

Comparison of Weed Control Methods in Organic Broccoli. Sarah R. Parry*, Larissa Larocca de Souza, Julie Pedraza, and Anil Shrestha, Department of Plant Science, California State University, Fresno, CA *Corresponding Author's Email: sarahparry13@mail.fresnostate.edu

Weed management in organic cropping systems is a major challenge. These systems generally rely on mechanical, physical, or cultural methods of weed control. Furthermore, there are very limited number of herbicides labeled for use in organic cropping systems and most of these are postemergence herbicides which are generally expensive. Therefore, weed management accounts for a substantial portion of farm budgets in organic systems. For example, 2010 estimates show that broadcast application of organic herbicides can cost approximately \$400-600/acre. However, in recent years, some newer certified-organic herbicides have been registered in California. One such herbicide is Suppress® a postemergence, broad spectrum, contact herbicide. The active ingredients in this herbicide are caprylic acid and capric acid. Broccoli is an important commodity in California and the state accounts for 91% of organic broccoli production in terms of sales nationwide. Estimates from 2008 show that the area under organic production of broccoli is approximately 4300 acres. Weed management in organic broccoli production is a concern as in any other organic cropping systems and cost-effective weed control measures need to be developed for the sustainable production of this crop. Therefore, a study is being conducted in Fresno, CA comparing several weed management treatments in organic broccoli production. Treatment comparisons include hand weeding once a week, hand weeding alternate weeks, propane flaming once a week, propane flaming alternate weeks, herbicide (Suppress) application twice during the growing season, herbicide application once + hand weeding, herbicide application once + propane flaming. An untreated control was also included. The experiment was designed as a randomized complete block with four replications. Data are being taken on weed densities by species. Time taken to implement each of these weed control treatments are being recorded. Amount of propane used during each application and herbicide costs will also be estimated. At harvest, weed biomass in each treatment plot will be estimated. Crop yield, quality, and chlorophyll concentration of the broccoli leaves will also be recorded at harvest. It is anticipated that this study will provide valuable information on comparative weed management methods in organic broccoli production.