Annual Almond Report
Dec. 31, 1986

Project No. 86-W3 - Almond Diseases
Ring and Lesion Nematode Control

Project Leader: Dr. Michael V. McKenry (209) 891-2500
University of California
9240 So. Riverbend Avenue
Parlier, CA 93648

Personnel and Cooperators: Howard Ferris (Nematology, UCD), Don Rough (San Joaquin County)

Objectives: Phase I - Identify the time(s) of the year when ring nematode and root lesion nematode reach their highest population levels.

Phase II: Test various nematicides for control of these two nematodes.

Interpretive Summary:

Phase I.

Ring nematode populations are highest in the 12 to 36 inch depths. At the surface to 12 inch depth populations are generally half that of deeper depths. Populations peak in fall months being two to three times higher than in April to August. Complete data from the thousands of soil samples are not completely analyzed and under closer scrutiny more discrete population peaks are likely to emerge.

Root lesion nematode populations in soil are highest in the surface 24 inches. Populations at 24 to 48 inches are reduced in the presence of a shallower rootstock (Marianna 2624) compared to the deeper rooting, Nemaguard stock. Younger bearing trees (5-years old) provide a slightly higher population than older bearing trees (eight-years-old) as well as higher population peaks when they do occur. There are two lengthy population peaks lasting 75 days each on Nemaguard rootstock. Soil populations of root lesion are lowest during the month of May and again from September through January. There can be more than three peak populations, lasting 40 days each, associated with Marianna 2624 rootstock. Population depressions of 30 to 40 days each occur during the months of May, September and January.

Phase II.

Due to the closeness of Nemacur to registration in almonds we concentrated our efforts on basin or spray applied Nemacur. Nemacur reduced populations in the surface 3 feet of soil against root lesion nematode on sandy loam soil and ring nematode on sandy soil. Against root lesion nematode the two rootstocks were treated at 6 lb ai/Ac, four separate times over 1 year for a total of 24 lb ai/Ac Nemacur. Treatment times included October, May, June and September. After the fourth treatment to Nemaguard root, populations were 90% lower than the untreated for 5 months and 75% lower for nine months

Phase II. (continued)

after final treatment. Applied to Marianna rootstock adequate control was attained for 8 months after which control was completely lost. There was a yield benefit of about 14% where Nemacur was applied to Nemaguard rootstock.

In a bacterial canker site treatments were applied in July, October or both. Treatments were equally effective against the ring nematode but none reduced populations below 50% of the untreated. Tree decline from bacterial canker complex was markedly reduced, however, when an October treatment of 9 or 18 lb Nemacur was utilized. This treatment timing is being re-tested in October '86 using a 4.5 lb strip treatment versus 9 lb solid treatment of Nemacur. Fall treatments appear to be most effective against ring nematode and should also provide ample control of root lesion nematode where it is present. Whether applied by sprinkler or as a spray to moist basin irrigated soils, Nemacur should be quite effective against root lesion nematode with less effectiveness against ring nematode. Split treatments are worthy of testing but at least one treatment should be during the fall months.

Experimental Procedure:

Two sites were selected for the studies. In one site we had 9-year-old tree on four different rootstocks, with and without root lesion nematode. Nemacur was applied at 4 different times from Oct. '84 through Sept. 1985, primarily when root lesion soil populations were lowest. Nematodes were being counted every 28 days during that time so the treated sites were included in the experiment and sampled every 3 months.

In a second site 4 adjacent irrigated basins with 130 trees each were treated with Nemacur at either 18 lb in July, 18 lb in October, 9 lb in July and October or no chemical. Nematodes were being sampled extensively from the untreated area and additional samples were collected from the treated area druing 1985 and '86. Tree survival in this BCC area was monitored in spring 86 and will be monitored again in spring 1987.

Results:

Our data are voluminous with more than 2000 soil samples already collected and counted. We have not yet completely tabulated and analyzed the data and it will take another 6 months to do so. The sketchy results to date are reported in the interpretive summary. More samples will be collected from treated areas during 1987. Additionally, we will have another look at BCC in spring 1987.

Discussion:

In general Nemacur is quite effective against root lesion nematode on Nemaguard rootstock regardless of application date. This product is much less effective against ring nematode whether applied in July or October however, BCC was controlled in 1986 in any site receiving on October treatment of Nemacur. We want to see if BCC control can be repeated in 1987.

Publication:

None.