the Practical Farmer

Practical Farmers of Iowa Newsletter

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Spring 1998

PFI 1998 FIELD DAYS – BRANCHING OUT AND DIGGING IN

PFI cooperators met Feb 12-13 to plan the year's field days and on-farm research. Their interests represented many of the current issues in Iowa agriculture. Many of the field days and trials will be collaborations: manure management with ISU Extension; management-intensive grazing with the Northeast Iowa Demonstration Project; and nitrogen management with the Iowa Farm Bureau, to name a few. A number of the on-farm trials reflect the growing interest in marketing opportunities for organically produced meats and grains. And this year several vegetable growers join the research network, addressing questions specific to their production.

This year also marks the start of a concerted effort on the part of cooperators to gather data on hoophouse swine production, a system about which there are still large information gaps. Working with Mark Honeyman, Director of ISU Outlying Research Farms and with economist Mike Duffy, Associate Director of the Leopold Center, PFI will be generating information on the productivity and labor requirements of these deep-bedded operations. Several cooperators will also work with agricultural engineer Tom Richard on the handling and

Walt Ebert, Plainfield, discussed profitable oat production at his 1997 field day.

IN THIS ISSUE

NAN BONFILS JOINS PFI STAFF

The Practical Farmers of Iowa Board of Directors and staff are pleased to announce that Nan Bonfils is accepting the position of program assistant for PFI. The position focuses on communications and on organizational and membership functions. It will allow PFI to separate organizational tasks from work related to specific projects. That should make funders of specific projects more comfortable, and it will provide PFI members with better and more timely services!

Nan Bonfils (pronounced Bone-FEES) was selected from thirteen applicants, including a number of very talented and experienced candidates. Since 1996, she has served as Associate Director of the Iowa Arboretum, in Madrid. Prior experiences include writing copy for Land's End, Inc., technical work for Agripro Seeds, and twenty years of teaching – fifteen in Asia. Her current volunteer projects include work for the Iowa Barn Foundation, the Women, Food and Agriculture Network, and Plant a Row for the Hungry.

Nan and her husband Don Adams farm just south of Ledges State Park, in Boone County, where they raise row crops, small grains, alfalfa, and rotationally graze a beef cow-calf herd. They live with Don's 87-year-old father who is still actively farming. Don and Nan continue to sponsor two Asian refugees, Andrew and Luk, who live in Canada and Thailand, respectively. Nan and Don have been PFI members for two years, and Nan has also helped nurture the PFI women's winter gatherings.

Nan Bonfils joins the staff as program assistant.

Looking forward to her work with PFI, Nan commented, "On to new challenges! I'm delighted to be working with PFI, as its goals are so compatible with our own. I have plenty to learn and heaps to give – a healthy balance."

Nan Bonfils will work half-time for PFI and will be officed in the ISU Agronomy Hall. She will share a phone number (515-294-8512) with PFI staff person Gary Huber, who will also be working part time on campus. Welcome, Nan!

(PFI Field Days, continued from page 1.)

fertilizer value of bedding from the hoops.

Nitrogen is in the news in connection with the "dead zone" in the Gulf of Mexico, and Iowa farmers now have some new tools with which to manage nitrogen use. PFI leaders have identified an opportunity to collaborate with the Iowa Farm Bureau on trials related to nitrogen management. IFB Environmental Resources Director Rick Robinson took part in the February cooperators' meeting, and a number of IFB members have agreed to be part of the research network this year. Dates have yet to be decided for most of these field days.

Expect to receive the full PFI field day guide in June. In the mean time, look over these dates and topics. Remember, the summer isn't complete if you don't get to a few field days!

June 24 New Melleray Abbey (Joe Fitzgerald, farm mgr.), Peosta (319-588-2319 ext. 171)
flame cultivation for row crop weed control, compost production and use in forage and row crops (with County of Dubuque and Iowa DNR), nitrogen testing and variable rate application, organic crop production

July 1 Dennis and Kate McLaughlin, Cumming (515-981-9684)
preplant N vs. split application for corn, winter grazing and rotational grazing, strip intercropping, restoration of a Century barn, filling an abandoned well, pesticide-free soybeans, pasture poultry.

July 6 Richard and Sharon Thompson, Boone (515-294-5486 (PFI/ISU Extension))
SARE Train-the-trainer in-service workshop on manure/nutrient management options and integrated farming systems. Open to both producers and agency personnel. Pre-registration required.

July 7 Tom and Irene Frantzen, New Hampton (515-364-6426)
integrating hoophouses into a swine production system, nonchemical quackgrass control (with Laura Jackson, UNI).

July 8 Greg and Kathy Koether, Giard (319-873-3385) (in cooperation with the NE Iowa Demonstration Project)
beef productivity under management-intensive grazing, cooperative marketing of organic beef, ultrasound results from cow herd and effect on calf crop, gain on improved vs. traditional pasture (both rotationally grazed).

Jeff Klinge and Deb Tidwell, Farmersburg (319-536-2314)
economics of organic crop production, barley as feed grain, biocontrol of alfalfa weevil and leafhopper.

July 9 Matt and Diana Stewart, Oelwein (515-294-5486 (PFI/ISU Extension))
SARE Train-the-trainer in-service workshop on management for water quality. Open to both producers and agency personnel. Pre-registration required.

July 11 Angela Tedesco, Johnston (515-278-4522)
market gardening for community-supported agriculture, ±mulch and planting method for onion production.

July 13-15 SARE North-Central Regional workshop, Ames, *Facing a Watershed: Managing Profitable and Sustainable Landscapes in the 21st Century* (Heidi Carter, UNL (402-472-0917)).

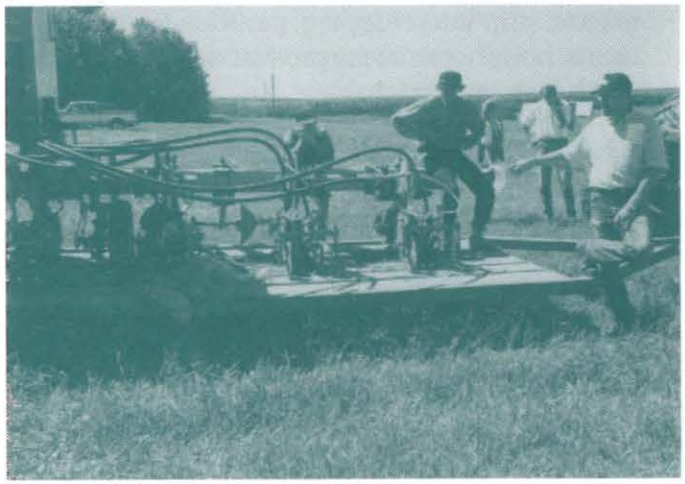
All Aboard for 1998!

The train's leavin' the station! Got your ticket? PFI members are gearing up for a year of networking on farming practices, marketing, and mutual discovery. If you are a paid member, you can look forward to the year with PFI. If you missed the membership renewal calls in the newsletter, the two reminder letters, and the personal phone call from another PFI member... well, it was good to have you aboard. **This is the last newsletter we can send you.** Similarly for non-members who've received the newsletter through their participation in a *Shared Visions* project – *join up!*

July 16 David and Lisa Lubben, Monticello (319-465-2053)
deep-rip plow, nutrition and economics of wrapping hay and crop residues, recordkeeping for livestock, feedlot management.

July 19 *Field to Family* Ames Community Food System (515-232-7162)
sustainable farming and market gardening for community-supported agriculture
Richard and Sharon Thompson farm, Boone
Heenah Mahyah ISU Student Farm, Ames
Onion Creek Farm, Boone
additional farm to be announced.

July 23 Vic and Cindy Madsen, Audubon, and Ron and Maria Rosmann, Harlan (515-294-5486 (PFI/ISU Extension))
SARE train-the-trainer workshop on innovative marketing, community agricultural strategies, and integrated farming systems. Pre-registration required.



Twin-row planter at the Wilson 1997 field day.

Craig and Katia Milius welcome visitors to their farm.

Aug. 17 Mike Natvig, Protivin (319-569-8358)
intensive rotational grazing pasture management for beef and swine, fire for perennial grass promotion, monitoring riparian area grazing, hazelnut windbreak, cultural practices for weed control, establishment of native species for grazing.

Aug. 20 Doug Alert and Margaret Smith, Hampton (515-456-4328)
management-intensive grazing beef cattle on rotational pastures, transitioning to an organic system.

Dennis and Eve Abbas, Hampton (515-579-6421)
farrowing in hoophouse vs. in pasture, corn population effect on N sufficiency, composting hoophouse manure.

Aug. 21 Paul and Karen Mugge, Sutherland (712-446-2414)
manure and/or purchased N for corn (with Joel DeJong, Northwest Iowa Extension), deep-banding P and K, managing for spring nitrogen release, strip-intercropping, pesticide-free soybeans, hoophouse swine production, composting death-loss, farm safety.

Colin and Carla Wilson, Dan and Lorna Wilson, Paullina (712-448-2708, 712-448-3870)
deep-bedded (Swedish) farrowing, hoophouse for gestation building, composting hoophouse manure.

Aug. 23 Gary and Nancy Guthrie, Nevada (515-382-3117)
market gardening for community-supported agriculture, mineral oil for corn earworm control in sweetcorn.

Aug. 27 Neely-Kinyon Research Farm, Greenfield (712-769-2402)
high-oleic acid vs conventional soybeans, 15" vs. 30"-row corn, nitrogen management in corn, transition to organic system.

Aug. 28 Dordt College Ag Stewardship Center, Sioux Center (712-722-6220)
±Bt gene for corn, food-grade soybean production, ±Roundup-ready soybeans, high-oil corn, native perennial legumes, weed emergence study (with Doug Buhler, Soil Tilth Lab), medic smother crops, intensive rotational grazing for milk cows.

Aug. 31 Dave Struthers, Collins (515-385-2132)
(In cooperation with IFB)
N management in corn, hoophouse swine production, ±ACA in corn production.

Sept. 10 Richard and Sharon Thompson, Boone (515-432-1560)
(in conjunction with ISU Agronomy Day) double-throw ridges for weed management in ridge-till soybeans, Kverneland plow for quackgrass control, A-frame isolit farrowing house results, manure dump box, 150' feeder for ground cornstalks and hay, freeze-branding cows, separating the turn signals from the slow-moving flashers on tractors.

Sept. 12 Ron and Maria Rosmann, Harlan (712-627-4653)
±seed treatment for corn, manure management for organic corn, hoophouse swine production.

Ken Rosmann, Harlan (712-627-4217)
organic production and cooperative marketing.

Sept. 13 Tom Wahl and Kathy Dice, Wapello (319-729-5905)
agroforestry options: fruit and nut-bearing trees – grafted varieties of chestnut, black walnut, Persian (English) walnut, heartnut, pecan, hican, shellbark and shagbark hickory, persimmon and pawpaw, hybrid F-1 hazelnuts, nut pines, ginko.

Sept. 15 Larry and Judy Jedlicka, Solon (319-644-2686)
hoophouse swine production, organic farming.

Sept. 19 Virginia Moser, Garrison (319-477-8261)
market gardening for community-supported agriculture, popcorn economics and production with mulch vs. rototiller for weed control.

CFO – AN OPTION FOR YOUR FARM?

CFO, the Conservation Farming Option of the 1996 Farm Bill, is getting closer to being a real, live option for farmers. It will offer support for innovative conservation practices with a level of flexibility not seen in other farm programs. Organizations such as the Center for Rural Affairs and the Sustainable Agriculture Coalition have worked for passage and implementation of the CFO.

Because this is a new program, because it represents a departure from the past, and because its implementation has been somewhat uncoordinated, farmers will have to take the initiative if they want to benefit. The application materials were only released April 21, but the application deadline is June 1. The CFO is slated to grow in coming years, but nothing can be taken for granted. If you decide that the CFO might benefit your farm, it would be a good idea to stay in touch with Kris Thorp, who is tracking the program at the Center for Rural Affairs. She can be reached at CRA, P.O. Box 406, Walthill, NE, 68067, or call 402-846-5428, or email to krist@cfra.org. Below is background information on the CFO from the Center for Rural Affairs.

What is the CFO? The Conservation Farm Option is a voluntary conservation incentive program authorized by the 1996 farm bill. It is designed to establish a wide variety of pilot projects promoting innovation and environmentally-sound methods for protecting and enhancing soil, water and other natural resources, including resource-conserving crop rotations and whole-farm planning. All projects will be fully funded for a 10-year period upon selection, and funding may be renewed for an additional 5 years.

Who is eligible for CFO? Any farmer with a production flexibility contract for wheat, feed grains, cotton, or rice is eligible to participate. Assistance through CFO, however, is not limited to a producer's contract acres and may cover an entire farm. CFO assistance is in addition to the farmer's production flexibility payments.

