TopSoils Project

Soil Test Interpretation Sheet

Guide to the traffic light rating system on your soil test report sheet

	Well below target levels with possible implications for plant and soil health.
	Below target levels. Improving the level of the test may result in increases in the performance of your pasture system
	At target levels
	Above target levels – for the major nutrients, this means you may be able to make cost savings by not applying this nutrient until levels return to target
	Above target levels with possible implications for plant and soil health.

Soil type	Texture of soil is taken into account when interpreting other soil chemical results			
Soil pH	< 5.3 (water) < 4.5 ($CaCl_2$)	5.3 – 5.8 (water) 4.5 – 5.0 ($CaCl_2$)	5.8 – 6.5 (water) 5.0 – 5.8 ($CaCl_2$)	>6.5 (water) 5.8 ($CaCl_2$)
PBI Phosphorus buffering index	PBI is a measure of a soils capacity to react with/ fix applied phosphorus fertiliser. A soil with a high PBI value will require more phosphorus fertiliser than a soil with a low PBI value to obtain the same change in result. The PBI value is also needed to interpret Colwell P results.			
Soil Phosphorus (P) Can be measured using the Olsen P test or Colwell P test	***Using the Olsen P method for native pastures:***			
	Olsen P < 10 mg/kg	Olsen P 10 – 12 mg/kg	Olsen P > 12 mg/kg	
	Native pastures respond to increased rates of phosphorus up to an Olsen P of 12. To maintain native pastures in the system it is recommended not to go above an Olsen P of 12			
	Using the Olsen P method for improved pastures:			
	Olsen P < 15 mg/kg Increases in P can increase productivity	Olsen P 15 -25 mg/kg	Olsen P > 25 mg/kg High levels of P can cause environmental issues when lost through run off or erosion	
	Using the Colwell P method for improved pastures:			
	PBI Category			
	0-70 71-140 141-280 281-840 >840	< 20 mg/kg < 31 mg/kg < 36 mg/kg < 44 mg/kg < 64 mg/kg Increases in P can increase productivity	20-31 mg/kg 31-36 mg/kg 36-44 mg/kg 44-64 mg/kg 64-84 mg/kg	> 35 mg/kg > 40mg/kg > 48mg/kg > 68mg/kg > 88 mg/kg High levels of P can cause environmental issues when lost through run off or erosion

Soil Potassium (K)	Soil potassium target levels are based on soil type				
	Sands	***Sandy Loam***	***Clay Loam***	***Clays***	***Peats***
	< 100 mg/kg	< 120 mg/kg	< 150 mg/kg	< 180 mg/kg	< 350 mg/kg
	101-150 mg/kg	121-200 mg/kg	151-250 mg/kg	180-300 mg/kg	351-600 mg/kg
	> 180 mg/kg	> 240 mg/kg	> 300 mg/kg	> 350 mg/kg	> 800 mg/kg
	Increases in K can increase productivity			High levels of K can cause environmental issues when lost via leaching through the profile	

Soil Sulfur (S) Can be measured using the CPC test or KCl-40 test	CPC test mg/Kg	< 4	4-6	>6
	KCl-40 test		8-12 mg/kg is adequate	

Aluminium (KCl test) mg/kg	**Aluminium is not required for plants growth, but can become toxic to plants (particularly seedlings)**	
	< 50 mg/kg for most pasture plants	

Salinity

Electrical Conductivity EC	Soil salinity is determined by measuring the electrical conductivity (EC) of the soil sample, with results in deciSiemens per metre (dS/m).	
	≤ 0.2dS/m	>0.2dS/m

Organic Matter

Organic matter is used to help interpret other soil tests (it is calculated from organic carbon content)

Guide to Exchangeable Cation levels (meq/100gm)

Exchangeable Cations	Low	Target	High
Calcium	<5	5-10	>10
Magnesium	<1	1-3	>3
Sodium	-	0-0.7	>0.7
Potassium	<0.3	0.3-0.7	>0.7

Calcium / Magnesium Ratio

Calcium / Magnesium Ratio	A well structured soil generally has twice as much exchangeable calcium to exchangeable magnesium.		
	<2	2-10	>10

Sodicity

Exchangeable Sodium Percentage (ESP)	If sodium is > 6% of the exchangeable cations, then the soil maybe Sodic and prone to dispersion, leading to compaction and soil surface crusting.	
	<6%	≥6%