the Practical Farmer

Practical Farmers of Iowa Newsletter

Vol. 9, #4
Winter 1994

REGIONAL STUDY RELEASED BY NORTHWEST AREA FOUNDATION

Perhaps you caught something on television or in the newspaper recently about a five-state study of sustainable agriculture. If it sounded familiar, maybe that's because you were part of the study! Along with ISU researchers, PFI participated in the project design and analysis, and many PFI members responded to a questionnaire or agreed to an interview or field observations. The last several issues of this newsletter have discussed different parts of the results from Iowa.

Now the Northwest Area Foundation, which sponsored the study, has gone public with the results. A thirty-second splash on TV may not seem much payoff for a six-year effort. But the message was a positive one – "sustainable farms *can* compete, *can* benefit rural economies, especially on an even playing field."

And the press releases are only part of the Foundation's outreach plans. With assistance from the Wallace Institute for Alternative Agriculture, "listening sessions" have been held for congressional staff in Washington. In addition, the full study results are just out in a book, *Planting the Future*, published by Iowa State University Press ($14.95).

Mailed with this newsletter is the "executive summary" of the press report, *A Better Row to Hoe*. This five-page synopsis gives the main

"sustainable farms can compete, can benefit rural economies, especially on an even playing field."

IN THIS ISSUE

points of the 38-page report. (It may also give you the idea that executives have a pretty short attention span.) The full report can be obtained from PFI by checking the form on page 4. An earlier report, *Which Row to Hoe*, based on the first phase of the study, is also available without charge.

A Better Row to Hoe provides an overview from all the participating states, while the articles in the PFI newsletter have focused solely on Iowa. For those of you who fall somewhere between "executive" and "reader," here are the headings from the report, along with a few observations.

- *The Contradiction in American Agriculture.* Farmers were sorted from sustainable to conventional based on: 1) reduction of inputs; 2) use of ecological practices; and 3) commitment to those practices. *"Ultimately, the contradiction between abundance and deterioration must be resolved, either by the chaotic forces of nature, or by the deliberate informed actions of people. Public policy will, intentionally or otherwise, contribute to this resolution."*

"Ultimately, the contradiction between abundance and deterioration must be resolved, either by the chaotic forces of nature, or by the deliberate informed actions of people."

- *Farm Practices and Crop Yields: Does Good Farming Make a Difference?* On conventional farms in Iowa, 94 percent of cropland was in corn or soybeans compared to only 61 percent on farms classified sustainable. Twenty-five percent of the land on sustainable Minnesota farms was found to be in non-crop uses like woodlands, pasture, and wetlands. The corresponding figure on conventional farms was 7 percent. However, there was no difference in the amount of CRP or terraced land on the Minnesota farms.

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PFI WINTER MEETING DRAWS 385

Everything went like clockwork at PFI's tenth anniversary celebration, Jan.6–8. The registration team, youth activities organizers, ecumenical service planners, poster presenters – everyone did their part and did it beautifully. There were many comments about how well the meeting went.

The anniversary provided an opportunity for Practical Farmers of Iowa to reach people who had never before participated in a PFI activity. Supporters and friends came from Minnesota, Missouri, Michigan, and Ohio to join in the event. About 70 folks who hadn't been members of PFI joined with the meeting. An additional 56 people came just to hear Wendell Berry speak Saturday evening. The weekend also deepened some acquaintances, giving people new appreciation of the feelings, abilities, and interests of other members.

Attendance Arithmetic	
200	Preregistered
-34	No-shows
+98	Walk-ins
+65	Children and youth
+56	Wendell Berry talk
385	Total

Thanks to the "camcorder corps," every talk and workshop was videotaped. These sessions fit on two videotapes. The tapes will be available through the PFI office at ISU. They can be borrowed or purchased directly. Fill out the form on page 4 to indicate your preference. Selections from the talks by Wendell Berry, Paul Johnson, and Alan Henning will also appear in future issues of this newsletter. Workshop summaries follow:

Ten Years of Conservation Reserve, Paul Johnson. (moderator and recorder Ron Rosmann)

Everyone introduced themselves, as the session was fairly small, with around 35-40 people. There are 36 million acres in CRP right now. This land needs to be protected, but at present only contrac from the first sign-up can be rolled over for one more year. What form CRP will take in the future is

A Snapshot at Ten Years

There was lots to talk about in between sessions. The schedule was packed, but there were also breaks.

Dick and Sharon Thompson received the Sustainable Agriculture Achievement Award from Larry Kallem.

Forty posters and displays made for a lively hour as cooperators and others shared results of projects.

Making paper starts with newspaper soup - and water all over the place. Chloe Millward (left) and Danika Rasmussen were two of 65 young people led in activities by Shelly Gradwell and crew.

The Saturday night community dance let everyone unwind. Beginners and old hands alike joined in square dances, contras, waltzes, and a two-step.

Homemade music was a feature of the Sunday morning ecumenical service. A spare moment to practice found these volunteers going over the scores.

Getting set for the workshops – Ron Rosmann, Jeff Olson, and Vic Madsen take a moment with Paul Johnson.

yet to be determined. A program more targeted by environmental considerations is likely, and rates for new signups will likely be lower than the rates ten years ago. One point nine billion dollars is the cost figure thrown out, although because of budgetary constraints, this may not be realistic. In Iowa, this figure is about 160 million dollars. Environmental easements are being looked at.

The influence of CRP is great. The entire DNR budget, for example, may be only one-fourth as large. Alternatives for the future are:

1) partial payments for partial usage. Participants were interested in having a rotational grazing use option.

2) CRP for grass buffer strips, riparian buffer zones, etc.

A key point for the future will be to work on problems *with farmers* at the federal level as well as locally.

Controlled Grazing, Alan Henning. (moderator and recorder Tom Frantzen)

About fifty people attended the grazing workshop. Alan Henning spent 40 minutes on slides of his demonstration dairy near Madison, Wisconsin. There followed 20 minutes of question and answer on basic dairy. I asked the group for some discussion on general grazing ideas. There were lots of

Order Form

Sustainable Agriculture Study Reports

- ❑ *Which Row to Hoe?*
- ❑ *A Better Row to Hoe*

PFI 10th Anniversary Meeting Video Tapes

Borrow: Buy:

❑ Tape 1($2.00 purchase) ..... $_____

Opening remarks and award, Paul Johnson address, CRP workshop, Alan Henning address, Grazing workshop, Alternative pork systems, Wendell Berry address

❑ Tape 2 ($2.00 purchase)..... $_____

Opening remarks and award, Paul Johnson address, Wendell Berry address, Sustainable communities workshop, Women in sustainable ag workshop (1 hr), Integrated cropping systems workshop, Soil quality workshop, Alan Henning address

❑ Tape 3 ($2.00 purchase)..... $_____

Marty Strange, *Plateglass or Plywood: Alternative Futures for Small Town Main Streets*, PFI annual meeting, Jan. 1994

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feeding questions, but the conversation usually came back to dairy.

***Cropping Systems for Integrated Farming, Mo Ghaffarzadeh and Rick Cruse.* (moderator Rick Exner)**

Rick Cruse began with a survey of ways to diversify in time and space. One method is shelter belts. Different crops respond to them to different degrees. Precision farming: most farmers are probably farming the whole field the same way even though they lose money in some spots doing that. We're trying to discover what crops belong where

We're trying to discover what crops belong where in the field.

in the field. Canadian farmers in Ontario have formed a strip intercropping club. Playing with twin rows in 1994, they reported corn yields of 300-400 bushels per acre. Is this repeatable?

Mo Ghaffarzadeh stated that if Iowa cropping systems are going to change, new alternative crops are needed. For example, oats are good in strip intercropping from a biological point of view, but not economically. Berseem is the legume of interest right now, but each producer must figure out how to use it in their own system.

Four PFI cooperators were asked to offer their perspectives on the state of strip intercropping. Weeds were a "fly in the ointment" in 1994. Paul Mugge, for example, was forced to plant some crops no-till because of the wet weather in 1993. In no-till strips, overwintering dandelions damaged the oats, and stalk borers infested some corn.

***Soil Quality, Doug Karlen,* (moderator Jeff Olson, recorder Laura Krouse)**

Doug Karlen is a soil scientist at the National Soil Tilth Lab in Ames. He presented a discussion of the difficulty for researchers in defining, identifying, and measuring soil quality.

The complex interactions between the soil and the environment make a soil quality index difficult to develop, and difficult to use in a number of different ecosystems.

Recent definitions of soil quality have included ideas about productive and environmental sustainability, and have attempted to consider the interactions between the soil and all the other components of the ecosystem, including the humans. Many soil scientists have agreed that some of the indicators of soil quality that are useful for agricultural soils include: topsoil depth, bulk density, organic matter, microbial activity, aggregate stability, infiltration rate, and water holding capacity. These indicators are helpful if the soil is used for crop production, but are individually only part of the measure of soil quality. The complex interactions between the soil and the environment make a soil quality index difficult to develop, and difficult to use in a number of different ecosystems.

Karlen showed a video produced by Rodale, in which non-scientists and many non-farmers were interviewed about their ideas on soil quality, soil health, and food health. The video sparked a discussion and series of questions from the audience. Some of the comments and questions included:

What is soil tilth vs. soil quality vs. soil health?

How will farmers use soil quality information produced by the National Soil Tilth Lab?

Farmer-managed trials could be used to assess soil quality.

Are funds available to educate non-farmers about soil quality?

Biological activity of soil can be a good indicator of soil processes, including nutrient recycling.

(Continued on page 13.)

SHARED VISIONS

farming for better communities

This section of the newsletter includes:

- a report on the *Shared Visions'* networking conference;
- updates on *Shared Visions'* groups;
- a report on results of the Poweshiek Area AG2020 group's survey of CRP owners.

SHARED VISIONS NETWORKING CONFERENCE

Over forty members of groups involved in *Shared Visions* braved six inches of new snow to attend the January 6th networking conference in Ames. All groups were represented, with the conference being the first organized *Shared Visions* event for five groups that are new to *Shared Visions*.

The conference provided a chance to get acquainted and learn. Dennis Keeney of the Leopold Center and Tom Frantzen of PFI welcomed people and thanked them for their willingness to work as part of local teams to improve rural Iowa. An overview of the W.K. Kellogg Foundation's Integrated Farming System Initiative was followed by a description of *Shared Visions*.

Tom Frantzen spoke on farming systems, decision-making, and the importance of trust in relationships. Mary Foley of ISU Extension helped group members understand their individual contributions to working in teams based on their Myers-Briggs Type Inventory (MBTI) scores. (MBTI is a widely used tool for helping people understand how their personalities influence preferences for making decisions and interacting with others.)

Three groups involved in the pilot year of *Shared Visions* (Poweshiek Area AG2020,

Mary Foley explains differences between networking conference participants in preferred styles of decision-making.

Virginia Moser from the Benton Couny *Shared Visions* group makes a comment during the networking conference.

Grundy-Hardin County group, and Neely-Kinyon Farm Committee) described their work and answered questions.

The day concluded with a piano and slide presentation titled *"Hymns and Herds"* by Tom Morain of Living History Farms and a discussion of peoples' memories of rural Iowa. Many participants also attended the January 7th PFI meeting.

This networking conference was the first of three planned for *Shared Visions*.

GROUP UPDATES

Eight community-based groups are currently involved in *Shared Visions*. Five are new groups and three have been involved since the program's pilot year. (The fourth pilot-year group, the Agricultural Committee of the Davis County Development Corporation, decided in December to end its involvement with *Shared Visions*.)

New groups:

Audubon County Graziers

The Audubon County Graziers includes 12 farmers and six non-farmers. The non-farmers include a veterinarian, a school employee, a postal worker, a minister, a sales manager for a feed company, and a retired Extension employee. The group has grazing systems as its focus.

Central Iowa Community Supported Agriculture Project

This group draws members from Boone, Story, and Marshall counties. Members include a farmer, a market gardener, an owner-operator of a habitat restoration business, employees of area businesses and agencies, a retired business owner, and several Iowa State University graduate students. The group wants to establish a Community Supported Agriculture (CSA) project in Central Iowa. (See box below for a short CSA description.)

Benton Development Group

This county-wide development organization is sponsoring a group of people from Benton County who also plan to develop a CSA project. Group members include several farmers, a market gardener, and a teacher.

Louisa County Group

The Louisa County group includes three local agency personnel, two bankers, an operator of a tree farm, and several other farmers. The group has not yet identified a focus area.

Ag Connect

Ag Connect, which is based out of Lenox, has a goal of preserving rural communities in a nine-

(Continued on next page.)

"Community Supported Agriculture forms a social and economic relationship where farmers and consumers share in the responsibility for those factors that ensure the production of quality food and care of the soil, ground water, and adjacent natural areas."

From the Dec. 2-4, 1994 Upper Midwest Community Supported Agriculture Conference brochure.

county area of Southwest Iowa through a regional beginning farmer program. Its board includes a mixture of bankers, utility managers, and farmers.

Pilot group updates:

Poweshiek Area AG2020

Original areas of interest to this group were beginning farmers, cooperation between farmers and townspeople, integrated crop and livestock farming systems, and the future of 46,646 Conservation Reserve Program (CRP) acres in Poweshiek County.

POWESHIEK AREA
AG 2020

A goal developed from these interests is to help CRP landowners use their land in ways that are environmentally sound and financially profitable. The initial project undertaken to achieve this goal was to assess the intentions and interests of Poweshiek County CRP owners and the availability of facilities for livestock production. (For some results, see the following article.)

Transferring the operation of CRP farms to the next generation was discussed at a meeting attended by over thirty CRP owners. Seven indicated they were interested in further consultations, which the group will facilitate. AG2020 is also helping promote a "Two-Generation Farming Workshop" being held by ISU Extension on February 27. A future goal is to serve as a local support group for farmers who want to use alternative practices on these acres.

Grundy-Hardin County Group

This group's goal is to develop a community-based beginning farmer initiative called *The Promised Land Beginning Farmer Program*. They developed a flowchart for how the program might work (see next page), and they have recognized that developing an organizational framework that specifies roles of cooperating partners is necessary to successfully implement the program.

Additionally, the group is hosting a public meeting on February 15 at which Steve Hopkins will talk about how he and his wife Sarah Andreasen began farming with a grass-based dairy in 1992 near Decorah.

Neely-Kinyon Farm Committee

A 160-acre farm near Greenfield was given to the Wallace Foundation for Rural Research and Development in late 1993. A local group called the Neely-Kinyon Farm Committee has been planning the use of the farm.

They have developed some long-term goals and short-term research and demonstration projects. Input from group members will provide the basis for a *Shared Visions* project application that will likely focus, in part, on research by several area farmers on how to best turn forages into dollars.

POWESHIEK AREA AG2020 CRP SURVEY RESULTS

Poweshiek County has 46,646 acres in CRP, which is nearly 73 square miles of land. Recognizing the importance of the future uses of these acres on area communities, a goal set by the AG2020 group was *to help CRP landowners use their CRP land in ways that are both environmentally sound and financially profitable.*

The group's first step toward achieving this goal was a survey of owners of CRP land in Poweshiek County. During the summer of 1994, 511 owners of CRP land in Poweshiek County were sent a survey. Of these, 353 were completed and returned, giving a response rate of about 70%.

Figure 1 shows that 45% of Poweshiek County CRP owners are

(Continued on page 1

The Promise Land Beginning Farmer Program

Developed 12/1/94 and 12/13/94 by Grundy/Hardin County Beginning Farmer Initiative

Support services from the community:
1. Mentors
2. Machinery for labor/neighbor involvement/support
3. Assistance preparing financial documentation
4. Inclusion in community activities (orientation)
5. Community loan fund
6. Education and training
   - Holistic Resource Management
   - FmHA
   - ISU Extension
7. Other commuity support services?

Owners of land:
Why program may be attractive to owners of land:
1. find operators that match owner philosophies and qualifications;
2. confidentiality
3. screening offers qualified candidates
4. avoid unpleasant conflicts with neighbors

Step 1. Identify Candidates
Step 2. Assess Candidates
a. attitudes and values
b. commitment to help
c. short and long term goals as landowner
d. resources (include willingness to keep intact)
e. willingness to mentor
f. rate of return desired

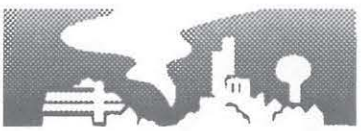
Beginners:
Step 1. Identify Candidates
Step 2. Assess Candidates
a. resources ($, equipment, support of others)
b. family unanimity
c. attitudes (open-minded, committed, community-minded)
d. skills
e. goals
Step 3. Create Personal Development Plans to overcome skill deficiencies (continuing education)
Step 4. Prepare Resumes (document resources, skills, attitudes)
Step 5. Outline preliminary business plans

Screen and Match Process
- personally compatible?
- professionally compatible?

