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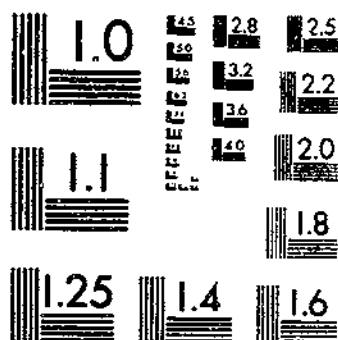
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SILAGE FROM 1955 CROPS: HARVESTING, STORING, PRESERVING

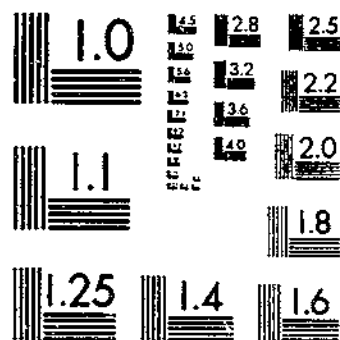
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SILAGE FROM 1955 CROPS

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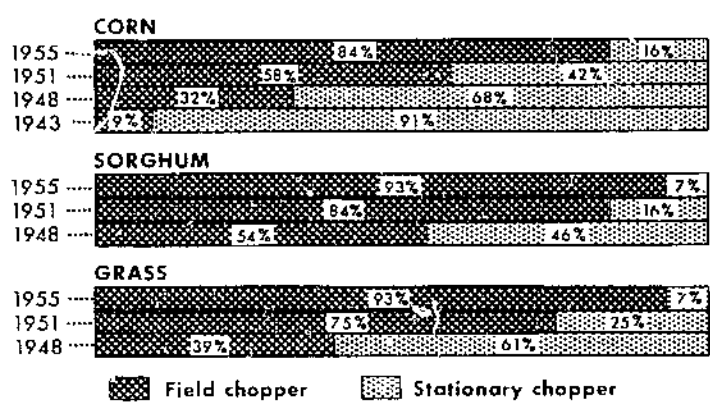
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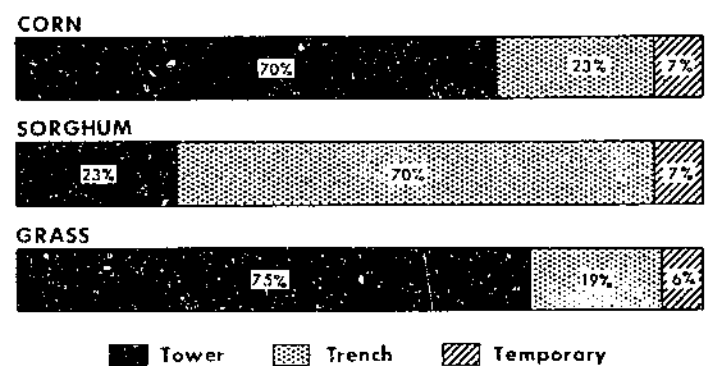
HARVESTING SILAGE CROPS



U.S. DEPARTMENT OF AGRICULTURE NEG. 57-17-2217 AGRICULTURAL RESEARCH SERVICE

STORING SILAGE

By Types of Silo and Kind of Silage, 1955



U.S. DEPARTMENT OF AGRICULTURE NEG. 57-17-2218 AGRICULTURAL RESEARCH SERVICE

Statistical Bulletin No. 217

UNITED STATES DEPARTMENT OF AGRICULTURE

SOURCE OF MATERIAL

The material in this report concerning methods of harvesting and storing the different kinds of silage, methods of feeding silage, and preservatives used with grass silage in 1955 is based on information supplied by voluntary crop correspondents of the United States Department of Agriculture in February 1956. A mailed questionnaire was used. Of the more than 29,000 farms covered in the survey, operators of about 9,000 reported that they produced one or more kinds of silage. On these farms, around 1,600,000 tons of silage was produced in 1955. This was more than 2 percent of the estimated United States total production of that year.

Reports from the crop correspondents and data from the Census of Agriculture were used in developing the material concerning the number of farms that produce silage and numbers of principal machines used for harvesting silage.

Results of earlier studies of methods of harvesting silage are included for comparative purposes. Statistical Bulletin No. 128, Harvesting the Silage Crops, was issued in 1953.

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SILAGE FROM 1955 CROPS

Harvesting...Storing...Preserving

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INTRODUCTION

Pioneer silage makers used many different products in their silage, and this tendency has continued. Harvesting silage in the early days was a time-consuming and laborious operation. The machines used and the methods of harvesting, storing, and feeding silage have steadily improved. Outstanding developments were the silo filler about 1876, the row-crop binder around 1890, and the modern field forage harvester around 1936. Other machines and techniques also have made important contributions to increased production of silage.

PRODUCTION OF SILAGE AND NUMBER OF FARMS PRODUCING

In 1955, silage was produced on more than 600,000 farms. This exceeded the 1951 estimated number by about 20 percent. The total production of about 73 million tons of silage in 1955 was more than a third larger than in 1951. Increases in production of silage and in number of farms producing it were pronounced in all areas, except the Lake States and the Northeastern States (table 1). Of the farms whose operators produced silage in 1955, about 79 percent produced only 1 kind of silage; about 20 percent produced 2 kinds; and 1 percent produced 3 or more kinds.

In both 1951 and 1955, only corn silage was made on more than 60 percent of the farms where silage was produced. Corn silage was also produced on most farms where two or more kinds of silage were made. Of the farms whose operators reported making silage, about 11 percent in 1955 and 9 percent in 1951 reported making only grass silage. Sorghum silage was the only silage produced on about 5 percent of the farms in both 1955 and 1951, but the percentage was much higher in the Northern Plains and the South. For the entire country, operators on about a fifth of the farms with silage produced 2 kinds. In the Northeast, of the operators who reported silage about 30 percent made 2 kinds. In the West, only about 10 percent of the silage farms were producing 2 or more kinds of silage.

