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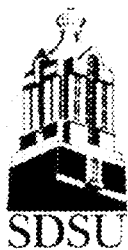
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ECONOMICS COMMENTATOR

South Dakota State University

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FARMLAND VALUE RELATIONSHIPS ACROSS SOUTH DAKOTA



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 has shown systematic relationships of per acre prices of farmland across counties and regions of South Dakota. 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.

In this article, relative land value relationships across South Dakota counties and regions are updated for the 1995 – 1999 period. Relative (percentage) land value relationships are shown for cropland, rangeland/ pasture, and all non-irrigated agricultural land.

Data Source and Methods

Land value data source used to develop the land value relationships were from the annual reports, 1995 – 1999, 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, pasture, and whole farms by county. The SDASS telephone survey is conducted each January and is completed by a random sample of nearly 3300 South Dakota farmers and ranchers.

For each county, the five-year (1995 - 1999) average per acre value 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 the region's or State's 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 (1995 – 1999) average per acre value of cropland and pasture/rangeland, statewide and by region, are shown in Figure 1. Relative (percentage) relationships of per acre average value of cropland, pasture, and all non-irrigated agricultural land across South Dakota counties and regions for 1995 - 1999 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 Codington county (Watertown area) was \$512 per acre or 45.0% of average cropland value of \$1139 per acre in Lincoln county (Figure 2).

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 / rangeland values except average per acre values are somewhat higher in the central region than in the north central region (Figure 1).

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

The percentage index of non-irrigated agricultural land values varies from 8.7% in Harding county to 93.5% in Union county and 100% in Lincoln county. Only 10 counties in the east central and southeast region have per acre average land values exceeding 50% of average farmland values in Lincoln county. Average ag land values in all other counties east of the Missouri River vary from 18.5% to 48.5% of Lincoln county land values, while average land values in counties located west of the Missouri River vary from 8.7% to 29% of agricultural land values in Lincoln county (Figure 4).

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 / rangeland, intermediate for cropland, and greatest for all non-irrigated agricultural land.

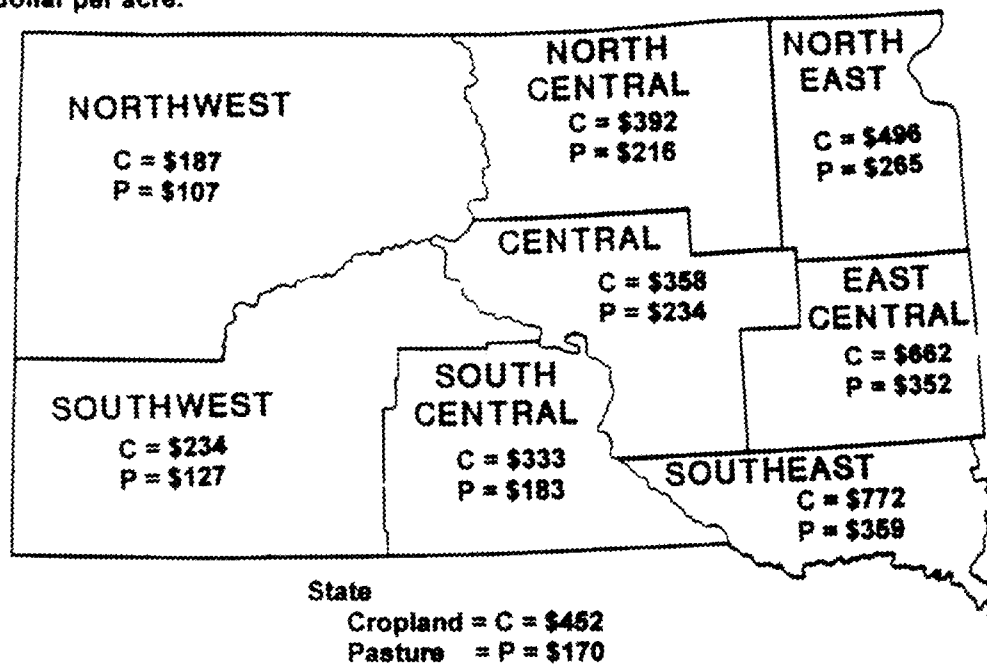
At the county level, the percentage index value of pasture is higher than the percentage index of cropland in all except six counties (compare data in Figures 2 and 3). This implies the value and productivity of rangeland is more evenly distributed across South Dakota than the value and productivity of cropland. This finding is consistent with annual land value and cash rental rate results obtained from the SDSU farmland market survey and is also consistent with the shifting pattern of land use across the state.

Relative to Lincoln county land values, the percentage index value of all non-irrigated agricultural land is **lower in all except two counties** than the corresponding percentage index values for cropland or pasture / rangeland (compare data in Figures 2, 3, and 4). These results are due to the compounding effects of two factors: (1) average per acre value of pasture / rangeland is lower than the average per acre value of cropland in all counties, and (2) the proportion of agricultural land in range/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 (39.7%), intermediate for pasture / rangeland (32.2%), and lowest for all agricultural land (27.3%).

