



TEXAS AGRICULTURAL EXPERIMENT STATION

R. D. LEWIS, DIRECTOR, COLLEGE STATION, TEXAS, MARCH, 1960

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Factors Affecting Cottonseed Margins of Selected Cooperative Gins

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SUMMARY

Three cotton producing areas in Texas—the Lower Rio Grande Valley, the Mid-West and the Plains—were selected for a study of the factors affecting cottonseed price margins.

The study showed that the following seven factors affect the margins on cottonseed handled by cooperative gins and influence the net returns a farmer receives for cottonseed: (1) the seasonal movement of seed from the farm to the gin to the oil mill; (2) methods used to harvest the cotton; (3) methods used to determine the weight of seed, weighing on seed scales or estimating the weight; (4) grading cottonseed sold by gins to oil mills; (5) seasonal price changes; (6) hauling allowances and drayage paid by oil mills for transportation of seed; and (7) patron refunds paid by cooperative oil mills to gins.

By evaluating these factors, ginners should be able to improve the efficiency of operations, thus lowering costs and enabling the gins to pay a greater proportion of the mill price to farmers.

Cottonseed, once a waste product of the cotton industry, has become an important agricultural product, which contributes to our economy in the form of human food, animal feed and other valuable products. Major developments in processing and use of cottonseed, along with developments in cotton production, have improved the competitive market position of cottonseed in the past few decades.

The 1959 cotton crop in Texas was valued at almost 737 million dollars at the farm level, and cottonseed accounted for over 72 million dollars of this total. Seed normally contributes 10 to 15 percent of the total value of the cotton crop.

More seed go to the crushers every year and fewer seed are returned to the farm for feed. The modern cotton producer prefers to feed cake and hulls and to plant certified seed.

Cotton gins are practically the only market available to farmers for their cottonseed. The prices which gins receive from cottonseed oil mills presumably determine the price farmers receive from the gins for their cottonseed. However, the margins between the mill

prices and prices paid farmers are affected by the operating methods of the gins and their buying and selling practices, which in turn affect the costs of handling cottonseed. Efficient practices contribute to low cost handling and make it possible for gins to retain lower margins and consequently pay a greater proportion of the mill prices to farmers.

This study was designed to determine and evaluate the factors which affect cottonseed price margins and cooperative gin and cotton oil mill practices. Prices paid to farmers by cooperative gins and prices received by these gins from oil mills are competitive with those of other gins. Therefore, price margins on cottonseed handled by cooperative gins generally are comparable with price margins at nearby noncooperative gins.

Three cotton producing areas in Texas were selected for this study—the Lower Rio Grande Valley, the Mid-West and the Plains. The three areas differ in geographic and economic conditions. The Valley area is composed of three counties in the Lower Rio Grande Valley and is serviced by the Valley Cooperative Oil Mill and 21 cooperative gin associations. Yields in this area are high; most of the acreage is under irrigation. The crop is harvested early, beginning in June. The cottonseed are processed mainly in the area. A small tonnage moves out to the north.

The Plains area is composed of the cotton-producing counties of the High Plains and is serviced by the Plains Cooperative Oil Mill and 70 cooperative gin associations. This is a high-producing area with a high percentage of the acreage under irrigation. A large percentage of the cottonseed produced in this area is processed in Lubbock.

The Mid-West area is composed of 18 dryland farming counties just east and south of the Plains area. This area is serviced by the Mid-West Cooperative Oil Mill at Hamlin and 44 cooperative gin associations. The large number of cotton oil mills operating in this area has developed keen competition for the seed produced. Most of the seed produced in these counties is processed within the area. A small tonnage moves to the Plains area and to Fort Worth.