MACHINES FOR HARVESTING SILAGE

Estimates of numbers and distribution by States of the principal machines used for harvesting silage are shown in table 2. One of the most striking changes has been the decrease in row-crop binders. Numbers of binders were at a high level, possibly at a peak, in 1942. By 1951, the number of these machines had declined by about 63 percent. There have since been further declines. Row-crop binders are also used to harvest corn for grain, corn for fodder, and sorghum as bundle feed. Reduction in the numbers of these machines reflects the increased use of cornpickers, field forage harvesters, and grain combines.

It has been estimated that on January 1, 1951, there were 208,000 stationary silo fillers on farms. These machines were widely distributed throughout the country, but the Lake States, the Corn Belt, and the Northeastern States together had about 80 percent of the silo fillers. Since 1951, the use and probably the number of stationary silo fillers have declined markedly.

Numbers and use of modern field forage harvesters, which were first developed around 1936, have increased rapidly in recent years. From January 1, 1950, to January 1, 1956, the estimated number of these harvesters increased from 81,000 to 225,000, a gain of about 180 percent (table 2).

With different attachments, field forage harvesters can be used to harvest row crops for silage, grass silage as a standing crop or from the windrow, and hay from the windrow. They can be used also to harvest straw and other kinds of forage.

Field forage harvesters are widely distributed throughout the country, but they tend to be concentrated in States where production of silage is important. In 1956, the Lake States, the Corn Belt States, and the Northeastern States together had about 62 percent of the machines.

CORN SILAGE

Although many crops and products are used in producing silage, in all years corn silage has been of first importance. Corn silage accounted for an estimated 73 percent of all silage produced in 1951 and for 74 percent of the 1955 silage. It was the only silage on 62 percent of the silage-producing farms of 1955 (table 1). Corn silage was also produced on most farms whose operators reported two or more kinds of silage.

Production data for corn silage are available for each year beginning with the 1919 crop. Since 1951, production of corn silage has increased materially and in 1956, it was the largest of record (table 3). Acreages harvested in both 1936 and 1934, years when drought was widespread, were at high levels. In these years, however, the per acre yield

was low and production was about in line with production in other years of the late thirties.

Corn silage is produced in all parts of the country, but production is concentrated in areas where dairy farming is important. The Lake States usually account for more than a third of the total production of corn silage. The 1951-55 average acreage and production of corn and sorghum silage are shown, by States and groups of States, in table 4.

Per acre yields of corn harvested for silage in the Great Plains and most Southern States are substantially below the United States average. They are substantially above average in the Western States, where corn for silage is grown mainly under irrigation.

Important changes in methods of harvesting corn silage have occurred since 1943, when only 9 percent was harvested with field forage harvesters. These machines harvested 32 percent of the corn silage in 1948, 58 percent in 1951, and 84 percent in 1955 (table 5).

The method of harvesting corn silage is closely related to the tonnage harvested per farm. In all areas for each of the 3 years reported, the percentage of the total tonnage harvested with field forage harvesters increased with the tonnage of silage per farm (table 6).

Tower silos were used to store about 70 percent of the corn silage produced in 1955. But in the Lake States and the Northeastern States, 90 percent or more of the corn silage was stored in silos of this kind (table 7). Tower silos also accounted for the bulk of the corn silage in the Corn Belt and the Appalachian States.

Trench and bunker silos were used extensively to store corn silage in the West, most Southern States, the Northern Plains, and Missouri. Some corn silage was stored in temporary silos in all areas, but temporary silos accounted for only about 7 percent of the silage. In North Dakota and South Dakota, a third or more of the corn silage was stored in temporary silos.

SORGHUM SILAGE

Sorghum was among the crops first used for silage. Annual estimates of production are available beginning with the 1929 crop (table 3). Production of about 9.4 million tons in 1955 was the largest thus far reported. The bulk of this production occurred in Kansas, Texas, Missouri, and Oklahoma. Because of its drought-resisting qualities, sorghum is the leading silage crop in many areas of the Central and Southern Plains. Field forage harvesters were used to harvest 93 percent of the sorghum silage in 1955, compared with 84 percent in 1951 and 54 percent in 1948 (table 8). In each of these years, a higher percentage of sorghum silage than of corn silage was harvested with field forage harvesters.

In areas where sorghum silage is important, trench and bunker silos are used extensively, and 70 percent of the sorghum silage made in 1955 was stored in these silos. Twenty-three percent was stored in tower or upright silos, which were relatively important in the humid areas. Only 7 percent of all sorghum silage was stored in temporary silos in 1955. They were of above-average importance in the Northern Plains.

GRASS SILAGE

Grass silage is made from hay crops, small grains, and pasture clippings. Alfalfa, the clovers, soybeans, cowpeas, vetch, sudan grass, all other grasses, and small grains are used either separately or in mixtures to produce grass silage. It is estimated that about 9.3 million tons of grass silage was produced in 1955. It is produced in all areas, but the Lake States, the Corn Belt, and the Northeastern States produced about 80 percent of the total (table 10). Production is also important in the humid areas of Washington and Oregon.

In 1955, field forage harvesters were used to harvest more than 90 percent of the grass silage. Less than 40 percent of the 1948 grass silage was harvested with these machines (table 10). About 1 percent of the 1955 grass silage was stored without chopping. No estimate of the tonnage stored without chopping is available for other years. Stationary ensilage cutters were used to chop more than 60 percent of the 1948 grass silage. Only 6 percent of the 1955 crop was harvested with these machines.

