

# Nitrogen Management in Organic Potato Production: Challenges and Opportunities

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Nitrogen (N) is the nutrient most commonly limiting in potato production. Insufficient N supply results in reduced tuber yield and size, whereas excess N supply results in an increased risk of environmental losses. Matching N supply to crop N demand requires an understanding of the relative importance of the sources (applied amendments, mineralization of N in crop residues and soil organic matter) and losses (uptake by weeds, nitrate leaching, denitrification, ammonia volatilization) of plant available N in the potato root zone. Matching N supply to crop N demand also requires an understanding of the timing of N supply relative to crop demand. The potato crop has limited N uptake for a period of 40 days or more after planting, followed by a period of very rapid N uptake, which is then followed by a period where N uptake is limited and translocation from vines to tubers occurs in response to tuber bulking. Release of N by mineralization is a microbial process which is sensitive to environmental conditions, and the quantity, C availability, and C:N ratio of organic residues.

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