Can individual farmers or groups of farmers apply? Yes. Farmer-based associations and organizations and other non-profit groups are encouraged to apply on a group project basis. Individual farmers may also apply. The Natural Resources Conservation

Any farmer with a production flexibility contract for wheat, feed grains, cotton, or rice is eligible to participate.

Service may provide financial assistance to private organizations or local agencies for technical assistance, outreach, and monitoring and evaluation costs associated with a project proposal.

How do you apply? CFO application materials are available through local USDA service centers (NRCS and FSA offices). The Center for Rural Affairs will be happy to provide farmers and groups with copies of the materials as well. Materials include the application form, instructions for completing the form, and a copy of the scoring sheet that will be used to rank proposals.

How does CFO relate to other conservation incentive programs? A farmer participating in the Conservation Reserve Program, Wetlands Reserve Program, or Environmental Quality Incentives Program may not also receive funding through CFO. *However*, farmers may convert and subsume existing contracts under these programs into a CFO contract. The CFO is designed to provide payments that are equivalent to the payments that the farmer could otherwise have been eligible for under these other programs, in effect substituting a single annual payment for different types of payments under the other programs. Flexibility exists within CFO to try practices that may not be eligible under program rules for CRP, WRP, or EQIP.

What are examples of CFO flexibility? One example is in the land retirement area. Generally, CFO projects will not include large-scale land retirement, given that its aim is to maintain agricultural production while enhancing environmental benefit. However, smaller-scale land retirement for buffer strips and other conservation practices could be included, with payments similar to CRP payments. However, a CFO farm plan might include rotation of conservation strips for soil building purposes, or grazing plans for buffers to enhance resource benefits, or plantings to attract beneficial insects for pest control purposes, practices not ordinarily eligible under CRP rules.

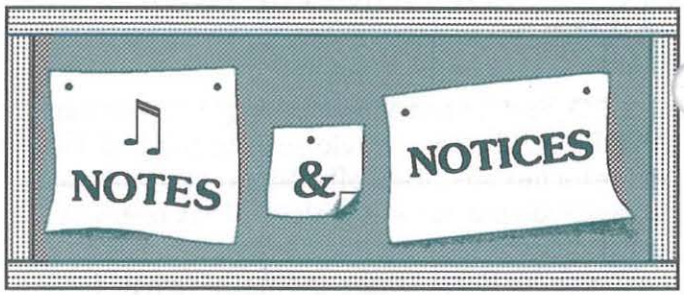
Why does CFO emphasize innovation? CFO provides incentives for long-term, whole farm natural resource planning as an innovative approach to conservation program design and delivery. Emphasis is also placed on innovative technologies and systems, including those not commonly used in project areas. These might include longer, more diversified rotations, new cover crop systems, rotational grazing, integrated crop management approaches to nutrient and pest issues, strip cropping, wetland buffers, composting, and many other sustainable agriculture practices.

...farmers will have to take the initiative if they want to benefit.

What are the requirements for CFO pilot projects? CFO proposals should demonstrate:

- innovative approaches to conservation program design and delivery;
- innovative conservation technologies and systems;
- cost effectiveness in achieving environmental benefits;
- a clear relationship to soil and water conservation, water quality improvement, wetland restoration or protection, wildlife habitat, or other natural resource goals;
- effective monitoring and evaluation procedures; and
- consideration of multi-stakeholder participation and additional non-federal funding.

Are on-farm research and demonstration activities fundable through CFO? Yes. On-farm trials are quite consistent with the goals of CFO. In many areas, assistance with establishing proper protocols is available from extension, sustainable farming associations, or the USDA Sustainable Agriculture Research and Education program (SARE). On-farm demonstration, education, and outreach activities are also a good way of transferring information and ideas to other farmers and for promoting program success stories.



Northeast Iowa Grazing Conference June 16

The morning session takes place in the Wilder Building at Northeast Iowa Community College, in Calmer.

8:30-9:00 Registration

9:00-11:30 Sonny Golden, a consultant from Pennsylvania. In his 40-year career he has focused on helping producers grow quality forages. Talk will cover pasture improvement, economics, establishment and benefits.

12:30-2:30 *Workshop A*: Vance Haugen on dairy issues in the Upper Midwest; Sonny Golden on nutrition for milking cows on pasture.
Workshop B: Dick Cates (Wisconsin) and PFI member Greg Koether on profit opportunities and strategies for beef on pasture.

3:00-5:00 Beginning and advanced pasture walks at Jim Hageman farm, just south of Calmar.

Cost of attendance is $15 per person or per farm and includes supplementary informational materials but not lunch. For more information call Matt Stewart, Oelwein, 319-283-1337.

Thailand Student Exchange

Five students came to Iowa in early April from Thailand's Suwanvajokkasikit Animal Research and Development Institute. This is part of a student exchange with Iowa State University. I am trying to place these students as interns on family run farms from late April until their departure in late September. Their exchange is for six months, but I am only asking families to take them on for one to two months or for however long. Their interests are in swine, dairy, or cattle operations. These students are hoping to gain

some hands-on experience on these farms and also learn about American culture.

These were students who were selected out of their institute to represent their country here in the United States, so they are very capable and conscientious young people. The group consists of five young men, ages ranging from 20 to 23, who are capable of communicating in English. They are willing to work in return for room and board. They will carry their own health insurance and have their own spending cash. Orientation and transportation to and from host families will be provided by Iowa State.

It would be a very interesting and fruitful experience for the student and for any interested family. Please feel free to call for more information at (515) 294-8447.

Samone Khouangsathiene
Thailand Project Coordinator

PFI District Events

In the months following the Jan. 10 statewide PFI meeting, PFI district leadership organized events on a range of topics.

Northwest – ISU organic specialist Kathleen Delate led a discussion on transitioning to organic production.

North Central – At the Jan. 10 annual meeting Steve Weis, Osage, was elected to the PFI Board.

Northeast – At the Jan. 10 annual meeting, Mike Natvig, Protivin, was elected to the PFI Board.

A district caucus at the Jan. 10 annual meeting.

Members attending the June 16 grazing meeting in Calmar (see previous page) will meet over lunch to plan district activities.

Southwest – PFI member Tom Frantzen gave a talk on holistic management.

Southeast – Wisconsin expert Ron Doetsch spoke on profitable small grains production. A Trees Forever representative described the organization's statewide riparian buffer initiative. At the Jan. 10 annual meeting, Susan Zacharakis-Jutz was elected to the PFI Board.

Army Corps Report Projects Ecological Decline for Upper Mississippi

A 1997 report by the Army Corps of Engineers predicts that the Upper Mississippi River will continue to decline, leading to poorer water quality, a shift to less desirable fish species, and fewer areas to support migratory waterfowl, according to an article in the Sept. 1997 issue of *Mississippi Monitor*, a newsletter published by American Rivers. Levee construction since the 1880s, and dam construction since the 1930s "are primarily responsible for converting the Mississippi from a free-flowing river with braided channels, floodplain forests, and wet meadows into a series of pools frequently cut off from the river's floodplain."

"Though these improvements have aided flood control and commercial navigation, dams, levees, and river training structures have robbed the Mississippi of its power to create new habitat during periods of high flow. Sloughs, side channels, and backwaters (that) fill with silt and sediment are no longer replaced during floods but are instead replaced (through) state and federal restoration programs." The Corps report, according to the article, recognizes the inadequacy of the Environmental Monitoring Program, the primary habitat monitoring and restoration program for the upper Mississippi.

The Forage Leader – A Benefit of IFGC Membership

The American Forage and Grasslands Council publishes a quarterly newsletter, *The Forage Leader*, that is received at the PFI office at ISU. There is always something worth reading in *The Forage*

Leader, and readers who are not part of IFGC may want to consider membership ($15) just to get the newsletter. In the current issue, regular columnist Jim Gerrish muses on the merits of harrowing pastures, the term "management-intensive grazing" is dissected, the price/availability outlook for warm-season grass seed is discussed, satellite phones are examined, and specialty corn hybrids are compared for silage. There is also an article on management of dwarf napiergrass – but, hey, we can't all farm in Oklahoma. If you would like more information about the Iowa Forage and Grasslands Council, contact them at 1-800-383-1682.

♫ Pointers for Farm Families

Dr. John Allen, a Nebraska rancher and sociologist, spoke at the Kansas Sustainable Ag Roundup last December. His comments were reported in *Rural Papers*, the newsletter of the Kansas Rural Center. Through surveys and interviews of Nebraska producers, Allen has identified three distinct approaches to farm management. These farms generally were focused on either continuous corn, no-till, or diversified, sustainable practices.

While those in all three groups highly valued their community, the sustainable, diversified farmers often saw themselves as "different" than their neighbors. Their farming style sometimes required that they go outside the community for markets, supplies, and information, and perhaps as a result they were less likely to discuss their farming and goals with neighbors. Allen suggested it is important to work against those isolating tendencies, as difficult as that may be.

Women on these sustainable farms often support the farm by working for a paycheck in town. This separation from day-to-day operations can add to the stresses of transition as new practices and systems are undertaken. Under the pressures of management, the need for discussion and consensus can be forgotten, leading to ill feelings and mistrust among family members. Consequently it is especially important to work for consensus within the family about new ventures, and families should think about their values and goals as they choose those new directions for the farm.

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Allen has also found that farming transitions are aided by social and information networks of like-minded people who may have been through similar changes themselves. Early and frequent communication with the banker is another key to successful transitions in farming. The reaction of a surprised banker can even break down equilibrium within the family, observed Allen.

♫ "Sustainable" Swine Producers Sought

PFI member Paul Willis is looking for additional pork producers to market hogs through Niman Ranch (see article on page 9). The company markets pigs raised without growth promotants or subtherapeutic antibiotics and in low-stress environments, for example pasture and deep-bedded systems. Producers receive a premium of $50 per cwt. Paul has an immediate need for hogs this June. If you would like more information, contact Paul Willis at 515-998-2683.

SHARE THE BOUNTY FROM THE GARDEN

Nan Bonfils

Home gardeners all across the country are pledging a row to feed the hungry. This service project, initiated by the Garden Writers Association of America, is designed to move durable produce to appropriate soup kitchens and food pantries. (Durable veggies are those that can stand some handling and shipping, like broccoli, cabbage, carrots, peas, green beans, tomatoes, peppers, eggplants, winter and summer squash, onions, beets, apples, and pears. Herbs are also welcome.) There is no cash involved – just you and

your garden, and some folks in your community who need fresh food. When you plant your vegetable garden this spring, simply plant one extra row of produce to give away.

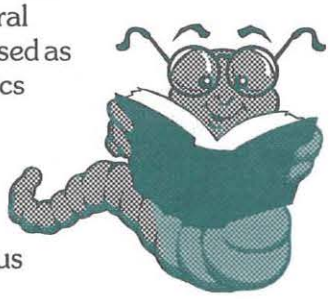
Even if your garden is already planted, it is not too late to get involved. Just make the mental commitment to send any extra veggies on to someone in need.

For the address of the nearest Iowa food bank, you can call the Food Bank of Iowa at 515-244-6555. For food banks across a broader geographic range, call Second Harvest at 312-263-2303 or Foodchain at 800-845-3008. To obtain free "Plant a Row for the Hungry" garden markers, call me at PFI's ISU office, 515-294-8512.

HAROLD WRIGHT LIBRARY AVAILABLE ON LOAN

PFI member Harold Wright has developed a library consisting of over 100 reference books plus newsletters, journals, magazines, and other publications on the following topics: alternative agriculture, biomass, biotechnology, care of the soil, community-supported agriculture, control of weeds, cover crops, energy conservation, family farms, global food supply, global warming, grass farming, green manure, land stewardship, organic farming, our food system, ozone depletion, protection of the environment, protection of wetlands, reduced chemical use, religious perspectives, rotation of crops, soil conservation, sustaining the community, water quality, wildlife habitat, wind power.

Harold would be happy to loan part or all of the library to a PFI member for a period of weeks or months, if that person would take care of loaning the books out to other interested people. For example, this could be a short term project for someone in one of the membership districts. The library also comes with several bulletin boards that can be used as displays. Bulletin board topics are: Alternative Agriculture; Family Farms Sustain the Community; Sustainable Energy; Nitrogen – Using Too Much; and miscellaneous articles from newspapers and newsletters around the Midwest.



For more information about this library, contact Harold Wright at 1718 Clark Ave., Ames, IA 50010-5345, 515-232-3361.

