**FIVE YEARS OF ON-FARM RESEARCH**

With this publication, MASA completes five years of sponsoring farmer-driven on-farm research and demonstrations and publishing the results.

In 1991, the Michigan Agricultural Stewardship Association and its on-farm research committee began offering financial help, enthusiastic moral support and technical advice to farmers who wanted to try a new idea or practice to see if it would work on their farms.

Most of them wanted to find out for themselves just how much nitrogen they needed to produce that corn crop, for example, or just what rate of herbicide would kill the weeds, or how a cover crop affects yields and soil and water quality. They didn't want to waste their money by applying more than was needed. Many were spurred by environmental concerns; they didn't want to add more agrochemicals to the environment than was needed to do the job.

The on-farm research project is ongoing. Kalamazoo dairyman Roger French chairs the committee that (1) solicits and selects new projects, (2) helps farmers set up on-farm experiments that are scientifically meaningful, and (3) collects and publishes the results.

Most projects attempt to optimize use of inputs, enhance environmental protection and in general help to identify sustainable practices.

In past years, MASA has paid farmers $500 to help defray their costs in carrying out a scientifically valid experiment. Usually that means setting up test plots in which treatments are randomly assigned and replicated four or more times and data are collected and averaged. MASA has paid $250 for a demonstration project, in which a farmer tries out a new idea or practice, such as composting, in which no side by side testing is needed.

Each project is assigned a coordinator who helps the farmer set up the experiment and collect and compile the results.

Financing in past years has come from the American Farmland Trust and the C.S. Mott Foundation.

**MASA ELECTS NEW OFFICERS**

MASA elected a new president and a new board member and reelected two board members at the annual meeting during the Michigan Agriculture Mega-Conference January 12.

The new president is Cindy Dutcher, from Goetzville in Chippewa County. She and husband, John, own a farm devoted to forage production for beef, sheep and angora goats. They recently added blueberries and are developing a U-pick operation.

The new board member is Paul Luttenbacher, a greenhouse grower from Clio in Genesee County, who was one of the original board members of MASA when it was formed in 1990.

Reelected to the board were Marlin Goebel, who runs a cow-calf operation near Hillman in Montmorency County, and Rich Lauwers, a cash crops farmer from Imlay City in St. Clair County.

The Michigan Agricultural Stewardship Association is a non-profit organization, the goal of which is to foster sustainable agriculture practices among Michigan farmers. Executive Director is Russ LaRowe, located in the MASA office at 605 N. Birch St., Kalkaska, MI 49646, who may be contacted for membership information or other matters. Phone: 616/258-3305 Fax: 616/258-3318.

MASA officers are: President, Cindy Dutcher, Goetzville 906/297-2120; Vice-President, Robert Fogg, Leslie, 517/589-0990; Secretary, Greg Mund, Redford, 616/788-3492; Treasurer, Tom Guthrie, Delton, 616/623-2261 or -2255.

Other directors are Jerry Wirbel, Hope, 517/689-3857; Richard Lauwers, Imlay City, 313/724-2253; Marlin Goebel, Hillman, 517/742-4305; Christopher Luftkin, Ionia, 616/527-5357, and Paul Luttenbacher, Clio, 810/686-1370. Leadership Development Coordinator is John Durling, Michigan State University, 517/353-3299 Fax: 353-7166. Roger French, Kalamazoo, 616/675-0658, chairs the On-Farm Research Committee. Advisory Board Chair is Oren Hesterman, MSU, 517/355-4064.

If you have sustainable agriculture news to share, send it to Newsletter Editor Dick Lehmann, 2700 E. Cavanaugh Rd., Lansing MI 48910. 517/882-2794 Fax: 887-4964.

**A CALL FOR PROJECTS**

Again this year, the on-farm research committee is looking for farmers wanting to do projects.

If you have an idea you'd like to test, contact Roger French at Dawnera Farms, 10004 Stadium Drive, Kalamazoo 49009, or call 616/375-0658. An alternate contact is Russ LaRowe, MASA executive director, at 605 N. Birch St., Kalkaska MI 49646 (telephone 616/258-3305).

Deadline for application is March 1. The committee will meet in March, select the projects it wishes to support and contact you in plenty of time to get your project underway this spring.

**MASA AT MSU'S ANR WEEK - MARCH 6**

MASA members and interested farmers are invited to participate in an agroecology discussion session Wednesday, March 6, during ANR Week at Michigan State University.

"There has been significant interest among producer groups and agricultural agency and industry professionals for information on more effective use of biology in production systems," says Richard Harwood, who holds the C.S. Mott Foundation Chair of Sustainable Agriculture at MSU. "Michigan is a leader nationally in several key agroecological areas," he said.

"Scientists here feel they are making significant breakthroughs and are anxious to share their research."

The program will go from 9 a.m. to 4 p.m. at the auditorium of the Plant and Soil Sciences Building on the MSU campus.

Speakers will address use of rotations, cover crops, plant diversity in the landscape, crops residues and other practices that affect biological processes.

To make a reservation for a box lunch to be eaten in the greenhouse conservatory, send $10 check to MASA, Office of Sustainable Agriculture, c/o Anne Connell, 260 Plant and Soil Sciences Building, East Lansing MI 48824.

