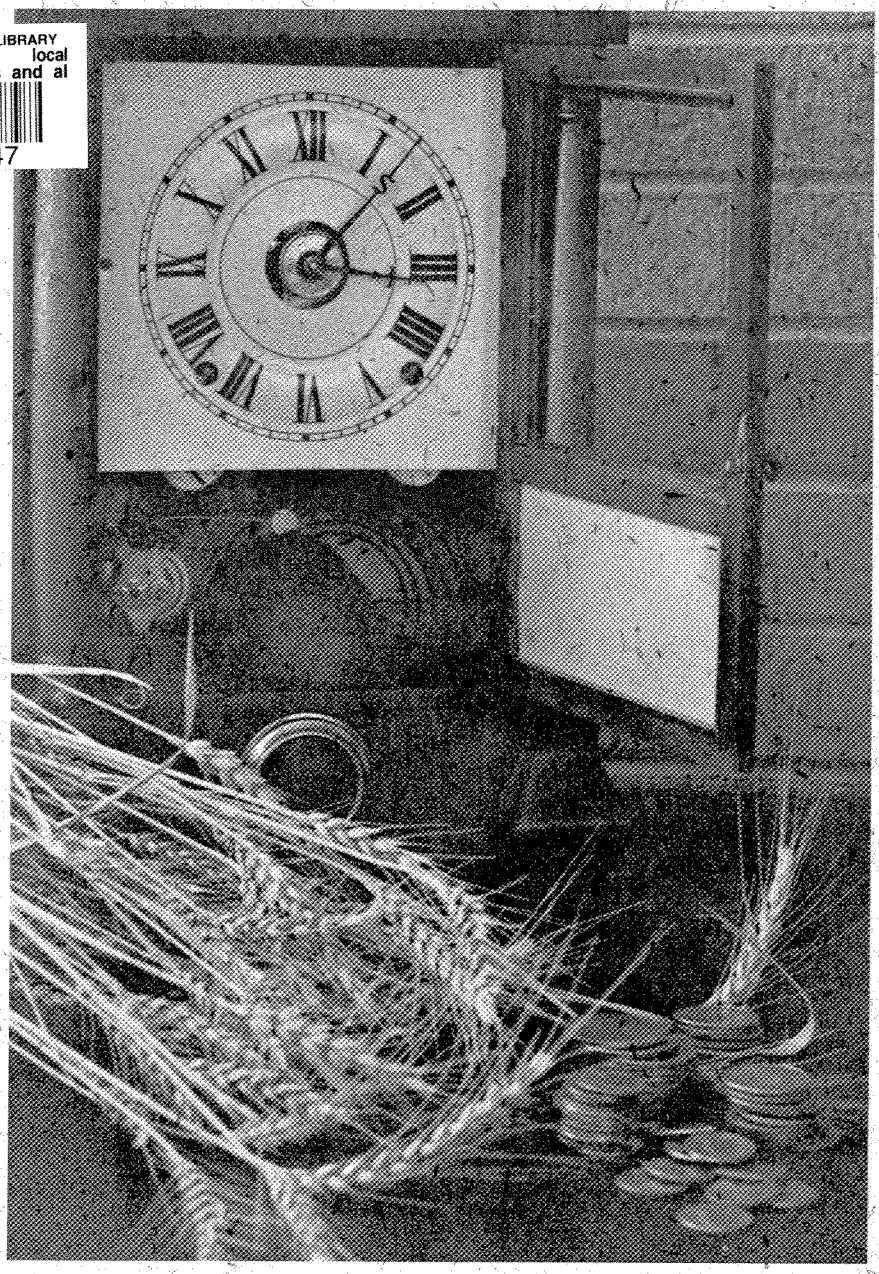

Cooperative
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Bulletin
495A

# MARKETING ISSUES AND ALTERNATIVES FOR COLORADO WHEAT PRODUCERS

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BY

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With deep appreciation, the authors wish to acknowledge the following persons for their time, expertise and perceptive comments in the preparation of this publication.

Mr. Harry Crim
Mr. Larry Dirksen
Ms. Kathy Everett
Ms. Ruth Folkers
Dr. Albert Madsen
Dr. John Matsushima
Ms. Virginia Monteen
Dr. Forrest Walters
Dr. James Welsh
Mr. J. Hugh Winn

THIS PUBLICATION WAS PRODUCED IN COOPERATION WITH THE
COLORADO WHEAT ADMINISTRATIVE COMMITTEE


Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Lowell H. Watts, Director of Extension Service, Colorado State University.



1M Sept. 1976

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## I. Introduction

This Extension bulletin was written and designed to help Colorado wheat producers better understand the marketing alternatives and issues which are facing them in an increasingly complex market situation. Colorado, because of its great variation in rainfall and weather conditions, is particularly vulnerable to fluctuations in yields. Wheat producers have learned to survive both price and yield variations by implementing sound business judgment and using the marketing tools at their disposal. It is the purpose of this bulletin to help clarify the use of those tools so that wheat producers may do a better job of marketing their wheat and show a profit when weather conditions permit.

## II. Review of the Wheat Industry

Colorado consumers do not use as much wheat as Colorado farmers produce. Where is the extra wheat shipped? Who buys this wheat? What other regions produce more wheat than consumed? Do Colorado wheat producers earn a profit? These questions are answered in this chapter.

### Colorado Acreages, Yields, and Values

Wheat is a major crop in Colorado comprising about 30 percent of total value of the crops produced. Wheat is harvested from 40-50 percent of total harvested acreages. In the United States, Colorado is the 16th largest producer of wheat with 2.4 percent of total U.S. production. Recent trends in Colorado production, acreage, and value are shown in Table 1.

As demonstrated by the variability of yields and production, Colorado wheat is produced on land requiring timely rainfall to produce a crop. During 1965, only 42 percent of planted wheat acreages was harvested. Even for acreages harvested, the 1965 crop yielded only 15.7 bushels per acre. In recent years, as much as 95 percent of planted acreages is harvested with state average yields as high as 25.1 bushels per acre. Yearly production since 1960 for Colorado has ranged from 19.8 to 67.8 million bushels. Acreages have remained below 3 million acres.

The value of wheat produced per acre has shown dramatic change. Wheat revenue averaged less than $20 per acre between 1965 and 1969. Revenue jumped to more than $90 per acre for 1973 and 1974. During these favorable years, both yields and prices were high. Revenue, with production costs per acre subtracted, gives the profit margin. Costs for the 1975 crop are developed in the following section.

### Colorado Production Costs

Production costs for Colorado dryland wheat are estimated at Colorado State University for use by Colorado Agribusiness Association members and other interested producers.[1] These cost budgets provide useful information about profitability and break-even yields and prices.

The estimated dryland wheat budget for 1975 is shown in Table 2. Total production cost is $89.48 per planted acre in a summerfallow rotation with two acres of land required per acre planted. Costs

[1]Harry Crim of the Department of Economics is in charge of cost data collection and summarization.

Table 1. Colorado Wheat Acreage, Production, and Value, 1965-76.

| Year | Acreage | | Yield per planted acre | Production | Value/ bushel | Value/ Planted acre |
|---|---|---|---|---|---|---|
| | Planted | Harvested | | | | |
| | Mil. ac. | % of planted | Bu. | Mil. bu. | $ | $ |
| 1965 | 3.00 | 42 | 6.6 | 19.8 | 1.33 | 8.78 |
| 1966 | 3.82 | 87 | 15.7 | 44.3 | 1.56 | 24.49 |
| 1967 | 3.16 | 58 | 11.4 | 35.9 | 1.24 | 14.14 |
| 1968 | 2.92 | 64 | 12.9 | 37.6 | 1.12 | 14.45 |
| 1969 | 2.68 | 73 | 15.7 | 42.2 | 1.13 | 17.74 |
| 1970 | 2.49 | 84 | 23.9 | 59.7 | 1.19 | 28.44 |
| 1971 | 2.37 | 90 | 25.1 | 59.6 | 1.20 | 30.12 |
| 1972 | 2.47 | 88 | 21.0 | 52.0 | 1.77 | 37.17 |
| 1973 | 2.54 | 95 | 23.3 | 59.3 | 3.91 | 91.10 |
| 1974 | 2.84 | 93 | 23.6 | 67.8 | 4.00 | 95.60 |
| 1975 | 2.75 | 81 | 18.3 | 50.40 | 3.25 | 59.56 |
| 1976[1] | 2.83 | 67 | 14.8 | 41.80 | 3.00[2] | 44.40[2] |
| Avg. 1965-69 | 2.92 | 65 | 12.5 | 36.0 | 1.28 | 15.92 |
| Avg. 1970-74 | 2.54 | 90 | 23.4 | 59.7 | 2.41 | 56.49 |

[1]Forecast.
[2]Estimated by authors.

SOURCE: Colorado Crop and Livestock Reporting Service.

can be divided into three components: (1) preharvest expenses of $18 per acre, (2) harvest expenses of $12 per acre, and (3) fixed overhead expenses of $60 per acre. If the crop is a failure, preharvest cash costs are lost and no fixed overhead costs are paid. The largest costs are fixed expenses for machinery and land.

For profitable wheat production, the value of revenue produced per acre of wheat, shown in Table 1, must be greater than $89. This level of revenue, measured in 1975 costs, was earned only during 1973 and 1974.

Harvest expenses are a major variable in the total cost per acre. Custom harvesting typically costs $10 per acre plus $.10 per bushel of wheat harvested over 20 bushels. Hauling expenses of about $.10 per bushel are additional.