Tower or upright silos were used to store about 75 percent of the 1955 grass silage. Use of these silos was above average in the Northeastern and Lake States. Trench and bunker silos were used to store 19 percent of all grass silage, but in the Northern Plains, the South, and the West, they were used for about 40 percent of the silage (table 11). Temporary silos were used to store about 6 percent of the grass silage, but in the Northern Plains, they accounted for about a fourth of this silage.

PRESERVATIVES FOR GRASS SILAGE

On more than a fourth of the farms reporting grass silage in 1955, all of the grass silage was treated with preservatives. In addition, 9 percent of the farmers treated a part of their silage. Of the total tonnage, about a third was treated with preservatives (table 12). Use of preservatives varied greatly in the different areas. In the Northeastern States, about half of the farmers who reported grass silage used preservative of some kind as compared with about a fourth of the farmers in the West and the Lake States.

Sodium metabisulfite was the only preservative used on about 45 percent of the farms on which preservatives were used (table 13). This preservative was relatively important in the Northeast, the Plains States, and the South. Of the farmers who used sodium metabisulfite, about 6 percent used less than 5 pounds per ton of silage treated; 32 percent used

from 5 to 7.4 pounds; 40 percent used from 7.5 to 9.9 pounds; and 22 percent used 10 pounds or more per ton. The average was 7.7 pounds per ton.

Molasses in either liquid, pellet, or dry form was the sole preservative used on about 23 percent of the farms. In the West, molasses alone was used on more than half of the farms on which preservatives were used. Of the farmers who used molasses, about 22 percent used less than 25 pounds per ton of grass silage treated; 40 percent used from 25 to 49 pounds; 25 percent used from 50 to 74 pounds; and the remaining 13 percent used more than 75 pounds. An average of about 50 pounds of molasses was used per ton of grass silage treated.

Feed grains were the only preservative used with grass silage on about an eighth of the farms. These grains consisted chiefly of crushed and ground ear corn, ground oats, ground barley, mixed grains, and brewers' and distillers' grains. Use of feed grains as a preservative was most important in the Corn Belt and Lake States. An average of about 100 pounds of feed grain was used per ton of grass silage treated. About 15 percent of the farms used less than 50 pounds; 30 percent used from 50 to 99 pounds; 40 percent used from 100 to 199 pounds; and 15 percent used 200 pounds or more per ton of grass silage treated.

Chemicals other than sodium metabisulfite were used on about 4 percent of the farms. Kylage and sulphur dioxide were among the "other chemicals" reported.

In 1955, two or more preservatives were used for grass silage on about 10 percent of the farms. Use of feed grains and molasses was reported on an appreciable number of these farms.

"ALL OTHER" SILAGE

Many different products are used in producing "all other" silage. In most areas, the bulk of this silage is made from byproducts of canning and processing crops, especially sweet corn, green peas, and green beans. Other products used include sugar beet tops, byproducts of tree fruits, tomato pulp, almond hulls, various kinds of vegetables, ear corn, weeds, and sunflowers. In addition to the tonnage of "all other" silage produced on farms, an important part of this silage is produced at canning and processing plants. Reports from crop correspondents indicate that in 1955 a small tonnage of sorghum silage was produced in States other than those shown in official estimates. The estimated production of sorghum silage in these States is included in the production of "all other" silage (table 14.)

Production of "all other" silage in 1955 is estimated at about 1,160,000 tons, with the Northeastern and Pacific Coast States together reporting more than half of the tonnage (table 14). About 38 percent of the tonnage was stored without chopping. Field forage harvesters were used for about half of the tonnage, and about 10 percent was chopped with stationary cutters.

Tower silos were used to store about 40 percent of the total tonnage (table 14). They were used for about 70 percent of the tonnage in the Northeastern States, but for only 8 percent of the tonnage in the Pacific Coast States. Trench and bunker silos together accounted for the storage of about 30 percent of "all other" silage in 1955. These silos were especially important in the West and the South. Temporary silos were used for about 30 percent of the 1955 tonnage. They were relatively important in the Northern Plains, the Corn Belt, and the Lake States.

HANDLING AND FEEDING SILAGE

Mechanical unloaders were used to remove about 4 percent of the silage stored in tower silos in 1955. About 65 percent of all silage was stored in silos of this kind. With the mechanical unloaders, the silage is removed either from the bottom of the silo or from the top of the stored silage. Use of mechanical unloaders was somewhat above average in the Corn Belt and Lake States.

About 6 percent of the silage stored in trench, bunker, and temporary silos in 1955 was self fed. Some of the bunker and trench silos are so constructed as to permit livestock to feed direct from the silo. Also, on some farms the livestock have direct access to the silage stored in temporary stacks or ricks. The percentage of silage stored in trench and temporary silos that was self fed was largest in the Lake and Northeastern States (table 15).