The day before, March 5, organic farmers will hold educational meetings. In the afternoon, the MASA board of directors meet. In the evening, a play based on the life and works of Rachel Carson will be performed in the Kellogg Center Auditorium. Part of the cost has been defrayed by a grant from MASA. To order play tickets ($5 each) or have lunch with the organic growers ($10), contact Anne Connell at the above address. Feb. 16 is deadline.
Sustainable Agriculture

Gary Manley, St. Joseph County

Soil Arthropods Thrive Under Cover Crops

Soil arthropods are small creatures—insects, mites, spiders—that scurry about at ground level finding food for themselves and being food for other organisms. They are part of a complex ecosystem.

Last year, Gary Manley, owner of a 120-acre farm near Three Rivers in St. Joseph County and an agricultural consultant, ran experiments to determine how ground cover affects the number and species diversity of this population of soil arthropods.

As well as being a MASA-supported project, his on-farm work was part of a larger study undertaken in the county by Dale Much, an IPM and cover crops Extension specialist at Kellogg Biological Station.

Paul Guenther, Washtenaw County

Intercrops Work in Seven of Last Eight Years

Paul Guenther has been implementing alternative, sustainable practices on his Washtenaw County farm since 1986. He uses legume cover crops and intercrops, biological soil amendments and reduced-rate and banded herbicides.

His quest started with a subscription to The New Farm and personal contacts with other producers within the sustainable agriculture movement. Now Guenther is himself a recognized source of information on cover cropping and intercropping.

As intercrops, Guenther has tried seven or eight Australian annual medics various clovers, buckwheat and berseem clover and hairy vetch. Guenther looks to intercrops to improve soil quality, help reduce herbicide and nitrogen inputs, and control erosion.

As he evaluates legumes for intercropping into corn, he looks for (1) ease of establishment, (2) biomass accumulation that doesn’t reduce corn yield, and (3) a life cycle that ends naturally the next spring.

Guenther planned to evaluate berseem and crimson clover in his 1995 MASA research plot. But for the first time since he began intercropping in 1988, he didn’t get any intercrops sown. Weather patterns were such that by the time the first-cut hay was made, the corn was too tall to drive through to interseed.

Always philosophical about his own approach to sustainable agriculture, Guenther evaluated his 1995 intercrop failure. “With fewer purchased inputs, we depend more on our own management and fate. This summer we just plain ran out of time to get our work done. But intercrops definitely have a place on our farm and will be back again next year.”

Paul Guenther

Henry Miller, St. Joseph County

Trying Alternative Methods in Growing Seed Corn

Henry Miller’s primary crop is seed corn. In recent years, his goal has been to grow less corn after corn. From corn follow potato following a three-year rotation. In 1995, he grew 500 acres of corn, 190 acres of snap beans, 60 acres of wheat and 60 acres of alfalfa, and, in a new venture, leased out 370 acres for potatoes.

Like some other seed corn growers in St. Joseph County, Miller is working with potato growers from other areas of Michigan. Both potato growers and seed corn growers are seeking ways to use effective crop rotations. Both use sandy soils onto which they have added expensive irrigation equipment, so both want to plant high-value crops. As part of the solution, potato acreage in St. Joseph County has boomed to 6,000 over the last two years.

One of Miller’s goals is to reduce cost of inputs, including tillage, on the seed corn. In his on-farm research in 1995, he performed the following tests:

(1) applied different rates of nitrogen fertilizer side-dressed and checked the yield response.
(2) tested the effects of tillage versus no-till for seed corn in the year following snap beans and a fall-seeded cover crop of oats.
(3) was the third year Henry has tested different rates of nitrogen sidedressed as he tries to home in on the right rate.
(4) in 1995, the lowest rate (66 pounds N per acre, which was sidedressed about 26 pounds N at planting) produced visual symptoms of deficiency. The three rates sidedressed this year showed no response to added nitrogen above the 82 pounds per acre rate (in addition to 30 at planting), but possibly some response to 82 pounds over 75 pounds.
(5) none of the no-till seed corn yielded almost identically to corn planted after conventional tillage. Since the crop was planted into oats, which died over the winter, a low rate of Roundup was used as a basemix, making this treatment cheaper than a tillage trip.

Chuck Cornillie, Shiawassee County

Brood Cows Graze Standing Corn

Brood cows graze standing corn on the Chuck Cornillie farm. His 60-head Angus, Simmental and Limousin cow-calf operation in southeastern Shiawassee County was involved in an on-farm demonstration sponsored by MASA for the second year.

Lower cow-calf production costs and reduced environmental impact were his objectives. Overwintering feed is one of a cow-calf operation’s most expensive inputs, he says. Grazing standing corn saves 30 to 40 cents per bushel by eliminating costs of combining, hauling, drying, storing and feeding. Corn stalks are also utilized in grazing.

