

the Practical Farmer

Practical Farmers of Iowa Newsletter

Vol. 6, #4
Winter 1991

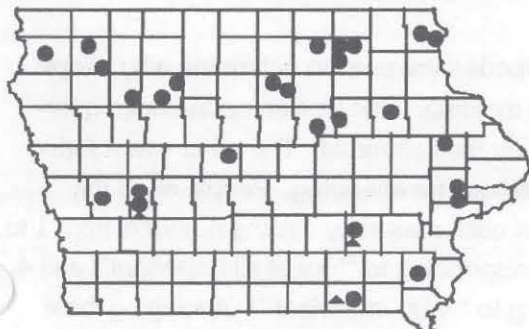
WINTER MEETINGS CAP YEAR OF ON-FARM TRIALS AND FIELD DAYS

It was an eventful year for the PFI on-farm trials program: another of those wet springs that kept several trials from ever starting, and an August that burned up crops in the southeast part of the state. But most of the crops got in and so did 68 replicated on-farm trials, bringing PFI's total to 238 in the last five years!

Trials covered nitrogen rates, weed management strategies, starter fertilizers, cover crops, insecticide rates, seeding rates — topics chosen by 27 cooperators around the state (see the map below). In addition, these cooperators and three PFI "assisting farms" hosted field days and farm tours whose total attendance approached 1,800 in 1991.

This issue of the Practical Farmer presents the 1991 trial results in full detail, beginning on page 7. In 1991, PFI was awarded the National Environmental Achievement

PFI 1991 DEMONSTRATION SITES



PRACTICAL FARMERS OF IOWA
● 27 COOPERATOR FARMS
▲ 3 ASSISTING FARMS

Award from the Renew America foundation for the on-farm trial program and cooperation with the Extension Service. But replicated trials, as important as they are, aren't the only thing PFI members have been up to:

If you attended one of the field days last summer, you

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may have seen demonstrations of narrow strip intercropping and intensive rotational (“planned”) grazing. These were two of the workshop topics at the PFI annual meeting December 9. The following articles give some of the flavor of that event.

A whole new endeavor for PFI is agricultural education, reported in the last newsletter. So far 69 members and 44 District Commissioners have expressed interest in helping a young person learn about sustainable agriculture.

“Global” issues— PFI members are thinking about some of the broader issues related to agriculture. They’re looking at “holistic” management approaches, farm forestry, and genetic conservation of heirloom crops and livestock breeds. Their activities will be reported in the spring newsletter.

These and other themes will develop as 1992 proceeds. Stay in touch with PFI. (*Have you renewed your membership?*) It ought to be another interesting year! ■

WINTER MEETING WRAP-UP

Gary Huber

PFI’s annual meeting in December was not my first. Some years ago I attended the morning segment of the annual meeting while I was a student at Iowa State. I do not remember much about that meeting because I was not paying attention very carefully. But at the meeting this last December I paid close attention to what was happening because, as PFI/Extension education coordinator, I am very interested in how PFI delivers information to others. What I saw and heard at the meeting impressed me favorably, and it is clear from the comments we received on the meeting’s evaluation forms that I am not alone in this impression.

In this article I will discuss how those attending the annual meeting evaluated the event, who attended the meeting, how they learned about it, the reasons they



Jerry DeWitt, director of agriculture for the Iowa Cooperative Extension Service, was presented the Sustainable Agriculture Achievement Award by board member Richard Thompson at the December meeting.

gave for attending, and what they liked about the meeting. I will also discuss the suggestions people gave for improving the annual meeting, as well as their recommendations for what PFI as an organization should be doing in the future.

Based on the number of unused evaluation forms, we estimate about 140 people attended. Of these, nearly 60 completed and returned evaluations. Information from completed evaluations shows that 73 percent of attenders were farmers and 22 percent were attending the meeting for the first time. Thus, there were a high proportion of farmers at the meeting, and there were a sizable number who were there for the first time. Most said they learned about the meeting from the PFI newsletter, while a smaller portion said they learned about it from newspapers or friends.

Two methods were used to determine why people attended the meeting. One was an open-ended question asking why they attended. The other was a listing of possible reasons for attending. People rated the importance of each reason by circling numbers from 1 to 4, with 1 corresponding to “not at all important” and 4 corresponding to “very important.” Averaging these numbers allows a determination of the relative importance of each reason in the decision to attend.

Average scores for reasons to attend annual winter meeting (1=not at all important, 4=very important).	
Visit with other farmers	3.6
Learn more about how to reduce herbicide use	3.4
Learn more about using tillage to manage weeds	3.2
Learn more about cover crops	3.0
Hear Bill Heffernan's presentation	3.0
Learn more about how to reduce nitrogen rates	2.9
Learn more on record keeping and economics	2.7
Learn more about controlled grazing	2.6

The table above lists these reasons and the average scores. The most important reason for attending was to visit with other farmers. This finding is supported by numerous responses to the open-ended question, such as *“to visit with farmers to get a feel for the direction of PFI,” “to speak with others who have had experiences with sustainable agriculture practices,”* and *“to visit with friends.”* Thus, people attended primarily to be able to interact with farmers.

HEFFERNAN ADDRESSES WINTER MEETING ON CONCENTRATION

Ron Rosmann, Harlan

Dr. William (“Bill”) Heffernan, chair of the Department of Sociology at the University of Missouri-Columbia, was the featured speaker at the Practical Farmers of Iowa annual winter meeting, Dec. 9. Heffernan, who was raised near Tripoli, Iowa, expressed praise for Practical Farmers of Iowa and enthusiasm for the winter meeting program.

Heffernan’s presentation centered around the increasing concentration, both in production and marketing, of most major food items in the U.S. The data he presented was summarized from a report written by Heffernan and Douglas Constance in May, 1991. Heffernan’s sobering message is that fewer and fewer companies are gaining more and more control of the food industry. For example: six companies now produce 45% of all the broilers in the U.S.; 1.4% of the feedlots fed 71% of the cattle in 1988; and four packers slaughter 45% of the pork.

On a more optimistic note, Heffernan suggested that it is exactly groups like PFI that can offer an alternative — a way to not only survive but compete with such concentration. PFI farmers’ ability to cut costs, maintain productivity, and approach sustainability are in our favor. In a competitive system, survival depends on efficiency. However, as concentration continues, does the importance of efficiency diminish? Heffernan stated that in an oligopoly (power by the few) or a monopoly (complete power), survival depends on economic and political power, not efficiency.

One of the most disturbing things is the pace at which all this is happening. We are currently witnessing the growth of corporate hog production in Iowa much like that which took place in North Carolina. For instance, the Murphy of Iowa plan to construct 100 contract hog feeding units is proceed-

(Continued on following page.)



Bill Heffernan spoke about sustainable agriculture in the changing world economy.

(Heffernan, continued.)

ing on schedule. Thirty-one units are already in production, and another 27 are under construction. Annually 250,000 hogs will be finished in these units. A 2,400-sow and a 3,400-sow unit are under construction in Missouri to supply the finishers in Iowa. The question has to be asked: "Is this going to sustain family-farm agriculture and the economic and social well-being of Iowa's communities?" ■

The open-ended question "What did you get the most from at this meeting?" was used to assess what people liked about the meeting. Many of the responses to this question centered on motivation and ideas. For example, some responses were: "inspiration," "re-dedication and motivation," "support from other members to keep trying," and "spending time with people who are interested in trying new things." Other responses were: "ideas from talking with others in similar situations," "sharing of ideas," "interaction with people and new ideas," and "ideas to take home." These are only some of the positive responses, but they are clear evidence that the meeting satisfied both the informational and motivational needs of those attending.

Quite a number of people responded favorably to the meeting format. Typical responses were "I really liked the format of concurrent sessions" and "it was good to have lots of workshops." Others expressed enthusiasm for particular sessions, such as "I found Chief Seattle's message to be very moving," "good talk by Bill Heffernan to get 'unhooked' from the system," and "the addition of economic analysis was a very good idea."

