

Deep Purple Plum and Alternate Rootstocks for Almonds

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The USDA Agricultural Research Service has identified various plum type rootstocks, which show varying degrees of compatibility with Nonpareil. One of these, Deep Purple (DP) (*Prunus besseyi* x *p.salicina*) has shown resistance to root knot and root lesion nematodes in field trials. The tolerance of this rootstock to Oak Root Fungus is unknown, trials are in progress in Butte County for this disease. Another candidate is Hiawatha, also a plum type rootstock with similar parentage and characteristics. Researchers in France (INRA) have developed numerous peach/almond hybrid rootstocks with desirable characteristics, such as improved anchorage, tolerance to drought, high pH soils and nematodes, and which also impart vigor to the scion. The most successful one of these, GF 677, is planted widely in Europe. Many newer almond cultivars have not been fully evaluated on M2624.

The objectives of this trial are to: 1) find plum type rootstocks compatible with Nonpareil and evaluate their field performance. 2) Evaluate the alternative rootstock GF 677 for Nonpareil and Butte. 3) Evaluate new almond cultivars for compatibility on M2624. 4) Retest older almond cultivars on M2624, which show erratic field trial performance. 5) Evaluate

double grafted trees with interstems of Padre between Nonpareil and M2624.

Nonpareils propagated directly onto Deep Purple have been planted from two sources, Fowler (Non F) and Burchell (Non B). Nonpareil directly on M2624 has also been included as well as Butte and Nonpareil on 'Hiawatha'. Extra items included are the newly developed cultivars, 'Durango' (Fowler) and 'Kochi' (Sierra Gold), which are on Lovell. The new almond varieties for M2624 include, 'Plateau', UC 13-1 and 'Avalon'. Varieties planted as standards on M2624 are 'Sonora' and 'Mission'.

Results:

Trees were evaluated on 8-8-00, five months after planting to determine survivability and to rate tree size. Table 1 shows that most scion rootstock combinations performed satisfactorily except for Nonpareil on Deep Purple. Eight of nine Nonpareils on Deep Purple (Fowler source) died midseason, while 1 tree of 9 from the Burchell source perished. Most other Non (B) trees on DP were rated very poor. Similar poor performance was found in the first field evaluation at Nickels in 1998 of Deep Purple rootstock with Nonpareil.

Other combinations grew quite well with Nonpareil and Butte on Hiawatha rated the highest. Surprisingly, Nonpareil directly on M2624 also rated high this first season.

Table 2 shows tree ratings for the selected varieties on Lovell and peach/almond hybrid rootstocks. In general, all combinations grew well except for Nonpareil/Hansens 536. Two of nine trees died in this treatment while the remaining 7 grew well. The most consistent performers in this section of the test were Nonpareil and Butte on GF 677.

Table 1
Plum Type Rootstocks
Tree Ratings

	<u>Mean</u>
Mission M2624	2.22
Sonora M2624	2.11
Avalon M2624	2.22
Plateau M2624	1.67
13-I M2624	2.22
Nonpareil/F M2624	2.88
Mission DP	2.22 *
Nonpareil/F DP	0.33 *
Nonpareil/B DP	1.77
Nonpareil/Padre M2624	2.22
Butte Hiawatha	2.88
Nonpareil/F Hiawatha	2.88

1 = small inferior tree
 2 = moderate growth, healthy
 3 = vigorous, healthy

* Indicates dead tree in plot
 ** All trees dead in plot

Table 2
Alternative Rootstocks
Growth Ratings

	<u>Mean</u>
Non- GF 677	3.00
Non- Hansens 536	1.88 *
Non- Lovell	2.77
Butte- GF 677	3.00
Butte -Hansens 536	2.66
Butte- Lovell	2.55
Kochi- Lovell	2.66
Durango- Lovell	2.77

1 = weak
 2 = fair
 3 = good

* Indicates dead tree in plot