NIMAN RANCH SENDS IOWA PORK WEST

Rick Exner

For several years PFI members Paul and Phyllis Willis, in Cerro Gordo County, have sold pasture-raised pigs at a premium to some of the finest West Coast restaurants. Their pigs are marketed through California rancher Bill Niman, who has spent two decades developing a customer base for sustainably produced beef, pork, and lamb. Meat animals sold through Niman Ranch have received no growth hormones, subtherapeutic antibiotics, or other growth promotants, and they are raised in systems that allow them to move about and interact socially. Niman Ranch has also built a reputation for premium quality. San Francisco Bay-area restaurants and retail outlets – and now customers of the national chain Whole Foods – can buy Niman meats with confidence both in the flavor of the products and in their origins, or provenance.

In the past year, Paul Willis has facilitated pork sales to Niman from several other Iowa farmers using pasture and/or deep-bedded production systems. (See his call for producers in the Notes and Notices section.) Paul says they are not seeking the leanest possible carcases, but animals with sufficient fat to contribute to flavor and do well in outdoor or semi-confinement operations.

The business shows signs of taking off, which shouldn't be surprising given the pent-up consumer demand for sustainably-produced, premium quality meats. Willis says in the future they will likely set up some type of marketing association in which producers have a share. In the mean time, you can learn more by contacting Paul Willis. Niman Ranch also has an Internet Web site at http://www.nimanranch.com.

TREES FOREVER ANNOUNCES 1998 IOWA BUFFER INITIATIVE SITES

(Editors' note: the following information about the Trees Forever buffer demonstrations was provided by Trees Forever communications coordinator Mike Tidman. You may find ideas or techniques on these demonstration farms that can be put to use in your own operation.)

Trees Forever has announced 20 demonstration and project sites for the Trees Forever Iowa Buffer Initiative for 1998. The demonstration sites will help landowners see the benefits of buffer technology at work on the ground on farms near them. For example, at the Bear Creek research site in central Iowa, nine landowners have invested in buffer technology on ten farms in the Bear Creek watershed. The concepts proven at the Bear Creek site will be taken statewide.

The goal of the Trees Forever Iowa Buffer Initiative is to increase awareness and use of land management and its impact on water quality, soil erosion, landscapes, and wildlife. The results of the Iowa Buffer Initiative will be the development of:

1) twenty highly-accessible buffer demonstration and research sites each year for five years;

2) a network of technical assistance to support landowners;

3) shelterbelts as buffers around livestock confinement operations;

4) a recognition program for landowners who protect streams and waterways with buffers; and

5) field days for farmers, rural landowners, and youth to increase understanding of buffers.

Trees Forever is working with landowners, Novartis Crop Protection, the Iowa Farm Bureau Federation, and several other public and private sector partners on this program. An Iowa-based not-for-profit, Trees Forever has been the catalyst for projects in over 400 Iowa communities and in all 99 counties. For more information, contact Michael Tidman, Trees Forever Communications Coordinator, at 1-800-369-1269.

Trees Forever Iowa Buffer Initiative 1998 Demonstration Sites

County	Landowner	Contact	Phone
Buena Vista	Steve Turnquist	Renee Braun	712-732-3096
Clarke	Richard Sargent	Becky Harris	515-342-2917
Clayton	Jim & Jody Kerns	Jeff Tisl	319-245-1048
Crawford	Lester Boyens	Kathy Schneider	712-263-4123
Davis	Dr. Russell Rasmusson	Fred Hainline	515-664-2600
Greene	Mark Williams	Greg Heidebrink	712-662-4088
Hardin	Mark Balvanz	Jennifer Welch	515-432-2316
Iowa	Amana Society Farms	Larry Gnewikov	319-622-7554
Lucas	Hunter Brothers	Brian Gross	515-774-2512
Montgomery	Dale Spencer	Tom Burkhiser	712-623-9680

AND THERE WAS MUD

Virginia Wadsley, Des Moines

Mud, mud, mud of spring thaws greeted the third annual PFI Women's Winter Gathering at the Christian Conference Center near Newton on February 28 - March 1, 1998. Bu as we communed, winter returned with soft snow lazily covering the land and tempera-

tures cold enough to harden the muddy ruts. It was the perfect setting for brisk walks to the mess hall and a cozy circle of sharing – complete with an evening in our "jammies," illumined by beeswax candles, popcorn, and hot spiced cider.

Concern for the small number present – nine – was quickly converted into a free-flowing agenda of telling our stories. For ten hours we talked – right through supper, way past bedtime. What engaged us so? Life histories or segments thereof. Cleaning out hoophouses and marketing poultry. Hip aches caused by wading through mud. Leasing dairy cows, calving, and surviving in the dairy business. Off-farm jobs. Our children. The most wonderful husbands in the world. Agriculture in Japan and Israel. Teaching in Malaysia. Popular education in Tennessee and in Cabbagetown, Atlanta, Georgia. Farm women's social clubs, times past and present. Problems of family partnerships. Cooperative marketing of meat. Growing and marketing organic produce. Living by design rather than default. Exciting courses and professors at ISU.

By 12:30 a.m., bed beckoned more strongly than our formal agenda item of sharing favorite books.

Sunday breakfast brought discussion of why our number was small, the needs of PFI women, and how those needs can best be met. What are the self-perceptions and priorities of PFI women? Where are our primary communities? Is there a need to gather as PFI women? Should we have more accessible regional gatherings? What should our setting and agenda be? Is staying overnight a problem for many? Answers to these questions will be sought throughout the coming year.

Karen Mason, curator of the Iowa Women's Archives in Iowa City, joined us for the morning with the announcement that a position to collect farm women's papers (individuals and organizations) has just been funded by Farm Bureau. This position will support the focus on women in agriculture suggested by co-founder Mary Louise Smith before her death in 1997. Materials sought include correspondence, diaries, speeches, scrapbooks, oral history interviews, photographs, publications, reports, film, audio and video tape, and organizational minutes. The collection is open to the general public, and PFI members are welcome to both use and contribute to it.

It was the perfect setting for brisk walks to the mess hall and a cozy circle of sharing.

Karen read from several items already in the Archives: one of Miriam Baker Nye's "From the Kitchen Window" columns (*Sioux City* Journal, 1951-1981) about mud; the diary of Maria Margaretha Kromminga (1874-1937), a single parent who farmed near Monticello; and the diary of Clara Steen Skott (1888-1994), a home economics teacher and writer who lived in China and Wisconsin as well as Iowa.

Our "sending out" ceremony was lunch, photos, and farewell hugs.

There are two ways you can follow up on the Gathering. If you have input or suggestions regarding PFI women's needs and future gatherings, contact Donna Bauer, 1667 Hwy. 71, Audubon, IA 50025 (712-563-4084). If you would like to contribute to the Iowa Women's Archives, or if you are interested in the newly funded archival position, contact Karen Mason, Curator, Iowa Women's Archives, 100 Main Library, University of Iowa, Iowa City, IA 52242 (319-335-5068; e-mail: lib-women@uiowa.edu; fax: 319-335-5900).

WINTER WORKSHOP REPORTS

If you weren't at the Adventureland Inn in Altoona last January 10, you missed some great workshops, wonderful Iowa-grown foods, and an inspiring keynote talk by Neil Hamilton. (By the way, mark your calendar now for January 8-9, 1999, at the Ames Gateway Holiday Inn.) Below are reports from some of the winter workshops, captured by staff and ever-reliable PFI members.

Acute and Chronic Health Effects of Pesticides

Dr. Charles Lynch
Moderator and recorder: Rick Exner

Charles Lynch is part of a large agricultural health study that will examine the relationships between health and a variety of kinds of environmental exposure. These environmental factors include pesticides,

fuels and oils, organic solvents, animal viruses, engine exhausts, welding fumes, paints, and grain dusts.

The best way to understand the human health effects of these everyday farm irritants is to follow a very large number of people for long enough that patterns emerge. This study will track about 90,000 adults living on farms in Iowa and North Carolina. Families have been recruited for the study through the pesticide certification programs in those two states.

Lynch said he goes on the assumption that, at least for individual environmental factors, *risk = toxicity x exposure*. Exposure can be long-term and low-level, one-time and high-level, or combinations in between. A major factor is the length of time after an accident before the individual can wash up and change clothes. Commercial pesticide applicators tend to be better equipped with protective gear than private applicators, but they are somewhat less timely in cleaning up, said Lynch.

It will probably be a decade before any clear associations can be reported. The investigators will be tracking the study sample population for rates of cancer, reproductive effects, immunologic effects, neurotoxicity, and developmental effects. Iowa farmers are in general more healthy than their urban counterparts, but some health problems – including some types of cancer – are represented in the farm population at higher than average rates. Previous studies have drawn associations between different types of cancer and specific classes of pesticides. The Iowans and North Carolinians participating in the present study will help to provide a much clearer picture of these and other rural health factors.

The HM Workbook: A Sunlight-Harvesting Manual for Developing a Holistic Management Business Plan

Tom Frantzen, David Schafer
Moderator: Don Davidson, recorder: Sharon Davidson

David Schafer began by showing his three-part goal: quality of life; forms of production within the ecosystem; and a landscape that will support forms of production. A slide showing the solar chain illustrated the cycle.

Tom Frantzen presented his view that values should be part of the decision-making process. This

(Workshops continued on page 14.)

HIGHLIGHTS FROM THE 1997 CAMP

Forests, Fishing, Farming & Folklore

Youth & Family Camp
June 24-26, 1998

Come explore the connections between people and the ecosystems they live in...

This year's camp features an experienced staff of naturalists who have worked in sustainable agriculture, history, environmental education, forestry, fishing, and natural resources projects in Iowa, California, Alaska, Belize, Honduras, Guatemala, Costa Rica, Mexico, and Malaysia. The staff look forward to sharing stories, food, crafts, and life skills from forest, farming, & fishing communities where they have lived and learned.

WHO? Youth and Families from: Practical Farmers of Iowa
Field to Family Project
Magic Beanstalk CSA
friends and others

Children 8 years and under must be accompanied by a parent. Teen counselors 14 years and up attend free and receive a $20 stipend. Counselors will come the morning of June 24 for an orientation workshop.

WHEN? 1 pm Wed., June 24 to 7 pm Friday, June 25, 1997 (camp will end with a potluck picnic)

WHERE? The Iowa 4-H Education and Natural Resources Center near Madrid, Iowa

WHAT? A chance for youth and families to explore ways of life from farm, forest and fishing communities all over the world. Activities:

Solar House & Farm Field Trip to Onion Creek Farm
Ecology studies of ponds, creeks, prairies, woodlands, and farm fields
Fishing, Canoeing, Swimming
Rapelling, Archery, Astronomy
Campfires, Music, Storytelling
Community Building Games

COST? $50 per participant

DONATIONS NEEDED: The true cost of the camp is higher than the fee. We encourage donations to support campers - if you can help this way, please send a check made out to PFI to the address below.

By June 1 send registration form and check made out to PFI to: Field to Family, 917 Burnett #3, Ames, IA 50010. FOR MORE INFORMATION call (515) 232-7162.

Names and Ages of Campers _____

Names of Parents _____

Address and Phone Number _____

Check if interested in helping: as a teen Counselor_____ as a parent helper_____

If willing to share an activity or project, list materials needed: _____

Suggestions and Special Needs: _____

David Schafer took part in both the HM workbook session and the marketing workshop.

approach requires that everyone is involved in the decisions made. Values need to be incorporated in actions. Tom then related how his own family benefits from having a mission statement and goals. Positive behaviors should be rewarded. Business plans propel you into the next year. Actively seek out places where there are conflicts. You cannot improve your life without seeking out your values.

Don Davidson asked the speakers about why people have trouble getting started with holistic management after going through training. Tom and David both felt that their lives are better because of the HM decision-making process. Obstacles are admitting that there are things wrong that would be better done another way. David at first thought the process was too complicated. It can be done to different degrees.

Proactive Approaches to Changes in the Swine Industry

John McNutt, Steve Weis, Dennis Abbas
Moderator: Colin Wilson, recorder: Gayle Olson

John McNutt, Iowa City –

Farms on family farm near Iowa City with three employees. Three conventional hog buildings were built in the 1970s, and he also has hoops. He got together with neighbors trying to figure out proactive approaches.

4 double-L buildings; fill every other week. Six hoophouses with 240 head each. They also have converted conventional buildings. Basically, they have three systems on one site. A goal: capture 95% of the advantage of the industrial system, but on a smaller scale.

They use an old schoolbus for transporting pigs, which gives some biosecurity.

In hoophouses they use four-hole Richy waterers, and they bring in extra pigs from the double-L buildings when the pigs are about 6-weeks old/11 pounds. They use modern genetics in the hoophouses, which are divided down the middle with extra-high walls so they can do split-sex feeding. They have 11-12 square feet per pig and would give slightly more if they had it to do over.

