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**FARM REAL ESTATE VALUATION PROBLEMS
INCURRED BY MINNESOTA FARM MANAGEMENT ASSOCIATIONS**

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FARM REAL ESTATE VALUATION PROBLEMS INCURRED BY MINNESOTA FARM
MANAGEMENT ASSOCIATIONS

G. A. Pond and T. R. Nodland

One of the problems involved in the farm accounting records kept by members of farm management associations is the determination of a satisfactory basis for valuing farm real estate--land, buildings, and other/^{real}estate improvements. Since the farmer uses these accounts both for an analysis of the farm business and as a basis for computing state and federal income taxes, certain problems arise.

A large amount of fixed capital in the form of land, buildings, and other land improvements is involved in farming. This is especially true on livestock farms in southern Minnesota. Under usual accounting practices these capital items are depreciated each year by the straight line or diminishing balance method of depreciation. This is common accounting practice for both income tax accounting and farm business analysis.

The sale or market value of farm land (including land improvements), however, changes from year to year. Usually these changes continue in one direction for a period of years, although the magnitude of the change from year to year is difficult to measure precisely--especially for any individual farm.

A stable basis for valuing farm real estate is important in farm business associations because of the measures of farm financial success or of the farmer's financial progress that are in general use in farm management analysis. A common measure of farm financial success and the one used in analyzing the accounts of the farm business associations in Minnesota is "labor earnings."^{1/} One of the deductions from gross income is a charge for the capital used at a given rate of interest on the average value of the farm capital used in the business. Then, also, any increase in farm capital during the year is considered as income and any decrease as an expense in computing "labor earnings." Since this type of analysis of financial success or progress is used in the farm business associations in Minnesota, uniform methods of evaluating the capital used as a basis for

^{1/} For a definition of "labor earnings" see "Some Recommendations for Standardizing Farm Management Terminology," pp. 595-598, Journal Farm Economics 35:4, November 1953.

the capital charge are essential, if significant comparisons are to be made among the farms included in the association. Unless this uniformity is attained, differences in earnings are likely to reflect differences in method of valuation among farms rather than differences in the basic management of the farms. Failure to keep basic real estate valuations in line with current price levels tends to affect both labor earnings and operator's net worth. Excessive valuations of property used in farm production will increase the capital charge and decrease the net earnings measure. Under-valuations will have the opposite effect. Under or over valuation of real estate capital will also result in under or over stating the net worth of the farmers.

Real Estate Valuation Policies Used in Minnesota Farm Management Services

When accounting records were started on the farms of the Southeast Minnesota Farm Management Association in 1928, the land and the buildings were appraised for inventory purposes at their current market sale value. By 1931 the level of land prices had dropped sharply. In an attempt to adjust to this lower price level, the land values shown in the books of the Association members were reduced a uniform 25 percent on all farms. A second cut of 29 percent was made in 1932. This cut included buildings and other real estate improvements (the other adjustment covered only bare land). By 1936, when land prices were beginning to register an increase, land values on the Southeast Minnesota Association farms were adjusted upward 10 percent, to bring them more closely in line with the current land market.

No further "across the board" adjustments in real estate values have been made in either of the Associations. As new farms were added to the Associations they were valued at the current market price at the time or at the value they were being carried on the owner's book for income tax purposes. When the Southwest Minnesota Farm Management Association started operation in 1940, real estate values were entered on the basis of current market value or current book values for income tax purposes.

Recent Changes in Farm Real Estate Values in Southern Minnesota

Studies made by the Department of Agricultural Economics of the University of Minnesota

Institute of Agriculture ^{1/} indicate the average price of farm real estate in southeastern Minnesota was \$100 per acre in 1928 (see Table 1). This dropped to \$51 in 1936-37, but by 1957 had risen to \$165 per acre. These studies also report a value in southwestern Minnesota of \$68 per acre at the time the Southwest Minnesota Farm Management Association was organized in 1940. By 1957 farm real estate values per acre had risen to \$230 per acre.

In 1928 the average value per acre of farms in the Southeast Minnesota Farm Management Association, as shown by the farm records, was \$120 per acre, as compared with \$100 per acre, as reported by the Department of Agricultural Economics, for all farms in southeastern Minnesota. Since the farms in the Association were somewhat more productive and better improved than the average farm in this area, this appears to be a reasonable valuation.

