

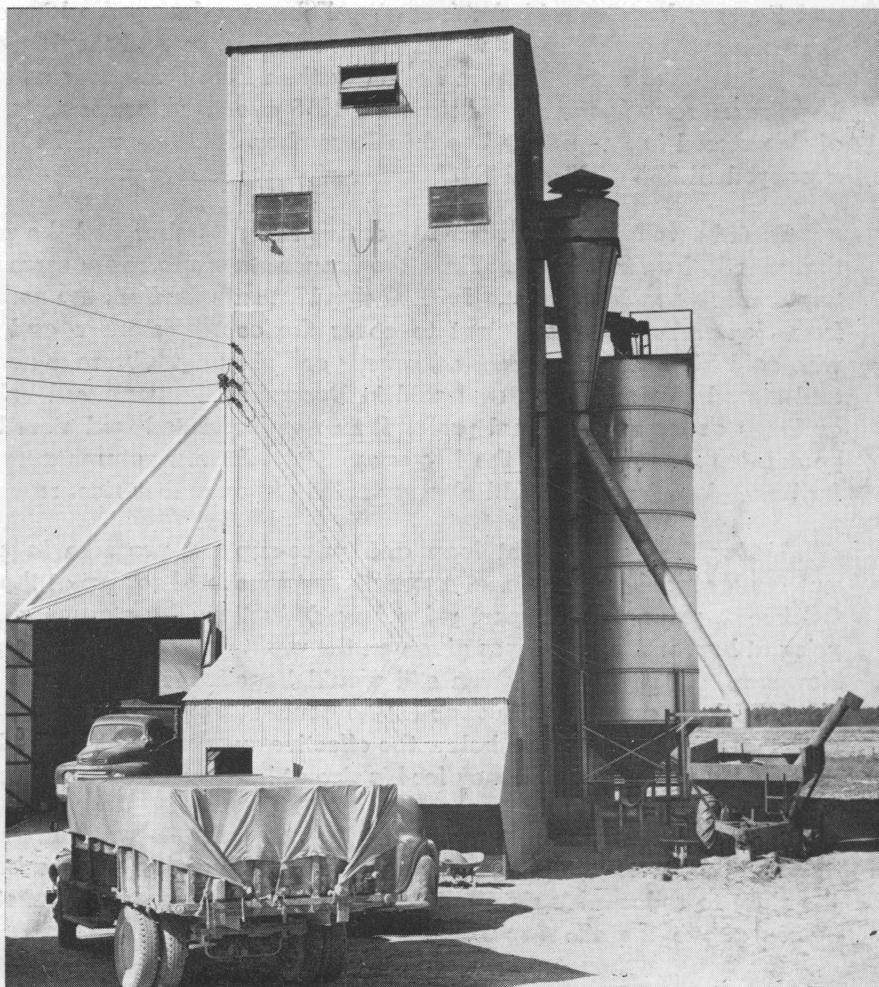
A. J. Egan



• Seasonal Price Change and • Commercial Storage Costs • of Rice

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TEXAS AGRICULTURAL EXPERIMENT STATION

R. D. LEWIS, DIRECTOR, COLLEGE STATION, TEXAS

SUMMARY

This study was made to determine whether the seasonal behavior of the market price for rice provides farmers a profit from storing rice in commercial elevators and selling it later rather than at harvest.

When the farmer's only alternative is to sell rice on the market, either at harvest or later, he can profit from storage if the later price is sufficiently above the price at harvest to more than cover the cost of storing and handling until the sale is made. However, the farmer still would need to know when to sell to gain the greatest returns.

The farmer with rice harvested in August could have profited from storing instead of selling at the harvest market price in 8 years had he sold his rice the following December or January, and 7 years had he sold the following February during the 10 seasons 1945-46 through 1954-55. Even though partial losses would have occurred in 3 of the 10 years, his average annual gain would have been greater from February than from December and January sales. Based on the 10-year average farm price of rice and 1955 average storage costs, the net gain from 2,000 barrels of rice stored in August and sold in December, January and February over the 10-year period averaged \$1,024, \$930 and \$1,076 annually, respectively.

Peak harvest in Texas normally occurs in September and the market price normally is lower that month than in August. Thus, the farmer stands to make more from storing rice harvested in September than in August. In 9 of the 10 years studied, the seasonal increase in market price from September was sufficient to cover the cost of storage and return a profit to the farmer who sold his rice in December, January or February. Average annual profits from rice harvested and stored in September, and sold in December, January and February, were more than twice as large as average annual profits from rice harvested and stored in August and sold in those peak-price months during the 10-year period. Annual returns averaged \$2,250, \$2,170 and \$2,304 for December, January and February sales of September rice, respectively, on 2,000 barrels.

Under the government loan and price-support program in existence in recent years, the rice farmer has had additional alternatives to those of selling at the market price. If the effective CCC loan price (the support price less deductions for storage charges) is less than the market price at harvest, the analyses given on the profit gained from storing rice still would be applicable. However, the support program still would benefit the farmer who puts his rice in storage under the CCC loan agreement in that; (1) he could recoup some of the losses should the subsequent seasonal price of rice move below the effective support level, instead of up as is its normal pattern, and (2) he could obtain money for his rice at harvest to care for any pressing debts or financial needs he might have.

Should the effective support price be above the harvest market price, the farmer still retains the right to redeem his rice from storage and sell it on the market if the seasonal market price moves above the effective loan rate.

ACKNOWLEDGMENT

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Seasonal Price Change and Commercial Storage Costs of Rice

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THIS STUDY WAS MADE to determine, over a period of years, whether it would be better to sell rice when harvested or to store it for sale later.

The farmer who sells rice at harvest avoids further expense in its handling. Should he choose not to sell at harvest he must pay storage and handling costs until the rice is sold. Unless the seasonal price increase amounts to more than the cost of holding the rice, it does not pay the farmer to store.

Investigations were made of (1) the seasonal movement of the farm price for rice, (2) the cost to farmers of holding rice in commercial storage, (3) the relationship between the seasonal movement of price and the cost of commercial storage, and (4) other conditions bearing on whether to sell rice at harvest or to store for sale later.

