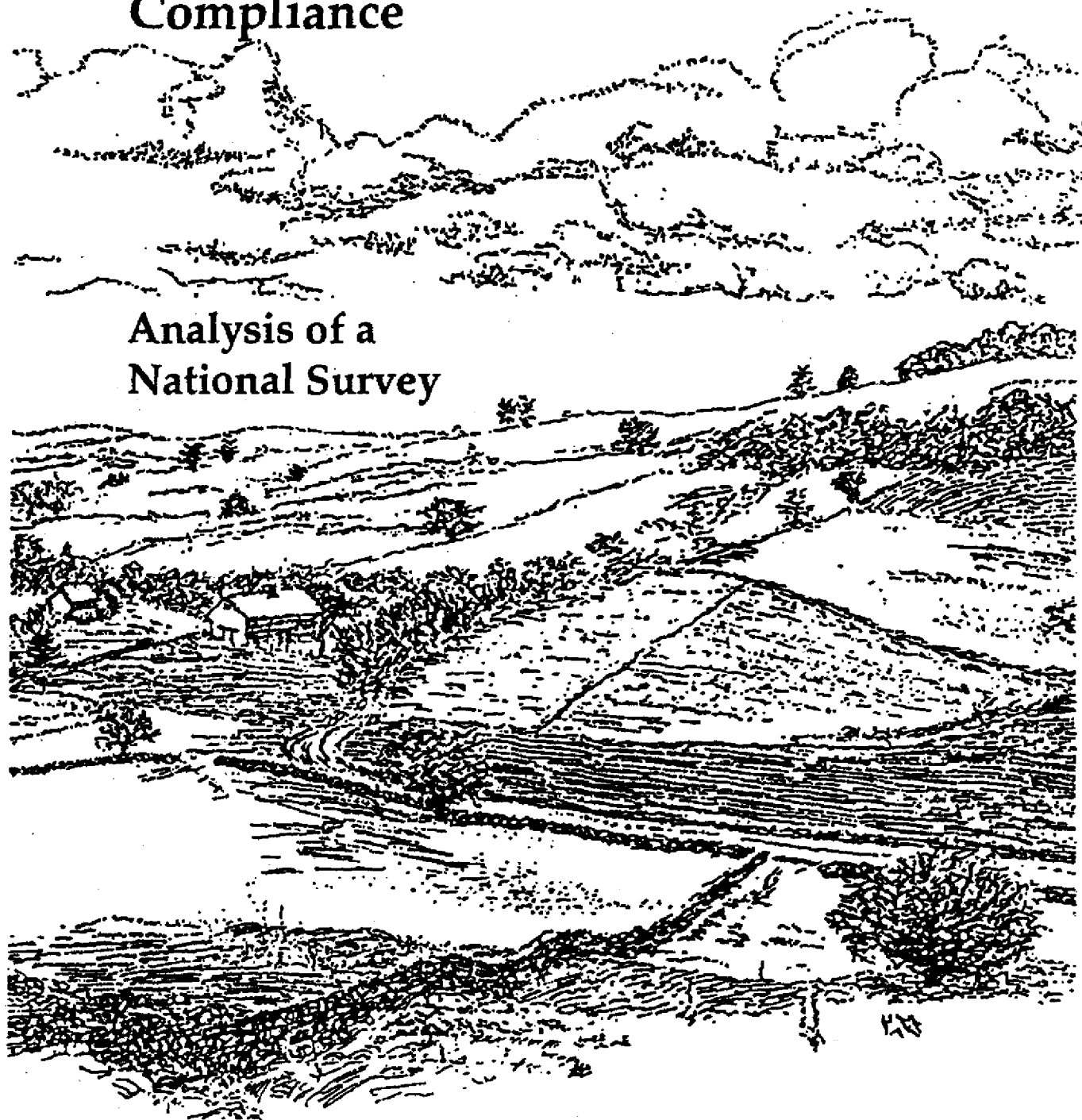


Producers' Opinions about Conservation Compliance

Analysis of a
National Survey



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American Farmland Trust is a private, nonprofit membership organization founded in 1980 to protect our nation's farmland. AFT works to stop the loss of productive farmland and to promote farming practices that lead to a healthy environment. The Center for Agriculture in the Environment was established in 1992 by AFT and Northern Illinois University with help from the Ford Foundation. The Center carries out policy research on agricultural resource protection issues. AFT's annual membership is \$20.



PRODUCERS' OPINIONS ABOUT CONSERVATION COMPLIANCE:
ANALYSIS OF A NATIONAL SURVEY

Report on a survey sponsored by
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Center for Agriculture in the Environment

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PRODUCERS' OPINIONS ABOUT CONSERVATION COMPLIANCE

ANALYSIS OF A NATIONAL SURVEY

1. INTRODUCTION AND SUMMARY OF MAJOR FINDINGS

Farmers who plant annual crops on highly erodible land are required to apply approved conservation practices to such land in order to be eligible for federal farm benefit programs like price supports and crop insurance. Highly erodible land (HEL) that was cropped any year between 1981 and 1985 is subject to regulatory provisions called "conservation compliance." HEL not in production during those years comes under a parallel set of provisions termed "sodbuster" (see Title XII of the 1985 Farm Bill, "The National Food Security Act," Public Law 99-198). As of May 1992, USDA's Soil Conservation Service had worked with more than 1.2 million producers to develop plans of approved practices affecting about 135 millions acres subject to conservation compliance (Richards, 1992). These plans are required to be fully implemented by January 1, 1995.

However, for a variety of reasons, the producers who are subject to these regulations may decide not to comply with them. Identifying such reasons and gauging how widespread they are among the regulatory program's clientele, policy makers for the program may take remedial actions or, alternatively, decide that the opposition is too strong to continue the program as currently structured. In a survey sponsored and funded by the American Farmland Trust, we studied farmers with conservation compliance plans. From late August to early November 1992, the Public Opinion Lab of Northern Illinois University interviewed by telephone a random sample of 885 farmers with plans who were spread over 100 counties in 32 states (see Appendix I). The response rate was 77%.

The interviews focused on five potential reasons for noncompliance: whether the farmers believed (1) that they would lose money from implementing the required conservation plans, (2) that the likelihood of noncompliance being detected was small in their counties, (3) that the likelihood of detected violations leading to significant penalties was small in their counties, (4) that the typical farmer in their county with a plan would not comply, and (5) that the plans, if implemented, would not really save soil. Conversely, compliance was more likely if farmers anticipated no financial losses, if they expected violations to be discovered and penalized, if they believed most of their peers would go along with the regulations, and if the regulations were

justified by the prospect of saving soil.

In this survey of farm operators with required conservation plans, relatively few respondents indicated reasons for noncompliance of these five types. In fact, the pattern of opinions looks rather conducive to plans being implemented. Only 21% of the respondents said they expected to lose money, 39% believed the plans would cause no change in their earnings above production costs, and 34% estimated they would come out ahead. From our analysis of these responses (using logistic regression), we found that positive assessments of plans' financial effects were more likely if, among other things, the respondents (1) reported raising cattle as their main farm enterprise, (2) had received technical assistance from the Soil Conservation Service for plan implementation, (3) were not farming in the Corn Belt, and (4) reported having already expended most of the effort of carrying out their plans. Regarding this fourth characteristic, we are not sure if positive assessments preceded or resulted from implementing plans. At least the experience of implementation did not result in relatively more negative evaluations; and at least most of the surveyed farmers who expected to make money were not persons with little if any implementation effort on which to base their assessments. Among the 299 respondents saying they would make money, 61% reported having already put in most of the effort for carrying out their plans.

The second potential reason not to comply that we investigated was whether producers with plans believed there was only a small likelihood of violations being detected. We found that 50.2% of our respondents with plans attributed a 50-50 chance to violations being discovered and that 32.7% expected something higher than 50-50. In a previous survey of Midwestern farmers with compliance plans, we learned that, in the eyes of most of those producers, a 50-50 chance of being caught was high enough to affect how carefully they followed the rules of conservation compliance (Esseks and Kraft, 1992).

To be deterred from noncompliance, potential violators may need to believe also in an adequately high probability that detected violators will receive meaningful penalties. Eighty percent of our sample thought there was a 50-50 or higher chance that discovered noncompliance would result in loss of eligibility for USDA program benefits. And 70% expected both a 50% or greater chance of noncompliance being detected and the same likelihood of such discoveries leading to loss of eligibility. That is, seven out of ten interviewed farmers with plans had a combination of expectations regarding detection and penalties that should help to deter noncompliance.

Another likely reason for noncompliance would be skepticism about the conservation plans' ultimate effect on soil erosion. The question asked was: "Given what you know about the compliance

plans in your county, and how they are likely to be carried out, do you think the overall amount of soil erosion on the land with plans will . . . decrease, increase, or not change at all?" Seventy-three percent of the interviewed producers chose the "decrease" response option. If these farmers were looking for a reason to comply, they might conclude that by complying at least they would contribute to a reduction in soil erosion.

The fifth reason for noncompliance that we investigated was whether farmers expected most of their peers to disobey the regulations. With that scenario, violating a regulation should be socially more acceptable and perhaps safer, because if a violator's neighbors are also disobeying regulations, they probably will not turn him in. However, the producers in our sample tended to expect compliance from their peers. Eighty-six percent reported that "the typical farmer" in their county would fully implement his/her plan by the January 1995 deadline. A follow-up question asked for estimates of the percent of the county's producers with plans who would fully comply. The median (or middle) response was 80%, while the 25th percentile (the answer 25% of the way through the array of answers arranged from lowest to highest) was 75%. That is, three-quarters of the respondents said that at least 75% of their counties' producers with plans would comply by the deadline.

Farmers might decide against compliance for reasons that could not be reliably investigated in the interviews. For example, we chose not to ask whether the USDA program benefits of interest to them were worth the effort of implementing their plans. We suspected that many farmers would be reluctant to answer "no," for fear it would be construed as indicating they would not comply with the regulations and this interpretation would somehow reach the authorities. However, regarding the five kinds of reasons we did explore, there was not the evidence to expect large-scale noncompliance.

Moreover, a little more than half (52.6%) of the surveyed farmers with plans reported that most of their plan implementation effort had already occurred or would so by the end of the year. By correlating these responses to the answers to relevant other questions (such as whether the farmer had received technical assistance for plan implementation), we concluded that the reports about carrying out plans were valid in the sense that almost all of those farmers believed that they really had made significant progress in implementation. They were not just telling us what they thought should be said. Furthermore, the farmers reporting this level of progress did not tend to be the ones for whom plan implementation might have been easy--that is, the respondents with relatively few practices in their plans or relatively few acres covered by the plans. For the 465 producers reporting most effort expended by 1992, the median number of separate kinds of conservation practices in their plans was identical to the median

for all 885 respondents with plans (three); and the first group's median number of acres covered by their plans acres, was also identical to the median for the whole sample (400 acres).

Of course, a telephone survey could not determine if the scheduled practices were applied properly. However, we can say that over 50% of this national sample believed they had already expended most of the required effort. We did not find just a quarter or a third at this stage, with the remaining three quarters or two-thirds waiting until 1993 or 1994.

Although this survey found a pattern of opinions that indicates most affected producers will comply, we did identify some problems with the program. In the fall of 1992, with just two years to go before all plans should be fully implemented, 27% of the interviewed farmers with plans still wanted to change or modify the conservation practices listed in them. Thirty-two percent needed clarification as to when practices should be applied. And 47% had postponed either all or most of their implementation effort until at least 1993. There were indications that a significant minority may not comply. Within this 47% group were many producers (a sixth of the whole sample) who would not or could not tell us when they intended to expend most of their plan implementation effort. A group that overlapped with this last one (and that comprised 14% of the entire sample) reported having never received any of the free technical assistance available from SCS for plan implementation and also not being interested in receiving any in the future.

On balance, though, the findings of this national survey give promise of a majority of producers complying. There may be many farmers or spokespersons for farmers who clamor for conservation compliance to be watered down. But this survey suggests that the program, as currently structured, can succeed in the sense of having a majority of the affected producers cooperate. How large that majority will be, we cannot predict.

