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No. 675 Winter 1994

## Four Decades of the Minnesota Rural Real Estate Market

Philip M. Raup

The annual survey of the Minnesota rural real estate market, conducted from 1952 through 1992, was based on mail questionnaires sent in July and August. The questionnaires were given to rural real estate dealers and brokers, members of farm managers associations, rural appraisers, farm credit officers of rural banks, and other individuals whose work acquainted them with local real estate market conditions. The Survey, in this form, continued a land market data collection and analysis effort that had produced a continuous time-series dating from 1910, for six reporting districts as shown in figure 3 on page 6.

Reporting districts were initially chosen to correspond to type-of-farming regions as then defined. Since then, the geographic pattern of crop and livestock farming has changed, but the division of the state into the initial six reporting districts has retained sufficient validity to justify its continuation.

The Survey asked respondents to estimate land value (good, average, or poor) for the territory with which they were familiar. In addition, data were requested on specific sales among non-relatives for which respondents could report location (by county and township), acres per sale, price per acre, selected data on land quality, presence or absence of buildings, method of financing, and selected characteristics of buyers and sellers.

The rationale for the separate collection of estimates of value and

sales prices rests on the fact that in any one year only a small percentage of the land is transferred by voluntary sales, often only 1 to 2 percent of the acreage in the better farming areas. The land that is sold is not necessarily representative of the land in a given reporting area. Aggregate data on sales prices are often distorted by a few sales at abnormally high or low figures. Sales prices are a questionable basis for projecting the total value of land in a study area, for example in estimating credit capacity, or the magnitude of a tax base.

Estimated values are better suited to these latter purposes, because they can be aggregated with less distortion to record trends in the distribution of wealth in land.

There has been a rough correspondence between trends in estimated values and sales prices. They both rose in the 1970s, and fell in the 1980s, but with distinctive differences in timing. In general, estimates of value rose faster on the up side of the land-price boom and bust in the 1970s, and fell faster than sales prices on the down side

(See *Decades* page 2)

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## A New Minnesota Farmland Price Series

Steven J. Taff

The Minnesota agricultural land values survey (the Survey), described in the accompanying article, is no more. University administrators have decided to cease financial and staff support for this activity. Taking its place will be a new series of land price studies, introduced in this article.

The new series is built from recorded property transfers, not from a

mail survey. Although both studies seek the same thing — “the going rate for Minnesota farmland” — they are not exactly the same.

Official land transfer records (Minnesota Department of Revenue Certificates of Real Estate Value) do not provide the wealth of detail that was obtained by the Survey. In

(See *New Series* page 4)

(Decades continued from page 1)

in the 1980s, as shown in figure 1. This is consistent with a pattern of behavior among buyers and sellers in which sellers restrict sales on the up side, hoping for still higher prices, and are reluctant to sell when prices turn down, hoping for a price recovery.

Buyers, in turn, facing reluctant sellers on the up side, bid up prices and intensified the boom phase. When market prospects reversed as they did from 1981 to 1982, the initial reaction was a drop of 24 percent in the number of sales reported in the survey. A brief recovery in sales activity in 1983 and 1984 (reflecting forced sales) was followed by a drop of more than one-third in sales volume from 1984 to 1985, to the lowest point reached in sales turnover in the last 40 years.

## 1973-1992: Boom, Bust, and Recovery

Three separate trends identify the twenty years of the Minnesota rural land market cycle from 1973 through 1992: boom, 1973-1981; bust, 1982-1987; and recovery, 1988-1992.

