

## SIREX MANAGEMENT IN RESPONSE TO THE GREEN TRIANGLE OUTBREAK: LESSONS FOR OTHER COUNTRIES

Dennis Haugen

1082 Shryer Ave, Roseville, Minnesota, USA

From 1987-1990, an outbreak of *Sirex noctilio* occurred in *Pinus radiata* plantations in southeastern South Australia and southwestern Victoria. Up to 80% tree mortality occurred in the most susceptible stands. The major management response was to inoculate 147,000 sirex-infested trees with the nematode, *Deladenus siricidicola*. Selected compartments were monitored for tree mortality, sirex emergence, nematode infection levels, and parasitoid levels over the next 4 years.

Monitoring showed that the mean nematode infection rate was 26% from inoculated trees. The expected rate was 90% and greater. Changes in inoculation procedures were studied and found not to be the major cause of the low infection rates. Further studies revealed a loss in nematode infectivity due to repeated laboratory culturing of the fungus-feeding form of the nematode without allowing for the infective cycle.

Evaluation of the monitoring data revealed compartments in which nematodes were already established prior to the 1987 inoculations. In hindsight, these areas already had adequate nematode levels, and further inoculations were not needed.

One outcome of this outbreak was recognition of a need for a national strategy for sirex management. A National Sirex Coordination Committee was formed under the Australian Forestry Council, and a subcommittee drafted the national strategy. This strategy was developed for the Australian situation, but many of the 12 major recommendations are applicable in other countries with some adjustments to the various parameters. In Australia, the national strategy appears to have worked; there has not been a significant sirex outbreak since the Green Triangle outbreak of 1987-1990.



Dennis has been working on sirex woodwasp for 20 years. In Australia, he was the lead entomologist in implementing a biological control program for the sirex outbreak during 1987-1991. Also, he was the lead author on the National Sirex Management Strategy for Australia. After returning to the US, he was a consultant to the US Forest Service on the Pest Risk Assessment for pine from New Zealand. He has been working with the National Forest Research agency (Embrapa) in Brazil on a sirex biological control program since 1997.

Dennis received his Ph.D. (Entomology & Forest Biology) from Iowa State University in 1985. He has been an Entomologist with the USDA Forest Service, Northeastern Area in the St. Paul Field Office since 1993.