SARE Project LNC92-44

the Practical Farmer

Practical Farmers of Iowa Newsletter

Vol. 8, #4
Winter 1993

PFI, POLITICS, AND POLICIES

Vic Madsen, PFI President, Audubon

Every year, during our annual meeting, we set aside some time for open discussion about PFI activities. This year we were happy to have a number of members voice their opinions about three or four issues.

The most time was spent on our potential involvement with the Sustainable Agriculture Working Group (SAWG). This group of organizations, among other things, takes policy positions on national agricultural and environmental issues. The question is an interesting one and deserves a reply.

From the time when PFI was begun nine years ago, our niche in Iowa agriculture has been to encourage profitable, environmentally sound farming methods. We use randomized, replicated plots to test alternatives and share that data plus personal experience at field days, at annual meetings, this newsletter, and other cooperative activities with ISU Extension.

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IN THIS ISSUE

It is tempting to move our organization into the area of trying to influence ag. policy. The majority of the PFI board of directors feels it would be better to stay focused on what has made us successful.

Our membership includes people who also belong to a wide range of other farm organizations. That diversity of views helps us evolve as an agricultural group that welcomes anyone who wants to improve the sustainability of her or his farm. Any policy position is bound to be divisive.

There is another point that needs to be made, a philosophical one. Virtually all policy discussions involve someone saying that someone else (she, he or they) should or shouldn't do whatever. This is a direct contradiction to the belief that the best people to make a decision are those on the farms or in the communities that will be affected by that decision.

We sometimes underestimate the power of example and of practicing what we preach. Many members are developing farming systems by putting together practices proven by our research plots. The resulting farming systems have dramatic profit potential compared to conventional corn and soybeans. We feel PFI serves best by helping people develop their farm and communities.

Two groups, The Center for Rural Affairs and the Iowa Natural Heritage Foundation, have told us they would welcome PFI members who want to work with their organization to be involved in farm policy through the Sustainable Ag. Working Group. PFI members will be receiving a mailing from the Center for Rural Affairs introducing that organization and its newsletter. The work of two other organizations, the National Catholic Rural Life Conference, and the Iowa Farm Unity Coalition, also includes legislative issues, both in Iowa and nationally. The addresses of these groups follows.

Center for Rural Affairs
Box 405
Walthill, NE 68067
(402) 846-5428

Iowa Natural Heritage Foundation
444 Insurance Exchange Building
505 Fifth Ave.
Des Moines, IA 50309-2321
(515) 288-1846

National Catholic Rural Life Conference
4625 Beaver Ave.
Des Moines, IA 50310-2199
(515) 270-2634

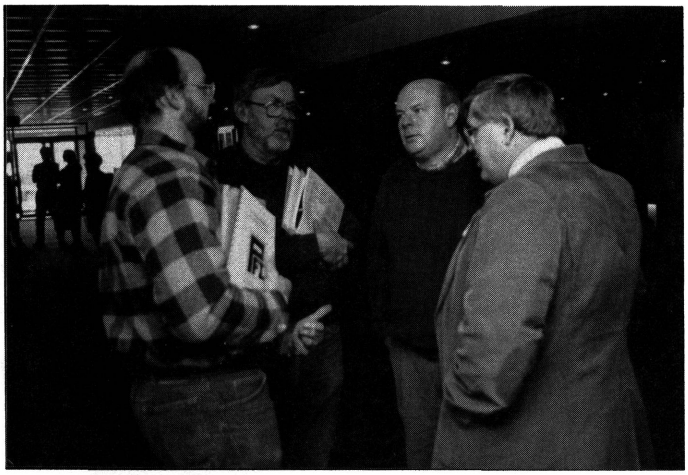
Iowa Farm Unity Coalition
550 11th St., #200
Des Moines, IA 50309
(515) 244-5671

MARTY STRANGE TALKS ABOUT RURAL COMMUNITIES

Osh Andersen, Rhinelander, WI

Small communities are not going broke as fast as the economists say they should because of "the economies of community: honesty, neighborliness, trust, mutual confidence and integrity," said Marty Strange. He spoke on *Plateglass or Plywood: Alternative Futures for Small Town Main Streets* at the annual membership meeting of Practical Farmers of Iowa, in Ames, on January 6th. Strange is the program director of the Center for Rural Affairs, in Walthill, Nebraska (population 750). He co-founded the Center in 1973 with Don Ralston. The Center is involved in issues of sustainable agriculture, rural economic development, federal farm programs, tax policy, and the environmental impacts of contemporary farming practices.

Using the economies of community as a principle for doing business is better than convenience, Marty said. "Convenience" is a code word for business opportunities that have been created, when really it's mitigating a miserable lifestyle where people don't have the economies of community. Marty Strange asked us to think about the issue of "convenience" by using the example of how he gets cash in Walthill after



Dan Specht makes a point to Marty Strange (second from right), as Dwight Ault and Paul Lasley listen.

banking hours without an automated teller card. He stops in to the bar and buys a 50-cent beer, paying for it with a check of $100. In return, he receives a report on the local news, sports (how the local football teams did last Friday), and weather (prediction for tomorrow's winter storm watch) from his neighbors there – and $99.50 in change.

Marty related how U.S. agricultural policies have acted to produce more crop but fewer people in rural areas. The trend has been for increases in the amount of money in farm programs, while the money in most farmers' pockets has been reduced. Forty percent of the income in rural areas is "unearned income" in the form of farm payments, rent income, and other mostly passive investments. Two-thirds of farm program benefits go to the top 5-10 percent of farmers with the highest net incomes. The effects of these inequities are seen in Marty's Walthill community and all over the rural Midwest. Small towns have fewer retail establishments, and the Main Streets have become "warehouse districts," with wholesale marketing businesses that deal in commodities, rather than with processing or people.

An alternative is to increase the number of people on the land and the money in their pockets through "low-input" agriculture, said Strange. This type of farming is actually high-input agriculture, he explained, because new business opportunities oriented towards sustainable agriculture create opportunities for people off the farm as well. Marty brought with him stories of how people have successfully created these opportunities for themselves. He told of a small business that

MEMBER REMINDER!!
If your PFI membership is not current, THIS IS YOUR LAST NEWSLETTER.

shreds and bales newspapers as livestock bedding and of low-cost applications of solar technology for solar grain dryers and for pre-heating water for dairy operations. These examples illustrate the principle, "It's better to think about creative solutions to problems than to think that every solution is going to come out of a barrel of oil," he said.

Marty Strange concluded by describing how the Center has been organizing revolving-loan credit groups for small businesses and farmers. This micro-enterprise strategy is modeled after self-help programs in Third World countries such as Bangladesh. Before the Center will come in with matching funds, the local communities meet and decide how to raise their own money. Meetings are held for people to make their payments and, most importantly, to give and receive support and help from their neighbors. The Center has assisted with 120 loans, and there is a waiting list of more communities.

For the people in Walthill, Nebraska or Ida Grove, Iowa, the economies of community are really based on the ways we look at convenience and efficiency. Rather than relying on a bigger, more technology-based agriculture, communities can and are finding better ways to farm and live in rural areas by living more cooperatively and relying on the intelligent and careful nurturing of local resources. ❦

WORKSHOP REPORTS

There's no substitute for actually being there, but here is a brief rundown of the main features of the winter workshops. Thanks to the session moderators and note-takers!

(Continued on next page.)

Woody Agriculture: The Hazelnut Story

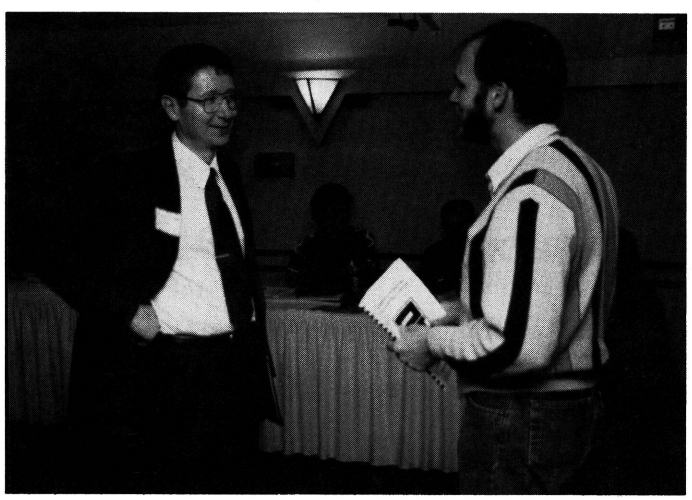
The room was full! Phil Rutters, of Badgersett Research Farm discussed why an agriculture based on woody plants is important. He needed more time. There were lots of good slides.

Management-Intensive Grazing (two sessions)

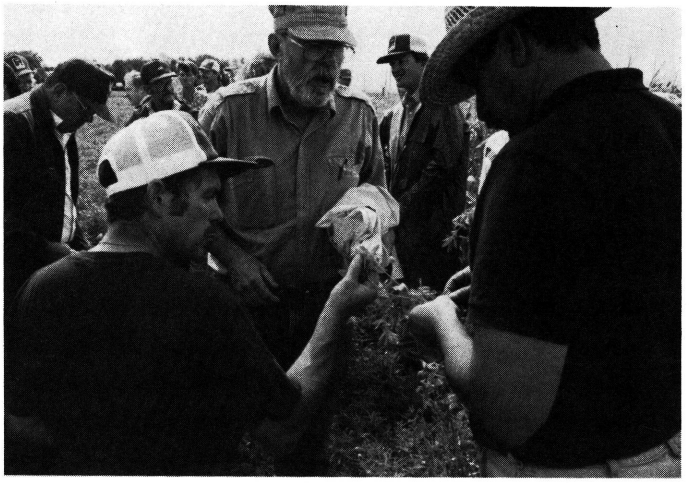
Because of sick cooperators and the weather, there weren't a lot of cooperators available to present, but the attendance was good. There was interest in the data from Steve Hopkins and Sarah Andreasen, even though they weren't able to attend. Tom Frantzen explained his grazing notebook records of grazing cells and timing. He explained that clear goals are the first step to any successful farming. John Cowles showed his paddock layouts. There was discussion of what grass/legume mixture he should use. In one session, there were a lot of questions, in the other one, people held back on questions because of the time limits.

Narrow Strip Intercropping

Moderator Tom Frantzen carefully allocated scarce time among himself, Doug Alert, Paul Mugge, and ISU researchers Rick Cruse and Mo Ghaffarzadeh.



Rick Cruse, recipient of the PFI Sustainable Agricultural Achievement Award, chats with Warren Varley after the workshop on narrow strip intercropping.



"Mo" Ghaffarzadeh examines berseem clover with Mike Reicherts and Dwight Ault at a field day.

Spirituality in Agriculture - Sharing Experiences from 1993

Forty-five farmers and agriculturalists shared thoughts and experiences from the 1993 growing season during the "Spirituality and Agriculture" workshop. The discussion was led by Carmen Lampe, an American Baptist minister from Mt. Ayr, and Father Richard Ament; who serves three parishes in Central City, Prairieburg, and Coggin. Participants shared spiritually significant experiences from rain-soaked 1993. We constructed life-experience wheels on paper, noting important events in our lives and farming careers. Our task was to include events from before and including 1993, and to project what we envision for the future. Using this tool helped us to view life as a cyclical process and to place this trying year in perspective of an entire life. Although in much of Iowa we experienced the most rain and worst flooding of this this century, life and love and farming will continue. The session concluded with a prayer to north, south, east and west from Native American tradition.

Costa Rica: A Farm Visit in Slides

Costa Rica, like many developing countries, is promoting agricultural exports to help pay loans from the developed nations, said Dan Brouse and Shelly Gradwell. Unfortunately, this is often done in ways that harm the natural resource base (damage to the coral reef by agricultural runoff) and/or decrease the economic independence of farmers (plantation agriculture). But for 20 years, the country has made available

small business loans and development loans that some communities have used to "reinvent"their agricultural economies. Several such communities now welcome visitors to see how nature and farmers can coexist in the tropics.

