

**SEASONALITY OF NORTH
DAKOTA COMMODITY MOVEMENTS**

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The transportation of grain and oilseed from North Dakota to the Minneapolis-St. Paul, Duluth-Superior and Pacific Northwest terminal markets is characterized by significant fluctuations in demand between years and seasonality within any given marketing year. The shipments of all grain and oilseed to the terminal markets varies considerably from year to year as is depicted in Figure 1. This fluctuation is caused by a variety of factors including supply and demand conditions, price and price expectations, government farm programs, cash flow requirements, and local production. This range of shipments between a low of 292 million bushels in 1974-75 and a high of 476 million bushels in 1979-80 implies a tremendous amount of excess capacity must exist in the marketing system.

Seasonality of grain and oilseed movement is similar to the peaks and valleys between years but it is different in that the variation takes place within a marketing year and it is seasonal which means the peaks and valleys occur during similar time periods year after year. The seasonal index for all grain and oilseed shipments from North Dakota ranges from a high of 141% in September to a low of 76% in January (Table 1). What this means is that 141% of the average monthly movement moves in September, while 76% of the

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average monthly movement takes place in January.¹ The peak months for movement of grain in North Dakota are August, September, and October with the months of July and November just prior and subsequent to this peak period being slightly above average as well, 107% and 110% respectively. The remaining seven months are below the average monthly shipment of grain and oilseeds.

TABLE 1. AVERAGE MONTHLY SEASONAL RATIOS FOR ALL GRAIN SHIPMENTS FROM NORTH DAKOTA TO ALL DESTINATIONS.												
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
12 year average	107	135	141	127	110	86	76	82	91	82	84	98

SOURCE: Wilson, William W., **Seasonal Behavior of Marketing Patterns for Grain from North Dakota**, Agricultural Economics Department, North Dakota State University, Fargo, North Dakota, Ag Econ Report No. 143, March 1981.

The causes of seasonality are many and may be related or totally unrelated. The harvest season is certainly a big factor. A majority of North Dakotas grain and oilseeds are harvested during a three to four month consecutive time period. Another factor is availability of on farm or commercial storage. If the farm bins and country elevators are full the grain that is harvested will have to move or be stored on the ground. Price and price expectations also are a significant influencing factor and are related to the carrying cost of storing grain (particularly at todays high interest rates). The seasonality of the Great Lakes and Upper Mississippi shipping also influence grain movements.

¹For a more complete explanation, see Wilson, William W., **Seasonal Behavior of Marketing Patterns for Grain from North Dakota**, Agric. Economics Dept. and Upper Great Plains Transportation Institute, North Dakota State University, Fargo, North Dakota, Ag Econ Report No. 143, UGPTI Report No. 38, March 1981.

