

the Practical Farmer

Practical Farmers of Iowa Newsletter

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Spring 1993

PFI AND DIVERSITY IN AGRICULTURAL RESEARCH

Tom Frantzen

Editors' note: Tom and Irene Frantzen and their three children farm near Alta Vista. Tom was PFI president during 1991 and 1992 and is on the executive committee of the advisory council for the Iowa Agriculture and Home Economics Experiment Station. He submitted this article last fall. We appreciate his patience with the delay, but his words seemed relevant to this issue of the newsletter, which kicks off the 1993 season of PFI trials, demonstrations, and field days.)

Driving down the interstate highways, a person receives the impression that Iowa is entirely a state of corn and soybeans. These crops do dominate our landscape, and PFI on-farm research activities usually focus on them. This is true as well with taxpayer funded land grant research activities. Concentrating research activities on dominating crops is an accepted norm. Perhaps it would be appropriate to challenge this practice.

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We promote the development of a sustainable agriculture. Diversity is a fundamental aspect of this concept. Thus, we need diversity in sustainable agriculture research. PFI cooperators are given a free hand in selecting topics for on-farm research. This policy resulted from lengthy board of director meetings. Allowing farmers to choose topics is easy with a private research group funded largely by foundations.

"We promote the development of a sustainable agriculture. Diversity is a fundamental aspect of this concept. Thus, we need diversity in sustainable agriculture research."

Directing research activities is not this simple with public taxpayer-funded institutions. Large commodity groups have a lot of influence on where research money is spent. Can public institutions resolve this conflict and address the pressing needs of sustainable agriculture?

Regardless of how well the public institutions do in finding balance in research topics, the private sustainable agriculture groups like PFI must fill the void. The "privates" need to walk a delicate line. They must promote diversity and yet avoid telling cooperators what to research. This may not be easy.

The initial step is to select and retain independent-thinking cooperators. The coordinators and directors of PFI must then provide the environment to inspire diverse, creative thinking. Examples of this would include speakers at state and district meetings, socials at cooperator training sessions, and meals at PFI field days.

PFI is a research and education organization. Our farm tours often involve demonstrations. Some demonstrations include intensive grazing management, or alternative enterprises such as pasture poultry. I believe that the common basis of all PFI activities is the development and preservation of agricultural skills.

These skills are what forms the "culture" in agriculture. If we work together, we can shape them into a diverse, productive, and creative portion of our society.

COOPERATORS PLAN 1993 FIELD DAYS

As Iowa farmers hustle to begin the cropping season, PFI cooperators are looking forward to a new year of field activity. Field day dates have been set, and on-farm trials and demonstrations are getting under way.

Cooperators met Feb. 19 and 20 to make plans. (This year the meeting was held earlier to avoid calving season.) They participated in three focus group sessions to identify ways that trials and field days can be even more effective. A few ISU researchers were included in these groups, and the exchange of ideas helped cooperators and researchers better understand each other's needs and perspectives. Cooperators and ISU supporters also found time to share experiences in an informal social setting.

The meeting included several technical talks, but the emphasis was on "taking stock" and setting new directions. On the second day of the gathering, cooperators, board members, and staff discussed what has been accomplished and what the emphasis should be in the next years. Practical Farmers of Iowa is widely respected for on-farm trials and information sharing. PFI cooperators and other members are thinking of ways to build on this base of accomplishment. Beginning with the next issue of *the Practical Farmer*, these new directions will be developed.

As always, the cooperators' meeting ended in a flurry of field day dates and ideas for on-farm trials. Tom and Irene Frantzen will compare the economics of oats for grain and for green chop. Ron and Maria Rosmann are evaluating different tillage and weed management systems under funding they got from SARE (see Notes and Notices). Before everyone hurried home to beat the snowstorm, they picked the following dates for farm tours. In June, newsletter

recipients will be sent the 1993 field day booklet, containing times, directions, and field trials. See you here!

June 22

Ron and Maria Rosmann
1222 Ironwood Rd., Harlan, Iowa 51537
712-627-4653

June 24

Dave and Lisa Lubben
RR 3, Monticello, IA 52310
319-465-4717

July 22

John and Pam Cowles
RR 2, Box 90, Bloomfield, IA 52537
515-675-3414

July 29

Bob and Diane Graaf
RR 1, Palmer, Iowa 50571
712-359-7787

Harlan and Sharon Grau
20013 600th St., Newell, Iowa 50568
712-272-3692

Todd and Linda Hartsock
RR 2, Box 47, Rolfe, IA, 50581
712-857-3426

Aug. 6

Lynn and Linda Stock
603 2nd St., NE, Waukon, IA 52172
319-568-2504

Aug. 12

Michael Natvig
RR 2, Box 215, Cresco, IA 52136
319-569-8757

Aug. 13

Dick and Maryjane Svoboda
2519 170th St., Aurora, Iowa 50607
319-935-3966

Aug. 18

Mike and Jamie Reicherts
2165 120th St., New Hampton, Iowa 50659
515-364-6776



With a tape recorder going on the chair in the middle, PFI cooperators discuss doing on-farm research on intensive grazing. From the left are Margaret Smith, the group's moderator, John Cowles, Mike Reicherts, Lynn Stock, Linda Stock, and Dave Lubben.

Tom and Irene Frantzen

1155 Jasper Ave., New Hampton, Iowa 50659
515-364-6426

Aug. 20

Ray and Marjorie Stonecypher
1321 March Ave., Floyd, Iowa 50435-8058
515-398-2417

Tom and Kathy Curl

1815 Asherton Ave., Ionia, 50645
515-228-2089

Aug. 23

Jeff and Gayle Olson
2273 140th St., Winfield, Iowa 52659
319-257-6967

Aug. 27

Dordt College Agricultural Stewardship Center
498 4th Ave. NE, Sioux Center, Iowa 51250
712-722-6285

Doyle and Sheryl Wilson

RR 1, Box 55, Primghar, Iowa 51245
712-757-3875

Paul and Karen Mugge

6190 470th St., Sutherland, Iowa 51058
712-446-2414

Aug. 30*Doug Alert*RR 1, Box 207, Hampton, IA 50441
515-456-4328*Donald and Sharon Davidson*RR 1, Box 133, Grundy Center, IA 50638
319-824-6347**Sept. 2***Vic and Cindy Madsen*2186 Goldfinch Ave., Audubon, Iowa 50025
712-563-3044*Ron and Maria Rosmann*1222 Ironwood Rd., Harlan, Iowa 51537
712-627-4653**Sept. 9***Richard and Sharon Thompson*2035 190th St., Boone, IA 50036-9632
515-432-1560**1992 PFI FIELD DAY EVALUATIONS:
THE GOOD AND THE BAD**

Gary Huber

Farm field days are one way PFI tries to encourage changes in farming practices. Surveys were sent to people attending last year's PFI field days to get their thoughts about these events. The results of an analysis of the 210 returned surveys should be of interest to PFI members.

Some of the questions on the survey dealt with simple demographic information. For example, 65% of people attending were farmers, the average age was 47, and the average amount of formal schooling was three years of college. Nothing particularly surprising here except perhaps that the field days draw a fair number of non-farmers and the average education level appears to be fairly high.

"Of farmers returning the survey, 63% said they were considering some changes [in their farming practices]."

A more important question was how far people traveled to the field days. The average one-way distance traveled was 64 miles, a fairly long drive. However, this figure is misleading because some people travel long distances to Dick and Sharon Thompson's field days. Excluding the 46 responses from people attending the Thompson's field days gives an average one-way travel distance of 36 miles. This still seems to be a long way to travel, and one begins to wonder if Alan Savory is right about farm field days.

Savory, who developed the Holistic Resource Management (HRM) model, has said that farm field days do not draw people living nearby because a hidden, unintentional message is that there is something wrong with the way they farm. Thus, he says farm field days only draw from beyond the distance within which the people know the hosts.

There may be some truth to that, but when the 164 people attending the field days other than the Thompson's are broken down into distances traveled, it is clear not all are coming from beyond the range of those who are acquainted with the hosts. Indeed, 36 traveled less than 10 miles and 27% traveled from 10 to 24 miles. Another 14% traveled from 25 to 49 miles, and 22% traveled more than 50 miles. Thus, while at first glance it appears Savory may be right with his observation, the 36-mile average is misleading.

Just over half (52%) of people attending the PFI field days were at their first, and everyone attending was asked how they learned of the event. Most often mentioned was newspapers, with 32% reporting these publications as their source of knowledge about the field days. Next came the PFI newsletter at 23%, followed by personal invitations at 19%. After these three sources, the percentages dropped dramatically, with 7% reporting word-of-mouth, 6% *the New Farm Magazine*, 5% radio, and 3% ISU Extension.