The workshop was attended by about 20 people, a number of whom want to establish some sort of farmer-to-farmer link with these communities. Not enough people were ready to make a visit themselves for a PFI trip to take place this winter, but this might develop at a later date.

Nitrogen and Manure Management

PFI cooperators presented results of N rate trials and manure trials, and Fred Blackmer reported on ISU nitrogen research in 1993. He has been focusing on using the late spring soil nitrate test in manured soils. None of those fields, whether the manure application was recent or not, showed corn stalks deficient in nitrogen at the end of the growing season. So far there is no evidence that these fields require a different critical level on the late spring test than corn fields without a history of manure.

Weed Management, Tillage, & Cover Crops

Obviously, 1993 was not a good year for weed control by any manner or means, but reduced-chemical approaches were not the disaster some might have expected. Todd Hartsock has progressed in his ridge-tilling system from broadcast herbicides to banding to no herbicides, and he is now growing organically. Ridge-till and the rotary hoe are the secrets to his success in a corn-soybeans-oats-meadow rotation. On the other hand, Dick Thompson's rotary hoeing had little effect in a trial in which all weed numbers were low.

Dick Thompson showed data from trials and described a field of soybeans that was planted in two sessions ten days apart. There were hard, driving rains after the first beans were planted, and this gave rise to a bumper crop of broadleafed weeds. The soybeans planted later received no such rain immediately after planting, so the soil stayed looser. This part of the field was virtually without broadleafed weeds. Even without the factor of rain, later planting allows more weeds to germinate and be eliminated at planting.

Animated discussions accompanied the noon meal at the annual PFI meeting.

With such late planting, Thompson said, you can leave the rotary hoe in the shed.

Ron Rosmann described their weed management trial comparing a variety of approaches. There were no significant differences in yield or weed numbers. Ron recounted the evolution of his farming methods, which are leading him to a ridge-till-organic system.

Doyle Wilson described the long-term weed management comparison he and his brother Lowell have carried out. They believe they are seeing an increase in weed pressure where they have used less/no herbicides, but they have not seen statistically significant differences in crop yield. The appropriate, low-cost method of management depends on the conditions in a given year.

The workshop also provided a good discussion on topics ranging from cultivator modification and adjustment to contract production of herbicide-free crops. Audience participation really helped make the workshop valuable.

Structuring for Financial Stability

Vic Madsen and Roger Schlitter presented their information in outline form.

Vic Madsen:

1) Live within means

2) Farm within means

(continued on page 6)

3) Income from three or more enterprises, not more than 50% from any one

4) Farming systems that use nature's strengths vs. dominating nature

5) As little bulk, generic production as possible

6) At least one niche-type, specialty market

7) Balanced borrowing

Roger Schlitter: Five basic credit factors

1) Character – to manage the enterprise being financed

2) Capacity – to reasonably insure repayment

3) Capital – to reasonable support capacity and collateral

4) Collateral – to reasonably protect the lender

5) Conditions – established in a written contract

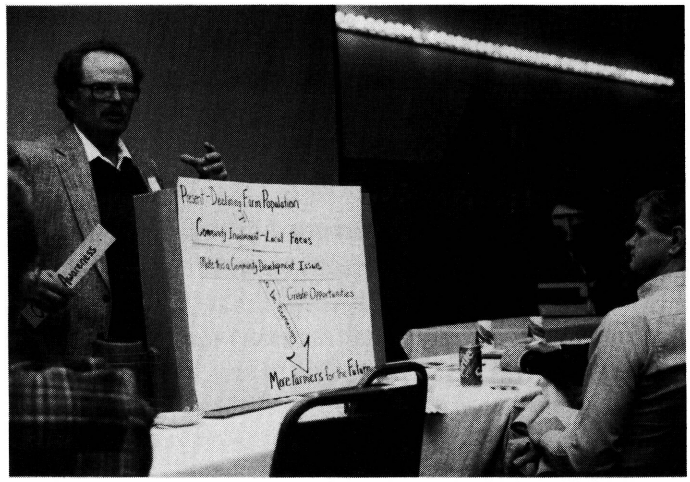
Getting Started in Farming

John Gilbert is part of a group that wants to help get new farmers started. He believes the need for a new generation of farmers is a local community development issue demanding a local solution. His group will encourage new farmers to use practices that generate income, not debt. There are many questions to be worked out, such as the appropriate level of equity. However, the group is already coming up with creative approaches, such as the "board of uncles" for mentoring.

John Baker, of the ISU Extension Farm-On program, said farmers need to acquire assets at the right point in their farming careers: 1) livestock, 2) machinery, 3) facilities, and 4) land, in that order. He said retiring farmers lose nearly half the value of their equipment in the taxes levied on a farm sale. They could instead lease the equipment to a new farmer until it depreciated, saving themselves money and helping a young person get started at reasonable cost.

Proposal Writing for FARMERS

You don't need to be a professional grant writer to get a grant under the SARE producer grant program or PFI Sustainable Projects. On the other hand, you won't get funding just because you need it. You will get the grant because: 1) the funder likes the project;



PFI member John Gilbert described the beginning farmer initiative he and neighbors are forming under the Shared Visions project.

2) you and/or your organization has a reputation for competence; 3) your project will make the funder look good or allow it to achieve its own goals; and 4) you can show that your research will benefit your occupation or your community. Some funders are now placing more emphasis on "quality of life" issues. Tailor your proposal to the issues important to the funder.

Defining the problem is key to creating a compelling proposal. Look for input from other individuals before the project is finalized. Type the proposal if possible, black print on white paper (copies better). Go back over the guidelines and check that you have met all the requirements of the funder (such as number of copies).

Marketing Organic and Crops Grown Without Pesticides

We had three guest speakers for the session. The first one was Greg Welsh, who is an Organic Agriculture Field Specialist with Iowa State University. Greg is involved in 29 eastern counties and works with crop and livestock producers who are interested in organic production or becoming organic. Some key points of Greg's presentation are that he is anxious to help anyone who is either considering organic farming or is practicing organic farming and that organic farming can work for both large and small farmers. With organic farming, farmers have more input as to what the sale price will be for their product. An organic farm typically is a diversified farm with both livestock and crops.

Ken Rosmann is an organic farmer from west central Iowa, farming 500 row crop acres plus a cow calf operation. Ken is president of the Heartland Organic Marketing Coop. Demand for organic products is on the increase because of consumer quality preferences and also for health reasons, said Rosmann. Organic farming requires more management and records because the product has a trail from producer to consumer. Ten years ago soybeans were the only organic product marketed, but today there is a demand for a wide variety of commodities. The greatest demand is for a clear hilum soybean that can be used for human food. The Heartland Organic Marketing Coop is a group of small growers who came together to pool products, allowing them to offer greater variety and volume of products to consumers

SHARED VISIONS

farming for better communities

Tim Jensen, manager of food grade soybean production at the Specialty Plant Product Division of Pioneer Hi-Bred International. It's his third year in the Better Life Program, which deals in pesticide-free grains. His goal is to find and work with producers as well as find new markets for soybeans. Pioneer is testing many new soybean varieties to fit consumer preferences. They do work with people who are in the transition stage to become an organic farmer. It's estimated that the average grower will make an extra $61 dollars an acre over a standard soybean grower. Pioneer is trying to open more markets for corn as well.

Shared Visions

This project, funded by the W.K. Kellogg Foundation, is a collaboration of Practical Farmers of Iowa, ISU Extension, and the Leopold Center for Sustainable Agriculture. The same kind of cooperation will be necessary at the local level, as participants build their communities through agriculture-related projects. Local groups will develop their own shared vision, identify goals, identify strategies toward those goals, choose a specific project, and make it a reality. Six community groups will be started in each of the next three years. They will be selected for their diversity, commitment, sense of shared responsibility, collaboration, and geographical location. Models that have contributed to the Shared Visions approach include Extension's *Tomorrow's Leaders Today* (TLT), and the Farm Improvement Clubs of Montana's Alternative Energy Resources Organization (AERO). ❦

SARE PRODUCER GRANTS GUIDELINES RELEASED

Grants of up to $5,000 are available to farmers to study sustainable agriculture production and marketing methods in the upper Midwest. Up to $100,000 will be granted to farmers in the 12-state area, according to the North Central Region of the USDA Sustainable Agriculture Research and Education program (SARE). The information from the SARE office states "During the first two years of the program, 56 grants were awarded to producers studying a variety of projects ranging from rotational grazing and grass mixtures to biological weed and pest control, low-input crop production, nutrient management, composting of manure, use of post-CRP land, and production and marketing of sweet sorghum syrup. Grants have been used to conduct on-farm research trials, sponsor educational programs and field days, and develop new technologies and equipment modifications."

Proposals are due at the SARE office by May 1. You'll be preoccupied with planting by then, so act now. Applications, budget forms, and guidelines can be obtained by contacting:
Producer Grant Program
NCR SARE Office
13A Activities Building
University of Nebraska
Lincoln, NE 68583-0840
phone: (402) 472-7081

Applications will be reviewed by the NCR SARE Administrative Council, which consists of producers, researchers, educators, and representatives of non-profit organizations and government agencies. In 1993, three PFI members obtained producer grants from the SARE program. The competition this year is

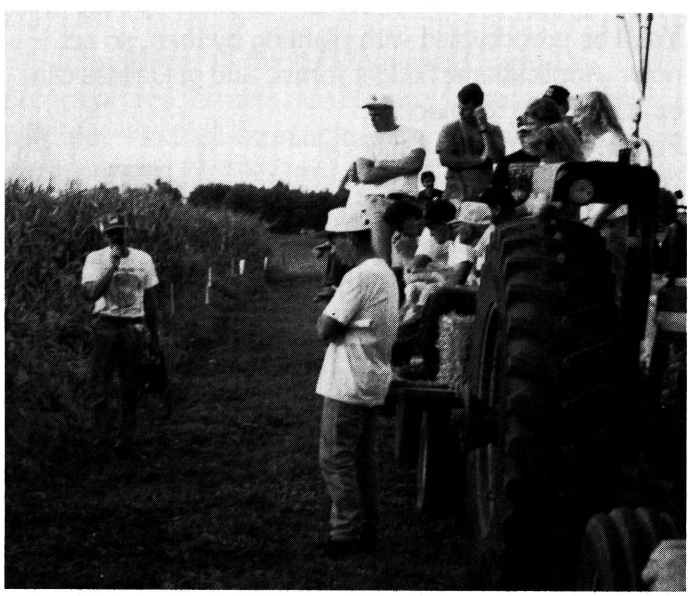
(Continued on next page.)

likely to be strong, as more farmers find out about the grants. At the PFI winter meeting, SARE grant recipient Ron Rosmann organized a special workshop (page 6) on grant writing to give interested members the edge in writing their own project proposal.

OPPORTUNITIES FOR CONTRACTING SOYBEANS

At least three Iowa companies are now contracting with Iowa farmers for identity-preserved soybeans of one kind or another. These programs carry premiums that are sometimes significant.

West Central Co-op has both an organic and a non-organic specialty category. They are seeking about 2,000 acres of organic, light hilum, food grade soybeans. They are signing contracts with growers for a minimum of 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. Besides the organic program, West Central is also buying several varieties of light hilum soybeans, contracting for $0.25 per bushel of food grade beans delivered to Jefferson. For more information, call Larry Tomsen or Bill Doubler at (800) 522-1946.

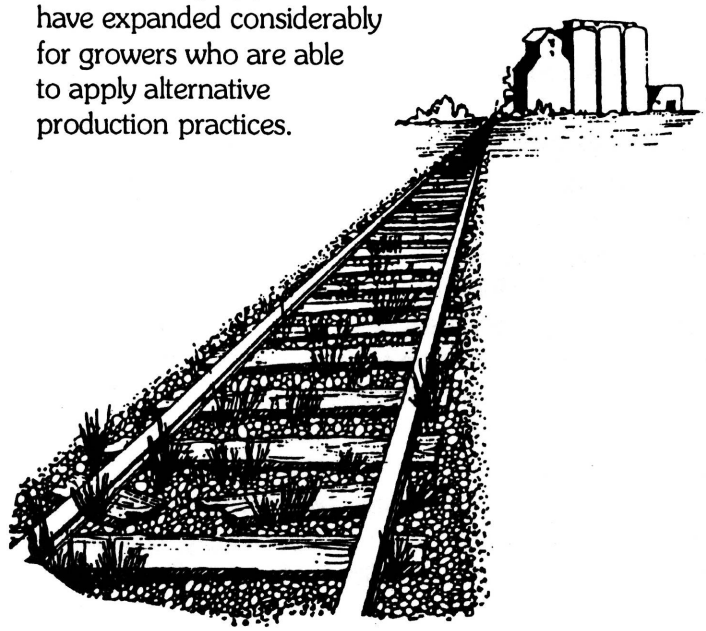


At the field day Ron Rosmann described the weed study carried out under a SARE Producer Grant.

