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B. YOUNGBLOOD, DIRECTOR
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Services, Facilities, and Costs of Marketing Vegetables in the Lower Rio Grande Valley of Texas



AGRICULTURAL AND MECHANICAL COLLEGE OF TEXAS
MAY 28 1928
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SYNOPSIS

There has been a rapid increase in the production of vegetables in the Lower Rio Grande Valley of Texas from fewer than 2,000 cars of vegetables shipped in 1912 to more than 14,000 cars in 1927. The vegetables are grown principally for distant markets and moved to the terminal markets by the local shipper on refrigerator cars. There are more than 20 varieties of vegetables grown in the area and about 45,000 acres devoted to vegetable production. Cabbage, beets, carrots, Irish potatoes, string beans, tomatoes, and green corn have the largest acreage, while other vegetables are being grown to a more limited extent. Information secured from 215 growers showed that the acreage planted to cabbage is more than twice that planted to any other vegetable crop in the area and amounts to 30 per cent of the acreage of these farms.

In many instances the price paid by the shipper to the grower for vegetables not yet harvested, and which the shipper harvests, is less than the cost of harvesting and preparing them for shipping. For example, the cost of preparing a carload of carrots by the shipper during the season of 1925-26 was 62 per cent of the total cost, while that of cabbage was about 20 per cent. Costs involved and services rendered in gathering, packing, loading, and transporting vegetables from the Valley to the terminal markets are discussed. For example, it was found that telegraph, telephone, labor, and salary expenses averaged about \$37.00 per car.

Cabbage is shipped from November to May, inclusive, the peak coming in April. Cold storage cabbage from Wisconsin and New York competes with the Texas product until about the middle of February. During March and April there is no formidable competition with Texas cabbage; but during the month of May Alabama and Mississippi are competitors. The competition from Florida is continuous throughout the season, but is mainly limited to the East coast country. Other crops produced in the region meet competition similar to that of cabbage.

Most of the cabbage was sold "cash at track," a small amount was consigned, and still a smaller amount "contracted" in the field. The net prices would probably be about equal for all methods if all factors were considered.

The average cost per ton of gathering and hauling 4,136 tons of cabbage from the farm to the shipping shed was \$2.74.

The average cost to the shipper is 50 cents per ton for inspection, ventilator, and assisting in loading the cabbage into the car.

Texas cabbage was distributed in carlots in 1925 to every state in the union except five.

The average price the grower of cabbage received for over 3,000 tons for the season of 1925-26 was \$11.45 per ton.

Similar data on the other major crops listed are given in the text.

Spinach and onions are listed as minor vegetables in the area as the schedules showed these vegetables to be of minor importance when compared with those more extensively grown.

The vegetable growers in the Valley should study the outlook reports on competing areas. The storage cabbage in New York and Wisconsin is grown far enough in advance of the Valley cabbage to enable the Valley growers to adjust their cabbage acreage to meet the demand.

There are no cities in Texas large enough to consume a straight carload of beets and very few that can handle straight carloads of carrots. Further expansion in the shipment of beets and carrots in Texas under refrigeration means shipping more cars of mixed vegetables. All towns and most cities in Texas could handle mixed cars of vegetables with the exception of cabbage and potatoes better than straight cars. Mixed cars afford a greater variety, deliver the product under refrigeration, and furnish a much cheaper rate than can possibly be had under local freight or express.

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SERVICES, FACILITIES, AND COSTS OF MARKETING VEGETABLES IN THE LOWER RIO GRANDE VALLEY OF TEXAS

G. L. CRAWFORD

The objects of this study are to ascertain the kinds of vegetables grown in the Lower Rio Grande Valley of Texas, the extent to which each kind is grown, the channels through which the vegetables pass in going to market, the services rendered, and the cost of rendering each service; and to point out any apparent improvements which may be made in the local marketing facilities and services. A later study will deal with the marketing phases at the points where the vegetables are consumed.

SOURCE OF INFORMATION AND METHOD OF SECURING IT

A schedule was designed to secure information on the marketing of vegetables for the season of 1925-26. The information requested was secured by personal visits made to 215 growers of vegetables, extending from Mission, the upper end of the Valley section studied, to Brownsville, the lower end. The schedules were presented in person to the growers and their answers were recorded. A separate schedule, covering the same territory as that covered by the growers, was used in securing data from 15 shippers handling over 7,000 cars of vegetables or about one-half of the vegetables shipped out of the Valley during the season of 1925-26. These data were supplemented by other data secured from railroad officials, bankers, and other sources.

DESCRIPTION OF AREA STUDIED

The Lower Rio Grande Valley is the southernmost part of the State of Texas, lying along the north side of the Rio Grande River. This section extends from the mouth of the Rio Grande 75 or 80 miles up the river, averaging from 25 to 30 miles in width. The surface of the land has a gentle slope to the southeast, and there are three distinct benches or levels, each bench having a secondary slope from southwest to northeast. A large per cent of this area is under the several irrigation ditches, water for which is lifted from the Rio Grande by pumps. There are 13 water-users associations in operation in this section. Being very productive the soils are adapted to a wide range of crops. About 45,000 acres of this area is devoted to vegetable growing, about one-third of which is planted to cabbage.

The average annual rainfall for a period of 52 years is slightly above 24 inches at Brownsville and diminishes westward until at Laredo the average is slightly less than 20 inches for the same period. The area

under study extends about halfway to Laredo. The mean temperature is around 73 degrees.

Size of Farms

The size of 213 truck farms studied averaged 48.3 acres per farm, with 42 acres tillable and under irrigation, of which 41.5 acres are in cultivation.

Three-fourths of the farms had been owned for an average of five years, and had been occupied by the present operators four years. The remainder were rented.

Land Values

Prior to 1921 the price paid per acre for 161 farms averaged \$346.00. In 1926 these same farms were valued by the owners at \$627.00 per acre. This increase in value of almost 20 per cent a year can be attributed to many things. Some of the most important factors are: (1) the improvements made on the land such as clearing, leveling, buildings, and fences; (2) increase in the residential value of the farm land surrounding the numerous growing towns; (3) increases in value of citrus groves.

PRESENT MARKETING SYSTEM

In general all vegetables shipped from the Valley, except a small amount sold through the cooperative associations, pass from grower to shipper, and from shipper to broker and wholesaler at the terminal markets. During the past 15 years, however, there have been several attempts made to organize the vegetable growers in the Valley into cooperative marketing associations. Most of them have failed, due very largely to lack of adequate finances or to poor management aggravated by insufficient market connections. Each attempt has contributed to the education of the growers in cooperative marketing, and the organization now in existence has a greater chance of succeeding than any preceding organization, due to the past experience of the members. When cooperative marketing associations net more money to the growers, for the same kind of product, than private concerns, they will be more likely to succeed.

Number, Size and Capacity of Sheds

The 15 local shippers whose records were studied were operating at 35 points in the Valley. Shipping sheds were located at 33 points, and ranged in capacity from 1,000 to 18,750 square feet of floor space, averaging 5,127 square feet per shed, with an average loading capacity of 6.5 cars of vegetables per shed for each day. The working hours were irregular. At times during the rush season shippers would grade, pack, and load at the sheds day and night.

Grading and Packing Equipment

There were eleven potato graders, of which two were electrically driven and had a capacity of 8,000 pounds each per day. Nine were

hand-operated machines with a capacity of one or more cars per day. There were six tomato graders, the largest one with a daily capacity of 8 cars, in operation by the 15 local shippers. These potato and tomato graders sorted only for size and were sizing machines rather than graders. The real grading for quality other than size must be done by hand. Hand grading is usually done while the potatoes or tomatoes are on the machine.

All sheds studied had an average of two platform scales and one floor scale. Most of them have washing vats, packing tables, washing racks, and three of them have motor-driven ice crushers, but mostly the ice is broken by large hand ice picks.

Comparatively little machinery and equipment are used by the average vegetable shipper in the Lower Rio Grande Valley. A great deal of ice is used in the vats in washing and chilling certain vegetables. Layers of ice are placed on top of the containers after they are loaded into the car. The ice is unloaded onto the platform in large blocks, where it is left until used, which results in considerable waste by melting. An insulated vault conveniently located would not require any more floor space than is taken up by the ice under existing practice, and would soon pay for itself in the conservation of ice.

Various Expenses of the Local Shipper in Shipping Vegetables

Telegraph and Telephone Expenses: According to 12 shippers who collectively shipped 6,642 cars of vegetables from the Lower Rio Grande Valley in 1925, the average telegraph and telephone expenses were \$5.80 per car. The telegraph expenses equal about two-thirds of this cost and the telephone expenses one-third.

Labor and Salary Expenses: The labor and salary cost per car on 2,625 cars shipped by 6 shippers in 1925 was \$31.13 per car.

Total Expense: The expense of \$5.80 per car for telephone and telegraph and \$31.13 per car for salary and labor make a total of \$36.93 per car. This does not include such expenses as interest and depreciation on investments in sheds, machinery, and other equipment, which varies at different points.

Number of Growers Financed by Local Shippers

According to the schedules, 10 local buyers in the Lower Rio Grande Valley of Texas partially financed 603 vegetable growers in 1925; one shipper furnished cash, three seed and cash, and six seed only. The average amount furnished each grower was \$158.37. According to the opinion of the ten shippers about 55 per cent of the vegetable growers in the Lower Rio Grande Valley could finance themselves.

Transportation Facilities

When the data on transportation were collected in 1926, the Missouri Pacific was the only railroad operating out of the Valley. This railroad

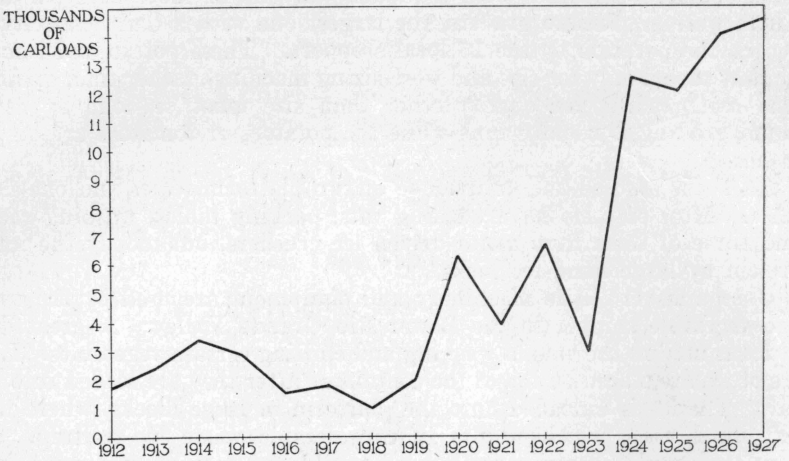


Figure 1.—Number of cars of vegetables shipped from the Lower Rio Grande Valley of Texas from 1912 to 1927, inclusive.*

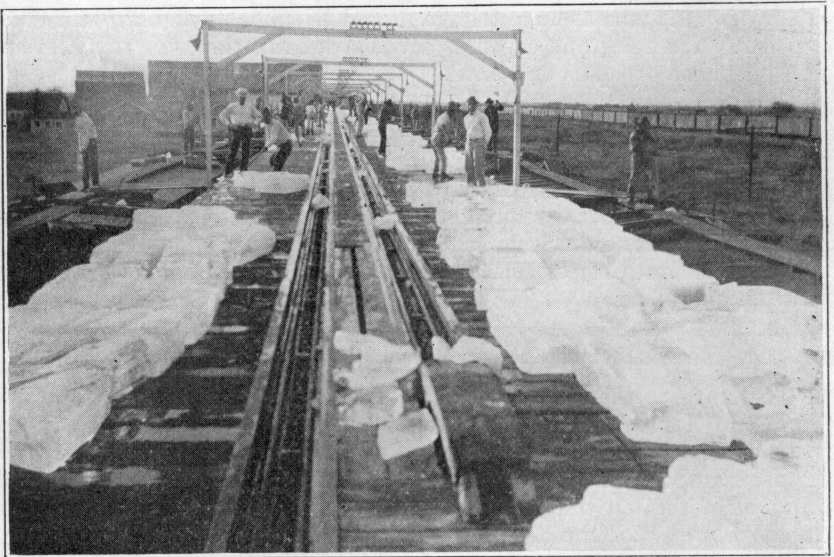


Figure 2.—Icing refrigerator cars loaded with vegetables at the railroad docks in Harlingen, Texas, 1926.