A lesson drawn from this information is that although our field days are attracting new people, we need to work at using ISU Extension to get people to field days while continuing to emphasize newspapers and personal invitations.

A question concerning the effectiveness of PFI field days was whether, as a result of the field day, the people attending were considering changing some practices. Of farmers returning the survey, 63% said they were considering some changes. When asked what they were considering changing, 25% of the responses were grazing management, 20% tillage practices, 13% herbicide use, 11% nitrogen use, 9% starter or P & K fertilizer use, 9% narrow strip intercropping, 7% cover crops, and 2% manure management. Thus, a fairly high percentage of farmers are considering changing a wide variety of practices as a result of attending.

A survey question concerning the value of PFI field days was whether the benefits of attending fell short, met, or exceeded peoples' expectations. Six percent of those returning surveys said the benefits fell short of their expectations, while 73% said the benefits met their expectations and 22% said the benefits exceeded their expectations. Thus, 95% of people attending PFI field days last year felt the benefits of attending either met or exceeded their expectations. While this is commendable, there is room for improvement.

Various suggestions for improving field days were given, with three being mentioned more often than others. One of these suggestions was to have more discussion time, with a slight variation being to have more time for each location that is part of the activities on a particular day.

Some PFI field days probably try to cover too much in too little time to let people discuss what is being researched or demonstrated. Part of the problem is scheduling: sometimes more than one farm visit is planned in a day. Part of the problem may be with

the presenter not giving people enough opportunity to talk and ask questions. PFI field days should be uniquely able to stimulate discussion because farmers do the presenting. Making sure that the farmer-presenters periodically pause for questions is important, as is not trying to do too much in too short a time.

Another suggestion that was often mentioned for improving the field days was to have printed handouts available. The kinds of information desired include diagrams of plot layouts, descriptions of treatments being compared, results of soil and tissue tests, analyses of the costs and returns for the treatments or practices, and the outcomes of previous trials of the

same type from PFI cooperators across the state. Some cooperators provide handouts with this type of information, but more effort is needed to give those attending the printed information they want.

A third suggestion that was often mentioned was that yield results should be mailed after harvest. A problem that summer field days face is that the events occur during the middle of the growing season. PFI field days are a bit different than some others in that the cooperators doing the field days often have data from previous years that they can present. But the problem remains that the results of the trial or trials being conducted in a particular year will not be available until after harvest.

One solution to this problem is to do what is asked and mail the results after harvest to those attending. However, another solution that may have greater benefits for PFI relates to the response to the last question on the survey. This question asked whether the person was a member of PFI, and 76% of those returning surveys were not.

One way for these people to get the results of the trials after harvest would be for them to join PFI. This way they would receive the results of the trial or trials they observed at the field day they attended in the

"... 95% of the people attending PFI field days last year felt the benefits of attending either met or exceeded their expectations."

summer, as well as the trials done by all the PFI cooperators, in the winter PFI newsletter. This option was discussed at the meeting of PFI cooperators in February and seemed to be the solution of choice. An effort will be made during the field days to ask people attending to become members of PFI so that they will receive the results of the trials being observed.

Several people sent letters back with their surveys. The one that follows is a nice summary of what can happen at PFI field days. (The complete Robert Frost poem is on page 21.)

Dear Sir:

I filled out the questionnaire as best I could and then I thought, look, the important thing that took place here cannot be easily measured. Persistence, patience, innovation, and a certain balance and connection between a farmer and a farm. It made me think of Robert Frost's last verse in *Two Tramps in Mud Time*:

*"But yield who will to their separation,
My object in living is to unite
My avocation and my vocation
As my two eyes make one in sight.
Only where love and need are one,
And the work is play for mortal stakes,
Is the deed ever really done
For Heaven and the future's sakes.*

CORRECTION!!!

In the last issue we were wrong when we identified Paul Muge of Sutherland as having been elected as the new PFI vice-president. Jeff Olson of Winfield was actually elected as PFI vice-president.

PFI RECEIVES SEVERAL GRANTS

The PFI organization operates to a large extent through funding from grants submitted to both private foundations and government agencies. This has meant that grant writing is an ongoing part of the work of PFI. PFI has been fortunate over the last few months to receive approval for several grant requests.

The Wallace Genetic Foundation provided PFI with a grant of \$33,000 to support PFI's education program. These funds will be combined with a grant of \$34,168 from The Educational Foundation of America to extend the education program through October of 1994. The money will be used for the education coordinator's salary, for supply and travel expenses, and for compensation for farmers who host tours or speak to youth groups.

PFI also received an \$8,700 grant from The Northwest Area Foundation to complete work on a multi-state project examining the social and economic impacts of sustainable agriculture. The project has involved PFI farmers who provided information from their farming operations and on their attitudes and perceptions regarding sustainable agriculture.

The Leopold Center for Sustainable Agriculture also approved an \$18,336 grant for the second year of a two-year project involving on-farm research and field days on the topics of narrow strip intercropping, manure management, and intensive rotational grazing.

NEW SOIL NITRATE TEST BULLETIN

Rick Exner

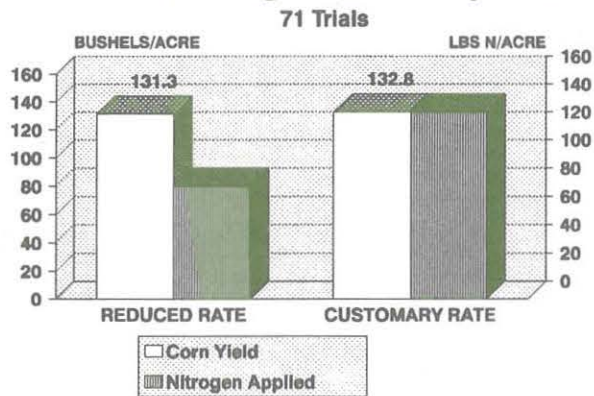
This spring ISU Extension and the Leopold Center for Sustainable Agriculture published a revised version of *Soil Testing to Optimize Nitrogen Management for Corn*, bulletin Pm-1521. A copy of the new bulletin, enclosed in this newsletter, will reach PFI members, Extension offices, and Soil Conservation Service offices.

As research continues, the test is being refined. Actually, the test has stayed the same; what has

changed is the way it is used. Producers now have a simplified guide for sidedressing recommendations and "critical level" especially for corn following alfalfa.

PFI cooperators were among the first to use the test, as they worked with ISU soil scientist Alfred Blackmer during its development. By now there have been 71 replicated nitrogen rate trials showing producers were able to reduce N rates an average of 53 pounds from their customary rate (Figure 1).

PFI 1987-92 Nitrogen Rate Comparisons



AVERAGE LOW RATE BENEFIT: \$6.68
 AVERAGE APPLIED N DIFFERENCE: 53 LBS/ACRE, 12.7 GAL. DIESEL FUEL/ACRE
 NO CREDITS SHOWN FOR ALFALFA, SOYBEAN, OR WINTER COVER CROP NITROGEN

Figure 1. PFI N rate trials over six years.

Statewide, the message is being received. Figures 2 and 3 show historical N rates and yields for corn in Iowa and Illinois. Nitrogen rates have declined in Iowa relative to Illinois, but yields have remained much the same. The rate reductions in Iowa are likely due to a

N Rates for Corn, 1976-1991

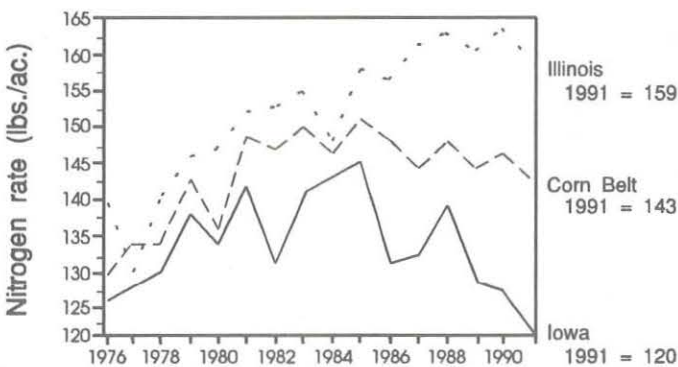


Figure 2. N rates for Iowa, Illinois, and the Midwest. (From Iowa Department of Natural Resources Technical Information Series 22 and update.)

number of factors, including the test, on-farm trials by PFI and others, and educational efforts such as the Big Spring Basin Project. Soil nitrogen tests are not promoted in Illinois.