Strayer Seed Farms, in Hudson, has contracted for specialty soybeans for a number of years. They apply 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. For information, contact Dennis Strayer, at (800) 728-4187.

Pioneer Hi-Bred International is continuing its Better Life program for soybeans grown without pesticides (synthetic fertilizers are permitted). Their primary 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). They may also offer a $2.50 premium to producers in southeast Iowa who want to grow LS301. For additional information, contact Better Life at Pioneer Specialty Plant Products, 800-356-0393.

Marketing opportunities have expanded considerably for growers who are able to apply alternative production practices.



It is difficult to know where the market will develop. Strayer and West Central seem to view no-pesticide soybeans as a short-term category. The demand is presently from Japan - and for certified, organic beans. One also senses some nervousness that this consumer preference may be a passing fad in that country. Many people believe, nevertheless, that identity-preserved grains represent a general trend in the industry. Iowa soybean producers should compare these options and similar ones and decide if they are in a position to grow for those premiums this year.

PFI PROFILES: KATHY AND MIKE WALTER, ANDREA AND JASON

Margaret Smith

Kathy Walter lives with her husband and 2 teenagers, Andrea and Jason, west of Tipton in the hills of the Cedar River valley. Although she and her husband Mike work together on their 240 acre farm, Kathy takes the major responsibility for the farming operations. Mike is also in business doing painting and drywalling.

Kathy thinks that she's probably always been a farmer at heart, but didn't start farming until about 5 years after graduating from high school. She attended college for a few years in Indiana, where part of the curriculum was to study and do service in another country. Kathy lived with a Honduran family and worked in an orphanage over a four month period. That experience, she says, "has had a long-term effect on me. At the time it made me less sure of myself - seeing other people's hunger and poverty made me wonder what I was doing with my life."

After returning to the U.S., Kathy and Mike were married and began working full-time in two different mobile home factories in northern Indiana. "We had no money and didn't know much, but we did know that we didn't really want to work for someone else," she admits. Early in their marriage, Kathy and Mike supplemented their income and savings by hunting and trapping together. They knew that they wanted a place of their own, and even considered buying land in Australia before returning to Iowa in 1973 and buying 25 acres that had originally been part of Mike's parents' farm.

They have always worked together on the farm and early-on assumed fairly traditional decision-making roles. As Kathy's interests developed, though, she gradually took more responsibilities of the farming operation. She does land preparation for planting and fertilizer application, then she and Mike share planting chores. Kathy and a neighbor work together on combining and hauling grain.

Currently, of the 240 acres they farm, Kathy and Mike own 120 acres and are buying the other 120. They raise corn, soybeans, oats, alfalfa, and have 13 acres of permanent pasture and 12 acres of timber. They have a 70 ewe flock on their farm, from which they feed and market lambs and sell wool. In addition, they have 50 ewes managed by another farmer on shares. Kathy has also been experimenting with raising hogs. She has been able to buy small feeder pigs from a neighbor, which in his larger operation did not grow well due to competition. By grouping them with like-sized animals, they have thrived. She also farrowed a few sows this winter and would like to expand this enterprise, but "not in the winter again with our current facilities!" She is also feeding a few calves on shares with another neighbor, exploring the possibility of adding another complementary enterprise.

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Kathy hasn't been afraid to try a new or unconventional enterprise and has also worked part-time at a number of jobs to help achieve their family's goals. Her "moonlighting" has included coaching basketball at Mt. Vernon, serving as a nurse's aid, reading meters for R.E.C., and working for other farmers doing both construction and demolition of buildings. From 1980 until 1990 the family raised potatoes, blueberries, red raspberries, blackberries, honey, sweet corn, melons, and cut flowers and sold them at farmer's markets.

During these years, Andrea and Jason contributed by picking berries and corn, washing potatoes, and helping sell the produce. Clearly, these crops were labor intensive. Weighing the labor requirements and the fact that more people were entering the market, increasing competition, they decided to discontinue these enterprises.

Andrea, 17, is a senior at Tipton and "has tried everything," her mother says. She has played basketball and volleyball, throws the discus in track and is swimming this year. She plays the flute and piccolo in band and is a member of the Academic Decathlon team. Andrea will be attending college next year and plans to major in engineering. Jason, 15, is in 9th grade and also participates in track. He plays the string bass too, but his major interest seems to be in computers and electronics. Kathy says, "He's always trying to hook something up to something else!"

Mike still enjoys hunting and fishing and often travels west to hunt elk in the fall. Kathy has been a member of PFI since its early years and is also a member of the Iowa Corn Grower's, Tipton High School Athletic Boosters, and the National Organization for Women (NOW). "It's been rewarding to interact with soo many good thinkers in PFI – I always come home from the annual meeting with a head full of information and ideas," she says. With children growing, Kathy is hoping that she may have more time in the future to pursue some of her interests in addition to the farm. It's clear that she likes learning new things, and she also enjoys meeting new people. She is becoming more interested in politics, especially issues related to farming and agriculture and would like to participate more on the local level.

At this stage of their family's growth it is often hard to find a time when everyone is home. Kathy senses that, "Sunday morning may be the only time of the week we're all going in the same direction at the same time," when they attend the First Mennonite Church, in Iowa City. She feels that life is a continual challenge, which requires exploring her beliefs spiritually, politically and socially. "Nothing seems to or can stay the same. I have to continue growing," she concludes. ❦

ON FARM SWEET SORGHUM PRODUCTION FOR ENERGY

Emily Hunter

This project began as a proposal from PFI to the Iowa Energy Center to evaluate sweet sorghum for biomass using sustainable agricultural practices. Substituting crop rotation for nitrogen fertilizer and using narrow strip intercropping, we would see whether it is possible to really get more energy out of a crop than was put in growing it. The proposal was rejected, but we continued with a scaled-back demonstration, working with Jeff and Gayle Olson, near Winfield.

As a graduate student in agronomy, I was interested in on-farm production of sweet sorghum (my research crop). We planted a strip of M81E – a late-maturing variety – on June 18, and things looked pretty good. Needless to say, the events of the rest of the summer kept us from working on the sorghum as we would have wished, but we still have some results.

My research has involved: 1) evaluating sweet sorghum varieties for sugar production, and 2) testing several growth regulators for increasing sugar yields and decreasing lodging in these very tall varieties. From the sugar yields and small fermentation trials we can consider the viability of sweet sorghum as an on-farm source of ethanol. The narrow strip intercropping system would work well in this type of production. Our thinking was that the growth regulators could easily be applied to the late stage sorghum from the small grain strip after the grain had been harvested. Sweet sorghum is also an additional option in diversifying a crop rotation. Weather prevented us from making any growth regulator applications, but we can make some projections about ethanol production from sweet sorghum grown in a narrow strip.

We found significant differences among rows in percent dry matter content, dry matter production, total sugar production, and plant height (Table 1). Rows one and six were bordered by soybeans and spring wheat/berseem clover, respectively. The table shows yields for variety M81E in the Olson trial and at the experiment station in Ames. The lower yields at the Olson farm are most likely attributable to the immaturity of the crop. The heads were just emerging at harvest. In mature sorghum plants, the predomi-

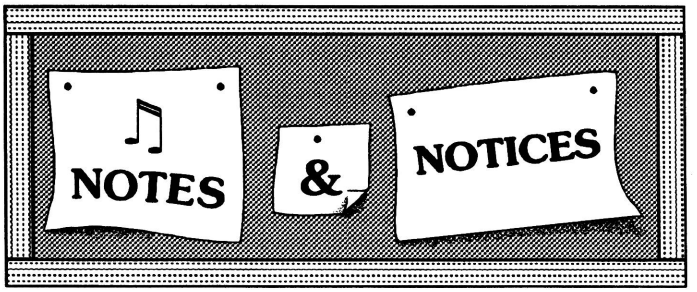
Table 1. Yield characteristics, by row, of sweet sorghum grown in a narrow strip.

Row	Dry Matter (percent)	Dry Matter (tons/acre)	Sugar (tons/acre)	Plant Height (ft)	Ethanol (gal/acre)	Gross Gain (gal diesel/acre)
1 (West)	31.4 a*	7.6 a	1.8 a	8.9 c	292	259
2	29.0 ab	7.7 a	1.9 a	9.9 a	306	273
3	26.6 bc	7.4 a	1.6 a	10.0 a	256	223
4	26.7 bc	7.2 a	1.6 a	10.1 a	249	216
5	27.2 bc	7.9 a	1.5 a	9.9 a	242	209
6 (East)	25.4 c	3.8 b	0.6 b	9.2 b	99.6	67
Avg.	27.7	6.9	1.5	9.7	241	208
* Means in column with same letter are not significantly different.						
Ames						
1993		8.5				
1992		10.3		4.5		
1991		8.9		3.6		

nant sugar is sucrose, but these plants contained more simple sugars. Maximum sugar yields are usually associated with onset of the grain filling period. The lack of solar radiation, cooler temperatures, above normal precipitation, and a pre-harvest frost also contributed to the yield depression. The significantly lower yield in row 6 may be due to the plants being less mature and stunted due to competition.

Ethanol potentials were calculated based on the total sugar produced (Table 1). These values correspond to an estimate of 276 gallons/acre for a corn crop averaging 110 bu/acre. Calculated ethanol yields from our Ames plots have ranged from 427- 996 gal/acre. When considering energy production from crops, we must also consider crop inputs, particularly nitrogen. The nitrogen requirement of sweet sorghum does not exceed 100 pounds/acre; this crop received just 18 pounds/acre N. The nitrogen energy costs for ethanol production from corn exceed those for sweet sorghum. One gallon of diesel fuel contains the energy equivalent of about 4.1 pounds of nitrogen fertilizer. And unlike corn starch, sorghum sap does not require mashing prior to fermentation. Sweet sorghum also has other beneficial characteristics: high water use efficiency, high radiation use efficiency, adaptability to a wide range of locations, and an easily fermented form of carbohydrate, sugar. The energy gained in the production of this crop can be seen in the last column of Table 1. It is the difference between the fermentable energy produced by the crop and the energy used to grow the crop. It does not take into account the energy that would be required to process the crop for fermentation, carry out the fermentation, or separate the alcohol from the water to make a combustible product. It also ignores the energy required to manufacture the farming equipment in the first place.

Ultimately, ethanol could be produced be acidifying and ensiling the chopped forage in a trench silo. Throughout the year, silage would be taken from the trench and heated to flash off the alcohol. Utilizing the heat from burning the pressed stalks, a crude distillation could than be done on the farm in order to reduce the amount of liquid to be transported to a central facility to be made combustion-ready. This is one of several scenarios being considered by researchers looking at the issue of local biofuel production.



Northeast Iowa Grazing Conference

The Northeast Iowa Grazing Conference will be held Monday, February 28, from 12:30 to 4:30, in the Wilder Bldg., at Northeast Iowa Community College, in Calmar. The keynote address will be "There to Here: Seven Years' Experience with Rotational Grazing," by Carl Pulvermacher, farmer from Lone Rock, Wisconsin. His talk will touch on March calving, breeding techniques, and grass-based dairying. Workshops will also be offered, including Fencing Materials for Grazing, Economics of Grazing Dairy, Management-Intensive Grazing Basics for Beef, and Hog Grazing and Pasture Farrowing.

