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Peach and Nectarine Scion Influence Suckering of Nemaguard Rootstock

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Rootstock suckers serve as reservoirs for diseases and pests, interfere with cultural operations, and are expensive to remove. Evaluators of new rootstocks rate suckering to eliminate those that sucker excessively.

Reports of scion influence on rootstock suckering are few. Larsen and Fritts (1981) reported that clonal 'Old Home' pear *(Pyrus communis* L.) stocks grafted with 'Anjou' produced more suckers than when grafted with 'Bartlett', but other stocks did not.

A peach *[Prunus persica* (L.) Batsch] scion cultivar that enhanced rootstock suckering might be useful for revealing the suckering tendencies of test rootstocks. This paper reports the scion genotype influence on suckering by Nemaguard rootstock.

Forty-nine scion cultivars were budded in 1986 by a commercial nursery onto open-pollinated Nemaguard seedlings. Virus-free 'Redhaven' was budded onto open-pollinated Lovell seedlings. Trees were planted in Spring 1987 in central Georgia at the Southeastern Fruit and Tree Nut Research Laboratory with a spacing of 1.2 × 6.1 m on a sandy-loam site with a previous history of peach tree short life (PTSL). A grass sod was maintained between rows with a 1.5-m herbicide strip in the tree row. Trees were fertilized each spring with ammonium nitrate (56 kg actual N/ha). No irrigation was applied.

Trees were trained to an open-center and maintained in a hedgerow with a sickle bar mower. All suckers originating below the soil line were counted and removed annually. Trunk diameters were measured 30 cm above the soil line in Fall 1989 and 1990. Years to onset of suckering was noted through Fall 1990. Sucker counts for trees that died before Fall 1990 were eliminated from the data set.

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The randomized complete-block design was a split plot with main plots being the 50 scion/rootstock combinations (single-plant plots), replicated in 20 blocks and with year as subplots. For analysis of variance, sucker count data were transformed into the square root of the number of suckers plus 0.5 (Gomez and Gomez, 1984). Mean separation of scion treatment means was performed with a cluster analysis technique (Gates and Bilbro, 1978).

Scion and year exerted a significant influence on the production of suckers by Nemaguard ($P < 0.0001$). However, a significant scion × year interaction was present ($P < 0.0001$), indicating some departures from the overall trend for suckering to increase each year. Most of these departures were for those scions that displayed low suckering rates. Therefore, only the mean number of suckers produced per tree per year is presented. Four distinct groups of scion/rootstock combinations differing in their tendency to commence suckering and mean number of suckers produced per tree per year are evident (Table 1). We did not observe any signs of scion/rootstock incompatibility, such as premature fall defoliation or scion/rootstock overgrowth, in any trees during this test. No useful correlations were found between mean annual sucker production and either trunk cross-sectional area or relative growth rate (data not shown).

While our choice of a PTSL site may have enhanced overall suckering rates of Nemaguard, some scion cultivars clearly enhanced rootstock suckering. If this effect proves uniform across a range of rootstocks, then the use of scion cultivars that enhance suckering would be useful to investigators testing rootstocks for commercial adaptability.

Table 1. Influence of peach and nectarine scion on suckering of Nemaguard seedling rootstock.

Scion	Type[z]	Mean years to onset of suckering	Mean no. suckers/tree per year
PI91459	O/PI	3.0 A[y]	2.3 A[y,x]
SCRS1	N/R	2.6 A	1.8 A
TN#2	N/R	2.7 A	1.8 A
Dixired	C	3.0 A	1.5 A
P31-29	PI	2.8 A	1.4 A
PI102705 (nec)	PI	2.9 A	1.4 A
NJ 555052	O	3.4 B	1.4 A
Halford	R/C	3.3 B	1.1 B
Mayflower	C	3.2 A	1.0 B
152AI2RH2	R	3.3 B	1.0 B
Krasvynos (nec)	PI	2.8 A	0.9 B
NA8	N/R	3.3 B	0.9 B
PI133987	PI	3.5 B	0.8 B
Lovell	R/C	3.9 C	0.8 B
J68-69	N/R	3.5 B	0.8 C
BY520-9	R	4.1 C	0.8 C
Reliance	C	3.4 B	0.7 C
Stark Redleaf	R	3.6 B	0.7 C
South Hero	N/R	3.7 B	0.7 C
Durbin	C	3.0 A	0.6 C
Shiron Donak	PI	3.3 B	0.6 C
Siberian C	R	3.6 B	0.6 C
NJ 682227062	R	3.6 B	0.6 C
GA102	N/R	3.7 B	0.6 C
Amarillo Tardio	PI	3.5 B	0.5 C
PI101676	PI	3.7 B	0.5 C
Redglobe	C	3.8 C	0.5 C
14DR51 (nec)	R	4.0 C	0.5 C
PI62602	O/PI	4.6 D	0.4 C
J67-34	R	4.1 C	0.4 D
NJ 682118044	C	4.5 D	0.4 D
Bailey	N/R	3.9 C	0.3 D
Junegold	C	4.0 C	0.3 D
Fla 14-11	R	4.2 C	0.3 D
Springcrest	C	4.2 C	0.3 D
Salcaja	PI	4.2 C	0.3 D
J68-271	N/R	4.2 C	0.3 D
Loring	C	4.4 D	0.3 D
Fireprince	C	4.5 D	0.3 D
Nemaguard	R	4.5 D	0.3 D
Agua 6-4	PI	4.2 C	0.2 D
Elberta	C	4.2 C	0.2 D
Flavortop (nec)	C	4.3 C	0.2 D
Sunland	C	4.6 D	0.2 D
PI134151	PI	4.4 D	0.1 D
Cresthaven	C	4.4 D	0.1 D
Redhaven	C	4.7 D	0.1 D
PI104287	PI	4.7 D	0.1 D
NJ 5110417	R	5.0 D	0.1 D
Redhaven/Lovell	C	4.9 D	0.0 D
Overall		3.9	0.6

[z]C = cultivar, N = natural, O = ornamental, PI = Plant Introduction and R = rootstock.
[y]Means separated via cluster analysis (Gates and Bilbro, 1978). Significance of divisions: AB, BC, and CD, $P < 0.05$.
[x]Means back-transformed for presentation.

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