

Applying non-fumigant combinations to a buffer zone

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What grows well in a buffer zone?



**Yellow
nutsedge**

Macrophomina phaseolina



Fusarium oxysporum



NON-FUMIGANT COMBINATIONS

- Mustard + Solar
- Mustard + Steam
- Steam + Solar

Mustard seed meal 2,000 lbs /a

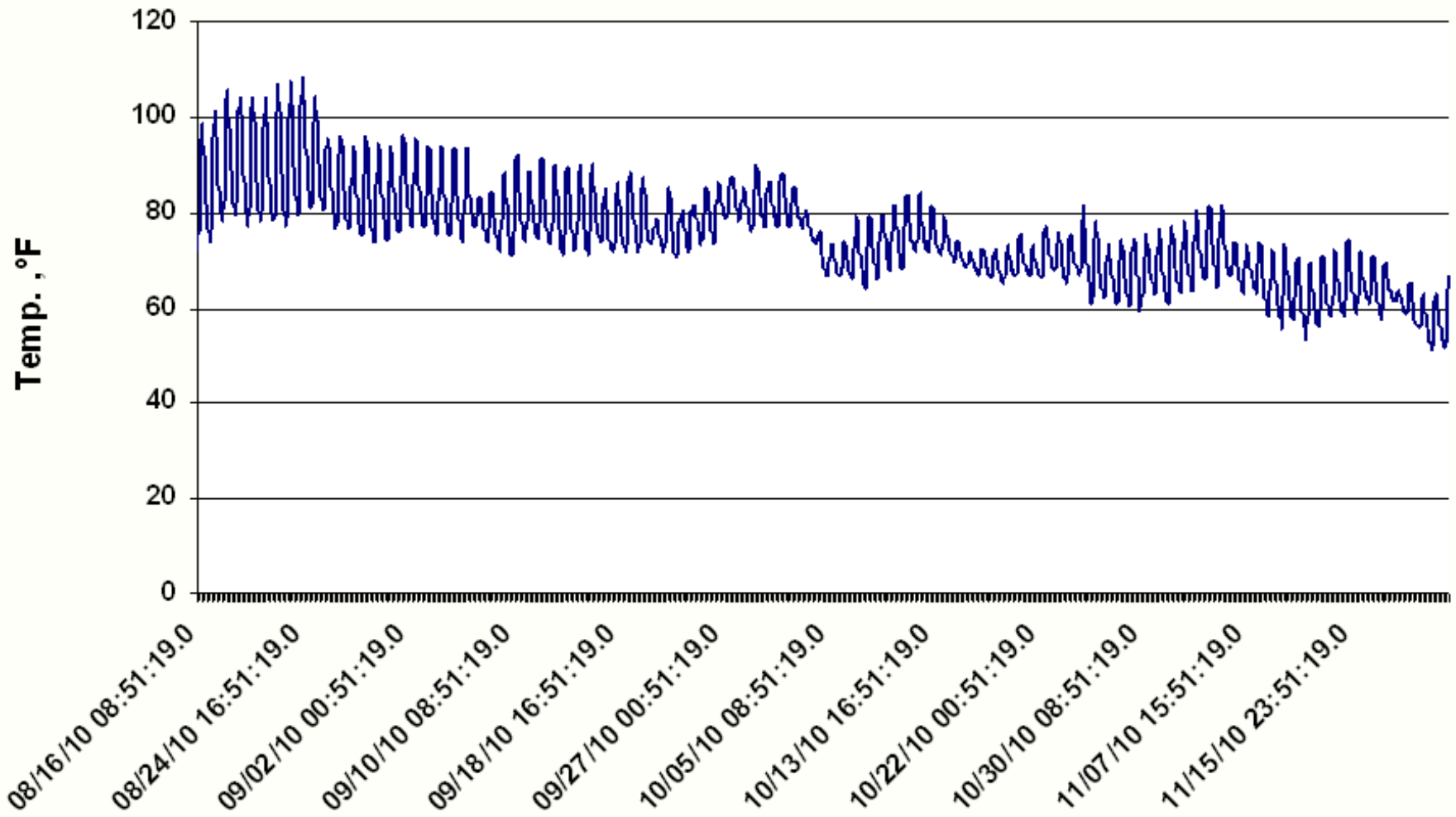




140°F at 12''



Soil temperature at 6" under clear mulch (solarization effect)