Table 1.- Silage: Estimated production and farms producing, by kinds of silage produced, by State groups, 1951 and 1955

State group	Crop year	Silage produced	Farms producing	Percentage of farms producing -					
				1 kind of silage				2 kinds of silage	3 or more kinds of silage
				Corn	Sorghum	Grass	All other		
		1,000 tons	Number	Percent	Percent	Percent	Percent	Percent	Percent
Northeast <u>1</u> /-----	1951	11,611	106,000	61.4	---	8.6	0.4	28.9	0.7
	1955	13,097	108,000	58.3	6.7	9.0	.5	30.0	1.5
Corn Belt <u>1</u> /-----	1951	7,949	91,000	64.3	2.8	17.0	.1	15.6	.2
	1955	12,274	120,000	54.1	5.0	16.0	.7	23.0	1.2
Lake States <u>1</u> /	1951	19,709	215,000	70.0	.1	7.5	.1	22.2	.1
	1955	20,414	209,000	75.0	.1	7.0	.4	17.0	.5
Northern Plains <u>1</u> /	1951	7,249	51,000	52.7	31.4	1.8	.3	13.1	.7
	1955	12,490	91,000	58.9	20.0	2.0	.1	18.0	1.0
South <u>2</u> /-----	1951	3,875	27,000	55.5	24.4	6.4	.6	12.2	.9
	1955	7,676	58,000	45.0	9.0	26.0	.5	18.0	1.5
West <u>3</u> /-----	1951	3,350	21,000	62.2	4.9	19.6	4.0	9.1	.2
	1955	6,971	28,000	52.4	5.0	26.0	4.0	12.0	.6
United States---	1951	53,743	511,000	64.4	5.2	9.3	.4	20.4	.3
	1955	72,922	614,000	61.7	5.2	11.0	.6	20.5	1.0

1/ See table 2 for States included.

2/ Includes the Appalachian, Southeast and Delta States, and the Southern Plains. (See table 2.)

3/ Includes Mountain and Pacific States. (See table 2.)

Table 2.- Harvesting machines: Numbers of principal machines used for harvesting silage and forage, by States and State groups, specified years

State and State group	Field forage harvesters			Stationary : silo fillers:		Row-crop binders	
	Estimated,	Census	Estimated	estimated,	Estimated	Estimated	
	Jan. 1,	1955	Jan. 1,	Jan. 1,	Jan. 1,	Jan. 1,	
	1950	(Nov. 1954)	1956	1951	1942	1951	
	Number	Number	Number	Number	Number	Number	
Northeast:							
New England-----	1,500	4,748	5,100	10,300	10,900	5,100	
New York-----	5,000	11,769	12,800	22,000	44,000	12,800	
New Jersey-----	600	1,701	1,900	2,000	2,500	1,900	
Pennsylvania-----	3,500	7,796	9,000	16,000	21,000	9,000	
Delaware-----	100	282	300	200	170	300	
Maryland-----	900	1,700	1,900	2,500	2,000	1,900	
Total-----	11,600	27,996	31,000	53,000	80,570	31,000	
Corn Belt:							
Ohio-----	3,500	7,452	8,300	10,000	45,000	8,300	
Indiana-----	2,200	5,566	6,200	5,000	20,000	6,200	
Illinois-----	5,800	12,263	13,200	8,000	30,000	13,200	
Iowa-----	6,500	13,956	15,000	10,000	44,000	15,000	
Missouri-----	2,000	7,635	8,300	7,000	10,000	8,300	
Total-----	20,000	46,872	51,000	40,000	149,000	51,000	
Lake States:							
Michigan-----	3,500	8,743	9,500	12,000	40,000	9,500	
Wisconsin-----	13,000	26,831	31,000	40,000	95,000	31,000	
Minnesota-----	7,500	15,556	17,500	22,000	80,000	17,500	
Total-----	24,000	51,130	58,000	74,000	215,000	58,000	
Northern Plains:							
North Dakota-----	2,000	7,305	8,000	3,000	20,000	8,000	
South Dakota-----	2,000	5,990	6,500	3,000	20,000	6,500	
Nebraska-----	3,000	7,807	8,500	5,000	25,000	8,500	
Kansas-----	5,000	13,084	14,000	8,000	40,000	14,000	
Total-----	12,000	34,192	37,000	19,000	105,000	37,000	
Appalachian:							
West Virginia-----	200	701	800	1,000	400	800	
Kentucky-----	600	1,937	2,200	1,500	600	2,200	
Tennessee-----	500	2,060	2,300	1,000	900	2,300	
Virginia-----	700	2,197	2,500	2,500	700	2,500	
North Carolina-----	200	1,847	2,200	1,000	600	2,200	
Total-----	2,200	8,745	10,000	7,000	3,200	10,000	
Southeast:							
South Carolina-----	200	728	1,000	300	200	1,000	
Georgia-----	300	1,093	1,400	300	300	1,400	
Florida-----	50	425	500	100	---	500	
Alabama-----	100	803	1,100	300	300	1,100	
Total-----	650	3,049	4,000	1,000	800	4,000	
Delta States:							
Mississippi-----	100	1,487	1,700	300	800	1,700	
Louisiana-----	100	628	800	200	200	800	
Arkansas-----	400	1,273	1,500	500	800	1,500	
Total-----	600	3,388	4,000	1,000	1,800	4,000	
Southern Plains:							
Oklahoma-----	800	3,051	3,500	1,000	9,000	3,500	
Texas-----	900	5,064	5,500	2,000	28,000	5,500	
Total-----	1,700	8,115	9,000	3,000	37,000	9,000	
Mountain:							
Montana-----	1,000	1,413	1,700	400	2,070	1,700	
Idaho-----	1,000	2,214	2,700	600	200	2,700	
Wyoming-----	300	702	800	300	500	800	
Colorado-----	2,100	3,823	4,300	1,700	6,000	4,300	
New Mexico-----	200	467	500	400	6,000	500	
Arizona-----	250	792	900	300	200	900	
Utah-----	400	1,585	1,800	700	100	1,800	
Nevada-----	200	242	300	100	---	300	
Total-----	5,450	11,238	13,000	4,500	15,270	13,000	
Pacific:							
Washington-----	800	2,037	2,400	2,000	500	2,300	
Oregon-----	800	1,689	1,900	2,000	400	1,900	
California-----	1,200	3,405	3,800	1,500	600	3,800	
Total-----	2,800	7,131	8,000	5,500	1,500	8,000	
United States-----	81,000	201,856	225,000	208,000	609,140	225,000	

