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**HANDBOOK OF
COOPERATIVES PROCESSING
HORTICULTURAL PRODUCTS
1945-46 & 1946-47**

By
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FARM CREDIT ADMINISTRATION
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Form used in supplying data to History and Statistics Section. Cooperative Research and Service Division	

The Cooperative Research and Service Division conducts research studies and service activities relating to problems of management, organization, policies, merchandising, sales, costs, competition, and membership arising in connection with the cooperative marketing of agricultural products and the cooperative purchase of farm supplies and services; publishes the results of such studies; confers and advises with officials of farmers' cooperative associations; and cooperates with educational agencies, cooperative associations, and others in the dissemination of information relating to cooperative principles and practices.

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U. S. DEPARTMENT OF AGRICULTURE
WASHINGTON 25, D. C.

HANDBOOK OF COOPERATIVES PROCESSING HORTICULTURAL PRODUCTS 1945-46 AND 1946-47

By

Anne L. Gessner
Agricultural Economist

Cooperative associations marketing fruits, vegetables, and other horticultural products have become increasingly important in recent years in the processing of these products. The need for more accurate information on their processing activities was particularly apparent during the war when information on specific fields of food processing was frequently requested by Government agencies and others endeavoring to establish certain priority ratings or price relationships. Students of cooperation, both in the United States and in a number of foreign countries, as well as others interested in cooperation, have made frequent inquiries regarding the types and extent of food processing done by cooperative associations in this country.

In April 1946, the Cooperative Research and Service Division published a statistical report giving detailed information on fruit and vegetable canning by cooperatives.¹ This report was compiled from information supplied by cooperatives to the Government in connection with the wartime food program, and contained statistics on the canning of deciduous fruits, berries, vegetables, and citrus products by cooperatives during the 1943-44 and 1944-45 pack years.

The present handbook has been developed from information supplied by cooperative associations annually to the History and Statistics Section, Cooperative Research and Service Division, Farm Credit Administration, and covers the 1945-46 and 1946-47 pack years. In addition to including information on canned fruits and vegetables, similar to that contained in the first statistical report, the present publication also contains data on frozen fruits and vegetables, and on other horticultural products processed by cooperatives, such as wine, nuts, and dried fruits.

NUMBER PROCESSING HORTICULTURAL PRODUCTS

Records in the History and Statistics Section indicate that a total of 163 cooperative associations were engaged in processing one or more types of horticultural products in the 1946-47 season. In addition to the 142 canning and freezing plants shown in table 1 and figure 1, 10

¹Weber, G. M. The Status of Cooperatives in Fruit and Vegetable Canning 1943 and 1944, F.C.A. Rep. 97, April 1946. (Processed)

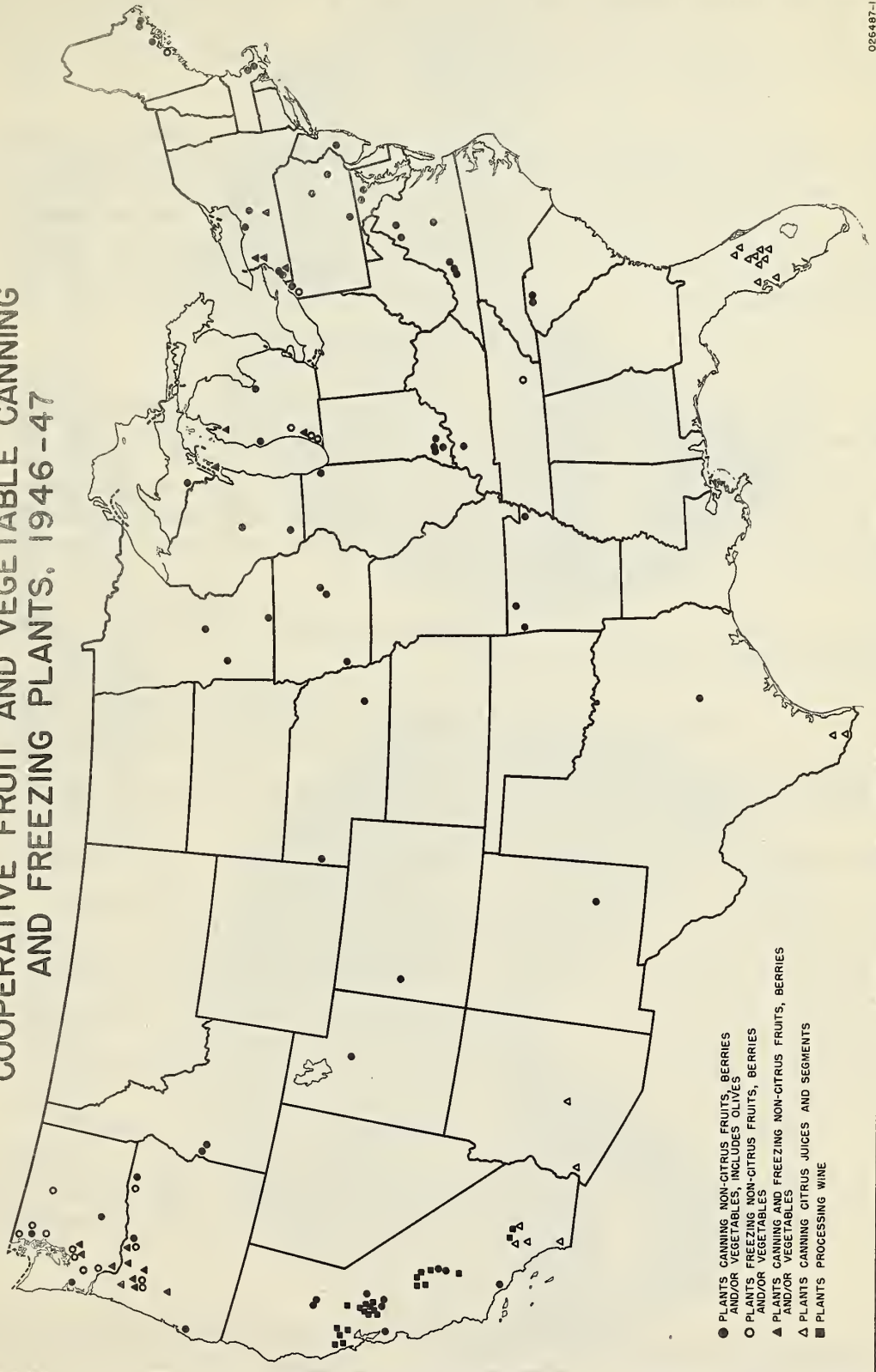
NOTE: Appreciation is expressed to the following staff members of the Cooperative Research and Service Division: M. C. Gay and H. C. Hensley for helpful suggestions and for supplying some of the photographs reproduced in this handbook; Grace Wanstall and members of her staff for their fine cooperation; Etta C. Emmons for statistical assistance; and Margie M. Baber for typing the copy.

Table 1. - Cooperative plants canning and freezing fruits and vegetables, 1946-47¹

State	Total number of plants	Number of cooperative plants producing						
		Canned vegetables	Canned non-citrus fruits and berries ²	Canned non-citrus fruits, berries, and vegetables ²	Frozen non-citrus fruits and berries	Frozen non-citrus fruits, berries, and vegetables	Canned and frozen non-citrus fruits, berries, and/or vegetables	Canned citrus juices, sections, and by-products
Arizona-----	2	-	-	-	-	-	-	2
Arkansas-----	3	3	-	-	-	-	-	-
California-----	35	1	27	3	-	-	-	4
Colorado-----	1	-	-	1	-	-	-	-
Florida-----	10	-	-	-	-	-	-	10
Idaho-----	2	1	³ 1	-	-	-	-	-
Illinois-----	1	-	1	-	-	-	-	-
Indiana-----	4	4	-	-	-	-	-	-
Iowa-----	3	2	1	-	-	-	-	-
Kentucky-----	1	1	-	-	-	-	-	-
Maine-----	4	-	2	1	³ 1	-	-	-
Maryland-----	2	2	-	-	-	-	-	-
Massachusetts-----	2	-	2	-	-	-	-	-
Michigan-----	8	2	1	-	3	-	2	-
Minnesota-----	3	3	-	-	-	-	-	-
Nebraska-----	2	2	-	-	-	-	-	-
New Jersey-----	1	-	1	-	-	-	-	-
New Mexico-----	1	1	-	-	-	-	-	-
New York-----	8	-	1	3	-	-	4	-
Oregon-----	14	-	2	1	3	1	7	-
Pennsylvania-----	5	-	³ 2	2	-	1	-	-
South Carolina-----	2	-	2	-	-	-	-	-
Tennessee-----	1	-	-	-	-	1	-	-
Texas-----	3	1	-	-	-	-	-	2
Utah-----	1	-	-	1	-	-	-	-
Virginia-----	6	3	2	1	-	-	-	-
Washington-----	14	1	2	-	5	3	3	-
Wisconsin-----	3	1	1	-	-	-	1	-
Total-----	142	28	48	13	12	6	17	18

¹Glass and bottled pack included.²Includes juice and brining or pressing operations for further processing.³New association not yet reporting.

FIGURE 1
**COOPERATIVE FRUIT AND VEGETABLE CANNING
 AND FREEZING PLANTS, 1946-47**



- PLANTS CANNING NON-CITRUS FRUITS, BERRIES AND/OR VEGETABLES, INCLUDES OLIVES
- PLANTS FREEZING NON-CITRUS FRUITS, BERRIES AND/OR VEGETABLES
- ▲ PLANTS CANNING AND FREEZING NON-CITRUS FRUITS, BERRIES AND/OR VEGETABLES
- △ PLANTS CANNING CITRUS JUICES AND SEGMENTS
- PLANTS PROCESSING WINE

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associations were marketing dried fruits and 5 were marketing tree nuts. Included in these figures for dried fruit and nut cooperatives are only the centralized or federated associations. Locals are not included. Six associations were producing other horticultural products, such as dehydrated potatoes, canned mushrooms, and starch.

Figure 1 shows that cooperatives in 28 States are canning or freezing. The greatest concentration of cooperative fruit and vegetable canning and freezing plants occurs in the States of California, Washington and Oregon. Thirty-five plants are located in California and 14 each in the other two States. When other processed horticultural products are considered, the total for California is greatly increased as most of the dried fruit and tree nut cooperatives are located in that State.

SALES OF COOPERATIVE PACK

Sales of major processed horticultural products by cooperatives in the 1945-46 and 1946-47 seasons are shown in table 2, together with the percentages represented by each group of the total for all products (fig. 2). These are based on the sales reported for the two seasons. They may not represent the entire season's pack as some associations do not market all their pack within the season it is processed. These sales, however, may include some carryover.