Section 2 of the report describes the survey's findings about the nature of the respondents, of their farm operations, and of their compliance plans (if they had one). A total of 1,006 producers were interviewed, of which 88% said they owned, managed, or operated land with conservation compliance plans. The two most notable findings about the plans were (1) they tended to be rather complex in that the median number of separate practices per farm operation was three and (2) they tended to cover most of the farmers' operation; for half of the respondents with plans, the compliance land consisted of nine-tenths or more of the total acres in their operations.

Section 6 discusses two aspects of the political viability of conservation compliance: producers' opinions of what Congress should do with the program when deliberating on the 1995 Farm Bill

and farmers' opinions about the fairness with which USDA has been enforcing the compliance regulations. The responses on these two aspects were fairly positive.

Appendix I lists the 100 counties spread over 32 states where the respondents farmed. Appendix II describes the random sampling procedures used in drawing the sample and explains why we believe the resulting sample was representative.

2. THE RESPONDENTS, THEIR FARM OPERATIONS, AND THEIR COMPLIANCE PLANS (IF THEY HAD ANY)

The Sample of Respondents: Drawing the Sample:

We sought the opinions of farm operators who were subject to conservation compliance because we assumed that, compared to non-operator owners or managers, their opinions were the most relevant for understanding whether conservation compliance was heading towards success or failure. More specifically, they would tend to know more about the contents of the conservation compliance plans affecting the land in question, (2) they would tend to have the most informed opinions about those plans' effects on farm operation earnings, and (3) their perceptions of the enforcement processes would tend to be the most important for whether scheduled conservation practices were applied on time.

Appendix II to this report ("Drawing the Sample") discusses in detail how we went about developing a sample of farm operators who had land with compliance plans and who, as a group, were reasonably representative of all farmers with plans. Here, we give the main points of that discussion.

Since we lacked access to a comprehensive national list of the farmers of highly erodible land (HEL), we were compelled to draw our survey sample in two stages. In the first, we randomly selected 100 counties from a list of 2,741 counties nationwide that had HEL tracts as of the spring of 1991. Each county's chance of being selected for this first stage of sampling was very close to being proportionate to its share of all HEL tracts in the country at that time. In the second stage, we asked the district office of USDA's Soil Conservation Service in each of the 100 counties to draw 15 HEL tracts at random from their files and to send us the names, addresses, and phone numbers of those tracts' operators of record. We provided the district offices with detailed instructions about how to draw those tracts randomly. All 100 district offices cooperated. Those counties' names and states are listed in Appendix I to this report.

Although we aimed for 1,000 completed interviews, previous experience with the response rate in a national-level survey of farmers suggested that we should begin with about 30% more operators than the targeted number of completions (Esseks and Kraft, 1990). As Table 1 indicates, for this survey the Public Opinion Lab of Northern Illinois University achieved a response rate of 77%; 1,006 of the total eligible cases of 1,305 completed interviews. Twelve percent of the total refused to be interviewed, 10% could not be contacted, and 1% consisted of cases where the

listed operator was sick or unable to participate because of hearing problems.

Table 1. Percentage of eligible cases with completed interviews and fates of other eligible cases

Classification of eligible cases	Number of cases	% of total
Interviews were completed	1,006	76.8%
Respondent refused to be interviewed	158	12.1
No contact (no phone, number unlisted, could not identify current operator)	132	10.1
Respondent was hard of hearing or sick	14	1.0
Total eligible cases =		1,310
		100.0%

Generalizing from Findings of the Survey

Our ability to generalize from the responses of this sample to the whole population of farmers who are subject to conservation compliance depends mostly on the random procedures used in sampling and on the response rate. Although a response rate of 77% compares well with the rates achieved for other telephone surveys (Frey, 1983; Lavrakas, 1987; Henry, 1990), we are still left with the problem that 23% of the eligible cases were not interviewed.

A common way of dealing with nonresponse is to compare what we learn about the persons who did participate in the survey to what is known about the whole population of persons to whom we wish to generalize. If, let us say, 27% of the interviewed farmers were from the Corn Belt, while the Corn Belt is the location of 25% of all listed HEL tracts, we conclude that at least on this trait--production region--the achieved sample is representative. However, we found population-level data for only two variables: production region and the prevalence of residue management in compliance farm plans. On those two variables, our respondents match closely what is known about the overall population (Tables 2 and 6).

Table 2. Distribution of respondents by production region, compared to distribution of highly erodible tracts (HEL)

Region*	% of respondents	% total HEL tracts*
Northeast	5.4%	5.3%
Appalachian States	15.9	18.9
Southeast	3.5	3.9
Lake States	10.5	8.2
Corn Belt	27.0	25.4
Delta States	1.7	2.0
Northern Plains	17.3	16.9
Southern Plains	7.2	7.2
Mountain States	10.2	10.5
Pacific States	1.3	1.7
Total	100.0%	100.0%
Number of cases	1,006	1,600,006

*Estimated from the total number of HEL tracts per state selected for 1991 "status reviews" (U.S. Department of Agriculture, "Profile Report of Field Office Status Reviews," 1991, unpublished). These reviews were conducted to determine the extent to which conservation compliance plans were being implemented on schedule. Since in each state approximately 5% of all HEL tracts were chosen for reviews, we multiplied the 5% sample by 20 to arrive at our estimate of the total HEL tracts per state.

Since the achieved sample may be unrepresentative on other traits, we deal with nonresponse error by making the very conservative assumption that all the uninterviewed operators would have answered regarding any trait in a pattern opposite to the pattern found in the survey. For example, where we found that most interviewed farmers with compliance plans--532 out of 885 or 60.1%--said they had received technical assistance from USDA's Soil Conservation Service (SCS) for implementing their plans (Table 9), we assume that all the 304 nonparticipant cases comprised farmers with plans who had not received such help. Therefore, the total cases increase by 304 to 1,189, while the number of cases with SCS assistance remains at 532, which drops the percentage with assistance to 44.7%

We must allow for possible error due to sampling as well as to nonresponse. In a two-stage random sample consisting of 1,189 completions, we estimate the error range for a 95% confidence level with a "yes/no" question to be plus or minus 4.3 percentage points. Therefore, in the Table 9 example of respondents with SCS technical assistance, we are 95% confident that at least 40.4% (44.7% minus 4.3 percentage points) of all operators in the country with plans had obtained such help by the fall of 1993. If we had somehow interviewed all 1.2 million producers with plans, the actual percentage would very probably have been closer to the 60.1% we found in the survey.

The Respondents' Status Regarding Conservation Compliance:

Table 3 shows that 88% of the respondents stated that they owned, managed, or operated land with a conservation compliance plan. Another 2.9% reported having land in the Conservation Reserve Program (CRP). Three interviewed producers (0.3%) were unsure of their land's status. But the remaining group of respondents, 8.8%, reported that they had neither compliance nor CRP land. Since the sample was drawn per county from USDA lists of tracts that had either conservation compliance or CRP plans, we assume that this 8.8% (or 89 persons) were either deliberately withholding information or were, themselves, misinformed. Another possibility is that we reached the wrong farmer; for some reason the records may have been inaccurate regarding who operated the land in question.

However, we assume that many if not most of the 8.8% were persons with compliance plans who preferred not to discuss them. Therefore, we asked them indirect questions about plans and other aspects of conservation compliance (for example, "Here is a question about the financial effects of applying conservation compliance plans. Try to answer the question from what you know about the plans of other farmers").

Table 3. Respondents' reports about owning, managing, or operating tracts of highly erodible land

Reports	Number	Percent
% saying they owned, managed, or operated land with a conservation compliance plan	885	88.0%
% saying they had no conservation compliance land but that they owned, managed, or operated land in the Conservation Reserve Program (CRP)	29	2.9
% saying they were uncertain if had CRP or compliance land	3	0.3
% saying that they had neither conservation compliance nor CRP land	89	8.8
Total	1,006	100.0%
Respondents with CRP Land		
% saying that owned, managed, or operated land in the CRP	334	33.2%
% saying that they had both CRP land and land with compliance plans	305	30.3%

Table 4. Respondents' reports as to whether they were operators or managers

Reports	Number	Percent
% reporting they were "operators"*	971	96.5%
% reporting they were not operators but were farm "managers"***	35	3.5
Total	1,006	100.0%

*In the interview, an "operator" was defined as "someone who by himself or with another person makes decisions on the day-to-day operations of a farm or ranch, such as about what to raise on the land, how to raise it, and when to harvest or market the land's products."

**In the interview, a "manager" was defined as "someone who makes decisions on behalf of owners about what to plant or raise on the land and when to market the land's products, or how to maintain land taken out of production."

Table 4 indicates that our goal of interviewing farm operators, rather than non-operator owners or managers, was largely reached. The staff of Northern Illinois University's Public Opinion Lab succeeded in tracking down by phone and interviewing the operators in 96.5% of the cases. Managers comprised the remaining 3.5%.

Table 5 summarizes the interviewed operators' top three agricultural products by sales in the most recent full calendar year (1991). Half (50.5%) of these farmers reported livestock or livestock products as among their top three. Small grains, corn, and soybeans were all listed by about third of the respondents. Fruits and vegetables were reported by a fifth; and forage crops and pasture, by 18.4%.

Table 5. Responding farm operators' major agricultural products: Number and percent of operators reporting the indicated products as among their top three in 1991 sales

Major products	Number of operators	Percent
Livestock	490	50.5%
Beef cattle	352	36.3
Dairy	99	10.2
Hogs and pigs	129	13.3
Small grains	336	34.6
Wheat	292	30.1
Other grain	441	45.4
Corn	334	34.4
Oilseeds	319	32.9
Soybeans	314	32.3
Fruits and vegetables	199	20.5
Forage crops and pasture	179	18.4
Cotton	68	7.0
Tobacco	92	9.5
Peanuts	21	2.2

Number of respondents who were farm operators = 971

3. THE RESPONDENTS WITH PLANS: THE PRACTICES IN THEIR PLANS
AND THEIR EXPERIENCE WITH TECHNICAL ASSISTANCE
FOR IMPLEMENTING PLANS

Practices in the Respondent's Compliance Plans

Since among the survey's major purposes was to have producers evaluate their compliance plans' financial impacts, we had to have those respondents recall the practices in the plans before asking them about impacts. Limited by our budget to interviews averaging 18 minutes, we could not afford the several questions required to do a thorough inventory of practices. Instead, we listed six kinds of common practices (contour farming, crop rotations, crop residue management, no till, grassed waterways, and terraces), asked the farmers which if any of those six were found in their compliance plan, and then asked if any other practices were in their plans.

As a result the variety of practices reported in Table 6 is limited, and the frequencies for some of the listed practices are probably understated. The six practices we gave as examples to the respondents all have much higher percentage entries than do the practices that farmers mentioned in the follow-up question about "any other" types of practices that may have been in their plans. Moreover, even the relative importance of a common practice like crop rotation may be misstated because of local differences in labels. The teams of researchers conducting field work for the Soil and Water Conservation Society's 1990-91 study of compliance found that in some sites the written plans listed the practice "conservation cropping system," but that category of practice seemed to have included residue management practices (Soil and Water Conservation Society, 1992). The researchers concluded, however, that "conservation compliance plans were largely crop residue management plans" (*ibid.*, p. 33).

The 1992 AFT survey supported that conclusion. Among our 885 respondents with plans, 74.8% reported their plans included residue management, no till, or some other practice whose objective is to leave sufficient residue to reduce soil erosion (conservation tillage, minimum tillage, chisel plowing, and ridge tilling). The former chief of USDA's Soil Conservation Service (SCS), William Richards, reported in March 1992, "Of the 135 million acres of highly erodible cropland, about 75% have conservation plans that call for crop residue management."¹ Finding that 75% of the total covered acreage has a particular practice is not the same thing as

¹USDA-SCS, Office of Public Affairs, "New Crop Residue Table Will Help Farmers in Soil and Water Conservation," Press Release, 0255-92.

