RELATIONSHIP BETWEEN FERTILIZATION AND BACTERIAL CANKER DISEASE IN FRENCH PRUNE

FREP CONTRACT # 95-0478

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Summary
Bacterial canker (BC) is a serious disease that affects apricots, prunes, plums, peaches, almonds, and cherries. The disease is caused by a ubiquitous epiphytic bacterium, *Pseudomonas syringae*, that attacks trees "stressed" by ring nematode root-feeding, poor soil drainage, cold temperature, rain and other general stresses. Over one million acres of these susceptible crops are grown in California and nearly all commercial scale farms apply some form of nitrogen fertilizer to these crops.

Research plots have been established at the UC Davis Department of Pomology's Wolfskill ranch to determine the effects of "fertigation" (N [urea] fertilizers applied through drip irrigation) on growth responses and yields of French prune. Fertigation is thought to be an efficient N delivery scheme and an alternative practice to top-dressing. Unexpectedly, two of our treatment blocks which had no or very low levels of applied nitrogen (N) developed a very high incidence of BC (60% and 32%, respectively). No BC losses occurred in the other 22 treatment blocks that received higher levels of nitrogen. Extensive soil analyses of all nitrogen treatments showed no differences in nematode populations. Thus, the only apparent variable associated with BC at this site was the level of applied nitrogen.

The goal of this two year project is to determine the relationship between the amount of applied nitrogen and the incidence of bacterial canker disease in French prune trees by correlating the disease incidence and severity with rates of nitrogen applied by fertigation and leaf N analyses. Although the study will focus on French prune, it is likely that the results will be applicable to other stone fruit crops in California. Fertilizer recommendations will be developed which minimize the risk of developing BC due to under-fertilization, while minimizing the amount of nitrogen that needs to be applied for adequate tree growth and preventing contamination of ground water supplies.