Chuck Cornillie

Arthropods were collected during five and the number of species and individual specimens were recorded. In all cases, the number of specimens found under cover crops was more than double the number from the control area. Both diversity and density of arthropods increased with increasing ground cover biomass. Annual ryegrass plots obtained the largest biomass by late November. At that time, hairy vetch plots had the largest biomass. Following tassel, the vetch died back, leaving a thick layer of mulch on the soil surface. This mulch layered in higher populations of detritus feeders (mites and Collembola, for example) and the largest total arthropod density during the September-October sampling period.

Various arthropods showed positive response to one or more covers. Diptera, parasitic Hymenoptera and spiders did best in hairy vetch. Isopoda, Opiliones, carabid adults and Staphylinid adults were more numerous in red clover. Thysanoptera and Symplyta appeared to seek the annual ryegrass cover. Chilopoda did not appear to be influenced by type of cover or its presence or absence in the area.

During 1995, with ample rainfall, growing ground covers had no influence on corn yield.

Henry Miller

Cherry Hill Farm, St. Joseph County

1995 SEED CORN NITROGEN RATES

<table>
<thead>
<tr>
<th>DATE</th>
<th>Treatment 1</th>
<th>Treatment 2</th>
<th>Treatment 3</th>
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</thead>
<tbody>
<tr>
<td>Fall 1994</td>
<td>Chisel plow</td>
<td>Field cultivate</td>
<td>Broadcast 1.5 pints</td>
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<tr>
<td>5-15</td>
<td>Plant corn with 200 lbs. 15-15-15 and 6 lbs. Loridan</td>
<td>Spray Dual 1.5 pints</td>
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<tr>
<td>5-16</td>
<td>Spray 4 oz. Pounce for flea beetles</td>
<td>82 pounds N</td>
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<td>5-17</td>
<td>15 pounds of annual ryegrass plus 11.25 pounds of crimson clover</td>
<td>15 pounds of crimson clover</td>
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</tr>
<tr>
<td>5-18</td>
<td>5-22</td>
<td>Spray Buctril and atrazine for weed control</td>
<td>Spray Buctril (3.75 pints) and atrazine (.2 pounds)</td>
</tr>
<tr>
<td>6-13</td>
<td>September</td>
<td>Harvest</td>
<td>Spray Buctril and atrazine for weed control</td>
</tr>
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<td>Yield</td>
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<td>104.39 b/a</td>
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<td>6-21</td>
<td>103.10 b/a</td>
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NO-TILL VS. TILLED SEED CORN

1995 SEED CORN NITROGEN RATES

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</thead>
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<td>Chisel plow and plant oats cover crop</td>
<td>Field cultivate</td>
</tr>
<tr>
<td>5-15</td>
<td>Plant corn with 200 lbs. 15-15-15 and 6 lbs. Loridan</td>
<td>Spray 1.4 pints Roundup</td>
</tr>
<tr>
<td>5-16</td>
<td>Sprayed Dual 1.5 pints</td>
<td>15 pounds of annual ryegrass plus 11.25 pounds of crimson clover</td>
</tr>
<tr>
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<td>Spray Buctril and atrazine for weed control</td>
<td>Spray Buctril (3.75 pints) and atrazine (.2 pounds)</td>
</tr>
<tr>
<td>6-13</td>
<td>Cultivate and sidedress N</td>
<td>Harvest</td>
</tr>
<tr>
<td>6-20</td>
<td>Spray Buctril and atrazine for weed control</td>
<td>138.42 b/a</td>
</tr>
<tr>
<td>6-21</td>
<td>139.39 b/a</td>
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</tr>
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Chellisons Farm, Ingham County

Do Cover Crops Provide Persisting Fertility?

The use of cover crops is increasing as producers seek to improve the health of the soil while maintaining or enhancing farm profitability.

Potential benefits of cover crops include helping farmers cut fertilizer costs, reduce soil erosion, and surface water pollution, reduce herbicide costs, reduce the potential for groundwater contamination and cut fuel and irrigation costs.

In 1995, corn was planted again. The entire field was plowed, 100 pounds of 9-44-9 was used as starter fertilizer, and 100 pounds of nitrogen was applied as side-dressed ammonium. The goal was to see if there was any noticeable effect in 1995 from the clover planted in 1993 and 1994.

Sherridan Farms, Tuscola County

How Much Tillage for Sugar Beets?

Pat Sheridan

Pat Sheridan is already sold on the Ray Rawson zone tillage system, in which coulters mounted on a cart in front of the planter provide all the tillage at planting time. Last year, the zone tillage planter unit was extended to sugar beets for the first time.

The farm's 500 acres near Fairgrove in Tuscola County is devoted to corn, wheat, soybeans, dry beans and sugar beets. Pat farms with his father, Pat, and son Lucas.

Last year, Sheridan Farms participated in a MASA demonstration project comparing three different tillage options for sugar beets.

While the Sheridans had already decided to plant using the zone-tillage planter, they had one field that had been tilled and needed tillage for leveling. It was a good time to compare.

One field, 190 acres with the new tile, was fall-plowed and field cultivated twice in the spring. One 80-acre field was zone-till planted in the fall, and the beets were planted with the zone-till unit in the spring. One 80-acre field was zone-till planted in the spring with no other tillage. In each case, the previous crop was soybeans.

