Utilising traditional and digital soil mapping techniques to facilitate research on a cattle station, Queensland

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The Spyglass Beef Research Facility (SBRF) spans 38,000 ha of typical beef producing country in northern Queensland. SBRF was purchased for the conduct of world class research, development and extension to advance tropical and subtropical beef production. An integral part in the facility's development is the generation of good quality soil and land resource information, including soil maps. A soil and land resource assessment was conducted on SBRF with data enabling researchers and station staff to optimise the building of critical infrastructure (fencing, laneways, water points, gates and paddock layout) and facilitate experimental design of research trials.

In order to provide a comprehensive set of data for the station there were two components to this survey, a traditional mapping component and a digital soils mapping component. The traditional survey mapped soil types at 1:50,000 scale (appropriate for grazing activities) and produced a soils map for the entire property. This was supplemented by digital soil mapping (DSM) across the whole property. Maps of soil attributes relevant to grazing and animal research: soil depth, soil texture, pH/soil nutrients (e.g. available P, available K, available S, total N, organic C) were mapped across the property using DSM techniques (Regression Tree and Random Forest). These attributes were modelled on a 90m x 90m grid size at multiple depths across the entire property. It is intended that the digital soil mapping products can be used in pasture growth models for the station.

By utilising both techniques we can provide a comprehensive foundational data set for the property. It is intended that these maps and data, in conjunction with other datasets relevant to grazing, are used to support the research activities on SBRF into the future.