

due to differences in harvest maturity, storage and ripening conditions. A wealth of information on proper handling of 'Bartlett' to achieve the best quality exists (6), but is lacking for new selections, thus there is a probable bias in these results in favor of 'Bartlett.' Possibly, the quality of some of these selections might compare more favorably to 'Bartlett' with better knowledge of optimum harvest, storage and ripening characteristics.

All the selections reported in this paper have a higher level of resistance to fire blight than 'Bartlett,' either rated on the basis of natural infection or inoculation studies (Table 5). Thus, it seems possible to breed pears with good processing qualities combined with resistance to fire blight if appropriate selection procedures are followed.

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Fruit Varieties Journal 41(4)140-141 1987

## Effect of 'Siberian C' Rootstock, Interstem, and Scion on Foliar Calcium Content in Peach

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### Abstract

A study was conducted to investigate the effect of 'Siberian C' when used as a rootstock, interstem, or scion on foliar calcium level in peach [*Prunus persica* (L.) Batsch]. Data from 2 years of field testing revealed that calcium was significantly reduced in leaf tissue only when 'Siberian C' was used as a rootstock. The results suggest that reduced foliar calcium in peach scions propagated on 'Siberian C' is due to reduced calcium absorption by roots of 'Siberian C,' and not to blockage of calcium transport at the graft union.

### Introduction

Peach trees grown on 'Siberian C' rootstock have been shown to contain

less foliar calcium as compared to trees propagated on other peach rootstocks (3). Couvillon (1) found that leaves from own-rooted peach trees contained higher levels of Ca than leaves from trees budded to several peach seedling rootstocks, and suggested that the graft union may block Ca transport to the scion. This has also been proposed by others (2). Knowles et al (3) suggested that graft union hinderance of calcium transport may be more pronounced on 'Siberian C' rootstock. The purpose of this study was to investigate the effect of 'Siberian C' when used as a root-

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stock, interstem, and scion on foliar Ca levels in peach. Such information should assist in determining whether the reduction in foliar Ca on trees propagated on 'Siberian C' is graft union related.

### Materials and Methods

In February 1982, trees of various rootstock-interstem-scion combinations were planted at the Sandhills Research Station, Jackson Springs, NC. Treatments consisted of the following combinations: 'Redhaven' on Lovell seedling rootstock (RH/L), 'Redhaven' on Nemaguard seedling rootstock (RH/N), 'Redhaven' on 'Siberian C' interstem (RH/SC/L), 'Redhaven' on Nemaguard seedling rootstock with a 38 cm 'Siberian C' interstem (RH/SC/N), 'Siberian C' on Lovell seedling rootstock (SC/L), and 'Siberian C' on Nemaguard seedling rootstock (SC/N). All grafted tree combinations were propagated from semi-hardwood cuttings. The study was arranged in a completely randomized design with 4 replications and 2 trees per replication. Trees were grown using standard cultural practices, except soil pH was maintained at approximately 5.5. Leaf samples were collected during the first week of August in 1984 and 1985 and consisted of removing 2 leaves from the midsection of 20 shoots on each tree. Leaves were dried in a forced-air oven at 70°C and ground in a Wiley mill. Leaf tissue was analyzed for Ca by atomic absorption spectrophotometry. Analysis of variance was conducted using the 'PROC GLM' procedure of SAS (1). Treatment means were compared using the LSD procedure.

### Results and Discussion

Effect of year on Ca content was significant ( $P < .01$ ), so data from each year was analyzed separately. Mean foliar Ca content over all treatments was 1.30 and 1.17% dw for years 1984 and 1985, respectively. In both years,

**Table 1. Foliar calcium levels (% dw) in peach trees with various rootstock, interstem and scion combinations. 1984 and 1985 results. See text for explanation of treatments.**

| Treatment     | 1984                | 1985   |
|---------------|---------------------|--------|
| RH own-rooted | 1.38 a <sup>z</sup> | 1.18 a |
| RH/L          | 1.28 a              | 1.17 a |
| RH/N          | 1.28 a              | 1.18 a |
| RH/SC         | 1.11 b              | 1.00 b |
| SC/L          | 1.32 a              | 1.22 a |
| SC/N          | 1.35 a              | 1.26 a |
| RH/SC/L       | 1.36 a              | 1.21 a |
| RH/SC/N       | 1.30 a              | 1.15 a |

<sup>z</sup>Mean separation by LSD, 5% level.

the only significantly different treatment was RH/SC, which showed lower foliar Ca content (Table 1). Trees which possessed a 'Siberian C' interstem piece showed no significant reduction in foliar Ca as compared to trees lacking an interstem. No significant reduction in foliar Ca was noted when 'Siberian C' was used as a scion. These results suggest that reduced foliar Ca levels in scions propagated on 'Siberian C,' are due to reduced uptake of Ca by roots of 'Siberian C,' graft union blockage of Ca transport.

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