IMPACTS OF INCREASED BIO-FUEL PRODUCTION ON THE MIDWEST LANDSCAPE

Presented by Soil and Water Conservation Society:
West North Central Region

October 16-17, 2007
Holiday Inn ~ Dubuque, Iowa

Agenda

Tuesday, October 16, 2007

1:00p Welcome

1:15p Beyond Bio-fuels:
Setting the Stage for a Sustainable Energy Future
Diana Friedman, USDASARE, Beltsville, Maryland

2:00p Ethanol Industry perspective
Brian Wrenn, National Corn-to Ethanol Research Center (NCERC)

2:30p Break

3:00p Concurrent Presentations
Modeling – Room TBD
Alternative Bio-fuels – Room TBD

See page XX for a schedule of presentations.

5:00p Reception (until 6:30) to review displays and meet exhibitors

7:00p Leadership Banquet
"Oktoberfest" Buffet
Guest Speaker: Stan Gruszynski

Wednesday, October 17, 2007

7:00a Breakfast and informal SWCS gatherings

8:00a Tour
New Melleray Abbey

Lunch Provided at Eagle Point Park over looking the Mississippi River

1:00p Concurrent Presentations
Wildlife – Room TBD
Policy – Room TBD

See *Concurrent Presentation Schedule* for a listing of presentations.

2:30p Break

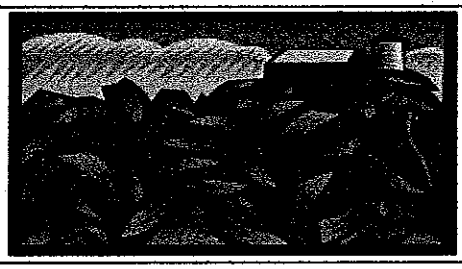
3:00p Biofuels Perspectives:
A Panel Discussion

Panelists:
Douglas L Karlen
National Soil Tilth Laboratory
Rick Robinson
Iowa Farm Bureau Federation
Walter Wendland
Golden Grain Energy, LLC
Brendan Jordan
Great Plains Institute

Moderator:
Carol Hunter
Des Moines Register

3:45p Summary/Wrap Up
Rick Cruse, Iowa State University

4:00p Adjourn



Impacts of Increased Bio-Fuel Production on the Midwest Landscape

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West North Central Region
Dubuque, Iowa • October 16-17, 2007

Concurrent Presentation Schedule

Modeling: Papers that discuss how bio-fuel production may affect water quality. Results are obtained from the use of simulation models. *These abstracts are printed in the order of presentation, beginning on page 2.*

3:00 p.m. **Erosion, Nutrient Loss, and Carbon Sequestration Estimates for Alternative Bio-Fuel Products in Missouri.** Verel W. Benson, Food and Agricultural Policy Research Institute (FAPRI)

3:30 p.m. **Environmental Implications of Bio-fuel Production on a Central Iowa Watershed.** Brian Gelder, Iowa State University

4:00 p.m. **Converting CRP Land to Corn: Impacts and Mitigation.** John Panuska, University of Wisconsin

4:30 p.m. **Environmental Consequences of Increased Bio-fuel Production in U.S. Midwest.** Katsuya Tanaka, Hiroshima University

Alternative Bio-fuels: Papers that discuss the use of alternative bio-fuels (other that corn) and their environmental impacts. *These abstracts are printed in the order of presentation, beginning on page 4.*

3:00 p.m. **Combining Forest Management (Thinning) and Bio-energy Production in Missouri.** Hank Stetzler, University of Missouri

3:30 p.m. **Utilization of Maclura Pomifera (Osage Orange) as an Agro-forestry Species for Energy Production, Carbon Sequestration and Bio-product Development.** Alan Gravett, Midwest Forestry and Biofuels

4:00 p.m. **The Chariton Valley Biomass Project in Iowa Switch-grass to Electric Energy.** Dora Guffey, Chariton Valley RC&D.

4:30 p.m. **Minimal Surface Impact Bio-fuels underground algae farming.** David A. Summers, University of Missouri-Rolla

Wildlife: Papers that discuss how bio-fuel production may affect wildlife diversity and habitat. *These abstracts are printed in the order of presentation, beginning on page 6.*

1:00 p.m. **Positive Effects of Agricultural Land Use Changes through the Conservation Reserve Program and Other Programs on Cold Water Fish Communities in Southwest Wisconsin Streams.** Jim Bauman, Wisconsin Department of Natural Resources

1:30 p.m. **Challenges and opportunities for wildlife from bio-fuels.** Tim McCoy, Nebraska Game and Parks Commission

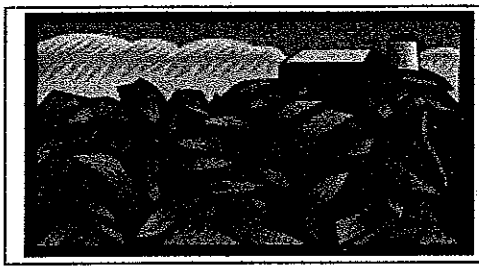
2:00 p.m. **Adding biofuels to the invasive species fire?.** Adam Davis, USDA-ARS, Invasive Weed Management Unit

