THE STRUCTURE OF SOUTH DAKOTA AGRICULTURE: CHANGES AND PROJECTIONS

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TO THE READER:

Agriculture in South Dakota has changed greatly in the second half of the 20th century and many more changes will occur in the next 20 to 50 years of the 21st century. "The technology, organization, and structure of agriculture are dynamic, and future changes may dwarf past ones. The evolution of agriculture will have important impacts on farmers and society at large." (Hallam, 1993, pg. 1). The purposes of this report are: (1) to examine and explain key changes in the organization and structure of South Dakota's farm sector, (2) to provide a contemporary profile of farm business and household characteristics, and (3) to suggest where structural changes may lead in the future.

This report includes the following major topics:

- major forces of change affecting farm structure
- changes in farm numbers and physical farm size
- sales volume and concentration trends
- land tenure and ownership trends
- farm household income and employment trends
- farm enterprise specialization and diversity, and
- a profile of South Dakota farms by economic class

Most of the data examined in this report are from various U.S. Census of Agriculture reports for South Dakota. Substantial portions of this report update and reinterpret information presented in an earlier report on Structural Trends in South Dakota Agriculture (Janssen and Edelman, 1983). The inspiration for preparing this report comes from the many questions asked by producers, agribusiness persons, students, community leaders, and concerned citizens about changes in South Dakota's #1 industry: AGRICULTURE.

We wish to thank our reviewers, Dr. Richard Shane, Dr. Don Peterson, and Dr. Scott Fausti, of the Economics Department for their constructive comments and criticism of an earlier draft of this manuscript. Appreciation is expressed to the Economics Department secretarial staff for final assembly of this report. Our co-author, Paula Loewe, prepared most of the tables and charts used in this report.

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I. INTRODUCTION

Concern about the future of family farms is a major reason why social scientists study structural changes in agriculture. Farm structure is the control and organization of resources needed for agricultural production. It includes the number and size of farms; ownership and control of resources; the managerial, technological and capital requirements of farming; farm-household interactions; and the social, economic, and political situations of farmers. The study of changing farm structure allows us to view agriculture in its entirety, and also to examine how changes affect individual farms (Stanton, 1993; Knutson, Penn, and Flinchbaugh, 1998, p. 296-298).

Recently the 1997 Census of Agriculture for South Dakota was released (USDA - NASS, 1997). This study provides an overview of the market structure and market participants in production agriculture, primarily from information contained in the Census of Agriculture for various time periods. An overview would be useful for those in and serving production agriculture.

II. FORCES OF CHANGE

Many forces influence South Dakota agriculture and either cause changes in market structure or are a result of past changes. The most recent significant changes are classified into four general categories. The general prosperity of the United States (U.S.) and South Dakota economies continues to drive change in South Dakota agriculture. Policy changes, including the farm bill, trade, and environmental policies, interact to change the structure of South Dakota agriculture. Changes in the input supply industries (seed, fertilizer, and other inputs) and agricultural processing, wholesaling, and food retailing industries may also influence production agriculture's structure. Finally, external forces (especially technology) continue to influence the structure of agriculture. The combined impacts are clearly evident on the size and scope of South Dakota farm operations.

Economic prosperity

For over a decade the U.S. has enjoyed robust economic growth and prosperity. According to data from the Economic Report of the President (Feb 1999), in recent years income has risen, employment has risen, and inflation has remained low. From 1987 to 1997 gross domestic product (GDP), a standard measure of all the goods and services produced in the U.S., has risen from $4.7 trillion to $8.1 trillion. Adjusting for inflation shows that real GDP rose over 22% during that time period, where the GDP deflator was used to adjust nominal GDP to 1992 dollars. Inflation has been low as well, starting at 4.4% in 1987, peaking at 6.1% in 1990, and dropping to 1.7% in 1997. The U.S. unemployment rate has shown a similar favorable trend in recent years. The rate was 6.2% in 1987, increased to 7.5% in 1992, and dropped to 4.9% in 1997.

The final major economic indicator is interest rates. The prime rate is the rate that banks charge their best customers and is a common benchmark rate. The prime rate in 1997, at 8.4%, was about the same as in 1987, at 8.2%. However, the prime rate rose to a high of 10.9% in 1989 and was as low as 6.0% in 1993. Hence interest rates have not been stable from 1987 to 1997, but they have not been high by historical standards.

South Dakota's economy has also prospered during recent years with per-capita income reaching $21,076 in 1997. Data in Table 1 show a modest increase in per capita income from 1978 to 1987 in both nominal and real terms. The increase from 1987 to 1997 was more pronounced with real income increasing 27% during that time. South Dakota's employment situation was stable relative to the U.S. Over the last two decades the unemployment rate has fluctuated moderately in South Dakota. The high during that time was a 5.5% unemployment rate during 1982 when the entire U.S. economy was in a recession. As shown in Table 1, the unemployment rate of 3% in 1997 is about the same as it was in 1978.

Table 1. South Dakota income and unemployment characteristics, 1978-1997.

Year	Nominal per-capita income	Real[a] per-capita income	Unemployment Rate
1997	$21,076	$18,890	3.0%
1987	$12,361	$14,882	4.2%
1978	$7,117	$13,985	3.1%

Sources: Bureau of Economic Analysis and Bureau of Labor Statistics
Note: [a]Real income, in 1992 dollars, was obtained by using the GDP deflator.

The general prosperity in the economy is expected to have mixed effects on the farm sector. To keep up with rising incomes throughout the economy, farm operations need to either generate more revenue from a given operation, reduce costs, or expand the operation. Hence, changes in farm enterprises and farm size could be expected. Prosperity also brings opportunities that compete with farming as a source of income and as a way of life. If non-farming sectors are more profitable than farming sectors, then the labor costs for farm operations will increase as will the opportunity cost for farm operators themselves.

Increases in labor costs need to be balanced with any changes in the cost of capital, machinery, or technology. The general inflation rate has been declining in recent years, but an adequate breakdown of inflation rates of capital goods and labor is not available. Therefore, any observed shift towards more or less labor will reveal itself in changes in enterprises and in capital expenditures.

Policy changes

The most notable policy change in recent years was the 1996 Farm Bill – the Freedom to Farm legislation (Young and Shields, 1996). The freedom portion of this legislation reflected the lifting of acreage restrictions so farmers could plant what they found most profitable without worrying about losing government benefits. Freedom to Farm also eliminated acreage reduction requirements, allowing farmers to use all of their land in the best way they saw fit.

A retained feature of past programs was a marketing loan program, where farmers are assured of receiving a minimum price level for different commodities – the loan rate. However, the loan rates were capped at a maximum level and there is no longer a farmer owned reserve that extended the loan periods. A cap on the maximum benefit that a farm receives was also retained.

To facilitate moving from a farm safety net to a market-driven farm policy, farmers were given the option of receiving transition payments, which decline in amount over seven years. To be eligible for the payments farmers either had to agree to purchase crop insurance or else waive eligibility to any potential disaster payments.

The farm bill was expected to impact farm structure in a variety of ways. Foremost, farmers were given greater freedom to choose what to produce and when to price their production. Thus, a change in the relative importance of different enterprises is anticipated. A faster response to market signals, especially prices, is also anticipated. Without the safety net of previous farm programs, more management skills are needed on operations and their presence is rewarded.

Other policy changes indirectly influence agriculture and farm structure. Trade policy is one example. Changes in the Export Enhancement Program and General Sales Manager programs both affect export levels for commodities. Likewise, periodic trade sanctions may limit trade. Most grains and oilseeds grown in South Dakota are dependent on the international market. Environmental policy is another example. Changes in the Conservation Reserve Program, wetlands rulings, and landowner liability laws for items such as lagoon spills can all influence farm structure by bringing land in or out of production or by imposing costs on different enterprises.

Industrialization of agriculture

Another force changing the structure of agriculture is the trend toward industrialization, although causality is difficult to assign for this factor. It may well be that some industrialization is a response to prior changes in the structure of agriculture, such as smaller family sizes reducing the availability of labor on the farm. One type of industrialization is the consolidation of input suppliers. Seed companies, chemical companies, and lending institutions have all merged nationwide in recent years.

Likewise, on the output side elevators, railroads, and packers have continued to consolidate.

When up-stream and down-stream industries consolidate there is a fear of losing market power to the larger consolidated business firms. Similarly, mergers often eliminate good paying jobs, which may not be as easily replaced in rural areas. At the same time, if the mergers make the segment more efficient, then there is the potential for the production sector to share in the benefits. Increased use of production contracts is another potential consequence of industrialization. Production contracts shift price risks and some production risks to an input supplier or processor, while requiring farm operators to manage their production practices according to contract specifications. Other impacts of production contracts on farm structure are more difficult to determine, but it is likely that the surrounding rural economy will be affected.

External changes

External factors can also influence the farm sector. Change in consumers' tastes and preferences may influence demand for different commodities. The most commonly cited trend is the shift by consumers towards greater poultry consumption and reduced amount of beef consumption per capita. Biological factors may have either positive or negative impacts on the farm sector. While improved genetics are beneficial, new diseases also plague certain crops. Technology is another major driver of change. Computers, for example, give farmers improved access to information and aid in record keeping. With these new tools, farmers can often make more profitable decisions.

External factors can impact the comparative advantage South Dakota agriculture holds in specific enterprises. Comparative advantage often dictates what is produced or what enterprises are undertaken. Cost and profit levels can also be affected, which can change the relative profitability of different enterprises. As profit levels change, farm structure can ultimately be affected as some farms gain and others lose because of external factors.

III. NUMBER OF FARMS AND PHYSICAL FARM SIZE

Declining farm numbers and increasing physical farm sizes are the most well known structural trends in North American agriculture. Since 1935, South Dakota's farm numbers have decreased and average farm size has increased.[1] From 1935 to 1997, South Dakota farm numbers declined from about 83,300 to 31,300, while average farm size increased from 445 acres to 1418 acres (Table 2). Nationally, farm numbers declined from a peak of 6.8 million farms in 1935 to 2.0 million farms in 1997, while average farm size increased from 145 acres to 436 acres.

The most rapid South Dakota farm exodus occurred from 1935 to 1940 when a net reduction of over 10,800 farms took place for a 2.8% annual decline. Farm numbers declined at rates slower than 1.5% per year during the 1940's and early 1950's, accelerating to 2.3% annually from 1954 to 1964. Since 1964, the average annual decline in farm numbers has been 1.4%, varying from 1.9% in the 1974 to 1978 period to only 0.4% in the 1982 to 1987 period. Since 1987, the annual rate of decline in farm numbers has increased and was above the long-term average rate in the most recent Census period (1992 to 1997).

Trends in farm numbers by region in South Dakota

Rates of decline in farm numbers from 1935 to 1997 have been similar in all regions of South Dakota, but major changes between regions occurred in different time periods. The regions (western, central, and eastern) and recent (1987 – 1997) changes in farm numbers are shown in Figure 1 and the annual percentage reductions in farm numbers by time period are shown in Table 3.

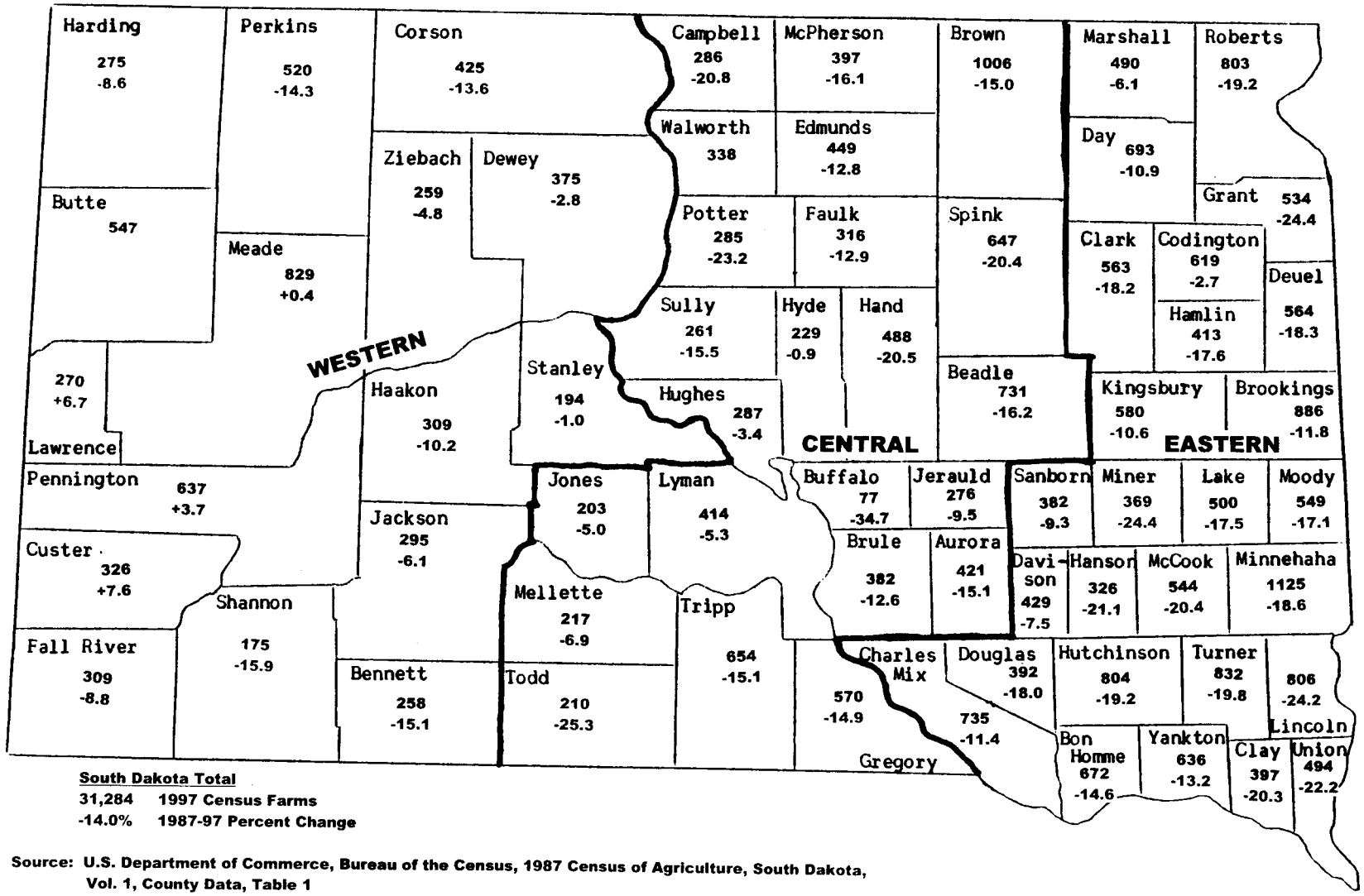
[1] Prior to 1935, farm numbers actually increased in South Dakota and for the United States, but have declined since then. Since 1945, the amount of South Dakota land in farms (and ranches) has varied from 43 million acres to 46 million acres after increasing by several million acres in most previous decades. Land in farms and ranches is 92% of all land acreage in South Dakota.

Table 2. Declining number of South Dakota farms, 1930-1997.

Census year	Number of farms	Net changes in number of farms	Annual rate of change	Land in farms (thousands of acres)	Average farm size (acres)
1930	83,157			36,470	439
		146			
1935	83,303			37,102	445
		-10,849	-2.8%		
1940	72,454			39,474	545
		-3,749	-1.1%		
1945	68,705			43,032	626
		-2,253	-0.7%		
1950	66,452			44,786	674
		-3,932	-1.5%		
1954	62,520			44,949	719
		-6,793	-2.3%		
1959	55,727			44,850	805
		-6,024	-2.3%		
1964	49,703			45,567	917
		-3,977	-1.7%		
1969	45,726			45,584	997
		-2,901	-1.3%		
1974	42,825			45,978	1,074
		-3,170	-1.9%		
1978	39,655			44,543	1,123
		-2,507	-1.6%		
1982	37,148			43,811	1,179
		-772	-0.4%		
1987	36,376			44,157	1,214
		-2,319	-1.3%		
1992	34,057			44,828	1,316
		-2,773	-1.7%		
1997	31,284			44,355	1,418

Sources: U.S. Department of Commerce, Bureau of the Census, 1959 Census of Agriculture, South Dakota, Vol. I, Table 1. U.S. Department of Agriculture, National Agricultural Statistics Service, 1997 Census of Agriculture, South Dakota, Vol. 1, Table 1.