Corn Yields, 1976-1991

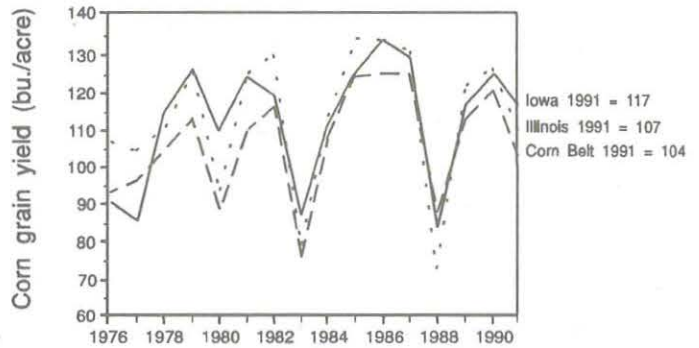


Figure 3. Corn yields for Iowa, Illinois, and the Midwest. (From Iowa Department of Natural Resources Technical Information Series 22 and update.)

Dr. Blackmer has compared the economics of different methods of determining nitrogen rates. To illustrate these approaches, he uses data like that shown in Figure 4. In that set of trials, conducted from 1987 to 1990, researchers applied ten different nitrogen rates to corn in order to determine what was the optimum rate in each trial ("Observed Optimal Rate"). The optimum rate varied widely from one site-year to another.

Figure 4 compares the observed best rates with rates recommended by the traditional "yield goal" method. The yield goal was set at the highest plot yield observed in each trial. That number was multiplied by a factor that depended on soil grou, typically 1.2 pounds N fertilizer per bushel of yield goal. Then any nitrogen credits for a previous soybean crop were subtracted to get the final recommendation. These fields were either in continuous corn or a corn-soybean rotation. They had not received manure in recent years.

The dotted lines show the ideal relationship, in which N recommendations based on yield goal perfectly match the observed optimum N rates. But there was no relationship between the true nitrogen needs

Optimal vs. Predicted N Rates

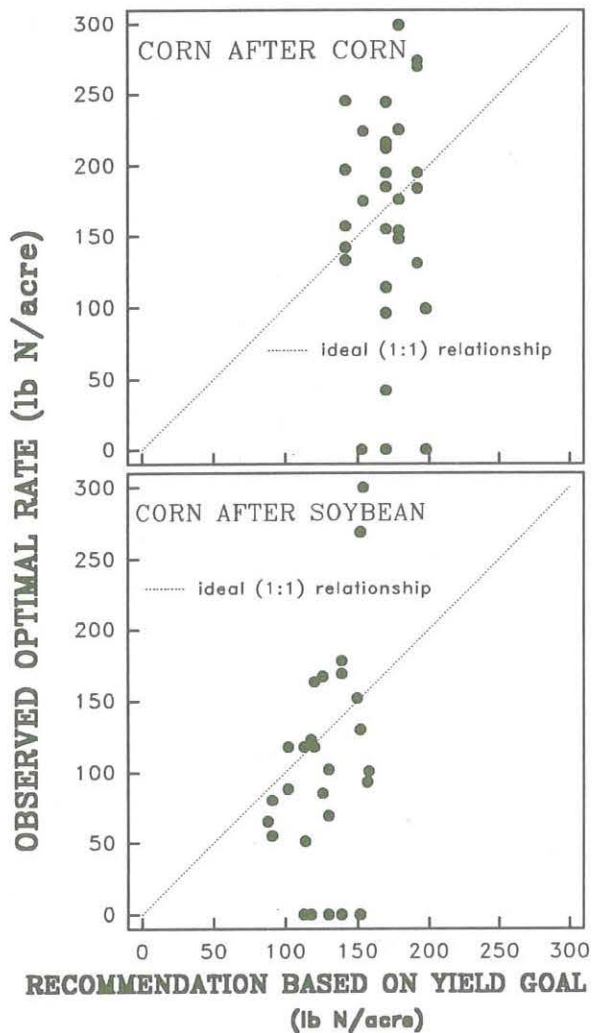


Figure 4. Ideal versus recommended N rates for corn. (From Dr. Alfred Blackmer.)

of corn and yield goal-based nitrogen recommendations in these experiments. In some cases, the yield goal recommendation was too low, in others it was too high. There simply wasn't enough field-specific information to make an accurate recommendation. But the late spring soil nitrate test *does* give field-by-field information. Blackmer has shown the test to be the closest thing yet to "perfect knowledge" of crop needs, and it is often the *only* profitable method in cases of unfavorable fertilizer and crop prices.

When one-foot soil samples taken at 6-12-inch corn height show less nitrate nitrogen than the "critical level," the corn requires additional nitrogen. The new

bulletin sets that critical level at 25 parts-per-million (ppm) nitrate-N, but gives producers leeway to adjust it up or down as weather and experience may suggest (Figure 5). Nitrogen sidedressing is calculated at a simple 8 pounds fertilizer N for each ppm that the test falls below the critical level. The previous bulletin provided a recommended *range* rather than a single rate.

NITROGEN SIDEDRESS RECOMMENDATIONS 1993 VS. OLD GUIDELINES

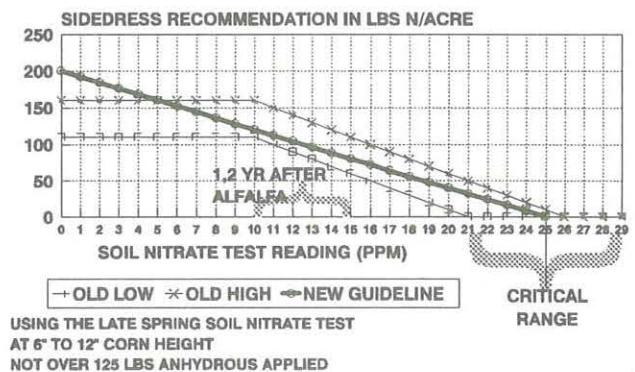
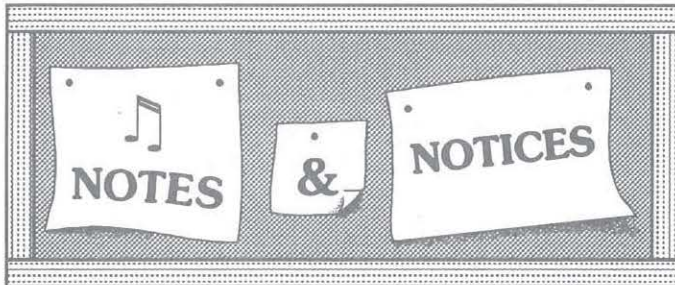


Figure 5. Late spring soil nitrate test N recommendations.

Previous PFI trials showed that the test sometimes recommended unreasonably high N rates for corn after alfalfa. Now there is a new critical level for first *and* second year corn following alfalfa, 10-15 ppm. For simplicity, the bulletin recommends a flat 50 pounds N for first year corn and 75 pounds for second year corn following alfalfa in cases where the soil test is below the critical level. However, producers would be just as justified in applying the same 8-lbs-per-ppm rule as for corn following soybeans or corn. In many cases the test will recommend no N fertilizer or too little to justify a separate application following alfalfa.

More field trials are needed to improve the precision of these recommendations. And so far there is not sufficient evidence to justify separate recommendations for manured fields. PFI cooperators are continuing to provide Blackmer with data from fields with manure histories. But overall, funding for research on

nitrogen tests has decreased drastically from the level of a few years ago. It would seem that this research is particularly needed now, as Iowa farmers try to reduce their N rates but not their production.



♪ TRANSCRIPT OF ALLAN NATION TALK AVAILABLE

Transcripts of Allan Nation's talk at the annual PFI meeting in January are available. Members can get a copy from the PFI coordinators (515-294-1923).

♪ ORGANIC INFORMATION NETWORK CALENDAR AVAILABLE

Calendars of events prepared by IOWA's ORGANIC INFORMATION NETWORK are available for the asking. Events listed are of interest to the organic and transitional farmer. If you want to receive these calendars or be on the NETWORK's mailing list, leave your name and address on the NETWORK's phone machine (515-472-0112), or drop a postcard to: IOWA's ORGANIC INFORMATION NETWORK, P.O. Box 1612, Fairfield, IA, 52556.

♪ INSTITUTE FOR AGRICULTURAL BIODIVERSITY OPEN FOR VISITS

The Institute for Agricultural Biodiversity (IAB), located in the historic Luther College Barn in Decorah, formed to address the need to preserve genetic diversity in livestock. Various events are planned at IAB this summer, including a community-wide potluck and dance on June 20 and the Iowa-Minnesota State Line Horse Plowing Assn. annual contest on Sept. 11. This last event will feature from 60 to 80 heavy horse teams competing on 11 acres near IAB. IAB will also

be open for walk-in visitors each weekend from noon to six. For information call 319-382-5947.

