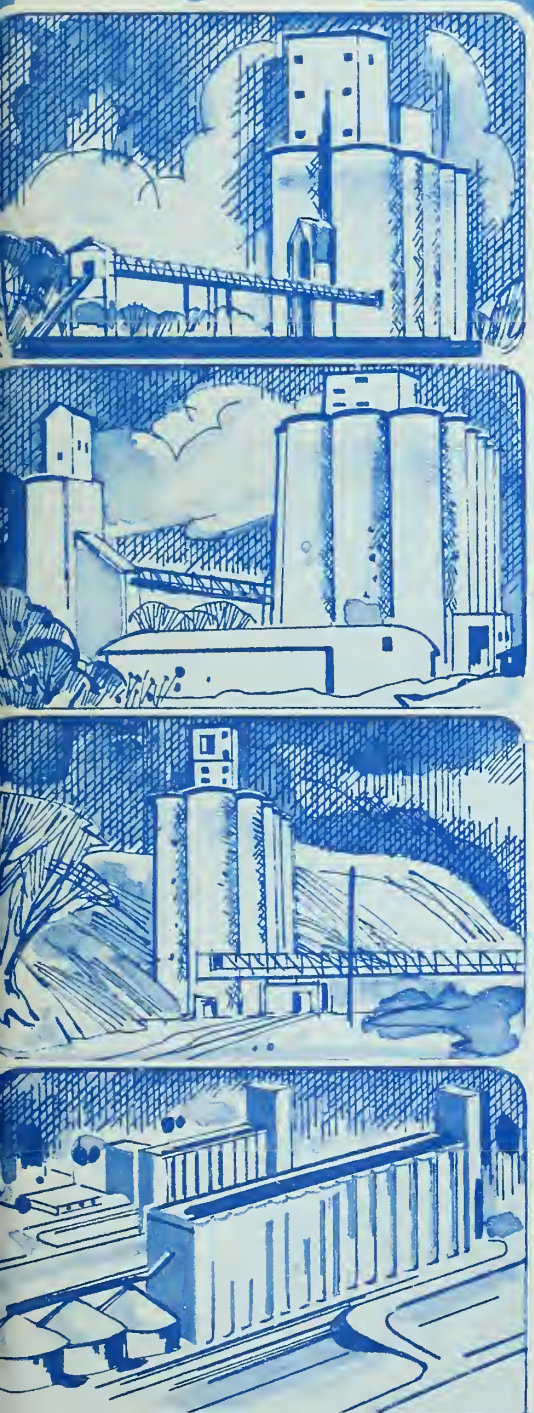


IMPROVING FGDA GRAIN MARKETING

SERVICE REPORT NO. 143

FARMER COOPERATIVE SERVICE

U.S. DEPARTMENT OF AGRICULTURE

CONTENTS

HIGHLIGHTS

Farm grain sales in Iowa are expected to increase 43 percent from 1973 to 1985. Farmers Grain Dealers Association of Iowa (FGDA) and member elevators therefore will need to handle, store, and ship much more grain than they now do. FGDA member elevators should increase their share of farm sales from 58 percent to at least 64 percent by 1985. By that time, FGDA should increase its share of member volume from 40 percent to at least 55 percent--perhaps 70 percent.

In May 1972, FGDA instituted a marketing agreement signed by more than 40 members. More of FGDA's nearly 300 members should sign this agreement, which will assure greater coordination and efficiency in marketing.

To handle increasing volumes of grain from farmers, member elevators will have to improve and expand facilities. Where feasible, existing elevators on heavyweight main-lines should be upgraded to ship in 50- to 54-car trains, to take advantage of lower unit-train rates.

Five important requirements for upgrading existing facilities or constructing a new unit-train elevator are:

--Locate on a main-line railroad that is likely to offer service for the next 15 years or more.

--To be upgraded, an existing elevator should be expanded without excessive cost. If a new elevator is to be built, it should be readily expandable to ship 100-car unit-trains.

--A sufficient volume of grain should be available.

--The elevator should be capable of complying with EPA regulations.

--The projected net cash flow should provide a rate of return great enough to pay off the loan in 10 or 15 years, and provide a rate of return of 15 to 20 percent.

Additional unit-train elevators are still needed in locations that lack them. In selecting a site, pay careful attention to future rail service, distance to nearby cooperatives and other unit-train elevators, cost to upgrade facilities, expected volume, and expected rate of return on investment.

If a unit-train elevator is needed at a particular location and if the local cooperative cannot build it, the possibility of having FGDA build it should be evaluated.

About one-third of FGDA cooperatives are on lightweight rail lines that give little or no service. These elevators have several alternatives:

(1) Serve as feeder to a country terminal that has unit-train or multicar rates;

(2) Truck to processors, river elevators, and livestock feeders;

(3) Use own limited rail services;

(4) Concentrate on grain bank and feed services, fertilizer, and other farm supplies;

(5) A combination of above items.

The river elevator at Meeker's Landing on the Mississippi River needs to expand its receiving capability. Improvement of the river elevator at McGregor and use of shuttle multicar rail service from Iowa points on the Milwaukee Railroad to the river should be investigated. A major grain elevator on the Missouri River is not recommended.

FGDA needs access to cooperatively owned port facilities on the East Coast and in the Galveston-Houston area. Also, access to a West Coast elevator may be needed in the future. Such port elevators should be owned and operated jointly with other regional grain cooperatives.

By 1985, FGDA will be shipping at least 163 million export bushels by rail, requiring 2,996 hopper cars. FGDA probably would need to supply half these cars.

Barge shipments are expected to climb from 38 million bushels in 1973 to 53 million bushels in 1985, when 132 barges will be needed--up from 95 in 1973.

RECOMMENDATIONS

Recommendations deal principally with elevator facilities, transportation, merchandising, organization and services. For each of these categories, we have indicated roles and requirements for FGDA member elevators and for FGDA in improving the cooperative grain marketing system.

The volume of Iowa farm grain sales is expected to increase 43 percent from 1973 to 1985. This means that FGDA and member elevators need to prepare to handle, store, and ship considerably more grain. We hope that the cooperative share can be increased, particularly the share of member volume handled by FGDA. Member elevators should be able to increase their share from 58 percent of farm sales to at least 64 percent by 1985. FGDA should increase its share of member volume from 40 percent to at least 55 percent by 1985--perhaps 70 percent.

Elevator Facilities

Member elevators:

1. Member elevators located on main-line railroads should continue improving and expanding grain facilities to handle increasing volumes of grain that will be sold by farmers. Existing elevators on heavyweight main-lines should be upgraded where feasible, mostly to 50- and 54-car capability, to take advantage of unit-train rates. 1/ Generally, it's more feasible to upgrade existing elevators than to build a new elevator. In either instance, consideration should be given to upgrading or building a unit-train elevator jointly with neighboring cooperatives to minimize total cost of transportation and handling.

2. Each situation is different and must be carefully evaluated. We listed five important requirements for upgrading existing facilities or in building a new unit-train elevator:

   a. Locate on a main-line railroad that is likely to offer the required service for the next 15 years or more.

   b. An existing elevator to be upgraded should be readily adaptable to proposed expansion without execessive cost, and if a complete new unit-train elevator is to be built, it should have the potential for future expansion to ship 100-car unit-trains.

   c. Elevator should have the ability to draw the needed volume of grain.

   d. Elevator should be capable of complying with EPA regulations.

   e. Projected net cash flow should provide a rate of return on the added investment great enough to pay off the loan in 10 to 15 years, and provide a rate of return of 15 to 20 percent.

3. If an elevator cannot be expanded to a 25-car unit-train capability because of property limitations then a new site should be considered. Expansion to a 25-car unit-train elevator can often be done for a small investment; however, don't pour in too much money. You might be better off to have a new 50-car unit-train elevator at a new site.

4. If upgrading is not feasible, a new 50- to 54-car unit-train elevator should be considered, remembering that the high cost of a new elevator will require high volume throughput. A new country terminal with unit-train capabilities must be an efficient handling house with high receiving load out rates, and have a minimum capacity of about 200,000 bushels. This doesn't leave much space for storage. Patrons

---

1/ An exception would be elevators located on the Illinois Central Gulf Railroad which already has a low 3-car rate for export grain.

generally want storage with their elevator. Generally, storage can be provided here at less cost than on the farm if the storage annex is of larger tanks or silos. This can be added as needed, and should be provided for in the initial plans.

5. Additional unit-train elevators are still needed. Potential locations can be determined with the help of maps of present elevator locations, their capabilities, and the density of farm grain sales. Separate studies should be made for each potential location. Careful study should be given to future rail service, distance to nearby cooperatives and other unit-train elevators, cost to upgrade or build new facilities, expected volume, and expected rate of return on investment.

6. FGDA should provide leadership and assistance to member elevators in optimizing the location, size and design of new and modernized country terminals. FGDA should have staff personnel capable of making studies to determine the most feasible action regarding country terminals. Such a staff should provide guidance to member elevators in planning, financing and organizing for unit-train elevators designed to serve one or more existing member cooperatives. In some instances, it may be feasible for FGDA to build and operate country terminals with the concurrence of the local member elevators. Such terminals should be on a self-supporting basis, whereby the area served would pay for the elevator over a period of time.

7. About one-third of FGDA member elevators are located on secondary and lightweight rail lines that provide little or no rail service. Alternatives for these elevators are:

a. Serve as a "feeder" elevator to a country terminal that has lower unit-train or multicar rates.

b. Truck to processors, river elevators, and livestock feeders.

c. Utilize own limited rail service.

d. Concentrate more on grain bank and feed services, fertilizer, and other farm supplies.

8. The principal outlet for many of these competitively "neutralized" elevators will be by truck to country terminals. There are four types of arrangements that such an elevator without rail service can make with a larger country terminal: (1) sell grain outright to larger country terminal, (2) Contract with larger country terminal to handle (or toll) at a specified fee, (3) unify or merge with larger country terminals, or (4) form a new cooperative to build a new unit-train elevator that is jointly owned by several local cooperatives.

FGDA elevators:

9. The river elevator at Meeker's Landing needs to have its receiving capability increased. We believe an additional future river elevator may be needed on the Mississippi River between McGregor and Muscatine. Additional study will be needed to determine feasibility.

10. The ownership of a river elevator at or below Keokuk for year-round barge shipments is not likely to be feasible because of the probable low utilization and relatively high truck and rail rates from major Iowa supply points to such river points. However, the tolling of grain through an existing river elevator in this area might be feasible.

11. We do not recommend a major grain elevator on the Missouri River. The only type of grain facility on the Missouri that might be feasible would be a low-cost fast handling facility for local grain.

12. The Avon elevator in Des Moines serves as the principal terminal elevator of FGDA and will need expansion of storage and handling capacity as farm grain sales increase.

13. FGDA should explore the feasibility of locating a port elevator in the Galveston-Texas City-Houston area (through Farmers Export Co.). This would give FGDA a through movement on the CRIP which should improve hopper car unilization as well as provide flexibility to export marketing. Such an elevator probably would also be to the advantage of FAR-MAR-CO. The feasibility of a port elevator in the Puget Sound area should be studied primarily for GTA, FAR-MAR-CO, and NPGG. FGDA could also benefit from such an elevator if unit-train rates are put into effect and if ocean freight rates from the Pacific Coast to the Orient are reduced relative to rates from the Gulf. Acquisition of an East Coast elevator owned by regional grain cooperatives would benefit FGDA. If regionals cannot acquire an existing East Coast elevator, consideration should be given to jointly building a new elevator.

14. Such port elevators for FGDA grain should be owned and operated jointly with other regional grain cooperatives. It is our opinion that all cooperatively owned port elevators in the U.S. should be controlled by one overall central cooperative whose principal function is to market all export grain for cooperatives.

Transportation

Member role:

15. Member elevators will need to move increasing quanitites of grain by rail and by truck. Each elevator should, to the extent possible, anticipate its transportation requirements and obtain commitments or arrangements for transportation. Plans should be made to spread out

shipments so as to minimize fluctuations in seasonal shipping requirements.

16. Member elevators with multicar shipping capabilities on heavy duty main-lines should look to the railroads and FGDA for their hopper car supplies. To the extent that car supplies from these sources are expected to be inadequate, a member elevator could lease additional cars and place them under the control of FGDA with the understanding that such member elevator will have "first call" on use.

17. Member elevators on lightweight and secondary rail lines and elevators on main-lines with limited load out capability will need to rely largely on single-car and truck shipments. These elevators should plan single-car rail shipments to domestic markets and truck movements to country and river terminals, and to feedlots and local processors. In some instances member elevators should own trucks to meet a significant portion of their requirements if they can obtain a high percent of truck utilization.

FGDA jointly with others:

18. A recent FCS study shows there are tremendous opportunities for reducing transportation costs and improving service if grain and farm supply cooperatives would join together in a coordinated program and jointly operate barges, towboats, and railcar equipment. We believe the time has come for cooperatives to join together and operate their own transportation system to provide a part of their total transportation needs. Transportation of your products has become so vital in marketing that you can no longer afford to stand in line waiting for someone to haul your grain. Cooperatives in the Midwest have the power--the power of tonnage--to jointly own and operate a pool of freight cars and a barge line to provide the service they will need in the days ahead.

FGDA role:

19. For rail shipments of export grain, we estimated an FGDA annual volume of 76 million bushels for this 1973 crop year. That would have required about 1,397 hopper cars--to be supplied by FGDA and railroads. For 1985, we estimate that FGDA's export rail shipments will be at least 163 million bushels. That volume of exports would require about 2,996 hopper cars. FGDA would probably need to supply nearly one-half of these cars and railroads would supply the rest. If domestic unit-train rates develop, even more additional cars will be needed.

20. For barge shipments of export grain, we estimated that FGDA volume would increase significantly in the years ahead--from 38 million bushels in 1973 to 53 million in 1985. Barge requirements for the 10-month season are estimated at 95 in 1973 and 132 in 1985. Domestic barge

shipments to southeastern U.S. are likely to increase and add to FGDA barge requirements.

21. The operation of an FGDA trucking division doesn't seem feasible principally because of probable truck utilization problems and union requirements. Contracting with small trucking companies is the best approach for FGDA and member elevators as long as trucks are available at reasonable rates. FGDA should stand ready to assist member elevators in truck procurement, particularly members on light rail lines with poor service and those with no rail service.

22. In recent years we've seen the trend to more direct marketing of grain which bypasses former handling points. Some farmers are bypassing the local country elevator to truck to the country terminal or processor. The country elevators and country terminals are bypassing the large city terminals to go direct to ultimate users and port terminals. This trend will increase and your cooperative grain marketing system should be designed to maximize direct movements to the extent possible.

Merchandising

The role of members:

23. Member elevators should look to FGDA to merchandise most, if not all, of their out-of-area sales, except soybeans and feed grains that move to cooperatively owned processing plants. Boards of directors of all member elevators should establish a firm policy requiring out-of-area sales to be kept in cooperative channels.

24. Member elevators particularly those with moderate to weak merchandising abilities, should sign a marketing agreement with FGDA, under which FGDA provides special assistance in inventory management, hedging and sales. The member agrees to market all out-of-area sales through FGDA. This agreement is for large and small cooperatives alike. It provides for greater coordination and efficiency in cooperative grain marketing.

The role of FGDA:

25. FGDA should continue to offer the merchandising agreement to all member elevators and add highly qualified personnel as needed in order to adequately service members under the agreement. The ultimate objective should be to bring all member elevators under the merchandising agreement so that the sales and movement of grain for all members can be more effectively coordinated.

26. FGDA should study and investigate the additional possibilities of penetrating the domestic market for soybeans and corn, particularly for out-of-state sales.

27. FGDA should continue to market all export grain through Farmers Export Co. and actively work to strengthen the role of Farmers Export Co. as the central export cooperative to coordinate and handle export sales for all regional grain cooperatives.

Organization and Services

Member elevators:

28. Members cooperatives must learn to adjust their organizational setup to effectively meet changes in transportation and elevator facilities. Each local situation should be studied carefully to determine the best local organization. Greater joint evaluations among neighboring cooperatives should be made to avoid duplicating or excessive investments in facilities. Merger may or may not, be the best solution, but often it is. Intermediate steps to possible merger may be taken to partly test the feasibility. For example, there may be management contracts between a financially stronger cooperative and a weaker cooperative. Another example would be where elevators enter into an agreement with a unit-train elevator to handle grain for a fee. After a period, it may become apparent that merger would, or would not, be an improvement for all concerned.

29. Member elevators should determine whether FGDA is providing all the services they need and are willing to pay for. It's probable that there are services members now obtain "outside" that FGDA can provide better and at less cost. For example, maybe FGDA could provide superior elevator engineering services to help member elevators with elevator modernization, equipment, and new construction. FGDA could provide other services at a savings to member elevators.

FGDA:

30. FGDA should provide the leadership in guiding further development of country terminals and in helping other elevators adjust to inadequate rail services and other changing conditions.

31. FGDA will have increasing responsibilities and problems assoicated with projected increased volumes of grain to handle and merchandise. It will take a top-flight management team to attain the volume levels we have projected. We suggest you take a good look at your organization structure, management information system, and personnel staffing to make sure you have the best. The FGDA staff should include the best specialists in merchandising, transportation, elevator operation, accounting, research, planning, and member services. We can't stress too much the importance of having the best personnel in the grain business. To get and keep top notch personnel, FGDA needs to pay as good or better salaries than competitors.

32. FGDA should establish one or more staff positions for economic research and planning. Such a staff could contribute materially to member services and FGDA operations in such areas as: design and location of new elevator facilities, grain transportation requirements, logistics of grain movements, marketing agreements and programs, organizations, and finance. An organization as large as FGDA cannot afford to neglect this important area.

IMPROVING FGDA GRAIN MARKETING

By

Stanley K. Thurston, Robert J. Byrne,
Phil F. Brown, Bert D. Miner*

In a letter dated August 12, 1973, Charles W. Hanson, executive vice president, Farmers Grain Dealers Association of Iowa (FGDA), requested Farmer Cooperative Service to study the grain facility and transportation aspects of their organization to help them determine how they can operate more effectively in the future. The results of the FCS study were first reported in preliminary report no. 4 in May 1974.

BACKGROUND

FGDA is a federated cooperative organized in 1904 by 30 farmer-owned cooperatives. Membership of FGDA has grown to nearly 300 cooperatives with 376 elevators in 1973. Headquarters are in Des Moines, Iowa.

Of the 376 FGDA member elevators, 228 are single-unit operations, each in a different town (fig. 1). The rest consisting of 148 elevators owned by 58 cooperatives, are multiple-unit operations where each cooperative has elevators in two or more towns (fig. 2).

Member cooperatives elect the 12-member board of directors for FGDA. Of this total, nine directors are elected from the nine crop reporting districts and three are elected at large (fig. 3). The executive vice president and general manager has five divisions reporting to him. The principal operating division is the Grain Division.

FGDA purchases grain from its member cooperatives and sells it to various domestic and exports outlets. Such grain moves from member elevators, either through one of the five FGDA elevators or direct from a member elevator to a destination designated by FGDA. Elevators owned and operated by FGDA are in Des Moines, McGregor, Muscatine, and Meeker's Landing in Iowa, and in Whiting, Ind., near Chicago (fig. 4). FGDA also operates a 550-ton-a-day soybean processing plant at Mason City.

The volume of grain handled by FGDA has increased sharply. Volume sold or processed increased from 60 million bushels in fiscal 1966 to 173 million bushels in fiscal 1973. The greatest rate of increase occurred from 1969 to 1973, when volume jumped form 66 million to 173 million bushels.

*The authors gratefully acknowledge the substantial assistance provided by Earl B. Miller, James O. Johnson, Richard Parsons, Charles E. Reed, and Edwin E. Drewniak.

