# POTASSIUM FOR PASTURE



Ballance agri-nutrients

**Potassium (K) is an essential element for plant and animal growth. Like all nutrients, it is removed from the farm when animals, milk, wool and crops are sent from the farm. Applications of potassium in fertiliser help to ensure that deficiencies don't hamper farm productivity.**

## CLOVER GROWTH

Clover is an excellent source of high-quality feed and is just as good – if not better – as ryegrass. In addition, clover fixes nitrogen from the atmosphere, so producing even more valuable feed.

However, perennial grasses are better than clover at extracting K from the soil. As a result, when soil K levels are low, grasses can outcompete clovers, leaving them susceptible to K deficiency and poor growth.

Ensuring adequate K nutrition will help improve the clover content of pastures and increase overall pasture production.

## DIAGNOSING DEFICIENCY

Soil and herbage testing are the best ways to diagnose a K deficiency. K-deficient clovers typically have speckling around the leaf margin, with deficiencies showing on older leaves first.

*K-deficient leaf showing characteristic speckles around the leaf margin.*

## POTASSIUM DRIVES PASTURE GROWTH

The graphs below show target soil test ranges for near maximum production on major soil types.

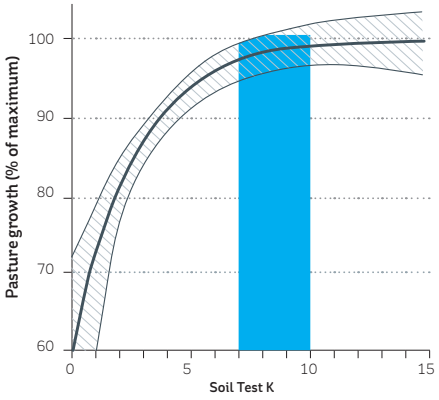


**FIGURE 1:** The relationship between relative pasture production and soil test K for ash and pumice soils. The blue shaded area represents the target range.

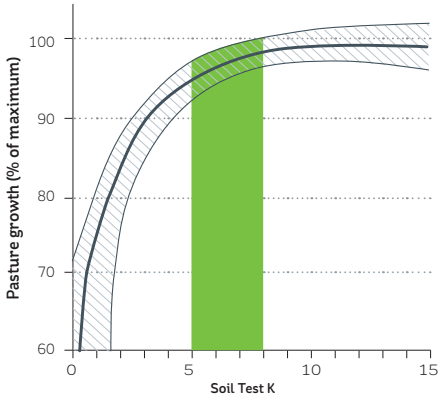


**FIGURE 2:** The relationship between relative pasture production and soil test K for sedimentary soils. The green shaded area represents the target range.

The ability to retain and supply K varies with soil type. In addition, on some soils, K leaching means it may not be economically feasible to maintain Quick Test K levels at the optimum. Applying K to meet plant requirements, and not just relying on soil reserves, helps ensure K deficiencies do not compromise pasture growth.

## WHAT'S THE BENEFIT OF INCREASING MY QUICK TEST K FROM 3 TO 5?

*An increase in pasture production of*

**5-10%**

*For dairy systems at a $6/kg MS payout this could equate to*

**$480/HA**

**of additional revenue**

*For beef at a $4.50/kg meat schedule, this could equate to*

**$140/HA**

**of additional revenue**

## SPRING OR AUTUMN?

Like all good things, improving pasture quality through applications of K fertiliser takes time. Pasture composition will change over 12-24 months once K levels are restored to the ideal range. This means the timing of K applications – spring or autumn –is not critical. However split applications are advised if application rates are heavy (i.e. above 50 kg K/ha) and also on soils prone to K leaching (e.g. those with low CEC and soils receiving more than 1500mm rainfall/year).

## ANIMAL HEALTH

Any risks to animal health can be minimised by following a few simple steps. Excess potassium can reduce the uptake of magnesium (Mg) and calcium (Ca), by plants and animals alike. The main metabolic disorders that are associated with this are milk fever (hypocalcemia) and grass staggers (hypomagnesaemia).