NORTH DAKOTA COMMODITY MOVEMENTS TO ALL DESTINATIONS
1969-70 THROUGH 1980-81

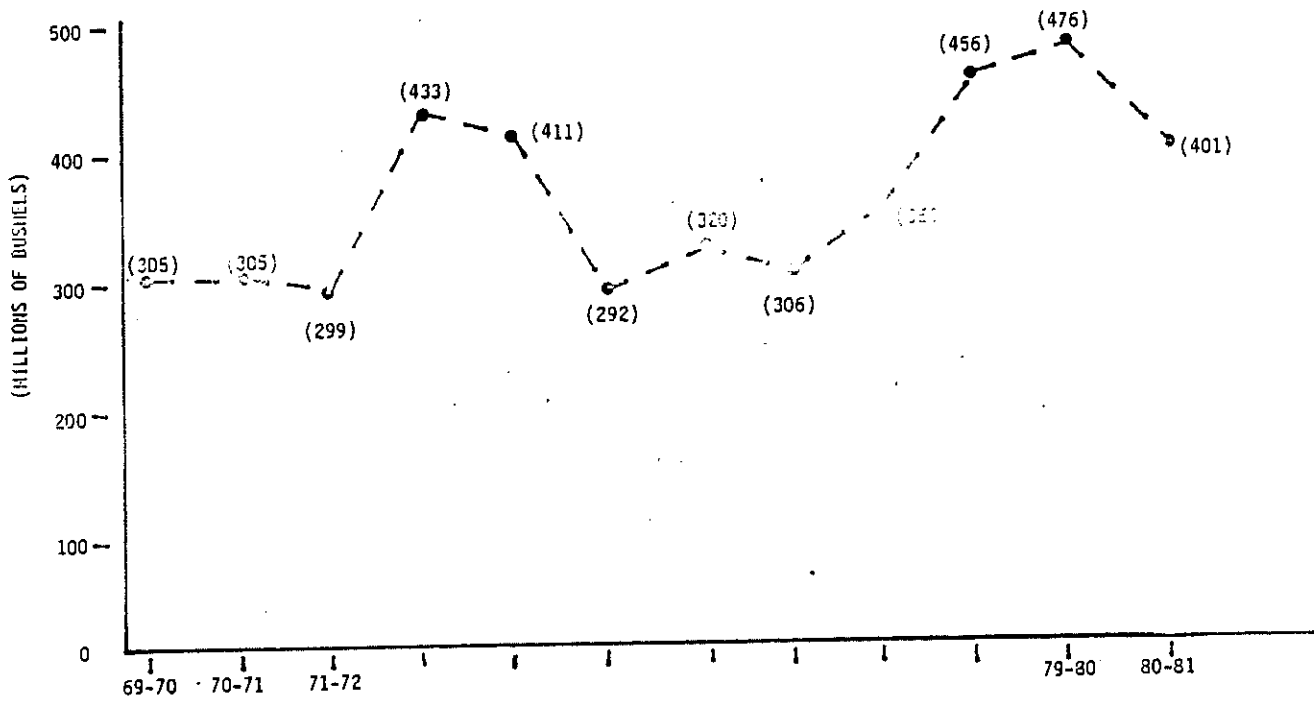


Figure 1

RECEIPTS OF SUNFLOWER AT DULUTH-SUPERIOR BY MONTH
1978-1979

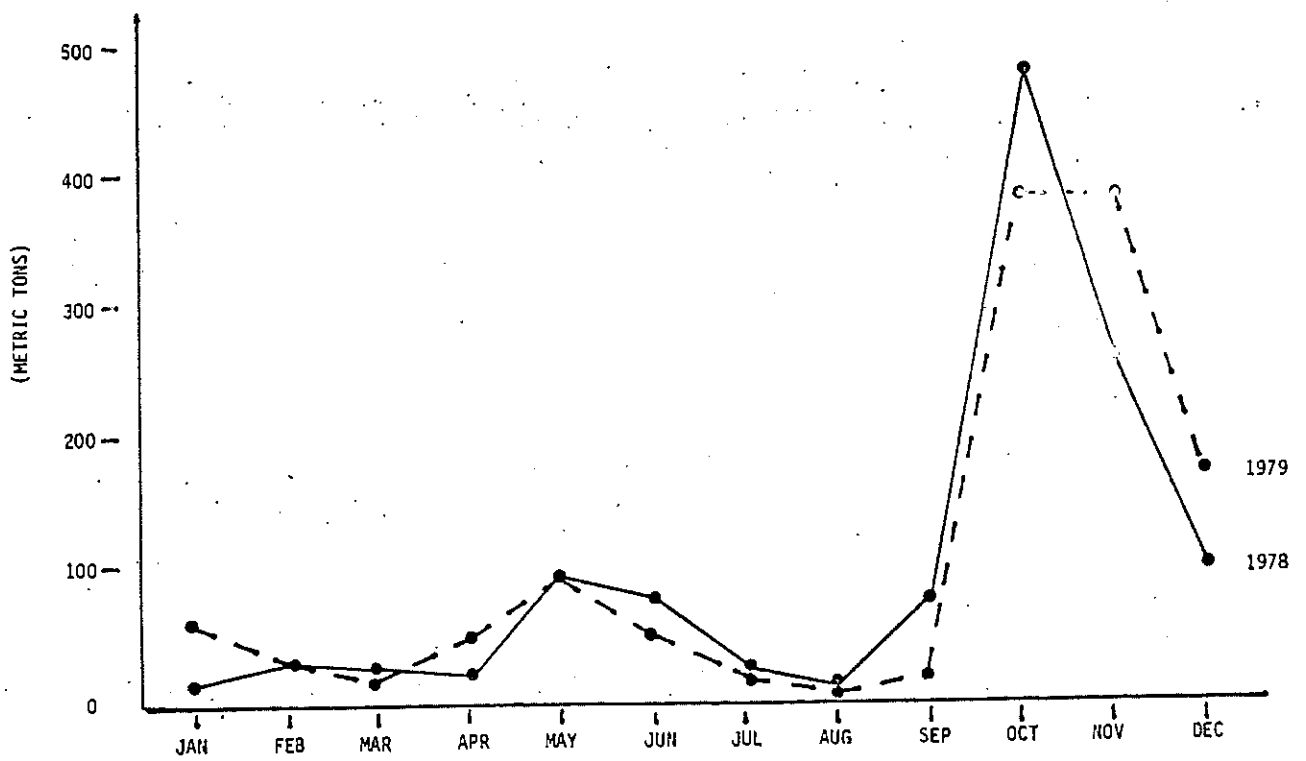


Figure 2

Regardless of the reason for seasonality and peak period movement of grain and oilseed it does present practical and economic problems. The fact that more grain and oilseed moves in greater amounts in one month than another means that excess transportation capacity exists in the truck and rail industry at some time or another. Like all excess capacity this must be paid for by someone. Excess capacity must exist in the merchandising system as well. Alternatively, it is difficult to marshal all of the transportation demanded during peak periods thus resulting in grain and oilseed remaining in the country which possibly would have been shipped if the transportation capacity were available. The ability to market grain during peak periods becomes an important issue in our traditional marketing system, for peak periods often signal relatively high commodity prices. In other words what good is a bull market if the producer cannot market his commodities during its presence.

Sunflowers and wheat movements both exhibit seasonality in the past few years, however the seasonality of sunflowers which has been extreme appears to be leveling off. The peak period for movement of sunflower as reflected in the inbound Duluth-Superior receipts of sunflower, is during the months of October and November and to a lesser extent in the month of December (Figure 2 and Table 2). In 1978 and 1979, 62% and 61% of the Duluth-Superior receipts took place in October and November. Thus nearly two thirds of the inbound movement took place in one sixth of the total time available for shipping during these two years. Seasonality was almost non existent in 1980 and returned to some degree in 1981 particularly in November (Figure 3).

TABLE 2. RECEIPTS OF SUNFLOWER AT DULUTH-SUPERIOR BY MONTH

