## Conventional and organic alternatives to methyl bromide on California strawberries and other high-cash crops.

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These data present the seventh year of field tests of alternative chemical fumigation, greenhouse grown strawberry plug plants, an organically acceptable strawberry production program, and turf and ornamental crop fumigation studies on the California Coast. The 2001-2002 programs compared three strawberry production systems: **Conventional** – MBr/CP, **Alternative**- Telone/CP and Iodomethane/CP, and **Organic** - using CCOF/OMRI acceptable soil amendments and VAM inoculation. Results from these studies were presented by this author in previous MBAO meetings. Current 2002-2003 studies focus on alternative strawberry transplants (plug plants) in non-fumigated soil compared to bare root transplants in fumigated soil, and testing of alternative fumigants on other crops such as turf and ornamentals, and fresh market tomatoes.

## Results

1. Alternative Strawberry transplants

Past season demonstration plug plantings totaled over 4 million plants in California with cooperating growers. The weather conditions were warmer than normal and the typical wide difference in plug plant earliness and conventional bare root transplants was not realized. Nevertheless, plug harvesting began 2-3 weeks earlier and continued ahead through the season until March, when plug plant yields were equivalent to bare root plantings. Several plantings of plugs were made into non-fumigated soil and soil treated with alternative fumigants within the matrix of cooperating growers. Both Camerosa and Ventana plugs were evaluated in the Oxnard and Los Angeles areas of Southern California during the 2002-2003 seasons, and many cooperating growers increased their participation with the plug technology program for the current season.

Greenhouse plantings in our program for the 2003-2004-production period were contaminated with antracnose disease, *Colletotrichum acutatum*, from a commercial grower in Ontario Canada from which the tip material was obtained. In greenhouse conditions, *C. acutatum* is particularly difficult to manage, since plants are continually misted and grown in high-density populations. The activities of this commercial grower and his contaminated tips have had a widespread impact to the strawberry plug plant culture nationwide. Numerous commercial strawberry plug growers in New Jersey, North and South Carolina, Florida and California have lost entire plantings from contaminated tips produced by this Ontario grower. This has, in effect, stopped the further expansion of this alternative technology, and caused plug growers to rethink their source of tip material in the future. In our case, all research material for the 2003-2004 season was lost to this disease event.

2 Turf and ornamentals

Three studies were conducted near Monterey California, testing the effectiveness of Iodomethane, Chloropicrin, Telone, and metham sodium for control of pathogens, weeds and soil borne disease. In turf studies, trimming weights, weed emergence and stand counts were used to evaluate differences among fumigants. In the case of ornamentals, bacterial soft rot incidence, weed emergence and bloom production were evaluated on Calla. On Larkspur, *Fusarium* incidence and severity was evaluated in addition to plant development and bloom production. In all cases, fumigants increased plant productivity and gave significant control of most weed species. Data from these trials are presented for review.