

# Marketing Idaho's Dry Edible Beans

Neil L. Meyer  
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## Contents

Summary .....	3
Introduction .....	3
Purpose .....	3
Interviews and Surveys .....	3
Production Area .....	4
Bean Types .....	4
Growing Beans (From Field to Market) .....	6
Institutions .....	7
Transportation .....	8
Exports .....	9
Economic Importance to Idaho .....	11
Literature Cited .....	11

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Neil L. Meyer and Wesley Harris

## Summary

Dry edible bean (DEB) production in Idaho has historically been about 12 to 15 percent of the United States' total production, making Idaho third in dry edible beans produced. Twin Falls County dominates production with 42 percent of Idaho's output in 1981. Pintos are the most important, comprising 57 percent of production, followed by pinks at 24 percent and great northern at 10 percent. About 25 percent of Idaho's DEB production goes for seed, the majority of which is exported from the state.

Beans are generally stored in warehouses within 15 miles of where they are produced until they are marketed. Generally, during the storage period, the beans remain property of the producer. When the beans are sold, they are cleaned to the buyer's standard and shipped. When the product is sold, it is transported by rail or truck to the user or exporter. The majority (69 percent) of the crop moves by truck although rail rates are more competitive. This is due to few warehouses being able to handle the larger volumes needed to load rail cars within the time constraints. Also, trucks are more versatile in terms of lot size.

Exports have been a strong market for U.S. and Idaho DEBs, although it has fluctuated significantly with Mexican import decisions. Further research is needed to determine the factors affecting export demand of DEBs and their impacts on future DEB exports.

Dry edible beans contributed \$45,000,000 to Idaho's cash farm receipts in 1981. That is 3.8 percent of the total cash farm receipts. Assuming a multiplier of 2.4, the 1981 dry edible bean crop contributed an estimated total of \$108,000,000 to Idaho's economy.

## Introduction

In the past few years, DEBs have become a very significant crop in much of Idaho. Idaho has for many years ranked third in the U.S. for DEBs produced, while the U.S. itself ranked fifth in the world for the same. Idaho produced 4,277,000 hundredweight of DEBs in

1981, 24 percent of which was used for seed. The production and acres harvested of Idaho DEBs has nearly doubled in the last 8 years. Throughout those 8 years, Idaho has produced between 12.3 and 15.0 percent of the nation's DEB crop. DEBs usually rank sixth in total value for Idaho crops — behind wheat, potatoes, sugarbeets, barley and hay. In 1981 DEBs made up 3.8 percent of the Idaho cash receipts from farm marketings (USDA 1982a).

## Purpose

This publication focuses on Idaho's DEB crop by describing the production, processing, transport and marketing. The publication's scope includes the production of DEBs through the final processor or exporter.

Primary data for this publication are from interviews with a sample of dealers, warehousemen and brokers during May, June and July of 1982 and a mail survey to producers in the fall of 1982. Additional data are from secondary sources shown in the reference list at the end of this publication.

This publication is part of a series on the transportation from producer to consumer or exporter of the major agricultural crops produced in Idaho.

## Interviews and Surveys

This study was undertaken to determine the movement, the cost of movement and the methods and procedures associated with the movement of Idaho DEBs from the producer to the final destination or export market. In order to achieve this objective, two methods of survey were employed; a personal interview with dealers, warehouse managers and brokers and a mail survey to producers of DEBs.

The questionnaire associated with the personal interviews was developed and tested in April and May of 1982. The actual interviews were conducted throughout May to August of 1982. For the interviews, a list of Idaho DEB dealers, warehouses and brokers was made from the Western Bean Dealers Association Directory



1980 and lists of licensed and bonded warehouses in Idaho. From these lists, nearly 85 percent of the Idaho DEB dealers, warehouses and brokers were contacted with 18 consenting to answer the questionnaire. With the information from the 18 interviews, 51 percent of the DEBs produced in Idaho in 1981 could be accounted for.

The questionnaire dealt with two main areas: a description of the business in terms of commodities, storage facilities and loading capabilities; and the cost, destination and mode of transportation used in the movement of the commodity to and from the facilities. This information was assembled, analyzed (unfortunately only limited statistical analysis could be performed because of the small sample size) and presented in this publication.

Producer data on DEB transport patterns were gathered through a mail survey during the fall of 1982. Surveys were mailed to 1,321 Idaho farmers and ranchers. A 78 percent response rate was achieved using the "Total Design method" (Dillman 1978). Data for the DEB sample were a subset of the total study. Dry edible bean producers in the sample numbered 106 and grew an average of 1,431 cwt per farm.

