

Horned larks are a native species and are protected by law. Our purpose is not to harm horn larks but rather to deter them. Avipel is a non-toxic bird repellent, not a bird poison. We are following EPA and FDA rules. We will send replicated samples of harvested canola seed for laboratory analysis to ensure there are no traces of the seed treatment in the harvested seed.

## Improving Nitrogen Use Efficiency for Winter Canola Using 4R Stewardship



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Winter canola has potential as an alternative cash crop to wheat. Canola also has tremendous rotational benefits for soil health, weed and disease control, and the subsequent wheat crop. Careful fertility management is important to ensure maximum yield and quality; however, fertility management research specifically for winter canola production is limited. In fall 2016, three nitrogen (N) fertility trials were started to investigate the optimum rate and timing of N-fertilizer application for winter canola. Trials were established in three areas that represent different yield potentials, soil types, crop rotations, and climatic conditions. Two dryland trials were located near the towns of St. John and Hartline in Washington and one irrigated trial located near Odessa, WA. The primary objectives are to learn N uptake during the growing season, to estimate optimum rate and the best timing for N application for canola grown in different environment with different yield potentials, and to evaluate how N affects canola yield and oil content. In the 2016-2017 trial, there were no statistically significant differences in yield or total above ground biomass among N treatments. Lack of yield response to N may be due to high variability in plant counts within plots and high soil residual N at planting. Above ground tissue N increased at all growth stages with increased N rate. Split and spring-only N application resulted in greater above ground tissue N when compared with fall-only application. Seed oil and protein content were found to be inversely related, with higher N rate contributing to higher protein content and lower oil content. The second year of trials is underway, with dryland sites in Colfax, WA; Latah, WA; Troy, ID; and one irrigated site in Echo, OR.

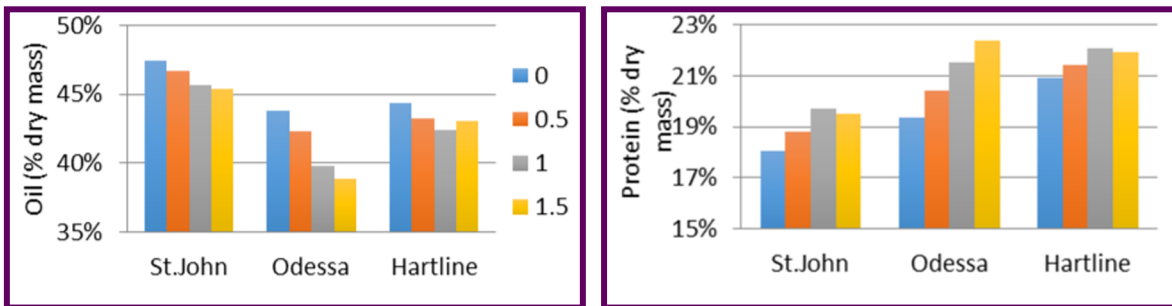


Figure 1. Seed oil and protein content as affected by N application. 0 indicates no N applied, 1 indicates full recommended rate based on Koenig et al., 2011. 0.5 and 1.5 represent 50% and 150%, respectively, of recommended N rate. Grouping is by field location.

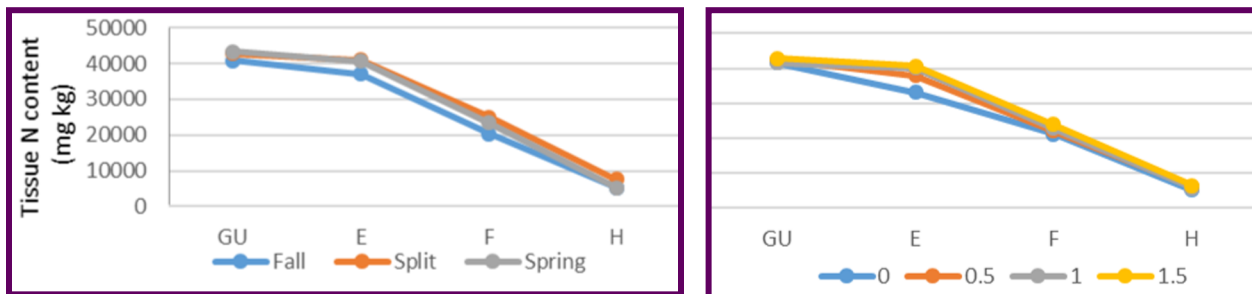


Figure 2. Above-ground tissue N content (mg kg<sup>-1</sup>) at Greenup (GU), Elongation (E), Flowering, and Harvest (H) as affected by N application timing (A) and rate (B) in St. John, WA in 2016-17.