Figure 1--FGDA single unit member elevators 1973

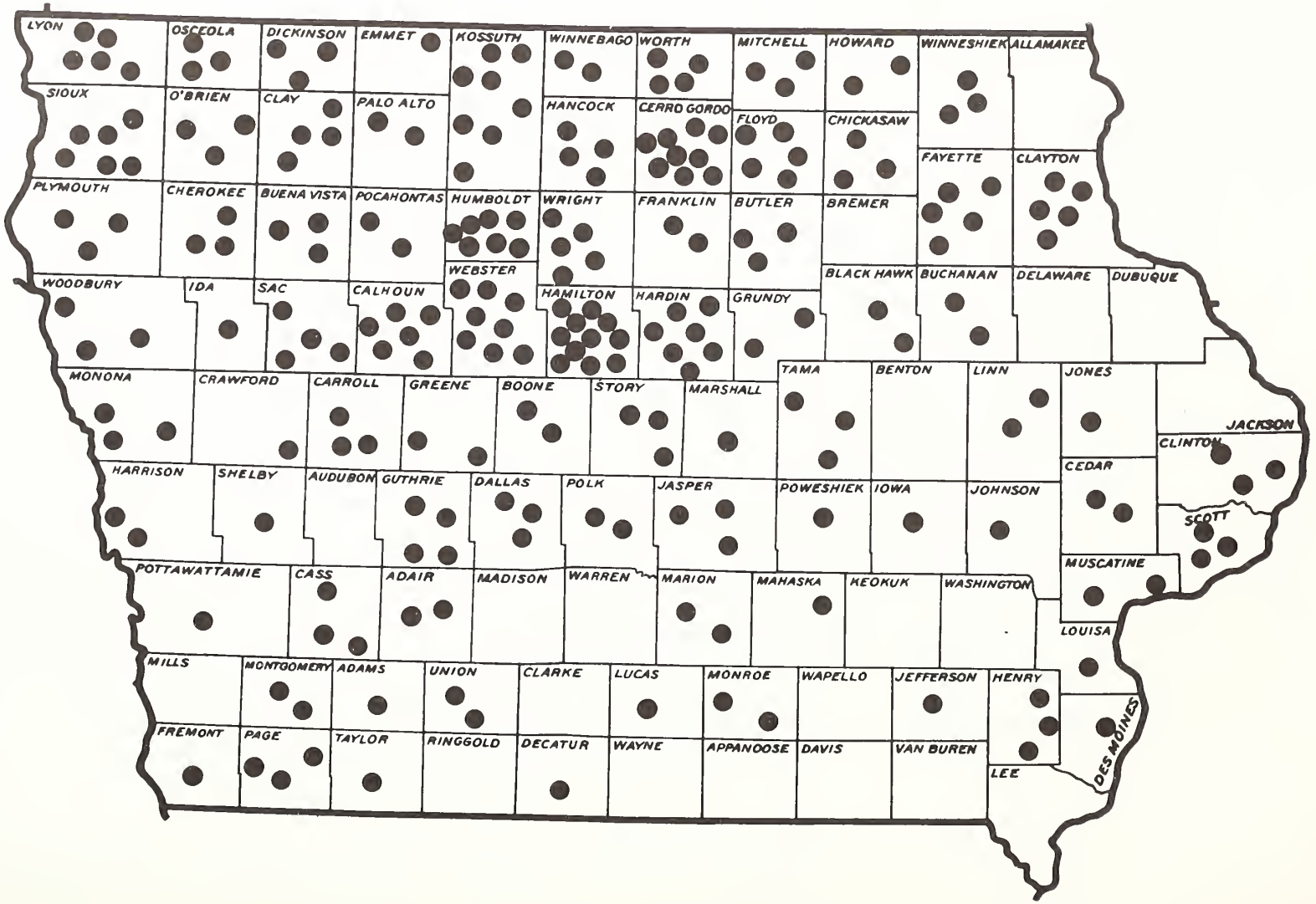


Figure 2--FGDA multi-unit member elevators 1973

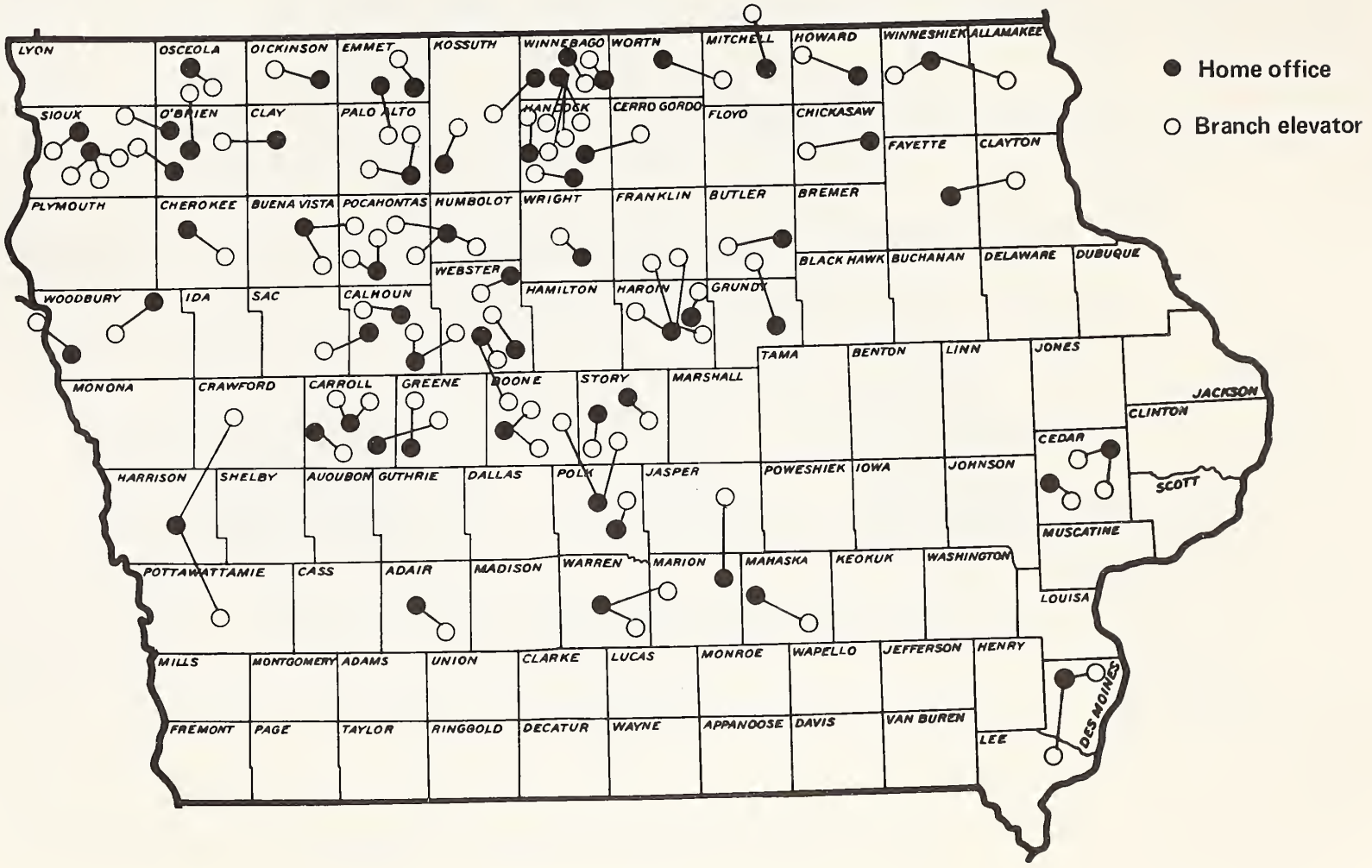


Figure 3--Organization Chart of FGDA

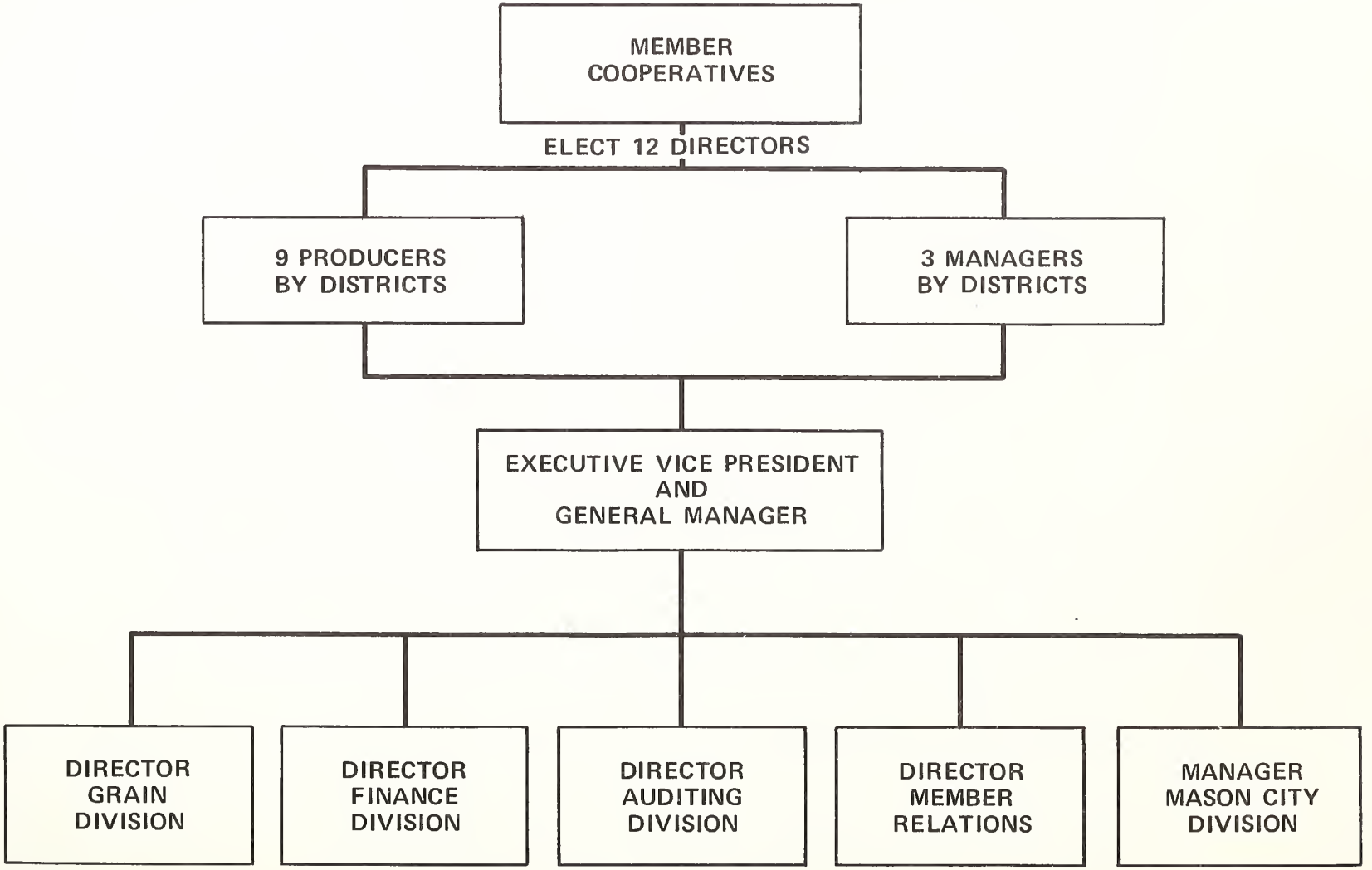
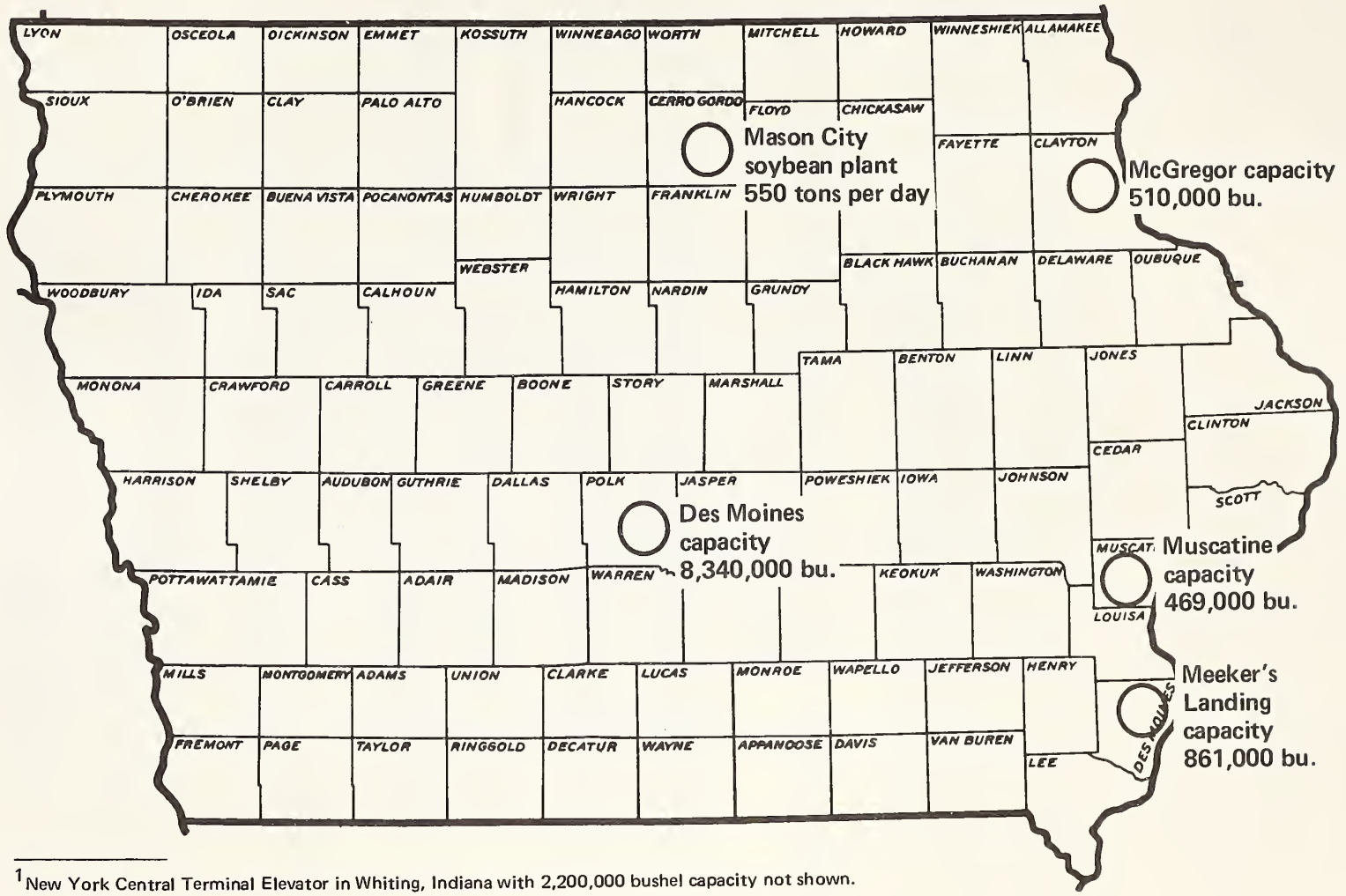


Figure 4--Location and capacity of FGDA elevators[1] and soybean processing plant.



[1] New York Central Terminal Elevator in Whiting, Indiana with 2,200,000 bushel capacity not shown.

For the 3 crop years, 1969-71, FGDA grain destined for export averaged about 51 percent of total grain sales volume. In crop year 1972 1/, it was 71 percent. Practically all FGDA export volume moves to Gulf ports. The rest goes through Great Lakes and East Coast ports. Domestic movements have been principally to soybean processors, feed processors, and corn millers. A significant portion of domestic sales are delivered within the State of Iowa.

GOAL AND OBJECTIVE OF FGDA

The board of directors established goal, action program, and objectives for FGDA. They were printed in the 1967 FGDA annual report as follows:

"GOAL: To operate so effectively that the Association will merit a greater share of member company business and through increased volume maximize returns to Iowa farmers.

ACTION PROGRAM: Develop more effective bargaining power for farmers and their cooperatives through Farmers Grain Dealers Association.

* Strengthen both FGDA's marketing and buying programs to become more effective in competing for member company grain.

* Work with other regional cooperatives in developing the export market for the benefit of midwest producers.

* Research the benefits to Iowa farmers through opportunities in cooperative grain and soybean processing.

* Study the economic impact of exclusive marketing agreements with member cooperatives.

OBJECTIVES:

* To develop buying and marketing strategies which would enable the Association to increase its volume by 20 percent each year.

* To work for improvements in transportation service to gain the lowest rates consistent with moving grain quickly from point of origin to destination.

1/ Crop year 1972 marketings cover approximately the same period as FGDA's fiscal year ending August 31, 1973.

* To seek improvements in grain harvesting, handling, and storage technology which would enable local cooperatives to profitably handle grain during this transition in harvesting methods.

* To assist cooperatives in finding more efficient and effective methods of operation.

* To motivate member companies to make greater use of our present marketing agreement."

PROBLEM DEFINITION

Two of the prime requisites of an efficient grain marketing system are: (1) efficient transportation from farm to ultimate market at the lowest possible cost, and (2) grain storage and handling facilities optimally designed and located. FGDA and its member elevators, in planning for a more efficient grain marketing system, face major problems in both transportation and grain facilities.

Facility Problems

1. Many of the present elevators of FGDA and its members are expected to become less adequate with respect to location, size, and type. Among the causes are rail line abandomnents, rail weight embargoes, less service on secondary rail lines, elevator obsolescence, increasing volumes to be handled, and the trend toward unit-train and multicar shipments of grain. Considerable investment in cooperative elevators will be needed in the future and FGDA and its members need guidelines for developing an optimum cooperative elevator system.

2. FGDA grain facilities on the Mississippi River may be expected to handle increasing volumes. FGDA needs to know whether existing facilities will be adequate to meet future needs and whether additional facilities are needed on the Mississippi and Missouri Rivers.

3. FGDA must be assured of having adequate port elevator outlets for export grain. FGDA needs to know whether they should acquire interest in one or more additional port elevators and where they should be located.

Transportation Problems

1. Volume of grain marketed from Iowa farms is increasing yearly while the rail transportation systems are abandoning unprofitable lines and reducing service on other secondary rail lines. This leaves many cooperative elevators with little or no rail service.

2. FGDA has been forced to lease hopper cars to be assured of their availability. Decisions must be made with respect to how many cars to lease or purchase, how to distribute them, how to keep utilization high, and whether to lease or purchase jointly with other regional cooperatives.

3. Future rail rates may change with respect to: (a) unit-train rates to Gulf, East, and West Coasts, (b) price spread between single-car and multicar rail rates (c) level of barge and truck-barge costs.

4. Future barge rates and service are uncertain. FGDA needs to determine to what extent they should lease, own, and control barge equipment and how they can join with other cooperatives for more effective barge transportation.

5. An increasing volume of grain is being trucked for relatively short distances. FGDA must determine whether it needs to increase control of grain trucking equipment.

GRAIN PRODUCTION AND FARM SALES

Grain production and farm grain sales are basic indicators of the volume of grain to be marketed. Farm sales are the better indicator because a large portion of corn production is fed on the farm. About 90 percent of farm sales of corn and soybeans pass through a country elevator or country terminal; consequently, we have used farm sales in this study as a general indicator of volume available to be handled by FGDA and member elevators. However, substantial variations in year-end grain stocks on farms and in member elevators can affect FGDA volume for a given year.

Production

The Economic Research Service, USDA, recently projected U.S. production of corn and soybeans for 1974, 1980, and 1985. We felt Iowa's share of U.S. production during the past 10 years represented Iowa's expected share of projected U.S. production. Projected production increases from 1973 to 1985 were 24 percent for corn and 25 percent for soybeans (app. table 1).

Farm Sales

Expected farm sales from the projected production were also based on past trends. Iowa soybean farm sales have crept up to or above 98 percent of production, and we chose to stay with this level (fig. 5).

Increasing proportions of the corn crop are being sold by farmers. The upward trend of the past 18 years suggests that about 62 percent of corn for grain will be sold by producers in 1985 compared with about 33 percent in 1955. This means an increasing volume of corn moving into

marketing channels as a result of both increased production and a greater percent being sold.

For 1985, we projected Iowa corn sales at 937 million bushels, 111 percent more than in 1969 (fig. 6). We projected Iowa soybean sales at 339 million bushels, 94 percent more than in 1969. Combined farm sales of corn and soybeans in 1985 are projected at about double the 1969 level and to be 53 percent greater than in 1972.

These projections suggest that in 1985, Iowa will account for a slightly larger share of U.S. corn farm sales than in recent years, while the share of soybean farm sales will remain unchanged (app. table 2).

Density of Farm Sales

Farm sales of grain per square mile is a measure of density that provides an indication of the commercial grain facilities that will be needed to handle the off-farm grain movement. It varies by county and community. We show county density estimates of combined farm sales of corn, oats, and soybeans expressed in 1,000 bushels per square mile 1/ (fig. 7).

High density areas are mostly in north central and central Iowa, and Mississippi River counties in southeastern Iowa. These are the areas where country grain elevators are most numerous and where many have modernized facilities to be able to ship multicar units of 25 to 54 hopper cars.

GRAIN STORAGE AND HANDLING FACILITIES

Iowa's grain storage and handling facilities are concentrated in the areas of heavy farm grain sales. Grain facilities fall in two classes: (1) On-farm and (2) commercial. FGDA is concerned principally with commercial facilities; however, the amount of farm grain storage in an area can significantly affect the amount, type, and location of commercial facilities.

As farm storage increases in relation to commercial storage, it tends to work to the disadvantage of smaller elevators and to the advantage of larger elevators, especially those with unit-train capabilities. Producers are more willing to haul longer distances from their farm storage than from their fields during harvest. After harvest, they tend to bypass smaller elevators to obtain a higher price from a unit-train elevator or processor.

1/ Based on previous estimates by Iowa State University.

Figure 5--Iowa farm sales of corn and soybeans as a percent of production, 1969-72 and projections to 1985.

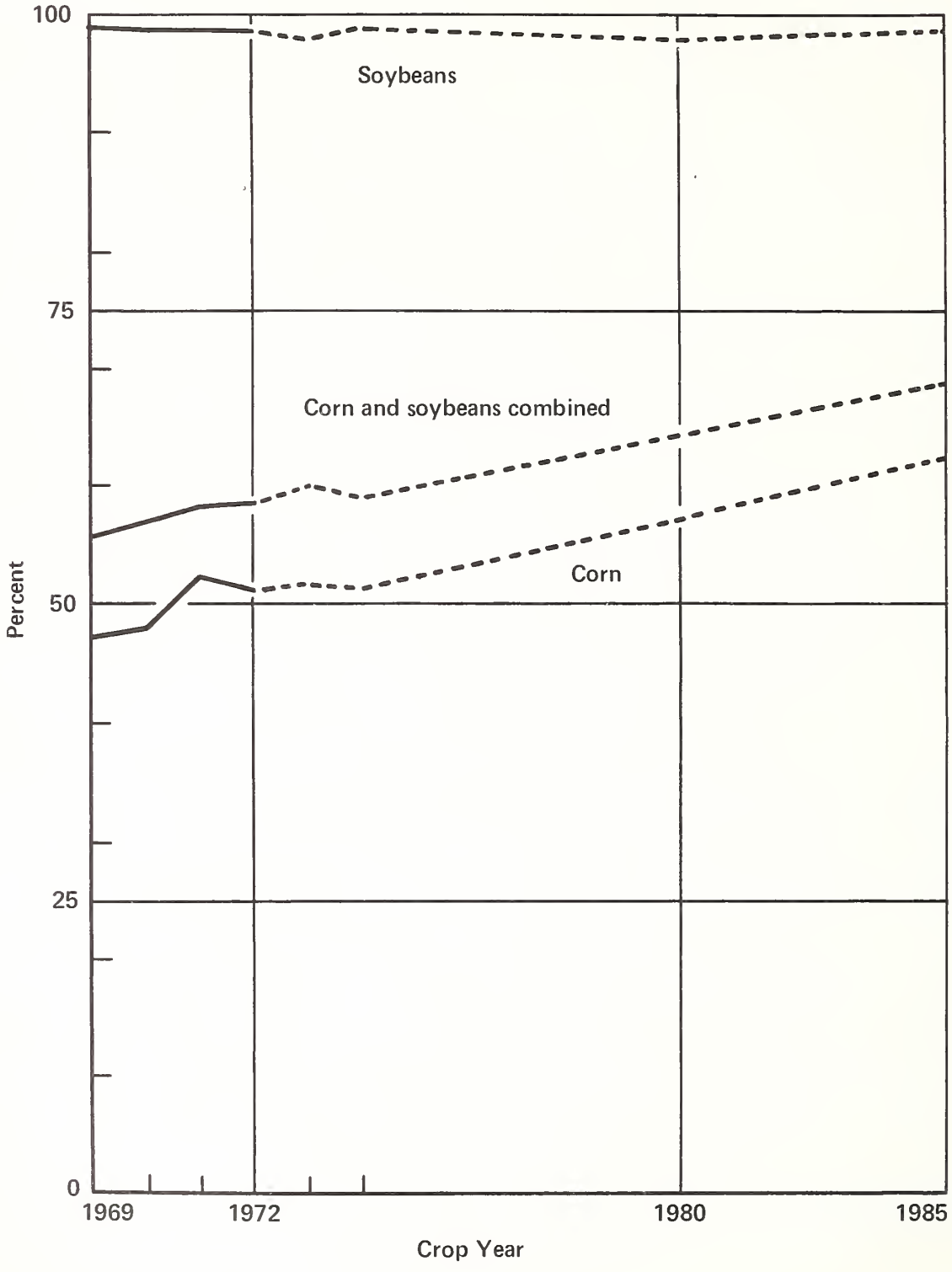


Figure 6--Farm sales of Iowa corn and soybeans, 1969-72 and projections to 1985.