Figure 1. South Dakota Census Farm Numbers 1997 and Percent Change from 1987
Top Number - 1997 Census Farms
Bottom Number - Percent Change Between 1987 and 1997



South Dakota Total
31,284 1997 Census Farms
-14.0% 1987-97 Percent Change

Source: U.S. Department of Commerce, Bureau of the Census, 1987 Census of Agriculture, South Dakota, Vol. 1, County Data, Table 1
U.S. Department of Agriculture, National Agricultural Statistics Service, 1997 Census of Agriculture, South Dakota, Vol. 1, County Data, Table 1

Table 3. Number of farms and percent reduction in number of farms by region of South Dakota, 1935-1997.

South Dakota region [a]	1935	1950	1964	1978	1997
	Thousands of farms				
Western	15.2	9.2	6.7	5.9	6.0
Central	25.6	19.3	13.9	11.2	9.1
Eastern	42.5	38.0	29.1	21.7	16.1
State	83.3	66.5	49.7	38.8	31.2
	1935-1950	1950-1964	1964-1978	1978-1997	1935-1997
	Average annual percent change				
Western	-3.4%	-2.3%	-0.9%	0.1%	-1.5%
Central	-1.9%	-2.4%	-1.6%	-1.1%	-1.7%
Eastern	-0.7%	-1.9%	-2.1%	-1.6%	-1.6%
State	-1.5%	-2.1%	-1.8%	-1.2%	-1.6%

Sources: Compiled from county data in Vol. 1, Table 1 of the 1978, 1969, 1959, and 1950 Census of Agriculture for South Dakota. Published by the Bureau of Census, U.S. Department of Commerce. Compiled from data in Vol.1, Table 1 of the 1997 Census of Agriculture, South Dakota, published by the U.S. Department of Agriculture, National Agricultural Statistics Service.

Note: [a] For a description of regions, see Figure 1.

From 1978 to 1997, farm numbers in western South Dakota essentially stabilized, compared to annual reductions of 1.1% in the central region and 1.6% in the eastern region. The situation was reversed in the earlier 1935 – 1950 period, when the annual reduction rate of farm numbers in eastern counties (0.7%) was less than one-fourth the reduction rate in western counties (3.3%). It is interesting to note that the highest rate of decline occurred earlier in the western region (1935 – 1950) than in the central region (1950 – 1964) or eastern region (1964 – 1978). Since 1964, the eastern region has exhibited the highest rate of decline in farm numbers.

Explanation of declining farm numbers

From 1935 to 1997, five of eight South Dakota farms consolidated into larger units. Initial settlement patterns, technological changes in agriculture, economic conditions (farm and off-farm), and availability of off-farm employment are the major explanations of declining farm numbers.

Dustbowl conditions during the mid-1930's and the Great Depression severely tested South Dakota farmers. The semi-arid western and central regions were affected the most as land use intensity declined (shifted back to a higher proportion of pasture and rangeland) and the resulting farm population declined.

Technological change and adoption of new agricultural technology are principal reasons for the farm exodus after World War II. The rate of technological change has varied across enterprises, but has generally been greater in the crop production and livestock feeding sectors. Larger crop machinery and automated feed handling have greatly increased the number of acres farmed and size of livestock feedlots operated. This has had the greatest impact in the more intensive cropland and livestock feeding regions of eastern and central South Dakota.

Growing national economic prosperity has greatly increased non-farm employment opportunities. Many farm families responded to these opportunities by leaving the farm and moving to towns and cities. Since the 1960's, the South Dakota economy has generated increasing numbers of industrial and service sector jobs, which

has helped to reduce out-migration from the state and has greatly increased the availability of off-farm employment for farm families.

Farm economic conditions also impact farm numbers with extended periods of depressed farm prices and/or severe weather conditions (usually drought) increasing the rate of decline in farm numbers. Conversely, extended periods of farm prosperity - a condition observed in the early to mid 1970's increases entry into farming and had a modest impact on declining farm numbers.

Entry/exit rates of farm operators

Over time, actual changes in farm numbers are largely determined by the rate of entry into and exit from farming by individuals and families. An examination of the age distribution of farm operators over time (age-cohorts) contributes to understanding how and why farm numbers have declined and is useful in making baseline projections of future farm numbers.

Age distribution data for South Dakota farm operators from 1950 to 1997 are shown in Table 4. For example, in 1950 there were 2600 young farm operators less than 25 years old. Additional entrants into farming increased this age cohort by 1959 to 9200 farm operators between 25 and 34 years of age and to 10,900 farm operators between 35 and 44 years of age by 1969. Since then the effects of change in occupation, retirement, disability, and death are apparent. By 1997, there were 7200 farm operators that are 65 years of age or older.

Analyses of age-cohorts of South Dakota farm operators from 1950 to 1997 reveal the following trends:

- Most farm operators enter farming when they are between 25 and 34 years of age, although some starting farmers are younger or older than 25 to 34 years.

- The number of farm operators in a given age-cohort increases slightly beyond the 25 – 34 year age group and is usually highest in the 35 – 44 year age group.

- The net effects of changing occupation, retirement, disability, and death reduce farm numbers for age-cohorts above 55 years. However, longer life spans, modern conveniences, and labor-saving technology has made it easier for senior farmers to remain active on their farm beyond 70 years of age.

Table 4. Distribution of South Dakota farm operators by age, 1950-1997.

Age level in years	Census year[a]											
	1950		1959		1969		1978		1987		1997	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Less than 25	2.6	4.1	1.3	2.4	1.2	2.6	2.1	5.3	1.2	3.3	0.7	2.2
25-34	13.2	20.8	9.2	16.7	5.4	11.6	6.2	15.6	6.1	16.8	2.9	9.3
35-44	15.3	24.1	13.7	24.9	10.9	23.3	6.7	16.9	7.1	19.5	7.5	24.0
45-54	14.7	23.1	13.7	24.9	12.7	27.2	9.7	24.4	6.7	18.4	7.2	23.0
55-64	11.7	18.4	11.1	20.1	11.0	23.6	10.0	25.2	8.7	23.9	5.8	18.5
65 and older	6.0	9.4	6.1	11.1	5.5	11.8	5.0	12.6	6.6	18.1	7.2	23.0
Total	63.5	100.0	55.1	100.0	46.7	100.0	39.7	100.0	36.4	100.0	31.3	100.0
Average age	45.6		47.4		49.2		48.5		49.7		51.8	

Sources: U.S. Department of Census, Bureau of the Census 1959 Census of Agriculture, South Dakota, Vol. 1, Table 4. 1969 Census of Agriculture, South Dakota, Vol. 1, Table 24. 1978 Census of Agriculture, South Dakota, Vol. 1, Table 29. 1987 Census of Agriculture, South Dakota, Vol. 1, Table 16. U.S. Department of Agriculture, National Agricultural Statistics Service, 1997 Census of Agriculture, South Dakota, Vol.1, Table 16.
Note: [a] Farm numbers are reported in thousands.

- From 1978 to 1997 the number of senior farmer operators, those 65 years and older, has actually increased as more farmers are retiring at an older age. During the most recent period, the net reduction in senior farm operators, 65 years or older in 1997, from farm operators in the 55 – 64 year age-cohort in 1987 was only 17%, compared to a 34% reduction from 1978 to 1987, and a nearly 50% reduction in the earlier time periods examined.

- From 1987 to 1997, the number of farm operators less than 35 years of age is only 50% of the number of senior farm operators. In all previous time periods, the number of younger farm operators less than 35 years of age exceeded the number of senior farm operators, 65 years and older. These facts suggest that major changes are occurring in net entry and exit from farming.

Net changes in annual entry/exit rates of farm operators by age group by decade since 1950 are shown in Table 5. The annual rate of entry into farming declined from the 1940's through the 1960's, but increased substantially in the 1970's. For example, the annual rate of entry during the 1960's was an average of 595 farm operators less than 45 years of age. During the 1970's, the rate of entry had increased to an average of 920 farmers per year. However, from 1987 to 1997, the rate of entry into farming declined to an average of 394 farmers per year or 43% of the entry rate in the 1970's. In the authors' view, this drastic change in entry rates is directly related to general farm economic prosperity during much of the 1970's and the farm "baby boom" of the 1950's and 1960's compared to the fallout of the farm economic depression in the mid-1980's. During the 1970's, many young people were strongly encouraged and financed to enter into farming. During the 1990's, considerably fewer young people have been interested in farming and / or able to obtain necessary capital to begin farming.

Farm numbers are expected to continue to decline because the number of senior farmers exiting greatly exceeds the number of younger farmers entering. The question is: "how fast will they decline?" Farm number projections to the year 2020 are dependent on two sets of variables:

- age distribution and related demographic characteristics of existing farm operators, and

- future economic conditions and structural incentives in the farm sector and national economy, especially the availability and attractiveness of nonfarm employment opportunities relative to farming.

Table 5. Entry and exit trends of South Dakota farm operators, 1950-1997.

Age level of farm operator	1950-1959	1959-1969	1969-1978	1978-1987	1987-1997
Years	average annual net change in number of farm operators				
Less than 25	145	125	232	127	67
25-34	739	412	546	449	177
35-44	55	58	142	100	133
45-54	-178	-94	-7	-1	17
55-64	-406	-275	-303	-114	-87
65 and older	-1284	-1167	-1283	-926	-816
Annual net changes in number of farm operators	-930	-940	-673	-365	-509

Sources: Compiled from age-level data shown in Table 4. Basic reference source is U.S. Department of Commerce, Bureau of Census, 1959 Census of Agriculture, South Dakota, Vol. 1, Table 4. 1969 Census of Agriculture, South Dakota, Vol. 1, Table 24. 1978 Census of Agriculture, South Dakota, Vol. 1, Table 4. U.S. Department of Agriculture, National Agricultural Statistics Service, 1997 Census of Agriculture, South Dakota, Vol.1, Table 16.

The age distribution of farm operators in 1997 provides indications of a continued decline in farm numbers. In 1997 there were 20,200 farmers age 45 years or older and almost all of these people will be retired from farming by the year 2025. However, there are only 11,100 younger farmers to replace them. In order to stabilize farm numbers at current levels, an additional 400 to 600 farm entrants are required per year to offset the exit of older farmers. This represents more than doubling current entry rates. Therefore, even if optimistic economic conditions and farm structure policies are assumed, stabilized farm numbers are not realistic.

The sensitivity of farm entry / exit rates to economic conditions can be seen by looking at alternate scenarios for farm numbers in the year 2020. The first scenario assumes 1987 – 1997 entry / exit rate trends will continue for each age group. The second scenario assumes 1978 – 1987 trends for each age group. Farm numbers in 1997 are extrapolated to the year 2020 with these assumptions.

If the faster rate of decline observed from 1987 to 1997 continued there would be approximately 20,000 to 21,000 farms in 2020, an annual decline of 1.8% per year. If the slower rate of decline observed from 1978 to 1987 continued there would be about 23,000 farms in 2020, an annual decline of 1.3% per year. It is unlikely that either trend will be replicated; however, the range in farm numbers projections indicates the sensitivity of farm numbers to present and future economic conditions and policies.

Farm size trends

Average farm size in South Dakota increased from 445 acres in 1935 to 997 acres in 1969 and 1,418 acres in 1997 (Table 6). Farm size generally increases as we move from east to west in South Dakota. The smallest average farm sizes are found in eastern South Dakota where average farm size by county is 360 to 1030 acres. In western South Dakota average farm and ranch size varies from 1600 to 7000 acres in most counties (Figure 2).

The distribution of farm size (in acres) has also changed over time. Since 1969, increasing average farm size has been accompanied by an increased number of larger farms and ranches (2000 acres or more), substantial declines in the number of small to medium size farms (180 to 999 acres), and modest declines in the number of farms in

the other size categories (less than 180 acres and 1000 to 1999 acres). From 1969 to 1997 the proportion of very small farms (less than 180 acres) increased from 20.4% to 27% of all farms, while the proportion of medium to large farms (1000 acres or more) increased from 22.1% to 33.5% of all South Dakota farms (Figure 3 and Table 6).

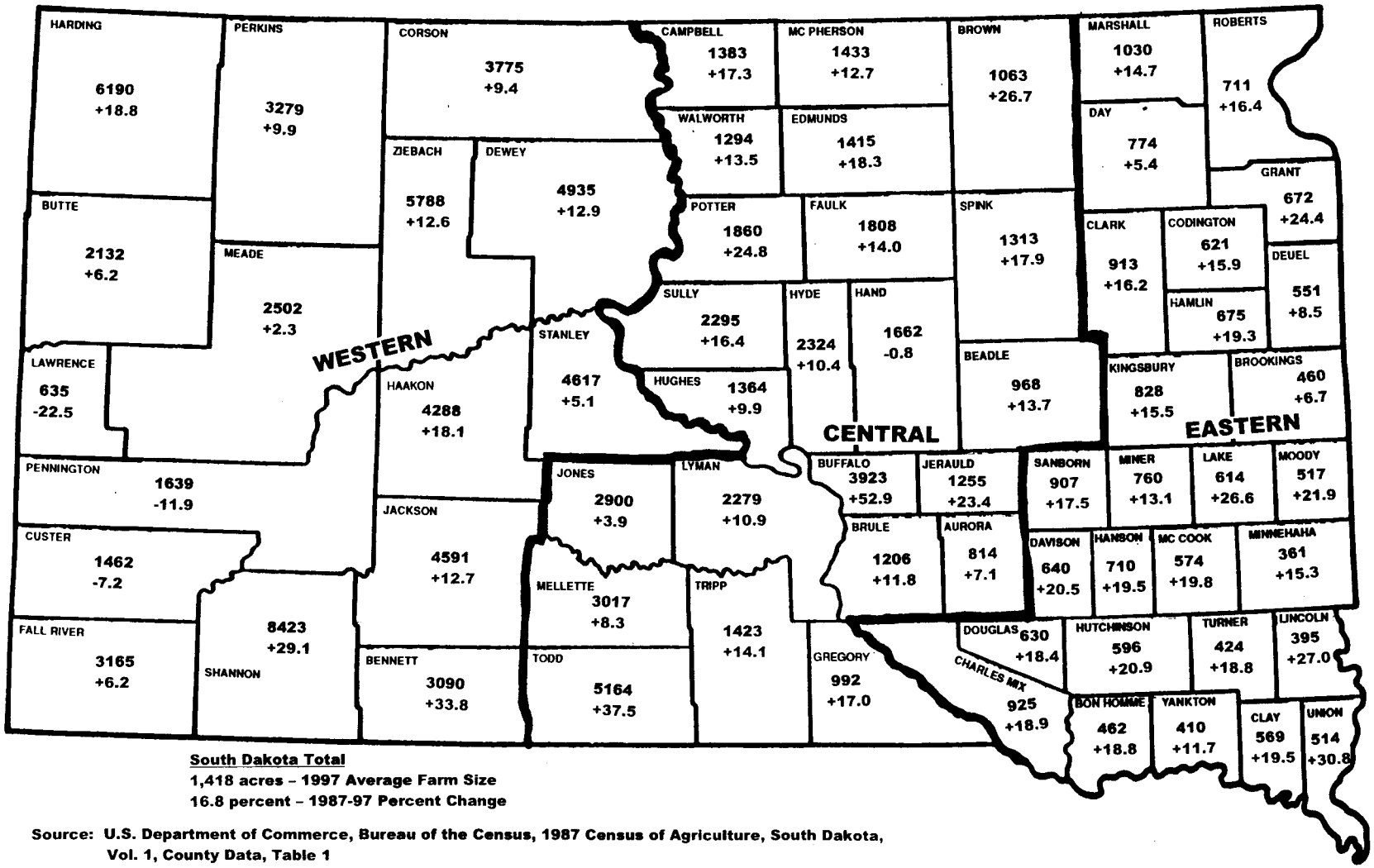
Table 6. South Dakota farm size distribution, 1969-1997.