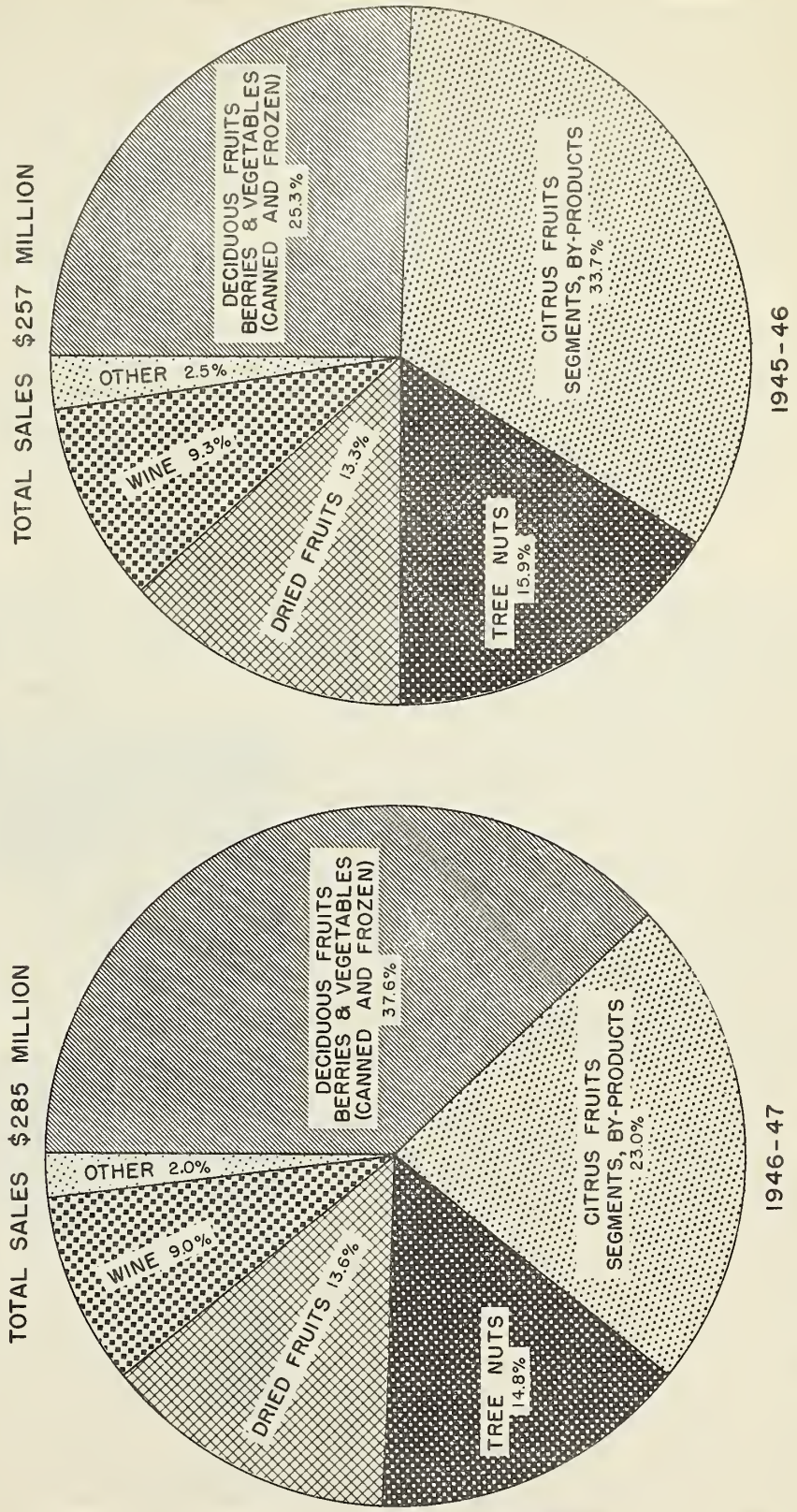
Table 2. - Sales of major horticultural products processed by cooperative associations, 1945-46 and 1946-47.¹

Commodity	Sales 1945-46	Percent of total	Sales 1946-47	Percent of total
Deciduous fruits, berries and vegetables (canned and frozen)-----	\$64,828,046	25.3	\$107,141,388	37.6
Citrus juices, segments, byproducts--	86,354,105	33.7	65,412,219	23.0
Dried fruits-----	34,239,067	13.3	38,574,049	13.6
Tree nuts-----	40,844,905	15.9	42,139,922	14.8
Olives-----	3,516,473	1.4	4,579,724	1.6
Wine-----	23,821,942	9.3	25,627,541	9.0
Other horticultural products ² -----	2,948,551	1.1	1,180,777	.4
Total-----	\$256,553,089	100.0	\$284,655,620	100.0

¹In a few cases the value of a small quantity of fresh products, which could not be segregated from the processed value reported, is included.

²Includes mushrooms, starch, and other horticultural products.

FIGURE 2
 SALES OF MAJOR PROCESSED HORTICULTURAL PRODUCTS BY
 COOPERATIVE ASSOCIATIONS, BY COMMODITY GROUPS
 1945-46 AND 1946-47



The sales of all processed horticultural products marketed by cooperatives in the 1945-46 and 1946-47 seasons are not completely accounted for in table 2, as this information was not reported by a number of cooperative associations. For the 1945 season, 125 associations were included and for 1946, 127 associations. Some associations included for 1945 failed to report for 1946, while others, which did not report for 1945, reported for 1946. Several of the cooperatives shown in table 1 and figure 1 were newly organized and were not yet reporting for the 1946 season. Two associations reporting in 1945 had ceased operations in 1946. On the other hand, four newly organized associations reported the first time for 1946.

Table 2 shows that canned and frozen deciduous fruits, berries and vegetables, together with canned citrus juices, accounted for almost three-fifths of the reported sales of all horticultural products processed by cooperatives in the two seasons. Dried fruits and tree nuts together represented somewhat less than 30 percent of the total sales in each of the two seasons.

CANNED FRUIT PACK

The principal canned fruits packed by cooperative associations in the 1945-46 and 1946-47 seasons represented slightly over 10 and 11 percent, respectively, of the United States pack (table 3 and fig. 3). Berries canned by cooperatives were slightly more than 55 and 83 percent of the total berry pack in the two seasons.

Red pitted cherries were next in importance representing approximately 26 and 22 percent, respectively, of the total pack in the 1945-46 and 1946-47 seasons. Pears canned by cooperatives in each season accounted for almost a fifth of the total pack of that product. The cooperative pack of plums and prunes represented well over 10 percent of the total pack in both seasons.

Berries were in first position as a percent of total cooperative canned fruit pack, accounting for about 29 and 44 percent, respectively, of the pack in 1945 and 1946. Peaches and pears were next with 21 percent each in 1945 and 13 percent in 1946.

In analyzing the United States pack of fruits canned by all types of processors, peaches were far ahead of all other commodities with about 37 and 30 percent



Cherries, to qualify for Fancy and Standard grades under continuous inspection, must undergo various tests (Cherry Growers, Inc., Traverse City, Mich.)

Table 3. - Principal canned fruits: Quantity of each packed by cooperative associations as a percent of cooperative pack and of United States pack, 1945-46 and 1946-47

(Basis 24 No. 2½ cans)

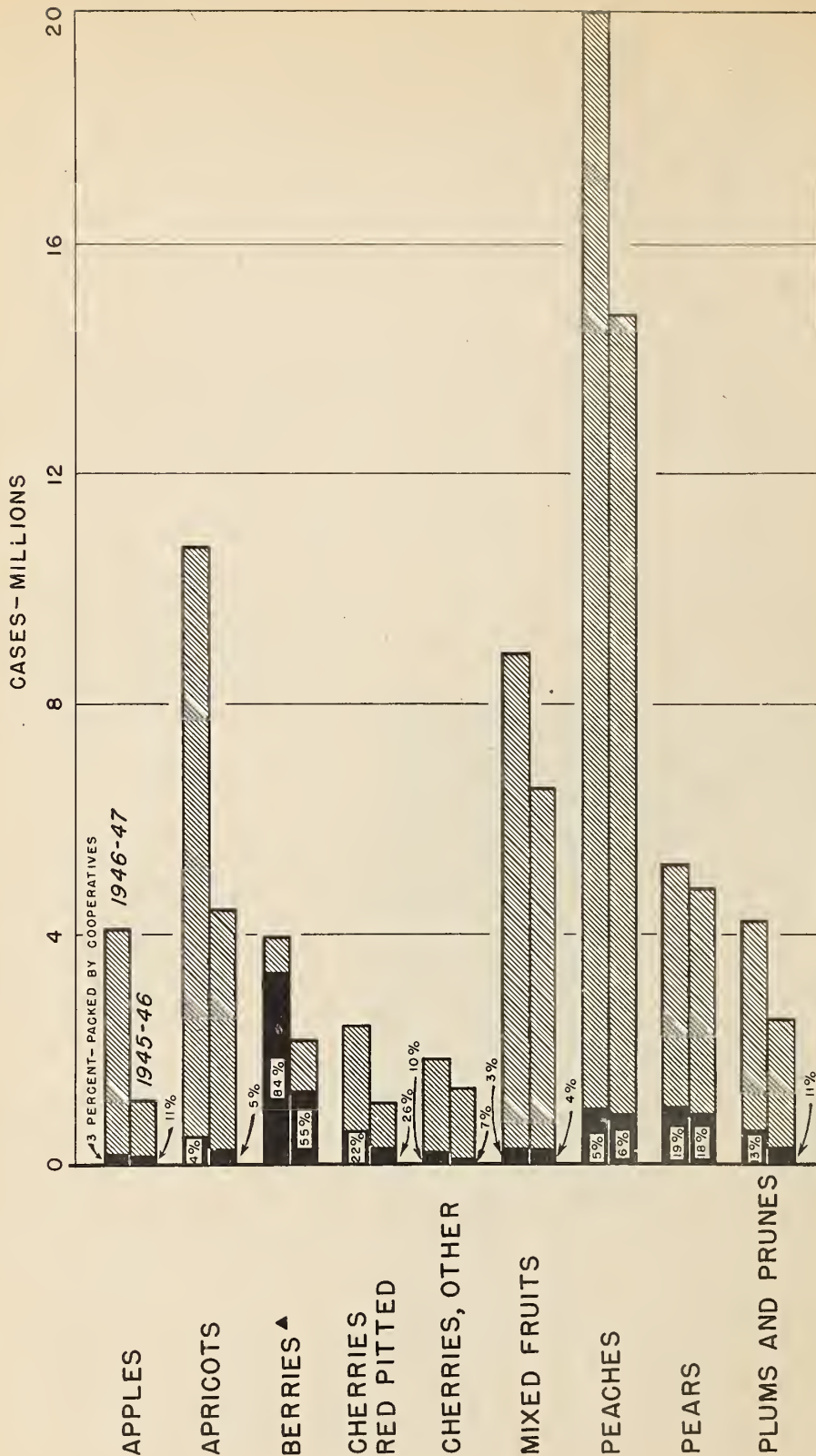
Commodity	Cooperative pack				United States pack				Cooperative pack as a percent of United States pack	
	Thousands of cases		Percent of pack		Thousands of cases ¹		Percent of pack		1945-46	1946-47
	1945-46	1946-47	1945-46	1946-47	1945-46	1946-47	1945-46	1946-47		
Apples-----	117	129	2.8	1.7	1,082	4,050	2.7	6.0	10.8	3.2
Applesauce-----	9	173	.2	2.3	1,912	6,200	4.7	9.2	.5	2.8
Apricots-----	214	448	5.2	5.9	4,347	10,698	10.7	15.9	4.9	4.2
Berries ² -----	1,205	3,327	29.0	44.1	2,188	3,984	5.4	5.9	55.1	83.5
Cherries, red pitted--	280	529	6.7	7.0	1,090	2,413	2.7	3.6	25.7	21.9
Cherries, other-----	91	179	2.2	2.4	1,296	1,822	3.2	2.7	7.0	9.8
Mixed fruits-----	251	284	6.0	3.8	6,539	8,866	16.2	13.1	3.8	3.2
Peaches-----	863	952	20.7	12.6	14,774	20,046	36.5	29.7	5.8	4.7
Pears-----	855	976	20.6	12.9	4,730	5,194	11.7	7.7	18.1	18.8
Plums and prunes-----	275	546	6.6	7.3	2,514	4,200	6.2	6.2	10.9	13.0
Total-----	4,160	7,543	100.0	100.0	40,472	67,473	100.0	100.0	10.3	11.2

