IMPROVING COOPERATIVE MARKETING OF MISSISSIPPI DELTA SOYBEANS

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PREFACE

Objectives and Study Area

The primary objective of this study is to provide guidelines to cooperative leaders in the Mississippi Delta area for building an improved cooperative marketing system for soybeans, with emphasis on the volume that moves into export channels. Such guidelines should consist of an evaluation of the cooperative marketing system in the Mississippi Delta as it currently operates, elevator and transportation cost relationships, prospective trends influencing soybean marketing, and alternative programs for action by cooperatives.

The components of an improved cooperative soybean marketing system include soybean procurement, transportation, construction and financing of elevator facilities, storage and merchandising practices, commitment, organization, and coordination among cooperatives.

The area to be studied as requested by the cooperatives consists principally of soybean producing areas with cooperatives that supply soybeans for export and use the Mississippi River for transportation. The study area selected is contiguous to the Mississippi River, and extends from the northwest edge of Mississippi to Port Allen, La. (figure 1).

The study area is in parts of three States. It includes areas normally considered the Delta area plus fringe counties that ship soybeans to Mississippi River points. In Mississippi, it includes fringe counties in Crop Reporting Districts (CRD) 2, 5, and 7 as well as CRDs 1 and 4 that are normally considered to be the Delta area. In Louisiana, it includes CRDs 3 and 5 and parts of CRDs 2 and 6. In Arkansas, it includes four counties that are a part of CRD 9.

The reason for selecting that particular area was so that the study would include mainly local cooperatives that appeared to have common economic and marketing interests for the export of soybeans via the Mississippi River.

ACKNOWLEDGMENTS

For contributions to this study, the author expresses appreciation to personnel in the Departments of Agricultural Economics in the Agricultural Experiment Stations in Mississippi, Louisiana, and Arkansas, and the Marketing Department of the Cooperative Extension Service in Mississippi. Appreciation is also expressed to Simmons-Belk, Inc., Cleveland, Miss., for information on elevator design and costs and to Francis P. Yager, Agricultural Economist - Grain, for counsel and field contacts to obtain basic information. The author is indebted to the various cooperatives for their cooperation in supplying information on their soybean marketing operations.

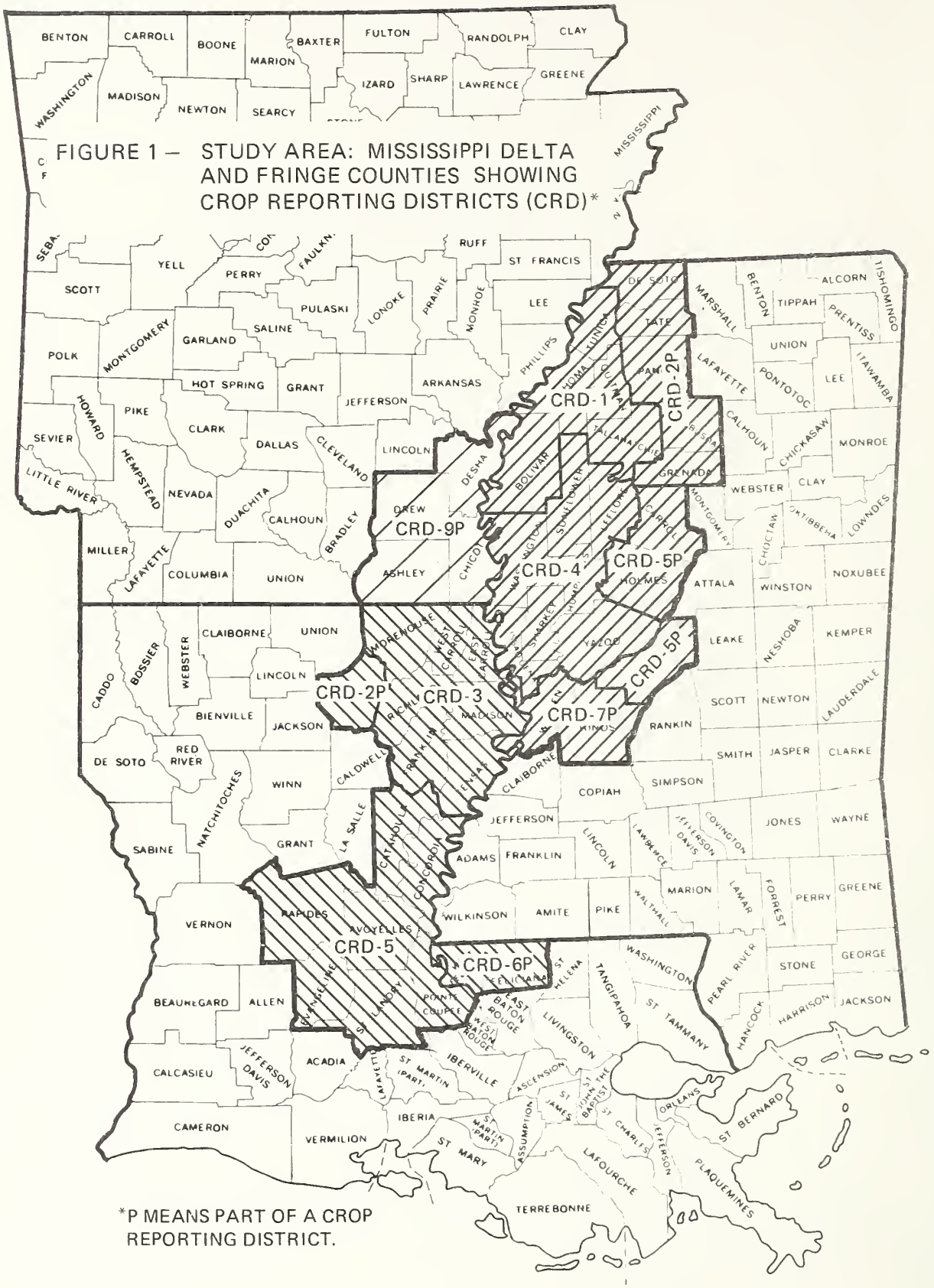

FIGURE 1 — STUDY AREA: MISSISSIPPI DELTA AND FRINGE COUNTIES SHOWING CROP REPORTING DISTRICTS (CRD)*

*P MEANS PART OF A CROP REPORTING DISTRICT.

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HIGHLIGHTS

1. Soybean production in the 43-county study area for the 1976 crop was 91 million bushels--7 percent of the U.S. total. Mississippi accounted for 48 percent of study area soybean production; Louisiana, 42 percent; and Arkansas, 10 percent. Projected 1985 soybean production for the study area is 105.5 million bushels, an increase of 16 percent over 1976.

2. The 160 grain elevators in the study area had a total storage capacity of 49.5 million bushels for the 1976 crop. Of this total, the 37 cooperatives had 15.8 million bushels of storage capacity or 32 percent of total for the study area.

3. There are 10 port elevators in the New Orleans area and 4 in other east Gulf areas. Total storage capacity for these 14 port elevators totals 65.3 million bushels. There are two cooperative port elevators: Farmers Export Co. at Ama, La. has a 5-million-bushel elevator; and American Grain Association at Lake Charles, La. has a 1.5-million-bushel elevator.

4. There are five major soybean plants that process soybeans from the study area. They have the ability to crush about 4,650 tons of soybeans daily. In addition, there are 10 cottonseed processing plants in Mississippi that may crush soybeans. Altogether, it's roughly estimated that 25-30 million bushels of 1976 crop soybeans were processed by the four plants in the Mississippi study area.

5. The 37 cooperative elevators handled 29 million bushels (net) in 1976-77. Cooperatives' share of total soybean production was 42 percent in the Mississippi portion of the study area, 20 percent in Louisiana, 29 percent in Arkansas, and 32 percent for the entire study area. About two-thirds of total cooperative volume originated in two crop reporting districts--CRD-4 in Mississippi and CRD-3 in Louisiana.

6. Cooperatives disposed of 18.6 million bushels, or 65 percent of their 1976-77 volume, to export channels. Cooperatives' share of soybean export movements from the study area was about 36 percent for the 1976 crop. The remainder of co-op volume (35 percent) was shipped to soybean processors of which about one-third went to the soybean processing plant at Marks, Miss. that was recently purchased by Gold Kist Inc.

7. Of the 18.6 million bushels originated by cooperatives for export, about 5.6 million went to a cooperative export elevator. Mississippi cooperatives in the study area shipped 1 million bushels to Farmers Export Co., and Louisiana cooperatives shipped 2 million bushels to Farmers Export Co. and 2.6 million to American Grain Association. Arkansas cooperatives shipped all their soybeans to their own processing plants for the 1976 crop.

8. In Mississippi, cooperatives originated 10.1 million bushels by barge, 8.5 million bushels by truck, and 1.8 million bushels by rail. In Louisiana, cooperatives originated 1.8 million bushels by barge, 6.7 million bushels by truck, and 800,000 bushels by rail. Much of the truck volume later moved by barge. Of the total cooperative soybean movement to the Gulf, 64 percent arrived by barge, 28 percent by truck, and 8 percent by rail. Export movements of soybeans from the study area rely largely on truck and barge transportation.

9. The cost of new country elevators has increased sharply. All-steel elevators are generally the least expensive to build, with estimated costs ranging from $1.03 a bushel of capacity for a new 558,000-bushel elevator to $2.33 a bushel for a 134,000-bushel elevator, not including land and site development. The estimated cost of a new river 1,052,000-bushel subterminal is $2.19 a bushel.

10. The estimated cost per bushel handled by elevators at assumed typical annual volumes ranges from 13.1 cents a bushel for a new 558,000-bushel elevator to 21.3 cents for 134,000-bushel elevator. Handling cost per bushel for a new 1,052,000-bushel river subterminal is estimated to vary from 18.1 cents a bushel at the 3-million-bushel volume down to 7.7 cents at the 9-million-bushel volume.

11. The projected 1985 soybean volume for cooperatives is 43.4 million bushels. This is based on the assumption that the study area production will increase 16 percent over 1976 and that cooperatives will increase their share from 32 to 41 percent. Such a 51-percent increase in volume for cooperatives would mean marketing an additional 14.7 million bushels of soybeans. Accordingly, if 65 percent continued to move to export channels, cooperatives would originate an additional 10 million bushels for export. Thus, the 18.6 million bushels originated from the 1976 crop could jump to about 28.6 million bushels in 1985. In order to obtain a 41-percent share of soybeans in the study area, cooperatives will need to improve facilities, service to members, cooperative orginization, and marketing expertise.

12. Government programs, such as Public Law 480 and CCC credit sales, in some years may be an important supplement or aid to a cooperative grain export marketing program. Sales arrangements through those programs can best be handled by an export cooperative.

13. Five alternatives are presented for consideration: (a) Continue with the present system of a generally weak commitment to Farmers Export Co., (b) use the present system except that all cooperatives would increase their commitment to sell to Farmers Export Co. through MFC Services or to American Grain Association, (c) form a new cooperative export marketing association that would be a member of FEC (and possibly American Grain Association) and would make

sales and coordinate soybean movements to FEC for all study area cooperatives, (d) form a new cooperative export marketing association to make sales to various exporters and coordinate soybean movements for all study area cooperatives, or (e) form a cooperative export marketing association that would coordinate sales and movements for study area cooperatives through a port elevator owned and operated jointly with outside or noncooperative interests.

14. A general weakness of alternatives (c) through (e) in item 13 would be the vulnerability of the new export marketing association, whose fate would depend greatly on the success and volume of soybean export sales. The association would not have diversification in processing as does Riceland Foods, Inc. and Gold Kist Inc.

Regardless of which alternative is chosen, the chances for improving the present cooperative soybean marketing system can be greater if the following actions are implemented:

A. Obtain volume and investment commitments by producers to local cooperatives, by local cooperatives to the regional marketing association, and by the regional association to a cooperative export elevator.

B. All local grain cooperatives become members of the regional marketing association that is a member of an export cooperative with port elevator facilities and an export merchandising program.

C. Place cooperative subterminals under the control of a regional association.

D. Have a high level of management ability for the regional association and export cooperative(s).

E. Coordinate operations of the regional association with any cooperative soybean processing plants in study area.

IMPROVING COOPERATIVE MARKETING OF MISSISSIPPI DELTA SOYBEANS

Stanley K. Thurston

Background and Problems

The volume of soybeans produced in the Mississippi Delta reached a relatively high level in the late 1960's and the 1970's. In 1976-77, soybean production for the study area totaled 91.1 million bushels, 8 percent of the U.S. total.

Soybean production began to increase rapidly in 1966, resulting in more local elevators handling soybeans, increased soybean processing capacity, and an increased soybean movement to the gulf for export.

Cash farm receipts in the Delta from soybeans has increased in importance in recent years. In 1966 soybeans ranked third in Mississippi and Louisiana, and first in Arkansas. 1/ In 1976 soybeans, as a source of farm receipts, ranked first in Mississippi, Louisiana, and Arkansas. During the period of expansion in soybean production, cooperatives and other firms built facilities to store and handle it. Even so, cooperative elevator facilities are not available to many producers in the study area to enable them to benefit from the price monitoring influence of cooperatives.

Cooperatives in the study area have various organizational arrangements. In Mississippi, there are two regionals that are involved in grain marketing; MFC Services and Staple Cotton Services. MFC is a member of Farmers Export Co. Ama, La., and procures grain through local cooperatives and noncooperative elevators for direct shipment to Farmers Export. MFC recently, signed a management contract with Old River Terminal at Lettsworth, La. Also, MFC recently purchased 18 Riverside Chemical farm service centers, some of which are located in the study area and have potential for handling significant volumes of soybeans.

Staple Cotton has a contract with Farmers Grain Terminal to manage its river terminal at Greenville branch elevator at Indianola, Miss. In addition, Staple Cotton owns and operates elevators at Webb and Hollandale.

Local cooperative elevators in the Mississippi study area are generally independent, with control exercised by local boards of directors. Some have membership with MFC Services; many have no affiliation with a regional cooperative.

1/ State Farm Income Statistics, July 1977, Economic Research Service, United States Department of Agriculture.

In Louisiana, Staple Cotton Services has a management contract with Farmers River Terminal at Mound, La. Local cooperatives are independent and have their own board of directors. Some are members of MFC Services; some are members of American Grain Association; Lake Charles, La.; and several are not affiliated with any regional cooperative.

In Arkansas, 3 cooperative elevators in the study area are part of Riceland Foods, a centralized regional cooperative. Thus, there are diverse cooperative organizational arrangements in the area with no overall areawide coordinated effort to market soybeans.

At present, the soybean marketing services by regionals are provided on a limited basis to local cooperatives. Staple Cotton Services has management contracts with two or three cooperatives, and MFC Services provides soybean marketing services primarily for movements to Farmers Export Co. (FEC) at Ama, La. In the Mississippi and Louisiana portions of the study area, local cooperatives generally provide their own grain marketing and operating expertise and do not look to regionals for guidance and assistance.

Soybean Production

Soybean production in the three Delta States of Mississippi, Louisiana, and Arkansas increased 167 percent from 1960 to 1976 and only 3 percent from 1970 to 1976 (table 1). However, increases for individual States were markedly different. Arkansas increased soybean production several years ahead of Mississippi and Louisiana. Growth in Arkansas production leveled off after 1970, whereas production from 1970 to 1976 increased 23 and 36 percent, respectively, for Mississippi and Louisiana.

Soybean acreage for the tristate area for the 1977 crop, in comparison with the 1976 crop, was estimated to increase 18 percent in Mississippi, 11 percent in Louisiana, and 30 percent in Arkansas. 2/ The large increase for Arkansas reflected the poor 1976 crop.

Production in the Study Area

Soybean production for the 1976 crop in the study area comprises 62 percent of Mississippi's production, 69 percent of Louisiana's production, and 11 percent of Arkansas' production. Production tended to be greatest in those counties adjacent to the Mississippi River (figure 2).

Since 1970, total soybean production in the study area has varied from a low of 69.5 million bushels in 1974 to a high of 91.1 million bushels in 1976 (table 2). The low production in 1974 was primarily due to lower acreage harvested and lower yields in Arkansas and Mississippi.

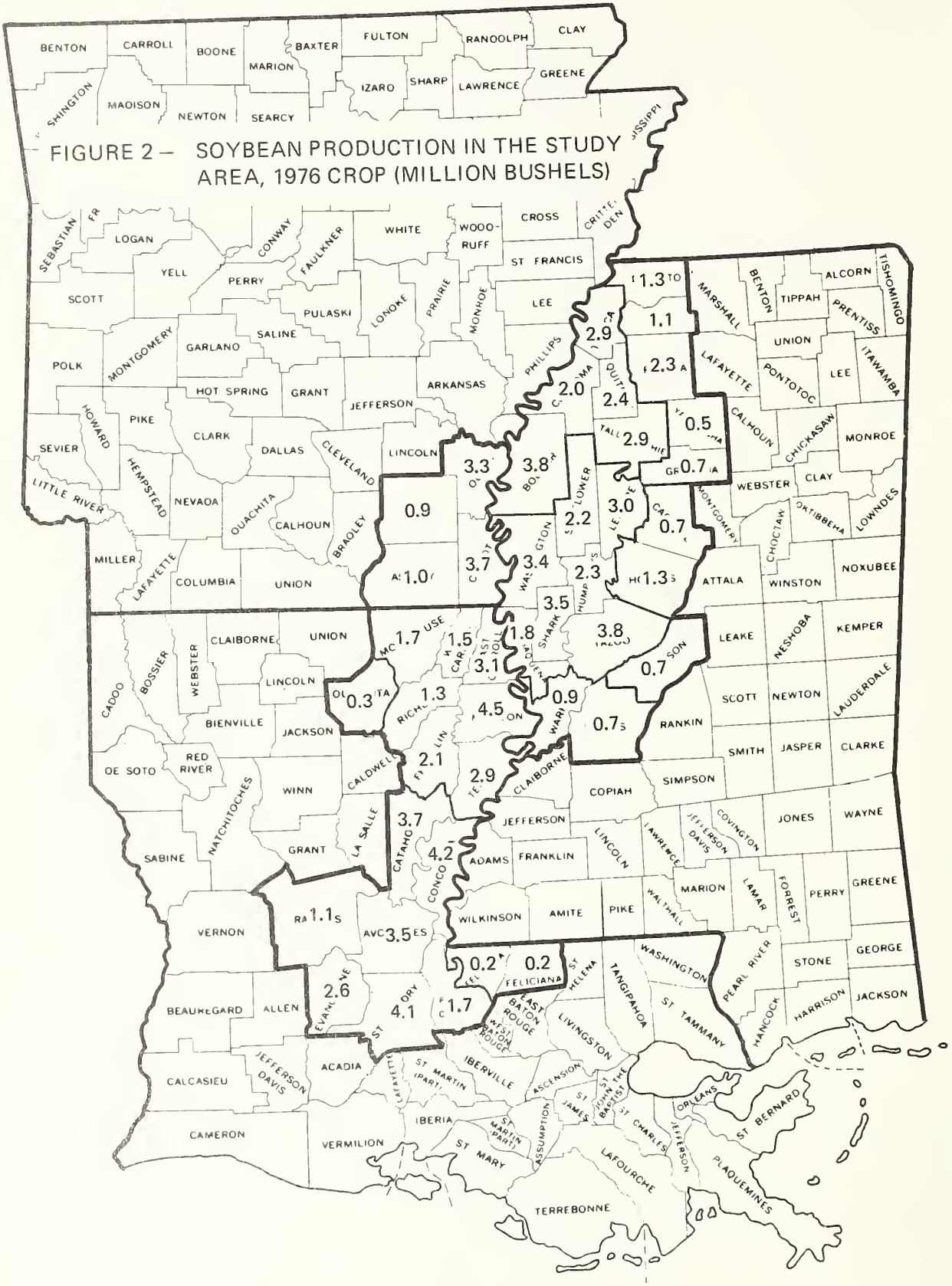
From 1970 through 1976, soybean production in the Mississippi and Arkansas portions of the study area generally did not increase. The

2/ Source: Crop Production, Crop Reporting Board, SRS, USDA, September 1977.

