CHANGES IN PRODUCTION OF PRINCIPAL CROPS

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North Dakota farmers have depended on the sale of crops for one-half to two-thirds of agricultural income. This figure has been subject to great fluctuations due to price changes and the vagaries of weather on crop yields. In 1974, relatively high crop prices resulted in cash receipts from crops amounted to 80 percent of the total. The mix of crops has changed, with high-value specialty crops becoming important alternatives to the traditional cereal crops of wheat, oats, barley, and rye. Flax was the important oil crop during World War II but has been partially replaced by soybeans and sunflower. Earlier maturing varieties of corn have led to that crop becoming more important as a source of income and not only a forage for cattle. Dry edible beans and confectionary sunflower have become important food crops.

In 1983, North Dakota ranked first in the U.S. in production of durum wheat, hard red spring wheat, barley, sunflower, and flaxseed; second in all wheat, rye, navy and pinto beans; third in oats; fourth in sugarbeets; and fifth in potatoes.

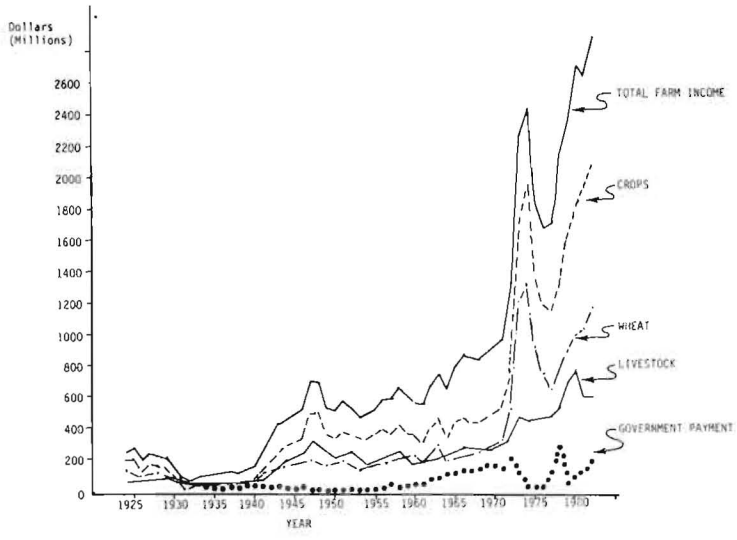

Figure 1. Total Farm Income, Cash Receipts from Crops, Livestock, Wheat and Government Payments, North Dakota, 1924-1982. Source: North Dakota Crop and Livestock Reporting Service, USDA, Fargo, ND.

All Wheat

Wheat continues to be the historic standby, accounting for up to 50 percent of total farm income (Figure 1). Cash income from wheat has varied from less than $20 million in 1931 to $1.3 billion in 1973. Hard red spring wheat is the most important category in total wheat receipts at about 65 percent, followed by durum at 34 percent and winter wheat at about 1 percent.

Production of wheat from 10.5 million harvested acres in 1951 was 145.7 million bushels compared to 330.8 million bushels from 10.5 million acres in 1982 (Table 1). The more than two-fold increase in yield per acre during that time was due to better varieties, improved production practices, and increased use of commercial fertilizer.

Table 1. Production and Value of All Wheat, North Dakota, 1974-1983.

Year	Acres Harvested	Yield Per Acre Harvested	Production	Season Average Price	Value Per Harvested Acre
	(000)	(Bu.)	(000 Bu.)	(Dols./Bu.)	(Dols./Ac.)
1974	10,316	20.4	210,752	4.95	101.19
1975	10,213	25.9	264,392	4.28	110.84
1976	11,655	24.7	287,830	2.60	64.26
1977	9,254	24.8	229,907	2.47	61.31
1978	9,585	29.8	286,065	2.84	84.84
1979	9,600	26.3	252,235	3.82	100.43
1980	9,620	18.7	179,650	4.40	82.14
1981	11,690	28.4	331,700	3.54	100 58
1982	10,490	31.5	330,785	3.69	116.40
1983	7,220	27.0	194,595	3.82	102.96

SOURCE: Statistical Reporting Service, USDA, Fargo, ND.

