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Self identified research needs of New York organic farmers

Brian P. Baker and Douglas B. Smith

Abstract. *A survey of organic farmers in New York State identified problems in need of university research. Weed management was the most frequently mentioned problem by far, identified as significant by two-thirds of the organic farmers. Only a few other problems were listed as significant, including insufficient time for farm work, lack of markets, low prices, and lack of appropriate tools. These were cited by more than a third of the farmers. Drought, insect management, and a lack of a dependable supply of labor were cited by about one-third of the respondents. The survey also examined organic farmers' information sources. They do not use conventional sources of agricultural information, such as the extension service and conventional agricultural media, as much as books, magazines, and newsletters on organic farming, other organic farmers, and on-farm experiments. Many respondents noted that local extension agents did not know very much about non-chemical solutions to organic production problems. They considered University Extension to be accessible, but not very useful in solving problems specific to organic farming, and had many suggestions to improve Land Grant research in organic agriculture.*

Introduction

Land Grant Universities and State Agricultural Experiment Stations (LGU/SAES) have questioned whether the existing agricultural production system in the United States is sustainable (Adams, 1985). Alternative approaches to agricultural production are being explored to set new research agendas. One alternative to conventional methods is organic agriculture. As organic techniques are examined by the LGU/SAES system, several questions emerge: How do the problems of organic farmers compare with those of conventional farmers? What should be the priorities for research? Is LGU/SAES research credible and useful to organic farmers? To address these and other questions about organic farming research, we conducted a survey of organic farmers in New York State.

Although organic farmers comprise only a small fraction of the overall farming population, several trends suggest that organic farming practices may be a fruitful future direction for publicly funded agricultural research. The increasing economic costs and environmental risks of modern chemical- and capital-intensive agriculture have led many farmers and agricultural scientists to consider reducing or eliminating the use of many purchased farm inputs. More farmers than is generally thought may already be using 'minimal input' practices (Buttel, et al., 1986). Technology that relies on fewer purchased inputs can serve several related public-policy goals, such as reducing overcapacity, controlling non-point pollution, and reducing production cost (Buttel, 1981; Buttel, et al., 1986). Assessing and serving the needs of organic farmers is an important step in promoting reduced input techniques.

Although the American research and extension system was based on the idea of two-way communication between farmers and scientists, farmer initiated research priorities have been relatively unimportant in the recent past. Scientists tend to set their research agenda according to personal, social and economic considerations not necessarily related to the perceived or actual needs of farmers (Busch and Lacy, 1983). This is not to suggest that there is any particular hostility or resistance on the part of scientists towards incorporating farmers' suggestions. Rather, it reflects the institutional failure of the LGU/SAES system to provide efficient mechanisms for farmers to communicate with scientists. Research directly applicable to alternative practices has been particularly neglected (Dahlberg, 1986).

Farmers have a different perspective on research problems than scientists. Their close dependence on agricultural activities makes them more likely to regard specific production problems as more important than macro-economic or broad social considerations. Organic farmers in particular work under circumstances that may be unfamiliar to agricultural scientists with conventional farm experience. Previous research in this area has included a study of the motives and decision-making processes of organic farmers, their practices, and the contact they have with agricultural institutions and other farmers (Wernick and Lockeretz, 1977). Organic farmers have also been asked about the barriers to adoption of organic farming (Blobaum, 1984) and the current state of the art (Altieri, et al., 1983).

Communication from organic farmers to scientists is a critical stage in identifying and solving the important production problems facing this special farming population. If one wants to know what farmers think, there is no substitute for asking farmers.

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Methods and sampling

We conducted a survey to answer the following questions:

1. What problems do organic farmers face?
2. What information sources do organic farmers consult to solve their problems?
3. Do organic farmers perceive traditional sources of research and extension as addressing their needs?

Any survey of organic farmers will have difficulty identifying the population to be surveyed. Inferences from such limited studies must be made with caution (Madden, 1987). The most easily identified organic farmers are those who belong to organizations supporting organic agriculture. In the interest of efficient sampling, therefore, we drew our sample from the membership lists of two organizations active in New York: Natural Organic Farmers Association (NOFA) and the Natural Foods Association (NFA), as well as from the mailing list for a mail-order farm supplier specializing in the needs of organic farmers, the Necessary Trading Company. Respondents from these lists were asked to supply the names of any other organic farmers.

