

# Soil pH Summary

## Northern & Central Tasmania



Soil pH is a significant constraint to agricultural production across Australia. Generally a soil pH(CaCl<sub>2</sub>) below 5.5 is not a constraint to crop or pasture production. Soil pH directly affects the concentration of major nutrients and the forms of microelements available for plant uptake and can result in deficiencies or toxicities.

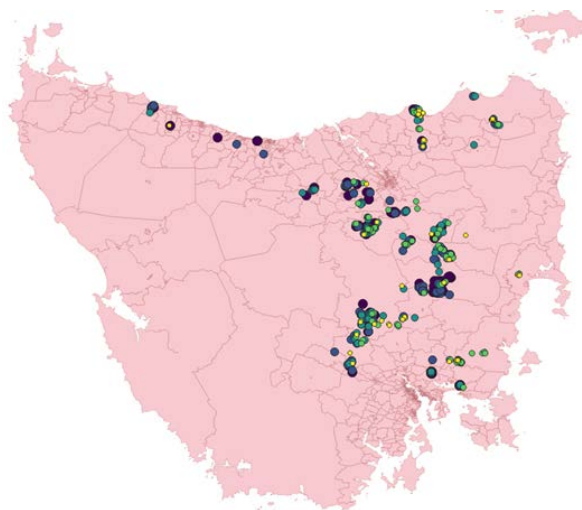
To increase soil pH is relatively easy, and usually achieved through the application of agricultural lime, with pH mapping allowing the quantity applied to be varied across the paddock based on the requirements.

Soil data from almost 500 paddocks sampled in Tasmania can provide valuable insights into the extent of soil acidity and variability seen at the sub-paddock scale. Across the entire dataset, the average paddock scale pH was 5.5, ranging from 4.2 to 7.1. Figure 1. shows the spatial distribution of paddock average pH.

Within any individual paddock, pH varied on average by 1.14 pH units but by as much as 4.67 pH units. This is reflected by the coefficient of variation (CoV), a measure of variability, which ranged from 1%-17% with a mean of 5.5%. Figure 2. shows the pH data for the individual paddocks. The orange line is the minimum pH to average and the blue line is the average to maximum pH for each paddock. The red line highlights the point of 5.5 pH, which is the ideal pH target for cropping or pasture enterprises. Nearly half (47.8%) of the dataset has an average pH less than the ideal. Furthermore, 27.8% of the paddocks tested had a pH lower than 5.2.

**TABLE 1. TASMANIAN SOIL pH DATASET SUMMARY STATISTICS**

Paddock average pH		pH variation in a paddock		pH CoV within a paddock	
Mean	Range	Mean	Range	Mean	Range
5.5	4.2-7.12	1.14	0.1-4.67	5.5%	0.96% - 17.1%



0-10cm pH<sub>CaCl<sub>2</sub></sub>  
 ● 3.89-4.79 ● 4.79 - 5.2 ● 5.2 - 5.5 ● 5.5 - 5.84 ● 5.84 - 7.13

Figure 1. Map of Tasmania identifying locations and average pH of grid soil sampling from 2018-2022.

