

Evaluation of Rootstocks for Performance in Bacterial Canker Sites

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Bacterial canker is a disease caused by the bacterium *Pseudomonas syringae* and is associated with almond and stonefruit orchards replanted into sandy soils infested with ring nematodes. Preplant fumigation is an important part of a bacterial canker management program. However, bacterial canker can still be a problem 3-5 years after fumigation as ring nematodes become re-established in the orchard. Currently registered nematicides are difficult to use in flood and microsprinkler-irrigated orchards. Microbiological soil additives have not proven to counter re-plant problems, including bacterial canker.

We currently have no ring nematode or bacterial canker resistant rootstocks available for almond and stonefruit growers. Nemaguard is highly resistant to root-knot nematode but is susceptible to ring and root lesion nematodes. Growers who have experience with bacterial canker tend to plant on Lovell rootstock in affected areas. Last fall at our cling peach meeting, I made a comment that I was not yet convinced that Lovell performs better than Nemaguard in bacterial canker sites, based on our rootstock trials. Now that I have collected data this spring, it appears I may have spoken too soon (see results below).

I am currently involved in four field trials in our area, monitoring rootstock performance in orchard replant situations. Two of these trials are old enough to give us some interesting data.

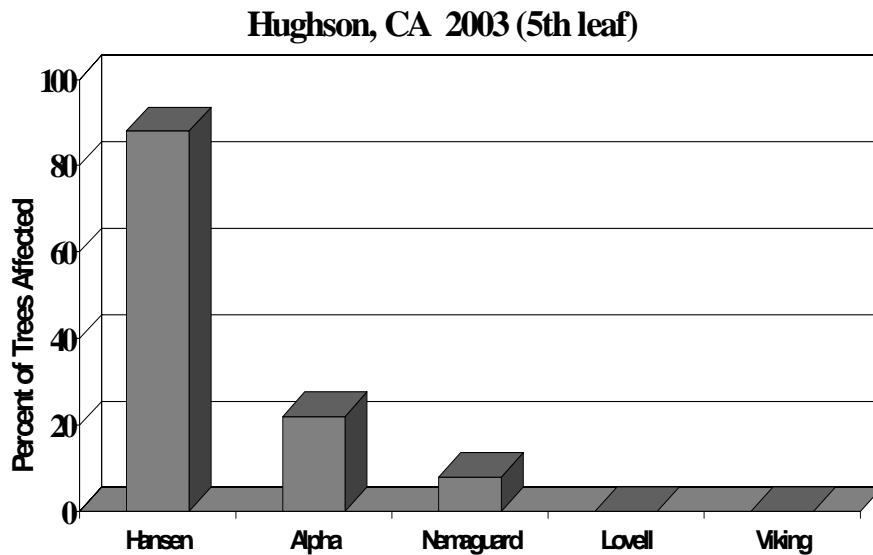
Trial #1. This trial is in a third-generation cling peach orchard in the Ceres area with a history of severe bacterial canker. In this trial we are evaluating the following rootstocks:

- Nemaguard (peach),
- Lovell (peach),
- Hansen 536 (peach-almond hybrid)
- Alpha (peach-almond hybrid)
- Viking (peach-almond-apricot-plum).
- Deep Purple (plum from USDA)

Despite per acre solid, tarped fumigation with 400 lb of 98% methyl bromide prior to planting, signs of bacterial canker began to appear in the 4th leaf. This spring (5th leaf), many trees died.

Results. So far, **91% of the trees on Hansen, 38% on Alpha and 42% on Nemaguard are significantly affected by bacterial canker.** Only 3% of the Lovell and Viking trees show significant signs of the disease. **88% of trees on Hansen, 22% on Alpha, and 8% on Nemaguard have died from bacterial canker.** No trees on Lovell or Viking have died in this trial (see Figure 1 below). The two peach-almond hybrid rootstocks are supporting high ring nematode numbers and Hansen has significantly more lesion nematode than the other rootstocks. Alpha supports almost as many root-knot nematodes as Lovell.

Figure 1. A Comparison of Peach Rootstocks Killed by Bacterial Canker.



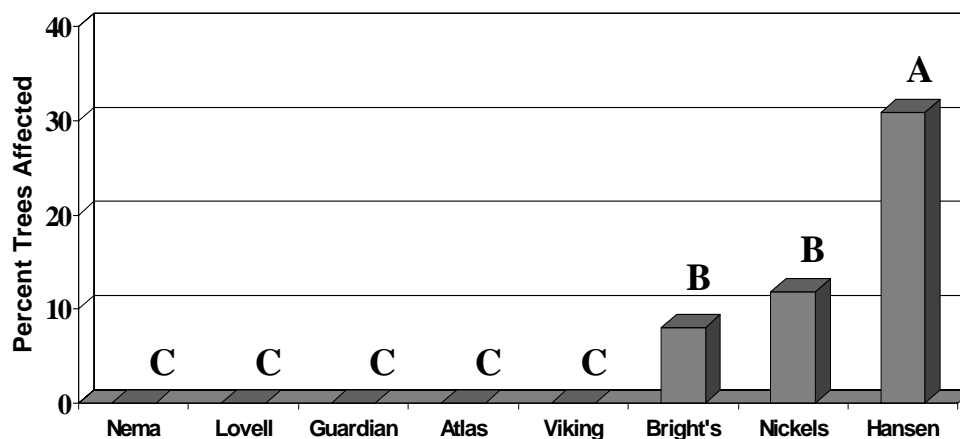
Trial #2. This trial is in a replanted almond orchard near Escalon with a history of bacterial canker. This orchard site was also fumigated with 400 lb per acre of 98% methyl bromide. In this trial, we are monitoring the performance of:

- Nemaguard (peach)
- Lovell (peach)
- Guardian (peach)
- Hansen 536 (peach-almond hybrid)
- Nickels (peach-almond)
- Bright's hybrid (peach-almond)
- Viking (peach-almond-apricot-plum)
- Atlas (peach-almond-apricot-plum)

In 2002 (5th leaf), only the three peach-almond hybrid rootstocks showed signs of bacterial canker (see Figure 2 below). Not much has changed this spring except a few of the trees on Hansen and Nickels have died. Results from this trial compliment the results from the peach trial.

Figure 2. A Comparison of Almond Rootstocks for Incidence of Bacterial Canker

Escalon, CA 2002 (5th leaf)



Most bc affected trees limited to death of small limbs.

Three Hansen trees had severe limb die-back.

Conclusions:

- Peach-almond hybrid rootstocks, especially Hansen, should not be planted in sites prone to bacterial canker.
- Lovell and Viking may be more tolerant than Nemaguard to bacterial canker.
- Nemaguard will generally yield better than Lovell (unless, of course, it dies from bacterial canker).
- Deep Purple is not a commercially acceptable rootstock for peaches.