Develop site-specific business plans

Get hitched:
- sign agreements

Monitoring
1. to make adjustment in program delivery
2. to insure success of beginners
   a. accountability
   b. communication with landlord and creditor



non-farmers, 33% are actively farming, 13% are retired farmers, and 10% are semi-retired farmers.

Figure 1. Poweshiek County CRP Owners

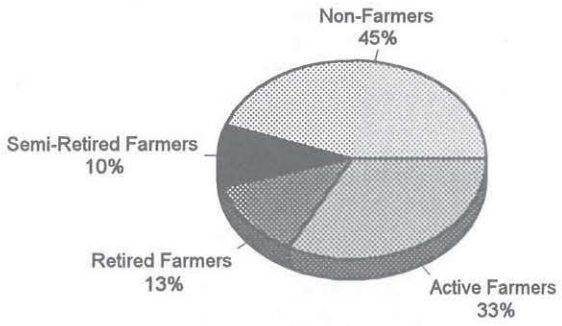


Figure 2 shows that the average ages of these groups were 72 for retired farmers, 70 for semi-retired farmers, 59 for non-farmers, and 54 for active farmers. Given that 23% of Poweshiek County CRP owners are in some stage of retirement and average at least 70 years in age, an opportunity exists to explore options for helping beginners start on these farms.

Figure 2. Average Age by Ownership Status

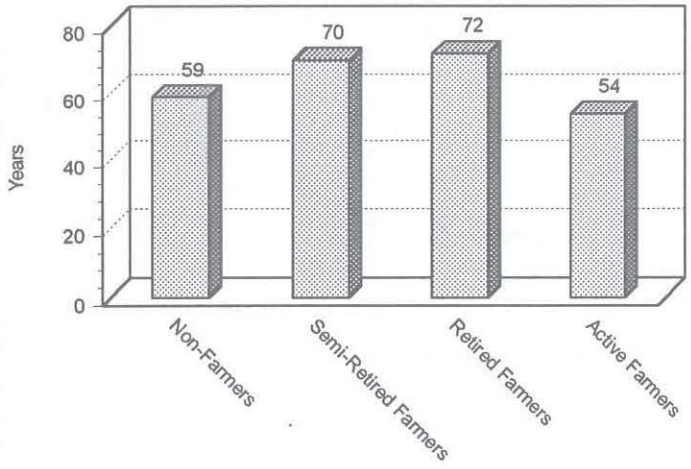
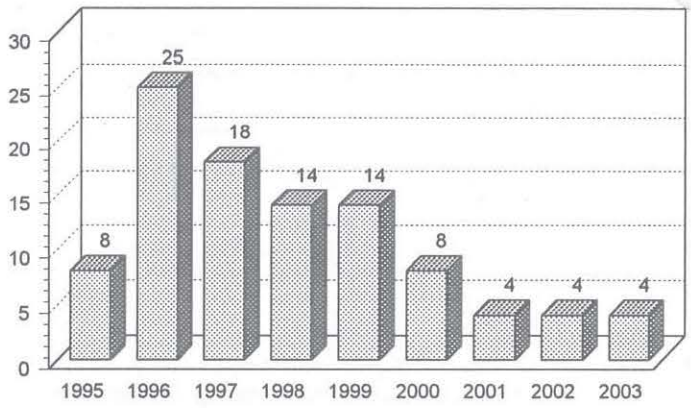


Figure 3 shows that 25% of CRP contracts will expire in 1996, another 18% in 1997, and 14% in each of 1998 and 1999. Thus, nearly 80% of contracts are set to expire in the next five years.

Powesheik County CRP owners were asked if they would re-enroll land into the CRP at current and lower payment levels. Figure 4 shows 94% would re-enroll with payments at

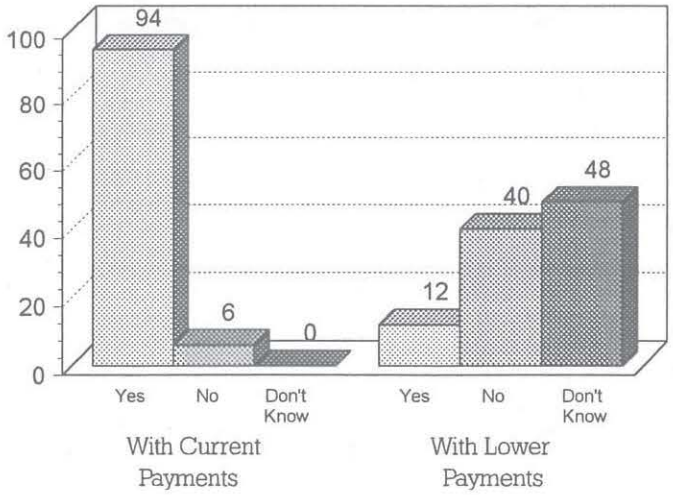
Figure 3. When CRP Contracts Will Expire

(Percent of Contracts)



current levels, and only 12% would with lower payments. Figure 4 also shows that 40% would not re-enroll if payments were lowered and nearly half (48%) do not know whether they would re-enroll with lower payments. Thus, a substantial amount of CRP land would likely come into production if contracts were extended but payments lowered.

Figure 4. Percent of Owners Who Would Re-Enroll if CRP is Extended



Poweshiek County CRP owners were asked about plans if CRP is not extended. Figure 5 shows that 38% would farm the land, 32% would rent out the land, 4% would sell the land, and 21% don't know. Thus, while more owners would farm their land than any other option, almost a third would rent out the land and 4% would sell.

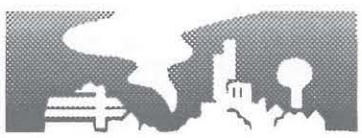


Figure 5. Plans if CRP is Not Extended

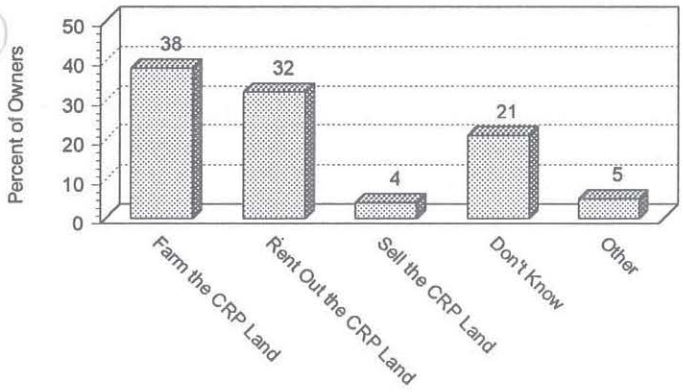


Figure 6 shows expectations of CRP owners on practices to be used if they rent out their CRP land. Forty-three percent said they expect renters to use minimum tillage, 30% expect renters to use no-till, and 12% expect renters to use conventional tillage.

Figure 6. Expectations of Renters if Land is Rented Out

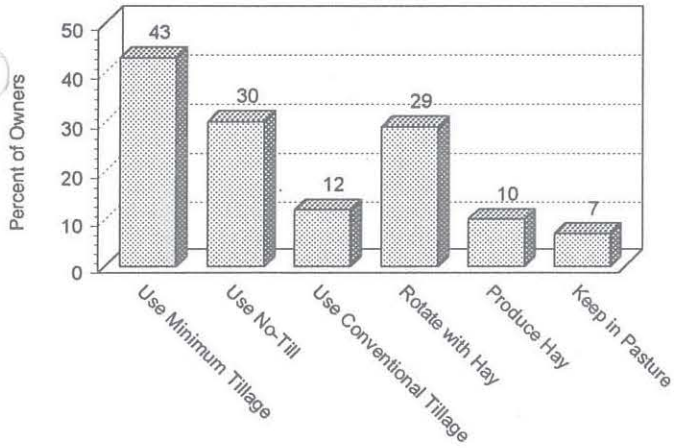
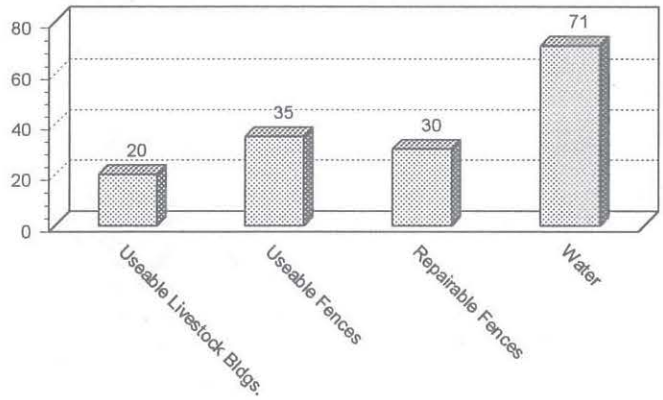


Figure 6 also shows that 29% expect renters to rotate with hay, 10% expect renters to produce hay, and 7% expect renters to keep the land in permanent pasture. Thus, a portion of CRP owners who would rent out their CRP land would expect forages to be used on this land.

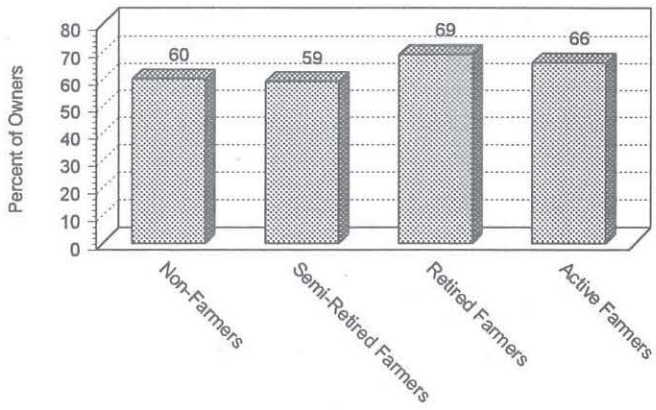
If there is an expectation that forages would be a part of how CRP land is used, a question of interest concerns the existence of facilities for livestock. Figure 7 shows that 20% of Poweshiek County CRP owners had usable livestock buildings on their CRP land, while 35% had useable fences, 30% repairable fences, and 71% sources of water.

Figure 7. Percent of Owners With Facilities for Livestock on CRP Land



AG2020 also asked CRP owners if they were interested in information about alternative uses of their CRP land. Figure 8 shows that 69% of retired owners, 66% of active farmers, 60% of non-farmers, and 59% of semi-retired farmers were interested in information on alternative uses.

Figure 8. Interested in Information on Alternative Uses for CRP Land



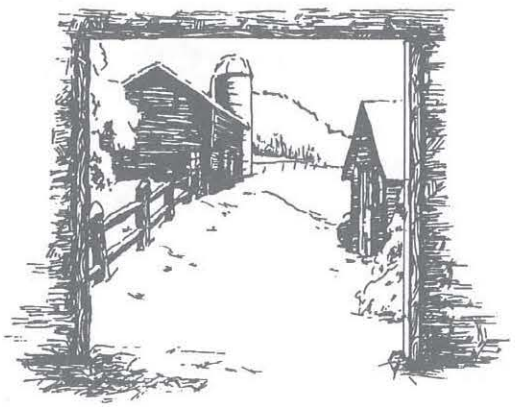
AG2020 also asked CRP owners if they were interested in talking with a beginning farmer. Nine percent (29 owners) said they were, while 64% said they were not and 27% said maybe. Twenty-nine CRP owners were willing to talk with a beginning farmer, which represents both an opportunity and a challenge for the Poweshiek Area AG 2020 group.

MAKING LISTS

Vic Madsen, Audubon, found the following "timely" reminders in an article entitled "Topics in Season," in the October, 1941, *Farm Journal and Farmer's Wife.*

Now Is the Time To:

Make cider,
Gather nuts,
Dig potatoes,
Clean the cellar,
Dust seed wheat,
Plant fruit trees,
Wash storm sash,
Count your turkeys,
Store winter squashes,
Put cabbage in a trench,
Landscape the farmstead,
Buy a pair of rubber boots,
Start feeder calves on grain,
Take care of farm machinery,
Buy fence for extra corncribs,
Clip dairy cows' flanks, udders,
Repaper the hired man's house,
Send Aunt Mary a birthday card,
Kill and dress a chicken for grandma,
Kill boxelder bugs with kerosene or scalding water,
Tell you neighbor his new bull is a fine looking animal,
Spray apples with hormones to make fruit hang on the trees,
Tell your wife her green tomato pies are the best you ever ate,
Give the lone scouts that old thresher belt for making ground fire beaters,
Ask Mabel if she saw the new washing machines at the fair, and which did she like best.



Vic says it just shows how far behind he is on his reading. Sticking to the form, he jotted down the following: *We are often asked what Practical Farmers of Iowa is trying to do. Sometimes it is difficult to put the right words in the right order to say what we are thinking. So the following words are listed for you to put into sentences that fit your situation.*

PFI Is For:

Fun,
Hope,
Trees,
Water,
Grass,
Profit,
Diversity,
Teamwork,
Opportunity,
Communities,
Many farmers,
Sleek animals,
Healthy plants,
Content people,
Productive soils,
Respect for nature,
Local food systems,
Value-added products,
Attractive landscapes,
Complementary enterprises.

(*Sustainable Study* continued from page 2.)

- *Farm Finance and Economic Performance: A Struggle to Compete.* The study took "snapshots," in 1989 and again in 1991. They reflect changes in commodity prices. For example, livestock prices were fairly high in 1989 but fell in 1991. Conventional farms tended to control more financial assets than sustainable farms, were generally larger, and had greater gross profits. However, in 1991, Iowa sustainable farms had twice the net farm income per acre of conventional farms. But this was before subtracting the greater wages for labor sustainable farmers paid to themselves and their families. Sustainable practices actually accounted for only a small part of the difference in profitability. Livestock ownership was a stronger (negative) factor that year.

- *Labor and Management: Putting More In.* In Iowa, sustainable farms involve 22 percent more labor on average than conventional farms, or 19 hours per week. This is largely due to livestock operations. The good news is that labor is more evenly distributed throughout the year on farms with livestock.

- *Community Interactions: Spending Less, but More Locally.* In Iowa, sustainable farmers spent $51.70 per acre on goods and services

purchased from farmers and local businesses. Conventional farmers spent $31.40 per acre. In spite of greater labor requirements, sustainable farm families participate in farm, civic, and church organizations just as much as conventional farm families.

- *The Adoption of Sustainable Agriculture: Meeting the Challenge.* Sustainable producers tend to farm less land but are more likely to own it than conventional farmers. Concerns for the environment and family health were often the most important reasons given for the adoption of sustainable practices. Concerns experienced in the transition to sustainable practices included weeds, crop yields, profitability, and labor/management demands. Only the last remained a concern for those who actually changed to more sustainable practices. Two-thirds of Iowa sustainable farmers said they were more satisfied than before they adopted sustainable practices.

Sustainable producers tend to farm less land but are more likely to own it than conventional farmers.

- *Insights on Sustainable Agriculture.* In 1991, conventional farms generally performed better than sustainable farms. But the top one-third of sustainable farmers did very well. Management may be key. Some farmers using sustainable methods may lack the information or skills to thrive in a competitive environment.

- *The Sustainable Choice.* Sixty-four percent of Iowa conventional farmland was planted to crops that receive government price support. Only 45 percent of sustainable farmland was planted to subsidized crops. The Northwest Area Foundation calls for farm support that is not commodity based but stewardship based and targeted at family farms.

In the next article, we will profile the farm and farmer types found in Iowa. We'll also look at their different success strategies.

(Workshops, continued from page 5.)

***Transitional to Sustainable Agriculture: Women's Experiences*, (moderator and recorder Margaret Smith)**

As farming is changing, women are adjusting, growing, and changing too. This workshop included farmers, women with careers outside of agriculture who work part-time on their family farm, women who work at home and also work part-time on the farm, and both men and women who do not live on farms but are deeply interested in women's roles and activities relative to farming. Panel members were: Irene Frantzen and Cindy Madsen, who both farm in partnership, and Regina Streigel who formerly farmed full-time and currently is making a career change. As part of her graduate program in counseling, Regina has surveyed women from "sustainable" and "conventional" farms.

Each panel member had differing stories, but some common themes emerged. Their involvement with the farm grew, both as children grew and as they made changes to more sustainable practices. They find the farm more rewarding as they have come to share more tasks, responsibilities, and decision making. More sustainable farming practices also offer more and safer opportunities for their children to work with them. Regina found that women from "sustainable" farms spent more hours working both on and off the farm, but that they enjoyed their lives (see *Well-Being of Women in Sustainable Agriculture, The Practical Farmer, vol.9, #2, summer, 1994*).

Each panel member had differing stories, but some common themes emerged.

Group discussion also revealed common themes of: how are work loads distributed among family members, how do women achieve their desired level of involvement with the farm, and how do you get everything done during the busy seasons. It's not surprising that these are similar to questions non-farm families are asking in the 1990's.

