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What Is the Value of Land ... To the Buyer? To the Seller?

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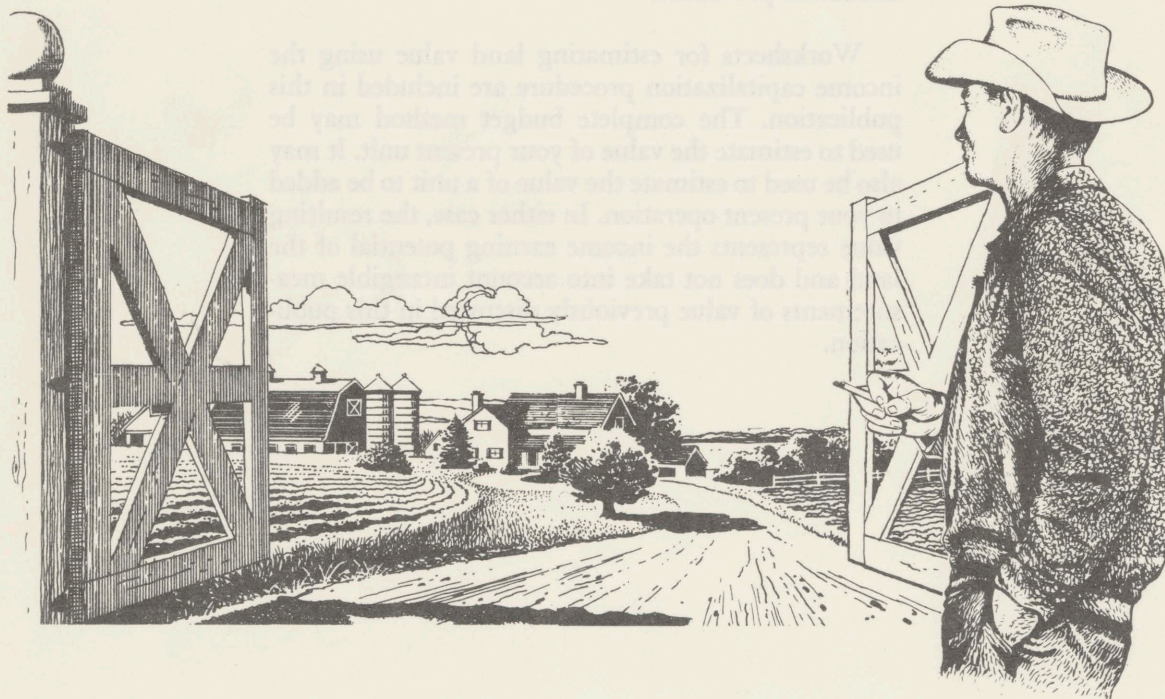
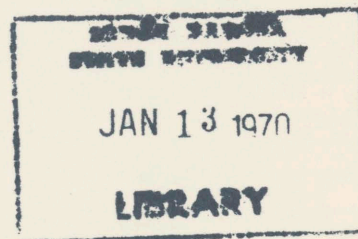
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What Is the Value of Land . . .

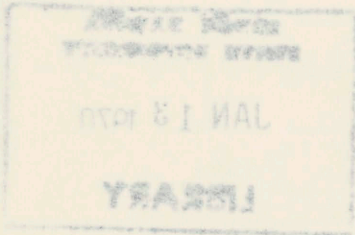
To the Buyer?

To the Seller?



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SUMMARY

Many land appraisors maintain that comparison or market values are the most realistic of all values because a farm is worth what it will sell for, regardless of its income earning potential. However, there are also those who feel that the market price approach should be used only as a check against the income capitalization procedure.

Worksheets for estimating land value using the income capitalization procedure are included in this publication. The complete budget method may be used to estimate the value of your present unit. It may also be used to estimate the value of a unit to be added to your present operation. In either case, the resulting value represents the income earning potential of the land and does not take into account intangible measurements of value previously discussed in this publication.

What Is the Value of Land . . .

To the Buyer?

To the Seller?

By **Merlyn M. Dahl**, area farm management agent, and
Wallace G. Aanderud, extension economist—farm management

Introduction

Nearly every farmer or rancher, sometime during his life, is forced to make decisions concerning the value of farm real estate. He might be selling a lifetime estate, buying his first farm or adding to an existing farm operation. Regardless of the situation, all have one common problem—that of determining the fair market value of land. Determining a fair market value is not an easy task, because no two farms or ranches are identical. Physical variations in soils, topography and climate usually exist. Often individuals place varying degrees of importance on the quality of roads, schools, churches, recreational facilities and shopping centers. Some will pay a high price for scenery or the privilege of acquiring land in a certain community or with a particular set of buildings, while others will not. Economic factors such as taxes, acreage allotments, opportunities for leasing additional land and zoning regulations all play an important part in farm real estate valuations.

Since land is an asset and can be expected to produce income and services for the owner in future years, its value is dependent upon three main factors: (1) Future net cash income that the land can be expected to return to the owner, (2) Owner's evaluation of non-cash income such as pride of ownership, hedging inflationary trends, rural living and recreation, and, (3) The rate of return the owner feels he must realize to justify his investment in the land.

Investing in farmland to be used as farmland is always a forward looking process because what is really bought and sold is essentially a set of rights pertaining to a certain tract of land. The right to use the land, to receive income from it, to sell it, to let it lie idle if we choose—the right to exercise these rights or privileges is always in the future, not the present.

