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# Farmland Values Relationships Across South Dakota: 2002-2004

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SDSU

# ECONOMICS COMMENTATOR

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## FARMLAND VALUES RELATIONSHIPS ACROSS SOUTH DAKOTA, 2000-2004

by
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Monitoring farmland market trends is an important component of ongoing land economic research at South Dakota State University (SDSU). Previous research completed by the author in the 1980's and 1990's has shown systematic relationships of per acre farmland prices across counties and regions of South Dakota. In this article, relative land value relationships across South Dakota counties and regions are updated for the 2000 – 2004 period. Relative (percentage) land value relationships are shown for cropland, pasture (including rangeland), and all non-irrigated agricultural land. This article is an update of Econ Commentator No. 399, written in July 1999, which contained data on relative farmland value relationships in South Dakota from 1995 – 1999.

### Data Source and Methods

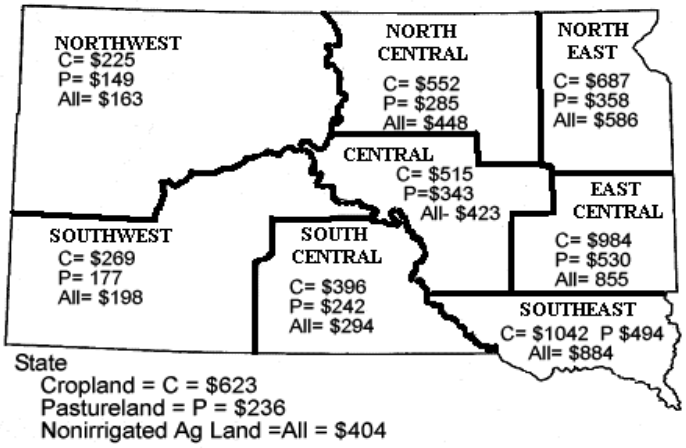
The data sources used to develop the land value relationships were from the annual reports, 2000 - 2004, of **South Dakota County – Level Land Values and Rents** published by the U.S. Dept. of Agriculture's South Dakota Agricultural Statistics Service (SDASS). Since 1995, the SDASS farmland market survey has been designed to provide land value and cash rental rates for non-irrigated cropland and pasture by county. The SDASS telephone survey is conducted each January and February and is completed by a random sample of nearly 3000 South Dakota farmers and ranchers.

For each county, the five-year (2000 - 2004) average per acre values of cropland and pasture/rangeland are estimated directly as the simple average of annual per acre value of each item reported in the SDASS survey. The per acre value of all non-irrigated agricultural land in each county is obtained by weighting the per acre cropland values and per acre pasture values by the estimated proportion of cropland and pasture/rangeland in the county based on Census of Agriculture land use data. Regional and statewide per acre average values are obtained by weighting the appropriate county land value by its relative share of farmland acreage in each specific use.

A percentage index is used to compare average farmland values across counties and regions. The index is set at 100 in Lincoln County, which usually has the highest average county land values. Relative (percentage index) land values are obtained by indexing the 5-year average per acre land value in each county and region to the 5-year per acre average land value in Lincoln county.

Five-year (2000 - 2004) average per acre value of cropland, pasture, and non-irrigated agricultural land, statewide and by region, are shown in Figure 1. Relative (percentage) relationships of per acre average value of non-irrigated agricultural land, cropland, and pasture / rangeland across South Dakota counties and regions for 2000 - 2004 are shown in figures 2, 3, and 4. To interpret the figures it is important to remember that all percentage indices of county, regional, or statewide land values are relative to land values in Lincoln County. For example, during this five year period, average cropland value in Davison County (Mitchell area) was $780 per acre or 50.6% of average cropland value of $1542 per acre in Lincoln County (Fig. 3).

Figure 1. Five-year value of nonirrigated cropland and pastureland by region, South Dakota, 2000-2004, dollars per acre.




Source: Compiled from annual county-level cropland and pastureland values published in South Dakota County Land Values and Rental Rates survey conducted by the USDA's South Dakota Agricultural Statistics Service (SDASS survey).

