NURSERY AND FRUITING FIELD FUMIGANT EFFECT ON STRAWBERRY

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An experiment was conducted during the fall, winter and spring of 2001 - 2002 to determine if the preplant soil fumigant (iodomethane/chloropicrin vs. Telone C-35) used for nursery plant production would have an effect on fruiting field performance of 'Chandler' strawberry plants and if formulation of iodomethane / chloropicrin mixtures and Telone C-35 applied preplant to the fruiting field affected strawberry fruit production. Bare-rooted strawberry plants were obtained from small plot nursery research in North Carolina and were transplanted in the fruiting field portion of the experiment at the University of Florida, Gulf Coast Research and Education Center in Bradenton, FL. All fruiting field fumigant treatments were applied using a standard 3 chisel in-bed fumigation rig with the chisels mounted in the throat of a single row bed former/shaper on 2 November 2001. The 8 inches tall, 28 inches wide beds were spaced 5 ft apart on centers. The main fruiting field fumigant plots were 50 ft in length and were divided into two equal sections for the plants from the two nursery fumigant treatments. Twenty plants of each nursery fumigant (Iodomethane / chloropicrin or Telone C-35) were transplanted into two rows in each plot on 15 November 2001, 13 days after fumigant application. The crop was fertilized and irrigated via a single micro-irrigation (drip) tube placed in the bed center and equally spaced between the two rows of plants.

Some foliar burn was observed on berry plants in early December 2001. This marginal burn and necrosis did not appear to be associated with any fruiting field treatment; however, it was more pronounced on plants grown in soil previously treated with iodomethane/chloropicrin in the nursery in NC than on those plants which were grown in areas treated with Telone C-35. Strawberry plant vigor was evaluated visually four times during the season. Plant vigor was not affected by fruiting field fumigant treatment during the first two evaluations (5 December and 27 December 2001), but it was during the 24 January and 13 March 2002 evaluations. On the 24th of January 2002, the most vigorous plants were observed in plots treated with iodomethane / chloropicrin (33/67%) and Telone C-35. By the 13th of March 2002, Telone C-35 was the only fruiting field treatment with plants more vigorous than the nontreated control and these plants were significantly more vigorous than all of the other fumigant treatments, other than iodomethane / chloropicrin (33/67%). At each of the four evaluations, plants grown in nursery soil treated with Telone C-35 were more vigorous than those

from soil previously fumigated with iodomethane/chloropicrin. This is in contrast to the appearance of the plants when first received and planted. Initially, the iodomethane/chloropicrin plants appeared to be the most vigorous, but once transplanted, the iodomethane plants appeared to suffer transplant shock longer than those from nursery soil fumigated with Telone C-35.

Soilborne disease pressure was light in this experiment and only minimal plant loss was observed. The fewest plants lost to soilborne disease resulted from soil fumigation with methyl bromide / chloropicrin, Telone C-35 and the high ratio of iodomethane (67%) to chloropicrin (33%). Fewer plants died where Telone C-35 was used in the nursery as opposed to iodomethane, following the trend observed with plant vigor.

All plots had weeds and there were few large differences due to fruiting field fumigant treatment. Early control of purple nutsedge was equal with all treatments, including the nontreated control. More nutsedge emerged in plant holes where Telone C-35 was applied, but there was no difference among fumigants for the number of nutsedge plants to emerge through the plastic mulch film. All treatments, except the 67/33 formulation of iodomethane / chloropicrin, controlled evening primrose. Fruiting field fumigant treatment had no effect on any of the weeds present at the end of the season; however, there was more nutsedge present in that portion of each plot where plants came from nursery soil treated with iodomethane. This increase in nutsedge population is most likely the result of reduced strawberry plant competition due to lower plant vigor.

Plant parasitic nematodes were not a growth limiting factor in this experiment. There was no difference among fruiting field fumigant treatments for rootknot, spiral or stubby root nematode populations in this experiment nor did nursery treatment affect nematode populations.

Fruiting field fumigant treatment did not impact yield, but nursery fumigation practice significantly affected yield during January and April and for the season total, with the most fruit produced on plants grown in soil fumigated with Telone C-35 in the nursery in NC. Fruit size was not affected by any treatment, fruiting field fumigant or nursery fumigation practice.