

Soil & Pasture Levels Compared

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At Winchmore Research Station in the South Island on stony silt soils, measuring perennial ryegrass and clover pastures tissue figures changed gradually as expected, whilst the soil test figures moved up and down for no reason. Some supporters of soil tests will say that they are just guides and that the optimum range is between an Olsen P of 15 to 30. This is ridiculous because it is a 100% variation and I know that in some cases 20 indicates low P levels, and 30 high, although many of New Zealand's high producing pastures have over 45. At this stage it should be mentioned that the Olsen P system was developed on alkali soils for alkali soils. 99% of New Zealand soils are acid.

Winchmore Irrigation Research Station, South Island, NZ.

A similar annual fertilising programme showing annual test changes.

Soil Olsen P levels jumped up and down while pasture P levels were fairly consistent.

Sampling was done by research people.

----- Phosphorus -----					----- Potassium -----		
Yr	Soil	Change	Herbage	Change	Soil	Change	Herbage
87	7	NA	0.53	NA	0.22	NA	2.6 NA
88	13	85%	0.62	17%	0.63	186%	3.5 35%
89	14	7%	0.59	-5%	0.32	-50%	3.0 -14%
90	9	-36%	0.54	-9%	0.33	3%	2.5 -17%
91	12	33%	0.52	-4%	0.61	85%	2.9 16%
92	14	17%	0.53	2%	0.35	-43%	3.0 3%
93	23	64%	0.53	0%	0.76	117%	2.3 -23%

It is pasture uptake that matters, not what the typically variable soil figures show.

Calcium - One application of lime was applied in early 1987.

Yr	Soil Ca	Change	Pasture Ca	Change
87	69	NA	1.02	NA
88	70	1%	0.72	-29%
89	87	24%	0.59	-18%
90	69	-21%	0.71	20%
91	73	6%	0.66	-7%
92	75	3%	0.70	6%
93	72	-4%	0.66	-6%

The optimum calcium herbage level in 75% ryegrass & 25% clover is 0.8%. The pH varied up and down between 5.8 and 6.5 despite no more lime being applied. The pH in 1993 was 6, but calcium deficiency symptoms were apparent. The fertiliser consultant being used went by the soil tests, so said no lime was necessary. In 1993 the consultant was changed and lime was applied with beneficial results.