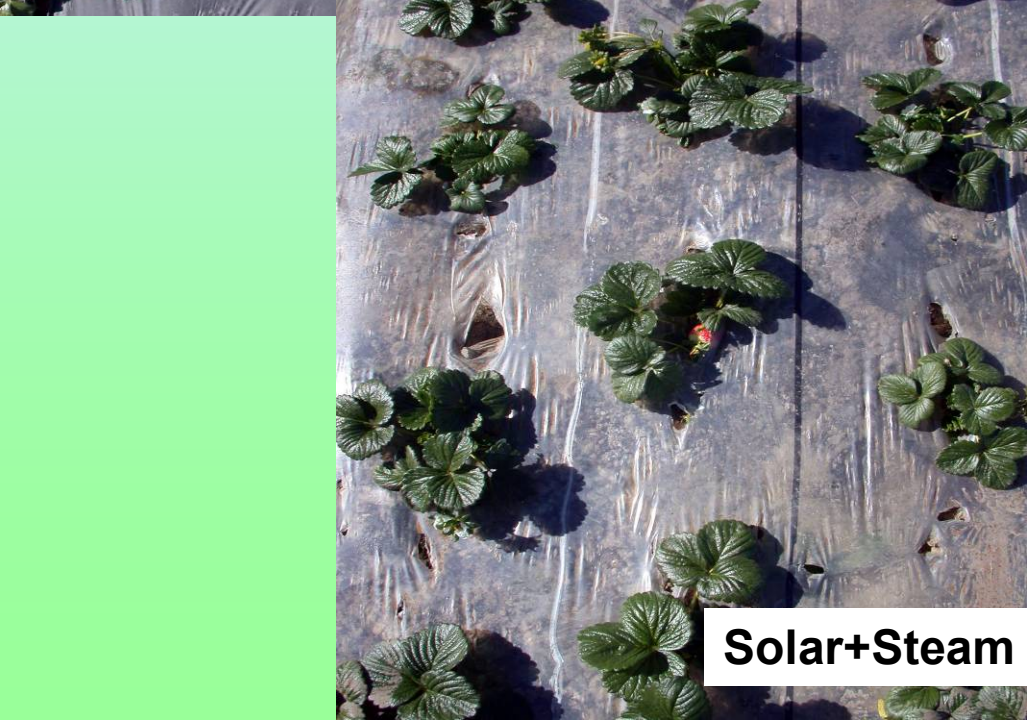
Nov 29, 2010



Mustard+Steam



Untreated

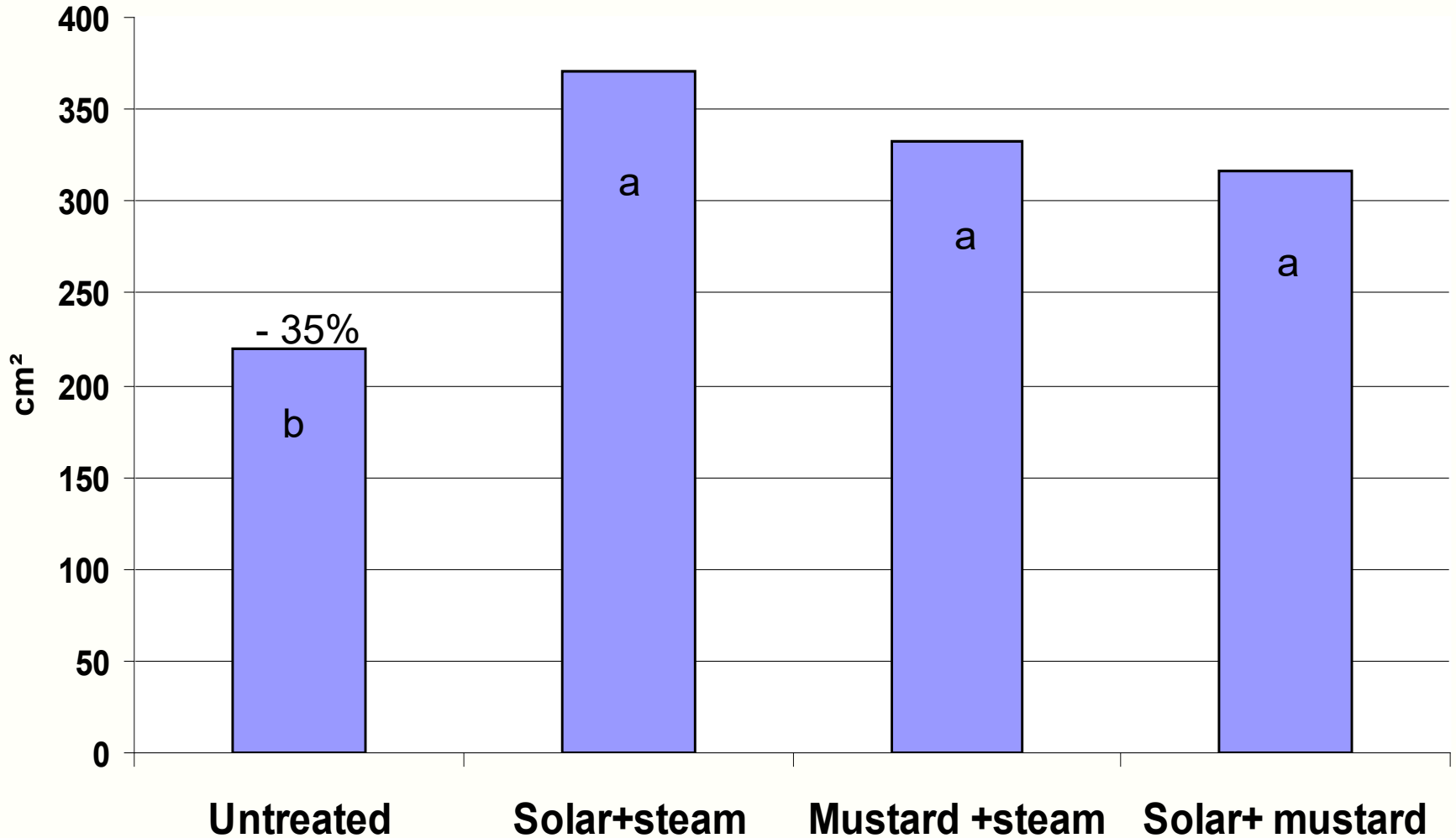