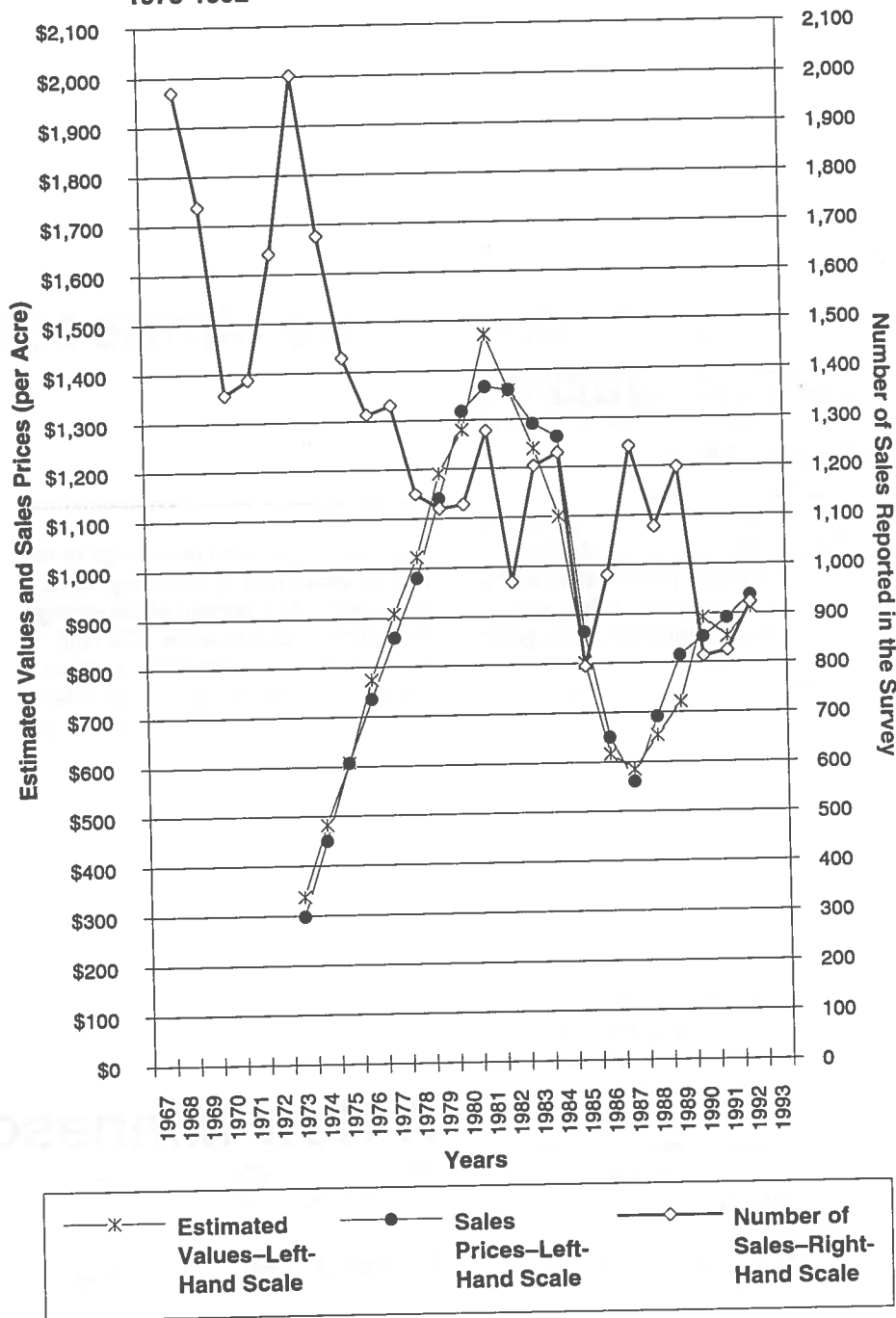
The magnitude of changes in these three periods is summarized in table 1. From 1973 to 1981, the statewide average sales price rose 459 percent. In southern and southwestern counties containing the highest priced land, the increase was more than fivefold. In the six years from 1982 to 1987, sales prices fell 59 percent statewide, and the drop in the highest priced counties approached 70 percent.

In the recovery phase, 1988 to 1992, statewide sales prices rose 68 percent from the 1987 low. However, based on an annual average, sales volume was down 30 percent. Coupled with the decline in the average size of tract sold, from 180 acres in the boom phase to 150 acres in the recovery phase, the data underline the fact that the average sales prices in the most recent years reflect a turnover of land that is more than 40 percent below market activity in the pre-boom phase. Sales prices have lost some of their power to predict land values.

## Changes in Land Use

Underlying these trends in sales prices and sales activity have been the gradual but massive changes in the location and intensity of agricultural land use in Minnesota over the past four

Figure 1. Trends in Estimated Values, Sales Prices, and Volume of Reported Sales. Minnesota Rural Real Estate Survey: 1973-1992



decades. These can be illustrated by the shifts in production of the three major field crops—corn, soybeans, and wheat—measured by acres planted and output, in 1952, 1972, and 1992.

The shifts in total crop output for corn, soybeans, and wheat are shown in table 2 for the state's nine USDA crop-reporting districts.

In that period, and in approximate terms, the output of corn tripled, the output of soybeans increased eightfold, and wheat output increased more than sixfold. In terms of acres occupied, corn remained the state's domi-

nant crop throughout the period, but with relatively minor changes in the distribution of production among the nine crop-reporting districts. The three major corn-producing areas accounted for 59 percent of total corn production in 1952, 68 percent in 1972, and 64 percent in 1992.

