

Special Options:

In the previous Agent Update we looked at the two most popular Optional Tests that can be useful as regular inclusions. Here we are covering some that are only needed in special circumstances.

2. Aluminium and Heavy Metals

Extractable Aluminium

One question we are often asked is “What about Aluminium?” There is a lot of misinformation out there and the result has been considerable confusion. Yes, Aluminium is a toxic element for plants (not all that good for animals and people either), but it has become imbued with some astonishing powers over the years, to the point where more people are more paranoid about it than understand what is really happening.

The greatest misunderstanding perhaps, is that Aluminium *causes* soil acidity and reduces nutrient uptake by plants through its toxic action on roots. Aluminium is toxic to plant roots, but it is Hydrogen that causes both soil acidity and high Aluminium levels. Put simply, most soils literally have tonnes of Aluminium (together with Iron, Manganese and organic matter it contributes to the colour of soils), but only a tiny amount will ever be present in a form that can cause problems for plants. The amount that is available in this form will change with the soil pH and in most soils above a pH of 6.0, levels of extractable Aluminium will be insufficient to cause any problem.

In general, the best method of assessing soil health is to determine the cation balance with a properly measured figure for Exchangeable Hydrogen. Once the soil balance has been corrected, Aluminium will no longer be of any concern.

This, of course, opens another hoary chestnut – Why don't we include Aluminium with the Exchangeable Cations? Yes, Aluminium is a cation, but very little is normally present in exchangeable form. But even if we did provide a true exchangeable Al test, it is unlikely there would be any 'desirable' level for soil balance anyway. Remember that soil balance is concerned with the Physical condition of the soil, not plant nutrition.

Still, Aluminium is toxic and can cause problems with specific plant species such as Lucerne, Saltbush and clover. In cases like these (prior to achieving proper soil balance) it may be worth knowing how much Al is present – simply as a means of seeing whether or not it is safe to plant such species yet. However, once the cation proportions get close to the ideal proportions, Aluminium will have become irrelevant.

Heavy Metals

Heavy Metals are another special case. These elements are usually contaminants (although soils that are naturally high in one or more do occasionally occur). The main elements are Cadmium (Cd), Arsenic (As), Mercury (Hg) and Lead (Pb) and are often of concern where land has previously been used for some industrial purpose or on land that has been irrigated with municipal effluent derived from an industrial area.

Cadmium has been associated with Potato production (prior to the industry change to using high analysis fertilisers) and Arsenic can sometimes be found in soils that have at one time been used for horticulture (prior to the removal of arsenic compounds from use). Mercury and Lead are mainly found as industrial contaminants. Generally, the main situation in which testing for these elements is required will be on properties converting to certified Organic production.

Under normal practice, these elements are unlikely to accumulate so they do not need regular re-checking. To determine which elements to test for, it is best to contact SWEP for further information.