*Data furnished by Missouri Pacific Railroad through W. B. Cook, Agricultural Agent.

connects Brownsville and Mission in the Valley. At Harlingen it goes north by Raymondville and Kingsville to Houston.

The Southern Pacific Railroad was built in the Valley in 1927, entering the Valley at Edinburg and forking, with one line terminating at McAllen and the other at Brownsville going by way of Harlingen and San Benito.

Figure 1 gives number of cars of vegetables shipped from the Lower Rio Grande Valley of Texas from 1912 to 1927, inclusive.* The number of cars shipped varied from year to year, but during the fifteen years the number of cars of vegetables shipped from this section increased from less than 2,000 to more than 14,000.

The railroads have established regular fast-freight schedules for fruit and vegetables as follows: first morning out, Houston; second morning out, Fort Worth; third morning out, Little Rock, Memphis, and New Orleans; fourth morning out, St. Louis; fifth morning out, Chicago. This schedule applies only to freight cars. Between four and five hundred cars of fruit and vegetables move by express each year. The express cars are attached to the passenger trains and move by a faster schedule than the freight trains. They move from about one-third to one-half faster than the refrigerator car.

The Icing of Vegetable Cars

Many vegetables could not be shipped out of the Valley to the northern markets without using refrigerator cars properly iced.

The refrigerator cars are iced, each car requiring from four to five tons in the bunkers. After being iced the cars are sent out to the loading places and may be left there for twenty-four hours without charge for icing. If kept out for a longer period of time, the shipper is charged for icing \$3.75 for each 12 hours or fraction thereof. This is called detention charge. If the car is held out over 48 hours, \$2.00 per day is charged as demurrage. The second icing or the re-icing after the car has been loaded usually requires one to three tons. This amount, plus the four or five tons used in the initial icing makes about seven or seven and one-half tons of ice used per car before it leaves the Valley. This amount of ice is used, as a rule, during the months of March, April, May, and June. A large part of the icing is done at Harlingen. The

Table 1.—Icing facilities for the Valley.

Location	Tons		Number of Cars that Can Be Iced at the Same Time	Number of Cars that Can Be Unloaded at the Same Time
	Production Capacity for Each 24 Hours	Storage Capacity		
Harlingen.....	265	10,600	40	14
San Benito.....	100	2,000	30	6
Brownsville.....	90	1,000	12	3
Kingsville.....	90	2,000	40	.....
Houston.....	90	2,000	40	.....

*Included cars shipped from Raymondville district in Willacy County, which was usually less than 200 cars annually.

railroad docks at Harlingen are 900 feet in length, allowing twenty cars on each side of the dock at the same time. Thus, forty cars may be loaded simultaneously. Figure 2 shows the cars in the docks at Harlingen when the car bunkers are being filled. It requires 22½ hours for the north-bound cars to move from Harlingen to Houston. The cars are re-iced at Kingsville and at Houston. Each succeeding re-icing requires a smaller amount of ice than the preceding one.

Table 1 gives the location of the icing plants, their capacity both in production and storage, and the size of icing and unloading docks at several points in the Valley and along the line of transportation.

Joint State-Federal Inspection

The joint State-Federal inspection of vegetables in the Lower Rio Grande Valley of Texas has been in effect since 1924. This inspection is intended to establish the true grade of the commodity by trained, disinterested parties. The service was given on approximately 3,600 cars for the season of 1924 and on 8,000 cars for the season of 1926. These figures give evidence that this kind of service is becoming more popular. The local shipper usually pays for this inspection service. The price varies from \$3.00 to \$5.00 per car according to the number of cars inspected—the more cars inspected, as a rule, the less is the cost per car.

Table 2.—Vegetables grown on 215 farms in the Lower Rio Grande Valley of Texas, 1925-26

Vegetable	Total Acreage	Number of Farms Growing Each Vegetable	Average Acreage Planted to Each Vegetable Per Farm
Cabbage	1,113.75	148	7.50
Green Corn	448.00	19	23.60
Carrots	425.75	65	6.53
Potatoes	406.75	49	8.30
Beets	270.50	49	5.50
Beans	216.50	48	4.50
Tomatoes	107.30	39	2.80
Onions	77.20	7	11.00
Spinach	30.50	12	2.50
Peppers	17.70	7	2.52
Peas (B. E.)	15.00	3	5.00
Cucumbers	9.25	5	1.85
Lettuce	9.00	5	1.80
Turnips	5.75	7	.82
Okra	4.75	3	1.57
Egg Plant	3.25	3	1.07
Squash	3.00	2	1.50
Peas (Eng.)	2.00	2	1.00
Mustard	1.00	1	1.00
Potatoes, S.	1.00	1	1.00

Vegetables Grown and Marketing Services Rendered

The list of vegetables grown on 215 farms in the Lower Rio Grande Valley of Texas for the season of 1925-26 is given in Table 2. The acreage, the number of farms on which each vegetable was grown, and the average acreage of each vegetable grown on each farm are shown also.

Cabbage, beets, carrots, potatoes, string beans, tomatoes, and green corn are listed here as major truck crops grown in the area. There were

more than 100 acres of each of these vegetables listed by the schedules secured during this study.

Cabbage

Cabbage, being better adapted to all types of soils and conditions, is probably the most important vegetable grown in the area. According to the data from 215 farms studied, the acreage planted to cabbage was more than twice as large as the acreage planted to any other vegetable. There is less expense in shipping preparations than there is for most other vegetables. Most of the cabbage shipped from the Valley is shipped uncrated in refrigerator cars, which require a ventilating contrivance extending through the middle of the car.

Cost of Harvesting Cabbage: The average cost per ton of harvesting 4,136 tons of cabbage in 1925 was 84 cents, which included cutting and loading into the wagon. The average cost of hauling for the same volume from the farm to the loading sheds, an average distance of three miles, was \$1.90 per ton. The cost of harvesting and delivering to shed was therefore \$2.74 per ton.

Methods of Selling and Prices Received by Grower: Figure 3 brings out the fact that in selling 4,262 tons of cabbage in the Lower Rio Grande Valley in the season of 1925-26 by the growers, 3,816 tons were sold cash at track, 426 tons were consigned, and 20 tons were contracted in the field by the grower to the shipper.

Figure 3 shows further the prices per ton the grower received for cabbage by the different methods of selling. Cabbage sold for cash at the track brought about \$2.00 per ton more than cabbage consigned or contracted in the field. However, the time of selling is an important factor in determining the price received. As a rule, the largest amount of cabbage was consigned on declining markets. Usually more cabbage is consigned during the latter part of the season when prices are often lower than during the early part of the season. The grower sells most of his cabbage for cash at the track. Very little is sold on consignment and practically none by contract.

The grower received \$3.00 to \$9.00 less per ton for cabbage when he delivered a wagonload at a time to the buyer than when selling in carlots. This difference in price between wagonload and carload lots was due in part to increased expenses necessary in assembling carloads from indiscriminate wagonloads as they chanced to come in. This margin between wagonload cash at track and f. o. b. price could be reduced if the growers could find some practical method of assembling their cabbage and selling f. o. b. in carlots.

Cabbage Left in the Field: The grower should consider more carefully the uses to be made of the cabbage left in the field. Of the 8,000 tons grown by 213 farmers in 1925, 4,108 tons, or about 51 per cent, was left in the field. The following reasons were given for leaving the cabbage in the field: 100 growers said the market was too low and in some instances there was no market at all; 10 said the quality was poor; and 3

stated that the cabbage left in the field was late and immature. It is probable that more cabbage was left in the field in 1925 than in 1926, as 100 growers out of 113 gave low or no price as the reason for not harvesting more of their crop in 1925. Furthermore, according to the data secured from the 213 farms, cabbage brought an average of \$11.45

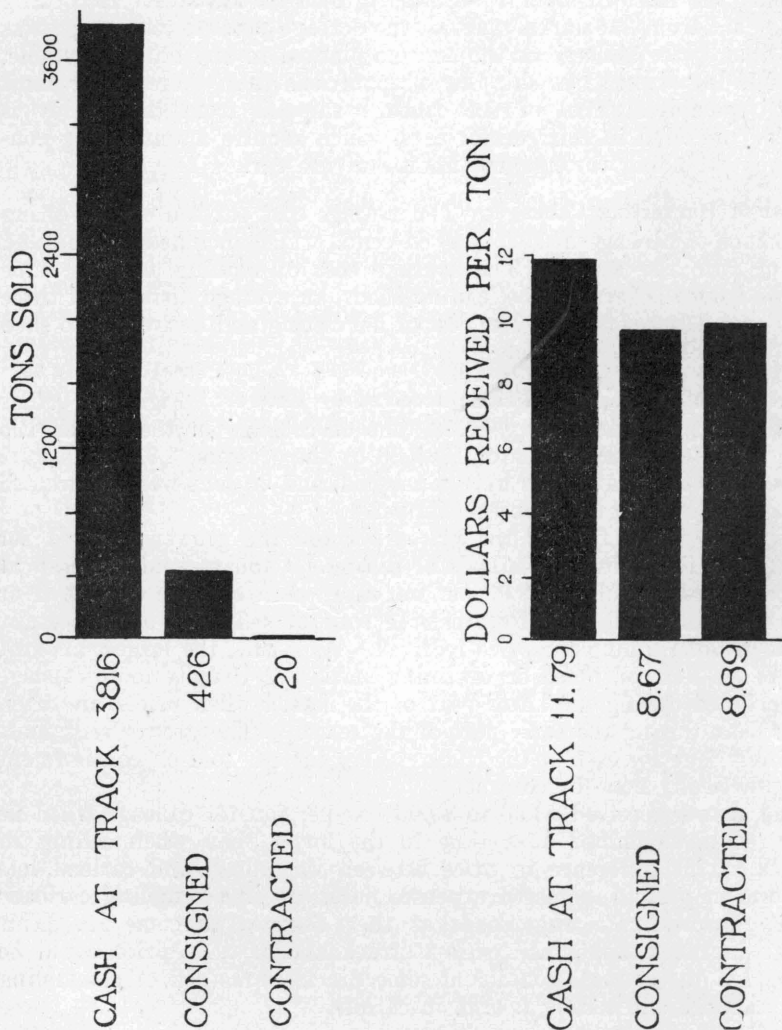


Figure 3.—Method of selling cabbage by grower and price received per ton by each method, 1925-1926.

per ton for the season of 1925, while in 1926 the growers received an average price of \$25.00 per ton. Therefore, it is reasonable to expect less cabbage to be left in the field when prices are high and when the quality is about the same for both seasons. When prices are low the tendency is to grade more closely. It does not pay the grower to

market cabbage under \$6.00 per ton. As previously stated, it will cost \$2.74 to cut and haul a ton of cabbage an average distance of three miles. For a greater distance, it will cost relatively more for hauling. Selling cabbage at \$6.00 per ton would leave \$3.26 per ton for wages if the cabbage were not culled at the loading shed, but often it is culled from 10 to 50 per cent. If the cabbage is culled 50 per cent, the expense would be twice \$2.74, or \$5.48; the grower would have only 52 cents per ton left for production if his cabbage brought only \$6.00 per ton. There will probably always be a large tonnage not suitable for shipping. The growers disc under the remaining cabbage in May and June. Cabbage has very little fertilizing value and the growers could afford to sell the cabbage not suitable for shipping very cheap. Table 3 shows the carlot shipment of cabbage from Texas and also from the lower Valley for eight years, 1920 to 1927, inclusive. The lower Valley has shipped on

Table 3.—Number of cars of cabbage shipped from Texas and from the Lower Rio Grande Valley of Texas, 1920 to 1927, inclusive.