These data were assembled from the records of the 3 cooperative cotton oil mills and 126 cooperative gin associations. When the data were analyzed and evaluated, it was found that seven factors in the cottonseed buying and selling practices of cooperative gins affect the gross margins on cottonseed. Four of these factors affect the margins directly and two are minor or con-

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tributing factors at all gins; one factor affects only cooperative gins. Seasonal price changes, purchase weights, mill grading and transportation allowances affect margins directly. Seasonal movement of cottonseed is correlated with seasonal price change. Harvesting methods contribute to gains or losses in the purchasing weights at the gins. At cooperative gins, the oil mill patron dividend on cottonseed purchases affects the margin.

HARVESTING METHODS

Cotton is harvested by four methods: hand picking, machine picking, hand snapping and machine stripping.

The method used to harvest the cotton determines the pounds of seed cotton required to yield a 500-pound bale of lint cotton. By custom, these amounts of seed cotton vary by location. In the Valley area, it was customary to take 1,495 pounds of hand-picked, 1,505 pounds of machine-picked, 2,140 pounds of hand-snapped or 2,500 pounds of machine-stripped seed cotton to the gin to obtain a 500-pound bale of lint cotton and approximately 800 pounds of cottonseed. In the Mid-West, the customary amount of seed cotton to yield the 500 pounds of lint and the 800 pounds of seed was 1,500 pounds hand-picked, 1,510 pounds machine-picked, 1,920 pounds hand-snapped or 2,075 pounds machine-stripped. In the Plains area, the customary requirement was 1,450 pounds hand-picked, 1,465 pounds machine-picked, 1,910 pounds hand-snapped or 2,150 pounds machine-stripped.

These variances in the required weight of seed cotton are the result of estimated amounts of trash, dirt and unginable cotton in a load of seed cotton. In addition to these differences, when the cottonseed is weighed on scales or the weight is estimated by formula, the varietal and oil content characteristics of the seed also become factors in determining the gains or losses of tonnage on the seed purchases.

Methods of harvesting vary by areas, depending on available labor and climatic conditions. The old conventional hand-picking method was most prevalent in the Valley area. Of the gins reporting, 75 percent of the crop was hand-picked, 6 percent was machine-picked and 19 percent was hand-snapped. In the Mid-West area, 84 percent of the crop was snapped and 16 percent was stripped. In the Plains area, 47 percent of the crop was snapped and 51 percent was stripped; 2 percent of the early cotton was hand-picked.

PURCHASE WEIGHTS

When a producer selects a gin for his cotton, he selects the market for his cottonseed. Gins either estimate the weight of cottonseed to a bale of cotton or weigh it on a cottonseed scale. Gins which estimate the weight use a wide variety of formulas. However, the seed-lint ratios formula is the one most commonly used.

The seed-lint ratios of cotton vary widely, from area to area, farm to farm, gin to gin, variety to variety, and bale to bale on the same farm. This variance leads to problems in determining weight of cottonseed.

Regardless of the method used in determining the weight of cottonseed, the gains or losses in tonnage sustained by the gin in purchasing cottonseed are important in determining the gin's margin.

This analysis shows that a greater tonnage of gains and losses was experienced by the gins estimating cottonseed weight than was experienced by gins using cottonseed scales. In the combined three areas studied, 79 percent of the gins reporting used cottonseed scales and 21 percent estimated weights in purchasing cottonseed. All cottonseed sold to the oil mills were weighed. Nineteen percent of the gins estimating seed weights balanced on purchases and sales, 66 percent gained tonnage and 15 percent lost tonnage. Twenty-six percent of the gins using cottonseed scales balanced on purchases and sales, 62 percent gained tonnage and 12 percent lost tonnage.

In the Valley area, 60 percent of the reporting gins using cottonseed scales balanced on purchases and sales, 40 percent gained tonnage and sustained no losses. Thirteen percent which estimated weights balanced on purchases and sales; 87 percent gained tonnage and sustained no losses.

In the Mid-West area, 43 percent of the reporting gins using scales balanced on purchases and sales, 32 percent showed tonnage gains and 25 percent sustained tonnage losses. Twenty-two percent which estimated seed weights balanced on purchases and sales; 33 percent showed tonnage gains and 45 percent sustained tonnage losses.