Table 3.- Corn silage and sorghum silage: Acreage harvested, yield per acre, and production, United States, specified years

Year	Corn silage			Sorghum silage		
	Acreage	Yield	Production	Acreage	Yield	Production
	harvested	per acre		harvested	per acre	
	1,000 acres	Tons	1,000 tons	1,000 acres	Tons	1,000 tons
1919---	3,554	7.56	26,866	---	---	---
1920---	3,682	7.60	27,996	---	---	---
1921---	3,486	7.74	26,979	---	---	---
1922---	3,663	7.53	27,568	---	---	---
1923---	3,983	7.50	29,874	---	---	---
1924---	4,307	6.67	28,737	---	---	---
1925---	3,681	7.97	29,343	---	---	---
1926---	4,350	7.01	30,493	---	---	---
1927---	4,268	7.01	29,926	---	---	---
1928---	3,985	7.53	30,000	---	---	---
1929---	4,021	7.30	29,335	103	6.10	628
1930---	4,875	6.16	30,026	106	5.40	572
1931---	4,710	6.98	32,875	133	5.83	775
1932---	4,293	7.47	32,073	232	5.80	1,345
1933---	4,864	6.72	32,705	377	4.75	1,791
1934---	7,132	4.92	35,093	816	2.75	2,244
1935---	5,309	7.08	37,563	666	4.70	3,133
1936---	8,539	3.95	33,690	749	3.84	2,874
1937---	5,543	6.77	37,522	580	5.15	2,988
1938---	4,456	7.90	35,187	740	6.10	4,512
1939---	4,514	7.35	33,200	904	4.83	4,364
1940---	4,735	7.31	34,615	1,081	5.75	6,217
1941---	4,023	8.39	33,751	1,233	6.40	7,896
1942---	3,841	8.71	33,445	927	6.51	6,032
1943---	4,162	8.05	33,518	913	5.18	4,733
1944---	4,476	7.79	34,888	879	6.42	5,644
1945---	4,495	7.83	35,214	671	5.32	3,570
1946---	4,577	7.87	36,031	623	5.76	3,587
1947---	4,637	7.39	34,290	649	5.14	3,338
1948---	4,317	8.71	37,592	602	7.17	4,318
1949---	4,513	8.95	40,386	513	7.10	3,640
1950---	4,937	8.31	41,002	706	7.33	5,176
1951---	4,809	8.10	38,949	855	6.85	5,858
1952---	5,361	8.05	43,174	794	5.31	4,218
1953---	6,102	7.84	47,855	1,083	6.01	6,506
1954---	7,114	7.39	52,559	1,356	5.60	7,590
1955---	6,970	7.61	53,024	1,719	5.47	9,402
1956---	6,580	8.30	54,606	1,438	6.04	8,691

Table 4.- Corn silage and sorghum silage: Acreage harvested and yield per acre, by States, average 1951-55

State	Total corn acreage harvested 1,000 acres	Corn for silage		Sorghum for silage	
		Acreage harvested 1,000 acres	Yield per acre Tons	Acreage harvested 1,000 acres	Yield per acre Tons
Northeast:					
Maine-----	13.4	11.2	9.9	---	---
New Hampshire-----	12.2	10.8	10.2	---	---
Vermont-----	62.6	59.0	9.7	---	---
Massachusetts-----	31.0	26.0	9.5	---	---
Rhode Island-----	6.8	5.8	9.0	---	---
Connecticut-----	37.4	31.8	10.6	---	---
New York-----	683.6	441.4	9.7	---	---
New Jersey-----	194.6	50.0	8.5	---	---
Pennsylvania-----	1,334.0	277.2	9.0	---	---
Delaware-----	170.0	6.2	8.6	---	---
Maryland-----	503.6	50.8	9.7	---	---
Total-----	3,049.2	970.2	9.5		
Corn Belt:					
Ohio-----	3,616.6	127.8	9.7	---	---
Indiana-----	4,722.8	91.6	9.7	2.0	10.5
Illinois-----	9,105.4	238.0	9.9	3.4	10.2
Iowa-----	10,668.0	237.0	9.6	7.6	11.1
Missouri-----	4,074.4	292.2	5.6	61.6	7.8
Total-----	32,187.2	986.6	8.5	74.6	8.3
Lake States:					
Michigan-----	1,812.0	278.4	8.3	---	---
Wisconsin-----	2,556.8	993.6	9.3	---	---
Minnesota-----	5,494.0	714.4	8.2	.8	9.0
Total-----	9,862.8	1,986.4	8.8	.8	9.0
Northern Plains:					
North Dakota-----	1,209.2	434.4	3.7	1.4	2.7
South Dakota-----	3,940.6	248.8	4.9	16.6	4.1
Nebraska-----	6,798.4	316.0	4.6	42.8	5.6
Kansas-----	2,244.2	372.2	3.8	604.6	5.5
Total-----	14,192.4	1,371.4	4.2	665.4	5.5
Appalachian:					
West Virginia-----	200.4	16.2	9.9	---	---
Kentucky-----	2,042.0	48.2	8.3	4.2	7.1
Tennessee-----	1,886.2	43.2	6.6	19.6	7.5
Virginia-----	924.4	93.2	9.3	---	---
North Carolina-----	2,150.4	40.8	8.4	4.6	8.8
Total-----	7,203.4	241.6	8.5	28.4	7.7
Southeast:					
South Carolina-----	1,181.2	14.4	5.9	5.8	6.1
Georgia-----	2,949.4	18.4	5.0	8.0	6.1
Florida-----	600.8	6.0	5.5	---	---
Alabama-----	2,375.0	10.6	5.7	5.0	6.9
Total-----	7,106.4	49.4	5.8	18.8	6.3
Delta States:					
Mississippi-----	1,686.2	20.4	6.8	24.4	9.4
Louisiana-----	660.4	7.8	8.2	3.6	7.7
Arkansas-----	784.2	17.2	4.9	22.8	7.4
Total-----	3,130.8	45.4	5.8	50.8	8.4
Southern Plains:					
Oklahoma-----	570.8	36.4	4.1	106.0	4.7
Texas-----	2,035.2	42.2	4.7	161.6	4.6
Total-----	2,606.0	78.6	4.4	267.6	4.6
Mountain:					
Montana-----	161.2	36.0	5.4	---	---
Idaho-----	41.4	26.4	13.8	---	---
Wyoming-----	58.4	34.6	8.1	---	---
Colorado-----	457.6	142.8	9.2	23.0	4.6
New Mexico-----	54.4	7.0	9.0	9.8	6.6
Arizona-----	37.4	5.2	11.2	16.4	12.7
Utah-----	36.8	29.4	12.5	---	---
Nevada-----	3.2	3.2	11.9	---	---
Total-----	850.4	274.6	9.5	48.2	7.8
Pacific:					
Washington-----	28.4	11.8	12.0	---	---
Oregon-----	28.8	12.8	10.2	---	---
California-----	123.8	42.4	12.6	6.8	11.9
Total-----	181.0	67.0	12.0	6.8	11.9
United States-----	80,369.6	6,071.2	7.8	1,161.4	5.8