For soybeans, the shifts in the location of production were more dramatic. In 1952, the Southwest and West Central crop reporting districts produced only 30 percent of the state's total output of soybeans. This rose to 38 percent in 1972 and to 46 percent in

1992. In contrast, the South Central and Southeast crop districts, which had produced 53 percent of total soybean output in 1952, saw their fraction fall to 46 percent in 1972 and to 35 percent in 1992. Soybean output has moved west and north.

Since 1952, wheat production has become increasingly concentrated in the West Central and Northwest Districts. In that year those two USDA districts accounted for 86 percent of total wheat output. This rose to 96 percent in 1972 and held at that level in 1992. In 1952, the Central, East Central, Southwest, South Central, and Southeast crop reporting districts combined produced 13 percent of the state's wheat. This fell to 3.8 percent in 1972 and to 3.4 in 1992. Wheat has virtually disappeared from southern Minnesota.

Trends in the Minnesota rural real estate market over the past 40 years reflect these shifts in land use. In the 1950s the state's highest valued rural lands were in South Central Minnesota, particularly Martin, Faribault, and Blue Earth Counties, to the south and southwest of Mankato.

This zone of highest priced farmland has moved north and northwest, especially since 1972. By 1992 it expanded to include Brown, Nicollet,

Redwood, and Renville Counties and adjacent areas. A reference to table 2 shows that this trend coincided with the northwestward movement of soybeans.

In proportionate terms, the distribution of corn and wheat production in Minnesota in 1992 was not greatly different from its geographic distribution in 1952. This is not true for soybeans, as shown in table 2. The generalized northwestward movement of soybean output has been associated with a parallel movement in land prices. This supports a conclusion that the soybean has been responsible for the principal geographic shift in land values in Minnesota during 1952-1992.

A strong supporting role for this northwestward migration of land values has been supplied since the 1970s by the expansion in sugar beet production in Renville and adjacent counties. Some sugar beet production was present in this area in the 1950s, but it had virtually disappeared in the 1960s and early 1970s. This was reversed with growth of sugar-refining capacity in Renville County in the 1980s. The result by 1992 was an area of higher priced land in the supply area of the Southern Minnesota Sugar Cooperative in which land sales prices approached those of the traditional top-priced counties on the Iowa border.

The combined effect of soybeans and sugar beets has restructured the spatial pattern of land values in Minnesota, especially in the 20 years from 1972 to 1992. The "center of gravity" in landed wealth in the state shifted north and west.

But what of the future?

## Forces Affecting Future Trends in Farmland Prices

One overriding characteristic of farmland prices is that they are not fixed, but they are difficult to manipulate. They are not the result of collective bargaining agreements. In a market economy based on private property, farmland ownership is so fragmented that it is not possible for owners to form a cartel to drive up prices. The capital sums involved in land purchase are so large that even the biggest credit agencies, insurance companies, or banks find it unrewarding to hold land in inventory, waiting for a better price.

In a world where labor costs are relatively inflexible, price cutting is regarded as commercial sin, and productive capacity and labor will be held idle or unemployed to avoid lowering prices or wages, land is one of the few commodities whose price still fluctuates to reflect market conditions. This suggests that land, as the residual claimant to economic rent, can be expected to show greater price volatility if other prices in the economy exhibit greater rigidity.

This conclusion seems to be validated by the behavior of land markets, and more generally of all real estate markets, in the 1980s. First, the farmland market collapsed from 1981 to 1987, followed at the end of the 1980s by the commercial real estate market, and in some regions the residential housing market. The implication is that we can expect to see greater volatility in land and real estate markets if prices of other production goods are relatively inflexible.

Caution is clearly indicated in any attempt to forecast future trends in real estate markets, and especially in farmland markets. Realistic appraisals of national and international commodity markets do not suggest a period of increasing land-price stability.

A major reason for this caution is the fact that farmland prices in the United States have become increasingly dependent on federal farm commodity

**Table 1. Percentage Change in Sales Prices and Trend in Annual Average Number of Sales, Over Three Phases of the Land Market Cycle. Minnesota Rural Real Estate Survey: 1973-1992**

Phase	Years	Percentage Change in Sales Price (%)	Annual Averages of	
			Number of Sales (No.)	Size of Tract Sold (Acres)
Boom	1973-81	+459	1,380	180
Bust	1982-87	- 59	1,070	149
Recovery	1988-92	+ 68	967	150

**Table 2. Percentage of Total Production of Corn, Soybeans, and Wheat Produced in Each Crop-Reporting District. Minnesota: 1952, 1972, and 1992**