SEASONAL MOVEMENT OF RICE PRICES

The seasonal movement of prices paid Texas rice farmers for the seasons 1945-46 through 1954-55 was analyzed. Price and production controls during World War II rendered the seasonal price changes of that period valueless for the purposes of this study. Pre-World War II price movements were likely affected by such conditions as to make them incomparable with the price changes of recent times. The immediate past appears a more reliable indicator of what may be expected in the immediate future.

Harvest of rice in the Gulf Coast area of Texas usually begins in August with peak harvesting in September or early October. In this study, the marketing season is taken as beginning in August, when the new crop generally first appears on the market. Reference to a particular season means from August of one year through July of the next year.

Price Movement

The solid heavy line in Figure 1 shows the average mid-month Texas farm price for rice from 1945-46 through 1954-55. The 10-year average September farm price was \$7.52 per barrel (162 pounds), the lowest monthly average. This reflects the heavy supply harvested and marketed in that month. Price generally strengthens in October and the following months until about mid-winter. The highest 10-year average

monthly price received by farmers for their rice was \$9.19 per barrel in February. The average February price was \$1.67 greater per barrel than the average September price during the 10-year period. Price of rice generally weakens in the spring and summer. This analysis suggests that the farmer who stores rice commercially should sell normally from storage sometime during the winter if seasonal price movements continue in the future as they have in the recent past.

There was some difference in the seasonal behavior of prices in the late Forties (1945-46 though 1949-50) in contrast with that in the early Fifties (1950-51 through 1954-55) as shown by the light, broken lines which depict the 5-year periods in Figure 1. Even though the 10-year average price is probably the most useful for predicting seasonal price change over the next few years, it is well to consider the seasonal price behavior of the two 5-year periods, and the conditions which likely account for this difference.

Average monthly prices in the late Forties tended to weaken in the winter, after a peak price in December, but strengthened in the summer following the spring decline. Prices in the early Fifties, however, continued to increase until February and showed a consistent decline through the summer. This difference reflects

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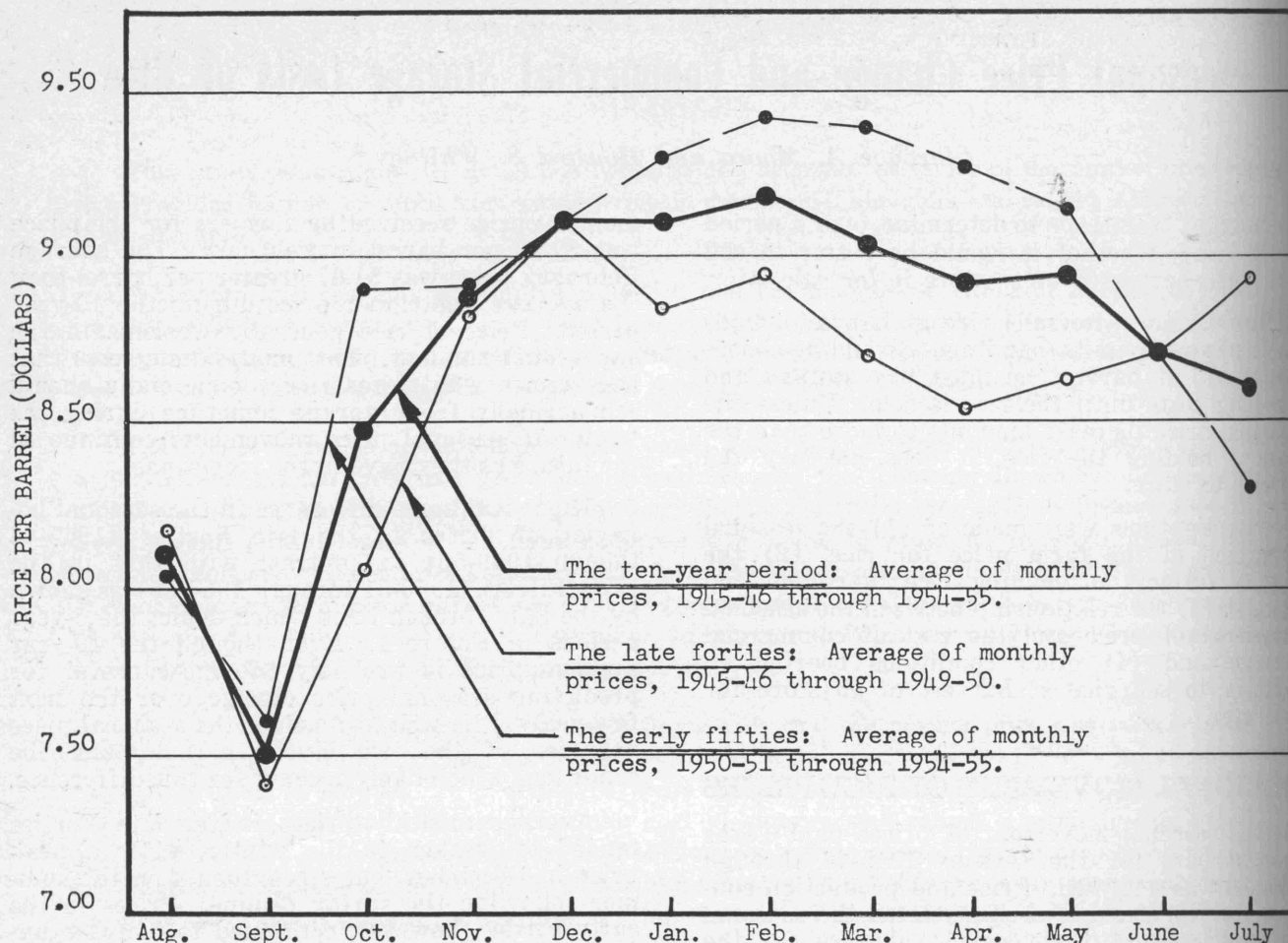


Figure 1. Seasonal price behavior of rice, Texas, 1945-55. Prices used in this bulletin are the mid-month Texas farm prices as reported by the Crop Reporting Service, U. S. Department of Agriculture.

different forces affecting the seasonal prices in the two periods. There is reason to suspect that the early Fifties will more nearly be consistent, and the Forties inconsistent, with conditions likely to prevail in the next few years.

