

down a considerable depth which often results in the using of such quantities of stored water in the drier sections that the plant can no longer survive. This alone has probably been the principal cause of the decreasing acreage in many nonirrigated sections of the West. Bacterial wilt and other diseases and insect pests have also been influential in reducing the acreage in several of the older and larger producing States. A third factor that has been important in some sections, is the introduction of seed of nonhardy strains or strains that were not capable of adjusting themselves to the soil and climate of the new location. A continuously good demand from eastern dairymen which has created and maintained comparatively high alfalfa prices at eastern markets has stimulated production in eastern sections. This, together with a desire on the part of many farmers to produce sufficient forage for their own use or to supply adequately local demand, has been responsible for a large part of the increased acreage east of the Mississippi River.

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APPLE Market Supply is Composed Largely of a Few Varieties

Hundreds of varieties of apples are grown in the United States but relatively few are of commercial importance. A survey in 41 leading markets

in a recent season of generally heavy apple production showed considerable differences in varietal composition and source of market supplies. In planning for production and marketing, apple growers may benefit by considering the special requirements of their markets.

Fifteen varieties composed 83 per cent of the market supplies, according to the survey. In order of importance these were: Winesap, Jonathan, Baldwin, Rome Beauty, Delicious, Yellow Newtown, Stayman Winesap, Rhode Island Greening, McIntosh, Esopus Spitzenburg, Ben Davis, York Imperial, Gravenstein, Yellow Transparent, and Grimes Golden. Winesap and Jonathan were of nearly equal importance and together made up slightly more than one-fourth of the supply. Five varieties—Winesap, Jonathan, Baldwin, Rome Beauty, and Delicious—represented almost one-half of the total.

When considered by geographical groups and even by individual markets, there are pronounced differences in the varietal composition of the supplies. In six eastern cities as a group the Baldwin was the leading variety, representing 13 per cent, followed by the Winesap with 12 per cent, and the McIntosh with 9 per cent. In the group of 11 mid-western cities the Jonathan was far in the lead, composing 22 per cent of the supply, and was followed by the Winesap with 12 per cent and the Baldwin and Delicious with 10 per cent each. In five far-western cities the Yellow Newtown comprised one-fourth of the apples on the markets. Jonathan, Yellow Bellflower, Rome Beauty, and Winesap were also prominent in the markets in the far West. Slightly more than one-fourth of the quantity of apples in 19 southern markets was of the Winesap variety. The Delicious and Stayman Winesap were also popular in the South. The South is generally considered a good market for Ben Davis but this variety constituted only 3 per cent of the apples in southern markets.

Causes of Regional Preferences

Differences in the proportions of varieties of apples used in individual markets or in groups of markets in different areas may be due to such factors as proximity to areas where certain varieties are grown in large quantities or to customs and preferences of dealers and consumers. The relative demand for different varieties may change somewhat from year to year in response to changed conditions.

Market preferences, as indicated by the proportions of varieties in the supplies in different cities, are rather pronounced. New York City is our greatest market for the McIntosh variety in so far as actual quantity is concerned. In percentage of total supply for each city, however, Boston used about 16 per cent of McIntosh compared with 11 per cent in New York. In contrast, other important markets such as Philadelphia and Pittsburgh used so few McIntosh that they were not reported separately in the survey and probably were less than 1 per cent. This does not mean that there is no potential demand for the McIntosh variety in markets other than New York and New England cities but it indicates that introduction of the variety into other markets has not so far been necessary.

Philadelphia is the outstanding Stayman Winesap market. About 31 per cent of this city's apples were of this variety, compared with an average of 5 per cent for all cities included in the survey. The Rhode Island Greening, apparently, is not in demand on the Pittsburgh market. Only one-fifth of 1 per cent was of this variety in Pittsburgh compared with 9 per cent in New York and 6 per cent as an average for the group of six eastern cities. In Chicago and other mid-western cities the Jonathan is the market leader and in a number of cities in this region it comprised from 20 to 30 per cent of the receipts. This is in contrast with the East and South where only about 6 per cent was of the Jonathan variety.