Cornelia Flora and Vic Madsen at the winter meeting.

***Sustainable Communities Workshop, Cornelia Flora and Wendell Berry* (moderator and recorder Gary Huber)**

Cornelia Flora began this workshop, which was attended by around 125 people. She noted that a community is made up of diverse interactions among organisms, and a sustainable community is characterized by having the resilience to maintain these interactions over time.

Ms. Flora then described various forms of "capital" in communities, which she defined as "resources invested to create new resources." One form is physical capital, and she included money in this form, which she noted was "incredibly mobile."

Another is human capital, which included education, skills, health, values, and leadership. She said human capital made physical capital more efficient, and she noted with some irony that "we sometimes understand the need to invest in human capital." Another form of capital is natural resource capital, such as land, soil, water, and biodiversity.

However, the form of capital she focused on as important for sustainable communities was social capital. She said social capital is "trusting, reciprocal relationships among individuals," and she commented that "when this exists, everything else works better." She also said the reciprocal relationships were not "I'll do something for you if you do something for me." Rather, they were more like "we are all better if the collectivity is better."

Ms. Flora said the absence of social capital increases the cost of other forms of capital, while, on the other hand, social capital can be substituted for other forms. She also said social capital includes the ability to discuss alternatives and engage in constructive conflict.

Wendell Berry began his part of the workshop by saying it was increasingly common to hear what he called the "ain't it awful conversation." He said the list of complaints people have is formidable, and the way out is by talking about community.

Mr. Berry then described community as "a bunch of people with things in common." He continued by saying that community was a place where the needs of people are fulfilled by others who live in that place. He then noted that "the way to destroy a community is to destroy its economy," which he described as "the mutual trading by which a community keeps its house."

Wendell Berry began his part of the workshop by saying it was increasingly common to hear what he called the "ain't it awful conversation."

He went on to give an example from Kentucky of how the collapse of one economy led to actions to develop another, with the latter having qualities that are helping to re-establish community. He explained how a crisis in the tobacco market led the Kentucky Tobacco Association to collaborate with the Community Farm Alliance to form Kentucky First Buying Clubs. Through this effort, people in urban centers receive half-bushel bags of fresh food grown by the tobacco farmers.

The effort just finished its first year and has been successful in that the farmers have realized significant income from their produce. Mr. Berry continued by saying, "I like it. It is something people are doing themselves," and he described several realizations that have come from the effort.

One was the value of a new kind of economics, "cooperative economics." As Mr. Berry said, "The producers are nothing without the consumers."

Another was that "causing a supply and a demand to come into existence simultaneously was extremely difficult," and he noted how this problem resulted in people being kept awake at night "rolling in our insomnia."

A third was that an incredible loss of knowledge about food has occurred. He emphasized this by saying that not only do people not know how to grow food, they don't know what to do with it after its grown. Thus there was a need to educate people on what they were getting and what to do with it.

A fourth realization was that creating alternative economies to re-establish local communities involves some suffering. He continued by saying, "People have to get over the idea that anybody is going to be a hero by finding a big solution to a big problem." He finished by saying that the work would be humbling and difficult, with lots of sweat and frustration, but it is do-able.

Questions and anwers that followed dwelled on several themes, with perhaps the most interesting related to how to address the influences of multinational corporations and the role of government. Both Ms. Flora and Mr. Berry seemed to advocate not trying to address a superior force head on. Rather, they suggested establishing alternative economies based on local food systems, which would begin to re-establish communities made up of "trusting, reciprocal relationship among individuals."

Alternative Pork Production Systems, Dave Stender, Dan Wilson, (moderator and recorder Vic Madsen)

Dave Stender used the first half hour to describe his analysis of the Iowa State Swine Enterprise Records. The numbers disprove the beliefs that sow herd size and pigs per sow directly determine profit. Profits come from a blend of cost control and respectable production levels. Focusing on either one exclusively is less profitable than a good mix.

Dan Wilson showed slides of his family pasture-farrowing operation. He also presented a slide tour of the September trip to Sweden's pork production systems. Sweden, by law, must use straw and low-density pens. The deep bedding, farrowing, and lactation buildings interested the workshop audience. This system deserves to be studied to see if elements can be used here. Wilson's description of his family's successful pasture pork production reinforced Stender's numbers with a real-life example of cost control and excellent production ratios.

Dave Stender, Extension livestock field specialist, helped take the mystery out of profitable hogs.

Farrow-to-Finish Enterprise Record Cost Range, Sorted by Profit			
Profit Group	High	Low	Avg.
Total Costs	$87	$113	$100
Feed Cost	$56	$67	$62
Operation	$10	$16	$13
Health	$6	$8	$7
Fixed Costs	$9	$11	$10
Pigs per Sow per Year	16	14	15
Labor Efficiency	0.58	0.73	0.65
Market Price per CWT	$47	$45	$46
Death Loss	6%	8%	7%
Herd Size	122	114	117

Editors' note: A copy of the overheads Dave Stender used in the workshop (example above) can be requested from the PFI coordinators at 515-294-1923.

EVALUATIONS FROM THE MEETING

Only 29 people turned in the yellow meeting evaluation forms. Of those, the most popular reasons given for attending were: 1) to hear Wendell Berry; 2) to visit with others; 3) to hear Paul Johnson and; 4) to hear Alan Henning. Among women's reasons, a three-way tie for fourth place was shared by the workshop on sustainable communities, the workshop on women in sustainable ag., and the opportunity to learn more about *Shared Visions*. Actually, both for farmers and for those people who had attended one or more previous meetings of PFI, the greatest attraction was the chance to visit with others. The following comments are from questionnaires returned.

Other Reasons for Attending

- *To see Dick and Sharon Thompson get a well-deserved reward.*
- *To learn from other farmers, talk with research people.*
- *I enjoy going to annual mtg. to see all our PFI friends and share stories of what's been happening over the past year. Certainly always learn something new from attending workshops and always come home feeling good. PFI's annual meeting always gives you that up feeling or positive charge.*

What Did You Get Most from the Meeting?

- *Renewal*
- *Hope*
- *Grazing*
- *Shared Visions was sole reason for coming; however we very much enjoyed all aspects of PFI – I think we're hooked. What a nice bunch of positive people.*
- *Enjoyed the posters. Really enjoyed the speakers and the music – seemed to encourage a sense of community (to dance together we had to work together).*
- *Urgent need for PFI and others to start building a local food market.*
- *Meaningful ecumenical service held on Sunday.*
- *Sense of people rooted and living out what they believe – humble risk takers who are open, warm, friendly, caring, welcoming diversity and aliveness, fortitude, inclusiveness, seriousness of the people.*

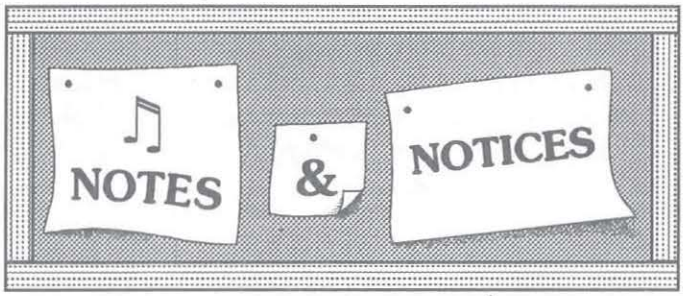
How Could the Meeting Have Been Better?

- *It was extremely well organized. Many thanks!*
- *I loved the setup of a relaxed conference setting. I enjoyed the family/community emphasis (day care).*
- *I was disappointed in the Saturday evening dinner.*
- *Would it be possible to have a section in the dining area for brown baggers?*
- *Room G was too warm, ceilings too low to allow good viewing of slides. Room A-B chairs are too close together, should have three inches between them.*
- *Get a better sound system, eliminate the lights behind the speakers.*
- *A standing mike on the floor for people to come to, to ask a question.*
- *A message board by the registration table.*
- *So many good (workshop) topics, too few opportunities to work them all in. Examples of operating farms using innovative ideas are much more meaningful than listening to theories and pep talks.*
- *Would have preferred three breakout sessions rather than two, and also more farmer presenters rather than so many experts.*
- *Could we have scheduled the business meeting for the 5-to-6 p.m. hour on Saturday? By the time Sunday noon rolled around, many members had left for home and didn't get to participate in district business.*

What Should PFI be Doing and How?

- *My daughter truly enjoyed PFI camp!*
- *Create a support group for women's issues as a farmer.*
- *1) Help set up cooperatives. 2) Disseminate philosophy through meetings like this and literature.*
- *Get the message out to nonmembers, mailings to educational institutions – Ag. Dept., high school teachers, community colleges, and university.*

- *Perhaps you could start developing an educational program for elementary/high schools that would create an awareness of sustainable farming systems in young children – THEY ARE OUR FUTURE!*
- *Keep on keeping on, growing organically from where you started. Once Shared Visions is stable, the next step might be rural/urban dialogue and stabilizing active relationships such as through marketing, CSAs, nutritional education, etc.*



Is Your Membership Current?

If you haven't checked on your PFI membership, now is the time. This will be your last newsletter if you are one of those who needed to renew last fall but you haven't taken care of it. Check the mailing label on this issue. If there is a little frowning face looking at you (☹), you're in trouble.

You can stay on top of field days, the next member directory, and other news with ten dollars for one year's membership or $25 for three years.

Board Elections Held

At the PFI annual business meeting, the north central district elected Don Davidson district director. Don, who farms near Grundy Center with his wife Sharon, his father, and his uncle, has served as associate director for nearly a year. The north central and northwest district caucuses also broke precedent by holding elections for associate director. The bylaws do not presently provide for election of associate board members, although this is under discussion. Doug Alert, Hampton, will be the associate director from the north central district. Colin Wilson, Paullina, was elected associate director in the northwest district. The southeast district is also due to hold an election for director. This will take place at the winter district meeting.

District Winter Meetings

The northeast district will get together in Calmar, March 25, from 1:00 to 4:00 pm, in the Wilder Building auditorium of Northeast Iowa Community College. Extension field specialist Tony Harvey will talk about dairy cow nutrition, and Scott Weinberg will discuss fencing for grazing and his own operation grazing dairy heifers. There will also be time for PFI members to exchange their own experiences and catch up with eachother. Families are welcome, and childcare will be provided.

The northwest district will meet Feb. 25, at 6:30, at the Family Table Restaurant in Cherokee. Dan and Colin Wilson will talk about their pasture hogs operation and Dan and Lorna's trip to see the Swedish system of hog production.

SARE Producer Grant Proposals Due May 1

The North Central Region of SARE (the Sustainable Agriculture Research and Education program of the USDA) has called for farmer proposals for the fourth year of its producer-initiated sustainable agriculture grants. Project proposals, which are due May 1, can cover a variety of topics. Last year PFI member Tom Frantzen carried out an evaluation of pasture-raised hogs in a system with stripped crops and trees. Dick and Sharon Thompson continued a study relating potassium uptake to manure and tillage.

For more information and application materials, contact: SARE North Central Region Office, University of Nebraska–Lincoln, 13A Activities Building, P.O. Box 830840, Lincoln, NE 68583-0840. Phone: 402-472-7081.

Burt Smith to Visit Graziers

Burt Smith, author of the popular book *Intensive Grazing Management*, is planning a three-month motorcycle trip across the country this summer. If you have at least three years' experience with intensive grazing, he will consider making a (free) visit to your farm. Contact him at the following FAX number: 808-883-0001, or write to him at Box 1944, Kamuela, Hawaii, 96743. PFI

member Tom Frantzen is interested in the offer, so you might contact Tom as well (515-364-6426).

♫ Leopold Center Fifth Annual Conference March 3.

The Leopold Center for Sustainable Agriculture, now in its seventh year, will be taking results of its work to Iowa's farming community with *Partners & Projects: A Research and Farming Exchange*, to be held at Scheman Continuing Education Building on Friday, March 3, from 8:30 am to 4:00 pm. PFI members have already received a mailing on the conference, which costs $25 with lunch, $15 without lunch.

Keynote speaker will be Sam Alessi, a farmer and USDA/ARS researcher from Minnesota. Alessi was also part of a team of farmers and scientists that developed *Farmbook*, a computerized farm records and decision-making tool. Also on the schedule are an open forum, researcher/farmer panel discussions, and round table presentation-discussions. A poster session featuring Leopold Center research will include several of the cooperator posters that appeared at the PFI annual meeting. For more information, call the Leopold Center at 515-294-3711.

♫ Young Farmers Host Satellite Broadcasts

The Iowa Young Farmers Educational Association, in cooperation with the Nebraska Young Farmers, have developed a series of interactive satellite broadcasts that are being aired this winter. There is still time to get in on the final two programs in the series.

- *The 1995 Farm Bill*, Feb 23. Presented by: Dr. Roy Frederick, University of Nebraska; Eugene Glock, from Senator Kerrey's staff; and Doug Rushing, Monsanto Environmental Affairs Manager. (Spacenet-3, NEB 2, Channel 4)

- *Characteristics of Successful Farm Operators, March 23. Presented by Moe Russell, Division President, Farm Credit Services, Omaha.* (Spacenet-3, NEB 2, Channel 4)

Satellite participants will be given an 800 phone number to call in comments. If you don't have a satellite dish, you can order a tape ($10) by the day before the broadcast. Call Dean Vantiger, IYFEA Executive Director, at 319-865-5241.

♫ PFI On-farm Research on Biologicals

A brief note in *New Farm Magazine* has resulted in 40 requests for the summary of PFI trials involving biological soil ammendments. From 1986 to 1994, PFI members carried out forty-two replicated field trials on a variety of products ranging from micronutrients to microbial inoculants. Classed loosely as "biologicals," these are materials intended to enhance or utilize naturally ocurring biological processes.

While the report urges producers to conduct their own evaluations to find out what works for them, it also shows that biologicals were less profitable than the check treatments by an average of $19.27 in corn and $13.85 in soybeans. A copy of the summary is available from the PFI coordinators, 2104 Agronomy Hall, ISU, Ames, IA 50011

♫ Grazing Discussion on the Internet

Editors' note: Michele Gale-Sinex, with the Center for Integrated Agricultural Systems, in Madison, passes along this notice of a new discussion group for management-intensive rotational grazing (MIRG):

Its name is GRAZE-L, and its purpose is to provide a virtual space to discuss MIRG and seasonal dairying issues in a more focused arena than other, more general, list servers provide, as well as to connect producers (and others) in New Zealand and the U.S — and elsewhere. It is quite new and the subscription list still small...and consisting primarily of farmers (hurrah!!!!) in New Zealand and Wisconsin. As you may know, New Zealand farmers have been involved in MIRG and seasonal dairying for many years, and these are prairiefire technologies in Wisconsin.

Information sharing is crucial in management intensive approaches. Topics of discussion this week on GRAZE-L have included seasonal strate-

gies, pasture supplementation feeding, cropping, breeding, stockpiling, and, alas for those of us in the snowy Upper Midwest, the beautiful summer weather and beaches of New Zealand.

If you have an interest in MIRG/seasonal topics, we welcome your subscription. Send an e-mail message to listserv@taranaki.ac.nz. In the body of the message type "subscribe GRAZE-L".

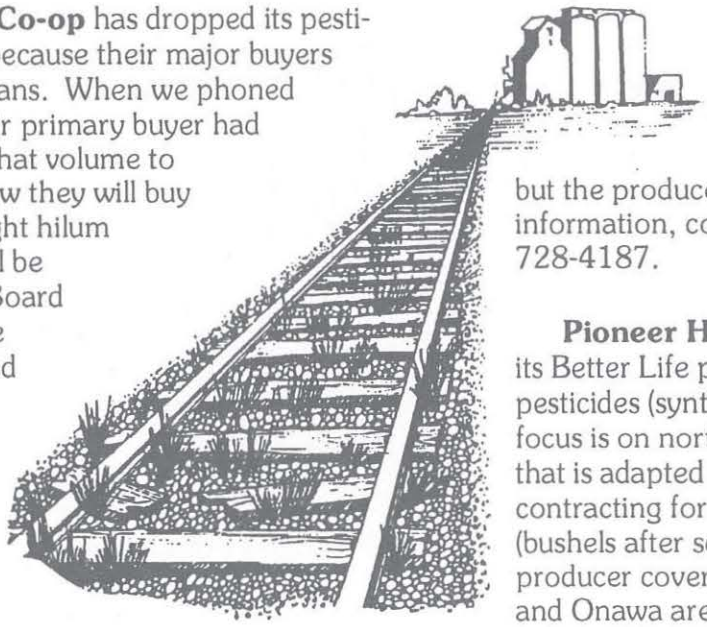
If you would like more information, contact me: GALE-SINEX@AE.AGECON.WISC.EDU or my exceptional New Zealand colleague, Noel Bridgeman, Taranaki Polytechnic: noelb@nzonline.ac.nz.