Table 2. Estimated Eastern Colorado Wheat Production Costs with Custom Combining for 1975.

| Fixed cost per planted acre | Amount | Price | Cost |
|---|---|---|---|
| | | $ | $ |
| Interest on land investment | 532.00 | .09 | 47.88 |
| Interest on machinery | 26.27 | .09 | 2.36 |
| Machinery and equipment depreciation | 26.27 | .13 | 3.53 |
| Building and improvement depreciation | -- | -- | 1.01 |
| Taxes - real estate and others | -- | -- | 4.30 |
| Miscellaneous overhead | -- | -- | .68 |
| Total fixed cost | | | 59.76 |
| **Preharvest variable cost per planted acre** | | | |
| Seed | .50 | 3.50 | 1.75 |
| Crop chemicals | -- | -- | 1.82 |
| Fertilizer | -- | -- | .63 |
| Machine hire | -- | -- | 1.93 |
| Pickup and truck expenses | -- | -- | .67 |
| Machinery repairs | -- | -- | 1.62 |
| Fuel and oil | 5.40 | .50 | 2.70 |
| Farm share of auto | -- | -- | .19 |
| Farm share of utilities | -- | -- | .20 |
| Labor - family and hired | -- | -- | 2.50 |
| Supplies and miscellaneous | -- | -- | 3.06 |
| Interest on operating capital | 8.54 | .09 | .77 |
| Total preharvest variable cost | | | 17.84 |
| **Harvest variable cost per planted acre** | | | |
| Custom combining charges | .90 | 10.00 | 9.00 |
| Added combining for over 20 bushels | 5.40 | .10 | .54 |
| Custom hauling charges | 23.40 | .10 | 2.34 |
| Total harvest variable cost | | | 11.88 |
| Total variable cost | | | 29.72 |
| Total fixed and preharvest cost | | | 77.60 |
| Total cost per planted acre | | | 89.48 |

Another cost variable is the valuation and costing of land. Colorado wheat land has rapidly risen in value. If land is valued at current prices, the annual cost of land, as shown in Table 2, is substantial. However, much land was originally bought for less than one-half current value. The actual costs of interest expense are, therefore, much less than the "opportunity" costs due to inflated land values.

The wheat producer objective must be to cover all costs. Both yields and wheat prices vary. The question is then what yield or price levels must be obtained in order that all production costs be covered. These values, defined as break-even prices and yields, are shown in Table 3. The break-even values are shown for covering harvest costs only, total variable costs, and total production costs. Wheat should be harvested if yields are at least two to five bushels. To cover total costs, yields of 26 to 47 bushels must be obtained depending upon the price received for wheat. With a 20-bushel yield, producers must receive $4.43 per bushel to pay all costs. With a 30-bushel yield, wheat must be priced at $3.02 per bushel.

Table 3. Break-even Prices and Yields for Colorado Wheat Production in 1975.

| | | Cost Level | | |
|---|---|---|---|---|
| | | Harvest only | Total variable | Total production |
| Break-even prices, $/bushel | | | | |
| Yield = State Avg. | 10 bu. | $1.00 | $2.78 | $8.76 |
| | 20 bu. | .55 | 1.44 | 4.43 |
| | 23.4 bu.[1] | .51 | 1.27 | 3.82 |
| | 30 bu. | .47 | 1.03 | 3.02 |
| Break-even yields, bushel | | | | |
| Price = | $2.00/bu. | 4.7 | 14.1 | 47.0 |
| | 2.50/bu. | 3.8 | 11.2 | 36.8 |
| | 3.00/bu. | 3.1 | 9.3 | 30.2 |
| | 3.50/bu. | 2.7 | 7.9 | 25.6 |

[1]Colorado average yield per planted acre for previous five years.

## Colorado Wheat Flow

Most of the Colorado wheat crop is utilized outside of the state. A review of flows and destinations follows. As shown in Figure 1, the largest flow of Colorado wheat is to Kansas City and other Missouri points. Flows of wheat to Kansas City increased 12.5 percent during the 1974-75 crop year as shown in Table 4.

As can be seen from Figure 1, more than one-fourth of Colorado wheat moved to the northwest coast and to the California coast. Wheat moving to this area is almost exclusively for export purposes; and at approximately 27 percent of total flows, it was down substantially from the 40 percent shipped to the area in 1973-74. This decrease in amount of wheat shipped to the west coast corresponds very closely

with an increase in wheat shipment to Kansas City. A change in the export markets may be a determining factor in this shift in movement. Much of the wheat shipped to Kansas City moves down the Mississippi by barge for export which would indicate a changing composition and destination of export markets from Pacific ports to Gulf ports brought about in part by change in transportation costs.

Table 4. Percent Changes in Outstate Movement of Colorado Wheat by Crop Year.

| Movement to: | 1971/ 1972 | 1973/ 1974 | 1974/ 1975 | % Change during 1974/75 |
|---|---|---|---|---|
| Calif. coast | .6 | 8.91 | 3.13 | ↓ 5.78 |
| Northwest coast | 3.5 | 31.11 | 23.74 | ↓ 7.37 |
| Gulf coast | 13.7 | 17.09 | 18.59 | ↑ 1.50 |
| Kansas City & Mo. | 29.7 | 25.09 | 37.59 | ↑ 12.50 |
| Nebraska | 32.2 | 13.36 | 10.79 | ↓ 2.57 |
| Other | 20.3 | 4.44 | 6.16 | ↑ 1.72 |
| TOTAL | 100.0 | 100.00 | 100.00 | |

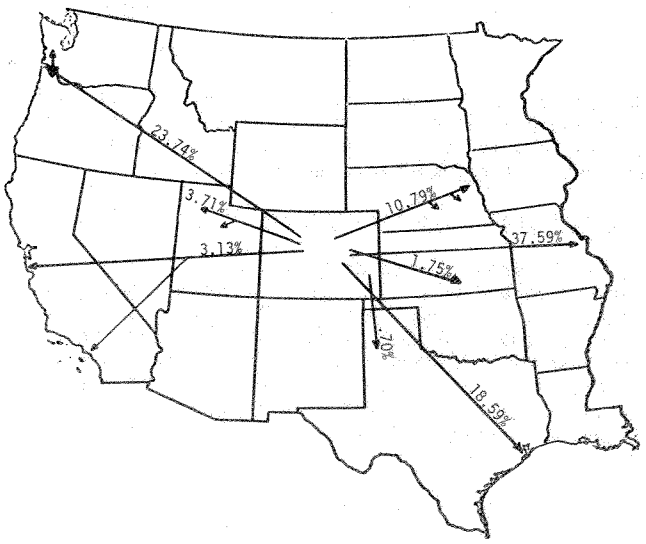


Figure 1. Movement of Colorado Wheat to Outstate Points During 1974/75 Crop Year. (Percent of Total Outstate Movement Shown on Map.)

A continued increase in export sales of wheat to the Soviet Union, Japan, People's Republic of China, European markets, and other world markets has been a significant determinant affecting Colorado's wheat sales. Two-thirds of the wheat produced in Colorado was used for export purposes in 1974-75. The amount of wheat shipped outstate and used for milling was down 10 percent from the amount milled last year. Milling now accounts for only 20 percent of outstate wheat use. The remainder is divided between feed use, storage, and a small residual. A breakdown of the Colorado outstate wheat market is shown in Table 5.

Table 5. Outstate Use of Colorado Wheat by Crop Year.

| Uses | % in 1973/74 | % in 1974/75 |
|---|---|---|
| Milling | 29.02 | 20.11 |
| Export | 59.23 | 66.76 |
| Feed | -- | .08 |
| Other | 1.87 | 7.95 |
| Unknown | 9.88 | 5.10 |
| TOTAL | 100.00 | 100.00 |

## U.S. Production and Use

U.S. acreage, yields, and production of wheat compared to 1959-61 are shown in Figure 2. Yields increased, gradually, but acreages and production have risen substantially in recent years.

Utilization of the supply is shown in Figure 3 and in Table 6. Domestic food use has remained stable at 500 to 528 million bushels. Feed use has shown considerable variability as the ratio of wheat to feed grain prices changes. In recent years, exports have expanded. Further, exports subsidized by government programs have declined as total exports rose. During 1972, exports expanded by 88 percent from the previous year with the higher exports level being maintained to the present.

The importance of wheat exports cannot be over-emphasized. If exports were to decline to pre-1972

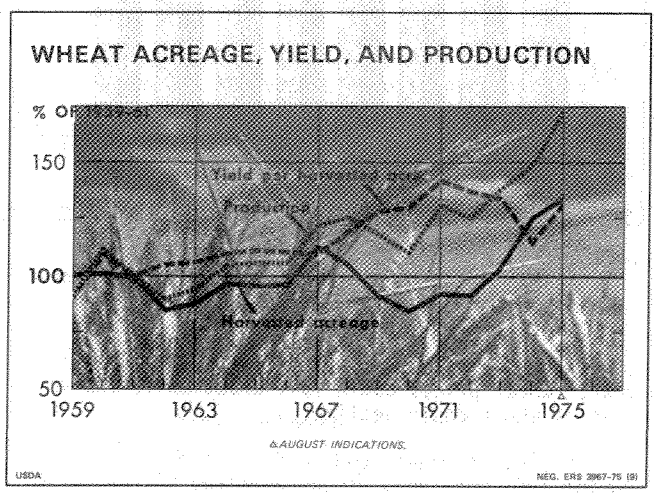


Figure 2.

Table 6. Utilization of U.S. Wheat Supply for Domestic Use, Exports, and Ending Stocks, by Year for 1965-76.

| Year beginning July 1 | Total supply | Domestic use | | | | Exports | | | Ending stocks |
|---|---|---|---|---|---|---|---|---|---|
| | | Food | Seed | Feed | Total | Under government programs | For dollars | Total | |
| | Mil. bu. | Mil. bu. | Mil. bu. | Mil. bu. | Mil. bu. | Mil. bu. | Mil. bu. | Mil. bu. | |
| 1965 | 2,133.8 | 515.4 | 61.5 | 154.3 | 731.2 | 568.9 | 298.5 | 867.4 | 535.2 |
| 1966 | 1,841.8 | 501.9 | 77.4 | 93.8 | 673.1 | 373.0 | 371.3 | 744.3 | 424.4 |
| 1967 | 1,932.9 | 519.2 | 71.3 | 42.8 | 633.3 | 477.5 | 283.6 | 761.1 | 538.5 |
| 1968 | 2,096.3 | 519.7 | 60.9 | 154.8 | 735.4 | 302.5 | 241.7 | 544.2 | 816.7 |
| 1969 | 2,262.6 | 520.6 | 55.6 | 195.4 | 771.6 | 329.3 | 276.8 | 606.1 | 884.9 |
| 1970 | 2,237.6 | 519.5 | 62.1 | 187.0 | 768.6 | 335.8 | 401.7 | 737.5 | 731.5 |
| 1971 | 2,350.3 | 525.9 | 63.2 | 265.6 | 854.7 | 317.0 | 315.5 | 632.5 | 863.1 |
| 1972 | 2,409.3 | 527.7 | 67.2 | 189.7 | 784.6 | 209.0 | 977.3 | 1,186.3 | 438.4 |
| 1973 | 2,147.4 | 528.0 | 84.1 | 139.5 | 751.6 | -- | -- | 1,148.4 | 247.4 |
| 1974 | 2,046.8 | 524.9 | 92.6 | 62.4 | 679.9 | -- | -- | 1,039.3 | 327.6 |
| 1975[1] | 2,463.0 | 540.0 | 95.0 | 85.0 | 720.0 | -- | -- | 1,200.0 | 543.0 |
| 1976[1] | 2,570.0 | 540.0 | 95.0 | 125.0 | 760.0 | -- | -- | 1,050.0 | 760.0 |

[1]Forecast.