♪ EXTENSION ORGANIC FIELD SPECIALIST HIRED

Greg Welsh recently started work as ISU Extension's first field specialist to organic agriculture. He grew up on an organic farm in Allamakee County and previously worked with Extension in a position related to organics. Based in the Muscatine County Extension office, Greg's primary territory is the north-east one-third of Iowa. His position focuses on production agriculture in crops and livestock systems, and he will be involved in production, management, marketing, and networking.

Greg had this to say about the new job: "I am very excited about Extension's commitment to provide practical information to Iowa farmers interested in identifying and implementing farming practices that require fewer or no pesticides and commercial nitrogen fertilizers, while profiting economically and ecologically." Contact Greg by calling the Muscatine County Extension office at 319-263-5701.

♪ POSITION ANNOUNCEMENTS

The Land Institute

On April 21 The Land Institute, Salina, Kansas, announced a search for a Director of Education responsible for managing the intern program, coordinating public education activities, and preparing *The Land Report*. This will be a one-year appointment that could lead to a permanent position. Contact the Institute (913-823-5376) for more information.

The Kerr Center for Sustainable Agriculture

On April 20 The Kerr Center for Sustainable Agriculture, Poteau, Oklahoma, announced a search for an agricultural economist to assess the economic aspects of the Kerr Center's farming systems and projects. Deadline for applications is July 1, 1993. Contact the Center (918-647-9123) for information.

♪ GRANTS AVAILABLE TO FARMERS

Sustainable Agriculture Research and Education (SARE) program

The North Central Region of the Sustainable Agriculture Research and Education (SARE) program has about \$100,000 available for grants to farmers wanting to investigate sustainable agriculture practices. One-year grants will be funded for up to \$5,000.

Application forms are available from the PFI Coordinators (515-294-1923) or the North Central Region Sustainable Agriculture Research and Education Office, 207 Agricultural Hall, University of Nebraska, Lincoln, NE, 68583-0701. For more information, call Steven Waller at 402-472-7081. Application deadline is July 15.

Organic Farming Research Foundation

Based in Santa Cruz, CA, the Organic Farming Research Foundation provides grants in the \$3,000 to \$5,000 range for research in organic farming methods, disseminating research results to organic farmers and farmers who want to make the transition to organic production systems, and educating the general public about organic farming issues.

Farmers anywhere are eligible. Applicants should request the Foundation's *Procedures for Grant Applications* by mail or phone: P.O. Box 440, Santa Cruz, CA, 95061 (408-426-6606). Application deadline is July 31.

♪ ROTATIONAL GRAZING REPORT AVAILABLE

The 1992 report of an on-farm rotational grazing project has been published by the Wisconsin Rural Development Center. The project, funded under the USDA LISA program, involved farmers in WRDC, the Minnesota-based Land Stewardship Project, and university scientists from those two states.

The report presents the results from on-farm trials on 23 topics carried out in 1991 and 1992. It has

sections on pasture establishment, pasture management, feeding and milk production, information resources, and the names and addresses of the 15 participating farmers. The reader is invited to contact these farmers for more information.

Copies of the report are available for \$2.00 by contacting Joe Meudt at the Wisconsin Rural Development Center, 1406 Bus. Hwy 18-151 East, Mount Horeb, WI, 53572, or call (608) 437-5971.

♪ FARMERS SOUGHT FOR VISIT TO COSTA RICA

Farmers wanting to spend ten days to two weeks on farms in Costa Rica sometime this next winter should call Gary Huber, PFI Education Coordinator, at 515-294-1923. There is the potential for arranging a trip if there is enough interest among farmers.

♪ UPCOMING PFI DISTRICT EVENTS

Northeast District Plans Summer Grazing Tours

A series of informal grazing tours on farms of northeast district members is planned. The schedule so far includes: Tom and Irene Frantzen near Alta Vista, 7 pm, June 30; Tom and Kathy Curl near Ionia, 2 pm, July 10; Mike and Jamie Reicherts near Saude, 7 pm, July 14; Dan Spect and Kathy & Greg Koether near McGregor, sometime toward the end of July; Steve Hopkins near Decorah, sometime during the day on August 3; Lynn and Linda Stock near Waukon, Aug. 6 as part of their PFI field day; and Mike Natvig near Protivin, Aug. 12 as part of his PFI field day.

Laura Krouse, district director, notes that these events will be informal, with no food, no fee, but plenty of opportunities to improve your grazing knowledge and get to know other PFI members better. She also notes that other tours may be added, and she will send out a district newsletter with more details about June 1. If anyone wants to host a tour or add items to the newsletter, call Laura (319-895-6924).

Southwest District Summer Social July 29

Are you a PFI member in the southwest district? If so, mark Thursday, July 29 on your calendar for a district event that will combine some socializing with some education. Tentative plans are to meet at noon at Lake Icaria north of Corning for a picnic. People should bring table service and a potluck dish. Hamburgers will be provided for grilling.

After the picnic a Soil Conservation Service representative in Adams County will lead people on a tour of watershed practices being used to protect water quality in Lake Icaria. Then around 4 pm people will travel a couple of miles to the Adams County CRP Research and Demonstration Project, which will be hosting a public field day that afternoon and evening. This project is entering its third year of researching intensive rotational grazing of CRP land.

Southwest district members will get a mailing before the event with more details. For more information call Vic or Cindy Madsen at 712-563-3044.

Northeast District Summer Social Aug. 1

PFI members in the northeast district should plan to attend a family social event in the Decorah area on Sun., Aug. 1. Current plans are for an event that will include a potluck meal at the Institute for Agricultural Biodiversity (IAB), a tour of IAB's facilities and animals, a side trip to the Seed Savers Exchange, games for the children, and plenty of time for socializing.

Laura Krouse, district director, will send out a district newsletter around June 1 with more details. She encourages members from her district to call if they have questions or suggestions (319-895-6924).

North Central District Summer Social Aug. 22

Ray and Marj Stonecypher have organized a north central district social event for Sunday, August 22. The idea is for a leisurely family event with plenty of time for visiting. Plans are to meet at Doug Alert's farm near Hampton at 11:30 for a light sack lunch that people should bring for themselves. After lunch Doug will give an informal tour of his farming opera-

tion, and people will drive to Don and Sharon Davidson's farm for a tour and picnic. Hamburgers will be provided for grilling, and people should bring table service for themselves and a dish to share with the others.

North central district members will get a mailing before the event with more details. For more information call Ray or Marj at 515-398-2417.

♪ OTHER UPCOMING EVENTS

Alfalfa IPM Field Day May 20

PFI member Glen Draper, Eldora, is a new member of the Integrated Pest Management issues team of the Leopold Center for Sustainable Agriculture. He and ISU entomologist John Obrycki are planning an afternoon field tour for Thursday, May 20, on Glen's farm to talk about new ideas for IPM in alfalfa. Glen Draper is a commercial alfalfa producer.

Researchers have identified a number of naturally occurring diseases of pests like alfalfa weevil. They are studying ways to help those diseases control pests. Even though this work is in its early stages, there are opportunities for producers to get involved and try out some techniques on their own.

At the field tour will be Obrycki, who heads the IPM Issues Team, Extension entomologist Marlin Rice, and several graduate research assistants. They will talk about the new IPM research and the Issues Team, and they will listen to the comments of producers. They are hoping to develop a network of alfalfa producers interested in the new methods.

The event is scheduled for 2-4 pm at the Draper farm. In case of bad weather, the discussion will take place in the shop. Directions: from south take Hwy 14, and 6 miles north of the Conrad corner go 1 1/8 mile west on county road D-53. It's the first farmstead, north side, two houses. From Wellsburg go 5 miles south on Hwy 214, continue across Hwy 175, then go south on gravel 3 miles to D-53. Then 1/8 mile west. For more information call Glen Draper at 515-366-2054 or John Obrycki at 515-294-8622.

Center for Rural Affairs Anniversary in June

The Center for Rural Affairs will celebrate its 20th anniversary on June 12-13 at Walthill, Nebraska. Music, food, displays, workshops, and much more is planned. Walthill is on the Omaha Indian Reservation in northeast Nebraska, about 30 miles south of Sioux City. For information contact the Center, Box 406, Walthill, NE 68067 (402-846-5428).

