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## South Dakota's Sustainable Agriculture Farmers

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# Economics Newsletter



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## South Dakota's Sustainable Agriculture Farmers\*

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South Dakota State University has been undertaking research on "sustainable" (also generally termed "regenerative", "alternative", or "low chemical input") agriculture since 1984. A primary focus of this research to date has been a comparative evaluation of sustainable and conventional crop rotation systems at the University's Northeast Research Station near Watertown. Selected results from this research have been reported in Econ N/L 254 (Sept 7, 1987) and a variety of other publications. The research trials and associated agronomic and economic evaluations at the Northwest Station will continue.

Another, more recent, focus of the University's research on sustainable agriculture is on the farms of those in South Dakota who are following regenerative agriculture practices in commercial farm production. This newsletter provides a report of preliminary findings from 32 South Dakota sustainable agriculture farmers who responded to a recent mail survey (about a 50% response rate). The mail survey was directed toward S.D. farmers believed to be following regenerative farming practices--on the basis of information from the Northern Plains Sustainable Agriculture Society, extension agents, and other local informants. A more detailed report of the survey findings is being prepared, and will be available this winter.

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## Regenerative agriculture survey respondents

Sixteen of the survey respondents are from the southeastern part of the state, 11 are from the northeast, and 5 are from along and west of the Missouri River (Figure 1). The most common cropland area operated by the individual surveyed farmers in 1988 ranges from 350 to 1,000 acres. The farms are highly diversified, with the major enterprises being beef cows, soybeans, corn, and wheat. Twenty eight of the 32 surveyed farmers raise livestock commercially.

The survey respondents range in age from 27 to 72 years, and average 44 years. Table 1 contains a comparison of the age distribution of the survey respondents with the age distribution for all South Dakota farmers, as reported in the 1982 Census of Agriculture. There is a strong concentration of regenerative agriculture farmers in the 35-44 age range (45% of them), compared with only 17% for all farmers in the state.

Table 1. Age of farm operator, regenerative agriculture survey respondents in 1988 versus all South Dakota farmers in 1982.

Age range for farm operators (years)	Age distributions (%)	
	Regenerative agriculture farmers	All farmers
Less than 35	19.3	22.3
35-44	45.2	16.7
45-54	16.1	21.7
55 and more	19.4	39.3

The 32 survey respondents have followed regenerative agriculture farming practices for an average of 14 years. About 70% have had between 5 and 19 years of experience with regenerative practices, and 5 farmers have had 20 or more years of regenerative farming experience (Table 2), including one who has farmed regeneratively for 42 years. Thus, the vast majority of survey respondents are "seasoned veterans"

