Workshop

The Impact of Soil Health and Organic Nutrient Management on Vegetable Yield and Quality

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The organic vegetable industry is familiar with production practices aimed to improve the health and function of the soil. Soil health is defined as the continued capacity of the soil to function as a vital living ecosystem that sustains plants, animals, and humans. The definition implies the management of the soil to provide food, shelter, and water for future generations (Ozores-Hampton et al., 2011). The most common indicators of soil health include physical, chemical, and biological properties (Doran and Parkin, 1994). Programs to minimize the movement of nutrients out of the root zone and reduce the resulting environmental impact can be challenging in organic production (Florida Department of Agriculture and Consumer Services, 2015). However, with the adoption of best management practices (BMPs), soil health can be improved while

simultaneously optimizing nutrient management. Best management practices, which include cover crops, compost, and other soil amendments, are nonregulatory, incentive-based, cultural practices intended to reduce or prevent nutrient loss into the watersheds, while maintaining agricultural productivity and profitability (Ditmar et al., 2015). Therefore, the objective of this workshop was to present information on the interactions of soil health, nutrient management, and BMPs on organic vegetable production.

The first paper examined cover cropping, which is recognized in California as a BMP in vegetable production systems, but its use is still relatively uncommon in many of the most important vegetable production regions in the United States. For example, the Salinas Valley, which is also known as the “salad bowl of America,” has a serious nitrate pollution problem in groundwater that occurred as the agricultural systems shifted from agronomic to high-value horticultural crops. The presentation included a discussion of the reasons that cover crops are uncommon, and three novel alternative cover cropping strategies to potentially increase adoption in vegetable systems were proposed.

The second paper focused on compost use guidelines, which are

currently limited in addressing both the positive and negative effects of its use in organic vegetable production. Currently, the National Organic Program has not made specific recommendations for an organic producer who uses compost as either a soil organic amendment or a nutrient source.

The third paper addressed organic vegetables produced in greenhouses and other controlled environments. Historically, limited technical information has been available to support these production systems. Research was presented concerning appropriate substrate mixes, such as compost and nutrient management.

The last paper presented West Virginia University’s long-term organic trial with 16 plots managed as high input, and 16 managed as low input. Plots were planted in a 4-year crop rotation schedule that included green bean (*Phaseolus vulgaris*), lettuce (*Lactuca sativa*), pea (*Pisum sativum*), pepper (*Capsicum annuum*), pumpkin (*Cucurbita pepo*), tomato (*Solanum lycopersicum*), and zucchini (*Cucurbita pepo*).

These papers illustrate the current challenges, and propose potential future practices that will improve soil health and organic nutrient management, while positively impacting vegetable yield and quality.

Literature cited

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