Strawberry-related Soil Fumigant Alternative Projects Funded by DPR

November 2014

Problem Assessment and Priority Setting

Project title	Organization, PI, location	Dates	Award amount
Nonfumigant Strawberry Production Working Group	DPR, Brian Leahy, Director	2011-2013	$28,350
The Department of Pesticide Regulation (DPR) convened a diverse working group of scientists and other specialists to develop an action plan to accelerate the development of management tools and practices to control soilborne pests in strawberry fields without soil fumigants. The 10-member working group was charged with recommending research priorities for maintaining the viability of the state's $2.4 billion strawberry industry in the face of increasing restrictions on fumigant use and the phase-out of the fumigant methyl bromide.			

Pest Management Research Grant Projects

Project title	Organization, PI, location	Dates	Award amount
Methyl Bromide Alternatives for Strawberry Nurseries	UC, Davis, Lynn Epstein, Shasta, Monterey counties	2013-2016	$153,289
This research aims to examine the efficacy of a number of pesticide and non-pesticide options for a commercial high elevation strawberry nursery. Performance measures include nematode and weed control, yield and quality of nursery plants, and marketable and total fruit yield of the transplants. In addition, the researcher will examine the impact of these treatments on soil quality through N-cycling and soil microbial community analyses.			
Improving Efficacy of Biologically Mediated Soilborne Disease Management in Strawberry by the Use of Reduced Rate Fumigations	Dan Legard, California Strawberry Commission	2014-2017	$298,472
Research on non-fumigant alternatives has not been completely successful in controlling all major soilborne diseases in California strawberry. A strategy that combines the use of fumigants at reduced rates with biologically active soil treatments in sequential combination may produce options that are more effective and significantly reduce the amount of fumigant used to manage soilborne diseases. This project will examine effects of integrating fumigation and biological soil treatments such as anaerobic soil disinfestation (ASD) and mustard seed meal (MSM) on soilborne disease management for strawberry production in California.			
5. Developing a Mobile Steam Applicator to Replace Fumigants for Strawberry	Steve Fennimore, UC Davis, Salinas	2014-2017	$294,612

Strawberry research indicates that soil disinfestation with steam is an acceptable alternative to soil fumigation. We built a prototype field steam applicator in 2011, and after two years of evaluations have found strawberry yields and pest control similar to fumigation. The 2011 prototype steamer requires water softening- a significant cost and time disadvantage. The prototype steamer, designed for research, requires about 20 hours to treat an acre. Greater steam output, speed and ability to use hard or soft water is needed for commercial-scale steam application. We propose to modify steam generator technology from Precision Combustion (PCI), for use as a field steam applicator. PCI's steam generator requires modification for agricultural use. PCI's compact 10 MM BTU/hr steam generator does not require softened water. A compact commercial-scale steam generator for soil disinfestation in California strawberry fields will be built.

Pest Management Alliance Grant Projects

Facilitation of the Anaerobic Soil Disinfestation Pre-Plant Soil Treatment For Strawberry and Caneberry Growers	Farm Fuel, Inc., Stefanie Bourcier, Berry growing regions of California	2013-2016	$247,850
The primary goals of this project are to promote ASD through 22 demonstration trials, educational outreach events, and literature. The three objectives are: implementation of 22 sites, evaluation of the success of the treatment process through grower questionnaire and interview, and outreach to the grower community through four events, and reports and project summaries available to growers, agricultural professionals, and the media.			

Additional Projects

Project title	**Organization, PI, location**	**Dates**	**Contract amount**
Impact of Soil Fumigant Use in CA and Efficacy of Non-Chemical Alternatives to Soil Fumigation in Key CA Crops	UC Davis, Michael Grieneisen	2013-2015	$185,000
This project aims to provide a formal meta-analysis of published literature regarding the efficacy of nonfumigant pre-plant alternatives for a variety of California crops. The project will attempt to identify the best practice alternatives to soil fumigation, potentially setting the stage for future outreach efforts to encourage their adoption by growers. This project will specifically 1) assess the efficacy (based on crop yields) and cost-effectiveness of IPM methods that are alternatives to pre-plant fumigant treatment of soil based on the results of published studies and 2) produce an annotated directory of these IPM methods.			
Development and Evaluation of a Raised-Bed Trough Production System to Produce Strawberry Fruit Without the Need for Fumigants	California Strawberry Commission, Dan Legard, Ventura, Santa Barbara, Santa Cruz counties	2011-2015	$500,000
This research continues development of a raised-bed soilless substrate method for growing strawberries that will allow strawberry farming without fumigation. Research plots and on-farm trials are being used to evaluate the effectiveness of the method in comparison to conventional production methods.			