The income to be realized from using the land or the rent for letting someone else use it is future income. We can think of this future income as a series of annual payments that will accrue to the owner, and

it is these annual payments from farming the land that gives it value. The price of land is, in effect, the present value that buyers and sellers place on these expected annual incomes. If there is reason to believe that the size of these annual payments will increase in the future then, theoretically, buyers should be willing to pay more at the present time for the right to receive these higher incomes in the future.

THE INCOME APPROACH

There are several methods that can be used by farmers and ranchers to estimate the value of real estate. One of the most common of these methods is the income approach which involves using the "productive capacity" as a basis for determining the value of a certain tract of land. Stated in another way, this method involves capitalizing expected future net earnings to determine present value.

Productivity

Net earnings or future income will depend entirely on what the land will produce. Obviously the best indication of what the land will produce is detailed production records showing past yields and also the amounts of fertilizer, chemicals and other production factors necessary to obtain these yields. These records will also provide some indication of management levels in previous years and whether or not the expected returns from the land should be higher.

If production records are not available for a given farm, estimates based on county average yields, soil characteristics, or perhaps neighboring yields will have to be used. All possible sources of information concerning productivity of the particular land under consideration should be used, because productivity and therefore income expectations are the basis for determining land values with this method.

Prices

Price per unit of production will also have to be determined. It would be easy to select current prices as a base and use them in conjunction with productivity to arrive at expected gross income for the tract of

land being evaluated. However, this would undoubtedly be an unrealistic estimate, because prices change over time. Past prices can be used as a guide to future prices. For example, average commodity prices or price trends for the past 5 or 10 years might be used to estimate prices for a similar period of time in the future (See Figure 1). Regardless of how prices are selected, they should represent your best judgment for years to come. The price estimates during the immediate years ahead are more important than those 15-20 years in the future.

Expenses

Operating costs will vary according to the size and value of the unit, type and intensity of operation, level of management and physical characteristics of the land. A farm or ranch to be operated as the sole economic unit will likely show different operating costs than if it is added to an existing unit, because costs and income do not always change in the same proportion. Operating costs on farms and ranches throughout the state have been steadily rising for several years and individual judgment will have to be used in deciding whether or not this trend will continue (See Figure 1).

Figure 1. Indexes of farmland and buildings value per acre, prices paid by farmers and prices received by farmers: Annual average, S. D. 1958-68 (1957-1958=100) computed from South Dakota Agriculture, 1968 Crop and Livestock Reporting Service.

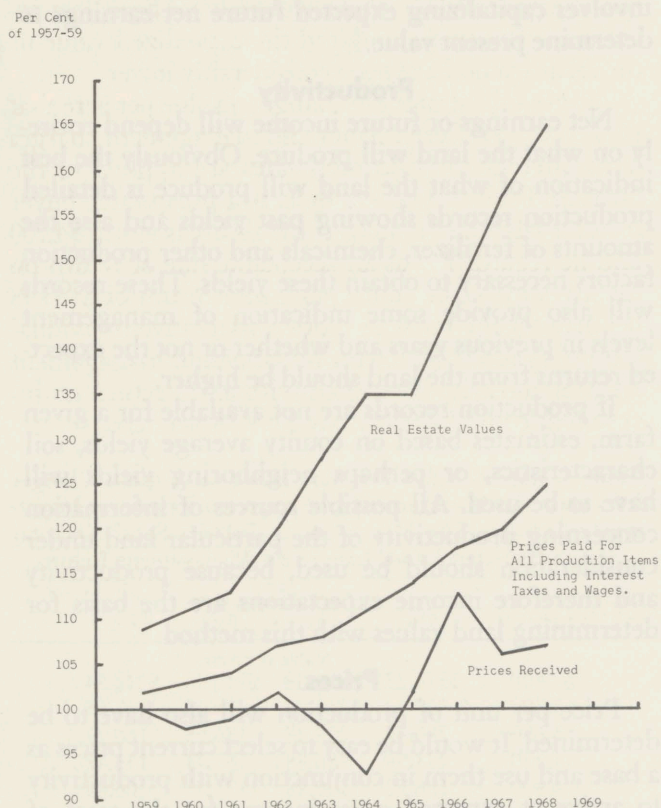


Table 1. Example Farm, 160 Acres, Eastern South Dakota

| Land Use | Acres | Expected Yield (bushels or tons) | Total Production (bushels or tons) | Expected Price per unit | Total Value |
|---|-------|-------------------------------------|---------------------------------------|-------------------------|------------------|
| Corn | 80 | 60 | 4,800 | \$ 1.00 | \$4,800 |
| Oats | 40 | 55 | 2,200 | .60 | 1,320 |
| Barley | 20 | 40 | 800 | .85 | 680 |
| Alfalfa Hay .. | 15 | 2.5 | 37.5 | 18.00 | 675 |
| Farmstead | 5 | | | | |
| | | | | Total | \$7,475 |
| Non-Land Costs: | | | | | |
| Seed | | | | \$ 375 | |
| Fertilizer, chemicals | | | | 450 | |
| Repairs, gas, oil | | | | 450 | |
| Hired labor | | | | | |
| Custom work | | | | 150 | |
| Personal property taxes | | | | 110 | |
| Interest on operating capital | | | | 120 | |
| Interest on machinery investment | | | | 500 | |
| Depreciation on machinery | | | | 900 | |
| Farm share of electricity, telephone, etc. | | | | 200 | |
| Charge for labor and management | | | | \$1,800 | |
| | | | | Total | \$5,105 |
| Balance to Pay Land Costs | | | | | \$2,370 |
| Land Costs | | | | | |
| Insurance, depreciation, maintenance | | | | \$500 | |
| Real Estate Taxes | | | | 350 | |
| | | | | Total | \$850 |
| Balance for Land Capital Costs | | | | | \$ 1,520 |
| Land Value (capitalized at 6%) | | | | | \$25,333 |
| | | | | (\$1,520 ÷ .06) | |
| Value per acre | | | | | \$ 158.33 |