## Land Value Comparisons – Key Findings

**(1) A systematic pattern of farmland values occurs across regions, regardless of land use.**

Average per acre cropland and all-agricultural land values are highest in the southeast region, followed in descending order by land values in the east central, northeast, north central, central, south central, southwest, and northwest region. The same pattern occurs for pasture values except average per acre values are somewhat higher in the central region than in the north central region (Fig. 1).

**(2) Tremendous variation in non-irrigated farmland values exists across South Dakota.**

The percentage index of non-irrigated agricultural land values varies from 9.3% in Harding county to100% in Lincoln County. Only eight counties in the east central and southeast region have per acre average land values exceeding 60% of average farmland values in Lincoln County. Another 15 counties in the north-central and eastern regions of South Dakota have per acre average land values from 43% to 58% of average land values in Lincoln County. Average non-irrigated agricultural land values in all other counties east of the Missouri River vary from 20% to 38% of Lincoln county land values, while average land values in counties located west of the Missouri River vary from 9.3% to 27.5% of agricultural land value in Lincoln County (Fig. 2).

The dramatic differences in non-irrigated agricultural land values across the State are primarily related to differences in land quality, land productivity, and land use. Rangeland is the dominant land use in most counties west of the Missouri River, while cropland (including hay) is the dominant land use in eastern South Dakota.

**(3) The variation in relative per acre values across South Dakota is the least for pasture and rangeland, intermediate for cropland, and greatest for all non-irrigated agricultural land.**

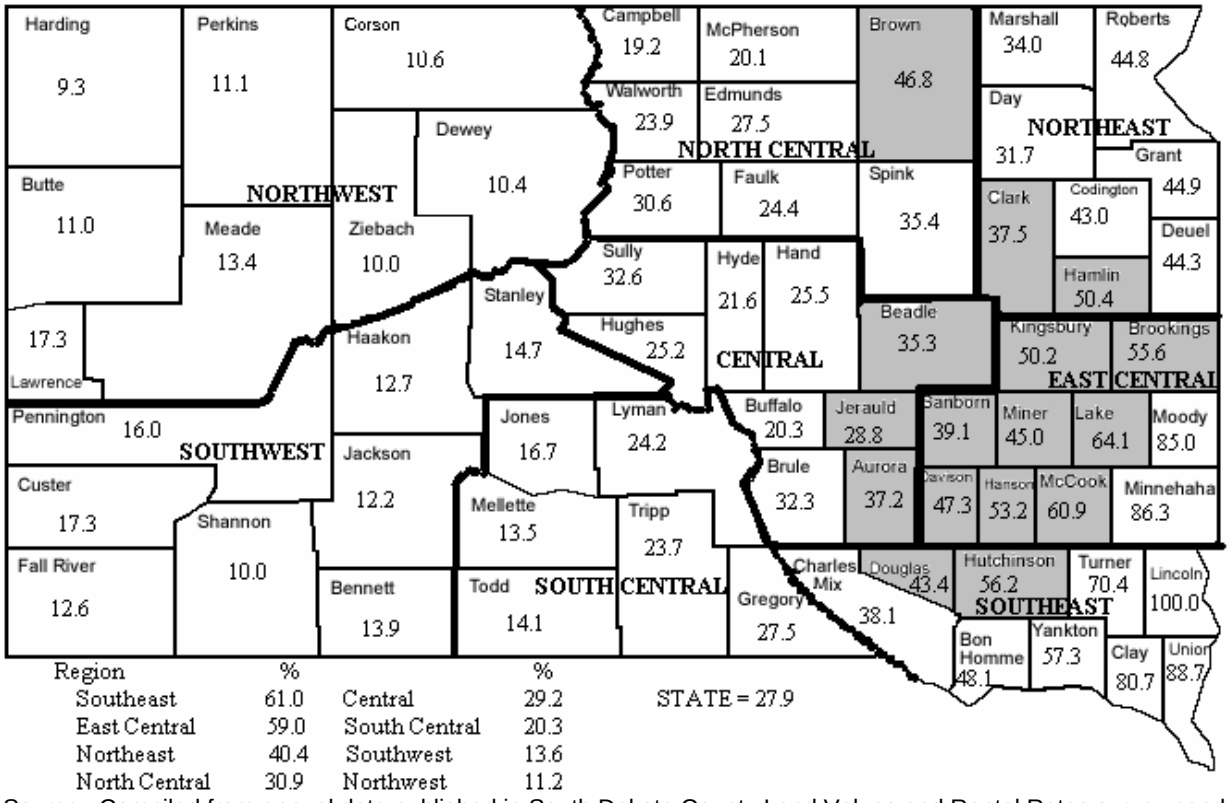
At the county level, the percentage index value of pasture is higher than the percentage index of cropland (or for all non-irrigated land) in all except two counties – Clay and Moody – located in eastern South Dakota. Furthermore, the percentage index value of cropland is higher than the same index value for all non-irrigated land in all counties (compare data in Fig. 2, 3, and 4)