	Farm operators								
	1969		1978		1987		1997		1997/1969
Farm size-- acres operated	No.	%	No.	%	No.	%	No.	%	%
1-49	3295	7.2	3850	9.7	4519	12.4	3611	11.5	109.6
50-179	6019	13.2	5673	14.3	5083	14.0	4844	15.5	80.5
180-499	15807	34.6	10916	27.5	8625	23.7	6500	20.8	41.1
500-999	10534	23.0	8962	22.6	7618	20.9	5866	18.8	55.7
1000-1999	5925	13.0	5987	15.1	5728	15.7	5185	16.6	87.5
2000-4999	4146	9.1	3085	7.8	3531	9.7	3748	12.0	127.3
5000 and above[a]			1192	3.0	1272	3.5	1530	4.9	
Total	45,726	100.0	39,665	100.0	36,376	100.0	31,284	100.0	68.4
Average farm size	997		1147		1214		1418		

Sources: U.S. Department of Commerce, Bureau of the Census 1969 Census of Agriculture, South Dakota, Vol. 1, Table 2. 1978 Census of Agriculture, South Dakota, Vol. 1, Table 3. 1987 Census of Agriculture, South Dakota, Vol. 1, Table 8. U.S. Department of Agriculture, National Agricultural Statistics Service, 1997 Census of Agriculture, South Dakota, Vol.1, Table 8.

Note: [a] Farm size of 5000 acres and above available only for 1978, 1987, 1997. The 1969 data are for farms with 2000 acres or more.

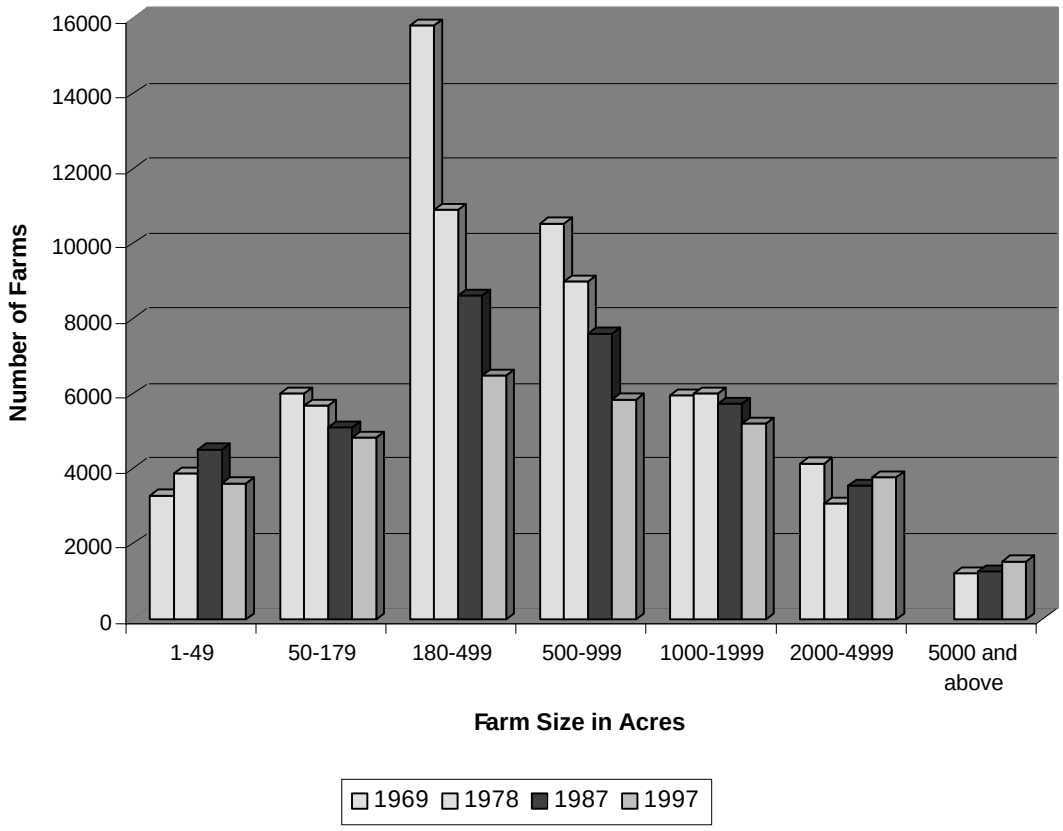
Figure 2. Average Size (Acres) for South Dakota Census Farms 1997 and Percent Change from 1987
Top Number: 1997 Average Farm Size (Acres)
Bottom Number: Percent Change Between 1987 and 1997



South Dakota Total
1,418 acres – 1997 Average Farm Size
16.8 percent – 1987-97 Percent Change

Source: U.S. Department of Commerce, Bureau of the Census, 1987 Census of Agriculture, South Dakota, Vol. 1, County Data, Table 1
U.S. Department of Agriculture, National Agricultural Statistics Service, 1997 Census of Agriculture, South Dakota, Vol. 1, County Data, Table 1

Figure 3. Changes in Farm Size, 1969-1997



In 1997, farms and ranches of 2000 acres or more operated 68% of land in farms and 48.7% of harvested cropland in South Dakota. The average value of land and buildings on these 5280 farms was about $1,444,000 per farm or $248 per acre. The value of land and buildings on these larger farms is nearly 48% of the total value of farmland and buildings in South Dakota (Table 7).

The largest farm/ranch operations (5000 acres or more) are mainly located in western and central South Dakota and control 42% of land in farms. The average size of these large operations exceeds 12,300 total acres, including nearly 2000 acres of harvested cropland.

Small and medium size farms with 180-1999 acres operate 30% of land in farms and 49% of harvested cropland in South Dakota. These farms are more cropland intensive than the larger farms and are primarily located in eastern and central South Dakota counties and near the Black Hills. The value of land and buildings on these small and medium size farms is 46% of the total value of farmland and buildings in South Dakota. The average real estate value varies from $617 per acre for farms in the 180 – 499 acre size category to $459 per acre for farms in the 1000 – 1999 acre size category.

Very small farms of less than 180 acres control less than 2% of land in farms and harvested cropland, but comprise 6% of the total value of land and buildings on South Dakota farms.

Future trends in farm size

In the year 2020, if there are 23,000 farms in South Dakota, average farm size will increase approximately 36% to about 1930 acres (Figure 4). If the other projection of 20,500 farms is more accurate, average farm size will increase about 52% to 2160 acres, assuming land in farms remains the same.[2]

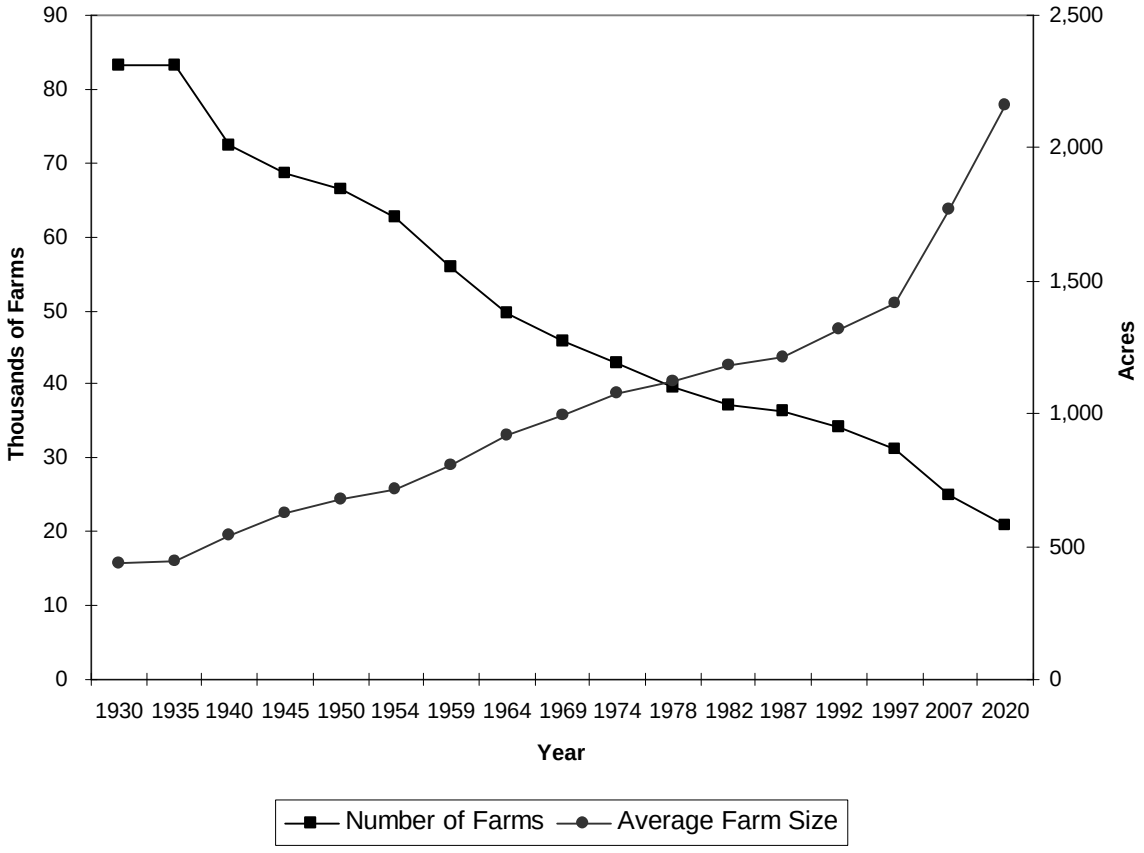
[2] From 1978 to 1997, farm numbers declined 21%, an average of 1.25% per year, while average farm size increased 26%. These results were close to projections by Janssen and Edelman (1983) of farm numbers of 30,000 to 31,000 in the year 2000 based on continuation of entry / exit rate trends observed from 1969 – 1978.

Table 7. Farm size, land use, and real estate value in South Dakota, 1997.

Farm size-- acres operated	Proportion of land in farms	Proportion of cropland harvested	Proportion of land and building value	Land and Building Value per Farm	Average Value per Acre
	%	%	%	$1,000	$
1-49	0.2	0.2	2.2	93.3	4,644
50-179	1.3	1.7	4.0	125.5	1,133
180-499	4.9	8.0	8.7	204.2	617
500-999	9.5	16.3	15.7	390.9	544
1000-1999	16.2	25.1	21.6	636.5	459
2000-4999	25.3	29.0	47.8[a]	1443.7[a]	248[a]
5000 and above	42.7	19.7			
Total-South Dakota	100.0	100.0	100.0	487.0	348
Total acres (1000)	44,355	14,285			
Total value ($1000)			$15,236		

Sources: U.S. Department of Agriculture, National Agricultural Statistics Service, U.S. Census of Agriculture, South Dakota, 1997, Vol. 1, Tables 7, 8, and 49.
Note: [a]The data for Proportion of land and building value, Land and Building value per farm, and Average Value per Acre are available only for farms with 2000 acres or more.

Figure 4. Comparison of Average Farm Size to the Number of Farms, 1930-1997, with prospects to 2020



SALES VOLUME AND CONCENTRATION TRENDS

Trends in gross farm sales volume and concentration provide important information on the changing economic structure of the farm sector. Gross farm sales is the total dollar volume of farm product sales before any expenses are deducted.

Increased sales volume and concentration

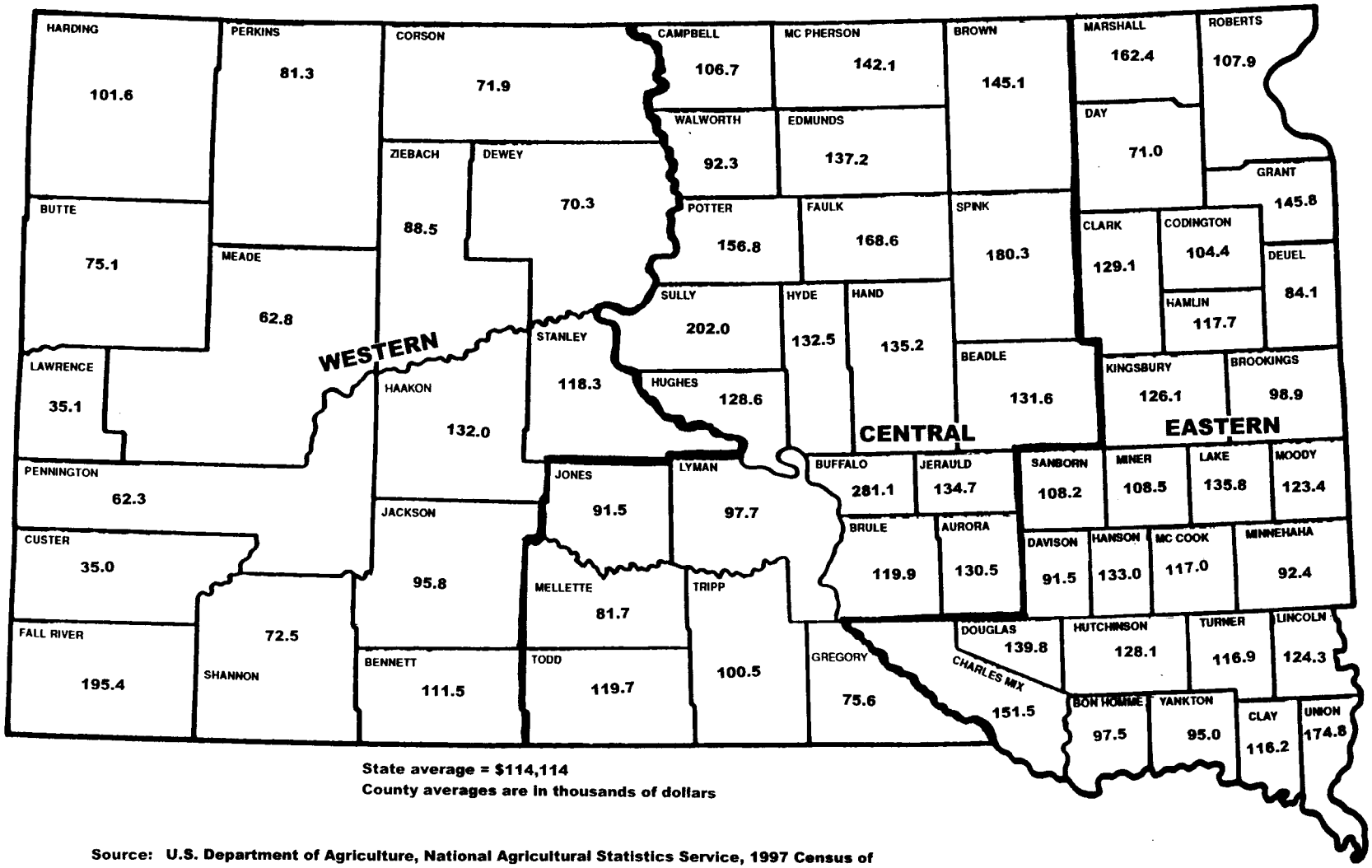
Gross farm sales in South Dakota increased 88.5% in dollar volume from 1978 to 1997, while gross sales per farm increased from an average of $49,030 in 1978 to $114,100 in 1997. Economic pressures for increased farm size and output to maintain acceptable profit and net cash flow for family living and farm business growth is the major contributing factor. General price inflation, which has reduced the dollar value during this period, is the other contributing factor.

Average value of products sold per farm varies greatly from county to county. In 1997, the county average value of products sold per farm varied from $35,000 in Custer and Lawrence counties to over $195,000 per farm in Fall River, Sully, and Buffalo counties. Statewide, 50 of 66 counties had average sales from $80,000 to $160,000 per farm (Figure 5).

Distribution of farms by sales class

Distribution of farms by sales class reveals the increased disparity of farms by size (Table 8). In 1997, we find that the largest 312 farms, each with sales of more than $1,000,000, produced three quarters of a billion dollars of farm products. These largest farms accounted for 1% of all South Dakota farms and sold 21% of the value of South Dakota farm products. By contrast, in 1978 there were only 205 farms selling more than $500,000 of farm products or 0.5% of farms selling 13.5% of farm products (Table 8 and Figure 6).

