Olsen Phosphorus Summary
Tasmanian Regional Insights

Phosphorus is an essential nutrient for plant growth. It has a key role in building plant structure compounds and as a catalyst in the conversion of numerous key biochemical reactions in plants, such as photosynthesis. Phosphorus is critical for the overall health and vigor of all plants.

Across the breadth of Tasmania, Olsen P data from over 400 paddocks can provide valuable insights into soil P levels and the variability seen at the sub-paddock. Across the entire dataset, the average paddock scale Olsen P was 27.2mg/kg, ranging from 2.0 to 69 mg/kg.

Figure 1. shows the spatial distribution of paddock average Olsen P. While the average paddock Olsen P level of 27.2mg/kg is within the optimum range of 20-30mg/kg for soils under pasture approximately 35% of paddocks had an average Olsen P of less than 20mg/kg.

More importantly, over 75% of paddocks had a minimum Olsen P of less than 20mg/kg suggesting that at least some areas of the paddock are potentially P limited. Similar to other soil constituents Olsen P was highly variable within a paddock (*Figure 2.*), with an average of 30mg/kg variance within a paddock (ranged from 2-121mg/kg).

This variation suggests that there is significant potential for variable rate capital P applications to address soil constraints and optimize fertiliser use. These results may be best understood through an Olsen P map of an individual paddock.

This paddock (*Figure 3.*) was tested in 2018 with an average Olsen P of 27.7mg/kg (ranging from 16-49mg/kg).

Regular soil testing is critical for monitoring P levels to maintain critical P levels and to track that sufficient P is used to replenish the soil. This is particularly important when wheat can remove 3 kg/t, grass pasture can remove 3 kg/t of dry matter and milk production can remove 1 kg/t of liquid (www.soilquality.org.au/factsheets/phosphorus-tas).

Knowing that the P capital is being continually mined, without a strategic P strategy to replace the removed P, the soil will continue to degrade and productivity will drop.

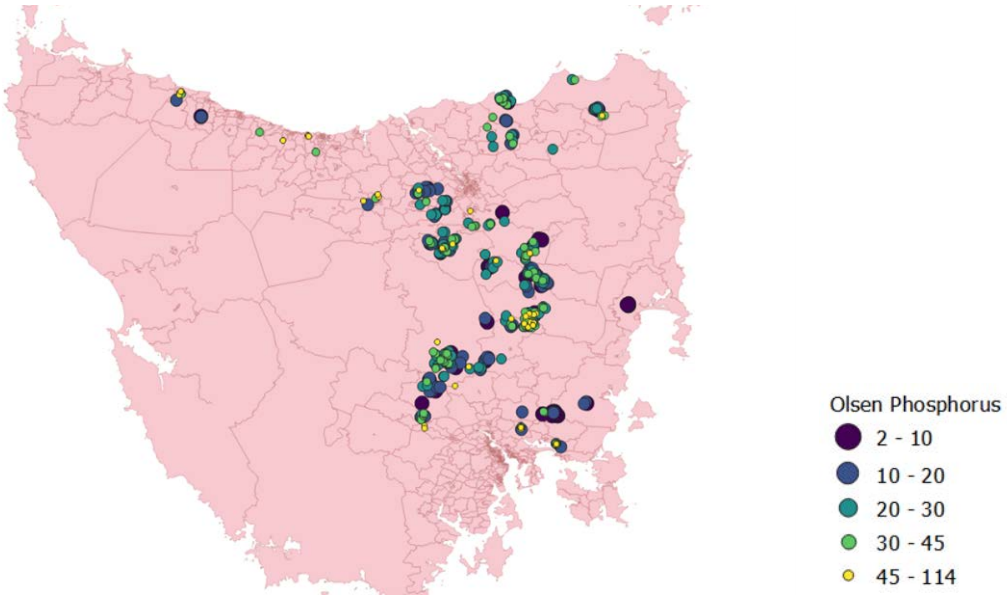

Figure 1. Average Olsen P data for Tasmania (2018-2022) by individual paddocks.

