

The Fruit Variety Trials at Knuthenborg, Denmark

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A recently issued "Progress Report—1957," by Count F. M. Knuth of Knuthenborg, Denmark, marks the tenth year of a most remarkable and perhaps unique commercial fruit variety testing project.

This project, now comprising over 650 varieties, includes the testing of leading varieties and promising material gathered from every major tree fruit growing district of the world. An effort has been made to collect every sport and strain of major varieties with the objective of securing valid comparative performance data under identical growing conditions in one orchard.

This comprehensive testing program is entirely conducted within the framework of a private farm and fruit growing enterprise. The Knuthenborg Estate is one of Denmark's largest modern economic undertakings in the use of land. Located on Lolland Island in southeastern Denmark, near the town and seaport of Bandholm, it employs 250 people in agriculture (grain, sugar beet, dairy farming and animal husbandry), forestry and horticulture, including large-scale fruit growing and plant nurseries.

The fruit testing project was commenced in 1947 to find better tree fruit varieties for planting in the Knuthenborg orchards. It was recognized that the majority of the prewar Danish apple varieties were obsolete and no longer capable of competing in the market with new fruits from overseas countries, although many of these older varieties are still recommended by nurserymen. The postwar demand on all available resources in a small country such as Denmark, to restore

and modernize its productive apparatus, left little for agricultural experimental work. It was this factor which led Count Knuth to undertake the variety trials at Knuthenborg.

Of the 350 apple varieties on test, Count Knuth has attached great importance to finding improved strains of leading commercial varieties. In his 1957 "Progress Report," page 7, he states: "In particular, I have made a point of searching up and testing strains of the fine old Danish apple, the Gravenstein, and the classical apple of Canada, McIntosh Red—two most exquisitely flavoured and perfumed fruits which, within their classes, may not be surpassed in our generation. After having recently passed their 150th anniversaries they stand in as strong a position as ever, favoured by growers and consumers over most of the world."

The Crimson Gravenstein, a sport from Ottawa, has proved a great improvement, because of its bright carmine-red color, although this is somewhat unevenly distributed. Six other red sports of Gravenstein are still being tested—Albany Beauty (New Zealand), Geneva (Wash.), Mead (Mass.), Oratia Beauty (New Zealand), Shaw (N. Y.) and Red Australian.

Of the blushed sports of McIntosh, Rogers and Summerland, have come into great prominence. Despite the fine quality of the old standard McIntosh and its suitability to Danish climate, its failure to color properly had caused it to be discarded. Count Knuth considers his introduction of the blushed strains to the Scandinavian countries one of the most important results of his experiments.

In 1956 the Society of Danish Fruit Growers, representing growers, wholesalers, retailers and consumers, placed the Rogers McIntosh on the list of recommended varieties, along with Spartan, Lobo and Golden Delicious. In the fall of 1957, Count Knuth reported that the Rogers was being heavily planted in Denmark.

Still newer red sports of McIntosh—Boller and Cornell (N.Y.) and Steele (Greening's, Mich.) await testing with hopes that one will be found with a more regular shape and firmer.

Other preliminary results may be summarized as follows:

Other Apples

Summer Varieties—Stark Earliest, Crimson Beauty and Close have good color but only mediocre quality. Red Melba and Atlas have good quality but do not always color well.

Autumn Varieties—Lobo is a newer introduction which is being planted heavily. It has color, size and good flavor but a little too much toughness of skin. James Grieve (red sport) colors late, sometimes not until after picking maturity. It is popular in Sweden and Germany but not in Denmark and England.

Early Winter Varieties—The standard variety, Cox's Orange, is becoming unprofitable and is slowly being replaced by Ingrid Marie—a well-shaped solid red apple of "indifferent" quality but with market appeal. In some years this variety cracks badly. Strangely enough, the one hundred percent red blushed sport of Cox (Cherry) does not sell, because the European consumer does not regard a red apple as a true Cox. Cortland has size and flavor but not always good color. Spartan appears to show great promise as a commercial variety. It is an early, heavy and regular bearer with good color and flavor.