An open-ended question on the evaluation form asked how the meeting could have been better. Many people suggested that more time was needed, especially for discussion during the workshops. Some suggested repeating the workshops more often, and a couple people even suggested that the meeting be lengthened to two days. Two others suggested videotaping the

(Continued on page 26.)

NOTES AND NOTICES

🎵 Renew PFI Memberships — LAST CALL!

The fall membership drive is drawing to a close. Are you "on board" for another year? THIS IS YOUR LAST PFI NEWSLETTER if you have not renewed your membership. You may have been confused by an indication in the fall renewal letter from PFI that you owed nothing. That was, in most cases, a big mistake! Check with the PFI coordinators or your district director if you're not sure of your status. Membership costs \$10 per year, but now you can join for three years for \$25.

🎵 MEETINGS

PFI Southwest District: Potluck and program in mid-March. District members will be contacted.

PFI Northwest District: Supper at Stubs Ranch Kitchen, Spencer, on Sat., Feb 29, 6:30 pm. PFI President Tom Frantzen will show slides of his trip to Latvia during the coup last year, and other members are invited to bring slides, pictures, and experiences to share. Last year's supper was a big success, drawing nearly 50 people.

PFI North Central District: Potluck and program Sat., Feb 22, starting at 11:00 am at the Trinity Lutheran Church, Hampton. From Hwy. 3, take Hwy. 65 to the "Kum & Go" on the north edge of town, go west 1½ blocks to the church. Tom Frantzen will speak on his trip to Latvia, and members will discuss the coming year. Drinks and silverware provided. Bring your spouse and a neighbor. For information, call Al and Laura Hagensick, at 456-2945.

PFI Northeast District: 1:00 pm, Thursday, March 5, at North Iowa Community College, in Calmar. Report on a new PFI grazing club that was started after the grazing meeting in Calmar this winter. There will also be a report on cooperator trial results from 1991 and discussion of activities for next year, including new work with the Institute for Agricultural Biodiversity on conserv-

ing heritage breeds of livestock. For more information, call Tom and Irene Frantzen, (515) 364-6426.

PFI Southeast District: 1:30 pm, Tuesday, Feb. 25, Montgomery Hall, in the Johnson County Fairgrounds, on the south side of Iowa City, 3149 Old Hwy. 218-S. PFI members in the district will elect a new district director. Forward your nominations to the nominating committee: Eddie Broders, (319) 785-6022 (evening), -6063 (noon); Wayne Bott, (319) 687-2622; or Dean Vantiger, (319) 865-7561. Gary Johnson, of Hutchinson Farm Management, Geneseo, will discuss profitable, low-investment hog systems. His firm manages a number of pasture-farrow operations in Illinois. Peter Jorgensen, of the Institute for Agricultural Biodiversity, will describe the project to conserve heritage breeds of livestock and how farmers can get involved. For more information, call Jeff and Gayle Olson, (319) 257-6967.

Our Vanishing Seed and Agricultural Heritage: Monday, Feb. 17, Cornell College, Mount Vernon. The symposium begins at 11:00 am, with a talk in King Chapel by Kent Whealy, of the Seed Savers Exchange. The program ends with Gary Nabham, of Native Seeds/SEARCH, Tucson, Arizona, who will speak at 7:30 pm in Hedges Lounge of the Commons on "Conserving Locally Adapted Seedstocks and Agricultural Habitats." For more information, contact Dave Lyon, (319) 895-4375 or -8240.

1992 Upper Midwest Organic Farming Conference, "Sustainability — One Farm at a Time." March 6-7, Marynook College Conference Center, Galesville, WI. Contact Dave Engel, (608) 734-3711.

Sixth Annual National Ridge Till Conference. Feb. 10-11, Sioux City Convention Center. Registration is \$55 (\$45 spouses). Speakers include: Larry Nepl, Iowa Farms Associates, Fort Dodge; Ernie Behn, Boone; Tom and Irene Frantzen, PFI, New Hampton; Doug Smith, Ontario, Canada; George Rehm, University of Minnesota; Randall Reeder, Ohio State University; and many more. Call (402) 564-3244 for additional information.

Leopold Center for Sustainable Agriculture: "Building Bridges: Cooperative Research and Education for Iowa Agriculture." Feb. 18-19, Scheman Center, ISU, Ames. General public: one day \$40, both days \$60. Farmers: one day \$30, both days \$40. (Includes lunch.) Speakers include: Peter Nowak, rural sociology, University of Wisconsin; Alfred Blackmer, soil science, ISU; Jon Tollefson, entomology, ISU; Roger Ginder, ag economics, ISU; John Ikerd, ag economics, University of Missouri - Columbia; Kathleen Merrigan, U.S. Senate Agriculture Committee; William Lockeretz, Tufts University; Ronald Cantrell, head of ISU Agronomy Department; Tom Frantzen, PFI president; and Dennis Keeney, director of the Leopold Center. For more information contact the Leopold Center at (515) 294-3711.

AWARDS AND HONORS

Thompsons Receive "Friend of Extension" Award

PFI cooperators Richard and Sharon Thompson were recently chosen by Epsilon Sigma Phi, the Extension Honorary Society, to receive the "Friend of Extension" award. This award recognizes Iowa citizens who have "contributed to the growth and development of Iowa communities in cooperation with Extension programs." The Thompsons were nominated for the recognition by their Boone County Extension Director, David Quinlan. The following text is from the award program, held last November, in Ames.

Together, Richard and Sharon Thompson have worked very hard with Iowa State University and Iowa State University Extension to bring sustainable agriculture and alternative farming methods to typical farm operations in Iowa and around the country. They have pioneered on-farm research methods for Practical Farmers and other groups. They helped initiate the Practical Farmers of Iowa organization and were a driving force in funding a PFI coordinator for Extension. They have hosted many people, including Extension agriculturalists on their farm. Their efforts have had a local, state, and national impact. Dick has cooperated



Iowa State University President Martin Jischke (right) and his wife Patty were guests on the farm of Richard and Sharon Thompson last fall.

with state and Central Iowa Area Extension staff to conduct many workshops on cover crops, nitrogen rates, ridge tillage with-and-without-herbicides, and controlled grazing. Dick and Sharon have been 4-H Club leaders for 16 years, and Dick currently is serving on the State Extension Advisory Council. They have four children, two of whom are now in farming.

Congratulations, Dick and Sharon!

PFI Members Win Iowa Masters Conservation Division in District Seven

“The rains came just right,” say Vic and Cindy Madsen, Audubon, of their 1991 corn crop. The field they entered in the Iowa Masters Yield Contest was measured at just over 204 bushels per acre, winning the conservation division for District 7.

After applying about 1,000 gallons of manure in late winter, the Madsens ridge-planted a full-season hybrid in 36-inch rows on May 2. The soil is predominantly Marshall series, with 5-9% slopes, and it tests very high for both potash and phosphate. Thirty pounds of nitrogen fertilizer went on with the planter. The late spring soil nitrate test gave a reading of 18 parts per million, so an additional 30 pounds was sidedressed at cultivation, for a total of 60 pounds purchased nitrogen.



Vic and Cindy Madsen and their sons farm 400 acres near Audubon.

“I hope it shows,” reflects Vic, “that a person who tries to farm sustainably can have excellent yields. We didn’t work the soil before planting, and we used the late spring test to fine tune the nitrogen rate.” Congratulations, Vic and Cindy!

PFI Members Win National Soil Conservation Award

Merlin and Fay Christensen, Elma, are among three farm couples to receive the nationwide Good Earth Family Award, sponsored by the National Endowment for Soil and Water Conservation and Case IH. In December, they travelled to Washington, D.C. to accept the award. The Endowment, established in 1982, is a non-profit, non-political, privately funded organization dedicated to promoting and recognizing innovative stewardship of land and water.

The Christensens, who are active in local conservation efforts, practice what they preach. They have reduced their tillage, installed waterways and a drop structure for water, and terraced or changed crop rotations to include meadow on different fields. A settling structure saves the manure solids from their 1,000-head feedlot. Drying costs are saved by feeding high moisture corn to these cattle, and an evergreen windbreak around the farmstead has saved on heating bills. Wildlife habitat includes a 30-acre wooded pond.

