18. Smagula, J. M. and Lyrene, P. M. 1984. Blueberry, p 383-401. In Handbook of Plant Cell culture Vol. 3 Crop Species. Ammirato, P. V., Evans, D. A., Sharp, W. R., and Yamada, Y. (eds.), Macmillian, New York.
19. Spiegle-Roy, P. and Vardi, A. 1984. Citrus. p 355-372. In Handbook of Plant Cell Culture Vol. 3 Crop Species. Ammirato, P. V., Evans, D. A., Sharp, W. R., and Yamada, Y. (eds.), Macmillian, New York.
20. Tisserat, B. 1984. Date Palm, p 505-545. In Handbook of Plant Cell Culture Vol. 2 Crop Species. Sharp, W. R., Evans, D. A., Ammirato, P. V. and Yamada, Y. (eds.), Macmillian, New York.
21. Wakasa, K. 1979. Variation in the plants differentiated from tissue culture of pineapple. Japan. J. Breed. 29(1):13-22.
22. Zimmerman, R. H. 1984. Apple, p 349-395. In Handbook of Plant Cell Culture Vol. 2 Crop Species. Sharp, W. R., Evans, D. A., Ammirato, P. V. and Yamada, Y. (eds.), Macmillian, New York.

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A New Fruit Variant in Peach

D. J. WERNER[1]

Numerous single-gene mutations affecting both vegetative and reproductive plant parts have been described in peach [Prunus persica (L.) Batsch] (1). This report describes a novel fruit mutation with a hard, shell-like exocarp.

The mutant phenotype was discovered as a whole tree mutation on grafted trees of NCX 2612 [('J.H. Hale' x 'Prairie Dawn') x 'Redskin']. The original seedling of NCX 2612 had normal fruit and possessed sufficient fruit size and quality to justify propagation for inclusion in advanced breeding trials. Four of 12 trees propagated by T-budding showed the mutant phenotype. Mature mutant fruit are approximately 4 cm in diameter and have a hard, shell-like exocarp, approximately 1 mm thick. At maturity, the exocarp and mesocarp are dry, and fruit persist on the tree indefinitely. The pith-like mesocarp is 7 to 10 mm deep. Mutant fruit look similar to pear fruit with acute boron deficiency symptoms (2). Nutrient analysis of fruit and vegetative tissues from normal and mutant trees revealed normal boron levels in all tissues in both tree types. Although speculative, the basis for the mutation may be boron related. Initial fruit set is generally quite low, and considerable fruit drop occurs at the initiation of pit hardening. Flowers are showy, and pollen abundant. Pollen germination on artificial media has ranged from 50 to 80%. Mutant fruit are indistinguishable from normal peach fruit during the first 3 to 4 weeks of development. Approximately 4 weeks after bloom, the suture becomes pronounced, fruit change to a lighter green than normal fruit, and pubescence begins to drop (Fig. 1). Cracking of the exocarp and profuse gumming from these cracks follow shortly (Fig. 2). Cross-sectional cuts through the mid-section of the fruit at this time reveal numerous, randomly distributed small (0.2 to 0.5 mm) gum ducts in the mesocarp. The mesocarp is sticky to the touch. Seeds from fruit that reach maturity are viable and exhibit normal germination. Vegetatively, the mutant phenotype is identical to normal peaches except for the presence of intense red pigmentation streaks on shoots of current season's growth. Fourteen open-pollinated seed-

[1]Department of Horticultural Science, North Carolina State University, Raleigh, NC 27695-7609.

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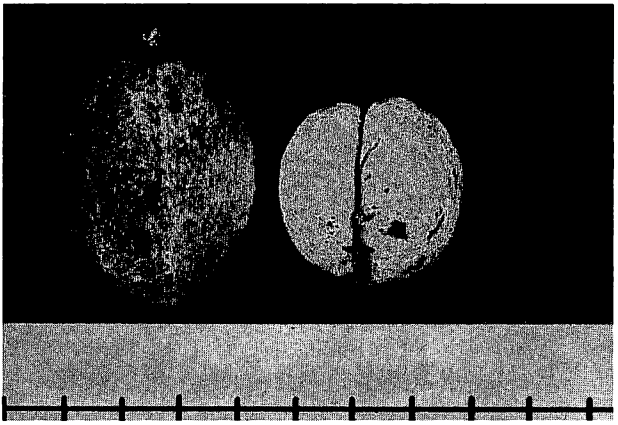

Figure 1. Comparison of normal (left) and mutant fruit, 60 days after bloom, showing pronounced suture. Scale = 1 cm divisions. Normal fruit shown is the cultivar Biscoe.

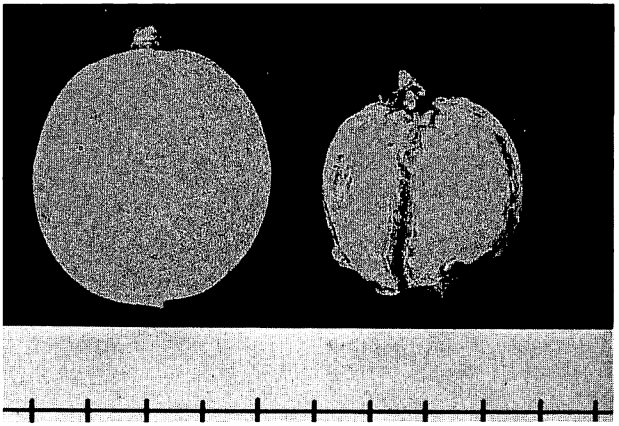

Figure 2. Comparison of normal (left) and mutant fruit, 75 days after bloom, showing cracking and gumming. Scale = 1 cm divisions. Normal fruit shown is the cultivar Biscoe.

lings from the mutant phenotype all exhibited normal fruit, and 14 'Ellerbe' x 'mutant' F_1 trees exhibited normal fruit. No F_2 data currently is available. Budded trees propagated from the mutant phenotype develop mutant fruit. The mutant phenotype has been expressed in numerous growing locations. The chilling requirement of the mutant phenotype is approximately 900 hr. Although genetic transmission of this trait has not yet been demonstrated, it is proposed that this phenotype be referred to as the "cracked exocarp" disorder. The North Carolina selection number has been designated as NCX 2612M. Budwood can be obtained from the author. Trees and budwood have not been virus indexed.

Literature Cited

1. Hesse, C. O. 1975. Peaches. pp 285-335. In: J. Janick and J. N. Moore (eds.), Advances in Fruit Breeding, Purdue Univ. Press, West Lafayette, IN.
2. Lord, W. J. 1979. Photographs of nutrient deficiencies. In: Fruit Notes 44:4-6. Coop. Ext. Ser., Univ. Mass., Amherst.