

Reducing Tillage on Organic Farms

Sustainable Agriculture Fact Sheet

July 2017

Crop: Organic vegetables

Need: Reducing tillage on organic farms, while maintaining weeds control

States: Washington

Background: U.S. Department of Agriculture National Organic Program rules stipulate that certified organic growers must implement tillage and cultivation practices that maintain or improve the physical, chemical, and biological condition of their soil and minimize soil erosion.

The Problem: Despite those requirements, and the fact that tillage decimates large-bodied soil organisms, reduces soil carbon storage and weakens the stability of aggregates, many of the approximately 300 certified organic vegetable farms in Washington passed over their fields 10 to 20 times annually with tillage equipment to manage plant residue, control weeds, and prepare the seed bed for planting.

The Research: In two different projects funded by Western SARE, Washington State University's Douglas Collins set out to identify production methods that effectively integrate cover crops and reduced tillage practices to improve soil quality while reducing in-season weed pressure and seed bank populations on western Washington organic farms. His team also evaluate profitability and greenhouse gas impacts of reduced tillage cropping systems and worked to promote adoption of the successful reduced-tillage practices. Collins' team tested a number of cover crops and a number of reduced-tillage strategies like strip-tilling, using a flail mower or a roller-crimper in different organic vegetable crops over six seasons.

The Impact: The team identified combinations of cover crops and reduced-tillage practices in different crops that reduced fuel use, reduced labor, and maintained weed control and yield. They effectively demonstrated to organic producers that reduced-tillage practices can be incorporated into organic production, where weed control is always a critical concern.

The Challenges Ahead: Expanding adoption of reduced-tillage practice among organic growers is an ongoing challenge as many see tillage as a key component in weed control. Collins helped show growers in one area successful ways to reduce tillage, but repeating that demonstration for different growers in different areas with different climates may be necessary.

Links:

Overview: <http://www.westernsare.org/Learning-Center/From-the-Field/Management-Practices-and-Cover-Crops-for-Reducing-Tillage-Enhancing-Soil-Quality-and-Managing-Weeds>

Project reports: https://projects.sare.org/sare_project/sw14-013/;

https://projects.sare.org/sare_project/sw11-072/

Book: Managing Cover Crops Profitably: <http://www.sare.org/Learning-Center/Books/Managing-Cover-Crops-Profitably-3rd-Edition>

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