



BUILDING CROP RESILIENCE BEFORE STRESS ARRIVES

Potassium (potash) is central to how a crop manages water and heat. Nutrition cannot prevent drought or heat stress, but crops with adequate nutrient supply are better equipped to maintain growth and photosynthesis for longer when conditions become difficult.

WHY POTASSIUM DEFICIENCY SHOWS UP UNDER DROUGHT

Potassium deficiency is not always obvious in a normal season. When soil moisture falls, hidden deficiencies can become more damaging. Crops short of K can show poorer water regulation, reduced photosynthesis and earlier stress symptoms.

WATER REGULATION

K helps stomata respond efficiently as conditions change, supporting better control of water loss

COOLING & PHOTOSYNTHESIS

Effective stomatal control supports transpiration, leaf cooling, CO₂ uptake and carbohydrate production

TURGOR & RECOVERY

K supports water movement within tissues, helping maintain cell turgor during moisture deficit

WHEN POTASH RUNS SHORT

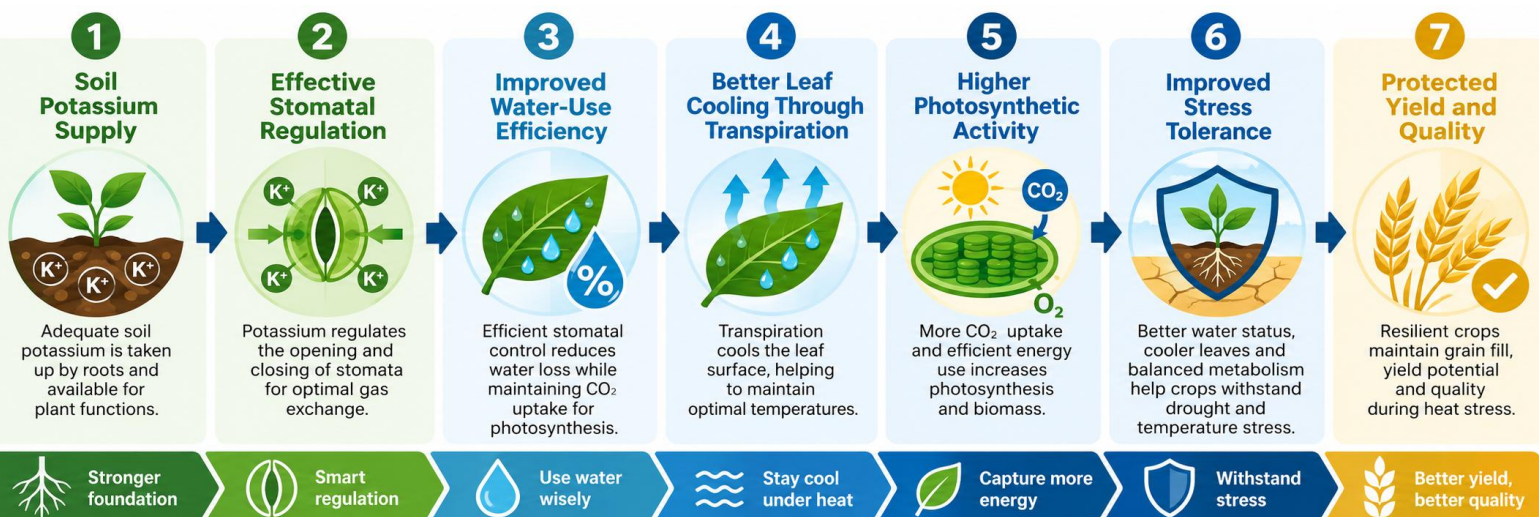
Poor Potash supply can lead to:

- ✓ Lower crop yields
- ✓ Less efficient response to nitrogen
- ✓ Smaller grain, tuber or root size
- ✓ Earlier expressions of stress
- ✓ Poorer quality
- ✓ Greater susceptibility to pests and disease

PRACTICAL LESSONS FOLLOWING 2 DRY SEASONS

- ✓ Maintain soil K, Mg and P indices at target levels
- ✓ Monitor nutrient uptake and replaced removed nutrients appropriately
- ✓ Use regular soil analysis
- ✓ Ensure nutrients are in an available format for plants to uptake after timely applications

HOW POTASSIUM HELPS CROPS COPE WITH HEAT STRESS



Graphic supplied by the Potash Development Association (PDA) August 2026

Maintain soil potassium at the appropriate target index and replace nutrient offtake.