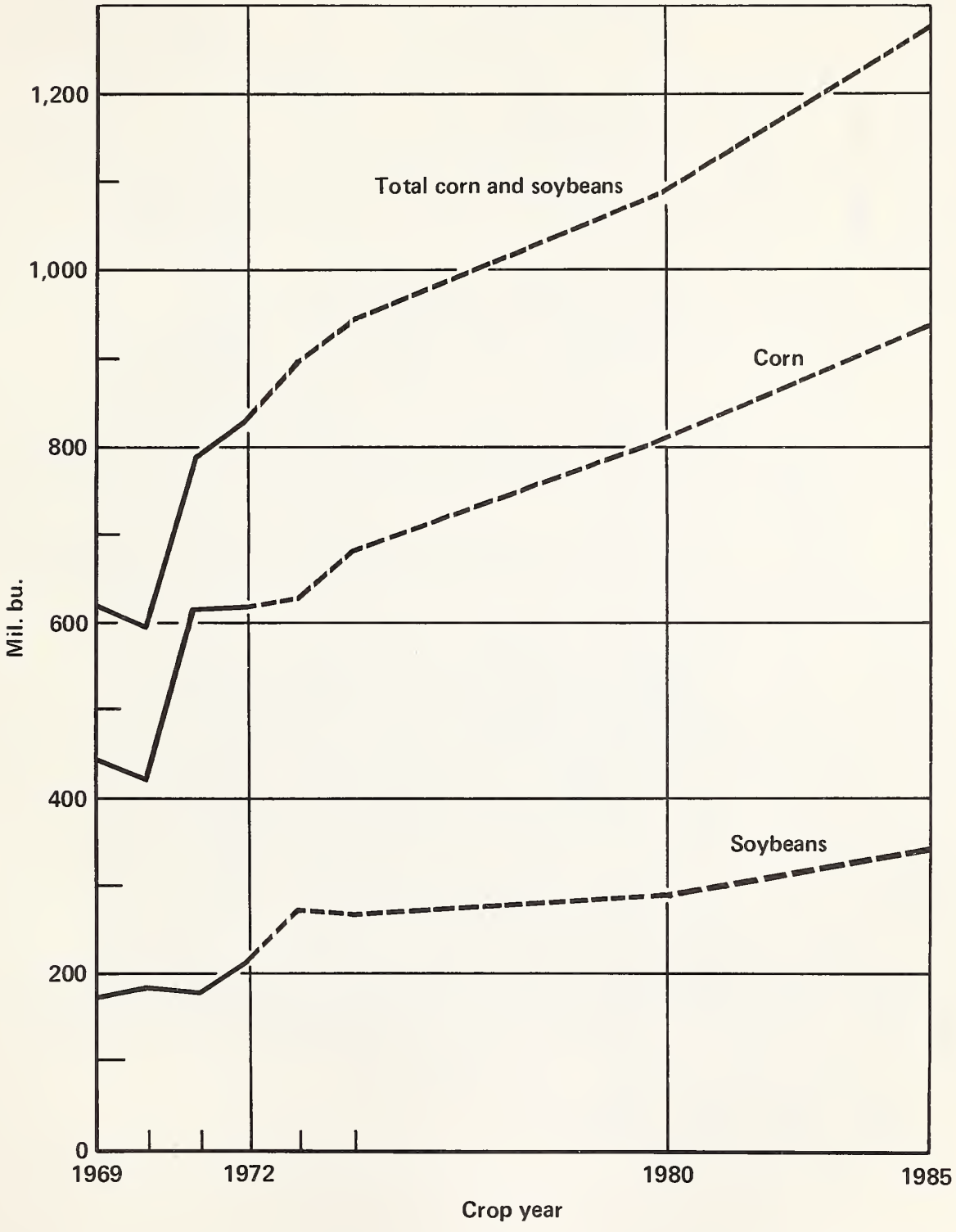
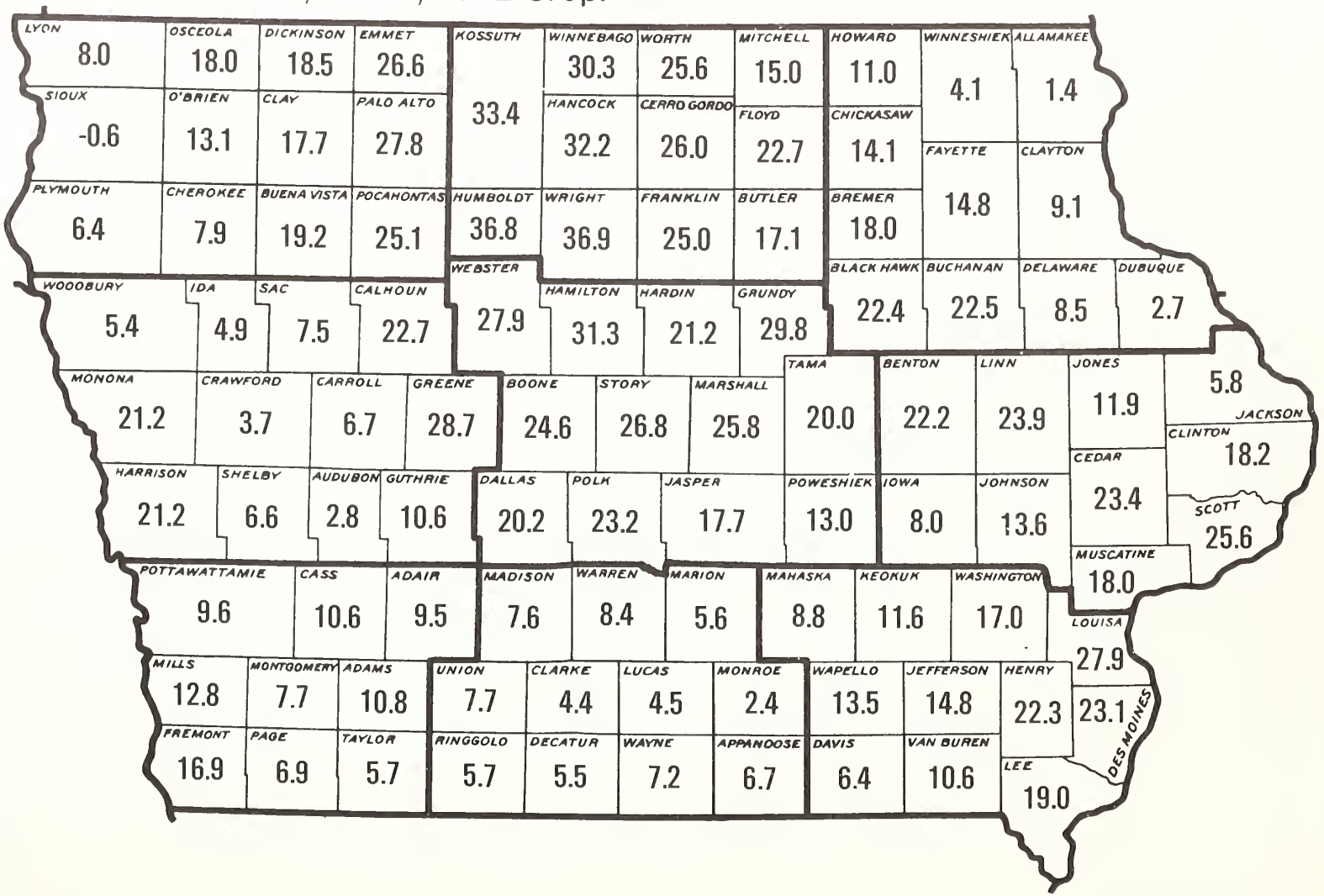


Figure 7--Density (1,000 Bu. Per Square Mile) of Iowa farm sales of Corn, Oats, Beans, 1972 Crop.



Iowa Farm Storage Capacity

On-farm storage capacity appears to be increasing at a rapid rate. However, the only data available are those from the Farm Facility Loan Program administered by the Agricultural Stabilization and Conservation Service (ASCS), USDA. Under this program, the following farm storage was built in Iowa during the past four years:

Fiscal year ending June 30	Farm storage capacity built under Farm Facility Loan Program (1000 bushels)
1970	16,953
1971	8,551
1972	38,585
1973	60,682
Total	124,771

This new storage of 125 million bushels was only a portion of the total farm storage built, and represented about 12 percent of estimated total farm storage in 1973.

Total farm storage capacity may be considered about equal to farm storage stocks of all grains as follows:

Year beginning January 1	Estimated stocks of all grain Million bushels
1970	1,025
1971	794
1972	912
1973	1,021

Iowa Commercial Storage Capacity

Commercial storage capacity for Iowa increased 48 million bushels from 1970 to 1973. The greatest annual increase occurred from 1972 to 1973 when many elevators were expanded and improved to ship multicar units of 25 to 54 cars.

Year beginning January 1	Commercial capacity Million bu.	Increase over 1970 Percent
1970	438	0
1971	443	1.1
1972	443	1.1
1973	486	10.9

Thus, for Iowa, the storage capacity on farms is more than twice the amount of commercial storage capacity (fig. 8). Both types of storage are growing.

FGDA And Member Elevator Capacity

FGDA and member elevators have 215 million bushels of storage capacity. Of this total, FGDA elevators operated by the Grain Division have 10 million bushels.

Location	1,000 bushels
Des Moines	8,340
McGregor	510
Muscatine	469
Meeker's Landing	861
Total	10,180

As of June 30, 1972, Iowa had 1,146 elevators. Of this total, 376 elevators were owned by FGDA or member elevators (fig. 9). Total Iowa capacity was 443 million bushels of which 215 million bushels, or 48.6 percent, was capacity of FGDA or member elevators (app. table 3). The average size elevator for FGDA affiliated elevators was 572,157 bushels, compared with 296,070 bushels for competitor elevators (app. table 4). The average size for FGDA affiliated elevators was larger than competitor elevators for all crop reporting districts except CRD-7. The average size was largest in CRD's 4 and 5.

The distribution of elevators by size (capacity) reveals that most FGDA and member elevators had capacities ranging from 250,000 to 1 million bushels. In comparison, competitor elevators' capacities were mostly less than 500,000 bushels. For elevators of more than 1-million-bushel capacity, FGDA affiliates made up about 50 percent (table 1).

An analysis of FGDA affiliated elevators by crop reporting district reveals that they had more than 50 percent of the elevator capacity in CRD's 1, 2, and 5. They had more than 40 percent in CRD's 4 and 8 (fig. 10).

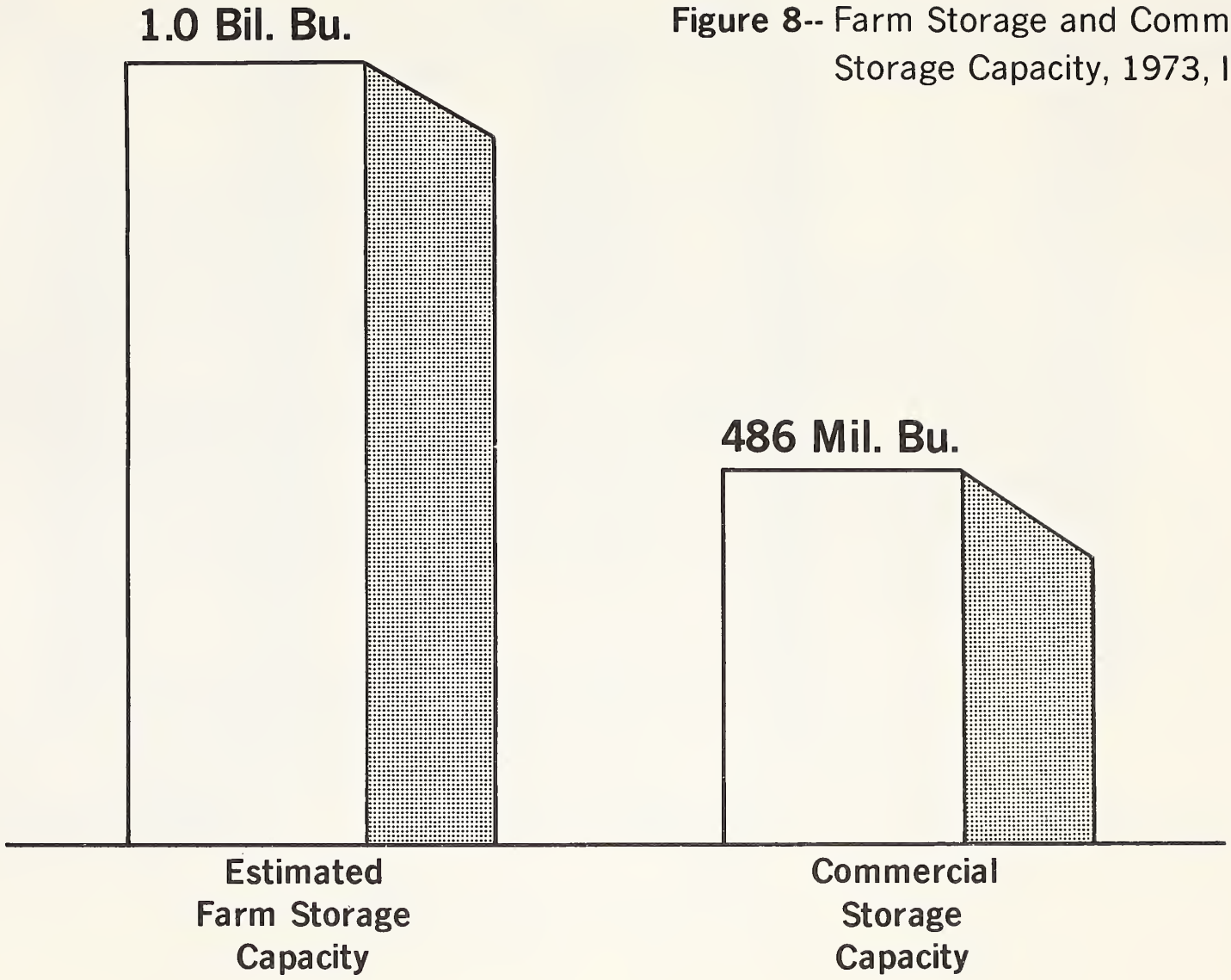


Figure 8-- Farm Storage and Commercial Storage Capacity, 1973, Iowa.

Figure 9--Storage capacity: FGDA affiliated elevators and all other elevators, Iowa, 1973.

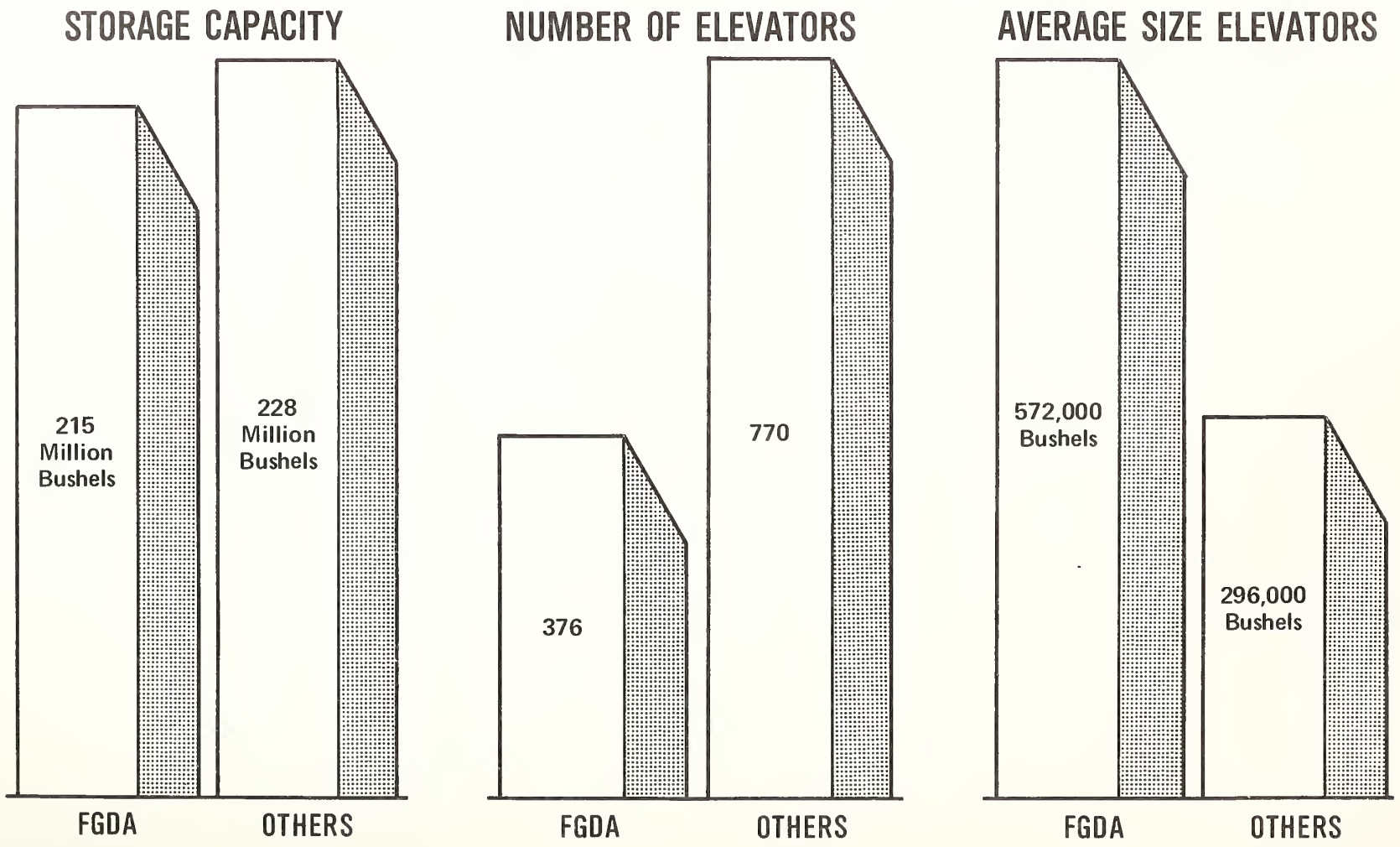


Figure 10--FGDA member elevator capacity and related statistics, by crop reporting district, June 30, 1972. (Includes elevators of the FGDA Grain Division)

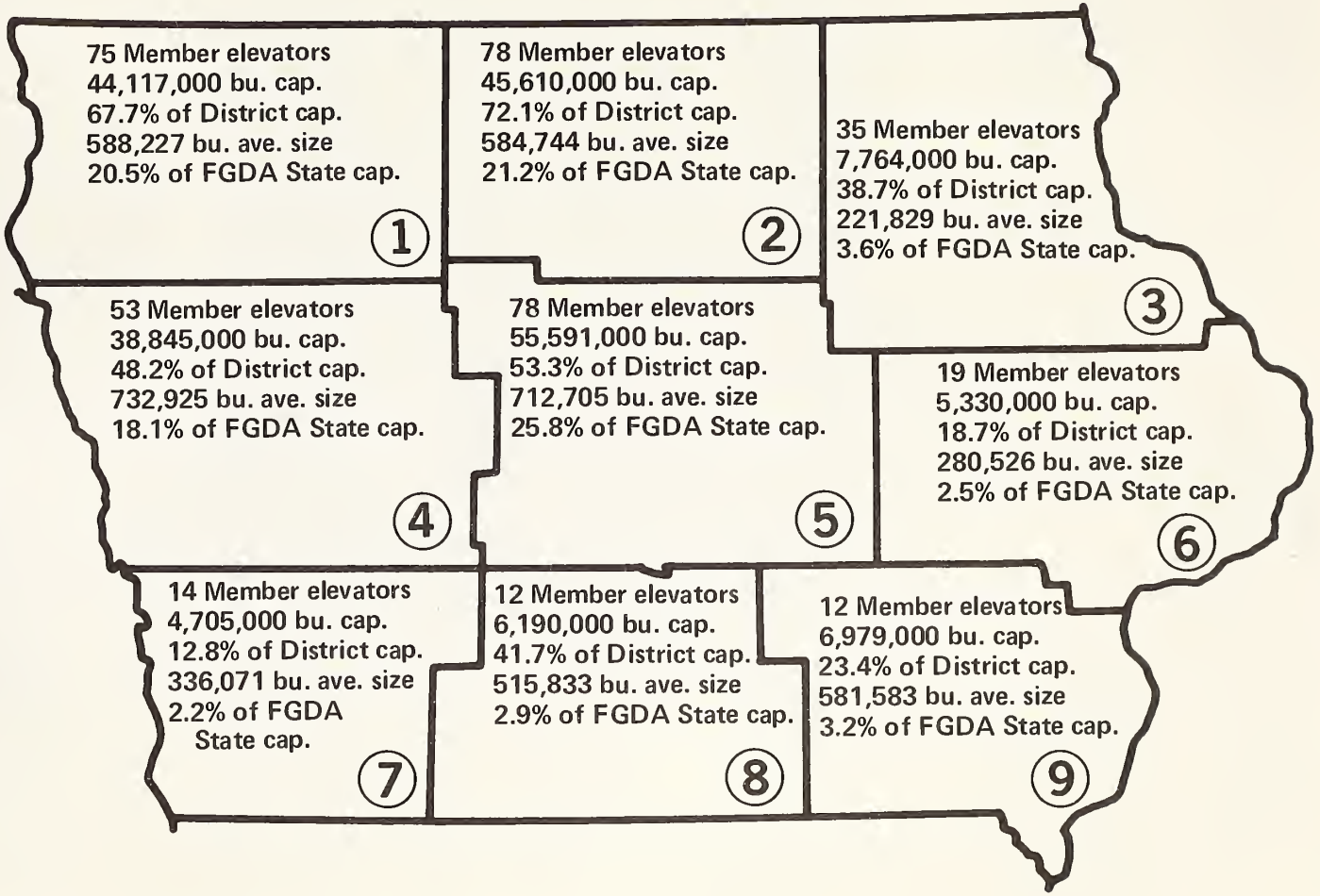


Table 1--Number of elevators within specified storage capacities, June 30, 1972

Storage capacity (Bushels)	FGDA and member elevators	Other elevator	Total
		Number	
100,00 or less	24	224	268
100,001 -250,000	58	226	284
250,001 - 500,000	110	206	316
500,001 - 1,000,000	144	55	199
Over 1,000,000	40	39	79
Total	376	770	1,146

FGDA affiliates had 85.6 percent of their storage capacity in CRD's 1, 2, 4, and 5. These districts also had the highest volume of farm sales. FGDA affiliates had only 9.3 of their capacity in the three CRD's adjacent to the Mississippi River. This points up the lack of nearby elevator support for FGDA's three river houses.

Member Capacity On Lightweight Rail Lines

A total of 109 of the 376 FGDA member elevators are located on lightweight rail lines not capable of handling railcars of more than 263,000 pounds. Of this total, 49 are on the C&NW railroad, and 30 on the CRIP. Several other elevators are located on the Milwaukee, Illinois Central Gulf, and Burlington Northern railroads (app. table 5). These elevators cannot ship loaded hopper cars, which severely impairs their effectiveness.

We estimate that 21.8 percent of FGDA and member elevator capacity is on lightweight rail lines and 3.3 percent is on rail lines currently proposed for abandonment (table 2). This represents 29 percent of existing member elevators. Today, most elevators on these lines have limited or poor service. Abandonment of a high percentage of these rail lines is likely to occur within 10 years.

Capacity on Specified Railroads

The total storage capacity of FGDA and member elevators, which totals 215 million bushels, is located on six different railroad lines (table 3). These railroads are ranked from high to low FGDA storage capacity: C&NW, CRIP, Milw., IGC, BN and N&W. Thus, about 84 percent of the storage capacity is located on the C&NW, CRIP, and Milwaukee railroads, each of which has unit-train rates to the Gulf area.

Table 2--Percent of elevators and elevator capacity located on rail lines of specified condition levels, FGDA and member elevators, 1973

Rail condition level	No. of elevators	Capacity
	Percent of total	
Over 263,000 lb. capacity	59.3	62.3
Upgrading planned	6.9	9.7
Under 263,000 lb. capacity	24.5	21.8
Abandonment proposed	4.5	3.3
Not on a railroad	4.8	2.9
	100.0	100.0

UNIT-TRAIN ELEVATORS

Country terminals have the ability to receive, handle, and load out grain at high rates of speed. They are basically fast-handling houses but may also have substantial amounts of storage capacity. They receive grain from both producers and other country grain elevators. The number of country terminals with the capability to load out unit-trains of 25 to 54 hopper cars has grown rapidly in the past 2 years. Two terminals, Des Moines and Jefferson, can load out 100-car trains.