The results: The heavily fall-tilled field yielded 13.7 tons per acre. The full field cultivated yielded 12.3 tons per acre. The zone-till-planted field yielded 15.4 tons per acre.

How Much Tillage for Sugar Beets?

Jon Mills

Rye Wasn't a Good Nurse Crop for Alfalfa

When Jon Mills conceived his MASA research project, he thought the results would be opposite of what they were. "I would like to investigate what happens if alfalfa is seeded directly into an established field of drilled rye seeded to be taken as a grain crop," he said then. "The alfalfa will be seeded at different rates to determine at which rate it can best be established, the most economical cost and at which point, if any, the alfalfa seeding becomes a pest to the rye crop."

In fact, the rye suppressed the alfalfa so thoroughly fewer than two plants per square foot survived when the rye was harvested.

"The alfalfa was there," he said. "You could see the rows. It came up good, but then it died off. There was good rjin and the rye averaged 47 bushes per acre. It seemed like the rye was toxic to the alfalfa."

Mills grows 150 acres of alfalfa hay for sale and to feed to the 150 head of beef he raises from calf size to slaughter weight. He's chairman of the Van Buren Soil Conservation District, from which he rented the no-till drill and put on 15, 15 or 20 pounds of alfalfa seed per acre. It was planted into 7.5 acres of rye planted last fall. He grows 30 to 50 acres of small grains each year, as well as 150 acres of corn and 60 of soybeans.

Mills found the alfalfa didn't do well in rye, whether on sandy soil or the black loam in one low corner of the field. With alfalfa seed at $2.50 a pound, this was an expensive test, one he won't try again. For whatever reason, rye wasn't a good nurse crop for alfalfa.

George and Sally Shelter, Kalkaska County

Grazing Fattens Dairy Operation's Bottom Line

MASA's longest-running demonstration project involves the Shelter family's intensive rotational grazing project for their dairy herd.

George and Sally had five children at home when the project began in 1990. Now, only two are at home to help with the farm. Part of the reason for their moving toward grazing was to address the labor shortage they saw coming.

Now, the 275-acre Kalkaska County farm is devoted entirely to forage. The farm has grown no corn for two years and does not plan to return to corn. George's goal of reducing labor and cost of production have been largely achieved.

After experimentation with exotic grasses, George settled on some conventional grass-legume mixes. This year, he will seed more orchard grass, which has performed well with high quality and longevity.

Although production per cow dropped, supplemental feed costs dropped as well. The results has been a fairly steady rise of income over feed costs (based on 1991 prices for feed and milk).

Electricity Use

Supplemental Feed Costs

Rolling Herd AVERAGE (grazing seasons)
Cutting herbicide rates in soybeans left some weeds uncontrolled.

"I think I can get satisfactory weed control right across the board using half rates of herbicides mixed with vegetable oil," said Richard Ekins, a farmer from Rives Junction in Jackson County. "But that assumes weeds are pretty well under control to begin with. If not, I wouldn't try it."

**Making Chestnuts Fit Forests and Orchards**

For L.L. "Bud" Coulter, retirement turned into an adventure in agro-forestry. Coulter, who’s been retired about 15 years, has devoted his retirement years to developing a desire to work with chestnuts. Chestnuts come in two very different forms, and Coulter wants to see both of them developed.

Coulter would like see the tree restored to its former grandeur as a forest tree for rot-resistance and yield, and as a MASA-funded research project. Paul was enthusiastic about it, because he believes cover crops improve soil tilth and are a positive part of sustainable farming methods.

The practice he tried was using a rotary hoe to perform a light tillage operation after spraying herbicide but before planting corn. He used the Rawson coulter zone-tillage system, with which there is usually no other tillage before planting. The idea behind using the rotary hoe before planting was to stir the soil a bit, expose the surface to air to dry and warm and at the same time do a light incorporation of herbicide to enhance its performance.

On May 31, he sprayed Gramoxone as a burndown on ground in corn stubble from the previous year. In the same tank mix was the preemergence herbicide Surpass. He waited one day to let the Gramoxone work, then rotary hoed half the ground in alternate strips covering 12 corn rows. He made five replications. One day later he planted. A month later he used 2,4-D. On November 30, he harvested and weighed the corn. The yields were virtually dead even.

"I borrowed the rotary hoe from a neighbor," said Coulter. "I won't buy one based on these results."

Like many farmers, however, he's looking at ways to improve the performance of no-till in wet years, with cool, wet conditions.

In 1994, the Wings became involved with a Michigan State University project studying interseeded cover crops. After research at the Kellogg Biological Station, Extension IPM and cover crops specialist Paul Wing used them. The Wings plan to use more banded herbicides, which reduces chemical use by two-thirds. They also want to do something valuable with the area left between the bands.

In 1995, the Wings planted no-till corn into the strips remaining from 1994. They sprayed Roundup at 1 1/2 quarts to the acre in mid-May, then planted starting May 22.

There were several problems. First, the Roundup did not kill all the clover. Partly as a result, the soil was dry, and the no-till planting resulted in a poor, inconsistent stand.