¹From Industry Reports - Canned Fruits and Vegetables, U. S. Department of Commerce.

²Includes cranberries and sauce.

FIGURE 3

U.S. PRODUCTION OF PRINCIPAL CANNED NONCITRUS FRUITS AND BERRIES AND PERCENT PACKED BY COOPERATIVES, 1945-46 AND 1946-47



NOTE: CASE BASIS, 24 No. 2½ CANS

▲ INCLUDES CRANBERRIES AND SAUCE

SOURCE: U.S. DATA FROM INDUSTRY REPORTS—CANNED FRUITS AND VEGETABLES, U.S. DEPARTMENT OF COMMERCE

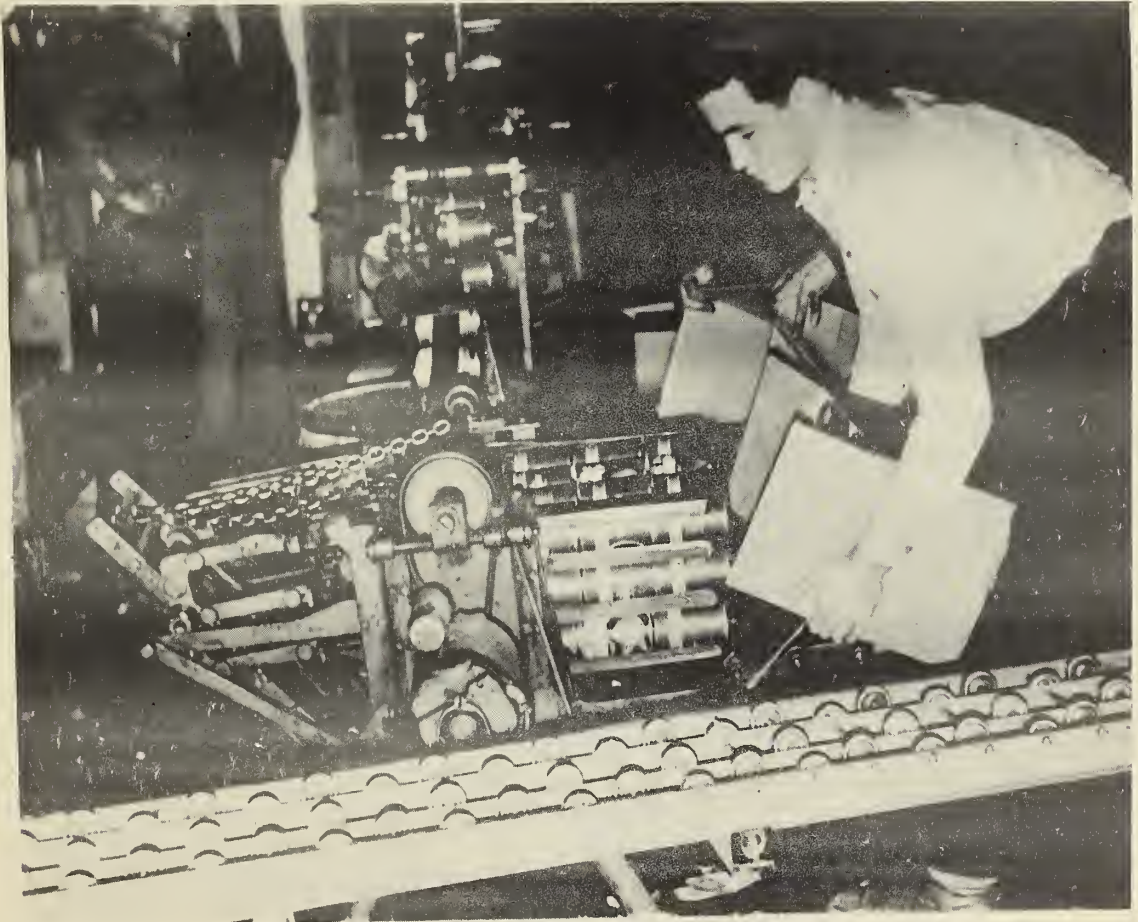
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respectively, in the two seasons. Mixed fruits, contributing about 16 and 13 percent, respectively, were second in the pack, followed by apricots and pears in that order.

CANNED VEGETABLE PACK

The canned vegetable pack of cooperatives exceeded their canned fruit pack in 1945-46 and almost equalled it in 1946-47 on a case basis (table 4 and fig. 4). The cooperative vegetable pack, however, represented less than three percent of the United States pack in both years. Pumpkin and squash canned by cooperatives ranked highest with 15 and 10 percent, respectively, of the total pack in 1945-46 and 1946-47. Carrots came next with 9 and 12 percent, and then green and wax beans, with 7 and 8 percent.

Green and dry beans accounted for nearly two-fifths of the cooperative pack in 1946. Ranking next was corn, with about 15 percent in each season, and peas contributed about 12 percent in each of the two pack years.



Casing machine in operation at Zigler Canning Cooperative, Timberville, Va.

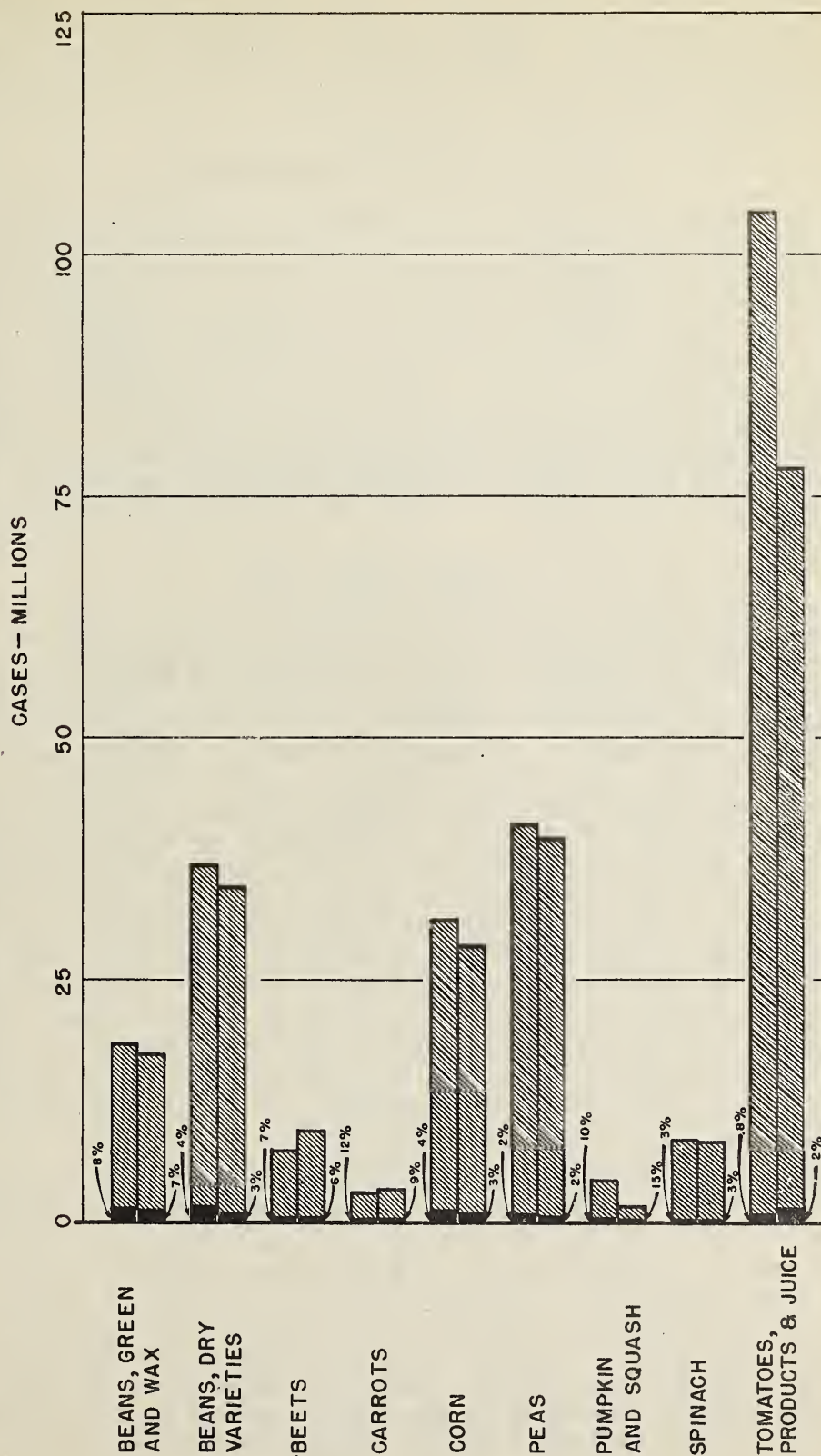
Table 4. - Principal canned vegetables: Quantity of each packed by cooperative associations as a percent of cooperative pack and of United States pack, 1945-46 and 1946-47
(Basis 24 No. 2 cans)