Pasture Management Clinic June 16-17

Pasture management will be the topic of a two-day clinic on June 16-17 on the CRP Research and Demonstration Farm near Corning. Cattle producers, agribusinesses, and agency people will learn the details of establishing and managing an Intensive Rotational Grazing System. Registration is \$50 and is limited to 40 people. Registration deadline is June 1.

For information contact Adams County Extension (515-322-3184) or Adams County SCS (515-322-3116). The clinic is sponsored by the Southern IA Forage and Livestock Committee with partial funding from the USDA's SARE Program.

Rosmann's Cultivation Field Day June 22

Ron and Maria Rosmann will have a cultivation field day on June 22 at 7 pm. The Rosmanns' will demonstrate building ridges in corn and the first cultivation of soybeans. They also will have an on-farm trial comparing a range of weed control treatments, going from completely mechanical to banding a variety of herbicide products with two row cultivations.

The field day is being supported by a producer grant from the USDA's Sustainable Agriculture Research and Education (SARE) program (see page 10 for information about this grant program). The Rosmanns' address 1222 Ironwood Rd., Harlan. To get to their farm go 2 miles west on Hwy. 44 from the corner of Hwys. 44 and 59, and then north 2¼ miles on the gravel. Their place is on the west side. Call Ron or Maria for more information (712-627-4653).

Natural Foods Associates Meeting July 10

The Iowa State Natural Foods Associates annual meeting will take place Saturday, July 10, at Heritage Farm, in Decorah. The program includes Dr. Vernon Varner, who has investigated pesticide inert ingredients, Bob Thompson, on uses of wild plants, and Mary Ellen Miller of Golden Acres Herbs. For additional information call Rita Engelken at (319) 925-2962.

Leopold Conference July 14-15

Who Will Farm the Land? Changes and Choices for Iowa Agriculture is the focus of the fourth annual Leopold Center conference July 14-15 at the Scheman Building at ISU.

"The prospect of further industrialization of agriculture, concern for the environment and rural communities, and the increase in farming regulations have many of us asking why, when, and how," says Rich Pirog, Center education coordinator. "Asking *who* will be on the farms and in the rural communities to make these changes happen is equally important," he adds.

Topics will include the state of Iowa agriculture and trends for the future, how USDA policy will affect who farms, and the evolving roles of producers, processors, distributors, and retailers in a sustainable agriculture. An option for the first afternoon are tours of sites in the Ames area, such as agroforestry, wetlands, and rotational grazing. An evening barbecue and readings by Iowa writers will round out the first day's program.

A complete agenda and registration materials are available from the Leopold Center for Sustainable Agriculture, 126 Soil Tilth Bldg., Iowa State University, Ames, IA 50011-3120; phone: 515-294-3711.

4-H Summer Sustainable Agriculture Camp Aug. 8-11

Fun in the Field: Sustainable Agriculture in the 90's is a camp where youth ages 13-18 will discover new farming techniques and learn how to live on the land in ways that ensure prosperity for future generations. The camp will be held at the 4-H Education and Natural Resources Center near Madrid on Aug. 8-11. The fee for the camp is \$85.

The camp is sponsored by ISU Extension, the Leopold Center for Sustainable Agriculture, the ISU Department of Agricultural Education and Studies, and Practical Farmers of Iowa. For more information contact Judy Levings (515-294-4760) or Randy Farnum (515-294-7581).

Third North American Agroforestry Conference Aug. 15-18

This national conference will be in Ames on Aug. 15-18. Some topic areas include alleycropping, shelterbelts, riparian zone systems, and sustainable agriculture. Call Joe Colletti (515-294-4912) about meeting content or Carole Seifert (515-294-1400) about registration.

Amaranth Meeting Aug. 20

This meeting, which will take place on Friday, August 20, in the Memorial Union on the ISU campus, will cover the production, marketing, and utilization of grain amaranth. The meeting is being sponsored by The Amaranth Institute and the Leopold Center for Sustainable Agriculture. For more information contact Dr. Robert Meyers, University of Missouri, Dept. of Agronomy, 210 Waters Hall, Columbia, Missouri, 65211 (314-882-0317).

PFI & MAX

Frank Moore

(Editors' note: Frank Moore is a PFI member who farms near Cresco and works as Environmental Specialist with the Floyd County Groundwater Protection Project for the Iowa Dept. of Agriculture and Land Stewardship.)

The MAX is a national program designed to recognize America's most efficient farmers. In 1992 MAX participation more than doubled from the inaugural year of 1991. Continued growth is expected again in 1993. In Iowa farmers from 80 counties enrolled 821 fields.

PFI has always advocated on-farm research to demonstrate and promote the economic and environ-

mental advantages of production systems. MAX is very similar in that it takes actual on-farm conditions with farmer controlled input decisions, and compares the economics of alternative rowcrop tillage systems. It is not research, but it is useful to farmers who are contemplating changes in tillage, weed control, and fertilizer programs.



Agriculture is in the middle of a revolution, the switch to no-till farming. PFI recognized this movement very early and has years of practical knowledge to share. MAX compares the costs of production systems many of us have been using for years, and proves that protecting the soil and water resources also makes economic sense.

The data from 1991 and 1992 show that no-till and ridge-till are the most consistently profitable cropping systems. Producers with the lowest machinery costs tend to fare well. Many top entrants have fine-tuned their operations with band-spraying, the late spring N test, and manure management. Contrary to popular belief, plow systems had the highest pesticide costs. They also had the highest machine costs and overall costs. High residue systems proved the most profitable, which is favorable for erosion concerns and conservation compliance. Management ideas that PFI members have used for years are proving very sound economically in the MAX program.

I would encourage PFI members to enroll fields in MAX in 1993. Look for entry forms in Successful Farming Magazine, or contact your local SCS office. Each county in Iowa has a local MAX coordinator to assist you. There is no cost to the program, and it takes little time to fill out the entry form. It is a tremendous opportunity for PFI members to demonstrate the efficiencies of their production systems.

PFI PROFILES: THE VIC & CINDY MADSEN FAMILY

Gary Huber

The view from the picnic table on the lawn of the Vic and Cindy Madsen family farm is of a rolling landscape with long, sweeping hills. To the south Indian Creek flows in a southwesterly direction toward Kimballton and Elk Horn. Land along Indian Creek is high quality, and the farms reflect this fact. But north and west of the Madsen farm the quality drops dramatically.

This drop in quality was reflected in the landscape we watched as we drove to get a trailer for the broilers Cindy would take to be processed the next day. Deserted farmsteads and whole farms colored the brown and grey of CRP in early spring were common. Vic noted that this land could support families if they had cow-calf operations, but not with rowcrops. He wondered out loud what the future holds.

Back at the farm, in between looking at 9 year old Eric's 4-H pigs, stacks of Pioneer seed ready for customers, and the 200 broilers that Cindy was raising for friends and neighbors, we talked about their farm operation. Of the 400 acres they farm, they own the 130 where they live and rent the rest. They raise about 150 acres each of corn and soybeans, and about 30 acres each of oats and hay. The corn and oats they feed to the 2,000 hogs they finish each year, and they sell the hay and beans.

Their cropping system has evolved since they started farming in 1970. The reason was mainly to find a more economical system, though environmental concerns also played a role. The first change was to leave more residue, and then in 1988 they decided to use ridge tillage. With the switch they began banding herbicides, which cut herbicide costs in half. They also started doing research trials on nitrogen rates using the late spring soil nitrate test. As a result they now use half the



The Vic and Cindy Madsen family: from left, Cindy, Eric, Vic, and Mark. Missing is Jeff, who attends ISU.

nitrogen fertilizer they had used before they started researching the test with the trials. They typically put some on with the planter, and then sidedress liquid 28% if needed at cultivation.

With the switch to ridge tillage, Vic notes that yields actually increased. There is less compaction, they are not working the soil wet, and they are getting good, even stands. As evidence, in 1991 Vic and Cindy won the conservation division of the District 7 Iowa Masters Yield Contest with a corn yield of 204 bushels from a field that received hog manure in late winter, 30 pounds of nitrogen at planting, and another 30 pounds of nitrogen sidedressed. Vic and Cindy noted that, "The rains came just right."

Other changes are coming. Last year they did a research trial to look at the impacts of eliminating herbicides in their system. Vic noted, "We are trying to simplify things and make the work more enjoyable, and eliminating herbicides will mean fewer containers to handle and less mixing." The main question they wanted answered, however, was whether the change would cost them money. Corn yields were 170.7 bushels per acre both with and without a herbicide band, so not using a herbicide saved them \$5.40 an acre.

"We are trying to simplify things and make the work more enjoyable..."