Table 1--Soybean production, acreage, and yield in Mississippi, Louisiana, and Arkansas, crop years 1960, 1970, and 1976

State	Crop year			1976 as a percent of 1970	1976 as a percent of 1960
	1960	1970	1976		
	Production--1,000 bushels				
Mississippi	20,152	58,050	71,500	123	354
Louisiana	5,184	40,512	55,120	136	1,063
Arkansas	51.282	99,000	77.760	79	152
Total	76,618	197,562	204,380	103	267
	Harvested acreage--1,000				
Mississippi	916	2,580	3,250	126	354
Louisiana	216	1,688	2,120	126	981
Arkansas	2,442	4,400	4,320	98	177
Total	3,574	8,668	9,690	112	271
	Yield--bu per acre				
Mississippi	22.0	22.5	22.0	--	--
Louisiana	24.0	24.0	26.0	--	--
Arkansas	21.0	22.5	18.0	--	--

FIGURE 2 – SOYBEAN PRODUCTION IN THE STUDY AREA, 1976 CROP (MILLION BUSHELS)



sizable increase in total Mississippi soybean production since 1970 occurred outside the study area.

Projected 1985 Production

For the Mississippi portion of the study area, the projected soybean production for 1985 is 50.8 million bushels, a 15.2-percent increase over production in 1976. For Louisiana, projected production is 42.7 million bushels, a 12.1-percent increase. For Arkansas, projected production is 12.0 million bushels, a 34.8-percent percent increase (yields were down in 1976). Overall, the projection for 1985 production in the study area is 105.5 million bushels, a 15.8-percent increase over production in 1976. By comparison, projected 1985 production for the United States is 1.8 billion bushels, a 45 percent increase over production in 1976. This rather conservative projection indicates a gradual growth in soybean production.

Grain Elevators and Soybean Processors

The study area market involved about 45 million bushels of soybeans for each of the 1975 and 1976 crop years. Soybean producers sell principally to local and subterminal elevators. Soybeans then move either to export elevators or to soybean processors.

Number and Capacity of Elevators

In the Mississippi portion of the study area there are 84 grain elevators with a total grain capacity of 25 million bushels (table 3). In addition, 14 oilseed processors have 30 million bushels of storage capacity for soybeans and cottonseed.

In the Louisiana portion, there are 57 grain elevators with an estimated total grain capacity of 17 million bushels. This includes country and river elevators and excludes the port elevator at Port Allen. It also excludes elevators used principally for rice. There are no oilseed processors in the Louisiana portion of the study area.

In the Arkansas portion, there are 19 grain elevators with an estimated capacity of 8 million bushels. (If an elevator handled rice, soybeans, and other grains, an allocation of storage capacity was made in proportion to annual volume handled in order to arrive at estimated capacity for grain (soybeans and other grains.)

River Elevators

There are 27 river elevators or loading facilities located in the study area. Of this total, 17 are on the Mississippi River, 4 on the Yazoo River, 2 on the Black River, 2 on the Atchafalaya River route and 2 on the Ouachita River (table 4 and figure 3).

Table 2--Soybean production in the study area for crop reporting districts within States, crop years 1970-76 and projected estimate for 1985

State and crop reporting district	Crop year							
	1970	1971	1972	1973	1974	1975	1976 1/	1985 2/
	Million bushels							
Arkansas:								
CRD-9 (part)	9.7	9.9	9.3	12.2	7.9	11.6	8.9	12.0
Mississippi:								
CRD-1	15.8	13.1	11.6	15.1	8.3	15.5	14.0	16.1
CRD-4	19.8	19.1	14.4	19.2	13.8	22.5	20.0	22.4
CRD-2 (part)	4.0	3.9	3.6	4.0	3.4	5.4	5.8	6.6
CRD-5 (part)	2.6	2.7	2.2	2.3	2.1	2.3	2.7	3.7
CRD-7 (part)	1.2	1.2	1.2	1.0	1.0	1.2	1.6	2.0
Subtotal	43.4	40.0	33.0	41.6	28.6	46.9	44.1	50.8
Louisiana:								
CRD-3	18.1	16.3	14.2	15.7	17.3	16.4	17.1	20.0
CRD-5	11.2	11.8	12.6	9.4	15.0	14.3	20.4	21.8
CRD-6 (part)	0.3	0.3	0.3	0.4	0.4	0.4	0.3	0.5
CRD-2 (part)	0.4	0.4	0.3	0.2	0.3	0.4	0.3	0.4
Subtotal	30.0	28.8	27.4	25.7	33.0	31.5	38.1	42.7
Area total	83.1	78.7	69.7	79.5	69.5	90.0	91.1	105.5

1/ Estimates from Crop Reporting Board, ESCS, USDA.

2/ Projected by Cooperative Marketing and Purchasing Division, ESCS, using percentage increases for State totals as reflected in estimates by SM-42 (Southern Regional Grain Marketing Committee) but using various means of estimating increses for crop reporting districts.

Table 3--Grain elevators and estimated storage capacity for grain, study area, by State, 1976 crop

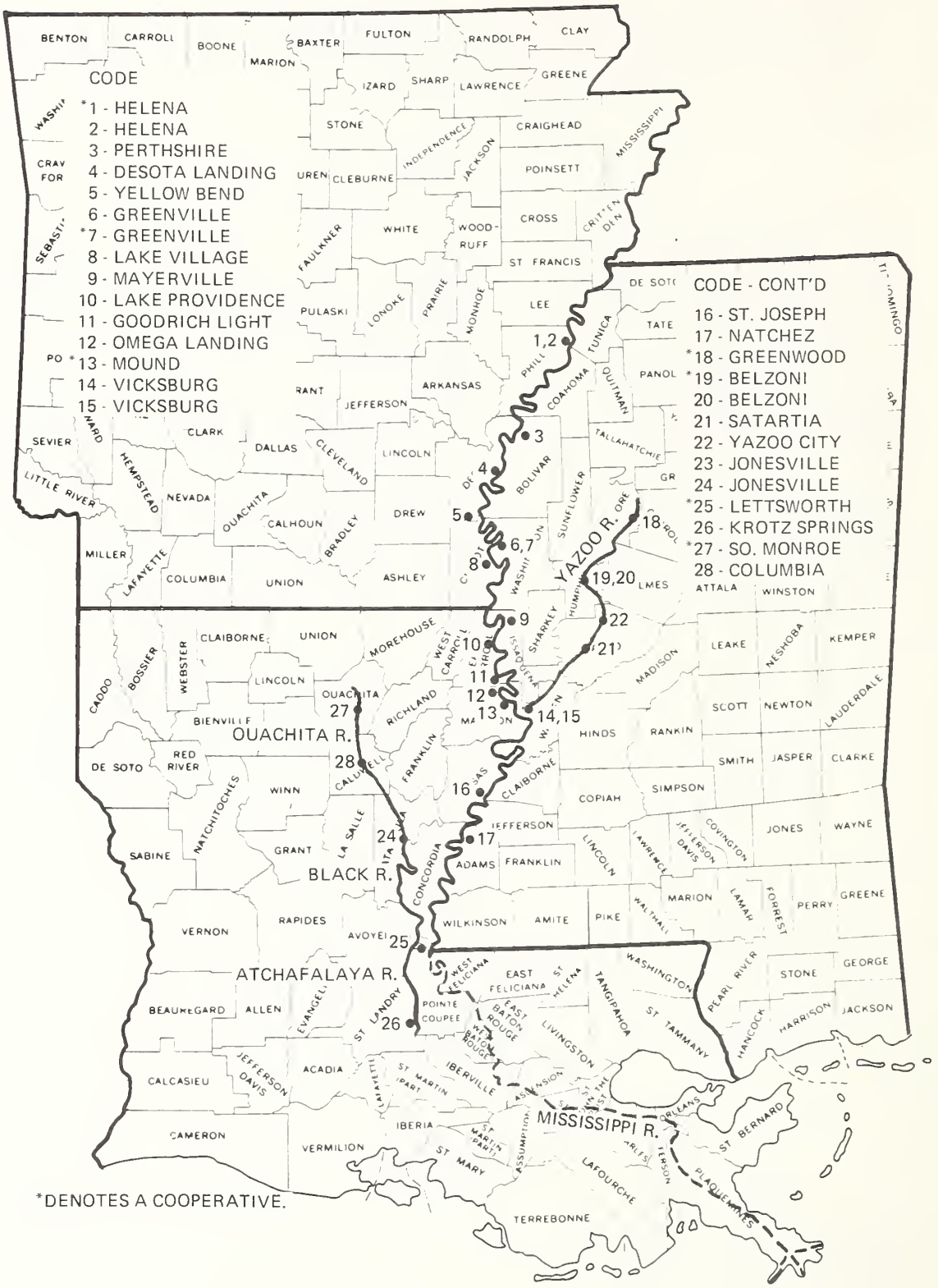
Portion of State in study area	Number of elevators	Estimated storage capacity
		Million bushels
Mississippi	84	25
Louisiana	57	17
Arkansas	19	8
Total	160	50

Table 4--River grain elevators and approximate storage capacity on specified rivers, study area, 1977

River system/location and code for map	Name of river elevator	Storage capacity
		1,000 bu
Mississippi River:		
1. Helena, Ark.	Riceland Foods	1/ 750
2. Helena	Helena Terminal	2/
3. Hurricane Point, Miss.	Bunge (Perthshire)	1,200
4. DeSoto Landing, Ark.	Bunge	1,100
5. Yellow Bank, Ark.	Cargill	4/ N.A.
6. Greenville, Miss.	Bunge	2,250
7. Greenville	Farmers Grain Terminal	2,400
8. Lake Village, Ark.	Midwestern Grain	900
9. Mayersville, Miss.	Bunge	1,300
10. Lake Providence, La.	Lake Providence Port Elev.	1,500
11. Goodrich Light, La.	Bunge (Transylvania)	1,800
12. Omega Landing, La.	Omega Grain Elevator	2,000
13. Mound, La.	Farmers River Terminal	1/ 1,000
14. Vicksburg, Miss.	Vicksburg Terminal Elev.	120
15. Vicksburg	Paymaster	5,800
16. St. Joseph La.	Tensas Port Elevator	260
17. Natchez, Miss.	Cargill	460
Yazoo River:		
18. Greenwood, Miss.	Cooperative Elevator Co.	1/ 2,011
19. Belzoni, Miss.	Farmers Elevator & Supply	1/ 400
20. Belzoni	Belzoni Oil Works	400
21. Yazoo City, Miss.	Bunge	1,000
22. Satartia, Miss.	La Delta Elevator	400
Black River:		
23. Jonesville, La.	La. Delta Elevator	1,400
24. Jonesville	Bunge	2,000
Atchafalaya River route:		
25. Lettsworth, La.	Old River Terminal	1/ 3/ 300
26. Krotz Springs, La.	Illa Corp.	250
Ouachita River:		
27. So. Monroe, La.	River Port Terminal, Inc.	1/ 160
28. Columbia, La.	Caldwell Port Elevator	337
28. Columbia	Caldwell Port Elevator	337

1/ Cooperative facilities.
2/ Loading dock only.
3/ On lower old river
4/ Not applicable.

FIGURE 3 – LOCATION OF RIVER GRAIN FACILITIES IN MISSISSIPPI RIVER DELTA STUDY AREA.



*DENOTES A COOPERATIVE.

Most river elevators perform the function of a subterminal by receiving soybeans from other elevators as well as from producers. River elevators play a significant role in marketing delta soybeans because barge transportation offers low rates compared to rail.

Number and Capacity of Processors

Five processors provide major markets for soybeans produced in the study area. Four are in Mississippi and one is in Arkansas (table 5).

The four Mississippi plants have a combined estimated daily crushing capacity of 3,150 tons of soybeans, and have total storage capacity for 14.1 million bushels of soybeans. It's probable that these four plants process somewhere near 25 to 30 million bushels annually. However, some of their soybeans are obtained from outside the study area.

The Riceland Foods plant at Helena has an estimated daily crushing capacity of 1,500 tons. Their supply of soybeans includes the volume shipped from their three elevators in the Arkansas portion of the study area, a few elevators in Mississippi, as well as other elevators in Arkansas.

In early 1977, Gold Kist Inc., purchased the soybean processing plant of Cook Industries at Marks, Miss. This plant can crush 1,500 tons of soybeans a day or up to 15 million bushels annually. This Gold Kist cooperative facility provides an opportunity for increased returns and service to soybean producers in the area. Patronage refunds of net savings will be paid to member producers and cooperatives in proportion to volume of soybeans marketed by each member. Refunds received by member cooperative elevators should be passed on to their producer members.

Other processing plants that may provide markets for study area soybeans include: (1) several cottonseed processing plants in Mississippi, (2) the Cook Industries processing plant in Pine Bluff, Ark., with a 250-ton-a-day capacity, and (3) the Bunge plant at Destrehan, La., with a 1,500-ton-a-day capacity. The volume of soybeans they process from the study area is believed to be relatively small.

Export Firms and Port Elevators

The export market provides an important outlet for delta soybeans. Soybeans are shipped by barge, rail, and truck from the study area to export elevators principally in the New Orleans area.

Fourteen export elevators in the New Orleans and other east gulf areas have a total storage capacity of 65.3 million bushels (figure 4 and table 6). In the New Orleans area, 10 port elevators have a storage capacity of 58.2 million bushels. Farmers Export Co. at Ama has the only cooperative port elevator in the New Orleans area. Five of the 10 elevators are operated by large international grain firms. The public elevator is at New Orleans, operated by a company owned by C.B. Fox Co.,

Table 5--Processors who provide major markets for soybeans produced in the study area

State and town	Company name	Estimated daily crushing capacity
		tons
Mississippi:		
Clarksdale	Planters Manufacturing Co.	450
Jackson	Anderson, Clayton & Co.	300
Marks	Gold Kist Inc.	1,500
Vicksburg	Anderson, Clayton & Co.	900
Total		3,150
Arkansas:		
Helena	Riceland Foods, Inc.	1,500

Table 6--Port elevator facilities in the New Orleans and other East gulf areas, 1977

Location	Name of port elevator	Storage capacity
		1,000 bushels
New Orleans:		
New Orleans, 1/	Pub. Gr. Elev. of New Orleans, Inc.	7,220
Myrtle Grove, La.	Miss. River Gr. Elev., Inc.	6,000
Westwego, La. 2/	Continental Grain Co.	6,000
Reserve, La.	Bayside Elevator (Cook Ind.)	4,000
Ama, La. 3/	Farmers Export Co.	5,000
Destrehan, La.	St. Charles Grain Elev. Co. (ADM)	6,250
Destrehan	Bunge Corp.	8,000
West Baton Rouge, La.	Cargill, Inc.	7,707
Reserve,	Cargill, Inc.	6,000
Pauline, La. 4/	Peavey	2,000
Subtotal		58,177
Other east gulf areas:		
Mobile, Ala. 1/	Mobile Grain Elevator	2,000
Pascagoula, Miss.	Louis Dreyfus Corp.	3,000
Lake Charles, La. 3/	American Grain Assoc.	1,500
Lake Charles, 3/	Continental Grain Co.	600
Subtotal		7,100
Total		65,277

1/ Public grain elevator.
2/ Destroyed by explosion December 1977.
3/ Operated by a cooperative.
4/ Construction to be completed in summer of 1978.

FIGURE 4 — LOCATION OF PORT GRAIN ELEVATORS IN NEW ORLEANS AREA, MISSISSIPPI RIVER

Peavey, and Pike Grain Co. The public elevator is a limited access facility available to other grain companies or cooperatives only by selling to one of the owner companies.

The Farmers Export elevator at Ama serves seven member regionals: Illinois Grain Corp., FAR-MAR-CO, Inc., Farmers Union Grain Terminal Association (GTA), Missouri Farmers Association (MFA), Farmers Grain Dealers Association of Iowa, MFC Services, and Indiana Grain Division of Indiana Farm Bureau Cooperative Association. Any local cooperative shipping direct to the port elevator must have shipped such grain in the name of one of the seven member regionals.

Peavey is building a new port elevator near Pauline, La., that will cost $35 million and be able to handle 100 million bushels annually. The port commission will sell bonds, build the elevator, and lease back to Peavey. Revenue bonds give the advantage of cheaper interest.

The Cargill elevator at Baton Rouge is ideally located to receive soybeans by truck, but the limited receiving capacity means long waiting periods to unload. It's common for trucked soybeans to be discounted 12 cents below barged soybeans. Baton Rouge might be a good location for cooperatives to own a port elevator; however, it would be very difficult to find a suitable location.

A new highway bridge is under construction about 6 miles upstream from the Farmers Export elevator at Ama. It is not expected to be completed for at least 3 years. This bridge might help make it feasible for Farmers Export Co. to add truck receiving facilities to their Ama elevator since grain could be trucked from east of the river.

In other east gulf port areas -- Mobile, Pascagoula, and Lake Charles -- four port elevators have a capacity of 7.1 million bushels. The Mobile Grain Elevator, operated by Alabama State Docks, serves as a public grain elevator. American Grain Association will begin operating a 1.5 million bushel port elevator at Lake Charles in November 1977. It will have the capability of receiving grain by barge, truck, and rail. It will principally serve elevators affiliated with American Grain Association.

Cooperative Elevator Facilities

Cooperative elevators are in a study area that extends approximately 300 miles in length and 100 miles in width (figure 5). The major cooperative elevators are river subterminals located at Greenwood and Greenville, Miss., Mound, La., and Old River Terminal, Lettsworth, La. The elevators at Greenville and Mound are on the Mississippi River, the elevator at Greenwood is on the Yazoo River, and the Old River Terminal is on the Lower Old River.

