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Agriculture, the Environment and Rural Sociology in the South

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AGRICULTURE, THE ENVIRONMENT AND RURAL SOCIOLOGY IN THE SOUTH

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ABSTRACT

Agricultural conservation research was revived by rural sociologists in the late 1970s and gained momentum during the 1980s. Most of this research was focused, however, on social and farm organizational factors affecting technology adoption and diffusion. Few studies included environmental factors such as soil characteristics, land physiography, and climate. This paper reviews rural sociologists' recent attention to environmental factors. Next, it describes the ecological and agricultural variation among production regions in the South and overviews Southern producers' participation in federal farm conservation programs. Finally, it prescribes three tasks for rural sociologists in the South to consider if they are to improve their participation in the agricultural conservation policy process.

INTRODUCTION

The past decade witnessed a rapid expansion of agricultural conservation and environmental policy in the United States. With increasing political pressure from environmental interest groups and public concern over the health risks from exposure to agrichemicals (Brown, 1988), Congress passed the Food Security Act in 1985 and the Food, Agriculture, Conservation, and Trade Act in 1990. Passage of these acts signaled a dramatic change in this nation's approach to resource conservation, environmental protection and the practice of agriculture. The 1985 Farm Act made receipt of most federal farm program benefits, such as commodity price supports, agricultural credit and crop insurance, contingent on producers' application of appropriate land and production

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management practices (SCWS, 1990). The 1990 Farm Act extended many of the provisions of the 1985 Farm Act, added new conservation programs and strengthened procedures for producer compliance with program guidelines. As a result of their implementation, these acts are changing programs and program priorities of governmental agricultural agencies, farm and ranch production practices, and effects of these practices on the environment. Moreover, they are creating opportunities for rural sociologists in the South to enhance their entrepreneurship in the areas of agricultural conservation policy and practice (Brooks, 1991).

Rural sociology has had a weak tradition in agricultural conservation research emphasizing socioeconomic and farm organizational factors (Field and Burch, 1988). A cursory examination of articles published in the journal *Rural Sociology*, for example, reveals that few studies prior to 1980 included environmental factors as causes or consequences of agricultural practices and farm organization. In the 1930s and 1940s, some attention was given to environmental factors such as soil erosion and conservation practices (Wilkening, 1988). However, the large majority of the studies conceptualized "rurality," described rural development and population change, produced spatial maps of rural social organization, and quantified rural-urban differences in human perceptions and values (Field and Burch, 1988; Buttel et al., 1987). While much of this activity has continued to date, a more vigorous environmental interest emerged in the late 1970s in studies of technology transfer (e.g., Pampel and van Es, 1977), land-use planning (e.g., LeVeen, 1979), and energy use in agriculture (e.g., Buttel and Larson, 1979).

This paper encourages rural sociologists to consider including environmental factors in their agricultural conservation research by first reviewing recent research attention to such factors. This review is followed by a description of the environmental and agricultural variation in the South to provide a context for discussing agricultural conservation programs and levels of participation by Southern producers. Finally, this paper identifies three tasks for rural sociologists in the South to address if they are to increase their participation in the agricultural conservation policy process.[1]

[1]I am not the first person to make this effort (e.g., Dunlap and Martin, 1983). Furthermore, this focus on agricultural conservation is not intended to suggest that rural sociological inquiry and practice be restricted to a sociology of agriculture (Albrecht and Murdock, 1990), a sociology of natural resources (Field and Burch, 1988), or an environmental sociology (Humphrey and Buttel, 1982).

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USHERING IN THE ENVIRONMENT

In the 1980s, rural sociologists made significant headway in addressing environmental issues in agriculture. Much of the conceptual foundation for investigating environmental factors was laid by Amos Hawley (1950, 1986) in his "new ecology." Hawley (1950) proposed a revisionary perspective of the human ecology developed by the Chicago School during the 1930s (Duncan and Schnore, 1959). In the POET ecological complex, Hawley (1950:17) divided the environment into organic (biotic) and inorganic (abiotic) elements (see Albrecht and Murdock, 1990, for a more detailed discussion of the history of human ecology). More recently, Hawley (1986) distinguished environmental elements according to their biophysical and ecumenic classes. The biophysical class includes physiographic features, soil characteristics, plant and animal life, minerals, climate and forms of these elements altered by people. The ecumenic environment comprises the social milieu and culture(s) possessed by people residing in a common community. It is the biophysical environment that most rural sociologists have neglected.[2]

