Villa Adjuvant Tip of the Month

ADDRESSING HARD WATER IS NOT ENOUGH

Many herbicides such as glyphosate, clethodim, some SU's and various others are affected by salt antagonism from carrier water. If you do not address poor water quality, it will result in unacceptable weed control. There is an incorrect perception that only hard water antagonises these herbicides, while the truth is that other cations are also detrimental. It is crucial to look at all aspects to understand the threat posed by water quality. We discuss the influence of hard water and certain other cations in more detail below.

What is hard water?

'Hardness' refers to water with elevated calcium and/or magnesium levels. It can be in the presence of various anions such as sulphate, chloride, and bicarbonate. We refer to water that contains low levels of calcium and/or magnesium as 'soft'. However, soft water often contains high levels of sodium, potassium, and even heavy metals like iron. All these cations are also antagonistic to salt-sensitive herbicides and contribute to poor weed control.

The sodium cation is not quite as antagonistic as calcium and magnesium, but it is often found at such high concentrations that it is by far the most important antagonistic cation in various regions of South Africa. Heavy metals are not often found at dangerously high levels but are extremely antagonistic to certain herbicides, so do not ignore them. Therefore, soft water can be just as antagonistic as hard water, so it is important to take steps to deal with all the antagonistic cations. If you do not neutralise antagonistic cations effectively, you can expect poor weed control because of reduced absorption. The influence of salt antagonism is always more evident under marginal conditions when suppressing herbicide absorption.

Requirements for salt adjuvants

It is not good enough for salt adjuvants to only eliminate hard water antagonism. Effective salt adjuvants should at least address the influence of calcium, magnesium, sodium, and potassium. Furthermore, they should also reduce iron antagonism when found at an elevated level. A salt adjuvant should also increase the efficacy of these herbicides, even when antagonistic salt concentrations are low. It will ensure effective and stable weed control, whether the water is hard or soft. The only salt adjuvant to consistently tick all these boxes is spray-grade ammonium sulphate. However, not all ammonium sulphate sources are suitable to use as adjuvants. Just because an ammonium sulphate source contains 21% nitrogen and 24% sulphur does not mean it qualifies as spray-grade quality. There is a different set of quality requirements to determine its acceptability as an adjuvant.

Villa's stance

Hard water is a crucial antagonist of salt-sensitive herbicides. However, take all the dissolved antagonistic ions into account when applying these sensitive herbicides. Villa only endorses ammonium sulphate containing adjuvants to address antagonistic cations. We recommend these adjuvants as a standard practice with all our herbicides with a label recommendation concerning salt antagonism. Whether water is hard or soft, it will always require a certain amount of ammonium sulphate to optimise weed control with sensitive herbicides.

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