

Evaluating novel nematicidal chemistry for usefulness in the nursery industry

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Project Summary/Abstract

The nursery industry and California agriculture have greatly benefitted from clean stock programs. The need for sanitary treatment of stock production land area is great. Regulatory guidelines of the Nursery Inspection Procedures Manual (NIPM-7) prescribe proper procedures for sanitizing nursery ground or alternative strategies to ensure clean nursery stock. With the discontinuation of methyl bromide, a true gap of treatment availability has arisen. In contrast to the efficacy requirements in commercial production fields, most complete nematode reduction is necessary to produce high quality stock. After decades of few nematicidal compounds being developed, the most recent years have provided new chemistries becoming available for nematode suppression. In a prior project graciously supported by this program, available chemicals have been intensively tested for efficacy in nematode suppression. Two non-fumigant materials, Salibro and a high-volume material were identified to have potential for successful nematode suppression. In a related project, highest levels of efficacy in nematode suppression of anaerobic soil disinfestation (ASD) were found. It is the objective of this proposal to improve and simplify application techniques and strategies of these methods. The three methods require tarp cover with totally impermeable film (TIF) on top of a complex net of drip irrigation lines to accommodate soil drenching with 6 acre-inches of water. In addition, ASD is logistically demanding for hauling, spreading and incorporating carbon substrate before the watering regiment is implemented. Simplifications and cost savings are urgently needed to make these methods commercially acceptable.

Scope of Work

Describe the goals and specific objectives of the proposed project and summarize the expected outcomes. If applicable, describe the overall strategy, methodology, and analyses to be used. Include how the data will be collected, analyzed, and interpreted as well as any resource sharing plans as appropriate. Discuss potential problems, alternative strategies, and benchmarks for success anticipated to achieve the goals and objectives.

Based on information from prior years of the study, two products and rates are chosen for application method modifications. Simplifying application methods and watering schedules in the highly effective anaerobic soil disinfestation (ASD) are the focus of this project. A field with natural infestations of *P. vulniferus* and other plant-parasitic nematodes will be chosen for small plot work. Soil (and root) samples for nematode extraction will be taken at planting and at 1/2-year intervals. This procedure will allow for determining if treatments were effective, and if this effectiveness was sufficient to maintain freedom of nematode infection. Two rows spaced 2 ft apart will be planted in each plot. Plants of one of these rows will be excavated after at the necessary intervals for growth and root evaluations, and the second one will be maintained until harvest maturity of the planting stock after approximately 15 months. Field plots will be established during the summer, and treatments timed to allow for planting of nursery plugs in the following spring. The one-year data will provide important predictive power of which treatments may require in post plant treatments with the tested nematicides.