Table 5.- Corn silage: Production, and percentage harvested with field forage harvesters and stationary cutters, by selected States, and by State groups, 1948, 1951, and 1955

State and State group	Production			Percentage harvested with -					
	1948	1951	1955	Field forage harvester			Stationary cutter		
				1948	1951	1955	1948	1951	1955
	1,000 tons	1,000 tons	1,000 tons	Percent	Percent	Percent	Percent	Percent	Percent
Northeast:									
New England-----	1,290	1,517	1,490	20	40	76	80	60	24
New York-----	4,450	4,425	4,474	20	50	76	80	50	24
New Jersey-----	522	418	413	36	55	90	64	45	10
Pennsylvania-----	2,460	2,384	2,728	21	44	70	79	56	30
Delaware-----	48	54	56	30	50	85	70	50	15
Maryland-----	380	440	510	30	50	85	70	50	15
Total-----	9,150	9,238	9,671	22	47	75	78	53	25
Corn Belt:									
Ohio-----	1,436	1,206	1,137	40	60	80	60	40	20
Indiana-----	675	738	1,034	55	75	88	45	25	12
Illinois-----	1,586	1,492	2,121	55	78	94	45	22	6
Iowa-----	1,969	1,564	2,907	56	80	94	44	20	6
Missouri-----	450	435	1,222	25	70	90	75	30	10
Total-----	6,116	5,435	8,421	50	74	91	50	26	9
Lake States:									
Michigan-----	1,954	1,997	2,515	24	60	85	76	40	15
Wisconsin-----	9,971	8,978	9,992	30	50	80	70	50	20
Minnesota-----	5,740	5,865	6,142	30	60	82	70	40	18
Total-----	17,665	16,840	18,649	29	55	81	71	45	19
Northern Plains:									
North Dakota-----	533	1,022	2,128	60	80	95	40	20	5
South Dakota-----	308	526	2,246	45	80	93	55	20	7
Nebraska-----	410	781	2,506	65	80	96	35	20	4
Kansas-----	294	617	1,326	40	70	92	60	30	8
Total-----	1,545	2,946	8,206	55	78	94	45	22	6
Appalachian:									
West Virginia-----	110	133	180	12	20	60	88	80	40
Kentucky-----	243	288	378	20	35	70	80	65	30
Tennessee-----	120	150	308	10	30	70	90	70	30
Virginia-----	644	820	860	18	40	70	82	60	30
North Carolina-----	220	220	420	4	15	60	96	85	40
Total-----	1,337	1,611	2,146	15	33	67	85	67	33
Southeast-----	186	179	394	4	30	73	96	70	27
Delta States-----	57	110	316	5	40	84	95	60	16
Southern Plains:									
Oklahoma-----	20	36	165	30	80	90	70	20	10
Texas-----	64	130	195	30	80	95	70	20	5
Total-----	84	166	360	30	80	93	70	20	7
Mountain:									
Idaho-----	84	168	604	55	90	94	45	10	6
Colorado-----	548	1,112	1,577	75	90	95	25	10	5
Utah-----	200	264	442	60	80	94	40	20	6
Other States-----	147	294	800	71	90	90	29	10	10
Total-----	979	1,838	3,423	70	89	94	30	11	6
Pacific:									
Washington-----	116	126	200	40	50	93	60	50	7
Oregon-----	82	108	216	50	60	85	50	40	15
California-----	275	352	1,022	62	70	95	38	30	5
Total-----	473	586	1,438	55	64	93	45	36	7
United States	37,592	38,949	53,024	32	58	84	68	42	16

Table 6.- Corn silage: Percentage harvested with field forage harvesters, by specified quantities harvested per farm, by State groups, 1948, 1951, and 1955

State group	Less than 50 tons			50 to 99 tons			100 to 199 tons			200 and more tons		
	1948	1951	1955	1948	1951	1955	1948	1951	1955	1948	1951	1955
	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent
Northeast-----	6	28	58	16	36	65	22	48	74	53	75	95
Corn Belt-----	34	60	80	48	68	90	49	76	94	67	90	99
Lake States-----	16	38	63	22	50	70	30	60	85	53	75	96
Plains-----	40	75	94	44	78	96	55	80	97	62	90	97
South <u>1/</u> -----	3	20	48	10	30	61	28	45	78	30	60	92
West <u>2/</u> -----	27	46	80	47	60	93	67	88	90	85	90	99
United States--	18	43	70	27	52	76	35	61	86	58	80	97

1/ Includes the Appalachian, Southeast and Delta States, and the Southern Plains.