(Continued on page 26.)

PFI COOPERATOR RESULTS, 1991

READING THE NUMBERS, KNOWING THE TERMS

Valid and reliable farmer-generated information is a cornerstone of Practical Farmers of Iowa. Consequently, PFI has worked to develop practical methods that safeguard the accuracy and credibility of that information. PFI cooperators use methods that allow statistical analysis of their on-farm trials. Chief among these are: 1) "replication," and 2) "randomization." (See the figure of a typical PFI trial layout on the following page.)

The farming practices compared in a trial are repeated, or "replicated," at least six times across the field. Thus trial results do not depend on a single comparison only, but on six or more. The order of the practices, or "treatments," in each pair is chosen with a flip of the coin. This "randomization" is intended to avoid unintentional bias. PFI on-farm trials have been recognized for their statistical reliability. So, while PFI coop-

(Continued on next page.)

CORRECTIONS FROM THE WINTER MEETING

If you attended the PFI annual meeting Dec. 9, you received a booklet detailing results from all the 1991 on-farm trials. As you might expect, the discussion in the workshops turned up some errors in that report. Here are the corrections.

Page 8-9: the nitrogen rate trial carried out by Jeff Olson was in corn following soybeans, not corn after corn.

Page 12-13: In Dave Lubben's trial examining the value of Biomix and Pepzyme, that starter combination was \$1.81 less profitable than no starter, not \$11.00 less profitable. A modest but statistically significant yield increase was associated with the starter, and including the value of the additional 1.7 bushels leads to the smaller loss figure.

Page 14-15: Ray Stonecypher, in accordance with the recommendation of the company that sold him the foodgrade liquid starter, also banded 24 pounds of potash as dry fertilizer. The zero-starter treatment, however did not apply any potash to the no-starter treatment. That increases the "treatment cost" and reduces the relative "\$ benefit" of the liquid starter treatment. The treatment cost should be \$27.41, not

\$15.44, and the \$ benefit should be \$14.83, not \$26.79. Under this new calculation, the liquid-dry package was less profitable than the dry fertilizer, which gave a treatment \$ benefit of \$26.63. However, the liquid/dry package was more profitable than applying no P and K fertilizer at all.

Page 20-21: Ted Bauer *lost* \$11.22 by harvesting early. The amount is incorrectly shown as a \$11.22 gain.

Page 20-21: Seeding costs were not equal in Don Davidson's comparison of ridge-till and drilled soybeans. Including seed costs changes the "\$ benefit" of ridge-till from \$15.16 to \$21.62. Ridge-till costs change to \$41.84, from \$26.64. No-till costs come to \$74.34 instead of \$52.68.

Page 23: In the table "Two Farmers' Corn Yields in Narrow Strip Intercropping," some yield numbers were cut off in the second, third, and sixth columns. The yields in column 2 (representing corn row #2) should read 177 and 227, not 17 and 22. The yields in column 3 (representing corn row #3) should be 171 and 209, not 17 and 20 bushels, and the yield in column 6 should be 227, not 22 bushels! ■

A PAIRED-COMPARISON TRIAL

NARROW STRIPS RUNNING ACROSS THE FIELD

STARTER FERTILIZER COMPARISON

Starter	No Starter	Starter	No Starter	No Starter	Starter	Starter	No Starter	No Starter	Starter	No Starter	Starter
118.0	117.9	112.0	126.2	119.9	100.7	110.8	114.9	116.9	119.9	119.7	118.5
bu	bu	bu	bu	bu	bu	bu	bu	bu	bu	bu	bu
Pair 1	Pair 2	Pair 3	Pair 4	Pair 5	Pair 6						

erators don't have all the answers, they do have a tool for working toward those answers.

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

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

The LSD doesn't work well in trials with more than two treatments. In those cases, letters are added to show whether results are statistically different from each other. The highest yield or weed count in a trial will have a letter "a" beside it. A number with a "b" next to it is significantly different from one with an "a," but neither is statistically different from a number bearing an

"ab." A third treatment might produce a number with a "c" (or it might not), and so on.

Average 1991 statewide prices for inputs were assumed in calculating the economics of these trials. Average fixed and variable costs and time requirements were also used. These can vary greatly from farm to farm, of course. The calculations use 1991 harvest time prices of \$2.25 per bushel for corn, \$5.28 for soybeans, and \$1.17 for oats.

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

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

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

NITROGEN

1991 was the fourth year PFI has used the late spring soil nitrate test for corn. The test has been a good indicator of nitrogen sidedress needs in both dry years

and wet. PFI cooperators continue to work with ISU soil scientist Alfred Blackmer to improve the test.

The late spring test recommends a range of sidedress rates. (See the chart below.) Through experience, growers find where in this "window" their nitrogen rates need to be. For most situations, the recommendations appear to be conservative. For example, the table of nitrogen trials on pages 8-9 shows that several cooperators ran trials in which it was the high nitrogen rate that was based on the test, with the low rate sometimes considerably below the test recommendation. Of these, only Doug Alert's trial and Lynn Stock's trial produced yield reductions from rates below the recommended range.

Tom and Irene Frantzen took the late spring test in corn following alfalfa. The test value of only 9 ppm (parts per million) nitrate N translated to a sidedress recommendation of 110-to-160 pounds nitrogen. In a replicated trial, Tom sidedressed three rates — 0, 50, and 110 pounds N. To no one's surprise, all three treatments yielded the same. The late spring test just came too early in the season to reflect the nitrate nitrogen that was going to be released from that plow-down green manure. Studies have shown corn following alfalfa responds to a maximum nitrogen application of about 25 pounds per acre.

Don and Sharon Davidson used three application rates to compare two methods for making nitrogen

recommendations: 98 lbs N (48 sidedress); 140 lbs N (90 sidedress); and 165 lbs N (115 sidedress). The middle nitrogen rate was based on the formula:

$$\text{Yield Goal} \times 1.2 \text{ lbs N/bushel.}$$

The high rate was based on the late spring soil nitrate test, which recommended a sidedress of 110-160 pounds N from the soil test value of 10 ppm. The lowest rate was also based on the late spring test, using a formula given to PFI cooperators during the early stages of research on the test:

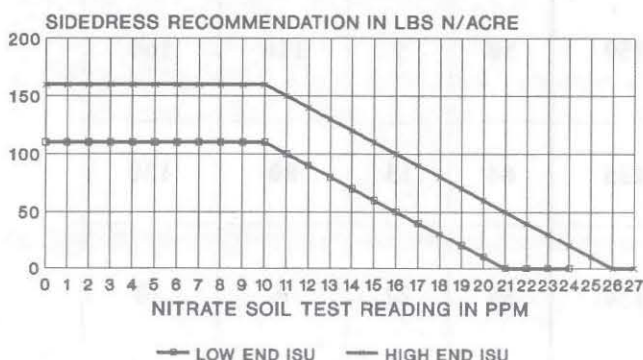
$$(21 \text{ ppm} - \text{test result}) \times 7 \text{ lbs N/ppm.}$$

The yields of the two lowest rate treatments were statistically the same. Unexpectedly, the highest rate of N was associated with a significantly greater yield. This four-to-five bushel increase did not necessarily pay for itself, however. Balancing the yield increase against the greater fertilizer cost, the high-rate treatment came out slightly less profitable than the lowest rate, at least with this year's data. Don plans to repeat the trial.

Ted and Donna Bauer contributed an interesting observation to the nitrogen discussion. They calculated the additional cost of handling and hauling from town the additional nitrogen fertilizer used in the higher rate of their trials. The additional cost, shown in the nitrogen table, comes to the better part of a dollar per acre. That is a cost most people probably don't recognize.

(Continued on page 12.)

NITROGEN SIDEDRESS RECOMMENDATION ISU EXTENSION 1991 SCHEDULE



USING THE LATE SPRING SOIL NITRATE TEST
DETERMINE EXACT SIDEDRESS BY
YIELD POTENTIAL AND EXPERIENCE



PFI cooperators and members examine trial results at the December membership meeting.