MONTH	YEAR			
	1978	1979	1980	1981
	(METRIC TONS)			
January	10,345	51,936	23,622	15,339
	(1%)	(4%)	(2%)	(1%)
February	26,417	24,932	28,913	8,669
	(2%)	(2%)	(2%)	(1%)
March	21,416	17,878	28,456	23,023
	(2%)	(1%)	(2%)	(2%)
April	15,780	47,891	117,387	61,718
	(1%)	(4%)	(9%)	(5%)
May	94,567	93,818	154,072	133,624
	(8%)	(7%)	(12%)	(11%)
June	77,136	49,262	116,207	168,352
	(6%)	(4%)	(9%)	(13%)
July	21,834	18,832	172,357	54,573
	(2%)	(1%)	(13%)	(4%)
August	9,178	2,088	122,103	48,086
	(1%)	(1%)	(9%)	(4%)
September	78,329	15,082	89,407	29,495
	(6%)	(1%)	(7%)	(2%)
October	481,051	384,214	156,062	203,178
	(40%)	(30%)	(12%)	(16%)
November	265,858	388,532	158,906	397,321
	(22%)	(31%)	(12%)	(32%)
December	105,290	170,366	136,582	102,523
	(9%)	(13%)	(10%)	(8%)
TOTAL	1,207,201	1,264,831	1,304,074	1,248,901

SOURCE: Minneapolis Grain Exchange Commodity Movement Report.

It is important to note that the total inbound receipts remained about the same during these four years ranging from 1.2 to 1.3 million metric tons (Table 2).

North Dakota originations of sunflower are almost a mirror image of the Duluth-Superior receipts for years where complete data exists. Peak periods existed in October and November of 1979 (Figure 4). However, seasonality seems to be almost non-existent during the most recent 1980-81 crop year.

Seasonality in the shipping of sunflowers has been caused by a combination of several factors. One major reason is that the harvest period is compressed into a two to three month period just prior to the closing of the Great Lakes which typically accounts for between 55 and 80 percent of North Dakota movements. Therefore, if any of the sunflower crop is to be exported through the Great Lakes in the year that is harvested it must be moved quickly and expeditiously from the field to Duluth-Superior. Also, storing of sunflower on farms was not an accepted practice in the early development of the commodity in North Dakota. This in turn led to the shipment of the commodity as soon as it was harvested.

