Organic practices result in equal net returns on corn, soybeans

Corn and soybean yields were only minimally reduced when organic production practices were utilized in a University of Minnesota research project. The organic practices were compared with conventional production practices. And after factoring in production costs, net returns between the two production strategies were equivalent, says Paul Porter, a U of M agronomist.

"These results won't surprise producers who are successfully using organic production systems," Porter says. "But the study results will probably be met with skepticism by many in the agri-chemical business who make their livelihood from the sale of synthetic fertilizer and pesticides."

Over 80 percent of corn and soybeans produced in the United States is grown in the Midwest—the vast majority with conventional production practices in a corn-soybean rotation requiring annual synthetic fertilizer and pesticide application. This corn-soybean rotation is practiced on over 100 million acres.

Organic production practices, in compliance with standards defined by the United States Department of Agriculture's National Organic Program (NOP), offer an alternative production system to conventional practices. The study of the influence of rotation length on yield of corn and soybean when grown utilizing organic and conventional production practices is published in the March-April, 2003 issue of "Agronomy Journal," a publication of the American Society of Agronomy. Porter is a co-author of the article.

The study was conducted at two Minnesota locations from 1989 to 1999. Scientists evaluated a two-year corn-soybean rotation and a four-year corn-soybean-oat/alfalfa-alfalfa rotation under conventional and organic management and production strategies.

The analysis of yield data began in 1993, after the first complete cycle of the four-year rotation had occurred. From 1993 through 1999, corn yields from the conventional two-year rotation averaged 143 and 139 bushels per acre at the two locations, while corn grown in the organic four-year rotation averaged nine percent and seven percent less, respectively.

During the same time frame, soybeans grown in the conventional two-year rotation averaged 43.1 and 40.7 bushels per acre, while organically produced soybeans averaged 19 percent and 16 percent less, respectively.

Weed control was a major factor for the reduced yields in the organic production system, Porter says. The larger yield reduction from organically produced soybeans relative to corn was associated with increased weed pressure in the soybean crop because of its placement in the rotation sequence.

While there was a reduction in both corn and soybean yields in the four-year organic strategy compared with the two-year conventional strategy, the organic strategy had lower production costs than the conventional strategy. Consequently, net returns for the two strategies were equivalent, without taking organic price premiums into account.

Conventionally produced soybeans were more responsive than conventionally produced corn to the expanded rotation length, Porter says. Whereas conventionally grown soybean in the four-year rotation yielded from three to six percent more than soybean grown in the two-year rotation,

conventionally grown corn in the four-year rotation yielded the same to four percent less than corn grown in the two-year rotation.

These results suggest conventional soybean yields would be increased when grown in a longer rotation than the commonly practiced corn-soybean rotation, Porter says. He may be reached at (612) 625-6719 or pporter@umn.edu.

Researchers want to put alfalfa to work in the environment

Can alfalfa save the world? Maybe not quite, but it can be used for far more than livestock feed. Alfalfa is the most widely grown legume in the U.S, with estimated sales of $6 billion a year, and it is now gaining new recognition for its environmental qualities as well. "We want to find new ways to use alfalfa because it's such an amazing plant for the ecosystem and for farm systems," says JoAnn Lamb, who is leading a team of researchers breeding alfalfa for new uses.

One innovative possibility being researched by Lamb's team is using alfalfa for producing biofuel. In a biofuel system, alfalfa stems would be processed to generate biofuel, while the leaves would continue to serve their role as livestock feed. "The key to success for an alfalfa biofuel production system would be to develop a system that would maximize both leaf and stem yield," says Lamb.

By crossbreeding a large-stemmed European variety with a standard Midwestern winter-hardy variety, she hopes to create an alfalfa variety well-suited for the production of biofuel. Lamb's project has also been using alfalfa to eliminate toxins from contaminated water and land. The process is called phytoremediation (literally, plant remedy). Lamb is working on developing an alfalfa with fast-growing, spreading roots that will take up lots of nitrates.

In a similar project, Lamb's team is looking at improving alfalfa's ability to take up metals such as aluminum from the soil. "We want the plant to be able to uptake those metals and put them into the leaves where we can harvest them out," she says. "It all depends on getting the plant to where it's adapted to the chemistry of toxic soils."

And finally, Lamb would like to see alfalfa tolerant to manure application by farmers. If alfalfa crops can be bred to be tolerant to the ammonium and salt in manure, she thinks, then they can become an environmentally safe destination for manure in the summer season.

The goals for alfalfa's uses may be ambitious, but Lamb is realistic about her team's work. "It's going to be slow, but I think that's okay. We're learning all the time."

She may be reached at lambx002@umn.edu. See

http://www.misa.umn.edu/Other/alfalfa.html for the complete research profile. —By Daniel Ungier, MISA intern

There's new evidence that organic crops may be healthier

Organically or sustainably grown berries and corn contain up to 58 percent more polyphenolics, natural antioxidants that are a natural defense for plants and may be good for our health, says a new study by researchers at the University of California, Davis. The work suggests that insecticides and herbicides may actually reduce the production of polyphenolics by plants.

"This really opens the door to more research in this area," says Alyson Mitchell, assistant professor of food science at UC Davis, who led the research team. For more information, go to http://www.directag.com/directag/news/article.jhtml?article_id=1011312.

