

ABSTRACT

USE OF SUDANGRASS AND EARLY SOIL TESTING AS A MEANS TO OPTIMIZE NITROGEN MANAGEMENT FOR PROCESSING TOMATOES

Fine-tuning nitrogen fertilizer application rates and the use of a winter cover crop in a processing tomato rotation can minimize negative environmental impacts from N fertilizer application without affecting economic yields. This experiment evaluated tomato yield and quality in response to N fertilizer applications rates under various sudangrass treatments. A presidedress soil nitrate test was employed to determine a critical soil nitrate value to be used in the development of N fertilizer recommendations.

Soil sampling was carried out before N sidedress for the tomato, after the sudangrass seeding, after both the tomato harvest, and the sudangrass harvest. Leaf nitrate analysis was done on the tomatoes and the sudangrass. Sudangrass biomass, tomato canopy cover, yield and quality factors were measured.

Significant differences were found in tomato yield and soluble solids in response to the N fertilizer rate. Sudangrass grown and removed, or grown and incorporated, did not significantly affect tomato yields and quality factors, but the interaction between N fertilizer rate and sudangrass was significant. The most appropriate N fertilizer rate for tomato was 150 lbs of N acre⁻¹ and at this rate, yields were higher when sudangrass was included in the rotation. The critical presidedress soil nitrate level was between 15.5 and 18 ppm of NO₃-N. It was concluded that the use of a sudangrass cover crop in a tomato rotation can effectively scavenge residual soil nitrate and improve N utilization by the tomato.

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