Prowl and atrazine were applied in mid-June, but weed control for the year was poor. The thin corn stand did not form a solid canopy. Plot yield data was not taken. Overall, the field yielded only 55 bushels of corn per acre, with areas without cover crops looking somewhat better.

"We think we need to be flexible with no-till," said Paul Wing. "It did not produce a good stand under our conditions. We also need to apply Roundup at the right time and in amounts that control clover."

The Wings farmed 13 acres, 11 of which were devoted to corn, soybeans and hay. They milk 80 cows and also feed some steers.

**Using Half-Rate Herbicides on Corn and Soybeans**

Diane Roberts, Kent County

**Rotary Hoe Preplant Showed No Benefit**

When Diane Roberts read about it in No-Till Farmer, it sounded like a great idea. So he tested it on his farm last year as a MASA-funded research project.

"I was looking for an outstanding difference," he said. "But comparing the two, I had only 200 pounds of corn difference over 15 acres."

The Wings sowed four cover crops before planting corn. He used the Rawson coulter zone-tillage system, with which there is usually no other tillage before planting. The idea behind using the rotary hoe before planting was to stir the soil a bit, expose the surface to air to dry and warm and at the same time do a light incorporation of herbicide to enhance its performance.

In 1994, he experimented with row cleaners on three of his six no-till corn planters, and saw a yield advantage for row cleaners in corn stubble, getting 15 more plants per 100 feet of row and about seven bushels more per acre.

He equipped the remaining planter units for use this year.

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**Cutting herbicide rates in soybeans**

**Making Chestnuts Fit Forests and Orchards**

**Using Half-Rate Herbicides on Corn and Soybeans**

**Rotary Hoe Preplant Showed No Benefit**

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1. Plant 2-year-old seedlings selected for vigor, root development and parentage.
2. Seedlings will have much variability.
3. Survival of grafts has been erratic. One cultivar, Colonial, shows promise in southwest Michigan.
4. Soil must be well-drained, somewhat acidic and biologically active.
5. Wood protection is imperative.
6. Suitable soil moisture must be maintained.
7. Eliminate all weeds, especially quackgrass, in a two-foot radius. Chestnuts react to quackgrass as if it was toxic to them.
8. Fertilize as for other fruit trees.
9. Protect against birds and deer, and occasionally insects.
10. Organic mulch is desirable.
11. Tree tubes offer protection, but must be monitored. Start with short ones and keep growing space open and free of debris.
12. Nurture them and they will reward you. Ignore them and they will frustrate you.
Eliminating Starter Fertilizer in No-Till Soybeans

The farm is experimenting with practices that reduce input costs and build levels of beneficial insects. No yield differences can be proven at this time. Otto says that the compost is affecting the block. Scouting leads him to believe the compost block has less insect pressure than others. Tree growth appears better as well.

A field scheduled for a new planting is also getting an experimental treatment. The fallow fields were seeded with cover crops incorporated before the trees were planted. This field also received 500-750 pounds per acre of gypsum. Instead of bulk gypsum, crushed drywall scrap from new construction areas, free of paint, was applied. The farm used a material headed for the landfill to supply a calcium need in the orchard.

According to Otto, “We are looking at several ideas: compost, alternative nutrient sources and improved ground covers that enhance pollination. All increase that important biodiversity we need for better orchard management. We don’t know which ideas will be beneficial but we think some combination will make the farm more profitable and sustainable.”

Tom Guthrie, Barry County
A Wheat Cover Crop Before Corn

Each year, Tom Guthrie devotes about six acres of his thousand-acre Barry County farm to a test plot. He uses it for his own education, and to show to the visitors that come to his farm each year. And there are quite a few visitors.

Tom was president of MASA during 1995 and is vice-president of Michigan Farm Bureau. His farm is also a part of the MIFPS project funded by the Kellogg Foundation through MASA. Tom plays host to MASA members, MIFPS collaborators, children from local schools and other visitors.

In 1994, the eight 30- by 1160-foot strips were in corn and soybeans. That fall, he planted bin-run wheat as a cover crop on the soybean strips and left the corn ground with no fall planting. He wanted to see how the wheat would increase corn yields this year.

Procedures and results are shown in the table. The 18-bushel yield increase can not be attributed to the cover crop alone, since there is a 10 percent yield increase that would normally be expected from the rotation from soybeans to corn. Tom does believe the fresh organic matter incorporated in the spring in his sandy-loam soil contributed to the yield increase.

Tom and his son Tom III grow 500 acres of hay, 170 acres of wheat and 120 acres of soybeans. Cash-crop hay is their major crop. While they usually grow no corn, they custom combine about 3,000 acres of corn and soybeans each year. They also have 60 beef cows and raise Holstein bull calves from weaning to 600 pounds each year.

