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Misled By Olsen P?

Many farmers have an obsession with the Olsen P levels of their soil. For them, maintaining or elevating Olsen P is just about the only reason for soil testing! Yet P is just one of many nutrients required by the growing plant!

If P is deficient, then obviously, if the goal is to maximise productivity, an adequate level of plant available phosphorus is necessary in the soil. The Olsen P test gives a useful indication of such levels but no more than that - it is not an irrefutable determinant of plant growth response! In some cases (neutral-alkaline pH) Olsen P under-estimates plant available P, while in others (acidic pH) it over-estimates these levels! Nor does it remain constant throughout the year as some farmers believe (or expect) i.e. the same paddock sampled at different times will give different Olsen P readings. Nor do low Olsen P readings necessarily indicate a problem i.e. in times of rapid plant growth, the Olsen P value can drop considerably: this is not because more P fertiliser is required but simply because the plant roots are up-taking lots of P out of the soil!

Clearly then, the Olsen P test result in isolation can be misleading, particularly if all you do is simply compare it to a rather arbitrary desired level (15,20,25,30 etc).

Further, much of the P in NZ soils is present in organic form (up to 70%). This is released as the organic matter decomposes. The Olsen P test gives no indication of how much organic P can be made plant available. On the other hand, if soil biological activity (earthworms, fungi, bacteria etc) is optimal (adequate moisture, temperature, available calcium etc) significant amounts of the plants P requirement can be supplied from this source.

Take an example; assume the Total P in the soil measures 1000kg/ha and 50% is present in organic form:

Inorganic P	=	500kg/ha
Organic P	=	500kg/ha
Total P	=	1000kg/ha

If say 5% of the organic P is mineralised and it's P released in the next 12 months, then the organic P (not assessed by Olsen P) can release 25kg/ha of P for plant use! That's the equivalent of applying about 275kg/ha of Superphosphate!!

Why would anyone apply P fertiliser if it's not necessary? That makes no economic sense! Are you being misled by your Olsen P results? Spend some of this money on good soil testing and find out what other nutrients may be limiting your productivity!