MINNESOTA EXTENSION SERVICE
UNIVERSITY OF MINNESOTA
AGRICULTURE

Agricultural News

Volume 3, Issue 1 January 1991

New ways to finesse nitrogen applications, protect water

Many farmers who raise corn on manured land over-fertilize with commercial nitrogen. In some cases, the extra nitrogen can pollute both ground and surface waters.

But new ways to fine-tune nitrogen applications could take much of the guesswork out of fertilizer nitrogen applications. And one indirect result will be to reduce the potential for nitrate contamination of water supplies, says Mike Schmitt, soil scientist with the University of Minnesota's Extension Service.

Schmitt and co-workers Gyles Randall, George Rehm and Gary Malzer are refining Minnesota nitrogen recommendations. They're also evaluating use of soil nitrogen tests.

Wisconsin and Iowa soil scientists are making nitrogen recommendations by using soil tests, and the Minnesota scientists are researching the possibility of including a soil N test in their system.

In 1989, Schmitt and co-workers started a study examining the use of soil nitrogen tests for making fertilizer nitrogen recommendations.

Extension soil scientist George Rehm (left) talks with Dave Jackson (right), a fertilizer dealer from Verndale, Minn., and Brent Flood, a representative of Great Salt Lake Minerals Corp., at the recent Soils, Fertilizer and Agricultural Pesticides Short Course in Minneapolis. (photo by Don Breneman)

The continuing study is based at 30 Minnesota sites. It involves various sampling depths and times, plus numerous forms of nitrogen analyses.

Presently, Minnesota scientists generally recommend a soil nitrate test only in some 30 Minnesota counties located in southwest, northwest and west central Minnesota. However, such a test "seems destined for the future in eastern and central Minnesota," Schmitt says.

The present N recommendations use an equation approach, where nitrogen fertilizer needed equals the amount of fertilizer needed to produce a bushel of grain multiplied by the yield goal, minus nitrogen credits. Nitrogen

Continued on Page 2

Campus Profile

The new farm bill "moves the safety net lower to the ground, and farmers will have to sharpen their marketing skills to be successful," says **John Lawrence.**

Lawrence, a marketing economist, has been with the Minnesota Extension Service just over a year. He works with commercial livestock producers to help them develop marketing skills and risk marketing strategies. Part of his job involves tracking the meat industry and helping interpret packing and consumer trends.

Lawrence started the "Lawrence Livestock Market Summary," an analysis of livestock markets that goes to agents on EXTEND. He writes the column weekly, or as new information becomes available.

He's worked with agents to develop some in-depth, 8 to 10-hour marketing workshops for livestock producers. The sessions had 10 to 20 participants and were conducted over three sessions. "I was able to teach marketing skills, rather than just talking about the market. And with the succeeding session format I got to know the people and they were less hesitant to ask questions," he says.

John also works with small producers who are direct marketers of specialty products to help them develop that all-important

market niche. He and extension agents Kent Thiesse, Al Harris and Eileen Anderson are cooperating with the ES-USDA on a global marketing project to help small businesses develop new overseas markets.

They're evaluating a search procedure to compile trade leads, identify export management companies and banks specializing in international financing. The system has the potential to bring global trade leads to anyone in Greater Minnesota with a computer and modem.

It's directed mainly at producers of specialty or value added products such as dry edible beans or sausages. "It could match small marketers up with trade leads anywhere in the world—within their county, elsewhere in Minnesota, Chicago or Singapore," Lawrence says.

Originally from southwestern Iowa, Lawrence farmed for several years after he graduated from high school. He started college as a 24-year old freshman at Iowa State University. He earned degrees in animal science and economics there; then went to the University of Missouri where he received a doctorate in agricultural economics.

"Sharing some of my farming experiences may give me more credibility with producers since I faced many of the same things they're going through," he says.

John and wife Kathy have been married for 15 years. Their first child , a daughter, was born December 31, 1990. Mother, daughter (and John) are doing just fine.

Jack Sperbeck

Agricultural News is a publication of the Agriculture Program Area, produced by Educational Development System, Minnesota Extension Service. Ideas for stories and letters to the editor are encouraged. Contact Jack Sperbeck, 447 Coffey Hall, University of Minnesota, St. Paul, MN 55108. Tel. 612-625-1794.

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Nitrogen/*cont.from p. 1*

credits can come from organic matter, legumes, manure and irrigation water.