Inadequate storage facilities available to farmers, and a strong demand measured against supply probably accounted for the December peak rather than a February peak in the late Forties. Rice mills likely bid strong for a good portion of their needs during and shortly following the harvest season. As storage facilities expanded, and as the supply of rice increased in the Fifties, there was less need for rice mills to follow this procedure.

Strengthening of prices in late spring and early summer in the Forties reflected a different demand-supply situation than that of the Fifties. Stocks of rice on hand near the end of the marketing season—prior to the new crop harvest—were relatively low in the Forties. Average stocks on hand at the time the new crop harvest began was almost three times greater in the Fifties than in the Forties. Although exports were greater in the Fifties than in the Forties, increased production more than offset increased exports. Pro-

duction minus exports was over a third higher in the early Fifties than in the late Forties.

In view of the relatively small carryovers of rice from one season to the next in the late Forties, buyers no doubt tended to "bid up" the price in late spring and early summer as stocks of rice become short. With increasing production and large carryovers of rice from one season to the next in the Fifties, there has been no necessity for buyers paying more in the summer to obtain the amounts they need. Ample stocks of rice on hand could be obtained at lower prices. Rice farmers have been in a weaker bargaining position when selling their rice just prior to the new crop harvest in recent years than in the Forties.

The 5-year period of the Forties was characterized by a relatively favorable demand to supply situation, and relatively low stocks available at the end of the marketing season. The 5-year period of the Fifties was characterized by relatively large supplies as measured against demand, and plentiful stocks on hand at the end of the marketing season. Since it is likely the large supplies of rice will continue to exist in the next few years,

TABLE 1. SEASONAL CHANGE IN RICE PRICE FROM AUGUST AND SEPTEMBER BY PERIODS, 1945-46 THROUGH 1954-55

Month	Difference between August and later prices			Difference between September and later prices		
	First 5-year period ¹	Second 5-year period ²	10-year period ³	First 5-year period ¹	Second 5-year period ²	10-year period ³
	Dollars					
Sept.	-.77	-.44	-.60			
Oct.	-.13	.86	.37	.64	1.30	.97
Nov.	.64	.89	.77	1.41	1.33	1.37
Dec.	.93	1.09	1.01	1.70	1.53	1.61
Jan.	.68	1.31	1.00	1.45	1.75	1.60
Feb.	.77	1.38	1.07	1.54	1.82	1.67
March	.52	1.35	.93	1.29	1.79	1.57
April	.39	1.25	.82	1.16	1.69	1.46
May	.46	1.21	.84	1.23	1.65	1.48
June	.55	.67	.61	1.32	1.11	1.25
July	.76	.28	.52	1.53	.72	1.16
Aug.				1.18	.12	.66

¹Later Forties: 1945-46 season through the 1949-50 season.

²Early Fifties: 1950-51 season through the 1954-55 season.

³10-year period: 1945-46 season through the 1954-55 season.

the seasonal behavior of rice prices in the Fifties are more nearly what can be expected to prevail than those of the Forties. However, with acreage control and the Soil Bank program in effect, "over-supply" may not be as acute in the future as in the last five years. This leads to the conclusion that the 10-year average seasonal price behavior is probably the most reliable indicator of what may be expected the next few years, since it reflects a more conservative "up and down" movement of seasonal prices than in the early Fifties.

There is a possibility that some years hence demand-supply conditions may become similar to those of the late Forties. Should this occur, the price behavior of the late Forties may be a reliable basis of predicting seasonal price change at that time.

TABLE 2. AVERAGE MONTHLY PRICES AND RANGES BETWEEN LOW AND HIGH MONTHLY PRICES PER BARREL OF RICE BY PERIODS, 1945-46 THROUGH 1954-55

Item	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July
	Dollars per barrel											
10-year period ¹												
Average price	8.12	7.52	8.49	8.89	9.13	9.12	9.19	9.05	8.94	8.96	8.73	8.64
Range: High	9.72	8.75	9.76	10.80	11.52	11.88	12.24	11.88	11.88	12.24	12.60	12.42
Low	5.87	5.91	7.02	7.02	6.95	6.70	6.59	6.91	6.77	6.66	6.48	6.48
Absolute range	3.85	2.84	2.74	3.78	4.57	5.18	5.65	4.97	5.11	5.58	6.12	5.94
Late Forties ²												
Average price	8.19	7.42	8.06	8.83	9.12	8.87	8.96	8.71	8.58	8.65	8.74	8.95
Range: High	9.72	8.75	9.76	10.80	11.52	11.88	12.24	11.88	11.88	12.24	12.60	12.42
Low	5.87	6.55	7.02	7.02	6.95	6.70	6.59	6.91	6.77	6.66	6.66	6.84
Absolute range	3.85	2.20	2.74	3.78	4.75	5.18	5.65	4.97	5.11	5.58	5.94	5.58
Early Fifties ³												
Average price	8.05	7.61	8.91	8.94	9.14	9.36	9.43	9.40	9.30	9.26	8.72	8.33
Range: High	8.91	8.75	9.72	10.21	10.53	10.85	11.02	11.50	11.50	11.50	11.18	9.72
Low	6.72	5.91	8.10	7.78	7.94	7.94	7.78	7.78	7.78	7.77	6.48	6.48
Absolute range	2.19	2.84	1.62	2.43	2.59	2.91	3.24	3.72	3.72	3.73	4.70	3.24

¹1945-46 through 1954-55.

²1945-46 through 1949-50.

³1950-51 through 1954-55.

Price Margins

The difference between the average August price and subsequent monthly prices and between the average September price and subsequent monthly prices are shown in Table 1. The average September price for the 10-year period was 60 cents less per barrel than the average August price as shown in column 3. However, prices generally strengthened after September and the average February price was \$1.07 per barrel greater than the average August price. A breakdown by 5-year periods, columns 1 and 2, shows the average of December prices, the peak, in the late Forties as 93 cents above the average August price, and the average of February prices, the peak, in the early Fifties as \$1.38 above the average August price.