Figure 5. Average Value of Agricultural Products Sold per Farm, 1997



State average = $114,114
County averages are in thousands of dollars

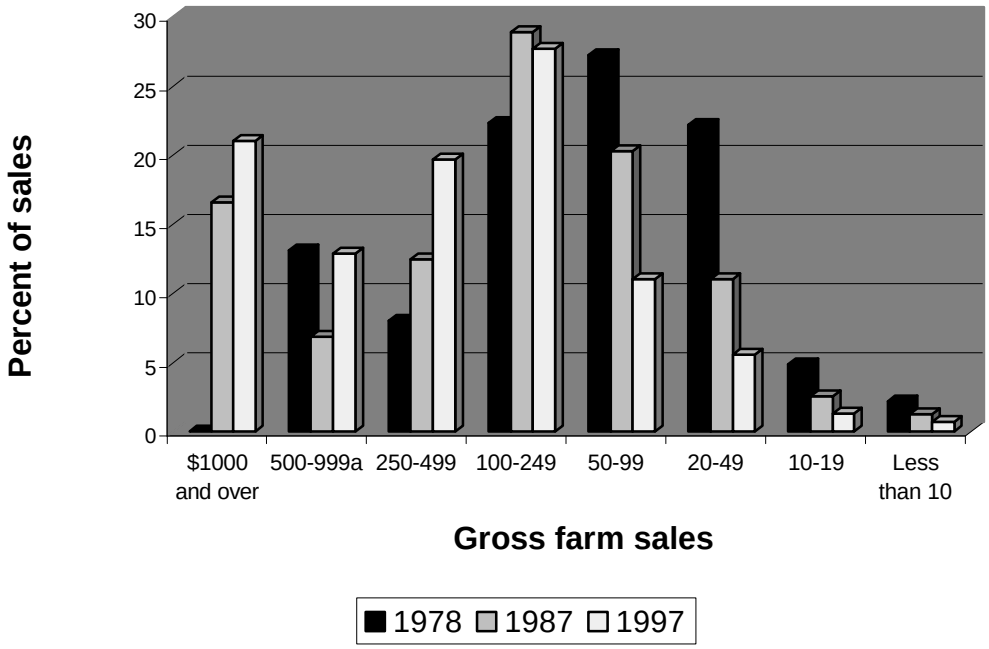
Source: U.S. Department of Agriculture, National Agricultural Statistics Service, 1997 Census of Agriculture, South Dakota, Vol. 1, County Data, Table 2

Table 8. Distribution of farm numbers and farm product sales by sales class in South Dakota, 1978, 1987, and 1997, South Dakota.

Sales Class	1978		1987		1997	
Gross farm sales: $1000 of dollars	Number of farms	Sales $1000	Number of farms	Sales $1000	Number of farms	Sales $1000
$1000 and over	-	-	167	451,017	312	751,090
500-999[a]	205	248,880	277	187,646	686	460,252
250-499	460	152,473	1,022	338,872	2,066	702,488
100-249	2,950	422,445	5,316	786,831	6,383	990,378
50-99	7,463	516,195	7,706	551,679	5,415	394,634
20-49	12,645	420,172	9,024	300,016	5,998	199,766
10-19	6,320	92,955	4,766	69,679	3,208	46,667
Less than 10	8,588	41,058	8,098	33,758	7,216	24,676
Total	38,631	1,894,178	36,376	2,719,498	31,284	3,569,951
	Percent of farms	Percent of sales	Percent of farms	Percent of sales	Percent of farms	Percent of sales
$1000 and over	-	-	0.5	16.6	1.0	21.0
500-999[a]	0.5	13.1	0.8	6.9	2.2	12.9
250-499	1.2	8.0	2.8	12.5	6.6	19.7
100-249	7.6	22.3	14.6	28.9	20.4	27.7
50-99	19.3	27.3	21.2	20.3	17.3	11.1
20-49	32.7	22.2	24.8	11.0	19.2	5.6
10-19	16.4	4.9	13.1	2.6	10.3	1.3
Less than 10	22.2	2.2	22.3	1.2	23.1	0.7
Total	100.0	100.0	100.0	100.0	100.0	100.0

Sources: U.S. Department of Commerce, Bureau of the Census 1978 Census of Agriculture, South Dakota, Vol. 1, Table 34. 1987 Census of Agriculture, South Dakota, Vol. 1, Table 2. U.S. Department of Agriculture, National Agricultural Statistics Service, 1997 Census of Agriculture, South Dakota, Vol. 1, Table 2.
Note: [a] Data for 1978 is for $500,000 and above.

Figure 6. Distribution of Gross Farm Sales, 1978 to 1997



[a]Data for 1978 is for gross farm sales of $500,000 and above.

The “sales hurdle” keeps increasing for the farming industry. From 1978 to 1987, the number of farms selling more than $50,000 of products increased, while the number of farms selling less than $50,000 of products declined. From 1987 to 1997, $100,000 of farm product sales became the dividing line between increasing vs. decreasing number of farms. This $100,000 dividing line is used to classify farms in 1997 into four economic class categories (Table 9). Corresponding gross farm sales volume for 1978 is also shown for each economic class. This adjustment reflects the change in farmer’s purchasing power for farm production items from 1978 to 1997.

Table 9. Economic class of farms

Economic Class	Gross farm sales volume in 1997	Gross farm sales volume in 1978
Large	$500,000 or more	$250,000 or more
Medium	$100,000 - $499,999	$ 50,000 - $249,999
Small	$20,000 - $99,999	$10,000 - $49,999
Very Small	$1,000 - $19,999	$ 1,000 - $9,999

Data in table 10 shows the proportion of farm numbers and sales volume held by the four economic classes of farms in 1978 and 1997. As previously stated, the economic classes are defined by roughly comparable sales volume in terms of farm purchasing power in each time period. Key findings from data in Table 10 are:

- Large farms are rapidly increasing in overall importance. These farms are increasing in total numbers, proportion of farm numbers, and sales volume.
- Medium farms have remained stable as a proportion of farm numbers and sales volume, but overall numbers have declined.
- Small farms are rapidly declining in overall importance based on farm numbers, proportion of farm numbers, and proportion of farm product sales.
- Very small farms are increasing in farm numbers and proportion of farm numbers, but declining slightly in the proportion of farm product sales.

The greatest adjustment is occurring in the small farm and lower portion of the medium sales volume categories. These farms are generally not large enough to generate adequate net incomes for most farm families. However, these farms are often large enough to prevent operators from assuming full time off-farm employment to obtain added income.

Relationship of farm real estate values and machinery values to gross farm sales

The magnitude of farm asset values, production expenses, and net cash returns are closely related to farm size as measured by gross farm sales. However, the distribution of these financial measures and rates of return differ by farm size. The relationship between farm assets and farm product sales and the rate of net cash return to farm product sales are important financial indicators of financial efficiency and production cost control.

The value of farm real estate and machinery / equipment is nearly 80% of the value of physical assets used in South Dakota agriculture. South Dakota farms in the $50,000 - $99,999 gross farm sales class control an average of $471,600 of farm real estate and $89,100 of farm equipment per farm – which is very close to the statewide

Table 10. Proportion of South Dakota farm numbers and sales volume by economic classes of farms, comparable sales categories, 1978 and 1997.

	Census years			
Economic Class[a]	1978 Farm no.	Sales Volume	1997 Farm no.	Sales Volume
	percent			
Large	1.7	21.1	3.2	33.9
Medium	26.9	49.6	27.0	47.4
Small	49.2	27.1	36.5	16.7
Very Small	22.2	2.2	33.3	2.0
Total Percent	100.0	100.0	100.0	100.0
Total - Farm Number	38,631		31,284	
Total Sales Volume (millions of dollars)		$1,894.2		$3,570.0

Source: See Table 9.

Notes: [a]Economic class definitions are based on rough adjustments in sales volume needed to maintain comparable purchasing powers by farmers in each time period. The adjustment is based on changes in the Index of Prices Paid for Items Used in Commodities by U.S. Farmers in each time period. The four economic classes of farms are defined as follows:

Large: 1978 sales volume of $250,000 and over and 1997 sales volume of $500,000 and over

Medium: 1978 sales volume of $50,000 to $249,999 and 1997 sales volume of $100,000 to $499,999

Small: 1978 sales volume of $10,000 to $49,999 and 1997 sales volume of $20,000 to $99,999

Very Small: 1978 sales volume of less than $10,000 and 1997 sales volume of less than $20,000.

Index of Prices Paid for Items Used in Commodities values for 1978 and 1997 were 58 and 117 respectively with base year 1990-92 = 100.

average per farm value of farm real estate and machinery (Table 11). As expected, the average value of owned and leased land, buildings, machinery and equipment per farm generally increases (decreases) with increasing (decreasing) gross farm sales. The largest 312 farms, with annual farm product sales exceeding $1,000,000 operate an average of 8,000 acres and control nearly $3.17 million of farm real estate and $490,000 of farm machinery and equipment per farm (Table 12).

A comparison of data in Table 11 and Table 12 reveals that large farms with farm product sales exceeding $500,000 generate 33.9% of gross farm sales, but only control and operate 14.7% of farm real estate and 13.7% of farm machinery. Medium size farms with gross farm sales between $100,000 and $499,999 generate / control a similar proportion of farm product sales (47.4%) and farm assets (44.7% of farm real estate value and 48.6% of farm machinery value). By comparison, small and very small farms generating less than $100,000 of farm product sales generate 18.7% of farm product sales, but control and operate 40.5% of farm real estate and 37.8% of farm machinery value in South Dakota agriculture. Simply put, larger farms are generating much more product sales volume per $1000 of real estate and machinery / equipment owned and leased.

Relationship of net cash return to gross farm sales

Net cash return is equal to gross farm sales minus cash production expenses.[3] Net cash return can be used for family living expenses, principal payments on debt, and capital replacement. Net cash returns by sales class provides an indication of net cash income and cash flow pressures experienced by farm operators in various sales classes. Net cash return of commercial farms varies from an average of $40,500 per farm in the $100,000 to $249,999 sales class to $501,800 per farm for the largest farms that average $2,407,000 in gross farm sales (Table 12). On average, smaller farms

[3] Net cash returns does not account for depreciation expense and other accrual adjustments to farm production expense, such as changes in accounts payable, or accrual adjustments to farm revenues, such as the value of inventory changes. Consequently, net cash return is a measure of cash profitability to the farm, but is not a direct measure of farm business income or profit, which includes accrual income and expense adjustments. Net cash return as a percent of gross farm sales is a cash rate of return on sales.

Table 11. Distribution of land in farms, value of land, buildings, machinery, and equipment by gross farms sales class, South Dakota, 1997.

Sales Class ($1000)	Land in Farms			Value of Land & Buildings		
	Total Acres (1000)	Acres per Farm	Total %	Total $1000	Per Farm ($1000)	Total %
$1000 and above	2,492	7,988	5.6	988,939	3,169.7	6.5
500-999	3,056	4,454	6.9	1,248,370	1,819.8	8.2
250-499	6,513	3,152	14.7	2,332,470	1,209.2	15.3
100-249	13,595	2,130	30.7	4,481,172	701.3	29.4
50-99	8,297	1,532	18.7	2,642,038	471.6	17.3
20-49	4,737	790	10.7	1,573,227	261.2	10.3
10-19	1,477	460	3.3	566,120	176.8	3.7
Less than 10	4,187	580	9.4	1,404,179	196.7	9.2
Total	44,354	1,418	100.0	15,236,515	487.0	100.0

Sales Class ($1000)	Value of Machinery & Equipment		
	Total $1000	Per Farm ($1000)	Total %
$1000 and above	152,892	490.0	5.4
500-999	237,311	345.9	8.3
250-499	473,898	245.7	16.6
100-249	908,651	142.2	31.9
50-99	499,317	89.1	17.5
20-49	274,540	45.6	9.6
10-19	106,618	33.3	3.7
Less than 10	199,304	28.0	7.0
Total	2,852,531	91.2	100.0

Source: U.S. Department of Agriculture, National Agricultural Statistics Service, 1997 Census of Agriculture, South Dakota, Vol. 1,Table 50.

Table 12. Distribution of gross farm sales, cash production expenses, and net cash returns by gross farm sales class, South Dakota, 1997

Sales Class ($1000)	Gross Farm Sales			Cash Production Expenses		
	Total ($1000)	Per Farm ($1000)	Percent of Total Sales	Total ($1000)	Per Farm ($1000)	Percent of CPE[a]
$1000 and above	751,090	2,407.3	21.0	594,536	1,905.6	21.8
500-999	460,252	670.9	12.9	336,448	490.4	12.3
250-499	702,488	340.0	19.7	473,827	245.6	17.3
100-249	990,378	155.2	27.7	724,353	113.4	26.5
50-99	394,634	72.9	11.1	334,449	59.7	12.2
20-49	199,766	33.3	5.6	173,841	29.0	6.4
10-19	46,667	14.5	1.3	49,185	15.4	1.8
Less than 10	24,676	3.4	0.7	46,750	6.5	1.7
Total	3,569,951		100.0	2,733,389		100.0

Sales Class ($1000)	Net Cash Return			NCR as	% of Farms
	Total ($1000)	Per Farm ($1000)	Percent of NCR[b]	% of GFS[c]	with Net Losses[d]
$1000 and above	156,553	501.8	19.5	20.8	12.8
500-999	123,804	180.5	15.4	26.9	8.0
250-499	186,650	96.8	23.3	26.6	12.9
100-249	258,639	40.5	32.3	26.1	15.1
50-99	76,811	13.7	9.6	19.5	25.2
20-49	24,966	4.1	3.1	12.5	31.4
10-19	-3,241	-1.0	-0.4	-6.9	43.5
Less than 10	-22,697	-3.2	-2.8	-92.0	75.2
Total	801,485		100.0	22.5	36.3

Source: U.S. Department of Agriculture, National Agricultural Statistics Service, 1997 Census of Agriculture, South Dakota, Vol. 1, Table 50.

[a]CPE is an acronym for Cash Production Expenses.

[b]NCR is an acronym for Net Cash Return.

[c]This data represents the percent of Gross Farm Sales that account for Net Cash Returns.

[d]The net loss data applies to the total number of farms in each sales class not the total number of farms.

obtain positive, but low, net cash returns while the smallest farms have negative net cash returns.

Net cash returns as a percent of gross farm expenses by sales class is a relatively good measure of the ability of a farm business to control cash production expenses. The distribution of net cash return as a percent of gross farm sales varies greatly by farm sales class (Table 12). The highest average net cash rates of return (26% to 27%) to gross farm sales in 1997 occur for farms in the $100,00 to $999,999 sales classes. Net cash rates of return are between 19% and 21% for farm sizes of $50,000 - $99,999 and greater than $1,000,000 of gross farm sales. Average net cash returns are negative for farms with less than $20,000 of gross sales.

Net cash losses from farming (cash production expenses exceeded gross farm sales) were reported for 36.3% of SD farms in 1997 (Table 12). The proportion of medium and large farms reporting net cash losses varied from 8% to 15%, while 75% of the very smallest farms (less than $10,000 of farm product sales) reported net cash losses in 1997.

From a financial perspective, the largest farms (on average) had the highest turnover rate of farm product sales in relation to durable assets (farm real estate and machinery/equipment) controlled and moderate – to – high rates of return on farm product sales. Medium size farms had average sales turnover rates, but the highest net cash rate of return permitting many of them to stay competitive. Small and very small farms had the lowest sales turnover rates and the lowest net cash rates of return. This makes it difficult (on average) for smaller farms to compete for additional capital resources, because they are not generating sufficient net cash returns.

Sales concentration trends

During the past four decades (1959 to 1997) the concentration of agricultural product sales has steadily increased for South Dakota farms. Data in Table 13 show the proportion of gross farm sales generated by a specific proportion of farms ranked by size in each time period. The top 50% of farms generated 93.4% of farm product sales volume in 1997, compared to 75.4% in 1959. The top 3% of South Dakota farms has generated most of the increased share in farm product sales! These larger farms have

increased their share of farm product sales from 18.1% in 1959 to 32.8% in 1997. The next 47 percent of farms have maintained between 57 to 62 percent of farm product sales volume during the 38-year period. Meanwhile the bottom 50% (smallest) of farms have dropped from nearly one-fourth (24.6%) of farm product sales in 1959 to only one-fifteenth (6.6%) of farm product sales in 1997.

