

The Tuber Times

Potato Growing Tips and News from the World of Research

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Factors to Consider when Sidedressing

prepared by Matt Kleinhenz

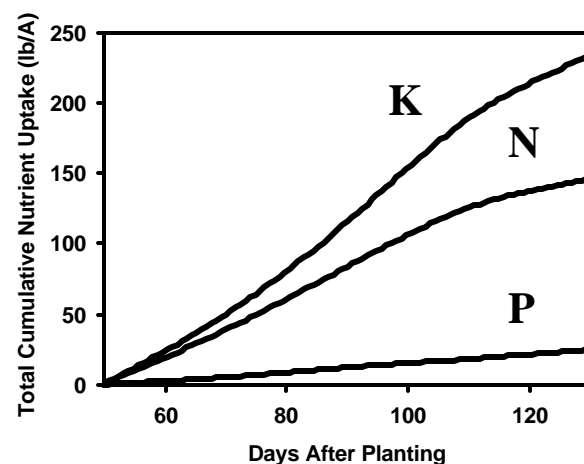
Sidedress fertilizer applications are common in potato production. Post-emergent fertilizer applications made during early-season cultivation or hilling operations allow growers to adjust fertilizer inputs to local production conditions. This helps to increase profit potential and reduce runoff and leaching. Nitrogen is the nutrient most often applied as a sidedress but complete fertilizers are also applied. Keep in mind a number of factors when sidedressing.

1. Crop Maturity ... The total nutrient requirement of a variety is influenced by its maturity. Shorter-season varieties tend to require less total nutrients, including nitrogen.

2. Timing of Crop Demand ... A generalized nutrient uptake curve for a potato crop is shown in the figure at right. Notice that the nitrogen (N) uptake rate is consistent through approximately 90-95 days after planting. Until then, it is important to ensure a consistent supply of N. Not enough will reduce yield while an excess is likely to leach, delay maturity, and reduce crop quality (tuber grade and processing quality).

3. Soil Moisture Levels since Initial Fertilizer Application(s) ... Fertilizer applications normally begin before or at planting. Rainfall and irrigation since these initial applications affect how much fertilizer

Nutrient Uptake with Time in Potato



remains for the crop. Fertilizer may be lost to runoff, leaching, and soil conversions (e.g., denitrification). If soil moisture has been consistently high since the initial applications, a greater amount may be required at sidedressing.

4. Soil Condition (texture, tilth, pH, CEC, organic matter, etc.) ... The physical and chemical condition of the soil directly impacts crop growth and nutrient demand and availability. Coarse textured soil with low CEC and little organic matter may require more frequent fertilizer application and greater care to reduce leaching. Low pH and poor tilth tend to reduce nutrient availability and slow root and crop growth. Heavier sidedress applications often do not overcome these limitations and increase input costs. Residual N may also be high, especially if large amounts of fertilizer were used in previous seasons.

5. Applications to be made with Crop Protectants and/or Irrigation ... Sidedressing is one of several ways to apply fertilizer, especially N, after planting. Low amounts of N may be added to the spray tank or injected into irrigation lines. Therefore, large amounts of N at hilling may not be needed. When adding to the spray tank or injecting into irrigation lines, ensure that all equipment is calibrated and all materials are compatible.

Research News

Local

A number of studies are underway at the OARDC in Wooster. For example, the yield, maturity, and cooking and processing quality of new and advanced selections will be compared to that of established varieties grown under standard conditions. Genotypes have been submitted from public and private breeding programs in the U.S., Canada, and Europe. Two studies have been started to help identify optimal management practices for organic potato production. The first study will document the performance of several varieties under uniform conditions. The second will identify the effects of variety maturity, organic fertilizer source, and cultivation practices on yield, quality, and several physiological factors.

Elsewhere

Dr. Bill Lamont, Extension Vegetable Specialist with Penn State University, wonders if drip irrigation and fertigation (injection of fertilizer into irrigation water) may increase fertilizer and water efficiency, yield, and quality. In this second year of on-farm study, Dr. Lamont will supplement soil-applied fertilizers with nutrients supplied via drip irrigation and record crop yield and quality. In 1999, he found that yield was greatest in two of three cultivars given moderate, as opposed to low or high amounts, of N and K via fertigation through seven weeks after planting. The use of drip irrigation and fertigation to precisely meet crop needs with minimal off-farm contamination, water resources, and leaf wetness is under increasing study in Pennsylvania and elsewhere.

For more information on this newsletter or its contents, please contact:

Dr. Matt Kleinhenz
Asst. Professor and Extension Vegetable Specialist
Department of Horticulture and Crop Science
The OSU-OARDC

phone: 330.263.3810

1680 Madison Avenue
Wooster, OH 44691-4096

FAX: 330.263.3887
Email: kleinhenz.1@osu.edu

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Keith L. Smith, Associate Vice President for Ag. Adm and Director, OSU Extension

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