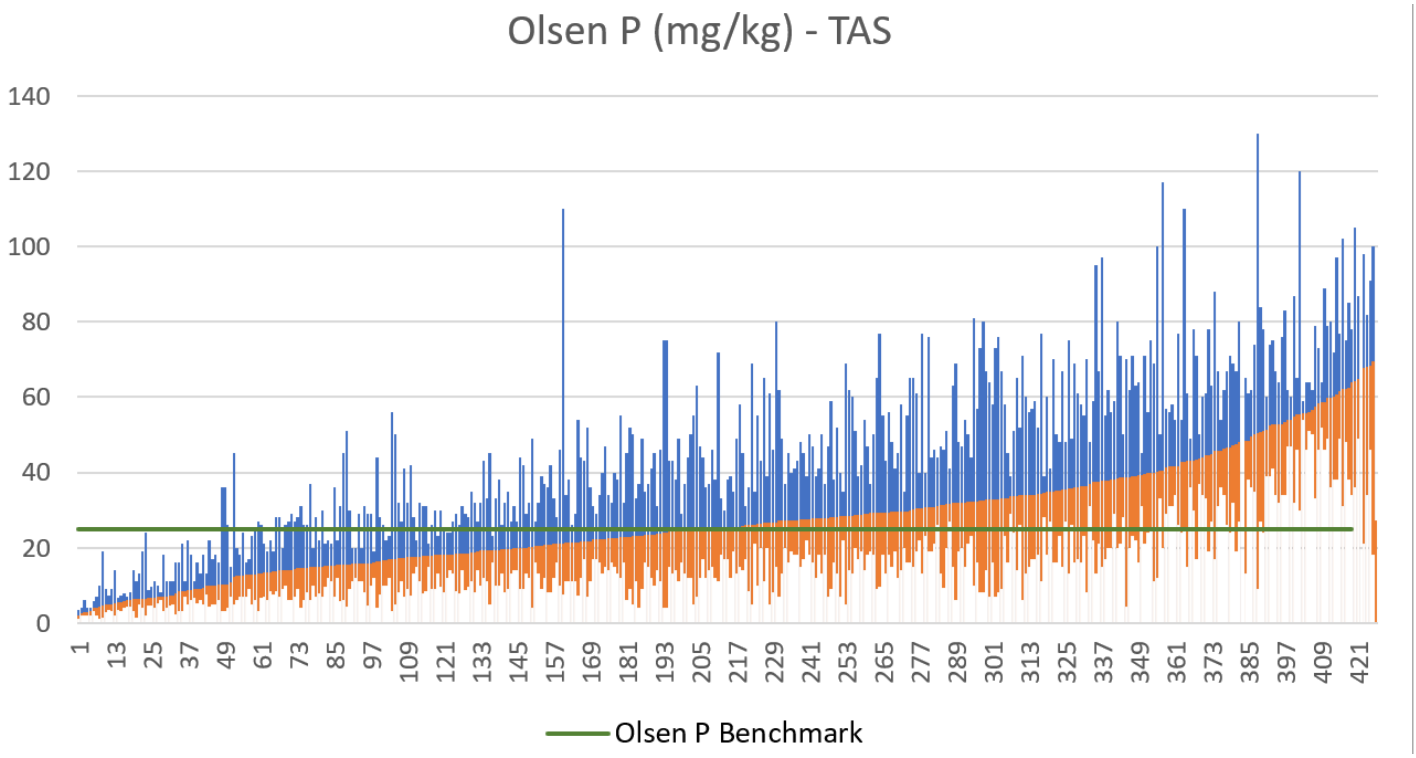

Figure 2. Soil Olsen P data for individual paddocks sorted by average Olsen P. The orange line is the average to minimum P values and the blue line is the average to maximum Olsen P in individual paddocks. The green Olsen P Benchmark line indicates what paddocks averaged above or below the critical level of 25mg/kg.

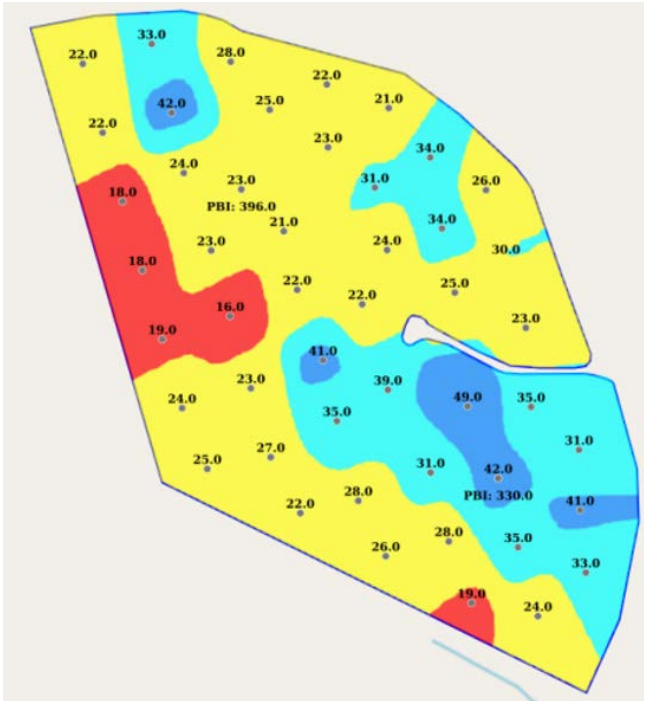

Figure 3. Soil nutrient map showing the Olsen P across a Pivot. The average Olsen P was 27.7 mg/kg ranging from 16 to 49 mg/kg.

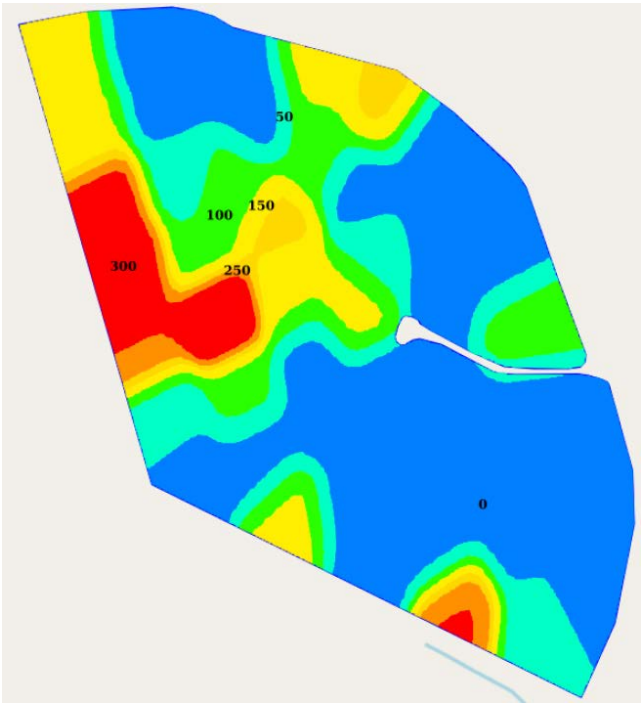

Figure 4. MAP application map - Target 25 mg/kg. Average rate applied - 71 kg/ha. Total MAP used - 3.5T over 48.7 ha.