Corn in Wheat Cover Crop

<table>
<thead>
<tr>
<th>Treatment 1</th>
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</thead>
<tbody>
<tr>
<td>Soybeans</td>
<td>Corn</td>
</tr>
<tr>
<td>1994 crop</td>
<td>1994 crop</td>
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<td>Fall 1994</td>
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<tr>
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<tr>
<td>Net value</td>
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<tr>
<td>$376.85</td>
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</tr>
<tr>
<td>1/3 disk, $10; plant, $8: 2 1/2 bushel wheat seed, $7.12</td>
<td></td>
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</table>

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<td>$25.12</td>
<td>$25.12</td>
</tr>
<tr>
<td>Net value</td>
<td>Net value</td>
</tr>
<tr>
<td>$376.85</td>
<td>$376.85</td>
</tr>
<tr>
<td>1/3 disk, $10; plant, $8: 2 1/2 bushel wheat seed, $7.12</td>
<td></td>
</tr>
</tbody>
</table>
Leaves Make Good Livestock Bedding

Bernard Wall, Midland County

Leaves, from an otherwise not very useful resource. They all watched a demonstration as neighbors--including Mayor Gene Robertson, FSA director Bill Cozet from Coleman, the small city two miles away. The city officials discovered the Walls had been taking leaves from city residents and friends for about four years, and Bernard was using them for cattle bedding, getting more use from a neighbor's farm a couple of years ago. Ralph and Denny lost their potato land in 1995 as part of a demonstration project. Built in an open-sided pole barn to serve as composting system, the first bin is moved to the secondary composting bin. After two months more, the composting process is complete. Temperatures are monitored. As the project continues, MSU researchers continue to monitor composting activities at Richen Farms. Of greatest interest is (1) finding out about the survival of microorganisms that might be pathogens and (2) discovering the fertilizer value of compost.

The lotts have learned that manure can be used on fields as long as there is a couple of manure free years before potatoes are planted in a field. This eliminates the scab problem associated with manure on potato ground.

The cover crops that are used vary from year to year but generally include sudax, rye, hairy vetch and other legumes. Dennis feels that idling so much land is good for the ground and good for the crop. It breaks disease cycles, increases organic matter and reduces pesticide and irrigation costs.

Land Swaps: A Creative Way To Rotate Potato Land

Jim and Tara Good of Barry County

Rotational Grazing of Dairy Steers

The $105 per animal return to labor, management, and capital compares favorably with what the Goods would expect from feedlot beef. Other advantages that they see with grazing are less use of pesticides than with corn-fed beef and very low capital investment.

Richen Farms, Ingham County

Composting Hog Carcasses and Afterbirth

Dave Cheney shovels spelt hulls.

The composting is so complete, he said, that after four months only a few larger bones and teeth are recognizable, and they are so fragile they break up during the spreading process.

Odors during the composting are "musty" or "earthy," not like the odor of rotten flesh. Composting, he said, is a method carried out by organisms that use the carbon in the bulking agent (sawdust or hulls) and the nitrogen in protein. The key is to keep dead animal tissue covered with at least four inches of bulking material to discourage flies and bacteria that cause rotting. Reusing the bulking agent S0/S0 with new material allows use of a material already seeded with the microbes that carry on the composting process.

In tests to date, organisms such as soil-mortality were destroyed within the first seven days of the composting process.

<table>
<thead>
<tr>
<th>ButtonItem</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total variable costs (per head)</td>
<td>$57 per hundredweight.</td>
</tr>
<tr>
<td>Cattle yields (18%)</td>
<td>14</td>
</tr>
<tr>
<td>over-summered corn, pellets, and milo replacer</td>
<td>100</td>
</tr>
<tr>
<td>over-winter hay</td>
<td>48</td>
</tr>
<tr>
<td>veterinary, supplies, misc.</td>
<td>46</td>
</tr>
<tr>
<td>planning</td>
<td>20</td>
</tr>
<tr>
<td>Total variable costs</td>
<td>$20</td>
</tr>
<tr>
<td>Sale price</td>
<td>425</td>
</tr>
<tr>
<td>Return to labor, management, and capital</td>
<td>$105</td>
</tr>
</tbody>
</table>

In tests to date, organisms such as soil-mortality were destroyed within the first seven days of the composting process.
Grazing-Based Seasonal Dairying

Jonathan Chase is working hard to make his Brown City grass-based, seasonal dairy a viable operation. The 40-acre farm milks 42 cows, and the goals are (1) to milk during the pasture season and (2) to buy minimal feed for dry cows in winter. To do that requires mass freshening in spring.

Getting all the cows to freshen in a short window of a couple of weeks in spring is one of his most frustrating problems. A common practice in New Zealand is to use Dexamethasone and Lutalyse to synchronize a late-bred cow with the rest of the herd. Chase used the drug combination on the herd this year. The cows were only 60% pregnant in bred cows. The cow is then bred to freshen with her herd mates.

One cow didn’t clean well so she had to be treated for a uterine infection. This caused some lag time in breeding and increased the cost of drugs to get the job done. The second cow did better and was successfully bred for a May 28 due date.

"Holsteins are hard to breed in very hot weather," Chase reports. "To have cows freshen in May requires that we breed them in the hottest, most humid time of year."

He has solved one winter feed problem: He raises May-born young stock to about 300 pounds before selling them to a neighbor in the fall. He has first option to buy the heifers back. This eliminates the need for feed and housing for young stock during winter.