Dunlap and Martin (1983) first called to attention the need to include the physical environment in rural sociological research. Coughenour (1984) continued their beckoning in his 1983 presidential address to the Rural Sociological Society. Despite the studies appearing in the early 1980s, he charged that research effort to include biophysical factors had been piecemeal and unsystematic. Coughenour (1984) gave two reasons for this neglect. Rural sociologists have ignored the process of commodity production through which environmental factors operate and we have neglected the effects of competition for resources on the organization of the production process. Coughenour (1984) then stressed the need to address the concept of "farming systems" by focusing attention on agricultural production at the farm level and including environmental variables.

Subsequently, several rural sociologists have investigated influences of biophysical variables in their empirical studies. For example, Ashby (1985) examined land physiography and soil degradation in a Colombian farming system. Nowak (1987) used erosion rates, land use intensity and corn suitability ratings in his study of the adoption of agricultural conservation

[2]As distinguished from an environment, an "ecosystem" is a territorially delineated system in which the interaction of population, environmental (biophysical and ecumenic) and technological factors serve to control the flow of materials energy, and information (Albrecht and Murdock, 1990).

practices. In addition, Albrecht (1990) included measures of farm location and saturated soil thickness to explain the adoption of different irrigation technologies. While this list is not exhaustive, such studies are few. Indeed, the use of biophysical variables in the study of agricultural production systems can be improved upon.[3]

AGRICULTURE IN THE SOUTH

Many rural sociologists are afforded this research opportunity by their academic residence in one of the most agriculturally diverse areas in the nation. An examination of land resource, production organization and technology factors illustrate this diversity. These factors are discussed in the context of four farm production regions in the South: Appalachia, the Southeast, the Delta states and the Southern Plains states (Figure 1).

Land Resources

As noted previously, rural sociologists have devoted much attention to soil conservation practices in adoption research. They have long recognized that soil quality and quantity influence how land will be used and managed. Within the United States, there are about 1.4 billion acres of non-federal rural land; the South has approximately 0.5 billion of these acres. the Soil Conservation Service (1961, 1982) has classified this land into eight categories on the basis of its crop production capability. Soils that fall into classes I through III are referred to as land suitable for cropland; soil in class IV is evaluated as marginal land; and soils in classes V through VIII are unsuitable for cultivation and have uses restricted to pasture, woodland or wildlife food and habitat (Albrecht and Murdock, 1990). As shown in Table 1, each production region in the South has a different distribution of land in these capability classes affecting the structure and extent of production agriculture. Appalachia and the Southern Plains have the largest proportion of land unsuitable for cultivation, while the Delta has the largest proportion of land most suitable for cropping.

[3]Environmental factors have appeared in two other "mainstreams" of rural sociological research in addition to the sociology of agriculture. Natural resources studies focused on forestland, wildlife and recreational issues (see Field and Burch, 1988 for overview). In addition, Western energy boomtown studies were a precursor for advancements made in social impact assessment (Murdock, 1979; Buttel et al., 1987).

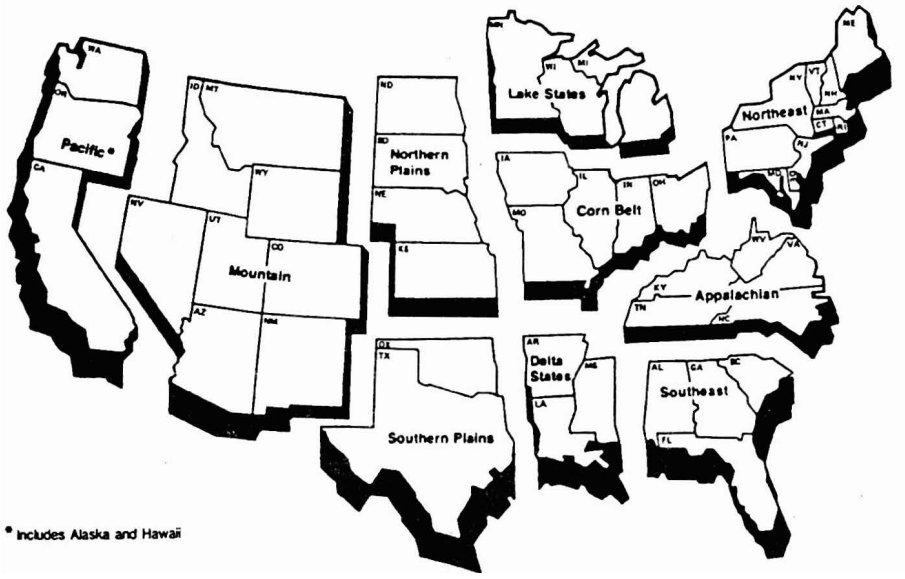

Figure 1. USDA Production Regions

Table 1. Percentages of Nonfederal Rural Land in Soil Capability Classes in the South