Table 6. Number and percent of respondents with compliance plans who reported selected practices being in their plans

Practice	Number of respondents	Percent
Residue management*	662	74.8%
No till	371	41.9
Crop rotations	566	64.0
Contour farming or contour strips	345	39.0
Grassed waterways	472	53.3
Terraces	322	36.4
Diversions	40	4.5**
Pond structures	4	0.5**
Permanent cover	28	3.2**
Cover crops	16	1.8**
Planned grazing	6	0.7**
Buffer strips	21	2.4**
Wind strips	5	0.6**
Filter strips	3	0.3**
Other practices	31	3.5**

Number of respondents with compliance plans = 885

***The cases categorized as "Residue management" include those where the respondent mentioned no-till, conservation tillage, minimum tillage, chisel plowing, and ridge tilling.**

****The frequencies of the last eight specific types of practices listed above are likely to be understated compared to the first six types because the first six were listed for the respondents as among the kinds of practices that appeared in compliance plans, while the last eight were ones that farmers mentioned only in response to a follow-up questions, "Are any other conservation practices included in the plan?" Items tend to be reported more frequently when they are offered to respondents as direct choices.**

finding that 75% of operators with plans have that practice. However, Richards' statement supports our finding that residue management is the most prevalent family of practices in compliance plans.

The number of separate practices per respondent is a rough measure of how complex it is for farmers to implement their compliance plans. About a sixth (15.8%) of the surveyed farmers with plans reported only one practice, and 28.5% indicated just two (Table 7). The median number of practices for all 885 respondents with plans was three, and the top 75% of farmers by this measure had at least four practices. For reasons discussed above, these values may err on the low side; it is likely that many farmers did not recall all the different practices found in their plans.

Table 7. Numbers of separate kinds* of practices reported per respondent with a compliance plan

Number of respondents reporting:		Percent
Only one type of practice	140	15.8%
Two types	252	28.5
Three types	178	20.1
Four types	122	13.8
Five types	135	15.2
Six types	29	3.3
Seven types	1	0.1
Don't know/won't answer	28	3.2
Total	885	100.0%

*See Table 6 for the 14 possible types used in calculating the frequencies in this table. No-till was considered to be a subtype of residue management rather than a separate type of its own.

Table 8 reports two likely measures of the importance of compliance plans to the farmer: the total number of acres in his/her operation that were subject to plans and the ratio of such acres to all acres in the operation. These measures suggest that, for the great majority of farmers with compliance plans, the amount

of land at issue is not trivial either in absolute or relative terms. For three-quarters of our sample's respondents with plans, their compliance land totaled at least 150 acres; for half, the total was at least 400 acres; and for the top 25% by this measure the sum was at least 1,061 acres. According to the second measure, for three quarters of the respondents, compliance acres comprised at least three-tenths of their operation's total acreage. For half, the compliance land was at least nine-tenths of their operation. If the farmer was not already using practices scheduled in the plan or was not applying them as extensively as required, conservation compliance had the potential for compelling very sizeable changes in his/her operation.

Table 8. Acres of land covered by conservation compliance plans: Absolute values and relative values per respondent

Number of conservation compliance acres per respondent

--75% of the 885 respondents with plans had at least 150 acres covered by the plans;

--50% had at least 400 acres so covered;

--the top 25% by this measure had at least 1,061.3 such acres.

Ratio of acres covered by plans to total acres in respondent's farm operation

--for 75% of the 885 respondents with plans, this ratio was at least 0.316;

--for 50% it was at least 0.9;

--for the top 25% by this measure, the ratio was 1.0 or higher.*

*We assume that when the ratio exceeded 1.0, the respondent did not accurately recall the number used for the numerator or the denominator.

Six tenths (60.1%) of our respondents with plans reported that they had already received some technical assistance from SCS for implementing their compliance plans (Table 9). As discussed in Section 2 of this report, we deal with possible error in our findings due to nonresponse and to sampling in the following way. We make the very conservative assumption that all 304

Table 9. Reports as to whether respondents with compliance plans had received technical assistance from SCS, as to when assistance was received, and as to the quality of that assistance

Report	# of respondents	Percent
Yes	532*	60.1%
No	351	39.7
Don't know	2	0.2
Total	885	100.0%

***Among the 532 who had received assistance:**

In what year?	# of respondents	Percent
This year (1992)	44	8.3%
A previous year	243	45.7
In 1992 and a previous year	244	45.9
Don't know	1	0.1
Total	532	100.0%

***Among the 532 who had received assistance:**

Was SCS assistance helpful?	# of respondents	Percent
Not helpful	15	2.8%
Slightly helpful	53	10.0
Moderately helpful	174	32.7
Very helpful	286	53.7
Don't know	4	0.8
Total	532	100.0%

nonrespondents did not receive technical assistance. This assumption adds the 304 to the 351 reporting no SCS help. The new total of respondents is consequently 1,189, and the 532 who received help is now 44.7% of the new total. When we take into account our estimated error range due to sampling (plus or minus

4.3 percentage points), we are 95% confident that at least 40.4% of all operators in the country with compliance plans had received SCS technical assistance for their plans by the fall of 1992. However, a comprehensive survey would very probably have yielded something closer to our finding of 60.1%.

Among the 532 respondents reporting SCS help, a small percentage--8.3%--said they were assisted only in 1992 (Table 9). For 45.7%, the assistance began and ended (or at least paused) some previous year, and for 45.9% it started before 1992 and either continued into 1992 or was resumed that year.

The 532 tended to rate the SCS assistance rather highly. A majority of 53.7% chose the evaluation option of "very helpful," while nearly a third selected the second-most-positive option of "moderately helpful" (Table 9). Moreover, most respondents perceived SCS to be the best place to go for assistance. When we asked our sample of 885 producers with plans to name "the best source of technical assistance for applying conservation practices found in your conservation compliance plan" and gave them a list of five potential sources (see Table 10), 72.1% chose SCS, while the next most frequently selected source, "Farmers you know in the county," was selected by only 8.7%. Our finding that only 5.4% mentioned Cooperative Extension supports the observation coming from the Soil and Water Conservation Society's field visits to 15 counties in 1990-91: for lack of money and staff resources, ". . . Extension Service officials at most locations visited gave little or no priority to Food Security Act-related matters" (Soil and Water Conservation Society, 1992, p. 41).

Table 10. Opinions as to what was the best source of technical assistance expressed by respondents with plans*

Source	# of respondents	Percent
SCS	638	72.1%
Farmers you know in the county	77	8.7
Cooperative Extension Service	48	5.4
Agribusinesses	45	5.1
Conservation District	21	2.4
Other sources	37	4.2
Don't know	19	2.1
Total	885	100.0%

***Text of question: "In . . . county, which of the following is the best source of technical assistance for applying practices found in your conservation compliance plan?"**

While 60% of the respondents with plans reported having already received technical assistance from SCS for applying compliance practices, only 26% of the same interviewed producers said they wanted such assistance in the future (Table 11). When this 26% was asked to identify the practices for which they would like help, residue management practices (not including no till) were the most frequently mentioned--by 32.2% of these respondents (Table 11). Grassed waterways ranked second--being listed by 23.9%; and no till came third (mentioned by 23%). Most of these producers wanted assistance to start sometime during the remainder of 1992 or in 1993 (Table 11). Only 6.1% would postpone it until 1994, the last year before all plans should be fully implemented. Three percent would wait until 1995, but 9.6% were undecided or would not specify the year.

Why did a large majority of respondents with plans--73.2% or 648 producers--not want technical assistance in the future? Sixty percent of these 628 farmers reported that they had received assistance in the past. Presumably they tended to think they could get by without further help. Some of this 60% or 389 producers might have decided against additional help because they found fault with the previously received assistance. However, in response to the question about their experience with SCS technical assistance, only 13% of 389 rated it "not helpful" or "slightly helpful."

Thirty-four percent chose the option, "moderately helpful," and 52%, "very helpful."

Did the 26% of the producers with plans who wanted assistance constitute a demand for service that SCS would have difficulty meeting? Our data do not permit a direct answer. We know that there has been concern about the adequacy of SCS field staffing. The Soil and Water Conservation Society's 1990-91 study found many SCS District Conservationists who believed that projected staff levels were inadequate for meeting the January 1995 deadline for compliance (Soil and Water Conservation Society, 1992). SCS told the General Accounting Office in 1990 that nationally its field staff would be 37% below the level needed for designing and installing conservation compliance practices during fiscal years 1990-94 (U.S. General Accounting Office, 1990).

Having 26% needing assistance is of course better than if half or two-thirds of the AFT sample had reported needing help. However, most of the 26% wanted to be helped in the near future, that is, during the remainder of 1992 or 1993 (Table 11). Reaching about a quarter of the total clientele might not be easy in that restricted time period.

Table 11. Need for technical assistance as expressed by respondents with compliance plans*

Assessment	# of respondents	Percent
Yes, would like assistance.	230**	26.0%
No, don't need it.	648	73.2
Don't know	7	0.8
Total	885	100.0%

*Text of question: "For any particular practice currently in your compliance plan, would you like help in understanding how to apply the practice? That is, would you like technical assistance for using the practice?"

Continued

Table 11. Continued

**Among the 230 who would like assistance:

For which kind of practice	# of respondents	Percent
Residue management (not including no till)	74	32.2%
No till	53	23.0
Contour farming or strips	38	16.5
Crop rotations	26	11.2
Grassed waterways	55	23.9
Terraces	49	21.3
Diversions and other drainage structures	3	1.3
Pond structures	5	2.2
Permanent cover	2	0.8

**Among the 230 who would like assistance:

When want assistance to start	# of respondents	Percent
1992	106	46.1%
1993	81	35.2
1994	14	6.1
1995	7	3.0
Don't know/won't answer	22	9.6
Total	230	100.0%

4.

PROGRESS IN IMPLEMENTING PLANS

Perceived Problems with Plans

The fall 1992 AFT survey tested for two kinds of problems with plans that might be obstacles to plan implementation: whether producers with plans believed that particular practices had to be removed from their plans and whether the producers reported that the plans were unclear as to when practices should be applied. In 1989, evaluation teams from the Soil and Water Conservation Society (SWCS) examined 750 compliance plans in 15 counties in 15 states and discovered problems of the first type: ". . . a significant number of plans call for crop residue levels that will be difficult to achieve and maintain; other plans entail installation of structural practices that may not be affordable with available public and private funds" (Soil and Water Conservation Society 1989, p. 72). USDA's own Office of Inspector General found a general lack of clarity in the 105 compliance plans it examined from 11 field offices in seven states: "We found that FSA [Food Security Act of 1985] conservation plans did not clearly describe the actions required for producers to comply with highly erodible land (HEL) conservation provisions . . ." (U.S. Department of Agriculture, 1990, p. 2).

Regarding the second type of problem, SWCS research teams in 1990-91 found that in some of the 15 research sites both farmers and SCS employees believed that the only deadline that counted was December 31, 1994, even though farmers had signed conservation plans providing for some or all their practices to be applied in earlier years (Soil and Water Conservation Society, 1992). A similar observation was made by the President of the National Wheat Growers when testifying at a May 1992 oversight hearing on conservation compliance: "Many wheat growers have reported that they were not adequately informed of their pre-1995 implementation schedules and other obligations. In some cases, implementation schedules were not included in the plan signed by the farmer . . ." (U.S. Congress, 1992, p. 10).

During 1991, SCS reportedly revised many compliance plans to eliminate such problems. Former SCS Chief William J. Richards told an oversight hearing in May 1992, ". . . we made a strategic decision and took a year to review the plans. We made sure that they were technically accurate, revised them where necessary, and ensured that our customers understood their plans" (U.S. Congress, 1992, pp. 45-46).

In the AFT survey, most of the respondents with plans asked neither to change practices nor for clarification as to when practices should be applied. As reported in Table 12, 27.3% of the

Table 12. Respondents' preferences about removing practices from their compliance plans*

Opinion	# of respondents	Percent
Doesn't want to remove any.	629	71.1%
Yes, remove at least one.	242**	27.3%
Don't know	14	1.6%
Total	885	100.0%

*Text of question: "Whether or not farmers expect losses or gains in earnings, they may wish to change their compliance plans. Would you like to remove any practice from your plan and substitute another practice for it?"

**Among the 242 wanting to remove practices, the reasons were:

Reasons	Number of respondents with reason	Percent of all 242 who wanted to remove practices
Because a new tract of land was added to the farm operation	62	25.6%
Because the practice is difficult or uneconomic to use	213	88.0%

interviewed producers with plans wanted to remove at least one practice or to modify a practice. Responses we received to a follow-up question indicated that, in many cases, the respondent wanted modification rather than complete removal.

