SOIL AND PLANT SENSING FOR PRECISION AGRICULTURE

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Abstract

Precision Agriculture requires fast and low cost measuring techniques. The heterogeneity can be derived from aerial image evaluation as well as by direct methods like soil mapping, harvest monitoring or different kinds of measurements of biomass distribution. Whereas fast and low cost mapping of soil texture is not solved, there are now principles for fast determination of humus, soil nitrogen, soil density, and soil moisture. Spectral sensing and spectral imaging of crop in the visible, near infrared and mid infrared (thermal) range show the ability for fast crop surveying. The spectral evaluation of reflectance and induced fluorescence at suitable wavelengths provides information on plant stress, nitrogen demand, yield and other crop quantities. Although intensive research has been performed, and imaging seems to have the best potential for fast weed and pest recognition, the automated determination of crop quality is an open question till today.

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