TECHNICAL BULLETIN

Driving Nitrogen Use Efficiency

IN WINTER WHEAT

The unique PNW environment poses distinct challenges to nitrogen management.

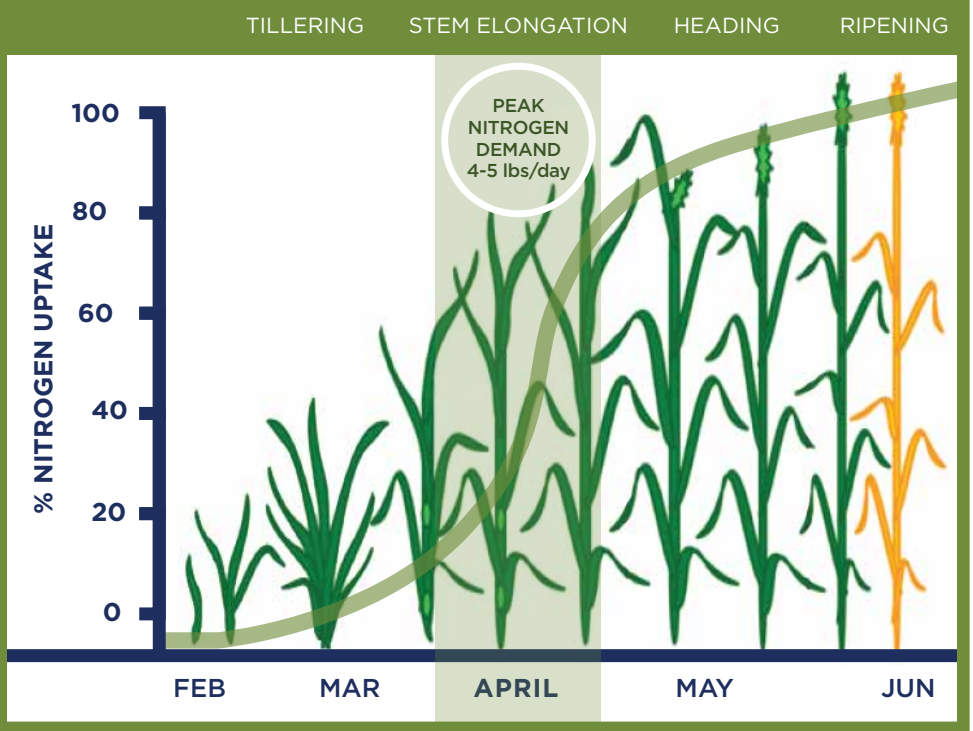
PNW soil temperatures can remain above 50˚ well into November allowing fall-applied nitrogen to begin converting from immobile ammonium to mobile nitrate prior to winter. **Fall-applied nitrogen leaches below the root zone before peak demands in the spring.**

In a region with already abundant tiller production due to timely September planting, spring top-dressed nitrogen often feeds unsprayed weeds and encourages unproductive and excessive spring tillers. **Top-dressed nitrogen misses peak demand timing to impact *grains per head* and *weight per grain.***

Cool spring soils slow the mineralization of nitrogen in the organic soil matter, delaying the soil's free nitrogen source. **Naturally occurring nitrogen is unavailable until after peak demand timing.**

The key to improving nitrogen use efficiency is aligning peak demands with peak availability.

NITROGEN DEMANDS BY MONTH



Non-stabilized, fall-applied nitrogen leads to unnecessary tiller production missing the more important yield-limiting factor for PNW wheat – *Grains per Head.*

By slowing the conversion of ammonia to nitrate, fall-applied nitrogen stays higher in the soil profile allowing better alignment of crop demands with crop access.

START. FEED. FINISH

YIELD 3D

Your pathway to optimal farm profitability

FEED THE NEED.

9% yield increase

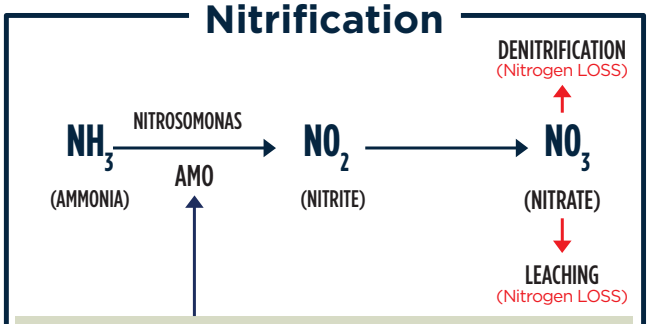
STABILIZED NITROGEN VS. UNPROTECTED NITROGEN

Research generated by The McGregor Company, fall-applied across 4 locations.

Nitrification inhibiting products target the enzyme produced by the Nitrosomonas bacteria in the soil that is responsible for converting immobile ammonium to mobile nitrate.

By controlling this enzyme, the nitrogen conversion process is slowed, the loss from leaching and denitrification is reduced, and the farm's nitrogen investment is retained higher in the root zone longer into the season.

Nitrification



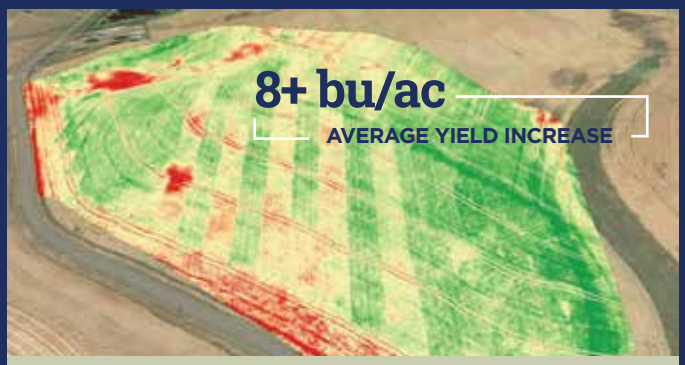
Nitrification inhibitors prevent nitrogen loss by blocking this enzyme and slowing the conversion of immobile ammonium to mobile nitrate

Nitrogen impacts every growth stage of the plant's lifecycle and each of the three yield components.

HEADS PER ACRE
Prior to stem elongation, nitrogen drives tiller production that is often excessive and too late to impact yield.

GRAINS PER HEAD
THE PEAK NITROGEN DEMAND PERIOD is during stem elongation when the maximum grains per head are determined.

WEIGHT PER GRAIN
After stem elongation nitrogen impacts grain fill and protein content.



Remote sensing drone imagery during stem elongation shows increased vegetation where a nitrogen stabilizer was applied, demonstrating heightened nitrogen utilization by the crop.

Research repeatedly shows that stabilizing nitrogen can **significantly improve** our ability to manage where the nitrogen is in our soil profile to drive **nitrogen use efficiency.**

Yield Component: Grains per Head

Premium Plant Nutrition

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