For most of the group of 242 respondents comprising the 27%, dropping or modifying practices may not have been a high priority issue. In replying to a previous question, 60% of the 242 said that they did not expect to lose money when applying the practices in their compliance plans. We interpret this combination of two responses to suggest that, while the producers in question were unhappy with individual practices, they did not anticipate losses from their plans as a whole.

Nevertheless, it looks as though, despite SCS's effort to revise plans, a substantial percentage of the total clientele was still not completely satisfied with them as of the fall of 1992, just two years before complete implementation is required. Before

we discuss a follow-up question about what particular practices the producers wanted to change, we need to deal with the possibility of significant error in this estimate of a minority of 27.3% desiring changes. As discussed in Section 2 of this report, our conservative procedure is to add all the 304 nonresponse cases both to the 242 cases where the producer wanted changes and to the total number of respondents. As a result, the percentage of cases for changing plans becomes 45.9% (546 divided by 1,189). When we add 4.3 percentage points to take into account sampling error, we can say that we are 95% confident that no more than 50.2% of the producers with plans nationwide wanted to remove or modify practices in those plans as of the fall of 1992. However, something closer to our finding of 27.3% is much more likely.

Table 12 also reports the responses to a follow up question as to why producers wanted to change or modify their plans' practices. Almost 26% answered that changes were required because new tracts of farmland were added to their farm operations. A much larger percentage, 88%, chose the response option, "because the practice you want to remove is difficult or uneconomic to use." We know that "difficult to use" and "uneconomic to use" are not synonymous expressions; a practice may be difficult to apply but not uneconomic. However, we lacked the time in the interview to ask separate questions for each potential reason.

Table 13 lists the individual types of practices that respondents wanted to remove or modify because they were difficult or uneconomic to use. Among the five types most frequently reported to be in compliance plans, residue management was the most common candidate for removal or modification. Fifteen percent of the respondents with that type of practice wanted at least one kind of residue management practice taken out of their plans or modified because it was considered "difficult or uneconomic to use." The highest corresponding percentage for any of the other four types was 7.5% (terraces). However, the farmers with no till were relatively happier; only 6% of them said they wanted it removed or modified. When we took the no till cases out of the overall "Residue management" totals in both columns (2) and (3), we found that 11.7% of the cases remaining in "Residue management" wanted the practice to be removed or modified.

We looked for differences across regions as to whether respondents wanted to remove or modify practices. Farmers in one or more regions may have been slow in requesting changes or in being invited by agency field staff to review their plans and then ask for modifications. We did find statistically significant differences involving two regions: compared to respondents in all other regions, somewhat more farmers from the Corn Belt wanted changes--by a margin of 5.5 percentage points (31.3% of the Corn Belt cases versus 25.8% of all other cases); and fewer respondents from the Appalachian Region desired changes--by a margin of 8.9 points (19.7% versus 28.6%).

Table 13. Individual practices that respondents wanted to remove from their compliance plans or at least modify: Absolute and relative frequencies*

(1) Practice	(2) All respondents with indicated type of practice	(3) Number who want to remove it	(4) % that (3) is of (2)
Residue management	662	102	15.4%
No till	371	23	6.2%
Crop rotations	566	34	6.0
Contour farming or contour strips	345	24	7.0
Grassed waterways	472	9	2.0
Terraces	322	24	7.5
Diversions	40	0	0.0
Pond structures	4	0	0.0
Permanent cover	28	4	14.3
Cover crops	16	0	0.0
Planned grazing	6	0	0.0
Buffer strips	21	0	0.0
Wind strips	5	0	0.0
Filter strips	3	0	0.0
Other practices	31	0	0.0

respondents asked to specify the practices they wanted to remove = 213

*Text of question: "What practice or practices would you like to remove from your compliance plan because it is difficult or uneconomic to use?"

As Table 14 indicates, almost a third (31.8%) of the interviewed producers with plans wanted clarification as to when practices in their plans should be applied. Some of them probably missed application times for practices that were written into their plans. It would be too fortuitous if all 31.8% had plans that scheduled all of their practices for 1993 or 1994, so that they could therefore postpone implementation until those years without violating the conditions of their plans. However, as discussed earlier in this section, many of the 31.8% may have had plans that failed to specify application dates per practice.

Table 14. Respondents' opinions about their compliance plans' clarity as to when conservation practices should be applied*

Opinion	# of respondents	Percent
Wants clarification	281	31.8%
Doesn't want clarification	593	67.0%
Doesn't know	11	1.2%
Total	885	100.0%

*Text of question: "Across the nation, some compliance plans have not been clear about when the listed conservation practices should be applied to the land. In other cases, plans are clear about the year of application. How about your plan? Would you like clarification regarding what year each practice should be applied to the land?"

Progress in Applying Practices

We decided not to ask the interviewed producers whether they had begun or completed the conservation activity called for in their plans. Direct questions of this nature may have been construed as efforts to check up on the farmer and, therefore, discourage candor in replies to the remaining interview questions. Instead, we elected to ask, "[I]n what year will most of the effort of carrying out the plan occur, that is, in what year will the most time or money be expended in applying the practices included in the plan?" By putting the question in the future tense and giving the explicit choices of 1993 and 1994, we meant to imply that it was legitimate if producers had not yet started or had thus far put in little effort for compliance. But by also listing the response options of 1992, 1991, 1990, and "1989 or earlier," we allowed that most of the compliance effort may have already occurred; however, the latter scenario was not presented as the preferred one.

Over half of the respondents with plans--52.6%--reported that most of their implementation effort had occurred or would occur by the end of 1992 (Table 15). Of course, a telephone survey could not determine if scheduled practices were applied properly. However, we can say that over 50% of this national sample believed they had already expended most of the required effort. While there may have been some exaggeration as to the extent of effort, we assume that almost all of these farmers had at least made a significant start in implementing their plans. Moreover, these producers did not tend to be ones with relatively few practices per plan or with relatively few acres covered by their plans; that is, they did not tend to be farm operators for whom compliance effort would be relatively easier on these two dimensions. Their median numbers of practices and of compliance acres per respondent were identical or virtually the same as the medians for the 47.4% who had not already expended most of their compliance effort.

The other nearly half--419 or 47.4%--of the surveyed farmers with plans selected 1993 or some later year as the time when most of their effort would be expended or answered in words to the effect, "Don't know," "Won't tell you," or were confused in their replies. In other words, for close to half of this sample, there were only two years before the January 1995 deadline in which to fit most of their plan implementation effort. Many of the non-starters or small-effort producers may have had plans that did not require application of practices before 1993 or 1994. And some may have been genuinely confused about when they should begin implementation (Table 14). However, some of them may never comply.

Did the 52.6% of the interviewed producers saying they had expended most of their plan implementation effort by 1992 really believe what they said, or did many or most of them give the response that they thought was expected of them? We think that almost all of them gave what they believed to be valid responses

Table 15. Farmers' expectations as to when "most" of the plan implementation effort would occur*

Year	# of respondents	Percent
1995 or 1996	5	0.6%
1994	105	11.9
1993	161	18.2
1992	112	12.7
1991	80	9.0
1990	62	7.0
1989 or earlier	172	19.4
Spread evenly over each year	37	4.2
Already implemented completely	3	0.3
Not sure/won't answer/not clear	148	16.7
Total	885	100.0%

*Text of question: "After any needed changes are made in your compliance plans, in what year will most of the effort of carrying out the plan occur, that is, in what calendar year will the most time or money be expended in applying the practices included in the plan?"

to this question about the timing of their compliance effort because (1) as discussed above we had legitimized selecting 1993 or 1994 as the years of most effort and (2) the answers of the majority who reported earlier years tended to be consistent with their responses to other questions in the interview. A response gains credibility, or is validated, when it correlates with responses with which common sense says it should correlate.

As common sense suggested, producers who reported having completed most of their implementation effort were (1) more likely to have already received technical assistance for implementation, (2) less likely to have wanted clarification as to when practices should be applied, and (3) less likely to have wished to remove practices from their plans. And these tendencies were not slight. Sixty-four percent of the producers reporting most of their effort completed by 1992 had, earlier in the interview, reported receiving

technical assistance. And 98% of them had received such aid or did not need clarification or did not want practices to be dropped from their plans.

Using our conservative approach (discussed in Section 2) for dealing with nonresponse and sampling error, we add the 304 nonresponse cases to the 419 cases where most effort was reported postponed until 1993 or later or where the respondents was uncertain about the timing of his/her effort. The number of cases with most effort reported by 1992 remains at 466. Dividing that number into the new total of 1,189 cases yields 39.2%. If we include our error range due to sampling, plus or minus 4.3 percentage points, we can say that we are 95% certain that at least 34.9% of all producers with compliance plans would report having completed most of their compliance effort by the fall of 1992 if all such producers had been polled. However, a comprehensive poll would likely have yielded something closer to our finding of 52.6%.

We have confidence in this 52.6% figure because it is compatible with information released by SCS in March 1993. In a press release, SCS estimated that at the end of 1992 "farmers had fully implemented conservation compliance plans on 81 million acres," which was 57.9% of the total of 140 million acres with compliance plans.² The 52.6% of our respondents who expended most of their compliance effort by the end of 1992 accounted for 59.5% of the total compliance acres reported by all producers with plans in our sample.

Explaining Who Did/Did Not Report Most Compliance Effort Completed by the End of 1992

In our efforts to explain the responses in Table 15, we used as potential explanatory variables the dichotomous variables, wanted/did not want clarification regarding the schedule for applying practices; did/did not want to remove practices from the compliance plan; did/did not believe that applying the plans' practices increased earnings above production costs; did/did not receive technical assistance for plan implementation from SCS; and various variables dealing with region (Corn Belt, Lake States, etc.), numbers and types of conservation practices in the compliance plans, total acres covered by the plans, and nature of the farm enterprise (gross farm sales in 1991, predominant farm enterprise in 1991).

The two variables, number of separate practices per plan and number of acres covered by the plans, were not significantly

²USDA Office of Public Affairs, "USDA Reports Farmers' Conservation Plans on Schedule," News Releases and Other News Materials. No. 3393: March 15-19, 1993.

associated with expending/not expending most implementation effort by 1992. In other words, the farmers who put in most of their effort by that year did not tend to be the ones with relatively few separate practices or covered acres.

For this analysis we used the logistic regression program provided by SPSS-X. Logistic regression is appropriate when the outcome variable of interest is dichotomous (Hosmer and Lemeshow, 1989), such as in this case where we want to understand what conditions shaped whether producers were relatively "early" implementers, that is, with most of their plan implementation effort expended by the time of the interviews. Listed below are the variables that were found to be statistically significantly associated with respondents being early implementers. The effect of hypothesized causal variables on the "caused" variable is reported as the change in the odds of a positive response being given. In this analysis, the positive response is "yes," most effort had already been made. Appendix III's Table 1 presents the relevant regression coefficients and associated measures.

--As would be expected, respondents who wanted clarification regarding the scheduling of practices were less likely to have reported most of their plan implementation being already completed. How much less likely? The odds of respondents of this type (those seeking clarification) being relatively early implementers are estimated to be about six-tenths (0.59) of the odds of the other producers (those not wanting clarification) being early implementers, other variables held constant. For example, if the odds of the latter type of producers having already expended most effort is two in ten or 0.20, we would multiply 0.20 by 0.59; and the odds would drop to 0.118. See Appendix III's Table 1 for further discussion of how changes in odds are calculated.

--Respondents who believed that their plans' practices increased earnings above production costs were more likely to be in the early implementers group rather than in the late or undecided group. The estimated odds for being "early" increase by a factor of 1.46 if the producer's assessment about earnings was positive (with other variables held constant).

--Respondents who wanted to remove practices from their plans were less likely to have reported most effort expended by 1992. The odds for this latter response decrease by a factor of 0.63.

--Respondents who had received SCS technical assistance were more likely to have expended most effort by 1992. The odds for being "early" increase by 1.34 if assistance had been received.

--Producers with cattle enterprises that comprised more than 50% of their 1991 earnings were less likely to have expended most effort by 1992. The odds decrease by 0.57 for respondents of this type.

--Respondents with terraces as an important type of compliance practice (i.e., being among no more than a total of three separate types) were more likely to be among the "early" implementers. The odds of being "early" increase by a factor of 1.51 with this kind of respondent, other variables held constant. The median number of separate types of practices per respondent was three. We limited our analysis of the effects of practices to those cases with no more than a total of three for fear that, with more, the effect of any one practice would be too diluted.

