

Assessment of soil inorganic nitrogen status using satellite imagery

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The use of satellite imagery to assess vegetation nitrogen (N) status has been scientifically documented worldwide. On the other hand, there has not been much research focused on using satellite imagery for assessing soil N, which is a challenging nutrient to monitor and manage. Soil nitrogen can vary depending on soil heterogeneity, interference from vegetation, and other factors. With that in mind, the goals of this research are to assess indices derived from satellite imagery as indicators of soil inorganic N in farming fields, and identify which index provides consistent results regardless of management practices. This study used satellite imagery (Planet, 3 m resolution) from three corn N trials conducted in Indiana in 2022. Prior to planting, five different N rates were applied, which were equivalent to the 40, 60, 80, 100, and 120% of the farmers normal N rate. Satellite imagery and soil samples were collected on two dates, before planting and before sidedress, at growth stage V6-V7. The indices evaluated were: NGNDVI, ARVI, NDVI, OSAVI and GNDVI. These indices were calculated in QJIS (Version 3.32.2). Regression analysis determined the relationship between the indices and the soil inorganic nitrogen. The results will be presented during the poster session.