Since September prices normally are the seasonal low prices, the difference between September and subsequent monthly prices are greater than the difference between August and subsequent monthly prices. Column 6 of Table 1 shows that the average of the peak February prices was \$1.67 per barrel greater than the average of the previous September prices over the 10-year period.

The analysis indicates that the farmer stands to gain more on rice harvested in September and stored for future sale than on rice harvested in August and stored.

Deviations from Average Prices

Individual monthly prices, from which the averages for several seasons were computed, varied widely. Table 2 shows the range of prices above and below the average.

The 10-year average September price was \$7.52 per barrel as shown in column 2. However, the highest September price during the 10-year period was \$8.75 and the lowest September price

was \$5.91 per barrel. Thus, individual September prices varied from \$1.61 below the average to \$1.23 above it, or a range of \$2.84. The range of prices around the average for other months was even greater than for September. The range was \$5.65 between the low and high February prices for the 10-year period.

Generally there has been less variation of monthly prices around the average in the Fifties than in the Forties. The range between the low and high August price was \$3.85 during the late Forties, but only \$2.19 during the Fifties. The range was \$5.65 between the low and high February prices during the late Forties, but only \$3.24 during the Fifties. The only exception was in September prices, where the range between the low and high price was \$2.84 in the Fifties but only \$2.20 in the Forties.

This analysis indicates the economic benefits that may be gained by consistent action over a period of several years, while recognizing that the gains may be at the expense of partial losses in any one year.

COST OF STORAGE AND HANDLING

Facilities for storing rice are provided by business firms organized for that purpose so that rice may be handled and sold more efficiently throughout the marketing season.

Considerable expense is involved in providing storage facilities. Initial investments are substantial, and day-by-day operating expenses occur in protecting and handling rice while it is in storage. Therefore, storage space is provided the farmer at a cost.

Charging Practices

No uniform rate is charged by all elevators and warehouses for storing rice. The charge varies from one plant to another in different parts of the rice producing area. Some elevators have a flat charge per barrel stored. The charge may be 50 cents per barrel regardless of whether the rice remained in storage only 1 or as much as 10 months. Others have an accumulative rate, charging a minimum amount the first month, and an additional amount for each subsequent month. Normally, such firms have a maximum charge which, when reached, prevails regardless of the length of time the rice remains in storage within a particular marketing season.

The basic storage charge in some plants includes the cost of providing such items as insurance, receiving, turning, fumigating and selling. Other elevators include such services at an additional cost to the farmer.

Charges sometimes depend on whether the rice is stored in sacks or in bulk. Handling is more inconvenient, and the elevator's operation costs are greater, when rice is stored in sacks. As a

result, some elevators charge the farmer more if his rice is stored in sacks. Most of the present analysis is based on the charge for bulk storage, since most rice for commercial use is stored in bulk, and the trend is toward bulk and away from sack storage.

Costs for Bulk Storage

An analysis of storage charges in effect in 1955 was made on data from 26 elevators and warehouses that stored rice for farmers. All charges for storing and handling while in storage were included.

The charge for bulk storage by the elevators that charged the same for bulk and sack storage were included. Had those elevators charged different rates based on the comparative costs of handling bulk and sack rice in storage, their charge for bulk storage probably would have been less than that reported. Therefore, the average charge for bulk storage used in this study may be somewhat higher than would have been the case had sack storage costs not influenced the bulk storage charges.

Average total charges of the 26 firms increased from 34.3 cents per barrel for the first month of storage to 61.5 cents per barrel for the eleventh month of storage, Table 3.

To eliminate extremely low or extremely high charges reported by a few firms, where errors in reporting may have been a factor, the three lowest and the three highest charges each month were excluded to obtain a range from low to high of individual charges by elevators and warehouses in the area. These data are given in columns 2 and 3 of Table 3. The lowest individual charge of elevators in this group increased from 20 cents per barrel for the first month to 42 cents for the fifth through the eleventh month of storage.

TABLE 3. COMMERCIAL CHARGES FOR STORING FARMER'S RICE IN THE GULF COAST AREA OF TEXAS, 1955

Months in storage	Average charge per barrel ¹	Range in charges per barrel ²	
		Lowest	Highest
		Cents	
1	34.3	20.0	54.0
2	44.4	32.0	60.5
3	49.0	37.0	60.5
4	51.5	40.0	63.5
5	52.7	42.0	64.0
6	53.3	42.0	66.8
7	56.8	42.0	69.5
8	58.6	42.0	74.0
9	59.6	42.0	76.0
10	60.7	42.0	78.0
11	61.5	42.0	80.5

¹Average of total storage charges by 26 elevators and warehouses reporting their schedule of charges in 1955.

²Range reported includes only 20 firms, or 77 percent of those reporting. The three lowest charges and the three highest charges each month were excluded in view of the possibility of error in reporting.

TABLE 4. TIMES THE STORAGE OF RICE HARVESTED IN AUGUST AND SEPTEMBER WAS PROFITABLE OR UNPROFITABLE BY PERIODS FROM 1945-46 THROUGH 1954-55¹

Month	Stored in August						Stored in September						
	Late Forties ²		Early Fifties ³		10-year period ⁴		Late Forties ²		Early Fifties ³		10-year period ⁴		
	Profit-able	Unprofit-able	Profit-able	Unprofit-able	Profit-able	Unprofit-able	Profit-able	Unprofit-able	Profit-able	Unprofit-able	Profit-able	Unprofit-able	
September	1	4	0	5	1	9							
October	2	3	4	1	6	4	4	1	5	0	9	1	
November	3	2	4	1	7	3	5	0	5	0	10	0	
December	4	1	4	1	8	2	4	1	5	0	9	1	
January	3	2	5	0	8	2	4	1	5	0	9	1	
February	3	2	4	1	7	3	4	1	5	0	9	1	
March	3	2	3	2	6	4	3	2	5	0	8	2	
April	3	2	4	1	7	3	3	2	5	0	8	2	
May	3	2	4	1	7	3	3	2	4	1	7	3	
June	3	2	4	1	7	3	3	2	3	2	6	4	
July	3	2	4	1	7	3	4	1	3	2	7	3	

Data assumes the farmer's cost of storage was the average of charges by commercial elevators in 1955, given in Table 3, and that he would have received the mid-month Texas farm price during each of the years covered in the study.

