

Exploring relationships between hyperspectral data and nitrogen application levels for two field crops located in the West Nipissing agricultural region of northern Ontario.

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The over application of nitrogen fertilizer can result in unnecessary expenses to producers as well as cause adverse impacts to adjacent lands. In this study we hope to determine whether hyperspectral remote sensing techniques can be used to help curb this potential problem by focusing on two experimental plots located in West Nipissing, Northern Ontario. Specifically, four separate nitrogen applications (0, 50, 100, 150 kg N/ha) were applied to a wheat (*Triticum aestivum*) and canola (*Brassica napus L.*) field and in situ hyperspectral readings were taken over the growing season. Using these data we wish to determine the earliest growth stage at which hyperspectral data can be used to distinguish between the various nitrogen applications. We also wish to determine the optimal hyperspectral vegetation indices (VI's) for separating the various treatments at the various growth stages during the entire growing season. It is anticipated that these data can be useful for producers who are interested in assessing the potential yields of their crops.