In the Plains area, 16 percent of the reporting gins using scales balanced on purchases and sales, 76 percent showed tonnage gains and 8 percent sustained tonnage losses. Fifty percent estimating weights balanced on purchases and sales; 50 percent showed tonnage gains and sustained no losses.

GRADING COTTONSEED

The U. S. Department of Agriculture took over the supervision of sampling, analyzing and grading cottonseed in 1937 at the request of the cottonseed industry. A standard sampling method was devised and samples are taken today at regular intervals while seed are being unloaded at oil mills. The sample is taken with a sampling tool similar to a corkscrew. An adequate gross sample is 2 pounds of cottonseed per ton of cottonseed in the load.

Cottonseed grading is a factor affecting the margins derived on the cottonseed sold to oil mills. The 126 cooperative gins in this study sold 247,353 tons of cottonseed to various oil mills. In the Valley area, the cottonseed were sold ungraded. This amounted to 45,918 tons of cottonseed on which no premium was paid. The other 201,435 tons sold in the Mid-West and Plains areas were graded and commanded a premium price of the weighted average of \$1.74 per ton above the quoted price.

In the Mid-West area, the weighted average for graded cottonseed was 102.0, or 2.0 above the 100 grade index. This was a premium of \$1.12 per ton. In the Plains area, the weighted average for graded cottonseed was 103.5, or 3.5 above the 100 grade index. This was a premium of \$1.87 per ton.

In some areas, the oil mills will agree to purchase cottonseed on a 100 grade index although the average index falls below 100. This practice can be carried out economically as long as the average grade basis for the entire oil mills' purchases does not fall below the 100 grade index. Toward the end of the season, the trash content of the cottonseed reduces the average grade index

so much that the seed must be purchased on a true grade and at a discount.

SEASONAL MOVEMENT

Cottonseed is a seasonal product, and the movement from gin to oil mill begins when the ginning season opens. Few gins are equipped to store large accumulations of cottonseed. As the ginning season progresses, it becomes necessary at most gins for the day's accumulation of seed to be moved to the oil mill at night.

Oil mills have storage facilities for large amounts of cottonseed. When the movement begins, oil mills store seed until the volume is large enough to assure continued operations when processing starts. It is not economical for the mill to have to shut down and reopen mill operations.

In the Valley area, the cotton crop is planted in February or March and harvest begins in June. Cotton harvest in the Valley must be completed by September 1 to meet government regulations on insect control. The peak movement of seed was reached the third week in July. Ninety-eight percent of the seed was delivered to the oil mills from the last week in June to the first week in August.

During this study, the total seed crop in the Valley was delivered before the harvest season opened in the Mid-West and Plains areas.

In the Mid-West and Plains areas, the harvesting season is similar, normally starting the second week in September and extending into the following year. The bulk movement occurs in October, November and December. The peak movement occurred the last week in November and the first week in December. Ninety-two percent of the seed was delivered between the last 2 weeks in September and the first week in December.

The harvest season began in the Plains area the second week in September and the peak movement was reached at the same time as the Mid-West area. However, the bulk of the Plains seed moved in less time than in the Mid-West area. Ninety percent of the seed moved from the third week in October to the second week in December.

SEASONAL PRICE CHANGES

Because of the limited time cooperative gins hold cottonseed between ginning and delivery to oil mills, the gin assumes little or no price risk in handling cottonseed. In this operation, most or all of the price risk is shifted to the oil mill.

Close contact between the oil mill and the gin further reduces any risk involved in seed price changes. In the Valley area, communication facilities between the oil mill and the gins are very efficient. Each gin is notified the afternoon before a price change is to become effective the next morning.

In the Mid-West area, the communication service is not nearly as efficient. Distances are greater and the transmission of information is slower than in the Valley. In many instances, it might be several days after a price change becomes effective before some gins receive the information. This condition often leads to uncertainties regarding the cottonseed market.