Crop Reporting District	All Corn			Soybeans			All Wheat		
	1952	1972	1992	1952	1972	1992	1952	1972	1992
NW	2.01	.50	.72	.57	1.62	2.92	65.18	74.85	70.23
NC	.34	.10	.10	—	—	.01	1.29	.61	.66
NE	—	—	—	—	—	—	.02	—	—
WC	15.69	11.31	14.90	13.68	13.62	21.56	20.56	20.75	25.75
CEN	19.59	17.34	18.27	14.78	13.89	15.02	5.59	1.59	1.72
EC	3.72	2.57	2.16	1.58	.80	.98	.69	.11	.14
SW	20.88	25.64	21.76	16.61	24.55	24.92	1.47	.65	.87
SC	24.25	27.55	27.97	41.20	34.49	26.25	2.98	.77	.46
SE	13.50	15.00	14.11	11.58	11.03	8.33	2.23	.65	.18
State Total	99.98	100.1	99.99	100.00	100.00	99.99	100.01	99.98	100.01

price-support programs. These programs are very exposed to budget-balancing proposals to cut federal government spending. It requires a high level of optimism to believe that a farm bill in 1995 will include levels of product price support as favorable as those in the 1990 farm bill. Among the regions of the United States, the Midwest and Great Plains are among the most vulnerable to any reduction in federal farm commodity price supports.

If price supports are reduced, the ultimate effect will be passed through to land values. With this in mind, it seems prudent to argue that current levels of farmland values in cash grain areas are approaching an upper bound of prices that can be sustained from farm earnings. Current land prices ranging from \$1,500 to \$2,000 per acre and higher in corn-soybean cropping areas seem especially vulnerable.

A second ground for caution is found in the sharp fall in long-term

interest rates that occurred over the past two years. In that period, the cost of borrowing to finance farmland purchase has fallen by one-quarter, and in some cases by one-third. This cheaper credit has been reflected directly in higher land prices. But it seems reasonable to assume that the major impact of lower interest rates is now behind us.

As noted above, with respect to future prospects for government commodity price supports, it requires an outer limit of optimism to believe that inflation threats are under control, and that interest rates will continue to fall. If interest rates rise, the general effect will be to dampen any uptrend in land prices.

A third ground for caution lies in the highly volatile economic climate that now characterizes international agricultural markets. The near-simultaneous approval of the NAFTA trade pact by the U.S. House of Representatives on November 19, 1993, and the

announced conclusion of the GATT agreement on December 15, 1993, have created a situation without precedent in agricultural trade forecasting. Many key variables are under revision. The comparative advantages of trading partners are uncertain, and the ground rules of trade are being changed.

All this is occurring at the same time as trade chaos is striking the countries once labeled "centrally planned economies." The world grain economy has been driven by the import demand of these countries for at least two decades. This seems likely to change, and the mid-years of the 1990s could be the turning point.

Faced with these uncertainties, any forecast of future trends in Minnesota farmland values seems foolhardy. It does seem safe to suggest that any weighing of judgments should avoid assuming a continuation of the trends that have prevailed over the past four or five years. It's a new ball game.

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*(New Series continued from page 1)*

particular, they tell us little about the "value" of land, or about methods of financing, or about characteristics of buyers and sellers. The new series tells us no more than — and no less than — the actual price of land that is transferred through "arms-length" sales. (The Revenue Department collects this information to aid assessors in property tax equalization.)

The new series reports the recorded sales prices for all land parcels greater than 35 acres that were previously classified as "agricultural" for property tax purposes and for which the buyer has indicated no immediate intention of changing use. Transactions are reported on an October-September "record year" basis. The sales price includes building values.

To what extent does the new series correspond with the Survey? Figure 1 shows statewide average sales prices per acre over the past several years. One line of the graph shows price according to the Survey and another shows price according to the new series. A third line presents a USDA

survey-based value of land and buildings series for comparison.

The new series and the Survey move in the same directions but at different levels. This difference might be due to the Survey reporting only January-June sales, or to the Survey's use of an average weighted by the number of farmland acres in each reporting county. The new series does not use this particular technique.

## The Market in 1993

One must be careful when making summary pronouncements about land prices. All that we actually observe are the recorded prices of more than a thousand individual parcels, of varying characteristics, scattered throughout the state. "The price" or "the average price" that we commonly report is merely a single number that we think best captures the flavor of this whole range of observed prices.

Figure 2 presents the distribution of 1,301 farmland sales recorded in the 1993 record year. (Four sales, each

averaging greater than \$4,000 per acre, are not shown in the figure.) At least three single numbers might be used to summarize this distribution. Table 1 shows an example of how each is calculated.