Solar+Steam

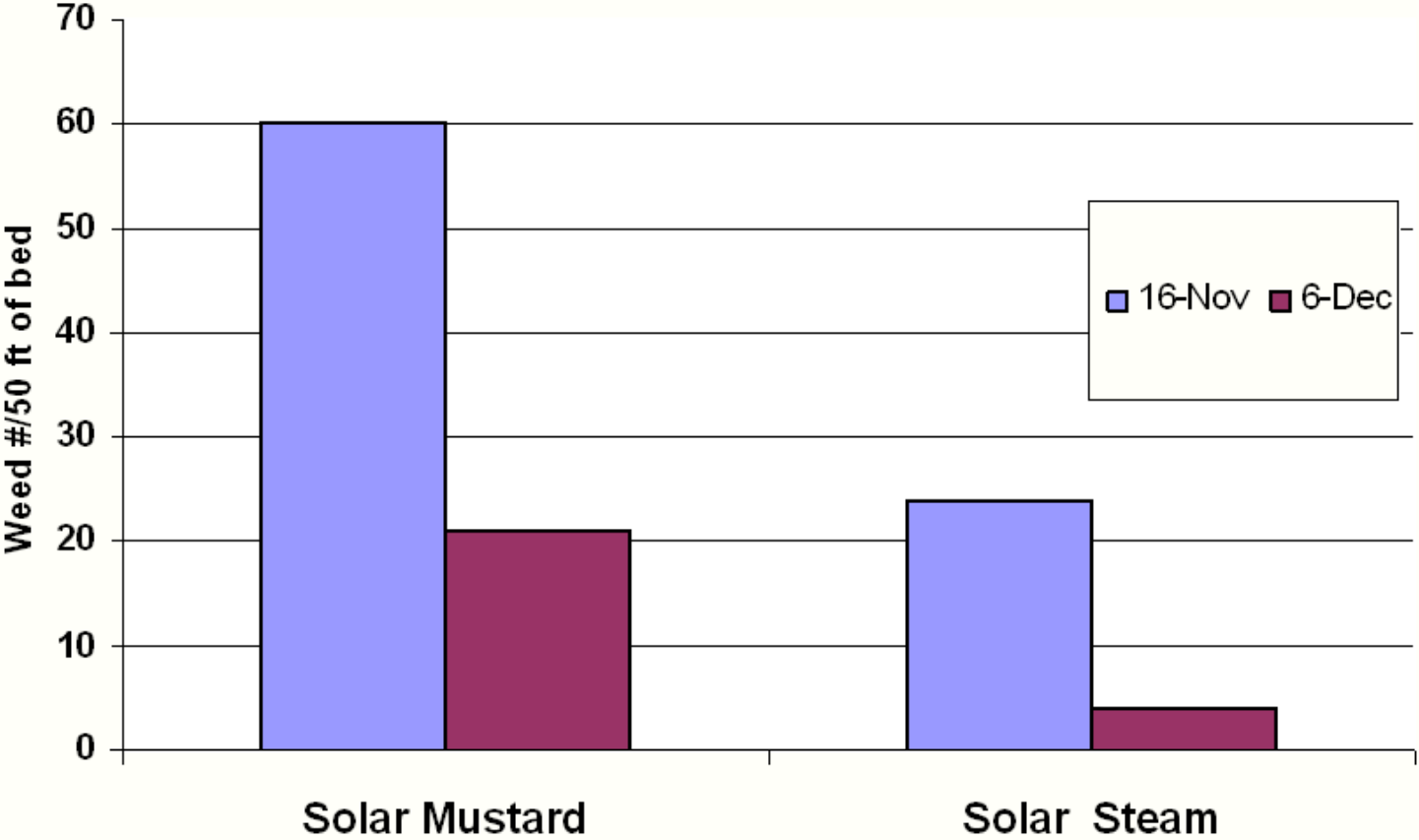


Mustard+Solar

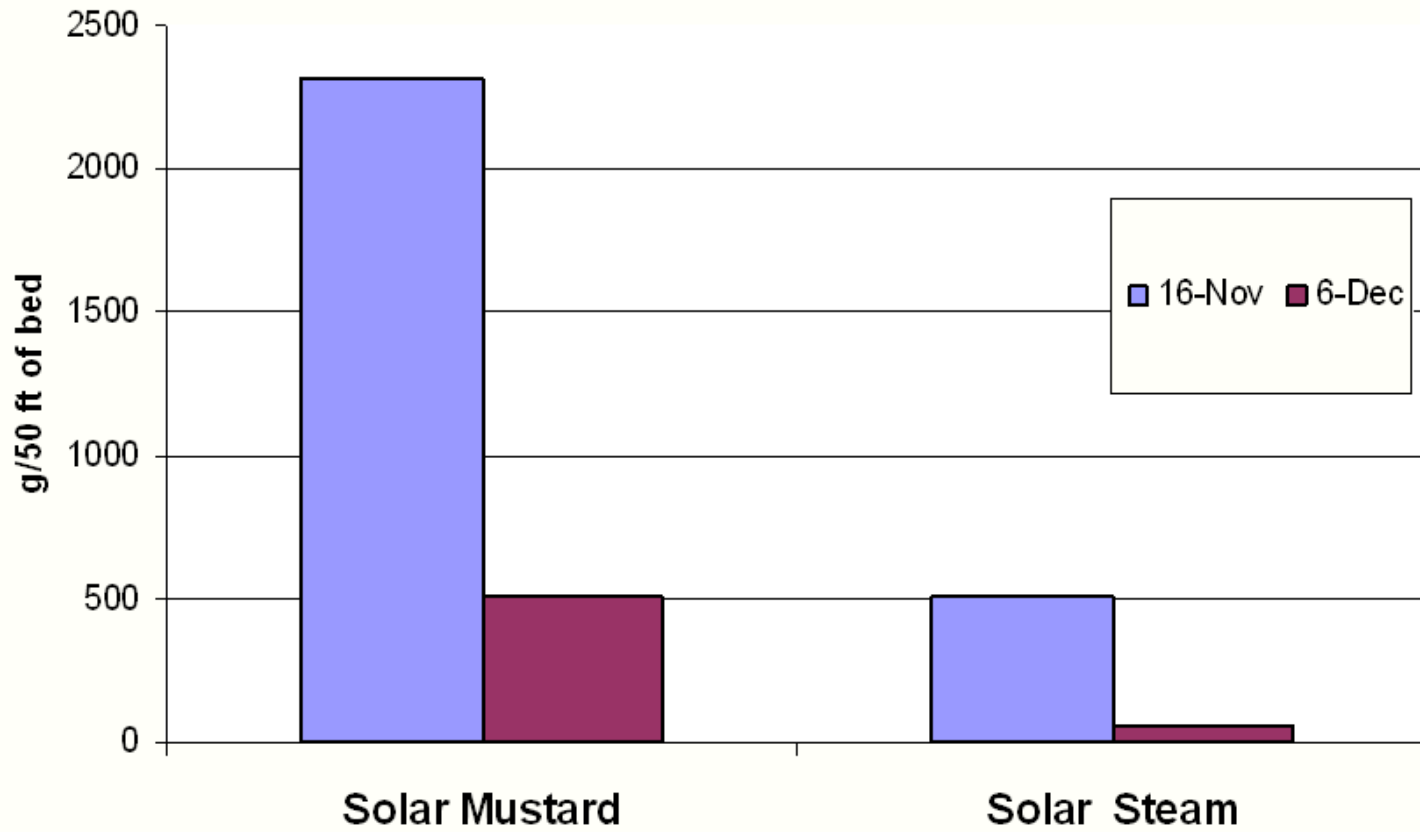
