

Seeds medium size, rounded; beak short, blunt; chalaza medium size, elongated, depressed; raphe obscure.

Seedless Grape Breeding at Geneva

The breeding of seedless grapes began in 1919 as a cooperative project between the New York Botanical Garden and the Station. The late Dr. A. B. Stout of the Botanical Garden staff directed the project from the beginning until his retirement in 1948. The project is being continued as part of the grape breeding program at Geneva.

The project had three objectives:

1. The study of the nature and scope of types of seedlessness in grapes.
2. A study of the inheritance of seedlessness in grapes.
3. The production by breeding of hardy seedless grape varieties suitable for culture in New York.

During the early years of the project Concord Seedless was used as a parent in a number of crosses. As a parent it was similar to Concord. All of its descendants in the first and second generations had the usual number of normal seeds, and none was outstanding.

The European grape, *V. vinifera* has several seedless varieties, some of which are very important viticulturally. Sultanina, the Thompson Seedless of California, is the basis of the seedless raisin industry. Black Corinth produces the dried currents of commerce, most of which come from Greece. Black Monukka and several others are grown. Several of these varieties, particularly Sultanina (Thompson Seedless) have been used as parents in the grape breeding project at Geneva. None of the seedlings of Black Corinth has been seedless in the first or second generation.

These *V. vinifera* varieties produce no seeds, but their pollen is good so they are used as pollen parents in crosses with seeded varieties that are winter hardy in this area. Large numbers of seeds have been produced, but germination is poor, and many seedlings are not winter hardy. Over the years, a considerable number of moderately winter hardy seedlings have been raised.

Fortunately, about half of the first generation seedlings from certain crosses between the seeded varieties and the seedless *V. vinifera* varieties have been seedless, and moderately winter-hardy. Some have been very desirable in other respects.

Five seedless varieties have been named. Stout Seedless, the first, was named in 1929 and described in New York State Agricultural Experiment Station Bulletin 578. Plants were first offered for sale in the Fruit Testing Association catalogue in 1937. Although it was originally de-

scribed as winter hardy at Geneva, the vines have experienced so much winter injury, and the fruit ripens so late that the variety is of no value in the grape-growing regions of the state.

Bronx Seedless was introduced in 1937 and it is herein described.

The cross between Ontario and Sultanina (Thompson Seedless) was most fortunate. The seedless varieties, Interlaken Seedless, introduced in 1947, and Himrod and Romulus, both introduced in 1952, are from this cross. In addition two other selections, N. Y. 15302 and N. Y. 15305, have much merit and are being distributed under number by the Fruit Testing Association for more extensive trial. These five promising seedless grapes were selected from a population of 56 seedlings.

Of more recent origin and still under trial are several black- and red-fruited seedless selections, some of Black Monukka parentage. Several are promising at this time.

Interlaken Seedless, Himrod and Romulus

These three varieties are of the same parentage, Ontario \times Sultanina (Thompson Seedless). Thompson Seedless, as it is known in California, is the seedless variety grown extensively for raisins as well as for shipping to the fresh fruit market in mid-summer. The cross was made to produce a seedless grape of this type that would be winter-hardy in New York. The cross was made in 1928, 56 seedlings were raised and these three varieties were selected in 1938. Interlaken Seedless was introduced in 1947, and Himrod and Romulus in 1952.

The three varieties are all seedless, yellow in color, and ripen at different times, Interlaken Seedless in late August, Himrod, a few days later, and Romulus about the season of Concord. The vines of all three varieties are very vigorous, productive and hardy enough for normal winters at Geneva if they have not borne excessive crops and the foliage has been protected from leaf-hoppers and mildew. Southward, and in the middle West, they have been susceptible to anthracnose.

Interlaken Seedless, the earliest, bears heavy crops, necessitating careful pruning to prevent overbearing. In Illinois winter injury at 0° F. has been reported, but it has withstood temperatures down to about -15° at Geneva. Protection of the fruit from birds is necessary as the crop may be destroyed just as it begins to ripen if not protected.

Interlaken Seedless is on the list of recommended varieties in Washington, but reports from other States, except one from a Missouri

sharply acute; lobes 3; upper sinuses shallow, narrow, V-shaped; lower sinuses absent or very shallow; petiolar sinus medium deep, V-shaped; upper surface dark green, nearly smooth, dull, convex except around petiole where it is concave, glabrous; lower surface with a small quantity of cobwebby hairs in tufts on mid-rib and veins of young and mature leaves; texture thin, brittle; petiole variable in length, averaging medium thick, brittle, tinged light red, with very few whitish wooly hairs when young; teeth irregular, short, broad, rounded; veins prominent, thin.