The first is the transaction mean, obtained by dividing the sum of all per-acre sales prices by the number of parcels sold.

Another common measure is the median, the price at which half of the transactions are higher and half are lower.

A third is an "area mean," the quotient of total dollar sales in a region divided by the total acreage sold in the same region.

The transaction mean might be thought of as "the average parcel price." The median is "the middle price." The area mean is "the price of a typical acre."

Which is the price of Minnesota farmland? All three, and none. Each is simply a number that tells us something, but by no means everything, about the shape and size of sales price distributions such as figure 2.

The number we choose to report can make a substantial difference. Consider table 2, for example. It shows for the 1993 record year (October 1992-September 1993), the transaction mean, median, and area mean sales prices for each of six reporting districts in the state. (These are the same districts traditionally used by the Survey. Sales price distributions are shown in figure 3.) The area mean generally falls between the two other average figures, but the three are often not very close to each other.

The remainder of this report uses the area mean to summarize sales price distributions. By this measure, the average 1993 sales price of Minnesota farmland was \$838 per acre, up from \$799 per acre in 1992.

Changes in farmland prices from 1992 differed substantially around the state, as table 3 shows. Prices rose 17 percent in the Northwest and more modestly throughout the rest of the state. The highest reported average sales prices remained in the Southwest District.

Figure 4 shows the same annual price comparison for the state government's economic development regions. This permits us to examine average sales prices on a more disaggregated basis, but still retain enough transactions in each analysis area to "smooth out" any extremes.

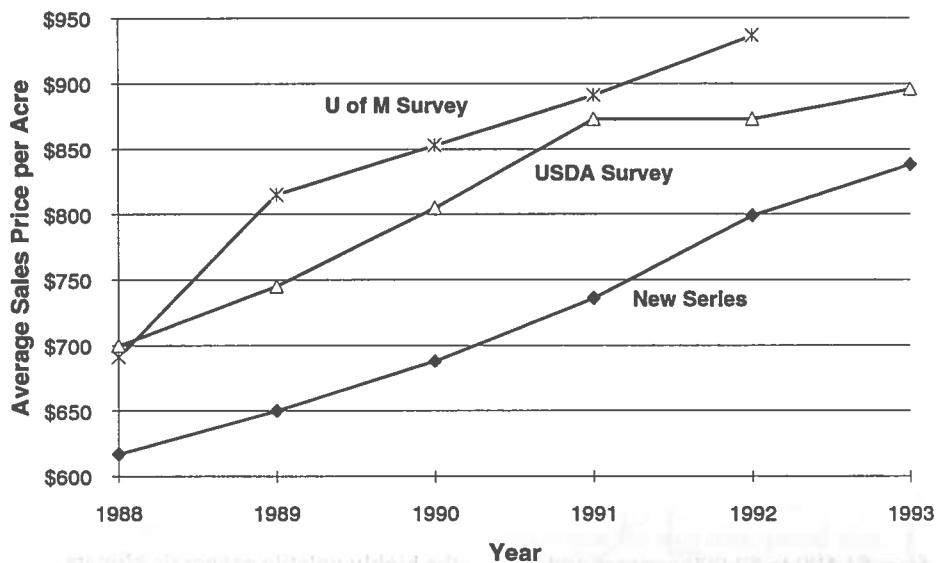
Under these boundaries, five regions show a decline from 1992 in average sales prices, including some agriculturally prominent south central areas.

## Price Adjustments

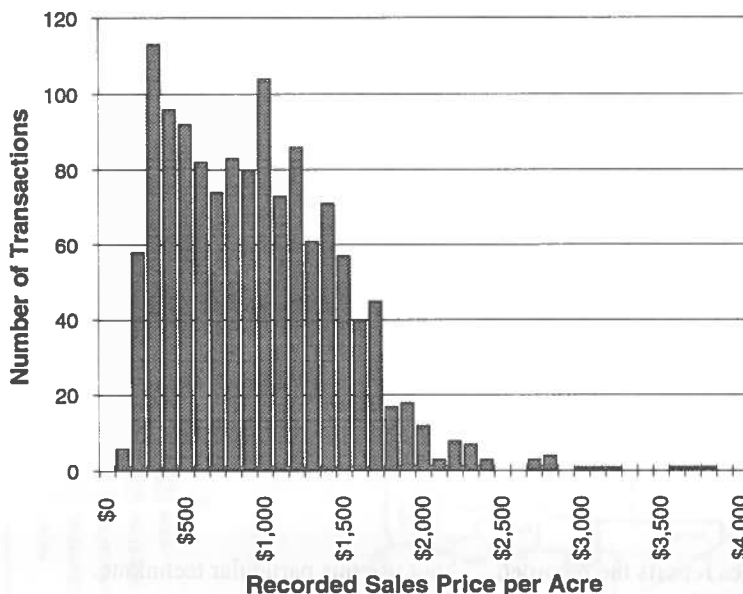
In addition to the recorded price used above, we can also calculate sales prices adjusted for financing terms or adjusted for the value of buildings and improvements. (Please note that these adjustments depend in part upon analysts' judgments. We observe on the market only the unadjusted prices.)