Greatest misuse of this system is from not taking the full amount of credit, or from having yield goals that are too high. "Many farmers are very conservative with their manure credits. The feeling is that 'nitrogen is cheap' so they err by overapplying nitrogen fertilizer. In many cases they could err in the other direction and still reach the yield goal," Schmitt says.

In addition, "more farmers need to take nitrogen credits the second and third year following manure applications. Second and third year credits can be 20 to 30 percent of the first year's, but I know of very few farmers who take them," he says.

Some N application rates were too high

Schmitt says the credit for organic matter in the Minnesota equation appears to be too low in southeast Minnesota. "It may also be necessary to re-evaluate the effect of some previous crops on N recommendations. We found some application rates that were higher than what was needed.

"Soil tests can be used to limit or eliminate fertilizer nitrogen in fields with high residual nitrates," Schmitt says. Substantial applications of manure and/or limited yields due to dry weather are examples of where high nitrate conditions may exist.

But the analytical quality of the nitrate data obtained by some of the "quick" tests being promoted is questionable. "We encourage using a professional soil testing laboratory, especially if the 'quick' test results call for a change in fertilizer nitrogen recommendations."

Jack Sperbeck

Food safety is everyone's responsibility

Part 1 of 3

Preparation important

Check the deli of a large food market. The cooked meats, baked beans, hot dishes, ready-to-eat salads and individual dessert portions signal a different "time" in eating. And with this trend come food safety implications.

Time is one of the issues. Multiple jobs outside the home use up time once spent in at-home food preparation.

Whether food preparation is done in the home or elsewhere, consumers need to be alert to food safety. Today's emphasis on food's microbial hazards (the salmonella danger in eggs, for instance, which now means eating them well cooked), pesticides (the recent Alar scare on apples), food additives, irradiation, growth hormones, food labeling and-cholesterol, all lead to consumer anxiety. People ask: is anything safe to eat?

Food is "nature's way of packaging chemicals!"

Bill Schafer, extension food technologist, may be jangling a few nerves with his description of food as "nature's way of packaging chemicals!" He adds, "There are 150 different chemicals in one potato, one of which is solanine, a toxic compound. You could do yourself 'in' if you ate a year's supply at one sitting because of that one compound." Food quality and safety is one of extension's national initiatives, he points out. "Food is not hazard free, just as clothing can be flammable and dyes allergic." People would like to have zero risks in food and one

Continued on page 4

Marketing Programs

Applying Marketing Concepts to Program Planning

(This month's column is the fourth in a series on program quality and applying marketing concepts to program planning. The marketing research method information is taken from Chapter 3, "Research Methodologies and Processes" in Marketing Research in Adult Learning by C. F. Falk and P. Miller, 1986, Learning Resources Network, Manhattan, Kansas.)

The second Falk and Miller market research method is "continuing feedback from staff." This can be as simple as asking support staff who have direct personal contact with clientele for their ideas on working with clientele and delivering educational information.

In extension, we should periodically ask county and state office support staff for information. AND, state faculty and program administrators should ask area and county faculty for feedback. The weakness in this technique is obtaining candid responses. Staff aren't going to provide valid feedback if they fear that providing information will have negative consequences for them.

The third technique in Falk and Miller is "use of existing records." This technique works particularly well for conferences and similar events with a formal registration and evaluation. It's easy to gather some background such as employment data, reason(s) for attending the event, prospective use of the knowledge acquired, etc.

Even at more informal events, attendance information can be collected occasionally by circulating a sign-up list and perhaps offering a follow-up mailing of additional information or personal notification of a subsequent event. A random sample of names can be selected from the list for follow-up marketing research and evaluation of the event and for subsequent evaluation of program impact on participants. Offering drawings for door prizes at larger events also is a technique for developing a list of names and addresses that can later be used for marketing research and event or program evaluation.

Falk and Miller's fourth market research technique is "expert and not-so-expert panels." Extension advisory committees can serve this function if we form and develop them appropriately. One potential weakness, as noted in last months column, is selecting only our "friends" to serve on advisory committees—then we tend to hear only good things about our programs.

Falk and Miller say that a panel of experts can consist of no more than 10 persons if they are carefully selected for their contributions of knowledge and expertise. A panel should be used to react to educational opportunities, to identify potential markets for educational programs and the attributes that will attract participants.

You can solicit information from a panel in a variety of ways—via round table discussions, telephone or written surveys, individual interviews and the Delphi Technique. The latter is a structured process for gathering individual input, summarizing and circulating it to panel members and getting reactions in additional rounds of group response.