To register, mail $10, payable to NICC, to Connie Hvitved, Northeast Iowa Community College, Box 400, Calmar, Iowa, 52132, or call 1 (800) 728-2256. For additional conference information call Steve Hopkins, (319) 382-9640, evenings.

New Jobs for PFI Members and Associates

As everyone knows by now, Decorah dairy farmer Paul Johnson has assumed the reins at the U.S. soil Conservation Service. Johnson, a member of Practical Farmers of Iowa since 1990, was the featured speaker at a previous annual membership meeting.

Karl Stauber has left the Northwest Area Foundation to become Deputy Undersecretary for Rural Development, in the USDA. PFI board and staff have worked with Stauber for nearly five years on a study of the agricultural, social, and economic impacts of sustainable agriculture. Stauber's sustainable agriculture work at the Northwest Area Foundation will be taken up by Marty Strange, program director at the Center for Rural Affairs, who has joined the foundation as a senior consultant. Strange, who addressed the PFI annual meeting last January, will also continue at the Center for Rural Affairs.

Talks on Tape

Marty Strange's talk at the PFI winter meeting was videotaped and captured on audio tape as well. Tapes may be borrowed by contacting Rick Exner or Gary Huber, at (515) 294-1923. Grazing expert Joel Salatin's Iowa City talk and the farmer panel discussion were captured on video by Jeff Olson, PFI southeast director. He may be reached at (319) 257-6967.

Harmony with the Lakota

Learning Harmony with the Lakota: Unlearning the Disharmony of Racism is the title of an event to be held in June by Nonviolent Alternatives. This program, which will travel among several South Dakota reservations and the Black Hills, "invites persons from many different cultures to experience together the contribution Lakota culture makes to a harmonious world view and whole earth ethic." Nonviolent Alternatives describes itself as a resource and activity center for exploration and experimentation with alternatives to violence. It is coordinated by Carl Kline, who is a UCC minister, and Chris Klug, a certified trainer for the Children's Creative Response to Violence program, the Alternatives to Violence Project, and peer mediation. Cost of the Lakota program is $900 plus round trip air fare. Contact Carl Kline, Nonviolent Alternatives, 825 4th St., Brookings, SD, 57006, or call 605-692-8465.

Farmers for the Next Century Conference to Help Beginning Farmers

March 4-5, in Omaha, the Center for Rural Affairs and Successful Farming Magazine are co-sponsoring an event to bring together young, prospective farmers with landlords and farmers planning for retirement and willing to lend a helping hand. Sessions will be both inspirational and informational, covering financial planning for beginning farmers, low-cost farming strategies, estate planning, and lender expectations. Advance registration is $20 per person, $25 per couple. For details call Successful Farming at (800) 678-5755.

PFI ON-FARM TRIAL RESULTS, 1993

READING THE NUMBERS, KNOWING THE TERMS

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 intended 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, 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.

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 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 1993 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 1993 fall prices of $2.57 per bushel for corn, $6.21 for soybeans, $1.56 per bushel for oats, $3.00 per bale for straw in small square bales, and $55 per ton for clover hay in large bales. Labor was charged at $7.00 per hour.

Some tables show both a " *treatment cost*" (which includes relevant costs, but not the total cost of produc-

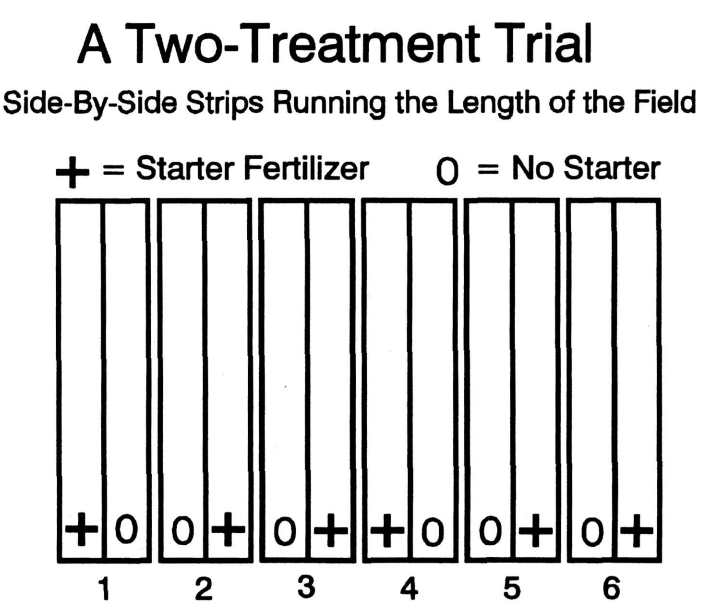


Figure 1. A typical PFI trial design.

Table 2.
TWO-TREATMENT NITROGEN RATE TRIALS IN CORN

	LOW RATE TRT			HIGH RATE TRT					RECOM-MENDED	
COOPER-ATOR	YIELD (bu)	N RATE (lbs N)	STALK NITRATE N (PPM)	YIELD (bu)	N RATE (lbs N)	STALK NITRATE N (PPM)	RATE DIFF.	SPRING SOIL NITRATE TEST (PPM N)	LOW RATE	HIGH RATE
(AFTER SOYBEAN)										
BAUER	97.4	93	380	100.9	141	2,560	48	--	--	--
WILSON	93.5	10	--	95.8	90	--	80	--	--	--
AVERAGE	95.4	52		98.3	116		64			

tion) and "*treatment benefit.*" The treatment benefit is the *relative* advantage of a practice compared to the least profitable treatment in that trial, which is 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 informational purposes.

NITROGEN

Nitrogen rate trials, always the mainstay of PFI on-farm research, were more severely affected by the rainy weather of 1993 than any other kind of experiment. In both 1991 and 1992, cooperators carried out nine replicated trials of N rates in corn. In 1993 the number dropped to two. The rain kept cultivators out of the field, so it was not possible to sidedress different rates of N. If the cultivator or other nitrogen applicator was eventually used, the corn crop was past

TWO-TREATMENT NITROGEN RATE TRIALS IN CORN

SIDEDRESSED

LOW RATE	HIGH RATE	TEST RATE	YIELD DIFF.	YLD SIG.	YLD LSD	LOW RATE $ BENEFIT	GAL DIESEL EQUI-VALENT SAVED	COMMENT
48	96	--	-3.5	*	3.1	$1.71	11.4	NO YIELD DIFFERENCE IN REPS AT LOW END OF FIELD. LOW RATE MORE PROFITABLE DESPITE LOWER YIELD.
0	80	--	-2.3	N.S.	11.8	$8.30	19.1	
						$5.00	15.3	

the 6-12-inch stage at which the late spring soil nitrate test could be taken.

1993 was not a year for precision applications. Many producers applied what they could, when they could. Those who did not have to rely on sidedressing to supply all of the crop's nitrogen were in a better position. Yellow corn plants reflected not just nitrogen stress but multiple environmental assaults. By mid-summer, it was evident that sidedressing could hardly be justified in some fields.

Ironically, 1993 was also the year a revised ISU bulletin for the late spring test was released (Pm-1521). PFI members received this bulletin "hot off the press" with the spring newsletter. Figure 2 shows graphically the new guidelines. Instead of a recommendation range, producers now have a simpler, one-number recommendation. The notable change is the separate guidelines for corn following one or two years after a stand of alfalfa that was established two or more years. For these fields, the critical range comes down to 10-15 parts-per-million (ppm) nitrate-N (See Figure 2).

Perhaps surprisingly, the two trials on record do not argue for high nitrogen rates. In both, the lower rate was the more profitable (Table 2). This was true even in Ted and Donna Bauer's trial, in which yield was significantly higher (3.5 bushels) at the higher N rate. That yield increase did not justify the cost of the additional 32-percent nitrogen solution.

NITROGEN SIDEDRESS RECOMMENDATIONS

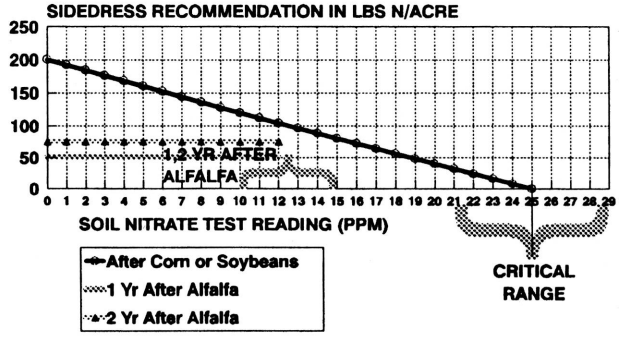


Figure 2. Sidedress recommendations for the late spring soil nitrate test.

MANURE TRIALS

In 1993, two cooperators continued manure trials begun in previous years (Table 3). Vic and Cindy Madsen, Audubon, want to demonstrate that livestock manure is an asset to the farm operation, not a liability. Their manured field strips averaged 21.4 bushels per acre more corn than strips with no fertilizer input, easily justifying the cost of proper application.

Dick and Mary Jane Svoboda, Aurora, compared manure to 28-percent nitrogen solution. The corn sidedressed with manure yielded just as well as the corn receiving 28-percent N. Economically, it was cheaper to use purchased N – until the other manure nutrients are also taken into account. Those other nutrients are needed on the farm, too. In dry years, for example, some of the Svobodas' corn fields have shown potassium deficiency symptoms. And economics for manure N–P–K don't reflect benefits like tilth improvement, micronutrients, and food for soil biota like earthworms.

STARTER AND FERTILIZER PLACEMENT TRIALS

In 1993, cooperators carried out trials to test *whether* starter fertilizers would work and *where* they would be most effectively placed. Three "with-and-without" trials were conducted by Jeff and Gayle Olson, Ray and Marj Stonecypher, and Dick and Sharon Thompson (Table 4.). All three found no yield increase with starters.

But wait. Three other trials examined starter rates or placement and *did* show a starter fertilizer benefit (Table 5). They also did *not* show that either the rate or placement was critical. Doug Alert, Hampton, compared: 1) no starter, 2) starter two inches below and two inches to the side of the seed, and 3) starter two inches directly below the seed. The last treatment was accomplished with the aid of a custom-made planter shoe. Both starter treatments yielded significantly more than the corn without starter fertilizer, but the yields of these two starter treatments were not significantly different from each other.

Harlan and Sharon Grau, Newell, deep-banded 12+30+100 pounds per acre at last cultivation of corn, comparing that to a broadcast of the same rate and to no fertilizer. Both sidedressing methods yielded significantly better than the zero-fertilizer check treatment. But there was no difference between the two kinds of placement.

Dick and Sharon Thompson, Boone, compared three rates of starter for corn and a zero-starter treatment. The starter fertilizer was applied with the same kind of deep bander used by Doug Alert. The low-rate 20+14+27 starter produced a greater yield than the check treatment and the same yield as the higher starter rates. Why did this trial show a starter effect while the other trial by the Thompsons showed none? Perhaps it was because the field had received only three dry tons of manure, plowed down in the spring, while the field where the trial showed no effect had six dry tons plowed down in the previous fall. Dick is wondering if nutrients from fall-incorporated manure are more available to the succeeding year's corn.

While these trials are interesting, it is important to remember they are only one year's data. Placement or rate effects may be different in a year with weather different from 1993. PFI cooperators will continue to experiment. Harlan Grau, for instance, has this fall banded fertilizer five inches deep into the ridges of next year's corn fields, hoping to achieve a starter effect.

OTHER FERTILIZER TRIALS

Two cooperators evaluated unconventional fertilizer materials in 1993, and a third PFI member carried out two trials under the *Sustainable Projects* program (Table 4). Jeff and Gayle Olson, Winfield, looked for a residual effect from the pell lime they banded in 1992. No effect was observed on last year's soybeans, and none was evident in 1993 either.

(Continued on page 24.)

