bearing variety for him.

I have also written to Professor Oppenheimer at the Volcani Institute in Rehovot, Israel. He writes that the "Kaller" atemoya tree exists in a Garden in Rehovot, and that it was first propagated about 15 years ago. He further states that the type exists in the collection at the Volcani Institute, but has not been grown commercially because other varieties are at least as good.

It now seems fairly certain that the "African Pride" variety should be called the "Kaller."

The "Kaller" is increasing in popularity in South Florida but does not seem to have the potential of becoming a commercial fruit. However, it can still be highly recommended for the backyard garden.

The Effect of Seedling vs. Semidwarfing Rootstock on the Frost Hardiness of 'Stayman' Apple Blossoms

S. A. WEINBAUM[1] AND C. M. RITTER[2]

Seasonal frosts frequently result in the loss of a significant percentage of the apple crop. Some Pennsylvania orchardists have observed on occasion that the bloom of compact fruit trees appeared more resistant to frost injury than blossoms of the same scion rootedon vigorous stocks. A study was conducted, therefore, to determine whether rootstock vigor could effect a differential response of the bloom and immature fruit to frost.

Ten-year-old trees of the apple cultivar 'Stayman' on EM VII and standard seedling rootstocks were used in this investigation.

The comparative cold tolerance of blossoms was measured following the exposure of samples to subfreezing temperatures in the laboratory. One hundred flower clusters were excised from each of the two stock-scion combinations at three stages of development: (1) the tight cluster stage; (2) two days prior to full bloom; and (3) at petal fall. A cold chamber equipped with an automatic temperature controller was used, and a temperature sequence designed to stimulate a frosty night was programmed.

After the freeze blossoms and fruit were sliced longitudinally through their medians and observed under a dissecting microscope for the discoloration characteristics of cold-injured tissues (1).

Differences in cold tolerance between the two groups of material were statistically non-significant. A dramatic rise occurred in the cold vulnerability of the young fruit as compared with the blossoms harvested previously. This pattern was apparently characteristic of the cultivar, and a differential rootstock effect was not observed.

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Table 1. Effect of rootstock on flower bud density and bud position on 10-year-old 'Stayman' trees.

Rootstock	Total number of flower clusters	Bud position	
		Terminal	Axillary
Seedling	583	85.43[a]	14.57
EM VII	938	63.59	36.41

[a]Figures represent percentages of total number of clusters.

Blossom density (flower clusters per unit length of vegetative growth) was appreciably higher on the semidwarfed trees. Differences in characteristic bud position were also noted (Table 1). Whereas in the case of seedling trees 14 per cent of the flower clusters were located in an axillary position, 36 per cent of the clusters were produced laterally on the semidwarfed trees. Relative to the terminally positioned blossoms, the development of flower clusters axillary on the previous year's shoot growth was considerably delayed. Anthesis of axillary clusters occurred six days later than those borne terminally and may better afford the danger of spring frosts. These clusters would conceivably produce the bulk of the crop in years of heavy frosts. This factor is likely to account in part for the reported frost hardiness differences associated with the effect of various rootstocks.

Literature Cited

1. Field, C. P. 1938. Low temperature injury to fruit blossom. I. On the damage caused to fruit blossoms by varying degrees of cold. *Rep. E. Malling Res. Sta. for 1938*:127-138.

Reviews and Abstracts

Pennsylvania State University offers book on propogating nut trees. By C. Marshall Ritter and George C. Weber. $1.50.

A new booklet, 'Propagating Nut Trees', has been published by The Pennsylvania State University College of Agriculture. The primary objective of this book is to stimulate interest in producing excellent varieties of hardy edible fruits. Many outstanding varieties of black and Persian walnuts, shag and shellbark hickories, filberts and Chinese chestnuts are readily available for planting and propagation.

Some of the more successful methods of grafting are illustrated and explained. The back inside cover of the book lists nut varieties that can be grown in Pennsylvania. Also included are photos of 9 different kinds of nuts that can be grown in the Commonwealth and surrounding states. Line drawings of various grafting techniques are clean and large so that they may be easily understood.

—*R. K. Simons*