Commodity	Cooperative pack				United States pack				Cooperative pack as a percent of United States pack	
	Thousands of cases		Percent of pack		Thousands of cases ¹		Percent of pack		1945-46	1946-47
	1945-46	1946-47	1945-46	1946-47	1945-46	1946-47	1945-46	1946-47	1945-46	1946-47
Asparagus-----	2	1	(2)	(2)	4,532	4,839	1.9	1.8	(2)	(2)
Beans, green and wax----	1,262	1,474	19.3	19.7	17,480	18,331	7.4	6.8	7.2	8.0
Beans, green lima-----	-	2	-	(2)	1,641	1,868	.7	.7	-	.1
Beans, dry varieties----	965	1,485	14.7	19.9	34,700	37,000	14.7	13.8	2.8	4.0
Beets-----	538	518	8.2	6.9	9,557	7,300	4.1	2.7	5.6	7.1
Carrots-----	322	367	4.9	4.9	3,585	3,000	1.5	1.1	9.0	12.2
Corn-----	967	1,165	14.8	15.6	28,653	31,025	12.2	11.5	3.4	3.8
Peas-----	793	890	12.1	11.9	39,696	41,047	16.8	15.2	2.0	2.2
Pumpkin and squash-----	282	451	4.3	6.0	1,856	4,489	.8	1.7	15.2	10.0
Sauerkraut-----	16	35	.2	.5	7,723	7,500	3.3	2.8	.2	.5
Spinach-----	226	253	3.5	3.4	8,415	8,600	3.6	3.2	2.7	2.9
Tomatoes-----	435	193	6.7	2.6	17,069	24,258	7.2	9.0	2.5	.8
Tomato products and juice-----	738	642	11.3	8.6	60,872	80,021	25.8	29.7	1.2	.8
Total-----	6,546	7,476	100.0	100.0	235,779	269,278	100.0	100.0	2.8	2.8

¹From Industry Reports - Canned Fruits and Vegetables, U. S. Department of Commerce.

²Less than .05 percent.

FIGURE 4
 U.S. PRODUCTION OF PRINCIPAL CANNED VEGETABLES, AND PERCENT
 PACKED BY COOPERATIVES, 1945-46 AND 1946-47



NOTE: BASIS 24 No. 2 CANS

SOURCE: U.S. DATA FROM INDUSTRY REPORTS - CANNED FRUIT AND VEGETABLES, U.S. DEPARTMENT OF COMMERCE

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As a percent of the total pack, green beans were much less important than they were in the cooperative pack, and amounted to only about 7 percent in each season. Tomato products and juice outranked other commodities as a percent of the United States pack and accounted for more than a fourth of the total in both years.

NUMBER OF ASSOCIATIONS FREEZING

The most recent information on the number of processors freezing fruits and vegetables in the United States puts the number at 384 in 1946 and 435 in 1947. The number of cooperative freezers in these years represented a very small percentage of the total. An analysis of all non-citrus fruit and vegetable cooperatives reporting volume in the 1945-46 season, indicated that 22 were engaged in freezing operations. Of these, 6 were freezing only fruits, 2 were freezing fruits and vegetables, 4 were canning and freezing fruits, and 10 were canning and freezing fruits and vegetables. In 1946-47 the number reporting had increased to 26, with 7 freezing fruits only, 3 freezing fruits and vegetables, 5 canning and freezing fruits, and 11 canning and freezing both fruits and vegetables.

FROZEN FRUIT PACK

The principal fruits frozen by cooperatives accounted for more than 7 percent of the United States total in 1945-46 and 10 percent in 1946-47 (table 5 and figs. 5 and 6). It is interesting to note that cooperatives were almost as important a factor in this relatively new processing operation as they were in the canning of fruits. In 1945-46 and 1946-47 the cooperatives' canned fruit pack was approximately 10 and 11 percent of the United States total. On a commodity basis, there is a wide range in the percentages of the total represented by each commodity. The cooperative pack of red raspberries ranked first and amounted to about 49 percent, or almost half, of the United States pack of this product in 1945 but dropped slightly to 42 percent in 1946. Cooperatives processed over 18 percent of the total pack of red sour cherries in 1945 and about 14 percent in 1946. While the cooperative pack of loganberries was a relatively small percentage of the total in 1945, it rose to about 31 percent the next season. Cooperatives supplied about 22 percent of all blackberries frozen in both 1945 and 1946, as well as approximately a fifth of the prunes. They also accounted for substantial percentages of strawberries, boysenberries, and currants.

When the individual commodities are analyzed as a percent of the total cooperative pack, red raspberries ranked first with 22 percent in both seasons, followed closely by strawberries with 18 percent of the pack in the two seasons. Blackberries, on a percentage basis, were more important in 1945 than in 1946, dropping from 16 to 10 percent of the cooperative pack. Cherries, on the other hand, moved up from 10 percent to 27 percent, following the industry pattern, as the United States production increased from 4 to 20 percent. These increases were, no doubt, due to increased cherry production as the 1946 crop was more than double the record-small crop of 1945. Both peaches and prunes were about half as important percentagewise in 1946 as in 1945 as a part of the total

Table 5. - Principal frozen fruits: Quantity of each packed by cooperative associations as a percent of cooperative pack and of United States pack, 1945-46 and 1946-47

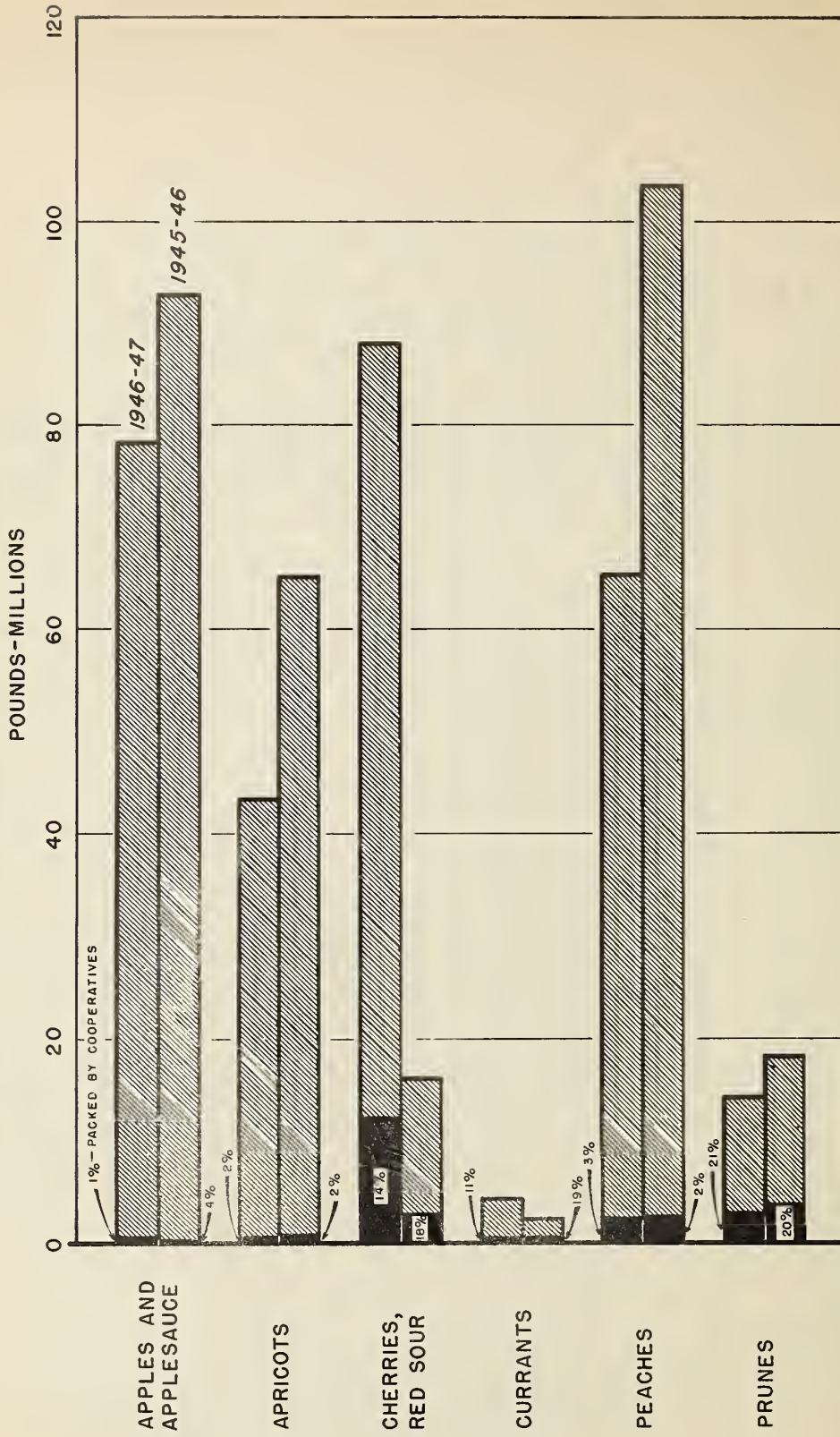
Commodity	Cooperative pack		United States pack		Cooperative pack as a percent of United States pack			
	Number of pounds		Number of pounds ¹		Percent of pack			
	1945-46	1946-47	1945-46	1946-47	1945-46	1946-47		
Apples and applesauce	412,664	861,453	92,985,406	78,219,867	23.5	17.5	.4	1.1
Apricots-----	990,072	852,912	65,158,052	43,571,459	16.5	9.7	1.5	2.0
Blackberries-----	4,814,898	4,420,420	21,503,229	19,750,261	5.4	4.4	22.4	22.4
Blueberries-----	13,320	113,445	7,828,944	10,240,067	2.0	2.3	.2	1.1
Boysenberries-----	734,071	1,135,192	7,084,067	10,905,107	1.8	2.4	10.4	10.4
Cherries, red sour---	2,943,766	12,080,006	16,143,827	88,061,401	4.1	19.7	18.2	13.7
Currants-----	503,700	479,985	2,667,567	4,219,292	.7	1.0	18.9	11.4
Gooseberries-----	384,447	423,290	1,557,955	1,430,389	.4	.3	24.7	29.6
Loganberries-----	334,393	930,740	2,522,402	3,016,866	.6	.7	13.3	30.9
Peaches-----	2,419,230	2,222,481	103,634,388	65,140,192	26.2	14.5	2.3	3.4
Prunes-----	3,754,852	2,912,881	18,368,454	14,106,368	4.6	3.2	20.4	20.6
Raspberries, black ² --	194,377	752,781	3,477,316	5,516,365	.9	1.2	5.6	13.6
Raspberries, red-----	6,451,313	10,044,496	13,254,453	23,904,626	3.4	5.3	48.7	42.0
Strawberries-----	5,302,513	7,924,004	36,916,743	78,059,148	9.3	17.4	14.4	10.2
Youngberries-----	98,032	214,437	2,550,634	1,765,577	.6	0.4	3.8	12.1
Total-----	29,351,648	45,368,523	395,653,437	447,906,985	100.0	100.0	7.4	10.1

¹From Frozen Food Statistics: 1946, National Association of Frozen Food Packers.

