work in bioproducts. There are many federal agencies that take part in these programs but it is important to know which type of agency you are applying to, whether it is a contract or grant agency, and to know the differences between the two types of agencies. The Department of Defense, Department of Education, Department of Energy, the USDA, the National Science Foundation, and NASA are just a few of the agencies that grant SBIR and STTR funds.

Dipner also stressed that is important to understand the different requirements for each program. For more information about these programs or for help obtaining a proposal visit: www.sbirhelpdesk.com.

ISU Spin-off Company Wins SBIR Grant

A spin-off company from Iowa State University has won a \$440,000 SBIR grant from the National Science Foundation to further develop its unique noise-reduction technologies. Vibroacoustics Solutions, Inc., is developing a "smart" material that has both passive and active noise-reduction capabilities. It is made from a composite of polymer and natural fibers such as kenaf and hemp.

The material can help control noise in products such as home appliances, doors, and office furniture as well as agricultural and construction machinery, automobiles and aircraft.

Atul Kelkar, a VSI co-founder and chief technology officer and a professor of mechanical engineering at Iowa State believes that commercialization of the technology could expand the market for agricultural crops grown in Iowa to supply the natural fibers.

The company received help from Carey Novak, a technology transfer associate at Iowa State's Institute for Physical Research and Technology.

The passive noise reduction capability of VSI's material stems from the fact that it's made from a composite of polymer and natural fibers such as kenaf and hemp. VSI also embeds active control technology into its material. A polymer-based piezoelectric layer is sandwiched between layers of the passive material. Along with an amplifier, power supply and control system, this active layer serves to cancel out or dampen the incoming sound waves.

The company was founded in late 2003 by Kelkar and Dr. Ken Budke, a dentist from Cedar Falls, Iowa. VSI has also received assistance from ISU Pappajohn Centers in Ames and Cedar Falls.

The Institute for Physical Research and Technology is a network of scientific research centers at ISU. Through its company assistance efforts, IPRT helps Iowa companies solve technical problems, create new products and increase productivity and quality. More information about IPRT can be found on the Web at <http://www.iprt.iastate.edu>.

BioIndustry Contacts:

Team Leader:

Jill Euken

Phone: 712-769-2650

Fax: 712-769-2610

Email: jeuken@iastate.edu

Project Manager:

Tim Sullivan

Phone: 515-727-0656

Fax: 515-727-0657

Email: sullytt@iastate.edu

Communications Specialist:

Krysta Nibe

Phone: 515-294-7936

Email: krystajo@iastate.edu

Communications Intern:

Lana Meyer

Email: lane1916@iastate.edu

A Closer Look: ICM, Inc.

As the price of petroleum increases, the number of ICM, Inc., employees also increases. The company, a premier design and engineering firm for ethanol facilities, is involved in over 70 percent of the ethanol plants currently in construction across the United States.

The company, which started as small business, now employs over 240 people. When ICM was founded in 1995 in Colwich, Kansas, by CEO and President Dave Vander Griend, there were ten employees. Just four years ago there were only 50-80 employees, but due to the recent demand for ethanol plants, the company's need for quality engineers, industry experts, welders, craftsmen, and researchers has grown.

ICM offers new ethanol facilities a variety of services including new technology process testing, plant startup and training, project management schedule and budget tracking, facility design and layout, feasibility studies, research and development, and more to help advance the agricultural industry through ethanol processes.

ICM collaborates with numerous companies, including Fagen, Inc., which is based in Minnesota. Due to that partnership, there are a growing number of Fagen/ICM efficient and reliable dry mill ethanol plants across North America.

One Fagen/ICM plant is the VeraSun Energy plant in Brookings, South Dakota. This plant is the largest green field ethanol plant in the United States. Currently, the two companies are collaborating on plans for more Fagen/ICM ethanol plants, including the VeraSun II plant in Fort Dodge, Iowa.

Genencor International, Inc., recently partnered with ICM to research their new enzyme system that converts raw, granular starch to ethanol. This new technology, called the no-cook process, would mean

that ethanol plants would not need to cook the starch before adding yeast. By using this systems, plants could eliminate a step of the ethanol process and possibly produce a higher yield.

This partnership initiated a pilot plant scale testing at the National Corn-to-Ethanol Research Center (NCREC) at Southern Illinois University.

ICM Director of Research and Development Tim Swanson said the need for increasing employment and the valuable partnerships are due in part to the design of their ethanol plants. Also, he credits President Dave Vander Griend with much of the company's success.

"[Farmers] trust him. He's got a reputation in the industry for caring about the farmer and the ethanol industry. He grew up on a farm and his father is a farmer," Swanson said. "And I'm not just saying that, he's really an excellent person."