Table 1. Average Real Estate Values per Acre

Year	S. E. Minn. Farm Management Assn.*	Southeastern Minnesota **	S. W. Minn. Farm Management Assn.*	Southwestern Minnesota **
		(dollars)		
1928	120	100	-	102
1940	70	59	79	68
1957	127	165	168	230

* From Annual Reports of Southeast and Southwest Farm Management Associations.

** From Reports 506 and 512, Department of Agricultural Economics, Institute of Agriculture, University of Minnesota.

When the Southwest Minnesota Farm Management Association was organized in 1940, the average value of farm real estate, as carried on the farmers' books, was \$79 per acre (see Table 1). The Department of Agricultural Economics reported a price of \$68 per acre

^{1/} "The Minnesota Farm Real Estate Market in 1954" by L. O. Sorenson and P. M. Raup, and "The Minnesota Farm Real Estate Market in 1957" by P. M. Raup and J. E. Johnson. Department of Agricultural Economics Reports Nos. 506 (December 1954) and 512 (March 1958).

for all farm real estate in southwestern Minnesota. This also appears a reasonable relationship, as these farms are also more productive than the average of the area.

Changes in Real Estate Valuations of Southeast and Southwest Minnesota Farm Management Association Farms Since Associations Were Organized

By 1957 the value of farm real estate reported by the Department of Agricultural Economics had risen to \$165 per acre in southeastern Minnesota--an increase of 65 percent over the 1928 figure of \$100 per acre (see Table 1). However, the average value of farm real estate, as carried on the books of the Southeast Association, was only \$127 per acre--approximately 70 percent of the area figure and only 6 percent above the 1928 figure. In southwestern Minnesota the value of farm real estate per acre, as estimated by the Department of Agricultural Economics, was \$68 in 1940, the year the Southwest Association was organized, and \$230 in 1957--an increase of 238 percent. However, over this same period the real estate value per acre of farms in the Southwest Association, as shown on the members' books, increased from \$79 per acre to \$168 per acre--an increase of only 113 percent.

It is apparent from these comparisons that the current values of an acre of farm real estate, as shown on the books of the members of the Farm Management Associations, have lagged behind current market values in the area. Since this value is used in computing "labor earnings" the result is to inflate the earnings figure because of the smaller capital charge resulting from the lower real estate valuation. For the same reason net worth figures for the Association farms are lower than current market values of the area would indicate.

This failure to keep real estate values on the books of the Associations in line with current real estate values in the area not only inflates current earnings and deflates current net worth figures but it also tends to obscure or invalidate comparisons among the farms in the Associations because there is a wide difference among members in the degree to which their real estate figures deviate from current levels. In general land values have trended upward since the late thirties. The longer a farm has been owned by one individual the more likely is the valuation to be below current market levels.

Effect of Failure to Keep Real Estate Values at Current Levels on Accuracy of Earnings and Net Worth Statements

Under estimates of real estate values result in higher "labor earnings" figures and lower "net worth" figures than if correct current valuations were used. The average labor earnings of the farms in the Southeast Farm Management Association in 1957, as shown in the annual report,^{1/} was \$4,170. Had these farms been carried on the books at the average value of farm land in southeastern Minnesota, as shown in table 1, the resulting higher inventory value would have reduced this figure to \$3,804 or 11 percent less than shown in the report cited. On the other hand, the net worth of the owner-operators would be higher by \$8,702, if the price of land is used in evaluating the real estate. In the case of the Southwest Minnesota Farm Management Association, the average labor earnings would be reduced by 18 percent, if the average price of land in southwestern Minnesota--\$230--was substituted for the average price shown on the farmers' books--\$168.^{2/} On the other hand, if the average price of real estate per acre in southwestern Minnesota was used, the net worth would be increased by \$16,840. Actually the discrepancy would be even greater than indicated above if the value per acre of the farms included in these Associations exceeded the estimated value of all farms in the area by the same percentage margin as it did in 1928 or in 1940.