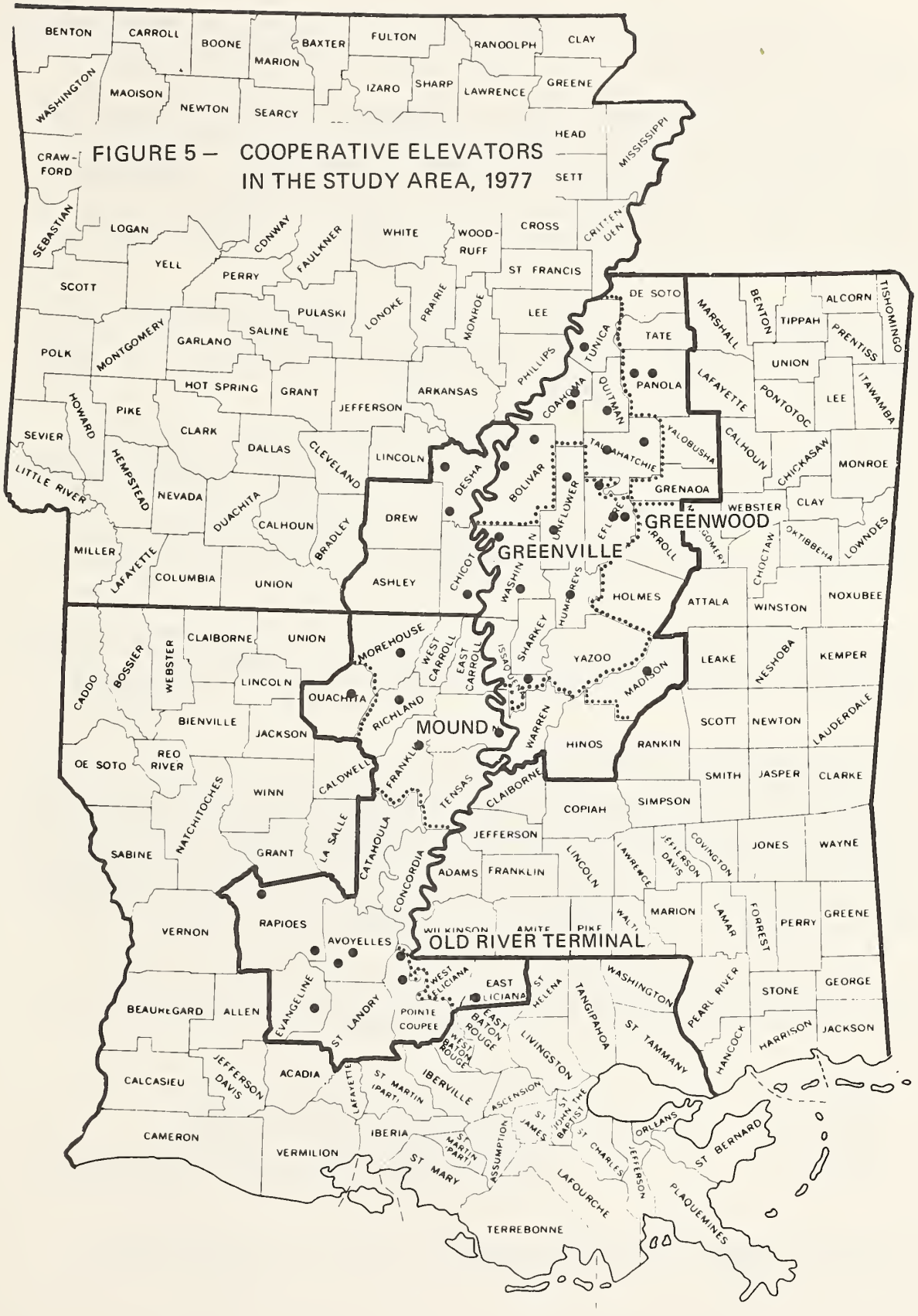


FIGURE 5 — COOPERATIVE ELEVATORS IN THE STUDY AREA, 1977

Location and Capacity

For the 1976 crop, there were 37 cooperative elevators in the study area having a total storage capacity of 15.8 million bushels (table 7 and appendix table 1). For the 1977 crop, there will be a new 1 million bushel cooperative elevator at Mound, La. Also, existing cooperative elevators in Mississippi will build an estimated 1.75 million bushels of storage. Thus, for the 1977 crop, cooperatives in the study area will have a storage capacity of 18.6 million bushels.

In the Mississippi portion, 20 out of 84 grain elevators were owned by cooperatives during the 1976 crop season. Cooperatives had a storage capacity of 10.3 million bushels, or 40 percent of the total. The major portion of cooperatives' storage was in CRD-4.

In the Louisiana portion, cooperatives owned 14 out of the 57 grain elevators. These cooperative elevators had 2.7 million bushels of storage capacity, or 16 percent of the total. About 70 percent of cooperatives' grain storage capacity was in CRD-5 but, even so, they had only 25 percent of the total in that CRD. Cooperatives had only 6 percent of the capacity in CRD-3; however, the new cooperative river elevator at Mound will increase that share.

In the Arkansas portion, 3 out of 19 elevators were cooperatively owned and operated by Riceland Foods. They had a storage capacity of 2.8 million bushels, or 37 percent of the total for the four-county area.

Elevator Construction and Operating Costs

Since the costs of new and modified elevator facilities are a major consideration for cooperatives in their efforts to improve soybean marketing, construction cost data has been collected from some typical elevator facilities. Operating costs for such typical facilities have also been provided. The effects of volume handled on costs per bushel are illustrated for a million-bushel subterminal river elevator.

Construction Costs--Costs were developed for elevators of steel contruction since this type appears most feasible from the standpoint of costs. Costs are shown for four model elevators:

Model I	--	134,000 bushel feeder elevator
Model II	--	252,000 bushel country elevator
Model III	--	558,000 bushel country elevator
Model IV	--	1,052,000 bushel subterminal river elevator

General specifications and estimated total costs for these model elevators follow:

Table 7--Number of grain elevators and elevator storage capacity for all elevators and for cooperatives, and cooperatives' share of capacity, by State and crop reporting district, study area, 1976 crop

State and crop reporting district	All elevators		Co-op elevators		Co-op share of capacity
	Number	Capacity	Number	Capacity	
	1,000 bu		1,000 bu		Percent
Mississippi:					
1	35	7 382	8	1,823	25
1/ 2	3	400	2	486	100
4	39	15 839	9	7,724	48
1/ 5	5	814	1	230	28
1/ 7	2	726	0	0	0
Subtotal	84	25,261	20	2/ 10,263	40
Louisiana:					
1/ 2	1	160	1	160	100
3	30	8,588	3	486	6
5	25	7,863	9	1 942	25
1/ 6	1	150	1	150	100
Subtotal	57	16,761	14	2,738	16
Arkansas:					
1/ 9	19	7,530	3	2,801	37
Total study area	160	49,452	37	15,802	32

1/ The entire crop reporting district was not in the study area.

2/ This includes the capacity of 2 rice driers, 450,000 bushels of storage capacity at 1 oil mill that is used principally to handle soybeans for resale, and 1 million bushels of capacity at another oil mill that had very low utilization of capacity and no marketing volume for the 1976 crop.

Model I -- Feeder Elevator

Capacity: 134,000 bushels

Other specifications:

2 - 12,500 bu. steel tanks
1 - 109,000 bu. steel tank
2 - 6,000 b.p.h. legs
1 - 60 ft. hydraulic dumper
1 - 60 ton truck scale
1 - 800 bu. dump pit
1 - small office ($5,000)

Total cost: $312,000 or $2.33 a bushel

Model II -- Small Country Elevator

Capacity: 252,000 bushels

Other specifications:

2 - 17,000 bu. steel tanks
2 - 109,000 bu. steel tanks

(Other specifications are same as Model I)

Total cost: $424,000 or $1.68 a bushel

Model III -- Moderate Sized Country Elevator

Capacity: 558,000 bushels

Other specifications:

2 - 17,000 bu. steel tanks
2 - 109,000 bu. steel tanks
1 - 306,000 bu. steel tank
2 - 6,000 b.p.h. legs
1 - 60 ft. hydraulic dumper and scale combination
1 - small office ($15,000)

Total cost: $575,000 or $1.03 a bushel

Note: For Models, I, II, and III, increasing leg capacity to 7,500 b.p.h. for 2 legs would add about $20,000 to cost. Adding two 2,000 bu. overhead tanks for truck loadout would add $12,000 to cost.

Model IV -- River Elevator

Capacity: 1,052,000 bushels

Other specifications:

6 - 28,000 bu. steel tanks (hopper bottomed)
4 - 221,000 bu. steel tanks (with 16" augers)
2 - 15,000 b.p.h. receiving legs
1 - 15,000 b.p.h. loadout leg for barges
1 - 40 ft. scalping leg
1 - 15,000 b.p.h. scalper ($65,000+)
1 - 3,000 b.p.h. drier, 2 legs ($85,000+)
1 - manlift
2 - 70 ft. hydraulic dumpers
2 - dump pits, 1,000 bu. each
1 - 70 ft. truck scale, 60 tons
1 - office building ($20,000)

Other features:

dust control in dump pits; roll-up doors
36" belts throughout
6' x 6' man tunnel under large tanks
16" ABC auger in each large tank
aeration: 1/5 c.f.m. per bushel

Total cost: $2 million or $2.19 a bushel

Note: The costs for above models exclude the cost of land, site preparation, roads, and rail siding.

Operating Costs--Operating costs are shown for four sizes and types of model elevators (table 8).

The small 134,000 bushel elevator model has a relatively high operating cost of 21.3 cents a bushel when it handles only 470,000 bushels annually. Costs per bushel could be reduced significantly by operating only during the harvest season and increasing to a higher volume level by shipping soybeans out immediately to a processor, terminal storage, or to an exporter.

The 252,000 bushel model is smaller than average for the area, yet it has the ability to handle up to a million bushels annually by shipping a significant amount during harvest. If operated at an annual volume of 750,000 bushels with a turnover of 3 times, costs would be 18 cents a bushel.

The 558,000 bushel model is the most efficient size of the three inland country elevators. By handling 1.4 million bushels annually, or a turnover of 2.5 times, the budgeted operating costs are 13.1 cents a bushel. This elevator has the ability to handle up to about 2 million bushels at even lower costs per bushel.

Table 8--Operating costs for first year of operation, grain elevator models of specified capacities, 1977

Item	Size of elevator, 1,000 bushels--			
	134	252	558	1,052
	1,000 dollars			
Fixed expenses:				
Depreciation	16	21	29	115
State and local taxes	5	6	7	20
Interest on long-term capital 1/	20	27	37	147
Total fixed expenses	41	54	73	282
Variable expenses:				
Salaries and wages	30	40	50	155
Insurance	6	7	9	19
Interest on seasonal capital	3	5	12	53
Professional fees	2	2	3	8
Repairs and plant supplies	7	10	14	50
Utilities	4	6	8	38
Other	7	11	14	47
Total variable expenses 2/	59	81	110	370
Total expenses	100	135	183	652
Total volume (1 000 bu.)	470	750	1,400	7,000
Expense per bushel	21.3¢	18.0¢	13.1¢	9.3¢

1/ Reflects an interest rate of 8 percent on long-term capital equivalent to two-thirds of fixed assts. One-third is assumed to be financed by noninterest-bearing member capital. Interest shown is for first year. Interest cost will decline as debt is reduced.

2/ Excludes any costs attributable to shrinkage and quality losses which might be about one-half of 1 percent of volume handled.

The 1,052,000 bushel river subterminal model performs a somewhat different function than the three inland country elevator models. It receives a large portion of its grain from large trailer trucks from other elevators as well as all sizes of vehicles from producers. This elevator specializes in a fast throughput for barge loading as well as storage for members. At a typical turnover of 6.7 times, the elevator would handle 7 million bushels at a cost of 9.3 cents a bushel.

The cost of handling soybeans through the model river elevator varies sharply with changes in annual volume (table 9). For example, at the 3-million-bushel volume, costs are 18.1 cents a bushel; at 5 million, 12.0 cents; at 9 million, 7.7 cents. This indicates that a new river subterminal that cannot effectively generate a high volume level in a relatively short time is more likely to operate at a loss.

Cooperatives' Grain Movements

As previously noted in the section on soybean production, the study area produced 91.1 million bushels of soybeans in 1976. Of this total, the 37 cooperative elevators handled 28.7 million bushels, or 32 percent (table 10). In Mississippi, 20 cooperatives handled and shipped 18.4 million bushels or 42 percent of total production in the area. In Louisiana, 14 cooperatives handled 7.7 million bushels, or 20 percent of production. Not included in this total were over 3 million bushels of soybeans shipped directly by producers to various river and gulf elevators through sales arrangements made by the Louisiana Farm Bureau. In Arkansas, three cooperatives had a volume of 2.6 million bushels, or 29 percent of production. Thus, it is apparent that cooperatives handle a significant share of the soybeans, particularly in Mississippi. Further, Mississippi cooperatives accounted for 64 percent of the cooperatives' total soybean volume in the study area.

Source of Cooperatives' Soybeans

In the Mississippi portion, the major source for soybeans was in CRD-4, where cooperatives handled 14.6 million bushels (figure 6). Major contributors to this volume were Farmers Grain Terminal at Greenville and Farmers Elevator at Greenwood. CRD-1 cooperatives originated 4 million bushels.

In Louisiana, CRD-5 was a major source area, furnishing 8.1 million bushels (figure 7). In Arkansas, cooperatives supplied 2.6 million bushels from Chicot and Desha Counties in CRD-9.

Soybean Procurement by Farmers Grain Terminal

Farmers Grain Terminal (FGT) a Greenville handled 7 million bushels of soybeans for the 1976 crop. Of this total, 1.3 million bushels were received from four cooperative elevators, 3.8 million bushels direct from producers, and 3.3 million from noncooperative elevators (table 11). Thus, receipts from member cooperatives and producers were 72 percent of total annual volume and 40 percent of CRD-4 cooperative volume.

Table 9--Operating costs for a million-bushel river subterminal elevator at various volume levels, 1977

Item	Annual volume, million bushels--			
	3.0	5.0	7.0	9.0
	1,000 dollars			
Fixed expenses:				
Depreciation	115	115	115	115
State and local taxes	20	20	20	20
Interest on long-term capital	147	147	147	147
Total fixed expenses	282	282	282	282
Variable expenses:				
Salaries and wages	120	140	155	165
Insurance	12	16	19	21
Interest on seasonal capital	41	47	53	59
Professional fees	6	7	8	9
Repairs and plant supplies	30	40	50	60
Utilities	20	30	38	45
Other	31	38	47	50
Total variable expenses	260	318	370	409
Total expenses	542	600	652	691
Expense per bushel	18.1¢	12.0¢	9.3¢	7.7¢

Table 10--Soybean production, volume handled by cooperatives, and cooperatives' share, study area, 1976 crop

Portion of State in study area	Soybean production	Cooperatives' volume--net	Share of cooperatives
	Million bushels		Percent
Mississippi	44.1	18.4	42
Louisiana	38.1	7.7	20
Arkansas	8.9	2.6	29
Total	91.1	28.7	32

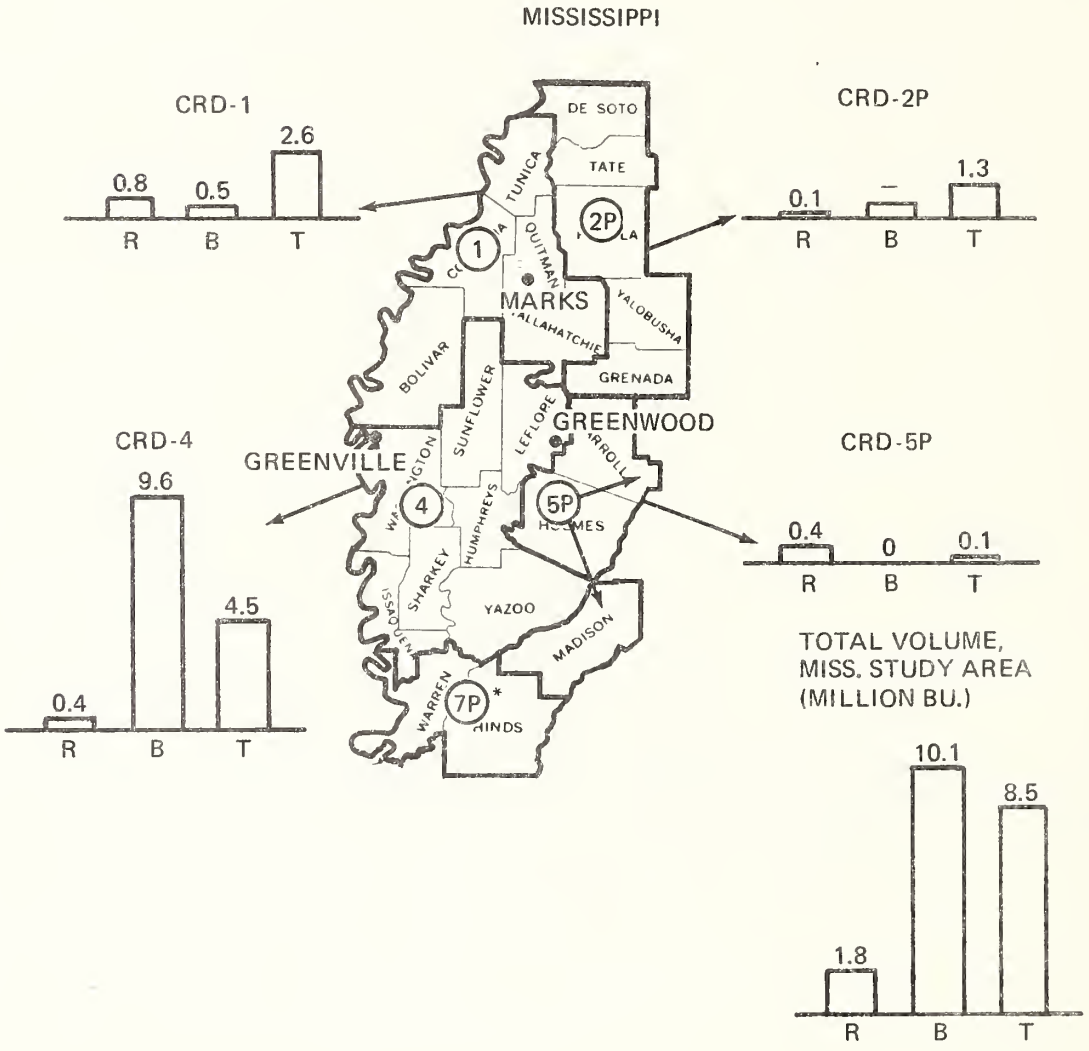
Table 11--Soybean volume received at Farmers Grain Terminal, Greenville, Miss., 1976 crop

Source elevator	Volume	Miles from Greenville
	1 000 bushels	
Country elevators:		
1	75.7	15
2	51.4	40
3	53.6	25
4	105.5	12
5	90.5	40
6	9.0	20
7	140.5	10
1/ 8	119.1	60
9	49.9	10
10	76.9	30
11	48.7	50
12	44.9	35
13	9.0	5
14	282.9	40
15	129.4	40
1/ 16	372.6	30
1/ 17	118.8	75
1/ 18	667.7	75
19	805.1	45
Subtoal	3 251.2	
Producers	3,783.8	
Total	7,035.0	

1/ Four cooperative elevators shipped 1,278,000 bushels. Shipments from producers and member cooperatives totaled 5,062,000 bushels, or 72 percent of total soybean receipts at Farmers Grain Terminal.

