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# Storage Facilities and Marketing Costs for Wheat in Southern Idaho

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## Key Facts from This Study

Both farm and commercial storage facilities for wheat are seriously inadequate in southern Idaho. About 14.4 million bushels of farm storage were available in 1967, with some 69 percent used for wheat storage. Commercial storage is provided by 148 elevators and flour mills. Total elevator capacity in southern Idaho was 25,909,690 bushels, of which about 60 percent was for wheat.

Farm and elevator shortage problems are most critical in southeastern Idaho where, in 1967, 13,543,025 bushels of storage were estimated available for the 24,577,500 bushels of wheat produced. Southwestern Idaho is the second most critical storage area. Production in 1967 was 4,175,000 bushels of wheat, but only 2,227,514 bushels of storage space were available. Southcentral Idaho has little storage problem.

Considering present and projected wheat production, optimum locations for additional storage facilities are Caldwell in southwestern Idaho and Pocatello in southeastern Idaho. Some 630,000 bushels of storage are needed at Caldwell and 3.7 million bushels at Pocatello. These estimates are based on 1967 production. The need for additional facilities would be less if production declined.

Many southern Idaho elevators are small and probably inefficient

in terms of an optimum sized unit. Most of the region's wheat is produced in the southeast where most of the small elevators exist. This adversely affects area wheat farmers because they must rely on an expensive marketing system. Replacing small elevators with fewer, larger ones would reduce handling costs and would benefit both grower and elevator operators.

Elevator handling costs could be reduced by as much as 18 percent if the elevators operating in southern Idaho averaged 300,000 bushels in size.

Gross margins charged by elevators range between 9 and 10 cents per bushel. Average handling costs ranged between 3.84 and 9.31 cents per bushel depending upon the county involved. Southeastern Idaho had 10 counties with an average elevator handling cost of 7 cents or more per bushel.

Farm-to-elevator costs could be reduced by 11 percent if farmers used larger, more efficient trucks (350 bushel capacity as opposed to present 200).

Further, specific marketing advantages for southern Idaho wheat growers and elevator operators would result from the introduction of a fully competitive transportation system that would reduce the freight rate structure.

# Storage Facilities and Marketing Costs for Wheat in Southern Idaho

by Roger B. Long and Bernard E. McEldowney

Moving wheat from farms in southern Idaho<sup>1</sup> to terminal markets has been complicated by the following problems:

- (1) The shift in production from hard wheat to soft wheat.
- (2) The geographical disadvantage of south Idaho in relation to its major markets in California and Asia.
- (3) A chronic boxcar shortage during harvest months.
- (4) Increased competition, by wheat and feed grains produced in other areas, entering markets traditionally supplied by southern Idaho.
- (5) Increased freight rates for wheat shipped from southern Idaho.

In addition to these problems, there is also a lack of alternative transportation facilities. With present highway weight restrictions, trucks are not fully competitive with the one railroad that serves southern Idaho.

The lack of adequate wheat storage facilities, both on and off farm, is detrimental to the wheat grower for marketing reasons. Inadequate elevator and farm storage may force farmers to sell wheat in the fall when prices are

low. Boxcar shortages aggravate the problem because the railroad is the principal means of transporting wheat. When storage facilities are inadequate and boxcars are not available, farmers may be forced to store wheat on the ground. This also decreases its value. Storage facilities should be adequate to handle the wheat produced in the study area, especially if it is to be used for human consumption.

All these problems affect the distribution of wheat grown in southern Idaho. A high-cost marketing system decreases the price which elevator operators and, in turn, farmers receive for wheat. If handling, storage, or transportation costs could be reduced through more efficient operations, farmers and elevator operators both might benefit.

Concerned with these marketing problems, the Idaho Wheat Commission financed this study to determine the amount and locations of new wheat storage facilities that should be built in southern Idaho. The study required an analysis of the marketing system from farm to terminal market. The costs of trucking wheat from the farm to elevator, elevator handling, and transportation from elevator to terminal market

<sup>1</sup> Southern Idaho, the study area with which this report is concerned, is comprised of all the counties in the state south of Idaho County.

were estimated. The analysis was based on the cost structure in each county and the balance between actual 1967 wheat production and the storage available on

farms, in elevators, and in flour mills. Recommendations were then made concerning the location of additional facilities, and the size or capacity of these facilities.

## Production Characteristics

In recent years, wheat has ranked behind only cattle and potatoes in terms of cash farm income in Idaho, earning about \$50 million per year. Southern Idaho produced 39,092,100 bushels of wheat in 1967, the largest amount in 20 years. The largest area planted to wheat was 1,308,000 acres in 1953 (6). Wheat production has changed greatly in southern Idaho the last 20 years in terms of the type of wheat grown and where this wheat is grown. These changes are also affecting the marketing pattern.

## Acreage Trends

Dryland wheat acreage usually exceeds irrigated wheat acreage; however, the reverse is usually true in terms of production (Table 1). The dryland area produces primarily hard wheats while the irrigated area produces soft wheats. Hard wheats are used for bread flour and command about a 20 percent price premium over soft wheats for higher protein levels. The soft wheat in Idaho, on the other hand, is sold either to markets in Asia or is

Table 1. Irrigated and dryland wheat acreage and production in southern Idaho, 1946-67.\*

Year	Irrigated wheat		Dryland wheat		Total wheat	
	Acres planted	Bushels harvested	Acres planted	Bushels harvested	Acres planted	Bushels harvested
	(000)	(000)	(000)	(000)	(000)	(000)
1946	225.9	9,057	714.1	15,064	940.0	24,121
1947	230.9	10,117	796.1	18,207	1027.0	28,324
1948	312.8	12,349	862.2	16,556	1175.0	28,905
1949	298.7	11,169	834.7	14,859	1133.4	26,028
1950	263.7	11,899	779.3	15,842	1043.0	27,741
1951	336.6	14,773	942.4	16,822	1279.0	31,595
1952	365.4	15,985	941.6	15,764	1307.0	31,749
1953	392.3	18,899	916.0	17,587	1308.0	36,486
1954	312.4	14,372	653.6	11,360	966.0	25,732
1955	320.2	17,054	645.8	12,159	966.0	29,213
1956	325.3	17,339	649.7	13,017	975.0	30,356
1957	337.4	20,919	557.6	12,765	895.0	33,684
1958	366.3	19,617	586.7	11,915	953.0	31,532
1959	312.3	16,695	560.7	12,092	873.0	28,787
1960	283.3	14,719	550.7	9,440	834.0	24,159
1961	278.5	14,053	547.5	10,523	826.0	24,576
1962	222.6	12,498	482.4	10,177	705.0	22,675
1963	277.7	11,974	510.3	13,819	788.0	25,793
1964	311.6	14,992	529.4	12,904	841.0	27,896
1965	297.7	17,980	562.3	14,723	860.0	32,703
1966	265.3	14,761	518.0	9,486	783.3	24,247
1967	379.0	23,604	611.0	15,488	990.0	39,092

\*Statistical Reporting Service, U.S. Department of Agriculture. 1946-67. Idaho wheat by counties.

used as a feed grain or pastry flour in Idaho and neighboring states.