²Includes some purple.

³Less than .05 percent.

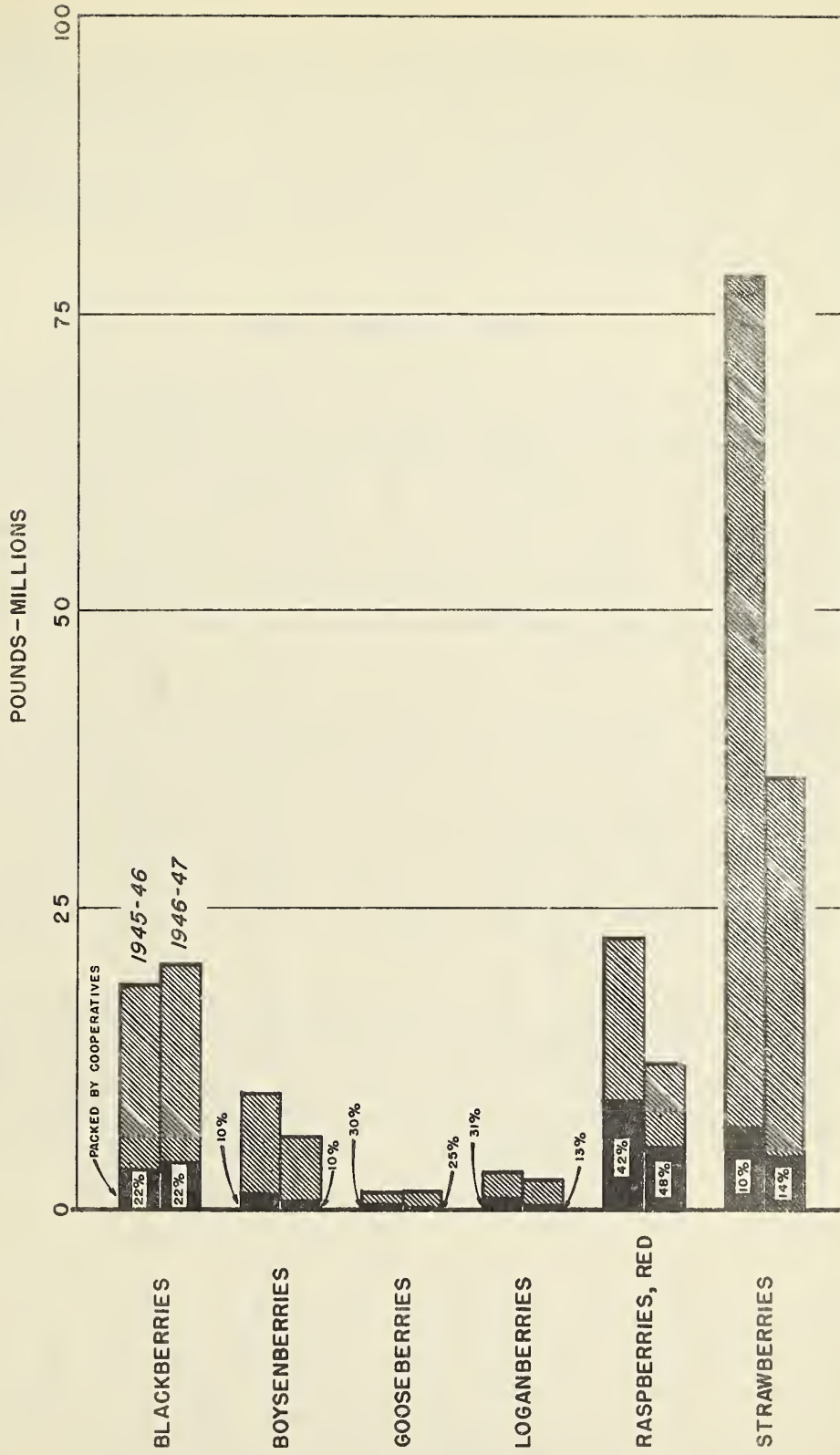
FIGURE 5
 U.S. PRODUCTION OF FROZEN NONCITRUS FRUITS, AND PERCENT
 PACKED BY COOPERATIVES, 1945-46 AND 1946-47



SOURCE: U.S. DATA FROM FROZEN FOOD STATISTICS: 1946, NATIONAL ASSOCIATION OF FROZEN FOOD PACKERS O26487-5

FIGURE 6

U.S. PRODUCTION OF PRINCIPAL FROZEN BERRIES, AND PERCENT PACKED BY COOPERATIVES, 1945-46 AND 1946-47



SOURCE: U.S. DATA FROM FROZEN FOOD STATISTICS: 1946, NATIONAL ASSOCIATION OF FROZEN FOOD PACKERS

cooperative pack.

As a percentage of the United States pack, strawberries ranked next to cherries and rose from 9 to 17 percent. Apples and applesauce, although less important than in 1945, still constituted a substantial part of the total, and accounted for about 18 percent of the principal frozen fruits. On a percentage basis, peaches had dropped from slightly over 26 percent in 1945 to less than 15 percent of the total in 1946. Similarly apricots dropped from approximately 17 percent of the total in 1945 to about 10 percent of the 1946 pack.

FROZEN VEGETABLE PACK

Just as vegetables canned by cooperatives represented a smaller percentage of the United States pack than did canned fruits, so did frozen vegetables account for a smaller percentage of the pack than did frozen fruits. Cooperatives supplied about 4 percent of the principal frozen vegetables (table 6 and fig. 7). The cooperatives' highest percentage was frozen corn, 9 and 12 percent, respectively, in the two years. Rhubarb packed by cooperatives dropped from 20 to 8 percent of the total in the two years. Green snap beans and carrots were relatively important in the 1946 season with cooperatives contributing a little over 6 percent of each to the total pack.

Peas represented the important frozen vegetable in the cooperative pack, accounting for more than half in 1945 and about 35 percent in 1946 of the cooperative total. Corn was second in rank, and constituted about a fifth of the cooperative pack in 1945 and about a third in 1946. These two commodities together amounted to about 70 percent of the cooperative total in both seasons. The only other important item was green snap beans, providing about 12 and 16 percent of the cooperative pack. In addition to the frozen commodities shown in table 6, frozen potato strips were an item in the cooperative pack.

In the United States pack, as might have been expected, peas were the major item, representing 37 and 35 percent of the total in the two seasons. Lima beans and green snap beans were of about equal importance, each contributing between 10 and 12 percent. Corn accounted for 9 percent in 1945 and 11 percent in 1946 and was closely followed by spinach with 13 and 10 percent, respectively, of the pack in the two seasons.

CONTAINER SIZES OF FROZEN PACK

A larger percentage of all frozen fruits packed by cooperatives was in the small retail size (1 pound or less) in the 1946-47 season - 15 percent as compared with 8 percent in 1945-46 (tables 7 and 8). This was at the expense of the barrel pack, which dropped from 50 percent of the cooperative pack in 1945 to 44 percent in 1946. The small institutional size (over 1 pound through 10 pounds) decreased slightly, while the large institutional and industrial size (over 10 pounds) maintained its position at about 38 percent of the total 1946 pack.

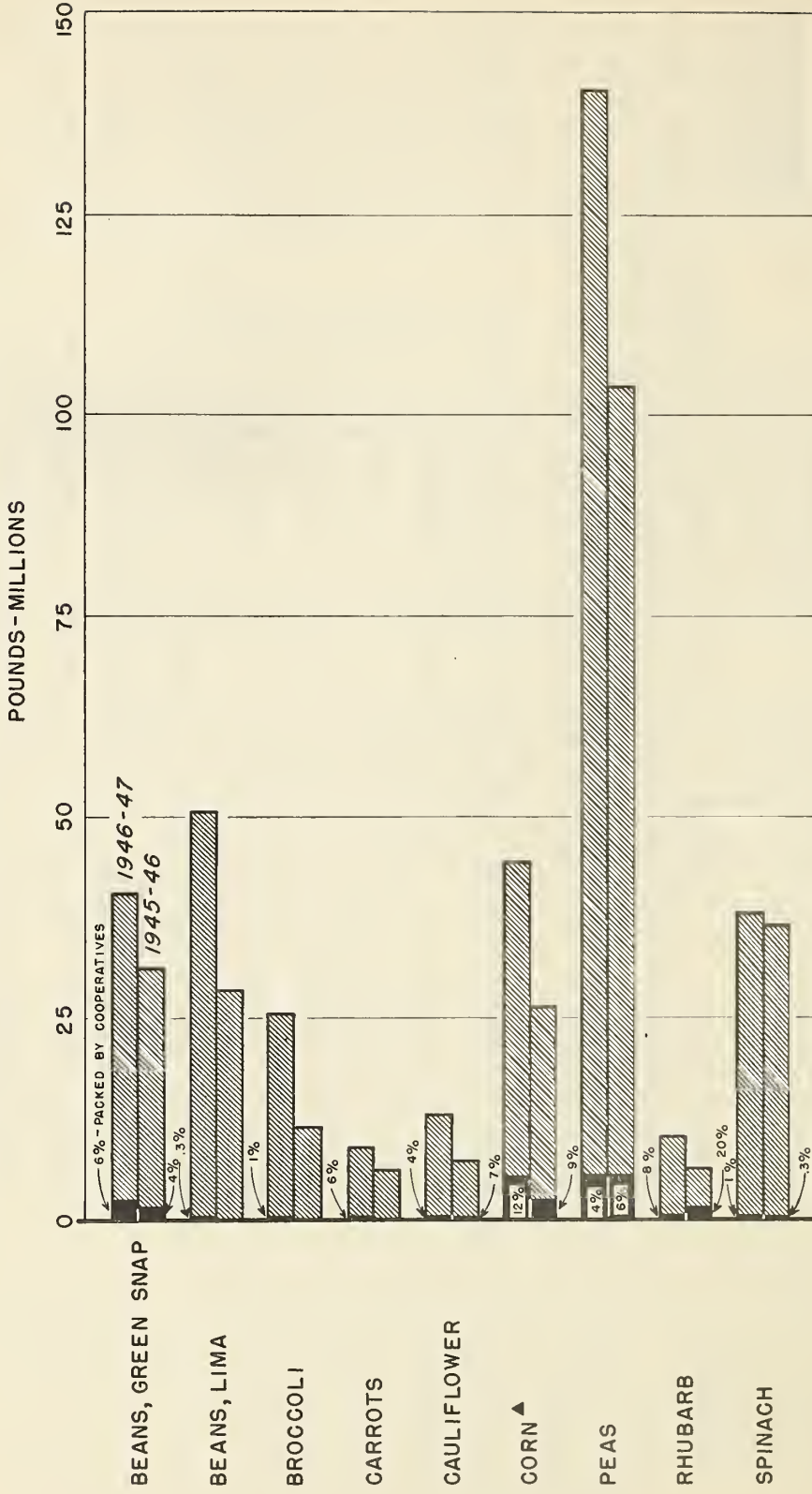
Table 6. - Principal frozen vegetables: Quantity of each packed by cooperative associations as a percent of cooperative pack and of United States pack, 1945-46 and 1946-47

