

Can We Grow Organic or Conventional Vegetables Sustainably Without Cover Crops?

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Abstract

Vegetable and fruit consumption patterns in the United States indicate that most people need to eat far more fruits and vegetables to meet the current nutritional guidelines for a healthy diet. Following these guidelines would require more than doubling the harvested acreage for fruits and vegetables and could have serious environmental implications if unsustainable production practices were used. This situation will likely intensify with population growth and climate change.

Most vegetable production in the Salinas Valley is high-input, tillage intensive, and done without the regular use of cover crops. This region has a serious problem of nitrate contamination of the ground water that occurred as the agricultural systems here shifted from agronomic to high-value horticultural crops—primarily vegetables and strawberries—over the past several decades. This raises questions about the sustainability of past and current vegetable production practices and indicates the need for a radical paradigm shift in nutrient management.

Cover cropping is well-recognized by sustainable agriculture advocates as a “best management practice” in vegetable production systems, but is still relatively uncommon in many of the most important vegetable production regions in the U.S., including the Salinas Valley. The author argues that cover crops are an essential part of sustainable vegetable production because they provide a complex suite of unique ecosystem services during fallow periods that complement best management practices during cash crop periods.

The reasons why cover crops are uncommon in the Salinas Valley are discussed and three alternative winter cover cropping strategies are described to reduce residue management challenges. Strategy 1 involves planting cereal cover crops in furrow bottoms of peaked beds and killing the cover crop relatively early in the season. Strategy 2 involves repeated mowing of cover crops that are planted on bed tops. Strategy 3 is a novel approach where cover crops on beds are harvested to extract the juice from nitrogen rich, immature shoots for use as a liquid organic fertilizer in subsequent cash crops. Increasing the adoption of cover cropping in vegetable rotations will take creative collaborations between farmers and researchers and effective communication of the science and art of cover cropping.

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