

NUTRIENT MANAGEMENT IN STRAWBERRIES

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Nutrition and fertilization are important factors in maintaining healthy and productive strawberry plants. It is difficult to provide precise recommendations for a particular farm, because many factors influence nutrient uptake and availability including pH, moisture, organic matter content, clay content, mineral composition, tillage, herbicide use, fertilization history and weather. Using a combination of soil testing, tissue analysis, scheduled fertilizer applications and observation of crop response is currently a grower's best approach for managing nutrients in strawberry fields.

Soil tests have been used for many years to estimate the amounts of nutrients available to plants. Soil tests are most appropriate for the year prior to planting. With the exception of N, sufficient fertilizer and lime can be applied and incorporated prior to planting to obtain pH of about 6.5 and meet nutritional needs over the life of the planting. Growers can obtain instructions and sample soil test bags from their local Cornell Cooperative Extension Office www.cce.cornell.edu or from Cornell Nutrient Analysis Laboratories (607) 255- 4540 or www.css.cornell.edu/soiltest/. Soil testing laboratories use different methods to extract plant-available nutrients so results are not directly comparable from one laboratory to another.

Soil test recommendations for strawberries are really just ballpark estimates of fertilizer needs, because crop response data for each nutrient on different soil types have not been generated. Most growers assume a higher level of precision in soil tests than actually exists. A soil test approximates nutrient needs, but it cannot really be used to fine-tune a fertilizer program.

Plant tissue analysis can measure directly the amount of nutrients in various plant parts, and for established perennial crops, is usually a better indicator of nutrient status than a soil test. Leaf nutrient analysis can alert a grower when nutrient levels are approaching deficiency or if fertilizer is being over-applied. Leaf nutrient analysis also provide accurate results for all essential mineral, not just for the 4 or 5 major ones reported in soil tests. For strawberries, growers should collect 50 leaves newly expanded leaves representative of the entire field after renovation in late July or early August, remove petioles, wash leaves in distilled water, dry, place in a paper bag and send to the laboratory for analysis. A leaf analysis, including nitrogen cost about \$32 at the Nutrient and Elemental Analysis Laboratory www.hort.cornell.edu/department/facilities/icp/index.html or (607) 255-1785.

For nitrogen management growers must continue to rely upon scheduled fertilizer applications as large fluctuations in N that occur from week to week make estimating its availability with soil test and even leaf analysis of limited value. A typical N fertilization regime might be as follows:

Year 1: 30 pounds per acre four weeks after planting
 40 pounds per acre in early September

Year 2: 70 pounds per acre immediately after fruiting
 30 pounds per acre in early September

A specific nutrient management approach for strawberries should included: conducting a soil test and amending the soil according to recommendations prior to planting; and after planting, conduct a foliar tissue analysis at least every other year, monitoring the soil pH regularly and a completing a soil test every three years as well as always being alert for any unusual-looking leaves and unexplained reductions in plant growth or yield.

For additional details on soil and nutrient management in strawberries consult Chapter 7 in the NRAES Strawberry Production Guide.

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