¹1945-46 through 1949-50. ²1950-51 through 1954-55. ³1945-46 through 1954-55.

The highest individual charge increased from 54 cents to 80.5 cents per barrel from the first to the eleventh month of storage. Based on 1955 charges, few farmers would have paid less than the storage charge given in the low column or more than that given in the high column. The majority were charged somewhere between those extremes for storing their rice in bulk.

Most of the rice put in storage at harvest was moved from storage 4 to 6 months after harvest. Subsequent analysis suggests that this is the most appropriate time for sale to obtain maximum economic returns from storage. Therefore, the accumulated charges in the latter months given in Table 4 emphasize only that the farmer's cost of storage continues to increase

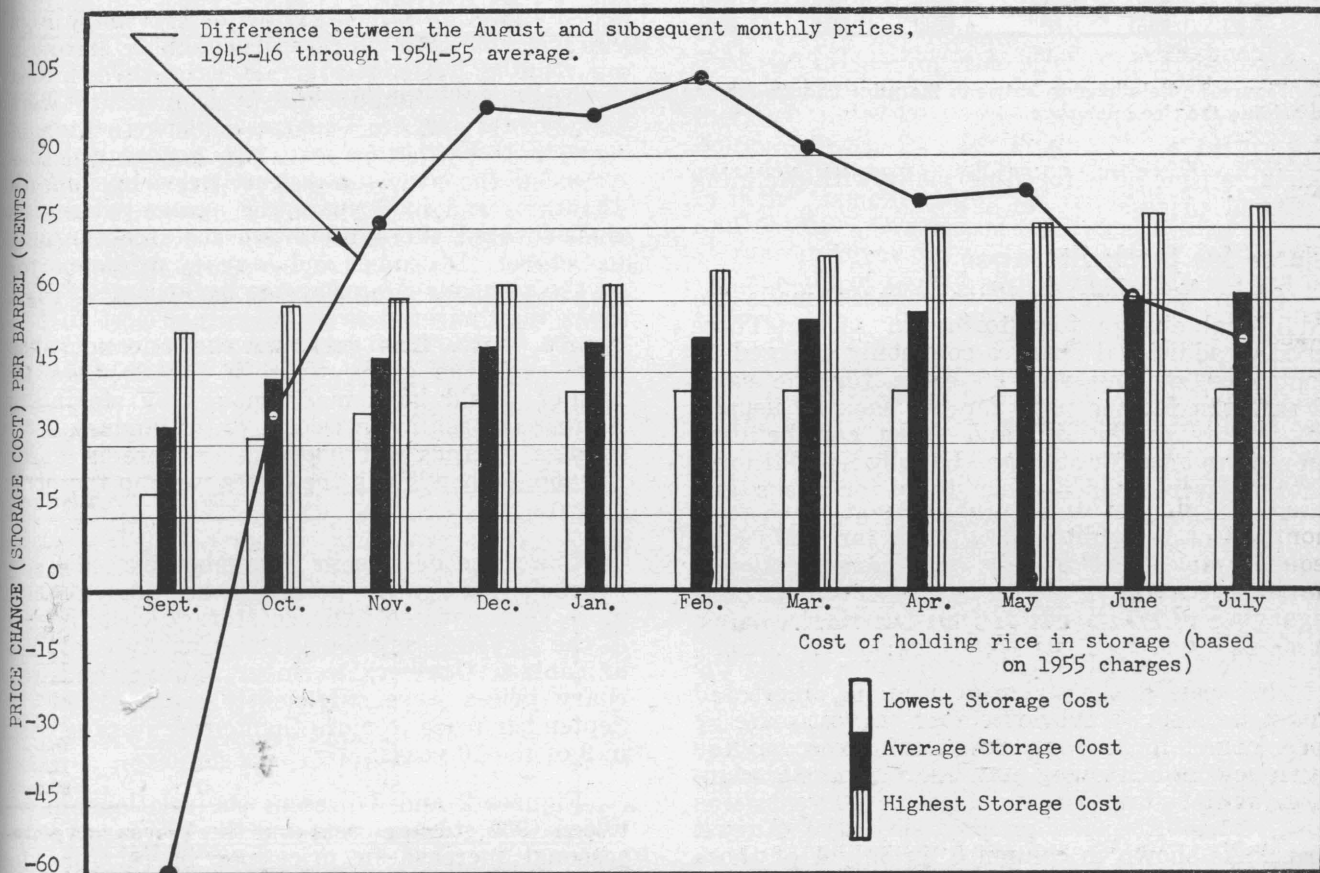


Figure 2. Relationship between the price change for rice from August to subsequent months and the accumulative cost of holding the rice in storage.