They will do another with-and-without-herbicide trial again this year, and if successful they will likely expand the acres grown without herbicides. Vic said, "Doing trials is an excellent way to test the economies and skills of different systems." He continued, "We have bills to pay, and so we need to know as much as possible about modifying systems before we go ahead with a change. On-farm trials are an excellent way to do this."

Another change they are contemplating is adding cattle to their system.

The idea, in Vic's words, is to "add value to everything produced on the farm." The hay they grow now is mostly for controlling erosion on the steepest hills and for the rotation benefits. But cattle fit in because, as Vic said, "We want to sell everything we produce as meat, both the grass and grains." Another purpose is to provide some income from the very rough ground and help clean up corn fields in the winter. They will probably start with some stocker cattle, and their plan is to "ease into it."

Vic said a long term goal is to "get our farm to be as self-sufficient as we can make it. That is the reason for the livestock and why we minimize purchased inputs." Vic continued by saying, "We also want an enjoyable workplace and work-style, and so we are adding other things that will diversify the work."

Besides helping with chores and field work, Cindy takes care of the bookkeeping, raises broilers, does gardening and canning, is a leader for a local 4-H club and treasurer for the cub scouts, and helps their son, Mark, with a ninety-mile Sunday paper route. Mark, who is the middle of three sons, is 17. Vic and Cindy's oldest son, Jeff, attends Iowa State. Eric is 9.

One of Vic's hobbies is reading old farm books and magazines. Vic notes that, "I enjoy the values that

they express that aren't real common today. Magazines today tend to focus entirely on economics and large-scale operations, but the old magazines focused on family and farm life issues." He continued, "The problem-solving was more management oriented than buying oriented. You would change how you did things rather than buy a solution in a bottle."

Vic was elected President of PFI last January. Though he is not someone who relishes the spotlight, he is thoughtful and cares about people. His thoughtful-

fulness was apparent in how he accepted the position. Rather than immediately saying yes, he accepted only after conferring with Cindy, and only after noting that a requirement of accepting was help from the past presidents and the other directors.

"Doing trials is an excellent way to test the economies and skills of different systems. We need to know as much as possible about modifying systems before we go ahead with a change."

That he cares about people is apparent in how he often advises that the most important thing in what we do is to have fun. Indeed, in reflecting on PFI he noted he would like to add a third goal to the two that have been important, which are profitable practices and practices that are good for the environment. "I'm afraid we could have profitable, environmentally sound farms, and still have unhappy people. We need to add a third objective, which is to begin doing things that are good for people too."

He continued, "There are a lot of sources for technical information, but we tend to ignore whether or not people are happy. Cindy and I hope that PFI can be a forum for people to visit about things that will help us have fun with our chosen occupations. You know, when people talk about PFI meetings, they seem to remember the interaction with other people more than the topics. This is what I want to encourage. I'm not quite sure how, but I can start by talking about it."

PFI DISTRICT WINTER MEETINGS

NORTHEAST DISTRICT

Nearly 40 people attended a northeast district meeting at the North Iowa Community College in Calmar on March 20. Tom Frantzen and Steve Hopkins gave presentations on management intensive grazing. Both showed slides of their operations and talked about their experiences, and Steve discussed fencing methods and equipment. Steve used to work with Farm 2000 in the Grinnell area and last year started milking near Decorah.

Duane Bushman also gave a presentation on alternative crop opportunities. Duane operates Brumwell Mills, which produces food-grade products at plants in Sumner and Cresco. Duane provided boxes of buckwheat pancake mix produced by Brumwell Mills as door prizes for the meeting.

The northeast district library was also on display. The library now has nearly 40 books and videos and is operated by Tom and Irene Frantzen. If you are from the northeast district and are interested in the library, call them at 515-364-6426.

Members also discussed having a family-oriented social event in August that would include visiting some sites in the Decorah area, such as the Seed Savers Exchange and the Institute for Agricultural Biodiversity. Subsequent planning has given a date of August 1 for the event (see Notes and Notices).

NORTH CENTRAL DISTRICT

About 40 people participated in a north central district potluck dinner meeting on Feb. 6 in the Hampton United Methodist Church. After the meal Ray Stonecypher, district director, facilitated a program that included showing the video of the Thompson farm and slide presentations by Don Davidson and Doug Alert on their farm operations and research trial results. Don and his wife, Sharon, farm near Grundy Center. Doug farms near Hampton.

The topic of a library for the north central district was also discussed. Doug Alert volunteered to help operate the library. Anyone having books or videotapes they are willing to donate to the library should talk to Doug at 515-456-4328. Members also talked about having a summer social event that combined a picnic with a tour of some PFI farms. Subsequent planning has given a date of August 22 for the event (see Notes and Notices).

Ray would appreciate input on any topics of interest to district members. His phone number is 515-398-2417.

NORTHWEST DISTRICT

About 25 people attended a northwest district meeting on February 27 at Stubs Ranch Kitchen in Spencer. Members went through the buffet line and spent some time visiting before a presentation by Erik Ronneberg. Erik works with the Forest Resource Center in Fillmore County, Minnesota. His talk about nut tree crops, such as hazelnuts, and corn yield increases from the windbreak effects of tree shelterbelts stimulated lots of discussion.

SOUTHEAST DISTRICT

About 20 people attended a southeast district meeting on March 22 in Iowa City. Tom Frantzen showed slides and talked about some of the new systems he and his wife, Irene, are working with on their farm, such as the use of trees in a strip-crop shelterbelt system. Eric Ronneberg of the Forest Resource Center gave a presentation about hazelnuts and the use of tree field borders.

A library for the southeast district was also discussed. One option is for members to make their personal libraries available for loan to other members. Jeff Olson, district director, and Dave Lubben, district associate director, have put together lists of their books and videotapes. Others willing to participate should do so as well and get their lists to Jeff for distribution to district members. Jeff's phone number is 319-257-

6967, and his address is 2273 140th St., Winfield, IA, 52659

SOUTHWEST DISTRICT

The southwest district has a summer social event planned for July 29 (see Notes and Notices). The southwest district has also started a district library, which Vic and Cindy Madsen have volunteered to operate. The library's first two books went to people who called back and asked if they could buy them, so at present there is a distinct need for more books. Anyone from the district willing to donate books should contact Vic or Cindy at 712-563-3044.

SOUTHWEST DISTRICT HOSTS MARTY STRANGE

On March 31, Marty Strange spoke at an event in Harlan organized by Ron and Maria Rosmann and neighbors to talk about sustainable agriculture and rural communities. Strange is director of the Center for Rural Affairs, a Nebraska-based organization that focuses on agricultural policy and rural development. Also on the program was a discussion panel that included representatives from farming, banking, farm supply services, and the Harlan Chamber of Commerce. The meeting was sponsored by the Harlan Library Foundation and the Rodenborn Trust.

Marty Strange portrayed sustainable agriculture as not a set of rules but a goal that must be pursued in steps. He described the early pioneers of alternative agricultural systems as "bunch quitters," which he explained are the equivalent of animals that don't follow the herd. These days, he said, those interested in sustainable agriculture are more willing to pursue a public discussion of the sustainability of agriculture and even take the debate into the political arena.

Strange, whose organization contributes to a Washington lobbying effort, commented on the opposition to sustainable agriculture. He said a few environmental groups openly oppose it because they think it weakens the argument for the regulatory



Marty Strange of the Center for Rural Affairs spoke in Harlan as part of an event that focused on agriculture and communities.

approach, which they view as stronger. On the other hand, some farm organizations who have no particular allegiance to sustainable agriculture are giving it lip service because they also fear regulation.

Turning to structural issues, Marty Strange remarked that he has always defined a family farmer as someone who cries when he loses a neighbor rather than seeing it as an opportunity to buy more land. In Nebraska, the farm crisis of the 1980s removed 36 percent of the farmers in the 45-55 age bracket, and it has essentially halted the entry of young people into farming.

Strange said that a generation ago two-thirds of small town businesses were retail establishments and one-third were wholesale. With the loss of population and the shift to input-intensive agriculture, the proportion of retail businesses has declined, he said.

Both Marty Strange and the panel agreed that farming has been left out of rural development schemes in recent history. There was also wide agreement that communication and cooperation between town and county must be improved. As one panelist put it, "We can't do it alone."

1993 FFA SUSTAINABLE AGRICULTURE WINNER ANNOUNCED

Justin Hawkins of Cascade received the PFI-sponsored sustainable agriculture award on April 2 at the FFA Leadership Conference in Des Moines. The award recognizes Iowa youth who have worked to develop sustainable systems of farming.