Hoophouses are easier to manage in the cold than in hot weather, so their houses have a ridge vent that costs about $100. The only problem with the design is when they have big pigs and the building is closed tight. They discarded the roll-up door for Cover-all's new door. The hoophouse hogs are not so clean but healthy. They did have some problem with ammonia odor, which was probably due to insufficient bedding. They clean out the hoophouses with a Bobcat, since the tractor is too large. Cornstalks handle better than grass hay bedding. Bean straw works OK too. Getting a good underlying base seems important. Dry manure from the hoops can be piled outside for later hauling when it is convenient, unlike liquid manure.

In the hoops they get 1.7-1.9 lb/day gains. Hoop feed efficiency is in the area of 2.9-3.1 lbs feed/lb gain.

For McNutt, hoophouses are part of a system that allows all-in/all-out and split-sex feeding for a 300-sow-sized operation. Cost is $75-$80 per pig rather than the more typical $250.

Steve Weis, Osage –

Farms near Osage with his dad and two brothers.

In 1988 they built stall gestation buildings with crates at a cost of $200 per head. More recently a holistic management course opened his eyes. With

A goal: capture 95% of the advantage of the industrial system, but on a smaller scale.

They didn't want to commit to buildings that would determine the type of farming their kids would do.

low hog prices he began to look for simple, low-tech, versatile, flexible, low-investment, low-risk options – all the opposite of they way they had been going. They didn't want to commit to buildings that would determine the type of farming their kids would do. They put up three 30x72' hoophouses at a cost of $65 per head for their 200-sow herd.

Weis likes how hoophouses allow them to use on-farm resources like family labor, bedding, and construction skills. He wrote a SARE producer grant that allowed him to compare the hoophouses and their conventional system. In 1997, average daily gain in hoops was 1.67 lbs/day, compared to 1.76 in conventional finishing. Feed efficiency was 3.45 lbs feed/lb gain in hoops compared to 3.25. Death loss and cost of production were very similar in the two systems.

Bedding is key – you need an adequate supply and it must be cheap. Consider how you will handle the bedding. Their weak spot is that the back (north) curtain acts like a huge sail. They are concerned about longevity of the plasticized fabric. On the other hand, he really likes the versatility of the structure, which could be used for machinery, chickens, etc.

They still have lots to learn about the hoop buildings. Producers considering getting into hoops need to be proactive, open-minded, positive-minded, and to think about what's best for their operation.

Dennis Abbas, Hampton –

Dennis, who farms near Hampton, just put up his two hoophouses last fall. Having gotten out of confinement finishing some time ago, they now pasture-farrow 80 sows twice a year on the 320-acre farm. They hope to begin hoop farrowing in March. In the hoop buildings they use a corn cob base over straw. The Abbas farm is certified organic on 40 acres, and Dennis has market some pigs to the West Coast through PFI member Paul Willis.

Responses to questions: Worker health – Dennis got out of confinement due to health problems. So far, they have not recurred in the hoophouses.

Nitrogen leakage – McNutt's manure piles are surrounded by grass strips, but it's possible there would be nitrogen leached from the pile into the soil. So far research hasn't shown significant nutrient loss.

Profitable Cow-Calf Management
Dave Petty, Greg Koether, Alice Dobbs
Moderator and Recorder: Dave Lubben

Dave Petty, Union –

Dave Petty grazes corn stalks extensively in the winter, and this helps keep production costs low. He monitors feed costs to maintain production while grazing corn stalks. He has not had to feed hay for the last 14 years. Each cow requires 8-10 acres of cornstalks for winter grazing, at an average cost of $3 per acre. Petty plans to sell cull cows the week of June 20th, since that is the average date of highest prices.

Alice Dobbs, Trenton, MO –

Alice, who has taken a Holistic Management course from Stan Parsons, cited the "solar chain," in which the producer collects solar energy in forage and markets it through grazing stock. The more diverse the mix of forage species, the more stable will be production, she said. She and her husband David Schafer attempt to match the livestock to the environment, match the breeding cycle to the forage production cycle, and stockpile grass in the fall for winter grazing. Rotating the livestock through different paddocks helps keep fly populations from building up, she commented.

Greg Koether, Giard, IA –

Greg Koether commented that it is important to know where you are in the cattle price/numbers cycle. Try to work with nature and keep an eye on the condition scores of your cows. Koether calves in late May and June and weans in the fall. He overwinters the herd on stockpiled grass, and he grazes the year-old calves on spring grass to optimize compensatory gain. These yearlings are sold in August. Greg recommends producers read two books by the South African Jan C. Bonsma (available through the ISU

Library), *Livestock Production: Man Must Measure* and *Wortham Lectures in Animal Science*.

Women, Food, and Agriculture

Denise O'Brien and Danielle Wirth
Moderator: Donna Bauer, recorder, Sara Andreasen

Denise and Danielle represented a group that found its start at the PFI Women's Gathering of 1997. They have met four times since then. It is the loose-knit beginnings of a group interested in women, food, and agriculture. They recently received a grant to help them get started.

There are two main spheres of influence in agriculture: 1) growers – community-supported, industrial, small, family, etc.; 2) consumers (eaters) – the "whatevers" ("whatever is cheapest"), those who buy on environmental, organic, humane or other considerations, etc. The natural environment encompasses both these spheres and is not separate from them. The mission statement of the women, food, and agriculture network links and amplifies women's voices on issues of food systems, sustainable communities, and environmental integrity.

Workshop participants shared several comments regarding their own experiences in academic agriculture, as beginning farmers, and as women who work off the farm to help support the farm and family. These comments reflected issues of isolation and lack of recognition. Isolation from being part of the farm and isolation from other women in agriculture. Women farmers are often not counted in their communities, not counted in tax situations, and not recognized in other respects as well.

Danielle Wirth and Denise O'Brien led the Women, Food and Agriculture workshop.

Direct Marketing Your Farm-Raised Meats

David Schafer and Alice Dobbs (Trenton, MO)
Moderator: Barney Bahrenfuse, recorder: David Zahrt

David and Alice have farmed 300 acres in Missouri, using rotational grazing principles to raise sheep, chickens, swine, and beef cattle. They are now moving to a much smaller farm (65 acres) where they will concentrate on direct marketing. They quoted Joel Salatin as saying that the greatest opportunities in agriculture are where the corporate model has departed furthest from nature. Schafer and Dobbs believe producers can increase their share of the consumer food dollar both by reducing production costs and by marketing directly to the consumer.

They now grass-finish their beef. Since grass-fed beef is low in fat, it cooks faster. They also age their beef about three weeks, but lamb needs no aging. It is important to be able to see what a cut of meat looks like. They now shrink-wrap the cuts in clear plastic. Their prime market is customers with multiple chemical sensitivities. They are now also marketing to a CSA (community-supported agriculture) group, which buys in bulk. Alice and David recommend direct-market producers get listed in the publication Country Journal in order to increase their visibility. Paid advertizing has been a waste of money. However, they are still getting calls two years after issuing a press release about the farm.

PFI PROFILE: TOM AND IRENE FRANTZEN Northeast Iowa (New Hampton)

Jenny Kendall, Earlham

- Integrating agroforestry into an already diversified farm enterprise
- Grazing beef cows with sows
- Practicing holistic management since 1992

Anyone who has been reading the PFI newsletter over the years knows that Tom Frantzen is outspoken, willing to try new things, and ready to share his family's farming experiences. If you read his popular columns, "Footprints of a Grass Farmer," in chronological order, you realize you are reading the evolution of the Frantzen farm, an evolution that places today's Frantzen family operation in perspective.

Tom and Irene Frantzen and their children James, Jolene, and Jess explain the workings of the farm.

A Simple Vision

Tom began farming in 1974. Today, the Frantzen farm is managed and worked by the entire Frantzen family including Irene, and children Jess, Jolene, and James. The Frantzens use Holistic Management for their farming management model. Their approach to farm management might best be characterized by three words; planning, acting, and evaluating.

Their long term vision for the farm is stated simply: "We want to have a good quality of life supported by our diversified farm."

Likewise, Tom's definition of sustainable agriculture is also stated simply. Says Tom, "I view sustainable agriculture as a journey towards food and fiber production that will last."

Planning has always been integral to determining the Frantzen family farm goals. They have a long-term vision, create 5-year plans, and also do a yearly plan. Their planning book is appropriately named the Sunlight Harvesting Manual.

The entire family takes part in planning, which is typically done from late November to early January. Each year, they write down what is important and create a family quality of life statement. They list means of production that will help them to meet their goals and values and then describe the landscape that will sustain those means of production.

Their approach to farm management might best be characterized by three words; planning, acting, and evaluating.

Once the yearly plan is complete, it's time to act. One trick that Tom uses to help him keep up with planning and evaluating during the busy seasons is to keep his notebook close by his chair. That way, he can make notes while the information is fresh and he has up-to-date information. The Frantzens use this continually-gathered information in annual and long-term planning.

Evaluating, like planning, never stops. They have tried a variety of tillage practices, including moldboard plowing, chisel plowing, no-till, and ridge-till methods. They don't use no-till and also don't plant small grains after corn due to poor experiences with these methods. They do use crop rotation, their current plan incorporating a corn-soybean-oats-hay-pasture rotation.

Farm Goals

Specific Frantzen farm goals fall into three categories - quality of life, forms of production, and landscape. Quality of life goals include family involvement, financial stability, a pleasant life-style, and quality time. Tom and Irene like to make sure there is plenty of time for the Frantzen children to participate in school activities, especially sports. And Tom and Irene make it a point to attend the sporting events.

Says Irene, "Our quality of life goals also include having less stress and better personal relationships." One year, the family made a train trip vacation as a goal. Having that goal, and knowing the trip was coming up helped them to work through a difficult weather year.

Forms of production goals include: realizing a profit from livestock and determining the appropriate mix of annual and perennial crops, woody crops, and wildlife. The Frantzens currently raise a combination of cattle, hogs, soybeans, oats, forages, and alternative crops on their 335 acres. They pasture their sows and on occasion graze cows and sows together.

Says Irene, "Our quality of life goals also include having less stress and better personal relationships."

Trees play an important part for the farm. They use multi-purpose shelterbelt trees in their pasture-farrowing system and are working to establish hazelnuts to add to this already diversified enterprise.

For their landscape, they strive for an attractive farmstead, effective water and mineral cycles, capturing the sun's energy effectively, plant succession, covered soil, no erosion, and diverse crops. To further these goals, they have put in a pond and planted wildlife and shelterbelt areas. In fact, their landscape description occupies an entire chapter in the Sunlight Harvesting Manual and is used as their ideal futuristic vision of their farm.

The Role of On-Farm Research

The Frantzens do on-farm research to gain information on helping them to move their farm in a sustainable direction. Each trial is chosen for a specific reason. So, the Frantzen's have conducted research to examine profitability, to see how to reduce pesticide use, and to examine rotations that will work best for their farm.

Visitors at the Frantzen 1997 field day saw the first hoop structure going up.

Their latest on-farm research is work conducted in conjunction with Laura Jackson (University of Northern Iowa) with a SARE grant to investigate non-chemical means of suppressing quackgrass.

Frantzen Farm Enterprise Information

Category	Description
Farm Size	343 acres, with 85 rented and the balance owned
Equipment	4-row-wide Buffalo planter, 2 cultivators
Seed Varieties and seeding rates	Crow's high-lysine corn, Northrup King corn and beans with seeding rates of 27,000/acre for corn and 145,000/acre for beans
Labor and management practices	Family provides the labor
Livestock management practices	Pasture farrow hogs, cow-calf operation, rotational grazing, building 3 hoop structures for hogs
Marketing	Specialty marketing of grain amaranth
Agricultural organizations	Practical Farmers of Iowa, Shared Visions, Land Stewardship Project, Sustainable Farming Association
Weed management practices	Ridge till and 5 year rotations
Insect management practices	Crop rotation
Disease management practices	Reduce stress for the animals
Soil fertility management practices	Crop rotation, careful manure practices, rotating pastures
Crop yields	150 bu/acre corn, 50 bu/acre soybeans
Profitability indicators	Holistic Management indicators and invest capital where returns are best

Impact of Sustainable Farming Practices

The Frantzens have enjoyed improved profitability and have improved the look of the farm. Along the way, these practices have helped them to develop their ecological conscience, evolving an appreciation for the land they steward in a way that involves the entire family.

Says Tom, "We believe that it takes cooperative efforts to improve quality of life."

Tom has been involved with PFI since 1985. He served as district director, and was president of PFI for 1991 and 1992. Says Tom about PFI, "The single most important benefit from doing on-farm research with PFI has been access to new ideas."

Tom has also been active in the Shared Visions program. He represented PFI to the Kellogg Integrated Farming Systems Initiative from 1993 to 1996 and says, "It was among the best experiences I have ever had."

The Frantzens are strong advocates of sustainable agriculture who put their beliefs into practice and share what they learn along the way. They are pleased to be part of Practical Farmers of Iowa, as ... "PFI is a dynamic organization always looking to address the concerns of people in rural areas."