Once individual estimates concerning future yields, prices and costs have been made, based on past experience and research, the information should be organized in budget form. Budgeting is a systematic procedure for organizing these items in order to determine annual net income. The difference between annual income and annual costs will provide a return to land which can be capitalized to show the value of land based on earning capacity. The following formula may be used for this purpose.

$$\text{Value} = \frac{\text{Annual Net Income}}{\text{Capitalization Rate}}$$

The income capitalization method of land valuation applied to three example farms in eastern South Dakota comprising 160, 320 and 480 acres are shown in Tables 1, 2 and 3 on the following pages. Using Table 2 let us examine the income capitalization procedure.

Given certain assumptions regarding land use and expected yields and prices, the gross income of this 320 acre example farm would typically be \$14,950.

It was further assumed that the farm operator in this case felt his labor and management ability is worth \$3,000. After subtracting this and all other non-land costs, a balance of \$5,670 remains as a return to land. Land costs including insurance, depreciation

and maintenance on buildings, and real estate taxes reduce annual net income to \$4,190. Capitalized at 6% this amount indicates a total land value of \$69,833 or \$218.23 per acre.

Obviously, the reliability of the income capitalization method depends to a large extent on realistic estimates of annual net income and acceptable capitalization rates. If either of these items are unrealistic, the resulting land values will also be unrealistic.

The selection of the capitalization rate to use has to be an individual decision because the prospective buyer or seller must decide for himself what he considers a fair rate of return on investment. The current market rate of interest being charged by banks, insurance companies and federal institutions in the farm mortgage lending field is often used as a base. Expected returns from alternative investments such as common stocks, government bonds or a local business should also provide a guide to selecting an acceptable capitalization rate providing they involve the same amount of risk and exhibit the same growth potential as investment in land.

The charge for labor and management can also be a very important non-land cost in arriving at a true land valuation. In Table 2, the farm operator felt his labor and management ability was worth \$3,000. If he

Table 2. Example Farm, 320 Acres, Eastern South Dakota

| Land Use | Acres | Expected Yield | Total Production | Expected Price Per Unit | Total Value |
|---|-------|-------------------|-------------------|-------------------------|------------------|
| | | (Bushels or tons) | (Bushels or tons) | | |
| Corn | 160 | 60 | 9,600 | \$ 1.00 | \$ 9,600 |
| Oats | 80 | 55 | 4,400 | .60 | 2,640 |
| Barley | 40 | 40 | 1,600 | .85 | 1,360 |
| Alfalfa Hay... | 30 | 2.5 | 75 | 18.00 | 1,350 |
| Farmstead ... | 10 | | | | |
| Total | | | | | \$14,950 |
| Non-Land Costs: | | | | | |
| Seed | | | | | \$ 750 |
| Fertilizer, chemicals | | | | | 900 |
| Repairs, gas, oil | | | | | 1,000 |
| Hired labor | | | | | 200 |
| Custom work | | | | | 300 |
| Personal property taxes | | | | | 190 |
| Interest on operating capital | | | | | 200 |
| Interest on machinery investment | | | | | 900 |
| Depreciation on machinery | | | | | 1,540 |
| Farm share of electricity, telephone, etc. | | | | | 300 |
| Charge for labor and management | | | | | 3,000 |
| Total | | | | | \$9,280 |
| Balance to Pay Land Costs | | | | | 5,670 |
| Land Cost | | | | | |
| Insurance, depreciation, maintenance | | | | \$ 800 | |
| Real estate taxes | | | | 680 | |
| Total | | | | | \$1,480 |
| Balance for Land Capital Costs | | | | | 4,190 |
| Land Value (capitalized at 6%) | | | | | \$69,833 |
| (\$4,190 ÷ .06) | | | | | |
| Value per Acre | | | | | \$ 218.23 |