## Production Area

The Idaho DEB production area<sup>1</sup> has grown in the last few years from mainly south-central Idaho, Twin Falls County and surrounding area to include the southwestern counties of the state as shown in Fig. 1. The state and county production and acreage figures are found in Tables 1 and 2 while prices and acreage are shown in Fig. 2. Throughout the last 8 years, Twin Falls County has led the Idaho DEB production figures, and in the 1980 crop year, the county claimed 42 percent of the state's DEB production (USDA 1982b).

## Bean Types

In the Idaho production areas, there are basically five kinds of dry edible beans grown — pinto, great northern, small red, pinks and red kidney. There are also small amounts of navy, pea, black turtle, cranberry, baby limas, flat small white and small white. The percentage

<sup>1</sup>There are also some DEB produced in southeastern Oregon that could be marketed through Idaho transportation channels.

Table 1. Idaho dry commercial bean statistics, 1974-1981.

Year	Acreage		Production (cwt)	Average \$ price per cwt	Yield per acre (cwt)	Percent of U.S. production
	Planted	Harvested				
1983	90,000	88,000	1,452,000	19.50	16.5	9.52
1982	143,000	141,000	2,594,000	11.70	18.4	10.47
1981	246,000	243,000	4,277,000	15.70	17.6	13.40
1980	181,000	179,000	3,329,000	28.30	18.6	12.75
1979	134,000	133,000	2,165,000	24.40	18.5	10.47
1978	154,000	153,000	2,494,000	16.50	16.3	13.09
1977	134,000	132,000	2,460,000	19.10	16.4	14.81
1976	161,000	159,000	2,655,000	11.60	16.7	14.92
For seed:						
1981	61,324		1,079,302.4			
1980	44,380		825,468			

Sources: USDA 1982a.

Table 2. Idaho production by counties, 1976-1983 (county estimates in cwt).

County	1976	1977	1978	1979	1980	1981	1982	1983
Ada	—	—	—	49,400	44,840	66,200	36,900	17,400
Canyon	92,570	129,400	198,240	243,330	276,030	393,520	209,100	114,900
Cassia	285,990	270,100	288,760	285,920	403,550	500,110	301,400	148,500
Elmore	—	—	—	161,800	179,840	296,640	161,300	78,600
Gooding	97,560	88,710	127,300	161,440	187,850	246,950	143,400	75,000
Jerome	410,650	355,370	346,520	319,610	501,980	579,210	350,600	196,000
Lincoln	21,180	9,140	12,620	9,540	23,100	37,000	22,200	12,800
Minidoka	170,520	119,570	115,100	120,890	171,500	206,560	112,600	61,600
Owyhee	119,070	73,040	75,030	74,980	77,380	103,510	55,800	28,000
Twin Falls	1,175,000	955,670	1,067,470	995,700	1,427,910	1,797,270	1,170,400	702,800
Washington	—	—	—	26,280	27,070	33,030	21,600	11,600
Other	282,460	164,000	262,960	11,110	7,950	17,000	8,700	4,800
Total production	2,655,000	2,460,000	2,494,000	2,165,000	3,329,000	4,277,000	2,594,000	1,452,000

Source: USDA 1982b.