SOURCE: USDA, Wheat Situation.

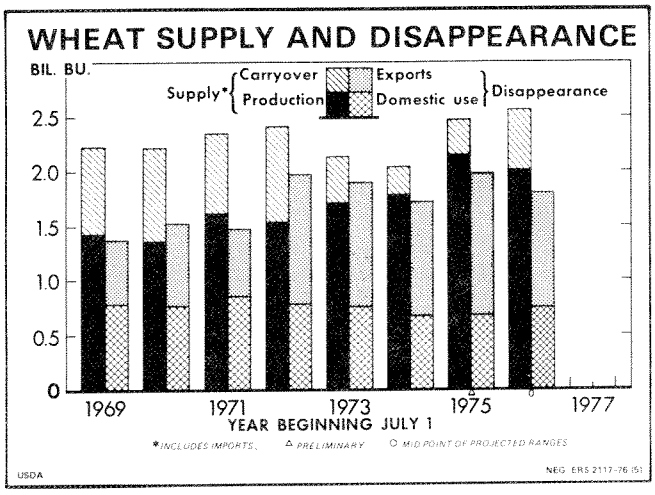


Figure 3.

levels, U.S. stocks of wheat would double in one year. Wheat prices could fall drastically and acreages of wheat could decline.

Stocks of wheat tend to depress market prices. During 1968 and 1969, stocks averaged 64 percent of total U.S. domestic use and exports. Prices were depressed. Stocks were only 13 percent of use during 1973 and prices rose rapidly as a result. Note that stocks in July of 1977 are forecast to rise to 100 percent of total yearly domestic use.

## International Production and Use

U.S. exports rose dramatically in 1972. The largest volume of U.S. exports is purchased by Asian countries. As shown in Figure 4, Europe is also a major purchaser of U.S. wheat. The Russian wheat purchase of 1972 caused much of the increased wheat exports in 1972. Since 1972, Russian purchases have declined but Asian buyers have expanded volume. Principal importers in Asia of U.S. wheat are India, Japan, and Korea.

World exports of wheat are shown in Figure 5. Other major exporters include Canada, Australia, Argentina, France, and USSR. World exports expanded in 1972 with the United States capturing most of the expansion. The United States, Canada, and Australia together control 70 percent of world wheat exports.

Annual world wheat production has fluctuated between 9.7 and 13.5 billion bushels in recent years. As shown in Figure 6, most of the variation in world production is explained by USSR production. When USSR production is low, their imports rise dramatically as in 1972. However, their import levels are not constant and fluctuations in imports cause worldwide instability in prices. Note also that while USSR production is greater than U.S. production, the

Russians must still import. The Russian diet is obviously dependent upon grains with little meat consumed.

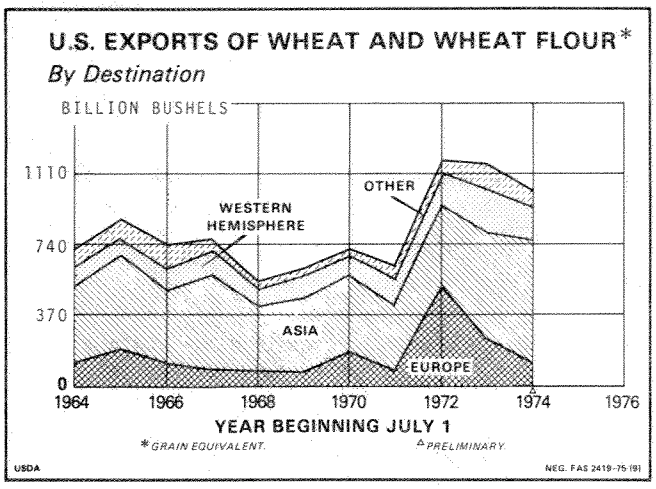


Figure 4.

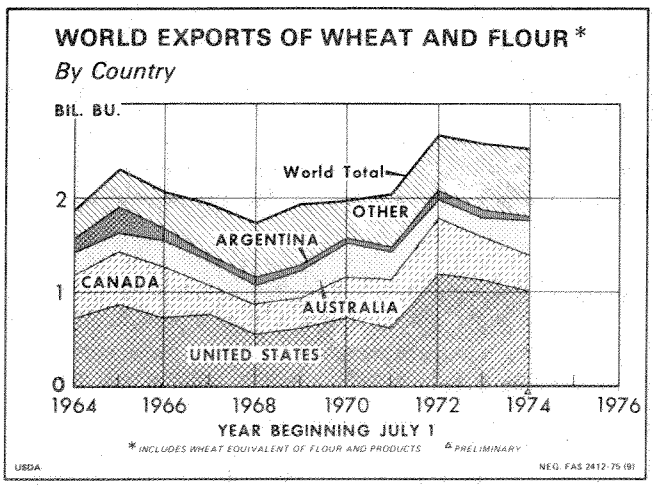


Figure 5.

## III. Marketing Issues for Wheat Farmers

Farmers have control over a variety of marketing decisions, including the timing of sales, choice of marketing firms, and quality of product sold. In this chapter, economic parameters for decision making on these topics are presented.

### Storage of Wheat

The decision to store wheat implies that expected benefits exceed costs for the storage period. The primary benefit is the increased wheat price that results from normal seasonal price rises following harvest. Primary costs of storage are (1) fixed

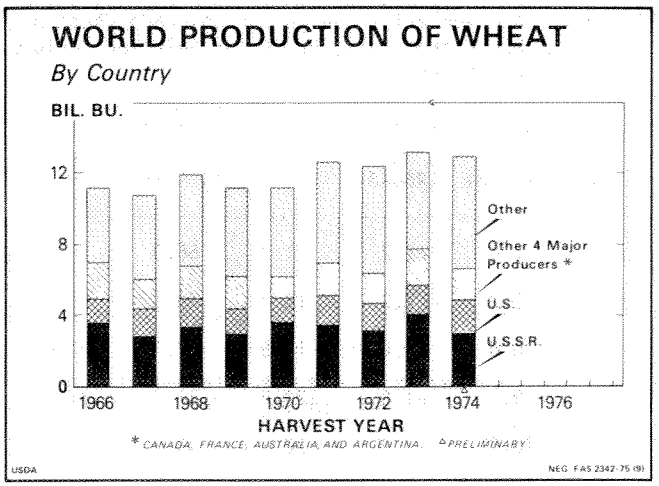


Figure 6.

expenses per year for owning storage facilities and placing wheat in storage and (2) variable expenses per month associated with interest charges on the wheat inventory being stored. These returns and costs are now evaluated for typical Colorado wheat producers.

Other benefits and costs are possible but will not be analyzed. A major benefit of wheat storage is often the postponement of income reporting. A farmer using the cash basis of income accounting does not have to pay income taxes on wheat produced in the current year if the crop is not sold until January of the following year. Therefore, income reporting and tax payments are delayed one year. By leveling out annual income reported, taxes are also reduced. Possible costs include loss of stored wheat due to insect damage or heat damage.

The wheat price rise during storage varies greatly from year to year. The average price rise and the price rise for selected periods is shown in Table 7. Also, Colorado monthly average prices for 1959 to 1975 are given in Appendix Table 1. The greatest price rise is reached in the month of January at $.26 per bushel. The average price rise is also shown on Figure 7.

Costs of storage are subdivided into (1) fixed annual costs and (2) variable costs per month of storage. The primary variable cost is interest on the wheat inventory investment. With wheat valued at $3 per bushel and a nine percent interest rate, the monthly interest cost per bushel of wheat is 2.25 cents per month. Therefore, if wheat is stored until January to capture the maximum average price rise, the interest cost equals 13.5 cents per bushel for six months. If wheat is stored in an elevator, an additional variable expense of about 1.5 cents per month is incurred for storage. Adding elevator charges to interest, the cost for six months of elevator storage is 22.5 cents per bushel.

If grain bins are owned by a wheat producer, fixed ownership costs are incurred. Construction costs are shown in Table 8 for bins with capacities between 6,530 and 185,820 bushels. The total investment in bin construction ranges from 89.1 cents per bushel for small bins to as low as 48.9 cents for

Table 7. Average Price Change for Colorado Wheat by Month from July, Price for Selected Periods. Cents Per Bushel.

| Month | 1959-60 to 1963-64 | 1964-65 to 1968-69 | 1969-70 to 1972-73 | 1973-74 to 1975-76 | 17-year avg. |
|---|---|---|---|---|---|
| Aug. | 2.6 | -2.2 | 11.2 | 66.0 | 12.5 |
| Sept. | 5.2 | -2.2 | 13.0 | 80.0 | 18.1 |
| Oct. | 6.6 | -4.0 | 18.5 | 87.7 | 20.6 |
| Nov. | 9.0 | -1.0 | 20.8 | 81.0 | 21.5 |
| Dec. | 10.4 | .4 | 30.8 | 83.3 | 25.1 |
| Jan. | 10.8 | -1.4 | 33.5 | 88.7 | 26.3 |
| Feb. | 12.4 | -2.6 | 22.5 | 93.0 | 24.6 |
| March | 11.4 | - .4 | 24.5 | 67.7 | 20.9 |
| April | 13.0 | -4.2 | 26.3 | 23.7 | 12.9 |
| May | 10.4 | -2.8 | 25.3 | -3.7 | 7.5 |
| June | -5.4 | -5.0 | 31.3 | -1.0 | 4.1 |

larger structures. The annual cost over a 20-year life for the construction costs and interest on investment ranges from 9.8 to 5.4 cents per bushel, as shown in Table 9. Other annual costs of storage include the labor to load and unload the bin, additional transportation of wheat to the bin, and wheat shrinkage during storage. If these costs are added to annual cost of the bins, the annual fixed cost per bushel ranges from 14.8 to 10.3 cents per bushel.

These costs of storage are summarized in Figure 7. The costs for bin storage are estimated at 14.8 to 10.3 cents per year plus 2.25 cents per month for interest cost. Elevator storage costs 3.75 cents per bushel per month.