Table 3. Example Farm, 480 Acres, Eastern South Dakota

| Land Use | Acres | Expected Yields | Total Production | Expected Price per unit | Total Value |
|---|-------|-------------------|-------------------|-------------------------|------------------|
| | | (Bushels or tons) | (Bushels or tons) | | |
| Corn | 240 | 60 | 14,400 | \$ 1.00 | \$14,400 |
| Oats | 120 | 55 | 6,600 | .60 | 3,960 |
| Barley | 60 | 40 | 2,400 | .85 | 2,040 |
| Alfalfa Hay ... | 45 | 2.5 | 112.5 | 18.00 | 2,025 |
| Farmstead | 15 | | | | |
| Shelterbelts, etc. | | | | | |
| Total | | | | | \$22,425 |
| Non-Land Costs: | | | | | |
| Seed | | | | \$ 1,080 | |
| Fertilizer, chemicals | | | | 1,350 | |
| Repairs, gas, oil | | | | 1,500 | |
| Hired labor | | | | 400 | |
| Custom work | | | | 500 | |
| Personal property taxes | | | | 220 | |
| Interest on operating capital | | | | 290 | |
| Interest on machinery investment | | | | 1,310 | |
| Depreciation on machinery | | | | 2,270 | |
| Farm share of electricity, telephone, etc. | | | | 350 | |
| Charge for labor and management | | | | 4,000 | |
| Total | | | | | \$13,270 |
| Balance to Pay Land Costs | | | | | \$ 9,155 |
| Land Costs | | | | | |
| Insurance, depreciation, maintenance | | | | \$ 1,100 | |
| Real estate taxes | | | | 1,020 | |
| Total | | | | | \$ 2,120 |
| Balance for Land Capital Costs | | | | | \$ 7,035 |
| Land Value (capitalized at 6%) | | | | | \$117,250 |
| (\$7,035 ÷ .06) | | | | | |
| Value per Acre | | | | | \$ 244.27 |

had charged \$4,200, there would have been less income to allocate to land and the capitalized value of the farm would have been considerably lower.

Table 4 illustrates the change in value per acre that results when different labor and management charges and different capitalization rates are applied to the farm in Table 2. For example, if a prospective buyer feels his labor and management ability is worth \$4,200 and he regards 7% as an acceptable rate of return on his investment, he could pay a maximum of \$133.48 per acre for the farm. A more conservative individual willing to accept \$2,400 for his labor and management services and who is satisfied with a 5% return on investment could logically pay \$299.38 per acre.

Table 4. Capital Value Per Acre Based on Various Charges for Labor and Management and Expected Return on Investment; Example 320 Acre Farm in Eastern South Dakota; \$7,190 Expected Land, Labor and Management Return

| Charge for Labor and Management | 4% | Capitalization Rate | 5% | 6% | 7% |
|---------------------------------|----------|-----------------------|----------|----------|----|
| | | Value per Acre | | | |
| \$2,400 | \$374.22 | \$299.38 | \$249.48 | \$213.84 | |
| 3,000 | 327.34 | 261.88 | 218.23 | 187.05 | |
| 3,600 | 280.47 | 224.38 | 186.98 | 160.27 | |
| 4,200 | 233.59 | 186.88 | 155.73 | 133.48 | |
| 4,800 | 186.72 | 149.38 | 124.48 | 106.69 | |

Purchasing Additional Land for Farm or Ranch Enlargement

A high percentage of the farm real estate transfers in recent years has occurred because operators want to increase the size of their business. According to the U. S. Department of Agriculture, 57% of all land transfers in 1968 were for farm or ranch enlargement.¹ Farms or ranches that have surplus labor and unused machine capacity are often the first to expand because additional land can be handled without a proportionate increase in all production costs. For example, a given complement of machinery will depreciate or decrease in value due to obsolescence whether it is used on 200 or 300 acres.

Unused family labor can also be considered a fixed cost of operation, especially if no off-farm employment opportunities exist. Obviously the return from additional land will be much more profitable for the operator who possesses unused productive capacity than for the operator who has reached the limit of his productive capacity. Quite often he will also be able to pay more for additional land than the operator who could handle additional land only by increasing his investment in machinery and hired labor.

The following steps should be considered in evaluating land that is to be added to an existing unit:

1. Capitalize expected annual returns from the existing unit.
2. Capitalize expected annual returns from the combined existing and "add-on" unit.
3. The difference between steps 1 and 2 represent the capital value that the "add-on" unit will support.
4. Increased size and investment nearly always carries with it an increase in risk, therefore, an

Table 5. Effects of Increasing Size on Capitalized Earnings for Three Sizes of Farms, Eastern South Dakota

| | 160 Acre Farm | 320 Acre Farm | 480 Acre Farm |
|------------------------------|------------------|------------------|------------------|
| Total Value of | | | |
| Production | \$ 7,475 | \$14,950 | \$ 22,425 |
| Non-Land Costs | 5,105 | 9,280 | 13,270 |
| Balance to pay land costs \$ | 2,370 | 5,670 | 9,155 |
| Land Costs | | | |
| Insurance, depreciation, | | | |
| maintenance | 500 | 800 | 1,100 |
| Real estate taxes | 350 | 680 | 1,020 |
| Total | \$ 850 | \$ 1,480 | \$ 2,120 |
| Balance for | | | |
| land capital costs..... | \$ 1,520 | \$ 4,190 | \$ 7,035 |
| Land Value | | | |
| (capitalized at 6%) .. | 25,333 | 69,833 | \$117,250 |
| Value per Acre | 158.33 | 218.23 | 244.27 |
| Value of Added Land | | \$44,500 | \$ 47,417 |
| Total per Acre | | 278.13 | 296.36 |

appropriate discount should be considered for increased risk.

Table 5 provides a summary of Tables 1, 2, and 3 and may be used to illustrate this procedure.

Let's assume you presently own and operate the 320 acre farm. Based on expected earnings, this farm has a capitalized value of \$69,833 (Step 1). Let's further assume that you have the opportunity to purchase an additional 160 acres which would increase your unit to 480 acres. Based on careful estimates of all costs and the increased value of production, the capitalized value of the combined unit is \$117,250 (Step 2). The difference between the capital value of the 320 acre farm and the 480 acre farm is \$47,417, the maximum capital investment that the additional 160 acres will support (Step 3).