PLANT CANOPY AREA (size), Nov. 29, 2011



Weed desnities



Weed dry biomass



Mustard+Steam



Untreated



1 March 2011

Solar+Mustard

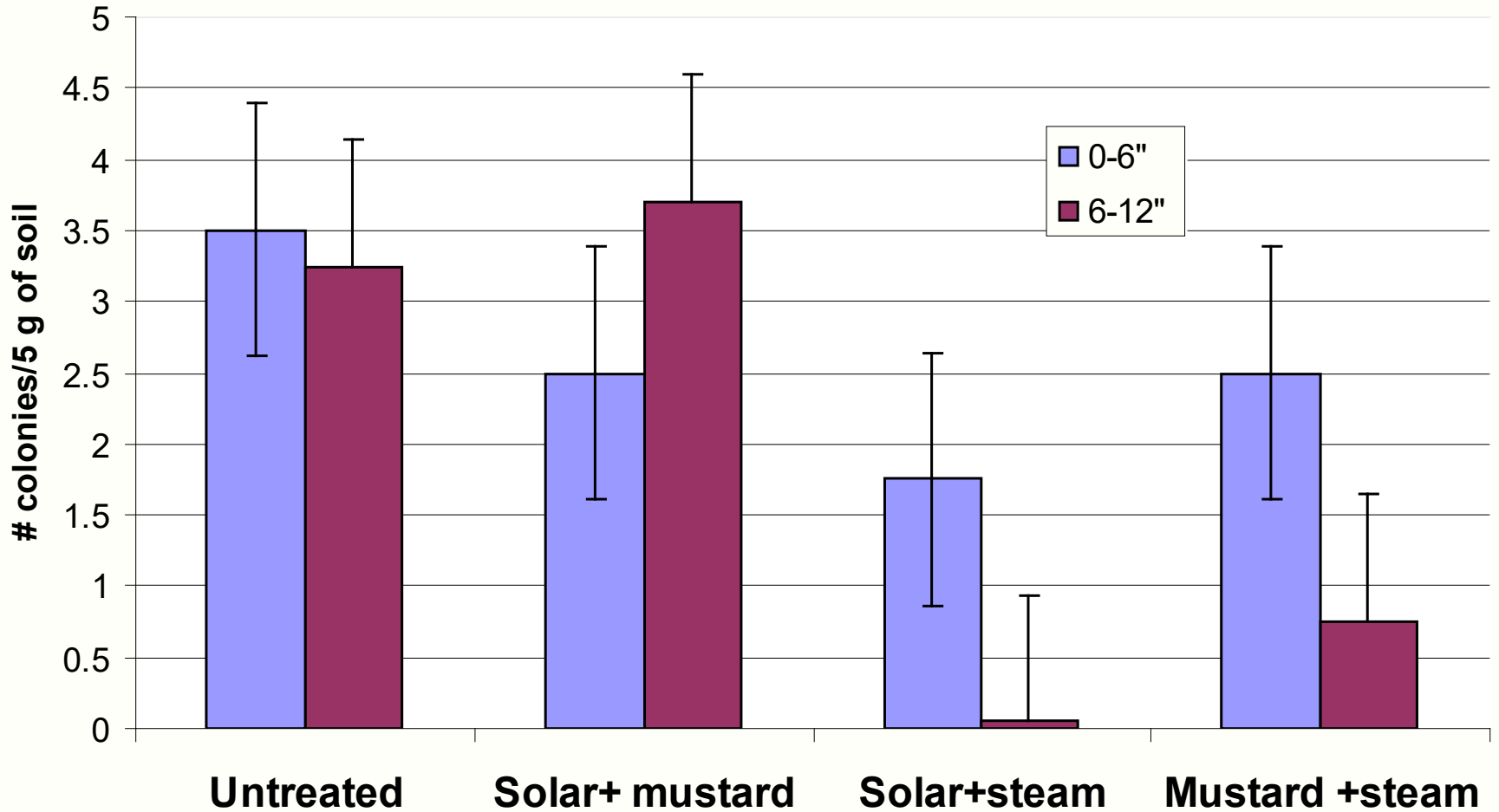


Solar+Steam

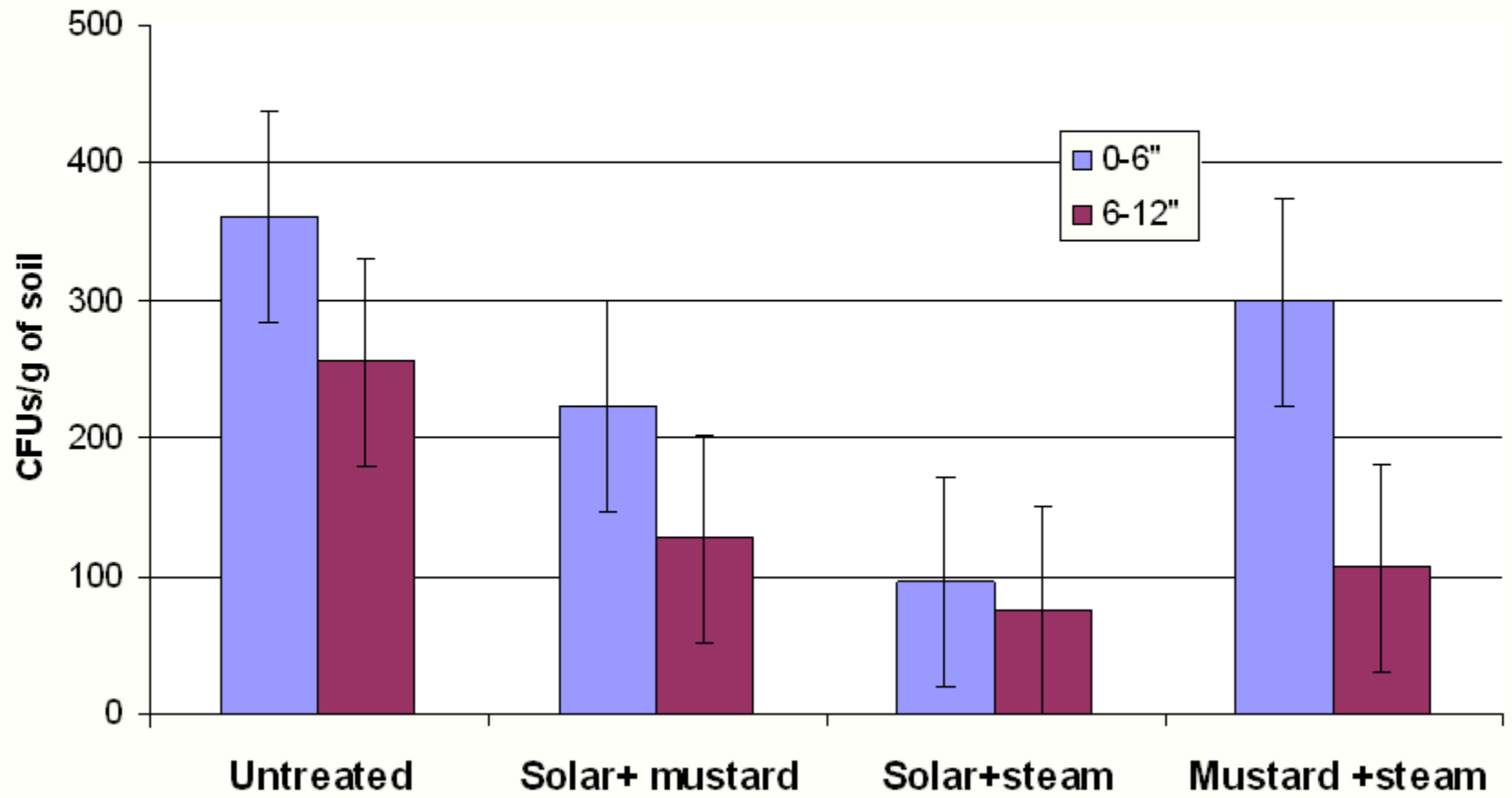


