FORAGE REPORT: INDICATIVE SOIL PHOSPHORUS (PROTOTYPE)

Queensland Government

Introduction

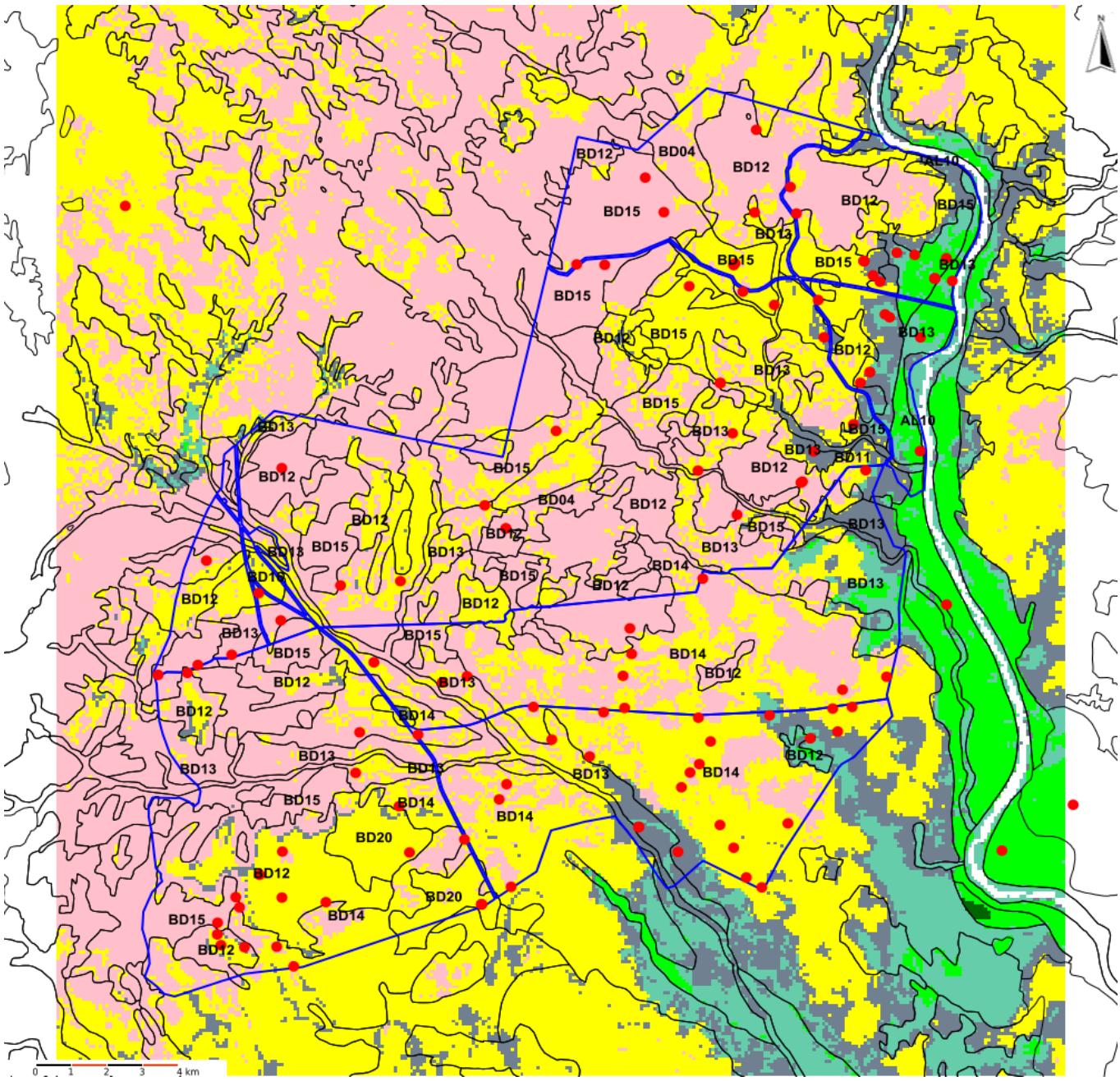
This report provides the inherent (i.e. natural soil with no phosphorus fertiliser treatment) 'plant-available' soil phosphorus (P) concentration and the soil P categories for different Grazing Land Management (GLM) land types for the selected Lot(s) on Plan. The map below shows the indicative plant available P concentration, using digital soil mapping methods based on site data collected during soil surveys. The specific soil test used is bicarbonate extractable P ('Colwell-P'), measured in the unit of 'parts per million' (ppm), which is the same as mg/kg.