FLAMING FOR IN-ROW WEED CONTROL IN SWEET CORN

Rick Exner

A number of producers are using or considering propane flame cultivation as an alternative to mechanical or chemical weed control in corn. The Cooperative Extension newsletter *Pacific Northwest Sustainable Agriculture* recently reported results of research on flame weeding of sweetcorn. The work was carried out from 1994-1996 by R. Ed Peachey and R.D. William, of the Horticulture Department, Oregon State University, Corvallis, OR. The corn was grown in 36-inch rows, and weeds in half the plots were controlled by hand and herbicide for comparison. Flaming was limited to a 12-inch band over the row to minimize cost, with cultivation in the row middles.

Table A. Tolerance of sweetcorn to propane flaming in weed-free plots.

Corn growth stage at flaming			Propane rate(s)			Sweetcorn yield	
1	2	3	1	2	3		
corn height (in.)			gal/acre/application †			unhusked tons/acre	
2 (1 leaf)			4.5			12.5	ab ‡
2 (1 leaf)			9.0			12.1	abc
2 (1 leaf)	10	16	9.0	4.5	9.0	12.8	a
10			4.5			12.6	ab
10			9.0			12.1	abc
10	16		4.5	9.0		11.9	abc
10	16	22	4.5	9.0	13.5	12.0	abc
16			9.0			12.1	abc
16			13.5			11.7	abc
16	22		9.0	13.5		11.5	abc
22			13.5			11.7	abc
22			18.0			11.1	c
no propane applied						12.0	abc

† Cost of propane was from $0.75 to $0.99/gallon.
‡ Yields followed by the same letter are not significantly different at the 5% level of probability.

The researchers concluded that flaming weeds at the stage appropriate for weed control coincided with a period of sensitivity for the corn, which was about six inches tall at this time. The alternative strategy was to flame later, when corn was more resistant to flaming, and/or earlier, when corn plants could still regenerate from their below-ground growing points (Table A). Alternatively, cultivation and hilling the row could be used to keep weeds

Table B. Effect of flaming on in-row weed control in sweetcorn at 8 weeks after planting (1995).

corn stage at flaming			propane rate				pig-weed	pur-slane	night-shade	barn-yard grass
1	2	3	1	2	3	total				
corn height (inches)			gallons propane/acre				percent reduction in biomass			
10			4.5			4.5	80	30	65	58
10			9.0			9.0	93	13	48	17
10	16		4.5	9.0		13.5	98	63	85	75
10	16	22	4.5	9.0	13.5	27.0	98	66	100	100
16			9.0			9.0	65	17	42	38
16			13.5			13.5	61	13	61	25
16	22		9.0	13.5		22.5	50	42	63	50
22			13.5			13.5	18	14	46	50
22			18.0			18.0	62	58	68	40
no propane applied							0	0	0	0

Table C. Summary of flaming effects on sweetcorn yield, weeds, and cost.

Corn growth stage at flaming			Propane rate				Sweet-corn yield	Weed control estimate (8 wks after planting)		
1	2	3	1	2	3	Matl. cost	(unhusked)	pig-weed	purs-lane	barn-yard grass
corn height (inches)			gallons/acre			$/acre	tons/acre	% weed biomass reduction		
10			9.0			$9.00	12.4	93	13	17
10	16		4.5	9.0		$13.50	11.4	98	63	75
10	16	22	4.5	9.0	13.5	$27.00	11.5	98	66	100
no flaming, unweeded						$0	10.0	0	0	0
no flaming, weed-free							12.0	100	100	100

down until corn was large enough to withstand flaming, according to the authors.

Early flaming was more effective that later flaming in eliminating a variety of weeds (Table B), and later flaming generally required propane rates so high that corn was damaged (Table A). Most effective of all for weed control was a combination of two or three flame treatments.

Corn yields, of course, reflect both the effects of weeds on the crop and any negative effects of flaming itself. Profitability takes into account the additional factors of material costs, machinery, labor, and crop price. Table C compares input, weed, and yield factors for several treatments. Results on any individual farm would differ somewhat, but the same considerations would likely play a part in decisions about the use of flame cultivation.

THE VALUE OF BIODIVERSITY

Paul Mugge, Sutherland

Despite our scientific prowess, we have today identified only 1.4 million of the estimated 10 to 80 million species with which we share our world. Although much of this diversity lives in the tropics, our ignorance is everywhere apparent. Even a handful of the soil beneath our feet contains many unknown species. But this most non-renewable of our natural resources is dying at a rate of about 100 species per day. Deforestation annually claims 42 million acres of wet and dry tropics and may concurrently claim one-forth of all tropical plant species over the next 30 years (Worldwatch, 1992). One of every eight plants indigenous to the U.S. is in danger of extinction.

But extinction is the eventual fate of all species. Indeed, 95% of the species that once existed, no longer exist. Norman Levine (Levine, 1989) wrote that "Extinction is inevitable and is needed for progress. New species continually arise, and they are better adapted to their environment than those that have died out." This biological progress is necessary and good as the environment changes and life changes to maintain the close match, he suggests. And humans, predominantly responsible for the environmental changes, are better off. As the prairie was cultivated in corn and wheat, the prairie chicken could no longer find enough food and nesting sites. Prairie chickens no longer grace the prairie, but we have fed the world with corn and wheat, and how many lives would be enriched if prairie chickens returned? According to Levine, extinction exists and it is neither possible nor desirable to stop it. So what are we worried about? Sleep well. All is right with the world.

But all is not right. The background extinction rate (before modern times) was about one species per year. We are now losing one every 15 minutes. The present depletion will affect virtually all major categories of species. Eventually it will affect the one at the top, since *Homo sapiens,* like every other species, is intimately dependent on others for its well-being. Time after time, creatures thought useless or even harmful are found to play crucial roles in natural systems.

Fundamentally, biodiversity exists on at least three levels: (1) diversity of entire ecosystems, (2) diversity of species within an ecosystem, and (3) genetic diversity within a species. In a future article I will address genetic diversity.

Ecosystems are more than the sum of their parts. They are more than collections of species or genes; they are functioning, synergistic wholes, processes as well as parts, and many are in decline worldwide. Tall-grass prairies of the U.S., the cedar groves of Lebanon, temperate old-growth hardwood forests, and temperate rain forests are all but lost forever. Many of the most species-rich ecosystems in the world are in trouble. Coral reefs are dying due to sedimentation from coastal agriculture and deforestation, and from the "bleaching" due to rising water temperatures. Wetlands and estuaries are shrinking or sick and provide neither the productive habitat nor the environmental protection that they once did. In 1870, there

Ecosystems are more than the sum of their parts. They are more than collections of species or genes; they are functioning, synergistic wholes

were enough oysters in Chesapeake Bay to filter the entire volume of water every three days. It now takes a year to filter the same amount of muddied and oxygen depleted water. Deserts are expanding as tropical forests have been harvested for fuel or lumber or bulldozed for farmland. In the far north, alpine ecosystems are shrinking as a result of the warming climate and the relentless northward march of boreal forests.

Although incredibly adaptive and resilient, ecosystems throughout the world are being taxed to the point of being overwhelmed by the extent and the rate of human disturbance.

Of the three levels of biodiversity, loss of species is perhaps the most visible. Everyone has heard of snail darters and spotted owls. Everyone is not aware, however, of the essential functions performed by creatures diverse and unknown. The services provided by nature often become apparent only when they are lost. Scientists have found, for example, a worldwide decline of amphibians, even in apparently pristine nature preserves. An adult frog can eat its weight in insects every day. Crashing frog populations in India have been linked to pest damage to crops and higher rates of malaria (Wake, 1990).

One-half of the prescriptions filled worldwide originated with a wild plant or animal, and less than one percent of these life forms have been evaluated for medicinal properties. We might recall that a humble fungus gave us penicillin and that taxol, derived from the rare Pacific yew, is providing new hope to cancer victims (Calypso Log, 1994). An endangered evening primrose can offer hope for coronary heart disease, eczema, multiple sclerosis, schizophrenia, and even hangovers (Myers, 1989).

"The unsustainability of modern agriculture is in part a measure of its inability to diversify. Both genetic and ecological uniformity demand costly and often futile reliance on chemicals..." (Worldwatch, 1992).

The single most effective means of conserving biodiversity is conservation of habitat, which in terms of traditional crop varieties, means saving the world's small farms. On average, one Amazon tribe has disappeared each year since 1900, and with them have disappeared their traditional crops and the knowledge to use them. The loss of cultural diversity is one of the greatest threats to biological diversity (Schultes, 1991). The world's local indigenous people, mostly in the third world, provide an immeasurable service to humanity. But because the modern industrial world does not reward them for that service, they are being tempted to abandon their traditional agriculture and embrace the global economy.

Beyond the value to humans measured in dollars and cents, there is intrinsic value in each of God's creatures. They were created in all their diverse splendor, each to fulfill a function as part of an indescribably complex whole. We humans, for all our arrogance, will never understand all of the intricate relationships among various pieces of the puzzle. In the words of Aldo Leopold, "If the biota, in the course of aeons, have made something we like but don't understand, who but a fool would discard seemingly useless parts. To keep every cog and wheel is the first precaution of intelligent tinkering".

Loss of biodiversity is not something that can someday be remedied once we discover the error of our ways. Mistakes we make today because of ignorance, or selfishness, or indifference may be forever. Extinction goes beyond even life and death. As has been stated, "death is one thing, an end to birth is something else" (Soule, 1980).

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FIELD TO FAMILY PROJECT REPORT

by Gary Huber

The Field to Family project received a boost last year when PFI received a $135,600 USDA Community Food Projects grant. The project involves various groups and organizations interested in developing a more equitable and sustainable food system in the central Iowa area.

Field to Family represents a continuation of the work PFI began with Shared Visions. Field to Family also helps fulfill elements of PFI's strategic plan that deal with developing community food systems and marketing initiatives for value-added income.

And it adds a new emphasis - making fresh, locally-grown food more readily available to low income families along with nutrition education, community building experiences, leadership opportunities, and hands-on farm and garden experiences.

There are three staff people working on Field to Family. Two of us are currently half-time employees of PFI - myself and Robert Karp. The other is Shelly Gradwell, who is a quarter-time employee. All three of us are involved in developing new markets for locally-grown foods. I am primarily responsible for the producer supports needed to meet these new markets, and Robert works mainly on supporting the involvement of low income families in the project. Shelly's role is focused on educational activities.

The project is important because we believe one of the keys to ending the cycle of poverty is good nutrition based on fresh, whole foods shared in a community-building context. We also believe healthy communities must support, and be supported by, healthy, local farms.

The Field to Family project involves a wide variety of activities. For example:

- We are working with the Magic Beanstalk CSA to expand to 150 members this year. We also helped expand the number of farmers involved; there will be three farms involved in the vegetable production and twelve other farm families who will market a wide variety of products to CSA members.

- We are working with the Ames Mainstreet District to develop a new farmers market in downtown Ames. The market is an attempt to expand the range of options available to local producers who want to sell to directly to community members.

- We are beginning to work with the Scheman Continuing Education Center at ISU, which wants to start buying local and Iowa grown and raised foods for meals at events at their facility. This presents a significant opportunity for producers.

- This year we will expand this number of low-income families involved in Magic Beanstalk CSA to 25. Last year there were 17.

- Last year we delivered over 3,500 pounds of locally-grown produce to local food pantries, which was the amount of produce left over at the end of the CSA distributions. This year we will likely increase this amount as Magic Beanstalk grows in size. As well, we are working at having these food pantries purchase additional locally-grown vegetables.

- We are beginning an effort to facilitate the emergence of small business ventures that employ low-income families and that are based on local food production or food processing

These individual efforts and others in the planning stage all involve building extensive partnerships with local farmers, CSAs, social service agencies, churches, businesses, schools, city and county government, and agricultural and environmental organizations. As PFI works with these groups and individuals over the next several years on this project, we will keep members informed of progress through periodic updates in this newsletter. If you would like to learn more, please call the Field to Family office at 515-232-7162.

PFI 1997 ON-FARM TRIAL RESULTS - I

(Editors' note: Results of PFI 1997 on-farm research willappear in *The Practical Farmer* over the course of this year. We hope this will give readers a chance to absorb these cooperator reports. This issue focuses on trials of fertilizer, placement, and manure. Also included is Steve Weis' report from the first year of hoophouse swine production.)

Deep Banding - One Year Later

Deep placement of potassium and phosphorus fertilizer is a practice that PFI members have researched for several years. ISU soil scientist Antonio Mallarino has also been working on the topic (see *The Practical Farmer*, Fall, 1997), and reports that, for producers using no-till and ridge-tillage, deep placement of potassium fertilizer sometimes gives a yield response even beyond that of the same fertilizer surface-applied. In 1997, two cooperators followed up on deep banding research that they carried out in 1996.

