

Four-year crop rotation boosts profits, improves soil health

In the first half of the 20th century, southwestern Minnesota's farms looked different than they do today. They were diversified landscapes that mixed corn, small grains, livestock, and pasture on their land. Today, over 90 percent of the region is devoted to growing corn and soybeans.

University of Minnesota soils scientist Deborah Allan is part of a long-term research project studying the effects of using a system that rotates crops over four years and compares that to the two-year corn and soybean system. The four-year rotation has corn the first year, followed by soybeans, then oats and alfalfa, and then an all-alfalfa stand. Trials of these two systems have been underway for 13 years.

Allan joined the cropping study in 1999 to assess soil quality, which she thinks is an integral part of understanding the benefits of the alternative system. She has been analyzing a wide array of physical, chemical and biological components of the soil in her research; but perhaps the most important indicator of soil health is tiny soil aggregates.

They are small clumps of soil particles, bound together by chemical and bacterial interactions. Allan found significantly more soil aggregates in the four-year rotation than in the conventional corn-soybean system.

Why would this be? In the microscopic world of soil biology, says Allan, the four-year rotation increases the amount of organic matter in the soil and helps keep it there. The oats' fibrous root system provides nutritious organic matter and binds aggregates together, and alfalfa's two-year presence in the rotation system limits the amount of annual tillage.

Though tillage does not directly break up these tiny aggregates—they're only several millimeters in diameter—it does allow huge amounts of oxygen to enter the soil. Oxygen is the crucial ingredient that helps microorganisms decompose the carbon in the soil, dissolving aggregates and eventually lowering the overall quality of the soil.

Allan realizes that ultimately, it is the bottom line that will make or break an alternative agricultural practice. "Economic analysis of the data has shown higher long-term net profitability in the four year rotation," says Allan. This, she says, is partially due to the buffering effect a diverse set of crops provides against commodity price fluctuations, but it is also a result of increased yields in the four-year system.

"The idea is that hopefully farmers will see that it doesn't hurt them economically, and get involved," she says. And Allan is quick to point out that her alternative system is really nothing new. "This is what everyone did here for years and years. My hope is that we can figure out how the system works so that we can imagine crops that will fit into the markets farmers have today."

Allan may be reached at allan001@umn.edu.

—By Daniel Ungier, MISA intern

New business planning guide will help entrepreneurs throughout the U.S.

You can get a new guide to developing sustainable businesses from the Minnesota Institute for Sustainable Agriculture (MISA). It's called "Building a Sustainable Business: A Guide to Developing a Business Plan for Farms and Rural Businesses."

This 280-page guidebook addresses the evolving business planning needs of beginning and experienced rural entrepreneurs. It was developed by a team of U of M faculty and staff, individual farmers and consultants. Six farmers were asked to develop their own business plans using the draft materials. The final guide incorporates recommendations from the farm families and includes five of their business plans.

Sample worksheets lend a practical perspective and illustrate how real farm families set goals, researched processing alternatives, determined potential markets and evaluated financing options. Blank worksheets help the reader develop a detailed, lender-ready business plan or map out strategies to take advantage of new opportunities.

“We hope the guide will assist today’s alternative and traditional business owners alike with the creation of a holistic business plan rooted firmly in personal, community economic and environmental values,” the preface reads.

It was co-produced by MISA and the Sustainable Agricultural Network. The wire-bound guidebook is available for \$17.95 (including shipping and handling) from MISA. To order from MISA, send a check or money order payable to the University of Minnesota to MISA, 411 Borlaug Hall, 1991 Upper Buford Circle, St. Paul, MN 55108. Or, call (800) 909-6472 or e-mail misamail@umn.edu. This publication is also available electronically at www.misa.umn.edu/bizplan.html.

Backyard composting CD-ROM available from U of M

The Extension Service unit of the U of M’s Department of Soil, Water, and Climate has developed a comprehensive guide to backyard composting. This interactive CD-ROM includes photographs, movies and animated diagrams to explain the key concepts and techniques of backyard composting. Two levels of text will meet the needs of homeowners and first-time composters, as well as Master Gardeners, students, teachers and anyone who loves to compost.