FIGURE 6 — SOYBEAN MOVEMENTS FROM COOPERATIVE ELEVATORS, BY MODE OF TRANSPORTATION AND CROP REPORTING DISTRICT (CRD)[1/], MISSISSIPPI STUDY AREA, 1976 CROP (MILLION BUSHELS)

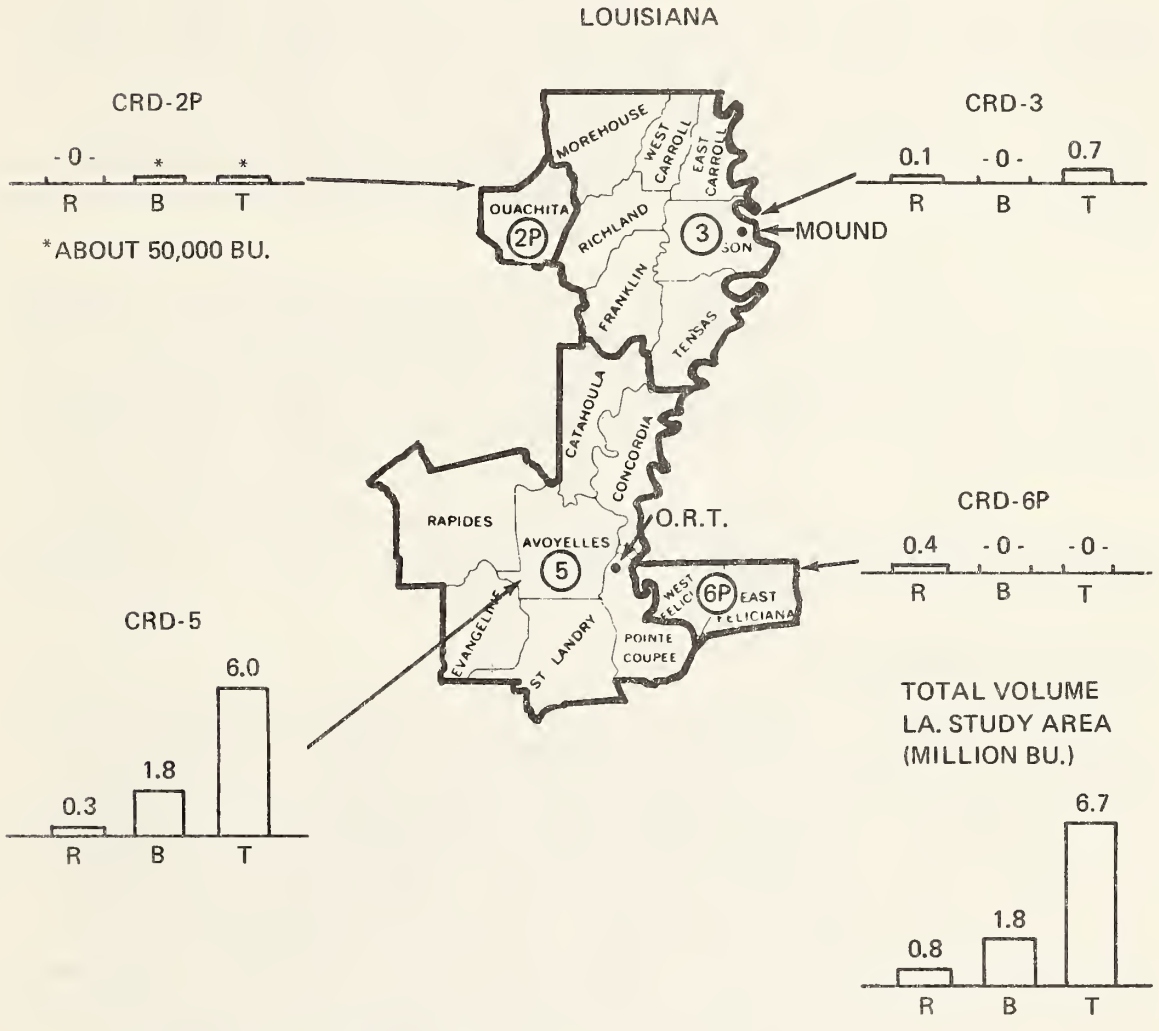
(R = RAIL, B = BARGE, T = TRUCK)



1/P MEANS PART OF CROP REPORTING DISTRICT.
* CRD 7P HAS NO COOPERATIVES.

FIGURE 7 – SOYBEAN MOVEMENTS FROM COOPERATIVE ELEVATORS, BY MODE OF TRANSPORTATION AND CROP REPORTING DISTRICT (CRD)1/, LOUISIANA STUDY AREA, 1976 CROP (MILLION BUSHELS)

(R = RAIL, B = BARGE, T = TRUCK)



1/ P MEANS PART OF CROP REPORTING DISTRICT

Soybeans procured from noncooperative elevators represent 28 percent of FGT's soybean volume. Soybean producers do not receive patronage refunds from FGT on such volume.

The procurement from noncooperatives provides significant additional volume that helps to lower unit costs of operation. Additional noncooperative volume may be obtained from Arkansas; however, noncooperative volume should not exceed 50 percent.

Destinations for Cooperatives' Soybeans

The 20 Mississippi cooperatives shipped 10.8 million bushels for export (table 12 and figure 8). Most of this came from CRD-4. Farmers Export Company received 1 million bushels of this volume. The balance of export grain went to noncooperative exporters. Farmers Grain Terminal at Greenville received 2 million bushels from area cooperatives as well as considerably larger volume from noncooperative firms and producers. 3/ Cooperatives in the Mississippi study area shipped 7.5 million bushels to processors, principally to Planters Oil at Clarksdale and Cook Industries at Marks.

In Louisiana, the 14 cooperatives shipped practically all of their soybeans either to a river elevator or an exporter (figure 9). Of the total 7.7 million net bushels shipped, Farmers Export received 2 million; American Grain Association, 2.6 million; other exporters, 2.3 million; other river elevators, 0.7 million; and Farmers Grain Terminal, 58,000 bushels.

In Arkansas, the three cooperatives shipped all of their volume to the soybean processing plant at Helena. Usually, little or no soybeans from these cooperatives are shipped elsewhere.

Mode of Transportation

In Mississippi, cooperatives shipped 10.1 million bushels by barge, 8.5 million by truck, and 1.8 million by rail (figure 6). Of this total, 2 million bushels represented duplicate co-op volume that moved by truck-barge from local cooperatives through Farmers Grain Terminal to a port elevator. The relatively small rail volume reflects the small reliance on rail as a method of assembly to river points and shipment for export. CRD-1 tended to rely on rail transportation to a greater extent than other CRD areas. Barge was the most important mode of transporation, and nearly all barged grain came from CRD-4, which has one cooperative river elevator on the Mississippi and two on the Yazoo River. Truck transportation was used by cooperatives in shipping 8.5 million bushels of soybeans. In addition, most of the grain received by cooperative river subterminals from noncooperative elevators was received by truck.

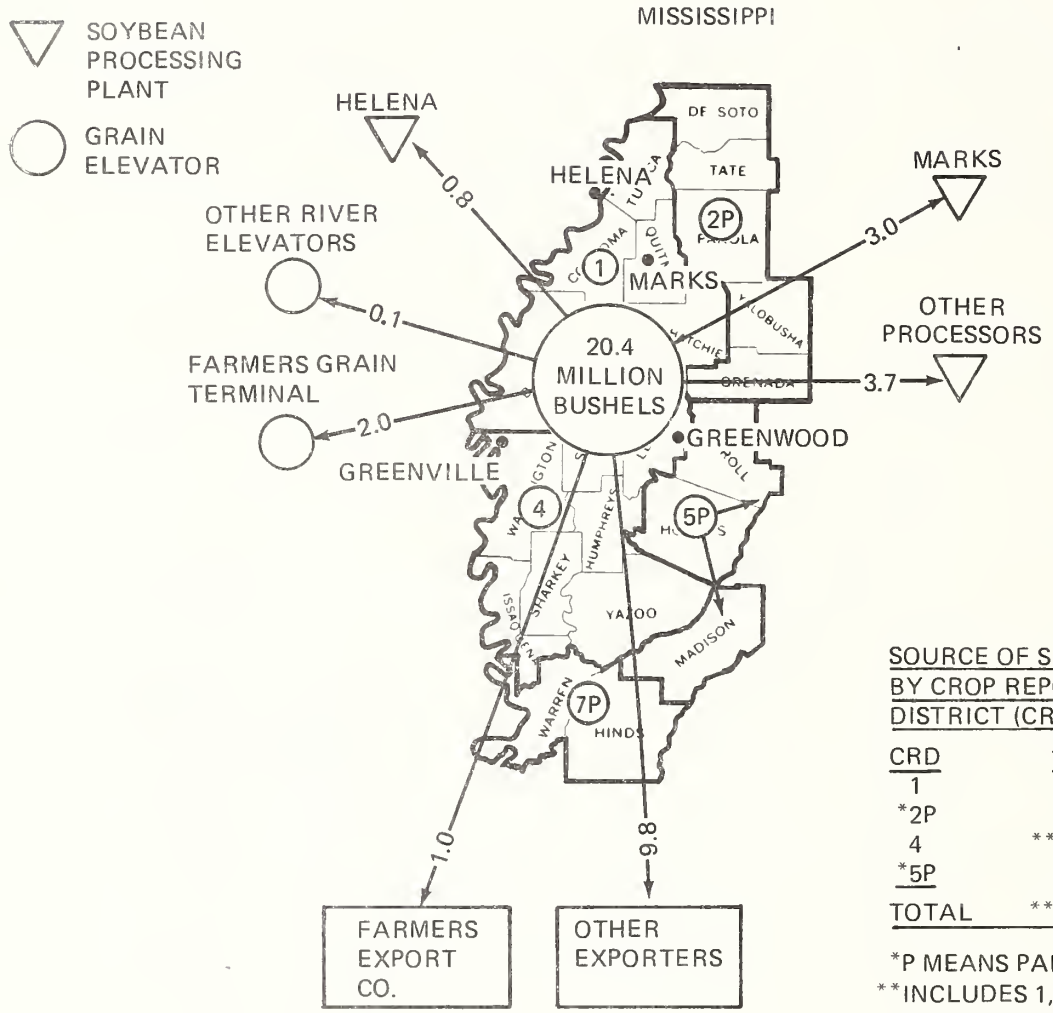
3/ This volume reported by cooperatives differs from the volume shown on records of Farmers Grain Terminal, possibly due to different ending dates of fiscal years.

Table 12--Disposition of soybeans by cooperative elevators, by type of outlet, for State portions of study area, 1976 crop

Shipping destinations or outlet	State portion of study area			
	Mississippi	Louisiana	Arkansas	Total
	1,000 bushels			
River elevators:				
1/ Farmers Grain Terminal Greenville, Miss.	1,960	58	0	2.018
1/ Old River Terminal Lettsworth, La.	0	1,604	0	1,604
1/ American Grain Assn. Mermentau, La.	0	1,686	0	1,686
Other river elevators	46	677	0	723
Subtotal	(2 006)	(4,025)	0	(6,031)
Gulf port elevators:				
1/ Farmers Export Co. Ama, La.	1,025	2,041	0	3,066
1/ American Grain Assn. Lake Charles, La.	0	923	0	923
Others	9,851	2,298	0	12,149
Subtotal	(10,876)	(5 262)	0	(16,138)
Processors:	7,520	37	2,575	10,132
Gross total	20,402	9,324	2,575	32,301
Less duplicate volume	1,960	1,604	0	3,564
Net total	18,442	7,720	2,575	28,737

1/ Farmer-owned cooperative.

FIGURE 8 — DISPOSITION OF SOYBEANS BY COOPERATIVES, MISSISSIPPI STUDY AREA, 1976 CROP (1,000 BUSHELS)



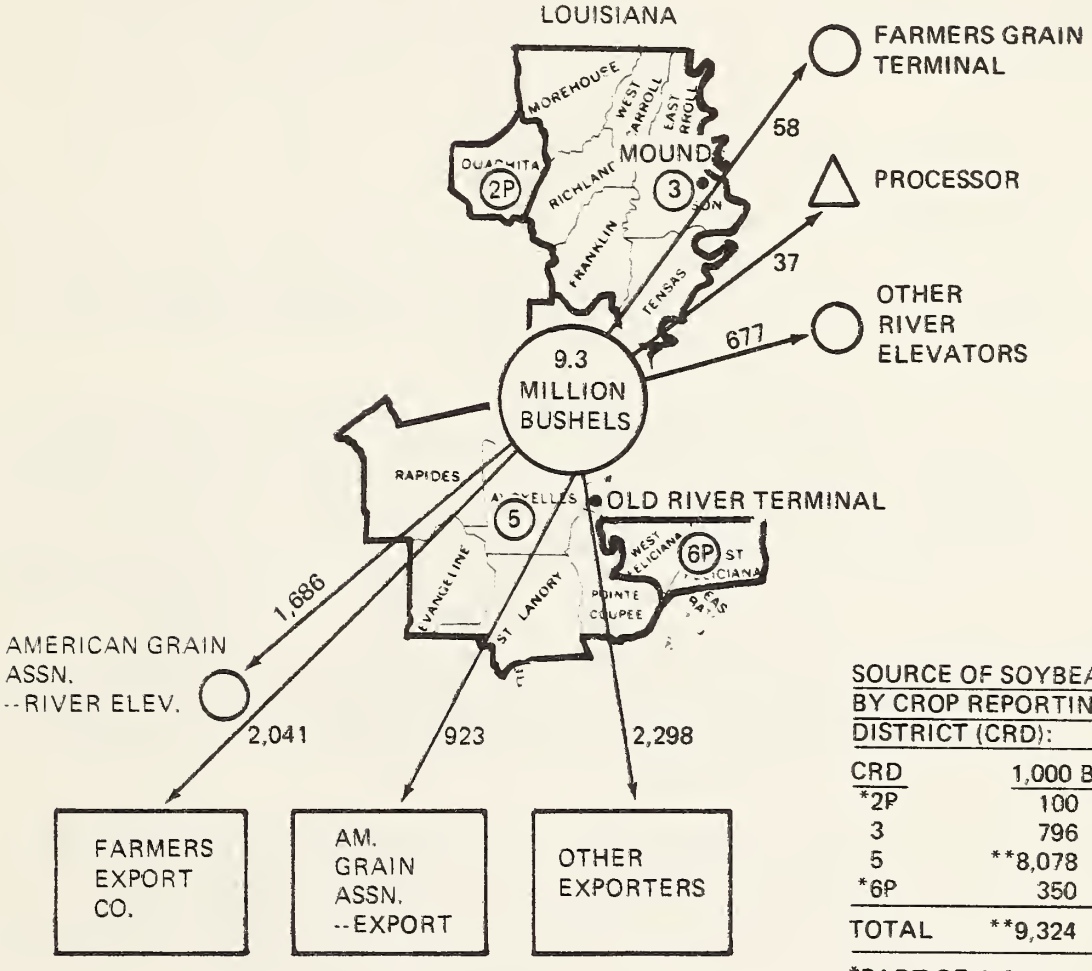
SOURCE OF SOYBEANS BY CROP REPORTING DISTRICT (CRD):

CRD	1,000 BU.
1	3,953
*2P	1,375
4	**14,574
*5P	500
TOTAL	**20,402

*P MEANS PART OF CRD

**INCLUDES 1,960,000 BU. OF INTERCOOPERATIVE DUPLICATE VOLUME TO FARMERS GRAIN TERMINAL

FIGURE 9 – DISPOSITION OF SOYBEANS BY COOPERATIVES, LOUISIANA STUDY AREA, 1976 CROP (1,000 BUSHELS)



SOURCE OF SOYBEANS BY CROP REPORTING DISTRICT (CRD):	
CRD	1,000 BU.
*2P	100
3	796
5	**8,078
*6P	350
TOTAL	**9,324

*PART OF A CRD

**INCLUDES 1,604,000 BU. OF INTERCOOPERATIVE DUPLICATE VOLUME TO OLD RIVER TERMINAL.

In Louisiana, cooperatives shipped 1.8 million by barge, 6.7 million by truck, and 800,000 bushels by rail (figure 7). Old River Terminal operated for part of the 1976 crop marketing year and was the only cooperative shipping a significant volume by barge. For the 1977 crop marketing year, Old River Terminal should have increased barge volume, and the new cooperative river elevator at Mound will begin to ship by barge--possibly as much as 3 million bushels. The truck is the most important mode of transportation for this area because of lack of elevators on rivers that can ship fully loaded barges yearround, and also because much of the study area is within 175 miles of an export elevator where trucks provide acceptable service at reasonable rates.

In Arkansas, the three cooperative elevators truck their soybeans to cooperative soybean processing plant at Helena.

Seasonal Aspects of Co-op Grain Flow

The physical receipts and shipments during the crop year for a given production level vary with price expectations, amount of available farm storage and elevator storage capacity, storage charges to members, purchasing practices, and merchandising expertise.

Elevators receiving only from producers generally receive 80 to 90 percent of the crop year's receipts by December 1, whereas a subterminal receiving from other elevators, as well as producers, may receive only about 45 to 65 percent of crop year receipts by December 1.

Elevators usually attain peak storage--around 75-85 percent of capacity--on December 1. Most of the soybean inventories in cooperative country elevators are owned by the members. Generally, evidence of ownership is merely the scale tickets held by producers. Inventory ownership in the larger subterminal type cooperatives is different. Warehouse receipts are usually issued at the subterminals such as those at Greenville and Greenwood. Such cooperatives usually own a significant portion of the inventory.

