Almond

Phytophthora Root and Crown Rot

Pathogen: *Phytophthora* spp.

(Reviewed 3/09, updated 3/09)

In this Guideline:

SYMPTOMS

Symptom expression depends upon how much of the root or crown tissues are affected and how quickly they are destroyed. Generally, crown rots advance rapidly and trees collapse and die soon after the first warm weather of spring. Leaves of such trees wilt, dry, and remain attached to the tree. Chronic infections, usually of the roots, cause reduction in growth and early senescence and leaf fall. These trees may be unthrifty for several years before succumbing to the disease. Phytophthora infections typically kill young trees because their root systems and crown areas are small compared to those of mature trees.

COMMENTS ON THE DISEASE

Periods of 24 hours or more of saturated soil favor *Phytophthora* infections. Conversely, good soil drainage and more frequent but shorter irrigations reduce the risk of root and crown rot. Surface water from irrigation districts is mostly contaminated with *Phytophthora* species. Rootstocks vary in susceptibility to the different *Phytophthora* species; none are resistant to all pathogenic species of the fungus. Thus, the success of a rootstock may depend in part upon the species of *Phytophthora* present in the orchard. In general, plum rootstocks are more resistant than are peach or peach-almond hybrids. Of the plum rootstocks, Marianna 2624 is the most tolerant to *Phytophthora.*

MANAGEMENT

Proper water management is the most important aspect in controlling root and crown rot. Do not allow water to accumulate or stand around crowns of trees. Provide adequate drainage to low spots in the orchard, areas that flood frequently, and places where water penetration is extremely poor or leave areas unplanted.

If you are replanting an area where *Phytophthora* is present, plant trees on small mounds, as shallowly as possible, or on broad ridges with the upper roots near the soil level. Establish berms before planting; the ridges should be 8 to 10 inches (20–25 cm) high. Planting depth after settling should be no deeper than in the nursery, and the graft union should be well above the soil line.

Common name (trade name)	Amount/Acre	R.E.I.+ (hours)	P.H.I.+ (days)

When choosing a pesticide, consider the general properties of the fungicide as well as information relating to fungicide resistance and environmental impact.

A. FOSETYL-AL

(Aliette WDG) 5 lb/100 gal 12 365

MODE OF ACTION GROUP NAME (NUMBER[1]): Phosphonate (33)

COMMENTS: For use on nonbearing trees only. Foliar spray, 60-day interval.

B. MEFENOXAM

(Ridomil Gold EC) 48 0

MODE OF ACTION GROUP NAME (NUMBER[1]): Phenylamide (4)

COMMENTS: Rate varies with method of application and size of tree. Make applications in early spring and fall.

C. PHOSPHOROUS ACID

(Fosphite) 1–2 qt 4 0

MODE OF ACTION GROUP NAME (NUMBER[1]): Phosphonate (33)

COMMENTS: For use as a foliar or soil treatment.

\+ Restricted entry interval (R.E.I.) is the number of hours (unless otherwise noted) from treatment until the treated area can be safely entered without protective clothing. Preharvest interval (P.H.I.) is the number of days from treatment to harvest. In some cases the REI exceeds the PHI. The longer of two intervals is the minimum time that must elapse before harvest.

[1] Group numbers are assigned by the Fungicide Resistance Action Committee (FRAC) according to different modes of actions (for more information, see http://www.frac.info/). Fungicides with a different group number are suitable to alternate in a resistance management program. In California, make no more than one application of fungicides with mode of action Group numbers 1, 4, 9, 11, or 17 before rotating to a fungicide with a different mode of action Group number; for fungicides with other Group numbers, make no more than two consecutive applications before rotating to fungicide with a different mode of action Group number.

PRECAUTIONS

PUBLICATION

UC PEER REVIEWED

UC IPM Pest Management Guidelines: Almond
UC ANR Publication 3431
Diseases
W. D. Gubler, Plant Pathology, UC Davis
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http://www.ipm.ucdavis.edu/PMG/r3100811.html