Items	Date							
	1920	1921	1922	1923	1924	1925	1926	1927
Cars of cabbage shipped from Texas.....	5,180	1,936	3,996	1,368	7,258	4,024	6,091	5,545
Yield per acre (tons).....			5.0	5.0	10.0	5.3	5.8	5.8
Cars from the Lower Valley.....	4,743	1,784	3,578	905	5,826	3,841	4,895	3,993
Per cent of Texas crop from the Valley.....	92	92	90	66	80	93	80	67

United States Department of Agriculture, Statistical Bulletins Nos. 9 and 19. The data for 1926 and 1927 were secured from the U. S. Department of Agriculture Market News Service. The 1927 data are subject to revision.

the average about 80 per cent of the cabbage shipped from Texas in carlots during the past eight years, averaging 3,448 cars holding 12 tons per car each year. This would be an average of 41,376 tons shipped from the valley per year. If only 10 per cent was left in the field each year and was suitable for making kraut, the Valley would have over 4,000 tons of cabbage per year suitable to be made into kraut.

Services Rendered by Local Shipper: The local shipper as a rule buys the cabbage from the grower in wagon and truck loads, ranging from one to two tons. The grower usually unloads from his wagon or truck into the refrigerator car. The shipper has men in the car to catch the heads of cabbage as they are pitched in by the grower. The inspector, who is a representative of both the State and Federal governments, inspects the cabbage as it is being loaded into the car until he is satisfied as to its quality. The culls are returned to the grower, who usually carries them home with him or dumps them at the side of the road en route home. The shipper furnishes and places the ventilator in the center of the car. After about 12 tons of cabbage are loaded loosely in the car, the door is closed and sealed, and the car is then ready for rolling. When cabbage is consigned through a local shipper, the brokerage varies from \$2.00 to \$2.50 per ton. In addition, 50 cents a ton

loading charge is made to cover the cost of inspection, ventilators, racks, labor, and any other loading charges. This would make the brokerage average \$27.00 per car for 12 tons of cabbage and \$6.00 for loading, or \$33.00 total charges per car of 12 tons. The standard outside brokerage for cabbage is \$15.00 per car.

Distribution of Texas Cabbage: Texas cabbage was shipped in carlots to every state in the union during the season of 1926 with the exception of North Dakota, New Mexico, Nevada, Vermont, and New Hampshire, as shown in Figure 4. Illinois and Missouri are the largest purchasers of Texas cabbage. While Texas cabbage is widely distributed, the middle western points appear to be the major carlot markets for the product.

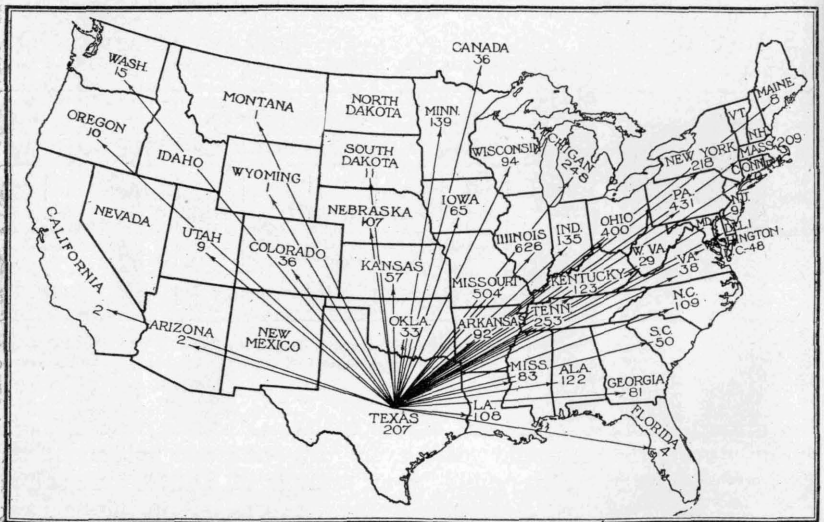


Figure 4.—Carlot distribution of cabbage from Texas, season of 1926.

Market News Service, United States Department of Agriculture, Bureau of Agricultural Economics and Texas Department of Agriculture, Bureau of Markets co-operating.

Hidalgo, Nueces, and Cameron Counties shipped 5,594 of the 6,091 cars of cabbage shipped in Texas, season of 1926.

Distribution of Texas Cabbage to Three Carlot Markets: Table 4 gives the carlot shipments of cabbage to three large carlot markets for the three years of 1923, 1924, and 1925, respectively. One column shows carlots shipped from Texas and one column from other sections for each year. The last column on the right gives the average per cent for the three years of carlots shipped by Texas to these markets. Of all carlots of cabbage shipped into St. Louis, 78 per cent were from Texas. During the same period, Texas furnished 58 per cent for Chicago, and 48 per cent for Pittsburgh.

Table 4.—Carlot receipts of Texas cabbage compared with carlot receipts from all other sections on three carlot markets, 1923 to 1925, inclusive.

Carlot Markets	Carlots						1923 to 1925, Inclusive, Per Cent Shipped by Texas
	1923		1924		1925		
	Texas	Other Sections	Texas	Other Sections	Texas	Other Sections	
St. Louis.....	179	109	612	150	460	87	78
Chicago.....	107	436	714	149	402	293	58
Pittsburgh.....	53	253	309	174	173	257	48

U. S. Department of Agriculture, Statistical Bulletins, Nos. 9 and 19.

Transportation Charges: Table 5 gives the transportation charges on a ton of cabbage from the Valley points and from Rochester, New York, St. Louis, Chicago, and Pittsburgh. The transportation charges per ton from the Texas points to St. Louis is \$14.27 more than from Rochester. The excess Texas pays on shipping a ton of cabbage to Pittsburgh over that paid by Rochester is \$28.15, which explains in part, at least, why Texas cabbage has supplied only 48 per cent of the carlot shipment of cabbage into Pittsburgh during the three years.

Table 5.—Transportation charges by the ton of cabbage from the Lower Rio Grande Valley of Texas and Rochester, New York, to three important consuming centers.*

Consuming Centers	Lower Rio Grande Valley of Texas	Rochester, New York	Difference in Transportation
St. Louis.....	\$23.47	\$9.20	\$14.27
Chicago.....	26.50	7.90	18.16
Pittsburgh.....	33.55	5.40	28.15

U. S. Department of Agriculture, Bureau of Agricultural Economics, and Texas Department of Agriculture, Bureau of Markets cooperating. Summary of Texas cabbage deal in 1926.

*The rates named in this table and elsewhere in this bulletin are those in effect at the time the study was being made and are of course subject to change at any time.

Competition of Texas Cabbage with Cold Storage Cabbage: New York and Wisconsin ship a large percentage of the cabbage taken by Chicago and Pittsburgh, since freight charges are \$18.00 to \$28.00 per ton less than the freight charges from Texas. Since there is a preference for fresh cabbage over cold-storage cabbage it is possible for Texas to compete with New York and Wisconsin, whose cabbage from November to February is storage cabbage. About one-fourth of the cabbage shipped from Texas during the past three years went to St. Louis, Chicago, and Pittsburgh. It is important for producers in Texas to ship a quality product, and to watch the outlook reports from New York and Wisconsin during the fall and winter, which give the quality and amount of cabbage going into storage, and to adjust their acreage of cabbage accordingly. When large supplies of cold-storage cabbage are on hand, the consequent low prices may cause a greater use of the cold-storage cabbage than of fresh cabbage at higher prices. If Texas shipped out a very poor quality of cabbage in direct competition with a good quality

of cold-storage cabbage, then Texas cabbage would suffer in the competition.

If the grower has produced large quantities of cabbage of poor quality regardless of the amount or quality of cabbage in storage it is too late for the local shipper to demand high prices for cabbage. This point is mentioned here to emphasize the fact that successful marketing of cabbage starts with the grower.

Competing Areas in the Production of Early Cabbage: Table 6 gives the number of cars of cabbage shipped by Texas, Florida, Alabama, Mississippi, Louisiana, and the early-producing section of California for the years of 1923, 1924, and 1925. These states produce the early commercial cabbage. For the immediate future, assuming that weather and other conditions are similar to those of the three years indicated in this table, Texas appears to be in no danger of losing her status as the leading state in the early cabbage market.

Table 6.—Cars of cabbage shipped by the early-producing sections (November to February) of the United States for 1923, 1924, and 1925.

States	1923	1924	1925	Total 1923 to 1925, Inclusive
Texas.....	1,356	7,281	4,048	12,685
Florida.....	1,172	3,842	1,936	6,950
Alabama.....	1,561	908	1,258	3,727
Mississippi.....	1,134	605	674	2,413
Louisiana.....	449	95	646	1,190
California*.....	273	144	369	789

United States Department of Agriculture, Bureau of Agricultural Economics and Texas Department of Agriculture, Bureau of Markets, cooperating. Summary of Texas Cabbage Deal, in 1926.

*Only includes the two early cabbage-producing sections.

The monthly carlot sales of the cabbage sold in states listed in Table 6 for the season of 1926 appear in Figure 5. In addition, Figure 5 gives the monthly carlot sales of New York and Wisconsin cabbage for the same period. In the early part of the season Texas competes with New York and Wisconsin. From about February 15 on through April, Texas leads in supplying cabbage to American markets. From May to the end of the shipping season Alabama and Mississippi offer competition to the Texas cabbage.

