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## What Price for this Land?

N. J. Anderson

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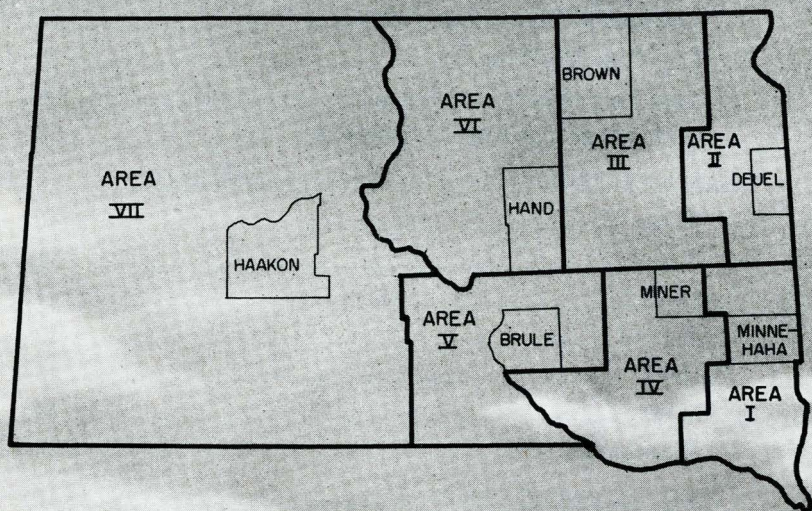
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# WHAT PRICE *for This Land?*



AGRICULTURAL EXPERIMENT STATION  
South Dakota State College, Brookings, S. D.



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GREATER STABILITY IN LAND PRICES is badly needed in South Dakota. Prospective purchasers and sellers have had difficulty deciding upon equitable and justified price levels within certain areas. The long-run annual net return from land, which does not emphasize management, should be the hub around which land valuation procedure centers. The earning capacity of the land itself should serve as a foundation for the calculation of its worth.

# What Price For This Land?

## Facts on Land Valuation in Seven South Dakota Counties During 1920-40

By NORRIS J. ANDERSON, Assistant Economist, Experiment Station

Farm land is now selling at higher prices as a result of upturns in agricultural income. Wartime increases in the prices of farm products usually bring about new interest in buying land. As prices of farm products rise, thus causing an increase in farm income, real-estate investments become more attractive. As the demand for land increases, the advance in land prices tends to become more rapid. Moderate price rises would not be serious, but a repetition of the skyrocketing prices following World War I would be disastrous.

Rises in land prices come about without causing much distress, but during the post-war period of falling prices, which is certain to come, many people will find it hard to meet their financial obligations. Regardless of the nature of the causes, fluctuation in land prices gives rise to serious problems, particularly for debtors. It is the purpose of this publication to prove the need for more stability in land prices today by reviewing experiences of South Dakota landowners during 1920-40 in seven counties located in seven different agricultural areas of this state. Data on four different valuations of land are presented—long-run sale price, capitalization of net rent, census valuation, and assessed valuation.

The effect of World War I upon prices may well be recalled as a means of emphasizing the seriousness of the need for averting a similar experience during the current war period. Land which sold for \$150 an acre in 1920 in eastern South Dakota sold for \$85 in 1929 and for about \$55 in 1932-33.

Following the close of World War I (1918-34) the consequences of permitting the agricultural debt situation to work itself out in a "natural way" became so serious that they could not be ignored. Many debtors who had hoped to pay off debts resulting from high wartime prices, found it impossible to do so because of the reduction in farm income during 1921-34. They were faced with a need for either debt adjustment or refinanced loans on the basis of long-term, low-interest-rate credit. In view of the increase in the purchasing power of the dollar, debt adjustment appeared to be the more fair solution. As a result of emphatic demands by debtors and also as a result of a realization by creditors themselves of the need for corrective action, debt-adjustment programs were launched in 1922. By 1934 programs of this kind were being carried out in 44 states. They provided that, if a man had claimed \$1,000 from a debtor, he was legally entitled to only \$800, or some other percentage of the original sum, whatever was stipulated by the debt-adjustment authorities in his state. It is apparent, therefore, that in the long run both debtors and creditors would have benefited from greater stability in land prices.<sup>1</sup>

1. See South Dakota Experiment Station Bulletin 370, *Farm Mortgage Experience in South Dakota*, by Gabriel Lundy.

The present land market may give way to the influence of wartime prices with the result that debt-adjustment programs will again become necessary. The interests of farmers are best served by stability in land prices as in other prices. Land prices most favorable to the farmer hover around that price level which can be sustained by long-run net rent (see page 7).

## Problems Due to Rapid Changes in Land Prices

Land prices have fluctuated widely in South Dakota during the past twenty-five years (Fig. 1). This extreme fluctuation has created uncertainty and confusion among buyers and sellers today as to the value of land in this state. Wide variation in land prices also creates a fertile field for speculation, much of which may result in even greater instability.

