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NDVI improves malting barley in-season nitrogen management

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First author Taylor Nelsen presenting malting barley research at the 2018 Small Grains Field Day. Photo by Mark Lundy.

To sell malting barley, growers must produce grain that has approximately 9 to 10.5% protein content. Achieving this can be difficult since environmental and management factors affect both grain yield and grain protein content. One of the most important factors is soil nitrogen (N) availability, but practical tools to determine whether a crop has enough in-season N are lacking.

In a study recently published in *Agronomy Journal*, researchers used canopy reflectance measurements (NDVI) to determine if an in-season application of N fertilizer was likely to increase grain protein and/or grain yield. The researchers measured reflectance early in the season. Whether subsequent in-season N fertilizer applications increased grain yield and/or protein depended on both the measured value and the agronomic conditions at the site. To help overcome the diverse environmental conditions among the experimental sites, the team compared NDVI to a zone within the field where enough N was applied to ensure that the crop was not limited by N.

This study demonstrates that in-season NDVI measurements are an important tool that farmers and agronomists can use to inform N fertilizer decision making. Combined with site-specific agronomic knowledge, these tools can help improve yield and protein outcomes for malting barley crops.

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Nelsen, T.S., & Lundy, M.E. (2020). Canopy reflectance informs in-season malting barley nitrogen management: An ex-ante classification approach, *Agronomy Journal*, *112*, 4705–4722. **https://doi.org/10.1002/agj2.20397**

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