The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
http://ageconsearch.umn.edu
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

No endorsement of AgEcon Search or its fundraising activities by the author(s) of the following work or their employer(s) is intended or implied.

Agricultural Economics Miscellaneous Report No. 21

August 1975

Demand and Costs . . . . for A PORTABLE SEED CLEANING UNIT in Logan County, North Dakota

Research-Extension Rural
Development Project Report

GARY BEDKER and EDDIE DUNN

Agricultural Economics Department
and
Extension Agricultural Economics
North Dakota State University
Fargo, North Dakota

FOREWORD

This report is one of a series of studies being conducted under a special Research and Extension Rural Development Project at North Dakota State University as authorized by Title V of the Rural Development Act of 1972. Partial funding for the study was provided through an Economic Development Administration Grant (Grant Project No. 05-6-01402).

DEMAND AND COSTS FOR A PORTABLE SEED CLEANING UNIT IN LOGAN COUNTY, NORTH DAKOTA

by

Gary Bedker and Eddie Dunn[1]

PURPOSE OF THE STUDY

The purpose of this report is to present an overview of the demand, the costs and special considerations relative to a portable seed cleaning unit in Logan County. Information for this overview was secured primarily from surveys of grain producers in Logan County, from a manufacturer of portable seed cleaning units, and from an owner of a portable seed cleaning business presently operating in North Dakota.

DEMAND FOR SEED CLEANING

The demand for a portable seed cleaning unit in Logan County was determined from mail and telephone surveys of all grain producers in the county.

Mail Survey Results

Questionnaires were sent to the 536 grain producers in Logan County, of which 139 questionnaires were completed and returned. Ninety-four of the respondents stated that they would consider having grain cleaned by a portable seed cleaning unit.

Thirty grain producers indicated that they would have their grain cleaned by a portable cleaner even if the unit was not equipped and licensed as a certified seed cleaning unit. Eighteen producers replied that they would not have their grain cleaned by a portable unit if the unit was not licensed. The remainder of the respondents, who had indicated that they would consider having their grain cleaned by a portable unit, either stated that it made no difference or that it would depend on the added cost of having grain cleaned by a certified unit.

Fifteen of the 139 respondents stated that they had their own seed cleaning unit and therefore, were not interested in the services of a portable unit.

---

[1]Bedker is a research associate and Dunn is the program coordinator of the Research-Extension Rural Development Project, Agricultural Economics Department, and Extension Agricultural Economics, North Dakota State University, Fargo, North Dakota.

The type and amount of grain which the 94 respondents, who would consider having grain cleaned by a portable unit if the machine were available, is presented in Table 1. Table 1 also includes the average cost per bushel that the respondents are now paying to have grain cleaned.

TABLE 1. TYPE AND AMOUNT OF GRAIN THAT FARMERS IN LOGAN COUNTY, WHO RESPONDED FAVORABLY TO THE SURVEY, EXPECT TO HAVE AVAILABLE FOR A SEED CLEANING UNIT, AND THE AVERAGE PRICE CURRENTLY BEING PAID FOR SEED CLEANING.

Type of Grain	Amount (Bushels)	Average Price Per Bushel (Cents)
Wheat	34,680	11
Barley	2,270	10
Oats	16,910	10
Flax	4,850	27
Rye, Millet, Durum	530	18
TOTAL	59,240	14 (average)

The grain producers surveyed in Logan County paid an average of 14 cents per bushel to have grain cleaned. This amounts to a total expenditure of $8,234.36 for grain cleaned by the 94 farmers who responded favorably to the questionnaire.

The average distance traveled by the producers to have grain cleaned was 9.2 miles. The maximum distance was 23 miles while the majority of the grain producers traveled eight miles or less.

An average of 15.4 cents per bushel was the maximum amount which producers indicated they would be willing to pay to have grain cleaned on their farms. However, the owner-operator of three portable seed cleaning units in North Dakota is presently charging and receiving $.22 per bushel.

The grain producers revealed a strong preference for having their grain cleaned in the spring as opposed to the other seasons. A total of 57% of the respondents favored spring cleaning, 26% favored winter cleaning and only 16% favored cleaning grain in the fall.

