

# Residual Nitrogen Effects on Grains Following Non-Dormant Alfalfa

## Objective

To evaluate the use of non-dormant and high nitrogen fixing alfalfa as a possible source of nitrogen for spring wheat and barley.

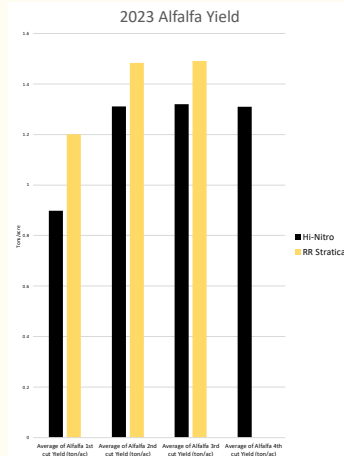
## Methods

Hi-Nitro, a non-dormant, high-nitrogen fixing alfalfa variety, and RoundUp Ready Stratica, a traditional dormant alfalfa cultivar, were clear seeded in Aberdeen in 2023. Forage was harvested 4 times, and evaluated for yield, quality, and nodule formation. UI Gold (hard white spring wheat) and ABI Eagle (spring malt barley) were planted in the spring of 2024. Termination of alfalfa was evaluated prior to planting grain. Wheat and Barley plots were harvested and evaluated for yield and quality. Protein was measured to determine the effect of nitrogen in the grain quality. Soil samples were taken before and after harvest.

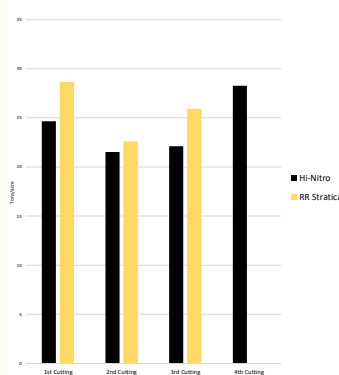


No difference in nodulation between dormant (fall dormancy = 4) and non-dormant (fall dormancy = 9) alfalfa cultivars (2023 and 2024).

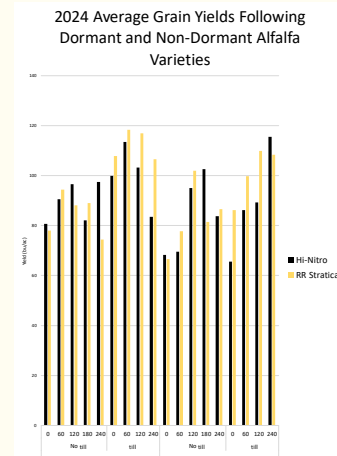
2023



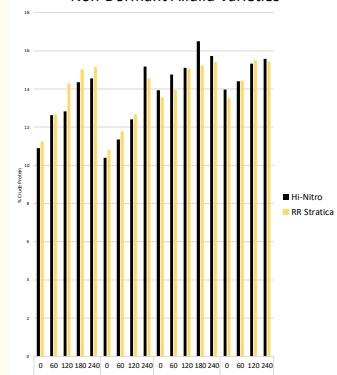
2023 Alfalfa Percentage of Crude Protein



2024



2024 Average Crude Protein Percentage Following Dormant and Non-Dormant Alfalfa Varieties



2025

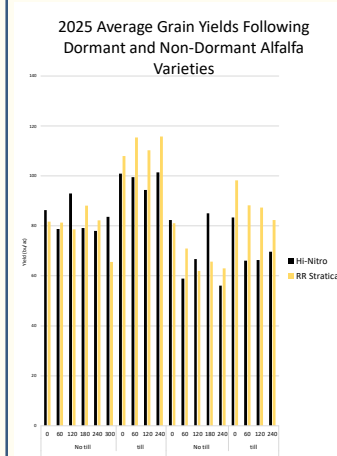
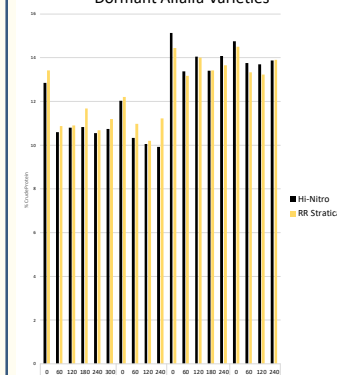


Chart 2025 Crude Protein Percentage Following Dormant and Non-Dormant Alfalfa Varieties



## Results

Stratica consistently out-yielded the Hi-Nitro variety on the first 3 cuts. The non-dormant alfalfa cultivar Hi-nitro continued to grow well into the fall affording an extra 4<sup>th</sup> cut which resulted in the highest overall annual yield. Stratica consistently exhibited higher crude protein. Both varieties had adequate protein levels and reached Supreme quality according to the USDA Hay Quality Designation guidelines. There were no significant differences in alfalfa cultivar nodulation between alfalfa varieties.

Grain yield responded in 2024 in correlation to variable rates of nitrogen, where increased amounts of nitrogen increased yield and protein. In 2025, results were mixed. UI Gold (Wheat) had a higher percentage of protein than ABI Eagle (Barley), however both species held even across all rates of nitrogen application. Yield increased with tillage, whereas protein was higher on non-tilled ground. Yield and protein were lower on average in 2024 than in 2025. Alfalfa Variety shows a slight increase in yield following a traditional variety (Stratica) compared to a non-dormant high nitrogen-fixing variety (Hi-Nitro). Protein levels increase with increased nitrogen, regardless of alfalfa variety grown the previous year.



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