

TECHNICAL INFORMATION

When Potash may be Damaging Your Soil - Should you use it?

Potash is measured in your soil in terms of K_2O but is taken up by your crop in the elemental form of K^+ . You might note I have added a single '+' to the K symbol, this is because it is a 'cat-ion' with a single positive charge and as such it is weakly held in the soil on the clay and humus particles.

Now imagine this – calcium Ca^{++} has two positive charges and will easily 'knock off' K^+ from the clay particles in which case the poor old K has no where to go except

- A) into your crop; or
- B) down the river

so when you apply lime (especially if you use magnesium lime) you will increase the amount of K in the soil solution, your plants cannot help but take it up and you can have excessive K and low Mg (because the Mg^{++} will be strongly held in the soil).

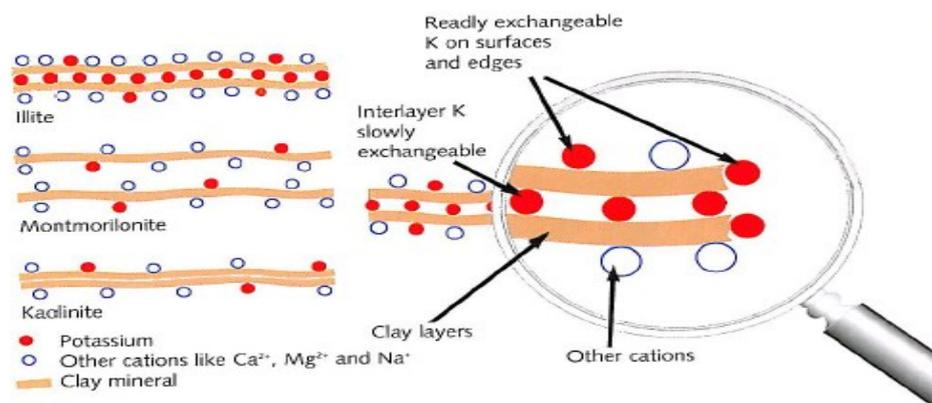
It is this excessive K that will cause imbalances and may result in 'Staggers', it will also cause the grass to become bitter and unpalatable.

Excessive potassium (K) will also flocculate the soil causing it to become hard when it dries out and traps too much water when it does rain – grass does not require high levels of potash.

The recommendations are usually made to 'replace' what you have taken off and if you are taking 2 or 3 cuts of silage and not using any FYM or slurry then you may indeed need to consider applying potash – but that is rarely the case and often more than enough is applied to maintain levels.

Even when your soil analysis comes back with a low level of K (index O) you still may not need to apply any – again it depends on what FYM etc. you are applying and what yield of crop you want to take.

Potassium and clay minerals



ABOVE: Clay minerals consist of lattices and layers, and cations are held in various positions in and around the layers.

You can replace the need for much of the K with an application of Na (sodium) – sodium will improve palatability and make for a softer more ‘lush’ type of grass – high K grass tends to be ‘stemmy’ hard and unpalatable – you need high K if you are growing haylage for horses, or you want to improve straw strength – we don’t want a hard or stemmy grass for cows or sheep to feed on.

The alternative potash to consider is sulphate of potash. This is much kinder to the soil and provides two important elements K and S. Sulphate is essential to build protein and should be applied in the spring with any nitrogen that might be required.

Only low levels of potassium sulphate will be required as it is more efficient than the high salt muriate form.

Your Soil Audit will identify if you do need to add K and also show the need for sodium and sulphate. I have not had ONE – NOT ONE grass sample come back showing that K is deficient – I have plenty of wheat crops where this is the case, but no grass.

So when you use *The Better Grass Program* it is highly unlikely that you will need to apply potash based fertilisers.

To find out which programme you need, a soil or forage analysis is necessary – ask for sample kit.

Potassium K^+ is held in the soil in the clay particles and different types of clay have a stronger bond than some others. For example in parts of Suffolk, Essex, Hertfordshire etc these soils never need potash applied as it just comes out from the huge reserves of 15 – 20,000 kg/ha.

Most UK soils have excellent levels of potassium in the clay particles (not if you don’t have any clay) but it is slow releasing – good biology, excellent root systems will help as the tiny hair roots can explore the clay particles.

The method of plant uptake is known as ‘exchange’ so what happens is this small K^+ ion is weakly held by the negative charge on the clay particles. A plant root with its huge range of beneficial microbes will create weak acids that will knock off this K and absorb it directly into the roots and subsequently up the vascular system to the leaf area of the grass where it is required in small amounts to maintain the leaf integrity (i.e. stop it from flopping over).

Sodium (Na) is preferred to potassium as Na improves the palatability of grass and works very similarly in the plant in terms of increasing yield. Sodium also reduces risk of staggers, which is caused by an imbalance of K/Mg.

Some potassium is essential and when it is required we will recommend it. Small amounts are included in the **Better Grass Products**.

The potassium cycle in the soil-plant system