Production Regions	Soil Capability Classes		
	I-III (Suitable)	IV (Marginal)	V-VIII (Unsuitable)
Appalachia	43	13	44
Southeast	45	23	32
Delta	55	11	34
Southern Plains	44	13	43

Source: Soil Conservation Service, 1961, 1982.

Table 2. Nonfederal Rural Land Cover in the South: 1987

Production Regions	Land Cover (millions of acres)					
	Total*	Crop	Pasture	Range	Forest	Other
Appalachia	106.8	22.5	18.2	0.0	62.3	3.9
Southeast	105.3	17.5	12.0	3.7	66.0	6.1
Delta	80.6	21.7	11.9	0.4	42.4	4.1
Southern Plains	197.5	43.5	25.3	109.8	16.0	2.9
SOUTH	490.2	105.2	67.4	113.8	186.7	17.0
ELSEWHERE	916.6	317.2	61.6	287.9	207.2	42.8

Source: Soil Conservation Service, 1989. * Rounding error

Table 3. Number of Farms and Acreage in the South, 1982 and 1987

Production Regions	No. of Farms (thousands)		Farm Acres (millions)		Average Acres Per Farm	
	1982	1987	1982	1987	1982	1987
Appalachia	337	293	50.0	47.2	148	161
Southeast	159	144	40.9	35.8	257	249
Delta	125	109	36.0	33.1	288	304
Southern Plains	258	259	163.7	162.0	634	611
SOUTH	879	805	290.6	278.1	331	345
ELSEWHERE	1,362	1,283	696.2	689.4	510	535

Source: U.S. Bureau of the Census, 1984, 1989.

Organization of Farm Production

Production organization factors include the types of cover on non-federal rural lands, number of farms, numbers of total farm and harvested acres, and levels of crop and livestock income. In Table 2, note the variation in land cover among production regions in the South. Relative to other areas in the United States, the South has proportionately less cropland and rangeland, and more pasture and forest land. In 1987, 21 percent of the non-federal, rural land in the South was planted in crops, 37 percent was pasture and range, and 38 percent forests. Appalachia, the Southeast and the Delta had one-half of their rural land acres in forest; these regions contained few acres of range. In comparison, the Southern Plains had slightly more than one-half (56 percent) of its rural land acres in range and eight percent in forest. About 20 to 25 percent of the rural land in each Southern production region was planted in crops in 1987.

Since 1982, the numbers of farms and farm acres have declined slightly, principally as a result of the agricultural financial crisis during the mid-1980s (Petrulis et al., 1987). In 1987, 2.1 million farms in the United States accounted for 967 million acres (Table 3). Thirty-eight percent were located in the South on 278 million acres (29 percent of the U.S. total). Appalachia and the Southern Plains had the most farms; however, Appalachia had the smallest average number of acres per farm and the Southern Plains had the largest average farm size among all Southern regions. It is also worth noting that 58 percent of the 1987 farm acreage in the South was located in the Southern Plains; much of this acreage was rangeland located in the western areas of this region.

While there has been little change in farm number and size, the number of harvested acres has changed significantly during the 1980s (Table 4). At the beginning of the decade, producers harvested 350 million acres nationally; 91 million acres were harvested in the South. By 1987, producers in the South and elsewhere harvested approximately 25 percent fewer acres. The largest percentage decline (42 percent) was experienced in the Southeast compared to other Southern regions. Much of this decline was caused by the farm crisis, bad weather effects on crops and hay, and changes in farm policy.

