

For Release
on Delivery
Expected at
10:00 a.m.
Thursday,
March 15, 1990

**Alternative Agriculture:
Federal Incentives and Farmers' Opinions**

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Before the
Subcommittee on Department Operations,
Research, and Foreign Agriculture
Subcommittee on Conservation, Credit,
and Rural Development
Committee on Agriculture
House of Representatives



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Mr. Chairmen and Members of the Subcommittees:

It is a pleasure to be here today to discuss our recently completed study of federal farm programs and how they contribute to, or inhibit the use of, alternative farm production methods.¹ Interest in alternative agriculture has grown substantially in recent years in response to increasing evidence of health, environmental, and economic problems related to conventional agriculture. A basic strategy of alternative agriculture is the reduction in the use of nonrenewable resources, particularly agrichemical inputs, through the use of diverse crop rotations, integrated pest management, mechanical weed control, and other practices. Many researchers, farmers, and consumers believe that alternative agriculture practices can help lower health risks, protect farm resources, reduce environmental damage, and improve long-term farm profitability and competitiveness.

Although a large number of farms in the United States use one or more alternative practices in conjunction with their more dominant use of conventional practices, few farms have fully adopted the goals and practices of alternative agriculture. Several hypotheses have been advanced as to why this is so. Farmers may perceive that alternative agricultural practices

¹The full details of this work are presented in our report entitled Alternative Agriculture: Federal Incentives and Farmers' Opinions, GAO/PEMD-90-12 Washington, D.C.: February 1990).

would lower crop yields and profits. Lack of information about workable alternatives or simple reluctance to change might also hinder their adoption. Farmers may also lack markets for some alternative crops, the financial resources to change labor and machinery, or the skills needed for more complex management. Finally, since government farm policies significantly influence farm profits, credit, and insurance availability and the development and transfer of research information to farmers, these policies may--intentionally or unintentionally--institutionalize the use of conventional practices and contribute to the reluctance of farmers to adopt alternatives.

Let me begin by briefly highlighting the key results of our study. We found that federal farm programs do provide strong incentives for farmers to grow program crops and to specialize in them year after year. These incentives reinforce farmers' use of conventional farming practices and make it economically difficult for them to adopt alternative practices. If the Congress wants to encourage the adoption of alternative agriculture, then the federal farm programs, and particularly the crop acreage base system, will have to be modified so that farmers have greater flexibility to make production changes without suffering undue financial consequences. Yet, because many other factors such as market prices and agronomic conditions also influence farmers' crop selection and production practices, changing the farm programs alone may not be sufficient to bring about any

significant increase in the adoption of alternative agriculture.

Before turning to any further discussion about farm program influences, let me first address some of the key concerns about conventional agriculture that have been raised and provide an overview of the characteristics of alternative agriculture.

CONVENTIONAL AGRICULTURE

Agriculture in the United States is highly productive. Food supplies are abundant, of high quality, and relatively inexpensive. Farmers today produce roughly twice as much per acre as they did in the 1940's. These productivity gains were spurred by increased farm specialization, mechanization, use of synthetic fertilizer and pesticides, and other technological innovations. While farm labor decreased by 56 percent between 1960 and 1987, agrichemical use on major crops rose 244 percent. Despite the impressive productivity of our nation's farms, several health, environmental, and economic challenges face conventional agriculture today.

Health

Concern is growing among consumers that harmful residues from agrichemicals are appearing in the food they eat and the water they drink. Although the National Research Council has

suggested that the pesticide residues consumed in the average diet do not make a "major contribution to the overall risk of cancer for humans," many agrichemicals have been shown to cause tumors and other health problems in laboratory animals. Because knowing precisely how dangerous such agrichemicals are to human health is quite difficult, these fears are likely to persist.

Health concerns can create economic risks for farmers. If consumers perceive that an agrichemical is harmful, purchases of treated crops can fall sharply, as they did with Alar-treated and other apples in early 1989. And, if perceptions are borne out by facts--for example, when an agrichemical is shown to cause unreasonable health risks -- it can be banned for use by the Environmental Protection Agency. Thus, whether food safety concerns are justified or not, farmers who rely on agrichemicals are at economic risk. They may face a loss of productivity if agrichemicals become unavailable for use or a loss of income if they cannot sell products treated with them.