--Also more likely to be early implementers were the respondents who believed that conservation compliance would decrease soil erosion in their counties (see Table 19). The odds of being early increase by a factor of 1.55 for respondents who had this positive evaluation of compliance's overall effect in their counties.

--However, less likely to be early were respondents from the Corn Belt. For them the odds of such a response decrease by 0.61. The regression analyses under Appendix III's Table 2 indicates that Corn Belt farmers were also more likely to have negative assessments about their plans' effects on earnings. But, for this analysis of the timing of implementation effort, the difference between Corn Belt respondents and those from all other production regions is probably not due just to differences in assessments of plans, because that assessment variable was included in the logistic regression analysis. There had to be something else about Corn Belt producers that accounted for their greater tendency to be "late" implementers. However, we are not sure what it is.

5. POTENTIAL REASONS FOR NOT IMPLEMENTING COMPLIANCE PLANS

Studies of other regulatory programs suggest that the implementation of conservation compliance plans will depend on, among other conditions, (1) the producers' calculations of the economic costs of compliance to them, (2) their expectations about the likelihood of noncompliance being detected and penalized, and (3) their sense of the social acceptability (or legitimacy) of conservation compliance (Baron and Baron, 1980; Cole and Sommers, 1981; Greer and Downey, 1982; Klepper and Nagin, 1989; Nagel, 1974; Pearce and Tombs, 1990; Sabatier and Mazmanian, 1981). If producers expected to lose money rather than to gain or break even, if they believed that failures to apply scheduled practices on time were unlikely to be detected or--if discovered--penalized, or if they believed that most of their peers would not comply and/or that compliance was not going to be legitimized by significant reductions in soil erosion, such producers had reasons not to comply. The AFT survey aimed to determine how many of the interviewed producers with plans had these types of reasons not to comply.

Opinions about the Plans' Effects on Earnings above Production Costs

The distribution of producers' opinions about their plans' financial effects looks rather conducive to the success of conservation compliance (Table 16). Only 21% of the respondents with plans expected to lose money, 39% anticipated no change, and 33.8% foresaw increased earnings. Among those anticipating losses, 35% believed that the decrease in earnings would be "small," as opposed to 43% expecting it to be "medium" and 15%, "large" (see the second part of Table 16).

In the Soil and Water Conservation Society's 1990-91 survey of farmers with plans in 15 counties (each in a different state), 29.8% of the respondents said that plan implementation "would reduce farm profitability a little"; and another 11.5% thought it would reduce profitability "a lot." The remainder anticipated no change, expected increases, or were uncertain (Soil and Water Conservation Society, 1992, p. 45). The results from AFT's 100-county survey may differ for a number of reasons: the sample was much broader in scope; the survey occurred one or more years later, when proportionally more of the sampled farmers should have had some experience in implementing their plans and when opinions about profitability may have become less negative; and the relevant question was worded differently. We asked about the impacts on earnings when the farmers had been using the plans' practices for "a few years and are experienced in using them."

Table 16. Respondents' opinions about the their plans' effects on earnings above production costs*

Opinion	# of respondents	Percent
Will decrease earnings**	186	21.0%
Will not change earnings	345	39.0%
Will increase earnings***	299	33.8%
Don't know	49	5.5%
Won't answer	6	0.7%
Total	885	100.0%

**Among the 186 respondents expecting a decrease:

Opinion	# of respondents	Percent
Expect small decrease	65	35.0%
Expect medium decrease	80	43.0
Expect large decrease	28	15.0
Don't know/won't answer	13	7.0
Respondents expecting a decrease =	186	100.0

***Among the 299 respondents expecting an increase:

Opinions	# of respondents	Percent
Expect small increase	120	40.1%
Expect medium increase	141	47.2
Expect large increase	16	5.3
Don't know/won't answer	22	7.4
Respondents expecting a decrease =	299	100.0

*Text of question: "Here is a question about the financial effects of applying the conservation practices listed in your compliance

Continued

Table 16. Continued.

plan. Let's say you have been applying those practices a few years and are experienced in using them. After you gain or have that experience, will applying the practices have any effect on the land's earnings after production costs? Will applying the practices decrease earnings after production costs, not really change earnings, or will it increase earnings?"

Missing from Table 16 are the responses from 89 farmers, many of whom, though claiming not to have had any compliance land, are likely to have been misinformed or have given deliberately wrong answers (see the discussion in this report's Section 2). However, we asked them about the effects on earnings indirectly. "Here is a question about the financial effects of applying conservation compliance plans. Try to answer the question from what you know about the plans of other farmers. Let us say that the typical farmer with a plan has been applying" The answers of the 89 farmers to this question were no more negative about plans' effects than were the responses of the 885 who admitted to having plans.

As discussed in Section 2 of this report, we deal with nonresponse error by making the very conservative assumption that all nonrespondents would have answered in a way opposite to the pattern found in the actual responses. In this case, since most respondents expected to break even or to make money, we add all the 304 nonrespondents to the 186 cases of producers who anticipated losses. Those 304 cases are also added to the total, so that we have 41.2% of that new total of 1,189 expecting to lose money. Then we add our sampling error range of plus or minus 4.3 percentage points, which allows us to state that we are 95% confident that, as of the fall of 1992, no more than 45.5% of all producers with compliance plans expected their earnings above production costs to decrease. However, a comprehensive poll of such producers would likely have yielded a percentage closer to our finding of 21%.

Explanatory Analysis for Opinions about the Plans' Financial Effects: The Producers Expecting to Lose Money

As potential explanatory variables, we used the same set of variables as discussed in Section 4's analysis of responses to the question about when most plan implementation effort would occur.

--Other variables in the regression analysis held constant, respondents who reported having already (by 1992) expended "most of the effort of carrying out the plan" were less likely to expect to lose money, compared to respondents who reported that most of their

effort would occur in 1993 or later or who were undecided. How much less likely? The odds of respondents of the former kind--the relatively early implementers--saying they would lose money are estimated to be about six-tenths (0.68) of the odds of the relatively late implementers giving that answer, other variables held constant. For example, if the odds of expecting to lose money for the latter type were two in ten or 0.20, we would multiply 0.20 by 0.68; and the odds would drop to 0.136. See Appendix III' Table 2 for the relevant logistic regression coefficients and associated measures.

Persons hoping that conservation compliance will succeed can take encouragement from this inverse association between (a) when most plan implementation occurred and (b) expectations about losing money from the plan. The experience of substantial implementation is not associated with losing money.

--Respondents who received SCS technical assistance were less likely to expect to lose money from their plans, by a factor of 0.65.

--Respondents who reported contour farming or contour strips being major parts of their plans (i.e., being among no more than a total of three separate kinds of practices) were more likely to believe the plans' effects to be negative. The estimated odds of having a negative assessment increase by a factor of 1.66 if the producer's plan included contour farming or strips, other variables held constant.

--Respondents who reported that grassed waterways were among only three types of conservation practices in their plans were less likely to anticipate financial losses. The odds decrease by a factor of 0.53 (that is, by about 50%) for producers with such respondents.

--If a cattle enterprise accounted for more than 50% of the farmer's 1991 gross sales, he/she was less likely to expect losses from compliance. The odds decrease by 0.55. One reason that producers of this type may not expect to lose money is that planting their HEL to permanent pasture or to crop rotations yielding hay can support their cattle operations.

--Respondents from the Lake States were more likely to anticipate losses. The odds of such a response increase by 1.96.

--Corn Belt respondents were also more likely to expect losses. The odds of such a response increase by 1.50 for surveyed farmers from that region.

The Corn Belt is therefore relatively farther behind on two important aspects of the implementation of conservation compliance: client satisfaction with his/her plan and the pace of

implementation (see Appendix III's Table 1). The analysis for Table 12 also indicated that relatively more Corn Belt farmers wanted to drop practices from their plans.

These differences might be due to nonresponse error; conceivably if the 304 nonrespondents (see Table 1) had been interviewed, the Corn Belt answers overall would look more positive or the responses from other regions, no more positive. However, we do not have the problem of too few respondents from the Corn Belt; 256 of the interviewed farmers with plans were from that production region. Since they were selected in two stages of random sampling, the 256 would be a large enough sample for a 90 percent confidence level, with an error range of plus or minus 7 percentage points, even with a design effect of 1.5 (Henry, 1990, p. 122).

Analysis of Responses from Producers Who Expected to Make Money from Their Plans

--Again, the timing of most of the effort of implementing the plan made a significant difference. If that effort had already taken place, the estimated odds of expecting financial gains increase by 1.53, other variables held constant.

--Corn Belt and Lake state respondents also tended to answer differently from farmers from other regions; they were less likely to anticipate gains. The odds decrease by factors of 0.56 and 0.46, respectively.

--Respondents in whose operations a cattle enterprise predominated in 1991 were more likely to expect gains. The odds increase by 1.51.

--The older the farmer, the more likely he/she was to anticipate gains. For every ten-year increment in age, the estimated odds increase by 1.15.

--Less likely to expect gains were respondents who had residue management (but not including no till) or rotations as one of no more than a total of three separate types of conservation practices. The odds of expecting gains decrease by 0.46 and 0.70, respectively.

--By contrast, having grassed waterways was associated with expecting gains. The estimated odds increase by 1.65.

--Respondents who reported having received SCS technical assistance were also more likely to expect to make money, by a factor of 2.12.

As expected, there is considerable symmetry in the regression analyses of respondents who expected gains versus those who anticipated losses. In both analyses, surveyed farmers from the Corn Belt and Lake States answered significantly differently from other producers, as did respondents with cattle operations, those with grassed waterways, and those who reported having received SCS technical assistance or having already made most of the effort of implementing their compliance plans. The last finding may simply indicate that the early implementers tended to be producers who had positive expectations before they started to apply their plans. That is, the positive expectations preceded implementation. However, another hypothesis that we could not test (because we lacked opinion data on the same persons before they began applying practices) is that the experience of implementing plans caused assessments of financial impacts to become more positive. That is, some producers were pleasantly surprised.

A noteworthy correlation was between receipt of technical assistance and the farmer's expectation about making money from his/her plan. Other variables held constant, that assistance seems to make a significant, positive difference.

Expected Likelihood of Noncompliance being Discovered

A common reason to comply with regulations is to avoid penalties for noncompliance. And normally for penalties to be imposed, violations have to be detected. However, it seemed plausible that many or most farmers subject to conservation compliance would believe there was a small likelihood of violations being discovered. SCS directives in 1990, 1991, and 1992 required field offices to check only 5% of all HEL tracts with compliance plans (U.S. Department of Agriculture, 1991).

In fact, though, AFT's fall 1992 survey found that 82.9% of the respondents with plans estimated the chance of detection to be "moderate" or "high," with "moderate" defined in the interview as being a 50-50 chance (Table 17). Previous research on farmers' expectations about the detection of noncompliance indicated that a 50-50 chance was high enough "to make a difference in how carefully" the average farmer followed the rules of conservation compliance (Esseks and Kraft, 1992).

Table 17. Estimates of the likelihood of noncompliance being discovered--estimates made by respondents with plans*

Estimate	# of respondents	Percent
Zero likelihood of discovery	5	0.5%
Low likelihood	117	13.2
Moderate likelihood (50-50 chance)	444	50.2
High likelihood	289	32.7
Don't know/won't answer	30	3.4
Total	885	100.0%

*Text of question: "In your county, how likely is USDA to discover that a producer has failed to apply scheduled practices on time? In your opinion, is there a zero likelihood of discovering it, a low likelihood, a moderate likelihood (such as a 50-50 chance), or a high likelihood of discovering it?"

The same question about likelihood of detection was asked of persons in our sample who claimed not to have land subject to conservation compliance. When we add in their answers, the value for any response category changes by less than two percentage points. Still 80.8% estimate the likelihood of detection as being at least a 50-50 chance.

When we asked this question, did we tend to receive back what the surveyed producers really believed to be the likelihood of detection or what they thought we wanted to hear? Logistic regression analysis of the responses to this question suggests that we tended to receive their genuine beliefs. The producers choosing a 50-50 chance or higher differed significantly from other respondents on the following three variables--they were more likely (1) to have received technical assistance for their plans, (2) to have terraces as one of their main practices (one out of no more than a total of three separate types of practices), and (3) to have stated that the typical producer in their counties with a plan would meet the January 1995 deadline. As discussed earlier in the report, a response gains credibility when it correlates with other responses with which common sense says it should correlate. We suspect that the correlation between expecting a 50-50 or higher chance of detection and having terraces in one's plans derives from the relative conspicuousness of terraces. Except on fields that are far from public roads, it is rather easy for USDA field staff to monitor whether terraces are in place.