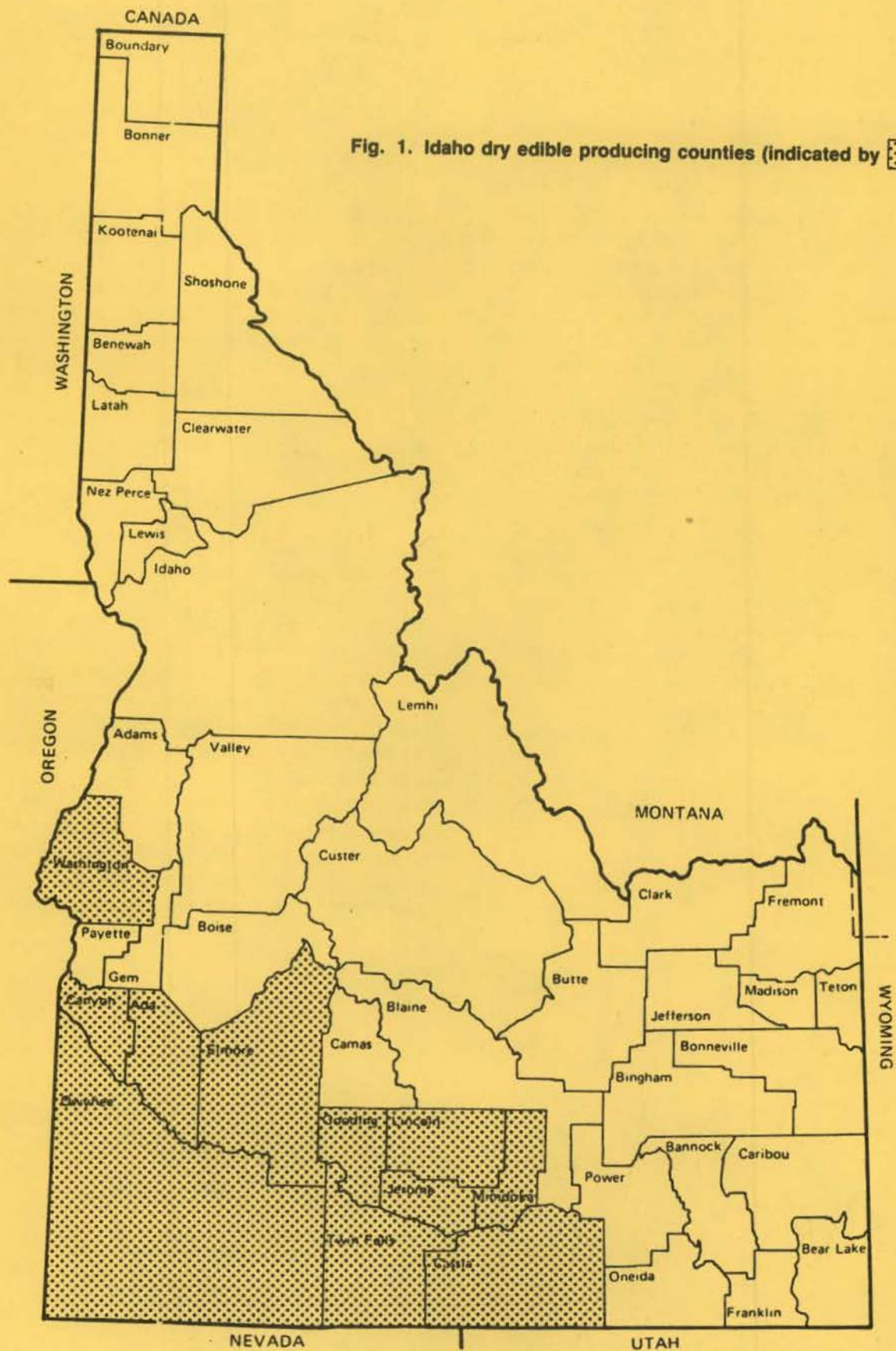


Fig. 1. Idaho dry edible producing counties (indicated by ).



of each kind produced of the total state production of DEBs is shown in Fig. 3 (USDA 1982a).

According to McMartin et al. (1982), the different kinds of beans have distinguishable markets. In the U.S., the lighter beans are generally preferred in the north, while the darker kinds of beans are enjoyed in the south. They further comment that the different DEB importing countries also have particular taste preferences for certain kinds of beans.

Pintos, which comprised 56.5 percent of the 1981 Idaho crop, are mainly sold at a retail level in a dry form or canned as refried beans. According to Smith (1980), both the domestic and export market for pintos have been expanding with the U.S. Hispanic populations and Mexican food popularity. Major purchasers in recent years include Mexico, the Netherlands, the Dominican Republic and Angola.

Great northern beans, which comprised 10 percent of the 1981 Idaho crop, have a steady domestic market and an increasing export market. They are mainly sold in dry form to nations such as Algeria and France.

Pink beans, that comprised 24.1 percent of the 1981 Idaho crop, are primarily confined to the domestic market with the exceptions of shipments to Puerto Rico and Brazil. They are used for packaging and canning, especially with meat products.

Small reds, which comprise 4.9 percent of the 1981 Idaho crop, are mainly used in the domestic market with some shipments to Latin American countries. They are used in packaging and canning, especially in chili (Smith 1980).

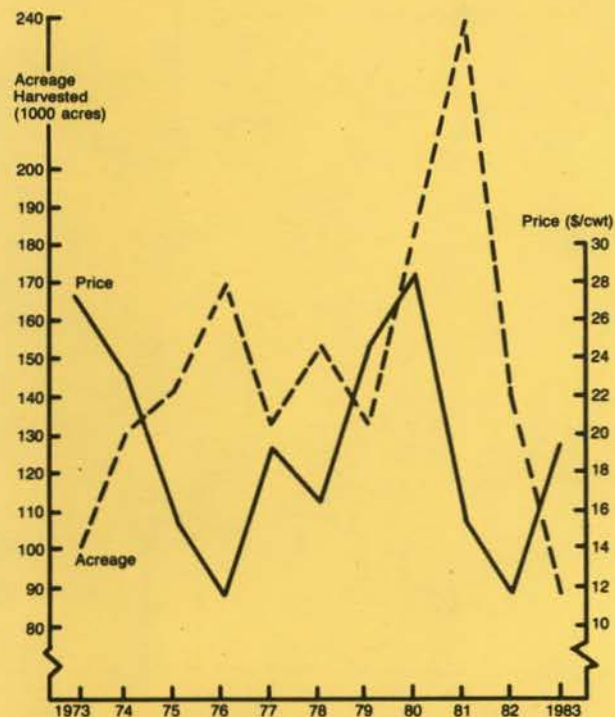


Fig. 2. Idaho dry edible bean annual acreage and average price.