In the Plains area, the communications service is much better than in the Mid-West area, but not as efficient as in the Valley. Distances and types of communication are major factors which slow down information in the Plains area.

Seasonal price change is correlated with seasonal movement—as the volume increases the price declines. The price to be paid for cottonseed usually is established well in advance of the opening of the season. The oil mills advise the patron gins of the opening price and agree on a set margin that the oil mill will pay for cottonseed. This margin was \$5 per ton in the three areas surveyed.

The opening price to producers in the Valley was \$52 per ton, making the price to gins \$57 per ton. This price held until July 17 when the price broke \$2 per ton. The gins purchased 22 percent of the cottonseed produced in this period. During July 17-23, when the price was \$50 per ton, the gins received 15 percent of the seed crop. During July 23-August 4, when the price had dropped to \$48 per ton, the peak was reached and 40 percent of the seed crop was received. During August 4-15, the price went up \$3 per ton to \$51 and 16 percent of the seed crop was bought. The price broke \$2 on August 15 and few seed were bought—only 1 percent of the total crop. During August 18-October 1, the price dropped to \$45 per ton. This was the close of the season and the remaining 6 percent of the seed crop was bought. The 20 cooperating gins had purchased 44,518 tons of cottonseed for a weighted average price of \$50.07 per ton paid to the producers.

In the Mid-West, the season opened in August with prices ranging from \$45 to \$50 per ton paid by the gins to producers. The quoted price to gins was \$48 per ton. Variations from the quoted price were the result of gins paying premiums for the first cottonseed of the season. The Mid-West, being a dryland production area, had a wide difference in planting and harvesting time. On September 14, the price broke to \$43 to producers; only slightly over 1 percent of the cottonseed had been bought by the gins. During September 14-27, 5 percent of the seed crop was bought by gins. The market broke to \$42 on the latter date. On October 1, the price rose to \$45 per ton. During October 1-22, 5 percent of the seed crop was bought by the gins. During October 22-November 4, the price was \$43 per ton and 25 percent more of the seed crop was bought by gins.

At the end of the season, the 37 cooperating gins had purchased 46,229 tons of cottonseed for a weighted average price of \$45.92 per ton paid to producers.

The harvest season opened in the Plains area in August, the quoted price being \$49 per ton to producers. The small amounts of seed purchased ranged from \$36 to \$100 per ton. Carryover-seed from the previous season brought the low price, and first-of-the-season premium seed received the high price. On September 14, the seed price was quoted at \$43 per ton; on September 27, the quotation was \$42 per ton. By September 27, less than 1 percent of the seed crop had been bought by the gins. On October 1, the price was up to \$45 per ton. On October 22, 11 percent of the seed crop had been bought by the gins. During October-November 4, when the price went back to \$45 per ton, and to the end of

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the season, 73 percent of the seed crop was bought by the gins.

At the end of the season, the 69 cooperating gins had purchased 158,632 tons of cottonseed for a weighted price to the producers of \$46.19 per ton.

In the three areas in this study, margins increased because of seasonal price changes. In the Valley, the increase amounted to 9 cents per ton and probably resulted from efficient communication between the oil mill and the gins. In the Mid-West area, the least efficient in communications between the oil mill and the gins, this margin increase was 85 cents per ton. On the Plains, with communications more efficient than in the Mid-West area, the margin increase was 21 cents.

TRANSPORTATION ALLOWANCES

It is a common practice in Texas for the oil mill to pay the freight on cottonseed from the gin to the oil mill. A rate schedule for each patron gin is set up; this expedites the procedure for making out the account of sales when a load of cottonseed arrives at the oil mill.

Most cottonseed moving from gins to oil mills are transported by motor truck. The oil mills pay a hauling allowance on each load of cottonseed, but it is the gin's responsibility to furnish the transportation.