2/ Includes the Mountain and Pacific States.

Table 7.- Corn silage: Production, and percentage stored by kind of silo, by selected States, and by State groups, 1955

State and State group	Production 1,000 tons	Percentage stored in -		
		Tower silos Percent	Trench, bunker, and: pit silos Percent	Temporary silos Percent
Northeast:				
New England-----	1,490	92	6	2
New York-----	4,474	94	4	2
New Jersey-----	413	90	4	6
Pennsylvania-----	2,728	90	8	2
Delaware-----	56	92	6	2
Maryland-----	510	92	6	2
Total-----	9,671	92	6	2
Corn Belt:				
Ohio-----	1,137	90	8	2
Indiana-----	1,034	74	23	4
Illinois-----	2,121	75	18	7
Iowa-----	2,907	70	20	10
Missouri-----	1,222	40	54	6
Total-----	8,421	70	23	7
Lake States:				
Michigan-----	2,515	93	4	3
Wisconsin-----	9,992	94	3	3
Minnesota-----	6,142	91	5	4
Total-----	18,649	93	4	3
Northern Plains:				
North Dakota-----	2,123	20	40	40
South Dakota-----	2,246	35	32	33
Nebraska-----	2,506	20	55	25
Kansas-----	1,326	45	45	10
Total-----	8,206	28	43	29
Appalachian:				
West Virginia-----	180	90	8	2
Kentucky-----	378	72	24	4
Tennessee-----	308	56	40	4
Virginia-----	860	81	17	2
North Carolina-----	420	68	28	4
Total-----	2,146	74	23	3
Southeast-----	394	42	55	3
Delta States-----	316	33	65	2
Southern Plains:				
Oklahoma-----	165	30	68	2
Texas-----	195	25	73	2
Total-----	360	27	71	2
Mountain:				
Idaho-----	604	8	90	2
Colorado-----	1,577	8	90	2
Utah-----	442	10	88	2
All other States-----	800	9	86	5
Total-----	3,423	8	89	3
Pacific:				
Washington-----	200	20	77	3
Oregon-----	216	20	70	10
California-----	1,022	15	77	8
Total-----	1,438	16	76	8
United States-----	53,024	70	23	7

Table 8.- Sorghum silage: Production and percentage harvested with field forage harvesters and stationary cutters, by selected States and State groups, 1948, 1951, and 1955

State or State group	Production			Percentage harvested with -					
	1948	1951	1955	Field forage harvesters			Stationary cutters		
				1948	1951	1955	1948	1951	1955
	1,000 tons	1,000 tons	1,000 tons	Percent	Percent	Percent	Percent	Percent	Percent
Corn Belt:									
Missouri-----	294	189	935	23	80	92	77	20	8
Other States-----	93	59	253	55	78	97	45	22	3
Total-----	387	248	1,188	31	80	93	69	20	7
Northern Plains:									
Nebraska-----	72	99	312	55	85	96	45	15	4
Kansas-----	2,728	4,148	3,436	60	85	95	40	15	5
Other States-----	31	26	111	42	78	95	58	22	5
Total-----	2,831	4,273	3,859	60	85	95	40	15	5
Appalachian-----	52	84	439	20	55	74	80	45	26
Southeast-----	91	60	259	6	70	76	94	30	24
Delta States-----	148	104	971	7	70	86	93	30	14
Southern Plains:									
Oklahoma-----	264	402	790	60	85	95	40	15	5
Texas-----	305	440	1,111	60	85	97	40	15	3
Total-----	569	842	1,901	60	85	96	40	15	4
Mountain:									
Arizona-----	110	104	392	75	95	97	25	5	3
Other States-----	74	62	263	67	93	95	33	7	5
Total-----	184	166	655	72	94	96	28	6	4
Minnesota-----	16	15	---	30	65	---	70	35	---
California-----	40	66	130	70	80	97	30	20	3
United States--	4,318	5,858	9,402	54	84	93	46	16	7

Table 9.- Sorghum silage: Production, and percentage of crop stored by kind of silo, by selected States or State groups, 1955

State or State group	Production : : : : :	Percentage stored in -		
		Tower silo	Trench, bunker: and pit silo	Temporary silos
	1,000 tons	Percent	Percent	Percent
Corn Belt:				
Missouri-----	935	25	70	5
Other States-----	253	61	31	8
Total-----	1,188	32	62	6
Northern Plains:				
Nebraska-----	312	22	53	25
Kansas-----	3,436	35	55	10
Other States-----	111	15	46	39
Total-----	3,859	33	55	12
Appalachian-----	439	44	51	5
Southeast-----	259	24	71	5
Delta States-----	971	8	87	5
Southern Plains:				
Oklahoma-----	790	5	92	3
Texas-----	1,111	5	92	3
Total-----	1,901	5	92	3
Mountain:				
Arizona-----	392	5	93	2
Other States-----	263	5	92	3
Total-----	655	5	93	2
California-----	130	5	90	5
United States-	9,402	23	70	7

Table 10.- Grass silage: Production, and harvesting method, by State groups, 1948, 1951, and 1955

State group	1948			1951			1955		
	Percentage			Percentage			Percentage		
	chopped with -			chopped with -			chopped with -		
	Field	Sta-	Pro-	Field	Sta-	Pro-	Field	Sta-	Not
	forage	tionary:	duction:	forage	tionary:	duction:	forage	tionary:	chopped
	harves-	cutters:		harves-	cutters:		harves-	cutters:	
	ters :			ters :			ters :		
	Percent	Percent	1,000 tons	Percent	Percent	1,000 tons	Percent	Percent	Percent
Northeast-----	30	70	2,227	63	37	3,090	90	10	1/
Corn Belt-----	68	32	2,164	85	15	2,485	97	2	1
Lake States-----	53	47	2,744	80	20	1,525	97	3	1/
West 2/-----	39	61	714	70	30	1,045	83	14	3
All other States--	29	71	562	66	34	1,190	90	7	3
United States---	39	61	8,411	75	25	9,335	93	6	1

1/ Less than 0.5 percent.

