Management of Root-knot Nematode Damage in Tomato.

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Background: Root-knot nematodes (*Meloidogyne* species) are the most damaging nematodes in a wide variety of crops grown in California. There are many different root-knot nematode species, but in the warm climate areas of inland Central and Southern California, two species; *M. incognita* and *M. javanica* are most often associated with crop damage. These nematodes have a wide host range including many vegetables, ornamentals, and fruit crops. Above-ground, nematode-affected plants can show a range of symptoms that indicate that roots are not functioning properly. Symptoms can include wilting, stunting, yellowing, or general poor growth. Symptoms on the roots of infected plants consist of root-galling. This can be very obvious on some crops such as cucurbits, and tomato. To control root-knot nematodes, nematicides can be used effectively in commercial agriculture. However, because most nematicides are highly toxic, and therefore are subject to restrictions as to how, how much, when, where, and in which crops they can be used, they are not available to home gardeners.
Other, non-chemical approaches can be used that lower the nematode populations and/or prevent major nematode damage. Examples of such approaches include growing nematode-resistant varieties, using crop rotation with non-hosts or nematode-antagonistic plants, fallowing, and soil solarization.

The goal of this study is to show effects of such strategies when used separately and when used in combination on nematode infestation of tomato.

Trial design:
The trial is located at the UCR Agricultural Operations Center, Riverside. The trial consist of 100 micro-plots. Each microplot is a concrete tube (diameter 3 ft), open at the bottom, 5 ft-dug into ground, containing root-knot nematode infested sand (range 150 – 5,000 per 100 cc at start of trial).
Main Treatments (5) march-may 2009:

1. dry fallow (F)
2. marigold *Tagetes patula* cv. Single Gold
3. oil radish *Brassica sativa* cv. TerraNova
4. mustard Brassica juncea cv. Nemfix
5. dry fallow-Basamid nematicide.

Crops were grown to flowering, cut, chopped and incorporated. Soil samples were collected. Basamid™was applied. All microplots were watered to capacity.
Sub-Treatments (2) may 2009:

micro-plot covered with clear plastic for 3 wks (+)
micro-plot not covered (-)

Soil and air temperatures were recorded in several covered and non-covered plots. After removal of plastic, samples were collected.
Sub-sub-Treatments (2) june-current (2009):

susceptible tomato var. Floralina (S)
resistant tomato var. Celebrity (R)

Three four-wk-old tomato transplants were planted in each micro-plot 24 hr. after removal of plastic. One month after transplanting, plants were removed to leave 2 tomato plants per plot.

At harvest, fruit yield per plot, root-galling and nematode soil-populations will be determined. Data will be analyzed statistically to determine if main, sub, and sub-sub treatments affected tomato yield, root symptoms and nematode levels, and which treatment combination resulted in highest/lowest yields and nematode levels.