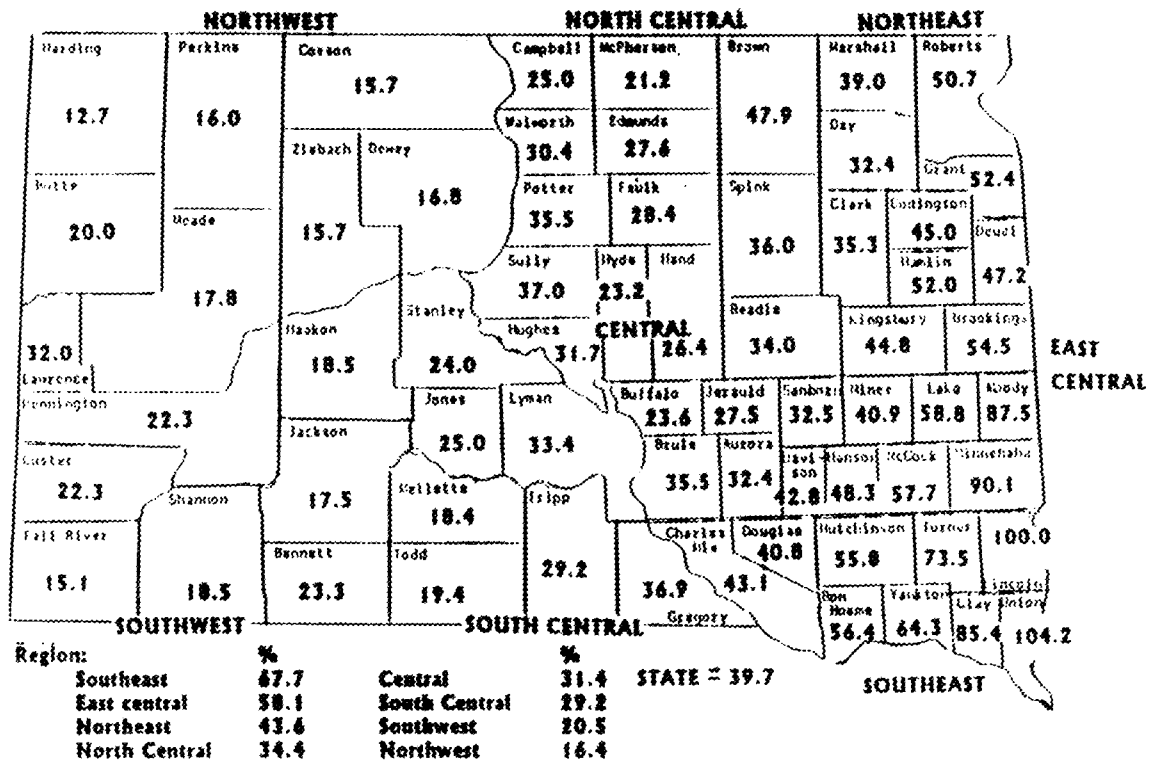
The statewide (and regional) average land values and percentage indices are weighted average values based on the distribution of various land uses across the State. Since the majority of cropland is located in the eastern regions where land productivity and land values are higher, the statewide percentage index value for cropland is higher

Fig. 1. Five-year value of nonirrigated cropland and pastureland by region, South Dakota, 1995-1999, dollar per acre.



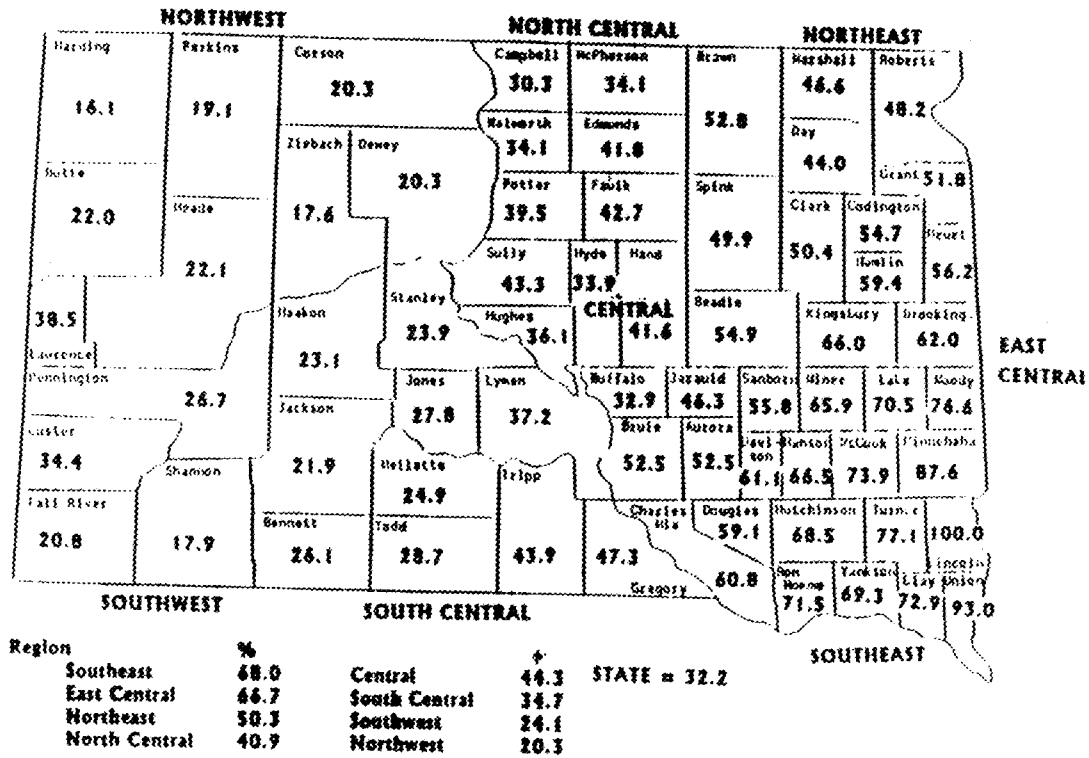
Source: Compiled from annual county-level cropland and pastureland values published in South Dakota County Land Values and Rental Rates survey conducted by the USDA's South Dakota Agricultural Statistics Service (SDASS survey).