Environment

Conventional agriculture has contributed to environmental problems involving soil erosion and water pollution. Intensive farm production methods and the cultivation of highly erodible lands have contributed to the loss of some 3 billion tons of soil each year. Estimates of the farm-related costs of soil erosion

range as high as \$18 billion per year.

Agriculture is also a primary nonpoint source of water pollution, contributing up to 50 percent of all the suspended sediments and 50 to 70 percent of the nutrients found in surface water supplies. Sediment and nutrient pollution obstruct waterways, limit recreational use, increase water purification costs, and harm plant and animal life, including fisheries. Estimates of the total economic costs associated with agricultural surface water pollution range between \$2 billion and \$16 billion per year. Groundwater contamination from agricultural pesticides has appeared in 26 states, and the U.S. Department of Agriculture (USDA) estimates that 46 percent of all counties in the United States contain groundwater susceptible to contamination from agrichemicals.

Economics

The long-term profitability and competitiveness of farming in the United States are uncertain. Average real net farm income was 25 percent lower in the 1980's than it was in the 1960's, even though government spending on farm income stabilization has been twice as high. According to USDA estimates, about one third of all farm operators were still in questionable economic health at the end of 1988, because they had marginal income, marginal solvency, or both, even though the

"farm crisis" of the mid-1980's was over. One key reason why net income declined is that farmers found it necessary to spend more of their farm revenue on variable production costs. Farm exports also fell sharply in the 1980's and, although they increased in 1987 and 1988, it is uncertain whether additional lost market shares can be recaptured.

ALTERNATIVE AGRICULTURE

Concerns about conventional agriculture have focused attention on alternatives that attempt to promote consumers' and farmers' health, maintain environmental stability, enhance farmers' profitability, and produce the agricultural goods that meet society's needs. Proponents of such an "alternative agriculture" contend that by using less synthetic fertilizer and pesticide, farmers can reduce production costs and thereby increase profits. Reducing agrichemical use can also decrease pollution, thus improving water quality, while easing consumers' and farmers' health concerns and problems. Furthermore, advocates of alternative agriculture believe that farm productivity can be maintained even with reduced agrichemical use. Alternative agriculture can best be illustrated by contrasting its practices with those of conventional agriculture regarding the four key farm management decisions: crop choice, pest and weed control, soil fertility, and soil cultivation. (See table 1.).

Table 1: Farm Practices

<u>Agricultural component</u>	<u>Conventional practice</u>	<u>Alternative practice</u>
Crop choice	Specialize; plant most profitable crop on same ground year after year	Increase diversity, use multiyear rotations, and develop integrated crop and livestock operations
Pest and weed control	Apply synthetic insecticides, herbicides, and fungicides	Use integrated pest management, natural predators, resistant crops, crop varieties well-suited to agronomic conditions, crop rotations, mechanical cultivation, and intercropping
Soil fertility	Apply synthetic fertilizer, especially nitrogen products such as anhydrous ammonia and urea	Use crop rotations, legumes to fix nitrogen, and livestock manures
Soil cultivation	Cultivate highly prepared seed beds	Maintain protective cover on soil and plow to minimize soil erosion and loss of soil moisture

These practices are distinctly different, although farms often blend conventional and alternative practices. Farms, consequently, are more or less conventional or alternative, rather than simply being one or the other. They are usually labeled "conventional" or "alternative" for their main tendencies, not because they fall completely within either category.

Because conventional and alternative farm practices overlap, moving from one to the other may not necessarily require dramatic changes in techniques. For example, carefully targeted applications of pesticides can help control insects and diseases while reducing the use of agrichemical inputs. Growing legumes, using manure efficiently, and following the guidelines of regular soil tests can enhance fertility and reduce the need for synthetic fertilizers. Broadening crop rotations to include a variety of cash crops, legumes, and hay can also improve soil quality, cut down on erosion, and break insect and disease cycles. Using different cultivation techniques and cover crops to control weeds can limit the need to use herbicides. These are all alternative techniques that lead to significant reductions in agrichemical inputs.

FARM PROGRAM INFLUENCES

Federal policy has traditionally had an important influence on the agricultural sector by supporting farm income and regulating production. Several proponents of alternative agriculture believe that federal policy has been a key factor encouraging the use of conventional farm practices and discouraging the use of alternative farm practices. Of particular concern to critics of federal policy are a number of different incentives embodied in two types of programs: commodity price and income support programs and farm credit and crop insurance programs.