Member-owned stocks usually decline rapidly after January 1 and are generally depleted or at a low level by May 1, but this will vary with price expectations. Soybeans sold by members and purchased by the cooperative may be held in the cooperative's account. Stocks for the larger elevators tend to decline more slowly because purchased soybeans are held in conjunction with their merchandising program.

During October and November, soybeans are usually shipped out, or turned quickly, in order to make room for more soybeans. To the extent possible, some soybeans are held in storage for the account of the member, until they choose to sell. Shipments are heaviest in October and November and generally quite heavy in January.

Considerations in Holding Grain

Grain in the cooperative marketing system can be held or stored at any one or more of the following points: the producer, the local

cooperative, or the cooperative terminal--but how much at each point and how long?

Where to Store Soybeans Storage is a problem confronting cooperatives and their producer-members. Conditions relating to price, transportation, and storage availability vary from year to year. Thus the cooperative physical system for storing and moving soybeans to markets must be flexible. Generally, producer-members in the study area have depended largely on elevator storage for their soybeans. This is because of the general availability of commerical storage, the difficulty of maintaining soybean quality on the farm, and the lower capital priority given to farm soybean storage.

Farm storage can give the producer greater marketing flexibility with respect to time of sale and delivery and the point of delivery. It tends to encourage direct delivery to terminals and processors from the farm later in the marketing year and thereby offers the potential for reducing overall marketing costs and increasing returns to producers. However, the producer must be willing to make the required investment and accept the responsibility for quality maintenance.

How Long to Hold Soybeans? It is questionable whether members and their cooperatives are effectively utilizing farm and cooperative storage capacity by shipping soybeans during harvest or shortly thereafter. They may possibly realize greater benefits by holding, hedging, and marketing at more opportune times. The answer hinges principally on storage cost, interest cost, and prices for present and future deliveries.

Charges for storing soybeans from the 1976 crop varied from 0 to 3 cents per bushel per month in cooperative elevators in the study area. A storage charge of 2 cents a bushel per month was most common in Mississippi and 3 cents in Louisiana.

The cost for farm storage, as with commercial storage, depends greatly on capacity and utilization. A recent study indicates a cost of 21 to 30 cents a bushel depending on the size of the facility. 4/ This assumes 6 months of storage at full capacity. Six months of storage in a commercial elevator at 3 cents would cost 18 cents.

The interest cost of holding $6 soybeans at 8 percent would be nearly 4 cents a bushel each month or, if $3 soybeans, 2 cents a bushel. It's apparent that the price level of soybeans and the interest cost are major considerations in determining how long to hold soybeans. Recent and past experience has demonstrated there is no reliable fixed guide on

4/ G. W. Malone, T. D. Phillips, and Remi Adeyemo, "Cost of Farm Storage of Soybeans in Mississippi" (A Preliminary Report), Information Sheet 1270, October 1976.

how long to hold soybeans before shipping. Each season is different. It's up to cooperative management to utilize its marketing skills to help maximize returns to producer members. If management needs training or guidance in this respect, it should seek help from marketing or merchandising specialists from a regional cooperative, a college of agriculture, or other sources.

Transportation Aspects

There are many considerations relating to soybean movements among which the most important are transportation rates, transportation service, intermodal transfer costs, and storage availability. The various cost relationship and service factors have an important effect on the directional flow of soybeans.

Rates

Transportation rates for rail, barge, and truck shipments all play an important role in the movement of soybeans to the gulf and to processors. Truck-barge and rail-barge (intermodel) rates to the gulf are often lowest. Transfer costs through a river elevator must also be considered as a part of the cost of intermodal movements.

Domestic rail rates are pertinent to movements from local cooperatives to processors and to subterminals such as at Greenville and Greenwood. Volume of such movements is relatively small but can become more important as fuel costs increase and soybean production increases in eastern Mississippi. Rail rates for soybeans from the West Point, Miss., area to Greenville are 20.7 cents a bushel, compared to an estimated truck rate of 19 cents. 5/

Export rail rates for soybeans from Mississippi points to the gulf are 23.7 cents a bushel in hopper cars (190,000 pounds) and 26.7 cents in box cars. Rates from Louisiana points vary. Export rates per bushel in hopper cars as reported by Louisiana cooperatives were Evergreen, 21 cents; Batchelor, 22 cents; Cheneyville, 26 cents; Mer Rouge, 24 cents; and Slaughter, 15 cents. The other nine Louisiana cooperatives did not ship by rail.

Barge rates from cooperative elevators on the Mississippi River to the Gulf vary considerably over time but tend to be similar for origin points between Greenville, Miss., and Old River Terminal at Lettsworth, La. Rates most common are 105-110 percent of the published tariff rate, which is 6.8 cents per bushel. The going rate may be 70-75 percent of tariff in May and June, but in the October-December period it may shoot up as high as 250-300 percent of tariff. The effect of rate variations may be minimized by contracting for barges well ahead of needs when rates are relatively lower.

5/ This is ICG Railroad rate that provides for storage transit. The C&G Railroad mileage rate is 10.5 cents a bushel.

Barge rates on other rivers are generally higher because of navigation problems and shallow water. Less than a barge load means a higher cost per bushel. However, in spite of such problems the cost is still considerably lower than rail, and soybeans will move this way if water and barges are available.

Truck rates to various destinations were collected from cooperatives in the study area. These rates were plotted against trucking distance for Mississippi and Louisiana cooperatives separately (figures 10 and 11). A free-hand curve was fitted to the plotted data. Rates per bushel were read from this curve for selected distances and converted to cost per loaded mile using assumed truck loads of 22.5 tons or 742.5 bushels (table 13).

The curves for Mississippi and Louisiana differ somewhat in shape, but the general level of rates is similar. A recent study of grain hauling costs in Illinois indicated about the same level of rates as shown here.

Transportation Cost Relationships

Soybeans tend to flow to markets by the lowest cost mode or combination of modes. Other factors are transportation availability and market prices at destinations. Transportation alternatives, as well as market alternatives, should be examined for any origin before planning the location or expansion of soybean elevator facilities.

Transportation costs vary in many ways regardless of distance. They may vary seasonally, due to demand, by type of rail car, by size of bargeload, and due to transportation availability in a given area.

A disproportionate rate change for any movement may change the movement to another destination. For some locations, the cost advantage for alternative modes may switch suddenly. For others, there is usually a fixed advantage for one mode. For all, the advantage could change because of unavailability of the usual mode. Thus, management must be continually alert to prospective changes in costs and transportation availability.

Total cost of movement also includes elevator handling at intermediate points which varies among elevators from about 5 cents to 15 cents a bushel.

Rail rates for export from a given origin are relatively fixed compared to barge rates. Rail rates vary from 21 cents a bushel depending on type of rail car and origin of shipment. Barge rates on the Mississippi River vary from 6 to 20 cents a bushel depending on the supply-demand situation for barges. The origin of barge shipments on the Mississippi River within the study area has little effect on the rate. On rivers other than the Mississippi River, barge services and navigating conditions are relatively poor, full bargeloads are often impossible, and barge rates are higher than on the Mississippi River.

FIGURE 10 – COST OF TRUCKING SOYBEANS FROM COOPERATIVE ELEVATORS TO MARKET DESTINATIONS, MISSISSIPPI STUDY AREA, 1976 CROP

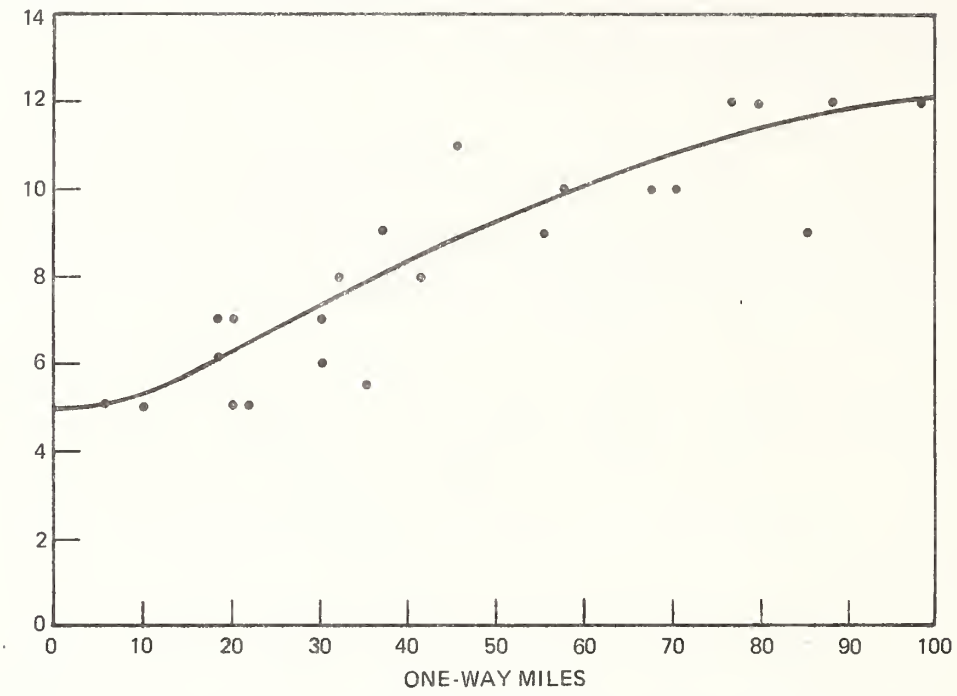
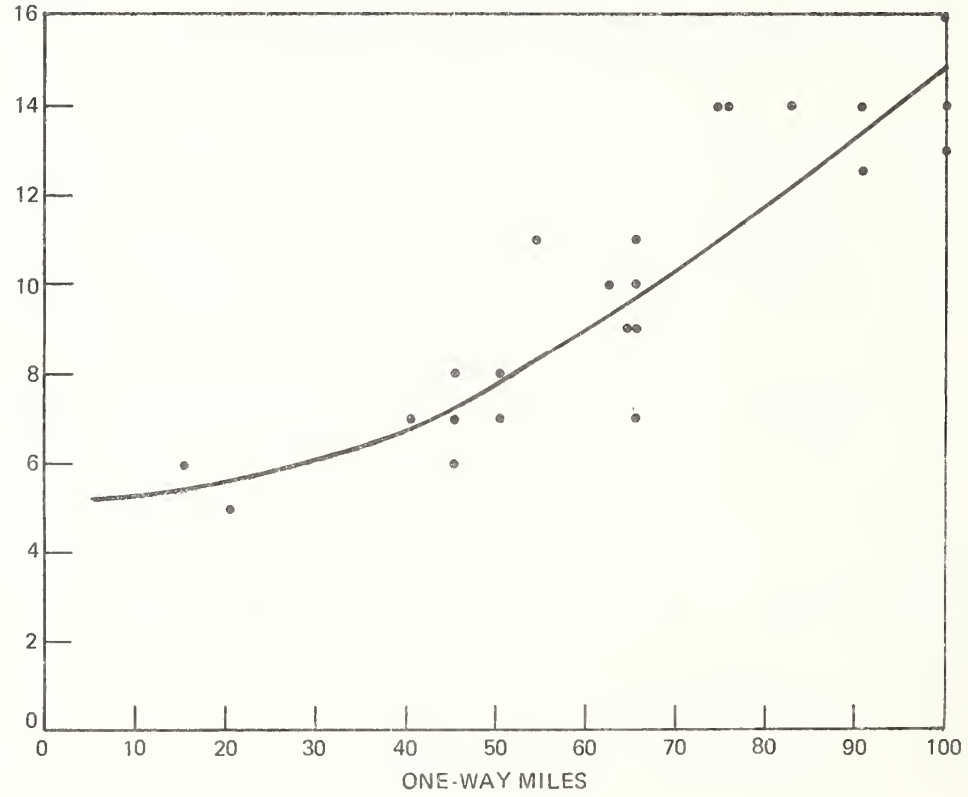


FIGURE 11 – COST OF TRUCKING SOYBEANS FROM COOPERATIVE ELEVATORS TO MARKET DESTINATIONS, LOUISIANA STUDY AREA, 1976 CROP.



For purposes of illustration and comparison of alternative soybean movements, we have used the following assumed rates: 9 cents a bushel for barge on the Mississippi River, actual truck rates reported by cooperatives, and 24 cents a bushel or reported rates for export rail movements (figure 12).

By viewing figure 12, probable minimum transporation and elevator handling costs to the Gulf can be determined for selected elevators. We used an average elevator handling cost of 9 cents a bushel for an intermediate point in a truck-barge combination. Using these assumptions, the probable minimum transportation and handling costs to gulf port elevators were calaculated (table 14).

These costs may show that rail is the most feasible route; however, in many instances poor rail service, lack of cars, and inadequate roadbeds make it impossible to ship by rail. Keep in mind that these costs can vary sharply, and they are used to illustrate the general cost situation, but it does illustrate the cost framework that should be considered by each elevator manager. Consideration must also be given to the practice of discounting price for truck delivery to port elevators which has been reported to be as much as 12 cents a bushel.

An examination of the various transportation costs to the gulf indicates that on the basis of rates alone, the truck-barge movement dominates the soybean movement to the gulf. Because of the inadequate rail service and discounts for truck delivery, the dominance is even greater. Considering truck costs reported by cooperative elevators, assumed intermediate elevator handling costs of 9 cents and barge costs of 9 cents, and rail rates to the gulf, the expected "radius of draw" for a river elevator might be expected to be about 40 miles or less (figure 13).

The "draw area" for a Mississippi River elevator may shrink due to strong prices paid by processing plants, weak export demand for soybeans, high elevator handling costs, high barge costs, and poor procurement, storage, and merchandising practices. On the other hand, the "draw area" may grow due to weak prices paid by processors, strong export demand, unavailable rail transportation to the Gulf, low elevator handling costs, low barge costs, and improved procurement, storage, and merchandising techniques. Actually, the "draw area" is often greater than 40 miles, principally because of inadequate rail service and the availability of storage space in river elevators.

Prospect for Railroad Improvements

The future is uncertain for soybean rail transportation in the study area. There is some hope for improved rail service. The ability of railroads to improve roadbeds, equipment, and service depends partly on loans that may be granted to railroads under the Railroad Revitalization and Regulatory Reform Act of 1976. Main line roads probably will be given priority in the use of such funds. Secondary lines may be

Table 13--Soybean truck rates per bushel and cost per loaded mile for selected distances, study area, 1977

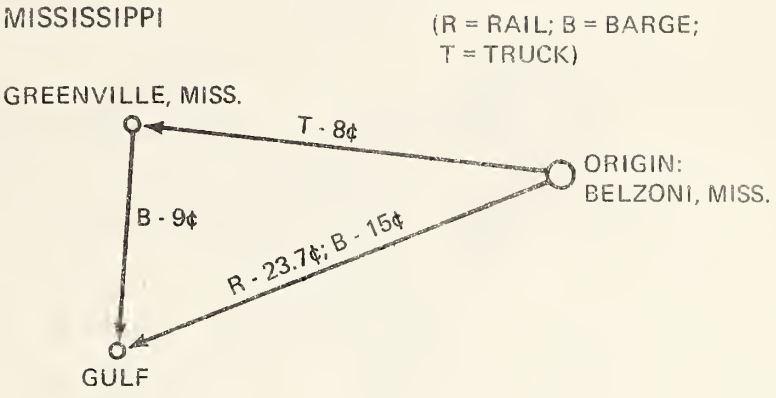
Miles, one way	Rate per bushel	Cost per loaded mile
	Cents	Dollars
	Mississippi	
10	5.3	3.94
30	7.3	1.81
45	8.9	1.47
60	10.0	1.23
90	12.0	.99
	Louisiana	
10	5.2	3.86
30	6.1	1.51
45	7.3	1.20
60	9.1	1.13
90	13.5	1.11

Table 14--Probable minimum soybean transportation and transfer costs to Gulf for selected origins 1/

Origin	Mode and rate per bushel
Mississippi:	
Belzoni	Rail - 24¢; truck/barge - 26¢; barge -15¢
Valley Park	truck/barge - 25¢
West Point	Rail - 24¢; rail/barge - 28.5¢
Batesville	Rail - 24¢; truck/barge - 34¢
Webb	truck/barge - 30¢
Louisiana:	
Mer Rouge	Rail - 246; truck/barge - 29¢
Batchelor	Rail - 22¢; truck/barge - 24¢; truck - 8¢
Ville Platte	truck/barge - 29¢; truck - 14¢
Cheneyville	Rail - 26¢; truck/barge - 25¢; truck - 15¢

1/ Using transportation costs in figure 12, and a 9-cent-a-bushel elevator transfer cost through intermediate elevators.

