

FINAL PROJECT REPORT

Project Title: Post-plant management of dagger nematodes

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Other funding Sources: VALENT provided DiTera for free

Agency Name:

Amount requested/awarded:

Notes:

Total Project Funding: \$ 7,495

Budget History:

Item	2006	2007	2008
Salaries			
Benefits			
Wages	4,185		
Benefits	460		
Equipment			
Supplies	450	1,000	0
Travel	400	1,000	0
Miscellaneous			
Total	5,495	2,000	0

Objectives: The objective is to use DiTera as means to control both *Xiphinema americanum* (dagger) and *Pratylenchus penetrans* (lesion) nematodes in post-plant cherry orchards. In addition, the effect of DiTera on non-target beneficial free living nematodes will be evaluated.

Significant Findings:

After 3 years of applying DiTera in a cherry orchards, a significant reduction in dagger nematode population was achieved in comparison to the untreated controls. DiTera did not cause a significant reduction to the non-target beneficial free-living nematodes in comparison to the controls.

Results and Discussion:

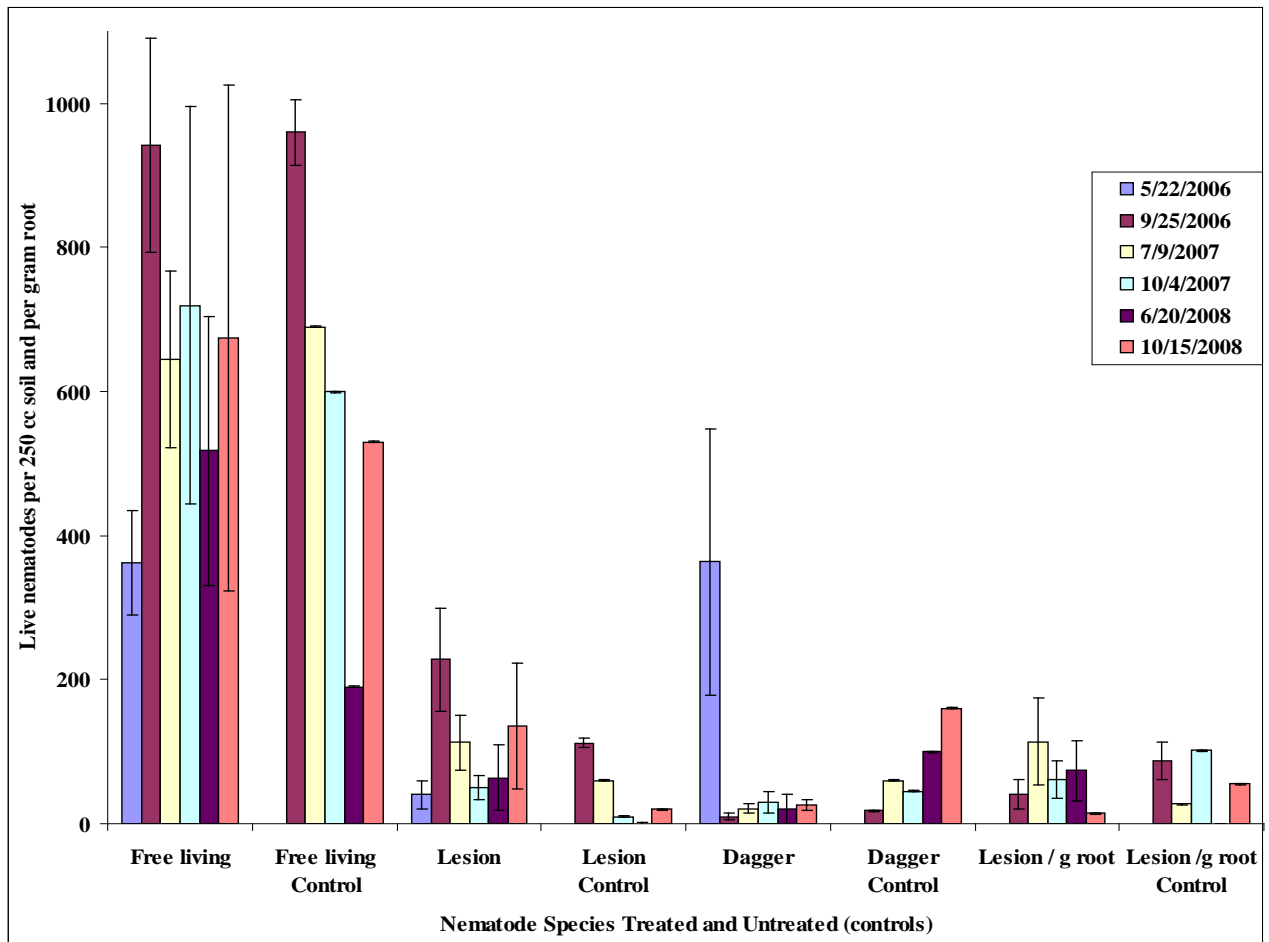
After 3 years of applying DiTera in a cherry orchard with high densities of dagger nematodes, a significant reduction in dagger nematode population was achieved in comparison to the untreated controls (Fig 1). On average, dagger nematodes were reduced from 400 individuals per 250 cc soil (initial samples were collected in May 2006) to 26 individuals per 250 cc (final samples were collected in October 2008). Similar reduction was recorded from all soil samples.