Sunflower

Sunflower is a comparatively recent addition to the list of crops grown in North Dakota and currently ranks second in importance as a source of crop revenue. Cash income has rapidly increased from $60 million in 1975 to $358 million in 1982, due to a significant increase in acreage (Figure 2). About 367 million acres of sunflower were harvested in 1975 compared to 3,348 million in

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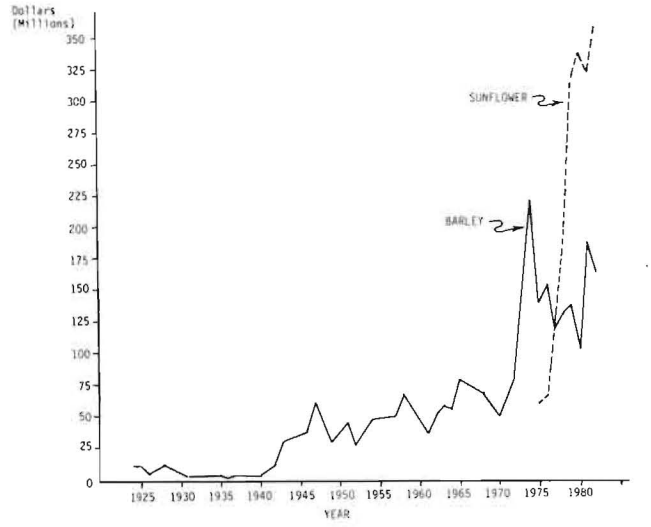

Figure 2. Cash Receipts from Barley and Sunflower, North Dakota, 1924-1982. Source: North Dakota Crop and Livestock Reporting Service, USDA, Fargo, ND.

1982 (Table 2). Nonoil types were dominant in the earlier years, but now oil varieties have far surpassed nonoil sunflower production. Cash income approached $79 million in 1982 (Figure 3).

Table 2. Production and Value of Sunflower, North Dakota, 1974-1983.

Year	Acres Harvested	Yield Per Acre Harv.	Production	Season Average Price	Value Per Harvested Acre
	(000)	(Pounds)	(000 Lbs.)	(Dols./Cwt.)	(Dols./Ac.)
1974	367	960	352,680	15.51	149.01
1975	498	1,100	547,800	10.80	118.68
1976	600	1,000	600,000	11.10	110.70
1977	1,320	1,255	1,658,250	10.60	132.49
1978	1,910	1,333	2,545,080	10.40	139.17
1979	3,378	1,357	4,584,600	8.89	120.68
1980	2,235	976	2,181,050	11.00	107.24
1981	2,628	1,202	3,158,160	10.70	129.04
1982	3,348	1,106	3,703,600	8.84	97.74
1983	2,314	1,043	2,413,400	12.60	131.41

SOURCE: Statistical Reporting Service, USDA, Fargo, ND.

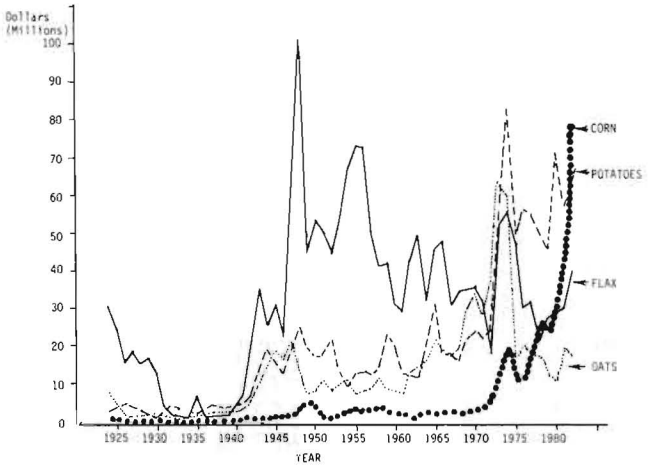

Figure 3. Cash Receipts from Corn, Potatoes, Flax and Oats, North Dakota, 1924-1982. Source: North Dakota Crop and Livestock Reporting Service, USDA, Fargo, ND.

Barley

Cash receipts from barley sales reached a record $222 million in 1974, which was 9 percent of total farm income (Figure 2). Barley ranks third in importance as a source of crop revenue. Average yields have increased from 9.5 bushels per acre in 1936 to 53 bushels per acre in 1982 (Table 3). Barley acreage has remained rather stable in spite of large increases in sunflower acreage. A large proportion of the barley grown in North Dakota is for malting purposes and usually receives a premium in price over feed barley.

Table 3. Production and Value of Barley, North Dakota, 1974-1983.

Year	Acres Harvested	Yield Per Acre Harvested	Production	Season Average Price	Value Per Harvested Acre
	(000)	(Bu.)	(000 Bu.)	(Dols./Bu.)	(Dols./Ac.)
1974	2,010	28.0	56,280	3.10	86.80
1975	2,100	38.0	79,800	2.55	96.90
1976	2,140	38.0	81,320	2.24	85.12
1977	2,530	39.0	98,670	1.54	60.06
1978	2,450	46.0	112,700	1.78	81.88
1979	1,650	46.0	75,900	2.06	94.76
1980	1,500	32.0	48,000	2.62	83.84
1981	2,200	48.0	105,600	2.15	103.20
1982	2,040	53.0	108,120	1.90	100.70
1983	2,700	46.0	124,200	2.25	103.50

SOURCE: Statistical Reporting Service, USDA, Fargo, ND.