Justin is worthy of the award. The 160-acre farm where he lives with his family was homesteaded by his great-great-great grandfather. Now Justin continues to help his family make the farm a place they can live, work, and enjoy life into the future.

A 160-acre farm may seem too small to be profitable, but the keys to the operation's profits are a diverse mix of crops, keeping costs down with intensive management and hard work, and a marketing strategy that pays a premium for high quality milk.

The entire farm is classified as highly erodible, and so corn, oats, hay, and pasture are rotated in contoured strips to help control erosion. The mix of crops grown on the farm are used for a herd of 30 Jersey dairy cows. The milk from these cows is sold for cheese under a component pricing contract that rewards Justin's family for the milk's high butterfat content.

The crop rotation is combined with corn cultivations to manage weeds. Spot spraying herbicides is used if needed depending on the weather. Herbicides were not needed in three of the last five years. Justin notes that "I have learned there are many ways to manage weeds without the use of herbicides. The cultivating and other practices we use on our farm take time and labor, but our practices are much safer and healthier for the environment, and for you and I."

Justin lives with his parents, David and Marilyn, and a younger brother and sister about five miles north of Cascade. His Agriculture Education instructor at the Western Dubuque High School in Cascade is Milt Luckstead.



Gary Huber presented the PFI-sponsored sustainable agriculture award to Justin Hawkins of Cascade.

PFI FARM SUBJECT OF ANTIBIOTIC RESISTANCE STUDY

Rick Exner

Background

A study involving PFI members Dick and Sharon Thompson may lead to methods to improve food safety. The project, under the direction of ISU Covault Distinguished Professor of Veterinary Medicine George Beran, looks at antibiotic resistance of bacteria in the Thompsons' hogs.

Even with the precautions taken in the United States today, it is common for meat bought by consumers to contain bacteria. This contamination can result through handling, processing, contact between meat and animal hide, or through contact between carcasses and contents of the gut at slaughter.⁽³⁾ A Food and Drug Administration study in Seattle, for example, found that almost one out of four chickens sold was contaminated by bacteria capable of causing sickness.⁽⁵⁾ Other reported figures for contamination vary widely, but range as high as 84 percent for pork carcasses and 74 percent for beef carcasses.⁽³⁾ This is why consumers are urged to cook meat well and practice kitchen sanitation. Nevertheless bacterial food poisoning does affect a number of people in the U.S.

each year. *Salmonella* bacteria, for instance, are responsible for 40,000 reported cases and 500 deaths annually.⁽⁴⁾

A separate concern is the appearance in these bacteria of resistance to antibiotics. Sickness caused by bacteria resistant to antibiotics may be more difficult to treat. There have also been cases in which antibiotic use by people precipitated food poisoning caused by bacteria that were resistant to the drug.⁽¹⁾ Any use of antibiotics has the potential to select for or increase populations of resistant bacteria. Therefore human and veterinary medical use is carefully controlled. Some scientists are concerned that the routine, long-term feeding of low, "subtherapeutic" doses of antibiotics to livestock as a performance enhancer could lead to increased occurrence in food animals of resistant bacteria.⁽¹⁾ One survey by the U.S. Centers for Disease Control found that food producing animals were involved in 47 percent of human food poisoning outbreaks caused by *Salmonella* bacteria and 69 percent of those involving antibiotic resistant strains.⁽²⁾

The Study

Several years ago George Beran visited the farm of Dick and Sharon Thompson, Boone, and was intrigued by their hog operation. He is of the opinion



Rex Thompson and research assistant Manuel Moro discuss procedures in the research project.

"The distribution of resistance changed completely for pigs under stress."

that the performance enhancement of livestock by subtherapeutic doses of antibiotics occurs when animals are actually suffering from excessive environmental stresses. Therefore, according to Beran, animals raised in a healthier, lower-stress environment should not need the antibiotic supplement. The Thompsons do treat sick animals, but they do not add antibiotics to

the hog rations. They have designed the semiconfinement system to take advantage of isolation, fresh air, ample bedding, oat-based rations, and cultural practices like

spreading ag lime and moving manure to the gestation unit from the rest of the operation. They reduce stress on the animals by separately weaning, castrating, and moving piglets out of the farrowing pens, instead of doing these all at one time.

Beran was interested to find whether there was less antibiotic resistance in the bacterial population of the Thompsons' herd as a result of the infrequent antibiotic use. If there were, it might mean that antibiotics would be more effective when hogs did require treatment. With research assistant Manuel Moro, he began analyzing fecal samples from the farm. They found fewer resistant bacteria, although they were still present in the gut microbes of the Thompsons hogs.

The researchers then brought several of the Thompsons' hogs back to the Vet Medicine Research Institute for observation. To their surprise, numbers of antibiotic resistant bacteria in feces rose considerably. What was causing the increase? The animals were receiving no drugs that would select for resistance. Beran and Moro then applied a mild stress to the pigs by raising the temperature to about 100 °F. The antibiotic resistance jumped again.

This mystery became clearer when the entire intestinal tracts of carcasses were examined rather than just feces. Unstressed animals showed fewer resistant gut microbes at the lower end of the tract (colon and rectum) than at the upper end (ileum and cecum). Figure 1 illustrates this pattern of resistance to ampicillin. Tetracycline (Figure 2) showed a distribu-

Ampicillin Resistance of *Escherichia coli*

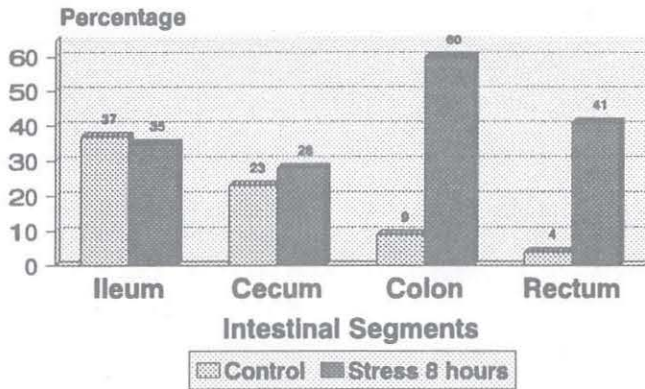


Figure 1. Resistance to ampicillin of *E. coli* bacteria found in hogs from the Thompson operation.

tion that was similar but less marked. There were simply different populations of microbes in different portions of the intestines. Those near the exit had little antibiotic resistance, which accounted for the fecal properties of pigs on the farm.

The distribution of resistant bacteria changed completely for pigs under stress. Their resistance was high at all intestinal locations and, logically, in manure as well. Under stress conditions, microbes high in the intestines washed down through the tract and were eliminated in feces. This is consistent with the diarrhea often found in stressed animals. There were more

Tetracycline Resistance of *Escherichia coli*

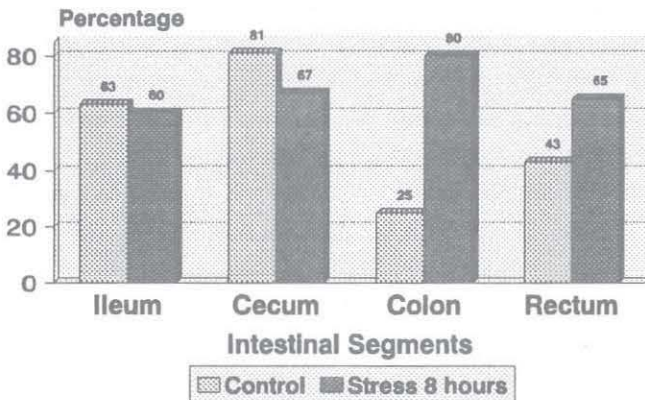


Figure 2. Resistance to tetracycline of *E. coli* bacteria in hogs from the Thompson operation.

Tetracycline Resistance

CARCASS SAMPLING

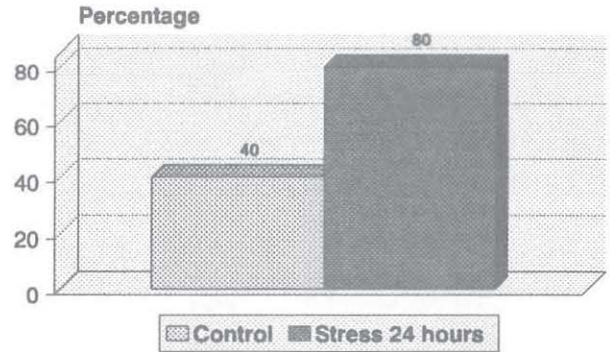


Figure 3. Resistance to the antibiotic tetracycline of bacteria found on the carcasses of stressed and unstressed hogs.

antibiotic resistant bacteria on the carcasses of pigs slaughtered after eight hours of elevated temperature than on carcasses of unstressed animals (Figure 3).