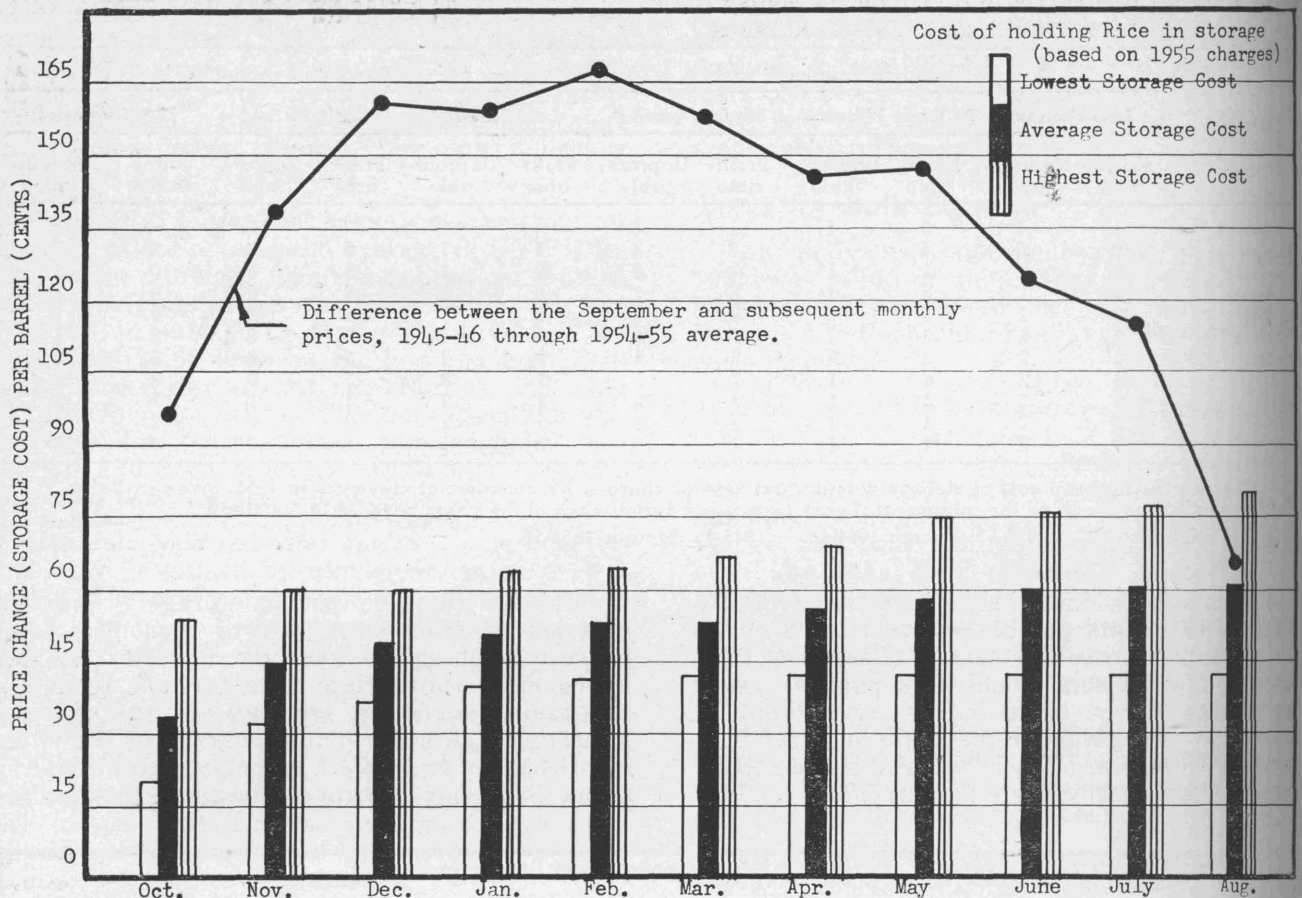


Figure 3. Relationship between the price change for rice from September to subsequent months and the accumulative cost of holding the rice in storage.

during a time he is faced normally with declining seasonal prices.

Costs for Sack Storage

Some elevators and warehouses made no additional charge for storing in sacks. Those making additional charges commonly charged 15 cents for sacking and 25 cents for the sack. Where the farmer pays for the sack he usually retains its ownership, and sacks can be used more than once for storage. Usually no additional charges were made—other than for sacks and sacking—for sack storage above the charges for bulk storage.

PROFITS FROM STORAGE

Table 4 shows the number of times during the 10-year period the price of rice has increased from the August and September harvest price by an amount more than sufficient to cover the average cost of storing and handling rice in commercial elevators. In only 4 of the 10 years was the September price greater than the August price. As shown in column 5, in only 1 of those years did the September price exceed the August price by an amount that would have covered the first month's storage cost. The October price

exceeded the previous August price in 8 of the 10 years, and in 6 years the excess price more than covered average storage cost from August to October. December and January prices exceeded the previous August price by an amount that more than covered average storage cost in 8 of the 10 years. The data, however, do not show how large the gains were in the 8 years the farmer would have made money by storing in August and selling in December or January if the storage charges did not exceed those in effect in 1955, or how much the losses were in the other 2 years.

The price of rice in November exceeded the previous September price by an amount that more than covered average storage cost in each of the 10 years, as shown in the last two columns of Table 4. October, December, January and February prices were sufficiently higher than the September price to more than cover storage costs in 9 of the 10 years.

Figures 2 and 3 present the relationship between 1955 storage costs and the 10-year average seasonal increase in price per barrel for rice harvested and stored in August and September, respectively. These charts show that, in the 10-year period studied, the farmer would have

profited by storing either his August or September rice in commercial elevators. The most profit could have been obtained by selling consistently in December, January or February. The height of the excess price line above the storage cost bar on the charts in any one month indicates the amount of gain possible under the conditions specified.

Returns on 2,000 Barrels of Rice

Table 5 gives an example of the financial results of storing rice for future sale over the 10-year period. Assuming the farmer's storage and handling cost was the average of commercial charges in 1955, and that prices he received for his rice were the monthly farm prices, columns 1, 2 and 3 show the gain or loss he would have incurred each year had he stored 2,000 barrels of rice harvested in August and sold the following December, January or February.

Losses would have been incurred in 3 of the 10 years had he sold in February, and in 2 of the 10 years had he sold in either December or January. However, the gains far exceed the losses over the 10-year period. Gains from February sales averaged \$1,076 annually, as compared with \$1,024 and \$930 for December and January sales, in spite of the 3 years of loss from February sales.

Similar data on results of storing 2,000 barrels of rice in September are given in columns 4, 5 and 6 of Table 5. Losses were incurred only in the 1945-46 season, and the largest loss was \$974 from rice sold in February. As was true of rice stored in August, the greatest gain from September storage over the entire period came from rice sold in February. Price increases from September to February were sufficient to cover storage

TABLE 5. GAINS AND LOSSES FROM DECEMBER, JANUARY AND FEBRUARY SALES OF 2,000 BARRELS OF RICE HARVESTED AND STORED IN AUGUST OR IN SEPTEMBER, 1945-46 THROUGH 1954-55¹

Season	Stored in August and sold in			Stored in September and sold in		
	Dec.	Jan.	Feb.	Dec.	Jan.	Feb.
	Dollars					
1945-46	1,130	606	374	- 180	- 730	- 974
1946-47	2,350	1,766	1,974	2,040	1,430	1,626
1947-48	2,570	3,236	3,974	4,560	5,230	5,926
1948-49	1,490	- 694	-1,146	5,500	3,290	2,826
1949-50	-3,410	-3,494	-2,866	240	130	746
1950-51	1,970	2,506	3,474	1,300	2,210	3,166
1951-52	=1,030	246	- 106	3,080	4,330	3,966
1952-53	2,210	2,826	3,154	2,580	3,170	3,486
1953-54	590	886	874	1,620	1,890	1,866
1954-55	2,370	1,386	1,054	1,760	750	406
Total	10,240	9,300	10,760	22,500	21,700	23,040
Average annual gain	1,024	930	1,076	2,250	2,170	2,304

¹Gains and losses computed for this table are based on the difference between seasonal price change for the years indicated and the average storage charge by commercial elevators and warehouses in 1955.



