5. Lesley, J. W. 1957. A genetic study of inbreeding and of crossing inbred lines in peaches. Proc. Amer. Soc. Hort. Sci. 70:93-103.
6. Mehlenbacher, S. A. and R. Scorza. 1986. Inheritance of growth habit in progenies of 'Com-Pact Redhaven' peach. HortScience 21:124-126.
7. Mowery, B. and W. B. Sherman. 1984. Breeding early ripening low-chilling peaches in Florida. Fruit Var. J. 38:6-8.
8. Scorza, R., S. A. Mehlenbacher, and G. W. Lightner. 1985. Inbreeding and coancestry of freestone peach cultivars of the eastern United States and implications for peach germplasm improvement. J. Amer. Soc. Hort. Sci. 110:547-552.
9. Yoshida, M. 1976. Genetical studies of the fruit quality of peach varieties. III Texture and keeping quality. (In Japanese). Bull. Fruit Tree Res. Sta. A3:1-16.

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Performance of Selected Peach Rootstocks in Ohio[1]

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Abstract

'Veteran' on 12 clones of *P. besseyi* was compared to 'Veteran' on Siberian C over a 10-year period with no particular advantage of any of the clones. Own-rooted 'Redhaven' was compared to 'Redhaven' on 8 other rootstocks. Trees in this trial experienced severe tree loss due to winter injury between the second and third year of growth. Trees on GF655-2 and Damas 1869 survived better than on the other rootstocks. Trees on Damas 1869 root-suckered badly.

Introduction

Peach production in the Midwest has declined markedly in recent years primarily due to the loss of crops resulting from fluctuating cold winter temperatures. The winter conditions have also caused significant tree loss due to winter injury and the subsequent increase of peach canker in the injured tissue. Tree losses in commercial orchards often occur first in imperfectly drained areas of the field.

Considerable grower interest exists in identifying a rootstock more tolerant of imperfectly drained soil that will survive more adverse weather conditions. Another interest is in the production of a smaller more efficient tree to facilitate more intensive orchards that will produce significant crops earlier in the life of the orchard. The two trials reported here evaluated selected rootstocks based on these criteria.

Materials and Methods

In 1977, Dr. James Cummins of the New York Agricultural Experiment Stateion at Geneva, donated 'Veteran' peach trees on 12 clones of *Prunus besseyi*. They were selected as promising trees from a New York orchard. Since there were variable numbers of trees of each clone, the trees were planted in a completely randomized design with trees of 'Veteran' on Siberian C as a control. The trees were planted 9′ x 18′ at the Jackson Branch of the Ohio Agricultural Research and Development Center.

In 1984, the NC-140 peach rootstock trial, 'Redhaven' peach was established at Wooster, Ohio. The trees were spaced 4.5 m x 6.0 m and trained as open center trees. The rootstock treatments were arranged as a randomized complete block with 10 single tree replicates with a guard row surrounding the planting. Trunk circumferences

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and yield were recorded annually and trees were trained as open centers. They received standard cultural and disease control practices in both studies.

Results and Discussion

There was no significant difference in tree size among the 12 clones of *P. besseyi* and trees on Siberian C following the tenth growing season (Table 1). In 1984 there appeared to be large differences in leaf fall and estimates were taken on 2 dates in October. However, due to the very small number of trees and tree-to-tree variability the differences were not statistically significant. In the 10 years this planting existed, the only full crop occurred in 1983. In 1986 a very small crop occurred due to a late spring freeze. The other crops were lost due to winter damage to the buds. In 1983, clone 13 out-produced trees on Siberian C with little difference among the other clones.

When production per unit trunk cross-sectional area was compared, none of the clones were significantly more productive than Siberian C. The small number of trees of each selection and the adverse weather causing loss of crop in all but 1 year undoubtedly affected tree size in this planting. However, none of the *P. besseyi* clones appeared to be the small efficient peach tree that was sought. Tree loss was minimal during the study.

In the second planting comparing own-rooted 'Redhaven' and 8 other peach rootstocks, GF677 appeared to produce the largest trees and 'Citation' the smallest over the first 2 years of growth (Table 2). Trees on 'Citation' defoliated much earlier than the other rootstocks. Trees on Damas 1869 suckered badly and the suckers were spread under the drip line of the tree arising from roots near the soil surface. Over the winter of 1985-1986, significant winter injury occurred and many trees died during the summer of 1986. Trees on Damas1869 and GF655-2 stood out as surviving better than the other rootstocks. Due to the excessive tree loss on most rootstocks, this planting was removed following the 1986 growing season.