The Relation of Price Received per Ton to Time of Selling Cabbage: Figure 6 gives the average price for each month that the grower of the Lower Rio Grande Valley received and the percentages of the total of more than 3,000 tons of cabbage that were sold each month. If the cabbage crop in New York and Wisconsin is small and the amount stored less than usual it probably would be advisable for the grower to arrange his farm work so that the cabbage could be marketed early. If, however, the New York and Wisconsin crop is normal or above normal, the best price usually prevails between February 15 and May 1. As a

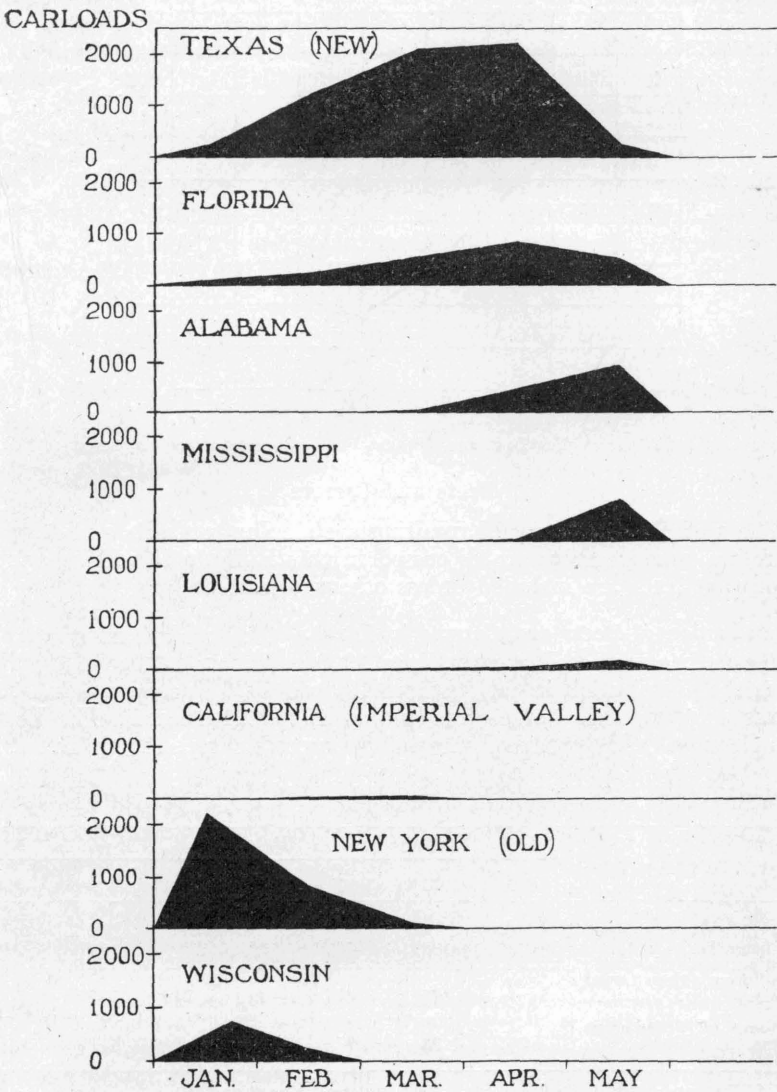


Figure 5. Monthly carlot sales of cabbage by states, season 1925-1926.

Market News Service, United States Department of Agriculture, Bureau of Agricultural Economics and Texas Department of Agriculture, Bureau of Markets, "Marketing Lower Rio Grande Valley Texas Cabbage Summary."

rule, Texas dominates the market at this time for fresh cabbage, as shown by Table 6.

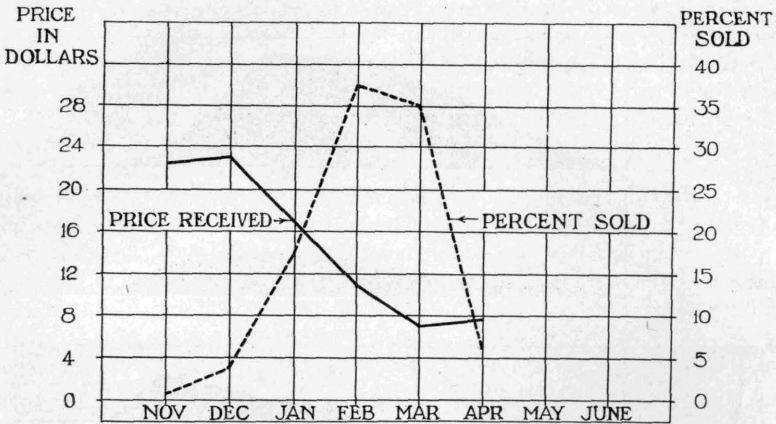


Figure 6. Monthly sales of cabbage and price per ton Texas grower received, season 1925-1926

Beets and Carrots

The methods and cost of harvesting are similar for beets and carrots; therefore, when carrots are discussed in this Bulletin it will be understood that beets are included unless otherwise stated.

Production of Beets and Carrots in Texas: The production of carrots in Texas has increased greatly since 1920 as shown in Table 7, which gives the distribution in carlots from 1920 to 1926, inclusive. In 1920, Texas shipped 5 cars of carrots and in 1926, 1,101 cars. The Lower Rio Grande Valley produced most of the carrots shipped from Texas.

Table 7.—Number of cars of carrots shipped from Texas and from Lower Rio Grande Valley of Texas, 1920 to 1926, inclusive.

	Date						
	1920	1921	1922	1923	1924	1925	1926
Cars of carrots shipped from Texas.....	5	198	48	65	296	601	1101
Yield per acre in baskets.....				325	377	261	
Cars from the Lower Valley.....	1	175	47	45	249	535	
Per cent of Texas crops from the Valley.....	20	88	97	69	84	89	

U. S. Department of Agriculture, Statistical Bulletins, Nos. 9 and 19.

Yield per Acre: The schedules secured from farmers showed that carrots yielded 215 bushels per acre and beets 165 bushels in 1925. It is shown further that about 28 per cent of the carrots and 25 per cent of the beets were left in the field on account of poor quality and low price. Thus about 163 bushels of carrots and 124 bushels of beets were gathered.

Kind of Pack: The pack for beets and carrots is the same for most of the Lower Valley. A bushel-basket is used with a few exceptions, when the western type of lettuce crate is used. Beets and carrots are bought from the grower by the local shipper by the basket; therefore, the basket is filled just as full as it can be filled by a number of the shippers, as shown in Figure 7. The results are that the producer bears the brunt of the shipper's generosity in giving an overflowing pack. It would be fairer to all if all vegetables purchased in the field by the shipper were bought on the pound basis. The majority of shippers said they would prefer buying the beets and carrots packed and delivered at the shipping sheds, but they have found by experience that often the pack is irregular both as to the quality and quantity of the contents if left up to the grower to pack and deliver.



Figure 7. Container used and method of packing carrots in Lower Rio Grande Valley of Texas.

Methods of Selling and Prices Received by Grower: According to the schedules, about 93 per cent of the beets and 77 per cent of the carrots were contracted in the field by the grower to the local shipper. A small amount of the remainder was harvested by the grower and consigned through the local shipper or sold in bulk for cash to the local shipper or to a neighbor for stock feed, or were left unharvested. Table 8 gives the percentage of carrots and beets sold by each method and the price received by the grower. The grower received an average price of 26 cents per hamper for carrots and 34 cents per hamper for beets.

Table 8.—Prices per bushel basket received by the grower by each method under different methods of selling carrots and beets.

Vegetables	Cash at Track	Contracted in Field	Consigned to Commission Company	Average Price for Season
	(Cents)	(Cents)	(Cents)	(Cents)
Price of carrots.....	23	27	loss	26
Price of beets.....	23	35	4	34
Per cent sold, carrots.....	22	77	1	.....
Per cent sold, beets.....	6	93	1	.....

Cost of Harvesting: The cost of harvesting beets and carrots in the area varied in 1925 according to the scarcity of labor, which usually becomes more acute when the demand for the vegetables is keen.

Cost of Harvesting to Contractor: The average costs of harvesting per basket of beets and carrots, as paid by four local shippers in 1925, were as follows:

	<i>Cents</i>
Harvesting (pulling, tying, clipping tops, and placing in basket) ..	11
Basket	15
Hauling to sheds	8
Cost per basket delivered at shed	34
Unloading from truck, washing, loading in car	6
If top iced, an additional cost of about five cents per basket	5
Total	45

Cost of Harvesting to Grower: According to data secured in 1925 from growers who gathered their beets and carrots and consigned them, the costs were as follows:

	Carrots (cents)	Beets (cents)
Harvesting (pulling, tying, clipping tops, placing in baskets)	12.0	11.7
Hauling to station	6.5	7.2
Cost of basket	15.0	15.0
Total cost per basket delivered to shipping shed...	33.5	33.9

The cost of harvesting and hauling carrots and beets was practically the same. It cost the grower one cent more per bushel to harvest carrots than it did the shipper. This can be explained in part by the fact that both grower and shipper depended on hired help to gather the crop. Since the shipper has large contracts to let, he probably secured his labor to better advantage. The contractor paid 5 to 10 cents per hamper for hauling beets and carrots from the farm to the shipping shed. The average cost was 8 cents per basket. It costs the grower 6.5 cents per basket of carrots and 7.2 cents per basket of beets for hauling a distance of three miles to the shipping shed, which was 1.5 cents per basket cheaper

for carrots and .8 cent for beets for the grower than for the shipper. On the average, the local shipper charged 10 cents per basket for brokerage and 2 cents per basket for loading. This would bring the grower's cost up to 45.5 cents per basket for carrots and 45.7 for beets loaded into the car. Most of the harvesting of beets and carrots by the local shippers has been done by contracting certain parts of the work to Mexicans. When a shipper had an opportunity to sell beets or carrots, he usually wanted them harvested at once and met almost any request, which meant gradually increasing the cost of harvesting. The grower, in securing help in harvesting, has had to meet the price paid by the local shipper.

The cost of harvesting beets and carrots could be materially reduced in the Lower Valley if the grower and shipper would work closer together in securing labor in harvesting beets and carrots.

Cost of Harvesting and Delivering to Shipping Sheds Compared to Price Received: Considering 500 baskets of carrots or beets as an average refrigerator carload, the shipper invested 45 cents per basket or \$225.00 per car for services in harvesting, hauling, and loading a car. According to the schedules the average price the grower received in the field for carrots for the season of 1926 was 27 cents per hamper, or \$135.00 per car. Using \$225.00 as the cost of preparing a car of carrots for the market, and \$135.00 the price the grower receives for a car, we have a total cost of \$360.00. The cost of preparing the carload is 62 per cent of the total cost. Similar calculations show that the cost of preparing a carload of beets would be 57 per cent of the total cost. This shows that the cost of carrots and beets in the field is less than the cost of preparing them for the market. This fact has often caused the grower to feel he was not getting the value of his product. By making the same kind of comparison for cabbage during the same year it was found that the services of harvesting, hauling, and loading were about 20 per cent of the total price.

Distribution of Carrots and Beets: Only 9 straight carloads of beets were shipped from Texas in 1925. They went to St. Louis. Most of the beets are shipped in mixed cars. The distribution of straight carloads of carrots in Texas is limited. In 1925 Dallas unloaded 4 cars and Fort Worth one. These carrots were grown within the state. The local shippers in the Valley state that it takes a city the size of Kansas City, St. Louis, or Chicago to be able to handle many straight cars of carrots. This fact forces Texas to ship carrots in carlots to the larger cities outside of the state. Figure 8 shows the monthly carlot movement of carrots by five states for 1925. In January and February, Texas carrots compete with storage carrots from New York State and to a small extent with new carrots from California. In April and May, Mississippi and Louisiana as well as New York and California come into the field with fresh carrots. Texas can compete in freight rates with all the states listed in Figure 8, except New York.

Comparison of Freight Rates from Texas and from New York to Chicago: The freight rate on carrots from the Lower Rio Grande Valley of Texas

to Chicago is approximately \$1.02 per hundred pounds. There is an additional charge of 36 cents per hundred for refrigeration, making a total of \$1.38 per hundred pounds. It costs 39.5 cents a hundred to transport carrots from western New York to Chicago, which is 98.5 cents per hundred pounds less than the rate from the Valley to Chicago. However, the New York carrots which compete with Texas are from cold storage and there is a preference for fresh carrots such as Texas has when competing with New York. Realizing that New York is their strong competitor in marketing carrots, the carrot growers in Texas should study the report of the carrot crop in New York in relation to production and quality, and plant accordingly. Since the New York crop starts on the market in August, there is ample time for making the adjustment. In the Valley, the growers begin planting carrots September 15 and plant until December 1.