1 March 2011

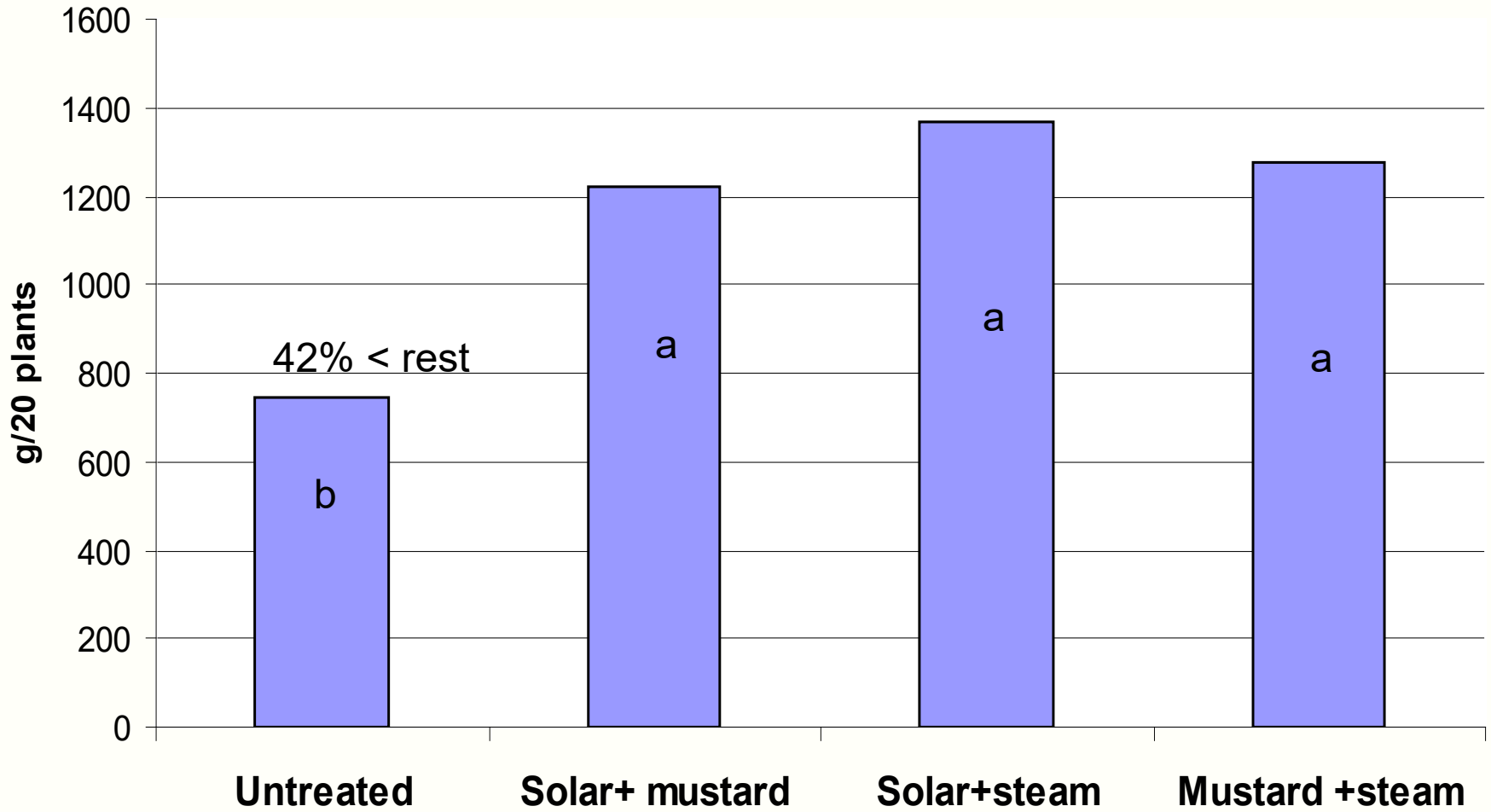
Macrophomina phaseolina



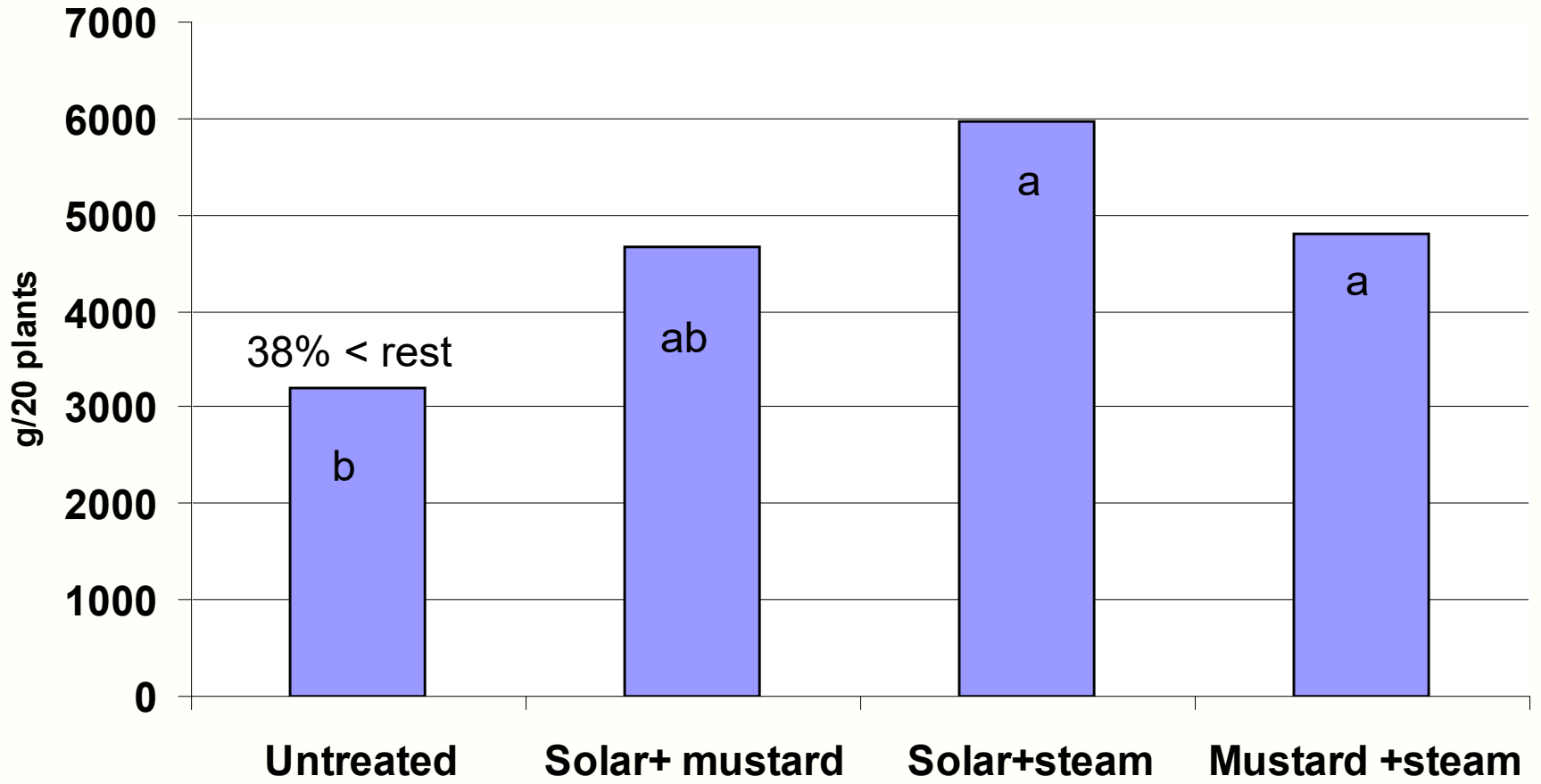