Location of Unit Train Elevators

The growth of unit-train elevators has occurred principally among those on the C&NW, Rock Island, and Milwaukee railroads (app. table 6). These railroads have relatively low export rates for unit-train shipments. The Illinois Central Gulf (ICG) railroad has relatively low export rates for 3-car shipments. Only one unit-train elevator is located on the ICG because its 3-car rates are about the same as unit-train rates. Unit-train elevators are concentrated in crop reporting districts 1, 2, 4, and 5. As of October 1973, there were 71 unit-train elevators in Iowa.

By next year, it is anticipated that the number of unit-train elevators will grow to 78. Of this total, 35 elevators will have a 25-car capability, 37 a 50- or 54-car capability, and 6 a 100-car capability (fig. 11).

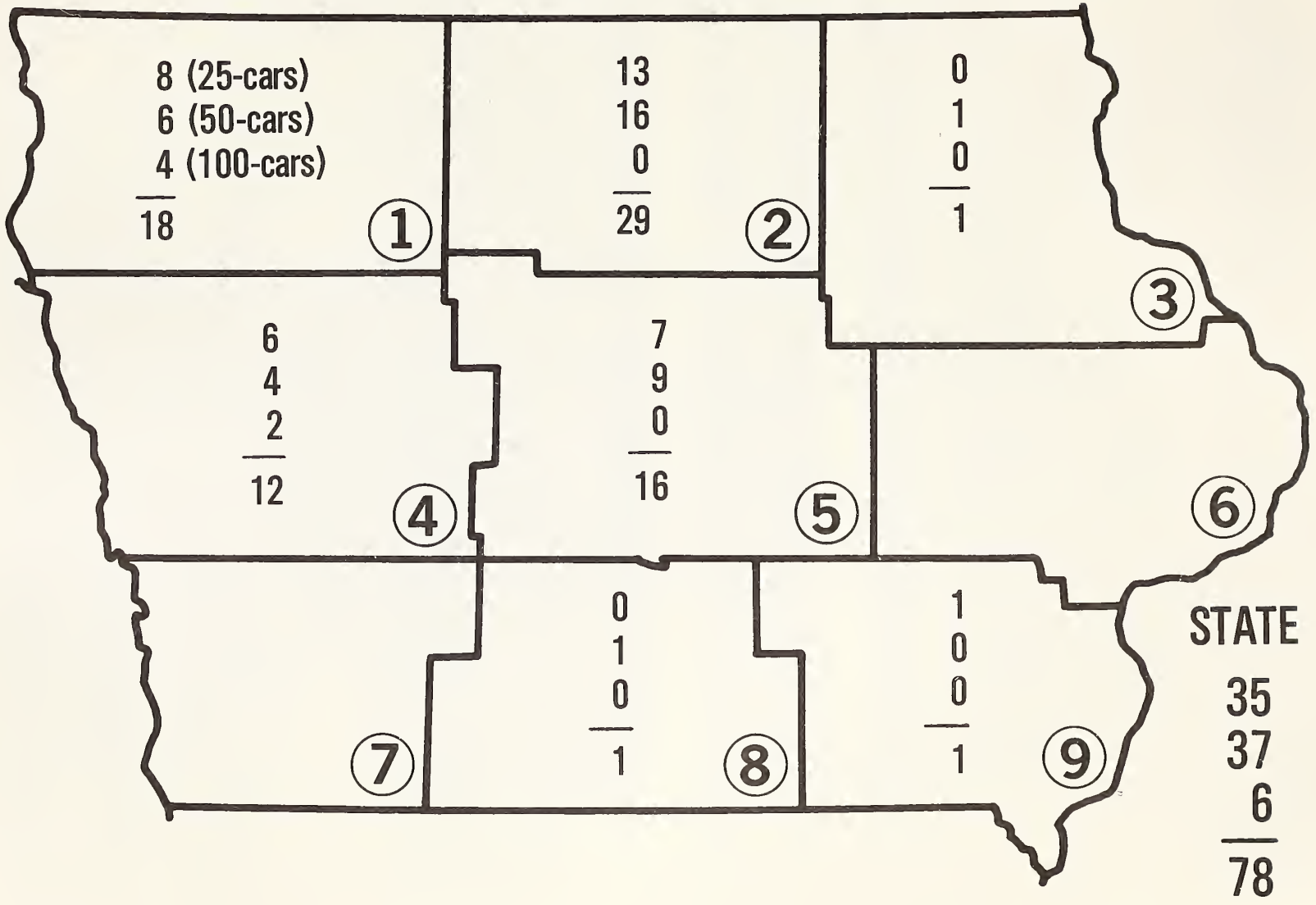
Several 25-car elevators plan expansion to a 50-car capability. Four FGDA member elevators and one noncooperative elevator plan 100-car elevators for next year.

Table 3--Number and capacity of FGDA elevators 1/, by railroad company, 1973

Railroad company and abbreviation	Total number	Storage capacity	
		Million bushel	Percent of total
Illinois Central Gulf (ICG)	36	17.0	7.9
Chicago & Northwestern (C&NW)	142	92.1	42.8
Milwaukee (Milw.)	76	36.2	16.8
Chicago, Rock Island & Pacific (CRIP)	80	52.8	24.6
Norfolk & Western (N&W)	1	0.3	0.1
Burlington Northern (BN)	23	10.5	4.9
None	18	6.2	2.9
Total	376	215.1	100.0

1/ Includes elevators of FGDA, Inc. and member elevators.

Figure 11--Estimated number of unit train elevators in 1974



FGDA member co-ops will have 63 of the 78 unit-train elevators, which indicates that these Iowa cooperatives have been alert and aggressive in gearing up for unit-train shipments. With 81 percent of the unit-train elevators in Iowa, it's apparent that FGDA and its member elevators can be a potent market force.

Factors Causing Growth of Unit-Train Elevators

The factors causing the growth of unit-train elevators are:

(1) Reduced freight rate on exports ranging from 4 to 5 cents a bushel lower for 50-car units and 2 to 3 cents lower for 25-car units, compared with single-car rates;

(2) unit-train elevators can obtain a better supply of hopper cars because such a multicar movement is considered to be the most efficent;

(3) car turnaround time for unit-trains is considerably less than for single-car and smaller units;

(4) the cost of upgrading existing elevators is often reasonable; and

(5) railroads sometimes agree to pay back the cost of a portion of the rail siding, based on the number of cars shipped and the revenue.

The grain procurement area for unit-train elevators usually expands to include new producers and sometimes elevators without adequate rail service. Elevators on heavyweight rail lines often upgrade to unit-train capability to meet competition on price and obtain hopper cars. Generally, in areas of high farm sales density, this is advisable; however, each situation must be carefully evaluated.

Considerations in Establishing Unit-Train Elevators

In studying the feasibility of establishing a unit-train capability, consideration should be given to two alternatives: (1) upgrading present facilities, and (2) building a new elevator.

Upgrading Existing Elevators

Before an elevator is seriously considered for major upgrading to a 25- or 50-car load-out capability that elevator should meet the following requirements:

(1) Be located on a main-line railroad that will provide hopper car service for the next several years;

(2) Be located on a railroad that offers significant freight savings for unit-train shipments;

(3) Be able to provide site for needed rail trackage, expanded elevator facilities, and increased truck receiving;

(4) Be readily adaptable to expansion without excessive cost;

(5) Be capable of being equipped and located in compliance with Environmental Protective Agency (EPA) regulations; and

(6) Be able to draw needed grain volume for the ne facility.

These requirements also apply when considering upgrading from a 25-car to a 50-car capability.

Alternative plans and requirements for upgrading should be evaluated. Different alternatives and their associated costs will vary with respect to size of unit-train capability (25 or 50 cars), amount of added storage, facility additions and modifications, and expected volume to be handled. Typical costs for selected elevator improvements are shown in table 4.

Budgeted estimates should be made for each important alternative that includes expected increases in investment, volume handled, volume stor d, cash inflow, and cash outflow. Estimated net cash flow can be used to calculate the expected rate of return and also to determine whether it will cover principal and interest ayments.

A simplified illustration of an evaluat on is contained in table 5. The end product of this evaluation indicates which alternative is the best from the standpoint of measures used and on the assumption estimates are reasonably accurate. In this illustration, the rate of return is greatest for alternative C, the 50-car unit-train with 200,000 bushels of new storage.

Principal and interest on loan must be paid from the net cash flow. Generally, a rate of return of at least 15 percent and preferably 20 percent or more is desirable.

This method of evaluation may be used for an actual proposed expansion. However, applicable facility costs and cash flow for a specific elevator may be different from those shown herein, and should be determined independently for any proposed expansion.

Table 4--Estimated cost of selected improvements that may be made in upgrading to unit-train capability, 1973

Description of cost item	Size of unit-train capability: 25-car	50-car
	1,000 dollars	
Receiving facilities:		
Regular truck hoists (2)	18	18
Hydraulic truck hoist	0	25
Dump pits and belt	24	35
Receiving legs	22	34
Distributors	9	9
	73	121
Storage facilities (200,000 bu.):		
Silos, tunnel, conveyors aeration and heat detection--	170	170
Drying facilities:		
3,000 b.p.h. drier	120	120
Rail siding and load-out facilities:		
Rail siding and switches	90	150
Load-out legs and belts	25	41
	115	191

1/ Source: Iowa State University and elevator contractors.

Table 5--Illustration of technique to evaluate alternative plans for upgrading existing 500,000-bushel elevator to a unit-train capability

Description of present facilities:

300,000-bushel concrete elevator, plus 200,000-bushel annex, two 7,500 b.p.h. legs, 2 dump pits 3,000 b.p.h. drier, 5-car rail siding, and a rail load-out rate of 7,500 bu. per hour

Alternatives to be considered:

A. Install a 25-car rail siding
No added storage or other improvements

B. Install a 25-car rail siding and load-out leg
Build an additional 200,000 bushel of storage

C. Install a 50-car rail siding
Build an additional 200,000 bushels of storage
Increase rail load-out rate to 20,000 b.p.h.

Cost of alternatives: (Minimum requirements)

Items added	A	B	C
		1,000 dollars	
Receiving facilities	0	73	121
Rail siding and loadout	90	115	191
Storage facilities	0	170	170
Total	90	358	482

Budgeted estimates:

	Alternatives		
A. Total operation:	A	B	C
Storage capacity, 1,000 bu. 1/	500	700	700
Volume handled, 1000 bu. 1/	1,250	1,600	1,950
Cost of upgrading, $1,000 1/	90	358	482
B. Estimated annual increases after upgrading			
Added volume stored, 1,000 bu./yr.	0	100	100
Added volume handled, 1,000 bu.	250	600	950
Added cash inflow:		1,000 dollars	
Merchandising	20	48	95
Drying-net	3	7	11
Storage	0	18	18
Total	23	73	124

continued

Table 5--Illustration of technique to evaluate alternative plans for upgrading existing 500,000-bushel elevator to a unit-train capability--continued

	A	B	C
		1,000 dollars	
Added cash outflow :			
Expenses	6	12	19
Added net cash flow	17	61	105
		Percent	
Simple rate of return, percent	18	17	22
		1,000 dollars	
Principal payment and interest, 2/ $1,000	17	68	92

1/ Present facilities have 500,000 bushels of storage and handle 1.0 million bu. annually.

2/ Equivalent to 1/10 of investment principal for a 10-year loan plus interest at 9 percent for first year.

Constructing a New Unit-Train Elevator

Construction of a new elevator for unit-train shipments may be the most feasible action when: (1) present elevator and nearby co-op elevators are not well suited for upgrading, (2) new elevator can serve more than one trade area, and (3) adequate volume is available.

The construction of a unit-train elevator is generally more critical than upgrading an existing elevator because of the high cost. A 700,000-bushel elevator with a 50-car unit-train capability is estimated to cost $1,050,000 which is equivalent to $1.50 per bushel of storage capacity. 1/ This not only is a fast handling house but also has substantial storage. Storage is assumed to consist of a basic concrete workhouse of about 250,000 bushels and several large-diameter tanks with capacities totaling 450,000 bushels. Much of the grain would come in from elevators and farms already dried. Operating costs would depend greatly on volume. To operate efficiently, the elevator would need a high rate of turnover--probably five times. To attain the needed volume, it will probably be necessary for two or more cooperative elevators to join together in building the new elevator.

A new unit-train elevator should be located on one or two main-line railroads that can be expected to maintain good service for hopper car shipments for the next 15 or more years. It should be at the edge of town, preferably about two miles from town, to minimize air pollution problems and provide adequate room for expansion and co-op services. It should be easily expandable to handle 100-car shipments if 100-car rates become effective.

Before deciding to build a new elevator it is strongly suggested that a thorough study be made to determine feasibility. The study should cover the following points: Source and expected volume of grain; a grain procurement plan; location, design, and size of elevator; a grain disposition plan; personnel staffing; estimated cash inflow, cash outflow, and rate of return; and recommendations.

A simplified illustration of estimating net cash flow and rate of return is shown in table 6.

ALTERNATIVES FOR ELEVATORS WITH INADEQUATE RAIL SERVICE

A country elevator on a lightweight rail line can be at a rail freight disadvantage of 4 to 5 cents a bushel, compared with a 50-car unit-train elevator, and 2 to 3 cents, compared with a 25-car unit-train elevator. Furthermore, railcars for single-car shipments may not be available. Elevators with no rail service can be at even greater disadvantage.

1/ These costs reflect conditions in mid-1973. Recent cost increases may dictate less storage capacity for a unit-train elevator.

Table 6--Illustration of estimating net cash flow and rate of return for a new elevator with a 50-car train capability

Description of proposed new elevator:

350,000 bushel concrete workhouse with 350,000 bushel storage annex, two 10,000 b.p.h. receiving legs, one 10,000 b.p.h. load-out leg, two 1,000 bushel dump pits, one 3,000 b.p.h. drier, 50-car rail siding expandable to 100 or more cars, load-out rate of 20,000 b.p.h., hydraulic truck lift, office, truck scale, and land.

Cost of new elevator:

$1,050,000 ($1.50 a bushel of capacity)

Volume stored:

400,000 bushel/years

Estimated cash flow:

	Volume handled (million bushels)		
	2.1	2.8	3.5
Cash inflow		1,000 dollars	
Merchandising	210	280	350
Drying-net	17	22	28
Storage	72	72	72
Total	299	374	450
Cash outflow			
Expenses	168	189	210
Net cash flow	131	185	240
		Percent	
Simple rate of return, percent	12.5	17.6	23.0
		1,000 dollars	
Principal payment and interest 1/	200	200	200

1/ Equivalent to 1/10 of investment principal of $1,050,000 plus interest at 9 percent for first year.

Country elevators with no rail service and those located on secondary and lightweight rail lines have these alternatives:

(1) Serve as a "feeder" elevator to a unit-train elevator or country terminal,

(2) truck to processors, river elevators, and livestock feeders,

(3) utilize own limited rail service, and

(4) concentrate more on grain bank and feed services, fertilizer, and other farm supplies.

In effect, many of these types of elevators have been "neutralized" from a competitive standpoint. They cannot compete with nearby country terminals on heavy-duty rail track having lower multicar rates.

The principal outlet for many of these neutralized elevators will be to country terminals that make multicar and unit-train shipments.

There are four types of arrangements that such an elevator without rail service can make with a larger elevator: (1) sell grain to larger elevators, (2) contract with larger elevator to handle (or toll) at a specified fee, (3) unify with larger elevator, or (4) form a new cooperative to build a new unit-train elevator that is jointly owned by several local cooperatives.

Contracting to toll at a specified fee can be a feasible solution in some instances, provided the larger elevator has low multicar rail rates and will pass back such advantage to the neutralized elevator. It is assumed that the neutralized elevator would have suitable facilities to receive, dry, and store grain.

Typical costs for a neutralized or feeder country elevator trucking a major portion of its grain to a country terminal with unit-train capability are:

	Approximate amount per bushel
Transportation to country terminal	2 - 3¢
Fee to handle through terminal	3 - 4¢
Sub-total	5 - 7¢
Less: Passback of freight advantage	3 - 4¢
Disadvantage	2 - 3¢

At present, at least 7 FGDA member elevators with unit-train capabilities receive grain from about 18 independent feeder elevators. One

country terminal receives grain from six independent feeder elevators and from as far away as 45 miles.

In some instances a contract is made between the independent feeder elevator and a country terminal for commitment of specific volumes at agreed fees and terms. Such contracts made concurrently with construction or modernization for a unit-train elevator can help assure an adequate volume for efficient operation.

For a few years, neutralized elevators with a good volume, good elevator, low operating costs, and good trucking operation to a country terminal might be able to pay close to a competitive price. Eventually, grain producer members of such a neutralized elevator may eventually receive 2-3 cents a bushel less for their grain, which is roughly equivalent to the added transportation cost to the country terminal. Such producers will have to decide whether they want to pay for the convenience of their nearby country elevator or haul to the country terminal direct from the farm.

The neutralized country elevator can have a satisfactory shortrun arrangement as a feeder to a country terminal until the country elevator becomes obsolete. The duration of such an arrangement can be lengthened if the feeder country elevator also has a profitable farm supply business as the major function. When obsolescence of grain elevator occurs, construction of a new small fast handling elevator with rapid truck load out may be feasible. Such a facility would have a high turnover rate and low operating cost. Storage and drying would take place on the farm or at the country terminal.

The longrun existence of a "neutralized" country elevator depends on several factors:

(1) Condition of grain elevator such as the degree of obsolescence, ability to condition grain, and the speed and ease of truck load out;

(2) farm supply volume;

(3) distance to a country terminal;

(4) fee charged by country terminal; and

(5) amount of freight rate passback by country terminals to country feeder elevator.

GRAIN FLOW NETWORK AND COSTS

The grain flow system from farm to terminal markets involves the following key handling points: Farm field, farm storage, small country elevator, country terminal (with unit-train capability), processor, and

terminals, particularly port elevators. The principal costs affecting grain flow are transportation, handling, and storage.

The grain flow system that minimizes transportation and handling costs will tend to dominate. Direct grain movements that bypass conventional handling points tend to minimize such cost. For example, grain moving from farm to country terminal to port elevator bypasses the handling costs of a country elevator or large inland terminal elevator.

Grain producers generally have the alternative of selling at harvest or storing grain. Within limits, they can store on-farm or in an elevator. They may be able to deliver to a small country elevator or to a country terminal. A given producer often follows two or more routes for handling, storing, and selling his grain because of limiting factors or the desire to spread his risk. Some of the limiting factors are: Inadequate farm storage, limited farm vehicles for trucking, too great a distance to the elevator of his choice, and lack of capital.

For illustrative purposes, we developed transportation, handling, and storage costs for grain-flow alternatives from farm to Gulf port elevator (fig. 12). These costs are believed to be relatively typical. Any elevator trade area can develop its own costs and substitute them in the flow diagram to determine relationships for its local situation.

Generally, costs are lowest for grain flowing from field to country terminal to Gulf (F → CT → G). A country terminal has the capability of shipping unit-trains at 4 to 5 cents a bushel lower. The next lowest cost movement is F → CE → G and F → FS → CT → G, The most costly movements are F → FS → CE → G and G → GS → CE → CT → G, representing movements for country elevators that can ship only single-cars to the Gulf or truck to a country terminal for unit-train shipments.

The preceding assumes that export demand at Gulf ports is setting the local market. This is not always the case. When local processors are setting the market price, the advantage of the unit-train rate becomes less.

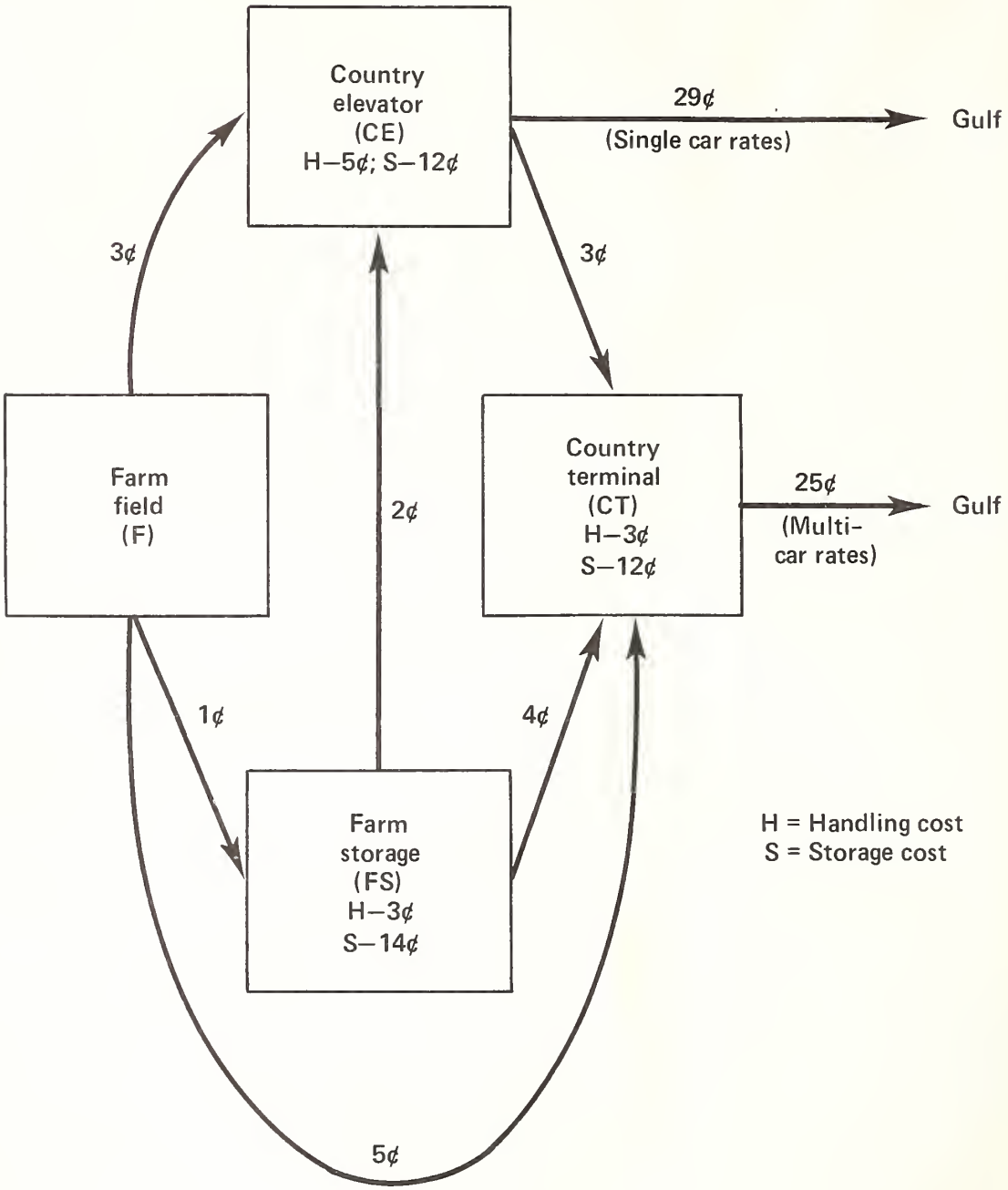
IMPORTANCE OF FGDA IN GRAIN MARKETING

FGDA's volume and the volume of its member elevators has increased steadily in recent years as a result of increased farm grain production and the growth in cooperatively owned grain storage and handling facilities. As previously mentioned, FGDA and its members now have about 49 percent of commercial storage in Iowa.