The reduction in harvested acres thereby accompanied slight shifts from crop-based to livestock-based income (Table 5). Crop-based income declined almost 15 percent nationally and 22 percent in the South from 1982 to 1987. Livestock-based income, on the other hand, increased eight percent nationally and 16 percent in the South. In 1982, the South accounted for 30 percent of the total crop-based income and 28 percent

Table 4. Acres Harvested in the South: 1982 and 1987

Production Regions	1982 (millions)	1987 (millions)	Percent change
Appalachia	21.2	17.1	-19.3
Southeast	15.3	8.9	-41.8
Delta	21.5	16.0	-25.6
Southern Plains	32.9	24.6	-25.2
SOUTH	90.9	66.6	-26.7
ELSEWHERE	258.7	223.0	-13.8

Source: U.S. Bureau of the Census, 1984, 1989.

Table 5. Crop and Livestock Income in the South: 1982 and 1987

Production Regions	Crops (millions of dollars) 1982	1987	Livestock (millions of dollars) 1982	1987
Appalachia	5,994	4,016	4,933	6,177
Southeast	6,580	6,779	4,216	4,882
Delta	4,534	3,022	2,993	3,636
Southern Plains	5,338	3,718	7,511	8,158
SOUTH	22,446	17,535	19,653	22,853
ELSEWHERE	52,177	46,216	50,486	52,864

Source: U.S. Bureau of the Census, 1984, 1989.

of total livestock-based income. In 1987, these percentages were reversed. The Southeast was the only Southern region to increase both crop and livestock-based income. It led other Southern regions in crop-based income, but trailed the Southern Plains and Appalachia in livestock-based income.

Organization of Farm Production

Finally, Southern production regions have varied according to technological inputs such as fertilizer, pesticide and irrigation. These inputs have been at the center of the environmental debate (Humphrey and Buttel, 1982; ReVelle and ReVelle, 1988). About 27 percent of the 225 million acres treated with fertilizer was located in the South in the early 1980s (Table 6). By 1987, the total number of acres treated with fertilizers declined 6 percent nationally and 13 percent in the South. Much of this decline was unequally distributed among Southern production regions and contrasted increases in the proportion of fertilized acres to harvested acres during the decade. The South increased its percentage of treated acres to harvested acres from 68 percent in 1982 to 81 percent in 1987.

Table 6: Fertilizer Use on Farms in the South: 1982 and 1987

Production Regions	Applied Fertilizer (millions of acres) 1982	1987	Percent Change	Percentage of Total Harvested Acres 1982	1987
Appalachia	13.9	12.6	-9.3	65.6	73.7
Southeast	13.0	10.1	-22.3	85.0	113.5*
Delta	12.3	10.3	-16.3	39.0	64.4
Southern Plains	22.1	20.8	-5.9	67.2	84.6
SOUTH	61.4	53.7	-12.5	67.5	80.6
ELSEWHERE	163.3	157.4	-3.6	63.1	70.6

* Florida Producers applied fertilizer to more acres than were actually harvested in 1987.
Source: U.S. Bureau of the Census, 1989.

Table 7: Insecticide Use on Farms in the South: 1982 and 1987

Production Regions	Applied Insecticide (millions of acres) 1982	1987	Percent Change	Percentage of Total Harvested Acres 1982	1987
Appalachia	3.6	4.7	30.6	17.0	27.5
Southeast	5.6	4.1	-26.8	36.6	46.1
Delta	5.9	4.4	-25.4	27.4	27.5
Southern Plains	8.1	7.4	-8.6	24.6	30.1
SOUTH	23.2	20.6	-11.2	25.5	30.9
ELSEWHERE	49.6	48.2	-2.8	19.2	21.6

Source: U.S. Bureau of the Census, 1987.

Table 8: Herbicide Use on Farms in the South: 1982 and 1987

Production Regions	Applied Herbicide (millions of acres) 1982	1987	Percent Change	Percentage of Total Harvested Acres 1982	1987
Appalachia	8.0	6.6	-17.5	37.7	38.6
Southeast	7.4	5.7	-23.0	48.4	64.0
Delta	12.1	9.8	-19.0	52.3	61.2
Southern Plains	12.5	14.6	16.8	38.0	59.3
SOUTH	40.0	36.8	-8.0	44.0	55.2
ELSEWHERE	136.9	134.5	-1.8	52.9	60.3

Source: U.S. Bureau of the Census, 1989.

