



Laeveld Agrochem

Together cultivating success

Villa Adjuvant Tip of the Month – November 2023

TRUTHS AND MYTHS ABOUT AMMONIUM SULPHATE

By Brian de Villiers

Ammonium sulphate is probably the most widely used adjuvant in the world. This is because it is used extensively with glyphosate and many other important post-emergence herbicides. Cations that occur naturally in water antagonise these herbicides. Ammonium sulphate neutralises most antagonistic cations and increases the efficacy of these herbicides. Although growers understand the water conditioning properties of ammonium sulphate, few realise that it has many other advantages. There are also many misperceptions about its mode of action. This leads to incorrect use and replacing the registered adjuvant with other water conditioners. We address just a few misperceptions about this adjuvant in this edition.

More than just a water conditioner

Ammonium sulphate neutralises the cations commonly occurring in hard and brackish water, like calcium, magnesium, sodium, and potassium. The sulphate anion forms complexes with these cations during droplet drying. Therefore, these antagonistic cations do not bind to the glyphosate molecule to limit absorption. The problem with the perception that it is just a water conditioner is that it is either not used when the water quality is good, or that it is replaced with other adjuvants. It is important to understand that ammonium sulphate often increases herbicide efficacy, even when the water quality is good. This is achieved by the ammonium cation that increases absorption. It is also frequently used in mildly antagonistic tank mixtures with phenoxies to maintain the glyphosate's efficacy. If herbicides are registered with ammonium sulphate, replacing it with products that only condition the water is reckless.

Misperceptions

There is a perception that you must mix ammonium sulphate with the spray water for a specific time frame before adding the herbicide to allow ample time for conditioning. This is a misperception because the binding of antagonistic cations occurs during droplet drying and not in the spray tank. There is another perception that ammonium sulphate is effective because of its acidification properties. Although ammonium sulphate is mildly acidic, and certain herbicides prefer an acidic spray solution, this is not its primary function. Glyphosate is also acidic and reduces the pH of most water sources to the target level. The third perception is that ammonium sulphate stimulates growth, opens the stomata, and makes the weed more receptive to the herbicide because it is a plant nutrient. While it may stimulate plant growth, this is not ammonium sulphate's primary function and probably plays an insignificant role.

Villa's stance

Ammonium sulphate is probably the most successful and widely used adjuvant that has ever been registered with herbicides. Always use it when the label recommends it and do not replace it with water conditioners not recommended on the herbicide label. Only use registered adjuvants with an L-number. Contact your Villa marketing advisor for more information about adjuvants and water quality.

In the tank. In the air. On the target.