Sales by FGDA Members

During the past 4 crop years, 1969 to 1972, the total farm sales of corn in Iowa have increased an average of more than 50 million bushels

Figure 12 - - Comparative cost of transporting, handling, and storing grain for various flow systems from farm to Gulf port elevator (cents per bushel).



annually--from 619 million bushels in 1969 to 832 million bushels in 1972, (fig. 13). During this same 4-year period, sales by FGDA member elevators are estimated to have increased an average of 25 million bushels annually. Most of this increase occurred with the 1972 crop, when total member sales reached 478 million bushels.

Percent of Farm Sales

The percent of Iowa farm sales handled by FGDA members dropped slightly from 61 percent in 1969 to 57.5 percent in 1972 (app. table 8). 1/ The decline in percent handled occured largely for corn, which makes up about 70 percent of total member grain sales (app. tables 9 and 10). However, the most significant point is that FGDA member elevators handle approximately 60 percent of the Iowa sales of corn and soybeans. This represents a great accomplishment on the part of Iowa grain cooperatives and is one good indication that they can continue to improve Iowa grain marketing for the benefit of grain producers.

Out-of-Area Sales

Out-of-area sales, or terminal sales, by FGDA member elevators are sales made to FGDA Grain Division, processors, and other buyers outside of the immediate trade areas of the individual elevators. Such sales averaged about 80 percent of their total grain sales (app. table 8); the remaining 20 percent was corn sold or used locally for livestock feed.

Out-of-area sales of corn and soybeans by FGDA members increased from 300 million bushels in 1969 to 387 million bushels in 1972 (fig. 13). Most of this increase stemmed from the 1972 crop.

Out-of-area sales represent the maximum volume that FGDA could expect to handle as long as it purchases all its grain from member elevators.

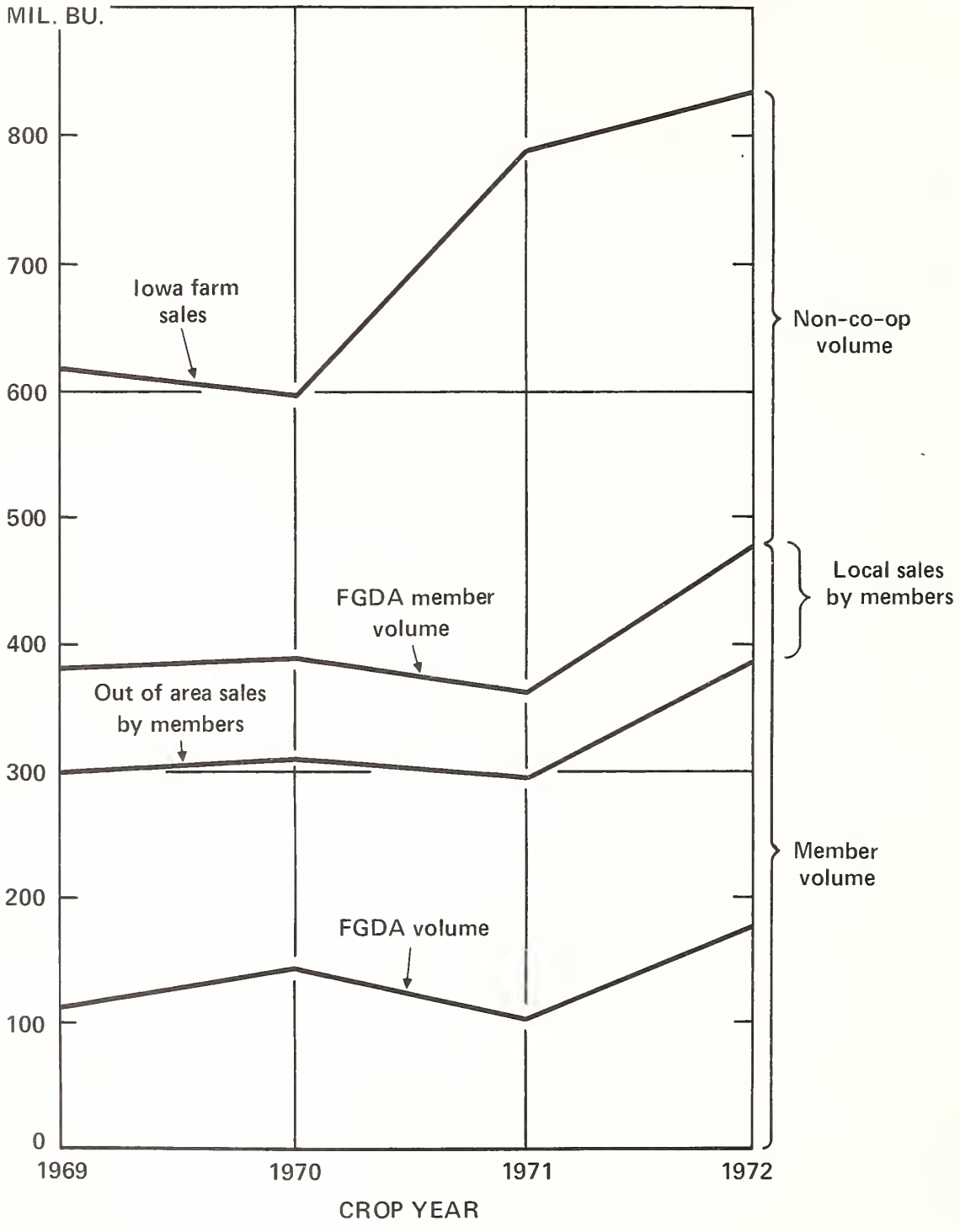
FGDA Marketing Agreement

The FGDA marketing agreement represents a unique attempt to increase the share of members' grain handled by FGDA, while providing a much needed service.

In May 1972, FGDA instituted a grain marketing agreement. It is an agreement between FGDA and a member elevator that contains the following features:

1/ It's important to note that "FGDA member sales as a percent of Iowa farm sales" is not a precise comparison since adjustments have not been made for differences in elevator and farm grain inventories at the beginning and end of the fiscal years.

Figure 13--Total corn and soybeans: Iowa farm sales, FGDA member volume, out of area sales by members, and FGDA volume, 1969 to 1972.



* Member agrees to market substantially all his grain through FGDA;

* FGDA agrees to supply its merchandising services, including market information, a grain record and reporting system, and hedging;

* Member agrees to regularly notify FGDA of his grain position and provide other information;

* Member shall finance all inventories until loaded out on order of FGDA;

* FGDA agrees to utilize storage space of member elevator to the extent feasible to enhance income of member;

* Member agrees to pay a penalty of 1 cent a bushel for all grain not sold within provisions of agreement;

* Member agrees to pay FGDA 1/4 cent a bushel for all grain sold for the member.

Advantages of the agreement are:

(1) removal of temptation to local managers to speculate;

(2) requires a good accounting system on grain;

(3) member is protected on price;

(4) assures that member is hedged;

(5) cost is only 1/4 cent a bushel; and

(6) member manager can devote more time to other business.

More than 40 members have signed marketing agreements with FGDA and the program seems to be working well. There are areas for improvement, however; this is being done as problems arise. After the "shakedown" on this new program it's expected that it will attract more members, and consequently, increase volume handled by FGDA. We believe this program should be continued, improved as needed, and expanded to include other members.

FGDA Grain Volume

Sales by the FGDA Grain Division in the past 4 crop years have ranged from 102 million bushels for the 1971 crop to 174 million bushels for

the 1972 crop (fig. 13). 1/ The large volume for 1972 was largely attributable to the great increase in foreign demand and, to a lesser extent, increased Iowa production. The volume of grain handled by FGDA is considerably less than its potential as indicated by out-of-area sales of FGDA member elevators.

FGDA's Share of Out-of-Area Sales

FGDA's sales as a percent of members' out-of-area sales ranged from 35 percent for 1971 tO 45 percent for 1972. This indicates that FGDA members sold a large part--55 to 65 percent--of their grain to someone other than FGDA and local buyers. This represents a potential added volume of more than 200 million busles for FGDA--provided it can be handled, transported, and marketed effectively.

Sales by the Top 41 Member Elevators

For the 1971-72 crop year, we selected the top 41 member elevators based on: (1) storage capacity, (2) out-of-area sales, and (3) sales to FGDA. We found the top 20 members of each of these 3 groups, and since some appeared in more than one group, members represented totaled 41 (app. table 7). The purpose of this selection was to show some of the characteristics and importance of the 41 larger member elevator:

1. Six had signed marketing agreements with FGDA.

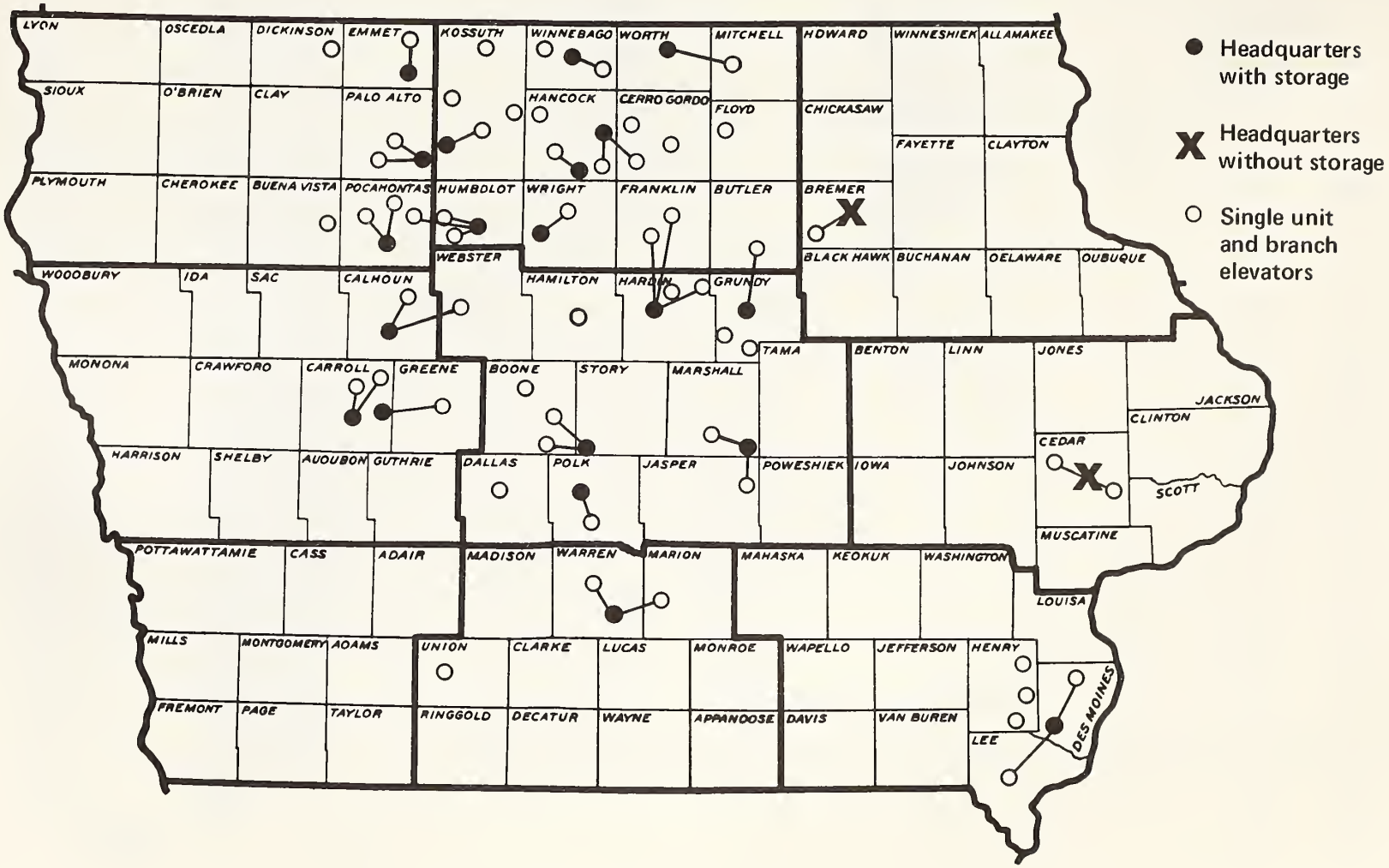
2. Fourteen had elevators with unit-train load-out capacity. Three more plan unit-train elevators. Of these 17 unit-train elevators, only 2 had signed a marketing agreement (Whittemore and Wesley). Nearly 60 percent of the 41 members cannot load out unit-trains.

3. The 41 members operated 76 elevators (fig. 14). This is 20 percent of total FGDA member elevators. They had a storage capacity of 62.2 million bushels. This was 29 percent of FGDA and member elevator capacity, totaling 215 million bushels.

4. Their out-of-area sales of 94 million bushels constituted 32 percent of total out-of-area sales by all members (fig. 15). Their sales to FGDA were 41 million bushels for fiscal 1972, and 40 percent of total FGDA volume (102.2 million bushels ÷ 41 million bushels). Thus, 20 percent of the elevators supplied 40 percent of FGDA's volume, and if they had sold all their grain to FGDA, it would have increased FGDA's volume 50 percent.

1/ The beginning of the crop year for corn and soybeans on October 1 corresponds closely to the beginning of FGDA's fiscal year, September 1.

Figure 14--Location of 76 elevators operated by the 41 largest FGDA member cooperatives.



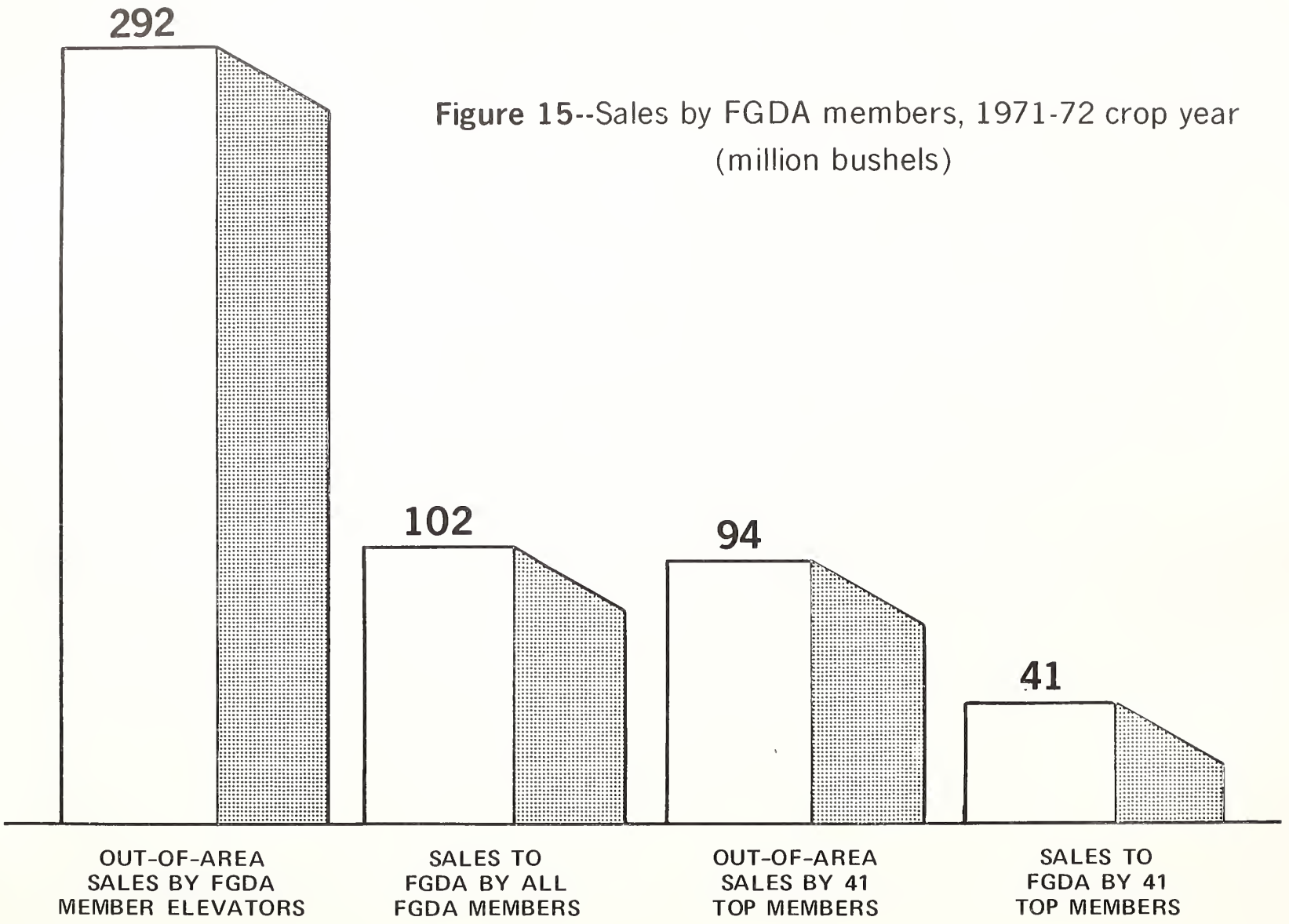


Figure 15--Sales by FGDA members, 1971-72 crop year (million bushels)

5. The percentage of out-of-area or terminal sales sold to FGDA ranged from 2 percent for Klemme and Thompson to 100 percent for Bondurant and Danville.

6. One of the 41 member elevators had a manager serving on the FGDA board and two had producer directors serving on the FGDA board.

Conclusions from this brief analysis are:

1. The 41 top members were no more loyal to FGDA than the average member.

2. These 41 members accounted for 29 percent of the member storage capacity, 20 percent of member elevators, 32 percent of out-of-area sales, and 40 percent of FGDA's volume.

3. Continued growth of FGDA depends greatly on the percent of larger elevators' volume that moves to FGDA.

Grain Flow for FGDA

FGDA grain moves from member elevators either to an FGDA grain facility, soybean plant, or directly to a market destination, as instructed by FGDA. Grain moving to an FGDA grain facility may be shipped almost immediately or stored for later shipment.

From the 1971 crop, FGDA sold nearly 100 million bushels of corn and soybeans (fig. 16). Of this total, 61 million moved through FGDA facilitiies. The Mason City soybean plant processed 3.9 million bushels, the three river elevators barged nearly 26 million, and the Avon elevator at Des Moines shipped over 12 million, mostly by rail. Most direct shipments from members were made by rail. Altogether, export sales were 55 million bushels and domestic sales 44 million.

FGDA volume for the 1972 crop was much larger--169 million bushels, (fig. 17). Of this total, 120 million moved direct and 49 million moved through FGDA facilities. All facilities handled more grain than in the previous year. Barge shipments totaled more than 30 million bushels and rail shipments, 18 million.

Export sales by FGDA from the 1972 crop were 2.2 times greater than from the 1971 crop--123 million bushels, compared with 55 million. Export sales composed 73 percent of the 1972 crop volume, compared with 56 percent for the 1971 crop volume.

Most of the increased sales volume moved by rail. FGDA rail shipments of the 1972 crop volume were 1.9 times those of the 1971 crop. This largely reflected heavy rail shipments to port elevators for export.

Figure 16--Volume flow of corn and soybeans from FGDA members through FGDA, 1971 crop. (million bushels)

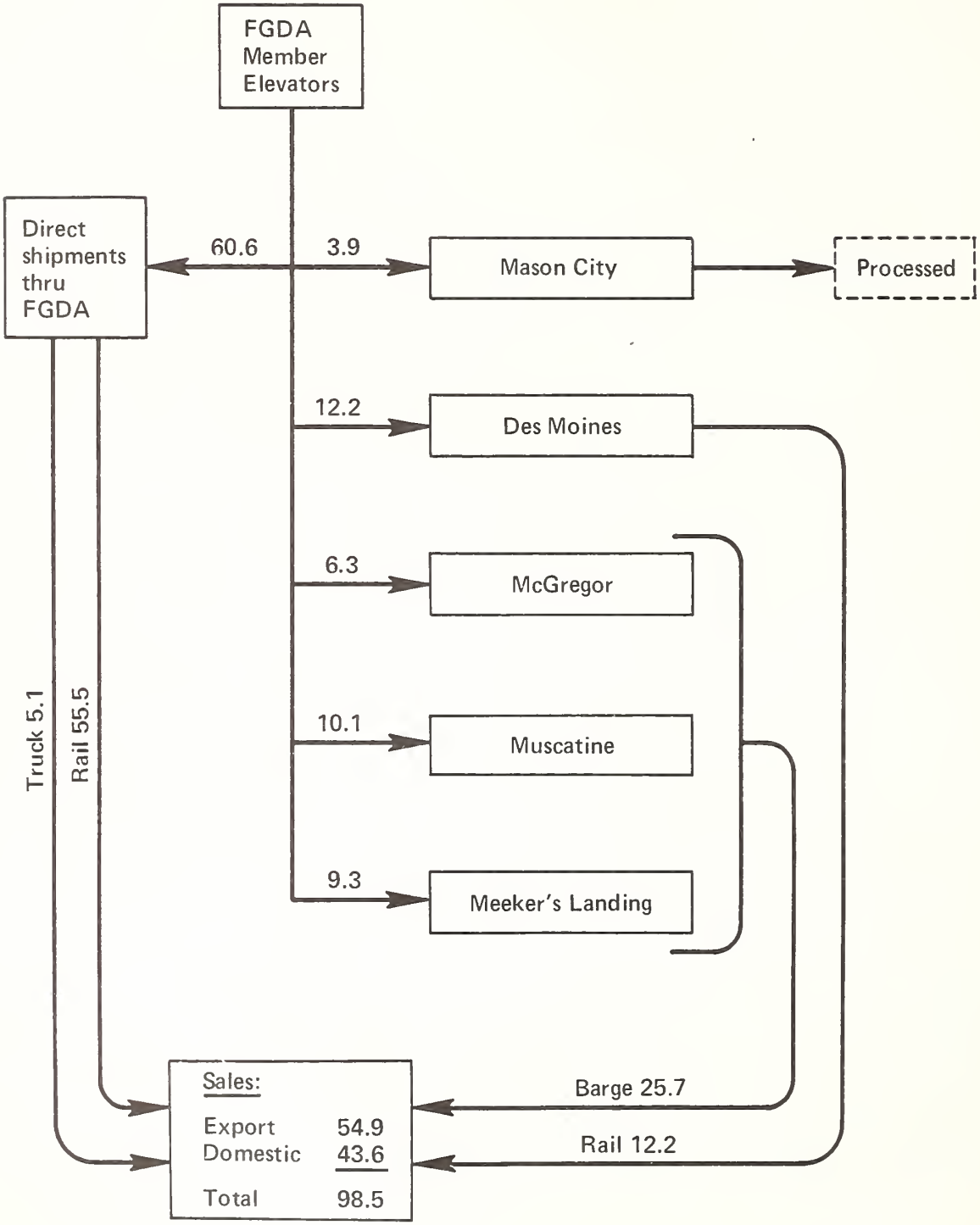
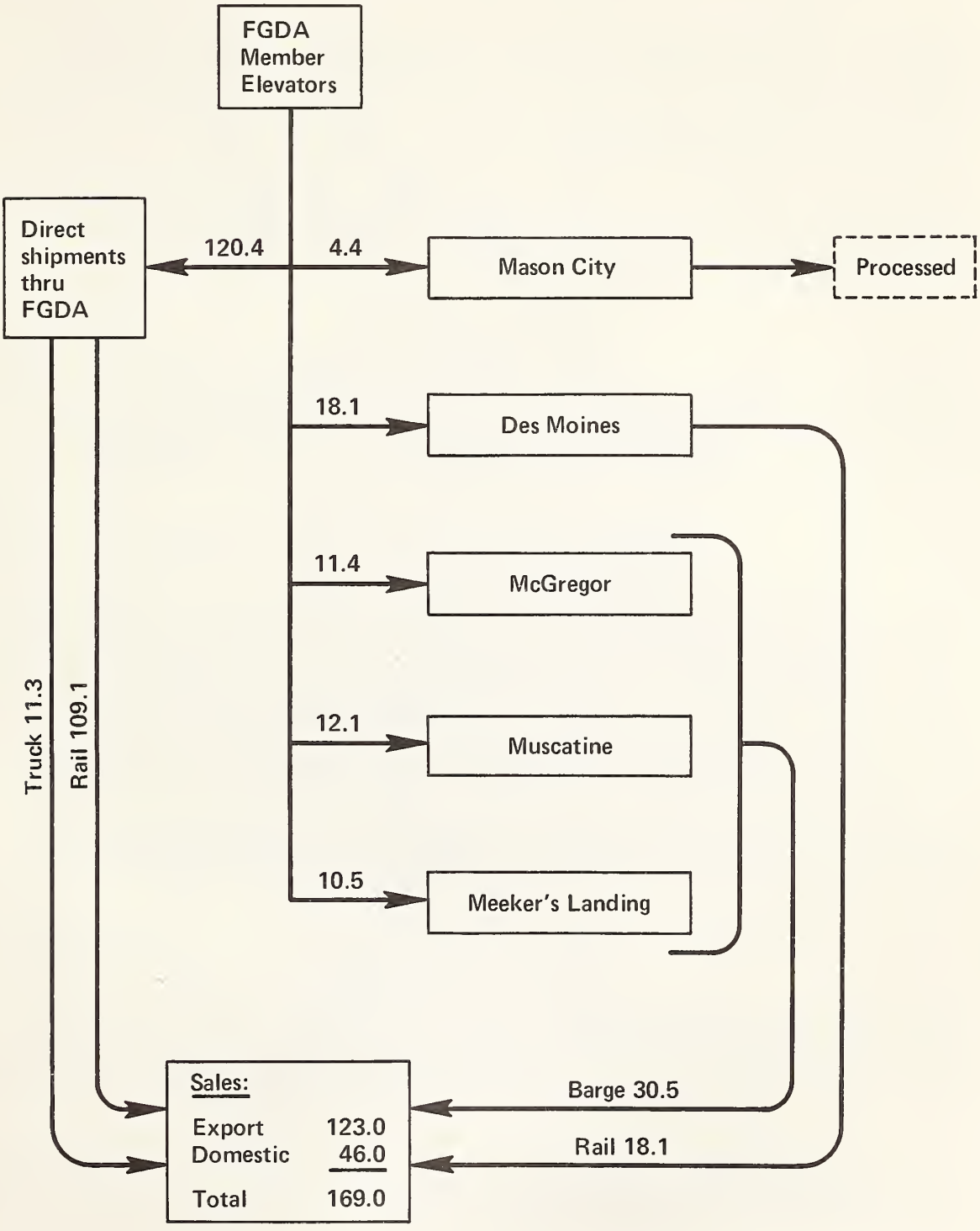