A comparison of benefits to costs shown in Figure 7 indicates that storage has been profitable over the last 17 years if sale is made during the

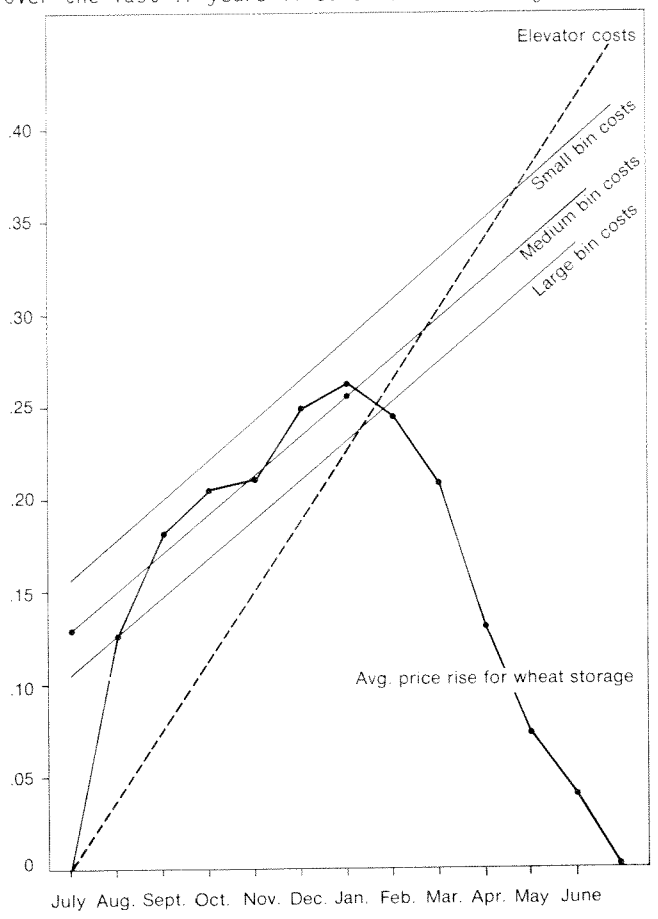


Figure 7. Average Price Rise for Storage of Colorado Wheat and Cost for Elevator and Bin Storage.

Table 8. Typical Construction Costs for Grain Storage Bins of Varying Size.

| | Size of bin | | | | |
|---|---|---|---|---|---|
| Size - diameter X height, ft. | 21 X 22 | 27 X 26 | 36 X 40 | 48 X 40 | 72 X 51 |
| Capacity, bu. | 6,530 | 12,698 | 35,029 | 63,793 | 185,820 |
| Investment costs, $ | | | | | |
| Bin price - F.O.B. | 3,001 | 5,100 | 14,219 | 22,243 | 62,895 |
| Auger | 600 | 700 | 800 | 900 | 1,000 |
| Ladder and rails | 420 | 699 | 1,185 | 1,297 | 1,580 |
| Transportation | 64 | 116 | 230 | 400 | 1,340 |
| Concrete | 750 | 1,000 | 3,000 | 4,950 | 12,500 |
| Installation | 980 | 1,525 | 3,500 | 5,100 | 11,520 |
| Total investment cost, $ | 5,815 | 9,140 | 22,934 | 34,890 | 90,835 |
| Investment cost/bu. | 89.1 | 72.0 | 65.5 | 54.7 | 48.9 |

SOURCE: Dirksen, Inc., 2114 I-25 Frontage Road, Erie, Colorado, using steel bins.

Table 9. Annual Costs for Wheat Storage with Ownership of Grain Storage Bins of Varying Sizes.

| Capacity, bu. | 6,530 | 12,698 | 35,029 | 63,793 | 185,820 |
|---|---|---|---|---|---|
| Annual costs/bu., ¢ | | | | | |
| Interest and depreciation[1] | 9.76 | 7.89 | 7.18 | 5.99 | 5.36 |
| Labor[2] | .76 | .71 | .68 | .68 | .67 |
| Transport to bin[3] | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Shrink[4] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| Total annual costs/bu., ¢ | 14.77 | 12.85 | 12.14 | 10.92 | 10.28 |

[1]Annual interest and principal payment over 20 years assuming no salvage value for bin in 20 years.
[2]Labor for loading and unloading bin with 450 bu./hr. @ $3 plus two hours labor per bin for cleanup.
[3]Five-mile haul with 450 bu. truck @ $1 per mile.
[4]One percent shrink with $3/bu. wheat.

right months. With elevator storage, a profit is earned for storage until January, but the maximum profit is earned in September. Because of lower monthly variable costs for bin storage, the maximem profit month is December. Smaller bins are not profitable at any time, whereas a large bin with lower costs is profitable from September through January. These results suggest that storage until March or April should be avoided.

Wheat storage returns are highly variable. As shown in Table 7, storage has been profitable during the 1969 to 1976 period. Actually, only 1972-73 and later years have been profitable. Prior to 1972, wheat storage seldom paid the costs of storage. However, because of government programs during the period, it paid farmers to store wheat. Since stocks have been at low levels since 1972, it appears that wheat storage is profitable when stocks are low. When stocks rise, storage should be avoided. Of course, government programs and stocks from 1964 to 1972 largely caused this low return to storage.

The variability of returns is shown in Figure 8. Prices that changed from the previous month are plotted for recent years. Note that price increases predominate during the months of August and September. Price decreases are most common during the months February, March, April and May. The conclusion is to hold wheat through September and sell before February for maximum price.

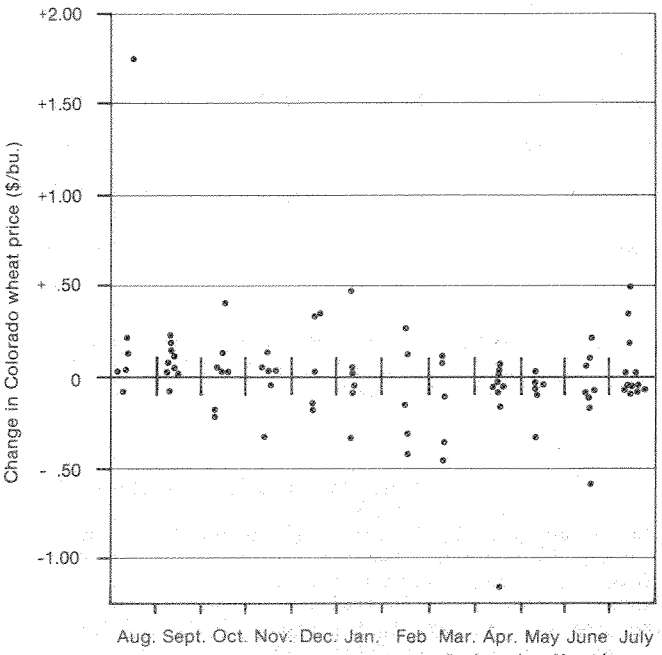

Figure 8. Change in Colorado Wheat Price by Month for 1959 Through 1976.

## Wheat Protein Premiums

The value of wheat is determined partly by milling and baking qualities. Higher wheat protein levels give better baking quality with improved loaf volume. High protein wheat has traditionally received premium prices. What premium level should be expected? Can Colorado producers profitably market high protein wheat?

The average protein premium during the past 17 years has been about 15 cents per bushel for 13 percent protein wheat over ordinary (11.5 percent) protein wheat in Kansas City. A complete listing of protein premiums by month is shown in Appendix Table 2. Protein premiums typically averaged less than 20 cents prior to 1974. During the 1974-75 crop year, the premium averaged 46 cents per bushel and the premium averaged 41 cents during the 1975-76 crop year.

High protein wheat must be segregated from ordinary protein wheat. If mixed with ordinary protein wheat, the extra value is lost. Therefore, separate and usually farmer-owned storage facilities must be available. In addition, these storage bins should be of small size. Even the 6,530 bushel bin of Tables 8 and 9 will hold the crop of 260 acres if the yield is 25 bushels per acre. Therefore, the higher costs of small bins must be paid. However, the returns to storage of high protein wheat include the normal price rise for storage plus the protein premium.

These returns and costs for storage of high protein wheat are shown in Table 10. Protein premiums are normally highest at harvest time when segregation of wheat is difficult and are lowest from January to May. Highest total returns are about 40 cents per bushel. When storage costs are subtracted, the greatest profit is earned for sales during August through January.

Table 10. Estimated Returns and Costs for Storage of High Protein Wheat in Colorado for 17-Year Average Prices.

| Month | Returns (cents/bu.) Storage | Protein[1] | Total | Storage costs[2] | Overall profit |
|---|---|---|---|---|---|
| July | 0 | 17.6 | 17.6 | 14.8 | 2.8 |
| Aug. | 12.5 | 16.4 | 28.9 | 17.1 | 11.8 |
| Sept. | 18.1 | 15.8 | 33.9 | 19.3 | 14.6 |
| Oct. | 20.6 | 16.2 | 36.8 | 21.6 | 15.2 |
| Nov. | 21.5 | 15.4 | 36.9 | 23.8 | 13.1 |
| Dec. | 25.1 | 15.1 | 40.2 | 26.1 | 14.1 |
| Jan. | 26.3 | 13.8 | 40.1 | 28.3 | 11.8 |
| Feb. | 24.6 | 12.7 | 37.3 | 30.6 | 6.7 |
| March | 20.9 | 13.4 | 34.3 | 32.8 | 1.5 |
| April | 12.9 | 13.6 | 26.3 | 35.1 | -8.8 |
| May | 7.5 | 13.7 | 21.2 | 37.3 | -16.1 |
| June | 4.1 | 17.8 | 21.9 | 39.6 | -17.7 |

[1]Monthly protein premiums are shown in Appendix Table 2.
[2]Cost of storage and interest for a small (6,530 bu.) bin.

A problem is determining whether your wheat has high protein. Once the wheat is in storage, a sample can be analyzed by laboratories to determine the percentage of protein. However, an estimated protein level is needed prior to storage so that low protein wheat is not stored in smaller, high-cost bins. Agronomists indicate that protein levels are influenced by (1) nitrogen fertilization, (2) yield level, and (3) variety of wheat. However, the relationships between protein levels and these three factors are highly variable due to weather factors.

As nitrogen fertilization increases, protein levels of wheat grain rise also. Several agronomic trials previously conducted in Montana and Kansas indicate that wheat grown without fertilization has protein levels of 11 to 13 percent. Protein levels rise to as high as 13.5 to 15.5 percent with fertilization of 180 pounds per acre. These relationships are shown in Figure 9. As yearly rainfall increases, yields will rise and wheat protein percentages fall. Within the band shown in Figure 9, the upper portion of the band is to be expected if rainfall levels are low and the lower portion is to be expected if rainfall levels are high.