Comparing the two units on an acre basis, the 320 acre farm has a capital value of \$218.23 while the combined 480 acre unit has a capital value of \$244.27 per acre. The increased capital value of the 480 acre unit occurs because the total of all costs does not increase in the same proportion or at the same rate as the value of production. This results in a higher net income per acre to capitalize. The 160 acre farm capitalizes at \$158.33 per acre when evaluated as an independent unit, but as an "add-on" unit to a 320 acre farm its value nearly doubles to \$296.36 (\$117,250 minus \$69,833 ÷ 160). Similarly if two 160 acre units are added together the second unit may have a value of \$278.13 per acre, rather than \$158.33 if the units were separate.

Based on the costs and returns assumed in Table 5, we have an example of five different capital values for farm real estate. These differences occur because costs and returns do not change in the same proportion as farm size.

An appropriate discount for risk will depend to a large extent on the willingness of the individual to assume risk (Step 4). It should also be considered in light of his present financial position, age, family obligations and personal estimates of other factors that will affect his farm business in future years. Using a higher capitalization rate as shown in Table 4 is the most common way of discounting for higher risk.

Income Approach—Animal Unit Basis

The income approach may also be applied to the ranch areas of South Dakota using animal units (AU) as a basis instead of acres. This is especially desirable where the carrying capacity per acre differs widely from one ranch to another.

One thousand pounds of body weight is commonly considered as an animal unit. If you prefer to estimate your own animal units, add beginning and ending weights and divide this total by 2,000 (2 times 1,000).

¹USDA Economic Research Service; *Farm Real Estate Market Developments*, CD-72, March, 1969, page 14.

Some of the more common animal unit designations for different classes of livestock are:

| | |
|------------------------------------|------------|
| Beef cow and calf | = 1.00 AU. |
| Bull | = 1.25 AU. |
| Weaned Calves (400-600 lbs.) | = .50 AU. |
| Heifers (550-700 lbs.) | = .65 AU. |
| Yearlings (600-750 lbs.) | = .70 AU. |
| Horses | = 1.25 AU. |
| Ewe and lamb | = .20 AU. |
| Ewes | = .15 AU. |

Tables 6, 7, and 8 show the capitalized values per cow unit of carrying capacity for 200, 400, and 600 cow units. The budget estimates are set up in the same manner as Tables 1, 2, and 3. The only difference is that real estate value based on expected earnings is expressed in terms of a cow unit instead of per acre. It should also be kept in mind that even though the budgets are expressed in increments of 200 cow units, the total livestock inventory is considerably higher. A 200 cow unit is assumed to include an inventory of

Table 6. Example Ranch, 200 Cow Unit, Feeder Calf Sold October, Replacements First Calve as 2-Year-Olds, 92% Calf Crop, 16% Replacement Rate, 1% Cow Death Loss, One Bull per 25 Cows

| Receipts | Value |
|--|------------------|
| Steer Calves 4.25 cwt. x \$30.00x92 head | \$11,730 |
| Heifer Calves, 3.75 cwt. x \$28.00 x 56 head | 5,880 |
| Cull Heifer, 6.0 cwt. \$23.00 x 4 head | 552 |
| Cull Cow, 10.0 cwt. x \$16.00 x 30 head | 4,800 |
| Bulls, 18.0 cwt. x \$18.00 x 2 head | 648 |
| Total | \$23,610 |
| Non-Land Costs: | |
| Bull replacements (2 head @ \$550) | \$ 1,100 |
| Feed, salt, minerals purchased | 2,660 |
| Repairs, gas, oil | 900 |
| Hired labor | 300 |
| Interest on operating capital | 300 |
| Veterinary and drugs | 600 |
| Personal property taxes & insurance | 700 |
| Interest on machinery and livestock | 3,480 |
| Depreciation on machinery | 800 |
| Ranch share of electricity and telephone | 200 |
| Transportation and marketing | 600 |
| Charge for labor and management | 4,000 |
| Total | \$15,640 |
| Balance to Pay Land Costs | \$ 7,970 |
| Land Costs | |
| Insurance, depreciation, maintenance | 1,800 |
| Real estate taxes | 1,600 |
| Total | \$ 3,400 |
| Balance for Land Capital Costs | 4,570 |
| Land Value (capitalized at 6%) | \$76,166 |
| (\$4,570 ÷ .06) | |
| Value per Cow Unit of Carrying Capacity | \$ 380.83 |

200 cows, 8 bulls, 34 yearling heifers and 36 heifer calves in order to make an allowance for bulls and normal replacements.

Using Table 7 (400 cow-calf unit) as an example, we find that expected receipts total \$47,220. A 16% replacement rate was assumed in calculating total receipts. After deducting all operating and land costs, a balance of \$14,070 remains. Capitalizing this balance at a 6% rate results in a value of \$586.25 per cow unit of carrying capacity.

As in the previous budgets for farm real estate in eastern South Dakota, it is very important to use a realistic capitalization rate and labor and management return. Table 9 shows the changes in value per cow unit of carrying capacity when various capitalization rates and different charges for labor and management are assumed.