The status of soil P affects the P concentration in pastures which plays an essential role for conversion of grass to energy in livestock body, growth and the development of body tissues, development of foetus and production of milk in pregnant and lactating cows. Extremely low or very low available-P soils may result in low plant P and hence P deficiency in cattle. Symptoms of P deficiency include bone chewing, which also increases the risk of cattle contracting botulism.

This map of soil P is a guide to assist graziers to improve the efficiency of supplementation for livestock production, fertiliser application and legume development through improved awareness of soil P availability. The red dots on the map are the locations where soil samples have been collected and analysed for Colwell-P, and some of the samplings may date back to the 1960s. Note: while bicarbonate extractable P is a better measurement of biological availability than total P, it may still not indicate true plant availability in all cases. For example, in iron rich soils, P may be less available to plants than indicated by this analysis due to the P-binding nature of these soils.

Property location

Soil P Map (2022)



Soil P Categories for Land Types

This table shows the indicative areas (ha) and percentage of different soil P categories present for each GLM land type for the selected Lot(s) on Plan.

The categories are classified based on soil P concentrations and include: Extremely Low (0-4ppm); Very Low (4-6ppm); Low (6-9ppm); Moderate (9-15ppm); High (15-25ppm); and Very High (>25ppm).

Land type code and name	Area (ha)	Extremely Low (ha) (%)	Very Low (ha) (%)	Low (ha) (%)	Moderate (ha) (%)	High (ha) (%)	Very High (ha) (%)
BD12 - Lancewood - bendee - rosewood BD	10224	6843 (66.9)	3042 (29.8)	280 (2.7)	50 (<1)	9 (<1)	<1 (<1)
BD14 - Narrow-leaved ironbark on deeper soils	8518	3424 (40.2)	4619 (54.2)	349 (4.1)	120 (1.4)	6 (<1)	<1 (<1)
BD15 - Narrow-leaved ironbark on shallower so	7958	4717 (59.3)	2579 (32.4)	504 (6.3)	155 (1.9)	4 (<1)	<1 (<1)
BD13 - Loamy alluvials	7240	3198 (44.2)	2185 (30.2)	737 (10.2)	565 (7.8)	556 (7.7)	<1 (<1)
BD04 - Box and napunyah	793	430 (54.2)	350 (44.1)	13 (1.6)	<1 (<1)	<1 (<1)	<1 (<1)
BD20 - Yellowjacket with other eucalypts	790	34 (4.3)	737 (93.3)	19 (2.4)	<1 (<1)	<1 (<1)	<1 (<1)
BD16 - Ranges	375	74 (19.7)	298 (79.4)	3 (<1)	<1 (<1)	<1 (<1)	<1 (<1)
BD11 - Goldfields country - red soils	198	26 (13.1)	89 (44.9)	69 (34.7)	15 (7.3)	<1 (<1)	<1 (<1)
AL10 - Wetland	81	<1 (<1)	3 (3.2)	27 (33.7)	22 (27.4)	29 (35.8)	<1 (<1)
AL09 - Water	4	<1 (<1)	<1 (<1)	<1 (<1)	<1 (<1)	<1 (<1)	<1 (<1)
BD05 - Box country BD	2	<1 (<1)	<1 (<1)	2 (100.0)	<1 (<1)	<1 (<1)	<1 (<1)
Total	36182	18746 (51.8)	13901 (38.4)	2003 (5.5)	925 (2.6)	604 (1.7)	0 (0)

Data sources

The Soil P map is based on data from products (2022) SLR_QLD_COLWELL_P_Stage3_05.tif, SLR_QLD_COLWELL_P_Stage3_EV.tif, SLR_QLD_COLWELL_P_Stage3_95.tif and SLR_QLD_COLWELL_P_Stage3_rel_uncert.tif of Queensland Spatial Catalogue (*https://qldspatial.information.qld.gov.au/catalogue*). The map has a spatial resolution of 100m, and the map accuracy depends on soil uniformity and density of soil sampling in any region. The GLM land type information is based on "SIRQRY.DAF_GLM_LAND_TYPES_V6" dataset. The categories of soil P concentration are adopted from Ahern C.R. *et al.* (1994). Some of the content in the 'Introduction' section of this report is referenced from McCosker and Winks (1994).

Note: This version of FORAGE Soil P reports currently does not cover the Gulf and Cape York regions. The spatial prediction of plant-available soil phosphorus is constantly evolving. The current map will be superseded when new analyses are completed and reviewed and will include all of Queensland.