The more recent issues of the Census of Agriculture have included a different breakdown of sales by number of farms as shown in Table 14. The table shows the number of farms that sell a given percentage of the state's production. In 1997 just 67 farms, or about 0.2% of the total number of farms, accounted for 10% of total farm product sales in South Dakota. However, the number of farms needed to produce 10% of the sales actually increased from 46 farms in 1987 to 67 farms in 1997. Hence, the increasing concentration in sales volume has not occurred among the very largest farms in South Dakota.

The rest of the market value breakdowns reinforce the conclusions of the other sales concentration breakdown. Medium size and large size farms have become larger in terms of sales volume. The absolute number of total farms accounting for 25%, 50%, and 75% of sales volume have decreased from 1987 to 1997.

Farm corporations

The number of farm corporations has increased over time in South Dakota. In 1997 there were 1298 corporate farms or about 4% of the total number of farms in S.D. The trend is likely to be disrupted, in part because of Amendment E. A breakdown of farm corporations by sales class is shown in Table 15. There are farm corporations in each of the sales classes defined in the table, reflecting a broad span of farm sizes. However, a majority of farm corporations have annual sales volumes above $100,000. A comparison across classes shows that corporate farms represent over 27% of farms with sales of $500,000 and above. In contrast, corporate farms make up less than 2% of farms with less than $20,000 in sales.

Table 13. Concentration of Gross Farm Sales by South Dakota Farms Ranked According to Sales, 1959-1997.

Proportion of farms ranked by sales	Proportion of Gross Farm Sales, Cumulative				
	1959[a]	1969[a]	1978	1987	1997
			percent		
Top 3%	18.1	23.2	25.7	31.4	32.8
Top 10%	35.2	39.5	48.9	47.8	53.9
Top 20%	51.9	54.7	63	66.2	67.5
Top 33%	64.3	68.5	75.9	78.6	83.1
Top 50%	75.4	81.9	87.4	90.6	93.4

Sources: U.S. Department of Commerce, Bureau of the Census, 1959 Census of Agriculture, South Dakota, Vol.1, Table 17, 1969 Census of Agriculture, South Dakota, Vol.1, Table 13, 1978 Census of Agriculture, South Dakota, Vol.1, Table 10, 1987 Census of Agriculture, South Dakota, Vol. 1, Table 2. U.S. Department of Agriculture, National Agricultural Statistics Service, 1997 Census of Agriculture, South Dakota, Vol. 1, Table 2.

Note: [a]The figures for 1959 and 1969 are based on farms with sales over $2,500.

Table 14. Fewest farms necessary to account for different percentages of sales volume, South Dakota, 1987-1997.

Percent of Sales	Year		
	1987	1992	1997
10	46	50	67
25	532	468	476
50	3,461	3,041	2,578
75	9,985	8,873	7,427
100	36,376	34,057	31,284

Sources: U.S. Department of Commerce, Bureau of the Census, 1987 Census of Agriculture, South Dakota, Vol. 1, Table 47, 1992 Census of Agriculture, South Dakota, Vol. 1, Table 45. U.S. Department of Agriculture, National Agricultural Statistics Service, 1997 Census of Agriculture, South Dakota, Vol. 1, Table 45.

Table 15. Relationship of farm corporations to farm sales volume, South Dakota, 1997.

Sales Volume per farm ($1000)	Total Number of Farms	Farm Corporations as a Percent of All Farms in Each Sales Class[a]	Total Farm Corporations	
			Number	Percent of all Farm Corporations
$500 and above	998	27.2	271	20.9
100-499	8,449	6.7	566	43.6
20-99	11,413	2.4	271	20.9
Less than 20	10,424	1.8	190	14.6
Total	31,284	4.1	1,298	100.0

Source: U.S. Department of Agriculture, National Agricultural Statistics Service, 1997 Census of Agriculture, South Dakota, Vol. 1, Table 50.

Note: [a]Farm corporations include both family held and other than family held corporations.

Future trends

All indications are that the larger farms will continue to dominate the agricultural structure in South Dakota. Farms with more than $100,000 in sales represent about 30% of South Dakota farms. At the same time, those farms control 60% of the land and capital in South Dakota There is a stark shift in the net cash returns for farms of this size – reaching 26% of gross farm sales. Farms of this size have a competitive advantage relative to the smaller farms.

The most likely candidates for attaining this more efficient size are the medium and small farms. They will most likely grow at the expense of farms with the smallest sales volumes as they have the lowest net cash returns as a percentage of gross farm sales. The smallest farms may continue, but only as specialized operations. They may engage in a single enterprise using the part-time labor of the operator. While the prospects for growth in sales shares by the largest farms are positive, there is some evidence of diseconomies of size. The largest farms have not been growing significantly in recent years.

IV. LAND TENURE AND OWNERSHIP TRENDS

Land tenure

Land tenure is an important component of agricultural structure because it is concerned with the extent of ownership and control of the farmland resource – which comprises 65 – 70% of the total value of physical assets in South Dakota's farm sector. Land tenure also influences resource organization and control at the farm level, degree of freedom to make business decisions and degree of risks assumed by the owner, ease of entry into farming, and transfer of farmland to the next generation. The key issue in land tenure is the extent of **farm operator control** of the farmland resource by leasing or ownership.

Land tenure statistics, compiled by the U.S. Census of Agriculture, classify farm operators into three main categories:

- **Full owners** operate only land that they own. They may also lease land to other farmers;
- **Part owners** operate land that they own and also lease additional land from others. Some part owners may also lease land to other farmers; and
- **Tenants** operate only land they lease from others.

Land tenure situation and trends in South Dakota are shown in Tables 16 and 17. Major changes in land tenure distribution occurred by 1969 with only modest changes since then. The major changes from 1950 to 1969 were rapid declines in relative importance of farm tenants and increased relative importance of full owners.[4] Part owners continue as the dominant land tenure class in terms of farm numbers and land operated. The average size of part-owner operated farms in 1997 is 1,905 acres (1,024 acres owned and 881 acres leased) compared to 1,013 acres owned and operated by full-owners and 988 acres leased and operated by tenants. The amount

[4] The increase in proportion of full-owners from 1950 to 1969 appear to be related to the high numbers of farmers in the 35 to 54 year age-cohort in 1950 that remained in farming in 1969. These farmers, age 55 and older, attained full-owner status in part by no longer renting additional land. The proportion of full owners stabilized after 1969 in part due to the lower proportion of middle age farmers that would later shift to full owner status.

Table 16. Agricultural land tenure trends in South Dakota, 1950-1997.

Tenure class[a]	1950	1959	1969	1978	1987	1997
			Number of farms			
			percent			
Full owner	31.1	32.0	38.3	38.8	40.8	40.3
Part owner	38.1	40.8	44.5	45.1	42.8	45.8
Manager	0.4	0.4	-	-	-	-
Tenants	30.4	26.8	17.2	16.1	16.4	13.9
Total	100.0	100.0	100.0	100.0	100.0	100.0
Number of farms reporting	66,452	55,727	45,726	39,665	36,376	31,284
			Land in farms			
	1950	1959	1969	1978	1987	1997
	percent					
Full owner	16.9	17.0	28.4	29.3	29.8	28.8
Part owner	61.3	63.8	60.7	60.9	59.1	61.5
Manager	3.9	2.8	-	-	-	-
Tenants	17.9	16.5	10.8	9.8	11.2	9.7
Total	100.0	100.0	100.0	100.0	100.0	100.0

Sources: U.S. Department of Commerce, Bureau of the Census, 1959 Census of Agriculture, South Dakota, Vol. 1, Table 3, 1969 Census of Agriculture, South Dakota, Vol. 1, Table 3, 1987 Census of Agriculture, South Dakota, Vol. 1, Table 16. U.S. Department of Agriculture, National Agricultural Statistics Service, 1997 Census of Agriculture, South Dakota, Vol. 1, Table 16.

Note:

[a]Definitions: Full owners - operated only land they owned
Part owners - operated land they owned and also land they rented from others
Tenants - operated only land they rented from others or worked on shares for others
From 1997 Census of Agriculture,South Dakota, Vol. 1, Appendix A-7.

Table 17. Relationship of farm tenancy in South Dakota to operator age and farm sales volume, 1997.

Age of operator in years	Farm tenure class			
	Full owner	Part owner	Tenant	All farms
	percent of farms			
Less than 35	7.8	8.7	30.9	11.5
35-54	38.3	54.0	48.7	47.0
55 and older	53.8	37.2	20.4	41.6
Total	100.0	100.0	100.0	100.0
Average age	56.1	50.8	42.8	51.8

Farm sales volume	Full owner	Part owner	Tenant	All farms
	percent of farms			
Less than $20,000	55.7	12.5	36.9	33.3
$20,000-99,999	31.5	39.2	41.9	36.5
$100,000-499,999	11.0	43.4	19.4	27.0
$500,000 and above	1.8	4.9	1.8	3.2
Total	100.0	100.0	100.0	100.0
Number of farms	12,598	14,322	4,364	31,284

Source: U.S. Department of Agriculture, National Agricultural Statistics Service, 1997 Census of Agriculture, South Dakota, Vol. 1, Table 46.

and proportion of farmland acres leased by part owners has gradually increased over time.

Farm tenancy varies greatly by age of operator and farm sales volume. Full owners tend to be older farmers with relatively low sales volume – 53.8% are 55 years or older and 55.7% sold less than $20,000 in farm product sales in 1997. Tenants are generally young or middle-age farmers and have less than $100,000 of farm sales volume. Part owners are predominantly in the middle-age group and the higher sales volume classes.

The dominance of part ownership since 1950 indicates renting some of the land operated is a normal part of commercial agriculture in South Dakota and throughout most of the United States. "In many cases, the most efficient method of expanding commercial farm operations is to rent rather than purchase additional farmland. Leasing often conserves expanding farmer's working capital by reducing financial outlays to acquire farmland. Part ownership also permits these farmers to obtain the advantages of farmland ownership and the advantages of farmland leasing. In an economic environment of farm expansion, part ownership is an important capital management strategy to increase current returns and to reduce business risk" (Janssen, pp. 476, 1993).

Land ownership

Information on agricultural land ownership is less complete than data on land tenure. National surveys of agricultural land ownership were conducted in 1946, 1978, and 1988. The following commentary on land ownership is based on land tenure / ownership data in the 1997 Census of Agriculture (Table 18), within the context of research reported from the 1978 and 1988 land ownership surveys.

In 1997, farmers **owned** 30.24 million acres (69% of land in farms) of agricultural land in South Dakota, but **owned and operated** only 27.43 million acres or 62% of land in farms. Farmers, mostly full-owners, rented out nearly 3.12 million acres to other farmers. However, 81% of farmland acres leased (13.81 million of 16.93 million acres rented) are owned by non-operator landlords.

Farm renters generally lease from more than one landlord. Overall, there are nearly 18,700 farmers leasing land from 48,300 landlords, including an

Table 18. Agricultural land ownership and leasing, South Dakota, 1997.

Item	Thousands of acres	Units	Number of Units	Average number of Acres per Unit
Land in Farms	44,355	Farm	31,284	1,418
Owned Land in Farms	27,434	Farms Operating owned land	26,920	1,019
Rented or Leased Land in Farms	16,931	Farms Operating leased land	18,686	906
		Landlords	48,261	351
Land Owned by Farmers[a]	30,241	Farms owning land	26,920	1,123
Land Rented or Leased from Other Farms[a]	3,117	Farm Operator Landlords	6,067	514
Nonoperator Landlord[a]	13,814	Nonoperator Landlords	42,194	327

Source: U.S. Department of Agriculture, National Agricultural Statistics Service, U.S. Census of Agriculture, 1997, South Dakota, Vol. 1, Table 46.

Note: [a]Farm ownership leasing data adjusted to exclude impacts of land owned and leased not included in the "Farm operating unit". This includes: 129.2 thousand acres of land owned but not operated by 299 tenants; 94.9 thousand acres of land leased from others and rented to others by 196 full owners; and 198.3 thousand acres leased by tenants to other farmers, both owned and subleased by 465 tenants.

estimated 42,200 non-operator landlords. Farmers tend to own more acres than non-operator landlords – an average of 1,123 acres per farm owner-operator vs. 327 acres per non-operator landlord (Table 18). These results correspond with past research (1986) reported on the South Dakota farmland rental market (Peterson and Janssen, 1988). Renters leasing from more than one landlord is the norm, not the exception. Furthermore, farmland renters often use a combination of cash and share leases.

The number of non-operator landlords (42,200) considerably exceeds the number of farmer owner-operators (26,900). The number of non-operator landlords has increased over time, while the number of South Dakota farm operators owning land has decreased.

Sustained net out-migration of farm youth and relatively high rates of farm retirement are major likely explanations of these ownership trends. A substantial (but unknown) percentage of non-operator landlords are retired farmers or farm widows receiving retirement income from renting out their farm. Also, many non-operator landlords are persons that were raised on the "family farm" but currently live elsewhere and work in other occupations.

Future trends

Farmland rental markets have become and will remain a "permanent" part of the organization of production agriculture in South Dakota and in the United States. "Landlords provide a major source of capital to most commercial farm operators. Their relative importance will continue to gradually increase because (1) commercial farmers are usually able to achieve higher current rates of return by investing in other production assets; (2) farmland ownership is a source of current returns and potential capital appreciation with risk-return characteristics that are attractive to many investors (farmers and landlords); and (3) farmland remains a major source of "consumption income" (utility) for many owners, even though their primary income may be obtained from non-agricultural pursuits." (Janssen, pp. 495, 1993).

The principal farmland buyers during the past 50 years have been established middle-age farmers who already owned some farmland and perhaps rented additional

land. In the future, established farmers[5] and nonfarm investors are likely to be the major buyers of South Dakota farmland. These two groups are in the best position to finance land purchases and have the necessary motivations to purchase agricultural land.

VI. FARM HOUSEHOLD INCOME AND EMPLOYMENT TRENDS

Income received from nonfarm (off-farm) sources is a major component of net income earned by many farm families. Since 1964, a **majority** of net income earned by farm families in the U.S. has originated from off-farm sources. These sources of income include in order of importance: wages and salaries, nonfarm business earnings, interest and dividends, pensions and social security, and nonfarm rental income. Almost three-fifths of off-farm income is earned as wages, salaries, and commissions.

Off-farm income

The most recent statistics on off-farm income are only available at the national level from the USDA. In 1997, the average farm operator household in the U.S. earned $52,347 in income (ERS, 1998). Of that amount only 11.4% or $5,989 came from farming activities. Hence, the majority of farm households do not rely solely on farming for their incomes. The breakdowns by sales class show a consistent pattern at the national level. On average, households with farm sales volume below $50,000 lost money farming in 1997. For households with sales between $50,000 and $250,000, off-farm income exceeded farm income. Only for households with sales volumes above $250,000 did farm income exceed off-farm income.

A regional breakdown of household income is only available as recently as 1995 (Sommer, et al., 1998). In the U.S. the average farm operator household income was $44,392 of which 10.6% came from farming. The situation is quite different in the Northern Plains (North Dakota, South Dakota, Nebraska, and Kansas). Average farm operator household income was lower at $39,148 and 26.1% came from farming. The

[5] Established farmers include South Dakota farmers expanding their operation and some farmers relocating from more urbanized States.

percentage of income from farming in the Northern Plains is the highest among all regions in the U.S. Hence, farm operator households in the Northern Plains would be more sensitive to changes in farm income relative to other U.S. farm households.

The Mitchell Farm Business Management Program records detailed farm records for a cross-section of South Dakota farms. Their most recent annual report includes data from about 80 farms (FBM, 1999). The average sales level for the farms was above $200,000. Net cash operating income across those farms averaged $48,505 for 1998. Non-farm income averaged $16,104 or about 25% of household income. The percent of farm income is much higher than the national average, but not when the sales volume of the farms is considered. Nationwide, net farm income exceeds off-farm income when sales volume is greater than $250,000.

Primary occupation of farm operators

Farming, as the principal occupation, has decreased from 81% to 73% of South Dakota farm operators. The number of operators claiming a different occupation has been increasing, and the pace has been faster in the last ten years. The number and proportion of farm operators reporting full-time off-farm employment and/or reporting their principal occupation is other than farming has increased over time. In 1997, 25.1% of South Dakota farm operators worked 200 or more days in an off-farm job compared to 16.5% in 1978.