The oil mills have established a trucking rate with a minimum of \$2 per ton for 10 miles or less. The rate increases, according to the Texas Railroad Commission tariff, as mileage increases.¹ This increase amounts to one-half cent for each additional 5 miles up to 75 miles. Above 75 miles, this increase is made at a lower rate.

The hauling allowance is used in some instances, particularly toward the end of the season when competition for seed is keen, as a trading measure to obtain seed. The higher price paid for the seed supposedly includes the transportation cost.

In the Valley, cottonseed were transported a maximum of 41 miles and a minimum of 1 mile, or a weighted average of 22 miles, in between the gins and the oil mill. The weighted average allowance per ton was \$2.44.

In the Mid-West area, cottonseed were moved a maximum of 120 miles and a minimum of 3 miles, or an average of 50 miles. The weighted average allowance per ton was \$2.41.

¹Item No. 110, Commodity Tariff No. 8-A of the Railroad Commission of Texas, Motor Freight, covers the rates, rules, regulations and charges governing the transportation of cottonseed by special motor carriers between points in Texas. It was issued February 23, 1954, and became effective March 10, 1954.

TABLE 1. MARGIN GAINS AND LOSSES BY AFFECTING FACTORS

Area	Set margin	Price movement	Purchase weights	Mill grading	Transportation allowance	Mill dividend	Total
	Dollars						
Valley	5.00	.09	1.94	2.44	2.97	12.44	
Mid-West	5.00	.85	(.77)	1.12	2.41	3.49	12.10
Plains	5.00	.21	1.28	1.87	2.70	6.99	18.05

TABLE 2. GROSS REVENUE RECEIVED BY GINS BY SOURCES

Area	Cottonseed sales	Ginning charges	Bagging and ties	Merchandizing cotton	All other sources	Total
	Percent					
Valley	62	30	3	2	3	100
Mid-West	59	35	5	1		100
Plains	61	31	6		2	100

On the Plains, cottonseed were transported a maximum of 143 miles and a minimum of 6 miles, or an average of 48 miles. The weighted average allowance per ton was \$2.70.

OIL MILL REFUNDS

When cooperative gins sell cottonseed to a cooperative oil mill, an additional margin increase is gained in the form of a patronage refund.

The three cooperative oil mills made substantial patronage refunds to the cooperative gins. In the Valley, the patronage refund averaged \$2.97 per ton. In the Mid-West area, the patronage refund averaged \$3.49 per ton. In the Plains, the refund averaged \$6.99 per ton.

Of the factors affecting the margins on cottonseed, the purchasing weight gains or losses and the mill grading seed have the greatest influence, Table 1. Seasonal movements and price changes have little influence other than shifting price risk from the gins to the oil mills. The harvesting methods affect the purchasing weights; therefore, they can be classed as an indirect factor. Transportation allowances affect margins indirectly and only to the extent of the efficiency of the gins in transporting the cottonseed to the oil mill.

The cooperative gin associations should be aware of the patron dividends paid by the cooperative oil mills since this factor definitely affects the margin on cottonseed sales.

TOTAL GROSS REVENUE

Cotton gins perform numerous services from which they derive gross revenue, Table 2. However, the two major sources of revenue are cottonseed sales and ginning returns. These sources accounted for 92 percent of the gross revenue for the 126 gins in this study. Margins on bagging and ties amounted to 5 percent. Handling cotton returned 1 percent and all other sources accounted for 2 percent.

The increases in margins derived from handling cottonseed, as observed in this analysis, also have increased the gross returns to gins. In this study, the sale of cottonseed accounted for more than 50 percent of the gross revenue to the gins in each area. Ginning rates have not been adjusted to offset this increase in gross returns from handling cottonseed.

ACKNOWLEDGMENT

These data have been assembled with the cooperation of the Farmers Cooperative Service, U. S. Department of Agriculture, and the Valley, Mid-West, Plains cooperative oil mills and 126 cooperative gin associations.