Several developments in the past few years have been a mitigating influence on the seasonality of sunflower movement. Producers have learned how to store sunflowers and correspondingly the grain drying and storing capacity has increased. Development of processing plants in the producing region has probably also influenced seasonality as well as the development of alternative markets such as Mexico. However the producers ability

NORTH DAKOTA SUNFLOWER MOVEMENTS TO ALL DESTINATIONS
1979-80 AND 1980-81

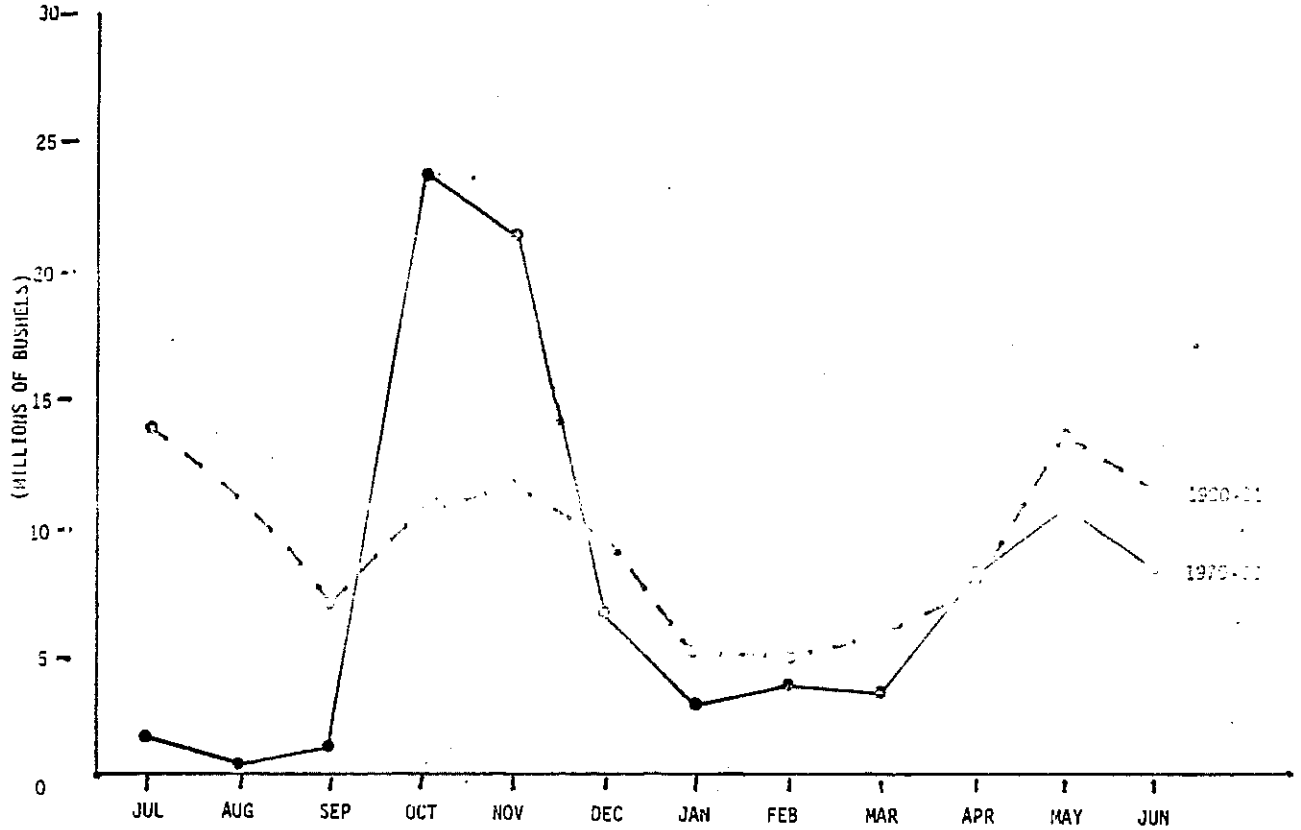


Figure 4

RECEIPTS OF SUNFLOWER AT DULUTH-SUPERIOR BY MONTH
1980-81

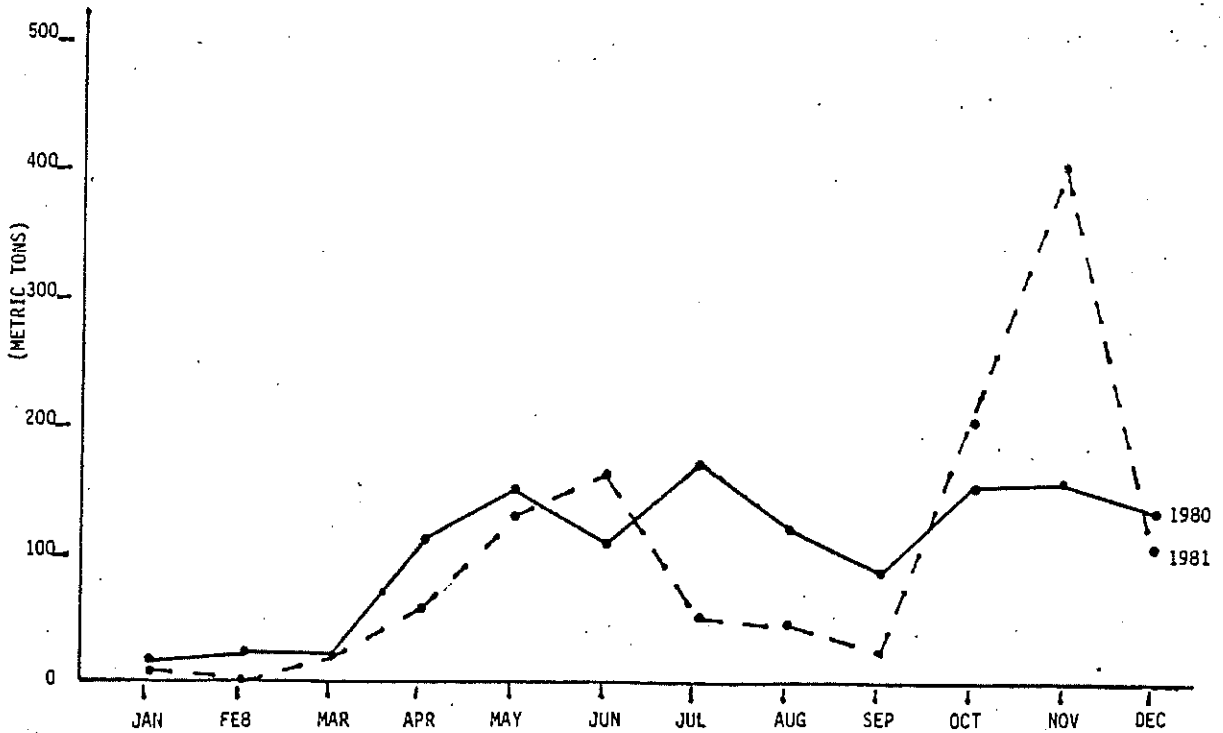


Figure 3

to store sunflowers has probably been the most influencing factor. This is supported by the total receipts of sunflowers at Duluth-Superior which have remained fairly constant during the last four years as is indicated in Table 2. The conclusion is that processing and new export markets have taken up the additional production rather than greatly reducing seasonality to Duluth-Superior.

Wheat also exhibits seasonality as is indicated in the index in Table 3. August and September are the peak months accounting for 140% and 149% of the average monthly movement respectively. June, July, October, and November were also slightly above the monthly average. The months of December through May represent the trough when movements are less than average.

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
12 Year Average	104	140	149	115	114	89	76	76	88	82	86	107

SOURCE: Wilson, William W., **Seasonal Behavior of Marketing Patterns for Grain from North Dakota**, Agricultural Economics Department, North Dakota State University, Fargo, North Dakota. Ag Econ Report No. 143, March 1981.

Delayed priced contracts (DPC), or as some call them no price established contract (NPE) may have a mitigating influence on seasonality by allowing grain to be merchandised and shipped without being priced at the same time by a producer. A transportation demand is triggered by the sale of grain in the North Dakota traditional marketing system. The linkage between a sale by a producer and the demand for transportation is broken when a delayed pricing contract is utilized. However, this remains to be seen and the effects of such contracts are speculative.