John and Cindy Dutcher, Chippewa County

Diversifying an Upper Peninsula Farm

Having rich, black, productive soils capable of high yields is somewhat a mixed blessing these days. Raw wood chips require too much nitrogen to decompose, robbing the young plants. Row covers are moved. Investment in land, planting stock and labor can run several thousand dollars per acre. The plants are expected to produce in their third year.

The Dutchers hope to use the blueberries to draw customers to the farm where other farm produce may be sold as well. Beef and herb sales are both possibilities.

Richard Lauwers, St. Clair County

The N Value of Clover before Corn

The Trans-Till was used in early May, four days before corn planting. The implement consists of a residue-cutting coulter, a deep-penetrating shank to fracture the soil, and two eight-wave coulters set to the sides of the shank.

John and Cindy Dutcher farm about 300 acres near Goetzville in Chippewa County, raising Angora goats, sheep and beef cattle. Declines in wool and mohair prices prompted them to look at alternative crops. In 1994 they turned a unproductive hay field into a blueberry planting. Blueberries were the choice because soil is acid (pH 4.4 to 4.9) and there is a U-pick niche in serving nearby Sault Ste. Marie. They planted 575 plants in the last two years. "We could have put the whole field in, I suppose, but I want this to be a cash project," said Cindy. "We spread the plants to spread the risk and keep the cash flow."

The field receives manure before planting, and the berries are mulched with aged cedar chips to control weeds in the rows.

Gary Buchholz, Huron County

Leaving More Residue To Protect Soil

The Trans-Till was used in early May, four days before corn planting. The implement consists of a residue-cutting coulter, a deep-penetrating shank to fracture the soil, and two eight-wave coulters set to the sides of the shank.

Gary Buchholz and daughter Holly

The Trans-Till was used in early May, four days before corn planting. The implement consists of a residue-cutting coulter, a deep-penetrating shank to fracture the soil, and two eight-wave coulters set to the sides of the shank.

From his perspective as a soil steward, Buchholz liked what he observed in the Trans-Till plots. Crop residue reduced erosion and sopped nitrates from winter-applied dair ymanure. Worm counts were higher, worm casts were more abundant, and soil structure was better. However, Buchholz was disappointed with the Trans-Till yield and economic return. Corn (following corn) averaged 96 bushels per acre with Trans-Till and 117 with conventional tillage. Gross margin was $62 per acre for Trans-Till and $143 for conventional. (Gross margin is revenue from corn sale minus costs of purchased inputs and custom rate field operations. See table.)

Buchholz wonders why neighbors and other Huron County Innovative Farmers searching until he finds a tillage system that will protect the soil, accommodate his manure application needs, and maintain economic return. That, Buchholz says, is the sustainability test.

<table>
<thead>
<tr>
<th>Input or Field Operation</th>
<th>Conventional</th>
<th>Trans-Till</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seed (Pioneer 3769)</td>
<td>31.22</td>
<td>31.22</td>
</tr>
<tr>
<td>Fertilizer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5-20-33 (% Zn (250 lbs)</td>
<td>18.89</td>
<td>18.89</td>
</tr>
<tr>
<td>28% N (9.2 gal)</td>
<td>8.01</td>
<td>8.01</td>
</tr>
<tr>
<td>82-0-0 (120 lbs)</td>
<td>19.59</td>
<td>19.59</td>
</tr>
<tr>
<td>Pest scouting</td>
<td>4.56</td>
<td>4.56</td>
</tr>
<tr>
<td>Preplant herbicides</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2,4-D (1 pt)</td>
<td>0.00</td>
<td>1.74</td>
</tr>
<tr>
<td>Roundup (1.5 qt)</td>
<td>0.00</td>
<td>19.41</td>
</tr>
<tr>
<td>activator</td>
<td>0.00</td>
<td>1.07</td>
</tr>
<tr>
<td>Post emergence herbicides</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Activator (2/3 oz)</td>
<td>0.00</td>
<td>17.34</td>
</tr>
<tr>
<td>activator</td>
<td>0.00</td>
<td>1.07</td>
</tr>
<tr>
<td>Clarity (0.5 pt)</td>
<td>0.00</td>
<td>5.01</td>
</tr>
<tr>
<td>Clarity (68 pt)</td>
<td>6.81</td>
<td>0.00</td>
</tr>
<tr>
<td>Trans-Till (spring)</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Soil Saver (fall)</td>
<td>10.70</td>
<td>0.00</td>
</tr>
<tr>
<td>Dicp</td>
<td>9.20</td>
<td>0.00</td>
</tr>
<tr>
<td>Field cultivator</td>
<td>7.55</td>
<td>0.00</td>
</tr>
<tr>
<td>Planter</td>
<td>12.35</td>
<td>0.00</td>
</tr>
<tr>
<td>Cultivator</td>
<td>7.55</td>
<td>7.55</td>
</tr>
<tr>
<td>Herbicide sprayer</td>
<td>4.80</td>
<td>9.60</td>
</tr>
<tr>
<td>Combine</td>
<td>21.00</td>
<td>21.00</td>
</tr>
<tr>
<td>Total purchased input</td>
<td>162.23</td>
<td>188.41</td>
</tr>
<tr>
<td>field operation costs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenue from corn sale</td>
<td>305.31</td>
<td>259.23</td>
</tr>
<tr>
<td>Gross Margin</td>
<td>143.10</td>
<td>61.82</td>
</tr>
</tbody>
</table>

1. 117 bu @ $2.75/bu less drying charges
2. 96 bu @ $2.75/bu less drying charges
Bob Fogg, Ingham County

'A Direct Market for What We Grow . . . '

As Bob Fogg sees it, the markup in the food business is awful . . . it's attractive. No way should the store price be two and three times what the farmer gets.