From the history of composting, to tips on producing better compost in less time, this CD covers the major topics. Narration is by Mark Seeley, Extension Service state climatologist and weather commentator on Minnesota Public Radio’s Morning Edition.

See <http://www.compost.umn.edu/> for computer requirements and seven samples of content. The cost is \$19.95 plus shipping and handling. For more details contact Tom Halbach at thalbach@soils.umn.edu or at (612) 625-3135.

College/Experiment Station listening sessions scheduled

The College of Agricultural, Food and Environmental Sciences and the Minnesota Agricultural Experiment Station (MAES) are holding eight listening sessions this summer. The purpose of the listening sessions is to allow citizens to provide input to help shape the future of research, education and engagement on environmental, food and agricultural issues in Minnesota.

Two years ago a similar set of listening sessions produced the College priorities—Emphasizing Exemplary Education, Promoting Safe and Healthy Foods, Enhancing Agricultural Systems, Improving Environmental Quality, Revitalizing Minnesota’s Rural

Communities and Serving Urban Communities. Participants will be asked to comment on how the College and MAES are implementing these broad-based priorities during this time of change.

This is an opportunity for citizens from all walks of life to share what is important to them, their families and communities. For more information or to pre-register for any of the eight listening sessions, go to <http://www.coafes.umn.edu/listen> or call (612) 624-3009. The dates and locations are:

July 8, 3 p.m.-5:30 p.m., Northwest Research and Outreach Center, Crookston

July 9, 9 a.m.-11:30 a.m., North Central Research and Outreach Center, Grand Rapids

July 15, 1 p.m.-3:30 p.m., West Central Research and Outreach Center, Morris

July 16, 9 a.m.-11:30 a.m., Southwest Research and Outreach Center, Lamberton

July 17, 9:30 a.m.-12 noon, Southern Research and Outreach Center, Waseca

July 21, 3 p.m.-5:30 p.m., University of Minnesota Landscape Arboretum, Chanhassen

July 24, 3 p.m.-5:30 p.m., Borlaug Hall, University of Minnesota St. Paul Campus

Aug. 5, 3 p.m.-5:30 p.m., Minnesota Rural Summit, Centennial Student Union, Minnesota State University, Mankato

If you would like a news release or more information, e-mail John Byrnes at byrnes@umn.edu or call (612) 625-4743.

Plan ahead to attend grazing workshops this summer and fall

Midsummer pasture supply slumps can often be minimized by growing warm season grasses. Warm season grasses include natives like Big Bluestem, Switchgrass, and Indiangrass that start late in the spring but hit their stride in July and August. A pasture walk in warm season grass being exploited by grazing will be held the U of M West Central Research and Outreach Center, Morris, Friday, July 11, following the morning summer station day.

Another grazing program this summer includes the “Upper Midwest Grazing Conference,” July 29-31, LaCrosse, Wis. This four-state Extension Service-sponsored event includes presentations and tours. Contact the Dubuque County, Wis. Extension office at (563) 583-6496 or tranel@iastate.edu to register. The conference website is at www.wisc.edu/cias/uppermidwest.

Four additional grazing sessions are scheduled at Morris. Topics and dates are:

—Supplementing Diets when Grass is Short, Aug. 6.

—Improving Pastures for Next Year, Sept. 10

—Extending the Grazing Season, Oct. 10

—Winter Pasture and Lot Management, Nov. 12

For more information on the Morris workshops, contact Dennis Johnson at (320) 589-1711, dairydgj@mrs.umn.edu.

The programs are designed for both experienced graziers and those considering implementing a grazing system. Experienced farmers who attend are excellent resources for those who are learning about grazing, Johnson says.