Late Winter Varieties—Golden Delicious has become an important commercial variety in Denmark but, to attain finish and size, it must be grafted on dwarfing rootstocks and planted in selected localities. Jonathan, although once very popular, is losing ground despite the availability of superior red sports, presumably due to small size. Idared has shown sufficient promise to warrant planting on semi-commercial scale. It has good color, quality and is an exceptionally long keeper. On July 17 the writer tasted an Idared taken from Count Knuth's unrefrigerated cold storage room. The specimen was in sound condition and still sweet and fairly juicy. Melrose, although quite promising, ripens rather late.

Standard American winter varieties such as Red Delicious, Winesap, Rome Beauty and Northern Spy, do not succeed in Denmark due to the short season (latitude 56 degrees North). However, with the mild coastal climate, hardiness is no problem.



Fig. 1. Fruit of Ingrid Marie, as grown in Denmark. Is solid red with indifferent quality but with market appeal.

FRUIT VARIETY TRIALS IN DENMARK

It may be of some interest that the "reddest" of all varieties tested has been Geeveston Fanny (Russell Red sport), a Tasmanian apple which colors a solid red even in full shade. Bonser 3, a Cox seedling from England, has proved to be the largest apple.

Other Fruits

Testing of pears (55 varieties), plums (60 varieties), cherries (50 varieties), and other fruits has not advanced as far as with apples.

Count Knuth believes, however, that the red-skinned pears may profoundly influence pear growing of the future. The Max-Red Bartlett (known in Europe as the Glow-Red Williams) is the only variety which has so far assumed commercial importance. It ripens later than the standard, has a tough skin that does not show bruises, and resists hail damage. Count Knuth's list of pears also includes a red-fleshed variety from Sweden.

Grapes (70 varieties) are being tested principally to find a variety for the manufacture of unfermented juice.

A remarkably fertile early-bearing sour cherry is also being tested at Knuthenborg. Bred by the famous rose breeder, Svend Poulsen, it is known as Kelleris No. 16, Kelleris being the location of the Poulsen nursery. Small trees observed in July 1957, the year after planting, were literally covered with large fine quality bright red cherries. Count Knuth states that as the trees get older, their enormous cropping and vigorous growth continues.

An interesting cherry grown at Knuthenborg is the variety Stevns, a small brownish-purple sour cherry which appears to be a well-defined group among Danish cherries. The variety is extremely aromatic and has very dark juice which is used for the manufacture of the famous "Cherry Herring" liqueur.

While visiting at Knuthenborg I enjoyed a superb strawberry, as attractive to the eye as to the taste, with the strange name of Senga Sangana—medium size, a clear dark red throughout—developed by the German professor, Dr. Sengbusch. At Knuthenborg, the variety yields well and has excellent frost resistance. The variety is being tested here at the University of Alaska and at Washington State College.

The "Progress Report—1957" contains a complete listing of the varieties at Knuthenborg with a description of source and parentage of each variety. The report is also enriched with excellent photographs of fruit, fruit growing and various scenes of the Knuthenborg Estate.

For agriculturists and scientists fortunate enough to plan a visit to Knuthenborg (a two-hour drive from Copenhagen), mention should also be made of the peace and beauty of the famous manor park which is the central part of the Knuthenborg Estate. Laid out by the then Count Knuth during the eleven years between 1863 and 1874, the park and home farm of 1,500 acres is surrounded by a six foot high granite wall, five miles long, which took 300 Swedish masons four years to build.

The park contains meadows, lakes and woodlands of ancient beeches and oaks. Rhododendrons, exotic trees and flowering bulbs abound, as well as wild life, including Sika deer, moufflons and lamas. The park has virtually become a national institution.



Gordon Butler, Chief Statistician of the New Jersey Crop Reporting Service, reports that Red Delicious is the leading apple variety being planted in New Jersey since 1950. Other varieties being favored are Red Rome, Jersey Red and Twenty Ounce.