

# GRAN-AM FACTSHEET

January 2004

- **Granulated ammonium sulfate fertilizer (20.2% N, 24% S);**
- **Stores better and is easier to apply than crystalline by-product Sulfate of Ammonia;**
- **Suitable for use in blends;**
- **Often used to supply part of a crop's nitrogen requirement where sulfur is needed.**

## MANUFACTURE

Up to the 1960s, industrial by-product sulfate of ammonia  $[(\text{NH}_4)_2\text{SO}_4]$ , e.g. from the coking of coal, was the most commonly used nitrogen fertilizer in Australia (and throughout the rest of the world).

Since then, synthesised nitrogen fertilizers such as anhydrous ammonia (Big N), urea, ammonium nitrate (Nitram) and the ammonium phosphates (DAP and MAP) have been produced in greater quantities (in response to the rapidly escalating demand for nitrogen fertilizers as the world's population grew). These products now account for the bulk of the nitrogen applied as fertilizer in Australia and elsewhere in the world.

While there has been insufficient by-product Sulfate of Ammonia available over recent decades to meet the increasing demand for nitrogen fertilizers, the synthesised products provided other advantages. Products such as urea (46% N) have a higher analysis than by-product Sulfate of Ammonia (21% N), meaning there is less product to store, handle and apply. In addition, by-product Sulfate of Ammonia, which is a fine crystalline material, is not suitable for use through much of today's modern application equipment, or for use in blends with other fully granulated fertilizers.

Recognising the need for a granulated product, Incitec Pivot Limited developed a process for synthesising ammonium sulfate from ammonia and sulfuric acid through a specially designed pipe reactor with a mixing tee, and granulating the end product. Production first commenced in 1977. The process proved far superior to the previous neutraliser based techniques being used at that time because the corrosive ammonium sulfate slurry was now confined to the reactor.

The granulated product is known as Gran-am, and has an analysis of 20.2% nitrogen (N) and 24% sulfur (S). Gran-am is produced at Incitec Pivot Limited's Manufacturing site in Brisbane, the site of the company's ammonia plant.

The process, a world first, is patented, and is used under license by several overseas manufacturers.

## USE OF GRAN-AM AS A FERTILIZER

While Gran-am is sometimes used to supply a crop's complete nitrogen requirements, this is normally not the way the product is used. Gran-am is more commonly applied in combination with other nitrogen-containing fertilizers, either on its own at a different application time, or in blends with other granulated fertilizers.

Gran-am costs more per kg of nitrogen than other nitrogen fertilizers such as urea, if no value is placed on its sulfur content.

Gran-am also supplies sulfur in excess of crop requirements. Gran-am contains approximately equal amounts of nitrogen and sulfur, while plant tissue contains ten or more times as much nitrogen as sulfur.

Hence, in a well balanced fertilizer program, Gran-am is used to supply a crop's sulfur needs and part of the nitrogen requirement, the balance of the nitrogen being applied as other products, eg. Urea and DAP.

Gran-am is compatible with many other fertilizers in dry blends, e.g. urea, DAP, MAP, dried granulated superphosphate, and Muriate of Potash.



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Gran-am is more acidifying to the soil (per kg of nitrogen) than straight nitrogen fertilizers such as urea and Nitram.

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