Getting turf nutrition wrong can cost a greenkeeper his reputation and possibly his job. So it is important to get it right. Take potassium. In my experience, many golf greens are fed far too great an amount of potassium salts each year. So it is important to get it right. University research which confirmed earlier finding contrasts with the tradition that high potassium levels improve disease resistance. The aim when feeding turfgrasses must be to achieve a natural nutritional balance. This will produce healthy turf, which is less prone to pest and disease attack.

Plants can take up nutrients that soil tests don’t detect as being available to them. Surprisingly, many sands contain potassium which is available to turfgrass plants. Soil tests that show low “available” potassium may not account for potassium from the natural weathering of sand, for example. With the right sand, it is quite possible for turfgrasses to survive with no potassium inputs, relying solely on the potassium content of pure sand for their needs.

So what if grasses take up too much potassium? Is that a problem? Yes, there are downsides.

Unfortunately, when grasses take up potassium, they don’t know when to stop and are able to take it up far in excess of their actual requirements! “Luxury uptake” occurs, which can be shown to depress the content of magnesium and calcium in the cells of the turfgrasses. In agricultural grassland this leads to nutritional disorders of grazing animals, such as hypomagnesaemia, where luxury uptake of potassium lowers the amount of magnesium in grass and forage with severe effects on the health of the animals that eat it. In broad-leaved herbaceous plants, induced magnesium deficiency symptoms can be easily spotted.

In these species other than grasses, where larger leaf size means that deficiency symptoms are easier to monitor, the effects of low calcium on plant structure would become apparent, but these are not so clear in grasses. But there may be other consequences; when he was working at Cornell University, David Moody completed some interesting research which confirmed earlier US research findings that the effect of a high level of potassium on the content of other nutrients are much wider ranging than previously thought. For example, in the case of induced calcium deficiency caused by high potassium levels, the most important finding is that low cell calcium content was correlated with a greater incidence of both pink and grey snow mold. Analysis of cell contents shows that there was a subclinical deficiency of calcium within the cell which interfered with cell biochemistry, specifically with the Krebs cycle, which is the series of chemical reactions the turfgrass plant uses to produce energy. This finding contrasts with the tradition that high potassium levels improve disease resistance. The aim when feeding turfgrasses must be to achieve a natural nutritional balance. This will produce healthy turf, which is less prone to pest and disease attack.

If you are going to apply potas- sium to turf, compare the available sources. Potassium nitrate is frequently used as a source of nitrogen and potassium because it is soluble and readily available. Unfortunately, potassium nitrate (13-0-46) contains far more K than N and when used on its own can cause oversupply and luxury uptake.

Unbalanced turf nutrition ren- ders turfgrasses liable to infection by diseases and, I suspect may be at the root of the recent problems with nematodes, something which has never been a problem in the past even though nematodes have always been around. Nematode resistance is certainly related to plant nutrition in other plant species, with high fer- tiliser potassium being associated with higher nematode activity. To summarise, potassium defi- ciency exists and is occasionally seen in turfgrasses but it is rare so in most cases only a little extra potas- sium needs to be applied as fertiliser each year.

So what if grasses take up too much potassium? Is that a problem?

The Back Nine

A new column for writers and members to air and share their views on golf greenkeeping topics

This month, Robert Laycock, delves into nutrients and the potassium fallacy

About the author

Robert Laycock took his horticultural degree at Northop Hall Horticultural College, Wrexham, in 1988. He then followed up with a BSc in Plant Biology at the University of Wales, Bangor, followed by a passing grade on a soft-horticulture MSc at the University of Reading. In 1997, Robert was appointed to the post of professional agronomist at the University of Wales, Bangor. He relocated to the north Yorkshire Karsten turf Science. He is currently busy advising across the UK. He is an ex-professional golf greenkeeper and now works as a plant pathologist in the food industry. Robert’s 20 years of the finest Japanese manufacturing for all your golf course machinery needs try Baroness. More than 100 years of the finest Japanese manufacturing skills and quality go into the making of all our products. Baroness products are made by Kyoeisha Co. of Japan, an ISO 9001 company. Quality on Demand for all your golf course machinery needs try Baroness. More than 100 years of the finest Japanese manufacturing skills and quality go into the making of all our products. Baroness products are made by Kyoeisha Co. of Japan, an ISO 9001 company.