Unlike other small grains that are managed for high protein, malting barley markets require a fixed protein concentration range, making nitrogen (N) fertilizer management especially dynamic and challenging. While other studies have shown that N fertilization decisions are critical for increasing yield and achieving acceptable protein, they have also shown that environmental conditions have a large influence on N response. This study seeks to improve quality and yield outcomes for malting barley in California by determining the optimal timing and rate of N fertilizer.

Overall findings:
• Increasing N fertilizer rates and applying N at a later growth-stage will increase both yield and protein, but these responses vary greatly based on location.
• 89% of yield variation and 57% of protein variation was explained by the effect of location for 2016-17 season.
• Micro-malting results indicate that there is very little control over quality parameters at the field level.
• A N-rich strip can be used to calibrate site specific N applications.

This site:
• Planted: November 22nd, 2017
• Tillering fertilizer: January 31st, 2018
• Varieties: UC Tahoe, LCS Genie

Figure 1. Represents the effect of N fertilizer application total and timing on malt barley yield (top) and protein (bottom) across three California locations measured in the 2016-17 season.