

HOW ARE COVER CROPS AFFECTING MY NUTRIENT LEVELS?

Understanding cover crop qualities and strategies for efficient nutrient management

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Making good cover crop choices first requires identifying a suite of services that the grower wishes to reap from the crop, then knowing which cover crops can provide those services, and cover crop management practices can enhance those services. Just as your cover crop choices will be influenced by the non-nutrient services you are looking for, they can be also influenced by how they affect nutrient levels. The effects of cover crops on nutrients should be understood for efficient and economical nutrient management. Understanding how different cover crops acquire nutrients gives a basis for understanding the effects they have on nutrients in the field.

A basic way to begin understanding this is to divide the most common cover crops into three to four groups that share common traits (chiefly by plant family), and also including general root structure and nutrient acquisition strategies. Grasses (fibrous root systems), legumes (taproot, nitrogen-fixing roots), and brassicas (taproot, non-mycorrhizal) constitute the majority of our cover crop choices with a few other exceptions (sunflowers, buckwheat, etc.). They can be used alone, or can be combined for a suite of complementary nutrient cycling services. Annual vs. perennial crop choices also influence how nutrients are cycled, through the depth of their root systems and the length of time that they allow soils to remain undisturbed.

Cover crops differ in the amount of carbon they return to soils as well, either through roots or aboveground growth. The timing of termination of cover crops heavily influences the rate of nutrient cycling (earlier termination increases the rate that nutrients in cover crop residues will become plant-available), and how much carbon is returned to soils (later terminations will return more carbon, but slow the return of plant-available nutrients to soils). When tillage is frequent in cropping systems, increases in soil organic matter from cover crops occur very slowly (a goal appropriate for a decade, rather than for a year), but as organic matter levels rise, soils should be expected to become more inherently fertile through multiple cascading positive changes in soil health.

The effects of legumes on soil nitrogen levels, and the levels of other nutrients recovered from cover crops, should be given credit in annual fertility plans, as should long term increases in general soil fertility. This will assure that your investment in cover crops pays off economically in the long run.