Another problem due to rapid price changes is that it is difficult for credit agencies to establish a sound loan policy when wide fluctuation occurs in land prices. When land prices are going up, competition among credit agencies tends to make these agencies loan larger amounts than can be justified by the debtor's long-run income. On the other hand, as land prices decline debtors are unduly pressed to pay debts assumed at higher price levels. The distress which accompanies mortgage foreclosure occurs largely during years following periods of abnormally high land prices.

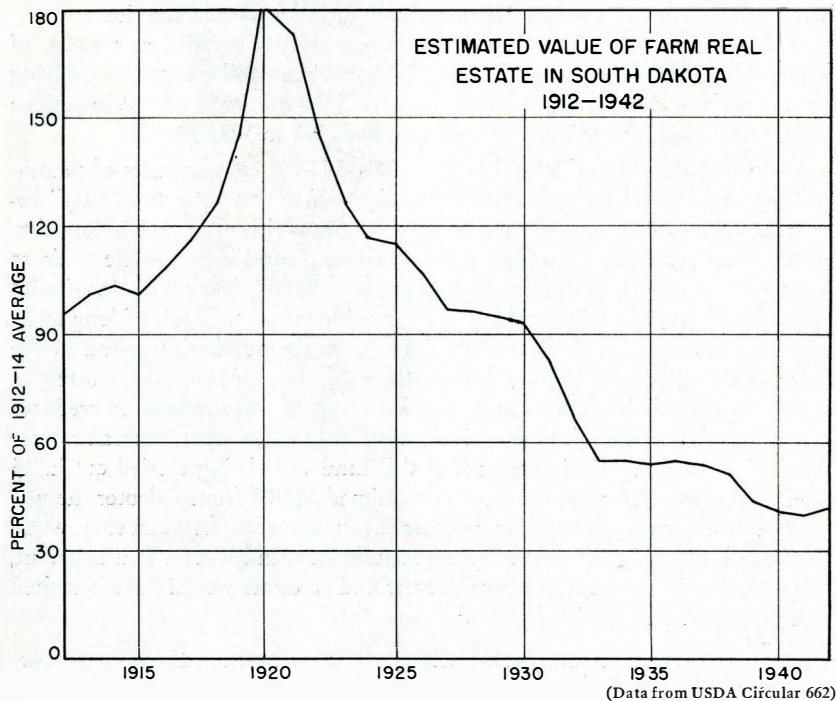


FIG. 1. EXTREME FLUCTUATIONS IN LAND PRICES CAUSED MANY PROBLEMS IN SOUTH DAKOTA

The lack of stability in land prices also complicates assessment of land for taxation purposes. South Dakota law provides that land shall be assessed at "true and full value." Under existing conditions, characterized by wide fluctuations in sale price, "true and full value" is extremely difficult to determine as of any one period, due partly to continuous variation. Tax revenues received from agricultural lands are the principal support of local government in most South Dakota counties. With revenue needs relatively stable, the fluctuations in assessed valuation tend to give rise to financial problems which may seriously hamper local government.

The average assessed valuation for the seven counties where intensive studies of land prices and assessed valuation were made (see cover map) was \$49.08 for 1920-25. By 1936-40 the average assessed valuation had been reduced to \$21.41.<sup>2</sup> Thus a decrease of 56.4 percent occurred in average assessed valuation between the early 1920's and the late 1930's. This decline in tax base and consequently in tax returns was a financial problem for the local governments. Fewer problems in assessment and taxation would arise if there were more stability in land prices.

High land prices due to large war incomes may cause another problem by tending to encourage farmers to make excessive farm improvements and expansion. Such unwarranted expenditure would be burdensome in itself, for taxation and maintenance costs would be high for years to come. In addition, such expense would mean an unnecessarily heavy drain upon the working capital of the farm owner-operator. The farmer who is already heavily burdened with debt should not assume still more obligations in the vain hope of solving his financial problems by expanding or multiplying his farm enterprises.

The widespread uncertainty concerning the present worth of land and also concerning the proper method of determining justifiable land prices indicates a need for information on long-run land values, which will give the farmer a sound basis for judging the value of his own land or of any land he may consider buying. It will also be an aid to other prospective buyers, credit agencies, and other groups interested in stabilized land prices.

The application of scientific land appraisal is helpful but is not widespread. Whereas a few credit agencies appraise land by means of information concerning soil type, slope, rainfall and its distribution, type of farming, nearness to market, and other factors affecting the earning capacity of land, this procedure is not yet in common practice. It seems advisable, therefore, that all possible use be made of such factual information as can be obtained through a study of long-run average sale price and other data on land valuation.

## Means of Determining Land Values

Agencies interested in the welfare of South Dakota farmers and other land owners can help to avert a land boom in this state by supplying information concerning the long-time average sale price of land in specific areas and by urg-

2. Annual reports of the South Dakota Division of Taxation and Department of Finance, 1920-40, Pierre.

ing prospective buyers to refuse to pay prices which are too far above the price level which can be sustained by long-run average net rent.