Building fertility before stress develops is more effective than trying to correct a shortage once dry conditions have arrived



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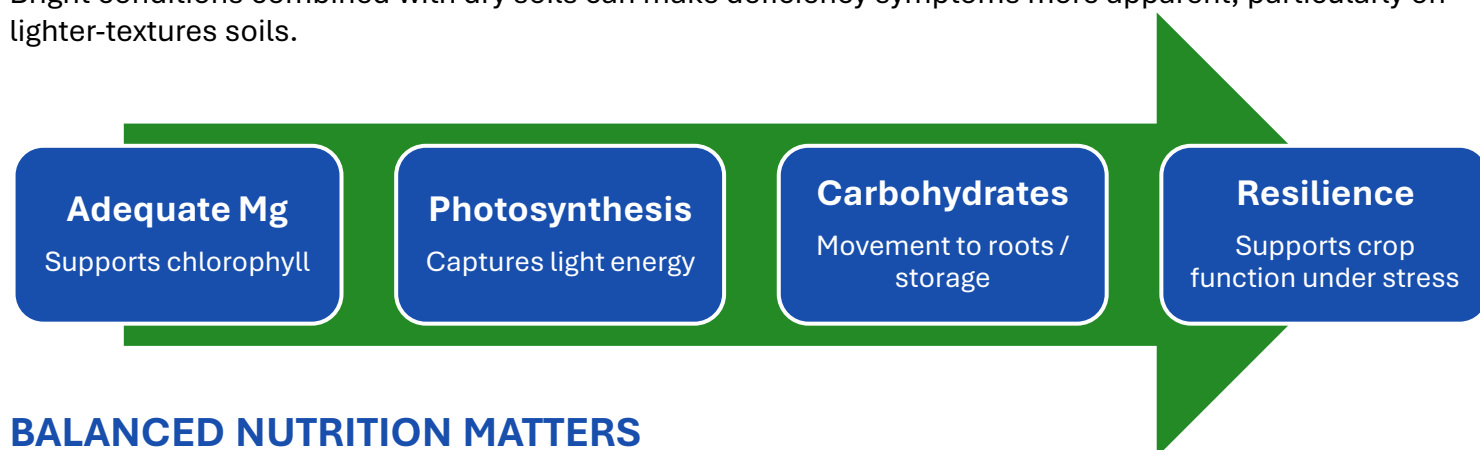




MAGNESIUM - KEEPING PHOTOSYNTHESIS WORKING UNDER PRESSURE

Magnesium is the central component of the chlorophyll molecule, so it has a direct role in photosynthesis. During periods of intense sunshine and elevated temperatures, maintaining photosynthetic efficiency becomes increasingly important.

A shortage of magnesium can restrict the crops' ability to capture and use light energy effectively. It can also impair the movement of carbohydrates from leaves to developing grain, roots or storage organs. Bright conditions combined with dry soils can make deficiency symptoms more apparent, particularly on lighter-textures soils.



BALANCED NUTRITION MATTERS

Potassium and magnesium are important parts of crop resilience, but neither works in isolation. Sulphur, calcium, soil structure and healthy rooting also contribute to the crop's ability to keep functioning when conditions become challenging.

SOIL SAMPLING: KNOW WHAT YOU HAVE

Recent dry seasons have reinforced the value of regular soil analysis showing unexpected deficiencies

Regular soil sampling helps to:



Protect crop Potential



Plan lime with confidence



Make better use of organic materials



Investigate field variation



Make Fertiliser work harder



Responsible nutrient planning

Payne soil sampling can help turn current soil results into a practical fertiliser plan, specific for the crop and field to maximise your return on every hectare.

K-MAG MIXES

Potash + Kieserite fertilisers to suit your conditions

A practical base fertiliser option applied before planting for sugar beet, potatoes, root crops and vegetables, supplying potassium together with magnesium and sulphur in one easy application.

K-MAG Mixes can be tailored around soil results, crop requirements and application rate – helping build a balanced based nutrition programme before the main growing season.

Potash Plus or Sulphur Cal can be used to **increase calcium** in soils where plant cell wall issues have been of concern in previous seasons.

Ask your Payne representative about how a bespoke K, Mg + Ca fertiliser analysis can help your high-value crops on your farm.

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