Figure 4. The principal rice-growing area of Texas, from the Louisiana line southeast along the Gulf Coast through Victoria county. The heavy black lines show the north and south boundaries of the rice area.

costs and leave an average annual gain of \$2,304. Gains from rice harvested and stored in September for winter sale was more than twice the gains from rice harvested and stored in August for winter sale.

Interest on Rice Held in Storage

Cost of storage and handling used in previous analyses did not include interest on the capital involved in holding the rice. For a good many farmers this may be important since a loan incurred to produce the rice crop may not be liquidated until its sale. If storage for future sale necessitates paying additional interest on debts, or if the farmer could invest ready cash at harvest and obtain a return on it, then putting rice in storage involves the additional cost of interest on the amount of money he has tied up in the stored rice.



Figure 5. Rice harvest is a busy time for farmers and commercial elevators. Most rice is harvested by combine, transferred from the combine bin to a truck and hauled directly to a local elevator for drying and storage.

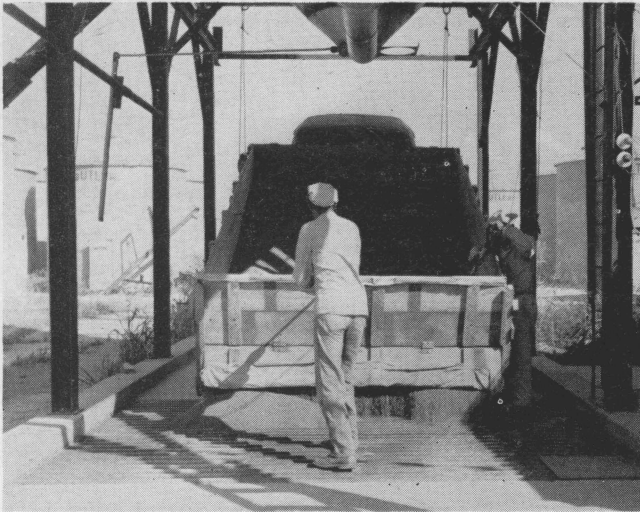


Figure 6. Most elevators are equipped so that rice can be received easily and conveniently and unloaded by hoisting the front end of trucks. Thus, the farmer's truck is released quickly of its load so that it may return to the farm for another. Delay in hauling may cause harvesting to come to a standstill.

At the 10-year average August price of \$8.12 per barrel, 2,000 barrels of rice would amount to \$16,240, and at the average September price of \$7.52 it would amount to \$15,040. This would be a sizable sum to have tied up for 4 to 6 months.

However, should interest be charged at the rate of 8 percent, the average annual returns from price increases shown in Table 5 would be more than ample to cover interest. It would reduce the average annual gain from rice stored in August by about \$433 if sold in December, \$541 if sold in January and \$650 if sold in February. Thus, the net return from rice storage, after interest is deducted, would be greater for December than for February sales.

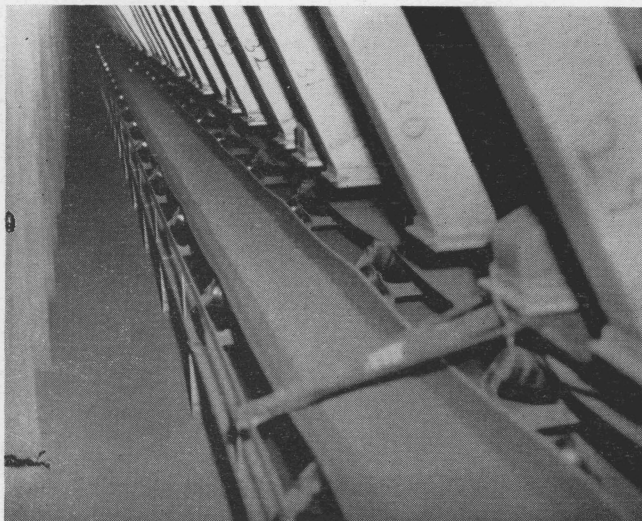


Figure 7. Belt (shown above) and auger are the two most important conveyor systems for moving rice in commercial elevators.

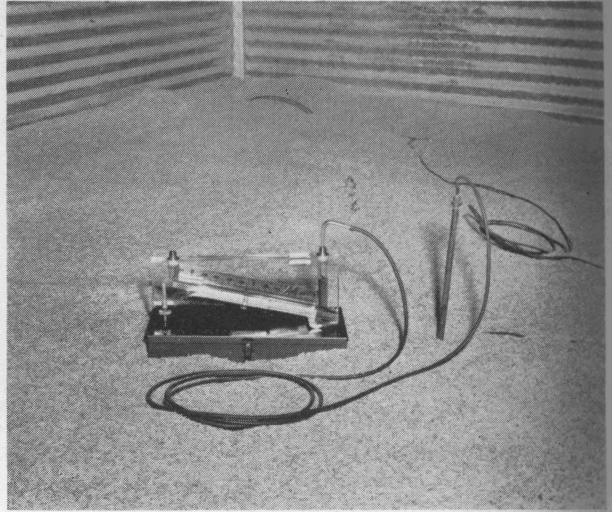


Figure 8. Handling and care of rice is more convenient when it is bulk stored in bins rather than in sacks. Commercial elevators in Texas store the farmer's rice on an "identity preserved" basis.

The interest cost would not be as large on rice stored from the September harvest. At 8 percent interest, the average annual gains shown in Table 5 would be reduced by about \$301 if sold in December, \$401 if sold in January and \$501 if sold in February. Again it would cause the net gain from storage, after interest is deducted, to be greater for December than for February sales.