(Additional marketing research methods will be discussed in future issues).

Marilyn Grantham

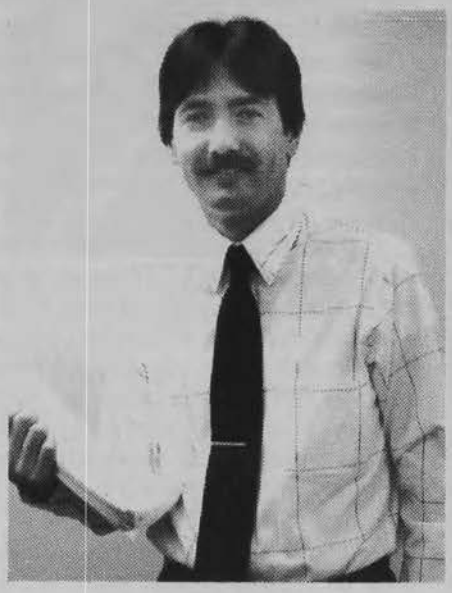
Marilyn Grantham
Program Leader, Agriculture

Agent Profile

Bob Olson has been building rapport with Dakota County farm families for 11 years. Now he's being "paid back" for some of his earlier work.

"Recently I helped a family transfer the farm to a son. I'd worked with them about five years ago on a debt restructuring plan. This time things were more upbeat," he says.

Olson's responsibilities include crops and soils, farm management and home horticulture. "I enjoy working one-on-one with farm families," he says. "In terms of financial planning there were some tough times in agriculture, but it's a good feeling to know you've helped people make some positive decisions."



He grew up on the family dairy farm near Osceola, Wis., and graduated from the University of Wisconsin-River Falls in 1979. He worked for a private crop consulting service in Wisconsin for two summers before joining the Minnesota Extension Service.

Olson enjoys the Dakota County location. "We're in a highly productive agricultural area, with a rapidly developing urban area in the northern part of the county. That presents some problems, but we're not losing as much farm land to urban development as many people think," he adds.

He just completed his Master of Agriculture degree from the University of Minnesota. His graduate project involved a case study of a family farm that quit using pesticides and commercial fertilizer in 1977. He analyzed how the farm compared to "peer" farms before and after the change.

"The chemical-free approach wasn't a panacea, but it didn't cause major problems either. Yields were relatively good, although overall farm profits declined somewhat in relation to peer farms. However, we can't be sure that the reduction in profits was due to the chemical-free approach," he adds.

Olson and wife Cheri live in Apple Valley. They have a boy and two girls. The youngest daughter was born Nov. 18, 1990, "just nine days after I finished the oral exam for my paper."

His parents are still on the home farm. Bob is putting his professional talents to use by helping them transfer it to his younger brother.

"Some things never change. I keep giving them (his parents) advice, and they never listen," he jokes.

Jack Sperbeck

Food safety/*cont.from p. 3*

and the same answer from every scientist on food questions, but this isn't possible.

Attention needs to be paid to food handling rules that were once learned as a normal part of cooking, but may be overlooked with fast food and microwave living.

Simple food handling rules may be overlooked...

Such rules include keeping cold foods cold, hot hot, proper refrigeration, washing hands thoroughly each time "between petting the dog, changing the baby's diapers and fixing a salad," Schafer says.

As a member of the state attorney general's food safety task force, Schafer envisions the university, in the not too distant future, having a food safety network which could link expertise on Twin Cities campuses (including the medical school and public health) with coordinate campuses. This could generate a computer data base to respond to questions from consumers and the media to head off the next Alar-type panic.

Although it will never be a totally chemical free society, Schafer applauds the move toward sustainable agriculture with its smarter use of chemicals and water.

Consumers are used to perfect looking foods. When that isn't possible and the less than perfect is rejected, it leads to food waste.

(Next: Part 2 Food Safety—Labeling)

Mary Kay O'Hearn

Issued in furtherance of cooperative extension work in agriculture and home economics, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Patrick J. Borich, Dean and Director of Minnesota Extension Service, University of Minnesota, St. Paul, Minnesota 55108. The University of Minnesota, including the Minnesota Extension Service, is committed to the policy that all persons shall have equal access to its programs, facilities, and employment without regard to race, religion, color, sex, national origin, handicap, age, veteran status, or sexual orientation.