Notes

'Marianna 2624' Plum as a Rootstock for Almond

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Marianna 2624 plum (*Prunus cerasifera* Ehrh. x *Prunus munsoniana* White & Hedr.) is used as a rootstock for almond [*Prunus dulcis* (Mill.) D.A. Webb] because of its tolerance to oak root fungus [*Armillaria mellea* (Vahl:fr) Karst] and heavy, wet soil. Not all almond cultivars are compatible on this rootstock. Symptoms of incompatibility include midseason cessation of shoot growth, yellow rolled leaves, marginal leaf necrosis, premature defoliation, and occasional tree death. Cultivars that are compatible tend to produce smaller, less-vigorous trees that should be planted closer together than trees on peach rootstocks. Trees on 'Marianna 2624' are more susceptible to bacterial canker (*Pseudomonas syringae* Van Hall) than those on peach rootstocks, and they often produce root suckers and overgrowth at the union with scions of many almond cultivars.

Trials to determine the compatibility of various almond cultivars on 'Marianna 2624' plum rootstock have been conducted at the Nickels Soil Laboratory near Arbuckle, Calif., for 15 years. Two replicated trials (with six to eight trees of each combination), one completed and one continuing, have shown apparent compatibility for the following cultivars on 'Marianna 2624': 'Aldrich', 'Fritz', 'Le Grand', 'Norman', 'Ripon', 'Ruby' and 'Wood Colony'. Earlier studies have also shown that 'Carmel', 'Jordanolo', 'Merced', 'Mission', 'Ne Plus Ultra', 'Padre', 'Peerless', 'Price', and 'Thompson' were compatible on 'Marianna 2624'. Limited trials and grower experience have shown occasional incompatibility of 'Butte', 'Monterey', and 'Sonora' on this rootstock, but there are successful orchards of these cultivars on 'Marianna 2624'. Incompatible cultivars include 'Dottie Won', 'Kapareil', 'Milow', 'Mono', 'Nonpareil', 'Solano', and 'Livingston'.

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Sometimes in commercial orchards, even compatible cultivars show incompatibility-like symptoms on 'Marianna 2624', especially during the second and third growing seasons. Such affected trees often recover the following year and, although smaller, appear normal in future years. A few of the affected trees may die. Thus, even the most compatible cultivars on 'Marianna 2624' may at times express apparent incompatibility.

To overcome the incompatibility of 'Nonpareil' on 'Marianna 2624', an interstock of 'Havens 2B' (*Prunus insititia* L.) that is compatible with 'Nonpareil' and 'Marianna 2624' has been used. Such interstock trees have had variable performance. Observations indicate that differences in performance might be due to the length of the interstock, with trees having shorter interstocks doing poorly.

Two trials were established in 1989 to determine if longer interstocks [8–10 inches (20–25 cm) or scaffold budding] of 'Havens 2B' between 'Nonpareil' and 'Marianna 2624' would improve compatibility over shorter [4-inch (10-cm)] interstocks. A second objective was to determine if a long interstock [8 to 10 inches (20 to 25 cm) or scaffold budding] of a compatible almond cultivar would work as well or perhaps even better than 'Havens 2B' (previous reports on the use of compatible almond interstocks were conflicting). 'Mission' and 'Jordanolo' were used as the compatible almond cultivars in these trials.

One trial was conducted on a deep loam soil at California State University, Chico, Calif. In this trial, scaffold budding of 'Jordanolo' 'Havens 2B' and 'Mission' and 8- to 10-inch interstocks of 'Jordanolo' have so far been the most vigorous of the combinations tested and have shown acceptable compatibility. Trees with 4-inch interstocks were less vigorous. Surprisingly, control trees of 'Nonpareil' directly on 'Marianna 2624' are growing fairly well on this deep soil after 9 years, even though this combination is considered generally incompatible.

The other trial at the Nickels Soil Laboratory, planted on 18 to 24 inches (45 to 60 cm) of gravelly loam soil over a heavy clay layer, has been subjected to greater stress. In this trial, all of the 'Havens 2B' interstocks have performed well, with the longer interstocks producing more vigorous trees than the shorter ones. Scaffold budding of 'Jordanolo' has so far also performed fairly well and has produced more-vigorous trees than the other compatible almond interstock treatments. On this shallow soil, trees of 'Nonpareil' directly on 'Marianna 2624' grew satisfactorily for a couple of years, but eventually the trees either died or performed poorly.

In summarizing these two trials, 8- to 10-inch interstocks and scaffold budding improved compatibility between 'Nonpareil' and 'Marianna 2624' compared to the use of shorter 4-inch interstocks. Thus, growers should benefit from using longer interstocks when planting 'Nonpareil' in an orchard requiring the use of 'Marianna 2624' rootstock.