The future for ICM seems to hold only more growth. Swanson said the main research and development projects now are in the areas of biodiesel, cellulosic feedstocks, starch feedstocks, and dry fractionization or the cold cook process.

ICM was recently voted one of the top ten places to work in Kansas, which Swanson said is because ICM is an employee-based company that believes in family values.

Not only does ICM focus on their employees, but the company also gives back to its community. Swanson said that each summer all of the employees work together with Habitat for Humanity to build a house for someone in need. Vander Griend and ICM also support the Belize Faith Mission, a children's home in Central America.

For more information about ICM, visit their Web site at <http://www.icm-inc.com/>.

Current ICM Projects

IOWA

Amaizing Energy
Central Iowa Renewable
Golden Grain Energy
Hawkeye Renewables
VeraSun Fort Dodge, LLC

MINNESOTA

Bushmills Ethanol
Granite Falls Community Ethanol

ILLINOIS

Central Illinois Ethanol

KANSAS

East Kansas Agri-Energy

SOUTH DAKOTA

Tri-State Ethanol

WISCONSIN

United Wisconsin Grain Products
Western Wisconsin Renewable Energy

Project Supporters

The BioEconomy Working Group is a working group of the Value Chain Partnerships for Sustainable Agriculture (VCPSA) project funded by the W. K. Kellogg Foundation at Iowa State University. Financial support comes from five key partners: Leopold Center, Iowa Energy Center, NatureWorks, BIOWA, and the US Department of Energy.



AMRCC Hosts Natural Fibers Tour at 2005 Conference



Doug Stokke (center) speaks about Kenaf plants and fibers during the tour.

Following the 2005 Biobased Industry Outlook Conference at Iowa State University, the Advanced Manufacturing Research and Collaboration Cluster (AMRCC) hosted a Natural Fibers discussion and tour. Approximately 45 people attended the discussion and tour which highlighted not only natural fibers crops, but also products that can be manufactured from the fibers.

During the discussion that preceded the tour, natural fiber company founders, farmers, researchers, and consultants shared their experiences with natural fibers. They explained the growth of natural fibers and the increasing interest in natural fibers within various industries including value-added product manufacturers. Representatives from various manufacturers and the Sorenson

Research Farm showed samples of products created from natural fibers and answered questions. Product samples included golf tees made from flax and a tool box made from switchgrass. Participants learned that products such as plastic toy wheels, colanders, tool boxes, and building supplies could be made from natural fibers.

After the discussion, participants traveled to the Research Farm where they visited several test plots of kenaf, sweet sorghum, and native warm-season grasses as well as a native prairie restoration. The test plots have been planted and are being evaluated for the effects of planting date, seeding rate, row spacing, and nitrogen fertilization on the total biomass yield for different sweet sorghum and kenaf varieties.

Biobased Industry Outlook Conference Attracts Over 400 Attendees

CONFERENCE from page 1

A variety of speakers shared the stage during the “Biorefineries: Opportunities for Business and Research Partnerships” breakout session. This session highlighted current biorenewables efforts within the represented companies and speakers emphasized partnership opportunities and product development.

Grant recipients from the Iowa Biotechnology Byproducts Consortium and the Iowa State University Center for Catalysis presented their research work and findings during the afternoon breakout sessions. The presentations included information about current and future of research in biorenewables.

The first day of the conference concluded with a reception which featured exhibitors and research posters. Participants were able to discuss opportunities with each other as well as learn about new research at Iowa State University and the University of Iowa.

Conference attendees returned on Tuesday for a presentation by Doug Faulkner of the U.S. Department of Energy. During his presentation, he emphasized the need for alternative sources of energy and also the Department’s support of such initiatives.

The remainder of the morning was divided into breakout sessions. The six sessions offered included “Bioproducts from Crop Oils,” “Ethanol Efficiencies and DDGs,” “Residues and Dedicated Energy Crops,” “Natural Fibers and Composites,” “Manure as a Feedstock for Biobased Products,” and “Conservation and the Bioeconomy.” The speakers spoke about emerging technologies and opportunities for new businesses in each field.

“We are very pleased with the turnout for this conference and the overwhelmingly positive feedback,” Euken said. “The planning committee feels that we achieved our goals and provided a information and ideas that attendees could take home and apply in their communities.” For more information about the conference, visit <http://www.valuechains.org/bewg/Conf2005/>.

Funding for the BioEconomy Update is provided by the W.K. Kellogg Foundation

BioEconomyUpdate

Facilitated by ISU Extension and CIRAS
53020 Hitchcock Ave.
Lewis, IA 51544-4058