The major advantages listed by the grain producers in having grain cleaned by a portable seed cleaning unit were:

1. No loading or hauling required (most common advantage listed).
2. Involves less travel than cleaning grain at an elevator.
3. Avoids mixing with other small grains.
4. Eliminates waiting in line to get grain cleaned at the elevator.

The major disadvantages listed for a portable unit were:

1. Having to provide adequate storage for seed while being cleaned.
2. Scheduling the portable seed cleaning unit at a time convenient for the producer.
3. Increased costs associated with cleaning grain by a portable unit.
4. Uncertainty of weather conditions, especially in the winter when the portable unit is scheduled to clean.
5. Uncertainty about the quality of cleaning that the portable unit can provide.

Telephone Survey Results

There were 397 farmers who did not respond to the mail questionnaire. Ten percent (40 farmers) of these non-respondents were telephoned to determine their attitude toward using the services of a portable seed cleaning unit. Approximately 50 percent contacted by telephone indicated that they were in favor of the unit, assuming (1) the cost was approximately the same as they were presently paying and (2) that the machine would be made available when they needed it.

Based upon the responses from the telephone survey it can be inferred that about 50 percent (198 farmers) of the 397 farmers in Logan County, who did not respond to the mail survey, would consider having their grain cleaned by a portable seed cleaning unit if it were available.

OPERATING CONSIDERATIONS

Several factors affect the feasible operation of a portable seed cleaning unit.

Seasonality and Weather

The demand for seed cleaning, as indicated earlier, varies widely according to the season of the year. Portable seed cleaning machines are operated approximately nine months out of the year. The actual length of time machines are in operation depends somewhat on the weather because machines are normally not operated when temperatures are below zero. Logan County normally has approximately 50 days per year of subzero weather.[2] In addition, heavy snow may prohibit the accessibility to grain bins and, therefore, decreases the amount of days a portable unit may be utilized. A special effort in scheduling is required if the unit is to be fully utilized during the nine months of normal operation.

---

[2]Jensen, Ray E., Climate of North Dakota, National Weather Service, North Dakota State University, Fargo, North Dakota, Figure 21, p. 30.

Employees

Obtaining dependable seasonal employees who are willing to travel and be away from home is considered to be of primary importance in operating a portable seed cleaning business.

Sacking

Sacking seed grain can be accomplished by a portable seed cleaning unit. However, a sizable amount of manual labor is involved and, therefore, the amount of bushels that can be cleaned by a portable unit may be decreased substantially by sacking.

Manufacturers

There are very few manufacturing companies in the midwest that make the complete portable seed cleaning unit for retail sale. Only two companies were identified that manufacture portable units. The owner-operator of the custom seed cleaning units in North Dakota obtains parts from various suppliers and has the machines custom built.

COSTS ASSOCIATED WITH A PORTABLE SEED CLEANING UNIT

The costs of seed cleaning units vary depending upon the operating capacity and the cleaning specifications desired. Units normally vary in price from $11,000 to $20,000 for a trailer-mounted portable cleaning unit. The trailer-mounted unit appears to be the more common type. It is estimated that a $20,000 unit has an average operating capacity of 300 bushels per hour with a maximum of 500 bushels per hour and can be licensed as a certified seed cleaning plant. On an annual basis the $20,000 unit is estimated to have the capability of cleaning 120,000 bushels of small grains under normal operating conditions during the nine-month operating period, in which travel, and weather are also taken into consideration.

Although smaller capacity portable seed cleaning units are available, only the unit with an average operating capacity of 300 bushels per hour is included in this analysis. Preliminary investigations indicated that the higher cost per bushel of cleaning and the reduced capacity per hour would inhibit the use of a smaller cleaning unit on a custom basis. The projected average annual operating costs for a 300 bushel per hour portable seed cleaning unit cleaning 120,000 bushels versus 60,000 bushels per year are presented in Table 2. Cleaning 60,000 bushels per year would accommodate the total cleaning requirement of the 94 producers who expressed an interest in having grain cleaned by a portable unit.

Based on the estimated annual cost, a charge of at least 16 cents per bushel would be required to cover the costs of operating the machine when only 60,000 bushels of grain per year are cleaned. The same unit cleaning 120,000 bushels, however, would require a per bushel charge of only 12 cents to cover total costs of operation.