A similar pattern of use occurred for insecticides and herbicides. The number of acres treated with insecticides declined 6 percent in the nation and almost twice that much (11 percent) in the South (Table 7). The decline was smallest in the Southern Plains, where producers treated the most acres. Meanwhile, the percentage of insecticide-treated acres to harvested acres increased to 31 percent in the South compared with 22 percent elsewhere in the nation.

U.S. producers treated more acres with herbicides than pesticides during the 1980s (Table 8). Producers in the South accounted for one in five herbicide-treated acres. The number of acres treated with herbicides decreased during the 1980s in all Southern regions except the Southern Plains. Southern Plains producers applied herbicides to 40 percent of the farm acres in the South. As observed for the other agrichemicals, the percentage of herbicide-treated to harvested acres increased in all Southern regions from 1982 to 1987.

Producers who irrigate their crops generally use more agrichemicals than producers who farm dryland. Irrigated fields attract more insects and increase weed problems. In 1982, 49 million acres, or 19 percent of all harvested acres in the United States, were irrigated (Table 9). Almost one in four irrigated acres were located in the South, mainly in the Southern Plains region. By 1987, the number of irrigated acres declined slightly in the Southern Plains and elsewhere in the nation. Other regions in the South had small increases in the (absolute) number of irrigated acres. All regions had greater percentages of irrigated acres to harvested acres in 1987 than 1982.

AGRICULTURAL CONSERVATION PROGRAMS

This glimpse of Southern agriculture indicates that ecological and farming conditions vary greatly. This variation may also indicate differences in producers' participation in federal farm programs and their conservation practices. Commodity programs such as feed grain, wheat, rice, cotton and wool account for most of the federal government's payments to producers. At the beginning of the decade, commodity and other farm program payments to producers totaled $3.5 billion nationally (Table 10). Slightly more than a third (35 percent) was paid to producers in the South. By mid-decade, program funds for the nation more than doubled and they doubled again in 1987. About one-fifth of all program payments went to Southern producers in 1982. By the end of the decade, the South received $3.3 billion dollars, or 30 percent of the total national outlay.

Production regions in the South have shared unequally in the receipt

Table 9: Number of Irrigated Acres Among Total Harvested Acres on Farms in the South: 1982 and 1987

Production Regions	Applied Irrigation (millions of acres) 1982	1987	Percent Change	Percentage of Total Harvested Acres 1982	1987
Appalachia	0.2	0.3	50.0	0.9	1.8
Southeast	2.3	2.4	4.3	15.0	27.0
Delta	3.1	3.7	19.4	14.4	23.1
Southern Plains	6.1	4.8	-21.3	18.5	19.5
SOUTH	11.7	11.2	-4.3	12.9	16.8
ELSEWHERE	37.3	35.2	-5.6	14.4	15.8

Source: U.S. Bureau of the Census, 1989.

Table 10: U.S. Farm Program Payments to Southern Producers: 1982 to 1989

Production Regions	Farm Program Payments (millions of dollars) 1982	1985	1987	1989
Appalachia	67.4	296.9	623.0	404.0
Southeast	85.4	222.2	527.0	405.0
Delta	306.4	495.5	909.5	1,015.0
Southern Plains	771.3	1,091.8	1,803.9	1,484.0
SOUTH	1,230.5	2,106.4	3,863.4	3,308.0
ELSEWHERE	2,261.4	6,324.0	12,883.3	7,579.0

Source: Economic Research Service, 1989, 1991.

Table 11: Percentage of Conservation Payments to U.S. Farm Program Payments: 1982 to 1989

	Percentage of U.S. Farm Program Payments			
Production Regions	1982	1985	1987	1989
Appalachia	20.9	5.6	12.8	18.6
Southeast	17.2	6.5	12.0	21.2
Delta	3.4	2.2	4.7	5.8
Southern Plains	3.3	2.4	9.5	15.6
SOUTH	5.2	3.2	9.3	13.6
ELSEWHERE	5.0	2.0	9.1	17.4

Source: Economic Research Service, 1989, 1991.

of farm program payments during the decade. Producers in the Southern Plains and Delta states have accounted for 70 to 87 percent of the payments to the South. Delta producers have steadily increased their share relative to other regions. However, the lion's share of payments still goes to producers in the Southern Plains states who operate more than one-half of the farm acreage in the South. Appalachian producers have received the fewest program funds.

