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Development of a multifunctional land evaluation for dedicated bioenergy crops

Key words: Bioenergy, Land evaluation

Abstract:

The Australian Biomass and Bioenergy Assessment (ABBA) aims to catalyse investment in the renewable energy sector, through development of detailed interpreted geospatial information regarding potential crop suitability, productivity and efficacy of dedicated bioenergy crops. Queensland, has limited and almost fully utilised land suitable for the production of traditional crops.

The potential of bioenergy crops in marginal areas of land needs to be assessed in the face of multiple production, environmental (built and natural) and socio-economic factors. We will address this through a geospatially based multi-functional land evaluation (MFLE) approach. In this approach we will make assessments on a limited suite of ecosystem services with the goal of achieving a more holistic assessment of enterprise suitability. Ecosystem service assessment will be undertaken through a combination of geostatistics, modelling and where necessary expert analysis.

Due to the variability of available data to parameterize and calibrate models, a tiered approach to modelling efforts will be undertaken. The favored approach is simulation modelling of agro-ecosystems using APSIM. Where insufficient data is available, less detailed water balance and water quality modelling for the regulating services will be undertaken using HowLeaky.

Communication of this information is through publically consumable web services. Web processing services providing user centric analytical tools for on the fly calculated products with multiple products being made available - based on the needs of investors, land managers and regulators.

By operationalizing MFLE, this approach opens up the door to a more holistic solution to add value to decision making of land managers, investors and regulators alike.