OTHER CONSIDERATIONS

Numerous conditions affect the extent of the farmer's profits or losses from storing in any one year. Any condition that causes the cost of storage to be lower, or that causes the difference between the price at harvest and subsequent prices during the winter to be greater, would increase profits from storing rice. Conditions that increase the cost of storage, or decrease the



Figure 9. Adequate control of insects and proper handling of rice are necessary to guard against deterioration of quality while in storage. Elevators and warehouses are storing more and more rice in bulk and less in sacks.

difference in seasonal prices, would decrease the profits from storing.

Price Supports

The government's price support policies and activities cannot be ignored in a study of this kind. It may, in the future, be the most significant factor in a farmer's decisions as to the proper time and circumstance in which to sell rice.

The guaranteed government price program has provided the farmer with the following alternatives: (1) to sell his rice on the market at harvest; (2) to store his rice in commercial elevators at harvest for future sale on the market; (3) to store his rice under loan to the Commodity Credit Corporation, and either forfeit the rice to the CCC or redeem it before the date of forfeit and sell it on the market.

The farmer who is concerned primarily with obtaining the greatest income would sometime consider the first, but never the second, alternative listed. Number 1 would be considered as an alternative to storing rice only when the CCC loan price is below the harvest market price. And should his decision be to store the rice, he certainly would choose to store it under CCC loan rather than outside the loan. For should prices decrease after harvest and go below the loan level he could recoup some of the loss from storage by forfeiting to the CCC.

If the loan support price, after storage charges are deducted, is above the harvest market price the farmer cannot lose, and may possibly gain, by putting his rice in storage under loan to the government at harvest. He still has the choice of redeeming the rice to sell on the market before the forfeit date, or forfeiting it at that time. However, should the market price not move above the loan rate before forfeit date, it would pay to forfeit to the government. Should the market price move above the loan price sufficiently to justify redeeming the rice and selling it on the market, then the farmer must decide when it

likely will reach a peak in order to sell and obtain the greatest returns. Our analysis indicates that December, January and February usually is the peak in the seasonal movement of rice prices.

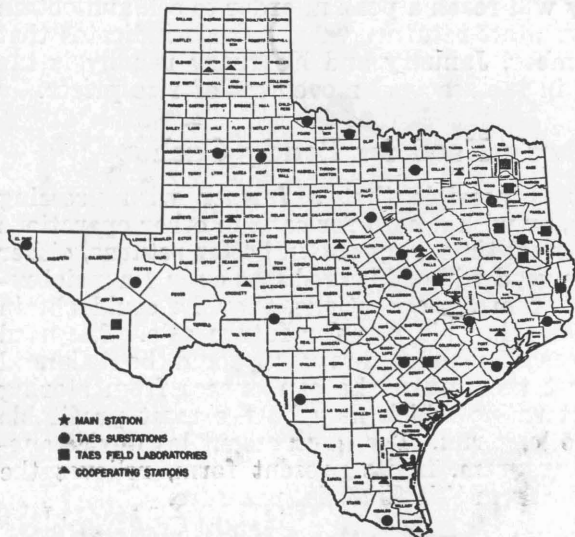
Farmer's Need for Ready Cash

It is possible that a farmer with pressing debts, or with a need for cash in other operations at harvest time, may obtain better returns, either in the good will of his creditors or in financial returns from his operations, than he could obtain from storing his rice for future sale. The need for ready cash at harvest should be balanced against the returns he can expect from storing to determine which may be the most profitable in the long run. The government loan-price support program, in its present form, relieves the farmer from this financial pressure.

Proportion Sold and Stored at Harvest

The size of the margin between the harvest market price and subsequent seasonal market prices is affected by the proportion of the total crop that is sold or stored at harvest. Prices later in the season will be lower, and prices at harvest higher, if greater amounts are stored, for this relieves the heavy harvest supply but increases the amount supplied later. Therefore, if a large proportion of the crop goes into storage, there will be lower margins between harvest and subsequent monthly prices, and a tendency toward less favorable possibilities of profit from storage. A lower proportion going into storage, with more sold at harvest, means lower harvest prices, higher prices later in the marketing season, greater margins between harvest and subsequent monthly prices and greater possibility of profit from storing.

It may pay the farmer to gather what information is available at harvest on the amounts of rice going into storage, and govern his action according to the likely consequence on subsequent monthly prices.



Location of field research units in Texas maintained by the Texas Agricultural Experiment Station and cooperating agencies

State-wide Research



The Texas Agricultural Experiment Station is the public agricultural research agency of the State of Texas, and is one of nine parts of the Texas A&M College System

IN THE MAIN STATION, with headquarters at College Station, are 16 subject-matter departments, 2 service departments, 3 regulatory services and the administrative staff. Located out in the major agricultural areas of Texas are 21 substations and 9 field laboratories. In addition, there are 14 cooperating stations owned by other agencies. Cooperating agencies include the Texas Forest Service, Game and Fish Commission of Texas, Texas Prison System, U. S. Department of Agriculture, University of Texas, Texas Technological College and the King Ranch. Some experiments are conducted on farms and ranches and in rural homes.

RESearch BY THE TEXAS STATION is organized by programs and projects. A program of research represents a coordinated effort to solve the many problems relating to a common objective or situation. A research project represents the procedures for attacking a specific problem within a program.

THE TEXAS STATION is conducting about 350 active research projects, grouped in 25 programs which include all phases of agriculture in Texas. Among these are: conservation and improvement of soil; conservation and use of water in agriculture; grasses and legumes for pastures, ranges, hay, conservation and improvement of soils; grain crops; cotton and other fiber crops; vegetable crops; citrus and other subtropical fruits; fruits and nuts; oil seed crops—other than cotton; ornamental plants—including turf; brush and weeds; insects; plant diseases; beef cattle; dairy cattle; sheep and goats; swine; chickens and turkeys; animal diseases and parasites; fish and game on farms and ranches; farm and ranch engineering; farm and ranch business; marketing agricultural products; rural home economics; and rural agricultural economics. Two additional programs are maintenance and upkeep, and central services.

RESearch RESULTS are carried to Texas farm and ranch owners and homemakers by specialists and county agents of the Texas Agricultural Extension Service.