Swedish machine offers relief to fruit and vegetable growers

Minnesota and western Wisconsin fruit and vegetable growers who have had enough of aching necks, backs, wrists, and knees will want to see the Swedish Drängen (DRANG-en) work cart and other efficiency-boosting tools in action at a field day in Foreston, Minn. Aug. 4, 2003.

“Vegetable growing can be really hard on bones, joint, and muscles with all the stooping, kneeling, reaching, and crawling required,” says grower Nett Hart. “It’s been fun to try out the Drängen this season and see how much more comfortable a lot of these tasks can be. Having both hands free to work together is wonderful.”

This self-propelled machine allows workers to “float” over the rows on their stomachs, leaving hands free to transplant, weed, or harvest. The cart looks like a massage table mounted on snowmobile treads and is powered by a small motor. One or two workers can lie on their stomachs while padded supports suspend them over the crop row.

Both hands are free to pick, weed, or tend. Foot controls steer and adjust speed. The frame adjusts so the position of the worker and the tracks can be changed. The use of treads, rather than wheels, minimizes soil compaction. (Photo at <http://www.mda.state.mn.us/esap/images/drangen.jpg>)

The Minnesota Department of Agriculture’s Sustainable Agriculture Program is co-sponsoring this field day, which will run from 1 p.m. to 4 p.m., rain or shine. Due to chemical sensitivities and the certified organic status of this farm, please do not use chemical bug repellants or perfumes. Also, please leave pets at home. This is a smoke-free farm.

Directions to the field day: From St. Cloud, take Hwy 23 east to Benton Co. Rd. 9. Turn north and go 5.75 mi. Turn east on 155th St. NE for 1 mile and look for the field day on the right.

For more information, contact Meg Moynihan (651)297-8916, meg.moynihan@state.mn.us

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 11. **Filling the Gap with Warm-Season Plants, WCROC Grazing Series**, Morris, MN. Contact Dennis Johnson, (320)589-1711.

July 11. **Summer Field Day at West Central ROC**, Morris, MN. Contact (320)589-1711.

July 15. **Wild Herb Walk**, north of Hutchinson, MN. Contact Connie Lahr, (320)963-3690.

July 17. **Blueberry Field Night**, Central Lakes College Ag Center, Staples. Contact Jerry Wright at jwright@umn.edu or (320) 589; or the U of M Central Region Partnership at (877)977-7778.

July 24. **Agronomy Field Tour at Southern ROC**, Waseca, MN. Contact (507)835-3620.

July 25. **Organic Field Day at Southwest ROC**, Lamberton, MN. Contact (507)752-7372.

July 31. **Horticulture Night at West Central ROC**, Contact (320)589-1711.

August 3-5. **Minnesota Rural Summit**, Contact Jane Leonard, (651)645-9403.

August 4. **Efficiency Tools for Vegetable Production**, Contact Meg Moynihan, (651)297-8916.

August 6. **Supplementing Diets when Grass is Short, WCROC Grazing Series**, Morris, MN. Contact Dennis Johnson, (320)589-1711.

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).

Send story ideas to the editor: Jack Sperbeck, 405 Coffey Hall, 1420 Eckles Ave., University of Minnesota, St. Paul, MN 55108, (612) 625-1794, fax (612) 625-2207, e-mail: sperb001@umn.edu. Other editorial board members: Helene Murray, (612) 625-0220, murra021@umn.edu; Beth Nelson, (612) 625-8217, schre002@umn.edu; and Bill Wilcke, (612) 625-8205, wilck001@umn.edu. Please send **address changes** directly to: Kate Seager, MISA, 411 Borlaug Hall, 1991 Upper Buford Circle, St. Paul, MN 55108.

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.

Produced by Communication and Educational Technology Services, University of Minnesota Extension Service.

In accordance with the Americans with Disabilities Act, this material is available in alternative formats upon request. Please contact your University of Minnesota county extension office or, outside of Minnesota, contact the Distribution Center at (612) 625-8173.

The University of Minnesota Extension Service is an equal opportunity educator and employer.

 Printed on recycled paper with minimum 10% postconsumer waste, using agribased inks.