Soilborne wilt disease caused by fungal pathogens Verticillium spp, Fusarium spp and bacterial pathogens Ralstonia solanacearum often cause serious losses to tomato growers either by stunting or totally killing the plants prematurely. Rotation and chemical fumigation of soil is not feasible to many growers either due to limited farm size or organic growing conditions. Biofumigation and/or biologically based options for managing these pathogens are critical needs to these growers. On-farm trials were conducted at grower cooperators’ fields with heirloom tomato ‘Mortgage lifter’ to investigate the efficacy of bio-fumigants, biological antagonists, and resistant rootstock in managing wilt disease, and demonstrate results to tomato growers. Thirty five days after planting in contaminated soil, grafted (on resistant rootstock “Maxifort”) tomato plants showed significantly higher plant vigor compared with non-treated check. All treatments had significantly lower symptomatic leaves than that of non-treated check at 35 days after planting. Cumulative harvests for six weeks showed that yield from all treatments except mustard cover crop were significantly (P<0.001) higher compared with non-treated check in the 1st year. However, in the 2nd year all treatments had higher yield compared to non-treated check. Grafted plants produced ~20 lb tomatoes/plant compared with only 11 lbs by non-treated check. Results suggest that organically acceptable methods can provide significant yield advantage to heirloom tomatoes in soilborne pathogen infested soil. A total of 120 farmers reported changes in knowledge, attitudes, skills and/or awareness from which 35 adopted planted tomato and bio-fumigation for managing soilborne tomato diseases as a result of outreach activities.

**SUMMARY**

Soilborne wilt disease caused by fungal pathogens Verticillium spp, Fusarium spp and bacterial pathogens Ralstonia solanacearum often cause serious losses to tomato growers either by stunting or totally killing the plants prematurely. Rotation and chemical fumigation of soil is not feasible to many growers either due to limited farm size or organic growing conditions. Biofumigation and/or biologically based options for managing these pathogens are critical needs to these growers. On-farm trials were conducted at grower cooperators’ fields with heirloom tomato ‘Mortgage lifter’ to investigate the efficacy of bio-fumigants, biological antagonists, and resistant rootstock in managing wilt disease, and demonstrate results to tomato growers. Thirty five days after planting in contaminated soil, grafted (on resistant rootstock “Maxifort”) tomato plants showed significantly higher plant vigor compared with non-treated check. All treatments had significantly lower symptomatic leaves than that of non-treated check at 35 days after planting. Cumulative harvests for six weeks showed that yield from all treatments except mustard cover crop were significantly (P<0.001) higher compared with non-treated check in the 1st year. However, in the 2nd year all treatments had higher yield compared to non-treated check. Grafted plants produced ~20 lb tomatoes/plant compared with only 11 lbs by non-treated check. Results suggest that organically acceptable methods can provide significant yield advantage to heirloom tomatoes in soilborne pathogen infested soil. A total of 120 farmers reported changes in knowledge, attitudes, skills and/or awareness from which 35 adopted planted tomato and bio-fumigation for managing soilborne tomato diseases as a result of outreach activities.

**MATERIALS AND METHODS**

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**RESULTS**

**OUTREACH ACTIVITIES**

20 consultations; 2 curricula, factsheets or educational tools; 4 on-farm demonstrations; 2 published press articles, newsletters; 3 tours; 2 webinars / talks / presentations; 3 workshop field days; 2 farmers 123 ag professionals participated; 120 farmers reported changes in knowledge, attitudes, skills and/or awareness as a result of their participation

**Key areas:**

- Soil-borne diseases on tomatoes
- Bio-fumigation with “Caliente mustard”
- Grafting tomatoes and bio-control