Commodity	Cooperative pack		United States pack		Cooperative pack as a percent of United States pack		
	Number of pounds		Number of pounds ¹		Percent of pack		
	1945-46	1946-47	1945-46	1946-47	1945-46	1946-47	
Asparagus-----	-	-	20,637,590	28,316,074	7.4	7.1	-
Beans, green snap----	1,335,432	2,595,996	31,460,363	40,974,804	11.3	10.2	4.2
Beans, lima-----	-	131,483	28,475,697	50,082,682	10.2	12.5	.3
Broccoli-----	-	213,492	11,655,577	25,788,855	4.2	6.4	.8
Carrots-----	-	572,556	6,050,973	9,069,314	2.2	2.3	-
Cauliflower-----	500,000	570,746	7,391,186	13,236,775	2.6	3.3	6.8
Corn ² -----	2,207,253	5,375,493	25,996,754	44,722,347	9.3	11.1	8.5
Peas-----	5,731,608	5,717,760	103,833,553	140,602,919	37.2	35.0	5.5
Rhubarb-----	1,348,757	842,548	6,851,526	10,566,207	2.5	2.6	19.7
Spinach-----	125,628	406,243	36,720,643	38,185,104	13.1	9.5	.3
Total-----	11,248,678	16,426,317	279,073,862	401,545,081	100.0	100.0	4.0
							4.1

¹ From Frozen Food Pack Statistics: 1946, National Association of Frozen Food Packers.

² Cut and on cob.

FIGURE 7
 U.S. PRODUCTION OF PRINCIPAL FROZEN VEGETABLES, AND PERCENT
 PACKED BY COOPERATIVES, 1945-46 AND 1946-47



SOURCE: U.S. DATA FROM FROZEN FOOD PACK STATISTICS: 1946, NATIONAL ASSOCIATION OF FROZEN FOOD PACKERS

Table 7. - Cooperative pack of principal frozen fruits according to percentage packed in each container size, 1945-46 and 1946-47

Commodity	Percent packed in containers						Total					
	1 pound or less		Over 1 pound through 10 pounds		Over 10 pounds		Barrels		Pounds		Percent	
	1945-46	1946-47	1945-46	1946-47	1945-46	1946-47	1945-46	1946-47	1945-46	1946-47	1945-46	1946-47
Apples-----	-	-	100.0	-	-	100.0	-	-	412,664	845,850	100	100
Applesauce-----	-	100.0	-	-	-	-	-	-	-	15,603	-	100
Apricots-----	2.8	6.0	4.2	-	76.0	84.5	17.0	9.5	990,072	852,912	100	100
Blackberries-----	6.7	17.1	1.5	11.6	31.0	15.3	60.8	56.0	4,814,898	4,420,420	100	100
Blueberries-----	-	33.3	-	-	100.0	66.7	-	-	13,320	113,445	100	100
Boysenberries-----	30.3	31.7	8.5	-	12.0	15.2	49.2	53.1	734,071	1,135,192	100	100
Cherries, red sour-----	-	(1)	(1)	(1)	83.6	46.7	16.4	53.3	2,943,766	12,080,006	100	100
Currants-----	-	-	-	-	-	0.2	100.0	99.8	503,700	479,985	100	100
Gooseberries-----	7.4	2.8	-	-	86.7	97.2	5.9	-	384,447	423,290	100	100
Loganberries-----	2.6	1.2	7.7	3.2	23.1	18.0	66.6	77.6	334,393	930,740	100	100
Peaches-----	17.0	70.6	2.0	0.3	76.8	24.7	4.2	4.4	2,419,230	2,222,481	100	100
Prunes-----	0.1	1.4	0.5	0.8	19.6	57.9	79.8	39.9	3,754,852	2,912,881	100	100
Raspberries, black ² -----	-	1.4	-	-	0.5	66.6	99.5	32.0	194,377	752,781	100	100
Raspberries, red--	9.5	21.8	3.6	0.5	33.8	45.1	53.1	32.6	6,451,313	10,044,496	100	100
Strawberries-----	15.6	25.3	2.9	6.6	20.7	14.6	60.8	53.5	5,302,513	7,924,004	100	100
Youngberries-----	1.4	5.8	-	-	13.8	45.2	84.8	49.0	98,032	214,437	100	100
Total-----	8.4	15.1	3.6	2.6	37.9	37.9	50.1	44.4	29,351,648	45,368,523	100	100

¹Less than 0.05 percent.

²Includes some purple.

Table 8. - Cooperative pack of principal frozen vegetables according to percentage packed in each container size, 1945-46 and 1946-47

Commodity	Percent packed in containers						Total			
	1 pound or less		Over 1 pound through 10 pounds		Over 10 pounds		Pounds		Percent	
	1945-46	1946-47	1945-46	1946-47	1945-46	1946-47	1945-46	1946-47	1945-46	1946-47
Beans, green snap-----	18.4	35.8	49.2	23.3	32.4	40.9	1,335,432	2,595,996	100	100
Beans, lima---	-	100.0	-	-	-	-	-	131,483	-	100
Broccoli-----	-	21.0	-	79.0	-	-	-	213,492	-	100
Carrots-----	-	1.3	-	4.3	-	94.4	-	572,556	-	100
Cauliflower---	100.0	75.9	-	24.1	-	-	500,000	570,746	100	100
Corn-----	52.2	50.7	26.5	32.5	21.3	16.8	2,207,253	5,375,493	100	100
Peas-----	43.9	56.7	56.1	40.1	-	3.2	5,731,608	5,717,760	100	100
Rhubarb-----	32.7	-	-	-	67.3	100.0	1,348,757	842,548	100	100
Spinach-----	25.0	74.3	75.0	25.7	-	-	125,628	406,243	100	100
Total---	43.4	47.6	40.5	30.9	16.1	21.5	11,248,678	16,426,317	100	100

In individual commodities, a notable change occurred in frozen peaches - the small retail pack for this commodity rose from 17 percent in 1945 to almost 71 percent in 1946. In this case, however, the change was reflected in the decreased pack in the large institutional size which dropped from approximately 77 percent in 1945 to about 25 percent in 1946, while the quantity cooperatives packed in barrels remained at about the same level for the two seasons. The small institutional size, which accounted for only 2 percent of the pack in 1945, lost ground and was less than 1 percent of the cooperative pack in 1946.

Strawberries, red raspberries, and blackberries all showed substantial increases in the percentages packed in small retail containers in 1946 compared with 1945. Blackberries showed a gain in percentage packed in small institutional size and a comparable loss in the large institutional size. Blueberries also decreased in the large institutional size and shifted to the small retail pack. In the cooperative pack of prunes and black raspberries, the large institutional size gained with a sizable loss in the percentage cooperatives packed in barrels.

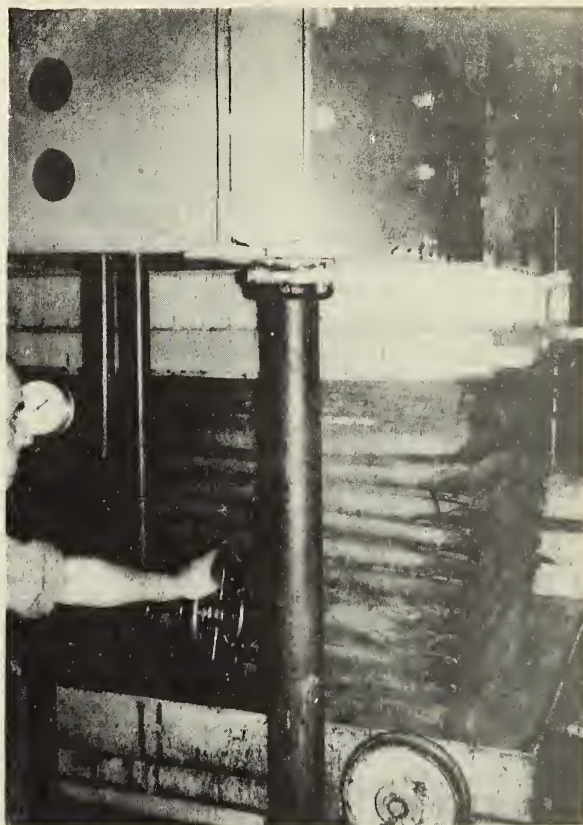
The shifts in the container sizes employed by the cooperatives freezing vegetables were much smaller in range than was true for frozen fruits. Of the total vegetables frozen by cooperatives, about 48 percent, or almost half, were in the small retail size (1 pound or less) in 1946-47, as compared with 43 percent in 1945-46. (table 8).

In analyzing the individual commodities, more than three-fourths of the broccoli frozen by cooperatives was in the small institutional size (over 1 pound through 10 pounds). Most of the carrots were in the large institutional size, 94 percent. Of the rhubarb, two-thirds in 1945 and all of it in 1946 was in the large institutional size (over 10 pounds). Of

the spinach reported by cooperatives, a much larger share was in the small retail size in 1946. In fact, the positions of the small retail and small institutional sizes for spinach were almost exactly reversed in the two-year period.

OTHER NONCITRUS FRUIT PRODUCTS

In addition to the canned and frozen fruits shown in tables 3 and 5, cooperatives also processed sizable quantities of non-citrus fruit juices. These included grape juice, apple juice, cherry juice and cranberry juice. Other fruit products processed were grape jam and jelly, grape pulp, crab apples and crab apple juice, apple concentrate, and such other apple products as cider, vinegar, syrup and pomace. Considerable quantities of sweet cherries were brined, primarily for further processing into maraschino cherries.