The proportion of conservation program receipts to total farm program receipts increased significantly during the past decade (Table 11). In 1982 the United States Department of Agriculture paid $178.6 million in conservation programs such the Agricultural Conservation Program, the Emergency Conservation Program, the Great Plains Program and the Appalachian Land Stabilization and Conservation Program. The South received $64.4 million, 36 percent of all conservation funds, in 1982. However, these dollars as a proportion of total farm program receipts varied among the production regions. For example, while the Southern Plains received the most conservation funds (i.e., $25.1 million) in 1982, conservation funds were only 5.2 percent of its total farm program receipts. Appalachia and the Southeast received slightly more than $4.1 million each, nearly one-fifth of their total farm program receipts. Such differences show the importance of participation in agricultural conservation programs relative to each production region.

Passage of the 1985 Farm Act made a significant change in

agriculture's commitment to controlling impacts on the environment. Congress authorized four conservation provisions (Ayer and Abdalla, 1990). The Swampbuster provision prohibited the conversion (i.e., drainage and cultivation) of wetlands to cropland. The Sodbuster provision restricted producers from plowing fragile grassland that had not been cultivated between 1981 and 1985. These two cross-compliance provisions made receipt of farm program benefits (a maximum of $50,000 for commodity price support payments) contingent on producers applying for conservation plans by Jan. 1, 1989, and their implementation of these plans by Jan. 1, 1995. The Conservation Compliance provision was aimed specifically at reducing the number of highly erodible acres. It, too, required farmers to prepare (by Dec. 31, 1989) and implement (by 1995) conservation plans in order them to receive farm program benefits.

The fourth provision of the 1985 Farm Act established the Conservation Reserve Program. It gave producers an incentive to retire highly erodible cropland and other fragile land from production for a period of 10 years. It was authorized by the Congress to withdraw up to 45 million acres by 1995. Participation by producers required that a vegetative cover be planted and maintained on program acres. The federal government would share up to 50 percent of the cost to plant a cover.

Since passage of the 1985 Farm Act, annual conservation program payments have increased to more than $1 billion. The proportion of these funds to total farm program payments also increased substantially in most of the South and elsewhere. In 1989, conservation program payments were $1.7 billion, or 16.3 percent of total farm program payments. Southern producers received $451 million, which represented 34 percent of the U.S. Department of Agriculture's outlay on farm programs and 14 percent of the producers' total farm program receipts. Payments continued during the decade to be distributed unequally among Southern production regions. For example, the Southern Plains states accounted for 51 percent of the agricultural conservation dollars in the South, compared with 13 percent by the Delta.

The Conservation Reserve Program is one of the most successful programs of the 1985 Farm Act. By 1988, the Soil Conservation Service had determined that 100 million acres in the United States were highly erodible. After ten sign-up periods, the Conservation Reserve Program includes 341,993 producers and operators and 34.4 million acres (Table 12).[4] The South has 102,813 participants and 8.9 million acres enrolled

[4]The eleventh sign-up was conducted from July 8 to July 19, 1991 for the Conservation Reserve Program; data currently are unavailable for this sign-up.

Table 12: Conservation Reserve Program: December, 1991

Production Region	Number of Contracts (thousands)	Acres Contracted (thousands)	Average Rental Rate/Acre	Total Annual Rental Payment (millions)
Appalachia	26.7	1,079.8	$52	$ 58.1
Southeast	32.1	1,603.9	$42	$ 68.4
Delta	17.1	1,132.1	$45	$ 49.7
Southern Plains	26.9	5,121.5	$41	$ 205.8
SOUTH	102.8	8,937.5	$46	$ 382.1
ELSEWHERE	239.2	25,460.2	$49	$1,303.2

Source: Agricultural Stabilization and Conservation Service, 1991.

in the program. Average rental rates per acre vary from $41 to $51 dollars in the South compared with an average of $49 elsewhere in the nation. Annual rental payments to Southern producers totaled $382 million in 1991 compared with $1.3 billion to producers elsewhere. About 78 percent of all program participants have completed conservation plans (Ayer and Abdalla, 1990).[5]