The correlation with receiving technical assistance may result from the experience of having SCS field staff visit producers' farms or talk to them in SCS offices. The farmer may conclude that, given the effort SCS staff members expended helping him, they will tend to watch his farm more frequently or carefully than if no help had been given, in order to see if their effort bears fruit.

The correlation with responses about the typical farmer complying may indicate the following reasoning: If one's neighbors and other peers with plans will comply, the farmer who does not will be conspicuous; and since "misery likes company," one of the compliers may turn in the noncomplier. Previous research in six Midwestern counties found that farmer respondents tended to attribute a rather high likelihood to conservation compliance violations being detected through the complaints of farmers (Esseks and Kraft, 1992).

Estimated Likelihood of Detected Noncompliance being Penalized

Having the clients of a quasi-regulatory program like conservation compliance believing in a high enough probability of violations being detected is not a sufficient deterrent; they must also expect a high enough likelihood of noncompliance leading to meaningful penalties. However, the Center for Resource Economics' survey of 1990 and 1991 enforcement activities at the national level found relatively very few producers being penalized (Cook et al., 1992). Farmers might conclude that the probability of losing eligibility for USDA program benefits was small. But AFT's 1992 survey found that a large majority of the respondents with compliance plans, 80.6%, estimated there was at least a 50-50 chance of their ASCS Committee voting an eligibility cut-off (Table 18).

The same estimation question was asked of persons in our sample who claimed not to have land subject to conservation compliance. When we add in their answers, the value for any response category changes by no more than 2.2 percentage points. By this measure 79.6% believed that there was at least a 50-50 chance of losing eligibility for benefits.

Table 18. Estimates of the likelihood of noncompliance leading to loss of eligibility for USDA benefits--estimates made by respondents with plans*

Estimate	# of respondents	Percent
Zero likelihood of losing eligibility	18	2.0%
Low likelihood	106	12.0
Moderate likelihood (50-50 chance)	367	41.4
High likelihood	347	39.2
Don't know/won't answer	47	5.4
Total	885	100.0%

*Text of question: "Let's say that a local USDA office found that a producer in your county failed to apply a scheduled practice on time. The office discovered this failure through visiting the farm or through inspecting aerial photographs. Let's say also that this failure was considered intentional. In your county, how likely is it that the ASCS Committee will decide to cut off the eligibility of a producer like this for commodity program benefits such as disaster payments and deficiency payments. In your opinion, is there a zero likelihood of a cut-off, a low likelihood, a moderate likelihood (such as a 50-50 chance), or a high likelihood of losing eligibility?"

Of course, deterrence is maximized when the targets of regulations believe in a high enough probability both of noncompliance being discovered and of detected violations leading to meaningful penalties. In the AFT sample, 69.7% of the respondents with plans attributed at least a 50-50 chance both to violations being detected and then being penalized.

Expectations of Compliance Plans' Effects on Reducing Soil Erosion

Producers may decide to comply for reasons other than expectations about the financial effects of applying practices or concern about violations being detected and penalized. One such other reason may be their assessment of whether conservation compliance will actually reduce soil erosion on the land covered by the plans. The expectation of such a reduction may help to justify, in the farmers' minds, whatever financial or other sacrifices that result from plan implementation. However, it seemed plausible that many producers would be skeptical of the plans' capacity to reduce erosion, such as because they expected

compliance to be spotty or they had heard about the criticisms of the compliance plans consisting of "alternative conservation systems" (U.S. Congress, 1988). Permitted in plans beginning in 1987, "alternative conservation systems" (ACSs) consist of practices or sets of practices that allow soil losses in excess of the "T" or tolerance level (the rate at which the land's long-term productive capacity can be maintained). ACSs were designed to permit flexibility in planning, particularly so as to protect producers from severe financial hardship (Ervin, 1989).

However, 72.9% of the AFT survey's respondents with plans indicated they expected erosion to decrease because of conservation compliance (Table 19). And almost three-quarters of the respondents who expected decreases believed that they would be "medium" or "large" rather than "small" (Table 19).

Table 19. Opinions about the overall effect of conservation compliance on soil loss on the land in their counties with plans--opinions of farmers with compliance plans*

Opinion	# of respondents	Percent
Soil erosion will decrease.	645**	72.9%
Will not change at all.	182	20.6
Will increase	46	5.2
Don't know/won't answer	12	1.3
Total	885	100.0%

*Text of question: "I would like your opinion of conservation compliance's overall effect on soil erosion on the land in your county that has compliance plans. Given what you know about the compliance plans in your county and how they are likely to be carried out, do you think the overall amount of soil erosion on the land with plans will change because of conservation compliance? In your opinion, will the overall amount of soil lost on the land with compliance plans decrease, increase, or not change at all?"

Continued

Table 19. Continued

****Among the respondents expecting a decrease in soil erosion (this group also includes the respondents claiming not to have plans.)**

Opinion	# of respondents	Percent
Decrease will be small.	182	25.0%
Decrease will be medium.	359	49.2
Decrease will be large.	183	25.1
Don't know	5	0.7
	Total	729
		100.0%

Expectations about the Compliance Behavior of Peers

Another reason for producers to implement their compliance plans may be that it is seen as socially acceptable or expected; they anticipate that most of their peers with plans will implement. The AFT survey found that 86.1% of the respondents with plans expected the "typical producer" in their counties to implement fully by January 1, 1995 (Table 20).

The percentage values change by less than two points when we add the responses from the 89 farmers who claim no compliance plans. And if we assume that all of the 304 nonrespondents would have answered, "No, will not comply by January 1995," we still end up with 64.1% of the producers with plans expecting their typical peer to comply by the deadline. If we add in the error range of plus or minus 4.3 percentage points, we can say that we are 95% confident that at least 59.8% of producers with plans believed, at the time of the survey, that their peers would comply by the deadline. A comprehensive poll would very likely have found something closer to our 86.1%.

Table 20. Opinions about whether the typical producer in their counties with a compliance plan will fully implement it by January 1, 1995--opinions of respondents with compliance plans*

Opinion	# of respondents	Percent
Yes, will fully comply by then.	762	86.1%
No, will not comply.	96	10.9
Don't know/won't answer	27	3.0
Total	885	100.0%

***Text of question: "In your opinion, will the typical producer in your county who has a compliance plan apply that plan's practices fully by January 1, 1995?"**

Summary Observations about Reasons to Comply/Not to Comply

As Table 21 indicates, only 4.9% of the AFT sample of producers with plans had a combination of expectations that suggest they may not comply. These are the respondents who both expected to lose money when applying practices and who anticipated a relatively low likelihood of noncompliance being detected and penalized (less than a 50-50 chance).

The second group listed in Table 21, 12.8% of the total, had a combination of expectations that might incline them not to comply: they did not anticipate any change in their earnings, but they also expected a relatively low likelihood of violations being discovered and penalized (less than a 50-50 chance). However, since all 113 of these persons had at least one possible reason to comply (they believed compliance would decrease soil erosion in their county or they thought compliance was socially expected since the typical producer in their county would comply by the deadline), they might nevertheless comply.

The largest of the four groups is next, with 41.3% of the total. It consists of respondents who, though they expected to lose money or to experience no change, assigned at least a 50-50 chance to noncompliance being found out and penalized. Whether they comply or continue to comply may depend largely on how credible USDA is in its practices of monitoring and imposing penalties for violations.

Members of the fourth group, 33.8% of the total, are likely to comply because they expect their net earnings to increase when compliance plans are applied. Moreover, over two thirds of this

group had the additional, potentially critical reason to comply of expecting there was at least a 50-50 chance of violators being detected and penalized.

Table 21. Predicting compliance by grouping respondents according to their answers to two or more questions

Group	Number of respondents	Percent
1. <u>May not comply</u> = expect to lose money when apply practices and don't assign at least a 50-50 chance to noncompliance being detected and penalized.	43	4.9%
2. <u>May comply</u> = don't expect any change in earnings and don't assign at least a 50-50 chance to noncompliance being detected and penalized. But had at least one possible reason to comply; they believed that compliance would decrease soil erosion in their counties and/or that most of their peers with plans would comply.	113	12.8
3. <u>Likely to comply</u> = expect to lose money or to experience no change when applying practices, but assign at least a 50-50 chance to violations being detected and penalized.	366	41.3
4. <u>Very likely to comply</u> = expect to increase net earnings when comply.	299	33.8
5. Others (unsure or unwilling to answer questions)	64	7.2
Total	885	100.0%

6. POLITICAL VIABILITY OF CONSERVATION COMPLIANCE

The long-run viability of conservation compliance may depend on the willingness of farmers to support it politically, as well as to support it through their own application of scheduled conservation practices. Political support or opposition can be expressed in various ways, such as through letters, phone calls, and other communications to Congressmen. Another medium is the public opinion poll. We took advantage of the interviews to ask producers with plans what Congress should do with conservation compliance in the next Farm Bill.

Just over a third of these respondents were content to leave conservation compliance unchanged, while 42.6% wanted Congress to improve it through amendments and 20.2% would have it abolished (Table 22). We had time in the interviews to ask in a follow-up question about only one kind of amendment--making "the rules about farming highly erodible land" less or more strict. We assumed that most producers wanting change would focus on those rules. We found that 22% of the 377 respondents who wanted amendments were not concerned about those rules; their responses to the follow-up question was "no change in these rules" (see the second part of Table 22). Another 20% (76 producers) actually opted for making the rules "a little more strict" or "a lot more strict." When we add those 76 producers and the 83 "no change" respondents to the 308 who chose the "keep-as-is" option to the main question, we have 52.8% of all the respondents with plans not wanting to water down the rules about farming HEL. Another 182 respondents (20.6% of the whole sample) preferred those rules to be only "a little less strict." This degree of acceptance looks rather good for a regulatory program.

Who were the 20% of farmers with plans who wanted to abolish conservation compliance? Logistic regression analysis found four variables on which they significantly differed from the other 80%. Compared to the other respondents, they were more likely (1) to be among the minority of surveyed producers (21%--Table 16) expecting to lose money from implementing their plans; (2) to be among the smaller minority (11%--Table 20) believing that the typical farmer in their county would not meet the January 1995 deadline, (3) not to have received technical assistance for the plans; and (4) not to have already expended most of their plan implementation effort. As suggested by the last two of these findings (#3 and #4), the preferences for abolition tended to lack the legitimacy that would come if the producers voicing the preferences had at least tried out the technical assistance or had expended considerable effort implementing their plans.

Table 22. Opinions of respondents with compliance plans as to what Congress should do with conservation compliance in the next farm bill*

Opinion	# of respondents	Percent
Keep it as it is.	308	34.8%
Keep it but amend it.**	377	42.6
Abolish it.	179	20.2
Don't know/won't answer	21	2.4
Total	885	100.0%

*Text of the question: "Finally, in your opinion, what should the US Congress do with conservation compliance in the next Farm Bill? Should it keep the conservation compliance program as it currently is, keep it but only after it is improved through amendments, or abolish it completely?"

**Among those 377 who wanted to amend it:

Opinion	# of respondents	Percent
Rules about farming HEL should become:***		
A lot less strict	28	7.4%
A little less strict	182	48.3
A little more strict	57	15.1
A lot more strict	19	5.0
No change	82	21.8
Don't know/won't answer	9	2.4
Total	377	100.0%

***Text of follow-up question: "Would you like the amendments to make the rules about farming highly erodible land a lot less strict, a little less strict, a lot more strict, or no change in these rules?"

Another relevant consideration for the political viability of conservation compliance should be whether the program's clientele believes that USDA enforces the regulations fairly. We asked producers with plans if they expected USDA to be fair when confronting farmers who were "not able to apply practices due to circumstances beyond their control," such as when residue levels are not adequate because of drought or pest damage. Only 5.4% chose the response option of "not at all fair"; 16.4% selected "somewhat fair"; 37.6%, "moderately fair"; and 36%, "very fair." Therefore, more than three-quarters of the surveyed farmers expected at least moderately fair treatment.