Figure 17--Volume flow of corn and soybeans from FGDA members through FGDA, 1972 crop. (million bushels)



FGDA's Status Among Other Grain Regionals

For fiscal year 1973, FGDA ranked fifth in total sales volume and in export volume among 21 regional grain cooperatives. 1/ FGDA ranked 2d in both corn and soybean sales.

FGDA is a member of Farmers Export Co. and supplies a major portion of the grain for its 5.3 million bushel elevator at Ama, La. The other members of Farmers Export Co. are: Illinois Grain Corporation, Farmers Union Grain Terminal Association, Missouri Farmers Association, FAR-MAR-CO, TFC Marketing Service, and MFC Services (AAL).

FGDA is also a member of Illinois Futures Co., Chicago; Soy-Cot Sales, Des Plaines, Ill.; National Federation of Grain Cooperatives (National Council of Farmer Cooperatives); and St. Louis Grain Corporation.

BARGE TRANSPORTATION

Barge transportation of grain can have an important role in the marketing of grain because of its relatively low transportation rate. For Iowa grain, the Mississippi River has an important role. Very little Iowa grain moves down the Missouri River.

Location of River Facilities

The importance of grain movement by water is indicated by the number of river elevators bordering Iowa. At the present time, there are 29 river elevators or barge loading facilities on the Mississippi River bordering Iowa. Seventeen are on the Iowa side of the river (fig. 18). In comparison, only 10 river elevators or barge loading facilities for grain front on the Missouri River bordering Iowa (fig. 19). Only four facilities are on the Iowa side of the river. Thus, Iowa has 20 river elevators or barge loading facilities.

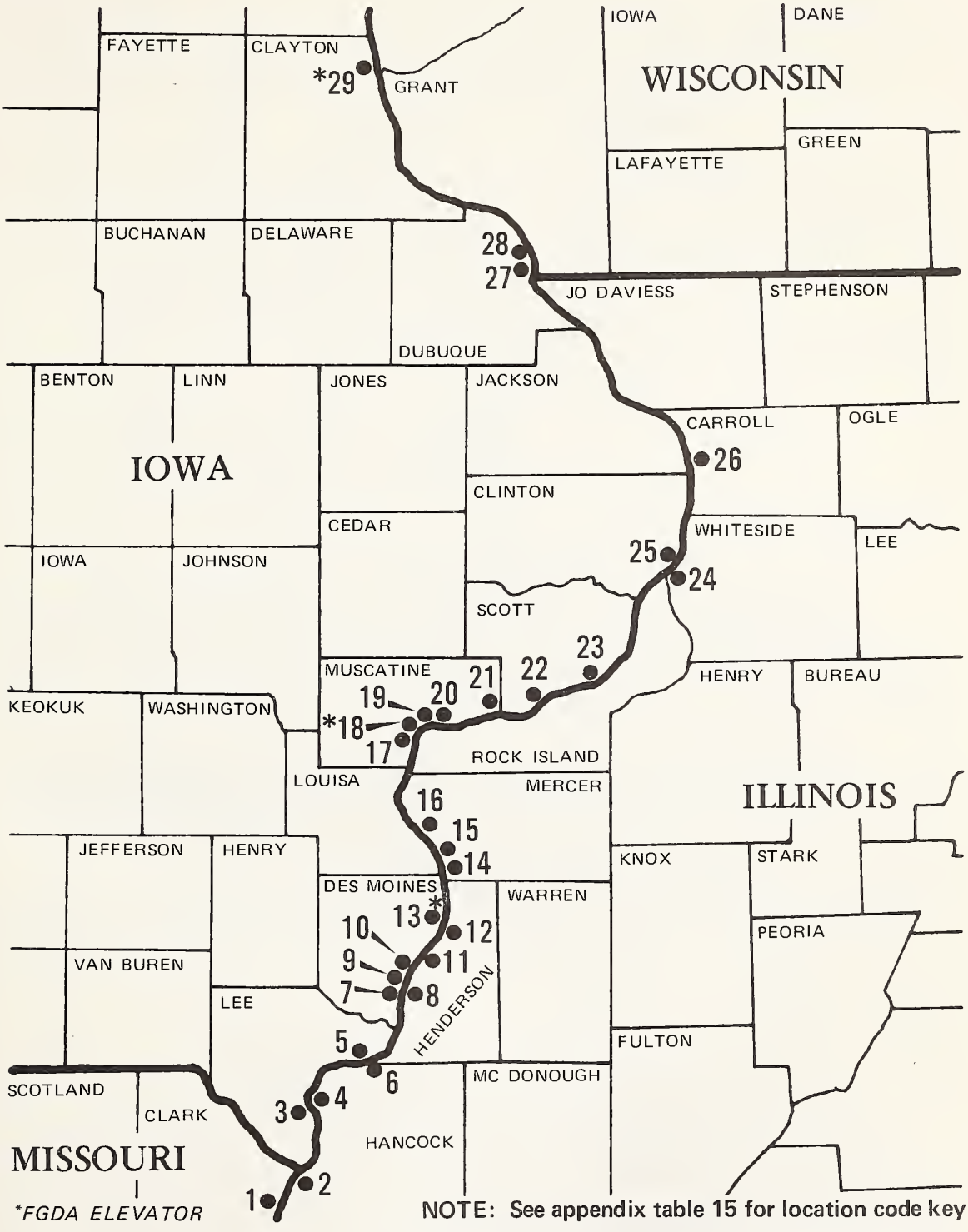
FGDA operates three elevators on the Mississippi River--at McGregor, Muscatine, and Meeker's Landing--but none on the Missouri River.

Volume of Grain Barged

Significant quantities of grain move by barge from elevators on rivers bordering Iowa (table 7). The volume of grain moving from Mississippi River points bordering Iowa averaged roughly 125 million bushels annually for the 4-year period ending December 31, 1973. In 1973, a

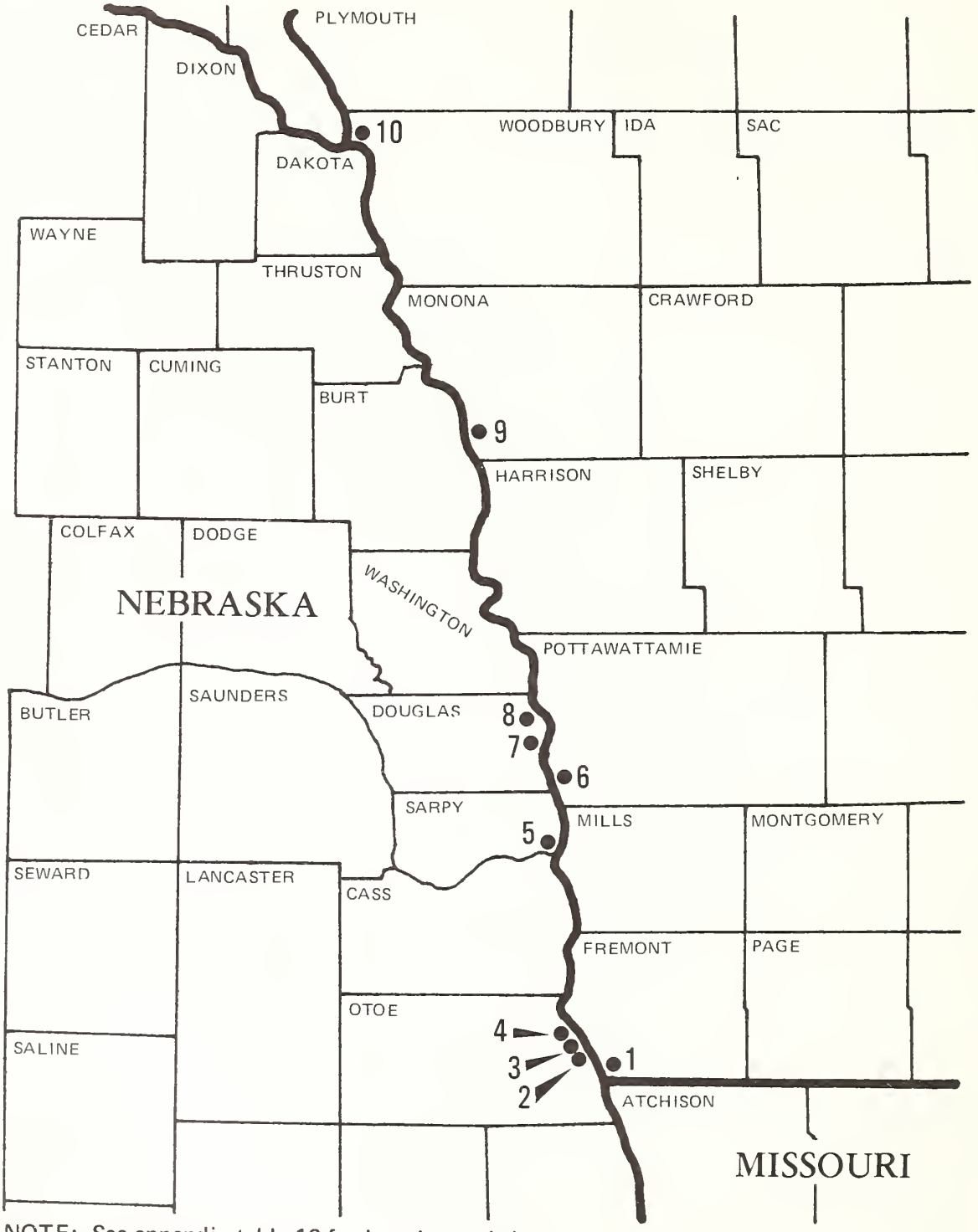
1/ FCS Service Report 136, "34th Annual Report of the Regional Grain Cooperatives."

Figure 18--Grain elevators on Mississippi River, in and adjacent to Iowa.



NOTE: See appendix table 15 for location code key

Figure 19--Grain elevators on Missouri River, in and adjacent to Iowa.



NOTE: See appendix table 16 for location code key

peak volume of 154 million bushels was shipped by barge. Of this total, 82 percent was corn and most of the rest was soybeans.

In comparison, the volume moving from Missouri River points bordering Iowa averaged roughly 9 million bushels annually. The year-to-year volume of wheat, corn, soybeans, and sorghum has varied widely. Of the total volume barged for the 4-year period, wheat composed 46 percent, corn 29 percent, soybeans 15 percent, and grain sorghum 11 percent.

Table 7--Volume of grain shipped by barge from elevators on sections of the Missouri and Mississippi Rivers bordering Iowa, 1970-73

Calendar Year	Missouri River Points	Mississippi River Points
	1,000 bushels	
1970	7,569	118,760
1971	7,886	111,629
1972	10,764	113,724

Seasonal Movement

Normal seasonal movement on the Mississippi River is from March to December. For the past 4 years, 1970 to 1973, peak movement generally occurred in June, July, and August; however, heavy shipments also were made in October, November, and December (fig. 20).

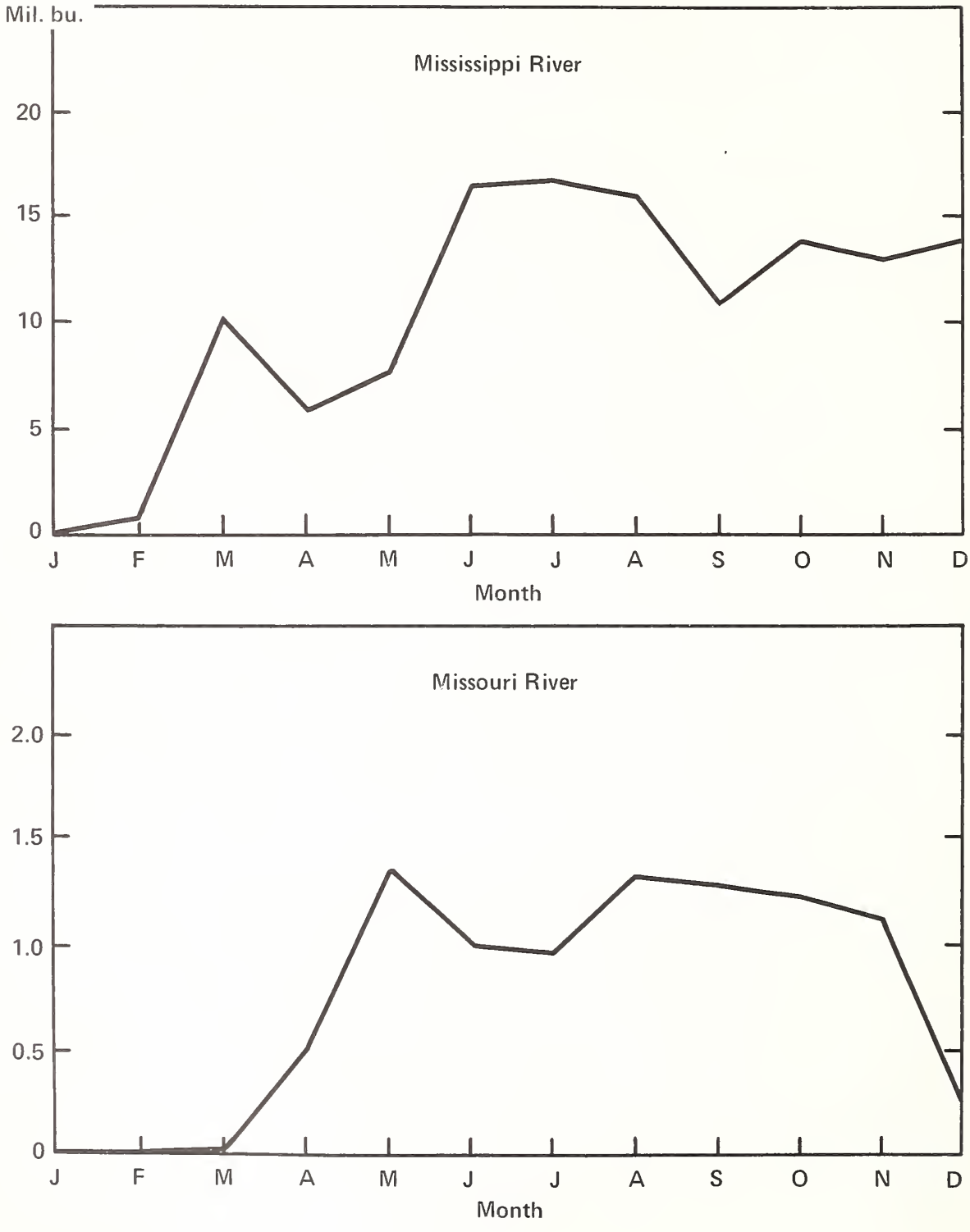
On the Missouri River, normal seasonal movement is from April to November--a somewhat shorter period than on the Mississippi River. For the past four years, peak movements generally occurred in May, August, September, and October.

If FGDA's seasonal pattern of barge shipments are similar to that for total grain shipped on the Mississippi River during the past 4 years, it's likely that its barge requirements will vary considerably during the year.

Truck-Barge Movements

FGDA's three river elevators handled an average of 30 million bushels in the past 3 fiscal years ending in 1973. Corn and beans have composed most of the volume, with corn making up 55 to 80 percent of the total. Grain came from as far away as Palo Alto and Green Counties--nearly 200 miles. The major portion of the river house volume came from central, north central, and southeastern Iowa, which are crop reporting districts

Figure 20--Average grain shipments on Mississippi and Missouri Rivers, 1970-73



2, 5, and 9 (fig. 21). Since counties in northeastern Iowa are relatively low in grain sales, much of the grain moving through river elevators must be trucked from north central and central Iowa.

Most grain shipped by barge originated as a truck shipment. Thus, the truck-barge transportation costs, plus river elevator costs, represent the total grain movement costs that must compete with rail movement costs to common destinations such as to a Gulf port for export.

How far can a given elevator afford to truck grain to a river elevator instead of shipping by rail to the Gulf? A comparison of "truck-river elevator-barge" costs with rail costs will provide some indication.

Based on a telephone survey of 11 selected cooperative elevators, it was estimated that truck costs for grain were:

1-way mileage	Cost per bushel of corn (Cents)
40	6.6
60	7.9
80	9.2
100	10.6
120	11.9
160	14.5
200	17.2

Based on FGDA records, cost of handling grain through river houses was 1.8 to 2.3 cents a bushel in fiscal 1972. Barge rates to the Gulf published by Arrow Transportation Co. in Schedule No. 8 dated October 1, 1972, ranged from 11.6 to 13.7 cents a bushel of corn, depending on the river point.

Next, rail rates to the Gulf were obtained from selected Iowa points that also truck to Mississippi River elevators. These rail rates were for single-car, 25-car and 50-car shipments. Then we determined the break-even mileage distance for truck-barge and rail rates; that is, the distance from the river elevator where "truck-river elevator-barge" costs were equal to the rail rate to the Gulf. This distance varied for single-car, 25-car, and 50-car shipments. For the single-car shipment, the break-even distance from the river was about 80 miles; and for the 25-car rate, about 80 miles; and for the 50-car rate, about 50 miles (fig.22).

As country terminals with 50-car load out capability are built closer to the river, the share of grain going to the river will tend to decline. This assumes the present rate relationship will continue.

Figure 21--Percentage of FGDA's river volume originating in each crop reporting district, 3 year totals.