Linear regression analysis of wheat acreages from 1946 to 1967 shows dryland wheat acreage has been steadily decreasing, while irrigated acreage has not changed significantly. The analysis provides these equations:

Irrigated wheat acreage

$$A_i = 297,235 + 760X$$

Standard deviation (1,622)

t-value (.469)

where

A = irrigated wheat

<sub>i</sub> acreage

X = year

Dryland wheat acreages

$$A_d = 863,366 - 18,363X$$

Standard deviation (3,226)

t-value (-5.690)

where

A = dryland wheat

<sub>d</sub> acreage

According to this regression analysis, irrigated wheat acreage was increasing at a rate of 760 acres per year. This relationship was not statistically significant at the 5 percent level. Dryland acreage, however, was decreasing at the estimated rate of 18,363 acres per year (significant at the 5 percent level). Government programs advocating the reduction of wheat acreages and low levels

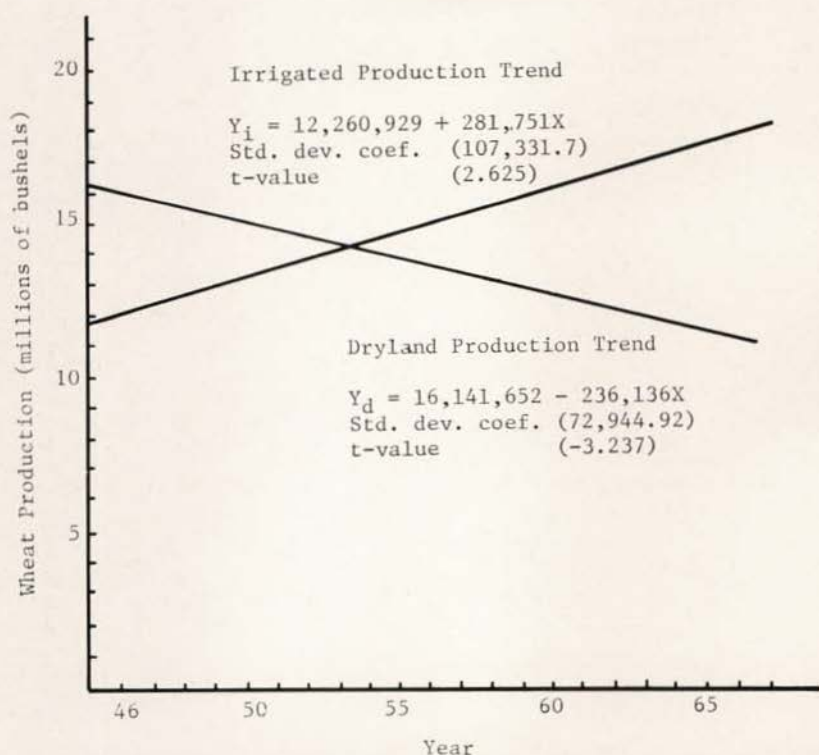


Fig. 1. Irrigated and dryland wheat production trends in southern Idaho for the period 1946-67. Both trends are statistically significant at the 5 percent level.

of productivity are probably the major causes of the decreasing dryland wheat acreage. These programs have not had the same effect on irrigated wheat acreage, probably because the productivity of irrigated wheat has increased so greatly. Irrigated yields increased from 40.1 to 62.3 bushels per acre from 1946 to 1967.

### Production Trends

Irrigated and dryland wheat production levels in southern Idaho have had distinctly different trends since 1946 (Fig. 1). Irrigated wheat production has been increasing at the rate of 281,751 bushels per year, while dryland production has been decreasing at the rate of 236,136 bushels per year. Both are statistically significant at the 5 percent level. The increase in irrigated production can be attributed primarily to

technology (improved varieties, more fertilizer) while the decrease in dryland production is the result of acreage reduction brought about by government programs in an area where technological advances have not increased yields.

### Irrigated Land

Irrigated land has been coming into production at the rate of about 52,000 acres per year, but the percentage of irrigated land devoted to wheat has not been increasing (Table 2). The irrigated area planted to wheat in 1966 was some 265,000 acres, only 7.4 percent of the total irrigated land. The fact that the irrigated land acreage has not been increasing significantly over time emphasizes the importance of technological advances in increasing irrigated wheat production.

Table 2. Irrigated wheat acreage and all irrigated land, Southern Idaho, 1946-1966.

Year	Irrigated land*	Irrigated wheat** (acres)	Percent of all irrigated land
1946	2,594,000	225,900	8.7
1947	2,597,000	230,900	8.9
1948	2,610,000	312,800	12.0
1949	2,613,000	298,700	11.4
1950	2,648,000	263,700	10.0
1951	2,684,000	336,600	12.5
1952	2,722,000	365,400	13.4
1953	2,766,000	392,300	14.2
1954	2,814,000	312,400	11.1
1955	2,870,000	320,200	11.2
1956	2,933,000	325,300	11.1
1957	2,998,000	337,400	11.3
1958	3,057,000	366,300	12.0
1959	3,106,000	312,300	10.1
1960	3,156,000	283,300	9.0
1961	3,253,000	278,500	8.6
1962	3,310,000	222,600	6.7
1963	3,360,000	277,700	8.3
1964	3,424,000	311,600	9.1
1965	3,500,000	297,700	8.5
1966	3,585,000	265,300	7.4

\*Unpublished data from Idaho Water Resources Board.

\*\*Statistical Reporting Service, U.S. Department of Agriculture. 1946-67. Idaho wheat by counties.

Table 3. Irrigated and dryland wheat acreage and harvested production by county in Southern Idaho, 1967.\*

County	Irrigated Wheat		Dryland Wheat		Totals	
	Acres	Bu.	Acres	Bu.	Acres	Bu.
<b>Southwest district</b>						
Ada	6,000	416,400	6,000	116,000	12,000	532,400
Adams			1,300	31,600	1,300	31,600
Boise	200	10,000	300	6,200	500	16,200
Canyon	23,900	1,785,000	400	6,300	24,300	1,791,300
Elmore	3,500	226,100	4,800	108,900	8,300	335,000
Gem	1,300	85,700	800	20,600	2,100	106,300
Owyhee	5,800	425,400			5,800	425,400
Payette	4,600	306,900	500	11,600	5,100	318,500
Valley	100	4,200	400	9,600	500	13,800
Washington	3,300	216,300	11,800	388,200	15,100	604,500
Total	48,700	3,476,000	26,300	699,000	75,000	4,175,000
<b>Southcentral district</b>						
Blaine	4,100	215,200	1,900	41,000	6,000	256,200
Camas	4,500	127,300	25,100	409,500	29,600	536,800
Cassia	24,400	1,609,400	49,900	1,114,000	74,300	2,723,400
Gooding	9,100	524,000	800	12,200	9,900	536,200
Jerome	19,500	1,412,300	100	2,000	19,600	1,414,300
Lincoln	11,200	657,800	400	6,000	11,600	663,800
Minidoka	19,500	1,382,400	5,100	100,500	24,600	1,482,900
Twin Falls	35,500	2,617,200	5,900	108,800	41,400	2,726,000
Total	127,800	8,545,600	89,200	1,794,000	217,000	10,339,600
<b>Southeast district</b>						
Bannock	7,400	380,700	56,000	1,336,200	63,400	1,716,900
Bear Lake	1,600	81,600	20,200	556,800	21,800	638,400
Bingham	53,700	3,241,400	12,100	270,000	65,800	3,511,400
Bonneville	35,200	2,028,900	58,500	1,553,000	93,700	3,581,900
Butte	7,100	352,800	4,200	83,800	11,300	436,600
Caribou	6,500	320,400	44,400	1,405,600	50,900	1,726,000
Clark	700	37,100	4,900	128,800	5,600	165,900
Custer	1,600	83,200	800	20,200	2,400	103,400
Franklin	8,500	431,600	25,600	727,900	34,100	1,159,500
Fremont	16,000	764,400	30,300	1,098,900	46,300	1,863,300
Jefferson	24,100	1,586,400	3,600	70,300	27,700	1,656,700
Lemhi	1,200	49,400			1,200	49,400
Madison	19,600	1,204,000	37,100	975,000	56,700	2,179,000
Oneida	4,400	215,700	66,900	1,788,300	71,300	2,004,000
Power	11,100	630,200	106,200	2,353,600	117,300	2,983,800
Teton	3,800	175,000	24,700	626,300	28,500	801,300
Total	202,500	11,582,800	495,500	12,994,700	698,000	24,577,500
South Idaho	379,000	23,604,400	611,000	15,488,000	990,000	39,092,100

