

Mutations of Late Maturity in Peaches and Nectarines

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Those fruit growers looking for mutations as they work in the orchard are frequently rewarded. Many mutations are of little practical value as they are often virescent or of reduced leaf size. However, mutations of certain varieties result in increased red skin color, and changes in time of maturity occasionally occur.

Three mutations of late maturity in peaches and nectarines have been found in California. A branch has been found by Mr. L. James of Modesto on an Elberta peach tree that ripened about one month later than the regular Elberta variety. Another late mutation was found on the Kirkman ranch, in Madera, on a Rio Oso Gem peach tree which matured four to five weeks later than the Rio Oso Gem variety. Mr. L. Hagler, of Kingsburg, discovered a late maturing mutation of the Le Grand nectarine which is claimed to mature about four weeks later than the Le Grand nectarine. The average maturity dates for these varieties and their mutations are summed up in Table 1.

The above three mutations all have a narrow section of flesh along the ventral suture of the fruit that ripens along with the original variety from which the mutation came. This section is usually about one-eighth to one-fourth inches wide, and extends from the base to the apex of the fruit. The epidermal tissue, made up of two or three layers of cells, is probably also like the parent type. Derman** found this type of suture chimera to be very similar to that of an induced polyploid peach chimera in which the outer epidermal tissue in the suture

area was tetraploid and the inner layers were diploid.

The presence of an early maturing suture on a commercial fruit variety is a serious fault. This portion of the fruit that ripens early is bruised easily after harvest. The suture portion will often be the point breakdown when the fruit is in transit or storage.

It is fortunate from the breeder's standpoint that this epidermal has no effect upon the pollen or egg cell development. The genes determining maturity are from the newly mutated type and seedlings can therefore be grown bearing fruit without the early maturing suture.

A limited study of the genetics involved in determining the maturity of the above varieties has been made. The range of maturity dates of the open-pollinated seedlings obtained from the late maturing mutations, as given in Table 1, is from slightly before the maturity date of the parent variety until the fruit will no longer ripen. In California this is a long extension of the season, since peaches in most years will ripen until about the middle of October. Populations

TABLE 1. Time of maturity of nectarine and peach varieties and the mutations of these varieties.

Variety	Normal variety maturity dates	Maturity period of the mutation
Elberta	Aug. 1-10	Sept. 1-10
Le Grand nectarine	Aug. 1-10	Aug. 28- Sept. 7
Rio Oso	Aug. 10-20	Sept. 7-20

*Plant breeder, F. W. Anderson Orchards, Merced, Cal.

**Derman, H. 1956. Histogenic factors in colorand fuzzless peach sports. Jour. Hered. 47:64-76.

of open-pollinated Elberta and Le Grand seedlings mature very close to maturity period of the parent variety, with the various seedlings ripening slightly earlier or later than the parent variety. Seedlings from the Rio Oso variety mature their fruit somewhat later in the season, but also close to the parent variety. The fruit from the Rio Oso mutation, seedlings that failed to ripen were very small and did not develop viable seeds. Fruits from seedlings of the other mutations that failed to ripen seemed to be normal.

Another late-maturing nectarine mutation was found on the F. W. Anderson ranch by Mr. J. Lara. This

was a mutation of the Sun Grand nectarine which matures from the tenth to the twentieth of July. A small limb had nine fruits, all of which had portions that ripened at the same time as the Sun Grand variety (Fig. 1). The remaining portions of the fruits ripened about one month later. There was no particular pattern in the area of the fruit that ripened early, or in that which ripened later. These early maturing areas developed as bumps above the non-mature part of the fruit. In three fruits it was necessary to look very closely before one found minute spots which ripened early, with the major portion of these fruits ripening late. In this mutation there was