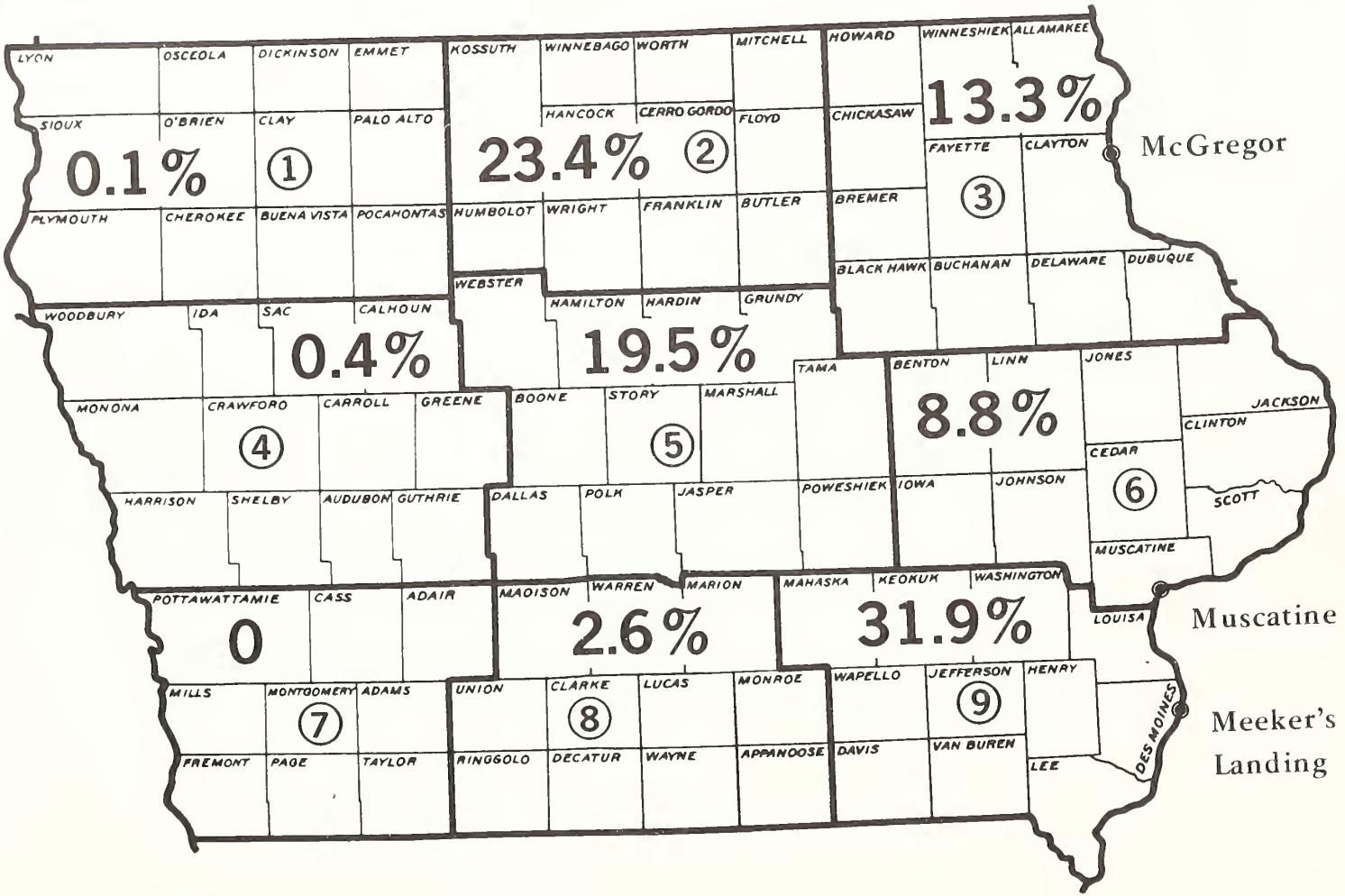
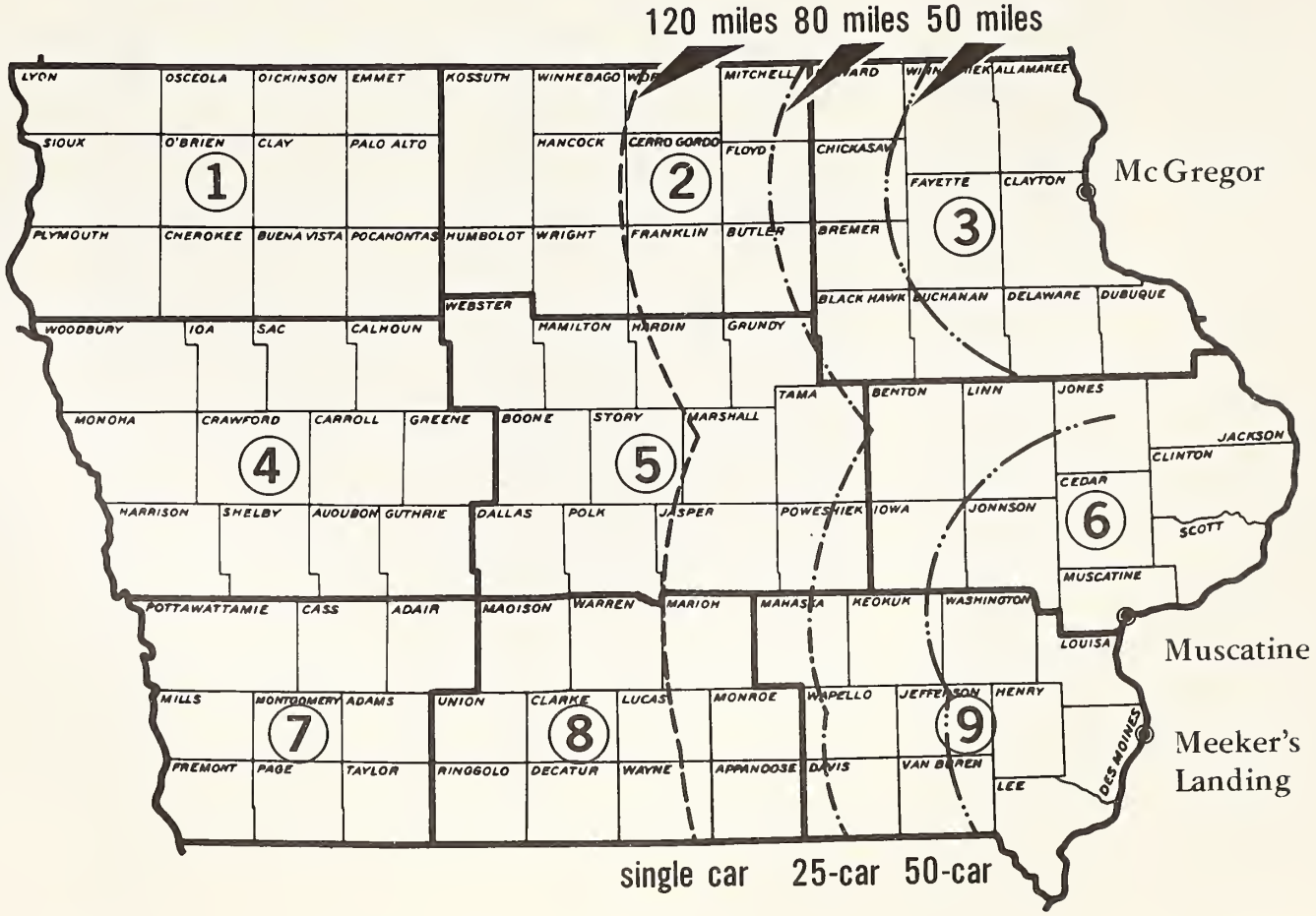


Figure 22--Approximate break-even point for shipping corn by truck-barge compared to single car, 25-car, and 50-car rates, from Iowa points through 3 river terminals, Iowa, August 1973.



A Barge Facility on the Missouri River?

The feasibility of a river elevator or loading site near Blencoe, Iowa, was considered. We assumed a suitable site could be found and that the cost of handling and loading out to the barge would be 4 cents a bushel. We further assumed that the cost of trucking from the Blencoe elevator or a nearby farm would be 2 cents. The barge rate to the Gulf was 21 cents per bushel of corn. These costs were compared with the single-car, 25-car, and 50-car rates to the Gulf to determine the advantage or disadvantage for barge shipment (table 8).

The only advantage to the barge was in comparison to single-car shipments--1.2 cents a bushel. The 25-car shipment would have an advantage of 4/10 cent a bushel, and a 50-car shipment, a 3.5 cent advantage. The feasibility of a barge facility depends largely on the availability of hopper cars for 25-car and 50-car shipments, the amount of grain moving direct from nearby farms, and the accuracy of the assumed barge loading costs.

It does not appear feasible to build a major grain elevator on the Missouri River in order to ship by water. In some instances it may be feasible to build a low-cost, fast-handling river loading facility for local grain.

Table 8--Comparison of barge and rail rates for corn between Blencoe and the Gulf

Type of movement	Rate per bushel	Advantage or disadvantage for barge 1/
	(cents)	
Single-car	28.2	+1.2
25-car	25.6	-0.4
50-car	23.6	-3.5
Barge	21.0	-0-

1/ Assumes following cost for a truck-barge movement from Blencoe elevator or nearby farm: truck 2¢; barge loading 4¢; barge rate 21¢.

River Navigation Problems

The principal navigating problem on the Mississippi River is the difficulty in lengthening the shipping season. At present, the FGDA elevators have roughly a 10-month season. It has been proposed that the season be extended to 52 weeks up to Burlington, Iowa, and to 48 weeks

up to Cassville, Wis. A study by the Corps of Engineers, U.S. Army, concluded among other things that this might be feasible and further study was warranted. We don't believe this will happen in the near future but its bears watching.

The only possibility for FGDA to have access to a 52-week navigating season would be to ship grain to a river facility at Keokuk or below. FGDA might arrange with an existing facility to handle grain on a fee basis.

The principal navigating problems on the Missouri River are shallow draft, swift water, curves, and narrow effective channel. It adds up to bad navigating conditions and barge operators have difficulty in providing reliable service. It is very difficult to obtain a barge or to obtain it on schedule. It would be unwise to build an expensive elevator strictly for barge shipments on the Missouri River.

Barge Supply and Ownership

FGDA's barge supply has largely come from annual contracts with barge firms and from barges procured on a trip basis at a negotiated rate. Barges may be procured under various arrangements, such as: (1) a guaranteed barge supply contract for one year or other period, and (2) a charter lease for a period, such as 5 or 10 years. Under a guaranteed supply contract, its provisions may include a gas price adjustment clause. Under a charter lease, the barge company may guarantee to supply a fixed number of barges per month or to operate a certain number of barges exclusively for the use of the shipper. Under this arrangement, the cost of barging depends upon utilization of barges. The shipper takes the risk for poor turnaround time caused by inability to unload and impassable waterways. Because the annual cost of a charter lease is roughly 21 percent of the cost of a new barge, it may be better to purchase rather than lease.

In view of these conditions and the already existing need for cooperatives to own their own barges, we reemphasize the findings of FCS Service Report 132 that recommended that cooperatives set up a system to jointly own and operate towboats and barges, and that they coordinate and pool shipments to increase their bargaining power with for-hire carriers. To gain operating experience, the cooperatives could lease towboats and barges initially. However, ownership of such equipment appears to offer the greatest potential for savings. 1/

Projected FGDA requirements for barges is covered in a subsequent section.

1/ "Coordinating Transportation to Reduce Costs," FCS Service Report 132, June 1973.

POTENTIAL FGDA GROWTH

Our previous projections of Iowa farm sales showed that corn sales are expected to reach 937 million bushels by 1985 and that soybean sales will reach 339 million bushels--a total of 1.3 billion bushels. Such projections and historical data on FGDA and member elevators provides the basis for projecting FGDA growth.

Growth of Member Elevator Volume

Total sales of corn and soybeans by FGDA member elevators expressed as a percent of farm sales are expected to rise gradually from 58 percent in 1972 to 64 percent in 1985 (app. tables 8, 9, and 10). This assumes that member elevators will "hold their own" and even increase their share slightly. Under such assumption, we projected total grain sales of FGDA members at 817 million bushels in 1985 (fig. 23).

In the past few years, it was estimated that FGDA member elevators sold about 81 percent of their grain for shipment out of their immediate trade area. Such out-of-area sales are available to FGDA, processors, and other buyers. We assumed this same percentage in making our projections to 1985. For 1985, we projected out-of-area sales for FGDA members at 661 million bushels, nearly 4 times greater than FGDA's volume for the 1972 crop.

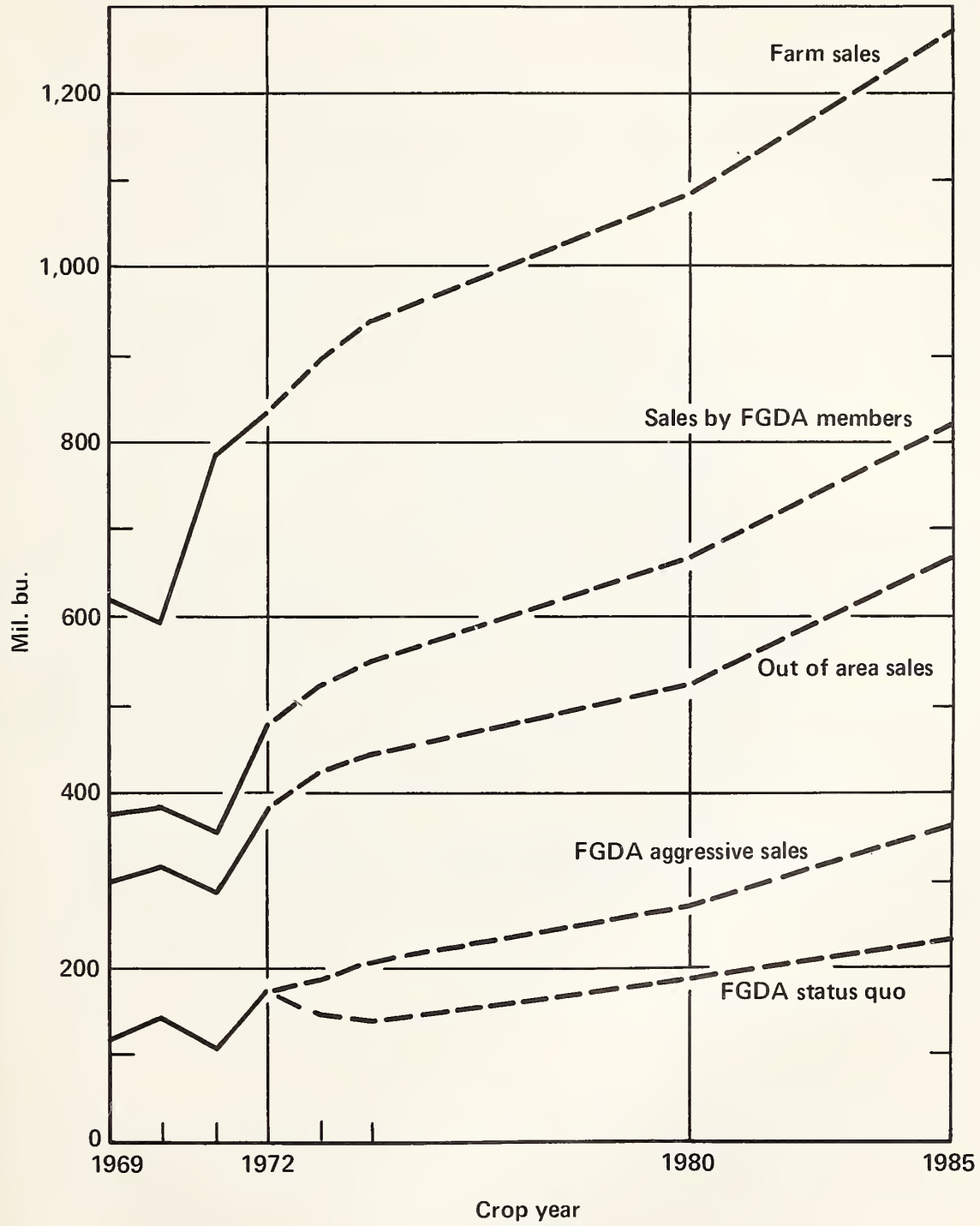
Growth of FGDA Volume

Not nearly all of members' out-of-area sales go to FGDA. For 1969-72, it averaged about 40 percent.

If FGDA is content with the status quo--that is, handles only about 35 to 40 percent of its members' grain--we project that it will increase sales to 228 million bushels by 1985. This is an increase of 31 percent over 1972, but an average annual increase of only 2.4 percent.

We do not believe that FGDA should be satisfied with the "status quo." FGDA should handle a much larger share of its members' grain. The percentage sold to FGDA will increase under an "aggressive" FGDA grain program that encompasses all areas, particularly grain procurement, merchandising, and transportation. Under an aggressive program, we believe FGDA should handle at least 55 percent of members' out-of-area sales by 1985. This would mean that FGDA sales could reach 364 million in 1985, an increase of 100 percent over 1972.

Figure 23--Corn and soybeans: Iowa farm sales, FGDA member sales and their out of area sales, and FGDA sales, 1969-72 and projections to 1985.



Domestic and Export Sales

With a projected 1985 volume of 364 million bushels and the expected increase in out-of-area sales by member elevators, we projected domestic and export sales volumes for FGDA to 1985. Projections made by Economic Research Service, USDA, for the U.S., served as an important basis for our projections.

Compared with 1972 crop sales, we projected FGDA domestic sales in 1985 to increase nearly two times, and exports to increase about 75 percent (fig. 24). Expected percent increases for soybeans are higher than those for corn, although the actual volume of corn exports is much larger than that for soybeans (app. tables 11, 12, and 13).

RAIL AND BARGE REQUIREMENTS FOR EXPORTS

Both rail and barge shipments are projected to increase about 75 percent from 1972 to 1985. However, if 1969 is used as a base year for comparison, the 1985 projections are about five times greater for rail shipments, and twice as large for barge shipments (fig. 25).

Projected Hopper Car Requirements

The rail volume of corn and soybeans is projected to increase to 163 million bushels in 1985 (app. table 14). We assumed an average turnaround time of 22.8 days in Gulf ports and other destinations, 3,500 bushels per trip per car, and 16 trips annually per car. Thus, each car would haul 55,400 bushels annually. Under these assumptions, total hopper car requirements for FGDA exports are estimated to increase from 1,397 hoppers in 1973 to 2,996 hoppers in 1985 (table 9). However, FGDA should be able to obtain a significant percentage of their requirements from railroad companies. Perhaps FGDA would need to furnish 40 to 60 percent of its own hoppers to be assured of adequate cars.

In the preceding paragraph, we assumed that FGDA hopper car requirements would be equal throughout the year. However, seasonal variation in hopper car shipments will increase the total number of hoppers needed during peak periods.

Figure 24--Corn and soybeans: FGDA sales for export and domestic use and total sales, 1969-72 and projections to 1985--Aggressive FGDA program.

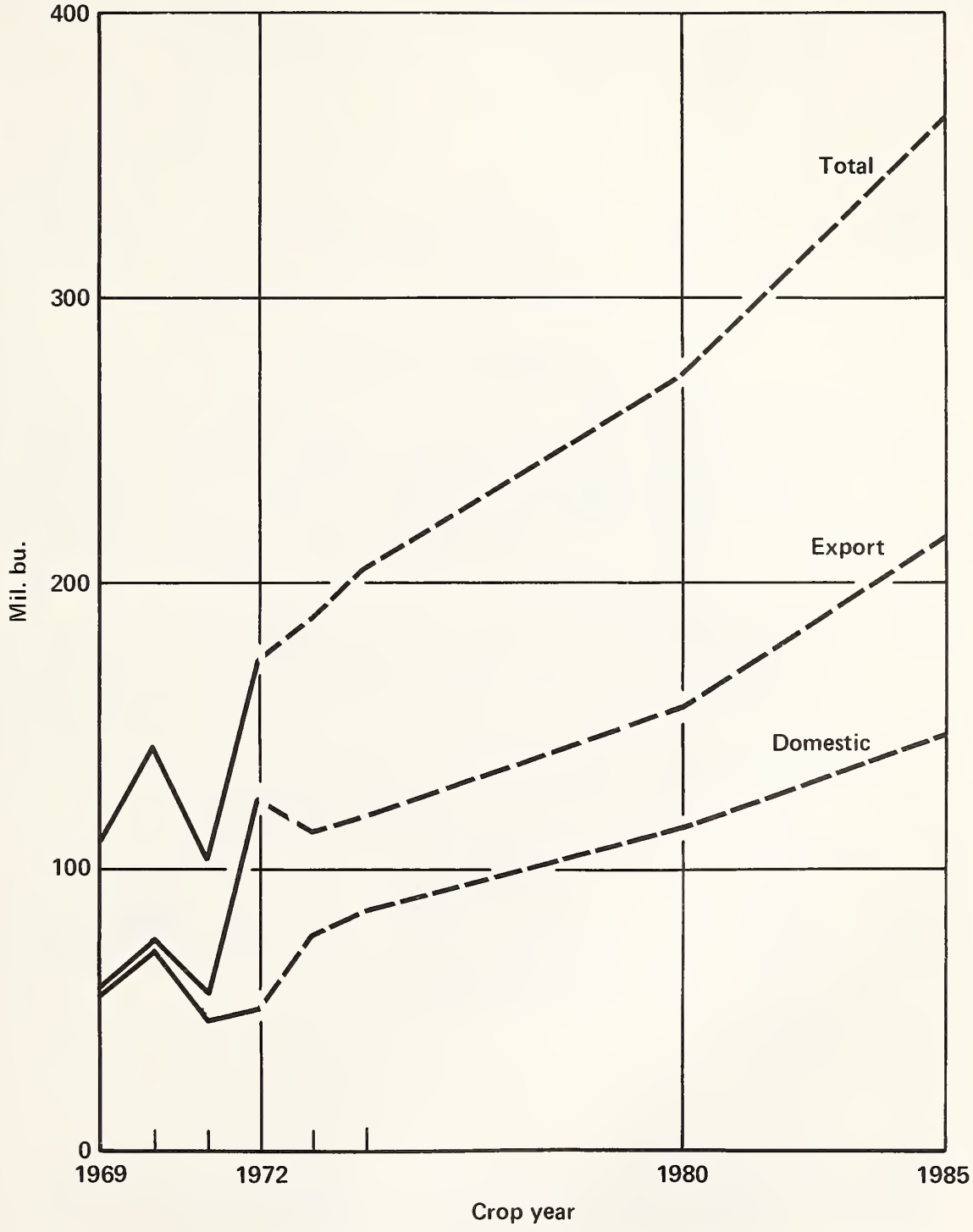


Figure 25--Rail and barge requirements for FGDA corn and soybean sales for export, 1969-72 and projections to 1985--Aggressive FGDA program.

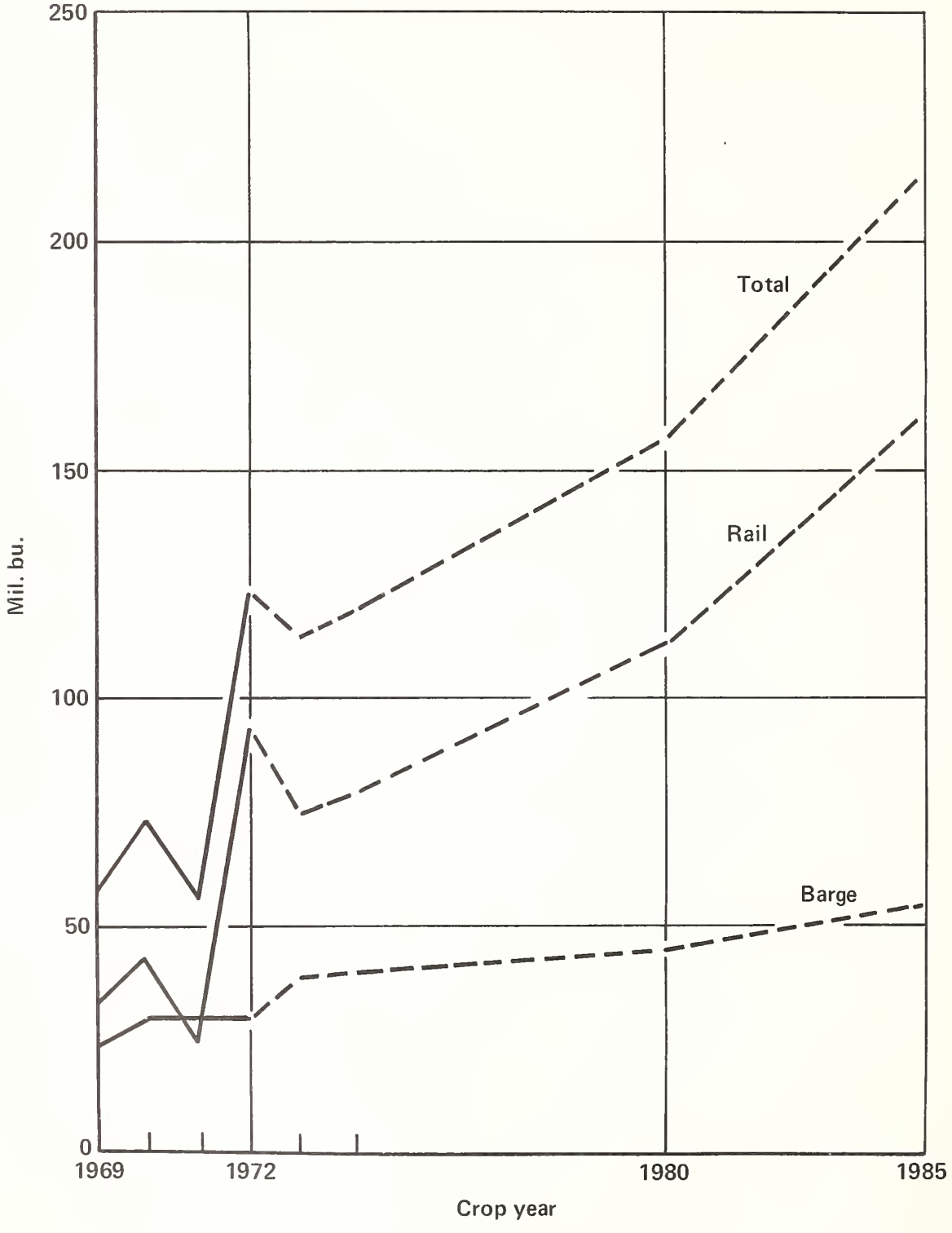


Table 9--Projected FGDA hopper car requirements for exporting corn and soybeans--aggressive FGDA program, 1973-85

Crop year	Projected FGDA rail export volume	Total hopper car requirements	FGDA requirements if they furnish: 40%	50%	60%
	Million Bushels	Number of hopper cars			
1973	76	1,397	559	699	838
1974	79	1,452	581	726	871
1980	112	2,059	824	1,030	1,235
1985	163	2,996	1,198	1,498	1,798

Projected Barge Requirements

Barge volume of grain for export in the years ahead is projected to increase moderately--from 38 million bushels in crop year 1973 to 53 million bushels in 1985. Assuming an average barge capacity of 45,000 bushels, 30 days turnaround time to the Gulf, and 10 months of operations, the resulting number of required barges would increase from 95 in 1973 to 132 in 1985 (table 10).

