

Remote Sensor Technologies

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There are many applications of remote sensing to generate information related to crop production, including information on soils, terrain, and climate. Assessment of crop health is key to supporting management that optimizes fertilizer applications. More efficient use of N fertilizers could reduce environmental impacts from run off, denitrification and volatilisation. Real-time DGPS guidance systems (Controlled Traffic) is the enabling technology that allows growers to fully utilize information from maps and other products developed from proximal and remote sensing. To develop crop assessments, we need to consider both the sensor and platform requirements when considering the best solution for the crop information requirements. Sensor requirements include which wavelengths are needed, the spatial resolution, and what sky conditions are required. Ground-based applications open up the use of active optical sensors, which are independent of sky conditions. Crop assessments generally utilize vegetation indices which are computed on some combination of wavebands. It's important to understand the basic differences between indices that characterize percent cover (such as NDVI) versus other indices that relate to plant N status. Future research areas include improving existing active optical sensing technology to take advantage of the improved vegetation indices, and evaluating complementary sources of data for crop information such as new satellite imagers designed for vegetation assessment.