Source: USDA various years.

## Growing Beans (From Field to Market)

The Idaho bean producer has, because of low humidity, a very good climate in which to grow DEBs. The hot days and cool nights of southern Idaho help to facilitate bean growth. The bean growing season starts in May with field preparation and planting and then continues through September and October when the beans are harvested. In between these times, the beans are sprayed with herbicides and insecticides, cultivated one to three times early in the summer before the plant leaves close over the rows, and irrigated throughout the growing period according to the plant's water requirements. Idaho bean plants have an average consumptive irrigation requirement of 13 inches of water for the growing season (Jensen and Griddle 1952). For September harvest, the beans are first windrowed and then combined about a week later.

Farm trucks deliver the beans from the combine to a storage facility such as a warehouse, elevator or on-farm storage. Once the beans arrive at a warehouse, they are weighed, graded, cleaned, bagged and stored until they are sold. Fig. 4 shows the actual operations at the local processing plant. A small percentage of the beans are cleaned and bagged at the farm and then sold to a processor or dealer.

From the warehouse, there are several routes along which the beans might be shipped. Since Idaho DEBs are relatively disease free, about 24 percent of Idaho's beans are used for seed, both domestic and foreign. Some of the beans go to packagers or canners where they are prepared for wholesale, retail and, eventually, the consumer. Another part of the beans goes directly for export from the warehouse, packagers or canners.

Some warehouses deal directly with the next part of the marketing chain that includes foreign countries. However, a large percentage is sold to brokers. The broker deals with the processors and exporters.

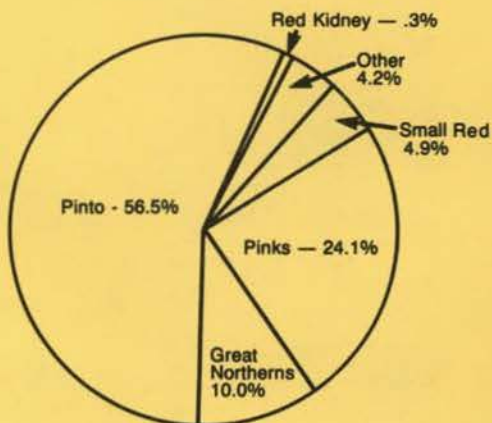


Fig. 3. Idaho dry edible bean types produced in 1981.

Source: USDA 1982a.



## Institutions

After the beans are grown, they take several routes to reach the consumer. Nearly all the beans are delivered to a warehouse where they are graded, cleaned, usually bagged and finally stored until they are sold. Procedures for determining grade, dockage and price are not standardized. The packagers and canners impose their own grade and quality specifications on the bean market with domestic market specifications usually being more stringent than federal standards, especially with regard to bean color (McMartin et al. 1982). From here, the beans can be sold to a broker, canner, packager or an exporter.

One of the most important links in the marketing chain of dry edible beans is the bean broker. A broker's role is to find the next buyer for the beans. Either the broker or the next buyer arranges transportation to the next location and pays FOB<sup>2</sup> at the warehouse door for the DEBs.

<sup>2</sup>FOB — abbreviation for free on board; it is used to indicate who is responsible for paying the transportation charges: FOB shipping point, buyer pays for the freight; FOB destination, seller pays the charges (Welsch and Anthony 1977).

Canners and packagers may buy their supplies of DEBs through a broker or directly from a warehouse. At the canners, the beans are washed, prepared and canned for things such as: refried beans, pork and beans, baked beans and chili. A packager washes the beans and puts them into three or five pound sacks. After canning or packaging, the beans go to wholesalers and then retailers.

Exporters have become increasingly important in recent years as export markets have increased significantly (this increase is shown in Table 3 of the export section). Exporters arrange purchases through brokers in the U.S. and sell to foreign buyers (importers). Transportation to the importing country is arranged by the exporter.