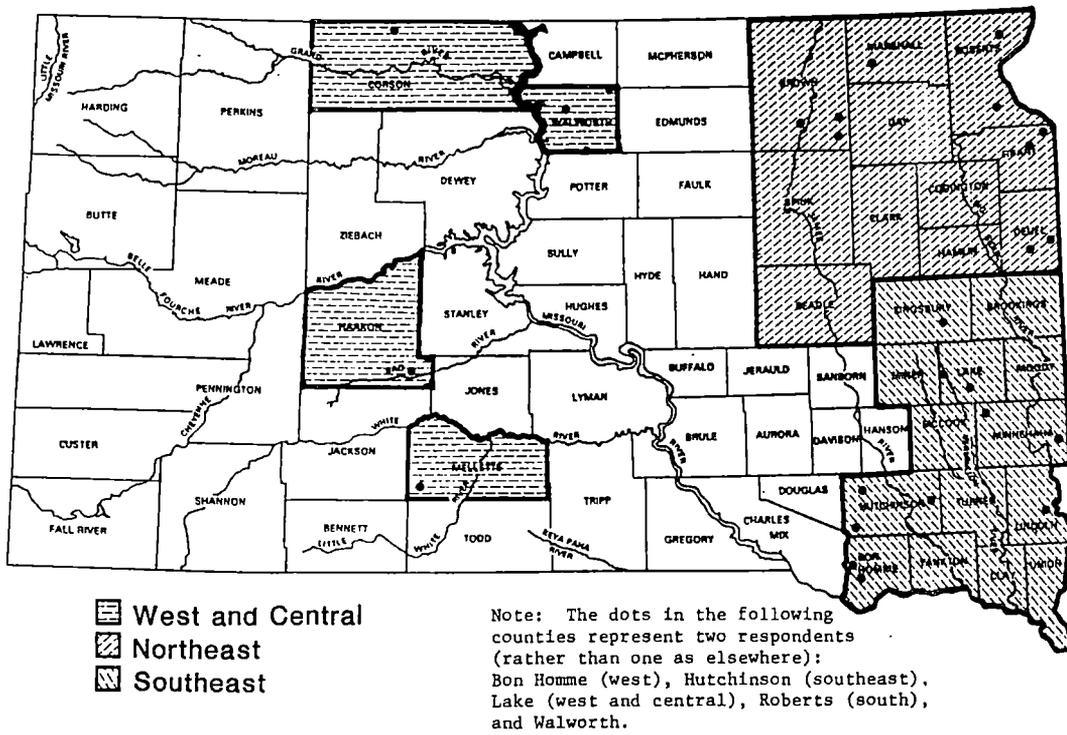


Figure 1. Location of 1988 South Dakota regenerative agriculture survey respondents, by region.

of sustainable agriculture.

Table 2. Length of experience with regenerative agriculture, survey respondents.

Range in years of experience	Survey respondents	
	Number	Percent
0-4	4	13.4
5-9	7	23.3
10-14	7	23.3
15-19	7	23.3
20 and more	5	16.7

One-half of the survey respondents switched to regenerative farming after starting to operate their present farm. Ten percent of them started to farm regeneratively when they started to operate their present farm, and the other 40% were farming regeneratively before they started to operate their present farm.

Respondents were asked to rate the relative importance of 10 suggested possible reasons for their now farming regeneratively. They registered their ratings on a scale of 0 to 5, where 0 meant not at all important and 5 meant very important. Within the 10 possible reasons, the following four were rated as most

important:

- To be a good steward of the soil;
- To reduce pollution of ground and surface water supplies;
- To raise a residue-free, high quality product; and
- To reduce possible harmful effects of farm chemicals on the health of the farmer and his/her family.

A second level of importance was ascribed to the following six reasons:

- To reduce direct cash costs of farm production;
- To reduce harmful chemical effects on livestock;
- To follow religious or philosophical beliefs;
- To reduce energy use in farm production;
- To reduce the economic risk resulting from low rainfall; and
- To overcome the ineffectiveness of plant protection chemicals.

Regenerative farming practices

The average number of farm commodities produced regeneratively per respondent is five. All 32 farmers raise at least one grain and/or forage regeneratively; 25

raise at least one livestock enterprise regeneratively (i.e., without either feed antibiotics or growth stimulants); six raise at least one vegetable and/or specialty crop regeneratively. Over one-half of the survey respondents report using regenerative practices in the production of beef cattle, corn, alfalfa, wheat, and oats (Table 3). Soybeans and millet are the next most common regeneratively produced commodities.

Table 3. Incidence of commodities produced under regenerative practices by survey respondents.

Commodities*	Percent of respondents	Commodities	Percent of respondents
Beef, cattle, corn, alfalfa, wheat, & oats	50-60	Horses, poultry, buckwheat, flax, red clover,	
Soybeans	40-49	sunflowers,	
Millet	30-39	sheep, & hay	5-9
Barley, rye, hogs	10-19		

\*Within each commodity grouping, the commodities are listed sequentially according to their individual relative incidence. In addition to the commodities shown in the table, ten different farmers reported producing ten other commodities regeneratively.