TWO-TREATMENT NITROGEN RATE TRIALS IN CORN

COOPERATOR	LOW RATE TRT		HIGH RATE TRT		RATE DIFF.	TEST PPM	RECOM-MENDED	
	YIELD (bu)	N RATE (lbs N)	YIELD (bu)	N RATE (lbs)			LOW	HIGH
(AFTER CORN)								
BAUER	168.0	66	166.9	125	59	14	70	120
HOULIHAN	144.4	69	151.1	169	100	20	10	60
MADSEN	169.3	147	168.8	192	45	8	110	160
ROSMANN	127.5	95	129.7	135	40	12	90	140
STOCK	154.2	109	158.6	194	85	7	73	107
WILSON	140.6	11	140.2	81	70	27	0	0
(AFTER SOYBEAN)								
ALERT	134.2	100	141.7	150	50	9	110	160
BAUER	164.2	61	165.0	125	64	13	80	130
OLSON	100.4	45	105.2	130	85	22	0	40

TWO-TREATMENT NITROGEN RATE TRIALS IN CORN

SIDEDRESS			YIELD DIFF.	LEAF N SIG.	YLD SIG.	YLD LSD	LOW RATE \$ BENEFIT	GAL DIESEL EQUI- VALENT SAVED	COMMENT
LOW RATE	HIGH RATE	TEST RATE							
23	82	82	1.0	N.S.	N.S.	2.6	\$13.74	14.1	ALSO: \$.69 MORE FERT. HANDLING
0	100	0	-6.7	N.S.	N.S.	13.1	\$23.28	23.8	
110	155	BOTH	0.5	N.S.	N.S.	3.8	\$10.48	10.7	
50	90	90	-2.2	N.S.	N.S.	15.1	\$9.31	9.5	ROOTWORM DAMAGE INCREASED LSD
0	85	85	-4.4	N.S.	*	4.0	\$9.62	20.3	SIDEDRESS WAS 2nd ANHYDROUS PASS
0	70	0	0.4	--	N.S.	4.9	\$9.14	16.7	N TEST IN LOW RATE = 42 PPM, IN HIGH RATE = 27
50	100	100	-7.5	N.S.	*	6.2	(\$5.28)	11.9	LOW RATE WAS BELOW NITRATE TEST
18	82		-0.8	N.S.	N.S.	5.9	\$14.90	15.3	ALSO: \$.75 MORE FERT. HANDLING
0	85	0	-4.8	--	N.S.	7.7	\$11.09	20.3	THREE REPLICATIONS ONLY

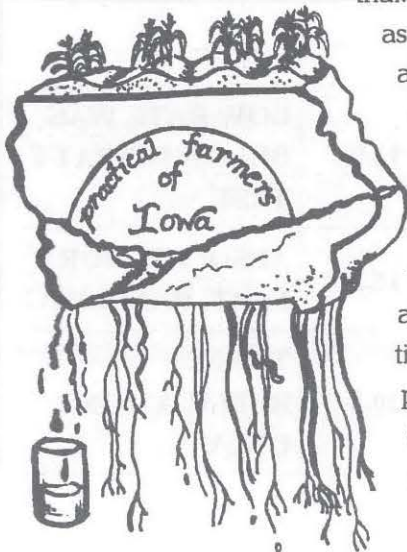
TRIALS USING MANURE

COOPERATOR	PREVIOUS CROP	MANURE TREATMENT					PURCHASED INPUT TRT	
		N CONTENT (MANURE + FERTILIZER)	N AVAIL-ABLE	LEAF N (%)	YIELD (bu.)	\$ COST	N RATE	INPUT TYPE
REICHERTS	OATS	50	25	2.7	180.9	\$20.93	69	28% N SIDEDRESSED
SVOBODA	CORN	133	112	2.0	155.5	\$37.72	121	28% N AND STARTER

MANURE

The table of manure trials above shows two trials comparing manure to purchased nitrogen. In neither the Reicherts trial nor the Svoboda trial was there a significant yield difference. In the trial on the farm of Mike and Jamie Reicherts, there was considerably more N available to the crop in the purchased-N treatment (69 pounds) than in the strips receiving the mid-season manure sidedressing (25 pounds estimated). The late spring soil nitrate test recommended 80-to-130 pounds of sidedressed N, but apparently the crop had enough nitrogen in either system. Dick and Mary Jane Svoboda supplemented manure with purchased nitrogen in their

trial. That system yielded as well as did corn with all N purchased, and its nitrogen cost about the same. Although it is not reflected in the \$ benefit calculations, the manure treatment also received an additional \$14.07-worth in potash and phosphate from the livestock manure.



STARTER FERTILIZERS

Two-Treatment Trials

Starter fertilizers were a popular subject of trials in 1991. Of nine with-and-without trials, two found a significant yield increase and one a significant yield decrease with starters, and six trials found no significant yield difference. (See the table on pages 12-13.) Jerry and Jill Carlson found a 3.8 bushel higher yield with a urea-calcium chloride starter. Research at Texas A&M University indicates this nutrient mix can be of value, at least under cool conditions. Dave and Lisa Lubben recorded a 1.7 bushel greater yield in soybeans using enzyme and micronutrient products manufactured by Tainio Technique and Technology. In neither of these two trials did the starters pay, however. Balanced against the cost of the products, the starter treatments lost an estimated \$2.21 and \$11.00 per acre, respectively, in the Carlson and Lubben trials.

Dave Lubben reported a significant yield decrease using a starter-foliar combination of products recommended by a consultant and sold by TransNational AGronomy, Ltd. Dave reports the foliar spray was applied about two weeks late, due to delayed shipping, and thinks that it may have caused leaf burn. Lubben also ran two trials using the fertilizer additive ACA (zinc

TRIALS USING MANURE

PURCHASED INPUT TRT			DIFFERENCE					MANURE \$ BENEFIT	COMMENTS
LEAF N (%)	YIELD (bu.)	\$ COST	RATE DIFF (lbs)	YIELD DIFF. (bu.)	YLD. SIG.	YLD. LSD	LEAF N SIG.		
2.8	181.2	\$29.97	-44	-0.3	N.S.	7.1	N.S.	\$9.05	LATE-SPRING TEST: APPLY 80-130 LB N
1.9	156.9	\$37.69	-9	-1.4	N.S.	9.9	N.S.	(\$0.03)	NOT VALUED: \$14.07 MANURE P & K

acetate). ACA has increased corn nitrogen uptake in some private and university experiments, but the response is hard to predict. There was no yield effect in either of Dave's trials with ACA.

Three-Treatment Starter Trials

A number of cooperators compared starter rates or different products with a zero-rate check in three-treatment trials, shown in the table on pages 16-17. With no significant yield differences, the zero-starter check won financially in Mark and Rita Mays' trial, in Dick and Sharon Thompson's trial of corn-following-hay, and (for the third year) in Steve and Gloria Leazer's starter trial. Conventional fertilizers topped both the checks and alternative fertility materials in other trials by Lubben and Thompson. In the three-treatment trial conducted by Ray and Marj Stonecypher, conventional dry fertilizer and dry-plus-low-salt liquid fertilizer both yielded significantly more than the zero-starter check treatment.

Are Starters for You?

The popularity of starter fertilizers is helped by observable yield responses on some farms and in some years. Even in trials that show no yield increase, starter effects such as faster early growth and silking are often

visible. Some producers consider starters worthwhile just for the early competition with weeds and the earlier cultivation they may allow. Others expect no yield response — they simply use starters as a way to apply maintenance levels of nutrients. These different strategies require different financial calculations as well as a few value judgments.

PHOSPHORUS AND POTASSIUM AND DEEP BANDING

Following on university research that shows banding to be the most efficient method of fertilization in ridge tillage, PFI cooperators have compared banding and broadcasting on their own farms. Two trials this year yielded inconclusive results. Paul and Karen Muggge compared a fall band in the ridge with spring broadcast. Harlan and Sharon Grau compared a fall band in the ridge with fall broadcast. Although neither trial gave a yield difference, Harlan Grau observed an early season starter effect from the fall band. The addition of a zero-rate check treatment will benefit future trials.

