CALIFORNIA STATE SCIENCE FAIR
2003 PROJECT SUMMARY

Name(s)
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Project Number
J1426

Project Title
Alternatives to Methyl Bromide

Abstract

Objectives/Goals
Methyl bromide, an ozone depleting pre-plant soil fumigant will be banned in the year 2005. An alternative is desperately needed. I chose to evaluate methyl iodide(chemical alternative), walnut tea extract and commercial compost(natural alternatives) and an untreated check against the current industry standard methyl bromide. I believe methyl iodide will be very effective at disinfesting the soil of root-knot nematodes and weeds.

Methods/Materials
In a randomized and replicated experiment, five soil treatments were evaluated for their effectiveness against the root-knot nematode. 500cc of methyl bromide, methyl iodide, walnut tea extract, commercial compost and untreated soil was placed in 750cc plastic pots. A radish plant was used as a host plant to measure the host response and plant development in the different soil treatments.

Results
In my experiment the natural alternatives, walnut tea extract and commercial compost failed to disinfest the soil of root-knot nematodes and weeds, and plant growth was poor. Methyl iodide, the chemical alternative with a 2.5 day half life was very effective at disinfesting the soil of nematodes and weeds and plant growth was moderate.

Conclusions/Discussion
It will be difficult to find effective alternatives to methyl bromide. Methyl iodide is very effective at disinfesting the soil of root-knot nematodes and weeds, but did not produce plants as large as the methyl bromide treated soil. The walnut tea extract, compost, and the untreated soils were severely infested at the end of 7 weeks. The search must continue for natural or chemical products that minimize the risk to workers and the environment.

Summary Statement
Evaluating natural and chemical alternatives to methyl bromide.

Help Received
Used a greenhouse at the University of California, Kearney Ag Center, under the supervision of Staff Research Associate Tom Buzo, UCR Nematology.