Policy: Papers that discuss policy or the need for policy. *These abstracts are printed in the order of presentation, beginning on page 7.*

1:00 p.m. **The Impact of Bio-fuel Production on Biodiversity: A National and World Perspective.** Dennis R. Keeney, Institute for Agriculture and Trade Policy

1:30 p.m. **Energy security? The framing of bio-fuels in the 2007 Farm Bill debates.** Nadine Lehrer, University of Minnesota

2:00 p.m. **What is The Value of My Crop Residue?.** Doug Karlen USDA ARS National Soil Tilth Lab



Impacts of Increased Bio-Fuel Production on the Midwest Landscape
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Abstracts

Modeling – Tuesday, October 16 - 3:00 p.m. to 5:00 p.m.

Erosion, Nutrient Loss, and Carbon Sequestration Estimates for Alternative Bio-Fuel Products in Missouri.

Verel W. Benson, Food and Agricultural Policy Research Institute (FAPRI), BensonV@missouri.edu

The energy-from-wood industry has been deterred by the high cost of harvesting and collecting the biomass; lack of infrastructure for marketing woody biomass fuel products; obsolete conversion technologies; disproportionate emphasis on competing fuels; and failure to give appropriate consideration to the environmental, national security, and economic benefits of using wood for energy (Zerbe, 1988). Even though the technology for converting wood to energy has advanced over the past decade and a half, many of these deterrents still exist.

The environmental and regional economic benefits from the combination of renewable energy production and forest enhancement need to be quantified to show the value of public and private investment in improved forest management. This paper presents the results of an integrated effort by foresters, economists, and environmental modelers. It quantifies the availability of forest biomass by 300 meter grid for southeast Missouri, the regional economic value, and the types of biomass systems which may be economically viable. Four bio-energy options are considered:

1) burn wood chips to provide heating/cooling schools, hospitals and other public buildings,
2) burn wood chips and other fuel to heat/cool large multi-building facilities such as universities,
3) burn wood chips and other bio-fuels to generate electricity, and
4) produce ethanol.

Some of these systems would be considered risky investments if only private costs and returns are considered. However, considerable public benefits in terms of regional economic growth and environmental enhancement could be used to stimulate public investment in the form of grants, guaranteed loans, and low interest loans.

Environmental Implications of Biofuel Production on a Central Iowa Watershed.

Brian Gelder, Iowa State University, bkgelder@iastate.edu

Biofuels production will have numerous environmental consequences of importance for soils, with impacts on soil carbon, fertility, erosion, and soil moisture, with the greatest concerns predicted to be in the area of erosion and hydrology. Previous studies, such as the DOE Billion Ton Study, have used assumptions to generate a nationwide approximation of the acceptable amount of residue that can be harvested for biofuel production. However, the factors influencing erosion and hydrology are local in nature requiring the use of more advanced models to evaluate the impacts of biofuel production on a local scale. To better clarify the consequences of biofuels production, the Iowa Daily Erosion Project, a

hydrologic model capable of utilizing real-time rainfall and climatology in conjunction with the WEPP erosion model, was updated and modified to reflect current and possible management scenarios for a central Iowa watershed. Erosion, runoff, and soil moisture will be modeled at the field level for the period from 2003 to 2006 using observed management conditions and three different biofuel harvest scenarios, a variable harvest scenario based on field conditions and two different straight percentage harvest scenarios. Model results will be compared between the expected increase in erosion with biomass harvesting and recommendations for sustainable biofuel production will be evaluated.

Converting CRP Land to Corn: Impacts and Mitigation.

John Panuska, University of Wisconsin – Madison, jcpanuska@wisc.edu

Currently there are more than 600,000 Wisconsin acres enrolled in the USDA's Conservation Reserve Program (CRP). The contracts for approximately 45 percent of these acres may expire between 2007 and 2009. Because of their vulnerability to erosion, CRP lands were removed from production and placed in perennial cover where soil and nutrient losses are minimal. Interest in ethanol production has created increased demand for corn that could result in CRP acres going back into corn production, potentially increasing sediment and nutrient export from these lands and resulting in adverse environmental impacts.

The Snap-Plus nutrient management planning software was used to evaluate the sediment and phosphorus (P) loss for different corn rotations and tillage methods on highly erodible fields (http://www.snapplus.net). Snap-Plus includes RUSLE2 to estimate soil loss and the Wisconsin P Index calculator to estimate P loss. Representative highly erodible field sites were selected using eleven soil mapping units with steep (map units C and D) slopes from WI counties with significant CRP acreages. Snap-Plus was run for each field under grass hay (similar to CRP) and 10 corn-based rotation tillage combinations. Soil and P losses increased when these lands were converted to corn-grain, but the impact can be minimized with no-till or strip-till systems. For most of these fields, removal of the entire corn plant causes soil loss exceeding tolerable limits (T). This application demonstrates how modeling accounts for site specific conditions for evaluating management options and the degree to which site specific conditions impact system responses.