This bulletin gives data covering the 1920-40 period on (1) long-run sale price of land, (2) long-run land value determined by capitalization of net rent, (3) census valuation, and (4) assessed valuation.

## **Areas Studied and Sources of Data**

One county in each of the seven major agricultural areas of South Dakota was studied—Minnehaha, Deuel, Brown, Miner, Brule, Hand, and Haakon. Trends discovered may be considered similar to trends in other counties throughout the respective areas (see map on cover). Because of the expense involved, every county in each area was not investigated.

Information concerning land transfers and sale price was obtained from county records supplemented by interviews. Some transfers in each county were omitted from the study largely because in many cases the full price had not been reported by the purchaser. However, the omission of such transfers does not significantly affect the reliability of the results because those studied are representative of all transfers recorded.

## **Long-Run Sale Price of Land**

The average of actual, voluntary sales was determined for the seven counties for 1920-40. This period includes both good and poor years and is long enough to reveal an average which may be accepted as a reliable guide to prospective purchases, credit agencies, and other interested parties. Obviously, a short-term average would lack reliability.

Information concerning real-estate transfers was secured from the office of the Register of Deeds in each of the counties. An attempt was made to eliminate all transfers that appeared to be something other than voluntary bona-fide sales. Such transfers are represented by sheriffs' deeds, fractional interests or beneficiaries of estates, and deeds given creditors in lieu of foreclosure. Sales were accepted only when information concerning exact acreage and price were available. Transfers were then grouped by these four periods—1920-25, 1926-30, 1931-35, 1936-40—and averaged for these periods within each county (see page 9).

## **Land Value Determined by Capitalizing Net Rent**

A method of determining long-run values that is more reliable than long-run sale price is that which takes into account the net earning capacity of property.<sup>3</sup>

The renting operator may want to know whether it will pay him to invest in a farm. If he is considering the purchase of the farm he occupies, he may well measure the advisability of buying that farm in terms of the rent he has been paying.

3. For further discussion of this approach see Iowa Experiment Station Bulletin 326, page 330.



The net amount of the rent received may be capitalized at the current mortgage rate of interest, and an evaluation determined which can be sustained and justified by long-run average net rent. It is relatively easy to estimate the receipts and expenses of the landlord, whereas it is exceedingly difficult to secure complete and reliable information concerning the receipts and expenses of an owner-operator. Such information is especially hard to obtain in South Dakota because there are not enough complete farm records.

An example of the procedure involved in using the net-rent approach to determine the value of an average farm in Brown county is shown below. The yields and prices used must be long-run averages. In any area where there is considerable variation in rainfall and consequently in crop yields, twenty-year averages are recommended. Evaluating land on the basis of net rent in favorable years only will give a more optimistic outlook than can be justified by long-run average prices.

#### HOW TO DETERMINE LAND VALUATION BY CAPITALIZING NET RENT

This example of determining land valuation by capitalizing net rent is given for an average farm (458 acres) in Brown county. The 1940 Census shows 2,222 farms in this county, having an average size of 458 acres.

The procedure is to divide the annual net rent by the rate of interest to determine the land value. The annual net rent is found as shown in **Step 2** below. The interest rate to be used should be decided by the purchaser. In this example an interest rate of 5 percent (.05) is used. It should be noted that if a purchaser is willing to accept a 4-percent return on his investment in the land, he would also be willing to pay a higher price for the land than would be indicated by capitalizing net rent at the 5-percent rate.

**Step 1.** The first step is to determine the total return from crops. In finding this figure for the average farm in Brown county, the following calculations were made (Yields and prices are actual 20-year averages in Brown county):

CROP ACREAGES <sup>4</sup>		YIELD PER ACRE	TOTAL YIELDS	PRICE	TOTAL
				PER BUSHEL (1920-40)	INCOME FROM DIFFERENT CROPS
Corn .....	44	18.1	796	\$.605	\$481.58
Oats .....	33	22.4	739	.317	234.26
Barley .....	31	16.5	512	.471	241.15
Rye .....	8	10.1	81	.627	50.79
Wheat .....	77	8.0	616	.953	587.05
Tame hay .....	13	.87 T.	11.7 T.	7.70	87.01
Pasture .....	252	-----	-----	-----	-----

The total return from crops on the average Brown-county farm was \$1,681.84.

**Step 2.** The second step is to determine the net rent per acre. The landlord's expenses and receipts are shown below. One third of the total crop income is

4. According to the 1940 Census, the 2,222 farms in Brown county had the following total crop acreages:

Oats .....	73,617	Corn .....	97,899	Wheat .....	170,851
Barley .....	69,855	Rye .....	17,533	Tame hay .....	29,060



given among the items in the receipts because in Brown county the typical crop-share rental contract provides that the landlord shall receive one third of the crop.