2/ Includes Mountain and Pacific States.

Table 11.- Grass silage: Production, and percentage of crop stored in different kinds of silos, by State groups, 1955

State group	Production	Percentage stored in -		
		Tower silos	Trench and bunker silos	Temporary silos
	1,000 tons	Percent	Percent	Percent
Northeast-----	3,090	89	8	3
Corn Belt-----	2,485	74	20	6
Lake States-----	1,525	86	10	4
Northern Plains-----	370	34	42	24
South 1/-----	820	53	38	9
West 2/-----	1,045	51	39	10
United States-----	9,335	75	19	6

1/ Includes the Appalachian, Southeast and Delta States, and the Southern Plains. (See table 2.)

2/ Includes Mountain and Pacific States. (See table 2.)

Table 12.- Grass silage: Use of preservatives, by State groups, 1955

State group	Farms reporting -			Grass silage produced	
	No preservative	Use of preservative with -		Total	Treated with preservative
	Percent	Part of silage	All of silage	1,000 tons	Percent
Northeast-----	50	10	40	3,090	46
Corn Belt-----	67	8	23	2,485	30
Lake States-----	74	9	17	1,525	21
West 1/-----	77	7	16	1,045	26
All other States-----	70	9	21	1,190	30
United States-----	65	9	26	9,335	33

1/ Includes Mountain and Pacific States. (See table 2.)

Table 13.- Grass silage: Percentage of farms using preservatives, and kind used, by State groups, 1955

State group	: Percent-	:	Farms using preservatives reporting -						
	: age of	:							
	: farms	:	1 kind of preservative					:	2 or more
	: using	:	Sodium	:	Feed	:	Other	:	preserva-
	: preserva-	:	meta-	:	Molasses	:	Other	:	preserva-
	: tives	:	bisulfite	:	grains	:	chemical	:	tives
	: <u>Percent</u>	:	<u>Percent</u>	:	<u>Percent</u>	:	<u>Percent</u>	:	<u>Percent</u>
Northeast-----	: 50.0	:	62.0	:	14.0	:	7.0	:	5.0
	:			:		:		:	4.0
Corn Belt-----	: 33.0	:	26.0	:	29.0	:	28.0	:	3.0
	:			:		:		:	1.0
Lake States-----	: 26.0	:	36.0	:	23.0	:	21.0	:	4.0
	:			:		:		:	2.0
West <u>1</u> -----	: 23.0	:	20.0	:	51.0	:	6.0	:	3.0
	:			:		:		:	10.0
All other States--	: 30.0	:	54.0	:	28.0	:	5.0	:	2.0
	:			:		:		:	2.0
United States---	: 35.0	:	46.0	:	23.0	:	13.0	:	4.0
	:			:		:		:	4.0
	:			:		:		:	10.0

1/ Includes Mountain and Pacific States. (See table 2.)

Table 14.--"All other" silage: Production, and methods of harvesting and storing, by State groups, 1955

State group	Production 1,000 tons	Percentage chopped with -			Percentage stored in -		
		Field forage harvester	Stationary cutter	Stored without chopping	Tower silos	Trench and bunker silos	Temporary silos
		Percent	Percent	Percent	Percent	Percent	Percent
Northeast-----	336	70	10	20	70	10	20
Corn Belt-----	180	35	10	55	34	20	46
Lake States-----	240	50	15	35	49	14	37
Northern Plains----	55	90	5	5	25	25	50
South <u>2</u> /-----	70	65	15	20	45	48	7
West <u>3</u> /-----	280	30	10	60	8	62	30
United States-----	1,161	51	11	38	41	28	31

1/ In most States, all other silage includes silage made from products other than field corn, sorghum hay crops, and pasture clipping. This table, however, contains estimates of sorghum silage produced in States for which there are no official estimates.

2/ Includes the Appalachian, Southeast and Delta States, and the Southern Plains. (See table 2.)

3/ Includes Mountain and Pacific States. (See table 2.)

Table 15.- Silage: Type of storage, and percentage fed by specified methods, by State groups, 1955

State group	Silage stored in -			
	Tower silos		All other (trench, bunker, and temporary silos)	
	Handled with:		Percentage	
	Total	mechanical	Total	that was
		unloaders		self-fed
	1,000 tons	Percent	1,000 tons	Percent
Northeast-----	11,912	4.0	1,185	10.0
Corn Belt-----	8,192	5.0	4,082	2.0
Lake States-----	18,754	5.0	1,660	13.0
Northern Plains-----	3,735	3.0	8,755	6.0
South <u>1</u> /-----	2,852	3.0	4,824	6.0
West <u>2</u> /-----	1,118	3.0	5,853	4.0
United States-----	46,563	4.4	26,359	5.6

1/ Includes the Appalachian, Southeast and Delta States, and the Southern Plains. (See table 2.)

2/ Includes Mountain and Pacific States (See table 2.)

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