FIGURE 12 a — APPROXIMATE OR AVERAGE TRANSPORTATION RATES PER BUSHEL



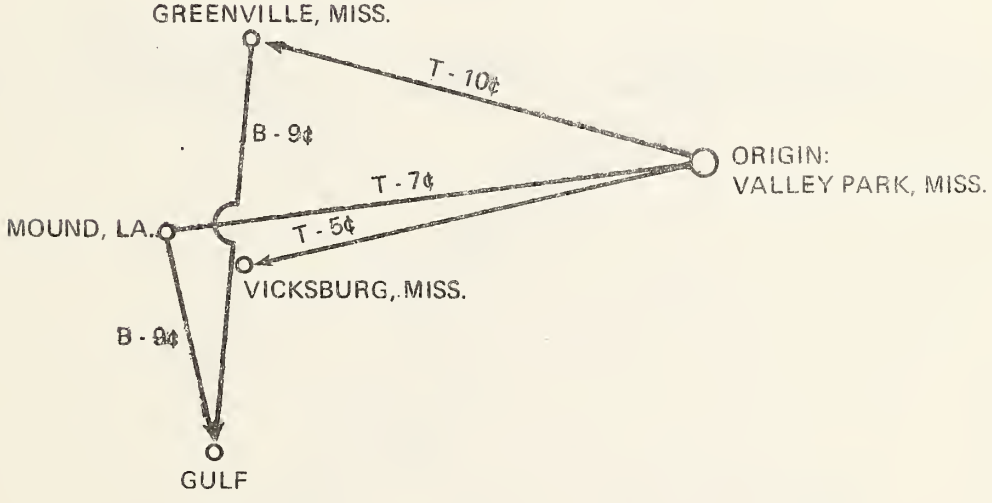
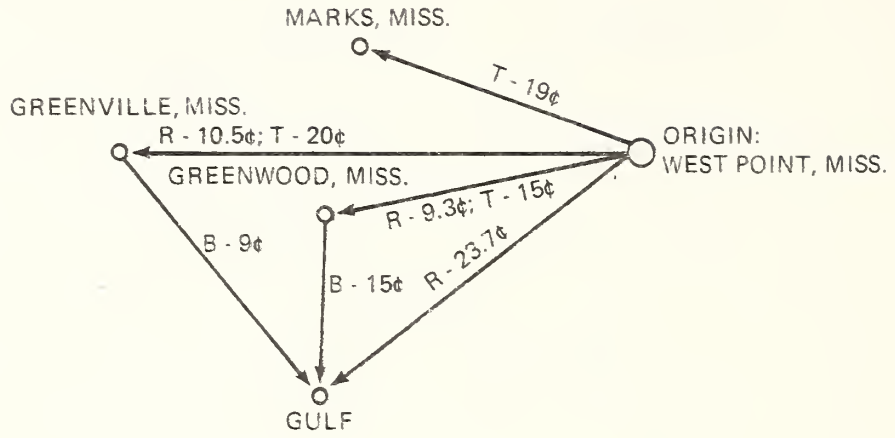
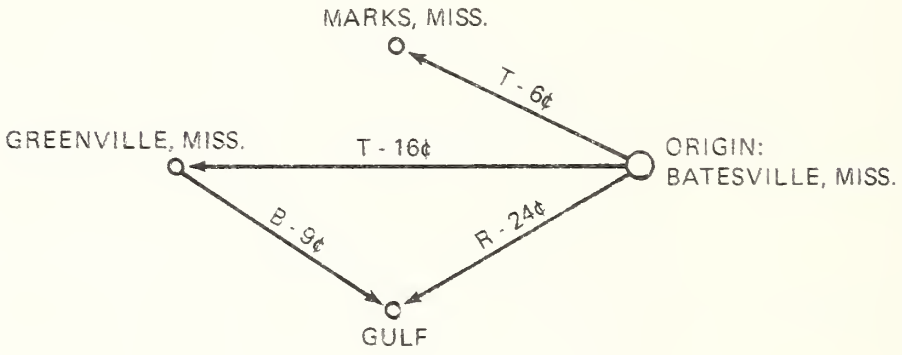


FIGURE 12 b

MISSISSIPPI





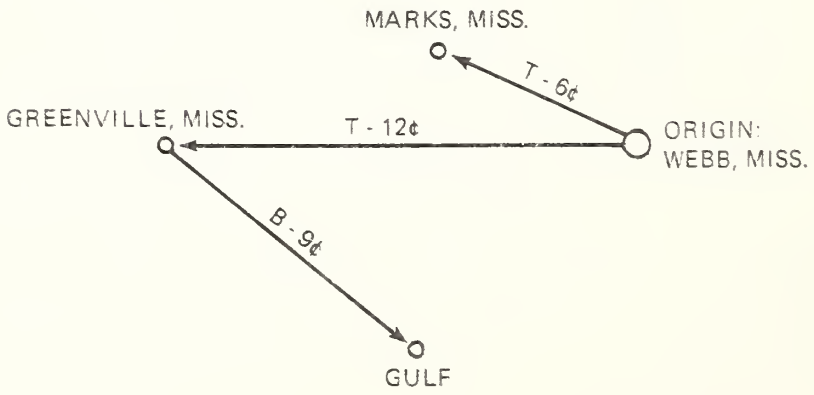
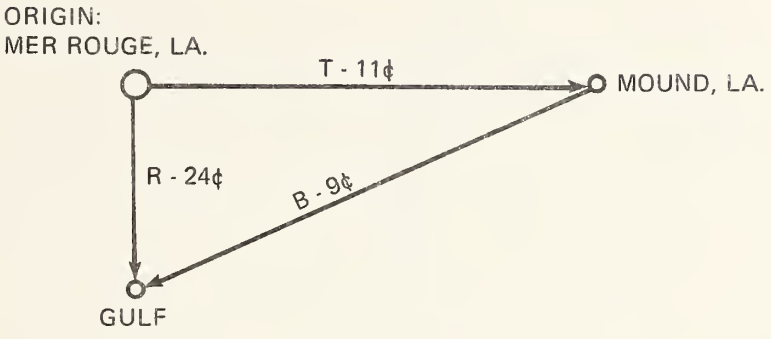


FIGURE 12 c –

APPROXIMATE OR AVERAGE TRANSPORTATION RATES PER BUSHEL

CODE: R = RAIL; T = TRUCK; B = BARGE

LOUISIANA



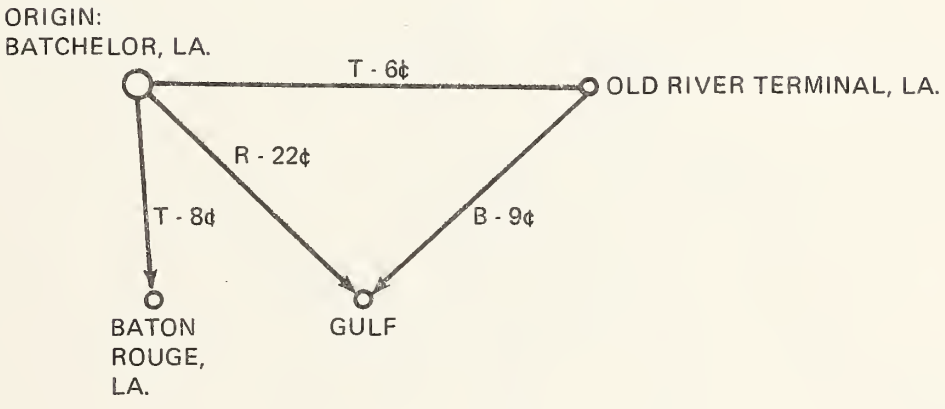
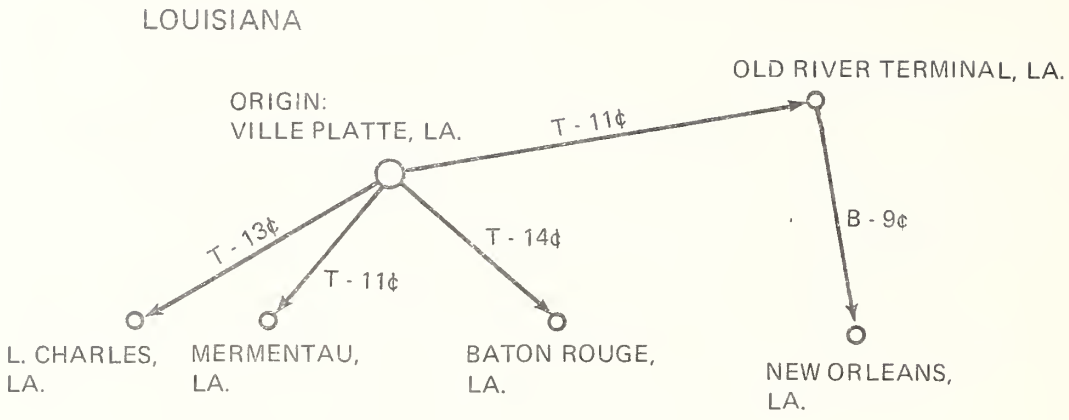


FIGURE 12 d


LOUISIANA
ORIGIN:
VILLE PLATTE, LA.
OLD RIVER TERMINAL, LA.
T - 11¢
T - 13¢
T - 11¢
T - 14¢
B - 9¢
L. CHARLES, LA.
MERMENTAU, LA.
BATON ROUGE, LA.
NEW ORLEANS, LA.

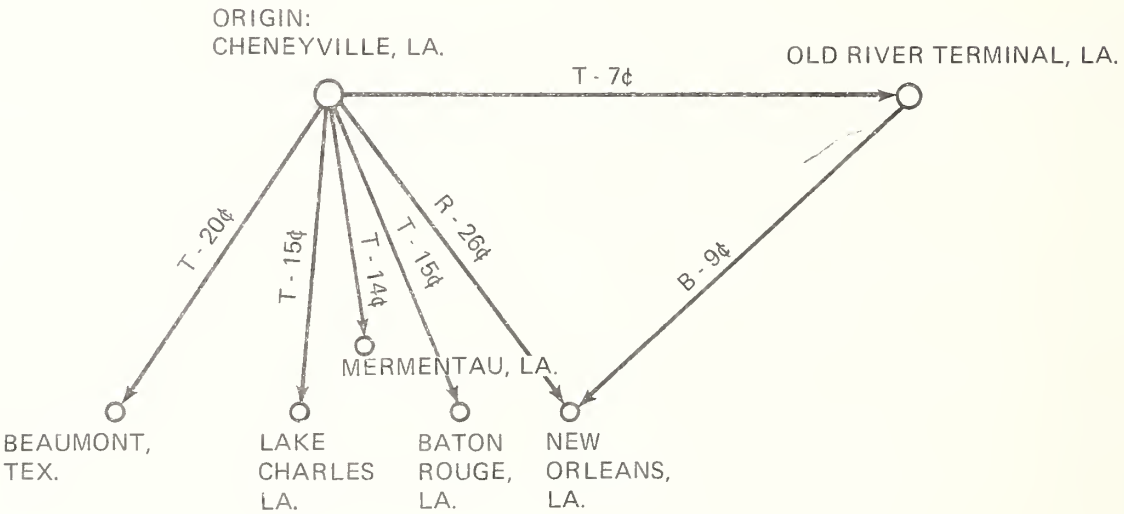
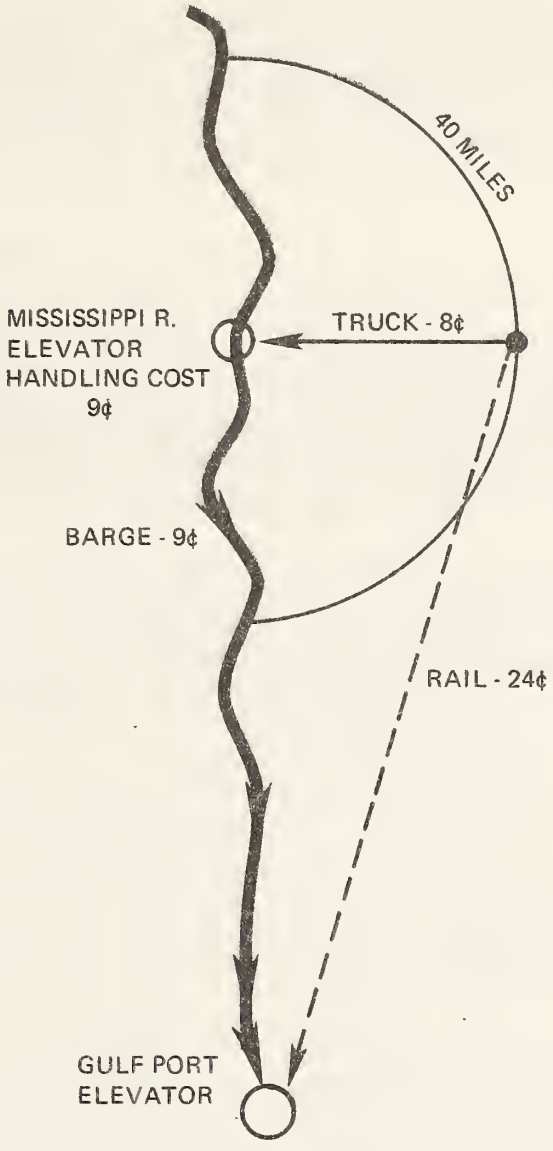

ORIGIN:
CHENEYVILLE, LA.
OLD RIVER TERMINAL, LA.
T - 7¢
T - 20¢
T - 15¢
T - 14¢
T - 15¢
R - 26¢
B - 9¢
MERMENTAU, LA.
BEAUMONT, TEX.
LAKE CHARLES LA.
BATON ROUGE, LA.
NEW ORLEANS, LA.

FIGURE 13 – EXPECTED "DRAW AREA" FOR A MISSISSIPPI RIVER ELEVATOR



abandoned or have less service, leading to eventual abandonment. Rail improvements are more likely to occur outside the study area than inside where truck-barge movements tend to dominate.

Railcar unavailability can be expected to continue to be a major deterrent to soybean rail shipments even though roadbeds may be improved. Railcars will be more available in nonharvest months. Elevators that are more than 50 miles from the Mississippi River and located on a main line railroad should consider additional storage for later direct rail shipment to the Gulf when cars are more available.

Waterway Users Tax

A waterway users tax is approaching reality. The House has passed a bill calling for a 4-cent-a-gallon tugboat fuel tax on October 1, 1979, which will go to 6 cents 2 years later. From Greenville, Mississippi to New Orleans, Louisiana, a 4-cent-a-gallon tax would mean an approximate maximum increase in barge costs of 1/4 cent a bushel for soybeans. A 6-cent-a-gallon tax could mean an increase of approximately 4/10 cent a bushel. Such increases would not be expected to have a significant effect on directional flow or mode of transportation for the study area.

However, there is considerable legislative pressure to impose a tugboat fuel tax high enough to recover all of the operation/maintenance costs and half of the capital improvement costs of providing navigable waterways. These costs have been estimated to be equivalent to a 40-cent-a-gallon tax. This could increase the cost of barging soybeans from Greenville to New Orleans as much as 2-1/2 cents a bushel.

Pricing and Price Relationships

The price paid to producers by a cooperative depends largely on the bid prices from exporters and processors for current and future delivery. The price paid is also influenced by competitors' prices, handling costs, and present and expected transportation costs to the buyer's delivery point.

For a given elevator, the price determinants with the least variability are elevator handling and transportation costs. Even these have significant variations. Greater variations occur in soybean prices. The cooperative manager cannot accurately predict prices, but he does use certain techniques in merchandising that can increase the probability of success and, hence, provide greater returns to producer members.

Establishing the Daily Soybean Price

One of the first steps in merchandising is to acquire grain at a fair and reasonable price. Most managers of local cooperatives establish soybean price paid by obtaining telephone bid prices from exporters, terminals, and processors. In establishing paying price they also consider delivery date, delivery point, transportation cost,

elevator handling cost, storage and interest costs, competitor's price, and other factors. Cooperative managers in Mississippi reported they needed merchandising margins ranging from 10 to 16 cents a bushel to cover their elevator costs. Two managers in Louisiana indicated they needed a 15-cent merchandising margin. These margins tend to be compatible with operating costs for medium-sized and larger new country elevators previously discussed, but tend to be too low for smaller new elevators that might have operating costs of around 18 cents a bushel or higher.

Pricing Methods Offered

The 35 cooperative elevators in Mississippi and Louisiana were asked what percentage of their soybean receipt volume from producers was purchased by the following methods: (1) Booked ahead of harvest, (2) delayed pricing, (3) priced when delivered, and (4) elevator stored by producer and purchased later. A summary of their replies is shown in table 15.

Booking ahead was usually for October, November, and December delivery. This method was used by practically all cooperatives. It accounted for an average of 33 percent of the volume in Mississippi and 24 percent of that in Louisiana. Some elevators booked ahead as much as 50 percent of their volume.

Delayed pricing, or pricing later at producers' option, after the producer delivers and sells, was not very prevalent in Mississippi. However, half the cooperatives in Louisiana used this method, and it accounts for 7 percent of their volume.

Pricing when delivered was the most used method in Louisiana, and accounted for 57 percent of volume, compared with 33 percent in Mississippi. This was most common for elevators with a small amount of storage and when a high turnover was desired.

Storing and purchasing later was a method used in Mississippi that was equally important to booking ahead and pricing on delivery. This method averaged 33 percent of volume in Mississippi compared to 12 percent in Louisiana.

Reservation pricing was another method used by one cooperative whereby the producer leaves a price with the cooperative at which he will permit sale of his soybeans. When the manager can obtain that price, or a higher one, he executes the sale.

Pooling of soybeans also occurs at one cooperative location in Louisiana and at three locations in Arkansas under the Riceland program. Under a seasonal pool, producers receive an advance payment when soybeans are delivered and subsequent payments as soybeans are processed and products sold. Final price to producers is not determined until the pool is closed.

Pricing Relationships

Soybean prices were collected from selected cooperatives in the study area for marketing years 1973-74, 1974-75, and 1975-76 (table 16). These prices included the closing Chicago future; price paid to elevators by Farmers Grain Terminal (FGT) at Greenville; basis bid by gulf exporters; price paid to producers by Cooperative Elevator Co. at Greenwood; price paid to producers by the Webb elevator at Webb, Miss., and price paid to elevators by Cook's soybean processing plant at Marks, Miss. Since prices were collected for only 2 days each month, (near the first and 15th) an analysis provided only a rough indication of price relationships for the Mississippi Delta area.

The year 1974-75 was different from the other 2 years with respect to the basis at FGT, Greenville. FGT's basis price to elevators was practically zero, for example, it averaged about the same as the futures price. Yet the FGT price was high in relation to prices paid by Cook at Marks, Greenwood, and Webb. There was a strong export demand in 1974-75, and basis bids by exporters were probably stronger than indicated by the 13-cent average gulf basis bid. This partly offset the zero basis at Greenville. As a result, the indicated average price spread between FGT's elevator price and the gulf price was 12 cents. By comparison, the spread between FGT at Greenville and the gulf price in 1973-74 was 26 cents and in 1975-76, 19 cents.

The prices paid producers at Greenwood and Webb were similar, but both were somewhat lower than Greenville's prices to producers. Ordinarily, prices in Greenville would be higher because of the superior river transportation to the gulf.

The soybean processing plant at Marks paid elevators a price about the same as Farmers Grain Terminal paid, except in 1974-75 when FGT paid an indicated 14 cents more.

An elevator selling soybeans to the Gulf for export must receive a price delivered at the Gulf that will pay transportation varying from 9 cents by barge to 24 cents by rail. Elevator handling costs may vary from about 9 cents to 20 cents a bushel. The spread between the producer price and the gulf delivered price for rail shipments could be expected to be about 39 cents a bushel (24 cents by rail and 15 cents elevator handling costs). For barge shipments, the spread would be considerably less.

Daily prices vary considerably from these averages, but they do indicate some general relationships and help to point out the price relationships confronting merchandising managers.

Hedging

An elevator operator that has adequate storage capacity and financing may find it to his advantage to hedge soybeans to which the cooperative has title. In order for the operator to analyze his hedging

Table 15--Percentage of soybeans that cooperatives purchased by specified methods from producers, Mississippi and Louisiana cooperatives, 1976 crop

Item	Booked ahead	Delayed pricing	Priced when delivered	Stored in elevator; purchased later
		Percent of annual volume		
Mississippi:				
Average	33	1	33	33
Range	5-50	0-10	0-50	3-75
Louisiana:				
Average	24	7	57	12
Range	0-50	0-40	20-80	0-50

Table 16--Soybeans: Rough indicated average prices and basis prices at selected points, marketing years 1973/74, 1974/75, and 1975/76 1/

	Price description	1973/74	1974/75	1975/76
		Average price per bushel		
(1)	Chicago nearby future, closing price	$6.01	$6.41	$5.42
(2)	Farmers Grain Terminal (FGT) Greenville, price to elevators 2/	5.85	6.42	5.27
(3)	Basis at Greenville, (2) - (1)	-.16	+.01	-.15
(4)	Gulf basis bid	+.10	+.13	+.04
(5)	Gulf price, (1) + (4)	6.11	6.54	5.46
(6)	FGT basis bid to elevators minus gulf basis bid, (3) - (4) or (5) - (2)	-.26	-.12	-.19
(7)	Greenwood, price to producers	5.71	6.15	5.10
(8)	Webb, price to producers	5.72	6.14	5.07
(9)	Cook, Marks, price to elevators	5.86	6.28	5.21

1/ Rough indications of price relationships obtained by taking first of month and midmonth prices, 2 days of each month, from records of cooperative elevators. Patronage refunds were not considered.