Barge shipments by FGDA have been almost entirely to the Gulf. However, in the future, domestic barge shipments to the southeast are likely to increase. This will increase barge requirements accordingly.

Table 10--Projected FGDA barge requirements for exporting corn and soybeans--aggressive FGDA program, 1973-85

Crop year	Projected FGDA barge export volume	Barges required
	Million bushels	Number
1973	38	95
1974	40	100
1980	45	112
1985	53	132

APPENDIX

Appendix Table 1 --Iowa production and farm sales of corn and soybeans, 1969-72 and projections to 1985

Crop year	Production			Farm Sales		
	Corn	Soybeans	Total	Corn	Soybeans	Total
	Million bushels					
1969	945	177	1,122	444	175	619
1970	867	185	1,051	416	182	598
1971	1,178	179	1,357	613	176	788
1972	1,212	218	1,430	618	214	832
1973[1/]	1,215	276	1,491	625	270	895
1974	1,327	268	1,595	677	263	940
1980	1,408	290	1,698	803	284	1,087
1985	1,511	346	1,857	937	339	1,276

1/ November 1, 1973 SRS forecast of production

Appendix Table 2--Farm sales of corn and soybeans, U.S. and Iowa, 1969-72 and projections to 1985

Crop year	Corn farm sales			Soybean farm sales		
	U.S.	Iowa	% Iowa	U.S.	Iowa	% Iowa
	Million bushels		Percent	Million bushels		Percent
1969	2,557	444	17	1,112	175	16
1970	2,264	416	18	1,107	182	16
1971	3,197	613	19	1,154	176	15
1972	3,213	618	19	1,257	214	17
1973	3,258	625	19	1,544	270	17
1974	3,785	677	18	1,504	263	17
1980	4,085	803	20	1,764	284	16
1985	4,467	937	21	2,107	339	16

Appendix Table 3--Number of grain elevators and storage capacity for FGDA elevators, all other elevators, and total Iowa elevators, by crop reporting district, June 30, 1972

Crop reporting district	FGDA elevators		All other Iowa elevators		Total Iowa elevators	
	No.	1,000 bu.	No.	1,000 bu.	No.	1,000 bu.
1	75	44,117	86	21,076	161	65,193
2	78	45,610	65	17,634	143	63,244
3	35	7,764	74	12,305	109	20,069
4	53	38,845	114	41,699	167	80,544
5	78	55,591	127	48,674	205	104,265
6	19	5,330	99	23,145	118	28,475
7	14	4,705	75	31,959	89	36,664
8	12	6,190	37	8,670	49	14,860
9	12	6,979	93	22,812	105	29,791
Totals	376	215,131	770	227,974	1,146	443,105

Appendix Table 4--Average storage capacity of elevators for FGDA and member elevators, other elevators, and State average, by crop reporting district, June 30, 1972

Crop reporting district	Average capacity of FGDA and member elevators	Average capacity of all other elevators	Average capacity of total elevators in Iowa
	Bushels		
1	588,227	245,070	404,925
2	584,744	271,292	442,266
3	221,829	166,284	184,119
4	732,925	365,781	482,299
5	712,705	383,260	508,610
6	230,526	233,788	241,314
7	336,071	426,120	411,955
8	515,833	234,324	303,265
9	581,583	245,290	283,724
Average	572,157	296,070	386,654

Appendix Table 5--FGDA and member elevator numbers and storage capacity, by condition of railroad track and railroad company

Rail condition or weight limit by rail company	FGDA and member elevators		Total capacity	Average capacity
	Number	Percent	1,000 bu.	Bushels
Over 263,000 lb. capacity:				
Rock Island	41	18.4	31,239	761,927
Milwaukee	69	30.9	34,325	497,464
Illinois Central	29	13.0	14,533	501,138
Chicago & Northwestern	76	34.1	48,200	634,211
Burlington	8	3.6	5,626	703,250
Total	223	100.0	133,923	600,552
Upgrading planned:				
Rock Island	9	34.7	7,906	878,444
Chicago & Northwestern	17	65.3	13,030	766,471
Total	26	100.0	20,936	805,231
Under 263,000 lb. capacity:				
Rock Island	24	26.1	12,349	514,542
Milwaukee	5	5.4	1,650	330,000
Illinois Central	7	7.6	2,436	348,000
Chicago & Northwestern	41	44.6	26,155	637,927
Norfolk & Western	1	1.1	313	313,000
Burlington	14	15.2	4,109	293,500
Total	92	100.0	47,012	511,000
Abandonment planned:				
Rock Island	6	35.3	1,345	224,167
Milwaukee	2	11.8	232	116,000
Chicago & Northwestern	8	47.0	4,763	595,375
Burlington	1	5.9	750	750,000
Total	17	100.0	7,090	417,059
Not along a rail line	18	100.0	6,170	342,778
Totals	376	100.0	215,131	572,157

Appendix Table 6--Elevators in Iowa with unit-train capability, October 1973

Town	County	Railroad	Maximum no. of cars	
			Present	Planned
CRD-1				
Albert City	Buena Vista	MILW	50	100
Marathon	Buena Vista	CNW	25	-
Dickens	Clay	MILW	25	-
Superior	Dickinson	CRIP	50	100
Lake Park 1/	Dickinson	CRIP	-	54
Ritter	O'Brien	CNW	25	-
Hartley 1/	O'Brien	MILW/CRIP	-	100
Sanborn	O'Brien	MILW	25	100
Sheldon	O'Brien	CNW	25	50
Ashton	Osceola	CNW	25	-
Ocheydan	Osceola	CRIP	-	54
Graettinger	Palo Alto	CRIP	54	-
West Bend	Palo Alto	CRIP	54	-
Cylinder 2/	Palo Alto	MILW	25	-
Ruthven	Palo Alto	MILW	25	-
Havelock	Pocahontas	CNW	-	25
Royal 1/	Clay	CRIP	25	-
Gilmore City	Pocahontas	CNW	25	50
CRD-2				
Greene	Butler	CRIP	25	-
Burchinall	Cerro Gordo	CNW	-	25
Clear Lake	Cerro Gordo	MILW	25	-
Rockwell	Cerro Gordo	CNW	-	25
Ventura	Cerro Gordo	MILW	25	-
Rudd	Floyd	MILW	25	-
Marble Rock 2/	Floyd	CRIP	25	-
Hampton	Franklin	CNW	25	-
Bradford	Franklin	CNW	50	-
Chapin 2/	Franklin	CNW/CRIP	25	-
Britt	Hancock	MILW	50	-
Klemme	Hancock	CRIP	54	-
Bode	Hunboldt	CRIP	54	-
Hardy	Hunboldt	CRIP	54	-
Renwick 2/	Hunboldt	CNW	25	-
Swea City 1/	Kossuth	CRIP	54	-
Algona 1/	Kossuth	CNW	50	-

Footnotes at end of table

Appendix Table 6--Elevators in Iowa with unit train capability, October 1973--Continued

Town	County	Railroad	Maximum no. of cars	
			Present	Planned
Whittemore 2/	Kossuth	MILW	50	-
Wesley 2/	Kossuth	MILW	25	-
Rake 2/	Winnebago	CRIP	54	-
Grafton	Worth	MILW	25	-
Northwood	Worth	CNW/CRIP	54	-
Northwood	Worth	CNW	50	-
Joice	Worth	CNW	25	50
Clarion 1/	Wright	CRIP	54	-
Dows 2/	Wright	CRIP	54	-
Goldfield	Wright	CNW	50	-
Eagle Grove	Wright	CNW	25	50
Hansell 1/	Franklin	CNW	25	-
CRD-3				
Readlyn	Bremer	CNW	25	50
CRD-4				
Rockwell City 2/	Calhoun	ICG	50	-
Farnhamville	Calhoun	CNW	25	50
Somers	Calhoun	CNW/CRIP	25	50
Dedham	Carroll	MILW	25	-
Ralston	Carroll	CNW	50	100
Glidden	Carroll	CNW	25	-
Jefferson	Greene	CNW/MILW	100	-
Harlan 1/	Shelby	CNW	50	-
Dunlap 2/	Harrison	CNW/ICG	25	-
Blencoe 2/	Monona	CNW	25	-
Blencoe 1/	Monona	CNW	25	-
Onawa 1/	Monona	CNW	25	-
CRD-5				
Roelyn	Webster	CNW	25	-
Clare	Webster	CNW	50	-
Vincent	Webster	CNW	50	-
Moorland (at Roberts)	Webster	CNW	25	-
Gowrie	Webster	CNW	50	-
Huxley 1/	Story	CNW	25	-
Story City 2/	Story	CNW	25	50

Footnotes at end of table

Appendix Table 6--Elevators in Iowa and unit train capability, October 1973--Continued

Town	County	Railroad	Maximum no. of cars	
			Present	Planned
Dallas Center 2/	Dallas	CNW	50	-
Minburn	Dallas	CNW	50	-
Woodward 1/	Dallas	MILW	50	-
Jewell	Hamilton	CNW	25	-
Buckeye 2/	Hardin	CRIP	54	-
Iowa Falls	Hardin	RI/IC/CNW	25	-
Alleman	Polk	CNW	25	-
Liscomb 1/	Marshall	CNW	25	-
Beaver 1/	Boone	CNW	50	-
CRD-8				
Creston	Union	BN	-	54
CRD-9				
Oskaloosa 1/	Mahaska	CNW	25	-

1/ Noncooperative
2/ Merchandising agreement with FGDA.

Appendix Table 7--Top 41 FGDA Elevators, 1971-72[1/]
(main office location)

Albert City	Lacona
Beaman	Ledyard
Bondurant	Minburn
Boone	Mt. Union
Bradgate	New London
Buffalo Center	Nora Springs
Burchinal	Northwood
Conrad	Pocahontas
Creston	Ralston
Danville	Readlyn
Dike	Ringstead
Eagle Grove	Sheldahl
Ellsworth	Supior
Farnhamville	Thompson
Fenton	Tipton
Glidden	Ventura
Gilman	Wesley
Iowa Falls	West Bend
Kanawha	Whittemore
Klemme	Winfield
	Woden

1/ Based on storage capacity, sales to FGDA, and total out-of-area sales.

Appendix Table 8--Corn and soybeans: Iowa farm sales, FGDA member and out-of-area sales, FGDA sales, and selected percentage relationships, 1969-72 crop years, and projections for 1973, 1974, 1980, and 1985

Item	Unit	Year							
		1969	1970	1971	1972	1973	1974	1980	1985
Iowa farm sales	Million bushels	619	598	788	832	895	940	1,087	1,276
Sales of FGDA members	Million bushels	380	387	357	478	520	550	668	817
Percent of farm sales	Percent	61	65	45	57.5	58	58.5	61.5	64
Out-of-area sales by FGDA members	Million bushels	300	318	292	387	421	445	541	661
Percent of FGDA members sales	Percent	79	82	82	81	81	81	81	81
						Projection for aggressive FGDA program			
FGDA sales 1/	Million bushels	112	143	102	174	189	204	271	364
Percent of out-of-area sales	Percent	37	45	35	45	45	46	50	55
Percent of farm sales	Percent	18	24	13	21	21	22	25	28
						Projection for status quo FGDA program			
FGDA sales (trend basis, stocks adjusted)	Million bushels	-	-	-	-	148	139	188	228
Percent of out-of-area sales	Percent	-	-	-	-	35	31	35	34
Percent of farm sales	Percent	-	-	-	-	16	15	17	18

1/ Includes soybeans processed at Mason City.

Appendix Table 9--Corn: Iowa farm sales, FGDA member and out-of-area sales, FGDA sales, and selected percentage relationships, 1969-72 crop years, and projections for 1973, 1974, 1980, and 1985

Item	Unit	Year							
		1969	1970	1971	1972	1973	1974	1980	1985
Iowa farm sales	Million bushels	444	416	613	618	625	677	803	937
Sales of FGDA members	Million bushels	278	264	249	343	347	383	475	575
Percent of farm sales	Percent	63	63	41	56	56	57	59	61
Out-of-area sales - FGDA members	Million bushels	197	195	184	252	248	279	348	419
Percent of FGDA member sales	Percent	71	74	74	73	71	73	73	73
					Projection for aggressive FGDA program				
FGDA sales	Million bushels	71	87	67	124	115	132	180	242
Percent of out-of-area sales	Percent	36	45	36	49	46	47	52	58
Percent of farm sales	Percent	16	21	11	20	18	19	22	26
					Projection for status quo FGDA program				
FGDA sales (trend basis, stocks adjusted)	Million bushels	-	-	-	-	96	83	126	153
Percent of out-of-area sales	Percent	-	-	-	-	39	30	36	36
Percent of farm sales	Percent	-	-	-	-	15	12	16	16

Appendix Table 10--Soybeans: Iowa farm sales, FGDA member and out-of-area sales, FGDA sales, and selected percentage relationships, 1969-72 crop years, and projections for 1973, 1974, 1980, and 1985

Item	Unit	Year							
		1969	1970	1971	1972	1973	1974	1980	1985
Iowa farm sales	Million bushels	175	182	176	214	270	263	284	339
Sales of FGDA members	Million bushels	102	123	108	135	173	167	193	242
Percent of farm sales	Percent	58	68	61	63	64	64	68	71.5
Out-of-area sales by FGDA members	Million bushels	102	123	108	135	173	167	193	242
Percent of FGDA member sales	Percent	100	100	100	100	100	100	100	100
						Projection for aggressive FGDA program			
FGDA sales 1/	Million bushels	40	56	36	49	74	72	91	122
Percent of out-of-area sales	Percent	39	46	33	36	43	44	47	50
Percent of farm sales	Percent	23	31	20	23	28	28	32	36
						Projection for status quo FGDA program			
FGDA sales (trend basis, stocks adjusted)	Million bushels	-	-	-	-	52	56	62	75
Percent of out-of-area sales	Percent	-	-	-	-	30	33	32	31
Percent of farm sales	Percent	-	-	-	-	19	21	22	22

1/ Includes soybeans processed at Mason City.

Appendix Table 11--Corn and soybeans: Farm sales and FGDA sales for export domestic use, 1969-72, and projections for 1973, 1974, 1980, and 1985--Aggressive FGDA program

Crop year	Farm sales			FGDA sales 1/		
	U.S.	Iowa	Iowa	Export	Domestic	Total
	Million bushels		Percent	Million bushels		
1969	3,669	619	17	56	54	110
1970	3,371	598	18	73	70	143
1971	4,351	788	18	55	47	102
1972	4,470	832	19	123	50	174
1973	4,802	895	19	113	76	189
1974	5,289	940	18	119	85	204
1980	5,849	1,087	18	157	114	271
1985	6,574	1,276	19	216	148	364

1/ FGDA domestic sales includes soybeans processed at Mason City.

Appendix Table 12--Corn: Farm sales and FGDA sales for export and domestic use, 1969-72, and projections for 1973, 1974, 1980, and 1985--Aggressive FGDA program

Crop year	Corn farm sales			FGDA corn sales		
	U.S.	Iowa	Iowa	Export	Domestic	Total
	Million bushels		Percent	Million bushels		
1969	2,558	444	17	36	34	70
1970	2,264	416	18	42	45	87
1971	3,197	613	19	35	32	67
1972	3,213	618	19	91	33	124
1973	3,258	625	19	70	45	115
1974	3,785	677	18	77	55	132
1980	4,085	803	20	101	79	180
1985	4,467	937	21	138	104	242

Appendix Table 13--Soybeans: Farm sales and FGDA sales for export and domestic use, 1969-72, and projections for 1973, 1974 1980, and 1985--Aggressive FGDA program

Crop year	Soybean farm sales			FGDA soybean sales 1/		
	U.S.	Iowa	Iowa	Export	Domestic	Total
	Million bushels		Percent	Million bushels		
1969	1,112	175	16	20	20	40
1970	1,107	182	16	31	25	56
1971	1,154	176	15	20	15	36
1972	1,257	214	17	32	17	49
1973	1,544	270	17	44	32	74
1974	1,504	263	17	42	30	72
1980	1,764	284	16	56	35	91
1985	2,107	339	16	78	44	122

1/ FGDA domestic sales includes soybeans processed at Mason City.

Appendix Table 14--Rail and barge volume for FGDA exports of corn and soybeans, 1969-72 crop years, and projection to 1985--Aggressive FGDA program

Crop year	Corn			Soybeans			Total		
	Rail	Barge	Total	Rail	Barge	Total	Rail	Barge	Total
	Million bushels								
1969	19	17	36	13	7	20	32	24	56
1970	25	17	42	18	13	31	43	30	73
1971	15	20	35	10	10	20	25	30	55
1972	67	24	91	26	6	32	93	30	123
1973	47	23	70	29	15	44	76	38	114
1974	52	25	77	27	15	42	79	40	119
1980	72	29	101	40	16	56	112	45	157
1985	104	34	138	59	19	78	163	53	216

Appendix Table 15--Code key to figure 18: Grain elevators on Mississippi River, in and adjacent to Iowa

Code	Miles above Ohio R.	Location	Owner or operator	Railroad connection
1	353.0	Gregory, Mo.	Cabe Logsdon & Sons	BN
2	359.7	Warsaw, Ill.	Hancock Grain Co.	T.P. & W.
3	374.9	Montrose, Iowa	Hunold Elevator, Inc.	BN
4	376.4	Nauvoo, Ill.	Colusa Elevator Co.	None
5	390.0	Green Bay Landing, Iowa	Green Bay Grain Co.	None
6	390.4	Dallas City, Ill.	Central Soya, Inc.	A.T. & S.F.
7	403.6	Burlington, Iowa	Archer-Daniels-Midland	BN C.R.I. & P.
8	404.25	Gulfport, Ill.	Ferruzzi & Co.	None
9	404.4	Burlington, Iowa	Wayne Brothers Grain Co.	C.R.I. & P.
10	405.2	Burlington, Iowa (O'Connell Slough)	Wayne Brothers Grain Co.	None
11	409.6	Gladstone, Ill.	Twomey Company	None
12	415.6	Oquawka, Ill.	Wayne Brothers Grain Co.	None
13	418.2	Iowa Shore Foot of Benton Isl. (Meekers Landing)	Farmers Grain Dealers	None
14	427.6	Keithsburg, Ill.	Wayne Brothers Grain Co.	C&NW
15	427.7	Keithsburg, Ill.	Chi & Northwestern Railway, Fred R. McKinzie	C&NW

(continued)

Appendix Table 15--Code key to figure 18: Grain elevators on Mississippi River, in and adjacent to Iowa Continued

Code	Miles above Ohio R.	Location	Owner or Operator	Railroad connection
16	433.0	New Boston, Ill.	Central Soya Co.	None
17	450.3	Muscatine, Iowa	Farmland Industries, Inc.	C.R.I. & P.
18	453.2	Muscatine, Iowa	Farmers Grain Dealers	None
19	454.2	Muscatine, Iowa	Central Soya Co.	C.R.I. & P.
20	455.3	Muscatine, Iowa	Central Soya Co.	C.R.I. &P. C.M. St. P. & P.
21	469.8	Montpelier, Iowa	Cargill, Inc.	None
22	475.7	Linwood, Iowa	Pillsbury	C.R.I. & P.
23	484.3	Davenport, Iowa	International Multi Foods Co.	C.M. St. P. & P.
24	514.3	Left Bank at Albany, Ill.	Bunge Corp.	None
25	517.2	Clinton, Iowa (Beaver Slough)	Froning's Inc.	C&NW C.M. St. P. & P. C.R.I. & P. BN
26	537.2	Savanna, Ill.	Greenley Elev. Co. Independence, Iowa	
27	580.0	Dubuque, Iowa	Pillsbury	I.C.G. C.&NW
28	580.3	Dubuque, Iowa	Continental Grain Co.	None
29	633.3	McGregor, Iowa	Farmers Grain Dealers	C.M. St. P. & P.

Source: U.S. Army Corps of Engineers

Appendix Table 16--Code key to figure 19: Grain elevators on Missouri River, in and adjacent to Iowa

Code	Miles above mouth of Missouri R.	Location	Owner or operator	Railroad connection
1	554.3	Hamburg, Iowa	Reid Grain Co.	none
2	561.8	Nebraska City, Nebr.	Consolidated Storage, Inc.	BN
3	562.4	Nebraska City, Nebr.	Bartlett Grain Co.	Mo Pac
4	562.4	Nebraska City, Nebr.	NFO	Mo Pac
5	584.5	Rock Bluffs, Nebr.	FAR-MAR-CO	none
6	614.4	Council Bluffs, Iowa	Cargill Inc.	yes
7	616.3	Omaha, Nebr.	NFO	yes
8	624.8	Omaha, Nebr.	FAR-MAR-CO	none
9	680.6	Blencoe, Iowa	NFO	none
10	727.8	Sioux City, Iowa	Terminal Grain Corp.	C&NW

Source: U.S. Army Corps of Engineers.

*U.S. GOVERNMENT PRINTING OFFICE:1975 621-491/3263 1-3

FARMER COOPERATIVE SERVICE
U.S. DEPARTMENT OF AGRICULTURE

Farmer Cooperative Service provides research, management, and educational assistance to cooperatives to strengthen the economic position of farmers and other rural residents. It works directly with cooperative leaders and Federal and State agencies to improve organization, leadership, and operation of cooperatives and to give guidance to further development.

The Service (1) helps farmers and other rural residents obtain supplies and services at lower cost and to get better prices for products they sell; (2) advises rural residents on developing existing resources through cooperative action to enhance rural living; (3) helps cooperatives improve services and operating efficiency; (4) informs members, directors, employees, and the public on how cooperatives work and benefit their members and their communities; and (5) encourages international cooperative programs.

The Service publishes research and educational materials and issues *News for Farmer Cooperatives*. All programs and activities are conducted on a nondiscriminatory basis, without regard to race, creed, color, sex, or national origin.

FCS Service Report 143 December 1974