\*Statistical Reporting Service, U.S. Department of Agriculture. 1967. Idaho wheat by counties.



## Location of Production

Southern Idaho produced 39,092,100 bushels of wheat on 990,000 acres in 1967. Of this total, 60.3 percent was grown on irrigated land and 39.7 percent in the dryland area. Production by county is shown in Table 3. Irrigated wheat is produced primarily in those counties bordering the Snake River, while dryland acreage is primarily in the area between the rivers and mountains in southern and eastern Idaho. In 1967, some 23,663,900 bushels of irrigated or soft wheat and 15,488,000 bushels of dryland or hard wheat were produced in southern Idaho.<sup>1</sup>

## Future Projections

Projections were made for dryland and irrigated wheat acreage and production for the years 1970 and 1975. Essentially, these projections reflect the trends established from the period 1946-1967, regardless of statistical significance, and could be altered significantly if government programs or technology were to change.

The acreage and production projections were as follows:

Acreage	1970	1975
Irrigated	315,475	319,275
Dryland	422,654	330,839
<sup>1</sup> Total	738,128	650,114

Production (bu.)	1970	1975
Irrigated	19,022,953	20,431,708
Dryland	10,474,388	9,293,708
<sup>1</sup> Total	29,497,341	29,725,416

These estimates do not reflect the impact that weather might have on production, especially in the dryland areas. It would seem, however, that in the future dryland and irrigated acreages will be about equal, and about two-thirds of total wheat production will come from irrigated land. Drastic price changes could change this because low wheat prices tend to have a greater impact on dryland than on irrigated wheat production because of lower productivity in the dryland areas.

<sup>1</sup> This assumes that all irrigated production is soft wheat and all dryland wheat is hard wheat. This isn't strictly true but is representative enough for this study.

Table 4. Estimated farm storage available for wheat by county in southern Idaho, 1967.

County	Total farm storage*	Storage available for wheat
(bu.)		
<b>Southwest district</b>		
Ada	116,010	87,390
Adams	18,550	12,466
Boise	6,860	5,167
Canyon	407,870	298,796
Elmore	167,009	125,807
Gem	74,524	56,139
Owyhee	279,960	210,894
Payette	126,253	95,106
Valley	99,449	74,915
Washington	200,324	148,832
Total	1,496,809	1,115,514
<b>Southcentral district</b>		
Blaine	148,660	108,671
Camas	17,100	12,881
Cassia	1,935,500	913,745
Gooding	121,776	91,733
Jerome	442,456	333,302
Lincoln	315,223	204,640
Minidoka	1,264,647	928,048
Twin Falls	197,618	148,865
Total	4,442,980	2,741,887
<b>Southeast district</b>		
Bannock	453,413	341,556
Bear Lake	228,174	171,883
Bingham	1,109,995	843,261
Bonneville	874,220	634,343
Butte	357,505	262,559
Caribou	799,072	592,750
Clark	179,734	135,393
Custer	109,310	82,343
Franklin	245,560	196,445
Fremont	929,689	720,627
Jefferson	957,015	738,681
Lemhi	26,210	19,744
Madison	612,502	437,503
Oneida	601,551	453,148
Power	302,282	227,709
Teton	623,178	406,645
Total	8,409,410	6,264,595
Southern Idaho total	14,349,199	10,122,000

\*Agricultural Stabilization and Conservation Service, U.S. Department of Agriculture, 1967. Farm storage facility loans, June 1, 1949, to June 30, 1967. Boise, Idaho.

# Farm and Commercial Storage

## Farm Storage

Since 1950, farmers in southern Idaho have obtained government loans to construct 14.4 million bushels of grain storage facilities.<sup>1</sup> The federal loans that finance on-farm storage offer lower interest rates and longer repayment periods than loans from private sources, so it may be assumed that this 14.4 million bushels represents nearly all on-farm storage built in the area since 1950.

Actual farm storage capacity is somewhat greater than this, of course, but not significantly so. Farms have storage facilities available for other grains, but not for wheat which must remain uncontaminated if intended for human consumption. For purposes of this study, it was assumed that storage built before 1950 would not be suitable to protect wheat from contamination.

The 14.4 million bushels, then, represent nearly all on-farm storage in southern Idaho suitable for wheat. Feed grains and other alternative crops compete with wheat for this storage. According to USDA statistics (7), the proportion of all farm storage actually used for the 1967 wheat crop amounted to about 10,000,000 bushels, or 69 percent of capacity.

Quantities of wheat on farms by county for 1967 were estimated using the 69 percent figure for the

state (Table 4). Most of the storage, and production, is in southeastern Idaho.

## Country Elevators— Location and Number

In 1967, there were 146 commercial grain elevators in 84 southern Idaho communities (Table 5). Of this total, 123 were licensed by the Bonded Warehouse Division of the Idaho Department of Agriculture and 23 were licensed by the Federal government. These elevators are inspected by the appropriate government agency and are bonded to store a specific amount of wheat. Table 5 shows the amount of storage and number of elevators by county. Two flour mills are also located in the study area and are included in Table 5. In total, the area has a bonded storage capacity for 25.9 million bushels of wheat.

Elevators are not used solely for wheat storage. Consequently, only part of the total storage capacity is available for wheat. A random interview sampling of 20 elevator operators indicated that about 60 percent of their total storage capacity was used for wheat (See Appendix Tables A-C). Based on this survey, it was assumed that 60 percent of the total elevator capacity in southern Idaho, 15,445,812 bushels, was used for wheat in 1967 (Table 5).

<sup>1</sup> Agricultural Stabilization and Conservation Service, U.S. Department of Agriculture, "Farm Storage Loans, June 1, 1949, to June 30, 1967," Unpublished data, Boise, Idaho.

Table 5. The number, bonded capacity and estimated total wheat storage of country elevators by county in southern Idaho, 1967.