The survey was mailed in February and March, 1986, to 193 persons identified from these sources. Of these, 66 valid questionnaires were completed and returned. An additional 62 returned questionnaires were excluded from the sample either because the person was not at that particular address or was not a commercial organic farmer at the time. Sixty-five people did not return their survey, yielding an effective response rate of around 51 percent of the potential eligible respondents. A follow-up survey of non-respondents was not conducted. The survey was followed up by personal interviews of selected farmers and discussions with the scientific staff of the New York State Agricultural Experiment Station. We contacted 10 farmers who indicated they were willing to be interviewed. This was an attempt to follow up the more difficult issues identified in the survey. The interviews were open-ended discussions of the problems they faced and their contacts with the LGU/SAES seeking answers to their questions.

There are several subtly different definitions of organic farming used by both its supporters and critics (Lockeretz, 1986). We left the definition of 'organic' to farmers. There are some conceptual and analytical problems with such a definition. We had in mind farmers who managed at least part of their farm without synthetic fertilizers and biocides. Self-definition could exclude farmers who actually fit our concept, but who do not like the word 'organic.' Self-definition could also include people who use practices we do not consider organic. The problem of specifying the study population was further hampered by the lack of a legal definition of organic agricultural products in New York.

The sampling technique may have biased the sample toward better educated, more organization-minded farmers. There may be a broader population of farmers practicing techniques close to organic methods. This population may be better represented by the overall farming population than the sample presented here. This bias was accepted in return for an efficient sample. Although this makes inferential statistical comparisons invalid, the results still yield useful information.

A profile of demographic characteristics is given in Tables 1 and 2. The following discussion compares the sample to farmers described in the New York State Report of the 1982 Census of Agriculture (1984), a random survey of New York State farmers in the spring of 1982 (Gillespie and Buttel, 1983), and in a statistical compilation by the New York State Department of Agriculture and Markets (1984).

Organic farmers in New York State differ from the overall farming population in several ways. They tend to be younger and more educated than the average farmer. One-fifth of the organic farm operators were women. This is over three times the norm for New York State. Organic farmers surveyed had farmed fewer years on average than most farmers. The majority had always farmed organically, and were not ex-conventional farmers who had converted to organic agriculture. Organic farms tended to be smaller and to have lower total sales than the average New York State farm. Although organic farms received significantly less gross farm income, net farm incomes for the two types of farms were suprisingly close. Three-quarters of the organic farmers surveyed had some type of off-farm job, compared to about half of all New York farmers. Because of their greater participation in the non-farm labor force, total household income was higher for organic farmers than for conventional farmers.

Table 3 shows the commodities produced by organic farmers. These proportions are different from those of the overall farm population. Vegetables and specialty products such as maple syrup, honey and flowers were the dominant commodities produced by the farms in

Table 1. Demographic Characteristics of organic farmers.

	Mean	Median
Age (Years)	40.0	43
Years Farmed	11.9	8
Years Farmed With Organic Methods	9.1	6
Gross Farm Income (n = 61) (thousand dollars)	19.0	5
Net Farm Income (n = 61) (thousand dollars)	2.6	2
Total Family Income (n = 61) (thousand dollars)	28.7	19
Farms operated by women	20%	—

(n = 66 throughout the study, unless otherwise noted).

Table 2. Education and Farm Experience of Organic Farmers.

	Percent
Highest Education Level	
Less than high school degree	6
High school graduate	5
Some college	24
B.A. or B.S. degree	47
Masters or doctoral degree	18
Farm Experience	
From family farm	42
Worked as farm hand	33
Studied agriculture in school	21
No farm experience	38

Table 3. The percent of organic farms that raise certain commodities, and selected characteristics of those farms. (n = 61)

Commodity Groups	Percent who fit category	Mean Total Acres	Gross Farm Income	Net Farm Income	Total Household Income
				(thousands of $)	
Vegetables	89	112	19.6	2.7	27.2
Specialty Products[a]	77	118	17.9	2.2	29.8
Livestock (non-dairy)	71	139	19.3	2.0	26.4
Fruits	62	92	21.1	4.3	26.8
Sweet corn	54	107	20.3	3.3	25.2
Hay or alfalfa	48	167	17.5	2.3	29.4
Cash grain	24	215	23.6	1.1	30.0
Dairy	18	178	36.4	4.5	20.9

[a] = (syrup, honey, herbs, spices, flowers, firewood, timber)

Table 4. Soil fertility-management practices.

