

UNIVERSITY OF CALIFORNIA

Sustainable Agriculture

Research and Education Program

Final Report

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\$278,324

Funding Period:

FY 1995–98

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Extending Biologically Integrated Farming Practices within the San Joaquin Valley's West Side

Objectives

1. To facilitate information exchange among West Side farmers, consultants and researchers on soil building practices and options for reduced reliance on agrichemical inputs.
2. To monitor and evaluate on-farm demonstrations of soil building practices, including cover cropping and organic soil amendment inputs.
3. To determine the extent to which integrated pest management (IPM) practices are utilized in row crops on the West Side and identify constraints preventing further adoption of biologically intensive pest management practices.
4. To provide community-based presentations of existing technologies to overcome constraints while making use of participatory research teams to develop and refine additional information.
5. To provide technical assistance to farmer/pest control advisor (PCA) participants.
6. To provide intensive pest management monitoring of fields enrolled in the project.

Summary

By the end of the third year of the West Side Biologically Integrated Farming Systems (BIFS) project, 12 farm managers were participating and had dedicated one or more field sites of 80 acres or more to side-by-side comparison plots of BIFS versus conventional farming practices—a total of 1,653 acres in 16 field sites. The BIFS cooperators managed a total of approximately 90,000 acres in the San Joaquin Valley. The most notable success in this project was in the area of soil building. On the alternative BIFS plots, 75 percent of growers incorporated the use of cover crops or manure and compost amendments into their farming practices during the project. In Fresno County, the estimated use of these practices is only five percent.

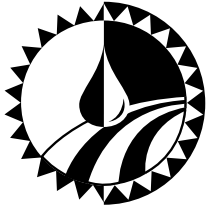
Three years of physical, chemical and biological data have been collected and analyzed to monitor the impacts of this biologically intensive soil management program. Increases in total soil carbon, microbial biomass carbon and nitrogen, exchangeable potassium, and organic matter were seen in the BIFS sites, compared to the conventional sites. A soil quality index is being developed with this data that should help growers decide on specific management practices beneficial for their soils. In 1998, through the educational activities of the West Side BIFS project, the California vegetable and field crop industry has been introduced to the potential of conservation tillage.

In the area of pest management, intensive monitoring for cotton pests and beneficial insect species was undertaken in the final two years. By the third year, several more biologically based integrated pest management practices had been tried on-farm including the use of cowpea buffer strips for Lygus management and release of beneficial insect species. Overall cotton insecticide use was not significantly reduced on the BIFS demonstration acreage: in 1997, a total of four BIFS growers made 12 insecticide applications versus 13 applications in a control group, and in 1998, 26 versus 29 applications were made.

For weed management, the use of the pre-emergence herbicide Treflan® at variable rates in tomatoes has been adopted by 40 percent of BIFS growers, and 90 percent forgo its use completely if fields have low weed pressure. The use of the variable rate herbicide application technology has been estimated to reduce the amount of Treflan® used by 40 to 60 percent. Treflan® is used in nearly all tomato acreage in Fresno County, and BIFS growers reduced their use of the product by 20 percent during the project.

Farmer and management team participant surveys conducted in November 1998 (nine respondents) reveal that all of the respondents deemed the project successful, with over half responding "very successful" in terms of exchanging and extending information. The general knowledge of participating farmers with respect to the use of cover crops, crop residue management, and biologically integrated pest management has increased.

For more information about this project and the BIFS program, visit the BIFS Web site at:
<http://www.sarep.ucdavis.edu/bifs/>.



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Final Report

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Implementing a Biologically Integrated Farming System for Winegrapes in the Lodi-Woodbridge Winegrape District

Objectives

The goal of the Biologically Integrated Farming Systems (BIFS) program in Lodi is to implement an area-wide biologically based soil and pest management system in Crush District #11. To accomplish this goal, the program has been divided into three primary endeavors:

1. Implementation of BIFS practices.
2. Grower outreach to participating growers and the larger LWWC's 650 grower members.
3. Monitoring and documentation.

Summary

Cover crops and monitoring of pests and beneficial species are used in over 70 and 100 percent of the Lodi-Woodbridge BIFS vineyards, respectively. Intensive in-season monitoring and the use of a computer database for managing this information were particular strengths of the project. By the third year of the project the proportion of BIFS vineyards sprayed for mites or leafhoppers had declined from 54 percent in 1996 to 28 percent in 1998. The percentage of acreage treated with pre-emergence herbicides declined from 70 percent to 59 percent, and the percentage of BIFS vineyards using only contact herbicides to control under-the-vine weeds increased from 19 percent in 1996 to 39 percent in 1998. Seventy-three percent of the BIFS acreage has been converted to drip irrigation, up from 57 percent in the first year of the project; this technology change can reduce the use of nitrogen by 50 percent.

The Lodi-Woodbridge BIFS project started with 30 BIFS grower-cooperators and 37 vineyards. By the third year of the project there were 43 BIFS growers working with 60 demonstration BIFS vineyards totaling 2,370 acres. These growers together managed about 50 percent (25,000 acres) of the acreage of vineyards in the Lodi-Woodbridge Winegrape Commission (LWWC).

In 1998, a comprehensive grower survey was sent to over 600 LWWC growers, managers and pest control advisors. Forty-seven percent of the survey respondents had spoken to a BIFS grower and 51 percent had talked with the Lodi-Woodbridge BIFS staff. Ninety-four percent of the growers had read the newsletter and 65 percent had attended a BIFS neighborhood grower meeting. Sixty-six percent of the respondents reported monitoring their vineyards more frequently since 1992. The results of the survey suggest that the Lodi-Woodbridge BIFS project had a significant impact on the entire district's implementation of biologically integrated farming practices.

For more information on this project or the BIFS program, visit the BIFS Web site at <http://www.sarep.ucdavis.edu/bifs/>.