

## Understanding phosphorus

**P**hosphorus is essential for plant growth. It is required for the normal functioning of cell membranes as well being a key component of nucleic acid and ATP (the molecule that fuels nearly all metabolic processes).

Phosphorus is also involved in the production and transport of sugars, fat and protein.

Phosphorus is particularly important for root development. In seedlings, adequate P supplied to the plant ensures rapid root growth and good uptake of other nutrients and moisture.

A plentiful supply of P promotes rapid growth and leaf size, it also brings forward maturity and stimulates flower, seed and fruit production.

Phosphorus readily accumulates in the soil and regular fertiliser use builds P to levels that will support highly productive crops.

Crops take up phosphorus as orthophosphate, only from the soil solution close (within one to two mm) to the roots. Soils that are inherently low in phosphorus need a higher application rate of P than the amount required to maintain a season's plant growth.

This is important in building soil reserves as less than 20 per cent of the phosphorus applied as fertiliser is taken up by the plant in the year of application.

Phosphorus in the soil is held either as:

- Inorganically fixed phosphorus — that is P that has reacted with iron and aluminum in acid soils, or calcium in alkaline soils, to create chemical compounds that are unavailable to plants.
- Organically fixed phosphorus — that is P which is tied up in the organic matter and soil flora and fauna. Organically fixed phosphorus is released by microbial activity. This is common under permanent pastures where organically fixed phosphorus is released when the soil is cultivated.
- P in the soil solution — only this phosphorus is available for plants to use.

Phosphorus is immobile in the soil and does not leach except in very low organic sands, some peat soils, and in excessive P soils where there are no longer sufficient numbers of exchange sites available for fixing P.

Cold temperatures, either soil or ambient, will reduce the uptake of P, inducing P deficiency symptoms in the leaf. Even when there is an adequate level of P in the soil, deficiency symptoms can still be induced.

### Alternatives

Phosphorus prices have risen significantly over the past year and alternatives to the standard MAP or DAP soil applications should be taken into consideration when choosing phosphorus inputs for your crop.

Krista UP can be used as a water injection product at planting. Krista UP is a free flowing white crystalline product containing 18 per cent N and 19.2 per cent P. The product is highly soluble in water with 960 g of product able to be dissolved in one litre of water at 20°C.

YaraVita Zinphos is a fully formulated foliar applied product that contains 18.7 per cent P, 6.4 per cent K and 14 per cent Zn. An application of Zinphos can be beneficial during early spring seedling establishment, when soil temperatures may be limiting P uptake or when tissue analysis has identified low phosphorus levels in the plant tissue.

More information [www.yara.com.au](http://www.yara.com.au) or phone Stephen Ziebarth on 0419 651 240.



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