PRACTICE	Organic Farmers
	(percent)
Spread manure	76
Leguminous crops in rotation	70
Lime	65
Spread compost	57
Nonleguminous crops in rotation	56
Fish emulsion sprays	38
Seaweed sprays	36
Rock powder	35
Commercial "organic" fertilizers	33
N-P-K blended fertilizer	15
Wood ashes (volunteered answer)	6
Spoiled hay (volunteered answer)	5
Mulches (volunteered answer)	5
Anhydrous ammonia	0

Table 5. Soil Conservation Practices.

PRACTICE	Organic Farmers
	(percent)
Spread manure	83
Cover crops	76
Crop rotations to conserve and build up soil	73
Soil testing (entire farm in last three years)	46
Overseeding	33
Plant trees and shrubs to conserve soil	18
Follow SCS farm plan	17
Contour farming on steep slopes	17
Chisel plow	15
Mulching (volunteered answer)	6
Standard no-till management (without herbicides)	2
Standard no-till management (with herbicides)	0

the sample. Figure 1 further displays the diversity of organic farming enterprises. Only 3 percent of the farms in the sample relied on a single product, with most producing at least five. The heterogeneity of the sample makes it difficult to generalize about the organic farm population.

The survey also covered the techniques practiced by organic farmers. The sample included farmers who used synthetic fertilizers, insecticides or herbicides on at least part of their farm, though they were in the minority. Tables 4 and 5 show soil fertility and conservation practices. Soil fertility and conservation practices overlapped to a great extent. Certain common practices, such as spreading manure, growing cover crops and rotating crops, are used by 75 percent or more of the farmers surveyed. About one in six farmers surveyed use some form of N-P-K fertilizers on some or all of their farmland.

Tables 6 and 7 present insect and weed management practices, respectively. Most farmers surveyed reported that their crops were relatively insect-free. A few used chemical insecticides and herbicides, yet still considered themselves organic and were included in the sample. The dominant forms of weed control are relatively labor intensive practices: tractor cultivation, hand weeding and hand tool cultivation. A majority also controlled weeds by crop rotations and growing weed suppressing over crops.