2/ Prices to producers were about 5 cents a bushel lower.

opportunities he needs to keep records on his own daily price and daily futures prices, to chart them weekly over a period of years, and to evaluate his opportunities daily. The ideal time to buy is when the basis is widest and to sell when it is most narrow. When the hedge is lifted, the cash soybeans should be sold. Consideration must be given to the effect on physical elevator operations, transportation availability and cost, interest cost, taxes, blending opportunities, and quality maintenance.

Projected 1985 Cooperative Volume

To estimate the cooperative soybean volume for 1985, we studied projections of 1985 data for U.S. average, supply, and disposition (appendix table 2), and obtained projections for 1985 soybean production in Mississippi, Louisiana, and Arkansas from the SM-42 Regional Grain Marketing Research Committee.

Cooperative soybean volume for 1985 is projected to total 43.4 million bushels for the study area, an increase of 14.7 million bushels over 1976, or a 51-percent increase (table 17).

By 1985, cooperatives in the study area portions of Louisiana, Mississippi, and Arkansas are projected to increase production by 7.5 million bushels, 5.6 million bushels, and 1.6 million bushels, respectively. The most significant increase is projected for CRD-3 in Louisiana where cooperatives are expected to handle 7.0 million bushels by 1985, an increase of 6.2 million bushels. Much of the expected increase in Louisiana is attributed to the new cooperative river elevators at Mound and Lettsworth, La.

The projected 1985 cooperative volume assumes that they will expand and build cooperative facilities in new and present locations. It also assumes that the total export demand for U.S. soybeans will be at 800 million bushels in 1985 and that domestic demand will top 1 billion bushels. As for transportation, the projection assumes that reliance on water transportation for area soybeans will be at least as great as it is presently and that the proposed users tax will not significantly deter waterway shipments of soybeans. Rail shipments should continue to be difficult because of track and service conditions.

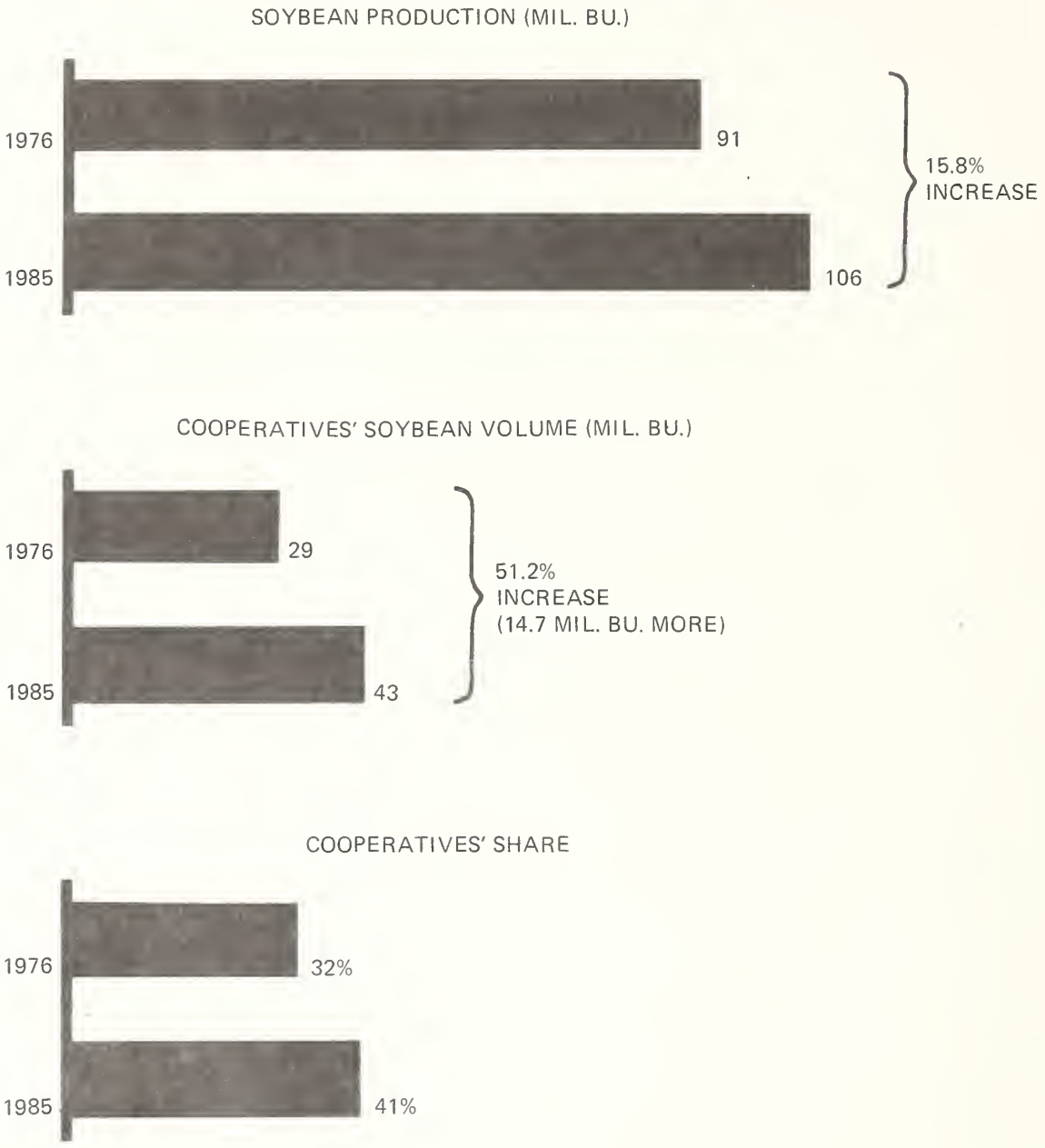
In 1985, soybean production in the study area is expected to be 16 percent higher than it was in 1976, and cooperative soybean volume is expected to be up 51 percent (figure 14). This will give cooperatives a 41-percent share of soybean marketings, compared to a 32-percent share in 1976. There will be minor changes in soybean flow patterns for cooperatives. The most significant change will be the movement through river terminals at Mound and Lettsworth, La. In addition to receiving soybeans directly from producers, these river terminals are expected to receive significant volumes from cooperatives and noncooperatives.

Table 17--Soybean production, cooperative soybean volume, and cooperative share for 1976 crop and projected 1985, study area

State and CRD	1976 Soybean production	1976 Co-op net volume	1976 Co-op share	Projected 1985 Soybean production	Projected 1985 Co-op share	Projected 1985 Co-op net volume	Increase over 1976
	Million bu		Pct.	Million bu	Pct.		Million bu
Mississippi:							
1	14.0	3.9	28.3	16.1	35	5.6	1.7
1/ 2	5.8	1.4	23.5	6.6	35	2.3	0.9
4	20.0	12.6	63.1	22.4	63	14.1	1.5
1/ 5	2.7	0.5	18.8	3.7	35	1.3	0.8
1/ 7	1.6	0.0	0.0	2.0	35	0.7	0.7
Subtotal	44.1	18.4	41.8	50.8	47	24.0	5.6
Louisiana:							
1/ 2	0.3	0.1	32.6	0.4	35	0.1	0
3	17.1	0.8	4.7	20.0	35	7.0	6.2
5	20.4	6.5	31.8	21.8	35	7.6	1.1
1/ 6	0.3	0.3	97.8	0.5	98	0.5	0.2
Subtotal	38.1	7.7	20.2	42.7	35	15.2	7.5
Arkansas:							
1/ 9	8.9	2.6	29.0	12.0	35	4.2	1.6
Total	91.1	28.7	31.5	105.5	41	43.4	14.7

1/ Represents only part of the crop reporting district.

FIGURE 14 — MISSISSIPPI DELTA STUDY AREA — 1985 PROJECTED VOLUME COMPARED WITH 1976 CROP



Cooperatives will be handling not only increased volume in 1985 but are expected to control grain farther along the marketing channel by having additional facilities. Already they have two new river elevators. Further control may be achieved by establishing more cooperative facilities that will directly receive grain from producers instead of letting it flow through noncooperative facilities.

Evaluation of Market Outlets

Any cooperative marketing entity, or other firm, in the study area must evaluate two primary market outlets for soybeans: (1) the domestic processor market, and (2) export outlets. The proximity of an elevator to a processing plant, river elevator, or Gulf port elevator is a major factor determining whether soybean sales are made to the processor or to an export outlet. Some cooperatives, particularly in Mississippi, have several alternative processor outlets as well as export outlets, and may alternate sales between them depending on net price obtainable.

Domestic Processors

Processors received about 10 million bushels of soybeans, or 35 percent of the amount sold by cooperatives in 1976-77. Of the 37 cooperative elevators, 19 reported deliveries to processors. Fifteen elevators were in Mississippi, 1 was in Louisiana, and 3 were in Arkansas. Of these 19 elevators, 8 sold only to processors.

Soybeans sold to processors were largely transported by trucks, but 5 elevators reported some rail movement to processors.

The processor market is an important outlet for soybeans in Mississippi and Arkansas, whereas in Louisiana the processor market is generally not readily accessible, and cooperatives must rely largely on the export outlets.

The Gold Kist soybean plant at Marks, Miss., has added dehulling equipment to attain the ability to make 49 percent protein meal. This and other improvements should improve their ability to enhance the competitive position of soybean producers within their drawing area. It is expected that Gold Kist and other processors in the Mississippi study area will follow an aggressive procurement program that will tend to minimize increased soybean movements for export from their drawing areas.

Export Outlets

Cooperatives sold approximately 18.6 million bushels of soybeans or 65 percent of their volume, to export outlets indifferent from 1976-77. These outlets were river elevators and exporters. Such export volume is roughly equivalent to 18 shiploads, which alone is not nearly enough to sustain an export elevator. Most port elevators in the New Orleans area handle about 100 million bushels or more annually.

Cooperatives in the study area presently sell to export outlets only in the sense that the grain eventually winds up in the hands of a foreign user. This broad definition of "export outlet" ranges from a sale to a subterminal that ships soybeans to a port elevator to a direct sale to a foreign buyer. Actually, none of the cooperatives in the study area make a direct export sale. Nearest to it would be sales made to exporters such as Farmers Export Co. and American Grain Association that, in turn, make direct export sales.

Future prospects for cooperatives to originate more export volume in the study area depend on increases in soybean production, export demand, and aggressiveness of cooperatives in export marketing of soybeans. Estimated soybean production for the study area in 1985 is 105.5 million bushels, an increase of 14.4 million bushels over 1976 production. If cooperatives were to increase their share from 32 to 41 percent, they would handle an additional 14.7 million bushels of soybeans. Accordingly, if cooperatives continue to move 65 percent to export channels, they would originate an additional 10 million bushels for export. Thus, cooperatives' export originations could jump from the 18.6 million in 1976 to 28.6 million in 1985.

Cooperatives in the study area are not utilizing the one cooperative export marketing channel that could be available to all of them, namely, the export elevator of Farmers Export Co. located at Ama, La. In 1976-77, cooperative elevators in the area shipped only 3.1 million bushels to Ama, 16 percent of study area export movements from cooperatives. The reasons for not utilizing such an export channel are largely attributable to cooperative membership and organizational problems and to the lack of commitment. Both of these can be overcome if cooperative managements will approach them in a spirit of cooperation.

Export Demand

The demand for soybeans as reflected in total U.S. disposition increased from 580 million bushels in 1960-61 to about 1.52 billion bushels in 1977-78, an increase of 162 percent (appendix table 2). For the same period, exports increased from 135 million to 590 million, an increase of 337 percent. Projected export demand for 1985 is 800 million bushels.

Of total U.S. soybean exports, about 78 percent are loaded out of gulf ports. About 80 percent of that or about 62 percent of U.S. soybean exports, is through Mississippi River ports. 6/

As previously indicated, the prospect is good for increases in U.S. soybean exports. Greatest demand for soybeans is expected to be in EEC-9 countries, Japan, and other western European countries that have in the past provided 80-85 percent of the market for U.S. soybeans. 7/

6/ Grain Market News, Oct. 7, 1977, Agricultural Marketing Service, USDA, pp. 12-13.

7/ Improving the Export Capability of Grain Cooperatives, FCS Research Report 34, Farmer Cooperative Service, USDA, June 1976, pp. 11-13.

Government Export Programs

Principal soybean sales that would be made by a cooperative organization to foreign buyers are most likely to be commercial sales; however, certain Government export programs can supplement and/or aid commercial sales.

Government programs that may be of principal interest to any firm or group desiring to export soybeans or other commodities include: Public Law 480 Export Program; CCC Export Credit Sales Program; Trade Opportunity Referral Service (TORS) provided by Foreign Agricultural Service, USDA; and Domestic International Sales Corporations (DISC).

P.L. 480 Export Programs 8/--The Office of the General Sales Manager (OGSM), USDA, has administrative responsibility for the "Food for Peace" program. Title I provides for sales of agricultural commodities to friendly countries on concessional terms. Title II authorizes donation of agricultural commodities to needy persons abroad.

Under title I, the U.S. Government finances purchases by foreign governments covered under agreements. Other than that, it is a normal commercial transaction between the importing government and U.S. suppliers. USDA publicly announces sales agreements and purchase authorizations for commodities and the quantities involved. When tenders are made by foreign governments, a cooperative (or other domestic supplier) can offer a bid in response to the tender.

Under title II (donations), Agricultural Stabilization and Conservation Service (ASCS) issues a detailed tender to buy a given commodity. All domestic sellers, including cooperatives, may submit bids. The successful bidder then delivers the commodity to a loading port designated by ASCS.

CCC Export Credit Sales Program (GSM-4)--This program is also administered by OGSM. Financing is provided by the Commodity Credit Corporation (CCC). The program is designed to help U.S. agricultural exporters meet foreign competition in both established and developing markets by supplementing rather than replacing private financing. The objective is to expand commercial sales rather than provide aid to foreign countries. Sales are financed to countries that are good credit risks but unable to meet all their needs with cash purchases. Financing may be provided for as long as 36 months, although the basic limit is 12 months.

The importing country makes a tender or negotiates purchase of commodities from U.S. exporters. At the time of shipment, CCC purchases for cash from the exporter the account receivable covered by the financing arrangement.

8/ Cooperatives interested in participating in this program should request further information from the Office of the General Sales Manager, U.S. Department of Agriculture, Washington, D.C. 20250.

Total Soybeans Sold under Government Programs--For calendar year 1976, 361,000 metric tons of soybeans were sold under the export program of the Agency for International Development, and about 215,000 metric tons under the CCC Export Credit Sales Program for a total of 576,000 metric tons under all such government programs. 9/ This amounted to 3.8 percent of total U.S. soybean exports. No sales were made under Public Law 480 programs.

For calendar year 1977, no soybean sales were made under the Public Law 480 or CCC Credit Sales Programs since soybeans were not approved. Last year it was felt that such programs for soybeans were not needed to move the crop. Thus it is apparent that a cooperative soybean exporter cannot expect significant volume under these programs unless its scope is increased sharply.

Trade Opportunity Referral Service (TORS) 10/--TORS is maintained by Foreign Agricultural Service (FAS), USDA, to help buyers of foods and other agricultural products (such as soybeans) to contact the appropriate U.S. suppliers. A foreign request or inquiry for commodities is relayed through FAS to U.S. exporters and others who have asked to be informed about such inquiries. The initiative lies with exporters to follow up on the inquiries. Currently, about 131 U.S. firms are on the USDA list to receive notification of inquiries about soybeans.

Domestic International Sales Corporation (DISC)--DISC's were set up in 1971 by Congress and the Nixon Administration to encourage U.S. corporations to sell goods abroad. A DISC set up to make sales abroad normally buys goods from the parent U.S. corporation and then sells those goods to foreign buyers. The parent company and the DISC subsidiary split the profits from the sale, and the DISC is allowed to defer income taxes on its profits. This allows interest-free financing.

A cooperative exporter could set up a DISC; however, the future for DISC's are uncertain since they may be eliminated in future tax legislation.

Alternatives for an Improved System

It is suggested that the objectives of an improved cooperative export marketing system for soybeans should be to obtain for producers the best possible price for their total crop. The means for

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9/ Foreign Agricultural Trade of the U.S., Economic Research Service, USDA, June 1977, pp. 28-31.

10/ Cooperatives interested in this program should contact the program manager; Trade Opportunity Referral Service (TORS) Foreign Agriculture Service, USDA, Washington, D.C. 20250.

accomplishing the objective will involve services for producers such as elevator facilities for receiving, handling, conditioning, and storing soybeans, and optional pricing and marketing plans. In addition, there will be the usual management and operating functions of a cooperative that include merchandising, financing, and transportation. Most important is the type of cooperative structure that will be used to attain the objectives.

Cooperatives have several alternatives in striving for an improved system. For each alternative, there are important considerations. These follow a brief description of the selected alternatives.

Description of Alternatives

With respect to export marketing of soybeans, cooperatives in the study area might consider the following alternatives.

Alternative I--Use present system with generally weak commitment to Farmers Export Co. (FEC) and about 17 percent of export movements going to FEC.

Alternative II--Use present system except that all cooperatives would increase their commitment to sell to Farmers Export Co. through MFC Services. 11/

Alternative III--Form a cooperative export marketing association that would be a member of FEC (and possibly American Grain Association). The export association would make sales and coordinate movements for all cooperatives. There would be a strong commitment by study area cooperatives and their export marketing association to Farmers Export Co.

Alternative IV--Form a cooperative export marketing association to make sales to various exporters and to coordinate soybean movements for all cooperatives in the study area.

Alternative V--Form a cooperative export marketing association that would coordinate sales and movements for all cooperative members through a port elevator owned and operated jointly with outside interests, for example, a noncooperative.

Under alternatives III, IV, and V, which provide for export marketing associations to be set up, it would likely be feasible for the new regional cooperative to also handle soybean sales to processors. Member elevators would commit or sell soybeans to the regional, which would then sell to either the processor or export market.

11/ An exception is that some Louisiana cooperatives ship to American Grain Association.

Thus, alternatives revolve around joint action such as centralized associations, centralized ownership of subterminals, coordination and control of soybean movements and sales, access to a port elevator, and commitment of local and regional cooperatives. In this report these alternatives are considered in relation to volume, commitment, organization and coordination, merchandising, transportation, facilities, financing, and management.