County	Number of elevators	Total bonded capacity	Estimated total used for wheat*	Smallest elevator	Largest elevator
(bu.)					
<b>Southwest district</b>					
Ada	0				
Adams	0				
Boise	0				
Canyon	7	1,356,489	813,893	20,257	833,333
Elmore	1	47,369	28,421		
Gem	0				
Owyhee	1	14,066	8,439		
Payette	0				
Valley	0				
Washington	4	518,744	311,247	25,414	376,265
Total	13	2,936,668	1,162,000		
<b>Southcentral district</b>					
Blaine	2	122,999	73,799	55,515	67,484
Camas	6	451,532	270,919	49,758	186,500
Cassia	10**	2,678,803	1,607,282	7,700	630,023
Gooding	2	561,216	336,730	202,156	359,060
Jerome	7	2,072,395	1,243,437	110,000	385,000
Lincoln	2	238,401	143,041	79,909	158,492
Minidoka	11	1,679,028	1,007,416	23,178	349,842
Twin Falls	20	4,037,930	2,422,758	32,678	686,148
Total	60	11,842,304	7,105,382		
<b>Southeast district</b>					
Bannock	7	1,240,005	744,003	15,838	732,214
Bear Lake	2	342,982	205,789	40,445	302,537
Bingham	7	649,516	389,710	23,757	240,000
Bonneville	9	1,545,428	927,257	25,000	362,007
Butte	1	59,447	35,668		
Caribou	9	2,056,688	1,234,012	30,077	600,000
Clark	0				
Custer	0				
Franklin	3	242,547	145,528	60,325	109,222
Fremont	10	1,039,187	623,512	34,167	233,358
Jefferson	8	947,492	568,495	51,323	277,000
Lemhi	0				
Madison	5	351,748	211,049	56,434	105,569
Oneida	4**	1,033,847	620,308	40,193	586,066
Power	7	2,176,548	1,305,929	77,978	842,000
Teton	3	445,283	267,170	98,342	221,941
Total	75	12,130,718	7,278,430		
Southern Idaho	148	25,909,690	15,545,812		

\*Based on 60% of total elevator capacity.

\*\*Includes one flour mill.

Table 6. Comparison of farm and commercial wheat storage with wheat production by county in southern Idaho, 1967.

County	Estimated wheat storage capacity			Wheat production	Storage surplus or shortage (-)
	On farm	Elevator	Total		
			(bu.)		
<b>Southwest district</b>					
Ada	87,390	—	87,390	532,400	445,010
Adams	12,466	—	12,466	31,600	19,134
Boise	5,167	—	5,167	16,200	11,033
Canyon	298,796	813,893	1,112,689	1,791,300	678,611
Elmore	125,807	28,421	154,228	335,000	180,772
Gem	56,139	—	56,139	106,300	50,161
Owyhee	210,894	8,439	219,333	425,400	206,067
Payette	95,106	—	95,106	318,500	223,394
Valley	74,915	—	74,915	13,800	-61,115
Washington	148,832	311,247	460,079	604,500	144,421
Total	1,115,514	1,162,000	2,277,514	4,175,000	1,897,486
<b>Southcentral district</b>					
Blaine	108,671	73,799	182,470	256,200	73,730
Camas	12,881	270,919	283,800	536,800	253,000
Cassia	913,745	1,607,282	2,521,027	2,723,400	202,373
Gooding	91,733	336,730	428,463	536,200	107,737
Jerome	333,302	1,243,437	1,576,739	1,414,300	-162,439
Lincoln	204,640	143,041	347,681	663,800	316,119
Minidoka	928,048	1,007,416	1,935,464	1,482,900	-452,564
Twin Falls	148,865	2,422,758	2,571,623	2,726,000	154,377
Total	2,741,887	7,105,382	9,847,269	10,339,600	492,331
<b>Southeast district</b>					
Bannock	341,556	744,003	1,085,559	1,716,900	631,341
Bear Lake	171,883	205,789	377,672	638,400	260,728
Bingham	843,261	389,710	1,232,971	3,511,400	2,278,429
Bonneville	634,343	927,257	1,561,600	3,581,900	2,020,300
Butte	262,559	35,668	298,227	436,600	138,373
Caribou	592,750	1,234,012	1,826,762	1,726,000	-100,762
Clark	135,393	—	135,393	165,900	30,507
Custer	82,343	—	82,343	103,400	21,057
Franklin	196,445	145,528	341,973	1,159,500	817,527
Fremont	720,627	623,512	1,344,139	1,863,300	519,161
Jefferson	738,681	568,495	1,307,176	1,656,700	349,524
Lemhi	19,744	—	19,744	49,400	29,656
Madison	437,503	211,049	648,552	2,179,000	1,530,448
Oneida	453,148	620,308	1,073,456	2,004,000	930,544
Power	227,709	1,305,929	1,533,638	2,983,800	1,450,162
Teton	406,645	267,170	673,815	801,300	127,485
Total	6,264,595	7,278,430	13,543,025	24,577,500	11,034,475
Southern Idaho	10,122,000	15,545,812	25,667,812	39,092,100	13,424,288

## Storage Capacity and Production Compared

Farm and commercial storage facilities were inadequate for the quantity of wheat produced in southern Idaho in 1967 (Table 6). Only 25,567,812 bushels of storage were estimated to be available. Production exceeded storage by 13,524,288 bushels.

County-by-county comparisons reveal that the elevator storage problem was most critical in southeastern Idaho where production exceeded storage by 11,034,475 bushels. In southwestern

Idaho production exceeded storage by 1,897,486 bushels, while in southcentral Idaho production exceeded storage only by 492,331 bushels.

In summary, about 13.5 million bushels, or about one-third the 1967 wheat crop, apparently lacked adequate storage. The problem is particularly acute in southeastern Idaho where 1.83 bushels of wheat were produced for each bushel of storage. When there are both inadequate storage facilities and a boxcar shortage at harvest time, farmers may be compelled to store wheat on the ground.

## Estimated Marketing Costs

Wheat production in southern Idaho exceeds local consumption and is marketed in cities such as Ogden, Utah; Los Angeles and San Francisco, Calif.; and Portland, Ore. (4). The distances to these markets emphasize the importance to Idaho farmers of farm-to-elevator trucking costs, elevator handling costs, and rail costs to terminal markets. Prices received by farmers at elevators are determined, in large part, by deducting marketing costs from prices at terminal markets.

### Farm-to-Elevator Costs

Custom or farm-owned trucks are used to haul wheat from the field to local elevators. Based on Esmay's study (3), the average cost for hauling wheat from farms to elevators was estimated to be 4.5 cents per bushel (Table 7). Esmay assumed the trucks used were farmer-owned, had a 200-bushel capacity, and traveled 20 miles on an average trip. Costs would be somewhat lower if larger trucks were used by farmers.

Custom rates for hauling wheat in 1969 averaged 6 cents per bushel in the Burley area, according to local mill operators.

### Elevator Handling Costs

Elevator handling costs are incurred by all southern Idaho wheat entering the commercial market. Storage costs, however, are incurred only on that wheat actually held for a period of time. Since storage costs vary with the time held and are not always a part of the marketing costs, they were not considered in this study. Handling costs include weighing of loaded farm trucks, unloading these trucks, determining the test weight of wheat, performing a moisture test, and weighing the empty farm truck. Additional costs are also incurred in locating a buyer and making the sale.