Environmental Consequences of Increased Biofuel Production in U.S. Midwest.

Katsuya Tanaka, Hiroshima University, katsuyat@hiroshima-u.ac.jp
(Authors: Katsuya Tanaka, JunJie Wu, Jerome G. Neppel)

This paper investigates environmental consequences of biofuel crop production, primarily focusing on corn, in the Upper Mississippi River Basin (UMRB). This objective is achieved by applying an integrated modeling system to nitrate-N (NO_3-N) runoff from the UMRB. An integrated modeling system developed in this study consists of an economic model and physically-based hydrologic balance simulation model. The economic model predicts corn acreage at different output price levels in 353 counties in the UMRB. This model is estimated using a series of agricultural and economic data and spatially-explicit locally-weighted regression model (geographically weighted regression; GWR). Using this approach, the model can be fitted at each county, allowing corn acreage response to vary spatially among counties in the UMRB. Based on predicted corn acreage from the economic model, the Soil and Water Assessment Tool (SWAT) is then used to simulate the level of NO_3-N runoff from the UMRB. As a result, our integrated modeling system provides basin-scale simulation of pollutant runoff, while incorporating county-specific corn acreage response to corn price increase.

Our results show that higher corn price resulting from enhanced biofuel production increases considerably NO_3-N runoff from the UMRB. For example, 25 percent increase in corn price will increase the level of NO_3-N runoff by nearly 10 percent due to corn acreage expansion. Because corn price is forecasted to continue to trend upward, policymakers need to consider relevant actions to meet or maintain water quality goals and sustainable agriculture in the region.

Alternative Bio-fuels – Tuesday, October 16 - 3:00 p.m. to 5:00 p.m.

Combining Forest Management (Thinning) and Bioenergy Production in Missouri.
H.E. "Hank" Stetzler, University of Missouri, StelzerH@missouri.edu

A recent spatial analysis of woody biomass that is potentially available from forest thinning operations has identified several regions in the Missouri Ozarks where a wood-to-energy facility would be feasible. Whether the facility would convert wood to electricity, heat and/or cool buildings, or produce ethanol, the primary source of this biomass would be from family forestland owners.

Having a market for wood that has previously had no value would be a great opportunity for family forestland owners to weed their woodland gardens. By doing so, the site's growth potential would be redirected to higher-value trees and improve the overall health of the forest.

However, the increased demand for this wood coupled with the difficulty of removing low-quality trees while protecting the higher-value trees could lead to high-grading the forest stand or wholesale clearcutting.

Key stakeholders need to be educated with respect to the potential and pitfalls of wood-to-energy operations. A comprehensive spatial analysis can greatly assist this effort. By integrating (1) the results from our spatial analysis, (2) information from the National Agricultural Imagery Program showing recent harvesting operations, (3) data layers from the U.S. Forest Service's Spatial Analysis Project showing priority areas in the state and the location of land parcels practicing good forest management, and (4) data from the Missouri Department of Natural Resources showing the location of distressed watersheds, stakeholders will be able to make informed decisions that can lead to better stewardship of the state's natural resources.

Utilization of Maclura Pomifera (Osage Orange) as an Agroforestry Species for Energy Production, Carbon Sequestration and Bioproduct Development.
Alan Gravett, Midwest Forestry and Biofuels, agvette5@aol.com

A forgotten old friend may hold part of the key to the bioenergy/global warming crisis. Osage Orange is a rapidly growing tree that has done well historically in mass plantings. It has been significantly researched previously and combined with new techniques is capable of producing 500 gallons of diesel and 750-900 gallons of alcohol (using genetically modified bacteria to ferment) and 4-5 tons of combustible biomass per acre per year. The high diesel yield is because the seed yields 100 gallon of oil, there are 100 gallon of combustible isoflavone and at least 300 gallons of diesel exists in the plant latex. Interestingly this mixture when "cracked" yields gasoline. Rapid growing trees that root well can sequester up to 8 tons of carbon a year. Osage Orange is especially good for carbon sequestration because of it's density being higher than any other North American hardwood. Several very high value chemicals (including unique non-toxic chemotherapeutic agents, as well as enzymes) are easily extractable to provide VAP. Although no fertilizer is generally used to grow other fruit crops when mature, water supplementation and mulching might increase yields. Inter-cropping until fruit production is possible on new plantings. Hedgerows and shelterbelts are essential for wildlife especially

in heavily farmed areas as well as to prevent wind erosion. Fence row to fence row farming creates multiple environmental problems. A case for re-establishing shelter belts to sequester carbon, facilitate wildlife, improve the environment and improve the economy via rural cooperative development will be presented.

The Chariton Valley Biomass Project in Iowa: Switchgrass to Electric Energy.
Dora Guffey, Chariton Valley RC&D, dora.guffey@ia.usda.gov

The Chariton Valley Biomass Project began ten years ago as an idea to help protect a watershed that was not only home to a flood control lake that provided recreation benefits to a southern Iowa area, but was also a water source for a rural water system in southern Iowa and northern Missouri. The idea was to take this area that had very highly erodible land, not well suited to traditional row cropping, and provide an alternative crop for the local landowners while at the same time protecting the environment. The planting of switchgrass, a warm season native perennial grass, was then set in place through the Chariton Valley Biomass Project. Through this research and development project conducted with the Department of Energy, Chariton Valley RC&D, Alliant Energy, and numerous other partners, the grass was harvested and converted from biomass to energy at a coal fired power plant.