Corn for Grain

Comparing the corn situation with the drought of the 1930s reveals a yield of 8.4 bushels per acre on 17,000 acres of corn harvested for grain in 1934. This has increased to a high of 81.0 bushels per acre on 513,000 acres in 1981 (Table 4). Yields per acre ranged between 20 and 30 bushels per acre as recently as the 1950s. Production of corn doubled in the late 1970s from previous levels due to improved varieties and an increase in acreage. Cash income approached $79 million in 1982 (Figure 3).

Table 4. Production and Value of Corn for Grain, North Dakota, 1974-1983.

Year	Acres Harvested	Yield Per Acre Harvested	Production	Season Average Price	Value Per Harvested Acre
	(000)	(Bu.)	(000 Bu.)	(Dols./Bu.)	(Dols./Ac.)
1974	170	48.0	8,160	3.07	147.36
1975	140	51.0	7,140	2.52	128.52
1976	204	40.0	8,160	2.19	85.60
1977	260	73.0	18,980	1.97	143.81
1978	300	79.0	23,700	2.06	162.74
1979	313	76.0	23,788	2.13	161.88
1980	290	58.0	16,820	2.87	166.46
1981	513	81.0	41,553	2.39	193.59
1982	520	68.0	35,360	2.69	182.92
1983	435	67.0	29,145	3.10	207.70

SOURCE: Statistical Reporting Service, USDA, Fargo, ND.

Sugarbeets

Sugarbeet production is limited to the eastern and western counties in North Dakota. Both the acreage and yield of sugarbeets increased until the mid-1970s and has leveled off since that time. Total production increased from 24,500 tons in 1924 to the record 3

million tons in 1978 (Table 5). Yield per acre in 1978 was a record 19.7 tons per acre, which is double the number recorded during the 1920s and 1930s. Cash receipts increased substantially during the 1970s to a peak of $93.4 million in 1980 (Figure 4).

Table 5. Production and Value of Sugarbeets, North Dakota, 1974-1983.

Year	Acres Harvested	Yield Per Acre Harvested	Production	Season Average Price	Value Per Harvested Acre
	(000)	(Tons)	(000 Tons)	(Dols./Bu.)	(Dols./Ac.)
1974	139.9	11.2	1,562	38.70	432.09
1975	130.9	13.9	1,820	28.50	396.26
1976	149.8	13.5	2,022	19.70	265.91
1977	155.2	17.8	2,769	21.40	381.81
1978	155.2	19.7	3,054	22.90	450.63
1979	143.1	16.1	2,304	34.10	549.03
1980	142.7	14.1	2,017	46.30	654.43
1981	144.9	18.6	2,695	20.50	381.28
1982	144.8	17.1	2,476	35.70	610.45
1983	142.2	16.9	2,404	NA	NA

SOURCE: Statistical Reporting Service, USDA, Fargo, ND.

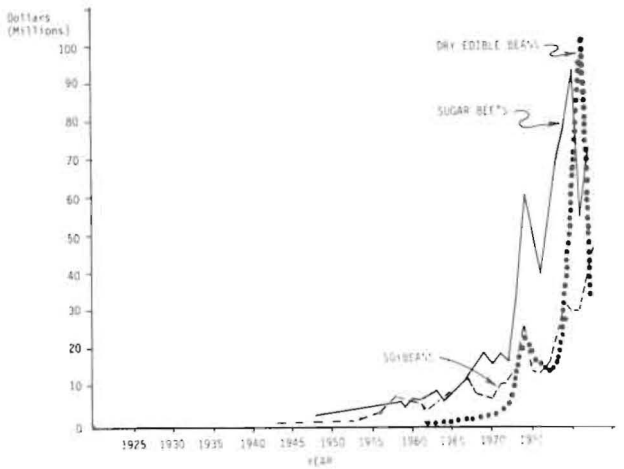

Figure 4. Cash Receipts from Sugarbeets, Dry Edible Beans and Soybeans, North Dakota, 1943-1982. Source: North Dakota Crop and Livestock Reporting Service, USDA, Fargo, ND.