LANDLORD'S EXPENSES		LANDLORD'S RECEIPTS	
Taxes per acre .....	\$ .419	Share of crop income ( $\frac{1}{3}$ of \$1,681.84) .....	\$560.61
Upkeep on buildings and other improvements per acre (depreciation on 30-year basis) .....	.347	Rent on pasture .....	151.20
Total expenses per acre .....	\$ .766	Return for buildings and other improvements .....	119.40
		Total receipts .....	\$831.21
		Receipts per acre .....	\$ 1.81

Receipts minus expenses (\$1.815 - .766) equals net rent (\$1.049)

**Step 3.** Actual capitalization of net rent is the third step in this procedure. The net rent per acre (\$1.049) divided by the interest rate (.05) equals \$20.98 per acre, which is the value of the land as computed in terms of capitalization of net rent. It should be noted that this figure (\$20.98) is a theoretical average in terms of long-run average yields in Brown county and long-run average commodity prices. If records of actual yields and income are used for a specific farm, valuation in terms of net rent could be calculated even more closely than if county averages are used as in this example.

## Census Data and Assessed Valuation

Census valuation data were made a part of this study in order to supplement as far as possible the other data used.<sup>5</sup> In some cases the census figures may be more reliable than figures for assessed valuation, in that they are more readily influenced by bona-fide land sales. Furthermore, the average census figure represents the aggregate judgment of a large number of owners. However, an owner's estimate may be influenced by wishful thinking. His figure may be too strongly weighted with optimism.

Census reports include an average value in dollars per acre for every county in the state. This figure is an average of the estimates of land-owners as reported to the census enumerator each census year from 1920 through 1940.

5. Data on assessed valuation were obtained from county records and from the annual reports of the South Dakota Division of Taxation for the years 1920-40.

## Land Price Trends in Counties Studied

Land price trends in the individual counties studied have certain characteristics in common. From 1920 to the close of 1940 there was greater flexibility in sale price than in assessed valuation. The net-rent figure for each county is represented in the graphs on the following pages by a straight line, indicating that when long-term average yields and commodity prices are used to determine land prices, there will be a single average figure for the 20-year period.

The results of the investigation of valuation in each of the counties studied are summarized below. The price trend that is revealed for each county is representative of the trends in most other counties that lie within the same agricultural area as the county investigated.

SALE PRICES AND VALUATIONS OF LAND PER ACRE AS RELATED TO CAPITALIZED NET RENT  
IN COUNTIES REPRESENTING SEVEN MAJOR AGRICULTURAL AREAS

County and area	Period*	Census valuation	Assessed valuation	Sale price	Capitalized net rent for 1920-40
Brown (III) .....	1920-25	\$71.39	\$50.00	\$59.25	
	1926-30	49.04	38.58	37.15	
	1931-35	33.81	22.76	20.93	\$20.98
	1936-40	22.40	21.10	15.83	
Brule (V) .....	1920-25	61.30	39.78	57.48	
	1926-30	38.88	31.66	32.03	
	1931-35	26.51	18.58	15.91	13.38
	1936-40	14.91	16.33	7.21	
Deuel (II) .....	1920-25	90.94	56.02	67.01	
	1926-30	63.90	46.08	49.72	
	1931-35	42.76	29.05	31.81	27.18
	1936-40	28.23	25.47	21.13	
Haakon (VII) .....	1920-25	18.06	13.03	13.94	
	1926-30	13.27	11.10	7.85	
	1931-35	9.48	6.60	5.10	.86
	1936-40	5.44	5.43	3.19	
Hand (VI) .....	1920-25	55.40	35.05	47.79	
	1926-30	36.03	29.03	28.43	
	1931-35	22.58	14.65	13.88	11.66
	1936-40	11.61	11.79	6.19	
Miner (IV) .....	1920-25	105.14	72.89	106.18	
	1926-30	68.74	58.94	51.08	
	1931-35	45.23	32.53	41.65	23.80
	1936-40	23.88	23.74	18.02	
Minnehaha (I) .....	1920-25	162.23	101.28	160.49	
	1926-30	109.52	85.06	95.93	
	1931-35	82.19	55.14	62.70	53.24
	1936-40	58.95	53.43	54.74	

\* The five-year period ends with the final date.

**Brown.** The trend in average sale price in Brown county during 1920-40 is clearly apparent; there was an inevitable return by 1936-40 to the approximate level of the figure for capitalization of net rent in dollars per acre (Fig. 2). Land prices should be determined in terms of long-run average conditions or instability will exist.