Jeff and Gayle Olson compared two sources of phosphorus for corn, diammonium phosphate (DAP)

(Continued on page 18.)

OTHER FERTILITY TRIALS

COOPERATOR	TREATMENT "A"		TREATMENT "B"	
	DESCRIPTION	YIELD (bu.)		YIELD
FRANTZEN	OATS - 30 LBS PREPLANT N	54.0	OATS - NO N	53.2
GRAU	FALL BAND IN RIDGE (13+32+66), HARROW	137.9	FALL BROADCAST (13+32+66)	132.3
MUGGE	FALL DEEP BAND (30+80+90)	101.2	SPRING BROADCAST (30+80+90)	98.3
ALERT	STARTER - SOYBEANS (12+30+30)	36.9	NO STARTER	36.8
ALERT	STARTER - CORN (20+20+30+2S+1ZN)	138.3	NO STARTER	135.2
CARLSON	STARTER FOR CORN -- (UREA N + Ca)	86.6	NO STARTER	82.8
LUBBEN	1 LB BIOMIX, 8 OZ PEPZYME (TT&T)	51.7	NO STARTER	50.0
LUBBEN	(4+13+2) STARTER + ACA -- CORN	97.0	NO STARTER OR ACA	99.3
LUBBEN	60 LBS PREPLANT N + ACA	146.2	60 LBS PREPLANT N ALONE	147.9
LUBBEN	ALTERNATIVE FERTILIZERS (TNA)	47.6	NO FERTILIZER	50.9
MADSEN	(7+21+7) STARTER -- CORN	163.6	NO STARTER	158.7
OLSON	(0+0+51) STARTER, DEEP BANDED	57.0	NO STARTER	56.5
SVOBODA	(1+6+6) STARTER -- CORN	141.7	NO STARTER	144.5

OTHER FERTILITY TRIALS

DIFFERENCE				
YIELD (bu.)	YLD SIG.	YLD LSD	\$ BENEFIT OF "A"	COMMENTS
0.8	N.S.	1.3	(\$10.48)	30 LBS N PREPLANT, 15 LBS FOLIAR. POOR OAT YEAR
5.6	N.S.	8.2	(\$2.75)	BAND APPEARED TO HELP EARLY GROWTH, BUT LARGE LSD
2.9	N.S.	6.1	(\$2.43)	
0.1	N.S.	1.2	(\$21.30)	
3.2	N.S.	8.4	(\$18.23)	CROP RECEIVED AN ADDITIONAL 30 LBS N AT PLANTING
3.8	*	3.2	(\$2.28)	COST EXCEEDED YIELD INCREASE
1.7	*	1.6	(\$1.81)	
-2.3	N.S.	9.7	(\$7.57)	STARTER COST \$4.55, ACA COST \$2.15
-1.7	N.S.	4.0	(\$4.56)	
-3.2	*	2.0	(\$30.92)	MICRONUTRIENTS & NATURAL FERTILIZER -- STARTER & FOLIAR
4.9	N.S.	6.5	(\$8.60)	BOTH TRTS: 45 LBS N AT PLANTING, 45 LBS SIDEDRESS
0.5	N.S.	9.3	(\$6.59)	
-2.8	N.S.	7.9	(\$8.25)	BOTH TRTS: 100 LBS K ₂ O PREPLANT, 90 LBS N SIDEDRESS

MULTIPLE-TREATMENT TRIALS

COOPERATOR	CROP	PREVIOUS CROP	YIELD SIGNIFI- CANCE	TREATMENT "A"				
				DESCRIPTION	YIELD (bu.)	STAT.	TRT COSTS	\$ BENEFIT
LEAZER	CORN	CORN	*	NO ROOTWORM CONTROL	106.6	b	\$0.00	\$14.40
STRIEGEL	CORN	CORN	*	NO ROOTWORM CONTROL	108.3	b	\$0.00	\$6.75
LEAZER	CORN	CORN	N.S.	NO STARTER FERTILIZER	102.2	a	\$0.00	\$38.50
LUBBEN	CORN	SOYBEANS	*	NO STARTER FERTILIZER	135.2	ab	\$0.00	\$10.00
MAYS	CORN	SOYBEANS	N.S.	NO STARTER FERTILIZER	131.3	a	\$0.00	\$38.50
STONECYPHER	CORN	SOYBEANS	*	NO STARTER FERTILIZER	112.0	b	\$0.00	\$0.00
THOMPSON	SOYBEANS	CORN	*	NO STARTER FERTILIZER	49.2	b	\$0.00	\$41.92
THOMPSON	CORN	HAY	N.S.	NO STARTER FERTILIZER	110.9	a	\$0.00	\$41.92
THOMPSON	CORN	SOYBEANS	N.S.	NO STARTER FERTILIZER	121.7	a	\$0.00	\$23.24
OLSON	CORN	CORN	N.S.	NO ADDED P, N ADJUSTED	104.6	a	\$15.36	\$10.87
DAVIDSON	CORN	SOYBEANS	*	98 LBS N (48 LB SIDEDRESS)	144.6	b	\$22.69	\$9.78
FRANTZEN	CORN	ALFALFA	N.S.	3 LBS N (0 SIDEDRESS)	170.4	a	\$7.00	\$25.61
STONECYPHER	CORN	SOYBEANS	N.S.	92 LBS N (60 LB SIDEDRESS)	124.6	a	\$40.25	\$13.97

MULTIPLE-TREATMENT TRIALS

TREATMENT "B"					TREATMENT "C"					OVERALL COMMENTS
DESCRIPTION	YIELD (bu.)	STAT.	TRT COSTS	\$ BENEFIT	DESCRIPTION	YIELD (bu.)	STAT.	TRT COSTS	\$ BENEFIT	
ROOT STIMULANT (BIOROOT+)	107.4	b	\$14.40	\$0.00	INSECTICIDE (COUNTER)	114.2	a	\$10.50	\$19.97	
HALF-RATE LORSBAN, 4.5 LBS	107.1	b	\$6.75	\$0.00	FULL RATE LORSBAN, 9 LBS	114.6	a	\$13.50	\$8.90	USED CONRAD BANDERS
100 LBS (5-23-23)	103.1	a	\$13.95	\$24.55	250 LBS (15-9-2-17S +MICRO)	101.8	a	\$38.50	\$0.00	ZERO RATE SHOWED HIGHER LEAF TISSUE Cu & Zn THAN OTHER RATES
5 GAL (7-23-5)	136.3	a	\$5.42	\$12.41	1 LB BIOMIX, 6 OZ PEPZYME	132.8	b	\$10.00	\$0.00	BIOMIX & PEPZYME MANUFACTURED BY TT&T
150 LBS (15-9-2-17S+MI)	132.3	a	\$23.10	\$15.40	250 LBS (15-9-2-17S+MI)	132.4	a	\$38.50	\$0.00	HIGH RATE SHOWED HIGHER LEAF TISSUE S & Mn THAN ZERO RATE
DRY STARTER (7+18+48)	130.6	a	\$15.60	\$26.63	LIQUID (+1+8+8 +5 Zn) & (0+0+23) DRY	131.0	a	\$27.41	\$14.83	TRT C: FOOD GRADE LIQUID, CHELATED Zn, 38 LBS KCl PREPLANT
(0+0+60) AS STARTER	51.2	a	\$7.75	\$43.47	LIQUID STARTER (8+18+17)	49.6	b	\$41.92	\$0.00	LIQUID FERT. STRIPS HAD SIGNIFICANTLY MORE WEEDS IN THE ROW
(40+0+60) FROM 28% N & KCl	112.9	a	\$16.83	\$25.09	LIQUID STARTER (8+18+17)	113.0	a	\$41.92	\$0.00	LEAF TISSUE IN (40+0+60) SHOWED SIG. GREATER K, LESS Ca & Mg
26+18+60 STARTER FERTILIZER	122.0	a	\$16.26	\$6.98	56+18+60 STARTER FERTILIZER	124.1	a	\$23.24	\$0.00	NO SIGNIFICANT DIFFERENCES IN LEAF TISSUE NUTRIENTS
P FROM DAP, N ADJUSTED	107.4	a	\$25.00	\$1.23	P FROM MAP, N ADJUSTED	106.5	a	\$26.24	\$0.00	THEORY: MAP P IS MORE AVAILABLE THAN DAP P. (N EQUALIZED)
140 LBS N (90 SIDEDRESS)	145.1	b	\$32.47	\$0.00	165 LBS N (115 SIDEDRESS)	149.6	a	\$38.29	\$4.86	HIGH RATE YIELD WAS SIGNIFICANTLY GREATER THAN LOW & MIDDLE
53 LBS N (50 SIDEDRESS)	173.5	a	\$19.80	\$12.80	113 LBS N (110 SIDEDRESS)	161.7	a	\$32.61	\$0.00	LATE SPRING NITRATE TEST 9 PPM. RECOMMENDATIO 110-160 LBS N
122 LBS N (90 SIDEDRESS)	123.9	a	\$47.24	\$6.98	152 LBS N (120 SIDEDRESS)	123.4	a	\$54.22	\$0.00	LATE SPRING TEST 13 PPM: 80-130 LBS N SIDEDRESS RECOMMENDED