The 400 cow unit assumes a labor management charge of \$5,000 and a capitalization rate of 6%. If you feel your labor and management is worth more, say \$7,000, and you desire a 7% return on your investment, then based on earning capacity, you could only afford to pay \$431.07 per cow unit of carrying capacity

Table 7. Example Ranch, 400 Cow Unit, Feeder Calf Sold October, Replacements First Calve as 2-Year-Olds, 92% Calf Crop, 16% Replacement Rate, 1% Cow Death Loss, One Bull per 25 Cows

| Receipts | Value |
|--|------------------|
| Steer Calves, 4.25 cwt. x \$30.00 x 184 head | \$23,460 |
| Heifer Calves, 3.75 cwt. x 28.00 x 122 head | 11,760 |
| Cull heifer, 6.0 cwt. x 23.00 x 8 head | 1,104 |
| Cull cow, 10.0 cwt. x 16.00 x 60 head | 9,600 |
| Bulls, 18.0 cwt. x 18.00 x 4 head | 1,296 |
| Total | \$47,220 |
| Non-Land Costs | |
| Bull replacements (4 head @ \$550) | \$ 2,200 |
| Feed, salt, minerals purchased | 5,320 |
| Repairs, gas, oil | 1,800 |
| Hired labor | 600 |
| Interest on operating capital | 550 |
| Veterinary and drugs | 1,200 |
| Personal property taxes and insurance | 1,380 |
| Interest on machinery and livestock | 6,800 |
| Depreciation on machinery | 1,000 |
| Ranch share of electricity and telephone | 300 |
| Transportation and marketing | 1,200 |
| Charge for labor and management | 5,000 |
| Total | \$27,350 |
| Balance to Pay Land Costs | \$ 19,870 |
| Land Costs | |
| Insurance, depreciation, maintenance | \$ 2,800 |
| Real estate taxes | 3,000 |
| Total | \$ 5,800 |
| Balance for Land Capital Costs | \$ 14,070 |
| Land Value (capitalized at 6%) | \$234,500 |
| (\$14,070 ÷ .06) | |
| Value per Cow Unit of Carrying Capacity | \$ 586.25 |

instead of \$586.25 assumed in Table 7. If you are willing to accept \$4,000 for your labor and management and you are satisfied with a 4% return on your investment, theoretically you could pay \$941.88 per cow unit of carrying capacity.

Table 10 provides a summary of Tables 6, 7, and 8. Given the costs and returns assumed in these budgets, it becomes obvious that increased economies of size are possible. The capital value per cow unit of carrying capacity is \$380.83 (200 cows), \$586.25 (400 cows) and \$657.50 (600 cows). It is interesting to note that as an independent unit the 200 cow ranch is valued at \$380.83 per cow unit of carrying capacity, but as an "add-on" unit it is worth considerably more. The value of a 200 cow ranch when added to an existing 200 cow ranch shows a capital value of \$791.67 (\$234,500 minus \$76,166 ÷ 200). When this same 200 cow ranch is added to a present 400 cow operation the capital value goes to \$800 per cow unit of carrying capacity (\$394,500 minus \$234,500 ÷ 200). As in the previous example regarding farm size, an appropriate discount for risk should be made according to each individual's best judgement.

Table 8. Example Ranch, 600 Cow Unit, Feeder Calf Sold October, Replacements First Calve as 2-Year-Olds, 92% Calf Crop, 16% Replacement Rate, 1% Cow Death Loss, One Bull per 25 Cows

| Receipts | Value |
|---|------------------|
| Steer Calves, 4.25 cwt. x \$30.00 x 276 head..... | \$35,190 |
| Heifer Calves, 3.75 cwt. x 28.00 x 168 head..... | 17,640 |
| Cull Heifer, 6.0 cwt. x 23.00 x 12 head..... | 1,656 |
| Cull Cow, 10.0 cwt. x 16.00 x 90 head..... | 14,040 |
| Bulls, 18.0 cwt. x 18.00 x 6 head..... | 1,944 |
| Total | \$70,830 |
| Non-Land Costs: | |
| Bull replacements (6 head @ \$550) | \$ 3,300 |
| Feed, salt, minerals purchased | 7,800 |
| Repairs, gas, oil | 2,600 |
| Hired labor | 1,800 |
| Interest on operating capital | 880 |
| Veterinary and drugs | 1,600 |
| Personal property taxes and insurance .. | 1,980 |
| Interest on machinery and livestock | 9,700 |
| Depreciation on machinery | 1,100 |
| Ranch share of electricity and telephone .. | 400 |
| Transportation and marketing | 1,800 |
| Charge for labor and management | 6,000 |
| Total | \$38,960 |
| Balance to Pay Land Costs | \$ 31,870 |
| Land Costs | |
| Insurance, depreciation, maintenance .. | \$ 3,700 |
| Real estate taxes | 4,500 |
| Total | \$ 8,200 |
| Balance for Land Capital Costs | \$ 23,670 |
| Land Value (capitalized at 6%) | \$394,500 |
| ($\$23,670 \div .06$) | |
| Value per cow unit of carrying capacity .. | \$ 657.50 |

Table 9. Capital Value of Land per Cow Unit of Carrying Capacity Based on Various Charges for Labor and Management and Expected Return on Investment; 400 Cow Example Ranch; \$19,070 Expected Land, Labor and Management Return

| Charge for Labor and Management | Capitalization Rate | | | |
|---------------------------------|-------------------------------|--------|--------|--------|
| | 4% | 5% | 6% | 7% |
| | Value in Dollars Per Cow Unit | | | |
| \$3,000 | 1,004.38 | 803.50 | 669.58 | 573.93 |
| 4,000 | 941.88 | 753.50 | 627.92 | 538.21 |
| 5,000 | 879.38 | 703.50 | 586.25 | 502.50 |
| 6,000 | 816.88 | 653.50 | 544.58 | 466.79 |
| 7,000 | 754.38 | 603.50 | 502.92 | 431.07 |