Elevator operations in southern Idaho are similar to operations in other parts of the nation. Yager (8), who estimated handling costs of elevator operations in the spring wheat belt, found

Table 7. Estimated costs of hauling grain from the farm to elevator in southern Idaho, 1967.\*

Expense item	Total cost**	Cost per bushel
Hauling labor	\$645.27	\$0.0298
Truck expense	247.52	0.0114
Truck depreciation	66.05	0.0030
Licenses	4.00	0.0001
Insurance	15.75	0.0007
Total	\$978.59	\$0.045

\*This table is based on Esmay, James L., 1961. Efficient resource combinations on dryland farms in southeastern Idaho. Idaho Agr. Exp. Sta. Bull. 335. Prices are updated with the following price index: Economic Research Service, U.S. Dep. Agr., 1967. The Farm Cost Situation No. 39.

\*\*Estimated cost of operating two grain trucks with a capacity of 200 bushels to haul 21,653 total bushels for a 20-mile round trip during harvest.

Table 8. Average costs for grain elevator handling activities, by capacity and volume, 1961.

Model	capacity	Total volume handled	Volume capacity ratio	Elevator handling costs		
				Average fixed cost	Average variable cost	Average total cost
	(bu.)	(bu.)		(cents per bu.)		
1*	100,000	200,000	2.00	3.26	11.51	14.77
		300,000	3.00	2.03	7.28	9.31
		400,000	4.00	1.48	5.42	6.90
2*	155,000	300,000	1.94	2.65	8.95	11.60
		400,000	2.58	1.85	6.41	8.26
		500,000	3.23	1.42	5.07	6.49
3*	190,000	600,000	3.16	1.28	5.30	6.58
		700,000	3.68	1.07	4.54	5.61
		800,000	4.21	.92	3.98	4.90
4*	265,000	700,000	2.64	1.43	5.29	6.72
		800,000	3.02	1.22	4.60	5.82
		900,000	3.40	1.07	4.08	5.15
5*	325,000	1,100,000	3.38	1.00	4.13	5.13
		1,200,000	3.70	.90	3.79	4.69
		1,300,000	4.00	.82	3.51	4.33
6*	380,000	1,200,000	3.16	1.00	4.01	5.01
		1,300,000	3.42	.91	3.70	4.61
		1,400,000	3.68	.84	3.43	4.27
7**	500,000	1,170,000	2.34	1.30	1.83	3.13
		1,559,000	3.12	.98	1.69	2.67
8**	750,000	1,757,000	2.34	1.32	1.66	2.98
		2,343,000	3.12	.99	1.57	2.56
9**	1,200,000	3,119,000	2.59	.90	1.59	2.49
		3,600,000	3.00	.78	1.52	2.30

\*Source: Yager, Francis P. 1963. Cost volume relations in the Spring Wheat belt. U.S. Dep. Agr. Farmer Coop. Svce. Rep. 63. (Grain merchandising with 75 percent storage).

\*\*Source: Araji, J. A. 1964. Optimum size and location of elevators in Nebraska. (Unpublished Master's thesis) University of Nebraska.

that handling costs decreased as size of elevator increased and as the total volume handled within a given elevator increased (Table 8). Costs are reduced more readily by increasing elevator capacity than by increasing the volume handled or rate of turnover. Most economies in elevator handling are achieved at about the 300,000 bushel capacity level. Larger elevators continue to have lower costs and may be justified in an area where there is enough wheat grown to support them.

Average handling costs were estimated for individual elevators using Yager's study and cost data collected in southern Idaho. An average cost was then estimated for each county based on the individual elevator costs in that county or, if no elevators existed in a county, based on the costs in the

nearest county with elevators (Table 9). Average estimated handling costs per bushel were as low as 3.96 cents in Canyon County and as high as 9.31 cents in eight other counties. Elevator handling costs were 7 cents or more per bushel in 14 counties, 10 of them in southeastern Idaho. Most elevators in southeastern Idaho have capacities less than 122,500 bushels. Most of southern Idaho's wheat (about 24 million bushels) is produced in this area. Replacing small, inefficient elevators with fewer larger elevators should reduce average handling costs.

### Elevator-to-Market Costs

Rail is the most common way to ship wheat from southern Idaho. About 78 percent of the wheat shipped leaves the state by rail

Table 9. Estimated average handling cost for elevator operations by county in southern Idaho, 1967.

County	Average handling cost	County	Average handling cost
	(cents per bu.)		(cents per bu.)
<b>Southwest district</b>		<b>Southeast district</b>	
*Ada	3.96	Bannock	4.90
*Adams	6.19	Bear Lake	5.63
*Boise	3.96	Bingham	8.02
Canyon	3.96	Bonneville	6.13
Elmore	9.31	Butte	9.31
*Gem	3.96	Caribou	5.17
Owyhee	9.31	*Clark	7.88
*Payette	6.19	*Custer	9.31
*Valley	6.19	Franklin	9.31
Washington	6.19	Fremont	7.23
		Jefferson	7.88
<b>Southcentral district</b>		*Lemhi	9.31
Blaine	9.31	Madison	9.31
Camas	8.18	Oneida	4.18
Cassia	3.84	Power	4.68
Gooding	5.58	Teton	7.16
Jerome	5.59		
Lincoln	7.43		
Minidoka	6.23		
Twin Falls	4.90		

\*Since these counties do not have elevators, these handling costs are based on elevators in surrounding counties.



Table 10. Cost per bushel for shipping wheat by railroad from selected counties in southern Idaho to major wheat markets, 1967.

County	Major south Idaho wheat markets			
	Portland, Ore.	San Francisco, Calif.	Los Angeles, Calif.	Ogden, Utah
	(cents per bu.)			
<b>Southwest district</b>				
Ada	23.4	37.8**	37.8**	25.2
Adams	25.8	43.2	43.2	30.0
Boise	23.4	40.8	40.8	30.0
Canyon	23.4	38.4	38.4	26.4
Elmore	24.0	36.0	36.0	24.6
Gem	23.4	38.4	38.4	25.8
Owyhee	23.4	38.4	38.4	27.0
Payette	23.4	37.2	37.2	25.8
Valley	24.6	40.8	40.8	30.0
Washington	23.4	38.4	38.4	25.8
<b>Southcentral district</b>				
Blaine	30.0	36.6***	36.6**	25.8
Camas	30.0	36.6	36.6	25.8
Cassia	29.4	33.6	36.0	22.2
Gooding	27.0	34.8	36.0	24.6
Jerome	27.0	33.6	36.0	24.6
Lincoln	27.6	34.8	36.0	24.6
Minidoka	28.2	33.6	36.0	22.2
Twin Falls	29.4	31.2	36.0	24.0
<b>Southeast district</b>				
Bannock	32.4	36.0**	36.0**	24.6
Bear Lake	35.4	39.0	39.0	21.6
Bingham	34.2	37.8	37.8	21.6
Bonneville	35.4	39.0	39.0	21.6
Butte	34.8	38.4	38.4	22.2
Caribou	34.2	37.2	37.2	21.6
Clark	37.2	42.0	42.0	24.0
Custer*	34.8	38.4	38.4	22.2
Franklin	30.6	37.2	37.2	19.8
Fremont	37.8	42.0	42.0	21.6
Jefferson	36.0	39.6	39.6	22.2
Lemhi*	37.2	42.0	42.0	24.0
Madison	36.6	40.2	40.2	22.2
Oneida	30.6	37.2	37.2	19.8
Power	30.0	36.0	36.0	21.6
Teton	37.8	42.0	42.0	24.6

Source: Union Pacific Railroad, Rate Schedule for Grain, Boise, Idaho, June 24, 1968.