and monoammonium phosphate (MAP). Jeff had heard that the phosphorus in MAP is more available. However, neither treatment yielded significantly more than the zero-rate check.

single strategy. Weed numbers did not seem to relate to yields in this experiment, but weeds were few overall.

WEED MANAGEMENT TRIALS

In the past five years PFI cooperators have compiled an impressive record showing that ridge tillage can be used to raise crops profitably without herbicides. Even in the wet growing season of 1990, only one of eleven trials in ridge-till showed a reduction in yield when chemical control was not used. The wet spring of 1991 presented an even greater challenge, and cooperators adopted a variety of strategies to cope. These included: 1) use of a preplant contact herbicide, with mechanical control thereafter; 2) planting into a "green" field of weeds, relying on those weeds to suppress later weeds and on a well-adjusted planter to clean the row zone; 3) use of those mechanical methods followed by a postemergence herbicide when the situation demanded.

The table on pages 20-21 shows at least one example of each of these strategies. If there was a lesson to be drawn from this year, it may have been the importance of timeliness of the postemergence application. Three trials in soybeans produced yield reductions because the foxtail and its friends got ahead of the crop before the postemerge herbicide went on. This class of herbicides gives farmers a "safety net," but like most techniques their use requires good timing.

OTHER TRIALS OF INTEREST

Rootworm control

Jim and Vickie Striegel compared rates of rootworm insecticide. (Table pages 16-17.) They used the shop-crafted banders manufactured by their neighbor, Larry Conrad, which are supposed to give more even distribution of material across the row than other banders. Scouting in 1990 had shown a high number of adult beetles, and the hope was that the banders would allow Striegel to use a half-rate of insecticide. Nevertheless,

COVER CROPS

Richard and Sharon Thompson devoted a major effort in 1991 to the study of cover crops for weed control. (See the table on the opposite page.) Previous trials by the Thompsons and other cooperators have pursued cost reduction, weed control, and managing the cover crop to limit competition with other crops. Dick Thompson put all these lessons together, seeding just 18 pounds of rye per acre in two rows just on the ridge. With this practice cost is limited, the cover is located where it gives the most erosion control and is easiest to eliminate, and the rye is tough on weeds. This weed control can come both through the rye's competitiveness and through the "allelopathic" effect (perhaps chemical) it has on other plants.

In a cropping system without herbicides, Dick Thompson compared the effect of two factors — cover crop and rotary hoeing — on crop yield and weed numbers. The "cover crop" was either the seeded rye or the natural cover of spring weeds, which, with the late planting, were abundant. Dick was most concerned with the effect of the practices on weeds in the row, but he also counted weeds out of the row. As the table shows, weed numbers were very low overall. In the trial at site 9, the rye cover was more effective in reducing total weeds than was the weed cover, but in the trial at site 1-N the reverse was true. Hoeing reduced the total number of weeds in all three of the factorial trials, but hoeing did not change the number of weeds in the row. In a year with a normal planting season, weed cover would not be so developed at planting time, offering a greater contrast between the rye cover and the volunteer weed cover.

A fourth trial pitted cover crops against two other weed control strategies: herbicide and rotary hoeing. Each of the three treatments in this trial relied on only a

(Continued on page 24.)

COVER CROPPING TRIALS

COOPERATOR: THOMPSON

SITE	CROP	COVER: HOE:	RYE		RYE		WEED		WEED		COVER	HOE
			YES	NO	YES	NO	YES	NO	EFFECT	EFFECT		
3-E	SOYBEANS	YIELD (bu.):	53.6	a	(SAME)		53.1	a	(SAME)		N.S.	---
FALL SEEDED RYE		TRT COST:	\$20.43		\$11.15		\$9.28		\$0.00			
		TRT BENEFIT:	\$0.00		\$9.28		\$11.15		\$20.43			
		WEEDS IN ROW:	14	a	15	a	14	a	19	a	N.S.	N.S.
		WEED OFF ROW:	48	ab	28	b	55	a	41	ab	N.S.	*
		TOTAL WEEDS:	62	ab	43	b	69	a	60	ab	N.S.	*
9	SOYBEANS	YIELD (bu.):	55.9	a	54.8	b	56.4	a	56.0	a	*	*
SPRING SEEDED RYE		TRT COST:	\$20.43		\$11.15		\$9.28		\$0.00			
		TRT BENEFIT:	\$0.00		\$3.78		\$11.15		\$20.43			
		WEEDS IN ROW:	1	b	2	ab	3	ab	5	a	N.S.	N.S.
		WEED OFF ROW:	9	b	12	b	13	b	20	a	*	*
		TOTAL WEEDS:	10	c	15	bc	16	b	25	a	*	*
1-N	CORN	YIELD (bu.):	115.0	a	114.9	a	110.3	b	110.2	b	*	N.S.
SPRING SEEDED RYE		TRT COST:	\$14.25		\$5.89		\$3.09		\$0.00			
		TRT BENEFIT:	(\$0.51)		\$7.68		\$0.00		\$3.09			
		TOTAL WEEDS:	187	c	842	a	77	c	511	b	*	*
3-W	SOYBEANS	YIELD (bu.):	51.7	b	50.5	c	53.0	a				
SPRING SEEDED RYE		TRT COST:	\$11.15		\$7.77		\$9.28					
		TRT BENEFIT:	\$3.03		\$0.00		\$12.01					
		WEEDS IN ROW:	42	a	3	b	9	b			(ALL WEED NUMBERS ARE PER ACRE.)	
		WEED OFF ROW:	20	b	19	b	38	a				
		TOTAL WEEDS:	61	a	23	b	47	ab				

WEED TRIALS TABLE

COOPER- ATOR	LOW RATE TREATMENT				HIGH RATE TRT
	DESCRIPTION	YIELD	BROADLEAFED WEEDS/ACRE	OTHER WEED INFORMATION	DESCRIPTION
(CORN)					
DAVIDSON	NO HERBICIDE, ROTARY HOE 3X	124.4	906	WET SPRING - EXTRA HOEING	8 LBS LASSO II IN 12" BAND
HOULIHAN	MECHANICAL, POST BROADCAST	120.7	--	HOED 1 X, CULT. 2 X	MECHANICAL, POST BAND
MUGGE	NO HERBICIDE, 1 EXTRA HOE	141.1	0		PREPLANT, PLANT, AND POST BANDS
SVOBODA	NO HERBICIDE OR HOE, 2 CULTIVATIONS	178.0	--		PRE/POSTEMERGE, CULTIVATION
THOMPSON	DOUBLE PASS ON POSTEMERGE HOE	124.0	178		SINGLE PASS ON POSTEMERGE HOE
(SOYBEANS)					
MAYS	NO HERBICIDE	43.0	1,073	HEAVIER GRASS PRESSURE ALSO	BANDED HERBICIDE
DORDT	POSTEMERGE, MECHANICAL	45.8	2,718	SIG. HIGHER GRASS PRESSURE	PRE/POSTEMERGE & MECHANICAL
MUGGE	POSTEMERGE	52.5	0	SIG. HIGHER GRASS PRESSURE	PLANTING AND POST BANDS
OLSON	POSTEMERGE, MECHANICAL	37.0	19	SIG. HIGHER GRASS PRESSURE	PRE/AT-PLANTING HERBICIDES
ROSMANN	MECHANICAL WEED MANAGEMENT ONLY	41.4	1,401	HEAVIER GRASS PRESSURE ALSO	POSTEMERGE, MECHANICAL
WILSON	BURNDOWN, MECHANICAL	55	32	NO GRASS PRESSURE	BURNDOWN HERBICIDE, PREEMERGE HERB., MECHANICAL