There was no significant reduction of lesion nematode populations in the soil or inside the cherry roots (this is a migratory endoparasite and it lives both inside the root and in the soil) (Fig. 1). We are hypothesizing that DiTera is reducing the dagger nematodes in the soil but does not affect lesion nematodes inside the roots; and once the nematicide effect of DiTera dissipates, then the lesion nematode leaves the roots and gets re-established in the rhizosphere soil. In addition, lesion nematodes have a shorter life cycle and a higher reproductive capacity than dagger nematodes so lesion nematodes can get re-established within one season in the soil.

DiTera did not cause a significant reduction to the non-target beneficial free-living nematodes in comparioan to the controls (Fig 1).

The reduction of dagger nematodes achieved in this study is of importance to established cherry orchards as controlling this nematode species will lead to reduction of virus transmission, yield increase and tree survival. Although DiTera did not control the lesion nematodes in this cherry orchard, the low lesion nematode densities found are not of significant concern to this established cherry orchard.

Fig 1. The effect of DiTera on *Xiphinema americanum* (dagger nematode), *Pratylenchus penetrans* (lesion nematode) and beneficial free-living nematodes – 2006, 2007 and 2008 Cherry Orchard field trial



Executive Summary

The dagger nematode, *Xiphinema americanum* is associated with virus transmission and yield reduction in cherries and other crops. Therefore, dagger reduction or elimination is necessary. After 3 years of applying DiTera in a cherry orchard with high initial dagger densities, a significant reduction in dagger nematode population was achieved in comparison to the untreated controls.

Future Directions:

DiTera has been applied in two additional cherry orchards; one orchard was treated in 2007 and 2008 and the second orchard was treated in 2008. The nematode densities in both orchards will be monitored over three years.

The high dagger nematodes found in the three cherry orchards we have sampled, indicate that pre-plant sampling for nematodes must become a routine measure to allow for pre-plant treatments against nematodes. Furthermore, pre-plant soil sampling must be followed by a synthetic nematicide or a bio-nematicide treatment to reduce or eliminate nematodes prior to cherry planting.

A cherry orchard was fumigated in fall 2007 with Telone and Vapam to reduce dagger nematodes. Cherry seedlings were planted in spring 2008 and DiTera was applied as an additional measure. This orchard will be monitored over three years.

We will seek more cherry orchards to sample for dagger nematodes and to apply synthetic or bio-nematicides in order to develop control strategies against nematodes.