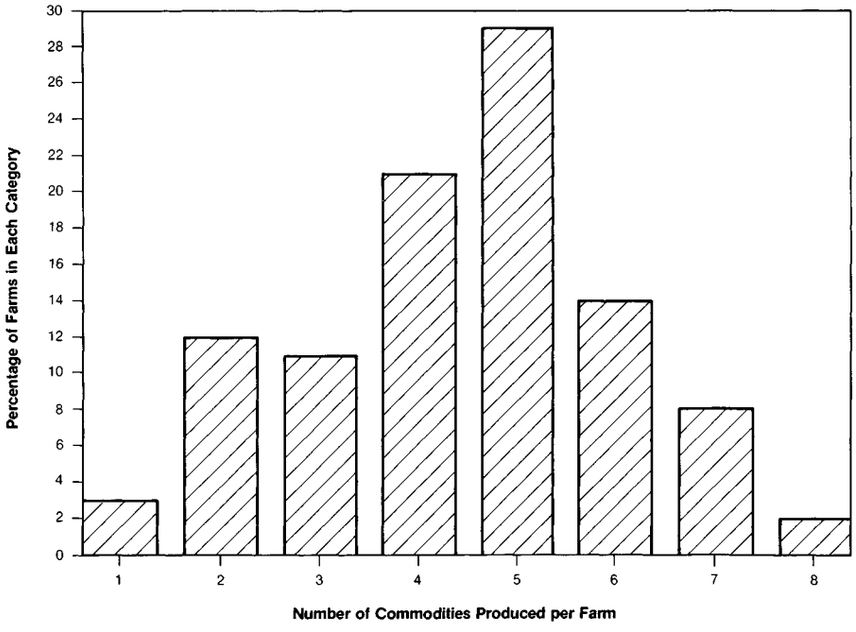

Figure 1. Diversity of Commodities Produced on Organic Farms

Problems faced by organic farmers

Identification of major problems that organic producers face was one of the primary goals of the questionnaire. Several questions were directed at discovering which problems concerned organic farmers the most, and of these which problems were most appropriate for further university-level research. Responses are summarized in Table 8. Problems mentioned generally fell into one of five major groups: biological organisms or inadequate seed or varietal quality; physical environment; logistics and in-

Table 6. Insect management practices.

PRACTICE	Organic Farmers
	(percent)
Grow relatively insect-free crops	58
Plant-derived insecticides (e.g. rotenone)	55
"Pathogen" insecticides (e.g. *Bacillus thuringiensis*)	50
Crop rotation for insect management	49
My own IPM program	17
Chemical insecticides	5
Companion planting (volunteered answer)	3
Beneficial insects (volunteered answer)	3
Encourage birds (volunteered answer)	3
Insect traps (volunteered answer)	3
Cornell-recommended IPM program	2

Table 7. Weed management practices.

PRACTICE	Organic Farmers
	(percent)
Tractor cultivation	76
Hand weeding	70
Hand tool cultivation	64
Crop rotations for weed management	62
Cover crops	58
Fallow/smother/green manure crops	50
Living mulches	33
Late planting	29
Chemical herbicides	14
Mulching (volunteered answer)	12
Stale seedbed	11
Black plastic (volunteered answer)	5
Mowing (volunteered answer)	3
Early planting (volunteered answer)	3

formation; economic constraints; and labor considerations.

The most commonly cited problem on organic farms is weed management. Economic and logistical/informational constraints were the next most commonly identified problems: insufficient time for farm work, marketing problems, lack of appropriate tools, and low prices were each cited by more than 35 percent of the respondents. More than one-fourth of the organic farmers had a problem in each of the five categories. The problems most often identified as appropriate for research were weed, insect, and plant disease management, mentioned by 47 percent, 24 percent and 20 percent, respectively. However, many of the economic and logistical problems considered significant, such as insufficient time for farm work, were not considered appropriate for research.

Table 8. Percent of organic farmers who mentioned different kinds of problems associated with organic production.

PROBLEM	Significant problem	Appropriate for research
	(percent)	(percent)
Biological Factors:		
Weed management	66	47
Insect management	32	24
Plant diseases	24	20
Animal predators	17	5
Poor yields	12	0
Unsatisfactory varieties	11	9
Animal diseases	3	2
Physical Factors:		
Drought	35	3
Soil fertility	24	9
Poor drainage	24	3
Harsh climate, short growing season	23	9
Soil compaction	15	6
Soil erosion	2	2
Logistical and Informational Problems:		
Insufficient time for farm work	45	2
Lack of appropriate tools	38	17
Building and equipment maintenance	30	2
Lack knowledge about production techniques	20	12
Selecting appropriate varieties and crop mixes	9	5
Economic Factors:		
Marketing	41	12
Low prices	38	14
Cash flow	23	6
High interest rates	15	5
Labor Force Considerations:		
Dependable supply of labor	32	5
High labor costs	12	0
Control of farm labor force	3	3

All organic farmers interviewed had specific production problems they were trying to address. Many stressed that their problems tended to change from year to year as environmental conditions changed and their skills improved. In several cases, farmers had decided to not grow crops susceptible to insects or diseases because the costs and risks of growing these crops exceeded the potential returns from selling them. Problems identified by farmers in the interviews paralleled those cited most frequently in the questionnaire responses: weed competition, insect and disease problems, and a lack of available information on organic practices.

Information sources used by organic farmers

The survey also sought to ascertain the main information sources that organic farmers used to learn about farming practices and to make decisions, with the results shown in Table 9. Three of the four most important sources of information are unique to organic agriculture. Almost three-quarters of those involved in organic production used books, magazines and newsletters about organic farming as one of their most important sources of information about production problems. All but 10 percent of the organic farmers used at least one of these sources. On-farm experiments were also widely used; about 60 percent of the organic farmers used them a lot, and 22 percent used them a little. Other organic farmers were frequently consulted by about half of the respondents, and occasionally by another 25 percent.

