Almond Leaf Scorch Impact on Different Rootstocks

Project No.: **06-PATH10-Uyemoto**

Project Leader: Jerry K. Uyemoto
USDA-ARS
Department of Plant Pathology
University California, Davis
One Shields Ave.
Davis, CA 95616
(530) 752-0309
jkuyemoto@ucdavis.edu

Objectives:

Compare trunk growth, canopy symptoms, and mean kernel wts of *Xylella fastidiosa* infected- and healthy-trees of cvs. Peeless and Sonora propagated on peach and plum rootstocks and Nonpareil on peach.

Materials and Methods:

Establishing plot and tree inoculations - Fifty almond trees were planted in 2004. A year later, 25 trees were inoculated (April 2005) with a cultured suspension of *X.fastidiosa* (placed 20 ul of 10^8 CFUs into a drilled hole in tree trunks), which resulted in zero infections. In July and again in August (latter trees with dead July grafts), diseased almond shoots were side-grafted; all scored as live in September 2005.

Year 2006 - Ten trees developed leaf scorch symptoms and 15 trees were reinoculated. All side grafts were scored as live 30 days later.

Year 2007 - One Peerless/Lovell tree failed to show leaf scorch symptoms. It was regrafted and all grafts survived 30 days incubation.

2007 trunk measurements and nut harvest - Circumference meaurements and mean kernel weights were recorded and data analyzed statistically. With trunk growth, significant differences occurred in between infected and healthy Peerless on both rootstocks and Sonora on Nemaguard roots (see Table 1). With mean kernel weights, no significant differences were found (Table 2).

Interpretative Summary:

The goals of this project were to compare severity of almond leaf scorch (ALS) disease on trees propagated on peach vs plum roots. Heretofore, chronically infected almond trees on peach root produce symptoms comprised of scorched leaf margins, limb

dieback, tree decline, and reduced nut production. In contrast, an ALS-Peerless/Mariana 2624 infected 15 years annually showed severe scorched leaves, yet continued to produce marketable crops and a full canopy, i.e. no dieback. It is expected that in the next 2 to 4 years meaningful differences in behavior among infected- and healthy-trees on peach and plum rootstocks will become evident.

Table 1. ALS: Trunk circumferences (cm) 9/13/07

Cultivars	Treatments	Mean circumference*
Peerless/Lovell	Control	35.6 AB
Peerless/Lovell	ALS	30.3 C
Peerless/M2624	Control	34.0 ABC
Peerless/M2624	ALS	32.4 BC
Sonora/Nemaguard	Control	36.9 A
Sonora/Nemaguard	ALS	32.5 BC
Sonora/M2624	Control	34.1 ABC
Sonora/M2624	ALS	33.5 ABC
Nonpareil/Titan	Control	35.5 AB
Nonpareil/Titan	ALS	36.9 A

*LSD 05 = 4.29; same letters are significantly similar

Table 2. ALS: Nut dry weights (grams) 9/4/07

Cultivars	Treatments	Single Kernel*
Peerless/Lovell	Control	1.26 A
Peerless/Lovell	ALS	1.08 A
Peerless/M2624	Control	1.25 A
Peerless/M2624	ALS	1.24 A
Sonora/Nemaguard	Control	1.32 A
Sonora/Nemaguard	ALS	1.36 A
Sonora/M2624	Control	1.26 A
Sonora/M2624	ALS	1.25 A
Nonpareil/Titan	Control	1.23 A
Nonpareil/Titan	ALS	1.08 A

*LSD 05 = 0.338; same letters are significantly similar