The incidence of full-time, off-farm employment and principal occupation of **other than farming** are associated with very small farm operations of less than $20,000 of gross farm sales (Table 19 and Table 20). Approximately two-thirds of farm operators in 1997 that worked off-farm more than 200 days and/or did not consider farming to be their principal occupation reported gross farm sales of less than $20,000. Senior farmers, 55 years of age and older, were much more likely to list their principal occupation as **farming** compared to young and middle-aged farmers (Figure 7).

Days worked off the farm by the farm operator

From 1978 to 1987 there was a noticeable shift from farmers working off farm part time, less than 200 days, to farmers working closer to full time off-farm, more than 200 days. The trend towards more full time off-farm work continued from 1987 to 1997.

Table 19. Farm operators by principal occupation, South Dakota, 1978 - 1997.

Principal occupation	1978	1987	1992	1997
		Number of operators		
Farming	32,174	28,407	26,141	22,704
Other	7,491	7,969	7,916	8,580
Total	39,665	36,376	34,057	31,284
		Percent of operators		
Farming	81.1	78.1	76.8	72.6
Other	18.9	21.9	23.2	27.4
Total	100.0	100.0	100.0	100.0

Sources: U.S. Department of Commerce, Bureau of the Census, 1978 Census of Agriculture, South Dakota, Vol.1, Table 1. U.S. Department of Agriculture, National Agricultural Statistics Service, 1997 Census of Agriculture, South Dakota, Vol. 1, Table 1.

However, during this latter span there was a corresponding decrease in the percentage of farmers without off farm work. This trend is consistent with the recent increase in operators claiming occupations other than farming. The most recent Ag Census (1997) is also the first time that more than a quarter of operators report working close to full time off the farm

Who works off the farm

A more complete analyses of farm household employment and income requires information on employment and income received (by type) by all family members, especially for the operator and spouse. This information is not available in the Census of Agriculture. However, related research data can provide some “ballpark” estimates of the relative importance of **off-farm employment** at the farm household level.

Farm operators and/or their spouses are employed in off-farm work in 61.8% of U.S. farm households. Both farm operator and spouse are employed off-farm in 25.9% of U.S. farm households (Table 22). Only 38.2% of U.S. farm households have neither operator nor spouse working off-farm and over half of these farm operators are over 65 years old (Korb, 1999).

Table 20. Occupation of farm operator by gross farm sales, South Dakota, 1987 and 1997.

	1987		1997	
Gross Sales ($1000)	Farming	Other	Farming	Other
	Number of operators			
Less than $20	6,953	5,911	4,474	5,950
20-99	14,917	1,813	9,225	2,188
100-149	6,128	210	8,052	397
500 and above	409	35	953	45
Total	28,407	7,969	22,704	8,580
Total Operators	36,376		31,284	
	Percent of operators by occupation			
Less than $20	24.5	74.2	19.7	69.3
20-99	52.5	22.8	40.6	25.5
100-149	21.6	2.6	35.5	4.6
500 and above	1.4	0.4	4.2	0.5
Total	100.0	100.0	100.0	100.0
	Percent of total operators			
Less than $20	19.1	16.2	14.3	19.0
20-99	41.0	5.0	29.5	7.0
100-149	16.8	0.6	25.7	1.3
500 and above	1.1	0.1	3.0	0.1
Total	100.0		100.0	

Sources: U.S. Department of Commerce, Bureau of the Census, 1987 Census of Agriculture, South Dakota, Vol. 1, Table 50. U.S. Department of Agriculture, National Agricultural Statistics Service, 1997 Census of Agriculture, South Dakota, Vol. 1, Table 48.

Figure 7. Number of operators in farming and other occupations based on age, 1997

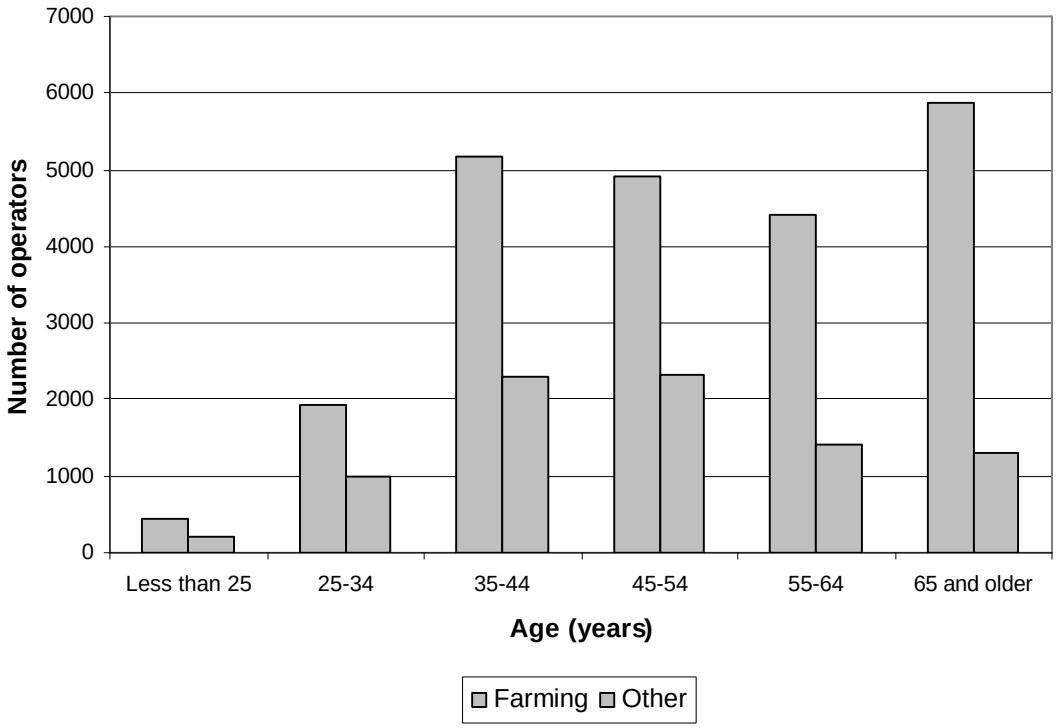


Table 21. Farm operators by days worked off-farm, South Dakota, 1978-1997.

Days Worked Off Farm	1978	1987	1992	1997
		Number of operators		
None	22,242	19,798	18,373	16,003
1 to 199 days	8,559	6,912	5,926	5,760
200 or more days	6,085	6,641	6,614	7,289
Not reported	2,779	3,025	3,144	2,232
Total	39,665	36,376	34,057	31,284
		Percent of operators		
None	60.3	59.4	59.4	55.1
1 to 199 days	23.2	20.7	19.2	19.8
200 or more days	16.5	19.9	21.4	25.1
Total	100.0	100.0	100.0	100.0

Sources: U.S. Department of Commerce, Bureau of the Census, 1978 Census of Agriculture, South Dakota, Vol.1, Table 1. U.S. Department of Agriculture, National Agricultural Statistics Service, 1997 Census of Agriculture, South Dakota, Vol. 1, Table 1.

Table 22. Household members that work off of the farm.

	Only the Operator Works Off-Farm	Only the Spouse Works Off-Farm	Both Work Off-Farm	Neither Work Off-Farm
		percent of total		
U.S. Farm Households, 1994	22.0	14.0	25.0	38.2
Midwest Farm Households, 1994	19.6	17.3	27.8	35.2
S.D. Farm Households, 1997	12.4	19.3	32.5	35.8

Sources: Korb (1999) except the South Dakota numbers, which are from Janssen et.al.
Notes: Korb (1999) reported the sample size for each category and the percentage of the sample in the Midwest. The authors computed the percentages listed for Midwest Households. The survey in Janssen et.al. 1993 only included married couples.

In Midwest farm households it is more likely that either the spouse only or both operator and spouse are working off-farm, relative to the U.S. as a whole (Korb, 1999). Adding the "spouse only" and "neither works" categories one finds that 51.5% of Midwest farm operators do not work off the farm. This percentage is consistent with the 55.1% of South Dakota operators who reported no off farm work.

A projected distribution of off-farm employment of South Dakota farm households (married farm couples) in 1997 is:

- 64% of South Dakota farms with married couples had some off-farm employment;
- 52% of married farm spouses and 45% of married farm operators were employed off-farm, part-time or full-time;
- both operator and spouse were employed off-farm, part-time or full-time, in 33% of South Dakota farm households; and
- only 36% of farm households had no off-farm employment by operator or spouse.

The above projection of South Dakota farm household employment is based on earlier (1989) South Dakota farm household survey data extrapolated to the farm size distribution and operator off-farm employment participation rates reported in the 1997 South Dakota Census of Agriculture.[6]

Hours worked on-farm and off-farm

A more refined breakdown of the hours worked by operators, spouses, and other laborers on farms was also reported in Korb (1999). Data in Table 23 shows the estimated number of hours worked on the farm by the different categories of off-farm work by the operator and spouse. The time the operator worked on the farm was reported in Korb (1999) as were the shares for different workers.

[6] Research on farm business and farm family characteristics of a random sample of 549 South Dakota farm families conducted by SDSU social scientists in 1989 examined labor force participation of married farm operators and their spouses. South Dakota farm families operating small farms with annual gross farm sales of less than $40,000 were underrepresented among respondents. These small farms were 53% (47%) of South Dakota farms in 1987 (1997), but only 21% of respondent farm operations. Results indicated that full-time or part-time off-farm employment was reported in 48% of respondent farm households. However, the incidence of off-farm employment was much higher on small farm operations. (Janssen, Clark, and Stover in Hallam, ed. 1993).

Table 23. Hours worked on the farm by household members.

Item	Only the Operator Works Off-Farm	Only the Spouse Works Off-Farm	Both Work Off-Farm	Neither Work Off-Farm
Time Operator Worked on Farm (Hours/Year)	1,028	2,462	1,046	1,709
Share of Total Hours Worked on Farm (%):				
Operator	62.3	74.6	67.8	69.1
Spouse	21.9	12.6	15.2	15.7
All other workers	15.8	12.8	17.0	15.2
Total Hours Worked on Farm by All Workers (Hours/Year)	1,650	3,300	1,543	2,473

Source: Korb (1999)
Note: The authors computed the total hours worked on Farm.

Several patterns are consistent with what one would expect across the different categories. When both the operator and spouse work off the farm the fewest total hours are worked on the farm. This category also has the highest percentage of "all other workers" contributing labor to the farm operation. When only the operator works off the farm the average number of hours worked on the farm by the operator is the lowest across the different categories. The amount of hours worked by the operators on the farm is slightly above 1000 hours or roughly 20 hours a week. The spouse's share of labor is highest for operations in this category.

The most on-farm work occurs when only the spouse works off the farm. This category is also representative of when the operator works the largest share and most absolute hours. The total worked by the operator is equivalent to about 50 hours a week on the operation. The share of spouse and all other workers is lowest for this category, but the total hours worked on such operations is the highest of the different categories at 3,300 hours a year.

The lower number of on-farm hours worked by farm households where neither works off-farm is closely related to the fact that more than 50% of these farm operations are operated by senior farmers, 65 years of age and older (Korb, 1999).

Future trends and implications

Farm household income levels continue to keep pace with regional and national trends of increasing household income levels. Because the nationwide economic prospects are good, a continued increase in household income levels is anticipated for S.D. farm households. However, the source of household income will most likely come from continued off-farm income sources and labor force participation by a spouse, the operator, or both. While off-farm income provides a stable source of household income, it may come at the cost of running a smaller or more specialized operation, i.e., such a move may reduce the portfolio benefits multiple farm enterprises. The other drawback to consider is that most farm family members who work off the farm do so out of a "need" for additional income (Korb, 1999).

During the past 30 years, South Dakota farm households have been much more likely to have one or more family members employed off-farm. This trend is consistent with family farm and rural industrialization trends in North America and in other developed, industrialized nations around the world (Janssen, 1991).

VII. FARM ENTERPRISE SPECIALIZATION AND DIVERSITY

Major farm enterprise trends in South Dakota

An enterprise is defined as an activity that a farm pursues. Enterprises are classified in different ways to give insight into production behavior that may differ from marketing behavior. One method of classifying enterprises is by land use as shown in Table 24. In 1997 pasture was the dominant use of South Dakota land, accounting for 53% of land in farms. Pasture was also the enterprise reported on the most farms, at just less than 17,000 farms. Corn and hay, when totaled across types, are the largest single types of crops grown, being raised on 3.5 and 3.4 million acres, respectively. Wheat, corn for grain, and soybeans were planted on about 3 million acres in 1997.

Alfalfa, with fewer total acres than wheat, corn, and soybeans, was raised on more farms than

Table 24. Agricultural land use in South Dakota by top 12 major enterprises, 1997, 1992, 1987, 1978.

1997

Rank	Enterprise	Acres[a]	Farms
1	Pasture	23,588.7	16,858
2	Wheat	3,177.5	9,561
3	Corn (grain)	3,175.1	14,342
4	Soybeans	2,939.1	11,700
5	Alfalfa	2,070.8	16,085
6	Hay (wild)	806.8	7,635
7	Sunflowers	740.7	2,858
8	Hay (tame)	517.6	5,843
9	Corn (silage)	308.1	4,785
10	Oats	254.0	3,729
11	Sorghum	106.2	753
12	Barley	104.2	966

1992

Rank	Enterprise	Acres	Farms
1	Pasture	23,946.5	17,326
2	Wheat	3,340.6	12,014
3	Corn (grain)	3,097.3	16,427
4	Soybeans	2,053.5	11,502
5	Alfalfa	1,921.0	17,947
6	Hay (wild)	677.2	7,484
7	Oats	627.6	9,055
8	Hay (tame)	437.2	5,957
9	Corn (silage)	394.1	6,235
10	Barley	361.7	3,285
11	Sunflowers	349.7	1,571
12	Sorghum	245.8	1,561

1987

Rank	Enterprise	Acres	Farms
1	Pasture	23,069.2	17,957
2	Wheat	3,229.4	15,273
3	Corn (grain)	2,573.6	19,448
4	Alfalfa	1,999.0	19,754
5	Soybeans	1,289.3	10,728
6	Oats	920.0	13,558
7	Barley	766.7	7,911
8	Hay (wild)	692.7	8,083
9	Hay (tame)	375.3	5,514
10	Corn (silage)	374.2	6,960
11	Sunflowers	262.8	1,659
12	Sorghum	181.8	1,363

1978

Rank	Enterprise	Acres	Farms
1	Pasture	19,028.4	20,294
2	Wheat	3,051.7	14,773
3	Corn (grain)	2,639.9	21,442
4	Alfalfa	2,347.4	25,120
5	Oats	1,968.6	22,618
6	Hay (wild)	1,067.1	12,332
7	Corn (other)	608.5	2,306
8	Barley	596.3	7,227
9	Sorghum	447.4	5,033
10	Soybeans	391.4	5,239
11	Hay (tame)	331.0	4,862
12	Sunlfowers	134.2	1,006

Sources: U.S. Department of Census, Bureau of the Census 1978 Census of Agriculture, South Dakota, Vol. 1, Tables 28 and 29, 1987 Census of Agriculture, South Dakota, Vol. 1, Tables 44 and 48, 1992 Census of Agriculture, South Dakota, Vol. 1, Tables 42 and 46, U.S. Department of Agriculture, National Agricultural Statistics Service, 1997 Census of Agriculture, South Dakota, Vol.1, Table 42 and 46.
Notes: [a]Land use is reported in 1000 acres. The proportion of land in farms used by the top 12 enterprises varies from 73.4% in 1978, 80.9% in 1987, 83.5% in 1992, and 85.2% in 1997.

those other crops. Sunflowers and oats round out the top ten enterprises in terms of acreage.

The amount of agricultural land in pasture/range, wheat, corn, or alfalfa has remained fairly constant over the time period examined. The largest changes are the increase in soybean acres and the decrease in oats acres. Soybean acres have increased from less than 400,000 acres in 1978 to almost 3 million acres in 1997. Oats acres have decreased from almost 2 million acres in 1978 to less than 300,000 acres in 1997. Barley has declined significantly in terms of acres while sunflowers have gained significantly. There was no apparent shift in land use directly tied to Freedom to Farm, but the impact of this legislation was to accelerate the shift to oilseed acres.