\*Rate based on nearest county with railroad.

\*\*Via Ogden, Utah.

\*\*\*Via Wells, Nevada.

and 22 percent by truck (4). Weight restrictions imposed by state laws are a primary reason so little wheat is shipped by truck.

Hauling wheat by truck from southern Idaho may be competitive with rail rates on a backhaul basis. However, due to an inadequate number of trucks available for backhauls, as well as competition from more valuable commodities, wheat shippers normally are forced to use rail transportation. Since long-haul trucks are used so little and their rates are so variable, because of backhauls, rail rates were used to determine elevator-to-market costs. An Idaho Wheat Commission study (2) provides more information on truck hauling.

Major wheat markets are linked directly by rail with 32 of 34 counties in southern Idaho. Railroad freight rates for Idaho wheat from shipping points to terminal markets were taken from published schedules. For simplification, it was assumed that each county was served by one shipping point and rates were determined between that location and each terminal market. A centrally located town with a major portion of the county elevator storage capacity was selected to represent each county. Table 10 summarizes rail rates to terminal markets by county.

Distance is the most significant factor when comparing rates for different counties. In general, rates were higher for counties in southeastern Idaho than in south-central or southwestern Idaho.

### County Marketing Rates

Total marketing costs from the farm to the terminal market, including elevator handling costs, are presented in Table 11. Feed

wheat moving from farm to elevator and back to another farm or feedlot was termed "processed feed wheat." Marketing costs for this product included costs from farm to elevator, elevator handling costs, and trucking costs back to the farm. It was again assumed that the livestock feeder who purchased processed feed wheat lived an average of 10 miles from the elevator. Wheat fed on the farm where it was grown was not included in marketing costs.

Total marketing costs differ by county depending on the distance to market and size of the elevators involved. The total marketing cost of moving Teton County wheat to Portland, Ore., was estimated to be 49.46 cents per bushel, while the cost of marketing Washington County wheat was 34.09 cents per bushel.

### Total Marketing Costs

Total marketing costs for the 1967 Southern Idaho wheat crop were estimated using 1968 transportation rates and a calculated flow of wheat from county supply points to terminal markets. Marousek (4) found in 1965 that about 14 percent of production remained on the farms where it was grown. Based on this percentage, 33,619,206 bushels of the 1967 wheat crop were sold to markets in Oregon, California, Utah and Idaho (Table 12). Southern Idaho shipped 26.6 percent or 8,841,943 bushels of its 1967 commercial wheat crop to the Far East via Portland, Ore., according to information from elevator operators. Southwestern Idaho sold 66 percent of its commercial supply to Asia, while southcentral and southeastern Idaho sold 30 and 18 percent, respectively, to this market. Estimated distribution of the

Table 11. Estimated total marketing costs for wheat from southern Idaho farms to the major wheat markets, by county, 1967.

County	Major south Idaho wheat markets				
	Portland, Ore.	San Francisco, Calif.	Los Angeles, Calif.	Ogden, Utah	Processed Feed Wheat
	(cents per bu.)				
<b>Southwest district</b>					
Ada	31.86	46.26*	46.26*	33.66	12.96
Adams	36.49	53.89	53.89	40.69	15.19
Boise	31.86	49.26	49.26	38.46	12.96
Canyon	31.86	46.86	46.86	34.86	12.96
Elmore	37.81	49.81	49.81	38.41	18.31
Gem	31.86	46.86	46.86	34.26	12.96
Owyhee	37.21	52.21	52.21	40.81	18.31
Payette	34.09	47.89	47.89	36.49	15.19
Valley	35.29	51.49	51.49	40.69	15.19
Washington	34.09	49.09	40.09	36.49	15.19
<b>Southcentral district</b>					
Blaine	43.81	50.41**	50.41*	39.61	18.31
Camas	42.68	49.28	49.28	38.48	17.18
Cassia	37.74	41.94	44.34	30.54	12.84
Gooding	37.08	44.88	46.08	34.68	14.58
Jerome	37.09	43.69	43.69	34.69	14.59
Lincoln	39.53	46.73	47.93	36.53	16.43
Minidoka	38.93	44.33	46.73	32.93	15.23
Twin Falls	38.80	40.60	45.40	33.40	13.90
<b>Southeast district</b>					
Bannock	41.40	45.40*	45.40*	29.20	13.90
Bear Lake	45.53	49.13	49.13	35.41	14.63
Bingham	46.72	50.32	50.32	34.12	17.02
Bonneville	46.03	49.63	49.63	32.23	15.13
Butte	48.61	52.21	52.21	36.01	18.31
Caribou	43.87	46.87	46.87	31.27	14.17
Clark	49.58	54.38	55.28	36.38	16.88
Custer	48.61	52.21	52.21	36.01	18.31
Franklin	44.41	51.01	51.01	33.61	18.31
Fremont	49.53	53.73	53.73	33.33	16.23
Jefferson	48.38	51.98	51.98	34.58	16.88
Lemhi	51.01	55.81	56.71	37.81	18.31
Madison	50.41	54.01	54.01	36.01	18.31
Oneida	39.28	45.88	45.88	28.48	13.18
Power	39.18	45.18	45.18	30.78	13.68
Teton	49.46	53.66	53.66	36.26	16.16

\*Via Ogden, Utah.

\*\*Via Wells, Nevada.

commercial supply of wheat by county, based on Marousek's work and supplemented by interview data, is presented in Table 13.

Multiplying total marketing rates for each county by the quantity of wheat moving to market provides an estimated total marketing cost for southern Idaho's wheat for 1967 (Table 14). This estimated total marketing cost is \$13,588,204, or 40.5 cents per bushel.

Marketing costs are a major part of the value of wheat at ter-

minal markets. Southern Idaho wheat moving to the four major markets in 1967 was worth \$57,293,172, based on terminal market prices. Total marketing costs were 24 percent of the market value for this wheat.

Of this 1967 marketing bill, 74 percent was for railroad shipments (\$9,959,969), 15 percent for elevator handling costs (\$2,008,581), and 11 percent for the cost of hauling from farms to elevators (\$1,468,265). Marketing processed feed wheat cost only \$151,389.

Table 12. Estimated commercial supply and disappearance of wheat in southern Idaho, 1967.

Item	Bushels	
<b>Supply</b>		
1967 total production	39,092,100	
Immediate farm use (feed and seed)	5,472,894	
Net commercial supply		33,619,206
<b>Distribution</b>		
Los Angeles and San Francisco		
Flour	12,956,030	
Feed	2,653,645	
Total		15,609,675
Ogden, Utah		
Flour	3,573,129	
Feed	4,603,368	
Total		8,176,497
Portland, Ore.		
Export		8,841,943
Idaho processed feed		991,091
Total commercial disappearance, 1967 crop		33,619,206

Table 13. Distribution of southern Idaho's 1967 wheat supply to major markets, by county.