Conventional sources of information--such as the Cooperative extension service, university researchers, soil testing labs, and conventional agricultural publications--were used frequently by less than one-third of the organic respondents. Many organic farmers consulted these sources occasionally; indeed, only 18 percent of the organic farmers never used information from the extension service or conventional farming books. Furthermore, conventional farmers and farmers' conferences and trade shows were each used at least sometimes by 60 to 75 percent of the organic farmers. Soil testing labs, farm supply dealers, private consultants, banks and financial advisors, and the mass media were each used by less than half of the organic farmers.

The degree of contact between organic farmers and personnel at the Cornell and Geneva Agricultural Experiment Stations (AESs) is summarized in Table 10. More than half of the farmers in the survey had contacted AES staff in 1985, and two-thirds had been in contact with

Table 9. Percent of organic farmers who used each type of information to make farm decisions.

INFORMATION SOURCE	Used as much or more than any source	Used it some	Did not use it
	(percent)	(percent)	(percent)
Organic farming books	74	14	12
Organic magazines and newsletters	74	11	15
On-farm experiments	60	22	18
Organic farmers	48	26	26
Conventional farmers	31	32	37
Farmers' conferences and trade shows	31	31	38
Cooperative extension service	30	45	25
University researchers	25	41	34
Conventional farming books	23	52	25
"Cornell Recommends" and other booklets	20	46	34
Conventional farming magazines and newsletters	12	45	43
Equipment dealers	9	42	49

Several sources were used by less than 50% of those responding to the survey. In declining order, they were: state soil testing, private soil testing, seed dealers, private labs and consultants, T.V. and radio, and banks and financial advisors.

Table 10. Percent of organic farmers who had different types of contact with staff at the Cornell and Geneva experiment stations.

Category	Percent
Had some contact with Cornell or Geneva experiment station staff *in 1985*	53
Had some contact with Cornell or Geneva experiment station staff *ever*	66
Types of Contact with Cornell *ever*:	
Called to ask for information	40
Visited to ask for information	34
Attended workshops or training seminars	32
Helped advise researchers about the problems of farmers like myself	12
As an undergraduate student	8
As an employee at experiment station	6
Know a professor at Cornell*	3
Bought livestock or root stock at Cornell*	3
As a graduate student	2
Assessment of Interaction	
I found them accessible and helpful	61
I found them accessible but not too helpful	23
I found them helpful but not very accessible	9
I found them neither helpful nor accessible	7

* Answer was volunteered by several respondents.

AES personnel at some time. In general, contact involved telephone calls or personal visits by farmers seeking information. Also, about a third of the farmers said that they had attended workshops or conferences at Cornell. This included attendance at meetings of the Natural Organic Farmers' Association of New York (NOFA-NY) held on the Cornell campus every spring.

The data in Table 10 also provides information about the ways organic farmers characterize their interactions with AES staff. Although about a third had never had contact with Cornell or Geneva personnel, most of those who did were satisfied with the information they had received. About two-fifths of those who made contact with the Cornell/Geneva staff felt either that it was difficult to find or approach AES staff, or that the information that they had to offer was not very helpful.

Contact with the Cooperative Extension Service and the Soil Conservation Service (SCS) is displayed in Table 11.

Table 11. Contacts and evaluation of information available from the Cooperative Extension and Soil Conservation Services

Number of Contacts in 1985	Extension	SCS
None	11%	21%
1-2	37	63
3-5	27	13
>5	25	3
Quality of Information		
Always useful	31	31
Occasionally useful	44	42
Never relevant	20	9
Did not use the service	5	18
	n = 64	n = 61

Over half of the organic farmers had three or more contacts with extension agents in 1985. Only 11 percent reported that they had never had contact with extension personnel. This is in sharp contrast to an earlier study which revealed that 50 percent of conventional farmers had not had contact with extension personnel (Gillespie and Buttel, 1983). Only 21 percent of the general farming population has three or more such contacts in a given year.