Other institutions dealing with beans along the way include truck brokers, railroads, bean commissions, banks and other financiers. There are many different routes the beans might follow to market that bypass one or most of the mentioned institutions such as going directly from producer to exporter. However, most beans follow the conventional path mentioned above and therein lies a problem of little communication between institutions at different levels of the market. Producers usually are not aware of what canners are pay-

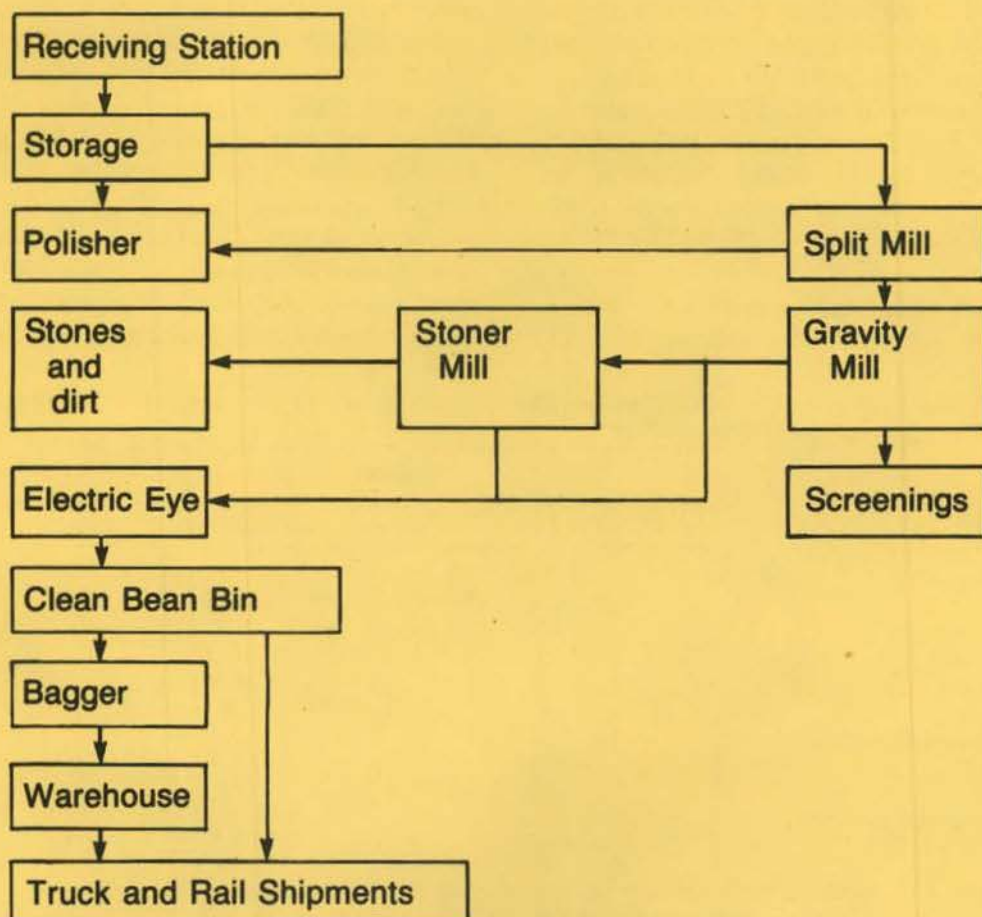


Fig. 4. Flow chart of dry edible bean handling from the warehouse receiving station to outshipment.

Source: McMartin, Dufner and Erlandson 1982.



ing for beans, and the warehouse may not know about exporters. Some DEB business places go so far as to have a policy against communication outside the business about certain parts of the market.

## Transportation

The transportation of marketable DEBs starts with the farm truck delivery to the warehouse at harvest time. Most producers ship from the field to commercial storage (52 percent) or market immediately from the field (45 percent) as shown in Table 3. The mean one-way transport distance from field to commercial storage was 10.5 miles compared to a slightly longer distance of 12.5 miles from field direct to market shipments for survey respondents. The results of the survey indicated that, on the average, a farm truck taking beans to a warehouse travels 10.5 miles one way (Table 3). That 10.5 mile trip will cost an average of \$.0136 per cwt per mile. Thus, if a truck hauls 8 tons (160 cwt) of beans and travels 21 miles, it will cost an estimated \$22.85 for the two-way trip. The results also indicated that farmers pay this 14.3 cents per cwt transportation cost.

Next, the DEBs are transported from the warehouse to the processors and exporters. Fig. 5 shows the transport flow of DEBs from producer to consumer. Based on the personal interviews with processors, we were able to account for 51 percent of the DEBs produced in Idaho in 1981. Of that 51 percent accounted for, 66 percent could be traced to the next destination. We assume the proportional distribution is the same for all DEBs. The percentages of Idaho DEBs shipped to each of nine areas in North America, the percentage that went by each mode of transportation (rail and truck, and the average transportation cost by each mode) are shown in Fig. 6.

According to this study's survey results, the destination most frequently shipped to was Mexico (Fig. 6).

