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# The Changing Composition of South Dakot's Farm and Ranch Enterprises

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## The Changing Composition of South Dakota's Farm and Ranch Enterprises

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"Don't put all your eggs in one basket." – Unknown[1]
"Put all your eggs in one basket and – WATCH THAT BASKET." – Mark Twain

The two preceding quotes describe the opposite ends of the investment spectrum. The first quote evokes portfolio theory, which tells us that there are valuable risk-reducing benefits of diversifying across multiple enterprises. At the farm level, this implies that raising corn and hay may provide more stable income than raising corn alone. Twain's advice calls for specializing in one enterprise. Economic theory tells us specialization results in economies of scale, where the per-unit costs decline as an operation becomes larger. Back at the farm level, raising only corn eliminates haying equipment and results in a lower per-bushel cost as the combine covers more acres. In reality, most farms and ranches tend to fall in the middle of the spectrum.

Aggregated at the state level, the degrees of specialization and diversification determine the comparative advantage producers may have and the extent to which producers are insulated from shocks to any one enterprise's profitability. For example, South Dakota is specialized in cow-calf enterprises relative to other states. Consequently, the cow-calf enterprises will be relatively more profitable because of their cost advantage. South Dakota is also diversified relative to other states. Thus, when an enterprise such as dairy has a period of low income, South Dakota's agricultural economy is not as impacted as those of Wisconsin or Pennsylvania. In this article, the trends in specialization and diversification are examined for South Dakota's agricultural enterprises, as is the composition of those enterprises. For a more in depth look at this topic see "*The Structure of South Dakota Agriculture: Changes and Projections.*"[2]

### Land Use Trends

Enterprises are often classified in different ways to give insight into production behavior that may differ from marketing behavior. One method of examining enterprises is by land use as shown in Table 1. In 1997 pasture was the dominant use of South Dakota land, accounting for 53% of land in

**Table 1. Agricultural land use by major enterprise, South Dakota, 1987 and 1997.**

| Rank | Enterprise | Acres (1000) | Farms |
|------|-----------|-------------|-------|
| | | 1997 | |
| 1 | Pasture | 23,589 | 16,858 |
| 2 | Wheat | 3,178 | 9,561 |
| 3 | Corn (grain) | 3,175 | 14,342 |
| 4 | Soybeans | 2,939 | 11,700 |
| 5 | Alfalfa | 2,071 | 16,085 |
| 6 | Hay (wild) | 807 | 7,635 |
| 7 | Sunflowers | 741 | 2,858 |
| 8 | Hay (tame) | 518 | 5,843 |
| 9 | Corn (silage) | 308 | 4,785 |
| 10 | Oats | 254 | 3,729 |
| 11 | Sorghum | 106 | 753 |
| 12 | Barley | 104 | 966 |
| | | 1987 | |
| 1 | Pasture | 23,069 | 17,957 |
| 2 | Wheat | 3,229 | 15,273 |
| 3 | Corn (grain) | 2,574 | 19,448 |
| 4 | Alfalfa | 1,999 | 19,754 |
| 5 | Soybeans | 1,289 | 10,728 |
| 6 | Oats | 920 | 13,558 |
| 7 | Barley | 767 | 7,911 |
| 8 | Hay (wild) | 693 | 8,083 |
| 9 | Hay (tame) | 375 | 5,514 |
| 10 | Corn (silage) | 374 | 6,960 |
| 11 | Sunflowers | 263 | 1,659 |
| 12 | Sorghum | 182 | 1,363 |

Sources: U.S. Department of Census and U.S. Department of Agriculture.

farms. Pasture was also the enterprise reported on the most farms, at just less than 17,000 farms. In terms of acres, corn and hay dominated the most acres being raised on 3.5 and 3.4 million acres, respectively. Producers planted wheat, corn for grain, and soybeans on about 3 million acres in 1997. Producers raised alfalfa on more farms than wheat, corn, and soybeans, but with fewer total acres. 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 constant since 1987. However, the proportion of land in farms used by the top 12 enterprises rose from 81% in 1987 to 85% in 1997. The largest change among enterprises was the increase in soybean acres and the decrease in oats acres. Soybean acres increased from less than 1.3 million acres in 1987 to almost 3.0 million acres in 1997. Oats acres decreased from just over 0.9 million acres in 1987 to less than 0.3 million acres in 1997. In addition, barley has declined significantly in terms of acres while sunflowers have gained significantly. It is possible that Freedom to Farm legislation accelerated the shift to oilseed acres.

## Enterprise Sales Trends

Another way of classifying enterprises is based on relative sales volume as shown in Table 2. Beef cattle was 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 had sales volumes close to wheat, but were produced by fewer 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 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 needed stocks is to harvest hay on the operation.