Table 23. Opinions of respondents with compliance plans about the fairness of USDA's enforcement of conservation compliance*

Opinion	# of respondents	Percent
Not at all fair	48	5.4%
Somewhat fair	145	16.4
Moderately fair	333	37.6
Very fair	318	36.0
Don't know/won't answer	41	4.6
Total	885	100.0%

*Text of the question: "Some producers will not be able to apply practices successfully due to circumstances beyond their control. It will not be intentional. For example, the required crop residue levels might not be reached because of a drought or pest damage. Do you think the USDA office that enforces conservation compliance in your county will be fair to producers who cannot apply practices successfully due to circumstances beyond their control? Will the USDA office be not at all fair, somewhat, moderately, or very fair?"

APPENDIX I

**COUNTIES FROM WHICH SAMPLE WAS DRAWN, BY PRODUCTION REGION
(See the accompanying map)**

NORTHEAST REGION

Maryland
 Howard County

New York
 Montgomery County

Pennsylvania
 Adams County
 Erie County
 Snyder County

Virginia
 Culpeper County
 Mecklenburg County
 Southampton County

APPALACHIAN STATES REGION

Kentucky
 Ballard County
 Casey County
 Garrard County
 Hart County
 Logan County
 Nelson County
 Taylor County

North Carolina
 Anson County
 Franklin County
 McDowell County
 Stokes County
 Yancey County

Tennessee
 Dyer County
 Haywood County
 Maury County
 Unicoi County

LAKE STATES REGION

Michigan
 Alcona County
 Oakland County

Minnesota
 Goodhue County
 Rice County

Wisconsin
 Chippewa County
 Fond du Lac County
 Lafayette County
 Rock County
 Washington County

NORTHERN PLAINS REGION

Kansas
 Cloud County
 Graham County
 Kearny County
 Nemaha County
 Russell County
 Wabaunsee County

Nebraska
 Butler County
 Dawes County
 Garden County
 Knox County
 Pawnee County
 Scotts Bluff County

North Dakota
 Barnes County
 Hettinger County
 Stark County

South Dakota
 Harding County
 Turner County

SOUTHEAST REGION

Alabama

Conecuh County
Lawrence County

Georgia

Coffee County

South Carolina

Calhoun County

DELTA STATES REGION

Louisiana

Franklin Parish

Mississippi

Pike County

SOUTHERN PLAINS REGION

Oklahoma

Custer County
Logan County
Woods County

Texas

Concho County
Haskell County
Lynn County
Wheeler County

CORN BELT REGION

Illinois

Clark County
Hancock County
Livingston County
Peoria County
Stephenson County

Indiana

Boone County
Hancock County
Montgomery County
Sullivan County

Iowa

Appanoose County
Cedar County
Decatur County
Hardin County
Johnson County

CORN BELT REGION CONTINUED-

Iowa Continued-

Mahaska County
Plymouth County
Shelby County
Washington County

Ohio

Champaign County
Mahoning County

Missouri

Audrain County
Clinton County
Johnson County
Newton County
Saline County

MOUNTAIN STATES REGION

Colorado

Arapahoe County
Larimer County
Saguache County

Idaho

Bingham County
Twin Falls County

Montana

Chouteau County
Hill County
Pondera County
Sweet Grass County

New Mexico

Dona Ana County

PACIFIC STATES REGION

California

Imperial County

Washington

Whitman County

Geographic Distribution of Counties from which survey sample was drawn

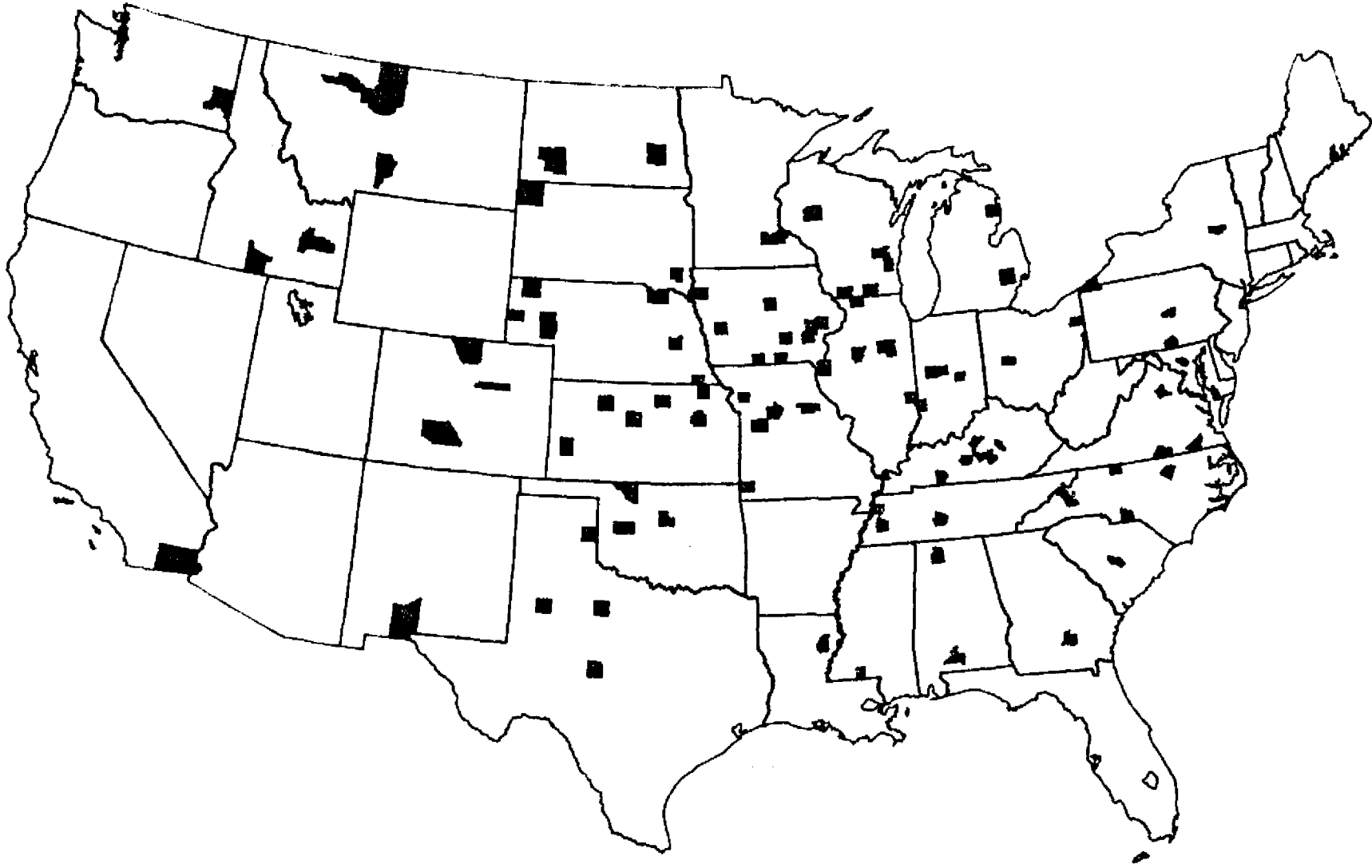


Figure 1.

APPENDIX II

DRAWING THE SAMPLE

This appendix describes how the sample of farm operators was drawn and then explains why we believe the sample was reasonably representative of all operators nationwide who farmed land subject to conservation compliance.

As discussed in Section 2 of the report, we aimed to interview farm operators because we assumed that, compared to non-operator owners or managers (1) they would tend to know the most about the contents of the conservation compliance plans affecting the land in question, (2) they would tend to have the most informed opinions about those plans' effects on farm operation earnings, and (3) their perceptions of the enforcement processes would tend to be the most important for whether scheduled conservation practices were applied on time. However, we could find no national list of such operators. Instead, we did have access to lists of all the 2,741 counties in the country that, as of early 1991, had highly erodible tracts with approved conservation plans either for land enrolled in the Conservation Reserve or for land subject to conservation compliance. This list enumerated per county the number of "status reviews" to be conducted that year. From it we drew a random sample of 100 counties for our first stage of sampling.

According to the January 1991 amendment to SCS's National Food Security Act Manual, "Beginning with the 1990 calendar year, the District Conservationist (DC) is responsible for making an annual status review of 5 percent of all tracts that have HEL and an approved conservation plan. The purpose of the status review is to assess the performance of persons in applying their conservation systems and to assist persons in applying their plans consistent with the installation schedule and conservation practice standards, so that all willing persons will be meeting the FSA [Food Security Act] requirement of using approved conservation systems by January 1, 1995" (Section 510-17). By March 1st of each year, the DCs were supposed to draw a 5% random sample from the HEL tracts with compliance plans. A tract was defined as "a unit under one ownership operated as a farm or part of a farm" (U.S. Department of Agriculture, 1988, Section 517-5).

Since the listed status reviews were by tract and the number of reviews per county was supposed to be 5% (or very close to 5%) of all the HEL tracts with compliance plans, we could multiply the listed number by 20 to estimate the total tracts with plans. The total nationwide exceeded 1.6 million. Alternatively, when drawing the sample we could use the listed numbers and not bother with the consistent multiplication by a factor of 20. We followed the

latter approach when conducting the first stage of sampling.

First Stage of Sampling

We decided to pick a total of 100 counties in our first stage of sampling because, other things being equal, the larger the number of units in the first stage, the more representative the sample. For reasons explained below, we knew we would need the help of USDA field offices in conducting the second stage of sampling. When doing two stages of sampling for a national survey in 1986, we had succeeded in obtaining the necessary cooperation from local authorities in 59 counties (Esseks and Kraft, 1986). We decided to aim for 100 counties this time.

To minimize regional biases, we lined up the 2,741 counties by the nine production regions, (i.e., all the counties in states comprising the Northeast Region were grouped together, then all the counties in the Appalachian States, etc.--see Appendix I). Using a table of random numbers, we entered the list of those counties at a random point. Then we counted from that point until we reached 800. This number was our skip interval, because it represented the total number of HEL tracts selected for status reviews in 1991 divided by 100, our chosen number of counties for the first stage of sampling. The 800th HEL tract after our random starting point was found in Oakland County, Michigan. The 1600th tract was in Goodhue County, Minnesota, while the 2400th was in Rice County, Minnesota. So the selection proceeded until the 100th county was selected, Mahoning in Ohio, which was the 32nd state with at least one county included in the first stage of the sampling.

The Second Stage of Sampling

Our goal in sampling was to give to each HEL tract in the nation with a conservation plan an equal opportunity to be included in the sample. Since in the first stage of sampling each county's chance of being selected was very close to being proportional to its share of the national total of HEL tracts chosen for status reviews, which was very close to the national total of all HEL tracts with conservation plans, the number of HEL tracts per county in the second stage of sampling had to be constant across the counties. We decided to draw 15 per county. Although we had funds for 1,000 interviews averaging 18 minutes each, previous experience suggested that as many as 30% of the cases could not be used due to respondents refusing to be interviewed or not being accessible. They might not have phones, or they may have moved, retired from farming, be sick or have died.

We knew that the most up-to-date lists of the operators of HEL tracts with compliance plans should have been in the county-level SCS offices. From our own personal experience working with such

offices in the Midwest and from reading SCS manuals about conservation compliance, we knew that staff in the district offices were responsible for keeping files with the names and addresses of the owners and operators of all HEL tracts with plans. To the DCs in the 100 counties selected in the first round of sampling, we sent a letter that asked for their assistance and that included instructions for drawing at random 15 HEL tracts with plans.

The instructions included a set of computer commands for accessing the list of HEL tracts via software that virtually all SCS offices used (UNIX CAMPS). Two other commands allowed them to sort the HEL tracts by the identification number assigned to each tract. Then the instructions asked the DC or whoever pulled the tracts (perhaps the Conservation District clerk) to start at the beginning of the track file after the sorting in numerical order was done and count down a set number of tracts, let us say 60, select that tract (e.g., the 60th from the beginning of the file) for the first of the 15 needed tracts, count down another 60, select that one for the second, etc. We knew where the local office should stop for the first, second, and subsequent choices because we knew approximately how many total HEL tracts they had (the number selected for the 5% status reviews multiplied by 20). We divided that total by 15 to derive a skip interval for the particular county and used a table of random numbers to pick a random starting point. Then we counted down from that starting point the length of the skip interval to select one tract for that county's sample of 15, used the same skip interval to reach a second, etc. We supplied each of the 100 district offices with forms that indicated which tracts should be selected (e.g., "Please select the: 20th tract from the beginning of the tract file, with the file arranged in numerical order"; "Please select the 80th tract from the beginning of the file"; etc.). The forms also had space for the name, address, and phone number of the operator of each selected tract.