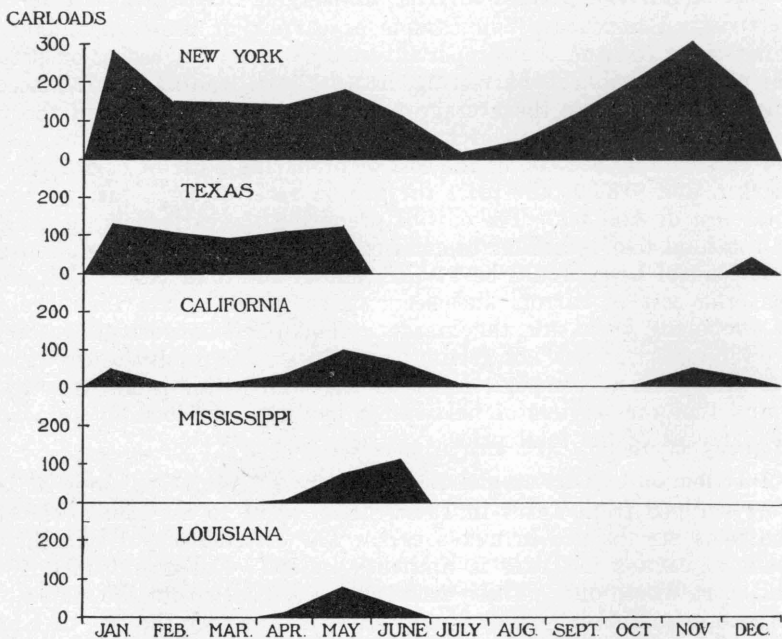


Figure 8. Monthly carlot sales of carrots by five states.

Market News Service, United States Department of Agriculture, Bureau of Agricultural Economics, and New York State Department of Farms and Markets cooperating. "Summary, Season 1925-26."

Due to the cost of harvesting, the great distance to large carlot markets, and the competition from New York state, the production and marketing of carrots in carlots from the Lower Valley appears to have only limited possibilities at present. Carrots are becoming more popular with the public. The quantity used in stews and soups is increasing steadily. Carrots may be canned locally or shipped in bulk to the canning factories.

Irish Potatoes

The carlot shipment of Irish potatoes from the Lower Rio Grande Valley is confined to Cameron County, the majority of which are loaded at Brownsville, San Benito, and Harlingen. Table 9 gives the number of cars of potatoes shipped from Texas by years from 1920 to 1927, inclusive. This table also gives the number of cars shipped from the Valley from 1920 to 1927, inclusive, and the per cent by years of the Texas crop produced in the Valley during the same period.

Cost of Harvesting and Delivering to Shipping Sheds: The average cost per sack of harvesting of 25,285 one-hundred-pound sacks of Irish potatoes in the Lower Rio Grande Valley by 49 growers in 1925 was 15.5 cents per hundred pounds. These same growers hauled the potatoes an average distance of four miles at a cost of 8.9 cents per hundred pounds.

Table 9.—Number of cars of potatoes shipped from Texas and from the Lower Rio Grande Valley, 1920 to 1927, inclusive.

Items	Date							
	1920	1921	1922	1923	1924	1925	1926	1927
Cars of potatoes shipped from Texas	825	1,133	1,494	790	1,426	1,430	2,014	3,023
Cars from the Lower Valley.....	175	290	404	123	533	1,011	1,320	1,553
Per cent of Texas crop from the Valley	21	26	27	16	37	71	66	52

U. S. Department of Agriculture Statistical Bulletins, Nos. 9 and 19. The data for 1926-1927 were secured from U. S. Department of Agriculture Market News Service reports. The data for 1927 are subject to revision.

The sacks cost 13.5 cents each. The total harvesting cost amounts to 37.9 cents per hundred pounds. The average price for the season of 1925 was \$2.35 per hundred. This would leave for the grower \$1.97 for cost of production and profit for each hundred pounds.

Methods of Selling and Prices Received: The schedules show that about 18 per cent of the crop was sold for cash at the track, the growers receiving \$3.30 per hundred pounds; and 82 per cent of the crop was consigned and sold for \$2.14 per hundred pounds. Very little emphasis should be given to the difference received under each method, for, as a rule, the potatoes were consigned only when the price was the lowest.

Yield per Acre: The Lower Rio Grande Valley produced an average yield of 112 bushels per acre, of which only 8 per cent were culls or unsalable potatoes. This 8 per cent consisted mostly of small potatoes sacked separately and sold as "creamers" or saved for seed for early fall planting. In some cases these small potatoes were fed to livestock.

Services Rendered by Local Shipper: The local shippers charged 15 cents per hundred-pound sack as a brokerage fee and 3 cents for loading into the car. When grading was necessary an additional charge of 6 cents was made. The shippers' charges of 18 cents plus the growers' costs for sacks, gathering, and hauling to the loading sheds amount to 56 cents per hundred pounds. If the shipper grades them an addi-

tional charge of 6 cents per sack is made. This makes a grand total of 62 cents per hundred pounds, which is the entire cost of taking potatoes from the ground and preparing them for shipment and loading into the cars. If the shipper belongs to the local association, he is charged one cent per sack for an association shipping tag. The grower pays the same amount, making an additional cost of 2 cents per hundred pounds. According to the schedules secured from 49 growers in the Lower Rio Grande Valley 82 per cent of the potatoes grown in that section are sold by this method.

Relation of Time of Selling to Price the Grower Received: According to the schedules for 1925, about 2 per cent of the Irish potatoes were sold in March and brought about 5.5 cents per pound to the grower. About 75 per cent were sold in April at an average price of 2.5 cents per pound; 22 per cent sold in May at 2 cents per pound; and the remaining one per cent sold in June at .5 cent per pound. The price received in March was more than 10 times the price received in June, 1925. April and May were the months in which 97 per cent of the potatoes in this section of Texas were sold.

Competing Areas: Table 10, compiled from the Federal Market News Service, gives the number of cars of the early grown Irish potatoes shipped in the United States from 1924 to 1926, inclusive. It will be noted that Texas is listed in this table as shipping between April 15

Table 10.—Carlot shipments of early grown potatoes, 1924-1926, inclusive.

State	Year	Date	Number of Cars
Florida.....	1924	Mar. 15—June 30	4,377
Florida.....	1925	Mar. 15—June 30	5,138
Florida.....	1926	Mar. 15—June 30	4,822
North Carolina.....	1924	Mar. 15—Aug. 31	6,568
North Carolina.....	1925	Mar. 15—Aug. 31	4,040
North Carolina.....	1926	Mar. 15—Aug. 31	6,692
Texas.....	1924	April 15—Aug. 15	1,425
Texas.....	1925	April 15—Aug. 15	1,424
Texas.....	1926	April 15—Aug. 15	2,001
Alabama.....	1924	May 1—July 31	2,920
Alabama.....	1925	May 1—July 31	1,046
Alabama.....	1926	May 1—July 31	2,217
Mississippi.....	1924	May 1—July 31	202
Mississippi.....	1925	May 1—July 31	30
Mississippi.....	1926	May 1—July 31	37
Louisiana.....	1924	May 1—July 31	1,425
Louisiana.....	1925	May 1—July 31	1,280
Louisiana.....	1926	May 1—July 31	1,409
Georgia.....	1924	May 15—June 30	544
Georgia.....	1925	May 15—June 30	255
Georgia.....	1926	May 15—June 30	356
Virginia (1st crop).....	1924	June 1—Sept. 30	22,952
Virginia (1st crop).....	1925	June 1—Sept. 30	15,674
Virginia (1st crop).....	1926	June 1—Sept. 30	16,204

Market News Service, U. S. Department of Agriculture, Bureau of Agricultural Economics.

and August 15, which is rather indefinite. As shown in Table 9, the Valley shipped during the past three years from 52 to 71 per cent of the Texas crop each year and our schedules show that 2 per cent of the crop was shipped in March and 75 per cent in April, all of which indicates, as would be expected, that the Valley is the earliest shipping section in the state. This table also develops the fact that the majority of the Southern states compete with each other in the shipping of Irish potatoes, indicating that one of the methods of developing the industry is in producing a quality product cheaply and distributing it with the least cost.

Local Potato Organization: The Rio Grande Potato Growers' Association was organized by the growers at Brownsville, Texas, in 1925. This association recognizes two principal agencies, the grower and the distributor, in the distribution of potatoes. The Rio Grande Potato Growers' Association has functioned effectively since being organized and has grown from 330 members in 1925 to more than 800 members in 1927. The constitutional amendments and by-laws of the association are brief, allowing the grower to withdraw after the first year with six months' notice. It recognizes the value of the local shipper and invites his counsel and cooperation in solving a problem mutual to both parties concerned. Each member must ship through local shippers designated by the association, and pay one cent per 100 pounds of potatoes sold through the association. The local shipper also pays one cent for each 100 pounds of the association potatoes handled. The fund thus collected is used by the association in rendering its members a field service in educating them in grading and standardizing their pack into even running one-hundred-pound sacks and supplying them with a tag of the association to protect its trade-mark. There was one weak point in the operation of this organization in 1926; namely, the shipper could buy as many tags as he desired and place them on potatoes he purchased from any grower whether the grower was a member of the association or not. This probably gives the association more revenue, but if practiced long may eventually lead to embarrassment if some shipper gets careless and sends out potatoes not up to the standards set by the association.

Distribution of Texas Potatoes: Table 11 gives the carlot shipment of potatoes from Texas to Chicago, St. Louis, and Kansas City, the three largest carlot markets of Texas potatoes for the years of 1924, 1925, and 1926. These three markets took almost one-fourth of the carloads shipped from Texas, and therefore are important to the Texas potato growers. Potatoes produced in Texas are shipped to nearly all parts of the United States. In 1926 more than 120 different towns and cities received one or more cars of potatoes from Texas. Chicago received 214 cars from Texas, the greatest number from any market. The freight rate from the Lower Rio Grande Valley of Texas to Chicago, Illinois, is 87 cents per hundred. The states farther north have the advantage of lower freight rates, and the disadvantage of a later market. The potato growers of the Lower Rio Grande Valley have an opportunity

to continue improving their marketing program by fully developing their field service and cooperating with the shippers interested in their program.

Table 11.—Carlot shipment of potatoes from Texas to Chicago, St. Louis, and Kansas City for 1924 to 1926, inclusive.

Years	Chicago	St. Louis	Kansas City	Total
1926.....	214	170	127	511
1925.....	97	132	104	333
1924.....	54	95	140	289

News Service, U. S. Department of Agriculture, Bureau of Agricultural Economics.

Snap Beans

The carlot shipment of snap beans from Texas has been developing rapidly. There were 7 cars of snap beans loaded in Texas in 1920 and 426 in 1926, as shown in Table 12. With the exception of two years of this period, the shippers of the Lower Rio Grande Valley loaded 90 to 98 per cent of the snap beans shipped from Texas fields.

Table 12.—Carlot shipment of snap beans from Texas and from Lower Rio Grande Valley, 1920 to 1926, inclusive.

Items	Date						
	1920	1921	1922	1923	1924	1925	1926
Cars of snap beans shipped from Texas.....	7	39	26	88	210	407	426
Cars from the Lower Valley.....	3	35	25	85	204	399	156
Per cent of Texas crop from the Valley....	43	90	96	97	98	98	37

U. S. Department of Agriculture, Statistical Bulletins, Nos. 9 and 19.

Cost of Harvesting and Delivering to Shipping Sheds: The average costs per hamper of harvesting 15,521 one-bushel hampers of beans grown by 48 growers in the Lower Rio Grande Valley in 1925 were: gathering, 25.35 cents; hauling 3.67 miles, 4.91 cents; or a total of 30.26 cents per hamper. Since the bushel bean hampers cost the grower an average of 16.75 cents each, the total cost of packaging and delivering a bushel hamper of beans to the shed was 47 cents. For the season of 1925, the average price the growers received was \$1.37 per hamper, which left only 90 cents for the grower's cost of growing and profit.

Yield and Amount Left in Field: The 48 growers produced an average of 95.91 bushel hampers per acre for the year 1925. They gathered 79 per cent and left 21 per cent in the field, owing principally to poor quality.