The average sale price of Brown-county land in 1920-25 was \$59.25 per acre. During 1931-35, only ten years later, the average sale price was \$20.93. The following sample case is submitted to illustrate one of the serious consequences of too much fluctuation in land prices. The existence of a 36-year mortgage on which equal annual payments were made, is assumed:

1. 160 acres bought in 1920-25 at \$59.25 per acre .....	\$9,480.00
2. Cash payment .....	4,480.00
3. Balance due .....	5,000.00
4. Payments on principal for 10 years at \$138.89 per year .....	1,388.90
5. Balance due, 1931-35 .....	3,611.10
6. 160 acres at 1931-35 average sale price, \$20.93 .....	3,348.80
7. Debt over sales value in 1931-35 .....	262.30
8. Total amount paid on principal by 1931-35 .....	\$5,868.90

In this sample case the farmer had paid a total of \$5,868.90 (cash payment of \$4,480 plus \$1,388.90) by 1931-35, and still owed \$262.30 more than the current market value (\$3,348.80) of his farm in this period, ten years after he had

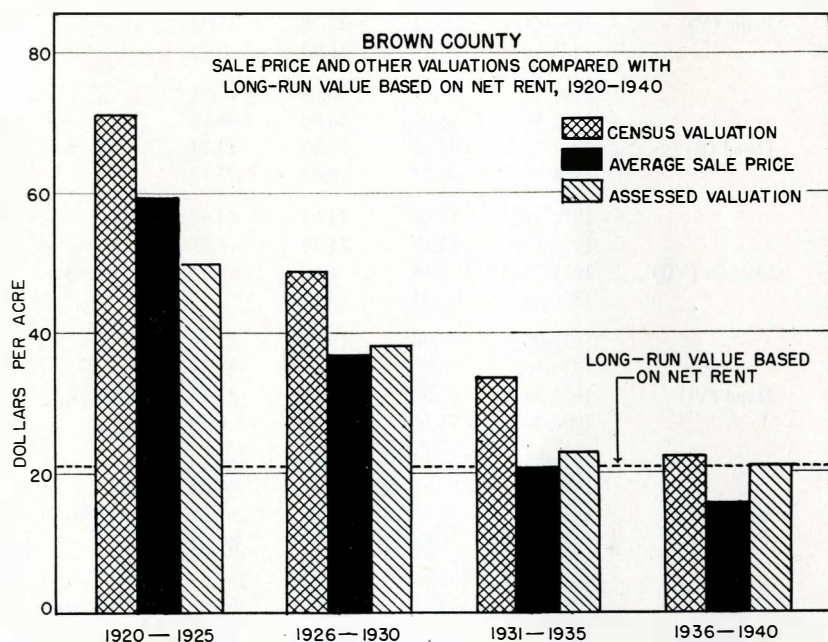


FIG. 2. LAND PRICES IN BROWN COUNTY DROPPED MORE THAN 50 PERCENT IN TEN YEARS (1920-25 TO 1931-35)



made his purchase. Cases of this kind can be found in many other counties included in this study.

**Brule.** The average sale price of agricultural land in Brule county during the 1920-25 period was \$57.48 (Fig. 3). The census valuation was slightly higher,

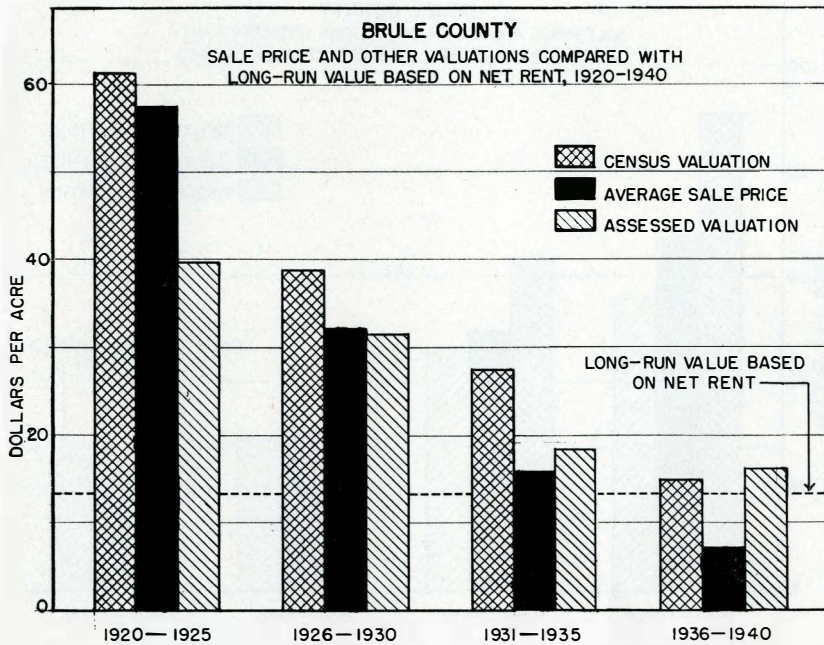


FIG. 3. NET RETURNS TO BRULE COUNTY LANDOWNERS COULD NOT SUSTAIN HIGH LAND PRICES OF 1920-25

but the average assessed valuation for the period was only \$39.78. By 1926-30 the average sale price had declined approximately 40 percent, whereas the assessed valuation declined only 20 percent. By 1931-35 further declines had occurred, with sale price again dropping more rapidly than assessed valuation. It is significant that by 1936-40 the census and assessed valuation averages settled at about the level established by the capitalization of net rent. Thus it may be said that the readjustment in land prices which occurred in Brule county, and other counties, was necessary because the high land prices which prevailed during the early 1920's were not justified. The long-run annual average net return received by non-operating landowners was not adequate to maintain so high a price level.