In 1996, both Jeff and Gayle Olson (Mt. Pleasant) and Paul and Karen Mugge (Sutherland) saw significant corn yield increases from fertilizer that was deep banded, compared to no fertilizer at all. Both used a combination of 18-46-0 and 0-0-60, so these were not single-nutrient trials. However, they applied enough total nitrogen that the crop should not have

(Text continues on page 28.)

First Year Experience with Hoophouse Hogs

Steve Weis, Osage

Editors' note: Steve and June Weis, Osage, recently completed a SARE-funded project to document their transition to swine production in hoophouses. (SARE, the Sustainable Agriculture Research and Education program of the USDA, supports producer grants in the North Central Region for projects like this one.) The following is extracted from their final SARE report.

I received a SARE (Sustainable Agriculture Research and Education) grant to look at the differences between our confinement building and our hoop buildings. This is a compilation of what I have noted during this past year.

Construction: The three units were built the summer of 1996. The buildings are from Bio-tech and are each 30 ft. by 72 ft. The company rates them at 200 head each, at 10.8 sq. ft./head. We don't put that many in each, but instead fill them with one farrowing room of pigs, either 15 or 18 stalls. Cost of the buildings came to $11,200 per building, including fill, water, electricity, and fencing. I do not have an accurate cost on labor since we worked on the project all summer with different family members at different times through the summer. I have talked to several people and would estimate the cost at $2,000-$3,000 per building to have someone else build them for you. At 150 head per building, cost is $75/head, and at 200 head per building cost is $56 per head.

The cement pad on the south end is 16 feet deep and is raised 1½ feet above dirt level. The cement pad was poured flat, but I wish I had sloped it in toward the bedding slightly to get rid of urine, manure, rain, and melted snow. Some companies recommend sloping the concrete toward the outside of the building, so that if your waterer breaks, the water will run outside the building.

Some people never clean off the cement. This probably has a lot to do with the cement slope and getting the pigs started right when they come into

Wayne Fredericks (with microphone) was part of the outdoor panel discussion at Steve and June's field day.

the hoop. We lock our pigs off the cement the first 2-3 nights so they don't sleep on the cement, and also to teach them to dung down in the bedding area when they get up in the morning. The amount of manure that has to be scraped off varies a lot. In most cases it amounts to less than a scoop shovel full. After a rain, it is usually more and sloppier.

Summer heat is a problem, since you need to concern yourself with the bedding pack giving off heat.

Bedding: I have used large round bales of different types of bedding including straw, Japanese millet, corn stalks, and soybean straw. Paper could also be used, but the main idea is to use a bedding that is available to you and is as cheap as possible. I think it is important to have multiple sources of bedding in case something happens that you can't get all your bales baled. (Such as last fall with cornstalks when it was very wet with an early snow and cold.) Ideally, you should store your bales inside for best quality. I think that at a minimum you need to cover your bales to protect them from rain, snow, and ice. Getting your bedding baled has to be a top priority; it isn't something you can put off until later.

We've bedded the hoops from both ends, but usually do so from the north end. We use 2-3 people to bed, since I have good help from my two boys; one drives the tractor with bale spear, and two of us move bales in the building. When the pigs are small, we bed once or twice in the first month, then once a week for the next 1½ months, and then two times a week until market time. It takes us 5-10 minutes per bale, depending on the weather. Bedding gets done a lot by looking ahead at the weather and working around the weather, especially in the winter. I have used both small (600-700 lb) and large (900-1000 lb) bales. I definitely like the smaller bales better. You can move them easier and roll them where you want them. You also need to consider that the bales will pick up moisture from rain and snow, and from just sitting on the ground.

Seasonal Changes: We started pigs last December and January in very cold temperatures and had no trouble at all with starting the pigs. This is with pigs

Table D. Finishing pig performance in confinement and hoop structure on the Weis farm.

Parameter	Hoop Structures	Confinement Building
Average Daily Gain (lbs. per day)	1.67	1.76
Feed Efficiency (lbs. feed/lb. gain)	3.45	3.25
Death Loss	1.83 %	1.71 %
Finished Weight	250.6 lbs.	254.7 lbs.
Backfat	1.12 inches	1.13 inches
Percent Yield	75.3 %	75.4 %
Avg. Bedding Required	65.3 750-lb bales	
Lung Score †	6.30	6.87
Mange Score ‡	0.13	0.20
Liver White Spots §	0 – 80.3%; 1 – 17.5%; 2 – 2.3%	0 – 98.7%; 1 – 1.3%
Rhinitis ¶	0.87	1.10

† Lung score is the average percent of the lung that is included in the pneumonia process. National average is 7.5%.
‡ Mange is graded on a scale of 0-3, with 3 being the worst. A score of less than 0.5 is desirable.
§ White spots on the liver are scar tissue caused by migrating worm larvae, indicating that worms are or were present in the intestines. Livers are graded from 0-2, with 2 being the worst (10 or more liver spots).
¶ Rhinitis is graded on a scale of 0-5. Five is the worst, indicating severe loss of structures in the nasal passages. The national average is approximately 1.7.

coming out of a 65 degree grower unit at 65 pounds. Very little snow blew in, even during blizzards, except for right inside the south gate, where at the worst a 2 foot high drift formed. The bedding area, at worst, received a dusting of snow.

Summer heat is a problem, since you need to concern yourself with the bedding pack giving off heat. In summer the plywood is taken off both ends, and the north curtain is raised all the way up. To cope with the heat on 90+ degree days, I sprayed the manure areas a couple times a day with a hose and spray nozzle, and also bedded them down more to insulate them from the heat. Some people put up a mister inside the building. Still, the pigs were often fighting to get at the waterer, not so much because they were thirsty, but because they wanted to lay in the water. A two-hole waterer put on each side of the cement pad might prove useful to give the pigs more access to a waterer.

The pigs in the hoops eat more feed than in our confinement building. This seems to be as much as 1 pound more per day per pig. We have been adjusting our rations in the hoops. Except for the heat of the summer, we always run 10% wheat midds in the ration to bulk up the ration. Last winter we upped this to 15% after 125 pounds was reached. We are still adjusting rations, but it looks like we can maybe feed an even less nutrient-dense ration. Ideally, we think we can attain the same ADG in the hoops as in confinement and make the difference in F.E. up by feeding a cheaper ration. We feel that there is still a lot to be learned yet of rations and feeding pigs in hoop buildings.

Something I noticed this summer was a possible advantage to not hauling the raw manure right from the hoops to the field. Instead we piled it up to self-compost for 3 weeks or longer. After setting that long, the material has heated up and broken down some more. By piling the manure you can avoid hauling during the winter or while you have crops in the field. You can haul when conditions are right for you. Odor from the hoops is minimal when there are pigs in them. If there is an odor, it probably means you aren't using enough bedding. When the manure is hauled to the field, there is an odor, but definitely less than when hauling liquid manure. I thought flies might be more of a problem with the hoops, but that isn't the case. There was no difference in flies between the confinement building and the hoop buildings.

Surprisingly, the backfat and yield percentage were very close for both buildings.

Production: We tracked production numbers for both the hoops and the confinement building during the past year (see Table D). Looking at the numbers, you see probably more of a disease effect rather than a building effect. We were hit with PRRS at the start of our study, and that translated into one very poor set of pigs in both the hoops and the confinement building. As we have learned how to cope with PRRS and its side effects, we have gotten better and more reliable data. ADG was less in our hoops than our confinement. I expected this to be closer, and it maybe would have been with better health. FE was poorer in the hoops as was expected. With higher consumption you need to compensate by changing the diet fortification and cheapening the diet. Surprisingly, the backfat and yield percentage were very close for both buildings. I expected the hoops to be fatter and lower yielding but that didn't seem to be the case.

All in all, I think hoop buildings have a place on our farm, and probably many other small to mid-size farms. They are versatile, low priced, and low risk. Even if they don't work out for hogs, they can be used for some other livestock or for storage of machinery, bedding, or hay. They also may be revolutionizing the hog industry due to all the versatile ways you can use them, such as for gestating sows or as a farrow to finish unit. Our confinement building is very nice, and we will probably always get better production numbers from it. On the negative side, there is a high capital outlay to build what is essentially a single-use building. Comparing the cost of production between the buildings is hard. With the confinement building, we have a higher capital cost, higher feed cost (due to feeding fat for dust control, micro-aid for odor control, and extra lysine to compensate for lower consumption), and a higher energy cost due to heating during the winter and running the pit fan, feed lines, and curtains. With the hoops we get a poorer ADG and FE, the cost of bedding, and probably a slightly higher labor cost due to the need to bed.

1997 Manure Source Trial at the Ken Rosmann Farm

Richard DeLoughery
formerly Extension Area Crops Specialist

One of the common questions organic growers ask is whether cattle manure is equivalent to poultry manure in both corn yield produced and the cost of hauling and application. To try to answer this question Ken Rosmann, organic farmer and manager of the Heartland Marketing Co-op, and I set up an experiment in 1997 to compare the two sources. The research was supported by Practical Farmers of Iowa.

The plots were on a Marshall silty clay loam soil with 2-5% slopes on a legume-grass pasture from 1996. Plots were 420 ft. by 30 ft. (0.3 acre). The two treatments were randomized within each of three replications. 18 or more rows of corn were borders on both sides and one end.

We sampled the manure and soil prior to manure application (see Table 2). We estimated that to meet the nitrogen needs of the crop, 2.1 tons of poultry and 10.4 tons of cattle manure were needed per acre. (Keep in mind that pre-season calculations based on credits and yield goals are approximations). Due to spreader limitations we applied 2.5 tons of poultry and 8.2 tons of cattle manure per acre. This produced significant differences in nutrient application. The manure was plowed down the same day it was applied (May 9). Corn was planted the next day in 30-inch rows, with 12 rows per plot. Emergence occurred uniformly on May 31.

A soil Late Spring Nitrate Test (LSNT) was conducted on June 13 when corn was 6 in. tall (Table 3). We also took a leaf sample at late pollination (see Table 3). Based on the ISU publication "Nitrogen Fertilizer Recommendations for Corn in Iowa" (Pm-1714), the LSNT indicated another 30 lb. N per acre might be recommended for the cattle manure plots, but an organic source of nitrogen was not available. The ear leaf test also showed the nitrogen level was lower in the cattle manure plots than in the poultry manure plots. Other nutrients were about the same at pollination, when leaf samples were taken.

Weed populations were very low throughout the summer. Second generation European Corn Borer (ECB) egg mass counts were very high, so the field was treated with *Bacillus thuringiensis* (*Bt*) granules in mid August. Stalk rot and ECB tunneling in the plots

Table 1. "A/B" Deep Placement and Manure Management Trials

COOPERATOR	CROP	TREATMENT "A"			TREATMENT "B"
		DESCRIPTION	YIELD (bu.)	TREATMENT COST	DESCRIPTION
MUGGE	SOYBEANS	DEEP BAND FOR 1996 CORN	56.8	$0.00	NO DEEP BAND
OLSON	CORN	DEEP BAND NPK FOR '96 CORN	178.3	$0.00	NO DEEP BAND
BOES	CORN	3 T POULTRY MANURE	133.5	$29.00	NO MANURE
ROSMANN, K.	CORN	OFF-FARM POULTRY MANURE	126.0	$49.65	ON-FARM BEEF MANURE

Table 2. Cattle and poultry manure analysis and estimated crop-available nutrients, Ken Rosmann farm.

	Manure Analysis		Soil Test		Manure Nutrients Available	
	Cattle	Poultry	Analysis	Recommendation	Cattle	Poultry
	lb./ton		ppm	lb./acre	8.2 Ton/acre	2.5 Ton/acre
N =	11 (7)	47 (35)	6	73 †	57 lb/acre	87 lb/acre
P =	8 (5)	59 (41)	6 L	75	41 lb/acre ‡	102 lb/acre
K =	11 (11)	51 (51)	196 VH	0	90 lb/acre	127 lb/acre
S =	1	10	OM = 2.7%			
Mg =	2	11	pH = 6.0			
Ca =	5	39	buffer pH = 6.7	1,300 ¶		
Zn =	0.05	0.69				
Moisture %:	72.1	34.6				

( ) = lb. of estimated *available* nutrient per acre. See 'Managing Manure Nutrients for Crop Production,' Pm-1596.

† 148 bu/acre yield x 1.1 = 163 – 90 lb./acre N credit from legumes = 73 lb. N/acre needed.

‡ Planned to add 400 lb./acre rock phosphate, but could not.

¶ lb. per acre of 100% ECCE lime. Not applied in 1997.