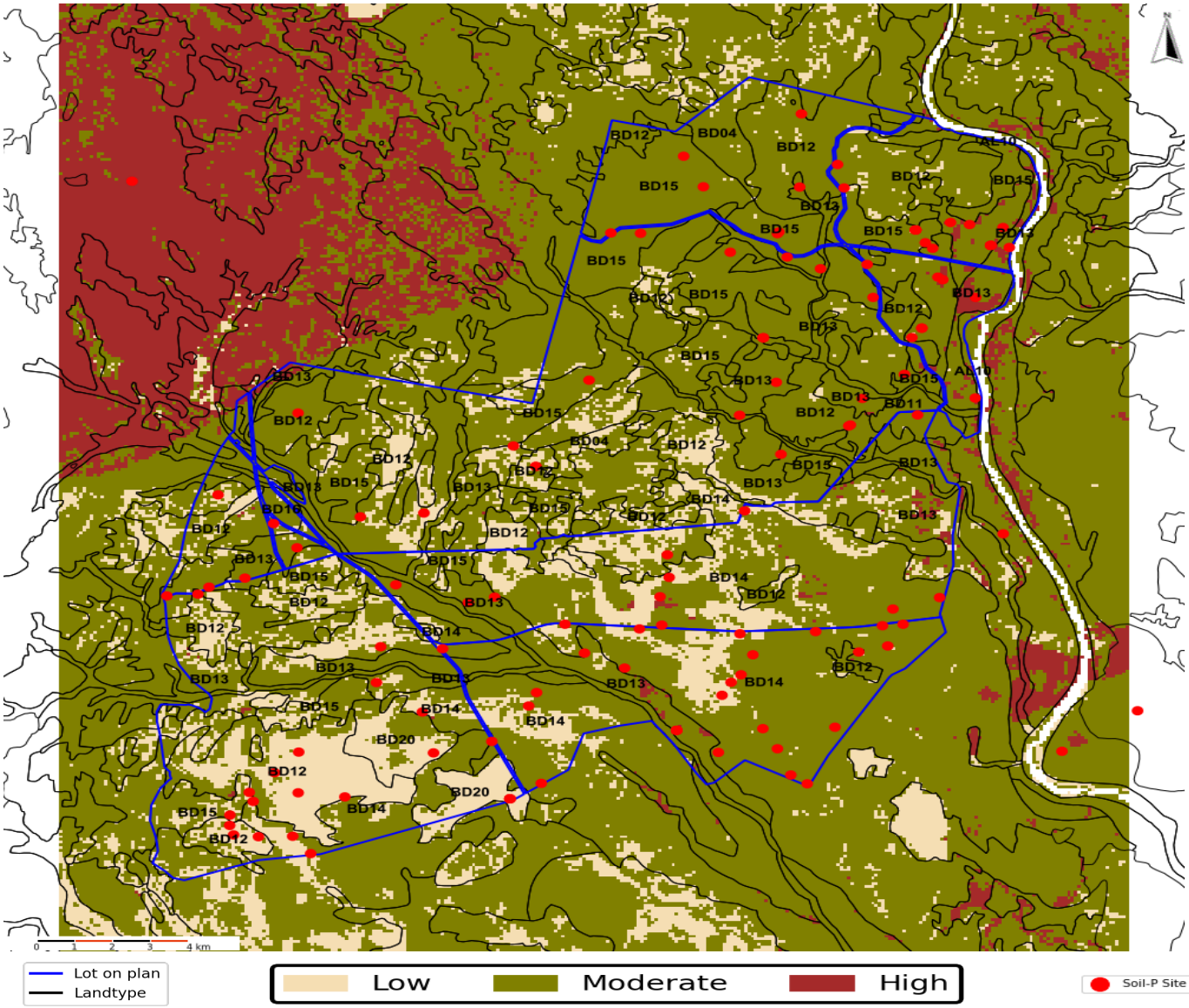
We acknowledge the work of numerous soil scientists, chemists, researchers and field staff who collected and analysed soil samples - and we also thank the many landholders for on-property access to collect samples since collections commenced.

You can now measure soil P on your property by registering for the national 'Pilot Soil Monitoring and Incentives Program' (*https://www.awe.gov.au/agriculture-land/farm-food-drought/natural-resources/soils/soil-monitoring-and-incentives*). Any data collected through this program will eventually contribute to a better P map for this report in the future.

Relative Uncertainty of Soil P Data

The indicative soil P map on page one is generated using complex digital mapping techniques. The map below indicates the 'relative' uncertainty of the soil P data used in the Soil P Map, expressed as low, moderate and high relative uncertainty.

Map of Relative Soil P Data Uncertainty



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