

environmental practices: new strategies needed

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Protecting the rural environment may require new Extension strategies to get farmers to voluntarily accept pollution control practices. It's possible these practices will have to come about through regulation. But some people don't want that. They're strongly against it.

This article isn't concerned directly with the regulation versus voluntarism controversy. Instead, we're going to look at current Extension strategies and see if they can be used to introduce control practices.

Like all campaigns, environmental quality campaigns must be designed initially to reach the most receptive farmers. . . .

Voluntary Acceptance Studies

The voluntary acceptance of innovative farm practices has been widely studied. These studies on the diffusion process examined the acceptance of farm innovations that were profitable and led to increased farm output. Most questions dealt with how social norms and personality traits inhibit the acceptance of these profitable innovations, and how these restraints may be overcome.

The characteristics of a practice determine how quickly it will be adopted. Practices that make the most money, save the most time, and are similar to practices now being used are adopted more rapidly. Also, certain farmers are consistently more willing than others to try new practices. These farmers tend to have more education, higher income, and larger farms, as well as certain personality characteristics.

Farmer "voluntary compliance" has been excellent. However, some of the alternative pollution control management strategies to be developed in the future may not be profitable commercial innovations, but environmental ones.

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Past Studies' Implications

Unfortunately, little implication for the acceptance of environmental innovations can be drawn from the diffusion literature. The appropriate studies are over 10 years old and theoretically and methodologically out of date. They don't tell us if knowing how to get *commercial* innovations adopted will help us introduce pollution control practices.

To answer some of the questions we've raised, we divided a number of farming practices into four categories. First, we distinguished between commercial and environmental practices. *Environmental practices* protect rural land and water quality. *Commercial practices* increase short-run commercial farm output.

We also separated high-profit from low-profit practices as perceived by the farmers. Therefore, we can identify four kinds of practices: high-profit commercial, low-profit commercial, high-profit environmental, and low-profit environmental. The importance of these distinctions is that farmer reaction to the high-profit commercial practices—studied most often—may be quite different from reactions to low-profit environmental practices or one of the other two types of practices.

Our Study

We did our study for three reasons:

1. To compare the adoption rate of the four types of practices.
2. To determine which farmers are first to adopt the different practices.
3. To discuss the possible implications of the findings for Extension strategies.



In February, 1974, we interviewed 233 farmers by *telephone*. Our sample was randomly drawn in 9 mid-southern Illinois counties.

The interview covered two areas. First, respondents were asked which of a list of 15 practices they currently used, and in what year they first used them. These 15 practices consisted of 9 commercial practices including marketing strategies, use of farm machinery, and planning techniques—all recommended for use by University of Illinois experts. The other six, classified as environmental practices, were recommended soil conservation practices. These conservation practices, designed primarily to protect rural areas from unsightly and unusable eroded land, serve as useful examples of pollution control methods (see Table 1).

Second, respondents were asked to rate how profitable they thought each practice was. This included how much they thought the practice saved time, made money, recovered costs, and showed results. Based on average farmer ratings, a single profitability score was obtained for each practice.

Findings

Differences Between Practices

First, we determined whether the four different types of practices were characterized by different rates of adoption. To do so, we related the different practices to the percentage of farmers currently using the practice, and to the rate of adoption we measured by the average number of adopters for the 10 year of most rapid adoption.

Profitability was closely related to percentage of farmers using and the rate of adoption. This was no surprise. Now we had to consider if the type of practice—commercial or environmental—affected speed of acceptance beyond the effect of profitability. To determine this, we compared the mean profitability score, the mean percentage adopting, and the mean adoption rate for the four types of practices.

We found profitability ranks similar, but adoption rates for commercial and environmental practices different. This indicates the important difference in farmer response to commercial and environmental practices.

The data confirmed that profitability was an important determinant of adoption. More precisely, the *degree* of profitability was important for the adoption of environmental practices.

Differences Among Farmers

We also examined differences among farmers. To do this, each farmer received an adoption score for each of the four types of practices. This was based on the average number of years ago the farmer adopted the practices compared to the time other farmers adopted those practices. The higher a farmer's adoption score, the earlier the farmer adopted that type of practice.

Table 1. Profitability ratings, percent adopting, and rate of adoption of practices.