WEED TRIALS TABLE

HIGH RATE TREATMENT			TREATMENT DIFFERENCES					COMMENTS
YIELD	BROAD WEEDS	OTHER WEED INFORMATION	YIELD DIFF.	YLD. SIG.	YLD. LSD	WEED SIG.	LOW RATE \$ BENEFIT	
121.5	941		2.9	N.S.	18.3	N.S.	(\$0.11)	SIGNIFICANTLY GREATER GRASS PRESSURE IN NO HERB.
122.9	--	HOED 1 X, CULT. 2 X	-2.2	N.S.	10.0	--	\$14.93	POOR GRASS CONTROL IN BOTH TREATMENTS
138.6	0		2.6	N.S.	3.9	N.S.	\$6.63	
167.2	--		10.8	*	7.7	--	\$12.76	GOOD RAINFALL THROUGHOUT SEASON
122.3	301		1.7	N.S.	3.4	*	(\$3.09)	NO HERBICIDES USED
45.9	623		-3.0	*	2.0	*	(\$7.57)	
51.6	955		-5.8	*	1.3	*	(\$28.38)	CUSTOM HOEING AND CULTIVATION WERE BOTH LATE
52.9	0		-0.4	N.S.	3.0	N.S.	\$2.85	
49.3	4		-12.3	*	8.0	N.S.	(\$69.02)	POSTEMERGE APPLIED TOO LATE TO SAVE YIELDS
46.6	778		-5.1	*	3.1	N.S.	(\$13.67)	ONLY 1 HOEING, WEEDS COUNTED ONLY IN 3 STRIP PAIRS
55	2	NO GRASS PRESSURE	0	--	--	*	\$11.49	POOR MONITOR PRECISION

OTHER TRIALS

COOPER- ATOR	CROP	TREATMENT "A"		TREATMENT "B"
		DESCRIPTION	YIELD (bu.)	DESCRIPTION
BAUER	CORN	HARVEST ON OCTOBER 3	161.4	HARVEST ON OCTOBER 23
DORDT	ALFALFA	MULTILEAF, (TRIPPER NURSE CROP)	3.6 T	STANDARD VAR. (WITH TRIPPER)
REICHERTS	OATS	BIN-RUN OATS (VAR. DON)	29.4	PURCHASED SEED (VAR. DON)
REICHERTS	SOYBEAN	BIN-RUN BEANS (RIVERSIDE 3033)	45.6	PURCHASED SEED (3033)
THOMPSON	CORN	30,000 PLANTS/ACRE	127.8	27,000 PLANTS/ACRE
THOMPSON	CORN	NARROW STRIPS, RIDGE-TILL	141.0	CROP BLOCKS, CONVEN- TIONAL TILL
THOMPSON	SOYBEAN	NARROW STRIPS, RIDGE-TILL	47.5	CROP BLOCKS, CONVEN- TIONAL TILL
CARLSON	CORN	"AROUSE" MICROBIAL SEED TRT	93.5	NO SEED TREATMENT
MAYS	SOYBEAN	"BIOROOT+" ROOT STIMULANT	54.8	NO ROOT STIMULANT
DAVIDSON	SOYBEAN	RIDGE-TILL. BURNDOWN, 2 CULTIVATIONS	38.6	NO-TILL. BURNDOWN, 2 POSTEMERGE SPRAYS

OTHER TRIALS

TRT "B"	DIFFERENCE				\$ BENEFIT OF TRT "A"	COMMENT
	YIELD (bu.)	YIELD DIFF.	YLD LSD	YLD SIG.		
157.7	3.7	6.3	N.S.	(\$11.22)	5.7% MOISTURE DIFFERENCE SAVED DRYING, HAULING	
3.8	-0.2	0.4	N.S.	\$0.00	SAME SEED COST, CRUDE PROTEIN, & REL. FOOD VAL.	
25.6	3.9	4.5	N.S.	\$3.19	4.25 BU/ACRE SEEDING, COST OF BIN-RUN INCLUDES CLEANING	
46.0	-0.4	0.9	N.S.	\$7.83	1.74 BU/ACRE SEEDING, COST OF BIN-RUN INCLUDES CLEANING	
124.2	3.6	2.7	*	\$5.48		
120.1	21.0	7.7	*	\$72.97	OVERALL ALTERNATIVE SYSTEM BENEFIT: \$24.23	
49.7	-2.1	4.4	N.S.	\$39.89	(BECAUSE OATS IN ALTERNATIVE SYSTEM LOST MONEY)	
91.2	2.2	3.0	N.S.	(\$13.65)		
56.3	-1.5	3.9	N.S.	(\$7.20)		
40.6	-2.1	1.7	*	\$21.62	RIDGE-TILL COSTS: \$41.84, NO-TILL COSTS: \$74.34	

the corn receiving the full rate of Lorsban yielded better than both the control and the half-rate treatments in this trial.

Steve and Gloria Leazer compared rootworm insecticide to an alternative root stimulant, Bioroot Plus. (Table pages 16-17.) Corn treated with insecticide yielded significantly better than both the zero-rate check treatment corn and the corn treated with the biological root stimulant. The same root stimulant was applied to soybeans with no observable effect by Mark and Rita Mays.



By late summer the multileaf characteristic was becoming evident in the Dordt College trial.

Seeds and Seeding

Mike and Jamie Reicherts evaluated the economics of using bin-run oats and soybeans instead of purchased seed. The farm-grown seed made them money in both cases. Dick and Sharon Thompson obtained a significantly greater corn yield with a population of 30,000 plants per acre than with 27,000. (Results on pages 22-23.)

Harvest Date

Ted and Donna Bauer performed a simple experiment to compare corn harvest dates three weeks apart. The good drying weather in October allowed them to save more than \$11 per acre in grain hauling and drying. (Table pages 22-23.)

Multileaf Alfalfa

Dordt College compared a multileaf alfalfa variety to a standard alfalfa variety. The multileaf has more leaf for the same amount of stem, and so should produce a higher quality hay. Ron Vos at the College measured yield, crude protein, and relative feed value. He did not find differences clearly attributable to variety, but the multileaf characteristic should be expressed more strongly as the stand matures next year. (Table on pages 22-23.)

No-till and Ridge-till

Don and Sharon Davidson carried out a trial to answer the question they often hear about the relative merits of ridge tillage and no-till. No-tilled soybeans can be seeded close with a drill, leaving little space between plants. In theory, this allows the crop to use more of the available sunlight earlier in the season than soybeans planted in 30-inch or 36-inch rows, and the no-till residue cover conserves soil moisture. The results from the trial, shown on pages 22-23, indicate that the no-till soybeans did indeed yield 2.1 bushels per acre better than the ridge-till soybeans, a statistically significant difference. But the no-till system also required two separate postemergence herbicide applications and a higher seeding rate, and its cost outweighed the economic benefit of the higher yield. Don hopes to continue this comparison for several more years.

NARROW STRIP INTERCROPPING

PFI cooperators have continued to work with Iowa State University researchers on the practice of narrow strip intercropping. In narrow strip intercropping, alternating strips of different crops run side by side across the field. In addition to giving erosion control and rotation benefits, the practice can achieve overall yield increases when crops in the borders of the strips use sunlight and moisture in complementary ways. If

everything goes right, this overall benefit can amount to a slight loss in soybean yields and a definite increase in corn yields.