For Colorado conditions, low yields tend to raise protein levels. This relationship is shown in Figure 10 for the Lindon variety in Five Colorado locations during 1975. If a field has a low yield, then the wheat from this field should be stored for possible protein premiums and wheat from higher yielding fields should be sold at harvest.

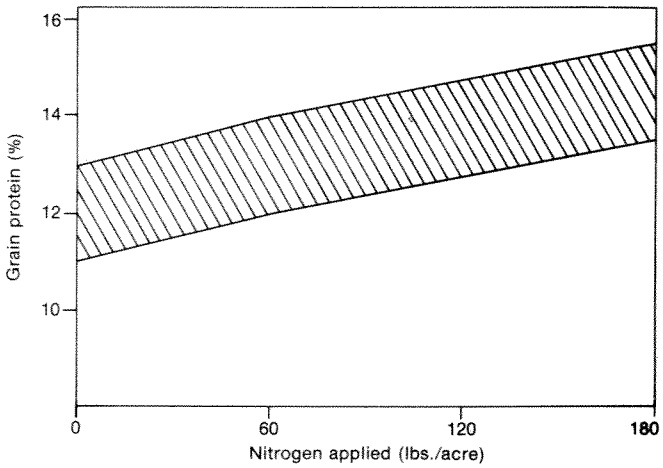


Figure 9. Wheat Protein Percentages as Related to Nitrogen Fertilization.

SOURCES: Irrigated Winter Wheat in Western Kansas and Montana Wheat Quality--Fertilizer Relationships.

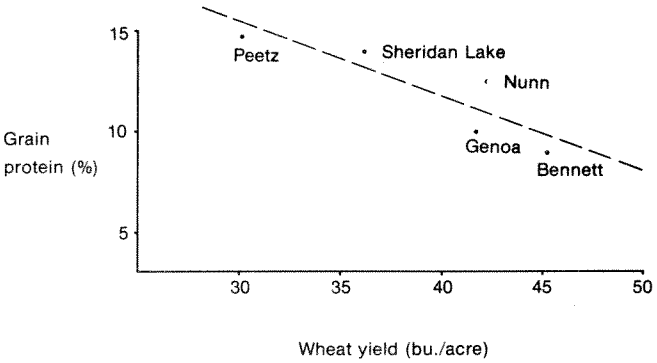


Figure 10. Relationship Between Yield and Protein Percentage for Lindon Variety Winter Wheat in Five Colorado Locations in 1975.

SOURCE: Data supplied by Dr. James Welsh, Department of Agronomy, Colorado State University.

The variety of wheat planted also influences protein content. Varieties such as Scout 66 or Lindon contain good protein levels. Several newer varieties; such as Lancota, were genetically developed for even higher protein. Many of the new higher yielding varieties have reduced protein. It seems that higher yields can be obtained by sacrificing protein levels. This tradeoff is illustrated for several varieties in Colorado during 1975 in Figure 11. Note that higher yield generally results in reduced protein. Should a high protein wheat be grown? As an example, Lindon and Lancota are compared. Lindon yields 42 bushels per acre. At $3 per bushel for ordinary protein, it gives revenue equal to $126 per acre. Lancota yields 39 bushels. Dividing the $126 by 39 bushels gives a break-even price for high protein wheat of $3.23 per bushel. Therefore, if a $.23 or greater protein permium can be earned, Lancota is a higher revenue crop. A $.23 protein permium has not always been earned, but has been available during the last two crop years.

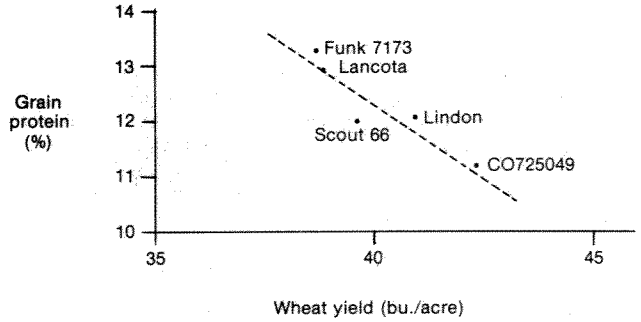


Figure 11. Relationship Between Dryland Wheat Yield and Protein Percentages for Selected Varieties in Colorado During 1975.

SOURCE: Data supplied by Dr. James Welsh, Department of Agronomy, Colorado State University.

Protein premiums offer potential for increased profits by Colorado wheat producers. Producers must be careful that costs for storage or fertilization do not exceed possible benefits.

## Feeding Wheat

At times, wheat prices can be attractive to the cattle feeders and a major shift of wheat to livestock feeding can occur. The primary use of wheat for livestock feed is by cattle in feedlot operations. As an example of the potential importance of livestock feeding, during the market year of 1971, livestock consumed 31 percent of the wheat produced in Colorado. Wheat comprised about 20-25 percent of the total concentrates fed in Colorado feedlots in 1971.

Wheat is a relatively good feed for cattle. Wheat energy values are only slightly below those of corn, but wheat protein averages perhaps 3.5 percent greater than corn. Therefore, wheat fed in a beef ration can replace both a part of the concentrate and a portion of the protein supplement. In wheat feeding trials in Kansas, the relative value of wheat depended upon the proportion of wheat in the ration. Their recommendation is to limit wheat to 50 percent of the ration. Similar results have been obtained by Matsushima and Truax in Colorado.

The Kansas results indicate that a pound of wheat will replace 1.17 pounds of concentrate such as corn. Or if protein is to remain constant, a pound of wheat will replace 1.04 pounds of corn and 0.13 pounds of 41 percent protein supplement, such as cottonseed meal. A bushel of wheat will replace 1.11 bushels of corn and 7.8 pounds of cottonseed meal. Grain sorghum has lower energy so that one bushel of wheat will replace 66.3 pounds of sorghum and 8.1 pounds of cottonseed meal. For various prices of grain and protein, an equivalent feeding price for wheat is derived. These equivalent wheat feeding prices are shown in Table 11.

As an example, with corn at $2.50 per bushel and protein priced at $150 per ton, the feeding value of wheat equals $3.37 per bushel. It appears that the feeding value of wheat very often exceeds the wheat price so that feeding wheat is a profitable alternative.

Table 11. Relative Values of Wheat Grain for Beef Cattle Feeding with 50 Percent Wheat in Ration and Varying Corn, Sorghum and Protein Prices.

| Concentrate price/bu. | Price of 41% protein supplement $/ton | | | | |
|---|---|---|---|---|---|
| | $100 | $150 | $200 | $250 | $300 |
| Corn | | | | | |
| 1.50 | 2.06 | 2.26 | 2.45 | 2.65 | 2.84 |
| 2.00 | 2.62 | 2.81 | 3.01 | 3.20 | 3.40 |
| 2.50 | 3.18 | 3.37 | 3.57 | 3.76 | 3.95 |
| 3.00 | 3.73 | 3.93 | 4.12 | 4.32 | 4.51 |
| 3.50 | 4.29 | 4.48 | 4.68 | 4.87 | 5.07 |
| Grain sorghum | | | | | |
| 1.50 | 2.18 | 2.38 | 2.59 | 2.79 | 2.99 |
| 2.00 | 2.77 | 2.98 | 3.18 | 3.38 | 3.58 |
| 2.50 | 3.37 | 3.57 | 3.77 | 3.97 | 4.18 |
| 3.00 | 3.96 | 4.16 | 4.36 | 4.57 | 4.77 |
| 3.50 | 4.55 | 4.75 | 4.95 | 5.16 | 5.36 |

SOURCE: Adapted from Feeding Wheat to Beef Cattle.

If the price of wheat falls below its feeding value, wheat is gradually introduced into rations. As the divergence between feeding value and price widens, even greater wheat feeding occurs. This relationship is shown for recent Colorado wheat feeding in Figure 12. During 1969 and 1970, feeders were uncertain as to the feasibility of wheat feeding. Feeding of wheat shifted higher in 1971 and 1972 as wheat feeding became more widespread.

## Direct Marketing

Larger wheat producers are capable of receiving higher prices by bypassing local middlemen and selling directly to centralized markets such as Kansas City. The direct marketing alternative requires that producers incur lower costs than the handling charges of local elevator operators.

The first requirement for analyzing direct marketing is the determination of the handling charges. Assume that your wheat is being shipped by rail to Kansas City. First, subtract the rail shipping rate from the Kansas City price to determine the net Colorado price. Secondly, subtract the price being paid to the producer. The ramainder is the current handling margin. As an example, in February 1976:

| | |
|---|---|
| Kansas City price | $3.81 |
| Less: rail rate | .50 |
| Less:. Colorado price | 3.21 |
| Equals: handling margin | $ .10/bushel |

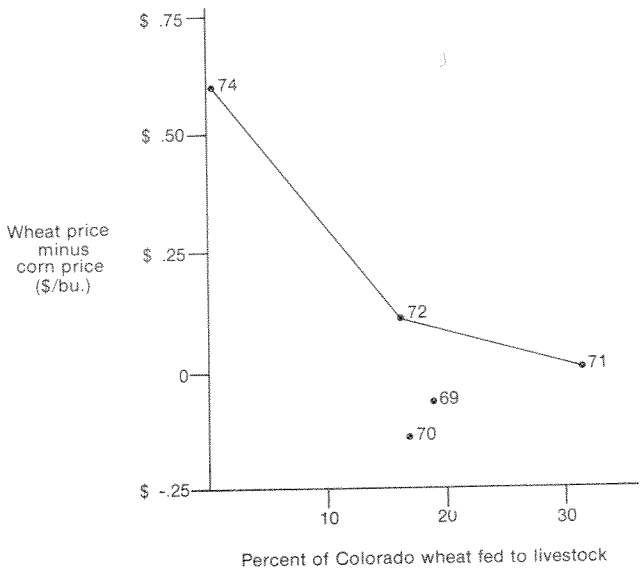


Figure 12. Relationship Between Wheat Feeding in Colorado and the Wheat Price - Corn Price Differentials in Recent Years.

This margin should normally be $.15 to $.20 per bushel or less.

The computed handling margin is avoided if the producer markets direct. However, numerous costs are incurred in direct marketing. An elevator incurs costs of perhaps $.05 to $.10 per bushel simply to receive wheat by trucks and load out by rail. In addition, the elevator must often finance the sale from the time the producer is paid until the load reaches Kansas City and the payment is delivered. Risks of price decline, wheat loss during shipment, and grading at lower than expected levels are incurred.

