

Midwest Cover Crop Council  
2009 State/Province Report

State/Province Name: Wisconsin

Contact Information

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Research

**Kura clover living mulch for corn production** (Ken Albrecht and current graduate students Bob Berkevich and Nate Bard and former graduate students Rob Zemenchik, Rich Affeldt, Tessa Milofsky and Agustina Sabalzaray)

We've developed a system that allows consistent high yield production of corn grain or corn silage in kura clover living mulch. We have just completed research that demonstrates that the system provides all but 20 lb/acre of N required for corn production. We are testing whether corn can be grown continuously or if a kura clover "recovery" year will be needed after 1, 2, or 3 years of corn. We are exploring the possibility of growing corn for silage in a mixture of reed canarygrass and kura clover—a mixture that shows promise as a permanent silage or pasture crop. We are testing mechanical and thermal suppression of kura clover to replace herbicidal suppression. We have a number of refereed publications available but no "fact sheets" or "how to" manuals have been developed yet.

We are looking for collaboration on soil physical factors affected by living mulch, nitrogen cycling in the system, soil biology (including insects, earthworms, microfauna, and disease causing organisms). We also need to study economics of this system, including costs associated with establishment. We need to develop a relationship with maize breeders to identify hybrids with superior performance in living mulch. And we will be looking for collaboration on alternative kura clover establishment strategies. A 0 to 10% yield loss is often observed when growing corn in living mulch and we need to explore reasons for this in multiple environments. We will also look for daring individuals to put this system on farm.

Funding is from USDA-CSREES Hatch and a small USDA-CSREES-SARE grant.

**Environmental impacts of kura clover living mulch** (Tyson Ochsner and Bill Jokela, USDA-ARS; Mahdi Al-Kaisi, Iowa State University; Ken Albrecht)

Collaborative research is in progress on effects of kura clover living mulch on nitrate leaching. Preliminary data demonstrate substantial (>50%) reduction in nitrate-N leached below the corn root zone in living mulch compared to conventional corn production. Research is being planned to measure the effect of kura clover living mulch on water and nutrient runoff and soil erosion from corn fields in the Driftless Region. Six acres of kura clover were established in August 2007 on a field with 8% slope. Treatments and measurements will be initiated in 2009 or 2010. We are eager to discuss research design and collaboration.

Funding is USDA-ARS and USDA-CSREES Hatch.

**Organic management systems for processing vegetables** (Jed Colquhoun and graduate student Heidi Kraiss)

Work focuses on weed and fertility management in processing snap bean and sweet corn. She has studied effects of incorporating cover cropping on organic nitrogen fertilizer demands in sweet corn. She is also comparing oat cultivars for their effectiveness at controlling weeds in fresh market vegetables. We will be mowing the oats just prior to planting and will rely on possible physical as well as allelopathic properties of the oats for weed control.

**Cover cropping strategies for commercial vegetable rotations** (A.J. Bussan and graduate student Mike Copas)

We have four projects ongoing looking at alternative cover crop strategies in an intensive vegetable rotation. Two of the projects focus on establishing perennial forage cover crops under snap bean that will serve as a nitrogen source for sequential crops. The cover crops were established in the first snap bean year and maintained through the following season of sweet corn and finally plowed down prior to potato planting in the third rotation year. The other two projects look at spring planted annual cover crops prior to snap bean. The projects will determine what stage of cover crop development will provide the most nitrogen for a subsequent snap bean crop, as well as cover crop residue management techniques that will minimize interference with the harvested snap bean crop.

**No-tillage organic soybean production in winter rye** (Joshua Posner, David Stoltenberg and graduate student Emily Bernstein; Janet Hedtcke; and R. and G. Miller & Sons Farm).

The goal of this research is to increase our understanding of the agronomic, environmental, and economic risks associated with the use of fall-planted rye as mulch in no-tillage, organic soybean cropping systems. Specific objectives are to determine the effects of plow-down rye versus roller-crimped and mowed rye on soybean establishment, development, and yield, weed suppression, soil moisture availability, soil loss, and profitability. Integration of fall-applied dairy manure into these organic soybean systems is also being assessed.

Funding is from a Wisconsin Distinguished Graduate Fellowship, University of Wisconsin-Madison Graduate School, and USDA-ARS. Project duration is fall 2006 to fall 2009.

**Developing Carbon-Positive Organic Systems through Reduced Tillage and Cover Crop-Intensive Crop Rotation Schemes** (Kathleen Delate, IA; Jeff Moyer, Rodale Inst.; Pat Carr, ND; Erin Silva, WI; Jim Riddle, Paul Porter, Milton Haar, MN; Dale Much, MI)

The long-term goals of the project are to maintain and enhance soil quality in organic systems by maximizing cover, minimizing erosion, and improving soil ecology and biological processes to reduce environmental and economic costs and optimize yield stability. Research and on-farm demonstrations will be utilized to develop these goals, in addition to disseminating results in classroom and Extension programs.

Funding is through a USDA-Integrated Organic Program Grant.

## Extension/Education

Albrecht, K.A. 2008. Farming for nitrogen: Intercropping corn and kura clover. Agronomy/Soils Field Day, Arlington, WI. (100 attendees)

Albrecht, K.A., T.E Ochsner, R.J. Berkevich. 2009. Farming for nitrogen: Intercropping corn and kura clover. Wisconsin Crop Management Conference, Madison, WI. (200 attendees)

Bernstein, E. 2008. No-tillage organic soybean production in winter rye for improved weed management in South Central Wisconsin. MOSES Organic Farming Conference. La Crosse, WI.

Bernstein, E. 2008. No-till organic soybean production in winter rye. Wisconsin Integrated Cropping Systems Trial Winter Meeting. Madison, WI. (30 attendees)

Bernstein, E. 2008. No-tillage organically-managed soybean production in winter rye for improved weed and nutrient management. Organic Workshop and Field Tour. Arlington, WI. (125 attendees)

Copas, M.E., A.J. Bussan, and M.J. Drilias. 2008. Annual cover crop options for snap bean. Midwest Food Processors Assoc. 81<sup>st</sup> Processing Crops Conf.

Copas, M.E., A.J. Bussan, and M.J. Drilias. 2009. Perennial cover crop management in processing snap bean. Proc. of Wisconsin Crop Management Conf. 48:87-92.

Copas, M.E., A.J. Bussan, and M.J. Drilias. 2009. Perennial cover cropping systems. 2009. Proc. of Wisconsin's Ann. Potato Meeting. 22:129-130.

Copas, M.E. 2008. Alternative cover crops in Wisconsin. Wisconsin Fresh Market Vegetable Growers Association Spring School. Hancock Ag Research Station, Hancock, WI.

Copas, M.E. 2008. Cover crop tools for processing vegetables. Central Wisconsin Processing Crops Meeting. Hancock Ag Research Station, Hancock, WI.

Copas, M.E. 2008. Cover crop management strategies for vegetable crop systems. Wisconsin Potato and Vegetable Growers, Soil Fertility Management Strategies Workshop. Stevens Point.

Raurk, Matt. 2008. Cover crops for N credits. Wisconsin Crop Management Conference, Madison, WI. (200 attendees)

On October 1, 2008 UW Extension held a workshop on cover crops use and management. Presenters included university researchers, NRCS specialists, Extension agents, and a farmer. Twelve extension agents, 22 NRCS staff, 11 county land conservation professionals, and three others attended the day-long workshop, which included a visit to a commercial processing vegetable farm that uses cover crops to protect seedlings from wind erosion. Workshop attendees expressed a high level of interest in additional information on cover crops. The workshop was organized by Diane Mayerfeld.