Potatoes

Potatoes have the highest value per harvested acre of the principal crops raised, reaching $959 in 1980 (Table 6). Production has increased from 6.5 million hundredweight on 124 thousand acres in 1929 to 20.5 million hundredweight on 124 thousand acres in 1983. Yields averaged 49 hundredweight per acre in the 1920s and have increased to 158 hundredweight in the 1980s.

Soybeans

The yield of soybeans reached an average of 28 bushels per harvested acre in 1983, which may be the reason why acreage increase from 4,000 acres in 1942 to 530,000 in 1983 (Table 7). Production of 14.6 million bushels in 1983 was substantially higher than the 3.3 million bushel average of the 1970s.

Table 6. Production and Value of Potatoes, North Dakota, 1974-1983.

Year	Acres Harvested	Yield Per Acre Harvested	Production	Season Average Price	Value Per Harvested Acre
	(000)	(Cwt.)	(000 Cwt.)	(Dols./Cwt.)	(Dols./Ac.)
1974	135	170	22,950	3.15	535.50
1975	110	160	17,600	4.20	672.00
1976	123	140	17,220	3.45	483.00
1977	140	160	22,400	2.70	432.00
1978	135	175	23,625	2.60	455.00
1979	114	160	18,240	3.25	520.00
1980	112	140	15,680	6.85	959.00
1981	115	175	20,125	4.05	708.75
1982	115	150	17,250	4.35	652.50
1983	124	165	20,460	4.50	742.50

SOURCE: Statistical Reporting Service, USDA, Fargo, ND.

Table 7. Production and Value of Soybeans, North Dakota, 1974-1983.

Year	Acres Harvested	Yield Per Acre Harvested	Production	Season Average Price	Value Per Harvested Acre
	(000)	(Bu.)	(000 Bu.)	(Dols./Bu.)	(Dols./Ac.)
1974	165	16.5	2,723	6.00	99.02
1975	149	19.5	2,906	4.99	97.32
1976	147	12.5	1,838	7.30	91.27
1977	175	20.0	3,500	5.83	116.60
1978	173	27.5	4,758	6.75	185.65
1979	206	27.0	5,562	5.80	156.60
1980	200	17.5	3,500	7.02	122.85
1981	230	28.0	6,440	5.66	158.48
1982	400	21.0	8,400	5.41	113.61
1983	530	27.5	14,575	7.40	203.50

SOURCE: Statistical Reporting Service, USDA, Fargo, ND.

Flaxseed

Flaxseed acreage reached a record 3.5 million acres in the mid 1950s with production of 28.7 million bushels. About 440,000 acres were harvested in 1983, yielding approximately 5 million bushels (Table 8). Cash receipts from sales of flax totaled $55 million in 1974, and have declined to $40 million in 1982 (Figure 3).

Table 8. Production and Value of Flaxseed, North Dakota, 1974-1983.

Year	Acres Harvested	Yield Per Acre Harvested	Production	Season Average Price	Value Per Harvested Acre
	(000)	(Bu.)	(000 Bu.)	(Dols./Bu.)	(Dols./Ac.)
1974	836	8.0	6,688	9.60	76.80
1975	770	10.0	7,700	6.51	65.10
1976	470	8.0	3,760	7.18	57.44
1977	700	10.0	7,000	4.64	46.40
1978	350	11.5	4,025	5.84	67.16
1979	460	13.0	5,980	5.76	74.88
1980	290	10.0	2,900	7.18	71.80
1981	340	12.5	4,250	6.57	82.13
1982	475	14.0	6,650	5.14	71.96
1983	440	11.5	5,060	6.80	78.20

SOURCE: Statistical Reporting Service, USDA, Fargo, ND.

Dry Edible Beans

Harvested acres of dry edible beans increased from 20,000 acres in 1966 to a high of 415 million acres in 1981. Cash receipts reached $101 million in that year but dropped to $33 million in 1982, due to reduced acreage of 240 million acres and sharply lower prices (Table 9 and Figure 4).

Table 9. Production and Value of Dry Edible Beans, North Dakota, 1974-1983.

Year	Acres Harvested	Yield Per Acre Harvested	Production	Season Average Price	Value Per Harvested Acre
	(000)	(Cwt.)	(000 Cwt.)	(Dols./Cwt.)	(Dols./Ac.)
1974	102	6.5	663	23.90	155.35
1975	122	9.7	1,183	14.70	142.54
1976	139	8.0	1,112	11.20	89.60
1977	105	10.5	1,103	15.80	165.97
1978	113	11.0	1,243	13.50	148.50
1979	105	13.5	1,418	22.50	303.86
1980	255	10.5	2,678	24.70	259.40
1981	415	11.0	4,565	19.80	217.78
1982	240	10.5	2,520	11.30	118.65
1983	160	10.3	1,648	20.10	207.03

SOURCE: Statistical Reporting Service, USDA, Fargo, ND.