Table 3. TRIALS USING MANURE, 1993

COOPERATOR		MADSEN	SVOBODA
PREVIOUS CROP		SOYBEANS	SOYBEANS
MANURE TREATMENT	TYPE	3,000 GAL AT PLANTING	2,000 GAL MANURE SIDEDRESSED
	N CONTENT (MANURE + FERTILIZER) (LBS)	165	55
	N AVAILABLE (LBS)	83	28
	LEAF N (%)	--	--
	YIELD (BU/ACRE)	86.1	113.7
	$ COST	$21.25	$18.41
PURCHASED INPUT TREATMENT	TYPE	NO N INPUTS	28% NITROGEN
	N RATE (LBS/ACRE)	0	30
	LEAF N (%)	--	--
	YIELD (BU/ACRE)	64.7	111.2
	$ COST	$0.00	$6.64
DIFFERENCE	RATE DIFF. (LBS N)	83	-3
	YIELD DIFF. (BU)	21.4	2.5
	YIELD SIGNIFICANCE	*	N.S.
	YIELD LSD (BU)	3.3	13.7
	LEAF N SIGNIF.	--	--
MANURE $ BENEFIT		$33.70	($11.77)
COMMENTS		TRIAL TO SHOW MANURE AS RESOURCE	NOT SHOWN IN BENEFITS: $13.77 IN MANURE P & K

Table 4. STARTER & OTHER FERTILITY TRIALS

COOPERATOR	CROP	TREATMENT "A"		TREATMENT "B"
		DESCRIPTION	YIELD (bu.)	DESCRIPTION
OLSON	CORN	+15+67+77 STARTER BANDED 2" x 2"	109.0	+15+67+77 STARTER SURFACE-BANDED
OLSON	SOYBEANS	+5+20+23 STARTER BANDED 2" x 2"	59.5	NO STARTER FERTILIZER
STONECYPHER	CORN	+1+6+6 BANDED AT PLANTING	67.4	NO STARTER FERTILIZER
THOMPSON	CORN	+20+14+27 STARTER 2" BELOW SEED	88.3	NO STARTER FERTILIZER
OLSON	CORN	PELL LIME BANDED IN 1992	93.7	NO PELL LIME
STONECYPHER	CORN	"ACHIEVE" BACTERIAL INOCULANT	60.6	NO INOCULANT
WURPTS	SOYBEANS	BIOLOGICAL FERTILIZER PROGRAM	30.9	ISU FERTILIZER RECOMMENDATION
WURPTS	CORN	BIOLOGICAL FERTILIZER PROGRAM	101.3	ISU FERTILIZER RECOMMENDATION

STARTER & OTHER FERTILITY TRIALS

TRT "B"	DIFFERENCE				
YIELD (bu.)	YIELD DIFF.	YLD LSD (bu.)	YLD SIG.	$ BENEFIT OF TRT "A"	COMMENT
108.4	0.6	9.7	N.S.	$0.00	2" x 2" BAND WITH YETTER DRY FERTILIZER COULTER & KNIFE
57.1	2.4	10.4	N.S.	($9.75)	
64.0	3.5	5.3	N.S.	($9.00)	
91.3	-3.0	4.8	N.S.	($13.86)	6 DRY TONS MANURE PLOWED UNDER PREVIOUS FALL IN BOTH TREATMENTS
105.8	-12.1	19.3	N.S.	$0.00	LIME COST ABSORBED IN 1992
62.9	-2.2	4.1	N.S.	($10.00)	INOCULANT APPLIED WITH STARTER FERTILIZER
31.1	-0.2	2.1	N.S.	($15.91)	BIOLOGICAL RECOMMENDATIONS MADE BY DEALER FOR AGRIENERGY
100.4	0.9	7.3	N.S.	($27.01)	BOTH TREATMENTS RECEIVED 120 LBS OF 28% NITROGEN

Table 5. MULTIPLE-TREATMENT TRIALS

				TREATMENT "A"				
COOPERATOR	CROP	PREVIOUS CROP	YIELD SIGNIFI-CANCE	DESCRIPTION	YIELD (bu. or T)	STAT.	TRT COSTS	$ BENEFIT
DORDT	CORN	CORN	N.S.	LAND O'LAKES 568 FOR SILAGE	5.4 T	a	$28.00	$0.00
DORDT	CORN	SOYBEANS	N.S.	LAND O'LAKES 568 FOR GRAIN	135.7	a	$28.00	$0.00
"								
ALERT	CORN	SOYBEANS	*	NO STARTER, (117 LBS N TOTAL)	71.5	b	$25.90	$0.00
GRAU	CORN	SOYBEANS	*	CHECK (NO ADDITIONAL FERTILIZER)	79.2	b	$0.00	$3.80
THOMPSON	CORN	SOYBEANS	*	NO PLANTER FERTILIZER BAND	56.9	b	$0.00	$0.00
"								
MUGGE	"THIRD CROP" IN STRIPS	SOYBEANS	--	BERSEEM CLOVER SEEDED WITH OATS	$218	--	--	--
THOMPSON	SOYBEANS	CORN	N.S.	NO COVER CROP	45.4	a	$0.00	$8.85
"	BROAD-LEAFED WEEDS:		*	BROADLEAFED WEEDS:	1,816	bc		
ROSMANN	CORN	SOYBEANS	N.S.	2 HOE, 2 CULTIVATIONS, 0 HERBICIDE	91.4	a	$10.99	$10.14
"				BROADLEAF RATING:	2.8	a		
"								
"								

MULTIPLE-TREATMENT 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
PIONEER 3394 FOR SILAGE	5.0 T	a	$28.00	$0.00	NK 6440 (WAXY) FOR SILAGE	5.2 T	a	$28.00	$0.00	PROTEIN AND TDN WERE ALSO SIMILAR
PIONEER 3417 FOR GRAIN	131.0	a	$28.00	$0.00	NK 4747 (WAXY) FOR GRAIN	125.1	a	$28.00	$0.00	
					LAND O'LAKES 522 FOR GRAIN	131.1	a	$28.00	$0.00	
STARTER 3" TO SIDE, (116 LBS N TOTAL)	80.6	a	$38.03	$12.24	STARTER 2" BELOW SEED (116 LBS N TOTAL)	81.4	a	$38.03	$12.24	CONTROL RECEIVED 10 LBS LESS N AT PLANTING
DEEP BANDED 12+30+100	87.2	a	$22.64	$0.00	BROADCAST 12+30+100	85.9	a	$22.64	$0.00	FERTILIZER APPLIED JULY 28 WITH NEW-MATICS DRY BANDER
20+14+27 APPLIED 2" BELOW SEED	70.6	a	$16.10	$18.94	26+17+35 APPLIED 2" BELOW SEED	66.1	a	$20.82	$14.21	HIGHER LEAF TISSUE P IN ZERO-STARTER
					34+23+46 APPLIED 2" BELOW SEED	74.9	a	$27.35	$7.68	
BERSEEM SEEDED INTO OATS	$177	--	--	--	OATS WITHOUT BERSEEM	$65	--	--	--	"YIELD" SHOWS GROSS VALUE OF GRAIN, STRAW, AND BERSEEM HAY
SPRING-SEEDED RYE COVER	46.3	a	$8.85	$0.00	FALL-SEEDED RYE COVER	46.7	a	$8.85	$0.00	
BROAD-LEAFED WEEDS:	2,465	a			BROAD-LEAFED WEEDS:	2,078	ab			
0 HOE, 2 CULT, 0 HERBICIDE	93.4	a	$6.25	$14.87	1 HOE, 2 CULT, DUAL	94.6	a	$15.04	$6.09	
BROADLEAF RATING:	3.3	a			BROADLEAF RATING:	2.8	a			
1 HOE, 2 CULT, BLADEX	94.8	a	$17.90	$3.22	0 HOE, 2 CULT, DUAL/BLADEX	92.8	a	$21.12	$0.00	
BROADLEAF RATING:	2.8	a			BROADLEAF RATING:	2.9	a			

Note: In the PFI annual meeting program, two weed numbers were reversed in Dick and Sharon Thompson's cover crop/weed management trial. Spring-seeded rye was actually associated with 2,465 broadleafed weeds, and fall-seeded rye with 2,078 broadleafed weeds, not the reverse.

Table 6. TILLAGE & OTHER TRIALS

COOPERATOR	CROP	TREATMENT "A"		TREATMENT "B"
		DESCRIPTION	YIELD (bu.)	DESCRIPTION
DAVIDSON	SOYBEANS	NO-TILL PLANT, POSTEMERGE BROADCAST, 1 CULTIVATION	28.2	RIDGE-TILL PLANT, 2 CULTIVATIONS
"		BROADLEAFED WEEDS:	385	BROADLEAFED WEEDS:
"		GRASS RATING:	3.3	GRASS RATING:
DAVIDSON	CORN	NO-TILL PLANT, POSTEMERGE BROADCAST, 2 CULTIVATIONS	56.5	RIDGE-TILL PLANT, POSTEMERGE BROADCAST, 2 CULTIVATIONS
		GRASS RATING:	3.8	GRASS RATING:
OLSON	CORN	PLANTED INTO 1992 DRILLED BEAN GROUND	104.5	RIDGE-TILL
BAUER	SOYBEANS	SAVED SEED FROM 1992	32.7	PURCHASED SEED
BAUER	CORN	EARLY HARVEST (OCT. 15)	85.2	LATE HARVEST (NOV. 4)
FRANTZEN	SOYBEANS	FOLLOWING CORN	26.2	FOLLOWING AMARANTH
FRANTZEN	CORN	FOLLOWING CORN, (MANURE SIDEDRESS)	41.6	FOLLOWING AMARANTH, (NO MANURE)
OLSON	CORN	FOLLOWING CORN, NO INSECTICIDE	113.8	FOLLOWING CORN, INSECTICIDE USED

TILLAGE & OTHER TRIALS

TRT "B"	DIFFERENCE				
YIELD (bu.)	YIELD DIFF.	YLD LSD (bu.)	YLD SIG.	$ BENEFIT OF TRT "A"	COMMENT
36.1	-7.9	2.4	*	($57.13)	SECOND YEAR OF TRIAL. HAULING COSTS INCLUDED
15	370	44	*		MORE BROADLEAFED WEEDS IN NO-TILL
1.8	1.4	0.4	*		MORE GRASS IN NO-TILL
69.4	-12.9	5.5	*	($23.25)	NO STARTER IN NO-TILL. CROP DELAYED, MORE WEEDS
3.3	0.6	0.6	N.S.		
114.1	-9.6	12.7	N.S.	$0.00	BOTH TREATMENTS CULTIVATED ONCE
33.1	-0.4	2.3	N.S.	$7.71	150,000 SEEDS PER ACRE, 55.4 LB SEED PER ACRE, $1.55 / BU. CLEANING & HAULING
79.9	5.3	1.1	*	$6.98	RESULTS IN 1991 FAVORED LATE HARVEST
26.5	-0.3	2.8	N.S.	$0.00	
52.8	-11.2	1.1	*	($49.95)	LATE SPRING SOIL NITRATE TEST WAS 23 PPM AFTER AMARANTH, 13 PPM AFTER CORN, SO CORN-AFTER-CORN WAS SIDEDRESSED
122.9	-9.2	8.5	*	($9.39)	1992 CORN NOT SCOUTED

Ray and Marj Stonecypher, Floyd, tested Achieve™ a product described as a bacterial inoculant. The material has been recommended as part of a package that includes reducing inputs and lengthening the crop rotation. The Stonecyphers, who already practice input efficiency and crop rotation, were interested in evaluating the product in their system. They found no significant yield effect.

John and Rosie Wurpts, Boone, applied for a *Sustainable Projects* grant to evaluate two fertilization recommendation approaches – Iowa State University's and that of a local dealer for Agrienergy products. This was the third year of the experiment, which includes both years of a corn-soybean rotation. Based on soil tests, ISU Extension recommended no fertilizer other than nitrogen. One hundred-twenty pounds N was applied to the corn in both the ISU and the alternative treatment. No significant difference in yield was measured in either the corn or soybeans, so net profit was determined by input costs.

TILLAGE TRIALS

The weather is certainly a factor in the performance of any system of tillage. In 1993, three replicated trials compared ridge tillage and no-till (Table 6). The tillage treatments in Jeff and Gayle Olson's field trial differed only in that corn was planted into either drilled-bean ground or ridges from the previous year's trial. Both treatments were cultivated once and received the same application of Extrazine™ and 2,4-D. Costs were the same, and there was no difference in corn yield.