Table 4 shows that the "conveyance-adjusted" prices are usually slightly lower than the recorded prices, and that "tillable land" prices (which numerically screen out the value of buildings and improvements and divide the residual by the number of acres of tillable land) are considerably higher in some cases.

**Figure 1. Minnesota Land Price Estimates (Area Mean): 1988-1993**



**Figure 2. Distribution of Minnesota Recorded Sales Prices: 1993 Record Year**



**Table 1. Example of Transaction Mean, Median, and Area Mean**

Parcel	Sales Price (\$) for Parcel	Acres	\$/Acre
1	10,000	20	500
2	5,000	50	100
3	20,000	20	1,000

**Transaction mean = 533**

$500 + 100 + 1,000$  (dollars per acre) = 1,600.  
 $1,600 \div 3$  (number of parcels) = 533.

**Median = 500**

Of three transactions, one is higher than \$500 and one is lower.  
 The \$500 transaction is the midpoint.

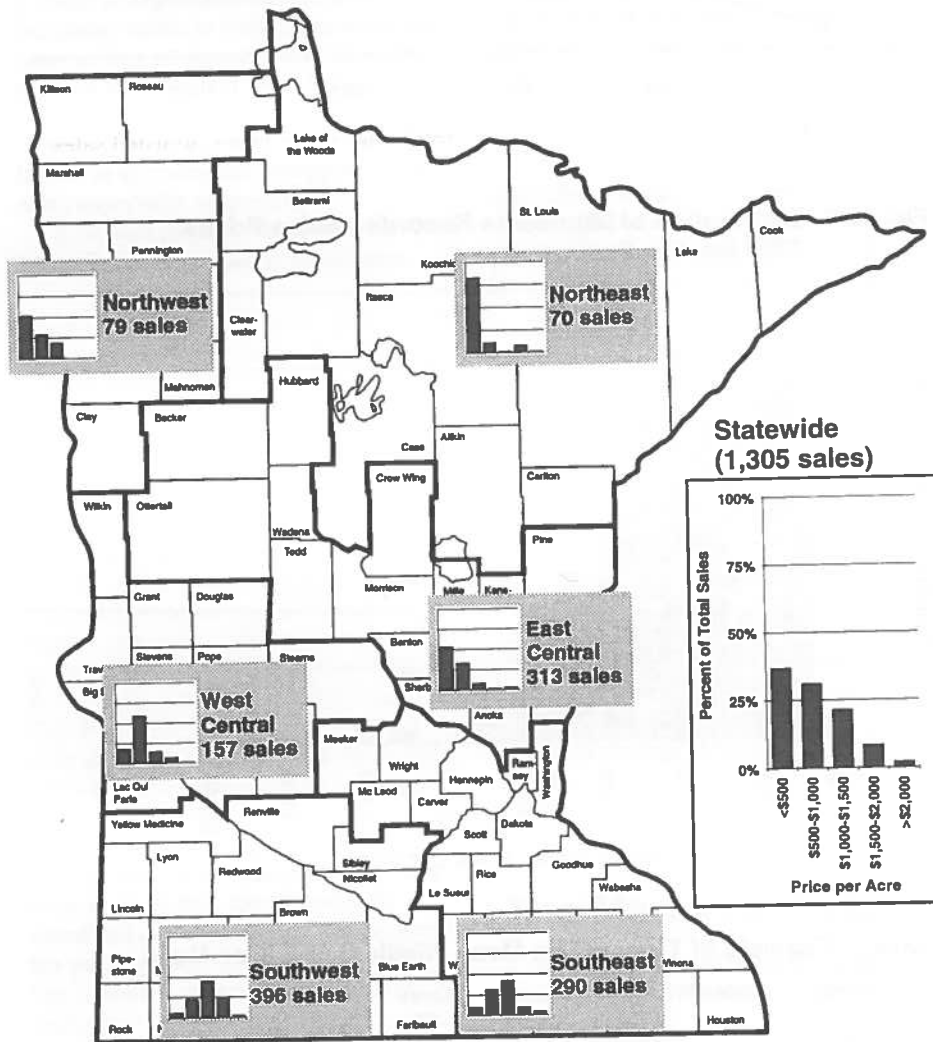
**Area mean = 389**

$10,000 + 5,000 + 20,000 = 35,000$  (total transaction amount).  
 $35,000 \div 90$  (number of acres) = 389.