Paul and Karen Mugge, of Sutherland, have attempted to compare crops grown in strips to solid blocks of the same crops. Paul's carefully designed trial fell victim to the high winds that cut across northern Iowa in July. His stripping trial became somewhat of a lodging experiment. Nevertheless, he recorded the following yields.

COOPERATOR: PAUL MUGGE			
YIELDS (bu.)			
	CORN	OATS	SOYBEANS
STRIPPED:	69.3	52.5	58.3
BLOCKED:	55.5	55.5	48.0

Interestingly, soybeans appeared to yield as well in strips as they did in solid blocks this year. (The solid block soybean yield shown is based on only one combine swath, however.)

In strips, corn takes advantage of the border conditions. Yields are typically higher along strip edges than in the interior rows of a strip. However, this year researchers saw something in Mike Reicherts' fields that made them wonder if there might be a drawback to the practice of strip cropping. There were telltale signs of rootworm activity in the rows of corn next to what had been last year's corn strips.

While rootworm migration has the potential to eat into the profitability of narrow strip intercropping, Corn yields collected by ISU soil scientist Richard Cruse on two PFI farms are encouraging. Cruse and his colleagues found a tendency for more root damage and less overyielding in the row next to the previous year's corn.

However, the yields themselves are not at all bad, as shown in the table.

TWO FARMERS' CORN YIELDS IN NARROW STRIP INTERCROPPING							
-- BUSHELS --							
(ROW 1 FARTHEST FROM LAST YEAR'S CORN ROW:)	180	177	171	166	FRANTZEN, 4-37"		
	258	227	209	217	211	227	REICHERTS, 6-30"
	1	2	3	4	5	6	ROW NUMBER

Cruse's associates are also gathering useful information on the growth of oats on the permanent ridges of these stripping systems. The following oat yields were taken at different locations relative to the ridge.

RIDGE SYSTEM OAT YIELDS -- FRANTZEN FARM	
YIELD (BU.)	LOCATION
58	UNTRACKED VALLEY
67	SHOULDER OF RIDGE
95	RIDGE TOP
37	WHEEL-TRACKED VALLEY

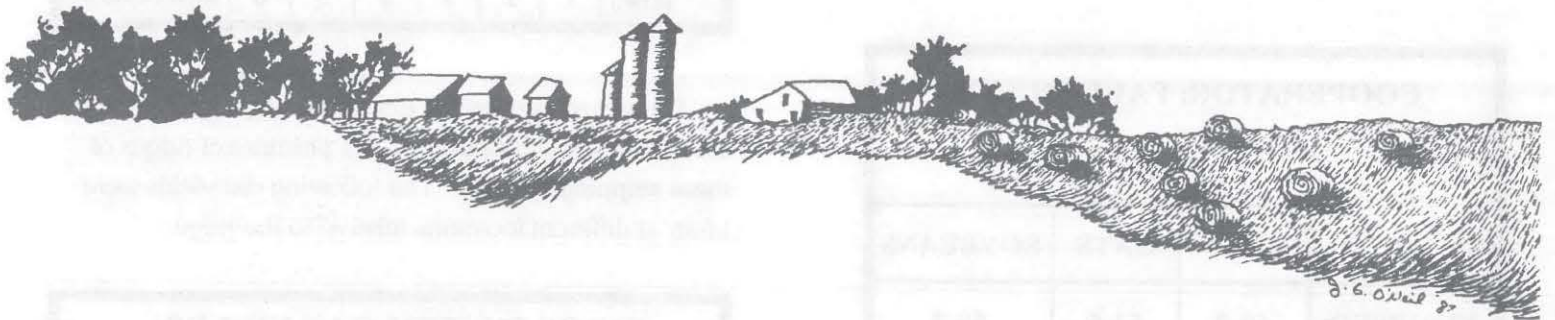


In Reicherts' 1991 trial, despite lodging in the row next to the previous year's corn, the yield there was greater than in the center of the strip.

The yields shown for the ridge-top location are high, especially for a poor oat year. The "weak link" is clearly the valleys between the ridges, and especially the wheel-tracked valleys. If farmers and researchers could discover how to improve the growing environment in these zones, oat yields could be increased. ■

The Christensens credit the crop scouting obtained through the Integrated Crop Management Program with cutting their fertilizer and herbicide bills 30-50 percent.

The Christensens have been members of Practical Farmers of Iowa for three years. They are also active in Pheasants Forever, Howard County Pork Producers, the Howard County and National Cattlemen's Associations, and local civic and religious activities. Congratulations on this well-deserved recognition! ■



(Meeting Wrap-up, continued from page 4.)

sessions so that tapes would be available to people who could not attend a particular session, and another suggested putting transcripts of the discussions in the PFI newsletter. One person said that some of the workshops had too many presenters.

So while people generally liked the workshop format, there was some frustration that too much was happening in too short a time. Suggestions for improving this situation centered around increasing the time allotted or coming up with alternative forms for the information, such as videotapes or transcripts.

There were a variety of suggestions for improvements beyond those relating to time constraints. Two similar suggestions were "lessen the emphasis on ridge tillage" and "look at more tillage choices, like disking and field cultivation." Thus, there was a desire among some to increase the diversity of the on-farm trials to include a variety of tillage systems. Another suggestion was that "cooperators need to provide more visual examples of their farms, like slides." Someone sug-

gested "getting Dr. Blackmer on the program to talk about his work with P and K," while another person advised "adding a workshop on equipment ideas and modifications." Someone mentioned that it would be good to have coffee and donuts right away during registration, and another person said that the chairs during the general session should be faced the other direction so that "latecomers can sneak in."

Another open-ended question on the evaluation form asked what PFI should be doing as an organization. Many of the comments were simply to "keep on doing what you are doing" and "do more of the same." Many others suggested that PFI should expand its education efforts. Typical comments were "try to reach out to more farmers," "proceed on the present course while striving to reach a wider audience," and "get more information and test results out to the public." Thus, an important segment of those attending want PFI to expand its educational efforts. One person who had been out of the U.S. for a number of years noted that "as time goes on and more people have trials, PFI will

have to look at how to present the results in an understandable format." This person believes determining how best to disseminate more and more information in an understandable form will be a key task for PFI in the future.

Others suggested that PFI should work to build membership. *Continuing in its activities while working toward growth in its active membership*" was how one person put it, and they continued by saying that *"getting farmers together will help sort out priorities."* Another person suggested that PFI needed to *"outline its mission and objectives,"* while several others encouraged working with other groups and staying as diverse as possible.

These recommendations are intelligent and useful, and they demonstrate the wisdom and knowledge of PFI members. Indeed, the evaluation forms were full of insightful comments from people who cared about the organization and about sustainable agriculture. PFI members are hungry for new knowledge and new ideas. They are not afraid to give something a try and stick with it. They are important resources for agriculture's future, and so is the Practical Farmers of Iowa organization. This was not lost on those attending the annual



Chief Seattle (Bill Dahl, who farms near Orion, Illinois) provided a stirring conclusion to the winter meeting with his challenge for stewardship.

meeting. In response to a final question asking for other comments, some of the responses were *"keep up the good work,"* *"I am glad what I see going on in PFI,"* and *"well done!"* ■

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?

Yes _____ No _____

Please enclose check or money order for \$10.00 payable to "Practical Farmers of Iowa/Æ" and mail to:

Practical Farmers of Iowa
RR 2, Box 132
Boone, IA 50036

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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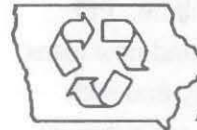
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PRACTICAL FARMERS OF IOWA MEMBERSHIP DISTRICTS



Acknowledgment:

The Practical Farmer and the PFI on-farm demonstrations are supported, in part, by Iowa State University Cooperative Extension and the Integrated Farm Management Demonstration Program of the Agricultural Energy Management Fund, State of Iowa, through the Iowa Department of Agriculture and Land Stewardship, with appropriations from the Iowa Groundwater Protection Fund.



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