

## Technical Note

# Melpat Ammonium Sulphate Spray Grade September 2008



The use of Ammonium Sulphate continues to increase.

### Why use Ammonium Sulphate?

Water is the cheapest and single-largest item added to a boom-spray tank. However, it is often given the least consideration.

The addition of Ammonium Sulphate has a number of positive effects, including:

- Buffering agent: improves water quality conditions, particularly in hard water.
- Improves pesticide activity in hard water.
- Slightly adjusts the pH, improving the performance of a range of pesticides.
- Acts as a buffering agent: Reduces the chemical antagonism in a range of herbicide mixtures, e.g. glyphosate & triazines, glyphosate & trifluralin.
- Improves herbicide activity: increases the biological activity of the plant, leading to improved uptake, e.g. grass herbicides, glyphosate, etc.
- Improved uptake of herbicides under less than ideal conditions, e.g. plant stress.

### Ammonium Sulphate is available in two formulation types: Liquid and Solids:

Traditionally the product was used as a liquid but there has been a significant shift to the solid/crystal option for both commercial and practical reasons.

Liquid formulations contain over 50% water. There is therefore a considerable wasteful factor to this formulation in that costs of freight, storage, packaging (drums), are literally doubled.

### Regulatory Requirement:

The APVMA has classified Ammonium Sulphate as an adjuvant and registration has now been gazetted. Liquid Formulation such as Liase®, Ammo®, Boost®, etc. are registered products.



For some reason APVMA approval for the solid formulations were overlooked.

All Ammonium Sulphate Formulations now have to be approved by the APVMA in that they are classified as an adjuvant.

Definition: “... any substance (other than water) that is added to an agricultural chemical product to alter its physico-chemical properties and/or to improve its efficacy”. This is covered under two classifications:

- a) Adjuvants which enhance product efficacy  
Extenders: “... enhance the amount of time the active ingredient remains toxic by increasing resistance to environmental degradation...”
- b) Adjuvants which improve ease of application  
Compatibility agents: “...permit the mixing of different agro chemicals by preventing antagonism between different ingredients in the spray solution...”

There is a debate in some circles as to whether product of this type in store is a fertiliser or an adjuvant. We don't intend entering into this debate and as such can be left to the individual store manager and users.

Melpat Ammonium Sulphate Spray Grade has been approved by the APVMA.

### **How does Ammonium Sulphate work?**

The aim of applying herbicides is to optimise weed control and to achieve this, a number of components have to be correct, i.e. including chemical rates, water volume and water quality.

Hard water contains calcium and magnesium salts and this can reduce herbicidal activity. Herbicides such as Glyphosate (Roundup®) are affected as these positively charged ions (Ca<sup>++</sup> / Mg<sup>++</sup>) are attracted to the negatively charged herbicide. This combination results in reduced absorption.

The addition of Ammonium Sulphate literally floods the spray solution with Nitrogen and Sulphate ions.

The Sulphate ions form conjugate salts with the hard water cations and the Nitrogen attaches to the Glyphosate. Glyphosate in this form is readily absorbed by the plant leaf.

Glyphosate in this form becomes more active in that less is 'bound' and tied up in an inactive form.

With the price of Glyphosate these days it makes more sense to optimise the performance of the products. We have been using Glyphosate as an example. The same applies to many other herbicides.

Regards,



**Hamish Turner**