Another way of classifying enterprises is based on relative sales volume as shown in Table 25. Beef cattle are the number one enterprise in 1997 and over the last two decades both in terms of total sales volume and number of farms. The situation in 1997 was somewhat skewed by the unusually high corn and soybean prices which reduced the demand for calves, thus lowering beef cattle sales volume. Soybeans, corn, and wheat had high sales volumes in 1997, which is consistent with the large number of acres devoted to those crops. Hogs and Pigs and the sum of Dairy Products and Dairy Cattle show sales volumes close to wheat, but were used by a smaller number of operators. Hay presents an interesting situation because while over 16,000 operations reported raising alfalfa, less than 8,000 operations reported any hay sales. The anomaly is explained in part by most operations raising hay for feed use on the farm. However, the persistent absence of any fluctuation in buying or selling may reflect an inefficient hay market, where the only way to assure supply is to harvest hay on the operation.

The trends in sales volumes have somewhat reflected trends in land use. Beef cattle dominate sales volume over time, which is consistent with the continued use of land as pasture. Hogs and Pigs have traditionally been the second largest enterprise. However, high corn and bean prices helped to push hogs and pigs to 5th place in terms of sales volume. The sales volume for hogs and pigs has remained fairly stable over

Table 25. Farm product sales volume by major enterprise, South Dakota, 1978-1997.

1997

Rank	Enterprise	Sales ($1000)	Farms
1	Beef Cattle	927,440	17,256
2	Soybeans	567,678	11,693
3	Corn	532,159	12,820
4	Wheat	298,942	9,541
5	Hogs & Pigs	281,516	3,067
6	Dairy Products	164,714	1,458
7	Other Grains	118,123	3,636
8	Hay[a]	80,819	6,719
9	Poultry	73,637	461
10	Dairy Cattle	65,353	1,785
11	Sheep[b]	37,134	2,533
12	Other Livestock	24,380	1,604

1992

Rank	Enterprise	Sales ($1000)	Farms
1	Beef Cattle	1,064,702	18,439
2	Hogs & Pigs	328,765	7,125
3	Corn	323,310	13,350
4	Wheat	293,739	11,985
5	Soybeans	268,791	11,478
6	Dairy Products	177,546	2,353
7	Dairy Cattle	105,501	2,839
8	Hay	61,815	6,775
9	Other Grains	50,385	2,884
10	Poultry	48,336	677
11	Sheep	40,184	3,614
12	Oats	22,461	5,120
13	Barley	20,366	2,322
14	Other Livestock	19,208	1,592

1987

Rank	Enterprise	Sales ($1000)	Farms
1	Beef Cattle	805,909	18,853
2	Hogs & Pigs	316,951	8,265
3	Corn	257,035	15,831
4	Wheat	233,420	15,149
5	Soybeans	180,976	10,710
6	Dairy Products	165,913	3,064
7	Dairy Cattle	105,754	3,876
8	Hay	58,759	7,853
9	Sheep	44,820	4,134
10	Poultry	35,638	1,363
11	Other Grains	34,809	3,917
12	Oats	32,485	7,795
13	Barley	31,776	5,825
14	Other Livestock	22,839	1,756

1978

Rank	Enterprise	Sales ($1000)	Farms
1	Cattle and calves	876,452	29,032
2	Grains	489,545	28,107
3	Hogs & Pigs	259,849	12,996
4	Dairy Products	120,060	4,455
5	Hay[c]	72,593	12,183
6	Sheep	39,730	4,582
7	Poultry	26,788	3,535
8	Other Livestock	14,080	1,565
9	Other Crops	2,416	71

Sources: U.S. Department of Census, Bureau of the Census 1978 Census of Agriculture, South Dakota, Vol. 1, Table10, 1987 Census of Agriculture, South Dakota, Vol. 1, Tables 2, 29, and 30, 1992 Census of Agriculture, South Dakota, Vol. 1, Tables 2, 28, and 29, U.S. Department of Agriculture, National Agricultural Statistics Service, 1997 Census of Agriculture, South Dakota, Vol.1, Table 2, 28, and 29.

Notes: [a]For 1997, 1992, and 1987, the hay category includes hay, silage, and field seeds.
[b]For all years, the sheep category includes sheep, lambs, and wool.
[c]For 1978, the hay category includes hay, field seeds, silage, and forage.

The proportion of gross farm sales attributed to the major enterprise are:
1978 = 99.8%, 1987= 85.6%, 1992 = 87.1%, and 1997 = 88.8%.

time, but the number of producers has declined substantially. Hence, the smallest operators probably stopped producing hogs. Similar scenarios have occurred in dairy and sheep enterprises. The sales volume of soybeans is the big mover among crops and has doubled between 1987 and 1997.

The relative degree and trend in specialization is shown in table 26. The percentages of operations with any livestock and with any grains have both declined from 1987 to 1997. About two-thirds of operations continue to maintain cattle and calves as an enterprise. Both dairy and hogs and pigs enterprises dropped off, especially from 1992 to 1997. Corn, hay, and other grains have remained stable over time. Wheat as an enterprise declined from over 40% of farm operations in 1987 to just over 30% in 1997. The opposite situation is reported for soybeans. Barley and oats show the most dramatic declines as enterprises, dropping from 16% and 21%, respectively, in 1987 to 2% and 6% of farm operations in 1997. The overall trend has been toward less diversified and/or more specialized operations over time.

NAICS classifications and enterprise diversity

The 1997 Census includes a new classification system for summarizing farm activities. The North American Industry Classification System (NAICS) will apply to the United States, Canada, and Mexico and is designed to replace the Standard Industrial Classification (SIC). Farms are given an NAICS category if at least 50 percent of its revenue comes from crops or livestock within a given category. The NAICS system is useful for examining the diversity of enterprises within specific farm categories. For example, questions such as “Are dairy farms more or less diversified than beef ranches?” can be answered with analysis of these classifications. In addition, once significant NAICS data are gathered, it will allow for comparisons across states and into Canada for better insight into the greater Northern Plains region.

A partial selection of NAICS categories is summarized in Table 27. The table rows show a particular NAICS category while the columns show the usual Census category for market sales of a given product. Not all NAICS categories and Census product sales categories are shown in this table.

Table 26. Grain and livestock enterprise specialization in, South Dakota, 1987-1997.

	1987	1992	1997
Number of Farms	36,376	34,057	31,284
Livestock Enterprises	Percent of producers selling livestock and poultry products		
Any livestock	78.1	77.1	73.4
Cattle and calves	67.3	67.0	66.4
Dairy and dairy products	8.7	7.1	4.8
Hogs and pigs	22.7	20.9	9.8
Sheep, lambs, and wool	11.4	10.6	8.1
Poultry and poultry products	3.7	2.0	1.5
Grain Enterprises	Percent of producers selling grains		
Any grains	68.7	63.4	60.8
Corn	43.5	39.2	41.0
Wheat	41.6	35.2	30.5
Soybeans	29.4	33.7	37.4
Sorghum	2.7	3.0	1.8
Barley	16.0	6.8	2.0
Oats	21.4	15.0	6.2
Other grains	10.8	8.5	11.6
Hay	21.6	19.9	21.5

Source: U.S. Department of Agriculture, National Agricultural Statistics Service,1997 Census of Agriculture, South Dakota, Vol. 1, Table 2.

Oilseed and grain farming is the most common category in South Dakota at 13,049 farms (the row total for the NAICS category). *Beef cattle ranching and farming* is the other major category at 10,957 farms. The *other crop farming* category is dominated by hay production in South Dakota (Table 27).

Crop farms tend to be more diversified than livestock oriented farms. For example, 92% of the 13,049 *Oilseed and grain farms* reported grain sales in 1997, 46% reported sales of cattle and calves, and 21% reported sales of hay or silage. Nearly 82% of the *other crop farms* sold hay or silage, 49% reported sales of cattle and calves, and 46% reported grain sales. Nearly 15% of *other crop farms* and 8% of *oilseed and grain farms* sold hogs and pigs in 1997, but less than 2% of these farms sold dairy products.

Beef cattle farms and ranches were the least likely to have any other enterprise except cattle or calves. For example, only 35% of these farms reported grain sales, only 13% reported hay or silage sales, and less than 5% reported any sales of dairy products or hogs and pigs. The lack of diversity among predominantly beef farms is likely explained by the lack of alternative uses for rangeland. Hence, beef producer incomes are highly susceptible to fluctuations in beef prices as they are not likely to have another profitable enterprise in a given year.

Farms classified as *Dairy cattle and milk production* and *Hog and pig farming* share a similar diversity pattern. More than half of these farms sold grains and sold cattle and calves in addition to their dominant enterprise. In fact, dairy operations were the second most likely type of farm to sell grains, but the least likely to sell hay. While dairy operations naturally have calves to sell, one can assume that a portion of their cattle and calf sales also include beef. The diversity of dairy and hog operations perhaps further accentuates the geographic opportunities or constraints prevalent in South Dakota.

Moving down the columns of Table 27 provides a different perspective on the engagement of South Dakota farms in different enterprises. Grains, cattle and calves, and dairy products tend to be dominated by operations classified as such. For example, 63% of farms with sales of grains were classified as *Oilseed and grain farming*. However, sales of grains and cattle and calves where common across all other types of

Table 27. Cross-classification of farms by NAICS category and commodity sales, South Dakota, 1997

	Census Category					
	Oilseeds and Grains	Hay, silage, and field seeds	Cattle and calves	Dairy Products	Hogs and Pigs	Total Farms
NAICS Category	Number of Farms					
Oilseed and grain farming	11,978	2,768	6,031	166	980	13,049
Hay farming	1,095	1,925	1,154	43	355	2,357
Beef cattle ranching and farming	3,882	1,428	10,736	317	467	10,957
Dairy cattle and milk production	589	93	927	930	50	932
Hog and pig farming	504	139	446	27	867	868
Total Farms	19,026	6,719	20,782	1,511	3,067	31,284

Source: U.S. Department of Agriculture, National Agricultural Statistics Service, 1997 Census of Agriculture, South Dakota, Vol. 1, Table 51.

farms, ranging from 35% to 63% for grains and from 46% to 51% for cattle and calves. In contrast, only 1-3% of farms in other categories had dairy product sales. This finding confirms the casual observations that dairy operations require specific assets and are resource intensive (especially in terms of labor). Both hay and hog sales occur in the middle ranges across different types of farms. Hence, they require some specialization and are not as widely ventured into as grain or beef.

Enterprise diversification is somewhat less pronounced when considering the volume of sales revenue across different NAICS categories. Data in table 28 show sales revenue for the cross-classification of NAICS categories and market values of different products. For all NAICS categories except *Other crop farming* a high percentage of product sales comes from the corresponding commodity. Sales of hay only account for 23% of the sales revenue for *other crop farms.* Sales of grains and cattle and calves account for 82% and 79%, respectively, of sales for *oilseed and grain farms* and *beef cattle ranches and farms.* Similarly, dairy products account for 74% of the sales revenue from *dairy farms,* while hogs and pigs sales account for 75% of sales revenue from *hog and pig farms.*

Table 28. Sales concentrations by NAICS categories, South Dakota, 1997.

NAICS Item	Grains	Hay, silage, and field seeds	Cattle and calves	Dairy Products	Hogs and Pigs
	Percent of sales revenue by NAICS category across all farms[a]				
Oilseed and grain farming	81.3	33.7	14.8	6.0	12.2
Hay farming	2.8	42.2	3.2	1.7	6.3
Beef cattle ranching and farming	8.2	16.8	51.8	13.2	3.6
Dairy cattle and milk production	1.4	1.6	1.5	75.2	0.4
Hog and pig farming	2.1	1.3	0.9	2.1	64.1

Notes: [a]The data values represent the percent of revenue based on the NAICS item. (The denominator value is the total revenue for each NAICS item and the numerators represent the revenue of the broad classification.)

The columns in Table 28 allow insights into the dominance of farm types in producing a particular commodity. For example, *Oilseed and grain farms* generate 81% of sales revenue from grains in South Dakota. Such a relation is slightly less pronounced for dairy and hog operations, which account for 75% of sales of dairy products and 64% of sales of hogs and pigs, respectively. However, *beef cattle ranches and farms* only account for 52% of sales revenue of cattle and calves. The remaining NAICS categories (principally grain and dairy farms) account for an additional 22% of sales. The residual is mostly attributable to beef feedlots that are a separate NAICS category not included here.

Overall, most South Dakota farms have primary and secondary enterprises, based on analysis of incidence of sales revenue. Most farm types obtain at least 70% of their sales revenue from their primary enterprises. However, the profit contribution of different enterprises, which would allow for analysis of farms based on their enterprise portfolio, is not available from Census records.

Sales revenue needed to achieve different income levels

The size of farming operations has increased over time, and noticeably so in South Dakota. A larger operation, in terms of sales volume, is presumably associated with a larger overall level of profit for reinvestment in the farm operation or transferred to the farm household for living expenses. The aggregate net cash return for South Dakota farms was about 22.5% of total sales in 1997. Thus every $1000 in sales generated about $225 in net cash income that a farm could use to expand the operation, to make principal payments on term debt, or to pay household living expenses. That benchmark can be used to make some comparisons between enterprise sizes and incomes.

Per-capita income in South Dakota in 1997 was just over $21,000. Likewise, mean household income in the Northern Plains in 1995 was just over $39,000. Thus, to obtain a comparable level of net income a farm operation would need a minimum target sales volume 4.5 times higher. Hence, to make the average per-capita income level would require a farm generating about $95,000 in sales. To make the average household income level would require a farm generating $175,000 in sales.

Of course, farm operations expanding in size and net worth require some reinvestment of net cash income into the farm business. Thus, the amount of net cash income required is more than the amount of net cash income used for family living expenses. The minimum farm size needed to achieve average household income levels and necessary reinvestment for farm growth illustrates some of the problems encountered by operators of small and medium size farms. Being self-employed, operators must also fund fringe benefits out of net cash income, such as Social Security and health insurance premiums. In addition, most small farms with gross sales of less than $100,000 have below average (or negative) net cash rates of return.

Specific or multiple enterprises make up the typical farm in South Dakota. Each enterprise can contribute to the total sales volume for the operation. The sizes of different enterprises that would give certain sales volumes are shown in Tables 29 and 30. For example, it would have taken 460 acres of corn to generate $100,000 in sales in 1997. This amount is determined by dividing $100,000 by the product of the average yield and price received per acre. While the relative profitability of different enterprises cannot be determined, the table does indicate the general size and scope of farming operation needed to generate a given level of gross cash farm income.

VIII. PROFILE OF SOUTH DAKOTA FARMS BY ECONOMIC CLASS

We have reviewed many trends affecting South Dakota's farm sector in the past 20 to 50 years. The major trends include: (1) decreased farm numbers and increased farm sizes, whether measured by acres or sales volume, (2) increased concentration of farm product sales by the largest 3% to 10% of farms, (3) dominance of part ownership among commercial farms and increased importance of farmland leasing from non-operator landlords, (4) increased importance of off-farm employment and income, and (5) enterprise specialization and concentration.

The economic diversity of South Dakota's farm sector is evident from the data presented. One major finding is that most trends are related to farm size as measured by volume of farm products sold.

Table 29. Average number of acres needed to achieve enterprise sales volume levels, South Dakota, 1997.

Enterprise:	Enterprise Sales Volume in 1997		
	20,000	100,000	500,000
	Number of Acres Needed		
Corn	92	460	2299
Wheat	182	909	4545
Soybeans	102	508	2538
C-W-S[a]	125	626	3128

Sources: Based on prices and yield data from South Dakota Agriculture Statistics, 1997-1998, 1996-1997, 1995-1996, 1994-1995, 1993-1994, 1992-1993.
Note: [a]C-W-S represents a rotation planting of corn, wheat, and soybeans.

Table 30. Average number of animals needed to achieve enterprise gross sales volume levels, South Dakota, 1997.