Table 10. Effect of Increasing Size on Capitalized Earnings for Three Sizes of Ranches, Western South Dakota

| | 200 Cow Ranch | 400 Cow Ranch | 600 Cow Ranch |
|--|------------------|------------------|------------------|
| Total Value | | | |
| of Production | \$23,610 | \$ 47,220 | \$ 70,830 |
| Non-Land Costs | 15,640 | 27,350 | 38,960 |
| Balance to pay land costs..... | 7,970 | 19,870 | 31,870 |
| Land Costs | | | |
| Insurance, depreciation, maintenance.. | 1,800 | 2,800 | 3,700 |
| Real estate taxes | 1,600 | 3,000 | 4,500 |
| Total | \$ 3,400 | \$ 5,800 | \$ 8,200 |
| Balance for land capital costs | \$ 4,570 | \$ 14,070 | \$ 23,670 |
| Land Value (capitalized at 6%) | \$76,166 | \$234,500 | \$394,500 |
| Value per cow unit of Carrying Capacity | \$ 380.83 | \$ 586.25 | \$ 657.50 |
| Value of added units: | | | |
| Total | | \$158,334 | \$160,000 |
| Per Cow Unit | | \$ 791.67 | \$ 800.00 |

CAPITALIZING RENT

Budgets used in previous examples for determining farm and ranch values have a definite advantage, because they take into account all receipts and expenses. However, it is often difficult to obtain the necessary data for complete budgets due to inadequate records or unwillingness to provide needed information. In this case, it is often desirable to capitalize rent, the amount the landlord would receive as his share of the crops or livestock or as cash rent after all of his costs have been deducted. Items such as insurance, depreciation, maintenance on improvements, real estate taxes and crop expenses, if any, are subtracted from the landlord's share in order to arrive at his net income from the farm or ranch business. Net income is then capitalized to obtain real estate value based on expected earning capacity. If this method is to be reliable, it also requires the best possible judgment regarding future prices, yields and costs.

Table 11 provides an example of the rent capitalization method for a 160 acre farm in North Central South Dakota.

Expected gross receipts total \$3,671 of which the landlord receives a one-third share amounting to \$1,224. Land and non-land costs of \$430 reduce his net income for paying land capital costs to \$794. Capitalizing the landlord's net income at 6% results in a total real estate value of \$13,233 or \$82.71 per acre.

For another example, we might consider the rent capitalization method applied to a single acre basis. Let's assume a half section of land with wheat being raised on the entire farm (50% fallow and 50% wheat). If the rental arrangement is again two-thirds to the renter and one-third to the landlord, an expected yield of 20 bushels per acre (10 bushels per acre annually) would give the landlord 3 1/3 bushels per year. An expected wheat price of \$1.80 per bushel would provide the landlord with an annual gross income per acre of \$6.00. If the landlord's expenses for real estate taxes and insurance, depreciation and maintenance total \$1.50 per acre, then he would be left with an annual net income of \$4.50. Capitalized at 6% this would result in a per acre value of \$75.00 (\$4.50 ÷ .06).

You might also want to check the rent capitalization method on the 320 acre example farm shown in Table 2. The most common rental rate in this area is 2/5 to the landlord and 3/5 to the renter. Forty per-

cent of the total value of production is \$5,980 (\$14,950 x .40). Under the 40-60 rental agreement the landloard normally pays 40% of the fertilizer and chemical costs amounting to \$360. He would also have land costs of \$1,480, leaving a balance of \$4,140 to pay land capital costs. Capitalizing this amount at 6% indicates a total value of \$69,000 or \$215.63 per acre—slightly lower than the complete budget method.

Obviously, the rent capitalization method is much simpler than the complete budget method shown earlier. If the cash or share rental rates are well established for the area, this method may be as reliable an estimate of value as the complete budget method. The rent capitalization method is often used when it is difficult to obtain the necessary information for complete farm or ranch budgets.

MARKET PRICE APPROACH

The market price approach to land valuation is simply putting together information on comparable land sales in the area. This information is always useful, especially during periods when there is an active real estate market. However, a prospective buyer should have a thorough knowledge of its shortcomings.

It was pointed out earlier that land prices do not always reflect true value in a strictly monetary sense. Many times intangible measurements of value exist, such as pride of ownership, "eye appeal," and location. Some buyers expect an increase in land value due to a growing population. Others feel land is a good hedge on present inflationary trends. Some purchases have been made by non-farmers for "hobby" farming. In some areas, the price of land is affected by potential non-farm uses. All of these factors exert an upward pressure on land prices. In other words, the selling price of land very often reflects forces other than the future earning ability of the land.

A prospective buyer must be able to sort out the relevant forces according to his own special needs. Only then will the sales price of comparable tracts of land represent the true worth of the property to a buyer.

Seldom, if ever, will two farms in the same area be identical in all respects. This necessitates making certain adjustments in the selling prices of similar farms which have sold recently. Selecting farms with the most characteristics that are similar makes the job easier. Beginning with average sale prices for land, the influence of other factors or values can be accounted for by the following adjustments up or down from the averages.