Benefits seen from this project include improving water quality, air quality, soil tilth, wildlife habitat and reducing soil erosion.

The final testing for this research and development project were concluded in the summer of 2006 and the final report is being compiled, to be completed approximately May of 2007.

Moving forward toward commercialization of this project includes raising switchgrass on approximately 150,000 acres within a potential 70 mile radius of the power plant to provide 200,000 tons of switchgrass per year.

Minimal Surface Impact Biofuels - underground algae farming.
David A. Summers, University of Missouri-Rolla, dsummers@umr.edu

Falling production of many of the world's major oilfields stresses the need for alternative fuel. Biodiesel from algae has a high production rate, 50 gm/sq m/day transiently reached in field tests in New Mexico, gives 2,500 gallons/acre/year if sustained. Use of surface vats had three major problems, evaporation, temperature fluctuations and local species invasion. These can be overcome, with additional benefit, if the farms are set in the abandoned space of underground mines.

Underground provides 3-dimensions - expensive on the surface - but already excavated, increasing algae production. Algae can double their volume up to four times a day, and can contain more than 25% lipids. The problem underground is the loss of the sunlight. Yet underground location allows light used to be optimized for the algae, and can be provided both renewably (solar and wind) or from other fuels (such as nuclear and coal) from power stations in off-peak times, at low cost.

The surrounding rock isolates, and insulates, so it is simple, and inexpensive to hold an optimal temperature. With the algae grown in vats, they will be isolated, also limiting invasion risk by local domestic species, and the converse risk of algal escape.

UMR is using its underground mine near campus, for research to optimize algae growth, including studies to optimize light intensity, color and duration, as well as temperature for the algae tested. The most effective ways to feed CO2, the optimal chemical content in water, and the best harvesting methods are being investigated.

Wildlife -- Wednesday, October 17 - 1:00 p.m. to 2:30 p.m.

Positive Effects of Agricultural Land Use Changes through the Conservation Reserve Program and Other Programs on Cold Water Fish Communities in Southwest Wisconsin Streams.

Jim Baumann, Wisconsin Department of Natural Resources, James.Baumann@Wisconsin.gov
(Based on a paper prepared by David W. Marshall, Andrew H. Fayram, John C. Panuska, James Baumann and Joseph Hennessy)

With the increased demand for corn for ethanol and the associated increase in cost for a bushel of corn, the enrollment of critical lands in the Conservation Reserve Program (CRP) is highly likely to decrease. CRP enrollment in the Driftless Area of Wisconsin has been high since its inception in 1986. We sought to quantify the effects of the CPR- associated agricultural land use changes on fish communities. We compared fish index of biotic integrity scores (IBI) and species diversity measures in streams sampled during the 1970's with data from the same locations sampled since 2000. In addition, we examined streams in watersheds without intensive CRP participation but with more traditional agricultural production, in order to detect changes in streams that may have been unrelated to land use changes. Prior to implementation of CRP and other conservation programs, fish communities in the 1970's were generally characterized by high diversity of eurythermal species with low coldwater index of biotic integrity scores. We found significant improvement in IBI scores and declines in species richness in streams where land use changes were evident. We found no changes over time in coldwater IBI scores in streams were CRP participation was low. Recent surveys in streams with dramatic changes in agricultural land use demonstrated that fish populations had shifted to stenothermal cool and coldwater species typical of trout streams. We conclude that fish community structure was positively affected by changes in agricultural land use associated with CRP.

Challenges and opportunities for wildlife from bio-fuels.

Tim McCoy, Nebraska Game and Parks Commission, tim.mccoy@ngpc.ne.gov

America's farm and ranchlands, traditionally having been recognized for food and fiber production, are now being looked to as a source for energy in the national quest for energy independence. National focus continues for the use of cleaner, renewable energy fuels in homes, businesses and transportation. Renewable energy sources on America's farm and ranchlands include wind power, solar power, and biomass fuels. Both short and long-term predictions of energy use, as well as national energy security issues, have led to a focus on biofuels produced from agricultural lands. The use of biomass to create energy brings potential opportunities for truly "green" fuels processed from perennial feedstocks that protect soil and water quality, improve wildlife habitat, and sequester carbon. This presentation will focus on the challenges and opportunities for integrating wildlife habitat and wildlife benefits into the production and harvest of biofuel feedstocks. Wildlife benefits from biofuels crops will largely depend on what plant sources are used, where those feedstocks are grown, what is planted, and how the biomass is managed and harvested. The accelerating interest and development in biofuels is creating new resource challenges; those challenges can best be met proactively in developing win-win situations for biomass production and environmental services.

Adding biofuels to the invasive species fire?

