

TECHNICAL INFORMATION

Soil Audit and Nutrient Management

No.4

Increase 'Available' Phosphate Levels

Soil phosphate levels in the standard UK test may show a low level at index 0 or 1 in which case you may be recommended to apply phosphate fertiliser. Many people continue to apply phosphate but their soil levels remain low, so what is going on?

UK soils generally have good levels of phosphate in the 'total' bank, but availability may be a problem. The answer is NOT to apply more of something you already have plenty of, rather to make it 'available'. To do this, we have to find out what is causing the 'lock-up'. It could be one or more of the following:

- Acid soil
- Alkali soil
- Excess iron (or manganese) - usually a sign of low pH
- Compacted - water-logged or very cold soil.
- Lack of biology - low humus

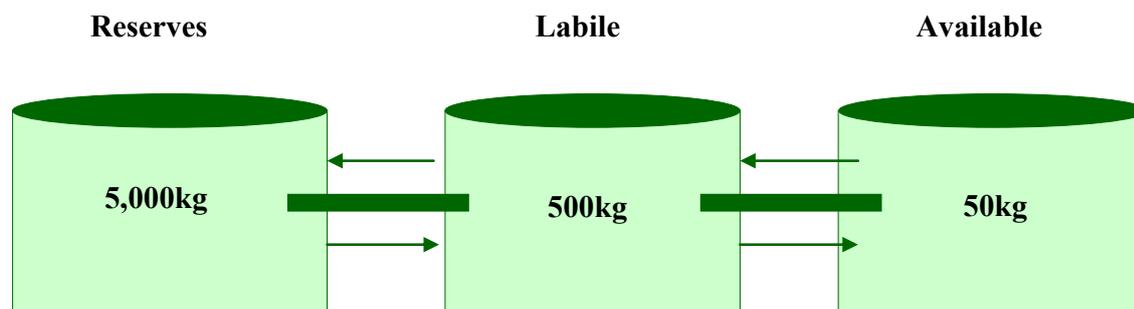
} *Phosphate is most
'available' at pH 6.4*

The key to improving 'available' levels of phosphate is to balance the soil as best you can; try to lift the calcium if this is too low and then to 'feed the soil'; get the essential phosphate-fixing organisms working for you, it is those tiny organisms that will pull the P from the soil reserves and feed it to your crop. In some instances it might be necessary to apply these beneficial micro-organisms and we are now including some in the **Better Grass XTRA** product in the form of Mycorrhizal Fungi - (See **Technical Information Sheet No.2**).

It is important to have good levels of phosphate in your grass – but there should not be a problem if you are using FYM/slurry etc. If you are buying-in feed these all contain phosphate and will be recycled through the FYM. The problem more often is getting these materials evenly applied to all fields.

Application of **Ag Slag** will put on small amounts of phosphate, but it is more likely the highly 'available' calcium that will improve phosphate availability in your soils.

When you apply phosphate fertilisers it goes into the 'available' tank and is then moved to the labile pool and on to the reserve tank. When crops grow in the soil they pull phosphate from the 'available' tank which is then replenished from the labile or reserve, sometimes you can have a blockage in the transfer mechanism – as described at the beginning of this note.



Finally, if you do apply phosphate fertiliser then bear in mind it stays right where you put it i.e. it is not mobile and if you put it on the top of the soil this is where it will stay. Plant roots may not be able to access this until or unless you can mix it onto the top soil. For grassland the only time you can really apply phosphate with some hope that it will be beneficial is at reseedling when, if required, a good dollop can be applied and it will be held in the soil reserves, but you must ensure you have good soil biology if you are to get it into your crops. See Notes on Mycorrhizal Fungi.

Sources of phosphate include:

All types of FYM

excellent source of 'available' phosphate.

Soft Rock Phosphate

a very good source and is not readily available but will become available as required – also contains calcium and that is what natural phosphate is $\text{CaP}_2^0_5$.

Mon Ammonium Phosphate

readily plant available with nitrogen usually 11-53-0, excellent for early root growth.

Di Ammonium Phosphate

Same as above maybe not quite so good – more nitrogen 18-46-0 – basis of most blended fertilisers.

T.S.P – triple super phosphate – poor source as too quickly 'locked up' and availability limited (better to use SRP).

Ag Slag – not much in it anymore and not available Ag Slag has many other benefits not least high levels of 'available' calcium, also has a high paramagnetic value and can improve 'available' phosphate levels from your soil labile pool.

Compost, sludge cake and most waste products have good amounts of phosphate in them – just make sure you know what else is in them.

The **BEST** possible method to improve phosphate uptake is to get your soil mycorrhizal fungi working for you. This and the natural phosphate fixers and other beneficial micro-organisms will feed your plants with ALL of the nutrients they need.