Pressing cherries for juice. Previous to pressing the cherries were heated to 145°. After pressing the juice is chilled, strained, and barreled before freezing.

CITRUS JUICES AND SEGMENTS

Cooperative associations in 1946-47 contributed nearly a third of the total pack of the major canned citrus juices (table 9 and fig. 8). On grapefruit juice, they did better than that, with more than 38 percent of the total. Blended juice was the second item of importance with approximately 28 percent of the United States pack processed by cooperatives, closely followed by orange juice with about 26 percent. More than a fourth of the relatively new product, tangerine juice, was processed by cooperatives.

As a percent of the total cooperative pack of citrus juices and segments, grapefruit juice was still at the top with about 44 percent. Orange juice represented a third of the cooperative pack and blended juice about 19 percent. Tangerine juice, including tangerine and orange blend, represented more than 2 percent of the total cooperative pack.

Of the total pack by all processors, grapefruit represented slightly less and orange juice somewhat more than a third, while blended and tangerine juices were relatively about as important in the total pack (19.2 and 2.3 percent, respectively) as in the cooperative pack (18.8 and 2.1 percent, respectively).

Table 9. - *Principal canned citrus fruit juices and segments: Quantity of each packed by cooperative associations as a percent of cooperative pack and of United States pack, 1946-47*

(Basis 24 No. 2 cans)

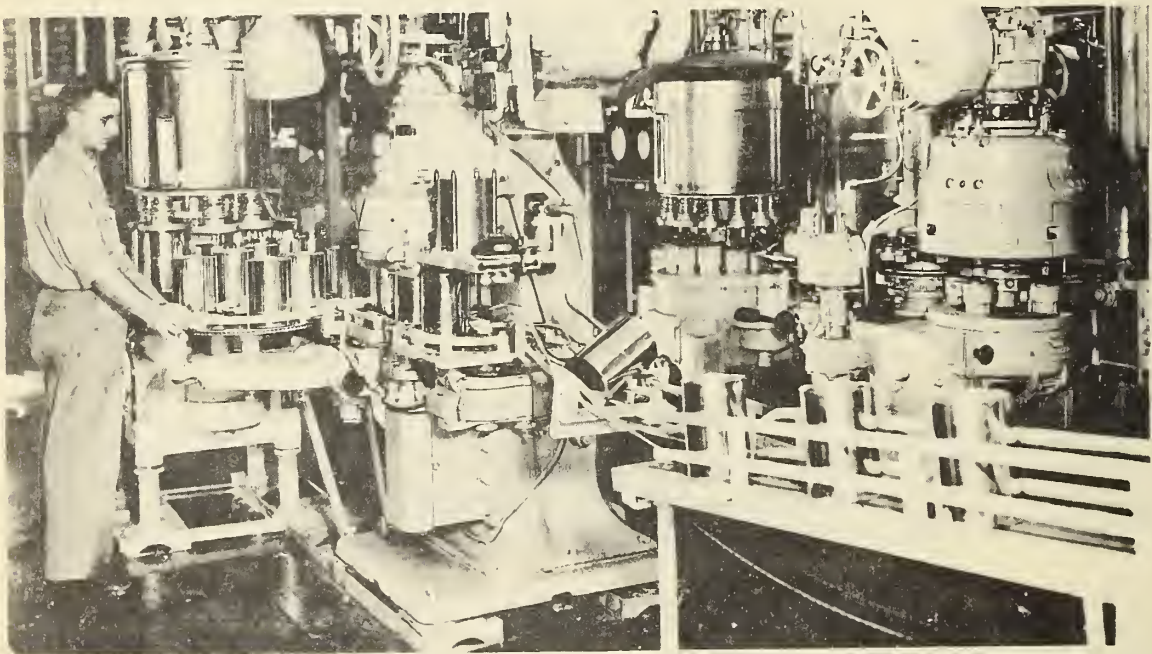
Commodity	Cooperative pack ¹		United States pack		Cooperative pack as a percent of United States pack
	Thousands of cases	Percent of pack	Thousands of cases ²	Percent of pack	
Grapefruit juice-----	6,727	43.8	17,614	32.2	38.2
Orange juice-----	5,066	32.9	19,717	36.1	25.7
Orange and grapefruit blended juice-----	2,888	18.8	10,459	19.2	27.6
Tangerine juice ³ -----	328	2.1	1,260	2.3	26.0
Total juices-----	15,009	97.6	49,050	89.8	30.6
Grapefruit segments-----	366	2.4	5,588	10.2	6.5
Total juices and segments---	15,375	100.0	54,638	100.0	28.1

¹In addition, cooperatives packed lemon and lime juices and other combinations of citrus juices.

²From "Canned Citrus Fruit Segments and Juices, Annual Pack and Disposition Data, 1928 29 to 1945-46" Fruit and Vegetable Branch, Production and Marketing Administration, U. S. D. A. June 1947, and supplementary tables issued April 12, 1948.

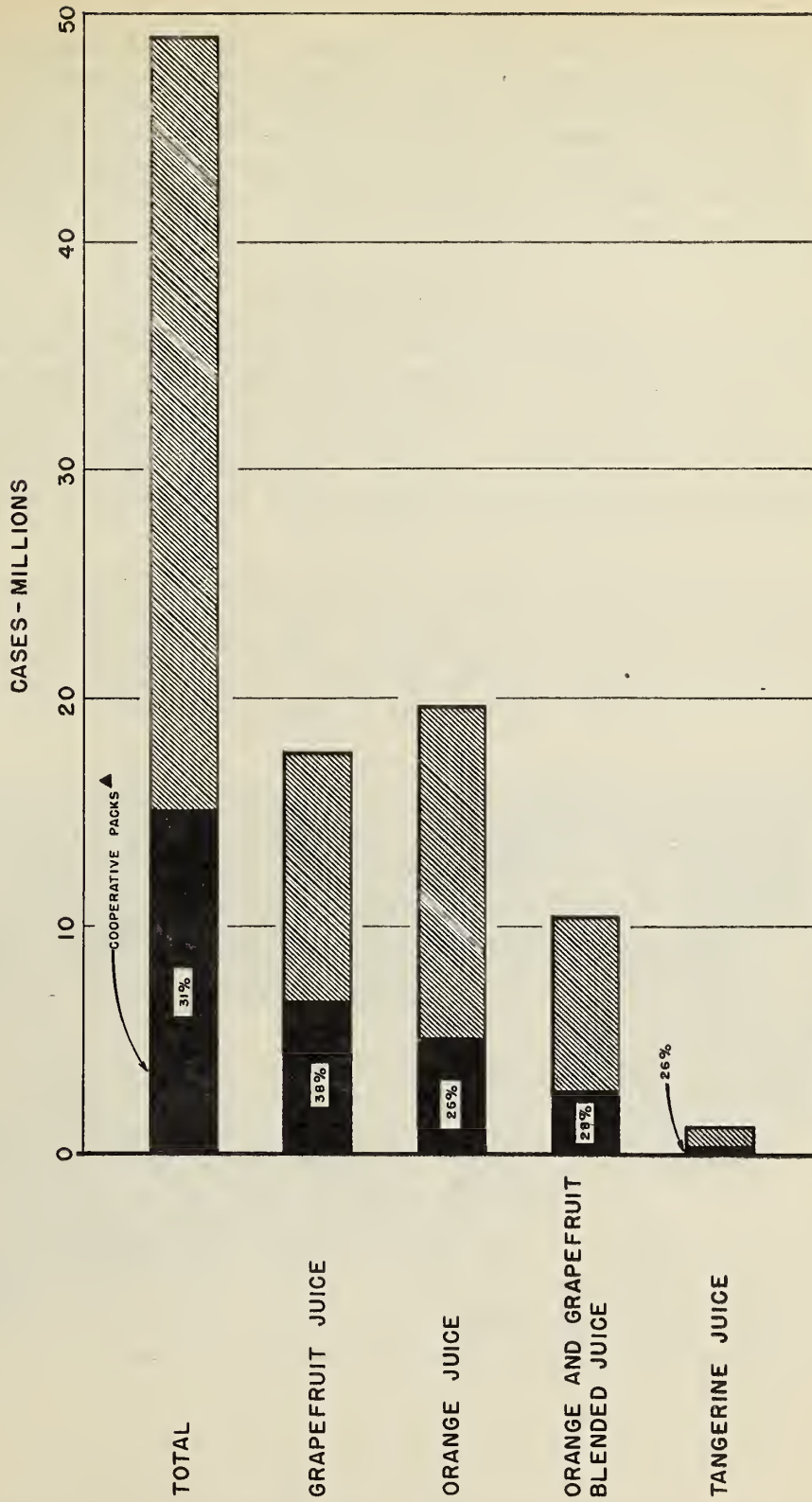
³Includes tangerine and orange blend.

Grapefruit segments packed by cooperative associations amounted to about 7 percent of the United States pack of that item and accounted for a little over 2 percent of the total combined juice and segment pack reported by cooperatives.



Juice filled cans running through the can ladders in the Southern Citrus Foods processing plant, owned and operated by Mutual Orange Distributors, Redlands, Calif.

FIGURE 8
 U.S. PRODUCTION OF PRINCIPAL CITRUS JUICES, AND PERCENT
 PACKED BY COOPERATIVES, 1946-47



NOTE: BASIS 24 No. 2 CANS

▲ IN ADDITION COOPERATIVES PACKED LEMON AND LIME JUICES AND OTHER COMBINATIONS OF CITRUS JUICES

SOURCE: U.S. DATA FROM "CANNED CITRUS FRUIT SEGMENTS AND JUICES, ANNUAL PACK AND DISPOSITION DATA, 1928-29 TO 1945-46," FRUIT AND VEGETABLE BRANCH, PRODUCTION AND MARKETING ADMINISTRATION, U.S. DEPARTMENT OF AGRICULTURE, AND SUPPLEMENTARY TABLES

OTHER CITRUS PRODUCTS

In addition to the citrus juices and segments shown in table 9, cooperatives processed large quantities of other citrus products. These included lemon and lime juices, orange and grapefruit concentrates, frozen orange, lemon, and grapefruit juices, citrus salad, and orange beverage base. By-products included thousands of tons of dried citrus pulp as well as several hundred thousand gallons of molasses to be used primarily for dairy feed.

WINE PROCESSED

Cooperatives are important processors of wine as shown in table 10. They also produce some brandy. In 1945-46 their reported production of wine amounted to 20 percent of the California total and about 19 percent of the United States production. In 1946-47 they contributed 18 percent of the California total and 17 percent of the United States production. Their production of brandy was between 2 and 3 percent of that produced in the United States for the two seasons.