Nearly 44 percent of the shipments accounted for were transported to Mexico by truck (41 percent) and rail (59 percent). Twenty-five percent was shipped to Portland (99 percent by truck and 1 percent by rail). More than 17 percent was shipped to the southwest U.S. (98 percent by truck, 2 percent by rail), and nearly 8 percent was transported to Seattle (99 percent by truck and 1 percent by rail). The remaining 6 percent was transported to the midwest U.S. (94 percent by truck and 6 percent by rail), the southeast U.S. (100 percent by truck), the northeast U.S. (90 percent by truck and 10 percent by rail) and the Twin Falls area (100 percent by truck). Overall, about 75 percent of the volume shipped went by truck with the remaining 25 percent being transported by rail.

Also from the survey results, the average cost of transportation to the different destinations was calculated (Fig. 6). The average cost of rail to Mexico was \$2.56 per cwt, while the truck rate was slightly lower at \$2.20 per cwt. The transportation rates to Portland and Seattle were very similar with rail costing \$1.10 (Portland) and \$1.18 (Seattle) per cwt, while truck rates were \$1.37 and \$1.65 per cwt to Portland and Seattle, respectively. To transport Idaho DEBs to the southwestern U.S. costs an average \$1.18 per cwt by rail and \$1.64 per cwt by truck. The average cost of rail to the midwest U.S. was \$2.39 per cwt, while the cost of truck transport was \$2.71 per cwt. Average truck rates to the northeast and southeast U.S. were calculated to be \$5.06 per cwt, respectively (no rail rates were given to these destinations during the course of the survey). Neither rail nor truck rates were obtained for DEBs transported to Canada or the Twin Falls region.

The warehouses primarily use the services of a bean broker to contact a buyer for the DEBs. Most beans are shipped FOB from the warehouse door, so the warehouses usually do not decide what form (sacked, bulk or container) the beans are shipped in. The survey

**Table 3. Mean mileages pulses were transported one-way by southern Idaho producers over private roads, county/local roads and state/federal highways.**

	Private road	County/local road	State/federal highway	Total distance	Number of respondents
Field to commercial storage:					
Mean miles <sup>1</sup>	0.4	5.0	5.0	10.5	68
% of total <sup>2</sup>	4	48	48		(52%) <sup>3</sup>
Field to market:					
Mean miles	0.3	5.4	6.7	12.5	59
% of total	2	44	54		(45%) <sup>3</sup>
Field to producer owned storage:					
Mean miles	1.5	4.0	1.0	6.4	10
% of total	23	62	15		(8%) <sup>3</sup>
Producer owned storage to market:					
Mean miles	0.2	6.9	7.2	14.3	12
% of total	1	48	51		(9%) <sup>3</sup>

<sup>1</sup>Sum of separate road distances may not equal total distance because of rounding error.

<sup>2</sup>May not total to 100 percent because of rounding error.

<sup>3</sup>Percentage of pulse producers who responded to the given category.



results indicated that presently the majority are sacked and put on pallets. Many dealers in the survey were of the opinion that the bean industry is heading toward more containerization — especially export containers, but presently, sacks dominate shipment volume. When loaded into export containers, the beans are sealed and transported to port where the container is loaded directly on ocean-going vessels. This eliminates an extra handling of the beans and thus lowers labor costs and improves security.

The buyer may wish to haul the DEBs by semi-truck. That means 450 cwt can be shipped per trip. Rail cars have nearly tripled that capacity (1,200 to 1,400 cwt). A problem exists at many smaller warehouses because they cannot use the cheaper, multi-car unit rates offered by the railroad, or, for that matter, they cannot even use single cars.

The warehouses generally do not own the beans they have stored — the farmers do. The farmers must sell the beans to the warehouse before they can be shipped. The DEB industry is made up of a number of small warehouses with a few large ones throughout the country. Putting these together, it becomes apparent that it is difficult for a small warehouse to load all of a rail car at once. This is one reason why many of Idaho's DEBs are shipped by truck even though rail is generally more economical.

One question asked during the interviews was if they (the firm, warehouse or elevator) had any problems with the transportation system since the regulatory reforms in 1980 (referring to the Staggers Rail Act of 1980 and the Motor Carrier Act of 1980). Most firms said the

trucks were better because they were less apt to damage the beans, but sometimes the trucks are unreliable and hard to get when they needed them. They also pointed out that the railroad was more competitive than it has been in the past and, overall, had better service qualities.

## Exports

In the last few years, exports have been one of the most significant factors influencing the U.S. DEB industry. In the years 1980-82, more than 40 percent of the U.S. DEB production was exported, while previous to 1980, the percentage exported was typically below 26 percent (Table 4). The considerable growth that occurred in DEB exports was primarily caused by the increase in Mexican DEB importation caused by drought in the bean growing areas of Mexico (USDA various years). The increase in Mexican DEB imports caused higher demand, increased prices and larger production the following 3 years. At the end of 1981, the average price of beans dropped to almost half of the ending 1980 price but was still above previous price peaks. This price drop meant an estimated 30 to 35 percent carryover of the 1981 Idaho DEB crop into 1982 and a 43 percent reduction in the acreage planted to beans in Idaho for 1982 as shown in Fig. 2 (6). This high level of imports continued until 1982 when the Mexicans had an above average DEB harvest and devalued their currency (because of high national debt, inflation and low oil revenues) nearly banning all imports (Business Week 1982). In 1983, exports to Mexico fell to a negligible amount, causing U.S. DEB exports to fall to 33 percent of production.