County	Total production	Net commercial supply*	Major wheat markets			
			Portland, Ore.**	California***	Ogden, Utah***	Idaho processed feed***
<b>Southwest district</b>						
Ada	532,400	457,864	302,190	98,075	51,372	6,227
Adams	31,600	27,176	17,936	5,821	3,049	370
Boise	16,200	13,932	9,195	2,984	1,563	189
Canyon	1,791,300	1,540,518	1,016,742	329,979	172,846	20,951
Elmore	335,000	288,100	190,146	61,711	32,325	3,918
Gem	106,300	91,418	60,336	19,582	10,257	1,244
Owyhee	425,400	365,844	241,457	78,364	41,048	4,975
Payette	318,500	273,910	180,781	58,671	30,733	3,725
Valley	13,800	11,868	7,833	2,542	1,332	162
Washington	604,500	519,870	343,114	111,356	58,329	7,070
Total	4,175,000	3,590,500	2,369,730	769,085	402,854	48,831
<b>Southcentral district</b>						
Blaine	256,200	220,332	66,099	97,166	50,897	6,169
Camas	536,800	461,648	138,494	203,587	106,641	12,927
Cassia	2,723,400	2,342,124	702,637	1,032,877	541,031	65,579
Gooding	536,200	461,132	138,340	203,359	106,520	12,912
Jerome	1,414,300	1,216,298	364,889	536,388	280,965	34,056
Lincoln	663,800	570,868	171,260	251,753	131,871	15,984
Minidoka	1,482,900	1,275,294	382,588	562,404	294,593	35,708
Twin Falls	2,726,000	2,344,360	703,307	1,033,863	541,547	65,643
Total	10,339,600	8,892,056	2,667,616	3,921,397	2,054,065	248,978
<b>Southeast district</b>						
Bannock	1,716,900	1,476,534	265,776	762,778	399,550	48,430
Bear Lake	638,400	549,024	98,825	283,625	148,566	18,008
Bingham	3,511,400	3,019,804	543,565	1,560,031	817,159	99,050
Bonneville	3,581,900	3,080,434	554,478	1,591,352	833,565	101,038
Butte	436,600	375,476	67,586	193,971	101,604	12,316
Caribou	1,726,000	1,484,360	267,185	766,820	401,668	48,687
Clark	165,900	142,674	25,681	73,706	38,608	4,680
Custer	103,400	88,924	16,006	45,938	24,063	2,917
Franklin	1,159,500	997,170	179,491	515,138	269,834	32,707
Fremont	1,863,300	1,602,438	288,439	827,819	433,620	52,560
Jefferson	1,656,700	1,424,762	256,457	736,032	385,541	46,732
Lemhi	49,400	42,484	7,647	21,947	11,496	1,393
Madison	2,179,000	1,873,940	337,309	968,078	507,088	61,465
Oneida	2,004,000	1,732,440	310,219	890,329	466,363	56,529
Power	2,983,800	2,566,068	461,892	1,325,630	694,378	84,167
Teton	801,300	689,118	124,041	355,999	186,475	22,603
Total	24,577,500	21,136,650	3,804,597	10,919,193	5,719,578	693,282
<b>South Idaho total</b>						
	39,092,100	33,619,206	8,841,943	15,609,675	8,176,497	991,091

\*14% of total production remained on farm for immediate use.

\*\*Based on interviews with sample of elevators.

\*\*\*Source: Marousek, Gerald E. 1967. Production and distribution of south Idaho wheat. Idaho Agr. Exp. Sta. Progress Report 125.

Table 14. Estimated total marketing costs for shipping wheat to major markets from southern Idaho counties, 1967.

County	Major wheat markets				Total cost
	Portland, Ore.	California	Ogden, Utah	Processed feed	
	(dollars)				
<b>Southwest district</b>					
Ada	96,278	45,369	17,292	807	159,746
Adams	6,545	3,137	1,241	56	10,979
Boise	2,930	1,470	601	24	5,025
Canyon	323,934	154,628	60,254	2,715	541,531
Elmore	71,894	30,738	12,416	717	115,765
Gem	19,223	9,176	3,514	161	32,074
Owyhee	89,846	40,914	16,752	911	148,423
Payette	61,628	28,098	11,214	566	101,506
Valley	2,764	1,309	542	25	4,640
Washington	116,968	54,665	21,284	1,074	193,991
Total	792,010	369,504	145,110	7,056	1,313,680
<b>Southcentral district</b>					
Blaine	28,958	48,981	20,160	1,129	99,228
Camas	59,109	100,328	41,035	2,221	202,693
Cassia	265,175	433,189	165,231	8,420	872,015
Gooding	51,296	91,267	36,941	1,883	181,387
Jerome	135,337	234,348	97,467	4,969	472,121
Lincoln	67,699	117,644	48,172	2,626	236,141
Minidoka	148,942	249,314	97,009	5,438	500,703
Twin Falls	272,883	419,748	180,877	9,124	882,632
Total	1,029,399	1,694,819	686,892	35,810	3,446,920
<b>Southeast district</b>					
Bannock	111,094	346,301	116,669	6,732	580,796
Bear Lake	44,995	139,345	52,607	2,635	239,582
Bingham	253,954	785,008	278,815	16,858	1,334,635
Bonneville	255,226	789,788	268,658	15,287	1,328,959
Butte	32,754	101,272	36,588	2,255	172,869
Caribou	117,214	359,409	125,602	6,899	609,124
Clark	12,733	40,081	14,046	790	67,650
Custer	7,781	23,984	8,665	534	40,964
Franklin	79,712	262,772	90,691	5,989	439,164
Fremont	14,284	444,787	144,526	8,530	612,127
Jefferson	124,074	382,589	133,320	7,888	647,871
Lemhi	3,901	12,249	4,347	255	20,752
Madison	17,007	522,859	182,602	11,254	733,722
Oneida	121,854	408,483	132,820	7,450	670,607
Power	180,969	598,920	213,730	11,514	1,005,133
Teton	61,351	191,029	67,616	3,653	323,649
Total	1,438,903	5,408,876	1,871,302	108,523	8,827,604
<b>Southern Idaho</b>					
Total	3,260,312	7,473,199	2,703,304	151,389	13,588,204

## Study Results

### Reducing Marketing Costs

The average Portland price for wheat in August 1967 was \$1.60 per bushel, and the average marketing cost for south Idaho wheat was 40.5 cents per bushel. Reducing these marketing costs should result in higher prices for Idaho farmers.

#### Farm-to-Elevator Costs

Farm-to-elevator transportation costs could be reduced if farmers operated larger, more efficient trucks. Trucks capable of hauling 350 bushels are not uncommon, but smaller farmers may not own such equipment. If truck capacity were increased from 200 to 350 bushels, hauling costs would decline from 4.5 to 4.0 cents per bushel, or about 11 percent. Increasing truck sizes would decrease total marketing costs by only 1.2 percent, a rather insignificant amount in relation to the total. Larger trucks may not be feasible on all farms.

#### Elevator Handling Costs

In certain counties of southern Idaho, elevator handling costs are high. Differences in costs between counties were attributed to elevator size (Table 8). Handling costs were highest in southeastern Idaho where over half the elevators had capacities less than 122,500 bushels. If larger elevators (300,000 bushel capacity)

were operated, total grain handling costs would be \$1,714,850. This is a reduction of 18 percent in elevator handling costs, but only a 3 percent decrease in total marketing costs.