Because the listserver is still quite new, folks who sign on in the next month or two will have the privilege of taking part in and shaping an exciting new virtual community.

OPPORTUNITIES FOR CONTRACTING SOYBEANS

This is the annual survey of companies contracting with Iowa farmers for identity-preserved soybeans of one kind or another. These programs carry premiums that are sometimes significant. If you have the capability to grow specialty varieties, pesticide-free, or organic soybeans, you can reap the rewards.

West Central Co-op has dropped its pesticide-free category because their major buyers want organic soybeans. When we phoned in late January, their primary buyer had not yet told them what volume to contract. They know they will buy certified organic, light hilum soybeans. They will be paying double the Board of Trade price. The beans must be stored on-farm and delivered to the Jefferson elevator. Growers must be certified by the Organic Crop Improvement Association (OCIA), which requires three years away from synthetic fertilizers and pesticides. For more information, call Larry Tomsen or Bill Doubler at 1-(800) 522-1946.



Strayer Seed Farms, in Hudson, contracts with growers in 11 states for a total of 14 varieties of specialty soybeans. Many of these are tofu beans, but general manager Dennis Strayer explains that different kinds of tofu require different types of soy protein. Strayer contracts directly with growers, and they also work through local seed houses for contracting and conditioning.

Strayer applies a yield adjustment for the food-quality soybeans they are seeking, with the specific factor depending on variety and region of the state. This multiplier ranges up to more than 130 percent, factored on a maximum yield that also varies by region and variety. Bushels over the maximum yield may be marketed, but without the adjustment. The second adjustment is a quality bonus of up to one dollar, applied for seed size, seed coat quality, etc. The third price adjustment is connected to special production methods. This year Strayer will pay $1.00 per bushel additional for soybeans grown without pesticides and $3.00 for organic soybeans. Organic soybeans need to be from farms certified organic by some third party such as OCIA.

Growers for Strayer would add together the three premiums and yield adjustments, if applicable, for a final price. Base price is a local (to the farmer) elevator price at any time (farmer's choice) from planting to August of the following year. The customary arrangement is for the farmer to pay storage and Strayer to pick up at no charge. Strayer will store, but the producer must then pay for delivery. For information, contact Dennis Strayer, at 1-(800) 728-4187.

Pioneer Hi-Bred International is continuing its Better Life program for soybeans grown without pesticides (synthetic fertilizers are permitted). Their focus is on northern Iowa, with a variety, HP204, that is adapted north of Highway 30. They are contracting for $3.00 per "food-grade bushel" (bushels after screening and cleaning), with the producer covering delivery costs. Grundy Center and Onawa are the two collection points. Better

Life is about done signing contracts for the year, having cut acreage back a bit due to the large 1994 crop. For additional information, contact Better Life at Pioneer Specialty Plant Products, 1-(800) 356-0393.

Heartland Organic Marketing. Inc. is the new name for the year-old producers' co-op centered in southwest Iowa. Ken Rosmann, one of the group's founders, explains that, while they will keep the cooperative philosophy, they will be structured like a business corporation until the membership grows beyond the present 20 members. Heartland grew out of the frustration individual producers experienced in dealing with brokers for organic grain. Through the association, they are now able to deal directly with the buyers.

Typical prices for clear-hilum, organic soybeans in 1994 were $12–$14 per clean bushel. Heartland will be signing contracts with member growers this spring at similar prices. Heartland is open to new members. The cost of membership is $1,000, but for the committed organic producers in the group, this is an investment that is paying off. Ken Rosmann can be reached at (712) 627-4217.

Iowa soybean producers should compare these options and similar ones and decide if they are in a position to grow for those premiums.

PFI DISTRICT LIBRARIES COOPERATE

Laura Krouse, Northeast District Director, has agreed to coordinate the five district libraries. The board decided to compile one listing of all available library materials, and this is the information Laura has been putting into the computer. PFI members will be able to request material from any library, but they should seek first within their own district.

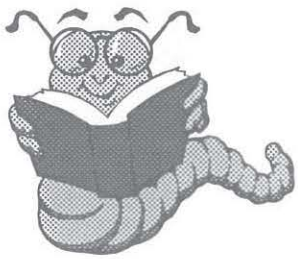
District libraries may be reached through the directors listed on the back of this newsletter. The exception is the northeast library, which is with Tom Frantzen. In addition, some individuals have offered materials from their personal libraries. To borrow those items contact them directly:

Tom Frantzen
515-364-6426
1155 Jasper Ave.
RR 2, New Hampton, IA 50659

Ray Stonecypher
515-398-2417
1321 March Ave.
Floyd, IA 50435-8058

Dave Lubben
319-465-4717
RR 3, Box 128
Monticello, IA 52310

The current library list appears on the next pages. Acquisitions and occasional blurbs will appear in later newsletters.



Ishmael, An Enthusiastic Book Review

Dwight Ault, Austin, MN

The book is *Ishmael*, a novel by Daniel Quinn, who is a native of Omaha, Nebraska. It is well nigh impossible to give a conventional report on *Ishmael*, or so it seems to me. I found it an incredible bit of writing.

The book requires the reader to suspend everyday expectations in order to hear a voice from an unexpected source. I won't reveal more than that, except to suggest the test of this device is whether the voice rings true. The book deals with western civilization's cause and effect along with the history of how we have become such a using society. The message does not condemn, nor does it leave the reader with a heavy burden of guilt. It does leave us with a sense of environmental responsibility and the realization that we cannot continue on a course of planet degradation.

For those who know me, I say, "Read it." For those who don't know me, I say, "Read it." *Ishmael* is a most unusual novel. It is a Bantam paperback costing $5.99.

Practical Farmers of Iowa District and Personal Lending Libraries – page 1		
Title	**Author**	**Home Library**
$100,000 on 25 Acres	Whatley	Northeast
1991 ISU Controlled Grazing Clinics	ISU	Northwest
20 Questions About the Amish	M. Good	Northeast
50 Farming Techniques from the Americas	White	Northwest
A Guide to Quality Oat Production	L. L. Hardman and D. D. Stuthman, Ag Ext Serv, Univ. of MN	North Central
A Guide to Ridge Tillage	Huseby	Northwest
A Guide to Ridge Tilling	Huseby	Northeast
A Little Phosphorus Goes a Long Way	New Farm	Northwest
A Livestock Producer's Legal Guide to Nuisance Land Use Control and Environmental Law	Hamilton	Northeast
A Practical Guide to Novel Soil Ammendments	Rodale	Northwest
A Sand County Almanac	A. Leopold	Northeast
A Sand County Almanac	Leopold, Aldo	Northwest
A Thousand Acres	Smiley	Northeast
Adapt 100	Successful Farming	Northwest
Agricultural Equipment Operator Safety Series (video)	ISU	Southeast
Agroecology	Altieri, Miguel	Northwest
Agroecology	Altieri, Miguel	Southeast
Agroecology: The Scientific Basis of Alternative Agriculture	Altieri, Miguel	Southwest
Alfalfa Science and Technology	ASA	Northeast
Alternative Agriculture	National Research Council	Northeast
Alternative Agriculture	National Research Council	Lubben
Alternative Agriculture	National Research Council, 1989	North Central
Alternative Agriculture: Scientists Review	CAST	North Central
Amaranth: Perspectives on Production	MN Ext. Service	Northeast
Amish Horsefarming Across America	Zielinski	Northeast
Amish Houses and Barns	Scott	Northeast
At Nature's Pace	Logsdon	Northeast
Avoiding the Storage of Unwanted and Unusable Pesticides (video)	ISU	Southeast
Award Winning Farm Energy Projects	Ia Energy policy	Northwest
Basic Herding (video)	Smith	Northeast
Basic Herding (video)	Smith	Stonecypher
Behavioral Methods for Accident Prevention (video)	Behavioral Science Technology, Inc	Southeast
Better Land, Better Water (video)	NRCS (SCS)	Northeast
Broken Heartland: The Rise of America's Rural Ghetto	Davidson	Northeast
Butterfly Against the Gale	N. Alfred	Northeast
Chicken Little, Tomato Sauce and Agriculture	Gussow	Northeast
Committee	US Congress, 1986	North Central
Controlled Grazing	Kingsbury	Northeast
Controlled Grazing Booklet	Land Stewardship Project	Northeast
Controlling Weeds with Fewer Chemicals	New Farm	Northwest
Cradled by the Hand of God (video)	Nat Catholic Rural Life Conference	Northeast
Cut Your Weed Control Costs in Half	New Farm	Northwest
Deming Quality Concept	Deming	Northeast
Dollars and Sense: Handbook for Seasonal Grass Dairying	Tranel	Stonecypher
Dr. Twisted Visits a Farm	Enshayan, K.	Northeast
Dr. Twisted Visits a Farm	Kamyar Enshayan	North Central
Encyclopedia of Organic Gardening	Rodale	Northwest
Encyclopedia of Tractors	C. H. Wendel	Northeast
Entomology and Pest Management	Pedigo	Southeast
Environmental Management in Animal Agriculture	Curtis	Southeast

(Continued on next page.)

Practical Farmers of Iowa District and Personal Lending Libraries – page 2		
Title	**Author**	**Home Library**
Establishing a Nut Grove (video)	Univ. of Guelph	Northeast
Family Farming, A New Economic Vision	Strange	Northwest
Family Farming, A New Economic Vision	Strange, Marty	Southwest
Farm and Ranch Electical Safety (video)	WA State Univ Ext	Southeast
Farm Animals in the Making of America	Paul C. Johnson	Northeast
Farm inventions in the Making of America	Paul C. Johnson	Northeast
Farm Power in the Making of America	Paul C. Johnson	Northeast
Farming in Nature's Image	Soule and Piper	Northeast
Farming Systems for Iowa: Seeking Alternatives	1990 Conference Proceedings Leopold Center	North Central
Forage Management in the North	Smith	Southwest
Forages	Heath, Metcalfe, and Barnes	Northeast
Free Range Poultry	Thear	Northeast
From the Ground Up: Wisconsin Sustainable Farmers Tell of Their Practice and Vision	Mike Irwin 1990	North Central
Future Perfect	Davis	Northeast
Grass Dairying: An Introduction to Rotational Grazing (video)	?	Southwest
Grass Productivity	Voisin	Northeast
Grass Productivity	Voisin	Stonecypher
Greener Pastures	Murphy	Northeast
Holistic Management (book and workbook)	Savory	Northeast
Holistic Resource Management	Savory, 1988	North Central
How to save $42 an Acre	?	Northwest
IFM Demonstration Program, 1991	ISU	Northwest
intensive Grazing Management	Smith	Northeast
Intensive Grazing Management	Smith	Stonecypher
Interdependencies of Agriculture and Rural Communities in the 21st Century	The North Central Region 198 Conference Proceedings	North Central
Intro to Rotational Grazing (video)	DATCP Sustainable Agriculture Program	Northeast
Intro to Soil Microbiology	Alexander	Lubben
Introduction to Permaculture	Mollison	Northeast
Leopold Center Progress Report - 89, 92, 93, 94	Leopold Center for Sustainable Ag.	Northwest
More Profit with Less Tillage	Behn	Northeast
More Profit with less Tillage	Behn	Northwest
Moving Toward Sustainability (video) Machinery Management		Southeast
Moving Toward Sustainability (video) Pest Managment	ISU Extension	Southeast
Moving Toward Sustainability (video) Soil Management		Southeast
Native American Testimony	Nabokov	Northeast
Native Grasses, Legumes, and Forbs	Phillips Petroleum	Northeast
Nature's Ag School: The Thompson Farm	Regenerative Ag Association, 1987	North Central
New Dimensions in Rural Policy: Building upon our Heritage	Studies Prepared for the Subcommittee on Agriculture and Transportation of the Joint Economic Committee	North Central
New Roots for Agriculture	Jackson	Northeast
Nitrates: A Needless Danger	?	Northwest
One Straw Revolution	Fuquoka	Northeast
Outdoor Pig Production	Thorton	Northeast
Pasture Poultry (video and book)	Salatin	Northeast
Pasture Poultry Profits	Salatin, Joel	Stonecypher
Pasture Primer (video)	Pratt and Ingram	Northeast
Pasture Profits with Stocker Cattle	A. Nation	Northeast
Pastured Poultry Manual	Salatin	Northeast
Pastures for Profit: A Guide to Rotational Grazing	Univ. of Wisconsin	Northeast
PFI Annual membership Meeting - 89, 90, 91, 92, 93, 94	Practical Farmers of Iowa	Northwest

Practical Farmers of Iowa District and Personal Lending Libraries – page 3		
Title	**Author**	**Home Library**
Plowman's Folly and as a Second Look	Faulkner	Stonecypher
Potassium: A Case of Too Much, Too Often	?	Northwest
Power Fencing (video)	Galagher	Northeast
Profitable Farming Now	?	Northwest
Profitable Farming Now	Regenerative Ag Association 1985	North Central
Report and Recommendations on Organic Farming	USDA 1980	North Central
Reshaping the Bottom Line: On Farm Strategies for a Sustainable Agriculture	David Granatstein, LSP, 1988	North Central
Ridge Till Hotline (back issues)	Lessiter	Southeast
Rodale's Garden Problem Solver	I. Ball	Northeast
Shattering: Food, Politics, and the Loss of Genetic Diversity	Fowler and Mooney	Northeast
Soils and Soil Fertility	Thompson and Troeh	Southeast
Spotlighting Alternative Crops	Steel	Northwest
Square Foot Gardening	Bartholomew	Northeast
SSE Fruit, Berry. and Nut Inventory	Seed Savers Exchange	Northeast
SSE Garden Seed inventory	Seed Savers Exchange	Northeast
Swine Production	Bundy	Northeast
Swine Production	Krider & Carroll	Northeast
The Albrecht Papers	Albrecht, W., 1975	Northwest
The Albrecht Papers, Vols I and II	Albrecht, W.	Lubben
The Complete Book of Composting	Rodale	Northwest
The Corporate Reapers: The Book of Agribusiness	A. V. Krebs	Northeast
The End of Corn Rootworm	?	Northwest
The Farmer's Fertilizer Handbook	New Farm	Northwest
The Farmer's Fertilizer Handbook	Regenerative Ag Association 1985	North Central
The Farming Game	Jones	Northeast
The Future of the Iowa Soybean Industry	ISU	Northwest
The Iowa Cattle Industry: Vision for the Future	ISU	Northeast
The Land Remembers	B. Logan	Northeast
The Miracle of Corn (video)	ISU MRC	Southeast
The Never-Never Land of N	?	Northwest
The Organic Way to Plant Protection	Rodale	Northwest
The River of the Mother of God	A. Leopold	Northeast
The Role of Legumes in Conservation Tillage Systems	J. F. Power, Conference Proceedings, SCCA, 1987	North Central
The Sheep Raisers Manual	Kruesi	Northeast
The Sheep Raisers Manual	Kruesi	Stonecypher
The Thomposn Farm On-farm Research	Rodale, 1990	North Central
Thompson on-farm Research Reports - 84, 90, 91, 93	Rodale, Thompson	Northwest
Tree Crops	J. Smith	Northeast
Tree Crops	Smith	Stonecypher
Using Manure Resources Wisely	New Farm	Northwest
Voisin Video #1	Murphy	Northeast
Voisin Video #1	Murphy	Northeast
Walking the Journey (video)	ISU Extension	Southeast
Walking the Journey: Sustainable Agriculture That Works	ISU	Northeast
Walking the Journey: Sustainable Agriculture that Works	ISU Extension	North Central
What are People For	Berry, Wendell	Northwest
What Really Happens When You Cut Chemicals	Rodale Press	Northeast
What Really Happens When you Cut Chemicals	New Farm	Stonecypher
Your Profitable Farming Checklist	New Farm	Northwest

PFI ON-FARM TRIAL RESULTS, 1994

Reading the Numbers, Knowing the Terms

Each year a subset of PFI members who are called "cooperators" conduct on-farm trials using a research design developed with university researchers. Since 1987 PFI cooperators have conducted 386 replicated trials using this design. The topics examined most often have been nitrogen rates and weed management techniques. In 1994 approximately 38 replicated trials were carried out by PFI cooperators and *Sustainable Projects* recipients. The map in Figure 1 shows the locations of the farms of these cooperators.

Valid and reliable farmer-generated information is a cornerstone of Practical Farmers of Iowa. Consequently, PFI has worked to develop practical methods that safeguard the accuracy and credibility of that information. PFI cooperators use methods that allow statistical analysis of their on-farm trials. Chief among these are: 1) "replication," and 2) "randomization." (See Figure 2., a typical PFI trial layout.) The farming practices compared in a trial are repeated, or "replicated," at least six times across the field. Thus trial results do not depend on a single comparison only, but on six or more. The order of the practices, or "treatments," in each pair is chosen with a flip of the coin. This "randomization" is necessary to avoid unintentional bias. PFI on-farm trials have been recognized for their statistical reliability. So, while PFI cooperators don't have all the answers, they do have a tool for working toward those answers.