Volume

The present and future annual export volume of cooperatives in the study area is projected to range from 19 to 28 million bushels of soybeans during the next several years. 12/ With this volume, cooperatives in the area can organize and implement an improved export marketing system under alternatives II and III. Their export volume is not expected to be large enough to support the sole operation of an average size port elevator. Even the inclusion of nonmember volume up to 49 percent would not suffice.

If all cooperatives in the study area were to join together their volume would put them in a position to bargain for access to a port elevator through joint arrangements (alternative V). However, the benefits of such arrangements may not be as great as coordinating such export movements through an existing cooperative export firm (alternatives I, II, and III).

Commitment

The cooperative marketing system for soybeans in the study area will have a better chance for success if the system includes firm commitments by soybean producers and cooperatives to their export organization. 13/ This can be done under any of the alternatives, II through V. It would provide the regional or export marketing association with a known supply of soybeans immediately upon harvesting and thereby allow it to develop superior marketing strategies. The new regional or export marketing association would have the option of selling to the export or processing market A current example of this type of program is the PROMARK program of FAR-MAR-CO, Inc., Hutchinson, Kan., and Riceland Foods, Inc., Stuttgart, Ark.

12/ Projected 1985 exports are calculated as follows: Study area production of 106 million bushels, of which 41 percent is expected to be handled by cooperatives and of which 65 percent is expected to be shipped to export outlets, a total of 28.2 million bushels.

13/ Improving the Export Capability of Grain Cooperatives, FCS Research Report 34, Farmer Cooperative Service, USDA, June 1976. "Let's Talk about Marketing Agreements," Reprint 393 from September 1974 News for Farmer Cooperatives.

Organization and Coordination

Changes in the cooperative organization for export sales and movements of soybeans can do much in the long run to make overall soybean export sales more effective in increasing returns to growers. This can be done by centralizing export sales and coordinating shipments in order to obtain more market power, improving efficiencies in export merchandising, providing flexibility in shipments to port elevators, and performing advisory marketing services to member local cooperatives.

Local cooperatives are currently organized to make independent export sales on an individual basis to various exporters. There is no prior commitment by local cooperatives to sell to an export cooperative except as a result of forward sales. There is generally no coordination of shipments except on an individual basis. The present system may be effective for an individual cooperative with superior management and facilities; however, in the long run, the apparent advantages of a larger centralized organization for export made up of study area cooperatives will be of greater benefit to soybean producers than the present system. Overall planning and coordination could bring about efficiencies in storage, seasonal shipments, railcar and barge procurement, and meeting shipping schedules.

Alternative II proposes changes from the present system to provide that local cooperatives sell and ship most of their soybean export volume to an export cooperative (FEC or American Grain). Sales and shipments to FEC could be coordinated through MFC Services.

Alternative III envisions a new export marketing association whose members would be the study area cooperatives that originate soybeans for export and process markets. It is assumed that such an association would become a member of FEC. This association would have its own board of directors, management, and personnel. It would be responsible for procurement from members, sales, transportation, coordination of shipments, and the conduct of services for member cooperatives. Firm commitments of specific quantities of soybeans would be expected from member cooperatives. A pooling program and agreements between producers and their cooperatives should be considered.

Alternative IV also envisions a new export marketing association. Organization and coordination would be the same as it would be under alternative III except that sales by the new association would be made to various exporters, possibly including other cooperative export firms. However, since this alternative would not emphasize commitment to a cooperative export firm, it is doubtful it could become a member of FEC.

Alternative V would require an export marketing association similar to that recommended in alternative IV except that it would have the shared privilege and responsibilities of an export elevator. It would have all the responsibilities of the one recommended under alternative III with respect to soybean procurement, transportation, coordination of

shipments to port elevators and processors, and provision of services for member cooperatives. It would have the added responsibility of making its own export sales, a formidable task for a new regional cooperative with a small volume.

Merchandising

Under the present system, merchandising is a vital part of the management function. Purchases and sales of soybeans are made by managers of individual cooperatives without direction from a central office or control point. The managers from three cooperative river elevators made about 60 percent of the study area's sales to exporters for the 1976 crop.

Merchandising is a highly technical skill seldom acquired to its full extent by managers of the small inland cooperatives, partly because of the pressure of other management duties related to farm supplies and services. It is believed that soybean merchandising for all cooperatives can be improved by centralizing the merchandising function.

Alternative II would not accomplish such centralization unless there was an areawide commitment system between producers and cooperatives that involved pooling arrangements probably coordinated by MFC Services.

Alternatives III, IV, and V would provide for a new marketing association that would centralize the merchandising function for local cooperatives.

Alternatives III and V, operated in conjunction with a pooling program, could provide the basis for establishing centralized marketing arrangements from producer to foreign buyers and processors.

Transportation

Transportation and scheduling of soybeans to the gulf are presently handled by individual cooperatives. Often, arrangements and contracts for barges are made several months in advance to lock in an expected lower rate. Railroad representatives are contacted by individual managers to apprise them of their needs for railcars. Regional cooperatives in the study area have expertise in transportation matters and generally represent the interests of affiliated local cooperatives. Unaffiliated cooperatives generally rely on their manager to represent their interests in dealings with transportation companies.

Under alternative II, transportation would probably continue to be handled by individual local cooperatives, but the opportunity would exist for MFC Services to help expedite coordinated movements to the Ama elevator.

Under alternatives III, IV and V, the new cooperative export association would likely coordinate and help negotiate barge contracts

for all member river cooperatives, and assist in the procurement of barges and railcars. In addition, it would coordinate the scheduling of barge and rail shipments in conjunction with sales by the cooperatives.

Under alternative V, it is assumed that all export sales would be f.o.b. at Ama; thus, ship procurement would not be the responsibility of the cooperatives.

Facilities

Regardless of the system adopted, the cooperative elevator facilities for the export movement of soybeans should be located so as to minimize transportation costs, and designed to operate at a relatively low cost per bushel. The handling of soybeans within and between elevators should be minimized to reduce grade losses and operating expenses.

No attempt was made to make detailed evaluations of the need for elevator facilities for the various trade areas. Generally cooperatives appear to have satisfactory facilities; however, there are instances where facilities need modification and/or expansion. Elevator requirements vary, and a separate study and evaluation is needed for each community or area.

It is believed consideration should be given to the establishment of satellite elevators to existing cooperative river subterminals located at Greenville and Greenwood, Miss., and at Mound and Lettsworth, La. Such satellite elevators would be relatively small and inexpensive, and designed primarily for handling and quick turnover. They could be established in communities whose producers are not adequately served.

Under alternatives I and II, the ownership and control of local elevators would remain as it is presently. However, under alternatives III, IV, and V, consideration should be given to the ownership or control of cooperative river subterminals by the new cooperative marketing association. This would give the cooperative system greater control of grain, and improve ability to coordinate movements and sales.

Under alternatives III through V, the need for additional storage facilities would be affected by the marketing strategy and program plan used by the proposed new export marketing association.

Under alternative V, the investment required to own one-fourth interest in a port elevator would be about $7-$12 million. An alternative arrangement for elevator "rights" to put grain through a port elevator on a fee basis might be possible but the fee would be high. Under either plan, the arrangements for receiving, storing, grading, weighing, and shipping would be difficult to work out with co-participants.

Financing

Financing under the present system is handled by each individual cooperative. Financing is available through the New Orleans Bank for Cooperatives. Under alternative II, the financing requirements could be expected to be about the same as they are now.

Under alternatives III, IV, and V, some financing costs might be shifted to the new export marketing association, and while marketing is expected to be more effective, it could result in some increased financing cost if marketing strategy called for greater holding of soybean inventories than at present. Such increased costs could be expected to be offset by increased returns from holding soybeans.

If the new export marketing cooperative were to initiate a marketing program that included pooling and marketing agreements, the effect on financing would be that: (1) the new cooperative might be eligible to obtain CCC price support loans on behalf of producer-members, and (2) the quantity of soybeans to be financed would be known in advance so as to permit the New Orleans Bank for Cooperatives to predict maximum financial needs.

Under alternative V, one-fourth interest in a port elevator of about $7-$12 million would be a difficult task for local cooperatives in the study area.

Management

The success of a soybean export marketing system for the study area depends to a large extent on the ability and performance of management in local cooperatives, regionals, and export cooperatives. Generally, management appears to be good but there are trouble spots. Many local managers are under considerable pressure in the handling and merchandising of soybeans in a highly volatile and competitive market environment, as well as having to carry heavy responsibilities in farm supplies and services to farm members. Some managers probably do not possess the expertise required for a first-rate job of marketing soybeans. Some do not have the capital required to carry out an inventory and hedging program. There appears to be a need for coordinated marketing management for soybeans which could be performed by a regional or export marketing association. This could involve a contract with the local cooperative to manage only the marketing of soybeans for the local A plan of this nature is in operation by the Farmers Grain Dealers Association of Iowa in Des Moines. Such a plan could be implemented under alternatives III, IV, and V.

Another plan would be a pooling program for producers such as has been implemented by Riceland Foods, Inc. and FAR-MAR-CO, Inc. Such a plan provides for marketing management, as well as other features, that gives marketing control and decisions to a centralized cooperative.

Evaluation of Alternatives

Alternative I--The present system, as previously described, consists of individual local cooperatives that largely operate independently. There is little coordination of sales and shipments among cooperatives. The system is effective as far as it goes, but cooperatives could have a stronger, more effective system.

Alternative II--The increased commitment to an export cooperative would offer the following advantages: (1) port elevator space would be more available, (2) market power of the cooperative export effort would increase and (3) local elevators and producers would share in savings of the export elevator.

The commitment would offer the following negative factors: (1) the cooperative export elevator would not always offer the highest price, (2) the Ama elevator would not be suited to receive truck shipments and (3) marketing arrangements and practices that are currently satisfactory for some of the local cooperatives would be eliminated.

Alternative III--A new export marketing association operating with a strong commitment program would provide the following positive factors: (1) Greater area control of soybean supplies and knowledge of quantities forthcoming, (2) greater ability to develop marketing strategy and implement better merchandising techniques, (3) ability to coordinate sales and shipments, (4) better opportunity to implement a pooling program, (5) greater opportunity to increase volume and benefit from economies of volume, (6) an opportunity to reduce soybean marketing responsibilities of local cooperative managers and to permit them to concentrate on other important items, and (7) an opportunity for local cooperatives and members to share in savings of the export cooperative.

It could result in the following possible negative factors: (1) Elimination of some of the marketing arrangements and practices that are currently satisfactory for some of the local cooperatives, (2) elimination of the present practice of selling to various exporters, depending on price and other factors, and (3) loss of some control by local cooperatives of movements out of their elevator.

Alternative IV--This alternative is similar to alternative III except for the important difference that the export cooperatives (FEC and AGA) would be ignored as cooperatives and considered as a sales outlets like other exporters. This alternative would provide the same positive factors as alternative III, except that local cooperatives would share little or none of the savings (refunds) of an export elevator since they would be shipping little or no grain to the cooperative export elevator.

The possible negative factors of this alternative are: (1) the elimination of some of the marketing arrangements and practices that are currently satisfactory for some local cooperatives, (2) loss of some control by local managers of movements out of their elevators, and

(3) the inability to significantly share in the savings of a cooperative export elevator.

Alternative V--This alternative, involving joint use of a port elevator, would provide the same positive factors (1) through (5) as does alternative III. The possible negative factors would be the same as for Alternative III. Also, there would be the following additional negative factors: (1) the high cost of buying into an export elevator, (2) possible problems in joint use of an export elevator, and (3) the high level of marketing expertise required to market soybeans to foreign buyers.

A general weakness of Alternatives III through V would be the vulnerability of the new export marketing association whose fate would depend greatly on the success and volume of soybean export sales. The association would not have diversification in processing as does Riceland Foods, Inc. and Gold Kist Inc.

Regardless of which alternative is chosen, the chances for improving the present cooperative soybean marketing system can be greater if the following actions are implemented:

(A) Obtain volume and investment commitments by producers to local cooperatives, by local cooperatives to the regional marketing association, and by the regional association to a cooperative export elevator.

(B) Have all local grain cooperatives become members of the regional marketing association that is a member of an export cooperative with port elevator facilities and an export merchandising program.

(C) Place cooperative subterminals under the control of a regional association.

(D) Have a high level of management ability for the regional association and export cooperative(s).

(E) Coordinate operations of the regional association with any cooperative soybean processing plants in study area.

Appendix table 1--Cooperative elevators and storage capacity in study area by crop reporting district and county, 1976 crop 1/

Name of cooperative elevator, State, CRD, and county	City	Storage capacity for soybeans
		1,000 bushels
Mississippi:		
CRD-1:		
Bolivar Co.:		
West Bolivar Rice	Rosedale	40
Duncan Grain Co.	Duncan	20
Coahoma Co.:		
Delta Grain Drying Association	Clarksdale	35
Jonestown Elevator	Jonestown	2/ 550
Quitman Co.:		
Farmers Grain Elevator	Lambert	2/ 235
Tellhatchie Co.:		
Tellhatchie Farmers Supply	Charleston	155
Webb Elevator 3/	Webb	228
Tunica Co.:		
Maude Elevator Association	Dundee	2/ 560
CRD-2:		
Panola Co.:		
Four Rivers Marketing Assn.	Batesville	156
Panola-Quitman Grain Co-op	Batesville	330
CRD-4:		
Humphrey Co.:		
Farmers Elevator and Supply	Belzoni	400

--(Continued)

Appendix table 1--Cooperative elevators and storage capacity in study area by crop reporting district and county, 1976 crop 1/ (Continued)

Name of cooperative elevator, State, CRD, and county	City	Storage capacity for soybeans
		1,000 bushels
Issaquena Co.:		
Valley Park Elevator	Valley Park	540
Leflore Co.:		
Cooperative Elevator Co.	Greenwood	2/ 2,011
Yazoo Valley Oil Mill	Greenwood	1,000
Minter City Oil Co.	Greenwood	450
Sunflower Co.:		
Ruleville-Drew Grain Elevator	Drew	390
Farmers Grain Terminal 4/	Indianola	200
Washington Co.:		
Farmers Grain Terminal	Greenville	2,400
Hollandale Grain Elevator 3/	Hollandale	333
CRD-5:		
Madison Co.:		
Madison County Co-op	Canton	230
TOTAL--MISSISSIPPI AREA		10,263
Louisiana:		
CRD-2:		
Ouachita Parish:		
River Port Terminal, Inc.	So. Monroe	160

--(Continued)

Appendix table 1--Cooperative elevators and storage capacity in study area by crop reporting district and county, 1976 crop 1/ (Continued)

Name of cooperative elevator, State, CRD, and county	City	Storage capacity for soybeans
		1,000 bushels
CRD-3:		
Franklin Parish:		
Associated Producers Coop.	Crowville	128
Moorehouse Parish:		
Moorehouse Gin and Elevator Co.	Mer Rouge	5/ 92
Madison Parish:		
Farmers River Terminal of La.	Mound	6/
Richland Parish:		
Richland Grain Co-op	Rayville	7/ 266
CRD-5:		
Avoyelles Parish:		
Avoyelles Farmers Co-op	Evergreen	300
Avoyelles Farmers Co-op	Moreauville	110
Old River Terminal Co-op	Lettsworth	300
Evangeline Parish:		
Ville Platte Rice Drier, Inc.	Ville Platte	8/ 600
Point Coupee Parish:		
Point Coupee Farmers Elevator	Batchelor	62
Rapides Parish:		
Central La. Grain Co-op	Boyce	150
Bayou Boeuf Grain Growers	Cheneyville	150

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Appendix table 1--Cooperative elevators and storage capacity in study area by crop reporting district and county, 1976 crop 1/ (Continued)

Name of cooperative elevator, State, CRD, and county	City	Storage capacity for soybeans
		1,000 bushels
St. Landry Parish:		
Tri-Parish Rice Drier	Eunice	70
American Grain Association	Port Barre	200
CRD-6:		
East Feliciana Parish:		
Tri-Parish Co-op	Slaughter	150
TOTAL--LOUISIANA AREA		2,738
Arkansas:		
CRD-9:		
Chicot Co.:		
Riceland Foods	Eudora	364
Desha Co.:		
Riceland Foods	Dumas	1,290
Riceland Foods	McGehee	1 147
TOTAL--ARKANSAS AREA		2,801
TOTAL--MISSISSIPPI DELTA STUDY AREA		15,802

1/ For the 1977 crop, the following storage capacity was added: In Mississippi: Jonestown 270,000 bu., Lambert 310,000 bu., Dundee 170,000 bu., and Greenwood 1,002,000 bu. In Louisiana: Mound 1,000,000 bu. (new elevator).

2/ Excludes new storage capacity added in 1977.

3/ Operated as a unit of Staple Cotton Services, Greenwood, Mississippi.

4/ Branch of Farmers Grain Terminal, Greenville, Mississippi.

5/ Represents storage allocated to soybeans. Other storage space is used for rice.

6/ New elevator under construction with 1 million bu. of storage capacity.

7/ This is a new cooperative. Elevator operated last year as a noncooperative elevator.

8/ Includes storage capacity that in any given year is first used for handling rice and immediately thereafter used for storing soybeans.

Appendix table 2--Soybeans: U.S. acreage, supply, and disposition, crop years 1960, 1970, 1974-76, and projections for 1977 and 1985

Year beginning September	Unit	1960	1970	1974	1975	1976 1/	1977 2/	1985 2/
				Acreage and yield				
Acreage:								
Planted	mil acres	24.4	43.1	53.5	54.7	50.3	59.0	62.0
Harvested	mil acres	23.7	42.2	52.4	53.8	49.4	58.0	60.7
Percent harvested	percent	97	98	98	98	98	98	98
Yield per acre harvested	bushels	23.5	26.7	23.2	28.8	25.6	27.5	30.2
				Supply and disposition				
Supply:								
Beginning stocks	mil bu	52	230	171	185	245	65	155
Production	mil bu	555	1,137	1,215	1,546	1,265	1,595	1,835
Total supply	mil bu	607	1,367	1,386	1,731	1,510	1,660	1,990
Disposition:								
Crushing	mil bu	406	760	701	865	790	845	935
Seed and other	mil bu	39	64	79	66	53	81	100
Domestic disappearance	mil bu	445	824	780	931	843	926	1,035
Exports	mil bu	135	434	421	555	564	610	800
Total disposition	mil bu	580	1,258	1,201	1,486	1,407	1,536	1,835

1/ Preliminary.
2/ Projected.
Sources: Fats and Oils Situation, October 1977, Economic Research, USDA; and Agricultural Supply and Demand Estimates, World Food and Agricultural Outlook and Situation Board, USDA, Nov. 11, 1977.

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