#### Elevator-to-Market Costs

Rail costs from elevators to terminal markets made up 74 percent of the total charges in 1967. Rail rates for wheat from southern Idaho to market are neither the highest nor lowest observed in the nation. Below are some comparisons of rates. These rates are comparable only in terms of distance. Rates from Pocatello to Portland are not nearly as high as from Wolf Point to Minneapolis. They are, however, quite high compared to the rate from Rockford to New Orleans. Some of the more apparent reasons for the latter are the differences in terrain in the midwest as compared to the west, and the competition from barges along the Mississippi River. If more competition existed among carriers of wheat in southern Idaho, rates might be lower. For example, if the Rockford to New Orleans rate were available in southern Idaho, shipping costs would be only \$4,370,497, a 41 percent decrease in total marketing costs. Such a reduction, however, seems to be out of the question without greater competition.

Shipping Point	Destination	Distance (miles)	Rate (cents per bu.)
Pocatello, Ida.	Portland, Ore.	725	33
Wolf Point, Mont.	Minneapolis, Minn.	750	44
Rockford, Ill.	New Orleans, La.	800	13

### Total Marketing Costs

If marketing costs were estimated using 350-bushel trucks, elevators with 300,000 bushel capacity, and rail rates competitive with barges, then total marketing costs would drop from 40.5 to 22.1 cents per bushel, a 46 percent reduction. At the 22.1 cents per bushel rate, total marketing costs would be \$7,210,813 to place 32,628,115 bushels of wheat in terminal markets. Such a savings would increase farm income from wheat by nearly 19 cents a bushel.

### Optimum Storage Sites

While these marketing cost reductions may be difficult to effect, building additional storage facilities would help alleviate storage problems at harvest time, and reduce handling costs.

Both southwestern and southeastern Idaho need additional facilities. In 1967, southwestern Idaho had a storage deficit of 1.9 million bushels (Table 6). Canyon and Ada Counties produced the majority of wheat in the area, some 2.3 million bushels. The export market at Portland, Ore., is the nearest out-of-state market and is as well a major outlet for soft wheat. The optimum location for additional storage is near Caldwell in Canyon County, the center of the area's wheat production and the area most critically

lacking adequate facilities. Using a 3:1 turnover ratio, and assuming complementary additional farm storage will also be built, a 630,000 bushel elevator is recommended. A unit of this size would be highly efficient for grain handling.

Shortages of storage facilities are most critical in southeastern Idaho. In 1967, only 13.5 million bushels of storage existed for the 24.6 million bushels produced. Five counties produced nearly 8 million bushels which could not be placed in storage (Table 6). Greatest storage needs are in Bannock and Bingham counties. Since Pocatello is the main rail center, additional storage facilities should be built there with a capacity of 3.7 million bushels (based on a 3:1 turnover). This could be one large facility or three 1.2 million bushel facilities. Either would reduce existing handling costs.

These recommendations are based on 1967 production levels. Should production decline from that level, the need for additional storage facilities would also decline. However, if the 13 million bushels of wheat not having access to storage during harvest in 1967 had been handled in these recommended facilities, elevator handling costs would have been about 26 percent less.



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Appendix Table A. Estimated percent of elevator capacity used for wheat and estimated volume-capacity ratio for 20 elevators in southern Idaho, 1967.

Elevator	Total storage capacity (bu.)	Bushels of wheat stored (bu.)	Percent storage used for wheat	Volume-capacity ratio	Volume handled (bu.)
1	38,157	26,709	70	4.0	152,628
2	73,970	0	0	1.5	110,955
3	81,155	27,593	34	5.0	405,775
4	84,233	42,116	50	3.0	252,699
5	86,000	60,200	70	3.5	301,000
6	91,012	81,911	90	3.0	273,036
7	91,126	45,563	50	2.0	182,252
8	105,569	42,228	40	3.0	316,707
9	111,000	27,750	25	6.0	666,000
10	135,337	27,067	20	1.0	135,337
11	152,566	30,513	20	3.0	457,698
12	176,585	105,951	60	2.5	441,463
13	195,000	117,000	60	3.0	585,000
14	202,156	101,078	50	2.0	404,312
15	362,007	181,003	50	2.0	724,014
16	376,265	282,199	75	1.3	489,144
17	433,745	182,173	42	1.0	433,745
18	447,968	295,659	66	2.5	1,119,920
19	833,333	666,666	80	1.0	833,333
20	842,000	673,600	80	3.0	2,526,000
Total	4,919,184	3,016,979	60	2.2	10,811,018

Appendix Table B. Estimated handling costs, gross margins, and storage costs by storage capacity for 23 elevators in southern Idaho, 1967.

Elevator	Total storage capacity	Average handling cost	Gross margin	Storage cost per month
	(bu.)		(cents per bu.)	
1	38,157	6		1
2	40,445	6		1
3	73,970	4.5		1
4	81,155			1
5	84,233	8		1
6	86,000	4		1
7	91,012	5		1
8	91,126		10	1
9	105,569	6		1
10	111,000			1
11	135,337		10	1
12	144,537	3		1
13	152,566			1
14	176,585			1.5
15	195,000	4.5		1
16	202,156		10	1
17	359,060	3		0.75
18	362,007		9	1
19	376,265	2		2
20	433,745	3		1
21	447,968	9		1
22	833,333		9	1
23	842,000	3		1

Appendix Table C. Number of southern Idaho elevators that were legally bonded for wheat, by size class and county, 1967.\*

County*	Total elevator capacity									Total
	(000 bushels)									
	0- 122.5	122.5- 187.5	187.5- 227.5	227.5- 295.5	295.5- 352.0	352.0- 490.0	490.0- 722.5	722.5- 975.0	975.0	
<b>Southwest district</b>										
Canyon	4	2							1	7
Elmore	1									1
Owyhee	1									1
Washington	3					1				4
Total	9	2	0	0	0	1	0	0	1	13
<b>Southcentral district</b>										
Blaine	2									2
Camas	5	1								6
Cassia	3	2				1	3**			9
Gooding			1			1				2
Jerome	1		1	2		3				7
Lincoln	1	1								2
Minidoka	4	2		1	2					9
Twin Falls	9	4		3	2		2			20
Total	27	11	2	6	4	5	5	0	0	60
<b>Southeast district</b>										
Bannock	5	1						1		7
Bear Lake	2									2
Bingham	6		1							7
Bonneville	2	3	1			3				9
Butte	1									1
Caribou	3	1	1	2		1	1			9
Franklin	3									3
Fremont	6	3		1						10
Jefferson	5	2	1							8
Madison	5									5
Oneida	2				1		1**			4
Power	2	1		1	1	1		1		7
Teton	1	1	1							3
Total	43	12	5	4	2	5	2	2	0	75
<b>Southern Idaho</b>										
Total	79	25	7	10	6	11	7	2	1	148

\*Source: Bonded Warehouse Division, Idaho Dep. of Agr. Unpublished data. Not included in the table are nine counties that do not have elevators legally bonded for wheat—Ada, Adams, Boise, Clark, Custer, Gem, Lemhi, Payette and Valley.

\*\*Includes one flour mill in operation.