Armed with the belief there is money to be made by being his own middleman and the Fogg family is putting the finishing touches on a new facility just off the U.S. 127 freeway at the Leslie exit near their farm.

A modern kitchen graces the Learning Center.

Actually, it's on the farm where Bob's mother lives and where he was born and grew up. Bob and his family live on their own farm a mile away.

Recently, they bought the family home farm, which had been 120 acres to the 257 they had--and gaining in the process an old chicken laying house Bob's dad, Arthur, had built in 1965 and used until 1985. The 40 x 220-foot building, with the cages intact, had sat there unused for 10 years until Bob figured out it might serve a grand purpose.

Actually, several purposes.

RETAIL SALES

Starting last August, the Fogg's began refurbishing the old building. They added a store front, so it no longer looks like a home for chickens. Immediately behind the front is the retail sales area, which will house in a 40 x 30 space displays of organically grown products and a checkout counter.

A cooler with a display front gives customer access. Behind that there's a wash and preparation room, a space for repackaging grains and flour, a prep room for eggs and other soybean products. The Fogg’s built their own bagging station with chairs and table. It's called The Learning Center.

The Fogg's have two grants from two agencies that help them build and administer the center. One is from MIFPS (the Michigan Integrated Food and Farming Systems Initiative); the other from SARE (the North Central Region Sustainable Agriculture Research and Education Program).

The MIFPS grant was made last fall. The purpose is to help Fogg's and others create an organic food network that includes producers and other community members. The project is called "Growing and Marketing Food Locally: Building Alternative Models."

The project was originally proposed as two projects. The Fogg's wanted to create a network for organic farmers and a market for locally produced food. Michigan State University anthropologist Laura DeLind and Mason organic farmer Mark Held proposed forming a CSA (Community Supported Agriculture), in which consumers contract for a share of the farm's production. Part of the plan is to hire a coordinator to help farmers share in the operations of food cooperatives.

The SARE grant supports community education. The Fogg's new kitchen will be used to demonstrate food preparation and preservation techniques, but the room is not restricted to that. The general mission is to do things that strengthen rural communities, serving as a place to meet and express themselves about sustainable farming and environmental concerns.

ON-FARM RESEARCH

With all that going on, Bob continues to do MASA-sponsored on-farm research. The project on his farm this year was set back by dry weather and will be done next year.

Innovative Farmers of Huron County

Evaluating Alternative Production Systems

For the last five years, Huron County farmers have been participating in the USDA Saginaw Bay Water Quality Demonstration Project. The goal is to reduce the potential for nutrient, sediment and pesticide loading in surface water.

The farmers have been working with MSU Extension, the Natural Resources Conservation Service and the Soil Conservation District. As a result of the Water Quality Project, the farmers formed an organization called the Innovative Farmers of Huron County.

The Innovative Farmers have rented two 40-acre fields on which they conduct research trials. MASA supports this project, as well as the projects of individual members who do on-farm research trials or demonstrations.

While goals of the Innovative Farmers coincide with those of the water quality project, the farmers also expressed concern about soil compaction, poor water infiltration, high investment costs, lack of soil microbial activity and a desire to have more leisure time. So they want a production system that reduces trips over the field, reduces equipment inventory, increases crop residue and increases organic matter and soil tilth.

Increasingly, more farmers are shifting from crops to market vegetables and pasture-raised livestock. The Integrated Cropping System Demonstration is designed to compare four tillage systems as they are applied to crops in two rotations: the three-year rotation of sugar beets, corn and dry beans that some rotation with wheat in the fourth year.

The tillage systems are fall plow, fall chisel, zone-till and Trans-Till. The Trans-Till system consists of a tool bar implement with two eight-wave coulters and a large shank per row. It is used to open the soil ahead of planting. Zone-till is carried out during planting with three coulters per row mounted on the planter.

During the winter, Innovative Farmers meet to discuss results and incorporate new ideas into the next year's research work. At each of the two research sites, growers can look at each of the rotation crops growing on 10 acres. In addition, MSU researchers have collateral projects under way evaluating cover crops for sugar beets, sugar beet plant populations, herbicides and fertilizers and corn varieties.

The group is also using Purdue University's MAX: Economic Analysis computer program to compare the economic returns from the various tillage production systems. Farmers throughout the Corn Belt participate in the program, and the results are published each year. Innovative Farmers can compare their production costs with those of growers using similar, or different, tillage systems in different areas.

For additional information on the Innovative Farmers and the Integrated Cropping System Demonstration, contact MSU Extension-Huron at 517/269-9949.