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(PhD) Research working title: Precision Agriculture tools and their application in land drainage issues in Ireland

Supervisor(s): Tim McCarthy (MU); Stuart Green (Teagasc)

Research Interests: Thermography, UAV, Remote Sensing, Photogrammetry, Land Drainage

My research focuses on the use of remote sensing to identify and classify artificial drainage at regional and local scales. The project will use existing soil survey data and satellite-derived estimates of grass growth to define heavy soil areas in the Border Midland and Western region of Ireland that likely have artificial drainage in place. Drained heavy soils retain less water than saturated heavy soils and will heat up quicker, thereby extending the growing season, grass yield and farm productivity. This resistance to temperature change (thermal inertia) will then mapped at high spatial resolution in a series of field experiments using thermal- and hyperspectral sensors on unmanned aerial vehicles to locate subsurface drains. The overland flow of surface water will also be accurately modelled using high resolution topographic models created by photogrammetry and compared with current methods (including LIDAR) for overall accuracy and cost. Cheap and effective means of monitoring farm drainage or irrigation systems will be an important aspect of increasing agricultural production into the future.

Publications: TBC

Conference/Workshop Presentations: TBC

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