When you see the outcome of a PFI trial, you also see a statistical indication of how seriously to take those results. The following information should help you to understand the reports of the trials contained in this document. The symbol "*" shows that there was a "statistically significant" difference between treatments; that is, one that probably did not occur just by chance. We require ourselves to be 95% sure before we declare a significant difference. If, instead of a "*," there is a "N.S.," you know the difference was "not significant."

There is a handy "yardstick" called the "*LSD*," or "least significant difference," that can be used in a trial with only two practices or treatments. If the difference between the two treatments is greater than the LSD, then the difference is significant. You will see in the tables that when the difference between two practices is, for example, 5 bushels (*or minus* 5 bushels, depending on the arithmetic), and the LSD is only, say, 3 bushels, then there is a "*" indicating a significant difference.

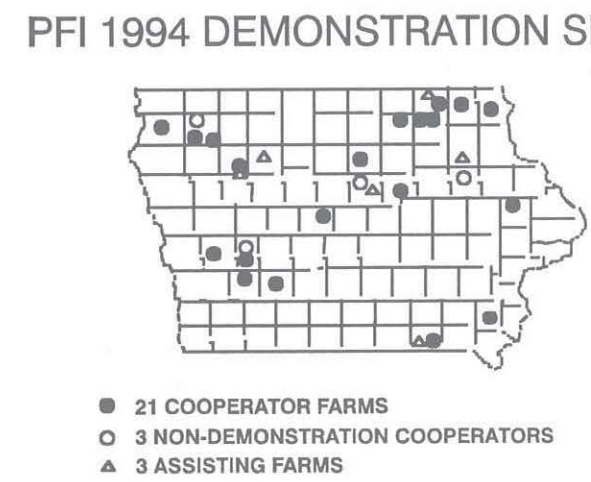


Figure 1. PFI 1994 on-farm demonstrations.

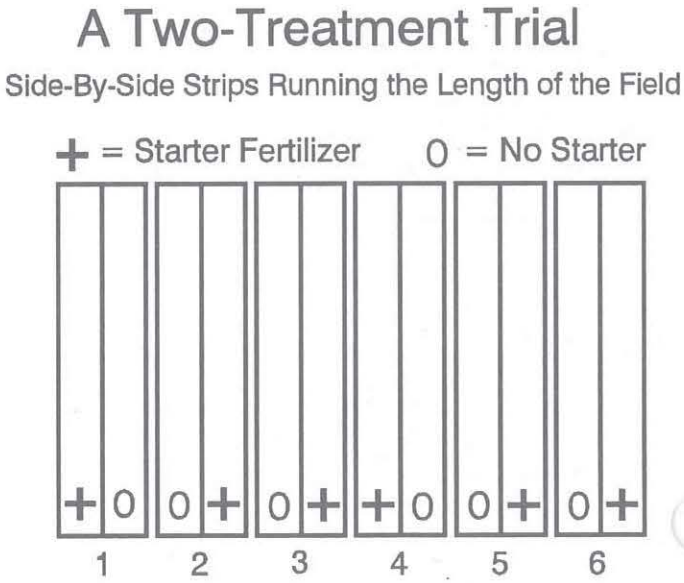


Figure 2. A typical two-treatment PFI trial.

The LSD doesn't work well in trials with more than two treatments. In those cases, *letters* are added to show whether results are statistically different from each other. (We usually use something called a Duncan multiple range grouping.) The highest yield or weed count in a trial will have a letter "a" beside it. A number with a "b" next to it is significantly different from one with an "a," but *neither* is statistically different from a number bearing an "ab." A third treatment might produce a number with a "c" (or it might not), and so on.

Average 1994 statewide prices for inputs were assumed in calculating the economics of these trials. Average fixed and variable costs and time requirements were also used. These can vary greatly from farm to farm, of course. The calculations use 1994 prices of $2.00 per bushel for corn, $5.30 for soybeans, and $1.30 per bushel for oats. Labor was charged at $8.00 per hour.

Some tables show both a "*treatment cost*" (which includes relevant costs, but not the total cost of production) and "*treatment benefit.*" The treatment benefit is the *relative* advantage of a practice compared to the least profitable treatment in that trial, which is often assigned a treatment benefit of $0. If there are no significant yield differences in the trial, treatment benefit is calculated solely from input costs. If the yield of a treatment is significantly different from that of the least profitable treatment, then that difference in bushels is also taken into account to calculate treatment benefit for the more profitable practice.

Dollar amounts shown in parentheses ( ) are *negative* numbers. A treatment "benefit" that is a negative number indicates a relative *loss*. The highest-yielding practice doesn't always have the greatest treatment benefit. You will see that sometimes the additional input costs of a practice outweigh its greater gross return.

Here is one more thing to be aware of. Fertilizer shown with dashes between the numbers (18–46–0) means *percent* by weight of nitrogen, phosphate, and potash in the product. Fertilizer shown with plus signs (18+46+0) indicates *pounds per acre* of those nutrients in an application.

The results that appear here imply neither endorsement nor condemnation of any particular product. Producers are encouraged to carry out their own trials to find what works in *their* operations. In reports of trials that involve proprietary products, brand names are included for purpose of information.

BANDED FERTILIZERS

As in past years, several PFI cooperators evaluated starters and other banded fertilizers in 1994. By now it should be no surprise that results were mixed. Even where these fertilizers increased crop yields, there was sometimes no clear economic advantage.

Doug Alert and Margaret Smith, Hampton, were among the ridge-tillers trying out the deep placement applicator shoe for the Buffalo planter. In soybeans, the fertilizer, placed two inches directly below the seed, increased yield 3.1 bushels, but the benefit was less than the cost of the 2–6–12 suspension fertilizer (Table 1). In the corn trial, Doug and Margaret compared placement below the seed, two inches to the side, and a no-starter check treatment (Table 3). Their soil tests very high in phosphorus and high in potassium. There was no observable yield difference among the three treatments. Don and Sharon Davidson, Grundy Center, also used the deep banding planter shoe in a soybean trial (Table 1). There was no significant effect on yield. Jeff and Gayle Olson, Mt. Pleasant, evaluated a planter band too, this one two inches to the side of the soybean seed and consisting of just potash fertilizer (Table 3). There was no yield effect. The potassium soil test there is between medium and high.

The usual method of deep banding involves a separate pass with an implement in the fall. Harlan and Sharon Grau, Newell, took this approach, comparing a fall deep band, fall broadcast, and a no-fertilizer check treatment. The corn in the deep band treatment yielded significantly better than the check treatment (nearly 16 bushels), with the broadcast treatment falling in between (Table 3). Soil tests are medium-to-very-high for phosphorus and high-to-very-high for potassium. Different results were obtained by Allen and Jackie Tibbs, Alden, who no-till planted soybeans directly over a fall band of fertilizer. They reported no yield in-

Table 1. STARTER & OTHER FERTILITY TRIALS

COOPERATOR	CROP	TREATMENT "A"		TREATMENT "B"
		DESCRIPTION	YIELD (bu.)	DESCRIPTION
ALERT	SOYBEANS	STARTER, 2" BELOW SEED	46.2	NO STARTER
DAVIDSON	SOYBEANS	STARTER FERTILIZER	37.6	NO STARTER
STONECYPHER	CORN	STARTER ON SEED	143.1	NO STARTER
ROSMANN	SOYBEANS	45 LB/ACRE ROCK PHOSPHATE	69.0	7.5 LB/ACRE ROCK PHOSPHATE
TIBBS	SOYBEANS	BANDED 22+70+90	54.5	NO FERTILIZER
FRANTZEN	CORN	80+8+50 AFTER BERSEEM CLOVER	171.1	20+8+50 AFTER BERSEEM CLOVER
LUBBEN	SOYBEANS	ACA W. HERBICIDE ON 6/27	62.7	NO ACA, JUST HERBICIDE
OLSON	SOYBEANS	GROZYME™/AGRI-SC™ PREPLANT BAND	63.9	ZERO CHECK
OLSON	CORN	GROZYME™/AGRI-SC™ POST BAND	165.2	ZERO CHECK
STOCK	SOYBEANS	ACHIEVE™ & REMEDY™ PREPLANT BROADCAST	54.0	ZERO CHECK
STOCK	CORN	ACHIEVE™ & REMEDY™ PREPLANT BROADCAST	159.5	ZERO CHECK
WURPTS	SOYBEANS	BIOLOGICAL FERTILITY PROGRAM	60.6	ISU FERTILITY RECOMMENDATIONS
WURPTS	CORN	BIOLOGICAL FERTILITY PROGRAM	184.7	ISU FERTILITY RECOMMENDATIONS

crease from the fertilizer band (Table 1). The soil on this field tests low-to-medium for phosphorus and high for potassium.

Ron and Maria Rosmann, Harlan, have put their home farm in a transition to organic certification. They evaluated two rates of a mined rock

STARTER & OTHER FERTILITY TRIALS

TRT "B"	DIFFERENCE				
YIELD (bu.)	YIELD DIFF.	YLD LSD (bu.)	YLD SIG.	$ BENEFIT OF TRT "A"	COMMENT
43.1	3.1	1.9	*	($6.63)	8+24+48 AS 2-6-12 SUSPENSION
37.9	-0.3	1.8	N.S.	($6.33)	2+7+13 AS 2-6-12 1" BELOW SEED. HP204 EDIBLE BEANS
150.6	-7.5	10.9	N.S.	($9.45)	1+6+6 IN STARTER
69.2	-0.3	0.9	N.S.	($3.75)	BLACK PHOSPHATE METERED THROUGH PLANTER INSECTICIDE BOXES. SOIL P1 TEST=21 PPM (HIGH)
53.6	0.8	1.7	N.S.	($33.82)	BEANS PLANTED DIRECTLY OVER FALL DEEP BAND. THREE REPS ONLY.
169.1	2.0	8.1	N.S.	($13.38)	LATE SPRING SOIL NITRATE: HIGH RATE 77 PPM, LOW 71 PPM. STALK NITRATE: 673 PPM HIGH RATE, 605 PPM LOW RATE
62.8	-0.1	2.3	N.S.	($4.14)	UNRANDOMIZED TRIAL, STATISTICS WEAKENED
65.0	-1.0	5.2	N.S.	($10.76)	GROZYME™SAID TO RELEASE SOIL NUTRIENTS, AGRI-SC SOLD AS SOIL CONDITIONER
164.0	1.2	16.1	N.S.	($10.76)	" "
53.0	1.0	6.3	N.S.	($13.85)	BIOLOGICAL EFFECT SOMEWHAT CONFOUNDED WITH STRIP "SIDE" (NORTH-SOUTH) EFFECT
160.5	-1.0	9.6	N.S.	($13.85)	
60.3	0.3	2.3	N.S.	($8.75)	
187.3	-2.6	7.2	N.S.	($10.11)	

phosphate on soybean yield, but saw no effect (Table 1). Their soil test for phosphorus was already medium-to-high.

Ray and Marj Stonecypher, Floyd, evaluated 3-18-18, a low-salt starter, which they placed right with the corn seed (Table 1). The 11 gallon per

Table 2. MANURE TIMING AND STARTER FERTILIZER

COOPERATOR	CROP	PREVIOUS CROP	YIELD SIGNIFI-CANCE	TREATMENT "A" DESCRIPTION	YIELD (bu. or T)	STAT.	TRT COSTS	$ BENEFIT
THOMPSON	CORN	SOYBEAN	*	NO MANURE, NO STARTER	165.9	b	$0.00	$0.00
				(PRORATED COST ¤)			$0.00	$0.00
				NO MANURE, STARTER	170.1	ab	$6.37	($6.37)
				(PRORATED COST ¤)			$6.37	($6.37)
	MAIN EFFECT: MANURE TIMING			NO MANURE	168.0	b	$0.00	$0.00
				(PRORATED COST ¤)			$0.00	$0.00
	SUB EFFECT: STARTER FERTILIZER			NO STARTER	168.9	b	$0.00	$0.00
THOMPSON	SOYBEAN	CORN	N.S.	NO MANURE, NO STARTER	69.5	a	$0.00	$43.80
				(PRORATED COST ¤)			$0.00	$35.65
				NO MANURE, STARTER	68.7	a	$22.14	$21.66
				(PRORATED COST ¤)			$22.14	$13.51
	MAIN EFFECT: MANURE TIMING			NO MANURE	69.8	a	$0.00	$21.66
				(PRORATED COST ¤)			$0.00	$13.51
	SUB EFFECT: STARTER FERTILIZER			NO STARTER	70.0	a	$0.00	$22.14

¤ PRORATED MANURE APPLICATION COSTS CALCULATED ON THE BASIS OF NUTRIENT WITHDRAWAL OF THE CROP IN THE FIVE-YEAR ROTATION.

acre rate amounted to about 1+6+6 of nitrogen, phosphate, and potash. Surprisingly, leaf tissue tests showed a reduction in both nitrogen and magnesium where the starter had been applied. For the third year running, the Stonecyphers saw no yield effect from a low-salt starter. Their soil tests very high in P and K.

Probably the most ambitious starter trials in 1994 were carried out by Dick and Sharon Thompson, Boone, who evaluated both starters and timing

MANURE TIMING AND STARTER FERTILIZER

TREATMENT "B"					TREATMENT "C"					
DESCRIPTION	YIELD (bu. or T)	STAT.	TRT COSTS	$ BENEFIT	DESCRIPTION	YIELD (bu. or T)	STAT.	TRT COSTS	$ BENEFIT	OVERALL COMMENTS
FALL, NO STARTER	170.8	ab	$21.66	($21.66)	SPRING, NO STARTER	170.0	ab	$21.66	($21.66)	
(PRORATED COST ¤)			$17.73	($17.73)	(PRORATED COST ¤)			$17.73	($17.73)	
FALL, STARTER	173.8	a	$28.04	($12.24)	SPRING, STARTER	171.0	ab	$28.04	($28.04)	
(PRORATED COST ¤)			$24.10	($8.31)	(PRORATED COST ¤)			$24.10	($24.10)	
FALL MANURE	172.3	a	$21.66	($13.00)	SPRING MANURE	170.5	ab	$21.66	($21.66)	
(PRORATED COST ¤)			$17.73	($9.06)	(PRORATED COST ¤)			$17.73	($17.73)	
STARTER FERTILIZER	171.6	a	$6.37	($0.96)						
SPRING, NO STARTER	70.5	a	$21.66	$22.14						
(PRORATED COST ¤)			$13.51	$22.14						
SPRING, STARTER	69.2	a	$43.80	$0.00						
(PRORATED COST ¤)			$35.65	$0.00						
SPRING MANURE	69.8	a	$21.66	$0.00						
(PRORATED COST ¤)			$13.51	$0.00						
STARTER FERTILIZER	69.0	a	$22.14	$0.00						

of manure applications for corn and for soybeans (Table 2). How do you test both manure timing and starters in one trial? They used what is called a "split plot" design. The "main plots" represented different manure application times – fall (in the corn trial), spring, and a no-manure check plot. Each of these main plots was split into a subplot with starter fertilizer and one without starter, the location of each subtreatment being chosen at random.

In the Thompson's soybean trial neither manure nor starter affected yields measurably. However, in

Livestock manure is an important fertility source on the Thompson farm.

the corn trial, both manure and starter had an effect on yield. Fall-applied manure was significantly better than the no-manure treatment, with spring-applied manure in between. The highest yielding treatment was fall-manure-plus-starter. However, because of spreading costs even this treatment lost money compared to the no-manure-no-starter treatment. Table 2 shows the economics calculated both for in-year costs and "prorated" spreading costs. Dick Thompson distributes spreading costs across all the crops of the five-year rotation, with each crop's charge weighted according to its nutrient withdrawal. It's worth noting that this field has been manured two or three years out of five for some time, so all treatment yields reflect the long-term benefits of manure. Soil tests for P and K are both very high here.