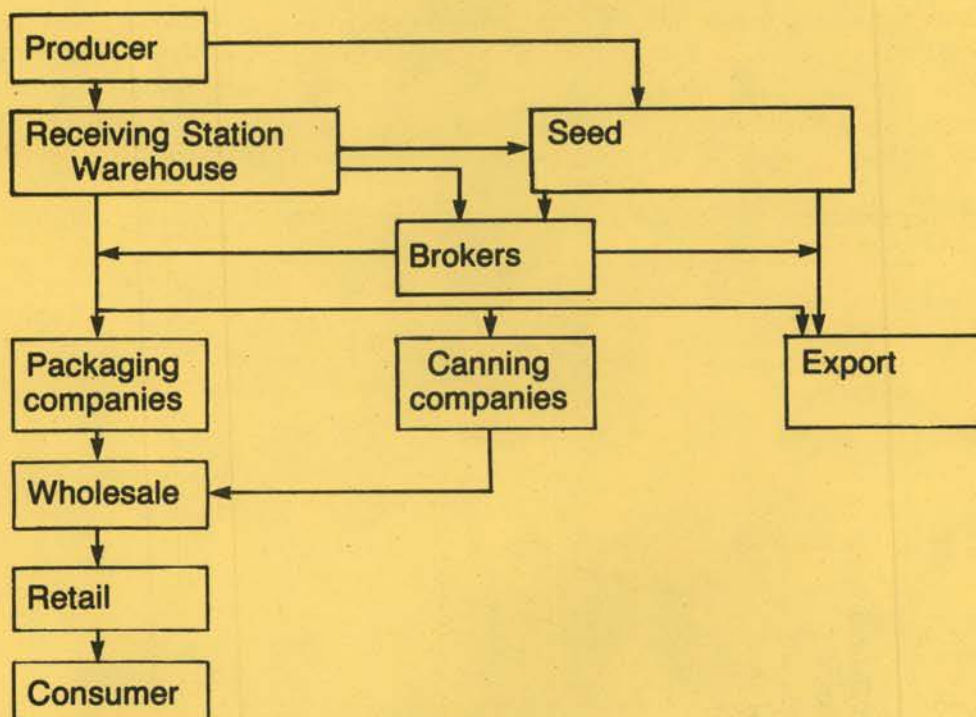


Fig. 5. Transportation flow chart of dry edible beans from producer to consumer.  
Source: McMartin, Dufner and Erlandson 1982.