	Profitability ^a		% adopting		Rate of adoption ^b	
	Score	Rank	Score	Rank	Score	Rank
Commercial Practices						
High-profit						
1. Regularly testing soil	7.1	1	61%	3	13.1	2
2. Drying corn on the farm	7.6	3	41	6	9.9	6
3. Using large planter	8.4	5	23	11	2.9	15
4. Keeping farm records	8.6	6	43	5	8.7	8
5. Using chisel plow	8.7	7	29	9	9.7	7
Low-profit						
6. Using narrow row rows	9.7	9	39	7	11.4	5
7. Using economic outlook information in planning	10.1	10	28	8	7.7	9
8. Futures market	10.9	14	23	10	7.4	10
9. Forward contract	11.8	15	31	12	6.9	11
Environmental Practices						
High-profit						
10. Sod waterways	7.2	2	70	2	16.8	1
11. Rotation level	8.2	4	82	1	11.8	4
12. Minimum tillage	8.8	8	44	4	12.3	3
Low-profit						
13. Contour farming	10.2	11	19	13	3.8	12
14. Terraces	10.7	12	14	15	3.4	13
15. Planting trees to conserve soil	10.9	13	16	14	3.5	14
^a The lower the score, the more profitable a practice is perceived to be.						
^b Based on the average number of adopters for the 10 years of most rapid adoption.						

The adoption of both kinds of commercial practices was closely related, as was the adoption of both kinds of environmental practices. On the other hand, the relationships between commercial and environmental adoption were much weaker. The use of high-profit environmental innovation was slightly related to the use of commercial innovations, but the use of low-profit environmental innovations was unrelated to commercial adoption. This suggests that farmers who adopt commercial innovations generally don't adopt environmental innovations and vice versa.

Previous studies show that early adopters of high-profit commercial practices usually have higher levels of education,

capital, and acres farmed. They also tend to be younger than late adopters of high-profit commercial practices.

Our data indicated that adopters of commercial practices differ from adopters of environmental practices. Except for income—always a troublesome matter to measure accurately, we found that the variables which in other research were related to commercial practice adoption, were in our research also related in the expected way to both the profitable and less profitable commercial practices. However, most of these characteristics were *not* related to environmental adoption. In fact, only age and total acres farmed were even slightly related to adoption of less profitable environmental practices.

Implications

Can Extension professionals use our findings when developing communication strategies to induce farmers to voluntarily change their farming operation to reduce environmental hazards? We think so. However, we want to call attention to the tentative nature of our findings. Further confirmation of our findings, including the study of different samples of farmers and different farm practices, is needed to give greater assurance that the issues we've raised are valid ones.

Our findings indicate that environmentally sound practices farmers considered profitable had high rates of adoption. Environmental practices considered less profitable had low rates of adoption. Farmers weighed profitability heavily when considering the adoption of environmentally positive practices. This is less so for commercial practices, which were adopted by a sizable group of farmers even when considered less profitable.

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We suspect this variation results from the different communication patterns associated with environmental and commercial practices. A network of supporting institutions (commercial enterprises, mass media communications, advertising, etc.) which provides information at various stages of the farmer's decision-making process, advocates adopting commercial practices. Since it's unlikely that environmental practices will, at least in the near future, be similarly advocated, the degree of profitability will be more crucial to adoption. To introduce less profitable environmental practices will necessitate strong promotional activities. In the long run, it may be necessary to build the kind of support system for environmental practices that's now associated with commercial

farm practices, an activity almost reminiscent of the beginning days of the Extension Service.

Any educational effort may be further complicated by the fact that what we know about the adoption of commercial practices may not be very useful in preparing campaigns oriented toward environmental innovations. The fact that the same farmer characteristics that relate consistently to the adoption of commercial practices don't relate well to the adoption of environmental practices, certainly argues against assuming that environmental campaigns demand nothing but another application of the known strategies.

Like all campaigns, environmental quality campaigns must be designed initially to reach the most receptive farmers. We found that the current commercial and Extension clientele are most receptive to commercial practices. For environmental educational campaigns to effectively reach the current clientele, Extension will have to devote special efforts to explaining the need for the adoption of environmental practices and their importance to the general welfare and the long-term welfare of the farming community. While the technical aspects of these practices must also be communicated, past campaigns have probably placed too much emphasis on the technical aspects, at the cost of stressing the noneconomic need for the adoption of the practices.

Extension professionals may also want to take a closer look at the segment of farmers that appears interested in environmental practices. These farmers may provide the local leadership in this area and thus provide useful channels for introducing new practices that are environmentally sound, although not considered very profitable.