**Table 2. Recorded Minnesota Farmland Sales Prices by District: 1993 Record Year**

District	Number of Sales	Sales Price (dollars per acre)		
		Transaction Mean	Median	Area Mean
East Central	313	611	456	507
Northeast	70	383	269	290
Northwest	79	588	475	586
Southeast	290	1,114	1,061	1,020
Southwest	396	1,239	1,250	1,160
West Central	157	803	743	772
State Total	1,305	923	865	838

**Figure 3. Recorded Farmland Prices by Reporting District: 1993 Record Year**



**Table 3. Change in Average Recorded Minnesota Farmland Prices: 1992-1993**

District	1992		1993		1992-93 Change (%)
	Number of Sales	Area Mean	Number of Sales	Area Mean	
East Central	224	437	313	507	16
Northeast	80	252	70	290	15
Northwest	120	500	79	586	17
Southeast	252	904	290	1,020	13
Southwest	477	1,145	396	1,160	1
West Central	159	738	157	772	5
State Total	1,312	799	1,305	838	5

The statewide average tillable land price was \$938 per acre, compared to the \$838 average recorded price. The difference is especially noticeable in the East Central District, where the tillable price exceeded the average recorded price by 20 percent.

Table 5 puts together all of the summary numbers. "The price" of farmland for Minnesota (or for any subdistrict) is whichever summary number readers find most appropriate for their own purposes. As in this article, the unadjusted area mean is the summary number most commonly used by land market analysts.

## First Signs of Decline?

Figure 5 shows that statewide prices rose in the January-March 1993 reporting period to a high of \$885 and then fell to \$742 by the July-September period. The late-season drop is even more dramatic in the Southwest District.

Is this decline due to the rain and floods experienced by many Minnesota crop farmers this past year? Do the lower average prices reflect a diminishing in the appeal of farmland for new and expansion buyers? Perhaps.

The July-September reporting period almost always contains far fewer sales than do the other periods, and these may not be typical of the

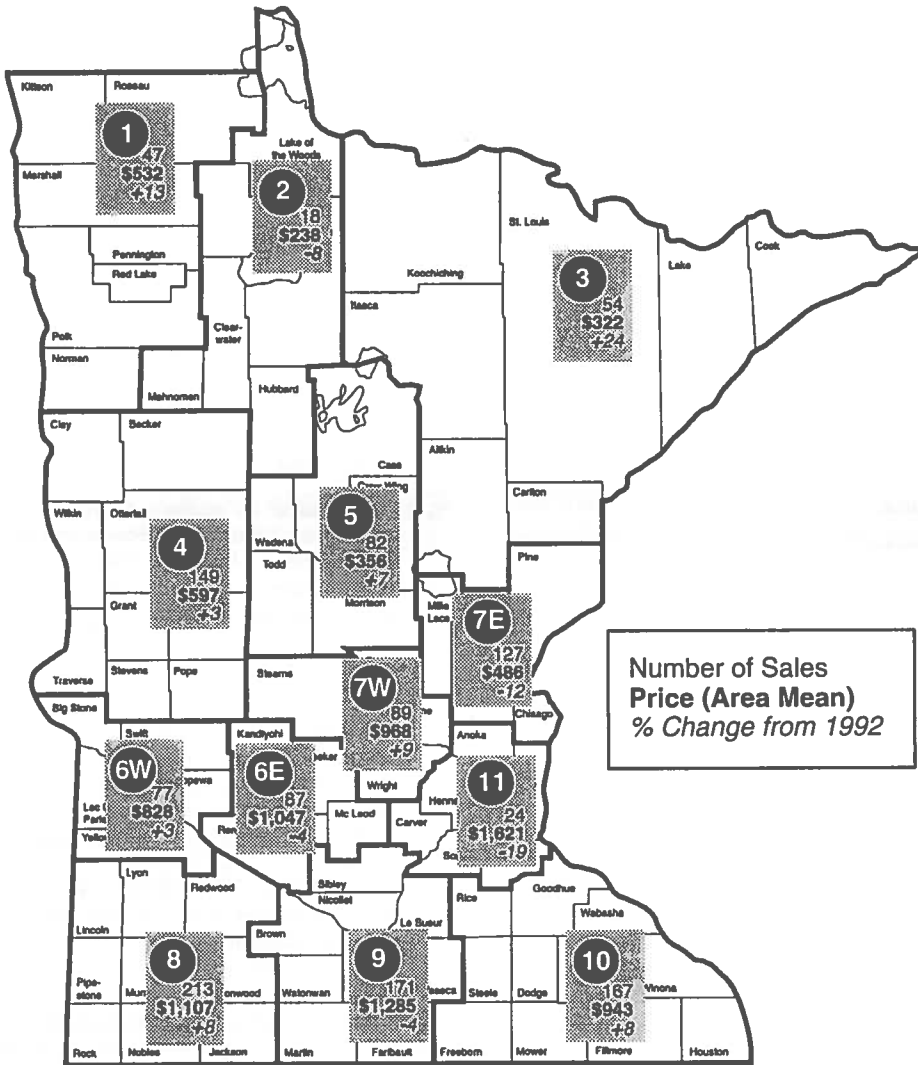
**Table 4. Three Farmland Price Measures (area mean, dollars per acre)**