These costs are sufficient that most producers should employ local middlemen unless the handling margin exceeds $.15 to $.20 per bushel. The Kansas City price minus Colorado farm price is shown in Appendix Table 3. Note that the margin often is close to the $.50 rail rate. The margin is higher at harvest time when most producers have inadequate labor for direct marketing. The margin was also higher during September 1973 to February 1974 when rail car shortages prevailed and direct marketing was complicated.

Producers often have surplus labor and equipment during winter months that could be used for direct marketing of wheat. Can farmers profitably haul their crops to Kansas City with their own trucks? Assuming a 1000-mile round trip distance, a farm truck hauling 350 bushels incurs a total cost of about $.70 per mile. Therefore, a $700 cost for 350 bushels equals $2 per bushel. This is far too high.

Perhaps the costs are less than $.70 per mile. Many farm trucks are inadequately utilized and only additional fuel, oil, tires, and maintenance costs are relevant since the trucks are already owned. These costs can be as low as $.15 per mile or $.43 per bushel. A semitrailer costs perhaps $.40 to $.50 per mile for a per-bushel cost of $.46 to $.58 per bushel. These lower costs allow a potential profit by direct marketing and truck shipment to Kansas City.

Future Market Hedging

Futures markets can be employed by producers to predetermine the price of wheat prior to delivery. Futures markets available to Colorado wheat producers include the Chicago Board of Trade and the Kansas City Board of Trade. The Kansas City market is recommended for Colorado since actual delivery of wheat is then possible.

Assume that you have wheat in storage following harvest. Because of income tax difficulties, you will not sell the crop until January. However, the current price is adequate and you want to guard against a price decline. By contacting a commodity broker, you can agree to sell your wheat at a predetermined price on a future date.

You do not actually have to deliver wheat to Kansas City. By "buying back" your original agreement to sell, the futures market commitment is ended. You are then free to sell your wheat on the local cash market. Price protection has been gained, however. Futures prices and cash prices for grain maintain similar prices so that if cash prices increase, futures prices increase by nearly the same amount. If cash prices fall during the storage period, you lose money on your cash wheat. However, the futures price declines by a similar amount so that when you "buy back" the futures contract, the price is lower than the original sale and an offsetting profit is earned. The overall result is that the original futures price has been guaranteed for the wheat sale.

A major advantage of hedging wheat is that a price rise due to storage can be "locked-in." The June 1976 situation is used as an example. The Kansas City futures price for July 1976 delivery is $3.80½ per bushel. By subtracting the $.50 per bushel rail rate and perhaps $.20 handling charges, the net Colorado cash price for July is $3.10½. However, the December delivery date has a price of $3.96½. The corresponding Colorado price is $3.26½. By contracting for December delivery, a storage return of $.16 per bushel is guaranteed. Of course, this guaranteed return is below the average cash price rise and the total costs of storage. Each producer must determine whether a low guaranteed return is better or worse than a higher average return that varies.

## IV. Marketing Issues for the United States

Many marketing decisions affecting wheat prices are not made by farmers, but are imposed by government or other business. In this chapter, five issues are analyzed. These issues are the setting of rail freight rates, overall wheat price differences by location, exportation restrictions, bread prices, and the maintenance of stocks and reserves.

Freight Rates

Freight rates are now the largest single component affecting the price the farmer receives. Wheat farmers, as well as other commodity producers, bear the cost of transportation to terminal markets. The price of grain at farm levels in Colorado is determined and reflected by terminal market prices less transportation and handling costs from county of origin to the terminal market. Thus the wheat farmer, while not actually paying the freight bill, does bear the cost of transportation to the terminal market.

Wheat farmers in Colorado have been put into a position of transportation disadvantage in recent years because "across the board" increases allowed to railroads by the Interstate Commerce Commission (see Table 12). Since 1971, when the cost of shipping a hundredweight of wheat to the west coast for export was 77½ cents, there have been over 12 general freight rate increases. The rate in October 1975 was $1.24 per hundredweight or $.74 per bushel. Table 13 shows the typical rail costs of putting a bushel of wheat into Colorado's three most important terminal markets.

Railroads dominate the outflow of Colorado wheat by moving 83 percent of the shipments as compared to 17 percent moved by trucks. Table 14 indicates the trands that have taken place since 1961.

Table 12. Freight Rate Increases. Denver - West Coast Export.

| Effective date | % of increase | Export trans-continental wheat | Export trans-continental corn |
|---|---|---|---|
| | | ¢/cwt. | ¢/cwt. |
| Base rate | | 77½ | 92½ |
| Oct. 23, 1972 | 3 | 80 | 95½ |
| Aug. 19, 1973 | 3 | 82½ | 98½ |
| Oct. 1, 1973 | 1.9 | 84 | 100 |
| Jan. 1, 1974 | 2.6 | 85 | 101 |
| Feb. 22, 1974 | 10[1] | 91 | -- |
| March 9, 1974 | 4 | 94½ | 105 |
| June 5, 1974 | 3.3 | 97½ | 108½ |
| June 20, 1974 | 10 | 107½ | 119½ |
| April 27, 1975 | 7 | -- | 128 |
| June 17, 1975 | 7 | 115 | -- |
| June 20, 1975 | 5 | 121 | 134½ |
| Oct. 11, 1975 | 2½ | 124 | 138 |

[1]Maximum of 6¢ per cwt. limitation.

## Price Differences by Location

Prices of wheat are low in Colorado relative to prices the consumer pays. After wheat leaves a Colorado farm, each level of the distribution raises the price to cover costs of handling and transportation. As an example, during January 1976, the Colorado price of wheat was $3.07 per bushel and the Rotterdam, Netherlands, price was $4.57 per bushel. This total price difference was $1.50 per bushel or 50 percent of the Colorado price. This total margin is divided into $.50 for movement to Kansas City, an additional $.34 for movement to a Gulf port, and finally $.66 for ocean shipping to Rotterdam. These price differences over a period are shown in Appendix Table 3.

Price differences between Colorado and Rotterdam have varied from $.41 to $2.03 per bushel during the four years analyzed. The Kansas City to Gulf margin has been relatively stable. However, the Colorado to Kansas City price difference has fluctuated widely. The rail equipment shortage during 1973 and 1974 was likely responsible for higher margins. Similarly, the Gulf to Rotterdam price difference rose as international wheat export expanded. Ocean shipping rates have varied from $.50 per bushel during 1973 down to $.13 per bushel during July to September of 1975.

Since about two-thirds of Colorado wheat is exported, the price of wheat in foreign countries less transportation and handling charges determines the Colorado price. Producers should monitor these price spreads to ensure that handling charges are competitive and that government regulated transportation rates are reasonable and fair.

## Stocks and Reserves

Wheat markets have recently been disturbed with unstable prices and low reserve stocks. Unstable prices are costly for both producers and consumers as adjustments are forced. With low reserve stocks, consumers are particularly concerned about shortages in case of a disaster. If the United States is to continue as the dominant wheat exporter, many argue that sufficient stocks must be maintained so that importers are assured sufficient supplies.

If U.S. stocks are insufficient, these diverse goals of stable prices, disaster protection, and export maintenance conflict. An example of conflict occurred in October 1974. Wheat and corn sales to the Soviet Union were suspended to evaluate the domestic stocks impact. Exports were sacrificed to guarantee sufficient supplies for domestic consumers.

Several major problems arise in implementing a reserve policy. First, who will control the stocks: producers, consumers, or the government? Secondly, who will pay the costs of storage for reserves? If the U.S. government regulates stocks with export regulations as in October 1974, the producers pay all costs via depressed wheat prices. If producers are to voluntarily store wheat from one marketing year to another, the costs of storage must be paid by wheat price increases. Costs of one year of storage, as shown in Figure 7, range from about $.35 to $.45 per bushel. Seldom does the wheat price increase over a one-year period to pay these costs. Therefore, producers will not store excessive levels of reserve stocks.

Table 13. Colorado Rail Freight Rates.*

| | R.R. | Wheat to Denver | Corn, milo, wheat to Kansas City | Export wheat to Pacific NW | Export wheat to California ports | Export wheat to Gulf-transit[a] |
|---|---|---|---|---|---|---|
| | | (¢) | (¢) | (¢) | (¢) | (¢) |
| Julesburg | UP | 19.8 | 44.4 | 74[a] | | 76 |
| Holyoke | BN | 20.4 | 44.4 | 88[a]<br>74[b] | | 76 |
| Wiley | ATSF | 39.9 | 48.6 | 88[a] | 70[a] | 68 |
| Burlington | RI | 23.7 | 44.4 | 90[c]<br>74[d] | | 74 |
| Cheyenne Wells | UP | 23.7 | 49.8 | 74[a] | | 76 |
| Holly | ATSF | 41.1 | 44.4 | 88[a] | 70[a] | 62 |
| Fleming | BN | 20.4 | 49.8 | 88[a]<br>74[b] | | 82 |
| Haxtun | BN | 20.4 | 48.6 | 88[a]<br>74[b] | | 79 |
| Towner | MP | 41.1 | 44.4 | 92[a] | 70[a] | 64 |

*Rates per bushel at ex parte 313 level of October 1975.
[a]Transit rate - allows a shipper to stop shipment prior to destination for processing or sale with reshipment to original destination at the same rate.
[b]Non-transit rate.
[c]Railroad equipment.
[d]Shipper-owned equipment.

Table 14. Percent of Colorado Wheat Moved by Rail and Truck.

| Year | Rail | Truck |
|---|---|---|
| 1961/62 | 75% | 25% |
| 1969/70 | 60% | 40% |
| 1971/72 | 44% | 56% |
| 1973/74 | 77% | 23% |
| 1974/75 | 83% | 17% |

Obviously, wheat consuming groups benefit most from assumed supplies. It can then be expected that consumer representatives, including domestic wheat millers and foreign government buyers, will buy sufficient wheat in advance to reasonably stabilize prices and assure supplies. As an example, the Japanese government should be willing to buy and store reserve stocks of wheat to guarantee their access to supply. Storage could be purchased here in U.S. production areas. In this manner, the costs of reserve maintenance are shifted to the primary beneficiaries. In addition, costly government reserve programs are avoided and stocks are maintained at moderate levels.

Producers have traditionally disliked excessive reserves. Whenever stocks are high, prices are depressed. Prices rise only when stocks are depleted. The relationship between ending stocks of wheat and the season is average U.S. price received by farmers is shown in Figure 13. Inflation has seriously distorted prices in recent years. Therefore, the actual wheat price has been divided by the consumer price index to obtain a deflated price. As an example, the 1966-70 average price of $1.97 is deflated to $1.87. The 1975 price of $4.09 is deflated to $2.54. The relative price increased only 36 percent with costs increasing 53 percent. The analysis shown in Figure 13 shows dramatically why producers oppose excessive stocks and reserves. The 1972-73 price was lower than expected in Figure 13 due to the large Russian wheat sale of 400 million bushels which greatly reduced stocks. The price had not yet responded to the lower stocks level.