How likely is it that the district offices lacked the time or motivation to follow our instructions carefully? We had two tests for "lazy" responses to our requests: (1) whether the lists of farm operators sent back to us were in alphabetical order, as if taken from a file arranged by name rather than by HEL tract number, and (2) whether all cases had addresses with the same zip codes, as if the names had been taken from a file arranged geographically. None of the 100 lists of farmer names was in alphabetical order or had the same zip codes for all the producers.

How likely is it that District Conservationists, worried that some superior might see a report of the survey's findings for their counties, deliberately "stacked the deck"? That is, did they list only farmers who would give responses that made the district office look good (e.g., positive assessments of technical assistance, of the clarity of compliance plans, of the fairness of SCS in administering compliance)?

Since we have worked with 23 separate survey samples of farmers drawn from the files of local USDA offices either by ourselves or our graduate assistants, we know how "unstacked" sample lists should look. We checked the lists sent from the 100 counties for indications of honest lists. One rather common indication is that, in the course of random sampling of tracts, the same farmer is listed for two or more separate tracts. We doubt that district SCS offices would embellish fabricated lists with this feature. In 23 of our 100 counties, at least two tracts had the same listed operator.

A second kind of indication of genuine lists--found in the lists sent to us from 18 counties--is where the person filling out our forms wrote on the form the ASCS farm unit number for each selected tract. We did not ask for that number, but when the office staff person listed the HEL tract file, the operator identifier that printed out per tract was apparently the farm unit number assigned by the USDA-ASCS office in the same county to the farm of which the HEL tract was a part. With that number, the district staff people could obtain the name and address of the HEL tract's current operator. Someone trying to stack the lists would not bother to work from that number, but list the "safe" operators whom he/she knew and then pull the addresses and phone numbers from SCS's own files.

A third kind of indication is where the listed "operator" is not a person but a company name, such as "3R Farm" or "Triple D Farms." Rather than giving us the name of someone likely to give "correct" responses, the local office sent us the company name found in the files and left it to us to track down the actual operator. Fourteen of the 100 counties had one to three tracts out of 15 with this kind of "operator" listed.

A fourth kind of indication is where the records are out of date or flawed so that the person listed as operator was dead, retired, never was the farmer but the owner, or owned land that was not being farmed. Rather than receiving lists of farmers chosen because they would be positive about conservation compliance, we received from nine counties lists containing at least one person whom our interviewers found to have died. The lists from 38 had one to five "operators" (out of 15 per county) who were retired and/or only the owners rather than operators. And from 17 counties came lists with one to six owners reporting their land was no longer being farmed.

A fifth indication was the absence of any phone number for a listed operator. The local offices knew that the survey would be conducted by telephone, and the forms provided to them specifically asked for phone numbers. But rather than stacking the deck with trustworthy clients who would say the right things to us and for whom we were given phone numbers, the offices in 23 counties sent us lists containing one to six cases (out of 15 per county) with no

number provided. This happened because the operators of the randomly selected tracts had no listed numbers or the office staff did not bother to find them.

In all, the lists for 88 of the 100 counties had one or more of these five indications of the lists not being stacked. The remaining 12 counties contributed a total of 133 respondents who reported having compliance plans. We do not believe that these farmers--seven to 13 per county--were deliberately listed because of their views about SCS or conservation compliance. In each of the 11 counties, interviewed farmers gave answers that were inappropriate to such a purpose. One of the questions asked of producers with plans was whether they had received technical assistance and, if so, how helpful was it. Another question asked if they thought "the USDA office that enforces conservation compliance in your county will be fair to producers who cannot apply practices successfully due to circumstances beyond their control." In all 12 counties at least one of the respondents with plans answered negatively either about SCS' technical assistance (it was "Not helpful at all" or was only "Slightly" helpful) or about the fairness of enforcement (the office was expected to be "Not at all fair" or only "Somewhat" fair). In eleven of the 12 counties, at least three respondents gave such answers.

As another way to test the hypothesis that the findings from this sample are more positive than they should be due to how the sampling was conducted, we compare findings from this survey to those of another for which the sampling was done differently. In the late winter and spring of 1992, we surveyed farmers about conservation compliance in six Midwestern counties, each of which is in a different state and five of which are in the Corn Belt (Esseks and Kraft, 1992). It was feasible for us to travel to the USDA field offices in those counties and personally draw the samples from their files. Three of the questions in that survey (which was funded by the Joyce Foundation) were identical in wording or virtually identical to questions that we asked in the 100-county survey later in the year. The first of these three questions dealt with whether farmers wished to change any of the conservation practices in their compliance plans. We found that across the five survey sites in the Corn Belt the average of respondents desiring such changes, 24% was actually lower than the corresponding percentage, 31%, for our 256 respondents in the larger survey who farmed in Corn Belt counties. Therefore, on this question the findings from the later study are less positive than those from the one where we personally drew the sample. For the two other questions being compared, the results were almost identical. Across the five sites an average of 44% of the farmers with plans said that most of their implementation effort would occur by 1992. The corresponding percentage from Corn Belt respondents in the larger study was 42%. In the five sites an average of 83% of the respondents with plans attributed at least a 50-50 chance to violations of conservation compliance being

detected. The comparable percentage for the bigger survey was 84%.

Therefore, both in these comparisons to a similar study and in our analyses of the lists sent to us from the 100 counties, we do not find evidence that the sample was stacked in favor of positive assessments of conservation compliance.

APPENDIX III

LOGISTIC REGRESSION RESULTS

Appendix III, Table 1: Explaining variation in the variable, EFFORT (whether producer reported most compliance effort by 1992)

Variable*	Its B Coefficient	Standard Error	Signif. Level	Exp(B) = Odds Ratio**
CLARIFY	-.5321	.1507	.0004	.5873
GAIN	.3790	.1534	.0135	1.4609
REMOVE	-.4646	.1594	.0036	.6284
SCSAID	.2937	.1454	.0434	1.3414
CATTLE	-.5606	.1711	.0011	.5708
TERRACES	.4131	.2218	.0625	1.5115
EROSION	.4358	.1605	.0066	1.5462
CORNBELT	-.5002	.1581	.0016	.6064
CONSTANT	.0122	.1768	.9450	

Number of cases = 885

Percentage of cases correctly classified = 59.3%

The odds that Y = 1 that are estimated by the base model*** = .129

***Variables defined** (includes variables in this appendix's tables 1 through 3):

AGE = producer's age

CATTLE = cattle production did/did not account for more than 50% of the farmers' 1991 gross sales.

CLARIFY = respondents did/did not want clarification as to the year when compliance practices should be applied.

CONTOUR = contour strip cropping or farming on the contours was/was not one of no more than a total of three practices found in respondent's compliance plan(s).

CORNBELT = producer was/was not from a Corn Belt state.

EFFORT = producer did/did not report that most of his compliance effort

Continued

Appendix III: Table 1. Continued

occurred by end of 1992.

EROSION = respondent did/did not believe that conservation compliance would reduce soil erosion in his county.

GAIN = respondent did/did not believe that applying compliance practices would increase his earnings above production costs.

LAKE = producer was/was not from a Lake State.

LOSE = respondent did/did not believe that applying compliance practices would decrease his earnings above production costs.

REMOVE = respondent did/did not want to remove or modify one or more practices from his compliance plan(s).

RESIDUE = a residue management practice was/was not one of no more than a total of three types of practices found in respondent's compliance plan(s).

ROTATION = a crop rotation practice was/was not one of no more than a total of three types of practices found in respondent's compliance plan(s).

SCSAID = respondent had/had not received technical assistance from SCS for applying compliance practices.

TERRACES = terracing was/was not one of no more than a total of three types of practices found in respondent's compliance plan(s).

WATERWAY = grassed waterways were/were not one of no more than a total of three types of practices found in respondent's compliance plan(s).

**Odds ratio = a measure of how much more or less likely it is that $Y = 1$ when the independent variable of interest (x_n) changes. More specifically, when x_n is increased by one unit and the equation's other independent variables are held constant, the change in Y is estimated by multiplying x_n 's odds ratio times the odds that $Y = 1$ before x_n was incremented. The latter we term the odds for the "base model" (see the explanation below).

***The base model we use is one that yields relatively low odds that $Y = 1$; that is, a model in which the regression equation's dichotomous variables are set at their levels less conducive to $Y = 1$ (e.g., if the sign for x_n is positive, x_n is set at 0) and where continuous variables are set at their quartile values that also are less conducive to $Y = 1$ (e.g., if the sign for x_n is positive, the 25th percentile value is used).

Appendix III, Table 2: Explaining variation in the variable, LOSE (whether producer expected to lose money because of conservation compliance)

Variable*	Its B Coefficient	Standard Error	Signif. Level	Exp(B) = Odds Ratio**
EFFORT	-.3907	.1707	.0221	.6766
SCSAID	-.4298	.1704	.0117	.6507
CONTOUR	.5046	.2476	.0415	1.6563
WATERWAY	-.6421	.2236	.0041	.5262
CATTLE	-.5893	.2261	.0092	.5547
LAKE	.6704	.2654	.0115	1.9550
CORNBELT	.4066	.1888	.0313	1.5462
CONSTANT	-.9072	.1758	.0000	

Number of cases = 885

Percentage of cases correctly classified = 79.0%

The odds that $Y = 1$ that are estimated by the base model*** = .052

*Variables defined (see list in this appendix's Table 1):

**Odds ratio = a measure of how much more or less likely it is that $Y = 1$ when the independent variable of interest (x_i) changes. More specifically, when x_i is increased by one unit and the equation's other independent variables are held constant, the change in Y is estimated by multiplying x_i 's odds ratio times the odds that $Y = 1$ before x_i was incremented. The latter we term the odds for the "base model" (see the explanation below).

***The base model we use is one that yields relatively low odds that $Y = 1$; that is, a model in which the regression equation's dichotomous variables are set at their levels less conducive to $Y = 1$ (e.g., if the sign for x_i is positive, x_i is set at 0) and where continuous variables are set at their quartile values that also are less conducive to $Y = 1$ (e.g., if the sign for x_i is positive, the 25th percentile value is used).

Appendix III, Table 3: Explaining variation in the variable, GAIN (whether producer expected to lose money because of conservation compliance)

Variable*	Its B Coefficient	Standard Error	Signif. Level	Exp(B) = Odds Ratio**
EFFORT	.4267	.1543	.0057	1.5322
CORNBELT	-.5867	.1783	.0010	.5562
LAKE	-.7770	.2710	.0041	.4598
CATTLE	.4132	.1783	.0205	1.5116
RESIDUE	-.7853	.1821	.0000	.4560
ROTATION	-.3553	.1775	.0453	.7010
WATERWAY	.4995	.1838	.0066	1.6480
AGE	.0144	.0061	.0192	1.0145
SCSAID	.7528	.1607	.0000	2.1229
CONSTANT	-1.7227	.3606	.0000	

Number of cases = 881

Percentage of cases correctly classified = 68.4%

The odds that $Y = 1$ that are estimated by the base model*** = .026

*Variables defined (see list in this appendix's Table 1):

**Odds ratio = a measure of how much more or less likely it is that $Y = 1$ when the independent variable of interest (x_i) changes. More specifically, when x_i is increased by one unit and the equation's other independent variables are held constant, the change in Y is estimated by multiplying x_i 's odds ratio times the odds that $Y = 1$ before x_i was incremented. The latter we term the odds for the "base model" (see the explanation below).

***The base model we use is one that yields relatively low odds that $Y = 1$; that is, a model in which the regression equation's dichotomous variables are set at their levels less conducive to $Y = 1$ (e.g., if the sign for x_i is positive, x_i is set at 0) and where continuous variables are set at their quartile values that also are less conducive to $Y = 1$ (e.g., if the sign for x_i is positive, the 25th percentile value is used).

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