

Keep an eye on K nutrition

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Potassium (K) deficiency is unlikely to be an immediate issue in most SA cropping districts but researchers are concerned that modern farming systems are depleting background reserves of K.

Most SA cropping soils are considered to contain adequate K but there are low-K acid sands in the South East, especially along the Coorong and parts of the Mt Lofty ranges, KI and southern Mallee, said Rob Norton, Regional Director for the International Plant Nutrition Institute (IPNI). K levels are considered marginal in some sandy soils on EP.

“Regional nutrient budgets show a progressive draw-down of potassium due to its removal in plant products,” Dr Norton said.

“Crop plants contain more potassium than any other element so removing crop biomass, whether by selling hay or straw or by burning, removes large quantities of K from the paddock.

It is important to make sure that K is the limiting factor; not something else.

“Growing hay, which removes a lot of K, on acid sands in high-rainfall districts is high risk for K run down and these systems will require K on a routine basis.

“K is relatively immobile in most soils, much like P in terms of lateral movement, but is very easily leached from acid sands due to the combination of the acid conditions, which free the K ions, and the free-draining nature of sandy soils.”

Field indicators of low K include urine patches in pastures and ‘windrow effects’, with better crop growth where there is more residue from the previous crop, he said.

Symptoms of clinical K deficiency include scorching along leaf margins, particularly in young leaves, and slowly-growing plants with poor root systems. Stalks of K-deficient plants are weak so deficient crops are more likely to lodge than crops with adequate K. Deficient crops are also more susceptible to disease and moisture stress.



DR NORTON, REGIONAL DIRECTOR FOR THE INTERNATIONAL PLANT NUTRITION INSTITUTE.

“If you think you might have a K nutrition issue, or that one might be developing, it is a good idea to apply some strips of K-rich fertiliser at rates of 50 to 100 kg/ha of K at right angles to the line of harvest to take account of any windrow effect and monitor the results during crop development and at harvest,” Dr Norton said.

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the limiting factor; not something else.”

Growers who identify a deficiency, or decide to apply K fertiliser as a precaution, should consider applying it every three or four years and before potentially K-sensitive crops such as hay or canola, which removes about 20% more K than wheat, because K is relatively immobile and any excess will remain in most soils for several years, he suggests.

“Most crops take up their K requirements during early growth stages, with wheat and canola taking up no more K after flowering. Corn takes up two thirds of its K requirements by the time it has developed a third of its biomass.”

This pattern of early uptake means there is little potential to improve K nutrition with late in-crop fertiliser applications.

Dr Norton advocates banding below the seed at sowing as the most effective method of applying K fertiliser for wheat, with the results achieved using this method much better than those from top dressing or pre-spreading.

A Colwell-K soil test is the best current measure of soil K levels, he said. Plant tissue tests can also be valuable, as can extending the sampling depth for soil tests from the standard 10 cm to 30 cm, particularly in acid sands where K might have leached deeper into the soil.

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