## Export Restrictions

Exports are a critical factor in U.S. grain markets. The 1972 sale of wheat to Russia led to favorable wheat prices in following years. Currently, the United States supplies 40 to 50 percent of the wheat involved in international trade. Wheat exports during the crop year 1974-75 amounted to $5 billion. These exports are critically important to the balance

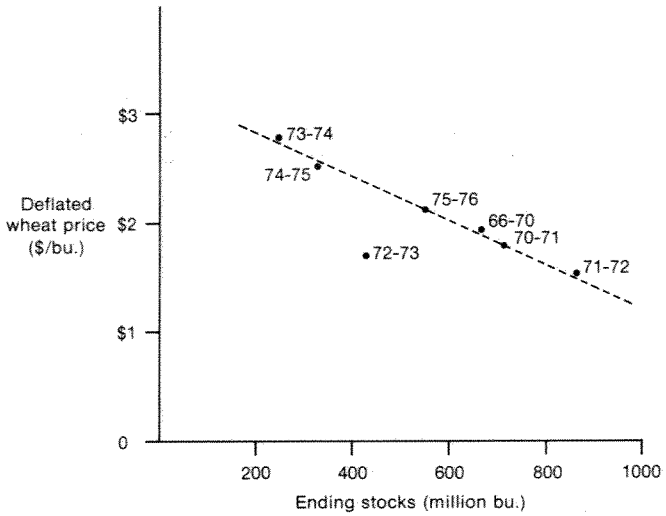


Figure 13. Relationship Between U.S. Ending Wheat Stocks and the Deflated Season Average Wheat Price, by Crop Year.

of payments situation resulting from purchases of foreign petroleum and durable products.

Export restrictions prior to June 1973 were nonexistent. Exporters were simply required to file a monthly report indicating actual shipments already made. An additional delay of perhaps 45 days was incurred prior to public release. As a result of protein product shortages, the first export restriction was imposed on soybeans and cottonseed in July 1973. A license approved by the Commerce Department was needed to export these products. In addition, a weekly reporting system for new sales was started. In October 1974, the White House temporarily suspended a grain sale made to the Soviet Union and also instituted a voluntary system for obtaining advance USDA approval for export sales. Exporters were asked to make sales "subject to USDA approval."

One positive result of these export restrictions is that the Soviet Union signed a five-year grain purchase agreement with the United States to begin in October 1976. Previous Russian wheat purchases have been erratic and have disturbed wheat markets unnecessarily. They have now agreed to purchase a minimum of 200 million bushels of wheat and corn each year. Purchases of more than 270 million bushels would need approval during periodic consultations. The agreement should stabilize U.S. exports and eliminate problems resulting from erratic purchases.

Wheat prices are highly affected by the level of exports. Perhaps the major effect of exports is reduced stocks with stocks then influencing price as shown in Figure 13. In a recent study by Brandow, the effect of Russian wheat sales during 1975 is evaluated. If sales of wheat and corn increase by 10 million tons (about 340 million bushels), then the following impacts are estimated to occur:

1. Farm prices of wheat and feed grains increase by 10 to 12 percent.

2. Ending stocks of wheat decrease by six percent, and feed grain stocks decrease by 22 percent.

3. Realized net farm income increases by 10 percent.

4. Retail food prices increase by one percent.

Increased exports have a major impact on the farm sector. Export restrictions have an immediate and drastic impact on farm income and prices.

Bread Prices

Flour is the major ingredient in bread. Less than one pound of wheat costing only about $.05 is needed to produce a one-pound loaf of bread. Why, then, is the retail price of bread $.35 per pound or seven times the cost of wheat?

Marketing margins account for the difference between retail price and the farm value of flour, shortening, and sugar. Recent bread prices and marketing margin spreads are shown in Figure 14. Note that retail bread prices have increased substantially since 1972.

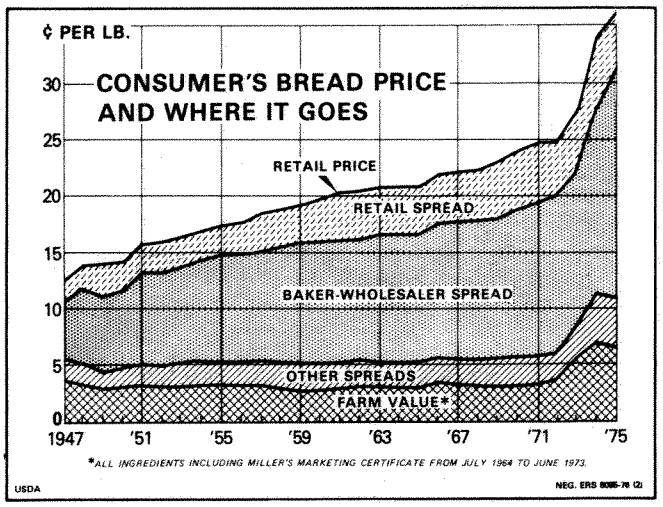


Figure 14.

SOURCE: Developments in Marketing Spreads for Agricultural Products in 1975.

A complete breakdown of the marketing margin during 1974 is shown in Table 15. The margin is subdivided by marketing level, by marketing function, and by cost item. Major cost items are for wholesaling and for labor cost. The farm cost of ingredients averaged $.086 per loaf in 1974. Therefore, the farmers share of the $.345 retail value is only 30 percent.

Wheat producers should be aware of marketing margins for their products. Since the consumer pays retail prices, margins directly affect consumer costs. It is consumer pressures arising from high retail prices that have caused political decisions to limit wheat exports. Therefore, if marketing margins are kept within reasonable limits, consumers can enjoy moderate prices at the same time that farm prices are adequate.

Table 15. Distribution of the Marketing Spread for One-Pound Loaf of White Bread in 1974.

| | Cost $/loaf | % of total spread |
|---|---|---|
| Total marketing spread | .265 | 100 |
| By marketing level | | |
| Retail | .058 | 22 |
| Baker-wholesale | .171 | 64 |
| Miller | .010 | 4 |
| Other spreads | .026 | 10 |
| By marketing function | | |
| Assembly and procurement | .006 | 2 |
| Processing | .099 | 37 |
| Intercity transportation | .004 | 2 |
| Wholesaling | .098 | 37 |
| Retailing | .058 | 22 |
| By cost item | | |
| Labor | .140 | 53 |
| Packaging | .020 | 8 |
| Transportation | .003 | 1 |
| Business taxes | .004 | 2 |
| Depreciation | .007 | 3 |
| Rent | .002 | 1 |
| Repairs | .002 | 1 |
| Advertising | .009 | 3 |
| Interest | .002 | 1 |
| Energy | .003 | 1 |
| Other | .052 | 20 |
| Profit | .021 | 8 |

SOURCE: Developments In Marketing Spreads for Agricultural Products in 1975.

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# A P P E N D I X

APPENDIX TABLE 1. COLORADO MONTHLY AVERAGE WHEAT PRICE FOR 1959 to 1976

CROP YEAR - DOLLARS PER BUSHEL

| MONTH | 1959-60 | 1960-61 | 1961-62 | 1962-63 | 1963-64 | 1964-65 | 1965-66 | 1966-67 | 1967-68 | 1968-69 | 1969-70 | 1970-71 | 1971-72 | 1972-73 | 1973-74 | 1974-75 | 1975-76 | Monthly Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| July | 1.60 | 1.59 | 1.66 | 1.88 | 1.75 | 1.27 | 1.29 | 1.66 | 1.35 | 1.10 | 1.06 | 1.09 | 1.20 | 1.22 | 2.27 | 3.73 | 3.12 | 1.70 |
| Aug | 1.64 | 1.60 | 1.72 | 1.90 | 1.75 | 1.27 | 1.27 | 1.67 | 1.28 | 1.07 | 1.06 | 1.09 | 1.18 | 1.37 | 4.05 | 3.72 | 3.33 | 1.82 |
| Sept | 1.67 | 1.64 | 1.73 | 1.92 | 1.78 | 1.30 | 1.30 | 1.68 | 1.21 | 1.07 | 1.11 | 1.21 | 1.16 | 1.61 | 4.20 | 3.80 | 3.52 | 1.88 |
| Oct | 1.68 | 1.65 | 1.73 | 1.91 | 1.84 | 1.32 | 1.32 | 1.47 | 1.26 | 1.10 | 1.15 | 1.22 | 1.19 | 1.75 | 4.01 | 4.22 | 3.52 | 1.90 |
| Nov | 1.69 | 1.68 | 1.76 | 1.93 | 1.87 | 1.35 | 1.35 | 1.54 | 1.23 | 1.15 | 1.17 | 1.24 | 1.20 | 1.79 | 3.97 | 4.37 | 3.21 | 1.91 |
| Dec | 1.72 | 1.68 | 1.79 | 1.94 | 1.87 | 1.36 | 1.38 | 1.59 | 1.24 | 1.12 | 1.19 | 1.23 | 1.22 | 2.16 | 4.35 | 4.20 | 3.07 | 1.94 |
| Jan | 1.71 | 1.70 | 1.76 | 1.94 | 1.91 | 1.34 | 1.34 | 1.53 | 1.26 | 1.13 | 1.20 | 1.25 | 1.21 | 2.25 | 4.83 | 3.88 | 3.07 | 1.96 |
| Feb | 1.74 | 1.71 | 1.77 | 1.97 | 1.91 | 1.34 | 1.36 | 1.40 | 1.29 | 1.15 | 1.18 | 1.24 | 1.21 | 1.84 | 5.12 | 3.58 | 3.21 | 1.94 |
| Mar | 1.77 | 1.71 | 1.78 | 1.98 | 1.81 | 1.31 | 1.38 | 1.51 | 1.30 | 1.15 | 1.15 | 1.24 | 1.22 | 1.94 | 4.67 | 3.23 | 3.25 | 1.91 |
| Apr | 1.74 | 1.67 | 1.80 | 2.03 | 1.89 | 1.29 | 1.34 | 1.47 | 1.22 | 1.14 | 1.18 | 1.22 | 1.24 | 1.98 | 3.50 | 3.22 | 3.11 | 1.83 |
| May | 1.69 | 1.66 | 1.83 | 1.96 | 1.86 | 1.27 | 1.38 | 1.50 | 1.25 | 1.13 | 1.15 | 1.23 | 1.20 | 2.00 | 3.10 | 2.90 | 3.01 | 1.77 |
| June | 1.63 | 1.66 | 1.84 | 1.80 | 1.28 | 1.26 | 1.47 | 1.40 | 1.17 | 1.12 | 1.13 | 1.26 | 1.20 | 2.23 | 3.22 | 2.77 | (3.10) | 1.73 |
| Yearly Average | 1.69 | 1.66 | 1.76 | 1.93 | 1.65 | 1.31 | 1.35 | 1.54 | 1.26 | 1.12 | 1.14 | 1.21 | 1.20 | 1.85 | 3.94 | 3.64 | 3.21 | 1.86 |

Source: Colorado Crop and Livestock Reporting Service, Colorado Agricultural Statistics.