Methods of Selling and Prices Received: About two-thirds of the beans sold cash at track at \$1.42 per hamper. One-third was consigned through the local shipper, and brought \$1.22 per hamper net after the

commission of 10 cents and the loading charge of 2 cents were deducted. Only a small amount was contracted in the field.

Services Rendered by Local Shippers: If the local grower grades and packs the beans properly, there is very little to be done to them after they reach the shed. Mexicans pick the beans by the hamper. These are hauled two or three miles to the shed and the jolting usually packs the beans down four to six inches. This has caused the shipper, in many instances, to insist on the grower's throwing in an extra hamper of beans with every six or eight hampers.

The grower should supervise the packing of the beans at the farm for both quality and quantity. If supervision at the farm is properly done, there is no need for the shipper to insist on any hampers in excess of those he buys.

Relation of Time of Selling to Price the Grower Received: The schedules received showed that 6 per cent of the beans were sold in November for \$1.34 per hamper; 5 per cent were sold in December for \$1.33 per hamper; and 3 per cent in March for \$1.90 per hamper; 80 per cent in April for \$1.36 per hamper; and 6 per cent in May for \$1.30 per hamper.

Distribution of Shipments of Snap Beans: The states that ship snap beans early in the season are Alabama, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Texas, and Virginia. The states that ship snap beans later in the season start with Arkansas and go north as the season advances. In 1925, St. Louis received 119 cars of snap beans, 53 of which came from Texas, 16 from Louisiana, and 12 from Florida, while numerous states shipped the remainder. Texas loaded 20 cars of dry beans in 1925 from the northwestern part of the State. These were principally pink beans.

Tomatoes

Tomatoes are grown for market in many states. In 1925, there were 27,898 cars of tomatoes shipped by 32 states. Minnesota and Oregon shipped one car each while Florida shipped 7,134 cars, and Texas shipped 2,390 cars. During the same period 2,881 cars were imported from Mexico, 322 cars from Cuba, and 112 cars from Bahama Islands. In the production of fresh tomatoes for table use Texas competes with the following states: Florida, California, Mississippi, Tennessee, Ohio, Illinois, and New Jersey. Other states produce tomatoes principally

Table 13.—Carlot shipment of tomatoes from Texas and from the Lower Rio Grande Valley of Texas, 1920 to 1926, inclusive.

Items	Date						
	1920	1921	1922	1923	1924	1925	1926
Cars of tomatoes shipped from Texas.....	1,395	2,025	1,886	1,091	1,694	2,390	2,883
Cars from the Lower Valley.....	185	584	46	110	318	342	866
Per cent of Texas crop from the Valley .	13	29	3	10	19	14	30

U. S. Department of Agriculture, Statistical Bulletins Nos. 9 and 19. 1926 data secured from U. S. Department of Agriculture Market News Service.

for canning purposes. Table 13 gives the number of cars of tomatoes shipped from Texas and also from the Lower Rio Grande Valley by years from 1920 to 1926, inclusive. The year of 1926 was the banner year for both the state and the Valley in the number of cars loaded. The Valley made 30 per cent of the carlot shipments that year, which was the highest percentage made during the 6 years.

Cost of Harvesting and Delivering to the Shipping Sheds: The pink tomato is the tomato that is turning pink on the outside when gathered. The pink tomatoes in Texas are not wrapped but are placed in four-basket crates and shipped in refrigerated cars to the markets. According to the schedules on 17,600 crates of tomatoes in the Lower Rio Grande Valley in Texas for 1925, it cost the grower 11 cents to gather and pack a four-basket crate of tomatoes, 4.5 cents to haul an average distance of 3 miles from the farm to the shipping shed, and 14 cents for the crate, making a total cost of 29.5 cents per crate for all services rendered from the field to the shipping sheds. For the season, the grower received an average price of \$1.28 per four-basket crate of 23 pounds each.

The greenwrap tomatoes are the tomatoes that are gathered when they are ripe or in the process of ripening, except that they are yet green in color on the outside. They are wrapped in a thin sheet of paper similar to that used for wrapping oranges and apples, and then packed in lugs. The greenwrap tomatoes are shipped in refrigerator cars ventilated but not iced. The greenwrap tomatoes are gathered and delivered to the shipping sheds in 45-pound field crates. They are sold cash at track by the pound to the shipper. According to data collected in 1925, it costs the growers 21 cents per crate to gather a 45-pound field crate and 7.8 cents to haul it to the shipping sheds, an average of 3 miles, making a harvesting and hauling cost of 28.8 cents per crate of .64 cents per pound. There would be a very small cost to add for the field crates but since they are used for several seasons and since the cost is so slight it is not included here.

Production per Acre, and Problems of Leftovers and Culls: The pinks yielded 181 four-basket crates of salable tomatoes per acre for the year of 1925. About 50 per cent was left in the field or culled at the sheds during the grading and packing processes. There were about ten times as many pinks as greenwraps sold in 1925, according to the schedules secured. Data were collected from six shippers, on a total of 8 acres, producing 10,885 pounds of salable greenwrap tomatoes in 1925. This would be an average of 1,352 pounds per acre, which is a very low production per acre. However, the growers estimated that only about 41 per cent were gathered. A sample so small obviously means little as a representation of a large industry such as the greenwrap deal has become the past two seasons, and is presented to show the situation in the beginning. There should be some way in improving either the varieties or methods of growing to reduce the number of undesirable tomatoes. It is true the tomatoes are not culled very closely; in fact, if there were fewer culls or some method devised whereby the culls might

be used to an advantage to the grower, he would probably cull more closely than he does. To him it is either a good tomato or a poor one, and a total loss if a poor one.

Methods of Selling and Price the Grower Receives: There are two general methods of selling the pink tomatoes in the Lower Rio Grande Valley. One of these is to sell for cash at track, and the other is to consign through local shipper. In 1925, the schedules indicated that about 28 per cent of the tomatoes were sold cash at the track at 90.5 cents per four-basket crate. About 72 per cent of the pinks were consigned, bringing the grower \$1.43 per four-basket crate. The shipper charged 10 cents per crate on the four-basket crate for brokerage and

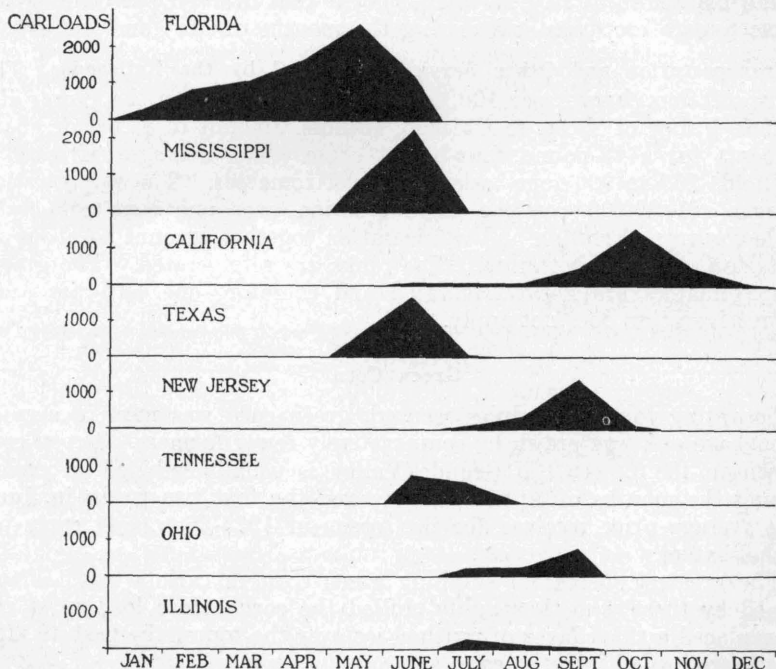


Figure 9. States with which Texas tomatoes compete and time of going on the market, season of 1925.

Market News Service, United States Department of Agriculture, Bureau of Agricultural Economics, Division of Fruits and Vegetables; Summary Texas Tomato Deal, 1925.

loading into car. Less than one per cent of the pinks were contracted in the field, which is not considered a large enough sample on which to quote prices. The greenwraps were sold to the shippers by the pound at an average price of 2.6 cents delivered at the packing sheds. The shipper graded the tomatoes, furnished the crates, and packed them at an average cost of 40 cents per lug. The grower could take the culls home with him if he desired.

Competing Areas: The Lower Rio Grande Valley of Texas is com-

peting strongly with the Jacksonville section in eastern Texas in the tomato deal as to time of selling, especially if the Valley is a little late or Jacksonville is a little early. Jacksonville is one of the tomato centers in Texas, having shipped 1,781 cars in 1925. During the same year the Valley shipped 342 cars of tomatoes. Normally, the Valley tomato deal starts two weeks ahead of the East Texas deal; however, during certain years, owing principally to climatic conditions, they come at the same time. During the year of 1925, Texas shipped 308 of the 442 cars of tomatoes received at the St. Louis market, while Florida shipped 74 cars. As a rule, the tomato deal in Florida is slowing up by June, but in Texas June is a very active month. Figure 9 shows the states with which the Texas tomatoes compete and the time they went on the market in 1925. It will be noted that over 90 per cent of the Texas tomato crop was sold during the months of May and June.

Transportation and Other Services Rendered by the Railroads: The transportation charges per 100 pounds of tomatoes from the Lower Rio Grande Valley of Texas to Chicago, Illinois, amount to \$1.02, or about 25 cents for a 23-pound four-basket crate. The average refrigerator car holds 850 to 900 four-basket crates of tomatoes. The refrigeration charges are \$90.00 per car, or a fraction over one cent per crate, while the transportation and refrigeration together amount to about 26 cents for a four-basket crate. The pinks are refrigerated. The green-wrap tomatoes are not refrigerated and therefore one cent per crate for refrigeration does not apply.

Green Corn

According to the schedules secured, green corn was next in acreage to cabbage and was grown by comparatively fewer farmers. Green corn grown in the Lower Rio Grande Valley is usually shipped in carlots during the months of April and May and the first two weeks in June. The average price received for the season of 1925-26 was 41 cents per bushel-basket.

The greatest success in shipping green corn in carlots has been obtained by those who thoroughly chilled the corn before loading it and then placed a thick layer of crushed ice over the top of the baskets after they were loaded into the car.

Costs of Moving the Corn from the Field to Shipping Sheds: Green corn is not considered a perishable product in the sense in which most other vegetables are. This is due to the fact that when the corn becomes too hard to be used as roasting ears it still has a value as feed for livestock or can be made into meal for human consumption. Other vegetables, as a rule, are a total loss if they are allowed to remain in the field any great length of time after they are ready to be shipped. Bushel-baskets were used principally in shipping green corn. These baskets cost about 16 cents each and held 36 to 48 ears. A few shipments were made in sacks. The sacks held 10 dozen ears and cost 10 cents each. The cost of gathering was 10 cents per bushel. Hauling a distance of three and one-fourth miles from the farm to the shed cost 8 cents per bushel.

About 98 per cent of the green corn was contracted in the field by the grower to the shipper at 40 cents per hamper net to the grower. The remainder was sold cash at track at an average price of 67 cents per hamper. By deducting 34 cents for the cost of the container, harvesting, and hauling, one has 33 cents net price to the grower selling cash at track.

Minor Truck Crops of the Valley

The data secured on spinach and onions listed here under minor Valley truck crops are not considered so conclusive as the data given on the other crops discussed, owing to the small number of growers from whom data were secured. However, they are considered of enough value to mention when it is considered that the winter garden section of Texas is greatly increasing yearly in the production of spinach and onions. The costs and methods of handling these vegetables are similar for both places.

