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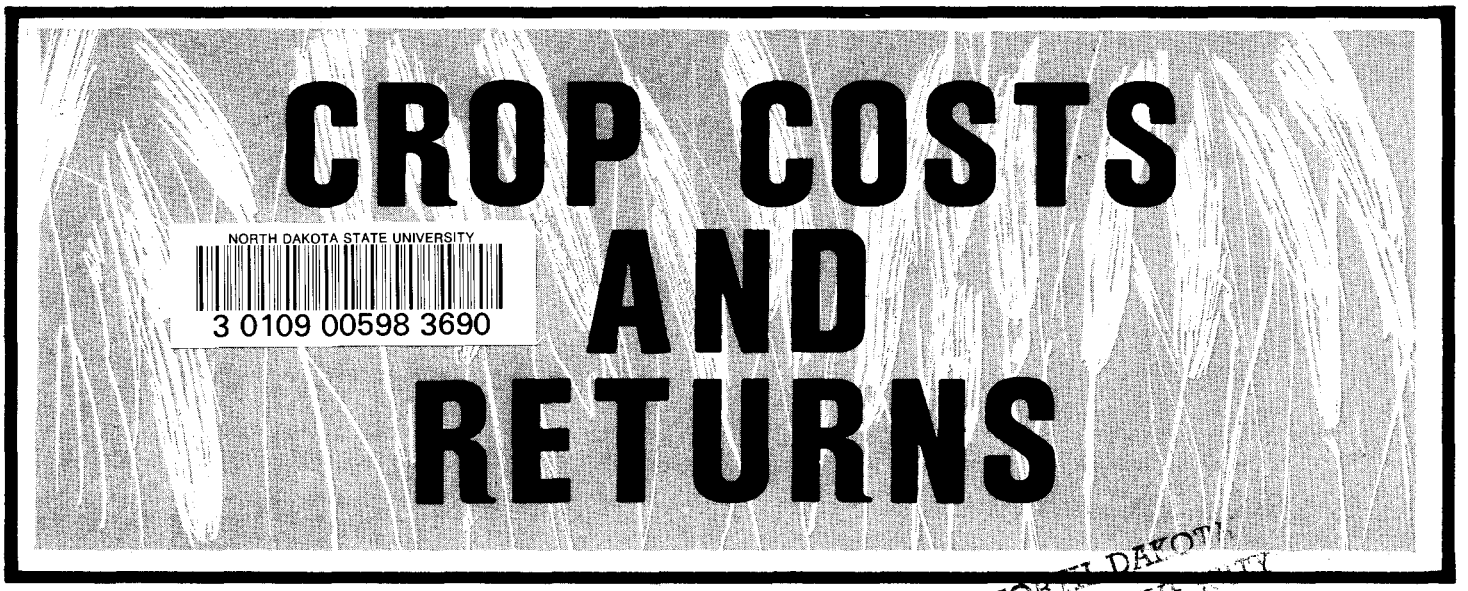

CROP COSTS AND RETURNS

DURUM WHEAT

BY L. W. SCHAFFNER, BILLY B. RICE, ROGER JOHNSON*

North Dakota produces from 80 to 90 per cent of the total United States production of durum wheat. Durum production in North Dakota varies, depending on the relative prices of hard red spring wheat and durum, potential yield of durum versus hard red spring wheat, weather, and disease situation.

Durum is the chief competitor to hard red spring wheat for land in North Dakota, except in the area south and west of the Missouri River. Northeastern and north central North Dakota were once considered the durum area of the state. With the development of the new shorter strawed and higher yielding varieties, durum production has increased in other areas of North Dakota.

In 16 of the past 20 years, 1950 to 1969, the durum price has been higher than the price of hard red spring wheat. However, due to the extremely large production of durum wheat (91,773,000 bushels) in 1969 and the relatively strong demand for hard red spring wheat, the durum price averaged 5 to 10 cents per bushel below hard red spring wheat for the 1969-70 crop. Supply and demand relationships for durum and hard red spring wheat over the next few years indicate that prices of durum will continue slightly below those of hard red spring wheat. The planted acreage, yield per planted acre, and production of durum is shown in Table 1 for the five-year period 1965 to 1969.

TABLE 1. PLANTED ACREAGE, YIELD PER ACRE, AND PRODUCTION OF DURUM WHEAT IN NORTH DAKOTA, 1965-1969

Year	Planted Acreage	Yield Per Acre	Production in Bushels
1965	2,038,000	30.1	61,411,000
1966	2,120,000	25.8	54,590,000
1967	2,353,000	23.3	54,888,000
1968	3,012,000	27.7	83,420,000
1969	2,831,000	32.4	91,773,000

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

The yield of durum averaged 3.9 bushels per acre more than hard red spring wheat during the five-year period shown in Table 1.