Enterprise:	Enterprise Sales Volume		
	20,000	100,000	500,000
	Number of Animals Needed		
Slaughter steers (1150 - 1250 lb)	20-25	110-125	550-605
Calves (450 - 500 lb)	45-55	240-270	1200-1350
Slaughter hogs (240 - 260 lb)	150-170	760-830	3800-4150
Slaughter lambs (120 - 140 lb)	170-200	850-1000	4300-5000
Dairy cows (160 - 180 cwt of milk production)	8-10	42-48	211-238

Sources: Based on price data from South Dakota Agriculture Statistics, 1997-1998, 1996-1997, 1995-1996, 1994-1995, 1993-1994, 1992-1993.

Sales class is probably the best descriptive variable that is readily available to assess structural trends and conditions in the farm sector. We have developed a profile of South Dakota farm operations by four economic classes:

	1997 farm product sales volume of:
Large	$500,000 or more
Medium	$100,000 to $499,999
Small	$ 20,000 to $ 99,999
Very small	Less than $20,000

Several key characteristics of South Dakota farms and farm operators by economic sales class are shown in Tables 31 and 32. These characteristics along with information presented throughout this report are analyzed for each economic sales class so that a representative profile can be presented.[7]

Large farms ($500,000 or more in sales)

Large farms, only 3.2% of all South Dakota farms, generated one-third of gross farm receipts and similar proportions of cash production expenses and net cash returns from farm product sales. Less than 10% of large farms reported net cash return losses from farming in 1997.

Nearly one-half of these farms are partnerships or corporations – usually multi-family units (parents and children, brothers and sisters, etc.). In many cases, the multi-family unit structure makes it possible for individual family members to specialize in specific enterprises (crops or livestock) or farm operations (crop production, animal husbandry, or marketing). It also indicates the importance of multi-operator management and continuity of management in these larger farms.

[7] A recent (1998) farm typology classification system developed by the U.S. Dept. of Agriculture's Economic Research Service uses gross farm sales combined with principal occupation, operator age and other characteristics to classify U.S. farms for analytical and policy purposes. Our "Large" farm class includes the ERS classes of large commercial family farm and industrial farms. Our medium class includes the ERS classes of small commercial

Table 31. Selected Characteristics of South Dakota Farms and Farm Operators by Economic Class, 1997.

Economic Class: Sales Volume	Large $500,000 or more	Medium $100,000-499,999	Small $20,000-99,999	Very Small Less than $20,000	Total
Number of Farms	998	8449	11413	10424	31284
Proportion of Farm Operators in Each Sales Class:					
Age					
Less than 25 years old	0.6	1.0	2.3	3.0	2.1
25-34 years old	6.9	8.6	9.8	9.6	9.3
35-44 years old	27.6	29.1	22.7	20.5	23.8
45-54 years old	28.5	26.6	20.9	22.2	23.1
55-64 years old	19.2	20.4	19.0	16.6	18.6
65 years and older	17.2	14.3	25.3	28.1	23.0
Total	100.0	100.0	100.0	100.0	100.0
Tenure					
Full owner	22.4	16.4	34.8	67.3	40.3
Part owner	69.7	73.6	49.2	17.2	45.8
Tenant	7.8	10.0	16.0	15.4	13.9
Total	100.0	100.0	100.0	100.0	100.0
Business Organization					
Individual or family	51.7	82.6	89.6	90.3	86.7
Partnership	20.0	10.2	7.6	6.5	8.3
Corporation[a]	27.2	6.7	2.4	1.8	4.1
Other[b]	1.1	0.5	0.5	1.4	0.8
Total	100.0	100.0	100.0	100.0	100.0
Size of Farm (Acres Operated)					
Less than 180	6.2	2.5	13.2	64.1	27.0
180-499	2.2	7.1	31.6	21.7	20.8
500-999	5.3	25.1	25.2	7.9	18.8
1000-1999	14.1	32.2	16.9	3.7	16.6
2000 and over	72.1	33.1	13.1	2.6	16.9
Total	100.0	100.0	100.0	100.0	100.0
Majority of Sales from:					
Livestock	57.8	41.0	48.1	59.2	50.2
Crops	42.2	59.0	51.9	40.8	49.8
Total	100.0	100.0	100.0	100.0	100.0
Labor Characteristics					
Farm Operator works 200 or more days in an off-farm job	4.8	5.0	19.1	44.5	23.3
Farm Operators principal occupation is not farming	4.5	4.7	19.2	57.1	27.4
Farm Operator with full-time hired labor	65.1	27.0	9.6	3.2	13.9

Source: U.S. Department of Agriculture, National Agricultural Statistics Service, 1997 Census of Agriculture, South Dakota, Vol. 1, Tables 50 and 51.

Notes: [a]Corporations include both family held corporations and other than family held corporations.
[b]The other category includes cooperatives, estates or trusts, institutions, and other organizations.

Table 32. Financial indicators of South Dakota farms and farm operators by economic class, 1997.

Economic Class: Sales Volume	Large $500,000 or more	Medium $100,000-499,999	Small $20,000-99,999	Very Small Less than $20,000	Total
	percent of farms in each economic class				
Farm Operators reporting interest expense	96.9	84.1	72.4	40.5	65.7
	average per farm				
Value of farm durable assets ($1000)[a]	2,632.8	970.1	437.1	218.4	578.2
Gross farm sales ($1000)	1,213.8	200.4	52.1	6.8	114.1
Net cash returns ($1000)	280.9	52.7	8.9	-2.5	25.6
	percent average ratio for each economic class				
Gross farm sales / Durable assets (%)	46.1	20.7	11.9	3.1	19.7
Net cash return / Gross farm sales (%)	23.1	26.3	17.1	-36.8	22.4
Net cash return / Durable assets (%)	10.7	5.4	2.0	-1.1	4.4

Source: U.S. Department of Agriculture, National Agricultural Statistics Service, 1997 Census of Agriculture, South Dakota, Vol. 1, Table 50.
Note: [a]The value of farm durable assets is the average per farm value of land, buildings, machinery, and equipment.

Most (72%) of these farms are more than 2000 acres in size. Farmers in this acre size category operate an average of 5560 acres, including 3425 acres of owned land and 2135 acres of leased land. Surprisingly, the large farms are more cropland intensive than medium size farms and average 2640 acres of harvested cropland.

Though large in size compared to other South Dakota farms and ranches, these farms have little market power to influence commodity prices. These farms are of sufficient size to achieve most technical (production) economies of size in farming and have quickly adopted new technology. Approximately 65% of these farms employ full-time hired labor and less than 5% of farm operators are employed full-time off-farm.

Operators of large farms generally rely on net farm income as their major source of household income. These farms usually receive the highest net farm income among all farms because they generate large sales volumes and control more assets than other farms. Most large farm operators are part owners and rent farmland from several landlords – an important source of capital. Most large farms (97%) are indebted and control an average of $ 2.24 million dollars of farm real estate assets and $390,000 of farm machinery and equipment. Large farms tend to have the highest rate of sales turnover per $100 of farm capital assets (real estate and machinery) and above average rates of net cash return per $100 of farm product sales.

Large farms are expected to continue to expand in size, due to rapid and successful adoption of new technology and due to greater potential of managerial continuity in a multi-family structure. Furthermore, some medium size farms will expand sufficiently to join their ranks.

Medium farms ($100,000 to $500,000 of sales)

Medium size farms are the typical example of commercial family farms in South Dakota. These 8450 medium size farms, 27% of all South Dakota farms, generate 47% of farm sales volume, 44% of farm production expenses, and 55% of net cash returns from farm product sales. In 1997, net cash returns from farm product sales (excluding government payments) averaged 26% of gross farm sales for medium size farms (and for large farms with sales of less than $1,000,000)–the highest rate of return

on sales of all farm sizes. However, nearly 15% of medium size farm operations had negative net cash returns from farm product sales.

Many of these farms are large enough to achieve most production economies of size in farming. However, many other medium size farms are struggling to increase their economic size and net returns per household enough to remain in commercial farming without shifting to primary reliance on off-farm employment and income.

Two-thirds of the medium farm operators own and lease more than 1000 acres. Average farm size is 2380 acres consisting of 1400 acres owned and 980 acres leased. Medium size and large farms tend to have similar land tenure arrangements with part-ownership as the predominant tenure category. Medium farms are also capital intensive, controlling an average of $806,000 of farm real estate and $164,000 of farm machinery and equipment. Most operators (84%) of medium size farms borrow money for farm operating expenses or farm capital purchases. Relative to other economic classes, medium farms tend to have moderate rates of sales turnover per $1000 of capital assets.

Only 16% of medium farms are organized as partnerships or corporations - a profile similar to smaller farms and much different than large farms. However, the operator age distribution of medium and large farms is very similar with 56% of farm operators in the middle-age (35 to 54 years old) category, compared to only 43% of farmers operating small and very small farms. Furthermore, less than 5% of medium or large farm operators are employed off-farm or consider their principal occupation as **other than farming**.

Medium size farms are usually one-family operations relying mostly on family labor and net income generated from farming. Only 27% employ full-time hired labor and few operators are employed off-farm. There are two key differences in labor resource use between medium size farms and other farm operations. Large farm operations tend to rely much more on hired labor and multi-family labor. Smaller farms tend to use more operator and family labor resources in off-farm employment.

Small farms ($20,000 to $100,000 of sales)

Small farms are still the most numerous size group with 11,400 farms but their numbers and relative economic importance has been steadily declining. In 1959, small farms (sales volume adjusted for changes in farmer purchasing power) were a majority of South Dakota farms. In 1997, small farms were 36.5% of all farms generating only 16.7% of gross farm sales, 18.6% of farm production expenses and 12.7% of net cash returns from farm product sales. Net cash returns in 1997 was only 17% of gross farm sales, much lower than the 26% net return on sales obtained by medium size farms. In addition, 28% of small farms reported negative net cash returns from farm product sales.

Most (74%) small farms operate 180 to 2000 acres, with an average farm size of 1142 acres, consisting of 728 acres owned and 414 acres leased. One-half of small farm operators are part owner operators, one-third are full owners, and one-sixth are tenants. Small farms and very small farms have a much higher proportion of senior farm operators than is the case for medium and large farms. Nearly 45% of smaller farms are operated by senior farmers, 55 years of age and older, compared to about 35% of medium and large farm operators. This age distribution probably explains the higher incidence of full owners in the land tenure pattern of small farms, as senior farmers are more likely to be full-owners.

Most (81%) operators of small farms are primarily employed on their farms and consider their principal occupation as **farming**. However, a majority of household income is probably obtained from off-farm sources such as income earned by working spouses and from social security.

Most (72%) operators of small farms borrow money for farm operating expenses or farm capital purchases. Small farms are fairly capital intensive controlling an average of $369,000 of farm real estate assets and $68,000 of farm machinery and equipment. Compared to large and medium farms, small farms generate: (1) lower average sales turnover rates per $100 of farm capital assets, and (2) much lower rates of net cash return per $100 of farm product sales. This combination is much of the financial explanation for the economic pressures encountered by small farms.

Small farms used to be the place to get started in farming. In 1978, 22% of small farm operators (3500 farmers) were young farmers less than 35 years old. In 1997, young farmers are only 12% of all farmers and only 35% of their former number. The decline in the number and percent of young farmers is much higher among small and medium size farms than among large farms or very small farms. These findings are directly related to the higher capital requirements necessary to get started in farming, stricter lending policies, and minimal federal programs for beginning farmers.

The small farm continues as a place to live and work in one's senior or retirement years. The small farm size is not well suited for most middle-age operators who rely on the farm for a majority of their household income. Most small farms do not generate sufficient net income for a "middle class" living standard. Increasingly farmers in this group (and many medium size farms) are faced with five options:

- expand to a larger farm size, usually by borrowing more money;
- reduce input costs and increase net income by switching to more sustainable farming practices;
- limit the scope of farm operation and obtain more off-farm income;
- remain the same relative size and accept lower returns; or
- leave farming.

Very small farms (sales of less than $20,000)

Very small farms are best viewed as "residential farms" which provide a rural farm lifestyle, but do not provide a major source of household income. These farms have increased in numbers over time. These 10,400 farms are one-third of all South Dakota farms, but they generate only 2% of gross farm sales and incur 3.5% of farm production expenses. Average net cash returns from farm product sales are negative (-$2,500 per farm) with 65% of very small farms reporting negative net cash returns from farming. By most standards, very small farms are not viable economic units and cannot generate adequate net incomes for family living. However, these residential farm operators are important to the economic and social fabric of rural communities in South

Dakota. Furthermore, their numbers are increasing unlike their small and medium farm operator counterparts.

A majority of these very small farm operators do not consider farming as their principal occupation and 44.5% are employed full-time off-farm. Another 28% are 65 years of age or older and are likely retired. Many (perhaps a majority of) families in this size group are two wage-earner families, while most other families living on very small farms have one off-farm wage earner or rely on retirement income as a major source of family income.

Nearly 65% of very small farms are less than 180 acres operated and very few exceed 1000 acres. Two-thirds of these operators own all of the land that they farm, the only economic class category where the number of full-owners exceeds the number of part owners.

Only two-fifths of very small farm operations are indebted. Very small farms control an average of $189,000 of farm real estate and $29,300 of farm machinery and equipment. Most operators of very small farms are financially able to enjoy a modest rural-oriented lifestyle because a majority of current household income originates from off-farm employment, or from past investments, social security, and pensions.

Rural residents engaged in some farming activity probably describes most families that live on very small farms in South Dakota today. These farmers are important to continued viability of many rural communities, but their continued existence depends as much on retirement benefits and economic conditions of businesses within commuting distance as on direct receipts from farming. In a sense, these farmers remain dependent on the rural economy but their major source of family earnings is indirectly channeled through payrolls of businesses located in South Dakota communities.

IX. CONCLUSIONS

South Dakota's agriculture has undergone many changes throughout the last century, particularly in the past few decades. Both national and international forces

have changed the structure of the farm economy. These forces include, but are not limited to, the economic prosperity in South Dakota and the U.S., policy changes, the industrialization of agriculture, and external changes such as changes in tastes and preferences of consumers. This report outlines some of the major structural changes that have occurred in S.D., both to farm businesses and to farm operators. Furthermore, it has provided an indication of what may happen to agriculture in the future.

Farm numbers are dwindling while average farm size is steadily expanding. Operators of small- to middle-sized farms face more challenges in light of the economies of size obtained by large farms. These large operations, which only account for a small portion of the total number of farms in S.D., dominate a major portion of total sales volume in the state.

Land tenure and ownership trends are also major indicators of changes in agriculture. In South Dakota, older farmers are the predominant full owners, but they have relatively low sales volumes. Middle-aged operators are mainly part owners with larger sales volumes. Moreover, the number of operators who own and farm their own land is considerably less than the number of non-operator landlords across all producer categories.

The combination of low returns on small operations and the strong overall economy has played a major role in the increase of off-farm employment. Many operators and/or their spouses have sought off-farm income to supplement farm income. Farmers have continued farming for more years than in the past; at the same time, there are less young operators entering farming.

South Dakota continues to show a broad mix of enterprises undertaken on the average farm. Changes in government policy and shifts in demand for various commodities have resulted in a significant change in the composition of commodities produced. Soybean acres have increased greatly over the past two decades; however, this increase has come at the expense of oat and barley acres. Other enterprises, namely corn, alfalfa, wheat, and beef, remained relatively stable. Beef cattle continue to provide the largest portion of farm product sales in South Dakota, a position held for decades.

Myriad elements will affect the future of farming. Predicting the direction this complex arena will take is difficult, but past information and trends provide some indications about the future. If South Dakota follows the established trends the most notable changes will be in the number of farm operators and the size of the operations, which will decrease and increase respectively. It is also highly likely that non-farmer investors and established farmers will be the dominant land purchasers in future years.

The prevalence of off-farm incomes, which have been a consequence of past structural changes, will now influence change. The increased dependence on off-farm income can potentially lead to less diversification on farm operations as operators become more focused or specialized with the limited time devoted to farming. This may result in less diversified farm portfolios that operators will have to balance against the benefits of the off-farm income.

Finally, there has been profitability in farming. The operations with significant size have been able to generate positive returns and the economies of size associated with large farms may be obtainable. It is possible that smaller operations, particularly between families, will combine to remain competitive in today's farm structure in South Dakota.

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