Fifty five percent of the respondents reported using zero levels of all synthetic chemical inputs--fertilizers, pesticides, and/or livestock feed additives and growth stimulants--on all their farm enterprises. The other 45% reported using moderate amounts of one or more synthetic inputs on one or more of their farm enterprises. The most common moderately used synthetic chemical input is herbicides (36% of the survey respondents), with limited applications to particularly weed-prone fields or portions of fields. The regenerative farmers view legume crops as their overall most important source of nitrogen for regenerative crop production, followed by crop residues and non-composted livestock manure.

In addition to limiting synthetic chemical input use, all survey respondents report using special regenerative weed control practices (Table 4). Crop rotations

represent the most important means of controlling weeds. The second most important group of special regenerative weed control practices includes using only certified and/or "clean" seed, adjusting crop planting dates, selecting weed competitive crops, and cultivating and harrowing more frequently.

Table 4. General types of regenerative farming practices, survey respondents.\*

Type of Practice	Followers of practice	
	Number	Percent
Special weed control	32	100.0
Crop rotations	31	96.9
Special insect and disease control	29	90.6
Tillage and residue management	24	75.0
Grain drying and/or storage	18	56.3
Other	16	50.0

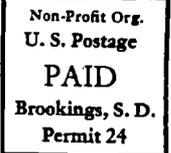
\*These are regenerative farming practices other than those that involve synthetic chemical inputs.

All except one of the survey respondents consider the use of crop rotations as a main regenerative farming practice (Table 4). For the 32 surveyed farmers as a group, small grains are the most common component of crop rotations. Row crops (mainly corn and soybeans) and legume forages are also prominent in eastern South Dakota crop rotation patterns, especially in the southeast. Each of the reported crop rotations in the sampled counties in western South Dakota involves summer fallowing; less than one-half of those in the western part of the state involve legume forages and only one of the 9 reported rotations involves a row crop.

#### Survey respondents' evaluation of regenerative farming

Fifty seven percent of the surveyed farmers consider crop yields to be higher with conventional than with regenerative farming practices. Of the remainder, about equal numbers (1) consider conventional and

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## Economics Newsletter

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regenerative yields to be about the same, (2) consider regenerative yields to be higher, and (5) are unsure about yield differences.

Two-thirds of the surveyed farmers, on the other hand, consider regenerative farming to be more profitable than conventional farming. Most cite considerably lower out-of-pocket costs of production as the primary reason. Some indicate improved market prices for regeneratively raised commodities and reduced production and price risks as additional economic benefits of regenerative farming.

Respondents were asked to rate the relative importance of 15 suggested possible continuing problems with regenerative agriculture on the same 0 to 5 scale as described earlier in this newsletter. The two most important problems identified by respondents are (1) difficulties in finding organic market outlets and (2) a lack of up-to-date and accurate information on regenerative agriculture. At the other extreme, the least important problems with regenerative agriculture involve insect and disease control.

One striking feature of the responses to the possible-problems-with-regenerative-agriculture questions is the wide range of views among respondents on the relative importance of individual possible problems.

Four or more farmers indicated a 0 rating for each possible problem. At the other extreme, one or more farmers indicated a 5 (very important) rating for each possible problem except three. This outcome reflects a certain degree of uniqueness among respondents in their respective production environments, managerial practices, and problem perceptions. Forums at which different regenerative farmers could share their individual experiences with and reactions to low chemical input agriculture could shed light on the particulars of these unique situations. Such forums could be instructive for the individual farmer participants and for others interested in learning more about regenerative agriculture.

### Future on-farm research

SDSU plans to continue its research with farmers who are engaging in sustainable practices. Efforts in the winter of 1989 will involve on-farm interviews with approximately two dozen such farmers, to obtain more detailed insights on their practices and the costs and returns associated with regenerative practices.

If you would like to be placed on a mailing list for reports on sustainable agriculture published by SDSU, please send your name and address to one of the authors of this Newsletter (& SDSU Econ Dept, Box 504A, Brookings, SD, 57007).