Don and Sharon Davidson, Grundy Center, continued their comparison of ridge tillage and no-till, with 1993 the second year on the same site. Whereas in 1992 drilled soybeans were more profitable than ridge-till beans, in 1993 row-seeded no-till soybeans were much less profitable. Not only were costs higher in the no-till soybeans, but yields were almost 8 bushels less. Don had some trouble at harvest because of dirt clods thrown into the row by the one cultivation in the no-till treatment. He also observed that the ridge-till controlled early grasses much better than the no-till. Don admits that the postemerge Poast™ application on July 28 was later than it should have been. He had to balance the demands of the experiment against those of the rest of the farm, and he is still learning how to be a no-tiller.

Don Davidson also attempted to raise no-till corn the way his neighbors do. That meant *not* applying a starter fertilizer. As do the majority of ridge-till farmers, Don does use starter fertilizer in corn. His no-till corn yielded almost 13 bushels less than the ridge-till corn. Was it because of the lack of starter? This illustrates one of the dilemmas of on-farm research. Should you compare individual *variables* or whole *systems*?

MISCELLANEOUS TRIALS

PFI cooperators make their own decisions on what trials are to be done, so it's not surprising that there are some "one of a kind" trials. The Dordt College Agricultural Stewardship Center, for example, is located near Sioux Center, an area with many dairy farms. The Center carried out two corn variety trials in 1993, one for silage and one for grain (Table 5). They were interested in seeing if the waxy varieties, not usually grown in Sioux County, would perform as well as others, which they did.

Ted and Donna Bauer, Audubon, continued two trials they have carried out before (Table 6). They compared purchased soybean seed to seed they grew and cleaned themselves. As in 1992, the seed that was saved back yielded as well and was more economical than purchased seed of the same variety.

The Bauers also repeated a comparison of corn harvest dates. Ted combined strips through the field every 48 rows on October 15. Then on November 4, after three weeks of good drying weather, he harvested strips halfway between the previous harvest areas. Whereas in 1991 late-harvested corn was more profitable, in 1993 ear drop and stalk rot combined to make late harvest less desirable by almost $7 per acre.

Jeff and Gayle Olson, Winfield, raised corn with and without 9 pounds per acre of Force™ rootworm insecticide (Table 6. They did not scout the previous year's corn, so they did not know what to expect for insect pressure. The corn without insecticide yielded 9.2 bushels less, more than justifying the cost of insecticide.

Tom and Irene Frantzen repeated their evaluation of the rotational effects of grain amaranth (Table 6). In 1992 trials, soybeans following amaranth had performed as well as following corn, but corn following amaranth grew unevenly and yielded much less than corn following soybeans. In 1993, however, no such difficulties were encountered. Corn following corn required additional nitrogen, which the Frantzens supplied in manure, but it still did not yield as well as corn following amaranth. The information from these trials will be very useful as more growers begin to integrate amaranth into their cropping systems.

Repeating trials like these, far from indicating a lack of creativity, shows that cooperators have a lasting commitment to addressing some basic questions. Many questions in farming can't be answered in a single trial. A variety of years and sites are required to discover the range and reliability of a practice or response. Especially when weather and other changeable factors are involved, patience and persistence pay off.

WIND CHARGER DEMONSTRATION

Doyle and Lowell Wilson, Primghar, included at the August field day a demonstration of the economics of their wind turbine. The charger has been in place since 1983, when investment tax credits were available for purchase of alternative energy technologies. With three blades 13.5 feet long, the Jacobs Co. charger sits atop a 100-foot tower. In a 27 mph wind, the device tops out at 17.5 kilowatts per hour. Present technology has raised the output of similar systems to 22-25 KW/hr.

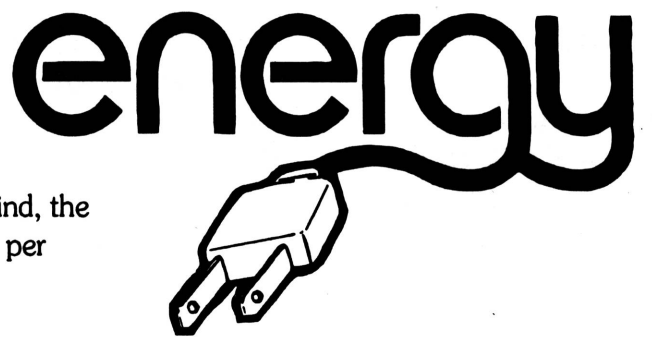


Table 7.

Wilson Wind Turbine Ten-Year Economics

Original Cost	$34,000
Investment Tax Credit	$13,600
Effective Cost	$20,400
Repairs, 1983-1993	$8,862
Insurance, 1983-1993	$550
Total Costs to 1993	$29,812
Output, 1983-1993	339,240 kilowatts
Savings, at $0.11/kilowatt Utility Rate	$37,316
Theoretical Cogeneration Income, at $0.048/kilowatt	$16,284

Table 7 shows the cost of the charger, the operating costs since 1983, and the savings in purchased electricity at the local rate of $0.11 per kilowatt. The Wilsons sell back $3-$10 per month to the utility, at a co-generation rate of $0.048 per kilowatt-hour. Doyle says the charger was something they tried just out of curiosity and because of the tax credit. The tax credit has meant that the charger has turned a profit within the first ten years of life. Chargers sold today have an output/cost ratio about one-third greater, and the additional output over ten years would approximately equal the tax credit originally obtained by the Wilsons.

Table 8. WEED MANAGEMENT TRIALS

COOPERATOR	LOW RATE TREATMENT				HIGH RATE TRT
	DESCRIPTION	YIELD	BROADLEAFED WEEDS/ACRE	OTHER WEED INFORMATION	DESCRIPTION
(CORN)					
DORDT	CORN PLANTED INTO SPRING-SEEDED ANNUAL MEDIC COVER	103.1	FEWER	MORE GRASS	NO MEDIC GROUND COVER
MUGGE	1 ROTARY HOE, 1 CULTIVATION	74.6	--		PREEMERGE BAND, POST BROADCAST
(SOYBEANS)					
MADSEN	ROUNDUP & 2,4-D AT PLANTING, 1 CULT	42.1	20		ROUNDUP/2,4-D, PURSUIT POST BROADCAST, 1 CULT
MUGGE	ROTARY HOE, 2 POSTEMERGE BANDS	37.3	--		PREEMERGE BAND, 2 POSTEMERGE BANDS
THOMPSON	NO ROTARY HOEING	45.5	14		2X FIRST ROTARY HOEING, 1X SECOND HOEING
THOMPSON	STANDARD BUFFALO PLANTER	44.6	1,377		MODIFIED, OFF-ROW PLANTER
WILSON	PREPLANT & POSTEMERGE SPRAYS, 1 CULTIVATION	46.7	447		PREPLANT, PREEMERGE, & POSTEMERGE SPRAYS

WEED MANAGEMENT TRIALS

Weed management in 1993 was often a case of "damage control," as the effectiveness of both chemical and mechanical controls was hurt by the continual rains. Despite the problems, a number of PFI cooperators conducted weed management trials. Paul and Karen Mugge, Sutherland, compared ridge-till corn grown with one rotary hoeing and one cultivation to corn with preemerge and postemerge herbicide bands (Table 8). Although the mechanical-control corn yielded a significant 3.0 bushels less, it was more profitable because it cost less than the chemical controls.

WEED MANAGEMENT TRIALS

HIGH RATE TREATMENT			TREATMENT DIFFERENCES					COMMENTS
YIELD	BROAD WEEDS	OTHER WEED INFORMATION	YIELD DIFF.	YLD. SIG.	YLD. LSD	BRDL. WEED SIG.	LOW RATE $ BENEFIT	
130.6	MORE	LESS GRASS	-27.5	--	--	--	($39.70)*	* NOT COUNTING YIELD DIFFERENCE. UNRANDOMIZED TRIAL, ONLY 3 REPLICATIONS
77.7	--		-3.0	*	2.6	--	$6.67	
35.8	6		6.3	*	2.1	*	$61.49	BOTH TREATMENTS CULTIVATED ONCE. PURSUIT STUNTED THE SOYBEAN PLANTS
38.8	--		-1.5	N.S.	3.0	--	$4.18	
44.2	6		1.3	N.S.	3.0	*	$7.19	FALL-SEEDED RYE ON ALL PLOTS. NO GRASS IN EITHER TREATMENT
45.4	1,816		-0.9	N.S.	2.3	N.S.	$0.00	NO DIFFERENCE IN COSTS OR YIELDS. LSD FOR BROADLEAFED WEEDS: 604 WEEDS/ACRE
47.1	15		-0.4	N.S.	2.6	*	$0.86	

The Mugges also compared one rotary hoeing to a preemerge band of Dual™ and Lexone™ in ridge-till soybeans. Yields did not differ, and the hoeing was the cheaper practice. Up the road in Primghar, Doyle and Lowell Wilson compared a preemerge band of Scepter™ and Command™ to one cultivation for ridge-till soybeans (Table 8). Yields were similar, and the cultivation was cheaper by about $0.86 per acre.

Vic and Cindy Madsen, Audubon, examined a postemerge band of Pursuit™ on ridge-till soybeans (Table 8). The whole field received Roundup™/ 2,4-D at planting and one cultivation. This basic management controlled weeds well. The Pursuit only reduced the number of broadleafed weeds from 20 to 6 per acre. But the Pursuit also stunted the soybean plants,

setting them back about two weeks. Partly because of late planting, the crop never had time to recover, and the Madsens measured a 35.8 bushel yield loss.

Dick and Sharon Thompson, Boone, also evaluated a practice that turned out to be unnecessary. They compared ridge-till soybeans that were not rotary hoed with beans receiving a double-pass first hoeing and a single-pass second hoeing (Table 8). The rotary hoe brought broadleafed weeds down to 6 per acre from 14, but there was no difference in soybean yield.

In addition, the Thompsons compared the standard Buffalo ridge-till planter, with coulter and gauge wheel over the row, to a modified Buffalo planter with no coulter and the press wheels off the ridge (Table 8). By not disturbing the ridge ahead of the planter sweep, Dick thought he might attain better weed control. There was not a significant difference in broadleafed weed numbers, but the tendency in 1993 was for weed numbers to actually be greater with the modified planter.

These two treatments were actually part of a larger trial in which the Thompsons focused on the effect of a rye cover crop on the ridge (Table 5). Using the off-row planter, they compared: 1) no cover crop, 2) rye seeded on the ridge the previous fall, and 3) rye seeded on the ridge in the early spring. A drill was used to place two rows of the cover crop on the top of the ridge, where it could be removed easily by the planter sweep. The soybeans following spring-seeded rye had slightly fewer broadleafed weeds than the beans after fall-seeded rye. However, contrary to expectations, the beans without a cover crop had even fewer broadleafed weeds – significantly fewer than the fall-seeded rye treatment. Because of the wet conditions, not all of the rye cover was eliminated by the planter, and the surviving cover crop may have competed with the soybeans.

Another multiple-treatment weed management trial was carried out by Ron and Maria Rosmann, Harlan, with the help of a "producer grant" from the LISA program of the USDA. In a trial that occupied most of a large field, the Rosmanns compared six weed management systems for ridge-till corn, varying from all-mechanical to mostly-chemical (Table 5). Weeds were a problem in all six treatments, and there were no real differences in corn yield. As a consequence, the lowest-cost weed management systems were the most profitable, and these were the two-cultivations treatment and the two-hoeings-plus-two-cultivations treatment. Included in the costs of these two systems is the labor for field operations. That wage labor is either a liability or an asset, depending on how you look at it.

Finally, the Dordt College Ag Stewardship Center conducted an unrandomized demonstration of an unusual approach to weed control. They planted corn into spring-seeded annual medic (Table 8). This alfalfa relative is being evaluated in Minnesota for its ability to control weeds in row crops. It is said to have the advantage of "self destructing," so as not to compete with the crop. It did not behave in this way in northwest Iowa in 1993. Perhaps because of the cool, wet growing season, the medic did not senesce. That and the high seeding rate used led to strong competition with the corn crop. The economic loss in the table reflects only seeding and field preparation costs. The yield difference, if real, would cause an additional financial loss. Cooperators may give annual medic another try next year, based on the farmer interest in Minnesota. However, as with Nitro "annual" alfalfa, Minnesota imports can be expected to change their behavior when they come down to Iowa.