These results are due to the compounding effects of two key factors: (1) pasture land value and productivity is lower and more evenly distributed across South Dakota than the value and productivity of cropland in all counties, and (2) the proportion of agricultural land in range and pasture uses increases as one moves west and north across the state.

**(4) Compared to Lincoln County, the statewide percentage index of land value is highest for cropland (40.4%), intermediate for pasture/ rangeland (34.8%), and lowest for all non-irrigated agricultural land (27.9%).**

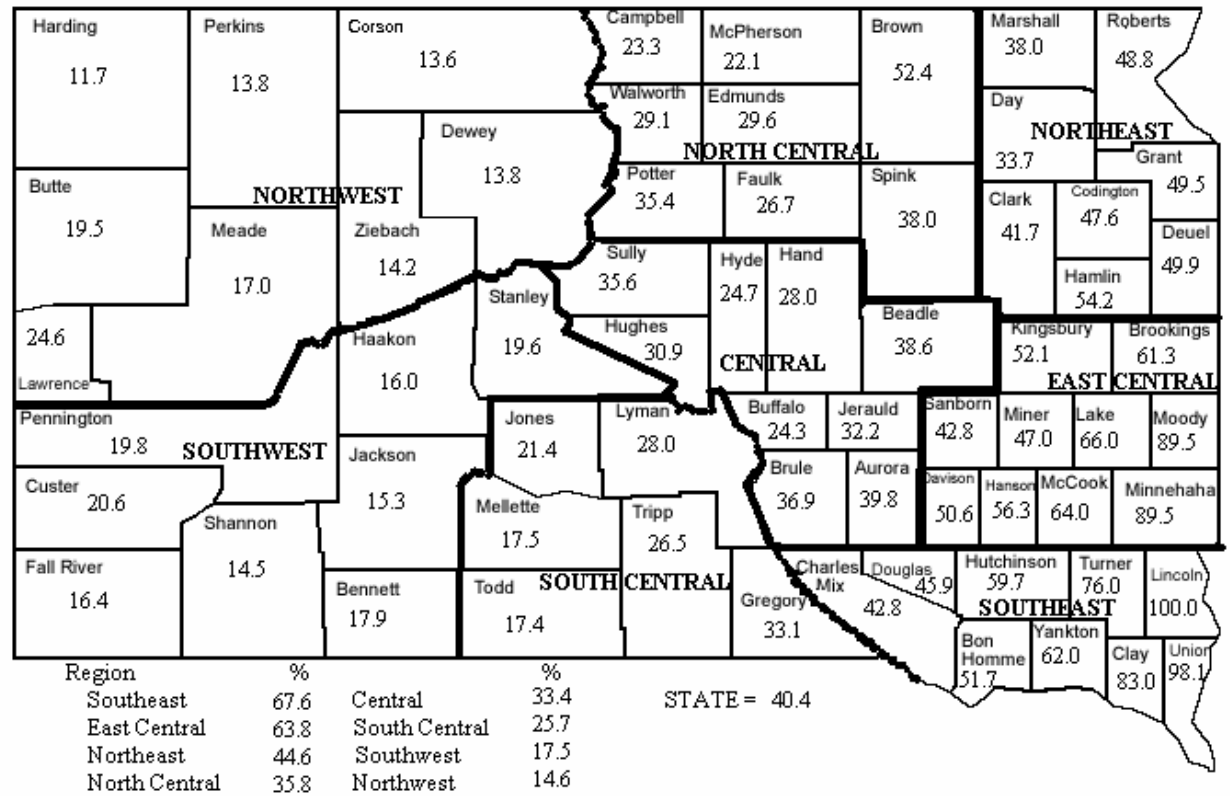
The statewide (and regional) average land values and percentage indices are weighted average values based on the distribution of various land uses across South Dakota. Since a majority of cropland is located in the eastern regions where land productivity and land values are higher, the statewide percentage index value for cropland is higher than the corresponding statewide values for rangeland or all non-irrigated land. A majority of South Dakota's acreage of rangeland and all agricultural land is located in counties west of the Missouri River, where average per acre land values are lower for all agricultural land uses.