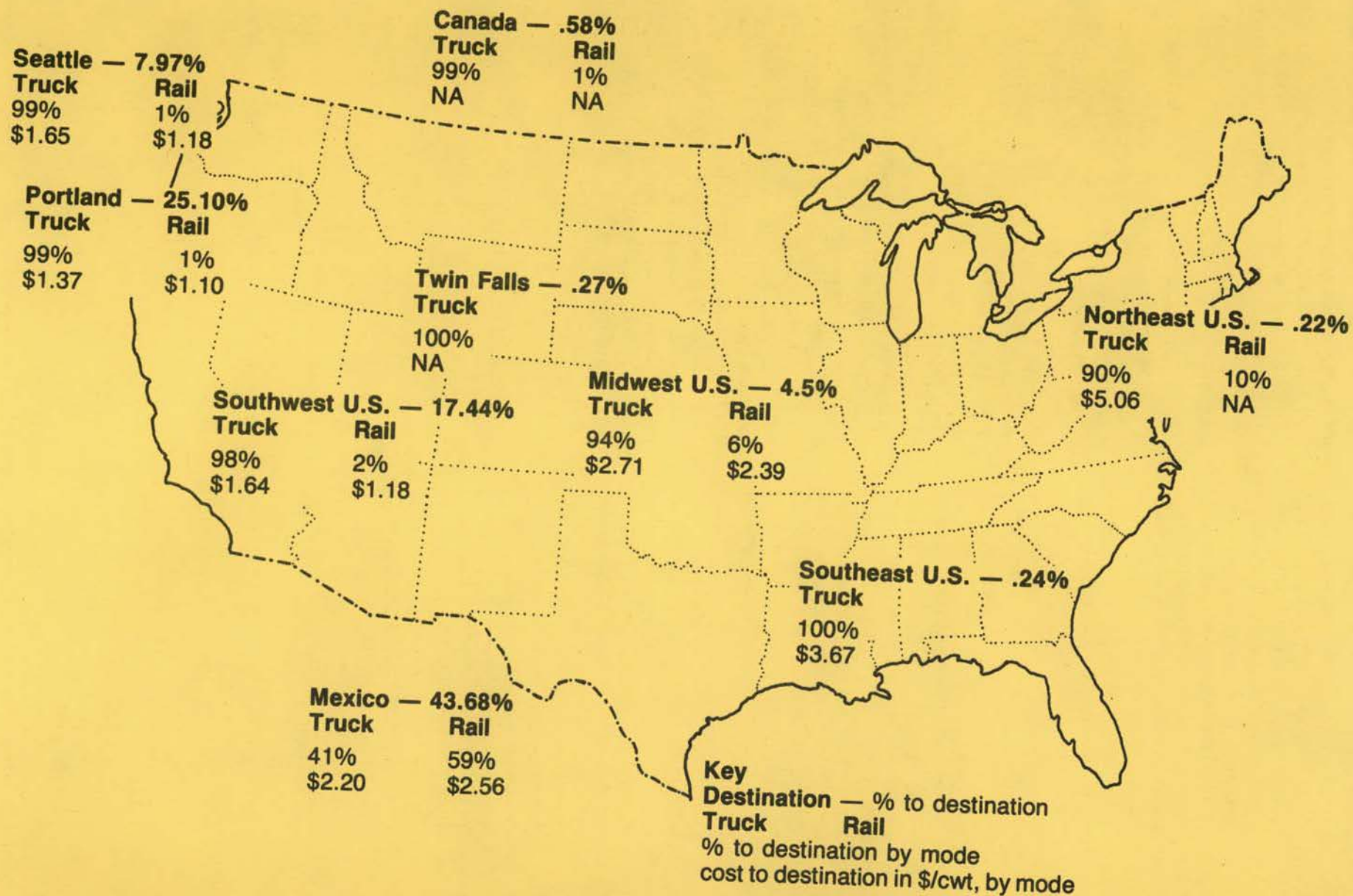


Fig. 6. Idaho's 1981 dry edible bean shipments by destination, mode and average transportation costs.



At this time, the DEB export market to Mexico is uncertain, although the USDA-FATUS is somewhat optimistic about exports to Mexico. They believe the Mexican economy is slowly recovering and will be able to increase imports in the near future (USDA various years).

One recent topic of discussion in export markets has been the relationships between export levels and exchange rates. In the early 1970s, the value of the dollar decreased compared to other currencies, and export levels rose; while in the early 1980s, the reverse has occurred. While many have been quick to point out a strong relationship between exchange rates and exports, recent econometric models have concluded that exchange rates are only one of the many important determinants of export demand (Batten and Belongia 1984). Henneberry and Henneberry (1985) point out that factors of inflation, general economic growth and income must also be considered in the U.S. and importing countries along with the exchange rate.

Because of the relative importance of dry edible beans to the Idaho agricultural economy, and the limited scope of this study, further study is needed in the area of Idaho DEB export. Further research could indicate the relative factors affecting Idaho DEB exports and estimate the elasticities of demand for projected exports.

## Economic Importance to Idaho

DEBs are an alternative crop for south-central and southwestern Idaho farmers. In 1981, the gross value of DEB production was slightly more than \$45,000,000, which was 3.8 percent of 1981's Idaho cash farm receipts. Based on studies of a similar industry in California, each dollar of output value generates a total of \$2.40 in economic activity in the local economy (Sarquis 1982). This extra revenue is the result of purchases by the producers for supplies, parts, personal consumption, payments for rents, taxes, utilities, etc., and all the other ways producers spend their gross income plus the processor and transportation expenditures. Based on the assumption of a similar multiplier, the 1981 dry

edible bean crop contributed \$108,000,000 in economic activity to Idaho's economy.

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Table 4. U.S. production and export of dry edible beans to world and Mexico, 1974-1983.

Year	U.S. production in 1,000 cwt	U.S. export in 1,000 cwt	Percent exported	U.S. export to Mexico in 1,000 cwt	Percent of U.S. export to Mexico
1974	20,330	3,253	16.00	148	4.55
1975	17,442	5,565	31.91	2,179	39.16
1976	17,836	2,617	14.67	182	6.95
1977	16,555	4,080	24.65	132	3.24
1978	18,935	4,396	23.22	203	4.62
1979	20,476	2,283	11.15	340	14.89
1980	26,395	7,772	29.44	2,563	32.98
1981	32,183	14,672	45.25	7,892	54.20
1982	24,764	16,126	65.12	9,158	56.79
1983	15,254	5,919	38.80	7	0.12

Source: USDA 1982a.





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