**Deuel.** The average sale price of land in Deuel county during the 1920-25 period was \$67, whereas the assessed valuation for the same period was \$56 (Fig. 4). By 1936-40 the average sale price had declined to \$21.13, and the average assessed valuation dropped to \$25.47.

When the net rent received by a non-operating landowner of an average farm in Deuel county is calculated on the basis of long-run average yields and prices, the capitalized net-rent valuation is \$27.18. This price level serves as

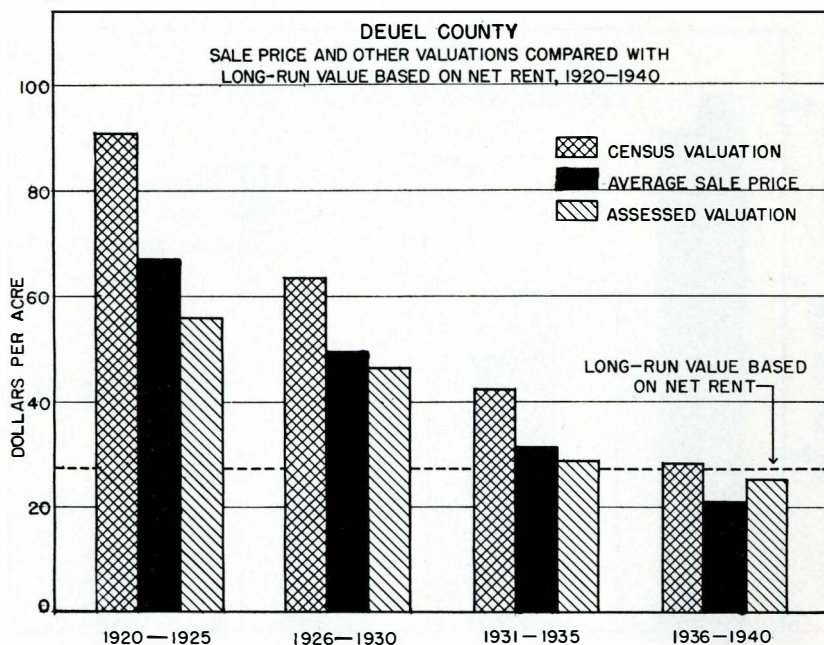


FIG. 4. CAPITALIZED NET-RENT VALUATION OF DEUEL COUNTY LAND EQUALED \$27 PER ACRE

a standard from which average sales price should not vary too much, lest re-adjustment in sales price and assessed valuation again become necessary. Clearly, the price level of the early 1920's was not warranted.

**Haakon.** The same general trend occurred in Haakon county that appeared in other counties during 1920-40 (Fig. 5). The average sale price declined from \$13.94 per acre in 1920-25 to \$3.19 during 1936-40. While this decline in market price was occurring, the average assessed valuation dropped from \$13.03 in 1920-25 to \$5.43 in 1936-40.

From 1926 through 1940 the assessed valuation exceeded the sale price. This condition is easy to understand. It results from fluctuations in the land market and the subsequent tendency to raise the assessed valuation during "good" years. After new government services have been introduced on the basis of higher assessed valuation, new standards of service tend to become established. Drought and depression then bring "bad" years, but a reduction in assessed valuation is difficult to make. The landowner is caught between high taxes and low net

income. Greater stability in land prices and in assessed valuation is desirable, and this stability can be obtained only by action which will maintain assessed valuation at about the level indicated by the long-run net earning capacity of the land.

The determination of net rent involves the subtraction of all expenses, including taxes, from the gross income per acre. Heavy taxation results in lower