NARROW STRIP INTERCROPPING

Past experience has suggested that the biggest advantage of narrow strip intercropping is seen in years with good yield potential. In years of drought stress, yields of stripped crops are no better than yields of whole-field blocks, and the outer rows of strips yield no better than the inner rows. The crop stress in 1993 was not from drought but too much moisture and late planting. With support from the Leopold Center for Sustainable Agriculture, PFI cooperators collected data from around the state on the behavior of this practice in a wet, short year like 1993.

Table 9. NARROW STRIP INTERCROPPING TRIALS

COOPERATOR	CROP	ROW DIRECTION	YIELDS (bu.)			COMMENTS
			STRIP	FIELD	DIFF.	
ALERT	CORN	NS	109.2	81.4	27.8	FIELD HAD 21 LBS MORE N EARLY, 11 LBS LESS TOTAL
DAVIDSON	CORN	EW	80.3	75.5	3.0	
MUGGE	CORN	EW	94.4	90.7*	3.7*	*ALSO ROTATION DIFFERENCE
OLSON	CORN	SE-NW	116.1	108.4	7.7	
THOMPSON	CORN	EW	113	102*	11*	*ALSO ROTATION, TILLAGE & PLACEMENT DIFFERENCES
			CORN AVERAGE:		11.0	
MUGGE	OATS	EW	16.4	12.5	3.9	
OLSON	WHEAT	SE-NW	10.3	11.3	-1.0	
		SMALL GRAINS AVERAGE:			1.4	
ALERT	SOY-BEANS	NS	31.0	29.5	1.6	
DAVIDSON	SOY-BEANS	EW	24.8	25.6	-0.8	
MUGGE	SOY-BEANS	EW	42.7	40.7*	1.9*	*ALSO ROTATION DIFFERENCE
OLSON	SOY-BEANS	SE-NW	41.6	45.5	-3.9	
THOMPSON	SOY-BEANS	EW	45	33*	12*	*ALSO ROTATION, TILLAGE & PLACEMENT DIFFERENCES
			SOYBEANS AVERAGE:		2.2	

As Table 9 shows, yields in strips relative to whole-field blocks was variable. Doug Alert, Hampton, found the greatest advantage to strips, with a 27.8 bushel advantage. Stripped soybeans varied from a 3.9-bushel deficit (Jeff and Gayle Olson, Winfield) to a 1.6-bushel advantage (Doug Alert). Dick and Sharon Thompson, Boone, found a 12 bushel benefit to stripped soybeans, but the figure is not directly comparable. Their strip system is a corn-bean-oats/berseem clover rotation using ridge-till and banded fertilizer, while the comparison field block is in a corn-soybean rotation with disk tillage and broadcast fertilizer.

Because of weather problems, Paul and Karen Mugge, Sutherland, could only compare strips in a corn-soybean-oat rotation to field blocks in a corn-soybean rotation.

With help from ISU researchers Rick Cruse and Mohammed Ghaffarzadeh, yields-by-row were gathered on eight cooperators' farms (Table 10, Figures 3 and 4). These yields may differ somewhat from those shown in Table 9. Four cooperators had strips running north-south. (A strip of Doug Alert's was thinned to different populations.) There was a tendency for

Table 10. STRIP YIELD BY ROW POSITION

STRIP ORIENTATION: NORTH-SOUTH	STOCK	FRANTZEN	REICHERTS	ALERT	ALERT	ALERT
ROW	CORN	CORN	CORN	CORN 24,000/A	CORN 30,000/A	CORN 36,000/A
(W)	(SOY)	(SOY)	(SOY)	(SOY)	(SOY)	(SOY)
1	82.9	76.6	68.4	80.8	78.1	75.8
2	97.6	84.5	87.7	88.0	80.2	75.5
3	100.5	87.2	93.2	90.7	79.0	83.7
4	89.3	86.3	92.8	80.8	89.0	89.1
5		(OAT)	86.2	(OAT)	(OAT)	(OAT)
6			86.6			
7			(OAT)			
8	85.2					
9	101.1					
10	112.5					
(E)	(SOY)					
BLOCK:						

corn to yield more on the eastern edge of these corn strips than in the row bordering the west edge of the strip. These east edges also were usually next to oats, while the lower-yielding west rows were next to soybean strips.

No such trend emerged in the strips running east-west. In addition to five corn strips, yields were measured by row in two soybean strips. Dordt College estimated soybean yield by counting plants, pods, and beans per pod in each row.

In the next months, PFI cooperators will be working with Don Davidson and Extension field specialist John Creswell to complete the Crop Enterprise Analysis on their strip and whole-field systems. The economic information that emerges from that work will reflect yields, but it will also show where coopera-

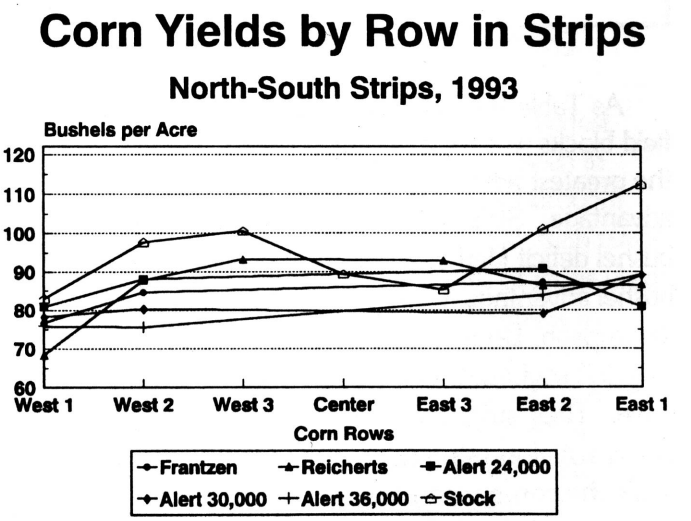


Figure 3. Narrow strip intercropping 1993 corn yields by row for strips running north-south.

STRIP YIELD BY ROW POSITION

	STRIP ORIENTATION: EAST-WEST	STOCK	DORDT	DORDT	DAVIDSON	MUGGE	THOMP-SON	THOMP-SON
	ROW	CORN	CORN	SOY-BEANS	CORN	CORN	CORN	SOY-BEANS
	(S)	(SOY)	(SOY)	(OAT)	(SOY)	(SOY)	(SOY)	(OAT)
	1	109.8	119.7	75.9*	79.6	84.3	104	51
	2	102.2	112.8	69.8*	73.5	78.1	113	45
	3	111.8	107.9	67.1*	86.8	80.1	112	43
	4	102.0	114.7	66.5*	82.1	92.6	121	39
	5		(OAT)	(CORN)	(OAT)	91.6	(OAT)	(CORN)
	6			* EST.		87.0		
	7					(OAT)		
	8	88.5						
	9	102.8						
	10	95.4						
	(N)	(SOY)						
	BLOCK:				77.5	90.7	102*	33*

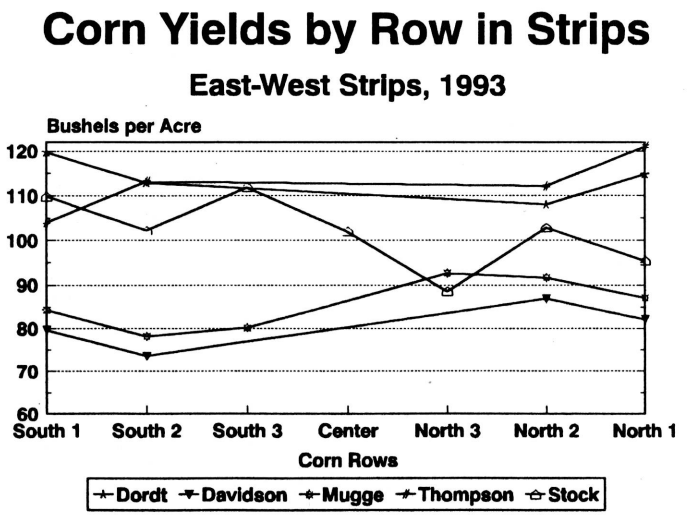


Figure 4. Narrow strip intercropping 1993 corn yields by row for strips running east-west.

tors made the most of the oats/berseem clover crop. Previously the "weakling" of the crop rotation, oats/berseem was a highly productive source of forage this year for those who had livestock to utilize it. Paul and Karen Mugge, Sutherland, examined the economics of oats alone, berseem seeded with oats, and berseem seeded into oats (Table 5). Tom and Irene Frantzen, New Hampton, documented the utilization of the berseem strip for greenchop feed. Their results appear on page 31. These cooperators are coming to see narrow strip intercropping as more than a fancy way to row crop. It can be an entry point into a more diverse and integrated farming system.

GRAZING

PFI cooperators are working with support from the Leopold Center for Sustainable Agriculture to document the economics of management-intensive-grazing, using the Beef Cow Business Record. Those results will become available later in the project. The Leopold Center and *PFI Sustainable Projects* also sponsored PFI members Steve Hopkins and Sarah Andreasen, Decorah, to document their dairy grazing system.

In 1993, the couple milked 16 Jersey cows and 2 Ayrshires on 20 acres of steep pasture divided into approximately 30 paddocks. They recorded not only costs and production (Figure 5), but also the growth and quality of forage over the summer (Figure 6). At the field day August 3, Steve described how weekly forage analysis was teaching them things they could not learn by just watching the paddocks. While forage protein content had remained high, an energy component of the grass – nonfiber carbohydrate (NFC) – had steadily declined over the summer. This explained the drop in production they had experienced, and it allowed them to remedy the deficit with supplemental feed.

Steve and Sarah and their neighbors will be watching to see if forage quality and quantity hold up next summer, in the second year of the study. In a drier summer, NFC is not likely to be as much of a problem as in 1993. Steve's goal is to rely as much as possible on pasture and to avoid investments in row cropping or ensiling equipment. The couple has dried out the milking cows for the winter and will resume milking next spring.

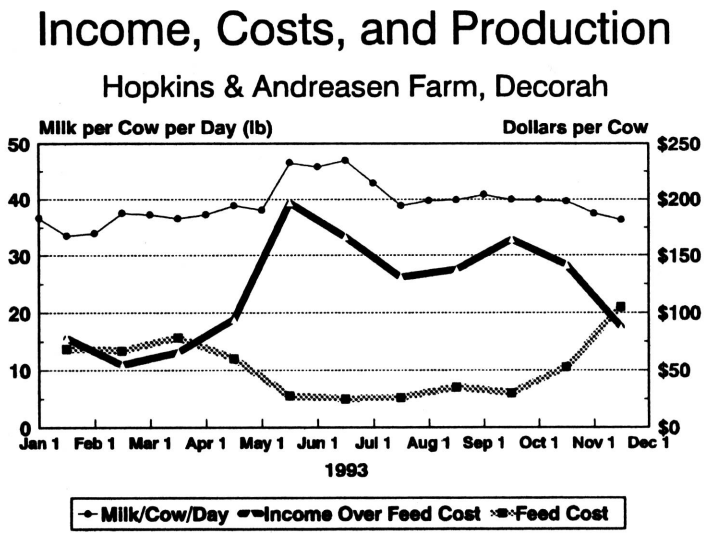


Figure 5. 1993 milk production, feed costs, and income per cow over feed costs. Steve Hopkins and Sarah Andreasen, Decorah.