As examples of peculiarities in individual city requirements in the South the cases of Spartanburg, S. C., and Savannah, Ga., are worthy of note. In the former city one-third of the apple receipts were Stayman Winesap with no York Imperial reported, whereas in the latter city, 22 per cent were York Imperial and only 11 per cent Stayman Winesap.

In all sections the trend seems to be toward the consumption of larger proportions of the so-called higher quality varieties. The demand for high quality as reflected in price is significant. In a recent season in New York, prices to jobbers for New York McIntosh averaged \$9.14 per barrel and for Yellow Newtown \$9.25 compared with \$6.56 for York Imperial and \$5.60 for Ben Davis. Delicious averaged \$3.78 per box at auction compared with \$2.87 for Winesap.

Apple Crop Widely Distributed

The wide distribution of the apple crop is illustrated by the fact that the carload supply of New York City during a recent full crop season was shipped an average distance of about 1,300 miles and more than half of this supply came from points over 2,000 miles distant. For Chicago, the average distance was more than 1,050 miles, with slightly over 50 per cent coming more than 1,500 miles. The average distance for Atlanta was more than 900 miles and 31 per cent was produced more than 2,000 miles away.

Western-grown apples are shipped to all parts of the country, whereas eastern apples are shipped as far west as cities in the Mississippi Valley. A comparison of the characteristics of northwestern apple supplies with those from the East and Middle West shows that many of the northwestern varieties, such as Winesap, Jonathan, Stayman Winesap, Rome Beauty, Yellow Newtown, and Delicious, are also grown extensively in the East and Middle West. The principal difference is that the northwestern apples are packed in boxes and are more closely graded and sized than are most apples from the East and Middle West, which are usually packed in barrels and bushel baskets.

Continued progress in the development and production of better varieties, changing consumer demands, and improvements in marketing methods, including better transportation and storage facilities, are causing gradual changes in the composition of the commercial apple supply.

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APPLE-TREE Plantings Since 1920 Show Trend Toward Newer Varieties

In a recent survey of apple orchards 243 varieties were reported by the commercial growers of Michigan and 241 by New York producers, whereas less than 75 varieties were reported by Washington growers. Although orchards throughout the United States contain hundreds of varieties, it is estimated that five varieties make up approximately 37 per cent of the total number of trees in commercial orchards and that the first 15 varieties include 71 per cent of the trees. Twenty-five varieties are listed in Figure 5 according to their importance in commercial orchards of the United States. They are shown by numbers of trees on January 1, 1928. The periods when they were set indicate the age of the trees and in a general way reflect changes in varieties planted from one period to the next in response to consumer preference.

Fifty-six per cent of the Delicious trees in commercial orchards were set in the period 1920-1927 while less than 7 per cent of the Ben Davis trees were planted during this period. Other varieties in which large proportions of the trees now standing were planted during this period are the Stayman Winesap, 38.5 per cent; McIntosh, 48.3 per cent; Yellow Transparent, 52.4 per cent; and the Golden Delicious, 94.4 per cent. Still other varieties of which more moderate percentages of the trees were planted from 1920-1927 are: Winesap, Jonathan, Rome Beauty, Grimes Golden, Wealthy, Rhode Island Greening, and Northern Spy. (Fig. 5.)

Only a relatively small percentage of the trees of such varieties as Baldwin, Ben Davis, York Imperial, Yellow Newtown (Albemarle Pippin), Gano, Arkansas (Mammoth Black Twig), Esopus Spitzenburg, and Stark were planted during the period 1920-1927. From 85 to 90 per cent of the trees of most of these varieties were planted before 1920, and for individual varieties the percentage of trees planted before 1910 varies from 35 to 77 per cent.

Trees of the four varieties—Delicious, Winesap, Jonathan, and Stayman Winesap—number about 25,000,000, or 31 per cent of the