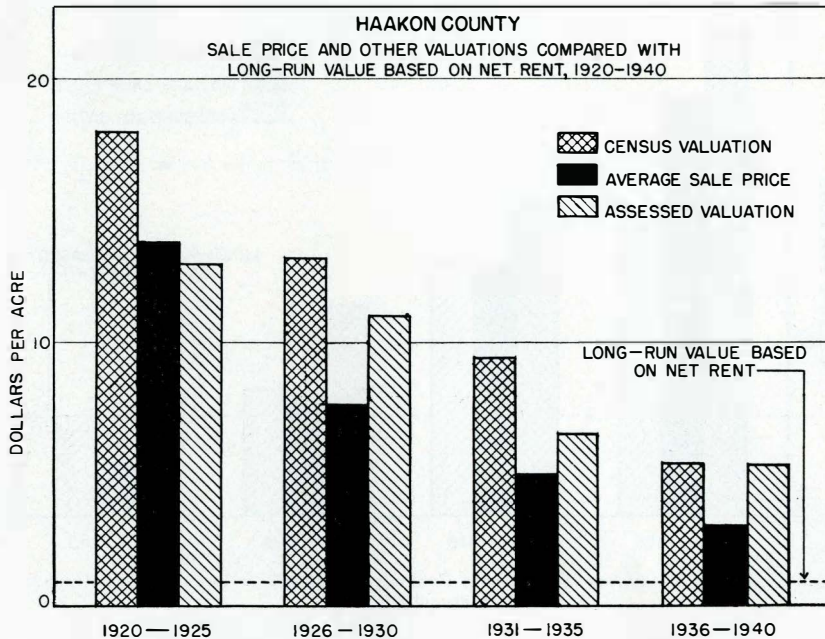


FIG. 5. ASSESSMENT PROBLEMS ARE REFLECTED IN ASSESSED VALUATIONS HIGHER THAN SALE PRICES IN HAAKON COUNTY

net returns to the landowner. It is apparent, therefore, that the high assessed valuation and subsequent tax burden are depressing to land values. A slight decrease in the net returns from low-priced land causes a larger percentage of fluctuation in the net-rent valuation of that land than would occur following a change of equal amount in the case of high-priced land because the decrease would be a larger percentage of the original figure. It is very important, therefore, that the tax burden on low-priced land (which of course affects the net-rent valuation) be reduced to an absolute minimum in order that the agricultural land of that area may have a value high enough to be conducive to private ownership.

**Hand.** During the last five-year period, 1936-40, there was an extremely close



correlation between the capitalized net-rent valuation, the census figure, and the assessed valuation in Hand county (Fig. 6).

The low average sale price, \$6.19, may be accounted for by the presence of a relatively large proportion of land which was made available for sale during this

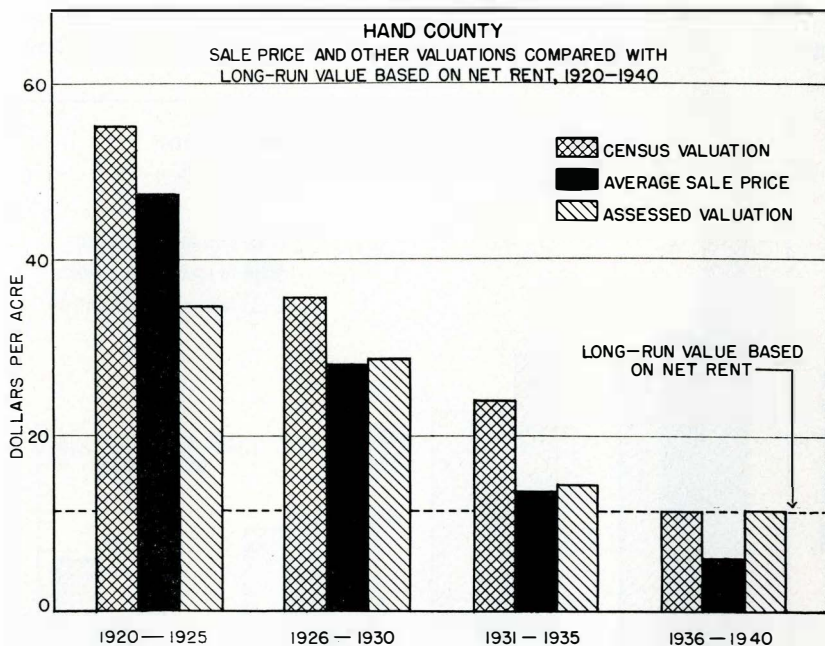


FIG. 6. ASSESSED VALUATION WAS CLOSELY CORRELATED WITH SALE PRICE IN HAND COUNTY DURING 1926-35

period. A large amount of land was also offered for sale during this period in other counties. The disproportionate number of sales by involuntary owners tended to force land prices down.

**Miner.** There was a wide fluctuation in land prices in Miner county during the 1920-40 period (Fig. 7). The average sale price for the period 1936-40, as recorded on county records, is only 17 percent of the average sale price which prevailed during 1920-25. This wide variation made necessary drastic reduction in the assessed valuation of agricultural land. By 1936-40 an assessment level had been established which corresponded closely with the capitalized net-rent valuation based on long-run net earning capacity.

The close correlation between the capitalized net-rent figure, census valuation, and the assessed valuation lends support to the belief that 1936-40 assessed valuation actually represents "true and full value," in terms of the average condition which prevailed in this county during 1920-40.