Although they generally had frequent contact with the extension service, most organic farmers found the information that they obtained to be at most occasionally useful. This is consistent with the results summarized in Table 9, showing that less than a third of the organic population considered the extension service an important information source.

Organic farmers were less likely to have had contact with the Soil Conservation Service than with the AES or Extension. In fact, only 16 percent of the organic farmers had more than 2 contacts in 1985 with the SCS, and one in five had no contact with SCS agents that year. Comparable data are not available for the conventional farming population. Nevertheless, organic farmers found the SCS about as useful as the extension service. Although a much higher percentage of the respondents said that they had received no information from the SCS in 1985, a similar percentage (31 percent) found the information provided by the SCS to be always useful. Forty-four percent of the organic farmers found the SCS information occasionally useful. Table 11 summarizes their judgment of the quality of information obtained in all previous contacts with the two sources.

Attitudes towards university research and extension

The farmers we interviewed expressed a desire to see the resources of plant breeding programs directed towards the needs of organic farmers. Specifically mentioned were resistance to diseases and insects (not to pesticides), germination and seedling vigor, cold hardiness, flavor, and the ease of seed or plant

propagation by individuals and small companies. Independent scientific testing of the effectiveness of many of the techniques and products used by organic farmers was cited as a potential role for university research. Economic issues and the macro-social impacts of agricultural practices were additional topics on which research was encouraged.

The personal interviews revealed that most contact with Cornell or Geneva personnel came through informal and often roundabout personal contacts. This typically required farmers to expend considerable time and effort to identify those at Cornell or Geneva who could answer their questions. Everyone thought that it was extremely hard to locate experts at Cornell and particularly difficult to find personnel who knew about or were interested in organic agriculture. In the opinion of one farmer, "you have to be an insider to get the information...not many people are going to know how to do that." These impressions contrast somewhat with the survey results, in which a majority of respondents considered the university staff to be generally accessible.

Part of the problem may lie in a generally cynical attitude among organic farmers towards university research. Reactions to questions about the potential of university research to help organic farmers ranged from an outright distrust of the whole 'system' to general frustration with the perceived lack of information and help. Some expressed the opinion that university scientists were in some way "bound by the system" to do research that primarily benefits large, conventional farmers. Others saw the deficiency of useful research as stemming from the historical lack of understanding of organic farming on the part of university researchers. This latter group held out the faint hope that public research on organic agriculture could be important to future agricultural development. Given the difficulties most farmers encountered when they contacted university personnel, these negative opinions are not surprising.

Many of the farmers interviewed reported regular contact with their local agents, but they all believed that they could not obtain much useful information from them about organic production problems. Extension agents were said to be friendly and willing to talk with the organic farmers, but they were unable to provide information about non-chemical means of managing agricultural problems, or tell farmers who to contact to get information. "They've been trained the other way and can't do much," said one farmer. Organic farmers said that extension publications emphasize the use of agrichemicals, and that the few non-chemical options covered in these publications are not comprehensively described. Some thought that the extension information is too technical to understand without a lot of agricultural experience. They generally used extension publications to gather basic information about crop varieties and to identify common insect pests and diseases.

A few farmers said that their local extension agents have not always been so accessible and friendly, and several farmers even thought that when they were just beginning to farm in the early 1970s, extension agents were actually hostile towards them. This seemed to be particularly true for those who had moved into rural communities where the local extension agents had already established comfortable working relationships with the area's conventional farmers. The difficulties faced by any newcomer to a rural community were obviously exacerbated by the fact that organic farmers did not conform to the conventional images of what farmers were "supposed" to do. Nevertheless, most of the farmers in the interviews said that over the past decade, extension agents have begun to accept their practices and are willing, though are not always able to discuss possible solutions to organic problems.

We also interviewed researchers at the College of Agriculture and Life Sciences at Cornell University. These scientists expressed a willingness to talk with organic farmers about their production problems. Many--particularly in the plant breeding and agronomy departments--believed most of their research is equally relevant to organic and conventional farmers.