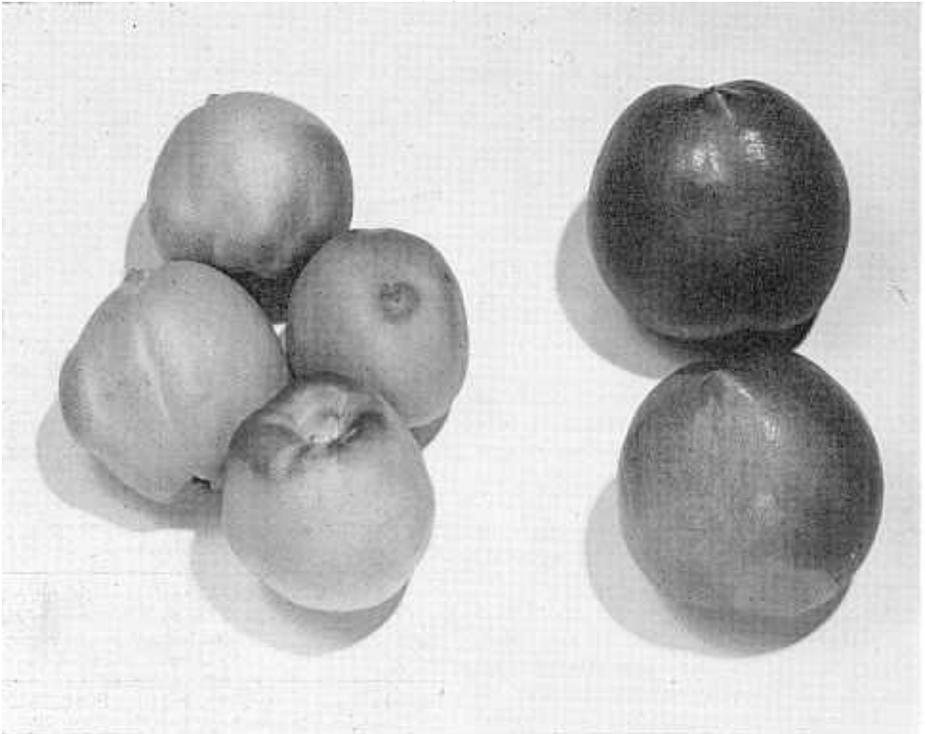


Fig. 1. Partial mutation of Sun Grand nectarine. In mutated fruit (left), a portion of the skin and flesh ripened as typical Sun Grand fruit (right), while the remainder of the fruit ripened almost one month later. Note that in one of the mutated fruits the section of flesh that ripened earlier was raised in the form of a bump.

TABLE 2. Time of maturity of fruit from seedlings of late maturing mutations.

Variety	Number of seedlings	Seedlings that ripened in each season					Did not ripen
		Aug. 1-15	Aug. 16-31	Sept. 1-15	Sept. 15-30	Oct. 1-15	
Elberta Mutation	21	2					
Rio Oso Mutation	28	4					
Le Grand Mutation	15	—					

no distinct suture line maturity, as in the other mutations. No seedlings of this mutation have fruited as yet, so

it is not known whether this mutation will be effective in extending the season of maturity.

Goldgem and Summerqueen, Two New Peaches from New Jersey

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Goldgem (NJ197) and Summerqueen (NJ157) have been named and released by the New Jersey Agricultural Experiment Station. These varieties were selected by Professor M. A. Blake from a cross between J. H. Hale and Cumberland made in 1926.

Goldgem is a large, yellow-fleshed peach which was recommended because it promises to be a profitable variety for the season between Jerseyland and Triogem. It will often overlap the last of the Redhaven picking season. Goldgem is vigorous and productive, and tends to yield good sized fruit on light soils. The fruit is oval like Elberta and usually better colored. It is firmer than Golden Jubilee but not as firm as Elberta. Goldgem is freestone when tree ripe but, when it is picked firm enough for shipping, it often is not fully freestone. Goldgem has good pollen. On the basis of its performance in several commercial plantings in New Jersey, it seems to possess some resistance to bacterial leaf spot (*Xanthomonas pruni* Dow.)

Summerqueen ripens with Sunhigh and was recommended for this season because it seems to be more resistant to bacterial leaf spot than Sunhigh. Summerqueen has firm large, yellow-fleshed fruit with a moderate amount of red at the pit. The fruit is fully freestone and of good quality, although not quite as good as Sunhigh.



Goldgem (NJ 197)

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