

# CROP COSTS AND RETURNS



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## BARLEY

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North Dakota ranks first in the nation in the production of barley. About 95 per cent of the barley acreage in North Dakota is seeded to acceptable malting barley varieties. From 75 to 80 per cent of the barley produced is sold off the farm, and two-thirds of these sales are for malting purposes. The proportion of barley sold for malting decreases from east to west in the state. During the period 1964 to 1968, sales for malting use were 27 per cent of total sales in western North Dakota, 60 per cent in central North Dakota, and 74 per cent in the eastern part of the state.

Cash farm income from barley in North Dakota accounted for 12 per cent of the total income from crops in 1969. Wheat is the only crop which ranks higher in income. The acreage, yield per planted acre, and production of barley for the six-year period 1965 to 1970 are shown in Table 1.

Barley is grown on both summerfallow land and land that has been cropped the previous year. The average per cent planted on summerfallow for the 1965 to 1969 period was 45 in the western area, 20 in the west central and east central areas, and 10 in the Red River Valley. The acreage planted on fallow land varies from year to year, depending on the amount of summerfallow land available, government programs, and weather conditions.

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TABLE 1. ACREAGE, YIELD PER PLANTED ACRE AND PRODUCTION OF BARLEY IN NORTH DAKOTA, 1965-1970

Year	Planted Acreage (000)	Yield Per Planted Acre (Bu.)	Production in Bushels (000)
1965	2,513	38.9	97,760
1966	2,990	30.9	92,288
1967	2,751	31.8	87,549
1968	2,696	39.4	106,353
1969	2,265	41.9	94,858
1970 <sup>a</sup>	2,039	33.7	68,705

<sup>a</sup>Preliminary

Source: North Dakota Crop and Livestock Statistics, Annual Summaries for 1966, 1967, 1968, and 1969, Statistical Reporting Service, U. S. Department of Agriculture and Department of Agricultural Economics, North Dakota State University, Fargo, North Dakota.

The state has been divided into four areas--western, west central, east central, and the Red River Valley (Figure 1). Costs and returns are presented for each of the four areas based on the typical cropping practices used. The input and output data used are what is being achieved on well-managed farms in each area. The costs and returns data presented here can help serve as a guide in making production decisions. The size of farm in cropland acres used in determining the production costs was 1,159 in the western area, 1,065 in the west central and east central areas, and 855 in the Red River Valley.

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TABLE 2. BARLEY: CROP COSTS AND RETURNS BY AREAS OF NORTH DAKOTA<sup>a</sup>

	CROP PRODUCTION AND COST INPUTS	WESTERN				EST. C. CENTRAL				EAST CENTRAL				RED RIVER VALLEY			
		SUMMERFALLOW		CONTINUOUS CROPH		SUMMERFALLOW		CONTINUOUS CROPH		SUMMERFALLOW		CONTINUOUS CROPH		SUMMERFALLOW		CONTINUOUS CROPH	
		BUDGET	YOURS	BUDGET	YOURS	BUDGET	YOURS	BUDGET	YOURS	BUDGET	YOURS	BUDGET	YOURS	BUDGET	YOURS	BUDGET	YOURS
1	Yield Per Acre	47		33		50		36		54		45		59		53	
2	Unit Price	\$ .84		\$ .84		\$ .91		\$ .91		\$ .96		\$ .96		\$ 1.00		\$ 1.00	
3	Gross Returns	\$39.48		\$27.72		\$45.50		\$32.76		\$51.84		\$43.20		\$59.00		\$53.00	
DIRECT PRODUCTION COSTS																	
4	Seed	\$ 2.10		\$ 2.10		\$ 2.10		\$ 2.10		\$ 2.10		\$ 2.10		\$ 2.10		\$ 2.10	
5	Fertilizer	\$ 2.00		\$ 3.75		\$ 2.00		\$ 4.24		\$ 2.77		\$ 5.22		\$ 2.77		\$ 5.71	
6	Spray	\$ 1.40		\$ 1.40		\$ 1.40		\$ 1.40		\$ 1.40		\$ 1.40		\$ 1.40		\$ 1.40	
7	Repairs:	\$ .77				\$ .94				\$ 1.12		\$ 1.89		\$ 1.89		\$ 1.89	
8	Fuel & Oil: Summerfallow Year	\$ 2.36		\$ 2.90		\$ 2.46		\$ 3.00		\$ 2.58		\$ 3.11		\$ 2.58		\$ 3.23	
9	Crop Year	\$ .45				\$ .55				\$ .66				\$ 1.05			
10	Interest on Operating Capital	\$ .77		\$ .87		\$ .78		\$ .90		\$ .82		\$ 1.10		\$ .83		\$ 1.15	
11	Crop Insurance	\$ .70		\$ .64		\$ .72		\$ .66		\$ .80		\$ .73		\$ .90		\$ .74	
12	Custom Cost	\$ 2.77		\$ 1.95		\$ 2.40		\$ 1.72		\$ 2.43		\$ 2.02		\$ 1.73		\$ 1.55	
13	TOTAL DIRECT COSTS	\$ 1.20		\$ 1.20		\$ 1.20		\$ 1.20		\$ 1.20		\$ 1.20		\$ 1.20		\$ 1.20	
14	RETURN OVER DIRECT COSTS	\$14.52		\$14.81		\$14.55		\$15.22		\$15.68		\$16.88		\$16.45		\$17.08	
15	FIXED COSTS	\$24.96		\$12.91		\$30.95		\$17.54		\$35.96		\$26.32		\$42.55		\$35.92	
16	Land Cost:	\$13.40		\$ 6.70		\$16.00		\$ 8.00		\$21.10		\$10.55		\$35.20		\$17.60	
17	Machinery Depreciation:																
18	Summerfallow Year	\$ .58				\$ .72				\$ .84				\$ 1.42			
19	Crop Year	\$ 2.88		\$ 3.32		\$ 3.06		\$ 3.50		\$ 3.20		\$ 3.58		\$ 3.20		\$ 3.70	
20	Interest on Machinery, Housing & Insurance: Summerfallow Year	\$ .98				\$ 1.60				\$ 1.30				\$ 1.91			
21	Crop Year	\$ 2.37		\$ 2.80		\$ 2.69		\$ 2.27		\$ 2.42		\$ 2.81		\$ 2.85		\$ 3.44	
22	TOTAL FIXED COSTS	\$20.21		\$12.82		\$24.07		\$13.77		\$28.86		\$16.94		\$44.58		\$24.74	
23	OPERATOR LABOR-MANAGEMENT RETURN	\$ 4.75		\$ .09		\$ 6.88		\$ 3.77		\$ 7.10		\$ 9.38		\$12.03		\$11.18	
24	AVERAGE OPERATOR LABOR-MANAGEMENT RETURN PER ACRE	\$ 2.38		\$ .09		\$ 3.44		\$ 3.77		\$ 3.55		\$ 9.38		\$11.02		\$11.18	
25	LABOR REQUIREMENT PER ACRE IN HOURS	1.67		1.43		2.01		1.43		2.21		1.74		2.81		1.79	