Spinach

Table 14 gives the number of cars of spinach loaded in Texas and also in the Valley from 1920 to 1926, inclusive. The data show that the carlot shipment of spinach in Texas as a whole has increased greatly since 1920. For the season of 1920, Texas had 17,500 acres planted to spinach as compared with 9,500 acres planted to spinach in Virginia, which ranked next to Texas in acreage of spinach.

Table 14.—Carlot shipment of Texas spinach and carlot shipment from Lower Rio Grande Valley, 1920 to 1926, inclusive.

Items	Date						
	1920	1921	1922	1923	1924	1925	1926
Cars of spinach shipped from Texas.....	909	1,484	1,518	2,382	3,123	3,442	4,513
Cars from the Lower Valley.....	3	30	13	21	8	37	77
Per cent of Texas crop from the Valley...	.3	2	.8	.9	.25	1	2

U. S. Department of Agriculture, Statistical Bulletins, Nos. 9 and 19. The data for 1926 were secured from the U. S. Department of Agriculture Market News Service.

Spinach is a minor truck crop in the region comprised in this study. According to the schedules secured from the growers in 1925 less than 200 cars of spinach were loaded in the Valley during the past seven years as shown in Table 14. This section has never loaded more than 2 per cent of the cars of spinach loaded in the State. However, it has not been practicable to extend the study to the principal area of production around Crystal City.

Cost of Harvesting and Delivery to Shipping Sheds: It cost the grower in the Lower Rio Grande Valley, according to the schedules secured on the 1925 crop, 15 cents to gather a bushel-basket of spinach, 5 cents to haul from the field to the loading sheds, averaging 2.3 miles; and 15 cents for empty bushel-baskets, making a total cost of 35 cents a basket.

Methods of Selling and Price the Grower Received: About one per cent of the spinach was sold cash at the track for an average of 55 cents per

basket. It cost the farmer 35 cents to harvest a bushel of spinach and move it from the field to the sheds, which left him a balance of 20 cents per bushel for cost of production and for profit. Approximately 99 per cent was contracted in the field, at an average price of 40 cents per basket net to the grower or twice the amount he received for profit and expenses when he sold cash at track. None was consigned.

Services Rendered by Shipper: The shipper often washes the spinach and places either a small block of ice or a shovel of crushed ice near the center of the hamper. Loading and icing costs about 5 cents per hamper.

Placing ice near the center and also on top of the spinach in the basket would probably be an improvement over the method now in force in parts of the Valley.

Farmers' Bulletin No. 1189 of the United States Department of Agriculture has the following to say in regard to handling spinach for long-distance shipment:

Table 15.—Carlot receipts of Texas spinach by seven terminal markets, season 1924 and 1925.

Year	Kansas City	St. Louis	Chicago	New York	Boston	Pittsburgh	Philadelphia
1924.....	48	746	251	780	340	159	236
1925.....	73	1065	381	589	352	179	322

U. S. Department of Agriculture, Bureau of Agricultural Economics, Texas Department of Agriculture, Bureau of Markets, and the San Antonio Chamber of Commerce, cooperating. Summary of Texas Spinach Deal, 1926.

“Spinach has become an important winter crop in some of the southern truck-growing sections. Shipments amounting to 2,102 cars were made in 1919, of which approximately 87 per cent were from Texas and Virginia.

“Careful handling must begin in the field. The spinach should be handled no more than is absolutely necessary, and each operation should be arranged to cause as little bruising and breaking of the leaves as possible. Slightly wilted spinach plants can be handled with less damage than crisp, turgid ones, but excessive wilting should be avoided.

“Washing increases decay. It is recommended that spinach be shipped unwashed, unless it is very dirty. When it must be washed, care should be used.

“Prompt and thorough cooling is necessary to secure the best conditions in transit. Crushed ice may be used to advantage in each package, and should be placed in two layers, part in the center and part on top of the spinach. Packages iced this way should be loaded right side up in the cars.

“To secure the most efficient refrigeration from the ice in the bunkers of cars, space must be provided for air circulation above and below the load.”

Yield per Acre and Amount Left in Field: The schedules indicated a yield of 212 baskets per acre gathered, which was 84 per cent of the

total yield. The 16 per cent remaining in the field was either of poor quality or matured when there was no demand.

Time of Gathering and Price Received: During December, 3 per cent of the spinach crop was gathered and sold for 50 cents per bushel basket; in January, 45 per cent was harvested and sold for 45 cents; in February, 37 per cent, bringing 25 cents per basket; and in March, 15 per cent, bringing 41 cents per basket.

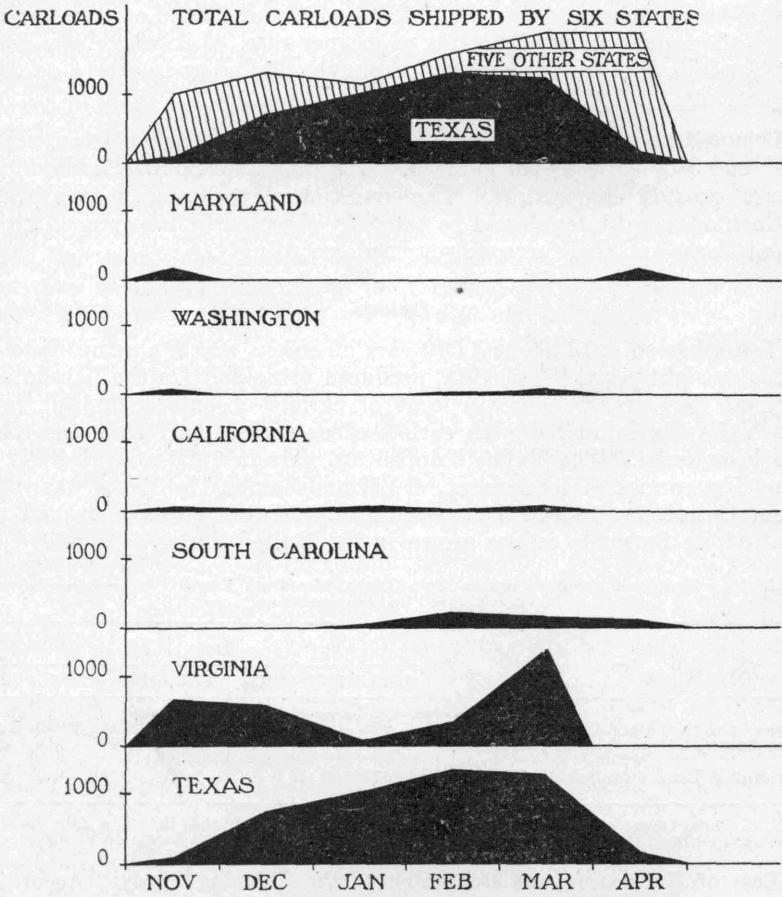


Figure 10. States with which Texas spinach competes and time of coming on the market, season of 1926.

Market News Service, U. S. Department of Agriculture, Bureau of Agricultural Economics, Division of Fruits and Vegetables, 1926.

The Principal Carlot Markets for Texas Spinach for 1924 and 1925: Over 70 per cent for 1925 and over 80 per cent for 1924 of Texas spinach shipped in carlots was marketed in seven cities as shown in Table 15, St. Louis leading by receiving over 1,000 cars in 1925.

Transportation Services: The freight rate on spinach from the Lower Rio Grande Valley to Chicago is \$1.02 per hundred pounds. A basket of spinach weighs 22 pounds. For all practical purposes 22 cents per basket will be used as the rate from the Lower Rio Grande Valley to Chicago. The refrigeration charge was \$85.00 per car. A car of spinach contains 850 to 900 baskets. For all general purposes, one cent per basket is charged for the refrigeration of a bushel-basket of spinach from the Lower Rio Grande Valley of Texas to Chicago. The 22 cents for freight and the one cent for refrigeration gave 23 cents per bushel-basket for these services. Kansas City and St. Louis are nearer the Valley and accordingly carry a cheaper rate. Likewise, New York City and Boston are farther away from the Valley and carry a relative higher rate.

Competitors of Texas Spinach: Figure 10 shows the principal states that compete with Texas spinach. Virginia and South Carolina are Texas' greatest competitors. The condition of the spinach growth and outlook of these states should be carefully observed by the spinach growers of Texas and their acreage governed accordingly.

Onions

Texas has shipped about 4,000 cars of onions a year during the past seven or eight years (Table 16), produced principally in the Laredo and Crystal City areas. The per cent of carlots of onions shipped from the Valley as compared with carlots of onions shipped from the State has been small. The Valley shipped 827 cars in 1920 and 51 in 1921. The first commercial shipment of Bermuda onions in Texas was made from Cotulla in 1900. At present South Texas grows about 80 per cent of the Bermuda onions grown in the United States.

Table 16.—Carlot shipment of onions from Texas, also from Lower Rio Grande Valley of Texas, 1920 to 1926, inclusive.

Items	Date						
	1920	1921	1922	1923	1924	1925	1926
Cars of onions shipped from Texas	4,958	4,209	4,630	3,027	3,918	3,940	5,242
Cars from the Lower Valley	827	51	119	185	198	256	94
Per cent of Texas crop from the Valley	17	1	3	6	5	6.5	2

U. S. Department of Agriculture, Statistical Bulletins Nos. 9 and 19. The data for 1926 were secured from the U. S. Department of Agriculture Market News Service.

Cost of Harvesting and Delivering to the Shipping Sheds: According to schedules secured from seven onion growers, who harvested over 16,000 crates in 1925, gathering cost 13.3 cents per crate and hauling an average distance of two and one-half miles cost 6.7 cents per crate. The empty crates cost 23 cents each. The seasonal price to the grower for delivery at the sheds was \$1.57 per crate. The total cost of harvesting, including gathering, hauling, and containers, was 43 cents per crate. Thus, if the grower sells cash at track, he has left for expenses and profit, \$1.57, less 43 cents, or \$1.14 per crate. If the onions were

consigned, the grower would receive \$1.50 less 43 cents or \$1.07 per crate.

Yield per Acre and Amount Left in the Field: The average yield of marketable onions was 216 crates per acre. After about 25 per cent had been culled and left in the field the gross yield was, therefore, about 288 crates per acre.

Methods of Selling and Prices Received by Grower: About two-thirds of the onions grown in the Lower Rio Grande Valley was consigned and brought about \$1.50 per crate. One-third was sold cash at track for \$1.74 per crate.

Services Rendered by Local Shipper: When consigning, the shipper charges 10 cents per crate for brokerage and 3 cents for loading, making a total charge of 13 cents per crate for his services. This charge of 13 cents, plus the 43 cents for harvesting and handling, makes 56 cents as the average harvesting and selling charges on a crate of onions sold in the Lower Rio Grande Valley in 1925.

The Relation of the Time of Selling to the Price Received by Grower: According to data obtained from the farmers, about 57 per cent of the onions were gathered in April. They sold for \$1.99 per crate. The remaining 43 per cent were gathered in May and sold for \$1.00 per crate. Thus it is seen that the early onions brought almost twice as much as the late ones in 1925. However, according to a small sample for one season, it would be unwise to conclude that the early onions would bring the best price. Domestic and foreign competition vary from year to year and often have much influence upon seasonal prices.

