

**TRANSPORTATION COSTS OF SELECTED
MOVEMENTS FOR SUNFLOWER SEED AND OIL**

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INTRODUCTION

Other things being equal, economic theory suggests that an industry will locate its plants near the source of raw materials if the manufacturing process results in weight loss. Plants will tend to locate near consumption points if the manufacturing process results in weight gain. In the case of the sunflower crushing industry, one would assume that plants would be located in North Dakota for at least two reasons. First, over two-thirds of the annual sunflower crop is produced in North Dakota. And second, the crushing process results in considerable weight loss since the seed yields about 40 percent crude oil.

Besides the "weight loss" theorem other factors determine where sunflower crushing plants will be located. Variables that also affect the profitability of crushing plants located North Dakota include sunflower oil/seed and meal/seed price differentials and transportation rate differentials.

Price Differentials

Sunflower oil prices have decreased substantially since 1978, both absolutely and relatively (Table 1). Oil prices were over three times as high (3.08) as seed prices in 1978. By 1982 oil prices had fallen to levels that were slightly over twice as high (2.30) as seed prices. The sunflower oil/seed price indexes that were calculated indicate that oil prices in 1982 were 75 percent of 1978 levels when compared to seed prices. That is, oil prices have fallen 25 percent relative to seed prices since 1978.

TABLE 1. SUNFLOWER OIL/SEED PRICES, RATIOS AND INDEXES, 1978-82.				
	Price			INDEX
YEAR	OIL	SEED	RATIO	1978 = 100
	-- \$/mt --			
1978	728	236	3.08	100
1979	573	200	2.87	93
1980	594	245	2.42	79
1981	545	240	2.27	74
1982	505	220	2.30	75

Source: USDA, Fats and Oils Situation Reports.

Sunflower meal/seed price differentials have not changed significantly since 1978 (Table 2). Meal prices in 1982 were 95 percent of 1978 prices when compared to seed prices.

TABLE 2. SUNFLOWER MEAL/SEED PRICES, RATIOS AND INDEXES, 1978-82.				
	PRICE			INDEX
YEAR	MEAL	SEED	RATIO	1978 = 100
	--\$/mt.--			
1878	102	236	.43	100
1979	106	200	.53	123
1980	122	245	.50	116
1981	115	240	.48	112
1982	90	220	.41	95

Source: USDA, Fats and Oils Situation Reports.

TRANSPORTATION COSTS

Transportation costs were calculated for selected movements from North Dakota for sunflower seed, meal and oil (Table 3). The costs were put on a per ton sunflower seed basis. That is, the transportation cost for seed was based on a one ton movement while the cost of moving oil and meal was based on the oil and meal that was extracted in the crushing process. It was assumed the crushing process yielded 40 percent oil and 55 percent meal. Therefore, calculating costs on an equivalent basis resulted in 20 hundredweights of seed versus 11 hundredweights of meal and eight hundredweights of oil.

The cost of transporting seed varied from a low of \$14.60 per ton to Duluth to a high of \$64.00 per ton to the Gulf. The cost of transporting oil varied from a low of \$31.87 to Chicago to a high of \$40.67 to California. Meal was assumed to be shipped to Chicago in all instances since the meal rail rate to Chicago fairly represented rates to the most common meal markets (Nebraska, Kansas, Iowa, etc.).

TABLE 3. TRANSPORTATION COSTS FOR SELECTED SUNFLOWER SEED, MEAL AND OIL MOVEMENTS FROM NORTH DAKOTA.				
DESTINATION			TRANSPORTATION COSTS	
SEED	MEAL	OIL	SEED	OIL*
			--Dollars/Ton--	
CHICAGO	CHICAGO	CHICAGO	27.00	31.87
PNW	CHICAGO	PNW	59.00	39.79
GULF	CHICAGO	GULF	64.00	37.87
DULUTH	CHICAGO	CALIFORNIA	14.60	40.67

*Assumes a crush that yields 40% oil and 55% meal.

CONCLUSIONS

Sunflower oil/seed price differentials have decreased significantly since 1978. This places added pressure on crushing plant managers to be keenly aware of crushing costs, markets and transportation costs. As oil/seed price differentials become smaller, transportation costs become a more important marketing factor. Current transportation rates generally favor crushing in North Dakota and shipping oil and meal versus whole seed. However, it is critical that an in-depth analysis be made of the sunflower industry to evaluate available markets and associated costs.