<sup>a</sup>These costs and returns should not be construed to be the average for North Dakota farmers. Yields and input levels used are higher than the average for each area.  
<sup>b</sup>Continuous cropping assumes summerfallow every third year in western North Dakota to every fifth or sixth year in the Red River Valley.

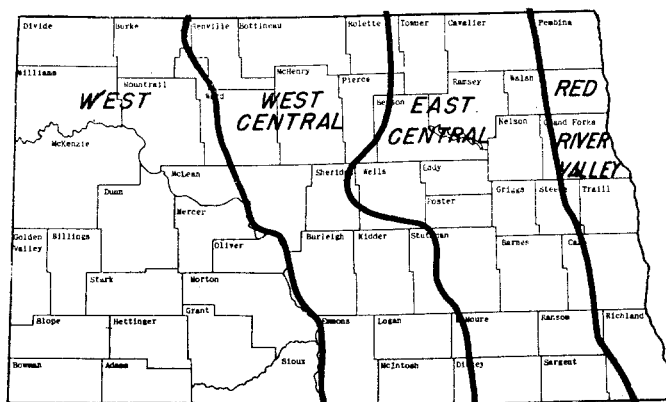


FIGURE 1. State Areas Used in Costs and Returns Data

### EXPLANATION OF COST AND RETURN DATA

Line 1, Yields: The yields shown are what can be expected using recommended practices and the levels of inputs shown in Table 2.

Line 2, Price: The barley price used is what one may expect to receive in the foreseeable future. The differences in price among areas takes into consideration transportation cost, proportion sold for malting, and quality.

Line 4, Seed: The cost of seed includes newly certified seed every third year with two years of cleaning and treating of home grown seed.

Line 5, Fertilizer: Rates used were the recommended rates for normal precipitation and for soils testing low in phosphate (See Extension Circulars S&F-13, S&F-6, and S&F-7).

Line 6, Spray: The cost of spray is for spraying once for broadleaf weeds plus spraying one-fifth of the acreage for wild oats.

Line 7, Repairs: Machinery repair costs were estimated on a percentage of the new cost based on agricultural engineering studies.

Line 8, Fuel and Oil: Nebraska tractor tests were used to calculate fuel consumption. Local fuel prices were used in arriving at the value. Diesel tractors and gasoline self-propelled harvesting machines were assumed in calculating fuel costs.

Line 9, Interest on Operating Capital: This cost was figured at 9 per cent of the direct production costs. The time period was six months.

Line 10, Crop Insurance: The crop insurance premium used insures 45 per cent of the gross returns. The premium rate used varied by area of the state depending upon the risk as established by insurance companies.

Line 11, Custom Cost: This cost is the application of herbicides by airplane.

Line 14, Land Cost: The charge for land is the average net return that North Dakota landlords received in 1969. This amounted to 7.3 per cent of the current market value of cropland (See Table 3).

TABLE 3. CROPLAND VALUE, LAND CHARGE, AND LAND TAXES USED IN CALCULATING LAND COSTS BY AREAS OF NORTH DAKOTA

Area	Land Value	Land Charge	Land Taxes	Total Land Cost
Western	\$ 80	\$ 5.85	\$ .85	\$ 6.70
West Central	95	6.95	1.05	8.00
East Central	125	9.15	1.40	10.55
Red River Valley	210	15.35	2.25	17.60

Line 15, Machinery Depreciation: Depreciation is based on normal machinery life using the straight line method of calculating depreciation.

Line 16, Interest on Machinery, Housing, and Insurance: These fixed costs were calculated on the basis of 10 per cent of the average machinery investment.

Line 18, Operator Labor and Management Return: Costs are included for all the resources required to produce barley except labor and management. When the total costs--direct plus fixed--are subtracted from the gross income, this gives a return to the farm operator for his labor and management. No hired labor is assumed in the costs presented.

Line 19, Average Operator Labor and Management Return Per Acre: The returns in line 18 above are not comparable between budgets, since the return from the summerfallow budgets represents the return from two acres of land while the return from the continuous crop budget represents one acre. Line 19 divides the summerfallow budget by two to make it possible to compare the per-acre returns between summerfallow and continuous crop.

Line 20, Labor Requirement Per Acre in Hours: The labor requirements include the direct hours of labor to prepare the seedbed, seed, harvest, and store or market the grain. The summerfallow budget hours include the time for both the year of fallow and the crop year.

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