Table 3. MULTIPLE-TREATMENT PLANT POP. & FERTILIZER TRIALS

				TREATMENT "A"				
COOPERATOR	CROP	PREVIOUS CROP	YIELD SIGNIFI-CANCE	DESCRIPTION	YIELD (bu. or T)	STAT.	TRT COSTS	$ BENEFIT
RICEVILLE FFA	NK4242	CORN	*	24,200 SEEDS/ACRE (22,200 PLANTS)	151.7	c	$27.19	$0.00
RICEVILLE FFA	P3751	CORN	*	24,200 SEEDS/ACRE (22,200 PLANTS)	141.8	c	$24.73	$0.00
ROSMANN	CORN	SOY BEANS	*	21,950 SEEDS/ACRE (16,840 PLANTS)	136.7	c	$18.59	$0.00
ALERT	CORN	SOY BEANS	N.S.	20 LBS P, 40 LBS K 2" BELOW SEED (DEEP PLANTER SHOE)	137.0	a	$34.59	$0.00
GRAU	CORN	SOY BEANS	*	BROADCAST P & K	174.4	ab	$28.73	($28.73)
OLSON	SOY BEANS	CORN	N.S.	75 LB K PLANTER BAND	64.2	a	$9.50	$9.50
NEELY-KINYON	CORN	SOY BEANS	*	0 LBS ANHYDROUS NITROGEN	136.4	b	$0.00	$0.00

Nitrogen

A few years back, nitrogen rate trials were the most common on-farm experiment. That's no longer true, maybe because we now have the late spring soil nitrate test for corn. At the Neely-Kinyon Research Farm, near Greenfield, Bernie Havlovic carried out a demonstration of nitrogen rates for corn following soybeans (Table 3). Four rates were compared: zero, 75, 110, and 150 pounds per acre spring-applied anhydrous ammonia N. The 110 pound rate, which was recommended by the late spring soil nitrate test, yielded as well as the 150 pound rate, and both yielded significantly better than the check treatment. The corn yield in the 75 pound treatment was not significantly less than the two high rates. With more replications than the three that were used, the trial

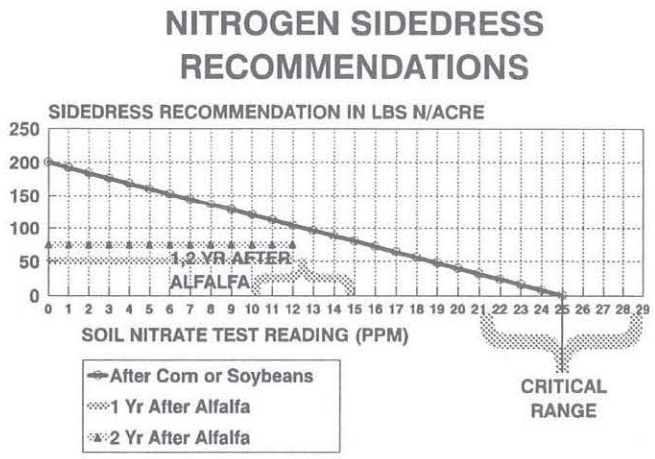


Figure 3. Sidedress recommendations for the late spring soil nitrate test.

MULTIPLE-TREATMENT PLANT POP. & FERTILIZER TRIALS

TREATMENT "B"					TREATMENT "C"					
DESCRIPTION	YIELD (bu. or T)	STAT.	TRT COSTS	$ BENEFIT	DESCRIPTION	YIELD (bu. or T)	STAT.	TRT COSTS	$ BENEFIT	OVERALL COMMENTS
27,700 SEEDS 25,400 PLNTS	158.7	b	$31.13	$10.11	32,000 SEEDS 28,200 PLNTS	162.9	a	$35.96	$13.68	
27,700 SEEDS 25,400 PLNTS	144.6	b	$28.31	$1.89	32,000 SEEDS 28,200 PLNTS	150.2	a	$32.70	$8.76	
24,400 SEEDS (19,800 PLANTS)	146.1	b	$20.67	$16.68	28,200 SEEDS (23,760 PLANTS)	157.7	a	$23.89	$36.76	LATE SPRING SOIL NITRATE 38 PPM, FALL STALK NITRATE LOW IN ALL TRTS
20 LBS P, 40 LBS K TO THE SIDE OF THE SEED	140.2	a	$34.59	$0.00	CHECK TREATMENT: NO BANDED P & K	136.9	a	$22.30	$12.29	TWO REPS DISCARDED BECAUSE OF MISSING DATA
DEEPBAND P & K	182.1	a	$29.41	$2.26	CONTROL (NOFERT.)	166.3	b	$0.00	$0.00	TREATMENT $ BENEFIT IS RELATIVE TO CONTROL TRT
150 LB K PLANTER BAND	65.4	a	$19.00	$0.00	ZERO K	61.2	a	$0.00	$19.00	SOIL K TEST: 125 PPM, MEDIUM-HIGH
75 LBS ANHYDRS. N	154.3	ab	$8.63	($8.63)						* RATE SET W. SOIL NITR. TEST. THREE REPS ONLY
* 110 LBS ANHYDRS. N	166.7	a	$12.65	$48.83	150 LBS ANHYDRS. N	167.5	a	$17.25	$44.23	

might have distinguished the 75 pound treatment as different too.

Tom and Irene Frantzen, New Hampton, tested the nitrogen contribution to corn from a previous crop of berseem clover (Table 1). There was no yield difference between the corn receiving 80 pounds N and that getting 20 pounds, suggesting that the berseem may have supplied a significant amount of N to the crop. The whole field had also received six tons of hog manure in October, 1993. The late spring soil nitrate test showed both treatments to be in the seventies (very high). However, both treatments gave late season cornstalk tests in the 600's, suggesting the possibility of an N *shortage*.

In early 1994, there were dry and warm conditions that released soil nitrogen and led to the large number of high readings for the late spring test. Then the rains returned, leaching soil N out of the root zone – and conditions were also excellent for crop removal of nutrients. As a result, some PFI farmers were left wondering if they really did have enough nitrogen in 1994. Dr. Fred Blackmer, who adapted the late spring soil nitrate test for Iowa, recommends always including one field strip of a high nitrogen rate. This can be a very useful reference if questions arise in mid-season.

Biologicals and Unconventional Products

A number of PFI farmers experimented with unconventional products in 1994. Dave and Lisa Lubben, Monticello, continued a line of investigation they began several years ago, testing ACA (zinc acetate). ACA is said to increase nitrogen uptake of corn under some conditions, but Dave and Lisa tried the product on soybeans this time (Table 1). There was no effect on yield.

Jeff and Gayle Olson, Mt. Pleasant, evaluated a package of biological soil amendments from Ag Spectrum. In both corn and soybeans, they applied

Table 4. MULTIPLE-TREATMENT TILLAGE TRIALS

				TREATMENT "A"				
COOPERATOR	CROP	PREVIOUS CROP	YIELD SIGNIFICANCE	DESCRIPTION	YIELD (bu. or T)	STAT.	TRT COSTS	$ BENEFIT
DORDT COLLEGE	SOY BEANS	CORN	*	RIDGE-TILL, SO I237	68.4	a	$77.10	$13.83
(TILLAGE & VARIETY, 2x2 FACTORIAL)				RIDGE-TILL, LOL 2200	63.1	b	$79.00	$1.07
	FACTOR 1: TILLAGE			RIDGE-TILL	65.8	a	$59.56	$0.00
	FACTOR 2: VARIETY			SOI 237	67.4	a	$19.88	$11.34
RICEVILLE FFA	SOY BEANS	CORN	*	8 ROW 30" PLANTER	46.7	b	$14.02	$9.22
THOMPSON	SOY BEANS	CORN	N.S.	NIGHT, FLAT PLANT	73.6	a	$0.00	$4.14
				BROADLEAFED WEEDS PER ACRE:	43	b		

Grozyme™ and Agri-SC™ (Table 1). Jeff reports that Grozyme is said to release soil nutrients, and Agri-SC is said to be a soil conditioner to help the Grozyme go into the ground. The products were added to an herbicide band in each trial. Crop yields were not different than in the check treatment that received the herbicide without the biologicals.

Lynn and Linda Stock, Waukon, evaluated a package of biological amendments from Farm for Profit. Lynn describes Remedy™ as a microbial inoculant that is sold to clean petroleum residues from the soil and improve structure. Achieve™ is a product said to provide nutrients for the microbes in Remedy. The trial was carried out within the strips of a narrow strip intercropping field, and that complicated the analysis. However, no difference in corn or soybean yield was seen between the biological treatment and the control treatment (Table 1).

John and Rosie Wurpts, Ogden, were *PFI Sustainable Projects* participants in 1994. They carried out an evaluation of two approaches to soil fertility, comparing ISU recommendations to a package of biologicals from Agrienergy (Table 1). This was the fourth year of the comparison. As in previous years, there was no significant difference in yield, so the economic difference was based on input costs alone. In earlier years of the trial, the ISU Extension recommendation was for no fertilizer (except nitrogen for corn). In 1994, the ISU recommendation included some P and K for the corn. However, the cost of the fertilizer was less than that of the biologicals.

Corn Population Trials

In 1994, corn population trials came from both cooperators Ron and Maria Rosmann, Harlan, and the Riceville, Iowa Future Farmers of America, which participated through a *Sustainable Projects* grant. In all three trials there was a consistent yield

MULTIPLE-TREATMENT TILLAGE TRIALS

TREATMENT "B"					TREATMENT "C"					
DESCRIPTION	YIELD (bu. or T)	STAT.	TRT COSTS	$ BENEFIT	DESCRIPTION	YIELD (bu. or T)	STAT.	TRT COSTS	$ BENEFIT	OVERALL COMMENTS
NO-TILL, SOI 237	66.3	ab	$77.17	$2.89						RIDGE-TILL CULTIVATED ONCE, ALL TREATMENTS BROADCAST HERBICIDE TWICE
NO-TILL, LOL 2200	62.9	b	$80.06	$0.00						
NO-TILL	64.6	a	$54.64	$4.91						
LOL 2200	63.0	b	$22.43	$0.00						
20' DRILL, 15" ROW SPACING	54.3	a	$13.29	$40.77						
15' DRILL, 8" ROW (NO-TILL)	46.2	b	$23.24	$0.00	15' DRILL, 8" ROW (REDUCED TILL)	47.4	b	$13.68	$9.57	
DAY, FLAT PLANT	73.3	a	$0.00	$4.14	ONE FALL CULT. TO BUILD RIDGE. DAY PLANT ON RIDGE	72.5	a	$4.14	$0.00	NO SOIL PREPARATION FOR FLAT PLANT
BROADLEAF WEEDS PER ACRE:	59	ab			BROADLEAF WEEDS PER ACRE:	104	a			

response to increasing populations (Table 3 and Fig. 4). The Rosmanns are adjusting their cropping system as they make the transition to organic certification. Not only did they see a yield response to population, they found through stand counts that rotary hoeing and cultivation had thinned the planted population by around 4,700 plants per acre. The finding may refocus their attention on these operations.

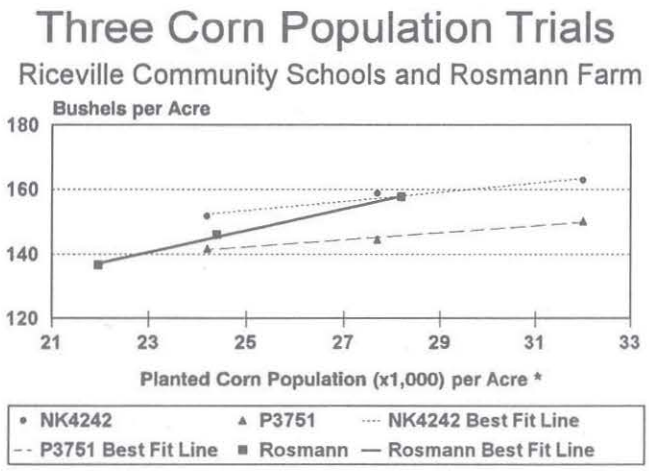


Figure 4. Three 1994 corn population trials.

The Riceville FFA compared three planting populations, the highest being 32 thousand seeds per acre. That rate was the yield winner in both of the corn hybrids evaluated, although crop stands were up to four thousand plants less than seeding rates. Of course, 1994 was a good year for corn. In a more stressful growing season, the yield response could be different. These trials probably should be repeated for a number of years, and results should be considered along with information provided by the seed companies and by third parties like ISU Extension.

Table 5. TILLAGE & OTHER TRIALS

COOPERATOR	CROP	TREATMENT "A"		TREATMENT "B"
		DESCRIPTION	YIELD (bu.)	DESCRIPTION
BAUER	SOYBEANS	19" BEAN ROWS	63.6	38" BEAN ROWS
DAVIDSON	CORN	NO-TILL	134.8	RIDGE-TILL
DAVIDSON	SOYBEANS	NO-TILL	38.8	RIDGE-TILL
FRANTZEN	OATS	OATS W. BERSEEM CLOVER	64.0	OATS W. RED CLOVER
BAUER	CORN	10/13 HARVEST	168.6	11/2 HARVEST
BAUER	SOYBEANS	CLEANED, SAVED SEED	66.3	PURCHASED SEED
ROSMANN	SOYBEANS	61 LB/ACRE SEED (170,800 SEEDS)	67.1	68 LB/ACRE SEED (190,400 SEEDS)

Tillage

Three cooperators and a *Sustainable Projects* recipient compared no-till to some other tillage system in 1994. Ted and Donna Bauer, Audubon, achieved 19-inch soybean rows by offsetting the 38-inch row planter and making two passes across the field. Although the narrow-row soybeans yielded significantly better than beans in the 38-inch rows, the cost of the extra planter pass made the practice somewhat less economical (Table 5). Still, the narrow-row soybeans yielded well, and the results suggest the trial is worth repeating.

Don and Sharon Davidson, Grundy Center, compared ridge-till and no-till beans and corn in 38-inch row spacings. This was the second year for the trials on that particular site. The no-till crops received one cultivation and broadcast herbicides, while the ridge-till received banded herbicides and two cultivations. There were no significant differences in crop yield (Table 5). Ridge-till corn had more broadleaf weeds than no-till corn, but there was more grass pressure in no-till corn and soybeans. In the soybean trial, weed management costs were markedly higher in no-till than in ridge tillage.

The Dordt College Agricultural Stewardship Center conducted a two-factor experiment – tillage and soybean variety (Table 4). Drilled no-till yields and ridge tillage yields were not significantly different. Economics favored the drill because ridge tillage strips received one cultivation plus the two broadcast applications of herbicide that the no-till treatments were given. There was a significant yield difference between the two soybean varieties.

The Riceville FFA carried out an extensive evaluation of tillage systems for soybeans: 30-inch planted rows; 15-inch drill; 8-inch drill with true no-till, and 8-inch drill with reduced tillage (Table 4).

TILLAGE & OTHER TRIALS

TRT "B"	DIFFERENCE				
YIELD (bu.)	YIELD DIFF.	YLD LSD (bu.)	YLD SIG.	$ BENEFIT OF TRT "A"	COMMENT
60.8	2.8	0.9	*	($4.02)	
135.4	-0.7	7.9	N.S.	($1.07)	NO-TILL HAD MORE GRASS, FEWER BROADLEAFED WEEDS
38.4	0.4	0.9	N.S.	($16.47)	NO-TILL HAD SIGNIFICANTLY MORE GRASS
75.5	-11.5	6.6	*	($28.89)	
161.1	7.5	--	--	($28.61)	(UNREPLICATED DEMONSTRATION) CATTLE WILL SCAVENGE DROPPED CORN
	OR, INCLUDING THE YIELD DIFFERENCE:			($13.61)	
65.8	0.5	1.5	N.S.	$7.47	
67.4	-0.3	1.3	N.S.	$2.02	NO OBSERVED DIFFERENCE IN WEED SUPPRESSION AT HIGHER CROP POP

The no-till 8-inch drilled soybeans were the only ones in which no primary cultivation was used to prepare a seedbed. The yield winner was the soybeans drilled in 15-inch rows. Jim Green, high school agriculture instructor for the group, thinks that the 8-inch drill was not used to its full capability. It should have been calibrated for each treatment. There were significant stand differences among the treatments; however, these differences, in themselves, were not correlated with the yield differences.

Dick and Sharon Thompson, Boone, designed a trial to "shed light on" the rumor that weeds can be kept from appearing by depriving them of the light cue that stimulates germination. Work in Europe continues on this, but most reports from the U.S. have been negative. The Thompsons compared flat (no-till) planting at night, flat planting in the day, and ridge planting in the daytime – all with no herbicides. But the phenomenon remained elusive. There were similar numbers of broadleafed weeds in the night and day flat planting. Ridge-till day planting had significantly more weeds, which might be expected from ridges built the previous fall. The light-weeds connection may be unproven, but the tillage-weeds connection was confirmed once again.

Miscellaneous Trials

Several on-farm trials don't fall into easy categories, but that doesn't make them any less interesting. Ron and Maria Rosmann, for example, who compared corn populations in their transitional organic system, also looked at soybean planting rates. They compared 171 thousand seeds per acre with 190 thousand seeds (Table 5). They observed no difference in either crop yield or weed suppression between the two planting populations.

Ted and Donna Bauer compared purchased soybean seed with farm-grown seed (same variety) that was cleaned and germination tested by a neighbor (Table 5). There was no yield difference, and even after accounting for handling, storage, and the lost sales opportunity, planting farm-grown seed was more profitable by over seven dollars per acre. This was the third year they have done this trial, and the result has always been similar.