Commodity Price and Income Support Program Incentives

Proponents of alternative agriculture argue that the farm programs give farmers incentives to

- grow only a small group of selected program crops,
- grow the same program crops year after year instead of planting diverse crop rotations,
- overproduce program crops, and
- plant program crops on land best left unfarmed.

Incentives to Grow Only Program Crops

The farm programs support, to varying degrees, the production of 16 commodities. By supporting only these crops,

the farm programs offer incentives to farmers to devote more resources (land, capital, and so on) to the production of supported crops and less to nonsupported crops. Program crops, especially those given higher levels of support, have tended to displace nonprogram crops, or program crops receiving less support, in areas where the crops could be substituted. The acreage planted with 3 of the most important program crops (corn, soybeans, and wheat), for example, increased from about 45 percent of total crop acreage in 1960 to almost 60 percent in 1987. However, the farm programs alone have not been responsible for the changes in crop acreage uses. Improvements in crop yields and better market prices have also been important influences.

Incentives to Grow the Same Crops Year After Year

Program support payments depend on a farmer's "crop acreage base," and this base is determined by the 5-year moving average of acres planted. Farmers thus have incentives to plant program crops even when alternative crops have higher current returns, if expected future returns for program crops are higher. Expected future returns from crop programs are also capitalized into the value of the farmland. Thus, the farm programs can make expected returns to program crops higher and more stable than alternative crops with regard to both current and future returns.

Incentives to overproduce program crops

The farm programs can also encourage increased production per acre of these crops. The incentives to boost per-acre production correspond to three program features: deficiency payments, nonrecourse loans, and required acreage reductions.

Before 1986, farmers received deficiency payments based on their crop "program" yields. Farmers could increase their deficiency payments by increasing these program yields. The ability to increase program yields by maximizing actual yields provided clear incentives to use more agrichemical inputs. The Food Security Act of 1985 placed a cap on program yields, thus significantly reducing this incentive. But because the Congress may reverse this policy, as farmers are aware, there are some continued inducements to farmers to boost their actual yields.

Since nonrecourse loan payments are made on current actual yields, they may induce farmers to increase production to obtain a larger loan. If market prices for a crop are below the loan rate, a farmer can forfeit the crop to the government and keep the loan. It has generally been assumed that whenever the loan rate is above the market price, marginal returns are raised and farmers have incentives to apply more inputs to boost yields.

Acreage reduction provisions may also contribute to the

intensity with which land is farmed. Since farmers are required to hold some of their crop acreage base out of production to receive farm program benefits, they may farm their remaining acreage more intensively to make up for the production lost from idle acreage. Furthermore, since farmers may have less land under production, they may be able to concentrate greater available resources toward increasing production.

Incentives to plant program crops on land best left unfarmed

Program support may also have encouraged farmers to produce program-supported crops on marginal lands, such as wetlands or land susceptible to high rates of erosion. The sodbuster and swampbuster conservation provisions created by the Food Security Act of 1985 restrict farmers' opportunities to cultivate fragile lands. Placing land in the Conservation Reserve Program also reduces the total acreage under production. However, highly erodible land that was previously entered into the programs can be kept under production, although the Food Security Act of 1985 requires farmers to develop conservation compliance plans on such acreage.

Farm Credit and Crop Insurance Program Influences

Proponents of alternative agriculture claim that farm credit and insurance opportunities may be limited for farmers who use

alternative farming practices. The basis for this assertion is that farm lenders and insurers are more likely to place greater emphasis on the use of conventional farm practices and are less likely to invest in or provide protection for alternative practices. Lenders concerned about an applicant's expected cash flow and ability to repay a loan often require detailed information on past crop production yields and farm management input practices. An applicant who does not have a well-established production history or does not use generally accepted conventional farm practices may be considered a higher lending risk, thus requiring more stringent loans.

Similarly, farm practices play a role in the way crop insurance premium rates are structured and insurance claims are settled. The crop insurance program will not pay damages on any crop acreage if the farming practices being used are not in accordance with the farming practices--usually conventional ones--used to establish the premium rates.

