

An Evaluation of Delicious Strains for the Size and Shape of Fruit

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Delicious strains have been evaluated primarily for fruit color and tree characteristics (1), although size and shape of fruit has received some attention. Westwood (5) showed that the fruits of Starkrimson (Bisbee strain) were more elongated than Starking. Meheriuk et al. (4) evaluated 22 strains of Delicious and found that fruits of spur strains were longer than those from trees with standard growth habit. In contrast, Fisher et al. (1) found only small differences in fruit shape among Delicious strains collected from orchards in Oregon, Washington and British Columbia. Nevertheless, the fruits of Oregon Spur were flattest of 13 standard and spur strains sampled, and the fruit were more uniform in shape. In a 4-year study of Delicious strains involving 3 locations, Ketchie and Olsen (2) found no specific trend in fruit circumference, weight or shape. The authors concluded that probably there is more variability between years and locations than among strains themselves.

It is well known that climatic factors affect shape of apple fruit (1, 6). It is important to know whether the size and shape of fruit produced by Delicious strains differ when grown under similar conditions since fruit with a high L/D ratio (length/diameter ratio) are more attractive to the consumer. In 1980, Lord et al. (3) reported on a long-term replicated evaluation of Delicious strains, including both spur and standard type. This paper is a continuation of that study with the object of determining over a

4-year period, if fruits produced by the strains differed in weight and shape.

Materials and Methods

A planting established at the Horticultural Research Center at Belchertown, Massachusetts in 1964 included the following strains on M. 7 rootstocks: Jardine Red, Royal Red, Turner Red, Richared, Rogers Red, Gardiner Red, Sturdeespur (Miller strain) and Starkrimson (Bisbee strain), the last 2 being spur-types. The trees were spaced 6.1×9.14 m with every 3rd tree in the row, beginning with the first tree, being McIntosh on M. 7 for pollination.

The trees received similar cultural practices and the strains did not vary consistently from another in leaf N, K, Ca or Mg (3). In 1978 to 1981, inclusive, the weight, length and the transverse diameter of 25 fruits per tree were recorded at harvest.

Results and Discussion

The data presented in Table 1 show that Starkrimson fruits were always longer than those of Jardine (the higher the L/D ratio the longer the fruit) but the strains did not differ consistently in fruit weight. Thus, we have limited evidence that Delicious strains differ genetically in shape. Numerous sports of Delicious have been introduced since the trees in this study were planted. Because fruit typiness is of concern, objective comparisons of these "newer" strains and Starkrimson (which is still heavily planted) should be made.

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Table 1. Mean fruit weight and shape of 8 Delicious strains planted in Belcher-town, MA in 1964.

Strain	Fruit weight (g)				Length/diameter ratio of fruit			
	1978	1979	1980	1981	1978	1979	1980	1981
Standard								
Jardine Red	162ab ¹	145a	158a	160ab	0.902c	0.931d	0.917c	0.905cd
Turner Red	159ab	144a	167a	152b	0.923ab	0.947cd	0.925bc	0.935ab
Gardiner Red	165ab	146a	166a	157ab	0.93a	0.970ab	0.945ab	0.937ab
Royal Red	174a	151a	160a	162ab	0.912abc	0.953bc	0.927bc	0.940d
Richared	174a	154a	155a	164ab	0.910bc	0.957abc	0.930bc	0.920bc
Rogers Red	171a	156a	163a	175a	0.920ab	0.945cd	0.920bc	0.900d
Spur								
Sturdeespur	157ab	149a	170a	167ab	0.927ab	0.947cd	0.935bc	0.935bc
Starkrimson	149b	150a	150a	147b	0.933a	0.971a	0.963a	0.938ab

¹Means separation in columns by Duncan's multiple range test, 5%.

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