The Bauers also carried out a comparison of mid-October and early-November corn harvest dates that they began two years ago. In the first year, the late harvest clearly came out ahead, while in year two the economics favored the early harvest. In 1994, moisture-corrected yields were 7.5 bushels greater with the early harvest (Table 5). But because of greater drying and handling costs, the November 2 harvest date was more profitable, even taking into account the value of the yield difference. Ted also points out that the combine moves more slowly through the moister corn encountered at the early harvest. And what about the corn left on the ground due to late harvest? Ted is hoping for some open winter weather that will allow his cattle to clean up those ears.

Tom and Irene Frantzen wanted to know how berseem clover would behave with oats. They know that berseem has potential as a green manure and a source of quick livestock forage. But how would it fit into their present cropping system? They compared oats seeded with berseem to oats seeded with mammoth red clover (Table 5). In 1994, the berseem grew nearly as tall as the oats, making it necessary to windrow the oat crop. Unfortunately, rains combined with the heavy berseem growth to retard drying of the cut grain, so some oat yield was lost in the berseem strips. Tom notes, though, that the berseem clover may contribute more as a green manure for next year's corn than it takes away from oat yields.

Pasture Versus Feedlot for Dairy Heifers

The Dordt College Agricultural Stewardship Center has long had a strong dairy program. In 1994 they took their first steps in management-intensive grazing. With support from *PFI Sustainable Projects*, the Stewardship Center carried out a comparison of feedlot and rotationally grazed Holstein heifers. A group of 23 animals was divided in May for the two treatments. Six animals remained in the lot, while 17 were put out to pasture. The first year's results appear in Figures 5 and 6.

Figure 5 shows that average daily gain was sometimes higher in the pasture setting, sometimes

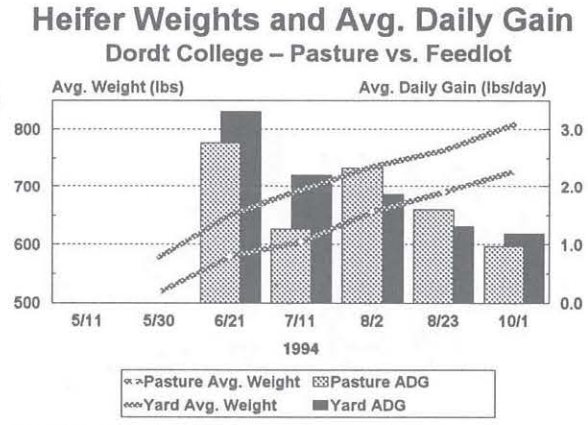


Figure 5. Pasture and feedlot heifer weights and average daily gain in the 1994 Dordt College trial.

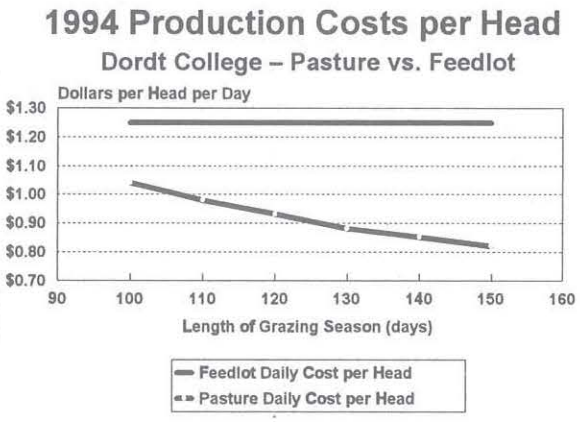


Figure 6. Projected production costs as grazing season lengthens, 1994 Dordt College trial.

in the feedlot. It also shows that there was a difference in average weight right from the beginning of the trial. Larger animals were selected for the feedlot because of involvement with a local business on another project. In the future, animals will be selected randomly for the two treatment groups in order to make a truer comparison.

The figure also starts at May 11, although weights are not shown until May 30. Animals went to pasture on May 11, but individual weights were not taken until nineteen days later. This makes it difficult to put absolute profit figures to the treatments, since the weight gain of the two groups is not known for the first period. However, student Lee DeHaan has done a good job of deriving the cost side of the equation. Feedlot costs per head are constant through the season. However, daily production cost for heifers on pasture decreases as fixed costs are spread across the lengthening grazing season (Figure 6). These first-year results should catch the attention of Sioux County dairy farmers looking for a better bottom line.

Transition to Grazing for Dairy

Matt and Diana Stewart, Oelwein, are PFI members who attended the talk by grazier Joel Salatin that PFI hosted last January. It was an important experience for them, and they began to plan changes for their own farm. In 1994 they received support from *Sustainable Projects* to document the process of moving their dairy operation to greater use of pasture. Matt's report follows.

"Stewartland Holsteins is very similar to the large number of family dairies in Northeast Iowa. We farm 380 acres and have milked 75-80 registered

Matt showed full-flow valves at the August 9 field day.

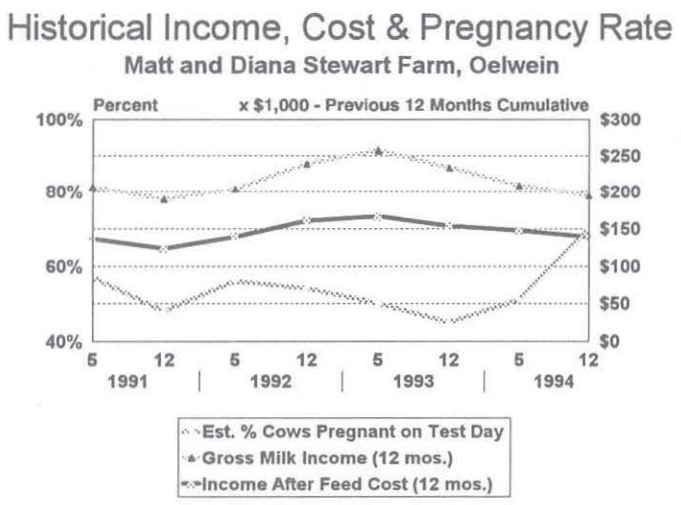


Figure 7. Cost and pregnancy trends, Stewart dairy farm.

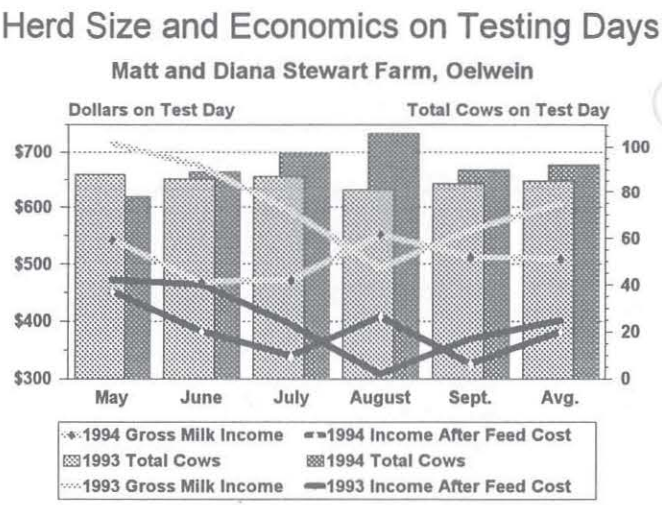


Figure 8. Comparison of 1993 and 1994 economics and dairy herd size on Stewart farm.

Holsteins in a tie-stall barn. We have two silos with a capacity of 1,000 tons and a liquid manure system with an earthen pit. Over 340 acres are tillable, and our corn base is 245 acres with a 129-bushel yield.

Our cows have been drylot-managed for most of the fifteen years since my wife and I joined my parents. We milked three times a day for the eleven years preceding this spring. Our herd average has been between 21,000–22,000 for the past ten years. The work force has consisted of my wife and me, my father, our four children (aged 3–13), and a full-time hired man. The heifers have been housed on a separate acreage seven miles away, and the man that lives there does the daily feeding in exchange for rent. We have a full line of machinery for chopping, haying, and hauling liquid manure. My brother has planted and combined our corn.

Our objective has been to switch to grass-based dairying as quickly as possible and demonstrate the economics of such a drastic change. Most of the economic data will not be available until next winter, but it does appear that we will be able to stand the transition and show an average net gain. This

Table 6. WEED MANAGEMENT TRIALS

COOPERATOR	LOW RATE TREATMENT				HIGH RATE TRT
	DESCRIPTION	YIELD	BROADLEAF WEEDS/ACRE	OTHER WEED INFORMATION	DESCRIPTION
(CORN)					
MUGGE	4x HOE, NO GRASS HERBICIDE	166.0	--	GRASS RATING 4.2	GRASS HERBICIDE, NO HOE
(SOYBEANS)					
BAUER	BAND/2 CULTIVATIONS	65.6	--		BROADCAST/ 1 CULTIVATION
SVOBODA	ANNUAL MEDIC IN-ROW	56.1	--		FRONTIER™ IN A PLANTER BAND

report covers the physical changes we have made and a couple of observations from our DHIA test sheets.

The first tough decision was to let ASCS know that we didn't want that big advance deficiency payment – we would only plant 60 acres of corn. (Now I know how hard it really is to get off welfare.) Of this 60 acres, 27 acres were chopped and put in the silo for winter feed.

About April 1 we direct-seeded 100 acres with 5 lbs. bromegrass, 1 lb. reed canarygrass, 1 lb. ladino clover, and 1 lb. red clover per acre using a Brillion seeder. We have seeded our alfalfa this way for ten years with no chemicals and excellent results. The foxtail was cut before it headed out, and it yielded 3 round bales per acre. The seeding was grazed twice after that in large paddocks with low stock density. As the foxtail regrowth became coarse in August and September, lactating cows refused to eat the lush new seeding beneath. Heifers grazed these fields until late November.

Another 100 acres of alfalfa-orchardgrass hayfields were too thin to hay again this year and diverted to pasture. As bred heifers had been out on cornstalks and hayfields last winter, the stubble was very short, and grazing was delayed until April 20. We had four groups on grass. The first group,

"For a good part of the year, grazing allows us to milk more cows than the barn will hold at one time – we just move two shifts through from pasture."

the lactating cows, had to return to conventional feeding on October 1. It became very difficult to maintain production in late September. The dry cow group and the two heifer groups maintained excellent condition through the seven months they were on grass, trace-mineral salt blocks, and no supplemental feed. We were extremely satisfied with their performance.

The milking group was allowed to gradually change from silage to grass. The first two days we waited until they were full to let them out to pasture. For the next two weeks we let the cows decide when they wanted to walk away from the bunk and go to pasture. We had been feeding 14 lbs. of grain in the barn and 40 lbs. of wet corn gluten feed with the silage. The transition was very smooth, and production was good. Our biggest mistake was that we should have raised the grain level to 18 lbs. By mid-June, the cows were too thin, production was

WEED MANAGEMENT TRIALS

HIGH RATE TREATMENT			TREATMENT DIFFERENCES					
YIELD	BROADLEAF WEEDS/ACRE	OTHER WEED INFORMATION	YIELD DIFF.	YLD. SIG.	YLD. LSD	BRDL. WEED SIG.	LOW RATE $ BENEFIT	COMMENTS
168.8		5.7 GRASS RATING	-2.8	N.S.	5.8	N.S.	($6.76)	GRASS RATING 1 = NO GRASS, 10 = COMPLETELY GRASSY
64.9	--		0.6	N.S.	0.9		$5.43	
58.6	--		-2.5	N.S.	4.3		($4.97)	POOR MEDIC STAND

about 5–10 lbs. lower than we thought it should be, and we did increase the grain to 18 lbs. In July we started feeding 10–20 lbs. corn silage. We monitored the appetite at the bunk to determine feed availability in the pastures. The cows were locked in the paddocks from the end of milking until one hour before milking.

Figure 7 shows our history of gross milk income, income after feed costs, and the estimated proportion of cows pregnant on testing days. The percent pregnant cows is based on confirmed pregnancies plus half of the "maybe" pregnant cows.

Figure 8 is also based on test days and focuses on the 1993 and 1994 grazing seasons. 'Total cows' is the number of milking and dry cows on test day. For a good part of the year, grazing allows us to milk more cows than the barn will hold at one time – we just move two shifts through from pasture. We were limited to 80 milking at any one time under our conventional system. 'Income After Feed Costs' applies to the whole cow herd on the day of testing. Milk prices were comparable between the two years. The total income after feed costs for the 160-day grazing period is $3,200 less than for the same 160 days in 1993. This will be more than offset by reduction in labor costs. We let our full-time employee go in May, when we dropped to milking twice a day. We thought we might go back to milking three times when the cows were back in the barn this winter, but so far production has remained acceptable with two milkings."

Weed Management

Three other trials were devoted specifically to weed management. Ted and Donna Bauer, Audubon, compared banding to broadcasting herbicide in soybeans. They did not take weed counts, but yields were the same in both treatments (Table 6). They found it was more economical to band and cultivate twice than to cultivate just once and broadcast.

Paul and Karen Mugge, Sutherland, evaluated ridge-till corn with and without a grass herbicide (Table 6). Both treatments received a broadleaf herbicide. In place of the grass herbicide, they substituted four rotary hoeings. While there was no significant difference in yields, the cost of the four trips with the hoe made that system less profitable. There was a tendency for hoeing to control grassy weeds better than the herbicide, but it fell just short of being statistically significant at the 95% confidence level.

Dick and Mary Jane Svoboda, Aurora, compared banded herbicide to a weed-suppressing cover crop of annual medic (Table 6). A relative of alfalfa, the medic is supposed to compete with weeds early in the season, then die back and let the crop grow through. Unfortunately, the medic establishment was very poor, so there was no observable effect on weeds.

Narrow Strip Intercropping

Narrow strip intercropping is a complex system requiring careful management. Maybe we should think of it as a finely tuned sports car. It's a roadster that can really perform on a good road. But it isn't built for rough ground or muddy lanes. We know, for example, that in stress years, there has not been the hoped for "overyielding" in the outside rows of the corn strips. 1994 appeared to be the smooth highway that farmers had been waiting for, but there were new lessons around the bend.

Narrow strip intercropping is a complex system requiring careful management. Maybe we should think of it as a finely tuned sports car.

There is a potential "biological efficiency" built into narrow strips. It has to do with the borders between strips. That is where neighboring crops can use resources like light, fertility, and soil moisture in complementary ways. This doesn't automatically happen, but crops that use these resources at different times of the season often make good neighbors in strip intercropping. Oats, for instance, are harvested in July, leaving extra resources for neighboring row crops. Corn and

Table 7. NARROW STRIP INTERCROPPING TRIALS

COOPERATOR	CROP	ROW DIRECTION	YIELDS (bu.)			COMMENTS
			STRIP	FIELD	DIFF.	
ALERT/SMITH	CORN, P3394	N-S	152.8	126.3	26.6	STRIPS @ 35,000, BLOCK @ 27,500 SEEDS/ACRE
ALERT/SMITH	CORN, P3417	N-S	152.3	141.8	10.4	STRIPS @ 35,000, BLOCK @ 27,500 SEEDS/ACRE
DAVIDSON	CORN	E-W	89	105	-16	STARTER SHOE PLUGGED IIN ONE OUTSIDE ROW
MUGGE	CORN, NO-TILL	E-W	150.8	153.0	-2.2	
MUGGE	CORN, CONV.	E-W	183.3	168.0	15.3	
OLSON	CORN	SE-NW	134.2	128.9	5.3	GRASSY STRIP BORDERS
THOMPSON	CORN	E-W	172.0	173.2	-1.2	ROTATION, TILLAGE, & FERTILITY DIFFERENCES
			CORN AVERAGE:		5.5	
ALERT/SMITH	OATS	N-S	73.2	--		
DAVIDSON	RYE	E-W	20	18	2	
MUGGE	OATS	E-W				
OLSON	OATS	SE-NW	67.3	100.5	-33.2	
THOMPSON	OATS	E-W	71.1	--		
ALERT/SMITH	SOYBEANS	N-S				COMBINE MALFUNCTION
DAVIDSON	SOYBEANS	E-W	39.2	37.5	1.7	
MUGGE	SOYBEANS	E-W	68.0	69.9	-1.9	
OLSON	SOYBEANS	SE-NW	25.8	40.5	-14.7	WEEDS IN STRIPS (NO HERBICIDE)
THOMPSON	SOYBEANS	E-W	57.5	61.2	-3.7	
			SOYBEAN AVERAGE:		-4.7	

soybeans are potentially competitive, but in past years, increased corn yields have not come at the expense of soybean yields in most PFI trials.

University and farmer researchers have seen that in stress years, the yield benefits of strip intercropping are less evident, as competition between crops dominates over the complementary use of resources. So 1994, which was generally a good year for crops, should have been a great year for narrow strip intercropping. In fact, some cooperators did see the yield benefits in corn (Table 7). The

largest yield benefit was nearly 27 bushels, in one of Doug Alert and Margaret Smith's trials. They optimize their strips, using higher corn populations and fertilizer rates than in the whole-field blocks. And their strips are in a three-year rotation, while the rest of the field is in a corn-soybean rotation.