Consumers want the real organic, poll shows

A majority (61 percent) of consumers don't want milk, eggs, poultry, or meat to be labeled "organic" if they were from animals fed antibiotics, hormones and pesticides, according to a nationwide consumer opinion poll conducted by RoperASW on behalf of the Organic Trade Association, the business group for the organic industry in North America.

The results of the OTA-RoperASW poll fly in the face of last minute legislation hidden in the 2003 Omnibus Appropriations Bill. Signed into law on February 20, the rider (Section 771) enables the label "organic" to be put on products that come from animals raised on feed containing antibiotics, hormones and pesticides. Immediate outrage over the rider has prompted a bipartisan effort in Congress to recommend the passage of the "Organic Restoration Act" in the Senate (S. 457) and its counterpart in the House (HR 955). Both measures call for repeal of the rider.

The OTA-RoperASW poll also found that consumers prefer meat products labeled organic to have a high organic content, including feed. Most consumers (78 percent) said milk, eggs, poultry, or meat should be 100 percent organic to be labeled organic. The special interests behind the rider seek to reduce the organic feed content requirements.

The OTA-RoperASW poll found that nearly three quarters (71 percent) of consumers believe Congress should not be able to change policies on organic agriculture regulations without public discussion. The Section 771 rider was inserted without public comment.

"In a democracy like America's, citizens have the right to provide input on decisions that affect their families and communities, and this includes policy concerning organic agriculture," says Katherine DiMatteo, OTA executive director. "Congress can easily correct this mistake by repealing Section 771 of the 2003 Omnibus Appropriations Bill."

RoperASW conducted the OTA poll. RoperASW completed telephone interviews with 1,019 people selected at random. The interviews were conducted March 14-16. The sample has a margin of error of plus or minus three percent at a 95 percent level of confidence.

For more information, visit the OTA website at www.ota.com or its new consumer website at www.theorganicreport.org.

You can watch 'Rethinking the American Dream" free on-line

A 20-minute video available for free on-line viewing helps viewers think about their current lifestyles. It also presents individual choices that can improve our natural environment and personal quality of life. It's titled "Rethinking the American Dream" and was produced by the Oregon State Extension Service.

The video focuses on what Americans report is most important in life: health, fulfilling work, education, connection with family, friends, community and the natural world, and spirituality. It points out how merely consuming "stuff" and increasing material wealth can get in the way of achieving these important goals.

A free 20-page companion guidebook on sustainable living (published October 2001) is also available for viewing and printing at the web site. The video and guidebook together make a strong teaching tool for individuals and especially for small groups and classroom settings.

"Rethinking the American Dream" is also available on videotape (and DVD soon) for $19.95 at the website below, or soon for free rental at the OEA's Clearinghouse at (651) 215-0232 or (800) 877-6300.

Click on http://eesc.orst.edu/agcomwebfile/EdMat/trailers/american_dream.html to see the video.

There is some good news for farmers

You can find positive news in this difficult agricultural economy. Farmers and ranchers are turning around problems and discovering opportunities in diversification of farm products, new market niches, water use reduction, and energy production. In some cases, the stories are remarkable, according to BioCycle magazine editor Robert Rynk.

Rynk cites a Texas grapefruit grower who reduced the number of irrigation cycles by 60 percent, and a Colorado hog producer who eliminated rendering charges. Many of these significant case studies will be presented at the 33rd Annual BioCycle National Conference, May

5-7 in Denver, Colo. at the Denver Renaissance Hotel.

The 33rd Annual BioCycle Conference focuses on managing organic materials, such as manure and crop residues, to create products like biogas, biofuels, compost, livestock bedding and other biobased products. For conference program and registration information, visit BioCycle magazine's website at www.biocycle.net. Or, call (610) 967-4135, ext. 22, or e-mail biocycle@jgpress.com.

Calendar of events, 2003

These events are sponsored by numerous organizations. More information is available on MISA's website: www.misa.umn.edu. Also check the Sustainable Farming Association of Minnesota's website at www.sfa-mn.org.

July 29-31. **Upper Midwest Grazing Conference,** Midway Best Western, Lacrosse, Wis., (563) 583-6496.

Aug. 16-17. Third Annual **Windy River Renewable Energy and Sustainable Agriculture Fair** in Todd County, (218) 568-8624, davidb@uslink.net, or www.sustainablefarmingcentralmn.com.

What we're about…

This newsletter is supported by the Minnesota Institute for Sustainable Agriculture (MISA)—a partnership between the Sustainer's Coalition and the University of Minnesota College of Agricultural, Food, and Environmental Sciences (COAFES), the University of Minnesota Extension Service, the North Central Region Sustainable Agriculture Research and Education (NCRSARE) Professional Development Program (PDP), and the Minnesota Department of Agriculture (MDA).

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You can find more University of Minnesota Extension Service educational information at www.extension.umn.edu. Also check MISA's home page at www.misa.umn.edu.

Our mission statement: To help bring people together to influence the future of agriculture and rural communities to achieve socially, environmentally, and economically sustainable farms and communities.

To stimulate thinking and discussion about sustainability, we try to present items that reflect different points of view. This being the case, we aren't promoting and don't necessarily agree with everything we publish.

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