APPENDIX TABLE 2. PROTEIN PRICE PREMIUMS
FOR 13 PERCENT PROTEIN WHEAT OVER ORDINARY
WHEAT IN KANSAS CITY BY MONTHS

CROP YEAR - CENTS PER BUSHEL

| MONTH | 1959-60 | 1960-61 | 1961-62 | 1962-63 | 1963-64 | 1964-65 | 1965-66 | 1966-67 | 1967-68 | 1968-69 | 1969-70 | 1970-71 | 1971-72 | 1972-73 | 1973-74 | 1974-75 | 1975-76 | MONTHLY AVERAGE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| July | 15 | 13 | 21 | 17 | 11 | 7 | 18 | 11 | 4 | 11 | 32 | 17 | 5 | 10 | 16 | 42 | 49 | 17.6 |
| Aug | 14 | 11 | 30 | 23 | 9 | 7 | 17 | 8 | 4 | 14 | 30 | 18 | 5 | 8 | 7 | 41 | 33 | 16.4 |
| Sept | 15 | 12 | 18 | 21 | 12 | 6 | 17 | 5 | 4 | 19 | 27 | 15 | 5 | 5 | 3 | 50 | 34 | 15.8 |
| Oct | 12 | 13 | 17 | 20 | 20 | 3 | 19 | 5 | 4 | 19 | 27 | 12 | 6 | 6 | 3 | 53 | 37 | 16.2 |
| Nov | 10 | 11 | 16 | 20 | 18 | 4 | 16 | 4 | 3 | 20 | 25 | 13 | 6 | 5 | 0 | 48 | 42 | 15.4 |
| Dec | 10 | 11 | 17 | 18 | 7 | 4 | 14 | 3 | 2 | 21 | 26 | 16 | 7 | 3 | 1 | 49 | 47 | 15.1 |
| Jan | 8 | 8 | 17 | 18 | 5 | 4 | 8 | 3 | 2 | 20 | 26 | 16 | 6 | 1 | 0 | 49 | 43 | 13.8 |
| Feb | 6 | 8 | 18 | 18 | 5 | 5 | 8 | 2 | 1 | 18 | 18 | 14 | 7 | 1 | 4 | 38 | 45 | 12.7 |
| Mar | 5 | 9 | 16 | 17 | 6 | 5 | 10 | 2 | 2 | 20 | 16 | 15 | 9 | 3 | 12 | 39 | 42 | 13.4 |
| Apr | 6 | 11 | 16 1/ | 11 | 4 | 4 | 11 | 2 | 3 | 20 | 18 | 12 | 8 | 4 | 17 | 41 | 43 | 13.6 |
| May | 9 | 11 | 16 | 12 | 4 | 6 | 11 | 5 | 3 | 18 | 16 | 8 | 7 | 6 | 17 | 43 | (40) | 13.7 |
| June | 10 | 14 | 15 | 12 | 5 | 10 | 11 | 5 | 9 | 22 | 19 | 10 | 9 | 11 | 42 | 58 | (40) | 17.8 |
| YEARLY AVERAGE | 10 | 11 | 17 | 17 | 7 | 5 | 13 | 5 | 3 | 19 | 23 | 14 | 6 | 5 | 10 | 46 | 41 | 15.1 |

1/ Number 2 wheat prior, Number 1 wheat now and after

Source: USDA, Wheat Situation.

APPENDIX TABLE 3. DIFFERENCES BETWEEN COLORADO, KANSAS CITY, GULF PORTS, AND ROTTERDAM IN EUROPE FOR UNITED STATES HARD RED WINTER WHEAT BY MONTH

| Month and Year | PRICES | | | | PRICE DIFFERENCES | | | |
|---|---|---|---|---|---|---|---|---|
| | Colorado | Kansas City | Gulf Ports | Rotterdam | Rotterdam - Colorado | Kansas City - Colorado | Gulf Ports - Kansas City | Rotterdam - Gulf Ports |
| 1972 | | | | | | | | |
| July | 1.22 | 1.58 | 1.76 | 1.76 | .54 | .36 | .18 | 0 |
| Aug | 1.37 | 1.82 | 2.05 | 1.78 | .41 | .45 | .23 | -.27 |
| Sept | 1.61 | 2.10 | 2.32 | 2.27 | .66 | .49 | .22 | -.05 |
| Oct | 1.75 | 2.15 | 2.38 | 2.54 | .79 | .40 | .23 | .16 |
| Nov | 1.79 | 2.25 | 2.46 | 2.53 | .74 | .46 | .21 | .07 |
| Dec | 2.16 | 2.62 | 2.83 | 2.97 | .81 | .46 | .21 | .14 |
| 1973 | | | | | | | | |
| Jan | 2.25 | 2.67 | 2.93 | 2.98 | .73 | .42 | .26 | .05 |
| Feb | 1.84 | 2.48 | 2.69 | 2.67 | .83 | .64 | .21 | -.02 |
| Mar | 1.94 | 2.42 | 2.67 | 2.67 | .73 | .48 | .25 | 0 |
| Apr | 1.98 | 2.51 | 2.74 | 2.79 | .81 | .53 | .23 | .05 |
| May | 2.00 | 2.63 | 2.83 | 3.09 | 1.09 | .63 | .20 | .26 |
| June | 2.23 | 2.69 | 2.94 | 3.52 | 1.29 | .46 | .25 | .58 |
| July | 2.27 | 2.90 | 3.20 | 3.97 | 1.70 | .63 | .30 | .77 |
| Aug | 4.05 | 4.67 | 4.93 | 5.24 | 1.19 | .62 | .26 | .31 |
| Sept | 4.20 | 5.01 | 5.24 | 5.48 | 1.28 | .81 | .23 | .24 |
| Oct | 4.01 | 4.67 | 4.89 | 5.27 | 1.26 | .66 | .22 | .38 |
| Nov | 3.97 | 4.78 | 4.95 | 5.45 | 1.48 | .81 | .17 | .50 |
| Dec | 4.35 | 5.22 | 5.34 | 6.25 | 1.90 | .87 | .12 | .91 |
| 1974 | | | | | | | | |
| Jan | 4.83 | 5.68 | 5.88 | 6.26 | 1.43 | .85 | .20 | .38 |
| Feb | 5.12 | 5.82 | 6.03 | 6.32 | 1.20 | .70 | .21 | .29 |
| Mar | 4.67 | 5.01 | 5.29 | 6.12 | 1.45 | .34 | .28 | .83 |
| Apr | 3.50 | 4.07 | 4.30 | 5.00 | 1.50 | .57 | .23 | .70 |
| May | 3.10 | 3.59 | 3.82 | 4.64 | 1.54 | .49 | .23 | .82 |
| June | 3.22 | 4.05 | 4.28 | 4.82 1/ | 1.60 | .83 | .23 | .54 |
| July | 3.73 | 4.36 | 4.60 | 5.19 | 1.46 | .63 | .24 | .59 |
| Aug | 3.72 | 4.33 | 4.56 | 5.28 | 1.56 | .61 | .23 | .72 |
| Sept | 3.80 | 4.35 | 4.64 | 5.54 | 1.74 | .55 | .29 | .90 |
| Oct | 4.22 | 4.94 | 5.23 | 6.25 | 2.03 | .72 | .29 | 1.02 |
| Nov | 4.37 | 4.88 | 5.11 | 6.23 | 1.86 | .51 | .23 | 1.12 |
| Dec | 4.20 | 4.66 | 5.06 | 5.97 | 1.77 | .46 | .40 | .91 |
| 1975 | | | | | | | | |
| Jan | 3.88 | 4.15 | 4.47 | 5.30 | 1.42 | .27 | .32 | .83 |
| Feb | 3.58 | 3.93 | 4.17 | 4.88 | 1.30 | .35 | .24 | .71 |
| Mar | 3.23 | 3.69 | 4.00 | 4.53 | 1.30 | .46 | .31 | .53 |
| Apr | 3.22 | 3.66 | 3.90 | 4.54 | 1.32 | .44 | .24 | .64 |
| May | 2.90 | 3.34 | 3.59 | 3.98 | 1.08 | .44 | .25 | .39 |
| June | 2.77 | 3.23 | 3.46 | 4.00 | 1.23 | .46 | .23 | .54 |
| July | 3.12 | 3.61 | 3.95 | 4.70 | 1.58 | .49 | .34 | .75 |
| Aug | 3.33 | 4.12 | 4.43 | 5.13 | 1.80 | .79 | .31 | .70 |
| Sept | 3.52 | 4.21 | 4.50 | 5.30 | 1.78 | .69 | .29 | .80 |
| Oct | 3.52 | 4.09 | 4.39 | 5.14 | 1.62 | .57 | .30 | .75 |
| Nov | 3.21 | 3.71 | 4.00 | 4.78 | 1.57 | .50 | .29 | .78 |
| Dec | 3.07 | 3.50 | 3.88 | 4.56 | 1.43 | .43 | .38 | .68 |
| 1976 | | | | | | | | |
| Jan | 3.07 | 3.57 | 3.91 | 4.57 | 1.50 | .50 | .34 | .66 |
| Feb | 3.21 | 3.81 | 4.16 | 4.82 | 1.61 | .60 | .35 | .66 |
| Mar | 3.25 | 3.81 | 4.15 | 4.98 | 1.73 | .56 | .34 | .83 |
| Apr | 3.11 | 3.61 | 3.96 | 4.74 | 1.63 | .50 | .35 | .78 |

1/ Beginning in June 1974, price quote in Rotterdam is for 13.5 percent protein. Prior to June 1974, price is for 12 percent protein wheat.

Source: USDA, Wheat Situation and Colorado Crop and Livestock Reporting Service, Colorado Agricultural Statistics.