FACILITATING ADOPTION OF ALTERNATIVES TO METHYL BROMIDE IN CALIFORNIA STRAWBERRIES

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Summary. The objective is to increase adoption of alternatives to methyl bromide (MB) for strawberries. This project will demonstrate which combinations of fumigants applied at reduced rates under impermeable and semi-permeable tarps can sustain strawberry production in commercial fields. The combined strategy of reduced fumigant rates and increased retention may allow for continued use of alternative fumigants despite increasingly stringent regulations on fumigant use. This project will test and demonstrate non-fumigant methods to control key soil pests by steam, non-fumigant chemicals, and natural products such as mustard seed meal. The ultimate goal of this research is to optimize and demonstrate cost-effective treatments that control soil pests and allow profitable California strawberry production to continue without pre-plant soil fumigation by MB.

The specific objectives and progress to date:

1. Evaluate reduced rates of alternative fumigants applied by drip fumigation under VIF and SIF in combination with metam sodium (sequential application).

   Field trials were initiated at MBA in Watsonville, CA on November 3, 2008, and in Salinas, CA on October 29, 2008. Treatments included were chloropicrin (Pic) at 150 lb/A, Inline at 200 lb/A, Pic-Clor 60 EC at 150 lb/A, Midas at 150 lb/A, MBPic at 300 lb/A and an untreated control. These treatments were tarped with three different films: HDPE, VIF (virtually impermeable film) and TIF (totally impermeable film). Viability of pathogen and weed seed samples from these trials is currently being analyzed. Harvesting of these trials is also currently under way.

2. Conduct on-farm demonstration trials in buffer zones (60 to 300 ft) using reduced rates of fumigant applied by drip fumigation under VIF.

   Demonstrations were initiated in October and November, 2008, at Edgar Terry and Bill Reimann, Oxnard, CA, Mar Vista Berry and DB Specialty in Santa Maria, CA, Rod Koda, and Miguel Ramos in Watsonville, CA, and with Tres Coronas in Salinas, CA. Yield assessments were completed at Oxnard and are under way at the other locations.

3. Determine relative fumigant retention under tarps for treatments used in objective 2.

Selected drip fumigation evaluations were conducted on the research and demonstration plots listed in objectives 1 and 2 showed that Pic, iodomethane, and Inline concentrations were at least two fold higher under VIF than standard PE tarp for five days after drip application.

Detailed drip fumigation evaluations with Pic-Clor 60 at 0, 50, 100, 200, 300 and 400 lb/A were conducted at Tres Coronas in Salinas, CA in Oct. 2008. Retention of Pic-Clor 60 under TIF was compared to 1 mil standard TriCal film. TIF increased the retention of Pic-Clor 60 compared to standard film. Weed control and fruit yield were higher with TIF than with standard film.

4. Evaluate and demonstrate promising non-fumigant alternatives for strawberry.

Field studies were initiated at Salinas Oct. 9, 2008 and at the Watsonville Monterey Bay Academy site Oct. 24, 2008. Treatments included steam, steam + Agrothrive, mustard seed meal, furfural, Cannonball + Ridomil + GoalTender, Topsin + Ridomil + GoalTender and AG3. So far steam is as consistent as MBPic for weed control. Fruit yields for Steam + Agrothrive are higher than for MBPic.

5. Demonstrate to growers the performance of key alternative fumigants so that they can make informed decisions during the transition to alternative fumigants.

A grower meeting was held Feb. 5, 2009 in Watsonville, CA and a field day was held in Ventura County on April 22, 2009 to discuss and demonstrate fumigant and non fumigant alternatives to MB for strawberry. Field days were held in Watsonville on June 19, 2009 and in Salinas on June 30, 2009.