Of the cooperatives reporting on the processing of wine, only one was located outside the State of California and its wine production was in connection with other fruit processing. Such records as were available indicated that there were about 22 cooperative wineries in operation, but not all of them were reporting at the time this information was compiled.

Table 10. - *Cooperative production of wine and brandy as a percent of California and of United States total, 1945-46 and 1946-47*

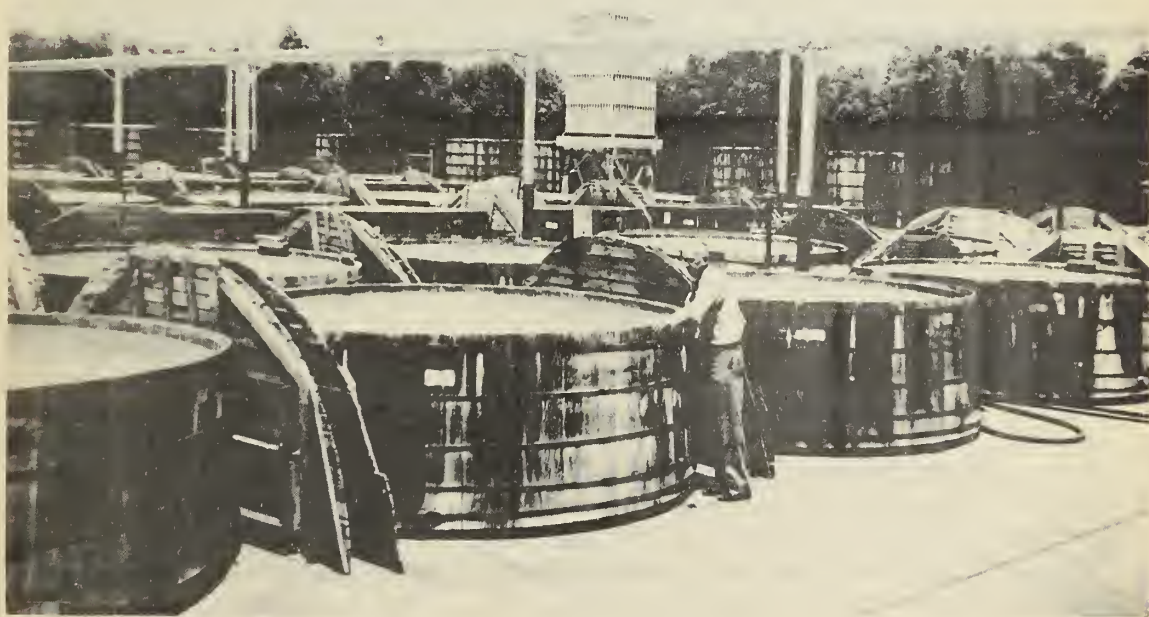
(In thousands of gallons)

Year and commodity	Cooperative production	Net production in California ¹	Cooperative as a percent of California production	Net production United States total ¹	Cooperative as a percent of United States production
1945-46:					
Wine-----	21,256	105,425	20.2	112,689	18.9
Brandy-----	816	33,145	2.5	34,416	2.4
Total-----	22,072	138,570	15.9	147,105	15.0
1946-47:					
Wine-----	27,699	157,158	17.6	165,276	16.8
Brandy-----	1,356	43,276	3.1	45,308	3.0
Total-----	29,055	200,434	14.5	210,584	13.8

¹From Eleventh Annual Wine Industry Statistical Survey, Part III, Wine Institute Bulletin No. 364, December 5, 1947.

OLIVES

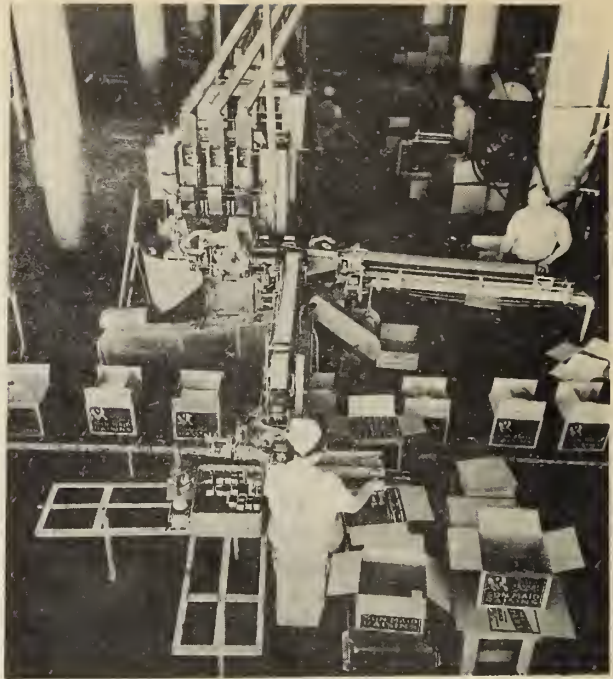
During the 1945-46 and 1946-47 seasons five cooperative associations reported processing olives, all in California. One of these was engaged only in crushing for oil and was marketing its canning olives through other channels. In 1945 the reported cooperative pack of canned and bottled olives amounted to slightly more than 500,000 cases and represented approximately 54 percent of the total pack on an actual case basis. In 1946 a larger part of the cooperative pack was reported as bulk pack in barrels and kegs and the canned pack reported represented only about a fourth of the total pack on an actual case basis. The actual percentage of the total produced by cooperatives was much higher than the percentage arrived at on the case basis indicates, but no other equitable basis of comparison was available.



Green olives (Spanish Style) are treated in tanks with caustic solution previous to fermentation in barrels at the plant of Lindsay (Calif.) Ripe Olive Cooperative.

DRIED FRUITS

The major fruits which cooperatives reported drying in 1945-46 and 1946-47 included prunes, raisins, apricots, peaches, and pears. The combined total for all of these fruits dried by cooperatives amounted to over 130,000 tons (dried basis) in 1945-46 and about 121,000 tons in 1946-47, or slightly more than 25 percent of the production of these fruits in both years. Not all of the cooperatives engaged in dried fruit operations reported on the quantities dried, although information on the value of the products dried was supplied in practically all cases. At least two cooperatives were known to be drying apples and another was drying figs, but the quantity data on these operations were not reported. While, therefore, the 25 percent figure represents only those cooperatives reporting, it is believed that the production of most of the cooperatives drying fruits is accounted for and the unreported quantity data represent a very small percentage of the total.



Automatic packaging at Sun-Maid Raisin Growers of (Fresno) California.

TREE NUTS

Cooperatives are a major factor in the processing of three important tree nuts. These are, in the order of cooperative importance, walnuts, almonds, and filberts. No cooperative reported marketing pecans in the 1945 or 1946 season. In compiling the information on tree nuts, it was necessary to supplement the information given on the annual report form, which was incomplete in one or two cases, with information from house organs and other published material. Some associations whose major operations were the processing of fruits and vegetables, were also marketing walnuts and filberts in relatively small quantities and these have been included in the cooperative total. It is believed that the percentages shown in table 11, which were developed from the annual statistical form supplemented by published estimates made by the cooperatives themselves, are reasonably accurate.

Cooperatives marketed about 75 percent of the three principal tree nuts in 1945 and 1946 (table 11). They were producing in both years around four-fifths of the walnuts, two-thirds or more of the almonds, and well over half of the total production of filberts.

Almonds had become more important both as a percent of cooperative pack and of the total pack in 1946. They had increased from about 29 percent



Inspection of walnut meats at the plant of the California Walnut Growers Association, Los Angeles.

Table 11. - Tree nuts: Quantity of each processed by cooperatives as a percent of cooperative production and of United States production, 1945-46 and 1946-47.¹

Kind	Cooperative production merchantable unshelled				United States production merchantable unshelled				Cooperative production as a percent of United States production	
	Thousands of pounds		Percent of production		Thousands of pounds ²		Percent of production		Percent of United States production	
	1945	1946	1945	1946	1945	1946	1945	1946	1945	1946
Almonds-----	35,908	53,801	28.9	38.0	54,000	75,200	32.7	39.5	66.5	71.5
Filberts-----	4,729	7,751	3.8	5.5	8,120	13,700	4.9	7.2	58.2	56.6
Walnuts-----	83,781	80,069	67.3	56.5	103,120	101,400	62.4	53.3	81.2	79.0
Total-----	124,418	141,621	100.0	100.0	165,240	190,300	100.0	100.0	75.3	74.4

¹Does not include pecans.

²From "Tree Nuts, Acreage, Production, Farm Disposition, Value, and Utilization of Sales, 1909-45," Bureau of Agricultural Economics, U. S. Department of Agriculture, October 1947

of the cooperative pack in 1945 to 38 percent in 1946, and similarly, from 33 percent of the total pack in 1945 to about 40 percent in the later year. Filberts, too, had increased slightly in their percentage position in both the cooperative and total packs.

OTHER PROCESSED HORTICULTURAL PRODUCTS

Both in 1945 and 1946 two cooperatives were producing large quantities of canned mushrooms. These were being packed in a variety of sizes, including 2-ounce, 4-ounce, 16-ounce and No. 2 size cans. Three associations were producing dehydrated potatoes, and one of these was also dehydrating peppers. One association reported processing considerable quantities of potatoes into starch in both years.

NOTE: On opposite page is form used in supplying data to History and Statistics Section Cooperative Research and Service Division.

UNITED STATES DEPARTMENT OF AGRICULTURE
FARM CREDIT ADMINISTRATION
WASHINGTON, D. C.

Annual survey of farmers' cooperative enterprises. Kindly fill in and return
in the enclosed official, postage-free envelope.

Exact legal name of organization _____

Mail address _____ State _____

Kind of enterprise _____
(Assembling, packing, canning, storing, selling, bargaining, etc.)

Members, or shareholders (those entitled to vote for directors), number _____

Patrons (all selling or buying through the Association), number _____

Principal product handled _____ Others _____
(Give quantities on other side)

Supplies handled _____
(Containers, fertilizer, feed, seed, machinery, spray materials, etc.)

Services rendered members _____
(Spraying, fertilizing, harvesting, thinning, etc.)

Date last business year closed _____: business transacted that year:

Farm products sold (f.o.b. value at shipping point) . . value \$ _____

By-products sold value \$ _____

Supplies sold (containers, fertilizer, etc.) value \$ _____

Commissions, interest, service charges, etc. \$ _____
(other than on above)

Total business for year \$ _____

Amount of check-off received if a bargaining association. \$ _____

Indicate on other side any changes in name or legal set-up during last year.

Officers _____ Name _____ Address _____

President _____

Secretary _____

Manager _____

Please enclose copies of last
annual report and latest finan-
cial statement, if available.

Signed _____

Title _____

Date _____

