

Developing a Nitrogen Mineralization Model for Organically Managed Vegetable Farms on the Central Coast

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Abstract

Given the high value of organic vegetables, there is resistance to taking risks with reducing nitrogen (N) applications to these crops. The proposed study will provide a practical and easy-to-use method of estimating N mineralization from organic material in order to help reduce N application rates without affecting yield. The information generated from this project will also assist growers in accurately estimating the portion of applied N from organic fertilizers and amendments that was available to their crop. These estimates are needed for organic growers to accurately report applied N rates to the Regional Water Quality Control Boards. The overall goal of this proposal is to develop a simple N mineralization model that can be integrated into the decision support tool CropManage for organic vegetable production in coastal California. Building upon the existing Fertilizer Research and Education Program (FREP) project and other work, we will take a deeper look at mineralization of N in organic vegetable production systems to help clarify N mineralization patterns in soils under organic management and provide tools that growers can use to estimate mineralized N.

Project Objectives

1. Create a N mineralization database for organic fertilizers and amendments, crop residues, and soil organic matter (SOM)
2. Develop a simple N mineralization model using the existing data
3. Evaluate and improve the simple model using field trials and incubation studies
4. Integrate the selected model with CropManage (CM) to simulate N mineralization in organic vegetable production in Coastal California
5. Conduct outreach to organic vegetable growers in Coastal California