



FACT SHEET
April 2017

Granulock® SS and Granulock® Z

Sulfur and Zinc Enriched Planting Fertilisers for Grain, Forage and Cotton Crops

MAP (Monoammonium Phosphate) is a popular planting fertiliser in grain, forage and cotton in Australia's inland cropping areas. It supplies phosphorus (P) and starter nitrogen (N). The balance of the crop's nitrogen requirement is applied pre-plant or is top or side-dressed during the growing season.

There are times where other nutrients need to be applied in fertiliser programs, including sulfur (S), and the micronutrient (trace element) zinc (Zn).

Granulock® SS and Granulock® Z are sulfur and zinc enriched monoammonium phosphate fertilisers that allow these two nutrients to be applied at planting. Their analysis is:

Product	Analysis			
	% N	% P	% S	% Zn
MAP	10	21.9	1.5	
Granulock® SS	10	17.5	12	
Granulock® Z	11	21.8	4	1

The sulfur and zinc are added during the manufacturing process to create uniform fully granulated compound fertilisers. The 12% sulfur in Granulock® SS is present in two forms, as:

- Elemental 8%
- Sulfate 4%

The sulfate (SO_4) is immediately available for plant root uptake, once the fertiliser granules dissolve in the soil. The elemental sulfur must first be converted to the sulfate form in the soil, before it is of use to plants. This process is performed by *Thiobacillus* bacteria.

Granulock® SS and Granulock® Z 15 are ideal planting fertiliser for grain, forage and cotton crops where sulfur and zinc respectively are required.

Granulock® SS may also be used for pasture establishment, and when over-sowing or direct drilling into existing pasture. The nitrogen assists in the establishment of grasses and may help legumes in the first few weeks before their roots are properly nodulated, and they become self-sufficient in meeting their own nitrogen requirements.

Sulfur (S)

Sulfur is more likely to be needed in fertiliser programs in high sulfur demanding crops such as canola, and to a lesser extent, grain legumes. Cereal crops are less likely to need sulfur.

The main reserve of sulfur in most soils is the soil organic matter, so sulfur is most likely to be needed on soils low in organic matter.

In some inland cropping areas, appreciable amounts of sulfur may be present as gypsum accretions at depth in the sub-soil. If the topsoil is low in organic matter, some starter sulfur at planting can assist in establishment and the early growth stages, until such time that the crop roots grow into and can access the sulfur that is present deeper into the soil profile.

High analysis fertilisers such as Anhydrous Ammonia (Big N), Urea, DAP and MAP either do not contain or are low in sulfur.

Higher crop yields and the adoption of reduced tillage practices which conserve soil organic matter and reduce its rate of mineralization have also contributed to the increased need to apply sulfur in fertiliser programs.

Zinc (Zn)

Along with molybdenum (Mo) in legume based pastures on acid soils, zinc is the micronutrient most likely to be needed in fertiliser programs in Australian agriculture. Zinc is often needed in crops.

Being a micronutrient (trace element), zinc is required in relatively low amounts.

If a concentrated zinc fertiliser such as Zinc Sulfate Monohydrate (33% Zn) was blended with MAP, and used at planting in a winter cereal crops, e.g. wheat and barley planted at narrow row spacings, there would be insufficient point sources of zinc in the crop row for it to be accessed by all plants.

Granulock[®] Z is a compound fertiliser that contains some zinc in every granule. It provides a more uniform and effective distribution of zinc in the crop row.

The availability of zinc in the soil for plant root uptake is reduced at high pH. Zinc is most likely to be needed in fertiliser programs on alkaline soils.