Proponents of alternative agriculture also claim that credit-lending policies work against the adoption of alternative practices because many lenders can require that applicants participate in the farm commodity programs as a condition for loan approval. Therefore, farmers wanting to switch from program crops to alternative crops may find it harder to qualify for a loan. For producers of alternative crops, the availability of

crop insurance can also be a limiting factor. Although insurance from the Federal Crop Insurance Corporation is available on more than 40 different crops, insurance on these crops is not available in every county and, for many other crops, federal crop insurance is not available at all.

FARMERS' OPINIONS

Rather than conclude that farm program incentives are the unique factors involved in the adoption of alternative farming practices, we decided to query farmers directly on their opinions about the farm programs and alternative agriculture. We asked a sample of 74 farmers a set of structured questions about factors that influence their planting decisions, the strategies they believe are important to reduce farm risk, the sustainability of their farms, the influence of the farm programs, and the possible barriers to the adoption of alternative production practices. (See appendix I.) Our survey results are presented to help answer three questions: (1) What are these farmers' opinions about the issues? (2) How strongly do they feel about particular issues? (3) Are there differences of opinion among different types of farmers?

Although we visited a variety of different farms, our analysis of the farm operations showed that they could be usefully divided into two groups: "specialized" and "diversified"

farms. We defined specialized farms as those that have a high percentage of their farmland concentrated in a small number of commodity crops, while diversified farms grow greater numbers of crops in relatively smaller portions. By distinguishing between relatively specialized and diversified farms, we were able to examine more closely key claims put forth by proponents of alternative agriculture--that the federal farm programs provide incentives for farmers to become and remain highly specialized in program crops and that such specialization leads farmers to choose conventional farm practices.

Factors Influencing Planting Decisions

Decisions about what crops to grow heavily influence the kinds and quantities of inputs that are used to control weeds, insects, diseases, and soil fertility. We asked farmers to rate 10 possible factors that might influence their decisions about what crops to plant. As shown in table 2, farmers responded that the federal farm programs, particularly "the desire to keep my crop acreage base," have a large influence on their planting decisions. The farmers also believed, however, that other factors such as experience with the crop, availability of markets, and crop prices are quite important. The specialized group of farmers gave greater importance to the crop acreage base factor and less importance to prices or markets; the diversified group of farmers gave greater weight to experience, markets, and

crop prices in determining what to plant.

Table 2: Factors Influencing Planting Decisions^a

<u>Factor</u>	<u>Farmers interviewed</u>		
	<u>All</u>	<u>Specialized</u>	<u>Diversified</u>
Desire to keep crop acreage base	4.09	4.26	3.91
Experience with the crop	4.00	3.60	4.48
Availability of markets	3.78	3.46	4.12
Farm program benefits	3.76	3.77	3.74
Need to rotate crops	3.76	3.80	3.72
Crop prices	3.74	3.37	4.08
Availability of equipment	3.26	3.03	3.49
Availability of labor	2.87	2.62	3.11
Need to produce feed	2.83	2.63	3.03
Conservation compliance	2.55	2.29	2.85

^a1 = no influence; 3 = moderate influence; 5 = large influence.

Ways To Reduce Farm Risks

We asked the farmers about the strategies they choose to reduce the economic risks they face. As shown in table 3, the farmers strongly believed that participating in the federal farm programs to get at least a fixed minimum price for their crops is an important way to reduce the economic risks of farming. To a lesser degree, the farmers also thought that diversifying their operation with crops and livestock is a good way to reduce risks. The specialized farmers, however, viewed diversification as a less-important strategy, whereas the more diversified farmers we interviewed considered it to be very important. Fewer than half the farmers favored buying crop insurance to reduce risk. Furthermore, only a small percentage of these farmers considered applying extra fertilizer or pesticides to their crops as a good way to reduce risk.

Table 3: Ways to Reduce Farm Risk^a

<u>Response</u>	<u>All</u>		<u>Specialized</u>		<u>Diversified</u>	
	<u>Yes</u>	<u>No</u>	<u>Yes</u>	<u>No</u>	<u>Yes</u>	<u>No</u>
Enter farm programs	65	6	33	2	32	4
Diversify with crops	57	14	24	11	33	3
Diversify with livestock	43	28	19	16	24	12
Buy crop insurance	31	40	20	15	11	25
Use "extra" fertilizer	11	60	2	33	9	27
Use "extra" pesticide	5	66	2	33	3	33

^aNumbers are numbers of respondents.