Flowers self-fertile; stamens upright.

Fruit: Clusters medium to large, 300–600 gms, conical, shouldered, well-filled to compact; peduncle medium long, thick, woody, tinged red; pedicels short, slender, warty; torus medium size, rough; brush short, green. Berries variable size, small to below medium size, 13–16 mm \times 12–14 mm wide, ellipsoidal, yellowish green, with heavy bloom, slightly adherent. Skin medium thick, medium tough, intermediate in adherence to pulp, neutral. Flesh tender, juicy, greenish, translucent, not aromatic, mildly acid, slightly vinous, good quality.

Season about with Concord, stores well.

Seeds very small, abortive.

Bronx Seedless

Bronx Seedless, the second seedless variety resulting from Dr. Stout's crosses, originated from a cross between N. Y. 8536 (Goff \times Iona) and Sultanina (Thompson Seedless). The cross was made in 1925, 68 seedlings were raised, Bronx Seedless was selected in 1931, and introduced in 1937.

Bronx Seedless at its best is a fine quality, large berried, red, seedless grape, borne on vigorous, productive vines. The clusters are large and often well-filled. In Washington it is on the list of recommended varieties with the comment that it is susceptible to cracking.

Unfortunately it is rarely at its best. Reports of cracking and rotting are frequent at Geneva and elsewhere. Susceptibility to mildew everywhere, and anthracnose in warmer regions, are serious faults. The vines frequently experience considerable winter injury. Several new seedless varieties, Interlaken Seedless, Himrod, Romulus and two others of the same parentage are much superior to Bronx Seedless and should replace it.

Vine very vigorous, moderately hardy, drooping, dense, moderately productive. Canes straight; bark much mottled with dull red; nodes slightly enlarged; diaphragm thin; shoots tinged with dull red, lightly pubescent, angular, with young tips dull bronze with cobwebby hairs; tendrils intermittent, forked, hairs present, strong and very large.

Leaves large, 20 cm wide \times 14 cm long, orbicular; apex sharply acute; lobes 3-5; upper sinuses deep, narrow, U- to V-shaped; lower sinuses medium deep, narrow, U-shaped; petiolar sinus closed with lobes overlapping; upper surface rugose along mid-rib and around petiole attachment, dull, contorted around petiole attachment, few cobwebby hairs along veins; lower surface with a small quantity of cobwebby hairs in tufts on mid-rib and veins; texture thick, brittle; petiole long, medium thick, brittle, medium reddish, with wooly hairs when young; teeth irregular, medium long, broad, acute; veins prominent, thick.

Flowers with stamens upright.

Fruit: Clusters medium size, 300-600 gms, long conical, well-filled; peduncle long, thick, woody, green; pedicels medium in length and thickness, warty; torus medium size, rough; brush long, green. Berries 15-20 mm long \times 15-18 mm wide, variable, spherical to short ellipsoidal, light red, striated, heavy bloom, strongly adherent. Skin medium thick, medium tough, cracking very easily, adhering to pulp, neutral flavor. Flesh tender, soft, greenish, translucent, juicy, very mildly aromatic, medium acid, neutral, fair quality.

Season after Delaware, a week before Concord.

Seeds large, soft, variable size, av. 6.0 \times 3.0 mm.

Concord Seedless

The origin of Concord Seedless is unknown. It was brought to the attention of this Station in 1913 by E. H. Wetmore, Rushville, N. Y. who wrote that a vine which bore seedless grapes was growing in a row of Concords about 12 years old in a vineyard on the east shore of Canandaigua Lake. Cuttings were sent that fall and the variety has been in the Station plantings since then.

Earlier, in 1907, plants of a seedless grape were received from the T. S. Hubbard Co., Fredonia, N. Y. This variety, which was designated Hubbard Seedless in Station records, was under test in the Hubbard Co. vineyards to determine its usefulness as a variety to be introduced. In a letter from the Hubbard Co. in 1921 it was stated that it was discarded after testing. The same letter stated that this variety was found in a vineyard on the Hudson.

F. E. Gladwin said of these varieties in 1930, "We have, supposedly, Concord and Hubbard (Seedless), although I must confess I think they are one and the same." Richard Wellington believed the two varieties to be identical.

The Hubbard Co. was a large producer of Concord grape vines, and possibly a cutting of their seedless variety may have become mixed with their Concord wood to produce a vine which reached the Wet-

GRAPE VARIETIES...



••• Introduced by the New York State Agricultural
Experiment Station

1928-1961

by George L. Slate, John Watson and John Einset

New York State Agricultural Experiment Station
Cornell University, Geneva, N. Y.