2011 Annual International Research Conference
on Methyl Bromide Alternatives and Emissions Reduction
Oct 31 – Nov 2, San Diego, CA

Presentation summary

THE HOTBED SYSTEM FOR SWEETPOTATO PLANTING STOCK: IS SOIL FUMIGATION NECESSARY?

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Previous research on this project has shown that weeds are the main pest problem facing commercial sweetpotato growers in hotbeds, and that nematodes and plant disease are inconsequential. However, growers commented that these results were preliminary, and further work is needed under varied locations and systems. Therefore, fumigation and non-fumigant alternatives to MeBr were evaluated in commercial sweetpotato hotbeds at 6 locations near Livingston, CA, in 2011. Fumigation alternatives were solarization, various rates of chloropicrin under TIF tarp, and metam sodium. These were compared to a non-fumigated control or a standard MeBr + Pic (53/47% at 350 lbs/A) under LDPE tarp. At each location, five different herbicide treatments were evaluated within each fumigation alternative treatment. Herbicides included Devrinol (napropamide), 4 lbs/A equivalent; two rates of Valor (flumioxizin), 1.0 and 1.5 oz/A equivalent; Dacthal (DCPA), 8 lbs/A equivalent; plus an untreated control. Herbicide treatments were the same at each location, however, due to the demonstration nature of this project fumigation treatments varied by location and were not replicated. The fumigation treatments were large, typically 1000 feet long by 30 feet wide. Treatments were evaluated for nematodes (especially root knot), *Pythium*, weed pressure, crop phytoxicity, and plant production.

Results

As in previous years, nematodes were sampled by taking a 500 cc soil sample from each of the main plots in February before the beds were installed and again at plant harvest in May. No root knot nematodes (*Meloidogyne incognita)* or other plant parasitic nematodes were found at either sampling event. Similar to nematodes, the soil analysis for potential root rotting pathogens showed no significant differences among treatments. *Pythium* populations were extremely low in all plots.

With the fumigation treatments, only MeBr provided adequate weed suppression. Even though Pic was applied at very high rates under totally impermeable film (TIF), weed suppression was negligible. Most of the weeds, with the exception of yellow nutsedge, were effectively controlled with the herbicides evaluated at each

location. Application of Devrinol or either rate of Valor significantly reduced the number of weeds as compared to not treating, with Valor having the greatest efficacy on the weeds present. Dacthal prevented most weed growth, but caused substantial crop injury and cannot be recommended for use in hotbeds even though it is a registered herbicide for sweetpotatoes. No crop phytotoxicity was seen as a result of the main plot fumigation treatments, and there were no differences in plant production between any of the treatments with the exception of Dacthal. Results to date strongly suggest that the use of MeBr in sweetpotato hotbeds is unnecessary and can be replaced with metam or chemical herbicides.