### WITHIN PADDOCK pH VARIATION

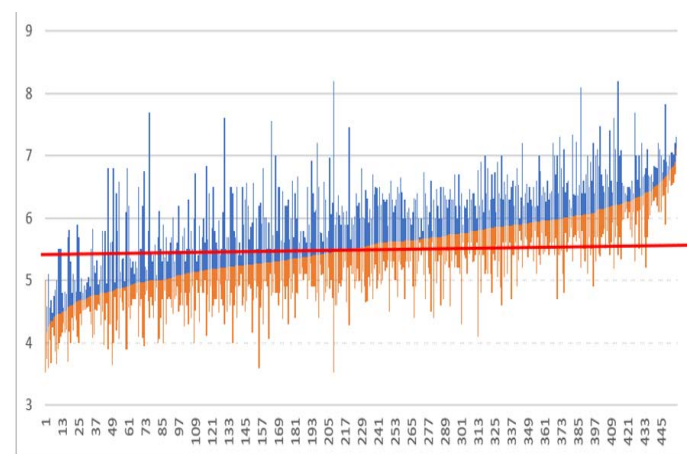
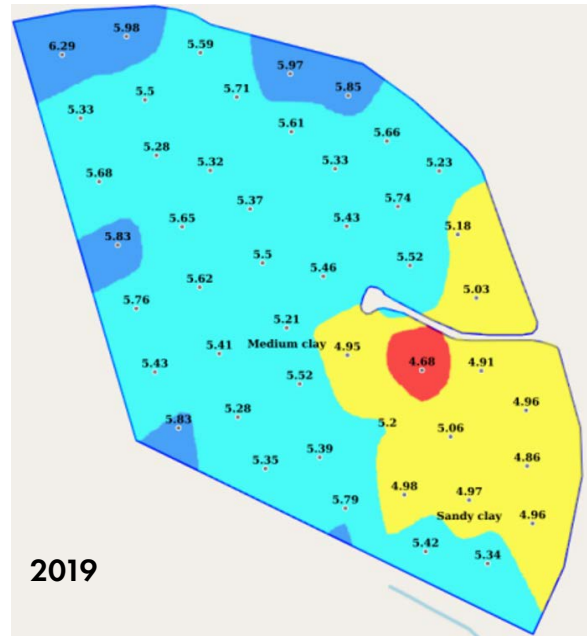
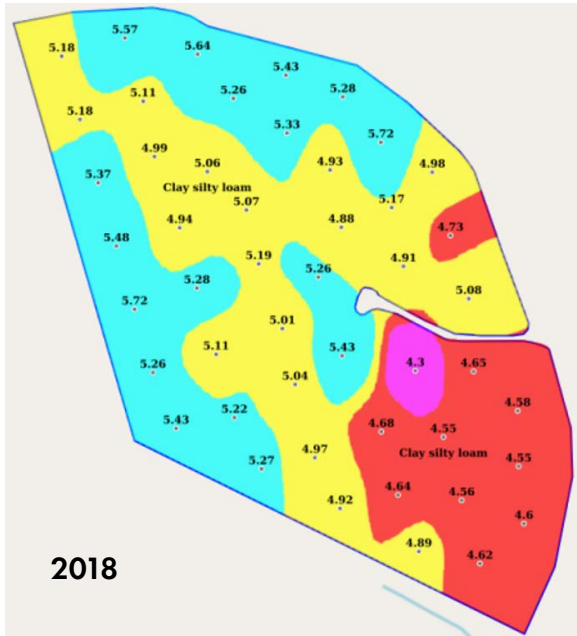


Figure 2. The red line marks 5.5pH across the 456 paddocks, indicating that 47.8% of paddocks tested had a pH below the optimum 5.5pH.

These results may be best understood through a pH map of an individual paddock. This paddock (Figure 3.) was tested consecutively in 2018 and 2019 (with a lime application in-between). In 2018 the average pH was 5.1 (ranging from 4.3-5.7). In 2019 we can see the adjustment in soil paddock pH, with the average pH lifted in this paddock by 0.3 units up to 5.4 pH. the paddock minimum was lifted from 4.3 up to 4.7, with significant improvement in the most acidic areas.

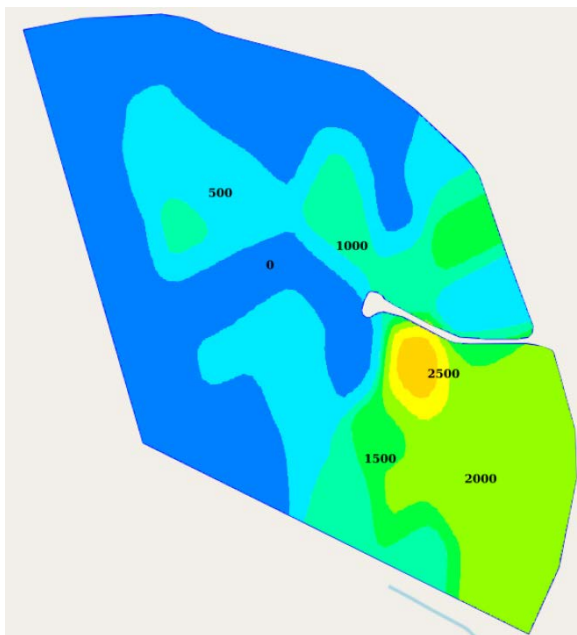
### WHAT DOES AN AVERAGE Paddock LOOK LIKE:



■ Above 5.8 pH ■ 5.2 - 5.79 pH ■ 4.8 - 5.19 pH  
 ■ 4.5 - 4.79 pH ■ Below 4.49 pH

■ Above 5.8 pH ■ 5.2 - 5.79 pH ■ 4.8 - 5.19 pH  
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Figure 3. Tasmanian pivot initially tested in 2018 and follow up testing in 2019 shows the average pH for the pivot lifted from 5.1 to 5.4 from a single application of lime.



■ 3000 kg/ha ■ 2500 kg/ha ■ 2000 kg/ha ■ 1500 kg/ha  
 ■ 1000 kg/ha ■ 500 kg/hg ■ 0 kg/ha

Figure 4. LIME application map - Target 5.2 pH.  
 Average rate applied - 719.4 kg/ha. Total Lime used - 35T over 48.7 ha.