"A/B" Deep Placement and Manure Management Trials

TRT "B"		DIFFERENCE				
YIELD (bu.)	TREATMENT COST	YIELD DIFF.	YLD LSD (bu.)	YLD SIG.	$ BENEFIT OF TRT "A"	COMMENT
57.6	$0.00	-0.8	1.5	N.S.	$0.00	DEEP BANDING INCREASED CORN YIELD IN 1996
176.5	$0.00	1.8	17.8	N.S.	$0.00	DEEP BANDING INCREASED CORN YIELD IN 1996
146.6	$0.00	-13.0	29.4	N.S.	($29.00)	AFTER LEGUME-GRASS PASTURE, MORE MANURE MAY NOT PAY
124.0	$35.25	2.0	25.2	N.S.	($14.40)	LOADING AND SPREADING CHARGED TO BEEF OPERATION

at maturity were much less than in untreated fields in the area. Rainfall was below average in July and August. The crop matured before the fall freeze.

We took end-of-season cornstalk nitrate samples in each plot on October 10 (see Table 3). All three nitrate samplings followed planned sampling patterns. Due to the great variability there was no significant difference between the treatments for cornstalk nitrate. Ken Rosmann observed some late season nitrogen deficiency on the lower leaves, with more on the cattle manure plots. Some of the stalk nitrate samples in these strips also suggested that the crop might have responded to additional N.

The middle six rows of each plot were harvested on November 8. Plant populations varied from 24,750 to 26,500, with less than 100 plants per acre difference between the averages of the two treatments. Individual plot lengths were measured. Grain moisture ranged from 17.0 to 17.6%, and yields reported are adjusted to 15.5% moisture at 56 lb. test weight (Table 1). The average yield of the poultry manure plots was just two bushels per acre higher than yield of the cattle manure plots. There were inconsistent responses among replications for both stalk nitrates and grain yield. More replications would help even out the variability, but even so there was little suggestion of a yield difference between the two treatments. The legume stand was variable in 1996, which probably contributed to the yield variability.

Table 3. Late spring soil nitrate, mid-season ear leaf nutrients, and late-season stalk nitrate-N, Ken Rosmann farm.

	Cattle	Poultry
	Late Spring Soil Nitrate Test † (ppm N03 - N)	
	19	28
	Ear Leaf Analysis †	
Nutrient	(percent)	
N =	2.67	2.81
P =	0.27	0.26
K =	1.87	1.8
S =	0.18	0.17
Mg =	0.2	0.2
Ca =	0.39	0.36
	End-of-Season Stalk Nitrate † (ppm)	
Avg.:	490	2,390
Range:	90 (low) to 1,180 (optimal)	1,300 (optimal) to 4,410 (excess)

† One composite sample represented all three replications of the same manure source.

(Deep banding, continued from page 23.)

been affected by the N in the deep band. Their question in 1997 was whether the benefit would last another year. As Table 1 shows, neither Paul Mugge's soybeans nor Jeff Olson's corn showed a residual fertilizer effect in 1997.

Livestock Manure – Crop Response and Economics

Two PFI cooperators in western Iowa posed research questions that apply to the crop nutrient needs on their organic farms, specifically. Jim and Lynn Boes (Atlantic) and Ken Rosmann (Harlan) have nearby sources of poultry manure. They wanted to know if purchasing some of this poultry manure would be a cost-effective way to import nutrients into the farming system.

Jim Boes worked with Extension Crops Field Specialist Mike White to compare purchased poultry manure to no manure at all. In fact, the entire field had a manure history, from livestock wintered there and from previous years' applications. Table 1 shows a 13-bushel average difference between treatments, but this cannot be taken too seriously, given the 29.4-bushel LSD from the trial. With no statistical difference due to purchased manure, the $29 cost would appear an unnecessary expense. Still, Jim says some of his soils could really use the phosphorus in the

Economics

An economic analysis is important because poultry manure must be purchased, while cattle manure is produced on the farm (see Table 4). The cost of loading, hauling, and spreading purchased (poultry) manure must be charged against the crops, but loading and spreading manure from an on-farm (cattle) feeding enterprise should be charged against that enterprise, because the manure must be removed from the feed lots or pits. Only the cost of hauling the on-farm manure from the building site to the field was charged to the crop.

These plots were located about one mile from the feed lots. The poultry manure had been piled in the field. Using average costs and the actual application rate in this study, the poultry manure cost about $14.40 per acre more than the cattle manure, or about $7.20 per bu. for the two-bushel-greater yield (Table 4). This represents a hypothetical economic loss since Ken's organic corn currently sells for about $4.00 per bushel.

If the intended application rates were applied, the cattle manure (at 10.4 T/A.) would have cost $44.75 per acre to apply (not $35.25), while the poultry manure (at 2.1 T/A.) would have cost $41.70 per acre (not $49.65). Yields may have been different too. Individual growers should recalculate this using their own costs.

Table 4. Financial analysis, corn following on-farm cattle manure or purchased poultry manure, Ken Rosmann farm.

	Poultry	Cattle
	$/Ton	
Product Cost	$8.00	0.00
Hauling Charge	$5.00	**$4.30
Loading-Spreading	**$6.85	0.00
Total	$19.85	$4.30
Tons/Acre	x 2.5	x 8.2
Cost/Acre	$49.65	$35.25

**Hauling or Loading & Spreading		
	Poultry	Cattle
	Load/Spread	Hauling
Hauling		*$53.5/hr.
Load/Spread	$53.5/hr. †	
Loads/hr.	6	5
$/Load	$8.90	$10.70
Tons/Load	1.3	2.5
$/Ton	$6.85	$4.30

† from the ISU publication "1997 Iowa Farm Custom Rate Survey" (Fm-1698).

poultry product. First-year corn might not be the best crop to receive the purchased manure, at least on fields like this one.

Ken Rosmann and Extension Crops Field Specialist Richard DeLoughery set out to compare purchased poultry manure to beef manure generated on the farm (see page 16 sidebar). They went to some lengths to monitor the crop's nutrient status throughout the season, and they factored in all the associated costs for each type of manure. They observed no difference in yields between corn receiving beef manure and corn fertilized with poultry manure, even though the poultry manure was applied at a higher rate than intended while the beef manure was applied more lightly than planned.

Dick DeLoughery's report mentions the field variability that made it difficult to measure the effects

With no statistical difference due to purchased manure, the $29 cost would appear an unnecessary expense. Still, Jim says some of his soils could really use the phosphorus in the poultry product.

of manure treatments. That variability was also a factor in the trial of manure and nitrogen rates that Paul and Karen Mugge (Sutherland) carried out with assistance from Extension Crops Field Specialist Joel DeJong. They set up this trial as a "split-plot" experiment. The "main factor" was nitrogen rate – four different levels of sidedressed N: 0, 40, 80, and 120 lbs per acre. Each main factor plot was "split" into with-and-without ("±") liquid swine manure injected at the rate of 3,200 gallons per acre in late April. The late spring soil nitrate test averaged 31 and 20 parts-per-million (ppm) in the manured and unmanured soils, respectively. Mid-season tissue samples collected by Joel DeJong confirmed that sidedressing additional nitrogen increased leaf nitrogen concentration (Table 5). End-of-season stalk samples also showed the effects both of manure and of sidedressed N (Table 5 and Figure 3).

So far, everything was fairly predictable, but crop yields raised new questions. There was the suggestion of a yield response to the first incremental addition of N, especially in the unmanured corn. But there was also indication of a yield *reduction* at the highest sidedress rate, especially in the manured corn. Was this just field variability? Both trends were not statistically significant. Interestingly, the downturn at high N occurred principally in two neighboring replications in the middle of the field. Was there something different in that part of the field? Would it appear another year? This would seem like pure speculation, except that ISU scientists also occasionally observe corn yield reductions at high N rates. They are now using technologies associated with precision agriculture to come to grips with the potential phenomenon.

The New Melleray Abbey is co-composting manure and municipal yard waste with assistance from the DNR.

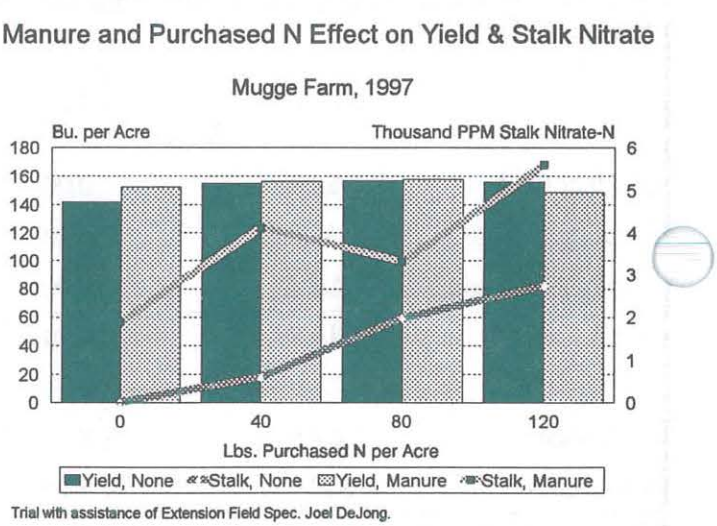


Figure 3. Corn stalk nitrate-N and yields from manure and sidedress nitrogen, Mugge trial

Table 6. Two-Treatment Nitrogen Rate Trials in Corn

	LOW RATE TRT			HIGH RATE TRT				
COOPERATOR	YIELD (bu)	N RATE (lbs N)	STALK NO_3-N	YIELD (bu)	N RATE (lbs)	STALK NO_3-N	RATE DIFF.	TEST PPM
(AFTER SOYBEAN)								
BRUNK	119.1	0		118.0	30		30	27
FRANTZEN	144.2	67		153.0	136		69	28
MCLAUGHLIN	172.6	120	70	179.6	138	415	18	20/28
	SPLIT APPLICATION			ALL PREPLANT N				

Table 5. Mugge Manure and Nitrogen Rates Trial

MANURE	NRATE lbs/acre	YIELD bu/acre	TISSUE N %	STALK N ppm	YLD STAT †	RAW COSTS per acre	BENEFIT per acre
NO	0	141.8	2.42	82	a	$0.00	$0.00
NO	40	155.0	2.55	595	a	$10.57	($10.57)
NO	80	157.0	2.76	1972	a	$21.14	$16.98
NO	120	155.7		2727	a	$31.71	($31.71)
YES	0	152.1	2.78	1874	a	$5.07	$0.00
YES	40	156.2	2.86	4117	a	$15.64	($10.57)
YES	80	157.8		3317	a	$26.21	($21.14)
YES	120	148.7		5587	a	$36.78	($31.71)
NITROGEN RATE:		PR>F=.2464	PR>F=.0387	PR>F=.0555			
(Main Factor)	0	146.9	(UN-BALANCED DATA)	978	a	$0.00	$0.00
	40	155.6		2356	a	$10.57	$11.08
	80	157.4		2645	a	$21.14	$5.01
	120	152.2		4157	a	$31.71	($31.71)
MANURE:		PR>F=.3525	PR>F=.0033	PR>F=0.0042			
(Subfactor)	YES	153.7	(UN-BALANCED DATA)	3724	a	$5.07	($5.07)
	NO	152.4		1344	a	$0.00	$0.00

† Letters within a column show statistically significant differences . An "a" is different from a "b," but neither is different from an "ab."

Two-Treatment Nitrogen Rate Trials in Corn

LEAF N SIG.	YIELD DIFF.	YLD SIG.	YLD LSD	LOW RATE $ BENEFIT	COMMENT
	1.1	N.S.	4.6	$7.93	MANURE HISTORY INCLUDING 3,200 GAL. IN FALL
N.S.	-8.8	N.S.	10.5	$18.16	NO DIFFERENCES IN MIDSEASON LEAF NUTRIENTS
	-7.0	*	3.8	($14.23)	DIFFERENT N RATES IN SPLIT AND PREPLANT. 70/415 PPM STALK NITRATE: (LOW/ MARGINAL) TOTAL SIDEDRESS N YIELD: 159.6 BU/A
	SECOND PASS WITH APPLICATOR:			$5.93	

Nitrogen Trials

A field's manure history plays a role in its nitrogen status, a fact now quantified in the ISU recommendations based on the late spring soil nitrate test. Whereas 25 ppm nitrate-N is considered sufficient in corn fields with a row-crop-no-manure history, recent manure use brings that critical level down by 5-10 ppm. Ron, LaDonna and Steven Brunk, Eldora, and Tom and Irene Frantzen, New Hampton, both carried out nitrogen rate comparisons. Both these farms have plenty of manure, and the late spring soil nitrate results came back 27 and 28 ppm, respectively, in the two trials (Table 6). In each trial, as you might expect, additional sidedress N did not produce a yield response.