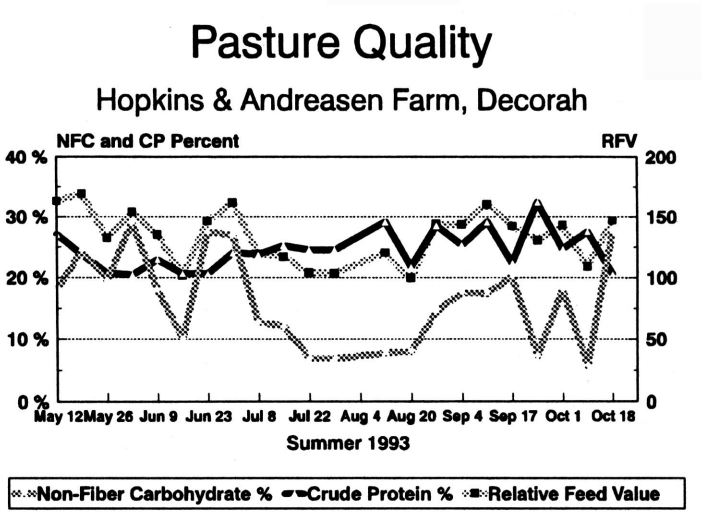


Figure 6. Pasture and forage quality in 1993 on the farm of Steve Hopkins and Sarah Andreasen, Decorah.

BACKGROUNDING CATTLE WITH AVAILABLE RESOURCES

Doyle and Lowell Wilson, Primghar

During the past year our farming operation has expanded into backgrounding cattle. Our premise is that there is a need to diversify farms, including ours. In Iowa there are many areas where older, small feed lots exist; with the addition of capture pens and chutes at minimal cost, a profit can be realized. Also, there are many potential bales of hay that are going to waste in road ditches, waterways, and headlands.

Backgrounding is a niche that not all farmers can fit psychologically, as treating sick cattle can be wearing. To carry out this kind of project you must have: 1) a desire for more income and the time to spend feeding and caring for the cattle; 2) facilities to handle 20-50 head of cattle; and 3) the desire to learn about cattle, some of their diseases, ways to treat those diseases, and a little about ruminant nutrition.

The facilities you need include a cattle lot with drainage for wet weather, some concrete to feed on, plenty of feed bunk space, and a catch pen (with a chute and head gate) that will hold about six head. The facility needs to work smoothly so that cattle can be captured with the least effort on your part and the least stress on both you and the cattle. Along with the pen and chute, you need a good digital thermometer.

You need a good source of good quality cattle that are green. Green in this case means a weight of 400-500 pounds. They need to look like they have not eaten well in life. If they are fleshy and nice looking, they don't have the potential to gain well and make you money. A reputable order buyer can be one source of cattle.

A veterinarian should be able to help with a sound vaccination and antibiotic program when they get sick. I mean *when*, not if. The digital thermometer is an important tool, because in the first 28 days you will probably take each animal's temperature 10-15 times. Taking temps on all animals often, helps in catching sickness as it starts in the animal, before damage has occurred to the lungs. Visibly sick animals have usually been sick for a few days, and damage can easily already have occurred.

Another part of the program is feed. When starting the animals, it is important to get them to come to the bunk twice a day and *clean up all the feed* in it. Grass hay is the best to start them on, with top-dressed protein and whole corn. All changes in feeding rates should be done slowly over two or three days. Within a week the cattle should be eating one percent of their body weight in corn, and within two weeks 1.5 percent of body weight. After two weeks there should be similar amounts of grass hay and corn. At two weeks start replacing the grass hay with coarse alfalfa, and at about three weeks a large, round bale of coarse alfalfa or good quality grass can be put in to be fed free-choice.

This method of feeding eliminates the need for an expensive investment in machinery and facilities. Cost of gain should be in the area of $0.40 per pound, depending on weather and how you protect the animals from it. It is important to have bedding in bad weather and shelter to keep them dry. Steamy, tight barns are worse than no barn at all, though.

The important thing is to keep the animals heathy and growing. For a feeding period of 90-120 days to put on 150-200 pounds, the return on investment is better than doing nothing. You can either sell the cattle to someone else to finish or finish them yourself. This enterprise makes use of buildings and feedlots that may not be used any other way. Small is better than large numbers anyway, because of the attention required by each animal. The old saying is that 30 done right is better than 300 done wrong.

FOOTPRINTS OF A GRASS FARMER

A Marriage Made in Heaven, or More Heavy Metal from Hell?

Tom Frantzen, Alta Vista

Graziers following the Savory or Voisin pasture management monitor the growth of grass. Typically the dry matter production decreases as the summer progresses. To avoid overgrazing, the rest recovery period is lengthened. To allow for this recovery, either more paddocks are added to the cell or the number of animals is reduced.

On our farm, we are exploring a different strategy to compensate for the seasonal decline in pasture dry matter production. Basically, we are green-chopping an alternative annual forage and feeding this supplemental to our grazing. The annual forage that we are experimenting with is berseem Egyptian clover. Iowa

The economics point to the value of well managed pastures. However, the Berseem green chop easily beats cash crop oats.

(Continued on next page.)

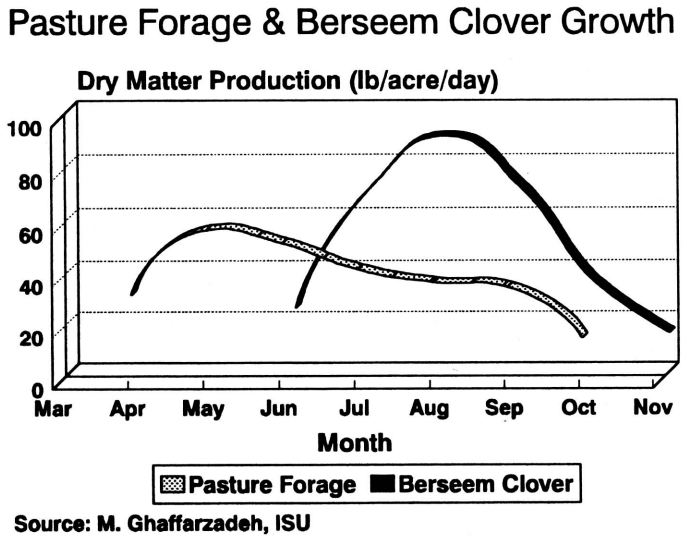
State University is actively involved in the project. Drs. Mohammed Ghaffarzadeh and Mike Brasche initiated the research project, with 13 on-farm locations across the state, as well as on-station sites.

Berseem is a highly productive annual. Excellent seedling vigor and robust growth characteristics result in dry matter yields of 3-4 tons per acre. Feeding quality is comparable to alfalfa. It does not have bloating characteristics.

One of the driving reasons for the research into berseem is the near chronic failures in small grain production in recent years. Oats harvested as a cash grain resulted in a net economic loss 7 of the past 10 years.

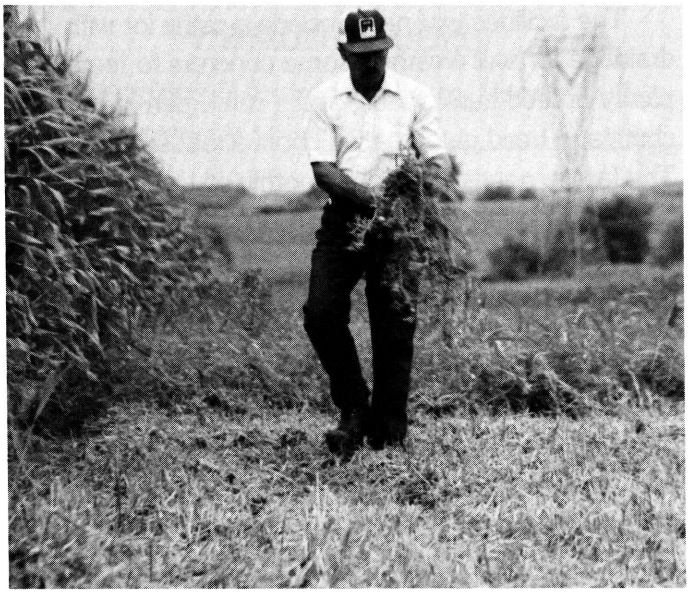
We are hesitant to abandon small grain seeding. The soil conservation and ecological diversification benefits are too good. Why not skip the grain harvest and chop the oats and berseem as a forage?

Figure 7 details how well this annual forage compliments the pasture. With help from ISU and Practical Farmers of Iowa, we put the above theory to a farm test. A group of 480-pound stocker cattle were purchased in April. They were pastured as a group until July 12th. From early June on, they were fed a limited amount of green-chopped berseem to help acclimate their rumens. On July 12th, the group was



Source: M. Ghaffarzadeh, ISU

Figure 7. Forage production through the growing season – berseem clover versus typical pasture.



Walking up a strip, Tom Frantzen inspects berseem clover/oats forage left by the chopper.

split and weighed. One group was drylot fed greenchop, the other remained on intensely managed pastures. Both sets were fed 1 percent of bodyweight in grain plus free choice minerals. ISU assisted the project with analysis of forage quality and feedlot rations. Researchers also conducted weekly, hand-harvest yield checks in the berseem strips. PFI's *Sustainable Projects* provided financial support to assist with weighing both cattle and machine-harvested berseem.

Both groups of cattle were scaled again on Sept. 7th. Each group gained 2.1 pounds per head per day. The cattle consumed roughly two-thirds of the available forage during the trial. The greenchop berseem produced around 600 pounds of beef per acre. The pastured stockers yielded 735 pounds of beef per acre. Both yields are adjusted to a full season basis.

The economics point to the value of well managed pastures. However, the Berseem green chop easily beats cash crop oats. I don't cherish the heavy metal aspect of green chopping. However, the three tracts of land we farm are not contiguous. Pasturing is done on the "home 80." Down the road on the remaining 240 acres, we apply ridge till conservation tillage and narrow strip intercropping techniques.

Is greenchop a viable mid- to late-season forage supplement? We plan to repeat the trial this year.

FROM THE KITCHEN

Marj Stonecypher, Floyd

Hope all of you survived 1993?? Or maybe we should not even mention 1993?? A year to remember, right?? Let's go to 1994, the IRS and seed catalogues.

Just baked the following bars. Our son-in-law would eat the whole pan, if I let him. This was the winning recipe, given over TV, at the Peanut Festival down south.

CREAM CHEESE PEANUT BARS

CAKE:

1 yellow butter cake mix (chocolate is good too)

1 egg

½ stick margarine or butter

Mix cake mixture and divide. Press half into bottom of greased 9 x 13" pan. Set other half aside for the top.

FILLING:

1 box (2 cups) powdered sugar

2 eggs

8 oz. cream cheese

1 tsp. vanilla

½ cup peanut butter, creamy

Mix filling and spread in pan over half of pressed cake. Top with remaining half of cake.

TOPPING:

1 to 2 cups finely chopped raw peanuts

Sprinkle on top of cake and filling.

Bake at 350 degrees for 35 minutes (no longer).

If you love spinach, you'll love the following. If you don't, you will be surprised, this is good.

SPINACH CASSEROLE

2 pkgs. frozen spinach (chopped)

1 stick butter, divided

1 8oz. pkg. Philadelphia cream cheese

1/2 tsp. salt

Pepperidge Farm herb dressing

pepper to taste

Cook spinach and drain well. Add cream cheese, salt, and half of butter. Mixed well. Put into 7x11" glass pan. Sprinkle with dressing and pepper. Melt remaining butter and pour over top. Bake 20 to 30 minutes, 350 degrees.

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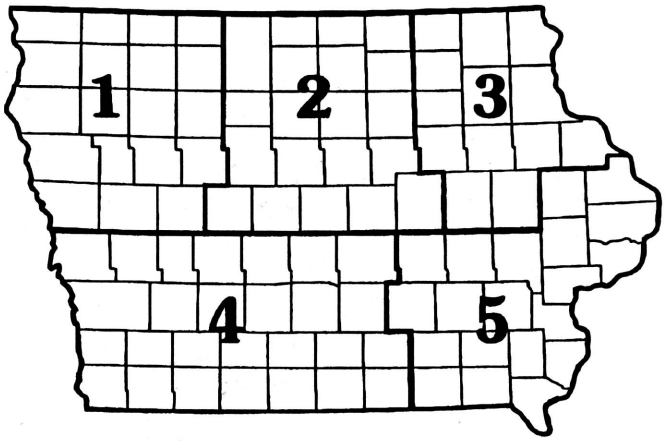

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