Validity of Comparison Among Farms and Area Impaired by Lack of a Uniform Basis of Real Estate Valuation

No attempt has been made to keep real estate values among farms in the Southeast Association on a uniform price or value basis since 1936. None has been made at any time in the Southwest Association. As a result, the basis of real estate values--especially as far as land is concerned--varies widely among farms in these Associations. The longer a farm has been in the Association the more likely is the basis of real estate valuation to be out of line with current market valuations. Some adjustments in building values are

^{1/} 1957 Annual Report, Southeast Minnesota Farm Management Service, Report No. 238, Department of Agricultural Economics, Institute of Agriculture, April 1958.

^{2/} The estimated value of the dwelling has been omitted in the calculation of labor earnings.

made each year for annual depreciation as well as for additions and substantial improvements, but no changes other than those in 1931, 1932, and 1936 have been made in the values of bare land. As a result, "labor earnings" as computed annually, varies not only with the quality of management but also with the level of real estate values for the particular farm. This latter factor is dependent on the price level of farm real estate at the time the operator joins the Association or on the type of valuation used by the operator for income tax accounting, or perhaps on both.

Estimated Current Sale Value of Farms in Southeast and Southwest Farm Management Associations

In view of the discrepancy between the current market sale value and the value, as shown on the books of the Association members, an attempt was made to measure this difference. The field men of each Association, in cooperation with the farm operator, made a careful estimate of the current sale value of each farm. Every effort was made not only to appraise accurately the current sale value of each farm but to keep the basis of valuation uniform among farms within the Association. A compilation of these estimates is shown in Table 2. In both Associations, as already pointed out, the book values used by the Association were higher than those in the areas as a whole at the time the Association was organized. In general they are somewhat more productive and better improved farms. This is especially true in the Southeast Association, since this group includes less of the more rolling, and hence less productive and less easily worked, land along the Mississippi River than does the southeast area as a whole. The farms in the Southwest Association also are somewhat more productive than those of the area as a whole but probably the difference is not as great as is true of the Southeast Association.

The estimate of farm real estate values made in early 1957 by the fieldmen of the Associations and the farm operators exceeds the average area valuations by a larger percentage margin than was true in 1928 and 1940, when these associations were organized. Through the process of selection that goes on each year, it is reasonable to assume that the quality of the farms in the Associations increases from year to year--and this is reflected in these figures. As far as type and general organization is concerned, there is little change from year to year but the Association farms tend to adopt new practices and

to build up both the productivity of their land, relative to the area as a whole, and to increase the quantity and quality of real estate improvements.

Table 2. Comparison of Account Book Values, Estimated Current Market Values, and Average Area Values of Farm Real Estate

	Southeast Minnesota			Southwest Minnesota		
	1928	1940	1957	1928	1940	1957
	(dollars)					
Association book values	120	70	127	-	79	168
Estimated current market value, 1957	-	-	227	-	-	285
Area value (U of M estimate*)	100	59	165	102	68	230
	(percent)					
Percent book value of area estimate	120	119	77	-	116	73
Percent 1957 estimate of area est.	-	-	138	-	-	124

* "The Minnesota Farm Real Estate Market in 1954" by L. O. Sorenson and P. M. Raup, and "The Minnesota Farm Real Estate Market in 1957" by P. M. Raup and J. E. Johnson, Department of Agricultural Economics Reports 506 (December 1954) and 512 (March 1958).

The average book values and the average range in book values, as well as the average January 1, 1957, estimate of current market value and the range in January 1, 1957, estimates, are shown by county groups in Table 3 for the Southeast Minnesota Association farms and in Table 4 for the Southwest Minnesota Association farms for which these data are available. The range in book values as of January 1, 1957, are much wider than are the estimated values for the same counties or county groups, as well as for all farms in each Association. It appears obvious that the use of the estimated current values would provide a more stable and a more significant basis for computing both the earnings and the net worth of the members of these Associations.

Table 3. Comparison of Book and Estimated Values per Acre of Real Estate by County Group, Southeast Association, on January 1, 1957

County Group	Book value		Estimated current market value	
	Average	Range	Average	Range
	(dollars)			
Goodhue	112	59-186	184	120-250
Wabasha and Winona	119	60-217	201	125-269
Olmsted and Dodge	114	58-193	224	115-348
Rice, Scott, and Dakota	140	33-254	227	141-279
Steele and Le Sueur	143	89-200	236	120-302
Freeborn and Mower	118	42-240	245	108-350
Waseca and Nicollet	141	46-263	266	130-321
All counties	127*	33-263	227*	108-350

* This figure differs slightly from the average book value shown in Table 1 since this calculation includes only those farms for which estimated sale values are available for comparison with current book values.

