

# Quantifying N Credits of Alfalfa in Rotation

**Kim Cassida, Michigan State University - Lansing, MI USA**



Kim Cassida is the Extension Forage and Cover Crop Specialist for Michigan State University, with degrees from Penn State and the University of Maine. Her extension program focuses on all things forage, and her research program focuses on management of alfalfa, perennial and annual forage mixtures, and the role of forages and cover crops in improving resilience of agroecosystems. In her spare time, she raises sheep.

In addition to its value as a forage and soil improver, alfalfa is noteworthy as one of the most effective sources of N credits for succeeding crops in rotations. When fertilizer N is expensive, these credits can add considerable value to an alfalfa rotation. However, quantifying the exact amount of legume N to credit to the next crop is challenging because it is affected by many environmental factors like soil texture, local climate conditions, and soil N mineralization rate, as well as by management factors like stand density, age, or height at termination, time since termination, irrigation, and use of manure. States and commercial soil testing laboratories rarely agree on the amount of N to credit after an alfalfa rotation, with values ranging from 0 to 190 lb/acre. This variability reduces producer confidence in N credits, who then often err on the side of caution and apply more fertilizer N than they need, reducing profitability and increasing N leakage into the environment. This paper will present an overview of the current situation.