### Key tips to minimise the risk

1. Herbage test – this will provide you with information on potassium and magnesium levels in the pasture
2. Avoid applying potassium to pasture two months prior to calving or lambing
3. Ensure there is an effective animal magnesium supplementation programme, this could include:
   - Magnesium dusting
   - Water-soluble magnesium added to the water supply, via a Dosatron
   - Minerals in supplementary feed
   - Mineralised molasses blocks e.g. those from SealesWinslow

## LUXURY CONSUMPTION

A distinctive characteristic of potassium is that plants (pasture and crops) will absorb more potassium than they actually need, a phenomenon known as luxury uptake. K plays a significant role in maintaining the electrical balance of the plant, and this is one reason why plants will take up excessive amounts. Luxury uptake is another reason why applying K after harvesting hay, silage and crops is recommended.

## DEFICIENCY IS COMMON

Analysis of soil Quick Test K results between 2009 and 2015 indicates that some pastoral farms are not receiving enough K. This was confirmed by analysis of clover tissue samples and by on-farm observations, which showed poor-performing young pastures, weak ryegrass and little clover.

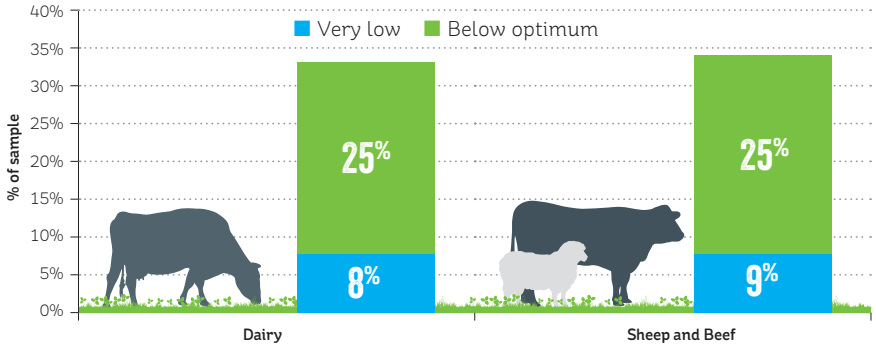


**FIGURE 3:** The percentage of farmers with potassium deficiencies from 2009-2015, based on Quick Test K soil tests.

## POTASSIUM BENEFITS

### DAIRY

When soil K levels are within the optimum range, pasture production is better. Having enough good-quality feed helps keep the herd in better condition which may help to support milk production. Good-quality feed in autumn also helps pre-calving – cows may deliver bigger calves and have earlier and higher peak milk production.

### SHEEP AND BEEF

Good-quality feed will help get sheep and cattle into the best condition for mating, which supports in-lamb and in-calf percentages. Feed quality in spring supports milk production allowing for good growth rates in lambs and calves.

### HAY AND SILAGE

Hay and silage can easily remove in excess of 20 kg K/tonne DM, so it is important that potassium is replaced after harvesting to ensure pasture production is not compromised.

## SURPRISINGLY AFFORDABLE

As a rule, potassium is not an expensive nutrient. Like all nutrients, the price can fluctuate; however, on a dollar-per-kilo basis, it's usually surprisingly affordable.

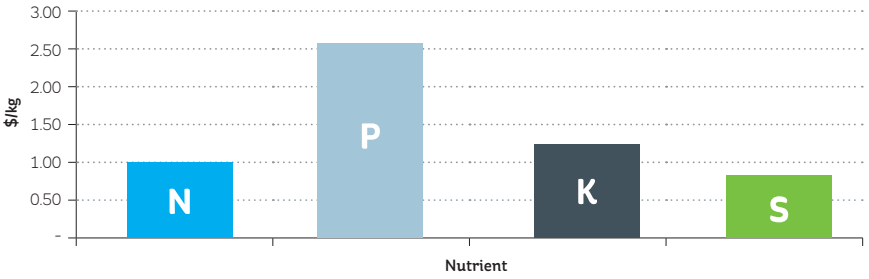


**FIGURE 4:** Cost of nutrients ($/kg), based on product prices on 8 December 2016



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