[5]Two national surveys of participants in the Conservation Reserve Program have been conducted. The survey by Guither et al. (1989) was stratified by state (n=21) and produced 12,717 respondents (a 40.6 percent response rate). Seven states were in the South (Ala., Ark., Fla., Miss., Okla., S.C., and Texas) and had 3,598 survey respondents. The study by Nowak et al. (1990) used a randomly selected sample that resulted in 2,016 respondents (a 74 percent response rate). According to these studies of program participants in the Conservation Reserve Program (see also Kairumba and Wheelock, 1990), a majority of respondents supported the program (60 percent) and were satisfied with their decision to participate (55 percent). About one of four participants would eliminate the Conservation Reserve Program. Participants in the North Central and Western states favored expanding the number of acres to 45 million, while those in the South and Northeast favored keeping reserve acreage around 30 million (Guither et al., 1989). Younger program participants who operated larger than average farms and participants who ran specialized operations (e.g., dairy, livestock and cash grains) were more dissatified with their participation than non-participants (Nowak and Schnepf, 1990). Thus far, the Conservation Reserve Program has reduced annual soil erosion by 663.5 million tons nationally and 238.4 million tons in the South (Agricultural Stabilization and Conservation Service, 1991).

The 1990 Farm Act expanded the conservation provisions of the 1985 Farm Act by providing four new programs. The Environmental Conservation Acreage Reserve Program includes the Conservation Reserve Program, which expanded eligibility to cropland contributing to water-related problems and allowed for the establishment of shelterbelts, filterstrips and windbreaks devoted to trees, shrubs and wildlife habitat. The Environmental Conservation Acreage Reserve Program also includes the Wetland Reserve Program, which was designed to restore and protect one million acres of farmed and converted wetlands by 1995. Producers can contract to provide permanent easements, 30-year easements, or easements for the maximum time periods allowed by state law. Half to all restoration costs are shared by the U.S. Department of Agriculture, depending on the contracted easement period. Congress did not appropriate funds in 1990 to implement the Wetland Reserve Program; however, it did appropriate $43.4 million to enroll 50,000 acres in five unspecified states during 1992 (Lippke, 1991).

The Water Quality Incentive Program was designed to promote the safe and efficient use of agrichemicals and animal wastes. It will enroll 10 million acres under water protection plans by 1995. Plans will remain in effect for three to five years with the U.S. Department of Agriculture compensating up to $3,500 annually per contract and an additional $1,500 for cost-sharing on the wetland and wildlife habitat option. Producers will retain their commodity acreage bases and farm program yields at the end of the plan period. The Water Quality Incentive Program received no Congressional funds in 1990, but will receive $6.75 million dollars for 1992. The program will be administered through the Agricultural Conservation Program, which is an ongoing program conducted by the Agricultural Stabilization and Conservation Service (Lippke, 1991).[6]

The Environmental Easement Program will establish easements on cropland that contains riparian corridors, critical habitat areas for threatened and endangered species, nontree-planted land in the

[6]In addition to the Agricultural Conservation Program which was implemented in 1936, the Emergency Conservation Program (in 1978) and the Forestry Incentives Program (in 1978) are ongoing programs in the U.S. Department of Agriculture that provide limited funds. Other provisions of the 1990 Farm Act that have environmental implications include Feed Grains (Title IV, improves water quality and wildlife habitat), the Forest Stewardship Act (Title XII, improves conservation practices, wildlife habitat and resource management on private forest lands), Agriculture Trade (Title XV, swaps food aid debt for conservation of natural resources), and Global Climate Change Prevention Act (Title XXIV, provides research studies and demonstration projects on the effects of global climate change on agriculture, rangeland and forestry; biomass energy generation; and improved international cooperation to protect tropical rain forests and promote sustainable agriculture).

Conservation Reserve Program, and other environmentally sensitive areas. Producers and other landowners must complete a conservation plan and cannot produce any commodity on easements acres except for the benefit of wildlife. This program will not be implemented until 1993 since no Congressional funds have been appropriated.

The last of the new conservation programs, the Integrated Farm Management Program Option, requires that producers devote 20 percent of their crop acreage base to the production of resource-conserving crops such as legumes and legume-grass and small grain mixtures. Experimental and industrial crops that conserve soil or water and that are grown in arid and semi-arid areas are also applicable. Plans can be implemented for three-year to five-year periods and can be extended five more years. No crop acreage base will be lost or gained in this program and there is a maximum enrollment limit of five million acres nationwide. Producers must develop management plans with the Soil Conservation Service and then file plans with their local office of the Agricultural Stabilization and Conservation Service during announced sign-up periods (Lippke, 1991).