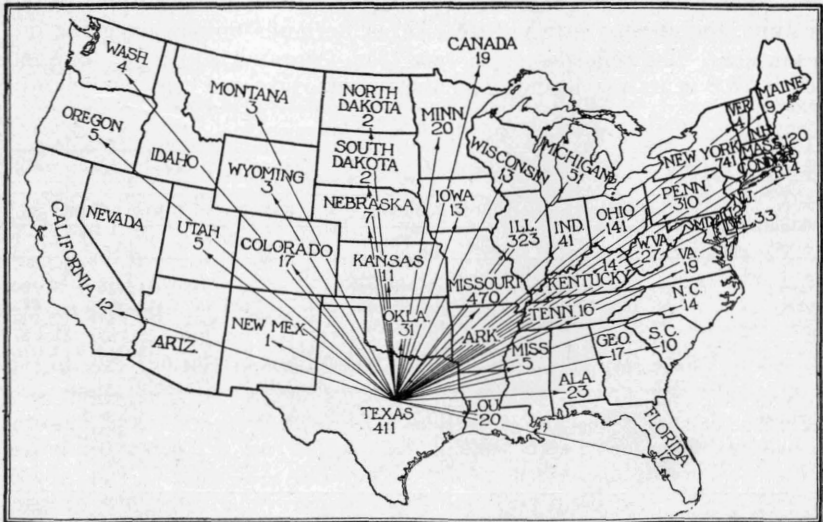


Figure 11. Carlot distribution of Texas onions, season of 1925.

United States Department of Agricultural Economics, Division of Fruits and Vegetables, "The Bermuda Onion Deal for Winter Garden District, Texas Season of 1925."

Domestic Competition: During the year of 1925, according to the Market News Service of the United States Department of Agriculture, 22 counties in Texas loaded 3,940 cars of onions. The number of cars loaded per county varied from one to over 1,600. The Laredo district of Webb County shipped 1,638 cars. Asherton, Big Wells, and Carrizo Springs, located in the winter garden section in Dimmit County, shipped 1,073 cars. These two counties shipped over 2,700 cars, or about 70 per cent, of the onions in carlots shipped from Texas in 1925. The sections in Texas producing Bermuda onions are known as the Laredo, Gulf Coast, and Winter Garden sections. The Gulf Coast section includes the Lower Rio Grande Valley. The Valley usually ships the first car of onions of the season. In 1925, it loaded the first car on March 11. On March 24 of the same year, Laredo billed out a car. The Winter Garden section followed with a car a few days later. The active harvesting season is between March 15 and June 10. Annually there are 90 to 500 cars of onions shipped from the northern part of the State, principally from Collin County, which shipped 184 cars of onions in 1924, 91 cars in 1925, and 487 in 1926. About 95 per cent of these onions are White Globe and Spanish type; the others are Bermudas. With the exception of the Bermudas, these onions start toward the market between July 15 and August 15. Riverside County, California, ships about 800 cars of Bermuda onions each year between April 15 and June 20. Louisiana ships a few cars of Bermuda onions in May, June, and July. June is the heavy month. Figure 11 shows the distribution of Texas onions in the United States for the season of 1925.

Foreign Competition: Table 17 gives the importation of onions into the United States by months from January, 1925, to and including June, 1926. The heaviest importation from Egypt arrives during April, May, and June, the months in which the Texas Bermuda onions are going on the market. The transportation rate from Alexandria, Egypt, to New York is 28.8 cents per bushel, and the import duty one cent per pound.

Table 17. Importation of foreign onions.*

Month	Nation							
	Spain		United Kingdom		Egypt		Other Countries	
	1925	1926	1925	1926	1925	1926	1925	1926
January	90,089	107,259	1,300	3,060			1,426	3,023
February	56,729	150,832	395	2,025			19,368	222
March	15,059	18,845	335		6,102	1,572	56,847	17,408
April	222	939			189,447	155,196	53,781	32,047
May		75	14,256		59,142	142,656	43,214	14,078
June	147,301	72,545	27,377	11	337,928	211,421	76,425	30,814
July	179,736		3,338		88,001		40,534	
August	142,621		7,927				4,362	
September	155,472		4,162				14,288	
October	176,262		4,522				2,363	
November	242,151		10,025				50,811	
December	94,973		930				6,996	

*Imports measured in bushels.

Market News Service, U. S. Department of Agriculture, Bureau of Agricultural Economics, Division of Fruits and Vegetables. Marketing of Texas Onions, Winter Garden District, summary season 1926.

Allowing 56 pounds to the bushel, the transportation and import charges would be 84.8 cents per bushel laid down in New York. The freight rate on onions from the Lower Rio Grande Valley to New York City is \$1.51 per 100 pounds or 84.8 cents per bushel. The transportation charges and import duties on a bushel of onions from Alexandria, Egypt, to New York are the same as the transportation charges from the Lower Rio Grande Valley of Texas to New York. The water route from Corpus Christi and Point Isabel to New York and to other Atlantic ports seems to have possibilities during certain seasons when the Texas crop is unusually early as compared with other early sections.

COST OF HARVESTING OF EIGHT MISCELLANEOUS TRUCK CROPS IN THE VALLEY

Table 18 contains some information on the cost of harvesting of eight miscellaneous truck crops of the Rio Grande Valley in 1925.

Table 18.—Price received and cost of handling eight miscellaneous vegetable crops in the Lower Rio Grande Valley, 1925.

Vegetable	Container Used	Miles Hauled	Cost				Price Received	Difference Between Costs and Price Received
			Container	Gathering	Hauling	Total		
			Cents	Cents	Cents	Cents		
Squash.....	Bu. Hamper.....	1.50	15.0	5.10	5.50	25.60	\$0.71	\$0.45
Pepper.....	Bu. Hamper.....	3.37	18.4	9.00	6.00	33.40	1.81	1.47
Okra.....	Basket, Hamper or Crate.....	3.37	16.5	33.30	2.80	52.60	3.59	3.06
Lettuce.....	Bu. Hamper.....	2.50	15.5	8.00	7.00	30.50	.....	.....
Peas (B. E.)	Bu. Hamper.....	5.25	19.0	18.33	5.60	37.30	.74	.37
Cucumbers...	Bu. Hamper.....	2.00	15.0	12.40	6.60	34.00	2.22	1.88
Egg Plant...	Bu. Hamper.....	.....	20.0	12.40	8.00	33.00	.42	.09
Turnips.....	Ton basis.....	3.00	.....	Ton \$1.86	Ton \$1.75	Ton \$3.61	Ton \$15.00	Ton \$11.39

MIXED CARS OF VEGETABLES

Table 19 gives the number of mixed cars of vegetables loaded yearly in the State of Texas and in the Lower Rio Grande Valley between 1920 and 1925, inclusive. Over 90 per cent of the mixed cars of vegetables loaded in the State during the six years were loaded in the Valley.

According to the opinion of eight local vegetable shippers in the Valley, the average number of varieties of vegetables in a mixed car ranges from three to six.

Table 19.—Carlots of mixed vegetables loaded in Texas, also from Lower Rio Grande Valley, 1920 to 1925, inclusive.

Items	Date					
	1920	1921	1922	1923	1924	1925
Texas shipments.....	385	1,134	1,553	1,512	4,407	4,209
Valley shipments.....	343	1,073	1,529	1,395	3,779	3,891
Per cent of Texas crop shipped from Valley.....	89	95	98	92	86	92

St. Louis used 2 per cent mixed cars of vegetables in 1924 and 3 per cent in 1925, while Dallas and Fort Worth, Texas, used 5 per cent in 1924 and 6 per cent in 1925. This indicates that the larger the city the larger the per cent of straight cars used. This is as would be expected. The smaller places may not be large enough to handle even a mixed car. However, two or more small towns could go together and use a mixed car of vegetables by having the car switched to the siding at the different points and partially unloaded. The extra charge of switching would be comparatively small. This would reduce the transportation charge considerably below the express charges of shipping the vegetables into the small consuming centers. The product could be delivered under better refrigeration, and thereby the consumption of more vegetables would be stimulated. This would apply especially to Texas. It is possible to have a part of a mixed car of vegetables unloaded in the large towns daily, and the remainder of the car to be diverted to the smaller towns in that section once each week or as often as required.

It would be necessary for the shippers to make new business connections and contracts, but this method of delivery would distribute more vegetables in Texas and relieve the congestion of the carlot centers.

The expanding of the mixed car shipment will give the grower a greater latitude in the crops to grow. It will extend the vegetable-growing season over a longer period of time, which will help out in the distribution of labor, an increasing farm problem.

SUMMARY

The area studied is the southernmost part of Texas, lying along the north side of the Rio Grande. This section extends from the mouth of the river for 75 or 80 miles upstream averaging in width 25 to 30 miles.

Data were secured from 215 growers, who produced over 20 different kinds of vegetables. The size of the farms studied averaged 48.3 acres per farm, with 41.5 acres in cultivation. The price paid per acre averaged \$346.00 and is increasing in value, due to the improvements being made, the growth of the nearby towns, and the citrus orchards coming into bearing.

In 1912 there were fewer than 2,000 cars of vegetables shipped from the Valley; by 1927 there were more than 14,000 cars shipped. This expansion in production has caused the shippers to go farther and farther away for markets, thereby increasing the length of the haul. They have made improvements in their methods of icing and are increasing their use of the joint state-federal inspection service.

The 15 shippers whose records were studied were operating at 35 points and owned packing sheds at 33 points, with an average loading capacity of 6.5 cars of vegetables per shed for each day. There were 11 potato graders and 6 tomato graders in operation by the shippers studied. All sheds studied had platform and floor scales and the majority had washing vats, washing racks, packing tables, and ice chippers. There appears to be adequate sheds and packing equipment for the present volume of vegetables shipped from the Valley.

The average telegraph and telephone expenses were \$5.80 per car

handled. The labor and salary expenses were \$31.13 per car, making a total cost of \$36.93 per car for telegraph, telephone, labor, and salary expenses.

Cabbage, beets, carrots, potatoes, string beans, tomatoes, and green corn are listed as major crops, due to the relatively large acreage of each grown in the area. The data secured show that the acreage planted to cabbage is more than twice that of its nearest competitor.

Most of the cabbage was sold "cash at track," a small amount was consigned, and still a smaller amount "contracted" in the field. The net prices would probably be about equal for all methods if all factors were considered.

The average cost per ton of gathering and hauling 4,136 tons of cabbage from the farm to the shipping shed was \$2.74.

The average cost to the shipper is 50 cents per ton for inspection, ventilator, and assisting in loading the cabbage into the car.

Texas cabbage was distributed in carlots in 1925 to every state in the Union except five.

From November to about the middle of February, Texas cabbage competes with stored cabbage from New York and Wisconsin. The remainder of the year the carlot competition comes from Florida, Alabama, Mississippi, Louisiana, and to a small extent California.

The average price the grower of cabbage received for over 3,000 tons for the season of 1925-26 was \$11.45 per ton.

Similar data on the other major crops listed are given in the text.

Spinach and onions are listed as minor vegetables in the area as the schedules showed these vegetables to be of minor importance when compared with those more extensively grown.

Squash, pepper, okra, lettuce, peas, cucumber, egg plant, and turnips are listed as miscellaneous crops for the Lower Rio Grande Valley of Texas. The kind and cost of containers used for these, miles hauled, gathering, and hauling from farm to shipping sheds are given. The price received for the miscellaneous vegetables is given with the exception of lettuce.

The vegetable growers in the Valley should study the outlook reports on competing areas. The storage cabbage in New York and Wisconsin is grown far enough in advance of the Valley cabbage to enable the Valley growers to adjust their cabbage acreage to meet the demand.

There are no cities in Texas large enough to consume a straight carload of beets and very few that can handle straight carloads of carrots. Further expansion in the shipment of beets and carrots in Texas under refrigeration means shipping more cars of mixed vegetables. All towns and most cities in Texas could handle mixed cars of vegetables with the exception of cabbage and potatoes better than straight cars. Mixed cars afford a greater variety, deliver the product under refrigeration, and furnish a much cheaper rate than can possibly be had under local freight or express.