District	Recorded	Adjusted	Tillable
East Central	507	503	609
Northeast	290	289	319
Northwest	586	586	646
Southeast	1,020	1,006	1,066
Southwest	1,160	1,145	1,197
West Central	772	781	789
State Total	838	831	938

**Table 5. The "Average" Price of Minnesota Farmland: 1993 Record Year (dollars per acre)**

	Transaction		Area
	Mean	Median	Mean
Recorded	923	865	838
Adjusted	911	856	831
Tillable Land	982	943	938

**Figure 4. Average Recorded Farmland Prices by Economic Development Region**



whole year's transactions. For example, the Southwest average for the July-September period shown in figure 5 is based on only nine reported sales.

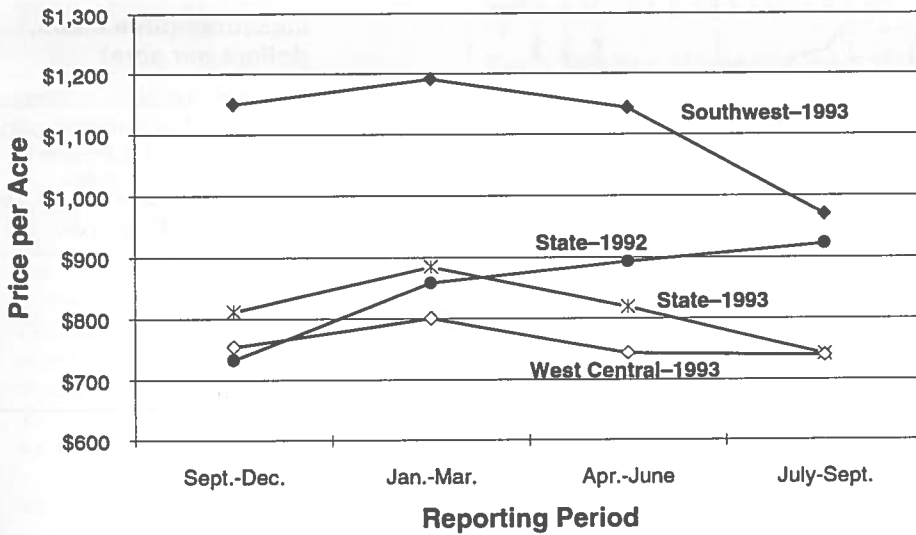
We will have to wait until the October-December 1993 (and succeeding period) price reports to learn more. These won't be available until late 1994, however, unless the Department of Revenue alters its regular data compilation schedule.

### Data Availability

Those interested in obtaining all of the new price series data for 1988-93 can contact me directly, at the address listed on the back page. In brief, for each valid "agricultural" sale, analysts can obtain the sale date, parcel size, total sales price, terms-adjusted sales price, and tillable land price (the last for the 1993 record year only).

I am reasonably comfortable reporting prices aggregated to a district or economic development region level, as in this article. The paucity of sales in many counties makes it hazardous to rely on a single "average" to tell us much about the farmland market at a more disaggregated level. Other analysts are encouraged to try their own hands, however.

**Figure 5. Average Recorded Sale Prices by Reporting Period (Area Mean)**





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**Steven J. Taff** ..... Managing Editor

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Please send all address changes for *Minnesota Agricultural Economist* to Louise Letnes, University of Minnesota, 232 Classroom Office Building, 1994 Buford Ave., St. Paul, MN 55108-6040.

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