Adam Davis, USDA-ARS Invasive Weed Management Unit, adam.davis@ars.usda.gov

Non-native (alien, introduced, non-indigenous) plants have served as valuable crops throughout history. Increasingly, research has been directed towards identifying new biofuel crops, including non-

native species, as sources of energy. Several plant traits deemed characteristics of an ideal biomass crop are also features commonly found among invasive grasses: low energy into maintenance relative to the production of energy-rich biomass; efficient use of light, water and nutrients; C_4 photosynthesis; nutrient translocation to storage organs during the non-growing season; and perennial growth. Some candidate species for biofuels, such as *Miscanthus x. giganteus* and *Arundo donax*, have many of these same traits. Introducing some plants as biofuel sources may be safe, but this assurance will only be evident following explicit agronomic and ecological risk-benefit analyses, which are already mandatory for the introduction of other potentially beneficial species. Such analyses will require agronomists and invasion biologists to collaboratively assess ecological risks *prior* to introducing potentially beneficial crops, or in carefully quarantined field plots, to ensure that we do not inadvertently add biofuels to the already raging invasive species fire.

Policy – Wednesday, October 17 - 1:00 p.m. to 2:30 p.m.

The Impact of Biofuel Production on Biodiversity: A National and World Perspective.
Dennis R. Keeney, Institute for Agriculture and Trade Policy, drkeeney@iastate.edu
(Authors: Dennis R. Keeney, Mark Muller, Claudia Nanninga)

While biofuel production has local, state and regional implications, in reality this is a global issue. Ethanol and biodiesel are on the verge of becoming internationally traded commodities, and many countries are adopting renewable fuel standards. Marketing of ethanol from maize in the U. S. and sugarcane in Brazil promises to put major pressures on land resources and diversity of plant and animal species both in the Corn Belt region of the U. S. and in the Cerrado and Atlantic rain forest of Brazil. In the Midwestern U. S., a significant amount of land currently in permanent grass and in conservation reserve may be converted to maize. Further, the long standing maize-soy-rotation is moving to one with at least two years of maize, perhaps more. Loss of biodiversity is assured. In Europe, biofuels take more the form of biodiesel and considerable emphasis is placed on import of biofuels. While soy is an efficient producer of biodiesel, palm oil has proven to be the highest yielding lowest cost source. Palm oil production centers in Malaysia and Indonesia as well as the Congo. Major impacts on rain forests in these countries are predicted as palm oil production expands. There are other impacts of biofuel production that must be considered. For example, in Brazil, expansion of sugarcane will push soy production into the more fragile Amazon. Now is a critical time for using policy, research, and market forces to shift the biofuel industry towards a more sustainable system that protects and enhances biodiversity.

Energy security? The framing of biofuels in the 2007 Farm Bill debates.
Nadine Lehrer, University of Minnesota, lehr0037@umn.edu

A year ago, agricultural policy commentators were predicting large-scale changes for the 2007 Farm Bill as WTO negotiations pushed Congress to limit traditional commodity subsidies. One year later, however, stalled negotiations, a booming biofuels market, Democratic Congress, and tight budgets have speculators predicting much less change. This difference in outlook from one year to the next is striking. It highlights the shifting backdrop against which interest groups frame and promote their Farm Bill positions for Congress and the public. These groups' framings in turn affect the kinds of policy alternatives that can be considered and the kinds of financial and political support that can be garnered. This research will focus on the influence of language in the Farm Bill debates -- on the role of phrases such as "energy independence" and "energy security" in the debates, and on their implications for agricultural policy. It will argue that these patriotic framings of renewable energy serve to build a

broad base of support for biofuels development among unusual allies that include among others commodity groups and environmental groups. Further, these unusual coalitions are able to argue for policies that indirectly serve to maintain current farm policy provisions and the current agricultural system in the name of promoting energy security. Based on interviews, participant observation, and document analysis, this paper provides insight on the role of language and framing of biofuels in the 2007 Farm Bill debates, and will speculate on implications for policy and corresponding patterns of land use.

What Is The Value of My Crop Residue?

Doug Karlen, USDA ARS National Soil Tilth Lab, karlen@nstl.gov
(Authors: Doug Karlen and Stuart Birrell)

Crop residue has been identified as a near-term source of biomass for renewable fuel, heat, and power. To meet this need without damaging soil, water, and air resources, agriculturalists throughout the world must collectively develop sustainable management strategies that go well beyond the perception that crop residues are "trash." This presentation will outline research activities associated with the USDA-ARS Renewable Energy Assessment Project (REAP) team. Objectives established for this multi-location team include: (1) determining the amount of residue needed to protect the soil resource, maintain soil organic carbon (SOC), and productivity; (2) estimating the trade-off between the short-term economic return to growers who harvest crop residues as a bio-energy feedstock versus the long-term benefits to soil, water, and air resources associated with building SOC and sequestering C; (3) developing robust algorithm(s) to guide the amount of crop residue that can be sustainably harvested as feedstock without degrading the soil resource, environmental quality, or productivity; and (4) developing management strategies supporting sustainable harvest of crop residue. Among the studies associated with the REAP project is one conducted on Des Moines lobe soils where harvesting crop residue one time decreased subsequent soybean yield by 50% compared to where the residues were not removed. For continuous corn, removing residue increased grain yield in the following year, but overall yield for the field decreased an average of 15 bu/acre despite applying twice as much fertilizer N. Many questions regarding the sustainability of crop residue harvest must be addressed to sustainably support this new agricultural demand.