Fusarium oxysporum



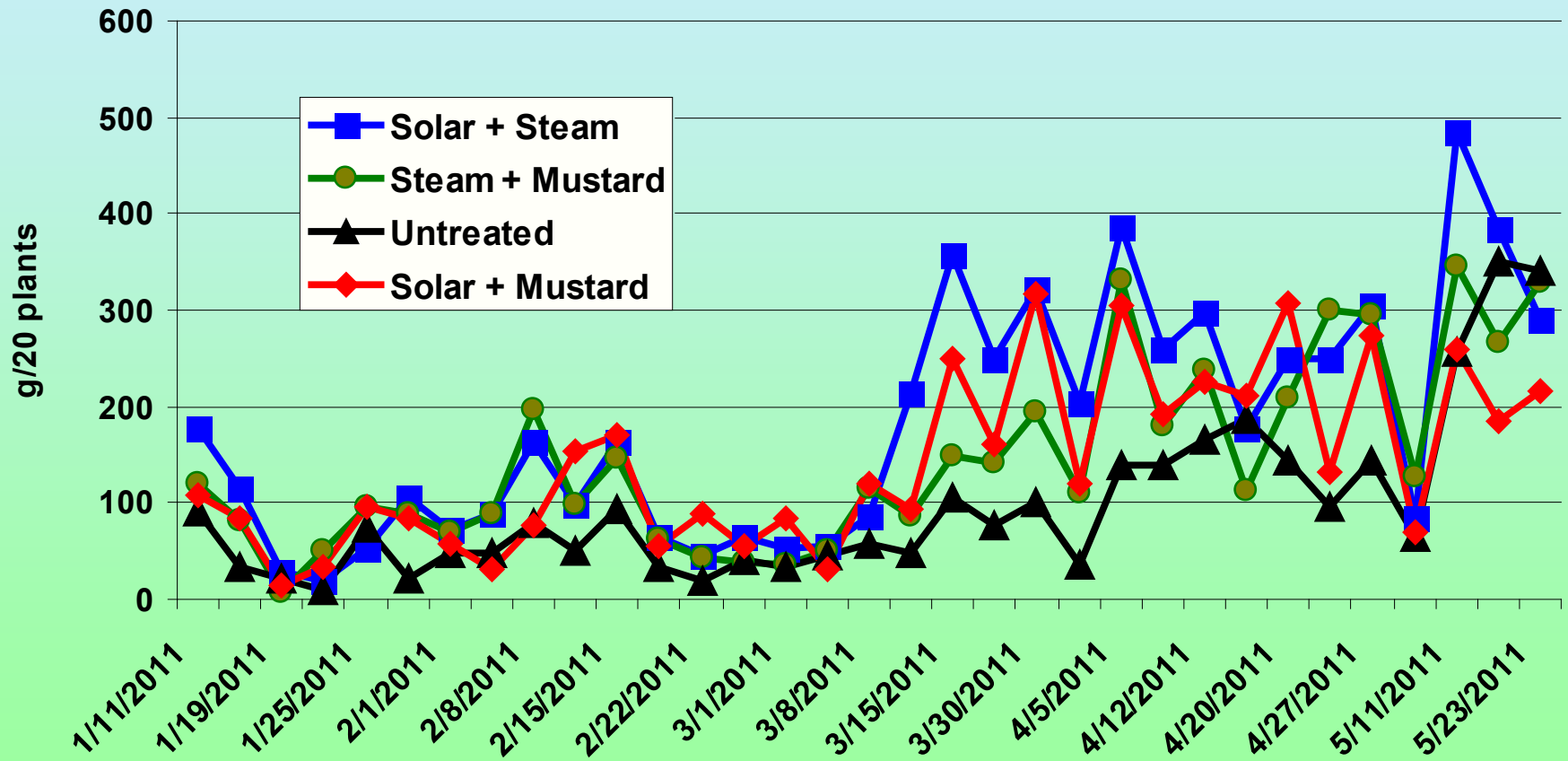
Early marketable fruit yield (Jan-Feb. 2011)



