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Abstract
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Keywords
Corn-soybean cropping systems, Human systems, demographics and beginning farmer programs

Disciplines
Agricultural Education

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Education-based incentive program to enhance long-term adoption of sustainable nutrient/pest management—a demonstration with farmers in northeast Iowa

Abstract: The Nutrient and Pest Management Incentive (NPMI) Education program used education to encourage producers to adopt environmentally sound management practices. Participants received small incentive payments to participate in a three-year series of workshops that showed them how to devise nutrient management plans for their own farms.

Background

In recent years, public incentive programs aimed at increasing adoption of nutrient and pesticide management best management practices (BMPs) have paid producers to hire crop consultants who provided management prescriptions for nutrient and pest management. (This approach was modeled on the way public cost share payments have been used to promote soil conservation.) However, consultants were not always readily available to help producers, and participating farmers were often reluctant to accept the recommended changes, or did not maintain them after the project was over.

The Nutrient and Pest Management Incentive (NPMI) Education program is a local initiative developed by Iowa State University Extension staff of the Northeast Demonstration and Sny Magill Creek Hydrologic Unit Area projects. It encourages farmers to participate directly in preparing their own nutrient/pest management plans, rather than relying on consultants.

The education-based incentive program
- Requires producers to learn the basics of managing their own nutrient/pest management programs so that long-term adoption is more likely;
- Can be used in areas where private agricultural specialists are too few, inexperienced in nutrient/pest management (to standards set by the Natural Resources Conservation Service), or unwilling to serve farms with small fields or modest crop acreage, including many livestock operations;
- Helps producers become educated consumers who are able to manage their own nutrient/pest management plans; and
- Introduces a peer-support mechanism to further enhance farmers’ adoption of more sustainable nutrient or pest management practices.

The overall goal of the project is to demonstrate a targeted educational program, supported by incentive payments, which changes producers’ attitudes and practices.
Approach and methods

Over a three-year period, a series of nutrient/pest management planning workshops helped participants develop and progressively refine site-specific crop nutrient plans and evaluate the outcomes for their own farms. Individualized educational materials, such as soil maps from the Iowa Computerized Soil Information database, were used. Participants provided recent soil tests for the mapped fields and information about any livestock operations so that manure inventories could be calculated.

Four workshops were offered during the first year of the project and two each in the second and third years. Modest incentive payments were made for completing each step of the project. Participants were expected to do their own soil and manure sampling and initial incentive payments (approximately $1/acre) were timed to cover their testing costs.

The fall and winter workshops in the second and third years stressed establishment of a simple field-by-field record system. Organizers believed that requiring the planning and evaluation process to be carried out over a number of years would encourage long-term adoption of the practices. Ultimately, a producer's best measure for a site-specific process, such as nutrient/pest management, is his or her own records over a period of years.

A project newsletter, published bimonthly during the growing season, helped maintain contact with participants between spring and fall meetings and provided timely information on local crop conditions. Project staff were available to consult on pest and other field problems during the season.

Recruitment for the demonstration was initially targeted toward livestock producers and early-career young farmers. Groups sought out later included producers from a number of watershed protection projects in northeast Iowa.

Results and discussion

Between the crop years 1995 and 1999, 65 producers enrolled 20,098 acres in the program. Recruitment of participants in the program required more staff time than expected. The modest incentive payment program was not sufficient in itself to attract participants. Although the program was widely publicized, most recruitment had to be done through one-on-one contacts by project staff.
Retention of participants also was lower than expected. Twenty-three percent of the first group dropped out of the program before completing the first season's cropping records. In the second group, 44 percent left before the end of the first year was over. Many year one dropouts from the NPMI program in these groups are no longer farming. The third group, supported in part by the Leopold Center, included more established farmers who stayed with the program through the end of the first season.

Completed records were required to receive payment for each year in the program. Beginning in crop year 1997, workshop attendance was not required for payment in the second and third years. Many second- and third-year participants did not attend the mid-winter (February) workshop.

Several repetitions of required workshops were offered to give producers enough opportunities to attend. Despite the additional sessions, many individuals missed the workshops or failed to turn in their records. Project office staff made every attempt to help participants complete their records.

The workshop format was fine tuned during the project to improve producer participation and their use of record-keeping tools. Staff used their own experience and feedback gained from annual surveys of participants to make the paperwork and topics more "farmer-friendly." Discussions based on common experiences and interests of the group made the workshop more effective than technical presentations.

Record-keeping and worksheets also were revised and simplified throughout the project, but still met Natural Resources Conservation Services (NRCS) requirements for nutrient and pest management documentation. Workshops were managed so that as much information as possible was entered on the worksheets during the sessions.

The project newsletter, published bimonthly during the growing season, became a valuable resource to many area producers in its final year (1998). It was used for recruitment and shared with producers who had dropped out of the program, but wanted to remain on the mailing list.

**Conclusions**

The project was successful in changing producers' practices and encouraging them to adopt refined nutrient and pest management strategies. The level of success was high enough that other water quality projects have become interested in the approach. However, there are difficulties that must be addressed to make the program more effective.
Participants' reluctance to meet record-keeping requirements was the major problem faced by the project. Even with follow-up by project staff, many participants were slow to turn in records. The average incentive payment ($220 per farm) was clearly not sufficient to motivate the group.

Attendance at second- and third-year winter planning workshops was poor and eventually became voluntary. Staff decided that having completed records (to provide multiple years of data) was more important than forcing workshop attendance. To get completed records, staff spent a lot of time on individual contacts, although still much less than if they have been providing one-on-one assistance throughout the project.

In spite of resistance from some participants, the multi-season approach remains valuable. The project's goal remains for all participants to complete three years of records analysis and nutrient plans, and at least two years of basic pesticide management plans, in a workshop setting. The reasoning is that when dealing with an unfamiliar practice, a producer may try the concept on a few acres one season, expand upon it the next season, and then adopt it. A practice that works over three seasons is much more likely to be used over the long term.

Impact of results

Participant surveys  Comparison of baseline and annual surveys shows that participants gained increased confidence in their own abilities to manage fertility programs (as opposed to relying on suppliers), reduced use of purchased fertilizers, and improved manure management practices. Of the 44 producers completing the first-year NPMI survey:
- 89 percent had changed their nitrogen management routine,
- 89 percent were comfortable reporting that their manure application rates increased (compared to 29 percent for solid manure and 68 percent for liquid manure prior to the project)
82 percent had reduced their nitrogen use, 68 percent had changed their manure management practices (45 percent said it was more profitable), 52 percent planned to change the number of acres spread the following spring, 96 percent had scouted their own fields for pests, and 68 percent saw themselves as involved in their soil test/nutrient management decisions (compared to 47 percent before the project).

Education and outreach

Other Iowa water quality projects and agencies have selected this program as a model for future nutrient and pest management projects. Among them are several watershed-based programs as well as Iowa Department of Natural Resources and NRCS Environmental Quality Incentive Program (EQIP) education efforts. These groups are choosing the NPMI program as a model because it has been more successful than other incentive programs in encouraging producers to adopt changes in practices.

Presentations about the project were made to state and national water quality groups. Posters were presented at the National Water Quality Symposium in Washington, D.C. in August 1997.

A training notebook created for the project combines descriptive and training materials to assist others in implementing similar programs. Copies of this notebook have been shared with soil and water conservation districts and agency partners in Iowa. The notebook also has been requested by agencies in New York, Missouri, Wisconsin, Minnesota, and Washington.

The NPMI program is described on the ISU Agronomy Extension Water Quality web site: http://www.extension.agron.iastate.edu/waterquality/Incentive_Ed.html.

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