Influence of the Farm Programs on Farmers' Behavior

We also asked the farmers about the influence of federal farm programs on their actions. As shown in tables 4 and 5, the farmers responded that participating in the farm programs encourages them to grow only program crops and makes it difficult to switch crop rotations, somewhat problematic to grow nonprogram crops, and easier to get credit. The farmers did not believe that the farm programs had much influence on other farm practices, such as their use of agrichemicals or crop yield goals. The specialized farmers believed more strongly than the diversified farmers that the farm programs make it difficult to switch rotations and grow nonprogram crops.

In subsequent questions, we asked the farmers about their interest in planting other crops. Fifty-seven percent indicated that they had considered planting some other crop. Most of these farmers considered planting either more of their existing crop mix or more of some other program-supported crop. The farmers provided a variety of reasons for not being able to plant other crops, such as the weather, the lack of markets, and the lack of flexibility in the farm programs. Seventy-five percent of the farmers said they would consider growing some other crop if their existing program crop acreage bases were protected. Several of these farmers stated that the farm programs should provide more

flexibility to enable them to switch crops without loss of established acreage bases.

Table 4: "Does Participating in the Farm Program Encourage You to -----?"^a

<u>Behavior</u>	<u>All</u>	<u>Specialized</u>	<u>Diversified</u>
Grow only program crops	2.18	2.14	2.22
Specialize in one crop	3.22	3.00	3.42
Get crop insurance	3.31	3.00	3.63
Use more fertilizer	3.33	3.23	3.43
Use more herbicide	3.43	3.31	3.54
Grow best crop rotation	3.44	3.74	3.16
Expand farm size	3.51	3.63	3.40
Produce higher yields	3.60	3.60	3.59
Use more pesticides	3.63	3.51	3.73
Raise crops and livestock	3.69	3.63	3.75
Borrow more	3.94	3.86	4.03

^aFarmers were asked whether participation in the farm program encouraged them to engage in the behaviors listed. Responses ranged from 1 = strongly agree through 3 = no effect to 5 = strongly disagree.

Table 5: "Does Participating in the Farm Program Make It -----?"^a

<u>Behavior</u>	<u>All</u>	<u>Specialized</u>	<u>Diversified</u>
Difficult to switch rotations	1.94	1.63	2.25
Easier to get credit	2.17	2.31	2.03
Tough to grow non-program crops	2.41	2.00	2.81
Tough to raise crops/livestock	3.13	3.09	3.17
Easier to grow one crop	3.30	3.06	3.53
Important to expand	3.43	3.40	3.46
More important to get insurance	3.51	3.51	3.50
Less important to use fertilizer	3.77	3.86	3.69
Less important to use pesticide	3.90	3.88	3.91
Less important to use herbicide	3.97	4.03	3.92

^aFarmers were asked whether participation in the farm program made these behaviors likely. Responses ranged from 1 = strongly agree through 3 = no effect to 5 = strongly disagree.

Farmers' Opinions About Sustainability

We asked the farmers what they thought about their farms' prospects into the foreseeable future. Ninety-seven percent of the farmers said they intended to continue planting their current crop mix and expected their use of agrichemical inputs, environmental conditions, and farm economics to be similar to the present. As illustrated in table 6, the farmers were somewhat optimistic about their crop yields and farm profits in the future but saw only minimal changes to input use and environmental conditions.

Table 6: Effects of Continuing Current Crop Rotation^a

<u>Effect</u>	<u>All</u>	<u>Specialized</u>	<u>Diversified</u>
Input			
Herbicide	3.11	3.11	3.11
Pesticide	3.11	3.20	3.03
Fertilizer	2.96	3.00	2.92
Environment			
Erosion	3.23	3.40	3.06
Weed problems	3.13	3.11	3.14
Water quality	3.06	3.00	3.12
Pest problems	3.01	3.00	3.03
Soil fertility	2.63	2.66	2.60
Economics			
Profits	2.61	2.65	2.57
Crop yields	2.31	2.29	2.34

^aEffects ranged from 1 = large increase through 3 = no change to 5 = large decrease.