**Table 2. Farm product sales volume by major enterprise, South Dakota, 1987 and 1997.**

| Rank | Enterprise | Sales ($ mil.) | Farms |
|------|------------|----------------|-------|
| | | 1997 | |
| 1 | Beef Cattle | 927 | 17,256 |
| 2 | Soybeans | 568 | 11,693 |
| 3 | Corn | 532 | 12,820 |
| 4 | Wheat | 299 | 9,541 |
| 5 | Hogs & Pigs | 282 | 3,067 |
| 6 | Dairy Products | 165 | 1,458 |
| 7 | Other Grains | 118 | 3,636 |
| 8 | Hay[a] | 81 | 6,719 |
| 9 | Poultry | 74 | 461 |
| 10 | Dairy Cattle | 65 | 1,785 |
| 11 | Sheep[b] | 37 | 2,533 |
| 12 | Other Livestock | 24 | 1,604 |
| | | 1987 | |
| 1 | Beef Cattle | 806 | 18,853 |
| 2 | Hogs & Pigs | 317 | 8,265 |
| 3 | Corn | 257 | 15,831 |
| 4 | Wheat | 233 | 15,149 |
| 5 | Soybeans | 181 | 10,710 |
| 6 | Dairy Products | 166 | 3,064 |
| 7 | Dairy Cattle | 106 | 3,876 |
| 8 | Hay[a] | 59 | 7,853 |
| 9 | Sheep[b] | 45 | 4,134 |
| 10 | Poultry | 36 | 1,363 |
| 11 | Other Grains | 35 | 3,917 |
| 12 | Oats | 32 | 7,795 |
| 13 | Barley | 32 | 5,825 |
| 14 | Other Livestock | 23 | 1,756 |

Sources: U.S. Department of Census and U.S. Department of Agriculture.
Notes: [a]The hay category includes hay, silage, and field seeds. [b]The sheep category includes sheep, lambs, and wool.

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. While the sales volume for hogs and pigs has remained stable over time, the number of producers has declined substantially as many smaller operators stopped producing hogs. Similar scenarios have occurred in dairy and sheep enterprises. The sales volume rose across the major crops, reflecting relatively high prices in 1997. Soybeans moved up in its rank substantially, reflecting higher prices and its large increase in acres.

The relative degree and trend in specialization is shown in Table 3. The percentages of operations with any livestock and 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, increasing from 29% in 1987 to 37% in 1997. 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.

## Table 3. Grain and livestock enterprise specialization, South Dakota, 1987 and 1997.

| Enterprise | Percent of producers selling | |
|---|---|---|
| | 1987 | 1997 |
| Any livestock | 78 | 73 |
| Cattle and calves | 67 | 66 |
| Dairy, products | 9 | 5 |
| Hogs and pigs | 23 | 10 |
| Sheep, lambs, wool | 11 | 8 |
| Poultry, products | 4 | 2 |
| | | |
| Any grains | 69 | 61 |
| Corn | 44 | 41 |
| Wheat | 42 | 31 |
| Soybeans | 29 | 37 |
| Sorghum | 3 | 2 |
| Barley | 16 | 2 |
| Oats | 21 | 6 |
| Other grains | 11 | 12 |
| Hay | 22 | 22 |

Source: U.S. Department of Agriculture.

## NAICS and Revenue

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. A partial selection of NAICS categories is listed in Table 4. The NAICS system is useful for examining the diversity of enterprises within specific farm categories.

The data in Table 4 show sales revenue for the cross-classification of NAICS categories and census categories of different products. Not all NAICS categories and Census product sales categories are shown in this table. The columns in Table 4 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. The other listed NAICS categories account for another 14%, while unlisted categories would bring the column total to 100%. The dominance of sales is 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. In addition, *beef cattle ranches and farms* only account for 52% of sales revenue of cattle and calves. The remaining listed 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.

While South Dakota remains fairly diversified in its enterprises, the trend has been toward specialization at the farm level. More acres are devoted to a smaller mix of crops. Except for cattle, the percent of farms and ranches that maintain a livestock enterprise has fallen. At the state level, a shock to grain/oilseeds or milk prices would likely have more concentrated impacts than shocks to other prices, because those operations seem relatively specialized.

3

**Table 4. 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 across all farms[a] | | | |
| Oilseed and grain farming | 81 | 34 | 15 | 6 | 12 |
| Hay farming | 3 | 42 | 3 | 2 | 6 |
| Beef cattle ranching and farming | 8 | 17 | 52 | 13 | 4 |
| Dairy cattle and milk production | 1 | 2 | 2 | 75 | <1 |
| Hog and pig farming | 2 | 1 | 1 | 2 | 64 |

Notes: [a]The data values represent the percent of revenue by census category. Thus only the columns would sum to 100%. When they do not, it is because other (unlisted) NAICS categories had sales.

[1] Dubbed the "most economically literate maxim" in Buchholz, Todd, *From Here to Economy: A Shortcut to Economic Literacy* (New York: Dutton, 1995).

[2] Diersen, Matthew A., Larry Janssen, and Paula Loewe, *The Structure of South Dakota Agriculture: Changes and Projections*, Research Report 2000-1, Economics Department, South Dakota State University. February 2000. This report may be obtained online at **agecon.lib.umn.edu/sdsu.html** or by contacting the Economics Department.

Note of Clarification -- In the last Commentator "The 1996 FAIR Act" (No. 413, Nov. 7, 2000) by Dr. Gary Taylor, the National Farmers Union referred to in the section entitle "The NFU Solution" is the CANADIAN NATIONAL FARMERS UNION. We are sorry is this was not clear from the text.

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