Table 1. Influence of 13 clones of *Prunus besseyi* on growth and production over 10 years of 'Veteran' peach trees planted at the Jackson Branch in 1977.

Rootstock	Number of trees	Height (m)	Spread (m)	Trunk Circ. (cm)	Leaf Fall* %	1983 Yield lbs/t Total	1983 Yield lbs/t Effic. (lbs/cm²)	Fruit/tree 1986
Siberian C	6	3.3	4.3	40.0	84	69.1b**	1.13ab	34.3
13	4	3.5	4.5	48.6	76	133.9a	1.19ab	86.2
21	3	3.3	4.1	37.7	78	52.6b	.93ab	28.0
24	1	3.5	5.2	46.1	55	53.4b	.69b	36.0
25	2	3.0	4.1	37.7	45	54.3b	1.02ab	33.5
33	2	3.5	4.0	40.2	80	31.4b	.69b	59.5
110	1	3.5	4.1	39.7	50	50.0b	.90ab	24.0
127	5	2.8	3.6	36.2	85	46.1b	.81b	26.8
225	1	3.4	4.4	37.0	95	58.8b	1.45a	56.0
324	5	3.4	4.5	47.7	63	44.8b	.80b	46.6
415	3	2.8	4.0	37.6	63	80.0ab	1.44a	29.0
525	2	3.3	4.2	43.2	75	104.9ab	1.22ab	38.0
527	3	3.3	4.1	42.3	60	43.0b	.85b	24.3
		NS	NS	NS	NS			NS

*Data collected October 17, 1983.
**Mean separation by Duncan's Multiple Range Test, 0.5%.

Table 2. Influence of 9 rootstocks* on tree loss and growth of 'Redhaven' peach in Wooster, Ohio during the first 2 years of growth.

Rootstock	TCA** cm²	Suckers t	Height (cm)	Spread (cm)	Defol. %	% Tree Loss 1986
Own Root	26.8bc***	0b	211ab	231cd	22bc	50
Halford	29.1ab	0b	230a	257abc	15c	60
Siberian C	28.9ab	0b	223a	250abcd	31b	60
Bailey	25.0bc	0b	213ab	225a	12c	40
GF 677	32.8a	0b	230a	268a	17bc	10
GF 655-2	22.8c	.2b	197b	225d	18bc	0
Damas 1869	24.9bc	8.2a	200b	237bcd	21bc	80
Lovel	29.1ab	0b	222a	263ab	17bc	70
Citation	12.4d	0b	166c	160e	88a	

*Trees planted in 1984 as part of NC-140 cooperative peach rootstock trial.
**TCA = Trunk cross-sectional area.
***Mean separation by Duncan's Multiple Range test 0.5%.

The results of these 2 peach rootstock trials would indicate that none of the *P. besseyi* clones surfaced as being particularly worthy for future tests. Because tree loss to winter injury has been a major problem for Ohio peach growers, GF655-2 and Damas 1869 should be tested further for their potential as rootstocks. However, the root suckering problem encountered with Damas 1869 would require special treatment.

'YORK IMPERIAL'

The plaque dedicated to the 'York Imperial' apple cultivar has been moved from its original location along Pennsylvania Route 111, the old highway from Harrisburg to Baltimore, to the Apple Hill Medical Mall about 2 miles from the York Hospital. The new site is on property of the old Jonathan Jessup farm and nursery. Mr. Jessup first propagated the now famous apple cultivar in 1820. 'York Imperial' was first known as 'Johnson's Fine Wonder' after Mr. Johnson who found the apple in the early 1800s on his farm, which then adjoined the borough of York, Pa. He was attracted to the tree because schoolboys visited it in the early spring to get the fruit which had spent the winter on the ground under the tree's leaves. Because of the long keeping quality of the apple, Mr. Johnson took scions to Jonathan Jessup who began propagating it. It was not a success at first, but after local farmers took discarded trees from the nursery dump and the trees began to bear fruit, interest increased in the new apple. Charles Downing was responsible for its renaming by calling it the "imperial keeper," and suggested 'York Imperial.' Prof. S. A. Beach described the cultivar in The Apples of New York, Volume I. 'York Imperial' and its strains are now grown mainly in Pennsylvania, Maryland, Virginia and West Virginia for the processing of apple sauce and apple slices. In terms of tonnage, it is the leading apple cultivar in Pennsylvania today, and has contributed much to the prosperity of the fruit industry in the state. 'York Imperial' is also grown in South Africa where it is marketed fresh. Its strains include 'Red York,' 'Yorking,' and 'Commander York.' — L. D. Tukey

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