New Melleray Abbey Tour

The New Melleray Abbey was a Leopold Center for Sustainable Agriculture demonstration site for organic farming from 1999-2001. The focus of the organic demonstration was on flame weed control in organic corn production and use of compost as a soil amendment and fertilizer. The current community of 34 monks owns 2,000 acres of cropland, 1,300 of this acreage is certified organic. They raise corn, soybeans, alfalfa, wheat, oats and grass-fed beef.
In addition, they maintain 1,200 acres of award winning forestland which supplies the wood needed for their wooden casket and cremation urn production. A brand new state of the art 35,000 square foot factory was completed in the spring of 2007. The new factory utilizes geothermal heat and the Abbey itself, made of limestone quarried from the farm, is heated by burning wood chips salvaged from timber harvests. Located about 12 miles southwest of Dubuque, the New Melleray Abbey was established in 1849 at the time of the great famine in Ireland by the Trappist monks of Mt. Melleray.

Bags, blankets, caps, jackets, t-shirts, polo shirts, long and short sleeve shirts for men and women, pullovers, sweatshirts, vests, and youthwear with embroidered SWCS logo are now available at www.americanbus.com/swcs/

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Speaker Bios

Jim Baumann
Jim is currently a Special Assistant to the Director of Watershed Management in the Wisconsin Department of Natural Resources. Over a span of more than 31 years, his has worked has included developing and implementing nonpoint source priority watershed projects, representing the National Governors' Association on two EPA storm water advisory groups and developing Total Maximum Daily Loads. Presently, Jim is coordinating a multi-million PCB removal project, developing phosphorus criteria for Wisconsin lakes and streams, chairing the water quality task force of the Upper Mississippi River Basin Association.

Verel Benson
Verel is the Environmental Program Director at the Food and Agricultural Research Policy Institute in Columbia, Missouri (FAPRI-Missouri). Verel's career has exposed him to many facets of agriculture and the environment. He helped compile a database of the energy use in all phases of agriculture in the 70s and was the team leader of the evaluation of the PL-566 Small Watershed Program in the early 80s. He worked with the team of scientists that built the EPIC, APEX, ALMANAC, SWRRB and SWAT models and have conducted nearly 100 workshops on the EPIC, SWRRB, SWAT or APEX models in the U.S., Canada, France and Austria from the mid 80s and 90s. His current focus as an environmental unit leader at FAPRI is to work with interdisciplinary teams to find solutions that address the joint objectives of environmental enhancement and economic sustainability.

Richard Cruse
Dr. Richard M. Cruse, Professor of Agronomy at Iowa State University, leads the college's Agricultural Systems Initiative and is Director of the Iowa Water Center. He is currently serving on the National Advisory Council for Environmental Policy and Technology, an advisory council to the chief U.S. Environmental Protection Agency administrator and has been appointed to Iowa Climate Change Advisory Council, an advisory council appointed by the governor. He received his BS from Iowa State University and his MS and PhD from the University of Minnesota. Dr. Cruse is Fellow of the American Society of Agronomy and the Soil Science Society of America.

Adam Davis
Dr. Adam Davis is an Ecologist with the USDA-ARS Invasive Weed Management Unit in Urbana, IL. He received his doctorate in Weed Science from Iowa State University, and completed postdoctoral research in Weed Ecology at Michigan State University. Dr. Davis's current research program is driven by an ongoing dialog between theoretical models of management effects on weed population dynamics and field experiments to test those models.

Diana Friedman
Diana Friedman is a research analyst for the national Sustainable Agriculture and Research Education (SARE) program. Part of USDA's Cooperative State Research, Education, and Extension Service, SARE helps advance farming systems that are profitable, environmentally sound and good for communities through a nationwide research and education grants program. At SARE, Diana currently focuses most of her work on the intersection between sustainable agriculture and clean energy, with a heavy emphasis on the sustainability dimension of biofuels.

Prior to joining SARE in 2003, Diana worked as a consultant with the Natural Resources Conservation Service and the University of Maryland on soil quality, and for a number of agricultural non-profits in the Chesapeake region. Before that, Diana worked as a research scientist, managing a long-term, multi-disciplinary sustainable agriculture project at the University of California, Davis. She has a M.S. in Soil and Crop Science from Cornell University and a B.S. in Natural Resources from the University of California, Berkeley.

Brian Gelder
Brian Gelder is a farm boy from Kamrar, IA who has received BS degrees from Iowa State University and a MS from Colorado State University focusing on reservoir water quality. His PhD from Iowa State University focused on GIS analysis of crop rotations and remote sensing of residue cover. He is now a postdoc at ISU researching methods of predicting yield variability for the I-FARM model.