Figure 2. Average per acre value of non-irrigated agricultural land, by South Dakota county and region, as a percent of average value in Lincoln County, 2000-2004.



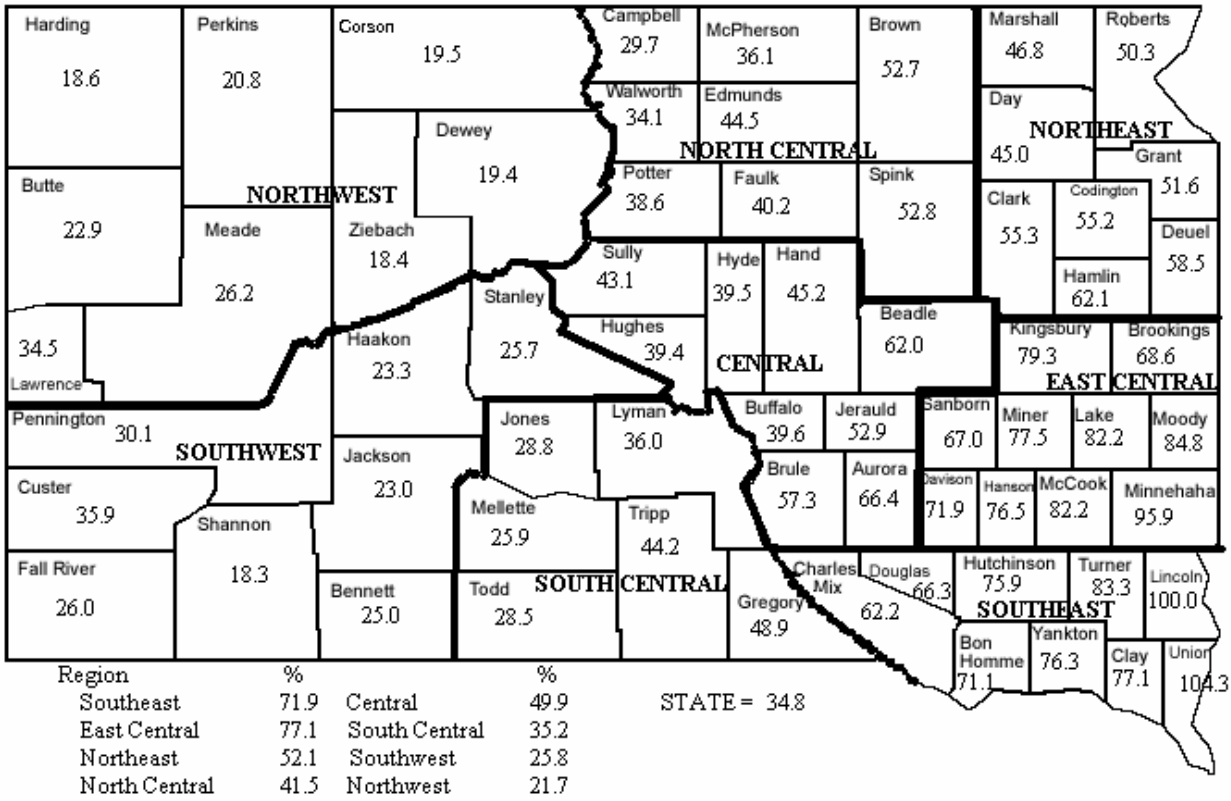

Source: Compiled from annual data published in South Dakota County Land Values and Rental Rates survey conducted by the USDA's South Dakota Agricultural Statistics Service.