Table 10. Production and Value of Oats, North Dakota, 1974-1983.

Year	Acres Harvested	Yield Per Acre Harvested	Production	Season Average Price	Value Per Harvested Acre
	(000)	(Bu.)	(000 Bu.)	(Dols./Bu.)	(Dols./Ac.)
1974	1,400	31.5	44,100	1.41	44.42
1975	1,370	41.0	56,170	1.32	54.12
1976	1,180	38.0	44,840	1.37	52.06
1977	1,500	40.0	60,000	.94	37.60
1978	1,160	54.0	62,640	1.00	54.00
1979	840	44.0	36,960	1.16	51.04
1980	450	30.0	13,500	1.77	53.10
1981	960	46.0	44,160	1.63	74.98
1982	1,150	54.0	62,100	1.20	64.80
1983	1,260	50.5	63,630	1.35	68.18

SOURCE: Statistical Reporting Service, USDA, Fargo, ND.

Oats

Oats continues to be a major crop even though it ranks near the bottom as a source of income from principal crops because a significant amount of oats production is fed to livestock instead of being marketed as a cash crop. Oats production peaked in 1969 with 153.6 million bushels from 2.7 million acres. The relatively low production in 1980 occurred because drought reduced harvested acres to 450,000 out of over 1 million acres planted. Yields were also low due to the drought (Table 10).

Government Payments

The level of farm program payments to farmers in North Dakota has varied significantly with peaks and valley in agricultural income (Figure 1). During the middle and late 1930s, farm program payments averaged 17 percent of total agricultural cash receipts. They averaged only 2.5 percent during the more prosperous 1950s. During 1974, 1975, and 1976 farm program payments were 1.3 percent of total agricultural income but had increased to 8 percent with the Payment-in-Kind Program in 1983. The most important generator of cash receipts was the Wheat Program, followed by the Feed Grain Program, Conservation, Sugar Act, Wool Act, Milk Indemnity Program, Bee Keepers Indemnity Program, and other miscellaneous programs.

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(1983 = 100), permits comparison of real rents paid over time. The adjusted values are plotted in Figure 8.

A rapid increase in inflation in 1973 as measured by the CPI/All Foods Index is apparent in Figure 8. The declines in real rentals for 1973 were further reduced by this spurt in the CPI/All Foods Index. Real gross cash rentals for both cropland and rented whole farms peaked in 1976 after rising from the low reported for 1973. Gross cash rentals have further declined in real terms since 1978. Another way to study this relationship would be to examine the ratio of gross cash rentals to the estimated market value of that rented land. However, this ratio fluctuates due to variations in both the gross rents and the estimates of market value of rented land.

In summary, this article has presented information on farmland values and rentals for North Dakota from several sources. The data show considerable consistency, although obtained by different methods and from different reporters. Presenting the numbers in terms of real dollars permits comparison of values over time, while accounting for the effects of inflation on the purchasing power of the measuring tool — the U.S. dollar.

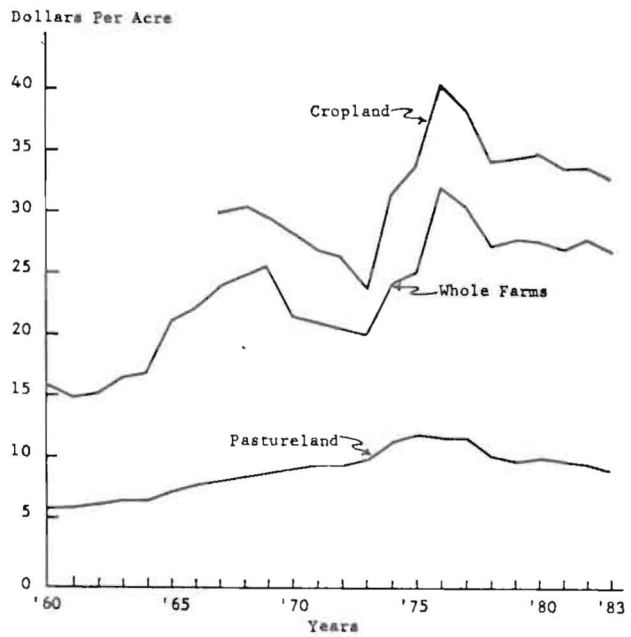

Figure 8. Gross cash rents for rented whole farms, cropland and pastureland adjusted by the Consumer Price Index for all foods, (1983 = 100), North Dakota (adjusted USDA data).