Alan Gravett
Alan Gravett (MD MPH) is a triply boarded physician (ER, Occupational medicine and sports medicine) Involved in farming/forestry since 1972 owns 1300 acres in Davis County Iowa including a very large riparian tree planting in CRP. Took 6 month sabbatical from Medicine to jump start program, has authored 10 grants and partnered with several USDA labs and Universities to promote program. Launching Hedgeapplebiotech which will be a rural cooperative focused on biorefinery development. Alan is a strong believer that the Internet has become a force capable of giving us all "Newtonian and Edisonian moments" of creativity and invention.

Dora Guffey
Dora Guffey works for the USDA - Natural Resources Conservation Service (NRCS). She is currently the RC&D Coordinator working with the Chariton Valley Resource Conservation & Development (RC&D). The office is located in Centerville, Iowa, and their RC&D area covers a four county area in Southern Iowa. Dora attended Iowa State University and has worked for the agency for twenty years.

Stan Gruszynski
Stan Gruszynski, Former Wisconsin 71st District Representative, joined the staff of the Global Environmental Management (GEM) Education Center at the University of Wisconsin-Stevens Point (UWSP) in 2003. Stan has extensive experience in assisting local communities in building leadership capacity and opportunities for economic advancement within the framework of Wisconsin's renowned conservation ethic. He brings to the table nearly 20 years of service in state government, and a wealth of consulting experience in both the public and private sectors.

Carol Hunter
Carol is the editorial-page editor of the Des Moines Register. Hunter grew up on a farm in Kansas and graduated with a degree in journalism from the University of Kansas. She started her newspaper career at the New Mexican in Santa Fe, then moved on to the Bridgewater, N.J., Courier-News, where she worked her way up through the ranks to become the newspaper's top editor. She also served as the editor of the Green Bay, Wis., Press-Gazette for seven years before coming to Des Moines in 2004.

Brendan Jordan
Brendan Jordan manages the Cellulose Initiative at the Great Plains Institute. His work emphasizes the development of biomass as a resource for creating value-added energy and products in order to displace fossil fuels, stimulate rural economic development, make improvements air, soil, and water quality, and address global warming. Since August 2006 Brendan has staffed the Biomass Working Group, a 55+ member stakeholder group from the Upper Midwest that has worked to develop state policy recommendations for advanced biomass technologies. Brendan joined the Institute part-time in January 2004 while he worked on his M.S. in Science, Technology, and Environmental Policy at the University of Minnesota's Humphrey Institute of Public Affairs, before coming on full-time in the summer of 2005. Brendan is a graduate of Carleton College in Northfield, MN. His international experience includes a Judd Fellowship with the Center for Environmental Studies in Budapest, Hungary.

Doug Karlen
Dr. Doug Karlen is a Supervisory Soil Scientist with the USDA-Agricultural Research Service (ARS) at the National Soil Tilth Laboratory in Ames, IA. He has been with the USDA-ARS for 29 years and currently serves as Research Leader for the Soil and Water Quality Research Unit at the NSTL. Doug also serves as co-leader for the ARS Renewable Energy Assessment Project (REAP) team, a multi-location effort focusing on sustainability of harvesting crop residues for bioenergy. Doug's research uses soil quality assessment to quantify effects of soil and crop management practices including tillage, crop rotation, nutrient management, manure management and most recently crop residue removal on the sustainability of agricultural management systems. He is author or co-author for 150 refereed journal articles and more than 100 refereed proceedings, book chapters, and non-technical publications. Doug is a Fellow of the Agronomy, Crop, and Soil Science Societies of America and is also recognized as an adjunct Professor in the Agronomy Department at Iowa State University and by the Soil, Crop, and Entomology Department at Clemson University.

Dennis Keeney
Dennis received his early education on the central Iowa family farm and the Runnells Iowa school system. He has degrees from Iowa State University and the University of Wisconsin-Madison in Agronomy and Soil Science. After 22 wonderful years on the University of Wisconsin faculties of Soil Science and Water Chemistry, Dennis returned to his native state in 1988 to be the first director of the Leopold Center for Sustainable Agriculture. He moved to a more flexible lifestyle in 2000 and now is senior fellow at the Institute for Agriculture and Trade Policy in Minneapolis. Dennis and Betty have residences in Ames and Minneapolis, and travel widely, visiting their families in Minneapolis and Boston, as well as extended trips to exotic places around the world.

Nadine Lehrer
Nadine is a PhD candidate in Natural Resources Science & Management at the University of Minnesota, planning to finish her degree in early 2008. Her dissertation work is on policy change in agriculture -- specifically how political and situational factors such as trade, budgets, and biofuels influence sustainable agriculture and environmental groups' work on the 2007 Farm Bill. Previous jobs include agroforestry extension in Peru and Brazil and urban tree care in New York City.

