posed principally of starch and dextrin. These increase in amount as the growth of the kernel proceeds and give to the corn the desirable body or consistency. The dextrin or dextrinlike substances are responsible for the creamy texture found in first-quality corn.

Although there are different kinds of sugars in sweet corn, that which furnishes the natural sweetness in corn at canning maturity is principally sucrose or cane sugar. Since this may be added at the time of canning with fairly satisfactory results, natural sweetness is considered as third in importance.

Natural flavors appear to be next in importance. These do not vary greatly in the different varieties of corn when at canning maturity, though there are distinctive differences in the flavors of the white and the yellow varieties. When corn is too mature the desirable flavor disappears and one less desirable takes its place.

These various properties are directly affected by the degree of maturity, and in the packing of first-quality corn maturity must be given first consideration.

Tests to determine the relative merits of the different varieties have shown that the variety factor is not important in determining quality, any of the standard varieties yielding a first-class product if canned at the proper stage of maturity.

Seasonal and climatic factors, particularly that of temperature, through their influence on the rate of development, have a profound effect on the quality of corn as it appears in the can. High temperatures speed the maturing processes and shorten the time during which corn may be satisfactorily handled.

C. A. Magoon.

SUGAR-Cane Varieties That Resist Disease

It has been increasingly apparent during the season of 1926 that, owing to the combination of low prices for sugar and low yields of sugar cane, many producers of this staple commodity in the South will be forced to discontinue the planting of cane unless some effective remedy is applied at once. The cane planters that are affected are not only the marginal producers but include some of the most experienced and successful growers utilizing the best lands. Increased per-acre production, which of course means lowering the cost of production, is the only course by which the situation can be alleviated until a readjustment of the world’s production of such to meet the world’s requirements establishes a more satisfactory price.

One of the most apparent causes of declining yields in the cane fields is the presence of several destructive diseases of the cane, which for a number of years have been accumulating until there now exists on many plantations a condition of disease saturation, where not a healthy plant is to be found in whole fields. That these diseases are a major factor contributing to the decline in yields is easily demonstrable by experiment. A simple and effective means of relief is offered by the substitution of disease-resisting varieties for the old varieties of cane.

Resistant Varieties Collected

Fortunately, a number of such disease-resisting varieties have been collected by the Department of Agriculture and tested, both in
small experimental plats and on a large scale under commercial plantation conditions. Increased yields of the resistant varieties indicated by these tests range from 30 to 50 per cent greater yield of sugar per acre than that produced by the old varieties. The varieties used in these tests were P. O. J. 36, 213, and 234, all of which are hybrid varieties imported from Java, and Cayana, a variety of the Chinese group of canes. Owing to the relatively low purity of the juice in the case of Cayana, it is especially adapted to sirup making.

Many other promising disease-resistant varieties are being tested by the department, but only the varieties mentioned have been commercialized. They are available in quantities sufficient to plant one-fifth to one-fourth of the total acreage in Louisiana this year, and of course if they are extended to any degree this means there would be ample seed next year to plant the entire acreage devoted to cane in the new varieties. Practically all of this represents the increase from a few cuttings of the varieties P. O. J. 36, 213, and 234, which were turned over to a plantation near Houma, La., in 1922 and 1923.

The qualities of these cane varieties that commend themselves to the sugar planter are:

1. Resistance to mosaic and root disease resulting in increased yields as compared with the old varieties.
2. Economy in planting material. Only 1 to 1½ tons of seed to the acre is required as compared with 4 to 6 tons of D-74 and Purple canes. This reduces costs of production very appreciably, as the value of seed cane represents a large proportion of total costs.
3. Ability to ratoon over a longer period of years. Satisfactory stubble crops have been obtained with these varieties in other countries for seven or eight years, and, although it is yet too early to say with certainty, the indications are that double the number of stubble crops now obtained can be expected with these new varieties in Louisiana.
4. Increased fiber production. About 20 per cent increased yield of bagasse has been reported for the new varieties. With increased utilization of the material for the manufacture of lumber substitutes, it has become an exceedingly valuable by-product.
5. Resistance to hurricane damage. It has been demonstrated that Cayana scarcely lodges at all and P. O. J. 234 straightens up after lodging in windstorms that practically ruin varieties like D-74 by snapping off the more brittle stalks.
6. Tolerance of cold. Where observations have been made on P. O. J. 36, 213, and 234 in other countries and on Cayana in this country a very definite tolerance of temperatures fatal to other varieties has been noted.

Desirable Qualities Observed

The desirable qualities of these varieties have not gone altogether unnoticed in Louisiana. One plantation near Houma increased the seed of these varieties to the greatest possible extent, even in the face of much adverse criticism. The American Sugar Cane League, made up of cane growers in Louisiana, has lately made a strong effort to establish them in the State. Largely as the result of efforts
by these two agencies, a remarkable increase in the quantity of available planting material of the new varieties has been effected.

E. W. Brandes.

Sugar-Supply Sources of the United States

In the five years 1921-1925 more than half of the sugar which became available for consumption in continental United States was the product of the island of Cuba. Second in volume to the Cuban supply in every year of the five was the domestic production of beet sugar. Hawaii and Porto Rico were, respectively, third and fourth in every year of the five in the volume of sugar supplied. In 1921 and 1922 domestic cane sugar was the fifth largest source of supply, with the Philippine Islands sixth; but in 1923, 1924, and 1925 the supply from the Philippines was larger than that from Louisiana. Sugar from all other sources of supply amounted to only 4 per cent of the total in 1921, 3 per cent in 1923, 1½ per cent in 1924, and less than 1 per cent in 1922 and 1925.

The gross supply of sugar by origin for each of these years, in terms of centrifugal raw sugar, is shown in Table 25. But in order to arrive at the net supply, deductions must be made for sugar exported or shipped back to the noncontiguous territories or possessions. The sugar exported is practically all refined sugar which has previously been imported in raw form. It is impossible to determine the exact origin of this sugar which passes through American refineries and goes out again to foreign markets, but it is practically all duty-paid sugar, for the quantity of sugar on which an export drawback is paid is in every year approximately equal to the domestic exports. In fact, the total on which drawback was paid in the five years 1921-1925 was actually slightly in excess of exports in those years. In the long run, however, the excess should be on the other side, at least by the quantity exported to the Virgin Islands and some minor border exports of true domestic sugar on which no drawback can be collected. Since the quantity of sugar on which drawbacks are paid is so close to the quantity of domestic exports, and since the official reports give the raw equivalent of the sugar on which drawbacks are paid, this raw equivalent rather than domestic exports of refined sugar has been deducted from imports in order to arrive at a figure for net supply. Table 26 shows the net supply made available for consumption in each of the five years, 1921-1925. This table was derived from Table 25 by deducting pro rata the raw equivalent of exports on which drawback was paid from the duty-paid imports and deducting actual shipments of refined sugar to Hawaii and Porto Rico and actual exports to the Philippines and Virgin Islands from the shipments and imports from these islands. No deductions have been made from the supplies of domestic sugar, as it is not believed that any appreciable quantity of this sugar is ever exported. No account is taken of annual shipments of about 3,000 tons to Alaska, so in this computation Alaska is in effect taken as a part of continental United States.

Table 27 is a percentage table based on Table 26, showing the relative importance of the several sources of sugar supply in each of the five years considered.