In other trials narrow strip intercropping did not fare so well. Observations in the field point the finger at weeds. The grass got out of hand in some stripped crops. Why was it worse in strips than in the whole-field blocks? Corn in strips lets in more light. This appeared to stimulate grass in some strips. And in some cases weed pressure had built up from two years in which weather prevented a second cultivation. Where trials got into trouble, the corn strip edges were the place with the most light, the lowest stands of corn, and the most grass.

What is the take-home lesson? It may be "back to basics" – not necessarily in the sense of a return to conventional farming practices, but in the recognition that narrow strip intercropping is a very management-intensive system. It is a system that is less forgiving of slips in weed management, and perhaps in fertility and tillage as well. It's that high-performance roadster that likes a smooth road.

Table 8. STRIP CORN YIELD BY ROW POSITION (hand harvest)

STRIP ORIENTATION: NORTH-SOUTH	STOCK	FRANTZEN	OLSON	ALERT/ SMITH
ROW	CORN	CORN	CORN	CORN
(W)	(SOY)	(SOY)	(SOY)	(SOY)
1	121.9	174.9	126.7	173.1
2	123.7	174.9	130.1	152.5
3	134.7	195.6	161.3	171.1
4	136.8	197.6	150.O	182.9
5	136.4	(OATS/ BERSEEM)	132.8	(OATS/ BERSEEM)
6	141.5		92.7	
7	132.9		(OATS/ BERSEEM)	
8	130.5			
9	136.7			
10	144.8			
(E)	(SOY)			
STRIP AVERAGE:	134.O	185.7	132.3	169.9
BLOCK:			137.4	101.9

Table 8 and Figures 9 and 10 also show corn yields in narrow strip intercropping, but these are hand-harvest yields row by row. They differ from the machine harvests shown in Table 7 both by the method and because they represent only a small part of the field, while the combine yields reflect the system as a whole. The effect of low stand and grass in some strip borders is evident, but a trend found in 1993 also stands out. This is the tendency for the east edges of north-south strips to yield better than the west edges. Corn on the east borders of strips receives the greatest part of its light in the morning, when moisture stress is reduced. Corn on the west edges of strips receives the full light of afternoon, and stress may prevent it from taking full advantage of this light.

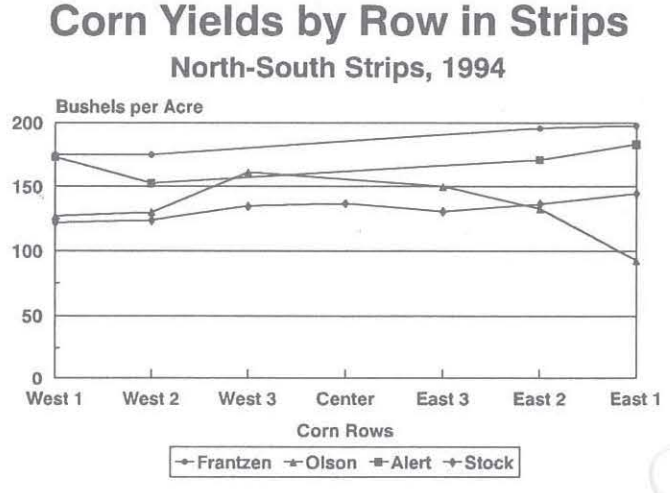


Figure 9. Narrow strip intercropping corn yields in north-south strips, 1994.

STRIP CORN YIELD BY ROW POSITION (hand harvest)				
STRIP ORIENTATION: EAST-WEST	STOCK	DAVIDSON	MUGGE	THOMPSON
ROW	CORN	CORN	CORN	CORN
(S)	(SOY)	(SOY)	(SOY)	(SOY)
1	130.0	49.8	181.1	152.1
2	137.1	83.3	179.7	183.9
3	144.5	84.2	172.1	172.0
4	140.7	59.8	172.1	126.6
5	142.8	(OATS/ BERSEEM)	172.0	(OATS/ BERSEEM)
6	144.8		175.0	
7	143.9		(OATS/ BERSEEM)	
8	129.8			
9	144.1			
10	139.6			
(N)	(SOY)			
STRIP AVERAGE:	139.7	69.3	175.3	158.6
BLOCK:		109.8	150.8	171.8

Forage Quality and Returns from Grazing

Steve Hopkins and Sarah Andreasen milked a small herd of Jerseys near Decorah the last several years. In October, they moved their cows to a farm near Newton, but not before wrapping up a project documenting their pasture-based approach to dairying. The effort began in 1993 with support from the Leopold Center for Sustainable Agriculture and *PFI Sustainable Projects*. In 1994, Steve and Sarah became PFI cooperators.

Figure 11 shows that, as in 1993, milk production improved somewhat and income over feed cost improved dramatically in the spring when pasture became available. Income and cost are expressed here per hundredweight of milk sold. Typical feed costs for well-managed dairies are $5-6 per hundredweight of milk. During most of the time the cows were in the paddocks in 1994, feed costs were around $3 per CWT milk sold. From May to July, daily feed costs were less than one dollar per cow.

Figure 12 shows the result of weekly forage sampling. In 1993, Steve and Sarah were surprised to see a mid-summer slump in non-fiber carbohydrate

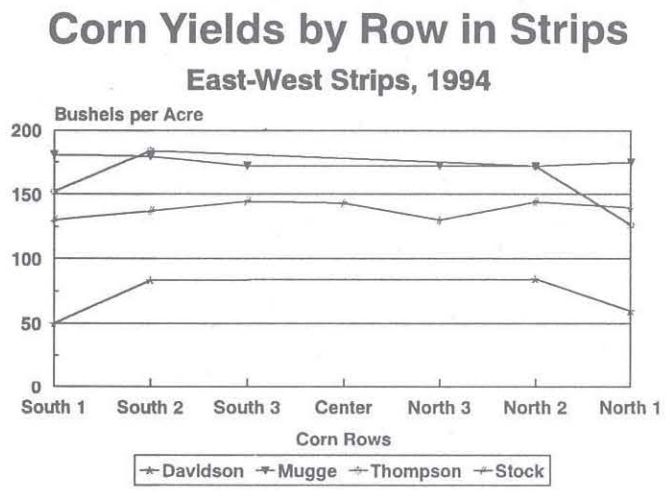


Figure 10. Narrow strip intercropping corn yields in east-west strips, 1994.

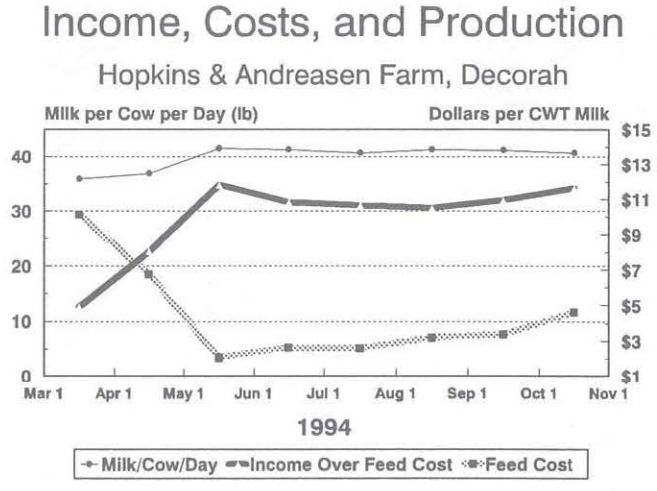


Figure 11. Milk production, feed cost, and income after feed cost over the 1994 grazing season, Hopkins/Andreasen farm.

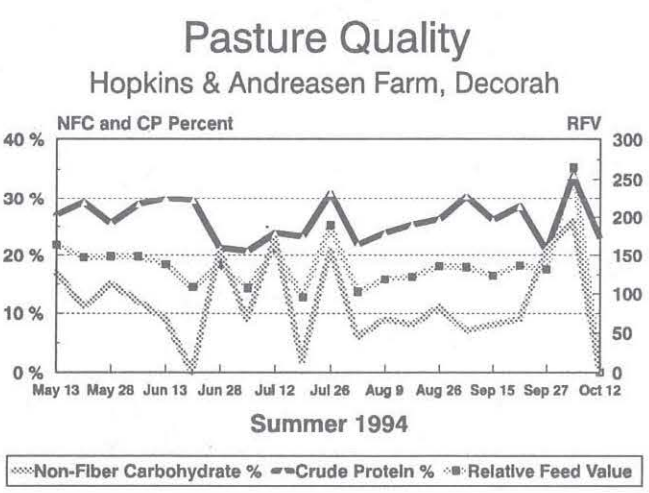


Figure 12. Forage analysis over the 1994 grazing season, Hopkins/Andreasen farm.

(NFC), an important measure of feed energy content. In 1994, forage energy fluctuated, reflecting the different paddocks in which the cattle grazed. Depending on paddock NFC, the cows were fed 10–16 lb. corn in the barn. Steve says that what impresses him is that crude protein levels were more than adequate throughout the season. He notes that this is the result of grazing grass in the leaf stage. His working theory is that, while crude protein is a function of grass height, NFC reflects both the growth stage of the grass and the fertility status of the soil. Steve and Sarah are looking forward to new pastures that aren't quite so steep and a grazing season just a bit longer than those in northeast Iowa.

Barley-Based Hog Ration vs. a Corn-Based Ration

Dan Wilson, Paullina, sends this description of the trial he and brother Colin carried out:

"This test was conducted on a group of cross-bred gilts raised on pasture. The main goal was to see if barley is an economical alternative to corn for growing/finishing pigs. We wanted to find a good use for the small grain in our crop rotation. The test was set up by splitting a group of 222 gilts. The gilts were farrowed on pasture. At six weeks of age they were weaned and moved to the barn with outside concrete lots. After being vaccinated and sorted, they were weighed and returned to pasture for the test.

The corn and barley were tested for protein, and the rations were balanced accordingly. Both

In 1994, forage energy fluctuated, reflecting the different paddocks in which the cattle grazed.

Forage analysis varied with grass height, soil fertility, and aspect of the slopes on this Decorah farm.

Because barley is higher in lysine, we were able to reduce the amount of soybean meal in the barley rations.

The field day crowd examines A-frame construction.

Table 9. COMPARISON OF BARLEY-BASED AND CORN-BASED HOG RATION – WILSON, 1994

	CORN-BASED RATION	BARLEY-BASED RATION
DATE ON TEST	AUG. 17	AUG 24
NUMBER OF HEAD ON TEST	110	112
AVERAGE WEIGHT ON TEST	62.2 LBS	70.3 LBS
DATE OFF TEST	NOV. 30	NOV. 29
NUMBER OF HEAD OFF TEST	108	111
AVG. WEIGHT OFF TEST	238 LBS	244 LBS
GAIN PRODUCED ON TEST	19,064 LBS	19,336 LBS
FEED FED ON TEST	65,692 LBS	68,385 LBS
COST OF FEED	$3,461.55	$3,510.64
FEED CONVERSION (LBS FEED PER LB GAIN)	3.45	3.54
COST PER LB OF GAIN	$0.18	$0.18
RATE OF GAIN	1.67 LB/DAY	1.79 LB/DAY
CARCASS YIELD	74%	72%
CARCASS PERCENT LEAN	49%	48%

rations were mixed on the farm using soybean meal and a vitamin/mineral premix. We started the group using barley on a ration of 200 lbs. barley per ton and slowly increased the barley to 700 lbs. per ton when they reached 150 lbs. This meant that 42 percent of the grain in the ration was barley, the rest was corn.

In calculating the cost of production we used $1.85 a bushel for corn and $1.50 a bushel for the barley (season-average market prices for our area). All other ingredients were priced at cost. Because barley is higher in lysine, we were able to reduce the amount of soybean meal in the barley rations. This helped to reduce the cost per ton of the barley ration, and it accounts for the fact that this group consumed more pounds of feed but cost the same per pound of weight gain (Table 9).

We were quite encouraged by the result of this trial, as it makes small grain a viable option in crop rotations. We will repeat the trial again to see if the results are consistent."

When the Wilsons repeat this trial in 1995, they will improve several procedures. They hope to have two replications in 1995; their barley crop was hailed in 1994, leaving them with only enough grain for the one rep of gilts. The barley group actually went on the ration August 17, the same day as the corn group. However, they couldn't be weighed and turned out until a week later, by which time they were heavier pigs. This could raise suspicions that the '94 test was really showing the effect of age/size, not rations. Finally, the packing house lost the records for individual pigs in one group. This means there is no way to know whether the one percent difference in percent lean or the 1.8 percent difference in carcass yield is a real difference or is probably just due to chance. But from the 1994 results, the Wilsons already have an indication that they can "afford" to grow a small grain in their crop rotation.

FOOTPRINTS OF A GRASS FARMER

Addressing The Weak Link, II

Tom Frantzen, Alta Vista

The last *Footprints* article explained viewing a farm as a tract of land collecting the sun's energy and converting it into saleable products. We see this process as a chain stretching from the sun's energy to the creation of reinvestment dollars. We examine this chain for its weakest link and direct our financial and labor resources toward reinforcing that point. The weak link can shift, and continual review of our operation is needed to track its location.

Converting existing forages and grains into marketable products was traditionally our farm's weak link. During the summer and fall of 1994, this weak link shifted to markets and market access. How could we tell?

Both cattle and hog markets declined sharply during the year. The drop in cattle prices, while it erased any hope of profit from the stockers that we purchased in the spring, offered us an opportunity to buy lower-priced bred Angus stock cows. The cows, scheduled to calve in the spring, will create several market opportunities. We can retain heifers, grow out yearlings, or place calves on feed. This allows us to build inventory while (hopefully) the cattle market improves.

The abrupt decline in the cash hog market signaled an important shift in the weak link. While markets are still available, they could become restricted. We need to produce the carcass quality packers desire while retaining the foraging characteristics of our current herd. In December, we purchased a set of excellent quality Tamworth boars. This breed is renowned for mothering abilities, the love of forages, and good carcass quality. Here attention to genetics and breed characteristics could shape up one of our weak links. Capital and labor resources invested into increasing gross hog production would not address this situation.

Another effort directed at improving this weak link is our investigation of antibiotic-free pork. We toured Sweden in September with a group to observe low stress, deep-bedded hog facilities. I see the growth of drug-free meat production as a real opportunity. In 1995, hogs will provide 50% of our net income. I will explain our progress in this area in future articles.

Our farm is currently a mixed grass-and-row crop operation. We are growing clear hilum soybeans and grain amaranth. They are sold as specialty grains. We are pursuing the idea of organic transition on a portion of our acres. We propose to utilize a 6-year rotation, with three of the six in a sod-building pasture. Three years of organic row crops would follow the sod. The combination of cow/calf grazing and organic row crop production would be more profitable than our current practices. We are examining this proposed action in light of our holistic resource management plans for our farm. Constant attention is needed to ensure that proposed actions do not conflict with stated goals. We hope that these actions will reinforce our farm's weak link. Management attention in this area could pay good dividends.

FROM THE KITCHEN

Marj Stonecypher, Floyd

Seems like just yesterday I typed recipes for the beginning of 1994, now it is 1995. It was a good year for crop production, but not for prices. I'm sure you all felt the same way as we did about prices for farmers. Been working on income taxes. Now to get Ray to help with the final step.

Let's look at something more pleasant, like spring, seed catalogues, what to plant for flowers, vegetables and herbs. Did any of you try herbs last year? I started some.

How about some simple, good, easy recipes? Bananas are up in price, so they don't sell until they are good and ripe – and cheaper. They make good banana bars and bread.

BANANA BARS

½ cup butter
1 ½ cup sugar 2 eggs
$^3/_4$ cup sour milk
2 ripe mashed bananas
2 cup (scant) flour
½ tsp. salt
1 tsp. vanilla
1 tsp. baking soda

Cream butter and sugar, add eggs and milk. Add mashed bananas, flour, vanilla, salt and soda. Mix well. Bake in cookie sheet, 375 degrees for 30 minutes. Frost with favorite powdered sugar icing. Can sprinkle with nuts. Instead of frosting, I sometimes put chocolate chips and nuts on before baking.

SURPRISE TACO PIE

1 ½ lb. ground beef
½ cup chopped onions
1 envelop taco seasoning mix
1 cup tomato sauce
3 eggs
1 $^1/_4$ cup milk
$^3/_4$ cup Bisquick
1 tomato, thinly sliced
1 ½ cup shredded cheese

Brown ground beef with onions (may add mushrooms too), add seasoning mix and tomato sauce. Put in bottom of 10" x 10" casserole. Mix together eggs, milk and Bisquick. Pour over ground beef mixture. Bake 350 degrees about 25 minutes, until set in center. Top with cheese and tomato, bake for 5 minutes or until cheese is melted.

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