Total marketable fruit yield (Jan- June 2011)



Marketable fruit yield



Untreated



Solar+Mustard



19 April 2011

Steam + Solar

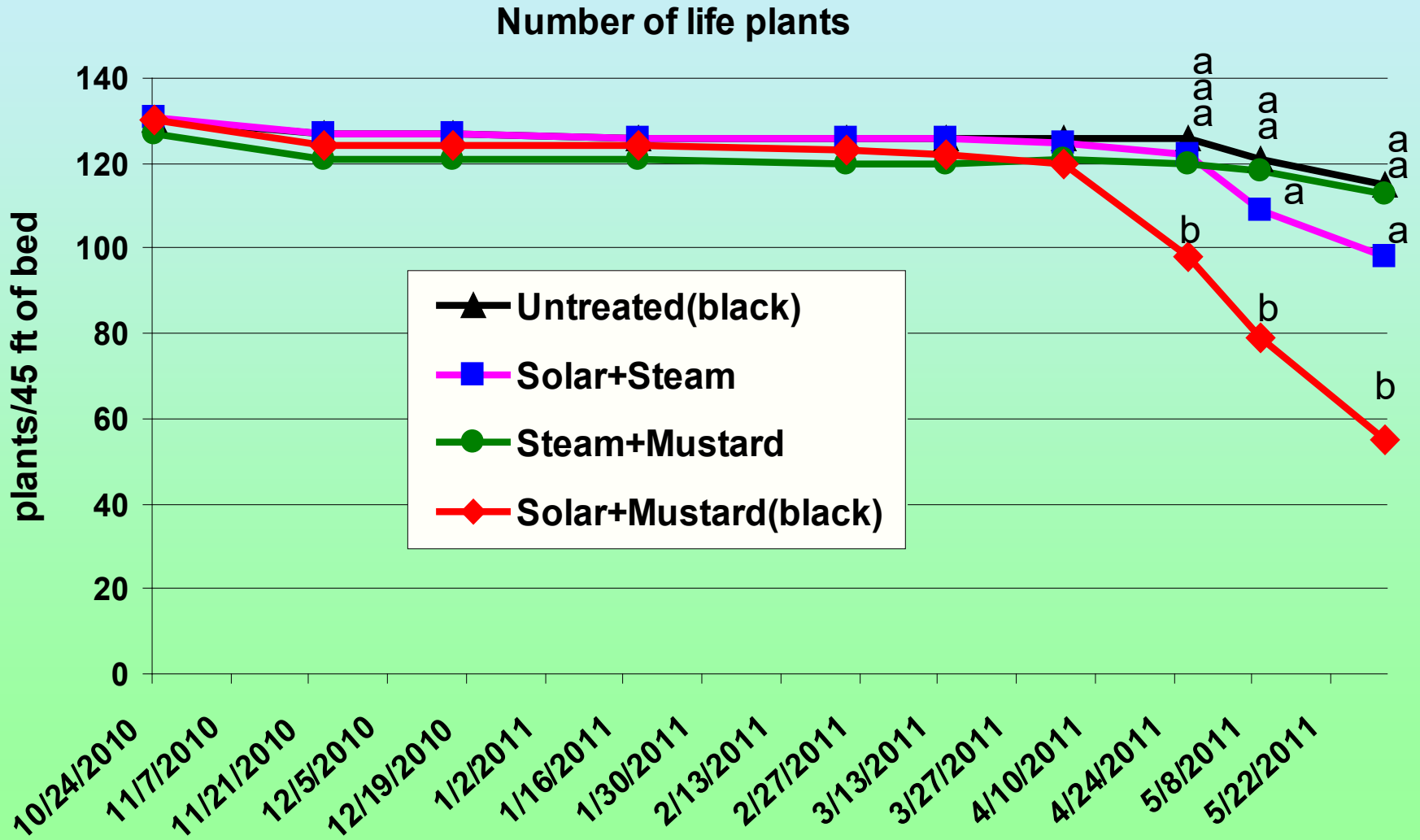


Steam + Mustard



19 April 2011

Mortality



End of the season mortality images

June 2, 2011

Untreated /clear



Untreated / black



Solar + Steam



Solar + Mustard



Steam + Mustard



Fumigated / Black



Fumigated / 'Skunk'



Non-fumigant combinations

- Did not eliminate fungal pathogens but may reduce their abundance in soil
- Improve plant vigor and productivity
- Economics?

Clear mulch: Earlier and greater

- **yield**
- **disease development and severity**

Acknowledgements

- Andy Hooper and Terri Farms
- CSC and USDA funding