Conclusions

The organic farmers we surveyed had many suggestions for useful research. Weed management was by far the most significant problem faced. Other biological, informational, logistical and economic problems were also cited as appropriate for research. The farmers surveyed relied most heavily on publications specifically addressing organic farming techniques. Although they did not use conventional sources as widely, most farmers consulted them.

More research is needed to understand better who organic farmers are and how they compare with the overall farming population. Many of the problems facing organic farmers are similar to those facing conventional farmers. However, the different crops grown by organic farmers, their aversion to conventional practices to solve their problems, and their integration into a different social and economic environment will require innovative research specifically aimed at organic farmers' situation. If the research needs of conventional and organic farmers are qualitatively similar, the agricultural research system need not alter its basic agenda. If, however, organic farmers face fundamentally different problems from conventional farmers, the agenda needs to be restructured. Some have argued the research program for sustainable agriculture should be based on a more holistic view of agricultural systems (Aiken, 1986).

Farmers are concerned with the environmental consequences of agriculture and are becoming more interested in alternative production systems in general (Lasley and Bultena, 1986). Most organic farmers we surveyed had some form of contact with the LGU/SAES. The majority were satisfied with the information they received. Although they expressed a healthy skepticism toward the agricultural research establishment, most saw a positive role for the LGU/SAES. Centers that have specialized in organic agriculture research, such as Rodale, New Alchemy, and the Land Institute, have a distinct advantage in meeting the needs of organic farmers. Their research programs have been tailored specifically to the cultural practices of organic agriculture. The results of their research are credible and acces-

sible to the farmers surveyed.

The LGU/SAES and USDA have an advantage in resources, organization and experience that the newer, private research centers lack. These organizations have greater experience with outreach, but have been slow to develop the clientele of organic farmers. The diversity of organic farmers makes it a challenge for the LGU/SAES to respond to that clientele's needs. Extension and SCS were perceived by interviewees as being more receptive to organic farming techniques than they once were.

Greater understanding of organic farming methods will be important as the LGU/SAES addresses sustainable agriculture. The problems outlined here need to be studied in greater depth to develop improved technology applicable to organic farmers. We hope that the results of this survey will help researchers guide their work toward a more sustainable agriculture.

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University of California must review small-farm impacts of research, court rules

The University of California must set up a review process to ensure that research funded by the federal Hatch Act benefits small farmers, said the California Superior Court on November 17, 1987. The action had been sought by small farmer and farmworker advocates in an 8-year-old lawsuit challenging the legality of public research on such devices as the tomato harvester. The university announced that it will appeal the decision.

Debra Jones, Executive Director of the California Action Network, a party to the suit, said that the ruling "will impact all types of agricultural research, including biotechnology and pesticide development." The court ordered the university to submit in 90 days its plan to weigh the impact of agricultural research projects on small farmers.

The court did not say that the university's research program was indeed hurting small farmers, but only that a review process was lacking, university attorneys say. The original 1887 Hatch Act establishing and funding agricultural experiment stations across the country stated that the interests of family farmers should be given "primary consideration." Although the Hatch funds account for only 3 percent of the university's total research program, some Hatch funds help support as much as three-quarters of the school's agricultural projects, the small-farm and farmworker groups say.

The ruling did not address the issue of impacts on farmworkers, a major consideration in the original suit, commented William Hoerger, a lawyer for the California Rural Legal Assistance. Despite this narrowing of focus, if the decision is upheld, it will have a major impact on research, a university attorney said.

Wildlife poisoning by pesticides target of campaign

A national "Poison Patrol" campaign, whose goal is reducing the impacts of pesticides on wildlife, has been launched by the nonprofit advocacy group, Defenders of Wildlife. "Poison Patrol" encourages citizens who find wildlife which they believe may have been poisoned to call a toll-free number to report their findings. Operators at the National Pesticide Telecommunications Network will record specific information. The Defenders will use the results as part of its effort to gain federal funding in FY 1989 for laboratory testing of wildlife located by such citizen action.

The hotline number for reports is 1-800-858-7378. "The killing is unintentional, but wildlife is dying in unknown numbers," says Defenders. A campaign pamphlet is available from Defenders, 1244 - 19th Street, NW, Washington, DC 20036.