TABLE 2. ANNUAL OPERATING COST FOR A TRAILER-MOUNTED PORTABLE SEED CLEANING UNIT CLEANING 60,000 AND 120,000 BUSHELS OF SMALL GRAIN PER YEAR.*

Item	Amount	
	60,000 bushels	120,000 bushels
FIXED COST:		
Depreciation on unit (10 yr.)	2,000	2,000
Depreciation on truck (5 yr.)	1,000	1,000
Interest (9.5%)	1,188	1,188
Insurance	300	300
Taxes and License	400	400
Telephone	170	170
TOTAL	$5,058	$5,058
VARIABLE COST:		
Wages	3,750	7,500
Gas, oil (truck)	500	1,000
Gas, (cleaning unit)	150	300
Maintenance & repairs	400	800
TOTAL	$4,800	$9,600
TOTAL COST OF CLEANING	$9,858	$14,658
TOTAL CLEANING COST PER BUSHEL	$ .16	$ .12

*The cost of cleaning grain is primarily dependent upon the distance between farms, the amount of bushels cleaned per farm and the number of days operated.

SEED TREATING

Local elevators in Logan County were contacted to obtain information on the type of seed treatment primarily used within the study area. Phenyl Mercury Ammonium Acetate (Mistomatic), a liquid seed treatment, was the type most commonly used by local elevators.

Portable seed cleaning machines can be equipped to treat seed. One manufacturing company makes a cleaning machine with the liquid type seed treater. Separate portable seed treatment units can also be purchased.

Portable Seed Treatment Unit

A portable seed treating machine is available for treating seed with carboxin (Vitavax 200), a flowable material. This machine can be installed in a pickup being used to transport the trailer-mounted seed cleaning unit and can operate at a rate of 300 bushels per hour. The

cost of the machine ranges from $1,075 to $1,400. The major difference in price is that the higher priced unit is made of stainless steel.

Presently, treatment of wheat with Vitavax 200 would cost approximately 23 cents per bushel.[3]

The total cost of cleaning and treating a bushel of grain with Vitavax 200 is estimated to be about 40 cents when 60,000 bushels are cleaned and treated annually, and 35 cents if 120,000 bushels are cleaned and treated. These costs are similar to custom rates presently charged in the county.

SUMMARY ANALYSIS

From both the mail and telephone surveys conducted, it is estimated that approximately 290 of the 536 grain producers are interested in having grain cleaned by a portable grain cleaning unit. These 290 grain producers seed about 58 percent of the small-grain crops in Logan County. The 94 producers who have expressed interest in a portable unit clean, on the average, approximately 630 bushels of small seed-grain annually. The remaining producers, based on estimated seeding rates, sow an average of 417 bushels of seed-grain annually. The number of positive mail survey responses from the larger grain producers implies that the operators of larger sized farms are more interested in the services of a portable seed cleaning unit than the smaller grain producers.

In 1974, there was an estimated 245,000 bushels of small grains sown in Logan County. A unit cleaning 60,000 bushels annually, or about 25 percent of all the small seed grains sown in the county, would incur a total cost of operating the portable unit of $.16 per bushel. This cost is relatively close to the maximum rate producers indicated they would be willing to pay for having grain cleaned by a portable unit.

A portable seed cleaning unit operating at 300 bushels per hour is expected to have the capability of cleaning 120,000 bushels annually, or approximately 50 percent of the 245,000 bushels sown in Logan County. At 120,000 bushels annually the cost of cleaning would be $.12 per bushel.

The primary concern of producers in Logan County is in having a seed cleaning machine available when convenient for a producer. To efficiently operate a cleaning unit, the machine must be fully utilized throughout the nine months that the weather and the demand for cleaning are most favorable. As indicated by the mail survey results, farmers prefer to have grain cleaned during the spring. Special efforts in scheduling could increase the utilization rate of the unit by distributing the cleaning services over a longer period, which would also reduce the peak demand for cleaning during the spring season.

---

[3]Vitavax 200 @ $16.60 per gallon at an application rate of 3 oz/cwt.

It is concluded that there is an adequate number of producers in Logan and adjacent counties who would utilize the services of a portable seed cleaning unit to allow charges for a portable seed cleaning unit to be competitive with existing grain cleaning rates in the county.