Table 4. Comparison of Book and Estimated Values per Acre of Real Estate by County Group, Southwest Association, on January 1, 1957

County Group	Book value		Estimated current market value	
	Average	Range	Average	Range
	(dollars)			
Murray, Rock, and Pipestone	211	67-241	238	160-350
Redwood	158	68-261	255	190-400
Cottonwood and Watonwan	171	99-256	284	230-384
Nobles	165	78-295	294	225-400
Jackson	142	55-243	304	230-400
Faribault and Martin	173	88-270	309	235-400
All counties	169*	55-295	285*	160-400

* This value differs slightly from the average book value shown in Table 1 since this includes only those farms for which estimated sales values are available for comparison with current book values.

Some Suggestions as to the Basis for Real Estate Valuations Used by Farm Business Associations

The determination of significant inventory valuations of the different types of farm property used in farm production is not an easy one. Farm records are used for a variety

of purposes. Two important uses are (1) an analysis of the degree of success with which the business is operated to determine possibilities for improvement and (2) as a basis for income tax accounting. Unfortunately the basis of valuation satisfactory for one may not serve equally well for the other.

The farmer's inventory includes a wide variety of items or classes of property. There is first such fixed assets as land, buildings, and other real estate improvements. These items are subject to both appreciation and depreciation. Buildings and other real estate improvements deteriorate through "wear and tear" as well as through obsolescence. Depreciation due to "wear and tear" may be offset by repairs and upkeep. Then, also, the market value of both land and real estate improvements may rise and fall--usually in fairly long cycles. Where farms continue in a farm business association for a long period of years, both of these factors--deterioration from use or obsolescence and changes in the price level for this item--may seriously impair the significance of the value of these items for analysis purposes. An appraisal of the extent to which this occurred in the Southeast and Southwest Minnesota Farm Management Associations is indicated in Table 2.

This deviation of the inventory valuation of farm real estate from current market values is a more serious problem and distorts measures of earning and net worth more than is the case with inventories of crops, feeds, livestock, and farm machinery, since there is a much more rapid turnover of the latter items in the operation of the farm business. Crops and feeds are revalued each year. There is a steady turnover of livestock and the process of current replacement of farm machines tends to keep the inventory value of these items fairly closely adjusted to current market prices of valuations.

The authors wish to propose a dual type of inventory valuations to be used in case of farm real estate. Two separate real estate inventories would be carried on each farm. One would be the type now used by the farm business associations in Minnesota in which buildings, and other real estate improvements are valued at cost depreciated to date in case of buildings and other real estate improvements and land at cost. This is the valuation currently used for income tax purposes at the time the farm entered the Association. This valuation would be used in computing income tax returns.

A second type of real estate valuation is proposed for use in determining current earnings and current net worth as well as in a general analysis of factors affecting farm earnings. This involves determining the current sale value of the farm when the farm joins the Association and then adjusting this up or down each year in line with changes in land values in the section of the state where the farm is located. An index of current real estate prices is published each year by the Department of Agricultural Economics, University of Minnesota Institute of Agriculture, for six different areas into which the state is divided. This general plan is in successful use in Illinois where 5000 farmers are enrolled in farm business associations. Obviously the adoption of such a plan would entail additional work and many problems would be encountered. However, the authors feel that much more significant earnings and net worth figures would result. It would enhance the value of comparisons between farms and make the records more useful in analyzing the factors that determine or condition the success of a farm business.

The authors have been studying this problem since the first association in Minnesota was set up in 1928. The early attempts to adjust real estate values in line with the current market were not sufficiently precise to merit continuance. Standard or average valuations of farm land were not available at that time. As farmers' earnings trended upward in the late thirties and early forties income tax considerations became a major factor in determining the real estate valuations. The growing discrepancy between current market values and those used for income tax purposes is increasingly distorting the significance of the farm business analysis techniques used. Differences in earnings and other measures of farm financial success may be due as much to methods of inventory valuation used as to differences in the quality of management. The authors of this report strongly urge upon the various farm management services in the state, including those under the supervision of the Vocational Division of the Minnesota Department of Education, that they also consider the use of this proposed dual system of real estate valuation in order to enhance the significance of the analysis basis on their records.