

Assessing Benefits, Costs and Trade-offs of Biologically Diversified Farming Systems in California's Central Coast Growing Region

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Abstract

Biologically diversified farming systems (DFS) are thought to generate important ecosystem services that provide critical inputs to farm productivity as well as clean water, clean air, and beautiful landscapes that promote human health and well-being. By regenerating ecosystem services, such systems should be less reliant on off-farm inputs, more ecologically and economically sustainable, and more resilient to environmental shocks. Yet, DFS have not been broadly adopted. Currently, infrastructural constructs of our increasingly consolidated food system may prevent growers from adopting management practices that focus on biological conservation without considering economic risk and business aspects of farming. For long-term sustainability, farming methods that protect environmental quality also need to be economically viable and support the desired livelihood of the farmer. We seek to understand how farmers perceive and experience the effects of diversified farming practices on beneficial biodiversity and their farming operations, and identify farmer perspectives on opportunities for or barriers to adoption of these practices.

Using an interdisciplinary, systems-level approach on 27 organic farms in the Central Coast growing region of California, we examine specific ways that diversified farming practices affect beneficial biodiversity and analyze how that biodiversity influences farm productivity including: soil fertility, water retention and transport, crop pollination, pest and disease control, and water and air quality. We also evaluate how these practices affect crop yields, economic performance and the overall resilience of farm operations. Many challenges and constraints exist when conducting this kind of interdisciplinary, on-farm research. In addition to reporting our preliminary ecological and social findings, we will share reflections on our experience with setting up this project, collaborating within the academic sector and between other sectors (e.g. farmers with diverse backgrounds, non-profit organizations, industry groups, etc.), and conducting the on-farm work.

For example, some of our research highlights will include: 1) Benefits of working with pillars in the agricultural community to make trusting connections with farmer participants; 2) How land tenure and lease length influence the ability to invest in long-term diversification practices; 3) How experiences with crucial regulations such as food safety differ among farmers along the diversification gradient and shape their anti-diversification strategies to avoid regulatory violations. Sharing our research experience will help facilitate the necessary conversation about how to implement a new phase of truly interdisciplinary research that will advance the understanding and implementation of agroecological practices.

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