Figure 3. Average per acre value of cropland, by South Dakota county and region, as a percent of average cropland value in Lincoln County, 2000-2004.




Source: Compiled from annual data published in South Dakota County Land Value and Rental Rates survey conducted by the USDA's South Dakota Agricultural Statistics Service.

Figure 4. Average per acre value of pasture and rangeland, by South Dakota county and region, as a percent of average pasture and rangeland value in Lincoln County, 2000-2004.




Source: Compiled from annual data published in South Dakota County Land Values and Rental Rates Survey conducted by the USDA's South Dakota Agricultural Statistics Service.

**(5) The distribution of percentage indices for non-irrigated land, cropland, and pasture values per acre across South Dakota from 2000 – 2004 is similar to their geographic distribution from 1995 – 1999.**

Statewide and in most counties there was very little change in the percentage index of land values between the two time periods. In other words, the distribution of agricultural land values per acre primarily reflect **relative differences** in land productivity and land use - attributes that usually change slowly over time, after the land settlement era has ended. Of course, more intensive economic development activity near metropolitan cities (Sioux Falls, Rapid City, and Sioux City), regional trade centers, and recreational areas (Black Hills) lead to considerable increases in residential and commercial site values and positive, but indirect, impacts on agricultural land values.

**(6) However, there has been some convergence of land values in several counties in eastern and central South Dakota toward land values in Lincoln County.**

The 16 shaded counties in Figure 2 are the counties where the percentage index of land value has increased by three percentage points from the earlier 1995 – 1999 period to the more recent 2000 – 2004 period. Most of these counties are located in the eastern regions of South Dakota, in the James River valley plus Aurora and Jerauld counties in the central region. In all of these counties, cropland use has shifted toward corn and soybeans and away from small grains. Technology changes such as reduced tillage, improved crop varieties, and rapid adoption of genetically modified corn and soybeans has increased yields and lowered per unit (bushel, cwt.) costs. Value added agricultural activities in the form of ethanol and

soybean processing plants as well as more unit train elevator facilities have also contributed to increased crop prices, net returns, cash rents, and land values in most of these counties.

Major changes in the **relative distribution** of farmland values within or between geographic regions usually occur for one or more of the following reasons: (1) a major **change** in agricultural technology with differential regional impacts, such as irrigation development in the western United States, (2) urbanization that leads to development of large metropolitan areas and associated changes in agricultural land uses, or (3) other reasons that lead to major changes in the spatial distribution of population and associated economic development patterns. Historical examples include land settlement policies and changing transportation development policies in the 19th and 20th centuries. Contemporary examples include recreational and amenity development in some rural regions, such as the Black Hills.

**Concluding Remarks**

The general stability of relative farmland values across the State reflects the importance of climate and land productivity on agricultural land values. It also indicates that land values tend to rise and fall together over time across counties and regions, although some lags may occur. It also reflects that many land buyers and sellers are sensitive to how much is paid for land in nearby locations and will adjust their bids accordingly. However, relative land values will also change in localities experiencing more rapid changes in agricultural activity. Past comments from South Dakota land professionals (rural appraisers, assessors, farm real estate lenders) to the author indicate that knowledge of relative land values is important, directly or indirectly, in their business.

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**ECONOMICS COMMENTATOR**

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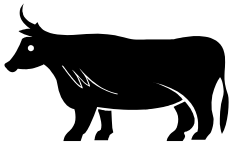

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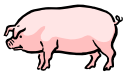

The hog market review is provided by Heather Gessner, Extension Educator, McCook County.

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