REDUCING ROOT-LESION NEMATODE IN PRUNUS WITH CHEMICAL DRENCHES IN NURSERIES

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High-value perennial crops are prone to nematode infection. Due to the long residence time in the field, the exposure of minimal initial populations can lead to build-up of damaging population densities. To reduce the risk of introducing and spreading plant-parasitic nematodes, strict regulatory guidelines (NIPM7) are in place that prescribe how nursery stock must be produced. In these guidelines, nursery stock producers have the option to either test their stock at the time of proposed sale or to follow prescribed treatment regiments. Many of the possible schedules rely on the use of the phased-out methyl bromide or 1,3-D-containing materials. The objective of this project was to determine if alternative nematicidal compounds could be used in lieu of the aforementioned fumigants. Two experimental fumigant and three non-fumigant materials were compared for efficacy to Telone, Vapam or Vydate treatments. Three drench treatment experiments were conducted in microplots of 60-cm diameter filled to 1.50 m depth with soil infested with *Pratylenchus vulnus*. One experiment in sandy loam-sandy soil mix was initiated on October 1, 2015 when treatments were applied as soil drenches in 1.5 liter of water/m^2, or as gas application (Telone II). On November 25, 2015, plots were planted to pre-stratified 'Nemaguard' seeds after soil samples were collected from 0-1.5-m depth in 30-cm increments. After plant emergence, root samples were taken initially for staining to determine nematode penetration (April 6, 2016), and later for root extraction for population density determinations (July 7, 2016). In the second type of experiments, selected treatments were applied on March 4, 2016. All treatments were drench applications, including a Telone EC, and a water control. On April 20, post-treatment soil samples were taken at planting of clonal 'Nemaguard' plugs. Soil counts from sieve-mist extraction attested limited nematicidal activity of some of the materials compared to 1,3-D treatment. The seedling evaluations were much more sensitive to detect nematode infectivity. Both fumigant materials reproducibly had much lower penetration by *P. vulnus* than the water control in the different experimental contexts. Surprisingly, especially one of the experimental non-fumigant materials reduced nematode root penetration to low levels compared to the water control. In summary, some of the experimental materials reduced nematode penetration almost to the

extent that 1,3-D-containing material did. Further optimization work is necessary to generate treatment protocols acceptable under the strict regulatory requirements of nursery treatments.