Fig. 2. Average per acre value of cropland, by South Dakota county and region, as a percent of average cropland value in Lincoln county, 1995-1999.



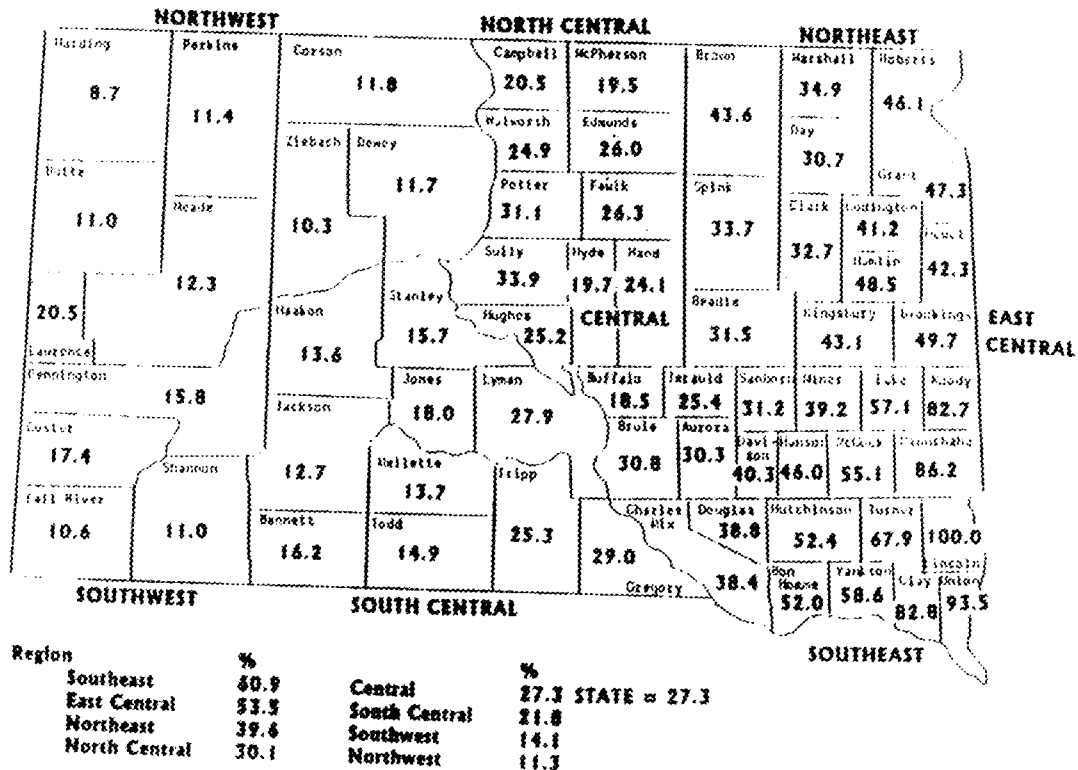
Source: Compiled from annual data published in South Dakota County Land Values and Rental Rates survey conducted by the USDA's South Dakota Agricultural Statistics Service (SDASS survey).

Fig. 3. 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, 1995-1999.



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 (SDASS survey).

Fig. 4. Average per acre value of non irrigated agricultural land, by South Dakota county and region, as a percent of average value in Lincoln county, 1995-1999.



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 (SDASS survey).

than the corresponding statewide values for rangeland or all non-irrigated agricultural land. The 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.

(5) The distribution of percentage indices of farmland values per acre across South Dakota from 1995 to 1999 is similar to the distribution of percentage indices of farm real estate sale prices per acre from 1975 to 1987.

This finding is consistent with the concept that 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.

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 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.

This article is a section of a detailed study comparing methods and results from the SDASS and SDSU farmland market surveys. For more detailed information, readers are encouraged to contact the Economics Dept. library (605-688-4142) and ask for SDSU Economics Research Report 99-1: **Agricultural Land Values in South Dakota: a comparison of methods and findings from two surveys, 1995 - 1999.** (54 pages).

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