The mitigation of environmental impacts has become and may continue to be an important part of sustainable agriculture. Changes in Southern agriculture were evident during the late 1980s and may continue as additional conservation programs in the 1990 Farm Act are implemented. What, then, can rural sociologists do to enhance their science and practice in this context of change?

TASKS AHEAD FOR RURAL SOCIOLOGISTS

Rural sociologists have at least three tasks ahead if they are to participate in agricultural conservation policy process. First, they need to reconceptualize agriculture and modify their analytical models (Milbrath, 1990). The concept of sustainable agriculture is politically popular. Sustainable agriculture embraces more than technology transfer and the economic viability of farms and markets in the South. Four aspects of agricultural sustainability have been proposed (Lowrance et al., 1986). "Agronomic sustainability" is the ability of a tract of land to maintain acceptable levels of production over a long period of time. This is a continuation of past yield-oriented approaches updated to reflect current concern for the impacts of agrichemicals and intensive production practices on soil quality. "Microeconomic sustainability" is the ability of a producer to stay in business by improving profitability and efficient use of production inputs. "Macroeconomic sustainability" involves monetary and fiscal policy at national and international levels, particularly policies set forth in the Farm Acts and international trade agreements. Finally,

"ecological sustainability" is the conservation of biophysical features of ecosystems impacted by Southern agriculture. This form of sustainability minimizes production impacts on wildlife, wildlife habitats and human safety. Moreover, sustainable agriculture also includes "social sustainability." Although mainstream agricultural scientists generally have neglected this form of sustainability (Dahlberg, 1986), rural sociologists have long recognized that structure and change of agricultural systems affect rural community organization, quality of life and individuals' lifestyles. As rural sociologists scrutinize these aspects of agricultural sustainability, they should consider how to integrate each into analytical models, particularly keeping in mind the growing importance of conservation practices and diversity of biophysical conditions throughout Southern farm production regions (Friedland, 1991; Coughenour, 1984).

Next, the research funding climate in agriculture increasingly is becoming tied to interdisciplinary efforts that address different aspects of resource policy issues. Rural sociologists need to expand their involvement in agricultural interdisciplinary research to improve competitiveness for research funds. In 1985, Preston La Ferney commented before Southern Rural Sociological Association that rural sociologists operate as "a group unto themselves [sic]. There is attention given in the Journal [*Rural Sociology*] and elsewhere to team efforts, interdisciplinary efforts and the like, but even a cursory examination of published products of the profession reveals a preponderance of one-discipline output (1985:6)."

Rural sociologists have not changed many of their research and publishing habits since LeFerney's comments (see also Coughenour, 1984). Heberlein (1988) correctly attributes much of this relunctance to participate in interdisciplinary work to professional punishments (e.g. inadequate reward structures and increased time and effort to conduct such work) and inadequate institutional support (e.g., unconducive structural organization of institutions for integrating the sciences, difficulty recruiting and training students, and few interdisciplinary journals). However, recent agricultural research programs such as the National Research Initiative and growing interest to create more interdisciplinary academic and research settings in land-grant universities (Wheeler, 1992) portend change in conditions external to rural sociology.

Finally, rural sociologists need to develop image enhancing strategies for their discipline. Some of this effort can occur with more interdisciplinary research collaboration and more participation in multidisciplinary conferences such as this annual meeting of the Southern Association of Agricultural Scientists. Also, rural sociologists can follow Brooks' (1991) suggestion to create a greater sense of entrepreneurship.

This sense was reiterated by Falk (1991) at the annual meeting of the American Sociological Association. Although he spoke in terms of what department heads and chairs in sociology could do within universities, many of his suggestions are equally applicable to rural sociologists and what they can do individually and collectively. Essentially, Falk proposed that (rural) sociologists should view their discipline as a commodity and he enumerated several ways to market and strengthen (rural) sociology's position within the university that are equally applicable to government agricultural agencies. Two of his suggestions are especially relevant: increase visibility by highlighting achievements within and outside the university, and demonstrate more productivity for each dollar invested in academic, research and service programs.

Numerous socio-political factors have affected and will continue to affect agricultural conservation policies and programs. As these policies and programs change, so will agriculture and its impacts on rural communities, consumers and the environment in the South (Friedland, 1992). Rural sociologists should use these circumstances of change to challenge traditional paradigms, intensify their environmental interests, enhance the discipline's stature and increase participation in the agricultural conservation policy process.

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