Slaughterhouses would naturally prefer to reduce the presence of antibiotic resistant microbes in their operations since there is always a chance for contamination of meat. Yet the stress of transport is likely to increase the numbers of resistant microbes found on hogs sent to slaughter. This study, which continues, is showing that factors in the hogs' environment are important determinants of antibiotic resistance. With this understanding, it may be possible to make feasible, stress-reducing changes in the environment that will have significant benefits to food safety.

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Two Tramps In Mud Time

(Editors' note: This poem is reprinted from the *New Enlarged Anthology of Robert Frost's Poems*, Washington Square Press, New York, N.Y.)

Out of the mud two strangers came
And caught me splitting wood in the yard.
And one of them put me off my aim
By hailing cheerily "Hit them hard!"
I knew pretty well why he dropped behind
And let the other go on a way.
I knew pretty well what he had in mind:
He wanted to take my job for pay.

Good blocks of beech it was I split,
As large around as the chopping block;
And every piece I squarely hit
Fell splinterless as a cloven rock.
The blows that a life of self-control
Spares to strike for the common good
That day, giving a loose to my soul,
I spent on the unimportant wood.

The sun was warm but the wind was chill.
You know how it is with an April day
When the sun is out and the wind is still,
You're one month on in the middle of May.
But if you so much as dare to speak,
A cloud come over the sunlit arch,
A wind comes off a frozen peak,
And you're two months back in the middle of March.

A bluebird comes tenderly up to alight
And fronts the wind to unruffle a plume
His song so pitched as not to excite
A single flower as yet to bloom.

It is snowing a flake: and he half knew
Winter was only playing possum.
Except in color he isn't blue,
But he wouldn't advise a thing to blossom.

The water for which we may have to look
In summertime with a witching-wand,
In every wheelrut's now a brook,
In every print of a hoof a pond.
Be glad of water, but don't forget
The lurking frost in the earth beneath
That will steal forth after the sun is set
And show on the water its crystal teeth.

The time when most I loved my task
These two must make me love it more
By coming with what they had come to ask.
You'd think I never had felt before
The weight of an ax-head poised aloft,
The grip of earth of outspread feet.
The life of muscles rocking soft
And smooth and moist in vernal heat.

Out of the woods two hulking tramps
(From sleeping God know where last night,
But not long since the lumber camps).
They thought all chopping was theirs of right.
Men of the woods and lumberjacks,
They judged me by their appropriate tool.
Except as a fellow handled an ax,
They had no way of knowing a fool.

Nothing on either side was said.
They knew they had but to stay their stay
And all their logic would fill my head:
As that I had no right to play
With what was another man's work for gain.
My right might be love but theirs was need.
And where the two exist in twain
Theirs was the better right - agreed.

But yield who will to their separation,
My object in living is to unite
My avocation and my vocation
As my two eyes make one in sight.
Only where love and need are one
And the work is play for mortal stakes,
Is the deed ever really done
For Heaven and the future's sakes.

FOOTPRINTS OF A GRASS FARMER

by Tom Frantzen

(Editors' note: This article also appears in the May issue of *The Stockman Grass Farmer*.)

Many farmers have discovered that the combination of pigs and pasture can equal profits. Is this practice always a sound aspect of sustainable agriculture? Pastured swine can be reared in a sustainable fashion, but often they are not. Loss of ground cover and the resulting soil erosion, declining biological diversity, and a poor infiltration of water into the soil profile, plague many outdoor systems. Improved management practices based upon solid long term goals can correct these deficiencies.

Are all classes of swine suited to grazing? In a natural setting, hogs of all age classes did some grazing but attained most of their food by rooting soil and eating exposed roots. They ate large quantities of tree nuts as well. Their simple stomach feature enables them to adapt to a wide array of food sources.

Domesticated swine remain an adaptable animal. An enormous amount of dietary research has been completed on all age brackets. Most researchers have concluded that swine in their reproductive stages can utilize forage diets efficiently. All age brackets can consume forage based diets but difficulties may arise meeting production target goals. Post weaning pigs perform best with a diet high in protein and energy.

Performance targets are an essential element in the profit strategy of any grazing plan. A swine grazing plan needs to be both profitable and protective of the natural resource base.

Pasturing reproduction classes of swine is both profitable and resource protective on my farm. Profits result from maintaining body condition – with small amounts of corn and minerals and no protein – during

the breeding gestation period. Feed savings typically run from 15¢ to 20¢ per day. This will vary.

Attention to body condition is important. I have found that high stock densities (60-80,000 lbs per acre) encourage uniform grazing. This requires frequent rotation, many paddocks, and close observation of pasture condition. If possible, the grazing cell should host a rotation of cattle, swine, and sheep in following years. Both sheep and swine develop parasite infections when exposed to the same pasture yearly.

Protection of the natural resources with pastured swine requires careful consideration. We have always placed copper rings in the nose of all of our gilts, sows, and boars. This effectively prevents rooting. However, on pasture farrowing systems, rings alone will not maintain soil cover. Bedded portable farrowing huts and the ensuing foot traffic near them ensures some loss of soil cover in most every operation. Typically, the sows and small pigs live in a set stocked cell for 4-6 weeks. If high stocking rates are used, such as 6 to 10

litters per acre, soil cover will be lost, and erosion will occur. Plant succession will be set back. This is not sustainable agriculture. What can be done to prevent this?

"A swine grazing plan needs to be both profitable and protective of the natural resource base."

Selecting flat sandy soils for farrowing will reduce the erosion damages, but not treat the cause of the problem (loss of soil cover). Soil cover and plant diversity can be maintained if the grazings are planned. Last year, I used stocker cattle to harvest the spring grass flush. After a short rest period (25 days), I placed farrowing sows in the pasture at a low stocking rate of 4 huts per acre. The huts are arranged in a fashion that controls traffic and limits damage to the soil. After the pigs are weaned and the sows removed, the damaged areas can be reseeded or allowed to recover. If the sod has quackgrass, the recovery will be swift. Later in the season, another stocker cattle grazing follows. Cattle will not graze after hogs without at least 30 days of rest. The combination of stockers plus farrowers meets the profit goals and protects the land.

FROM THE KITCHEN

Marj Stonecypher, Floyd

It's Spring!!! That is what it looked like in California four weeks ago. Between our doing some major remodeling, we have made a trip by Amtrak to Corpus Christi, Texas to see son #3, and my grandson from Duluth, and I flew to California to see son #1, his father. He is stationed on the USS Abraham Lincoln, a brand new aircraft carrier. Now it is time to settle down here at home, finish varnishing and painting in the house and start yard work. Already mowed the lawn. Brought back some LARGE fresh lemons (took ONE lemon to make two pies) from California and tried this delious lemon pie. Lemons are fresh in the stores now too.



LEMON MERINGUE PIE

- 1 cup sugar
- 3 tablespoons corn starch
- 1 1/2 cups cold water
- 3 egg yolks, slightly beaten (reserve whites for meringue)

- 1/4 cup lemon juice
- 1 tablespoon corn oil margarine
- Grated rind of 1 lemon
- 1 baked (9-inch) pie shell
- 1/3 cup sugar

In 2-quart saucepan, stir together 1 cup sugar and corn starch. Gradually add water until smooth. Stir in egg yolks. Stirring constantly, bring to boil over medium heat and boil 1 minute. Remove from heat. Stir in lemon rind, lemon juice and margarine. Cool slightly (no longer than 1 hour). Turn into pastry shell. In small a bowl beat egg whites at high speed until foamy. Add 1/3 cup sugar, tablespoon at a time, beating well after each. Continue beating until stiff peaks form. Spread over lemon filling touching crust all around. Bake 350 degrees, 15 to 20 minutes. Cool at room temperture away from drafts. Makes 8 servings.

LEMONADE

- 1-cup lemon juice
- 5-cups water
- 3/4 to 1/2 cups sugar

Mix well and chill.

PFI Membership Application and Renewal Form

Name _____

Address _____

City _____

County _____

State _____

Zip Code _____

Phone # (_____) _____

This is a _____ new membership
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Do you derive a significant part of your income directly from farming in Iowa?
 _____ yes _____ no

Please enclose check or money order (\$10 for one year, \$25 for three years) payable to "Practical Farmers of Iowa" and mail to:

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 2035 190th St.
 Boone, IA 50036**

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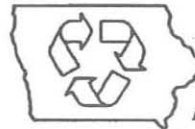


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