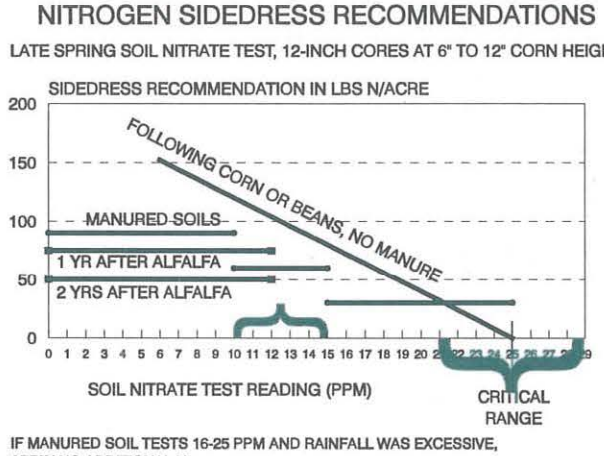
Dennis and Kate McLaughlin, Cumming, set out to determine the best timing for nitrogen application. Dennis's ridge-till equipment is not set up to sidedress N, so he would prefer to apply all the crop's nitrogen at one time, preferably before planting. In this trial he used the local co-op's anhydrous ammonia applicator to compare preplant application of 140 lbs N to a split preplant-sidedress rate of 70 lbs/70 lbs. He also included a few strips of 140 lbs applied entirely as sidedress.

Dennis noted that the pressure gauge on the applicator was not a reliable indicator of the rate. With no change in settings, readings on the gauge varied dramatically from one trip across the field to the next. After consulting again with the co-op, Dennis estimated that the preplant N rate might have been around 136 lbs, and that the split application probably was really closer to 120 lbs N total (Table 6). Consequently, there was a bit of an "apples and oranges" situation, in which yield differences could be due either (or both) to timing and rates of nitrogen.

One clear loser from the trial was the all-sidedress demonstration strips.

The treatment with the preplant application of about 138 lbs N yielded significantly better than the split application treatment of around 120 lbs N total (Table 6). However, the end-of-season stalk nitrate test showed about 70 ppm nitrate-N in the split application treatment (low), compared to an average of 415 ppm (marginal) in the preplant N treatment, which suggests that the crop may have run out of nitrogen in the split-application strips. This is just the opposite of what might be expected from a split application, strengthening the suspicion that the two N rates were not the same.

Given the yield difference, the clear economic advantage went to the preplant application, but Dennis is left with questions. He would like to repeat the trial, but is reluctant to do so unless N rates can be better controlled. There are regulators on the market that could accomplish that, but they are not cheap. One clear loser from the trial was the all-sidedress demonstration strips. Yields there averaged 20 bushels per acre less than those of the preplant N treatment and 13 bushels less than in the split application. This is in line with the observation of many other ridge-tillers, who compensate for slow soil nutrient release by adding some nitrogen at planting time.



Split application of nitrogen is easier if the cultivator is set up to sidedress 28-percent liquid N.

FOOTPRINTS OF A GRASS FARMER

Deep-Bedded Facilities Changed Our Lives!

Tom Frantzen, Alta Vista

Hog production techniques are changing in a dramatic fashion. Most of the attention given to this development is centered on the rapid expansion of large scale factory style operations. However, as the number of large operations grew, a counter revolution also developed. The driving energy of the counter revolution is the use of deep-bedded facilities instead of confinement slat floor practices. In Iowa, over 1,000 fabric covered "hoop house" buildings were erected in the last three years. We built three of these during the summer of 1997. Their use changed our lives!

The decision to proceed with this building project was significant. We employed the Holistic Management decision guidelines. Spending $40,000 is not a small matter on a 335 acre operation! This construction project and all of the expected changes passed all of the Holistic Management tests with ease! If you are not familiar with this process, a proposed action is questioned as to how it will affect the quality of life of the people involved, how it will meet the economic demands faced by those people, and its effects on the entire ecosystem. We also compared this project to other possible alternative investments.

A pig has at least three natural cravings: to run around, chew on something, and build a nest.

Construction began in April and lasted all summer. By the end of September one of the three hoops was entirely completed. What a joyful event it was moving the last confined, slat-floor pig into a straw bedded humane facility! A pig has at least three natural cravings: to run around, chew on something, and build a nest. Deep bedded sheds meet these desires. The pigs are happy. Stress levels are down for *all* parties.

Contented pigs are a significant benefit. This is overshadowed by several major improvements to our farm's ecology. We eliminated the use of slat floors and greatly reduced feeding hogs on bare concrete lots. A limestone floor covered with a combination of corn cobs, oat straw, and corn stalks provides a superior environment. The benefits are numerous. The soft bedding pack eliminates abrasion injuries from laying on a hard slat floor. The bedding is porous and absorbs the large amounts of dung and urine excreted. When the pigs are properly bedded, I can barely detect any ammonia. The fabric building eliminates the nutrient losses from precipitation run-off. This was a major loss, nearly impossible to prevent with our older concrete floors.

Several people have suggested that finishing hogs in the field would be more appropriate than using the deep-bedded hoops. Although I routinely use pasture and crop stubble for the gestation and farrowing herd, there are significant reasons to grow and finish hogs in covered bedded packs. This phase of pork production uses large quantities of feed. Recycling these nutrients back to where they came from is exceptionally important on a sustainable farm. Hoops make this possible. They keep nutrient losses low, provide an ideal manure to compost, and provide these features at the stage where it counts. The downside is the equipment required to haul and spread. This appears to be the price one must pay to raise any quantity of hogs on the same farm where the feed was grown.

The downside is the equipment required to haul and spread.

The Stockman Grass Farmer encourages its readers to align their livestock reproduction to complement the seasons. We heeded this advice and converted to seasonal farrowing. This also coincides with our use of the hoop buildings. Sows and gilts are bred to farrow in August and September. Farrowing ends in early October. The pigs are weaned in October and November directly into the hoops. The pigs spend the entire winter in the naturally warmed bedded packs. The spring farrowing season begins in March. Winter manure hauling as well as winter farrowing collide with nature. Aligning our production with the seasons reduces costs, minimizes nutrient loss, and improves quality of life. This is a major step in what we think is the right direction.

The Common Living Dirt

Marge Piercy (1983)

The small ears prick on the bushes
furry buds, shoots tender and pale.
The swamp maples blow scarlet.
Color teases the corner of the eye,
delicate gold, chartreuse, crimson,
mauve speckled, just dashed on.

The soil stretches naked. All winter
hidden under the down comforter of snow,
delicious now, rich in the hand
as chocolate cake: the fragrant busy
soil the worm passes through her gut
and the beetle swims in like a lake.

As I kneel to put the seeds in
careful as stitching, I am in love.
You are the bed we all sleep on.
You are the food we eat, the food
we ate, the food we will become.
We are walking trees rooted in you.

You can live thousands of years
undressing in the spring your black
body, your red body, your brown body
penetrated by the rain. Here
is the goddess unveiled,
the earth opening her strong thighs.

Yet you grow exhausted with bearing
too much, too soon, too often, just
as a woman wears through like an old rug.
We have contempt for what we spring
from. Dirt, we say, you're dirt
as if we were not all your children.

We have lost the simplest gratitude.
We lack the knowledge we showed ten
thousand years past, that you live
a goddess but mortal, that what we take
must be returned; that the poison we drop
in you will stunt our children's growth.

Tending a plot of your flesh binds
me as nothing ever could, to the seasons,
to the will of the plants, clamorous
in their green tenderness. What
calls louder than the cry of a field
of corn ready, or trees of ripe peaches?

I worship on my knees, laying
the seeds in you, that worship rooted
in need, in hunger, in kinship,
flesh of the planet with my own flesh,
a ritual of compost, a litany of manure.
My garden's a chapel, but a meadow

gone wild in grass and flower
is a cathedral. How you seethe
with little quick ones, vole, field
mouse, shrew and mole in their thousands,
rabbit and woodchuck. In you rest
the jewels of the genes wrapped in seed.

Power warps because it involves joy
in domination; also because it means
forgetting how we too starve, break
like a corn stalk in the wind, how we
die like the spinach of drought,
how what slays the vole slays us.

Because you can die of overwork, because
you can die of the fire that melts
rock, because you can die of the poison
that kills the beetle and the slug,
we must come again to worship you
on our knees, the common living dirt.

This poem was taken from the book *Sisters of the Earth*, Vintage Books, 1991, Lorraine Anderson editor.

BITS OF SUSTENANCE

***Wanted:* PFI Women to share your writings (fact or fiction). Some examples are – stories, poems, letters, recipes or favorite book lists. This last page of the PFI newsletter, titled "Bits of Sustenance" is being made available to learn more about the women of PFI. From attending the "Women's Gathering" the past three winters, I have discovered that PFI women are diverse. We are farmers, educators, students, homemakers, entrepreneurs, professionals, activists, and mothers. And most women are more than one of these.**

This is not to say that you should overlook other parts of the newsletter. Since the beginning, women have

been very involved in PFI and recognized in the newsletter. But, hopefully, "Bits of Sustenance" will be one more reason to read this newsletter.

We want to hear from you! Send your contributions to Donna Bauer 1667 Hwy 71 Audubon, IA. 50025, phone and fax: 712-563-4084.

A Story of Ingenuity

by Donna Bauer

In early March, I was left with the responsibility of looking after our heifers that were just starting to calve, while Ted attended a meeting in Sioux City. Ted gave me all the instructions I needed:

Here's the small bales of hay – here's where you put them – and there's where I've been getting the water. About mid-day you'll need to feed them more hay. I locked #278 in the barn along with her calf that she had last night plus two other heifers that look "close." You might want to unplug the fencer before you get to the lot to check 'em.

Knowing that I couldn't carry this calf to the barn, I had to use my ingenuity.

At 11:00 a.m. I headed out the check the bunk. I found the heifers had rearranged themselves. Having squeezed between a gate and a bunk, they were mingling where they pleased. No longer were the new mother and soon-to-be-mothers isolated in the barn. And, looking around, I found one soon-to-be-mother had already borne her calf amongst her lot mates.

After talking to Ted by phone and clarifying that I needed to walk the calf into the barn (and receiving his assurance that the mother shouldn't bother me), I dug out my seldom-used coveralls and headed out to do the job. Putting my arm around the calf, I pulled him up on his front feet and then on his back feet – and, of course, his front legs folded. After playing that game for awhile, I decided that this newborn calf, which had not yet stood up, was not going to walk across the snow-covered concrete lot. Knowing that I couldn't carry this calf to the barn, I had to use my ingenuity. Yes, I had to use my ingenuity because many times I had told Ted that farm women can do most if not all of the jobs performed by farm men, but that women may need to do them differently.

So, racking my brain to think of a way to move this calf into the barn – it came to me. My son's sled! And it worked! I just rolled the calf over on the plastic blue sled and pulled it over the snowy lot to the barn. And, although the mother didn't bother me, I thought how easy it would have been to drop the sled's rope had the cow decided to "take" me. Not bad for a woman's ingenuity – huh?

Do you have a similar story about having learned to do things "differently?" If so, please share it, because maybe it will be helpful to others.

PFI Membership Application and Renewal Form

Name _____

Address _____

City _____

County _____

State _____

Zip Code _____

Phone # (____) _____

This is a

____ new membership

____ renewal

Do you derive a significant part of your income directly from farming in Iowa?

____ yes ____ no

Individual or family membership: $20 for one year, $50 for three years.

Please enclose check or money order payable to "Practical Farmers of Iowa" and mail to:

Practical Farmers of Iowa
2035 190th St.
Boone, IA 50036-7423

CORRESPONDENCE

Correspondence to the PFI directors' addresses is always welcome. Member contributions to *the Practical Farmer* are also welcome and will be reviewed by the PFI board of directors.

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Colin Wilson, 5482 450th St., Paullina, 51046. (712) 448-2708.

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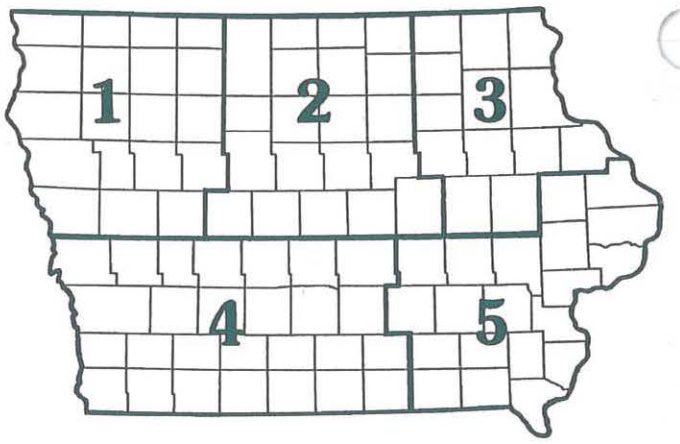

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