**Minnehaha.** The average sale price during the five-year period 1936-40 was 34 percent of the average price for 1920-25 in this county (Fig. 8). Obviously,

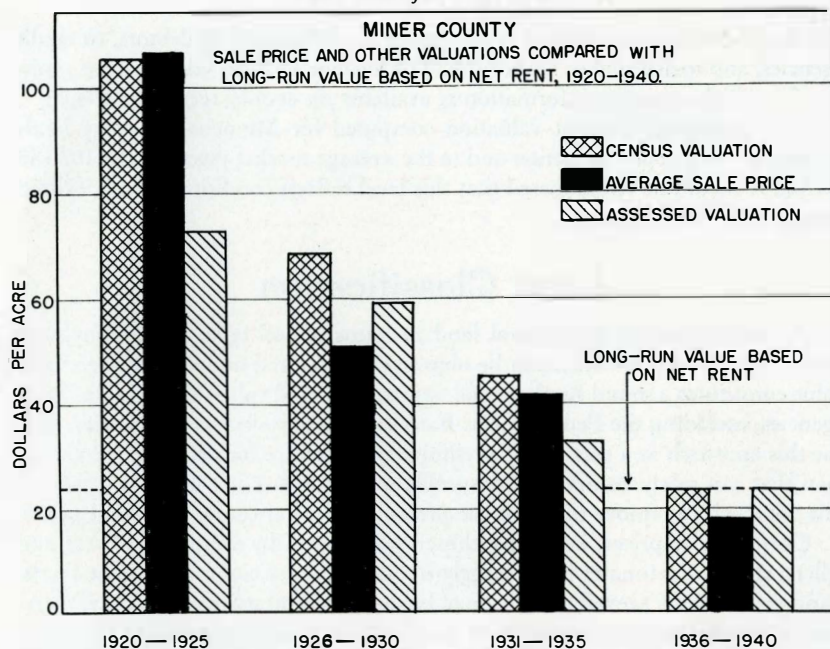


FIG. 7. WIDE VARIATIONS IN LAND PRICES MADE REDUCTIONS IN ASSESSMENT VALUATIONS NECESSARY IN MINER COUNTY

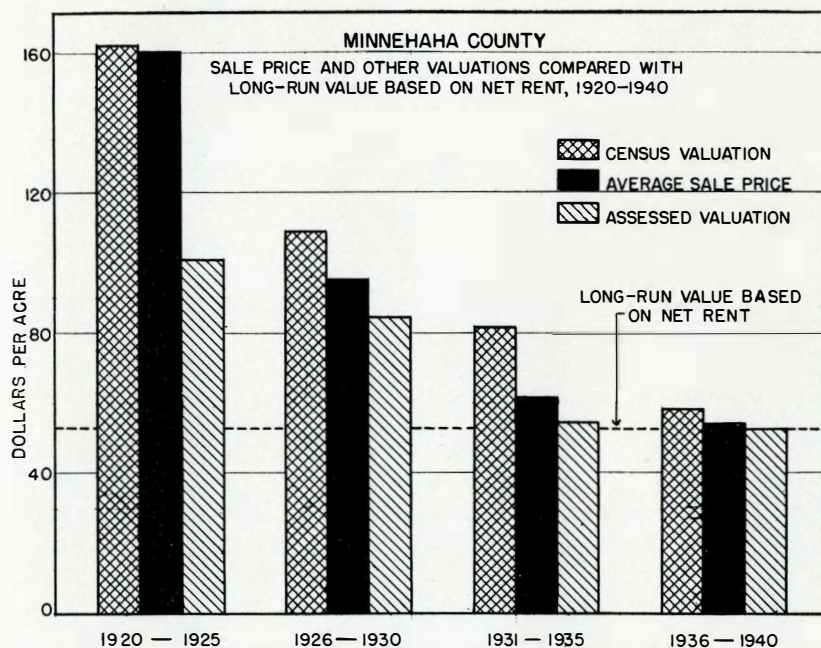


FIG. 8. CAPITALIZED NET RENT, ASSESSED VALUATION, AND SALE PRICE WERE SIMILAR IN MINNEHAHA COUNTY FOR 1936-40

this fluctuation was disturbing to landowners, particularly to debtors, to credit agencies, and to assessment authorities. The average 1920-40 sale price for transfers for which complete information is available on county records is \$93.46.

The capitalized net-rent valuation computed for Minnehaha county lends support to the assessed valuation and to the average market price for the 1936-40 period. It should be remembered that this level reflects conditions which existed during the 1920-40 period.

## Land Classification

A classification of agricultural land in terms of soil type, topography, and other physical factors which can be objectively measured and which affect land value constitutes a sound fundamental approach to land valuation. Certain credit agencies, including the Federal Land Bank and some insurance companies, now use this approach as a part of the preliminary procedure for deciding the size of loan that can safely be made on a specific tract. Further use could be made of this approach to remove much of the present confusion concerning land prices.

Current sales prices, including those agreed upon by voluntary buyers and sellers, are mere estimates based largely upon temporary commodity-price levels. Land prices which prevail in the case of bona-fide voluntary transfers may, therefore, be misleading and unsound. A classification of land in terms of objective, physical factors, followed by a study of the long-run earning capacity of each specific class of land, would aid in establishing sound land values.