Table 11. Example of Rent Capitalization Method, 160 Acres, North Central South Dakota

| | Acres | Expected Yield | Expected Prices | Expected Gross Return |
|---|-------|----------------|-----------------|-----------------------|
| | | (bu. or tons) | | (dollars) |
| Wheat after Corn | 20 | 16 | \$ 1.80 | 576 |
| Wheat on Fallow | 20 | 20 | 1.80 | 720 |
| Corn | 20 | 36 | 1.00 | 720 |
| Barley | 20 | 28 | .90 | 504 |
| Oats | 20 | 34 | .60 | 408 |
| Flax | 5 | 9 | 2.80 | 126 |
| Alfalfa Hay | 20 | 1.4 | 18.00 | 504 |
| Native Hay | 10 | .75 | 15.00 | 113 |
| Summer Fallow | 20 | | | |
| Roads, Waste | 5 | | | |
| | 160 | | | \$3,671 |
| Landlord's 1/3 crop share | | | | \$1,224 |
| Landlord Costs | | | | |
| Insurance, depreciation and maintenance of improvements | | | \$200 | |
| Real estate taxes | | | 180 | |
| Crop expenses (seed, fertilizer) | | | 50 | |
| Total Costs | | | \$430 | 430 |
| Balance to Pay Land Capital Costs (Net Income) | | | \$ 794 | |
| Land Value (capitalized at 6%) (794 ÷ .06) | | | \$13,233 | |
| Value per acre (160 acres) | | | \$ 82.71 | |

Time: Land prices in South Dakota have shown an average increase of 5 to 6% per year (See Figure 1). If a farm similar to the one under consideration for purchase was sold two years ago at, say \$200 per acre, one would likely assume that the same farm today would bring a minimum of \$210 per acre.

Size: Small acreages usually command a higher selling price per acre than larger acreages. If there is a substantial difference in size between recent sales and the farm under consideration for purchase, one may want to adjust the per acre price. Individual judgment will have to be used in adjusting the price of comparable sales up or down based on what you think they would have sold for if they were the size of the farm being appraised.

Location: Comparable sales in the area are frequently better or more poorly located with respect to roads, markets, schools, churches and shopping centers than the farm under consideration. In this case, you will want to adjust the selling price by the amount which in your opinion represents how much more or less the comparable farm would have sold

for if its location had been the same as the farm you are considering buying.

Land: Quality of land is seldom identical in every way on two separate tracts of land. In this case it will be necessary to estimate how much more or less per acre the comparable farm would have sold for if it possessed the same quality of land and the same proportion of cropland and pasture as the farm under consideration for purchase.

Buildings: Recent comparable sales in the area will undoubtedly exhibit a wide range in the buildings and improvements. Ask yourself "What would have been the selling price of other comparable farms if they had the same buildings as the farm I am considering buying?" Make your selling price adjustments, up or down, based on your own personal judgment.

By taking into account all of the preceding adjustments, plus or minus, you will reach an indicated selling price of the comparable farm if it had been similar in all respects to the farm you are evaluating. This figure then becomes the indicated market value for such farms.

ESTIMATING LAND VALUE (Complete Budget Method)

| | Present <u>Unit</u> | Present Plus Added <u>Unit</u> |
|--|------------------------|---|
| Value of Production | | |
| Crops..... | _____ | _____ |
| Livestock..... | _____ | _____ |
| A. TOTAL VALUE OF PRODUCTION | _____ | _____ |
| Non-land Costs | | |
| Seed..... | _____ | _____ |
| Fertilizer, chemicals..... | _____ | _____ |
| Repairs, gas, oil..... | _____ | _____ |
| Hired labor..... | _____ | _____ |
| Custom work..... | _____ | _____ |
| Personal property taxes..... | _____ | _____ |
| Interest on operating capital..... | _____ | _____ |
| Interest on machinery investment..... | _____ | _____ |
| Depreciation on machinery..... | _____ | _____ |
| Farm share of electricity, telephone, etc.. | _____ | _____ |
| Charge for labor and management..... | _____ | _____ |
| B. TOTAL NON-LAND COSTS | _____ | _____ |
| C. Balance to pay land costs..... (A minus B) | _____ | _____ |
| Land Costs | | |
| Insurance, depreciation, maintenance..... | _____ | _____ |
| Real estate taxes..... | _____ | _____ |
| D. TOTAL LAND COSTS | _____ | _____ |
| E. Balance to pay land capital costs..... (C minus D) | _____ | _____ |
| F. Land Value (E divided by capitalization rate) 4% 5% 6% 7% 8% (circle one) | _____ | _____ |
| G. VALUE PER ACRE OR PER AU..... (F divided by acres or AU's) | _____ | _____ |
| H. Value of Added land..... Subtract present land value from the value of the combined unit (Present plus added). | | _____ |
| I. Value of added Land Per Acre or Per AU..... (H divided by added acres or AU's) | | _____ |

ESTIMATING LAND VALUE
(Rent Capitalization Method)

Value of Production

Crops.....

Livestock.....

Total Value of Production.....

A. VALUE OF LANDLORD'S SHARE

1/3 2/5 1/2
(circle one)

Landlord's Costs

Insurance, depreciation and.....

maintenance of improvements.....

Real estate taxes.....

Crop expenses.....

B. TOTAL LANDLORD COSTS

C. Balance to Pay Land Capital Costs.....

(A minus B)

D. Land Value (C divided by capitalization rate)

4% 5% 6% 7% 8%
(circle one)

E. VALUE PER ACRE.....

(D divided by acres)