Tim McCoy
Dr. Tim McCoy is a Wildlife Biologist and currently the Ag Program Manager with the Nebraska Game and Parks Commission, focusing on the wildlife impacts of state and national programs and policies on Nebraska's wildlife. Tim has MS PhD degrees in Wildlife Sciences from the University of Missouri – Columbia, and a BS in Agriculture and Natural Resources from the University of Nebraska-Lincoln. Tim also serves as the Chairman for the Biofuels Working Group of the Agriculture Conservation Committee of the Association of Fish and Wildlife Agencies, and is also Chairing a committee undertaking a Biofuels Technical Review for The Wildlife Society. Since 1991, Tim has been involved directly with research, implementation, management, and policy recommendations for Farm Bill conservation programs, especially the Conservation Reserve Program.

John Panuska
John is a Natural Resources Extension Specialist in the Biological Systems Engineering Department at UW - Madison. He recently completed his PhD at UW-Madison looking at particulate phosphorus losses from corn management systems. He works on soil and water conservation issues that include: drainage, irrigation, soil erosion, non-point source pollution and water quality. His presentation will describe the results of a recently completed modeling study that explored ways to minimize soil and P loss from CRP lands converted to corn production.

Rick Robinson
Rick Robinson is an environmental policy advisor for the Iowa Farm Bureau Federation. He monitors conservation and environmental issues and develops programs and activities to position Farm Bureau as a leader in progressive, science-based, economically feasible solutions to the environmental challenges facing today's agriculture. Rick is an Iowa Master Conservationist and is trained in ISO 14000 environmental management systems. Rick joined the Farm Bureau staff in 1987, after graduating from Iowa State University with a B.S. degree in ag journalism. He formerly served as assistant director of publications at Farm Bureau, and was associate editor of the Farm Bureau Spokesman. Rick grew up on a farm in Delaware County, Iowa, but now lives with his family near Granger, Iowa. His family includes wife Wendy, who is a language and literacy trainer for educators, and three daughters. Rick enjoys following ISU athletics, hunting and outdoor activities with his family.

Hank Stelzer
A native of St. Louis, Hank received his B.S. in Forest Management in 1976 and his M.S. in Forest Genetics in 1978 from the University of Missouri-Columbia. After gaining professional experience in Arkansas and Missouri, Stelzer returned to graduate school and earned his Ph.D. in 1986 from Purdue University. Following a post-doc at the University of Florida, Hank remained in the Southeast with private industry. In 2002, Stelzer took the opportunity to return to his home state. Hank currently serves as the University's State Forestry Extension Specialist and is responsible for directing the School of Natural Resources Extension program. In addition to his extension responsibilities, Stelzer is also involved with a statewide woody biomass research effort. This applied research is enabling Stelzer and a team of interagency colleagues to develop new markets for small-diameter trees that will provide incentives for increased forest management on private lands. Hank will share the team's upcoming effort to develop community and regional wood-to-energy partnerships in the Missouri Ozarks.

David Summers
David A. Summers is a ninth-generation coal miner, who started his career in the North of England as an Indentured Apprentice. After getting degrees from the University of Leeds UK he came to the University of Missouri-Rolla in 1968, and has been there since. He was named a Curators' Professor in 1980 and has intermittently been Director of the Rock Mechanics and Explosives Research Center, a title he currently holds, since 1976. He has been widely recognized for his work in the application of high-pressure waterjets in a wide variety of fields, but more recently his work has turned to recognition of the coming decline in global oil production and the need to find alternate sources of fuel.

Katsuya Tanaka
Katsuya Tanaka is assistant professor in Hiroshima University in Japan. He earned his Ph.D. degree in Agricultural and Natural Resource Economics from the Oregon State University in 2003. His primary research interests include empirical analysis of interactions between land use and water quality. He conducts several related studies in the US Midwest as well as some Asian countries.

Walter Wendland
Walter Wendland is President and CEO of Golden Grain Energy in Mason City, Iowa. Wendland is a lifelong farmer and entrepreneur with a diverse background in agriculture and manufacturing. In addition to operating a northeast Iowa farming operation for 31 years, he has owned and operated a business for 20 years selling grain byproducts as feed for livestock and partnering in an 800-cow dairy for 10 years provided an excellent foundation for understanding the challenges of management and the importance of animal health and nutrition. His manufacturing experience includes 10 years as a supervisor for custom fabrication companies giving him vital insight into the processing industry. In addition to his role within Golden Grain Energy, Wendland is active in guiding ethanol on local, state, and national levels as chairman of the Iowa Renewable Fuels Association and a member of the board of directors of the National Renewable Fuels Association. He also serves on the boards of the Renewable Products Marketing Group and the North Iowa Business and Industry Group.

Brian Wrenn
Brian Wrenn is the Research Director at the National Corn-to-Ethanol Research Center (NCERC) at Southern Illinois University Edwardsville. Dr. Wrenn has a B.S. in Biochemistry and a Ph.D. in Environmental Science, both from the University of Illinois Urbana-Champaign. Prior to assuming his position at the NCERC, he was on the faculty at Washington University in St. Louis in the Department of Energy, Environmental, and Chemical Engineering, where he conducted research in environmental biotechnology. He is the author of over 20 peer-reviewed research publications and several book chapters. In 2005, he was a member of the National Research Council committee on oil-spill dispersants.