Barriers to the Adoption of Alternative Practices

We asked the farmers to identify factors that are barriers to the adoption of alternative agriculture. As seen in table 7, the farmers identified a great many barriers that make it difficult to adopt alternative agriculture. The farmers responded that the federal farm programs provide barriers to alternative agriculture, yet the farmers also strongly agreed that there are many other barriers not directly related to the federal farm programs. The farmers believed that adopting alternative agriculture may require greater management skills and cause greater weed problems, lower yields, and lower profits. The lack of farm labor, and the opinion that their work load may increase, also appeared to discourage farmers from embracing alternative practices. The farmers stressed that many alternative practices might be technically feasible on their farms, but for a variety of reasons they believed they were impractical or too costly.

Table 7: Barriers to the Adoption of Alternative Agriculture^a

<u>Potential barrier</u>	<u>All</u>	<u>Specialized</u>	<u>Diversified</u>
Greater management is required	1.61	1.63	1.59
Yields may decline	1.66	1.56	1.76
Weeds may increase	1.76	1.86	1.66
Profits may decline	1.89	1.80	1.97
Farm labor is unavailable	1.89	2.06	1.71
Need to maintain crop acreage base	1.90	1.80	2.00
Work load may increase	1.96	2.09	1.82
Current system works well	1.99	2.09	1.88
Lack of information	2.11	2.14	2.09
Loans are more difficult to get	2.13	2.23	2.03
Loss of federal benefits	2.39	2.54	2.24
Markets are not available	2.43	2.40	2.46
Rotations are not allowed in program	2.49	2.23	2.74
Livestock will be needed	2.53	2.26	2.80
Alternative techniques are not allowed on rental land	2.89	2.47	3.26
Crop insurance may be more difficult to get	2.77	2.94	2.60
No vacations will be possible	2.91	3.34	2.45
Neighbors "won't understand"	3.27	3.29	3.26

^aBarriers ranged from 1= strongly agree through 3 = feel neutral to 5 = strongly disagree.

Obtaining Credit and Crop Insurance

In our interviews with farmers, we asked them if lenders and insurers inquired about their farm practices and participation in the farm commodity programs. Forty-seven percent of the farmers said that lenders had asked them about participation in the farm programs but only 10 percent said lenders inquired about farm production practices. Eighteen percent of the farmers, though, said that lenders recommended they participate in the programs in order to qualify for a loan, but virtually no farmers said that lenders suggested that they change their farm practices. The farmers overwhelmingly agreed that farm practices and commodity program participation are not a consideration when applying for crop insurance or in settling insurance claims.

SUMMARY

Our farmer interviews support the claims made by proponents of alternative agriculture that there are strong incentives to grow only program crops and to keep growing the same program crops year after year. The farmers also agreed that participating in the farm programs makes it difficult to grow nonprogram crops and difficult to switch crop rotations. The desire to both maintain program crop acreage bases and receive program benefits influenced farmers' decisions about crop

choices.

By maintaining program crop acreage bases, farmers are able to obtain the full benefits of the commodity programs. Yet, maintaining crop acreage bases generally means planting the same program crop year after year. Growing program crops is less risky for farmers, because the programs provide available markets and guaranteed minimum prices. The crop acreage base system makes it economically difficult for farmers to move toward more-diverse crop rotations. The loss of program benefits that would result from giving up program crop acreage and using it to grow alternative crops is a key economic disincentive farmers must consider. The farmers we interviewed showed a strong interest in greater program flexibility that would allow them to grow other program crops without losing established crop acreage bases.

We found no evidence in our interviews to support the claim that current program provisions have led farmers to increase production or cultivate marginal lands. The farmers in general responded that the programs did not influence their use of agrichemicals or other farm production methods. The farmers also reported that their use of farm practices was not an issue when applying for a loan or taking out crop insurance. However, about one fifth said that lenders suggested they participate in the farm programs.

CONCLUSION

We believe that the results of our study have two important implications:

-- To the extent that the federal farm programs make it difficult for farmers to grow other crops and implement more diverse crop rotations, they act as a barrier to the adoption of alternative agriculture. The farmers who are the most specialized in the production of program crops are the ones facing the strongest disincentives.

-- The farm programs have a great influence on crop choice. Crop selection in turn strongly influences the types and amounts of production inputs that are required. Thus, even though the farm programs may not have a strong and direct effect on production methods, they do have a major indirect effect on input use.