The costs and returns data are presented in Table 2 for three areas of the state (Figure 1). The western area is not given because of the small acreage of durum in this area. The costs and returns for each area are broken down into two budgets - - durum grown on summerfallow land and durum grown on land that has been cropped the previous year. The input-output data used are what is being achieved on well managed farms in each of the areas. The size of farm used in arriving at the production costs was 1,065 cropland acres in the west central and east central areas and 855 cropland acres in the Red River Valley area.

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TABLE 2. DURUM WHEAT: CROP COSTS AND RETURNS BY AREAS OF NORTH DAKOTA[a]

	Crop Production and Cost Inputs	WEST CENTRAL				EAST CENTRAL				RED RIVER VALLEY			
		Summerfallow		Continuous Crop		Summerfallow		Continuous Crop		Summerfallow		Continuous Crop	
		Budget	Yours	Budget	Yours	Budget	Yours	Budget	Yours	Budget	Yours	Budget	Yours
1	Yield Per Acre	35		25		37		30		41		36	
2	Unit Price[b]	$ 1.41		$ 1.41		$ 1.45		$ 1.45		$ 1.48		$ 1.48	
3	GROSS RETURNS	$49.35		$35.25		$53.65		$43.50		$60.68		$53.28	
	Direct Production Costs												
4	Seed	$ 2.80		$ 2.80		$ 2.80		$ 2.80		$ 2.80		$ 2.80	
5	Fertilizer	2.16		4.40		2.16		4.96		2.16		6.15	
6	Spray	1.40		1.40		1.40		1.40		1.40		1.40	
7	Repairs: Summerfallow Year	.94				1.12				1.89			
	Crop Year	2.46		3.00		2.52		3.11		2.58		3.23	
8	Fuel & Oil: Summerfallow Year	.55				.66				1.05			
	Crop Year	.75		.90		.78		1.09		.78		1.13	
9	Interest on Operating Capital	.73		.73		.76		.73		.87		.77	
10	Crop Insurance	1.81		1.75		1.63		1.68		1.16		1.15	
11	Custom Cost	1.20		1.20		1.20		1.20		1.20		1.20	
12	TOTAL DIRECT COSTS	$14.80		$16.18		$15.03		$16.97		$15.89		$17.83	
13	RETURN OVER DIRECT COSTS	$34.55		$19.07		$38.62		$26.53		$44.79		$35.45	
	Fixed Costs												
14	Land Cost	$16.00		$ 8.00		$21.10		$10.55		$35.20		$17.60	
15	Machinery Depreciation:												
	Summerfallow Year	.72				.84				1.42			
	Crop Year	3.06		3.50		3.14		3.58		3.20		3.70	
16	Interest on Machinery, Housing, & Insurance: Summerfallow Year	1.60				1.30				1.91			
	Crop Year	2.50		2.27		2.45		2.81		2.85		3.44	
17	TOTAL FIXED COSTS	$23.88		$13.77		$28.83		$16.94		$44.58		$24.74	
18	OPERATOR LABOR & MANAGEMENT RETURN	$10.67		$ 5.30		$ 9.79		$ 9.59		$ .21		$10.71	
19	AVERAGE OPERATOR & MANAGEMENT RETURN PER ACRE	$ 5.34		$ 5.30		$ 4.90		$ 9.59		$ .11		$10.71	
20	LABOR REQUIREMENT PER ACRE IN HOURS	2.01		1.43		2.21		1.74		2.75		1.79	

[a]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.

[b]Does not include government payments.

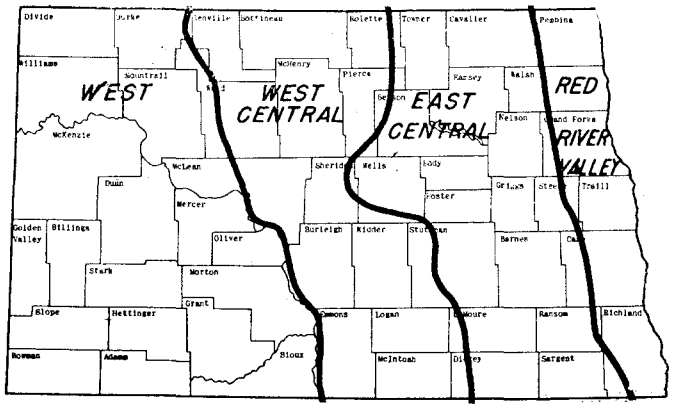

FIGURE 1. State Areas Used in Costs and Returns Data

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 durum prices used are what one may expect to receive in the forseeable future. The differences in prices, $1.41 in the west central to $1.48 in the east, take into consideration transportation costs and quality.

Line 4, Seed: The cost of seed includes newly certified seed every third year with two years of cleaning and treating 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-4, S&F-5, 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 durum 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 gas self-propelled 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 the direct and fixed costs except land. 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 as shown in 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
W. Central	$ 95	$ 6.95	$1.05	$ 8.00
E. Central	125	9.15	1.40	10.55
R.R.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 durum 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 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 budgets 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 budgets include the time for both the year of fallow and the crop year.

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