# Outlines of the Apple Breeding Work at Jork, W. Germany

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In Western Germany, breeding of new pome fruit varieties in order to improve the commercial supply of apples and pears is done nearly exclusively by the Jork Fruit Research Station near Hamburg. It is situated amidst Germany's biggest serried fruit growing district, the so-called "Altes Land," presently covering an area of about 34,000 acres of fruit, mostly apple, in a rather cool and humid climate.

The Jork Fruit Research Station was founded in 1934. Its purpose was, and is still, to give assistance to the farmers in their efforts to improve fruit production. In the beginning, plant protection and nutrition were the main problems, but by and by the scope of work has been extended to other fields of research in fruit.

In 1951 Dr. Loewel, the former director of the station, started breeding dessert apples. His aim was mainly to combine the good adaptation of the existing local varieties with the good quality of the foreign varieties. Dr. Loewel found that improving the quality of the existing fruit varieties by cultivation methods only would be an expensive task with little chance in this way to get a break-through on the market.

In 1961, the breeding section of the station became enlarged and the breeding program was extended. The general program now was changed from breeding and selecting varieties with restricted adaptation only to the local environment to breeding of apple and pear varieties with a high adaptability in order to ensure a steady high quality in spite of the different weather conditions in different years, and to combine this character with high commercial value and low production costs (low-maintenance varieties).

So far, two apple varieties have been introduced by the Jork Fruit Research Station: 'Jamba 69' and 'Gloster 69.' Both are trademarked and now under trial also with Dr. R. D. Way at Geneva, N.Y.

'JAMBA 69': season second-early, like 'Tydeman's Early'; avg. fruit size 75-80 mm diam., rather uniform; needs no thinning; shape round or slightly oblonged; flesh juicy and rather soft; taste excellent, subacid with good flavor; partly red-colored, blushed or striped; shipping ability medium, much better than 'James Grieve' which has been the only main variety of this season in Germany so far; yield good and regular. Tree growth strong, spreading. Advice to growers includes reduction of nitrogen applications to avoid bitter pit and severe June-drop; don't plant too closely, as unnecessary pruning reduces yield and increases production costs.

'GLOSTER 69': Season late, like 'Golden Delicious'; fruit size in older trees 70-75 mm avg. diam., needs no thinning; shape and color similar to 'Richared Delicious,' which is one of the parents; flesh greenish-yellow, not subject to bitter pit; taste good, more acid than 'Delicious,' smells well too; shipping ability excellent; stores well, like 'Golden Delicious,' but does not suffer from shrivelling; yield early and regular, very high, exceeds 'Golden Delicious'; flowers are relatively hardy against spring frosts. Tree growth is strong, upright. Advice to farmers includes no tip-pruning within the first few years; bending advisable; don't store in CA storage above 3% $CO_2$. May suffer from water core under cer-

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'Jamba 69'

tain conditions, especially fruits from young trees. Susceptible to scab and European canker; no mildew.

Both varieties were released to the growers in the winter of 1968-69, when decline of apple prices due to overproduction in Europe became threatening and many growers were either reducing or completely discontinuing fruit production. By December, 1972, 770 acres of 'Gloster 69' and more than 90 acres of 'Jamba 69' have been planted in the "Altes Land" region, in spite of the depression in fruit production, which had resulted in a reduction of the former apple growing area by about 20%. This means that 'Gloster 69,' within 4 years after introduction, had already gained the 10th place in the succession of the apple varieties according to their production area, covering nearly 3% of the whole remaining apple production area. 'Jamba 69' as a rather early ripening apple was still far behind in 18th place but came up quickly despite the mistrust of the growers having apples of this season due to bad experiences. Surprisingly to them, there is a strong demand for this variety on the market which can be served only slowly because of the well known time gap between increasing consumer's demand, nursery production and final fruit production. Good results and increasing production are also reported from other parts of Germany.

There are different reasons for the quick increase of the new varieties:
a) The breeding work at the Jork Fruit Research Station is intended to meet the demands of the fruit growers. Therefore selection is very rigorous, and no variety with low or irregular production or with high demands for expensive treatments will ever come through.

b) Selection at Jork includes a range of consumer tests. So only seedlings preferred to the standard varieties by a wide group of consumers will get a chance to become a variety.

c) The development of new varieties at Jork does not confine itself to breeding but is combined with further trials in order to release not only a variety but a whole system, including instructions to the farmers concerning planting systems, pruning, plant protection, nutrition, and storage.

d) At Jork, research and extension are closely connected. Farmers get full advice so that severe failures in production can be avoided. The lacking success of a variety must not necessarily be due to failures of the variety, but can be caused by failures in treatment of the variety as well.

Bud wood for trial purposes may be obtained by research institutes from: Fruit Research Station, D 2155, Jork-Moorende, W. Germany.