If the federal government wants to encourage farmers to adopt alternative agricultural practices, it will need to change its farm programs. To give farmers greater flexibility to grow diverse crop rotations, the crop acreage base system in particular will need to be modified. However, a different farm program may not be sufficient by itself to bring greater adoption of alternative agriculture.

Although the farm programs appear to have a strong influence on farmers' planting decisions, which in turn affects their choice of production methods, other factors appear to play an important role as well. As indicated in our farmer-survey responses, farmers have serious concerns about the effectiveness of alternative agriculture, particularly factors that relate to its economic viability and technical utility. Also, farmers may themselves be reluctant to change their practices without increasing their technical knowledge and managerial skills. Furthermore, market forces may still provide incentives to apply large amounts of agrichemicals on highly specialized farms.

Understanding the factors that may influence the adoption of alternative agriculture is much more complex than most people think. It is not just a matter of changing farm policy incentives or disincentives. Other factors as well--such as economic market conditions, farmers' attitudes, and evidence of the effectiveness of alternative production practices--are also likely to have an important impact on the use of alternative agriculture. Even if changing the crop acreage base system will not by itself transform these circumstances, it is still a prerequisite if a major move to alternative agriculture is desired. In sum, we believe that providing greater flexibility in the programs to allow farmers the opportunity to make production changes will be a critical first step toward

increasing the use of alternative agriculture methods in the United States.

Mr. Chairman, this concludes my prepared statement. I will be happy at this time to respond to any questions the Subcommittee may have.

STUDY SCOPE AND DESIGN

We designed our study to evaluate the extent to which federal farm programs create incentives that influence farmers' crop selection and production practices. We selected for review those components of the federal farm programs that have major importance for the economics of farming. We also looked at the federal components that have been identified in the literature as having potentially important implications for the adoption of alternative agriculture. From these criteria, we chose to examine the commodity price and income support, federal farm credit, and federal crop insurance programs. We narrowed the scope of our study to the major commodity cash crops covered by the price and income support programs--namely feed grains, wheat, cotton, and soybeans. We also included the main farm operating and ownership loan programs of the Farmers Home Administration (FmHA) and the Federal Crop Insurance Corporation (FCIC) programs, which subsidize insurance coverage on many different farm commodities.

Our study includes a number of evaluation components. To learn more about the characteristics of alternative agriculture and its use, we conducted an information synthesis. Our synthesis involved reviewing available research studies and other

relevant literature, as well as interviewing researchers, public interest group representatives, and various experts in the field. We also examined federal agriculture legislation, program regulations, and administrative provisions that pertained to the price and income support, credit, and insurance programs in order to identify program objectives, interactions, and intended effects. We supplemented this work by interviewing officials from USDA's Agricultural Stabilization and Conservation Service, FmHA, FCIC, Extension Service, and Economic Research Service and others knowledgeable about federal agriculture policies and programs. Our final evaluation component was a set of interviews with farmers to learn how programs are implemented at the local level and to obtain farmers' views about the influence of farm programs on their farm practices.

We visited seven farm counties in different parts of the country and interviewed 74 farmers, various state and local farm officials, and agricultural researchers at nearby land-grant universities.² We chose local farm areas that were concentrated in the major commodity production areas and selected counties within these areas where agriculture was a key part of the economy and where the federal programs were a key part of

²The seven study sites included Colquitt County, Georgia; McLean County, Illinois; Boone County, Iowa; Cowley County, Kansas; Robeson County, North Carolina; Brookings County, South Dakota; and Dane County, Wisconsin.

agriculture, as indicated by farmers' participation and federal farm program spending. In addition, we considered information on farm and farmer-related characteristics in the counties and tried to select counties that contained at least some farms devoted to alternative farming practices. Local extension service officials assisted us in selecting a sample of farmers to interview. We chose farmers who generally owned their own farms, had farmed for many years, relied on farming for their livelihood, grew program-supported crops, participated in the farm programs, and typically used conventional farming practices. We also identified a small number of farmers who used or were in the process of developing alternative practices.

Because information about farm program influences is fairly limited, and since we examined data from only a small, judgmentally selected sample of farmers in a few locations, our findings cannot be generalized to other farmers or farm areas. However, when the farmers in our sample are compared to their peers, they do not appear, collectively, to be unusual regarding farm size, crop types, and management practices.