



Villa Adjuvant Tip of the Month

ONE TANK MIXTURE, TWO OUTCOMES!

Tank mixtures are getting more complex as growers attempt to save money and time by applying multiple components at the same time. However, it is still important to stick to registrations and tank mixtures that will not cause problems.

Physical or biological incompatibility is always a risk when unregistered tank mixtures are applied. Water quality could also play a major role with potentially incompatible spray mixtures. Contrary to popular belief, water with low salt content often contributes to this problem. In the ensuing discussion, two growers in different areas apply a tank mixture of glyphosate, MCPA and ammonium sulphate. Both growers use the same mixing sequence and apply with the same sprayer setup and water volume. Both growers also decide to use a buffer as both water sources have a pH of 8.

The one grower applies this mixture with no problems, while the other grower gets a jelly-like spray solution, blocked sieves, and nozzles. Water quality caused this difference in compatibility.

Grower A

Grower A farms in an area where the water has a low salt content and buffering capacity. This water is excellent for this mixture as a low rate of ammonium sulphate is needed to bind the antagonistic cations. However, he decides to add the highest recommended rate of a buffer as the pH of the water is 8.

He does this because he has heard that glyphosate is more effective at low pH. He doesn't realise that the water has an extremely low buffering capacity and that the pH of the water will become too acidic, to a level of 4 or even lower.

Unfortunately, MCPA is relatively insoluble at this pH and will start precipitating. With agitation, this insoluble MCPA precipitate is mixed with the glyphosate formulation, causing a jelly-like spray mixture, blocked sieves, and nozzles. This means that he wasted his time and money and needs to redo the application without the buffer.

Grower B

Grower B farms in an area where the water has an extremely high salt content and buffering capacity. This is the only water source available, therefore he must use a much higher rate of ammonium sulphate to bind the antagonistic cations. He also decides to use the same buffer at the highest recommended rate. However, because the water has a high buffering capacity, the pH is only decreased to a level of 6. At this pH, MCPA is much more soluble, and no precipitate is formed. There is no reaction with the glyphosate formulation and no blocked sieves and nozzles. It is a successful application. Thanks to "poor" water quality, Grower B got away with a risky practice. Next time, he may not be as fortunate.

Villa's stance

Water quality contributed to the problems that Grower A experienced. Grower B got away with the same mixture because the water quality was favourable, but he may not be as lucky in future.

Grower A's problems can escalate even further with other factors that limit the solubility of MCPA. This includes low water volume and cold spray water. It is extremely important to consider all the components in the spray solution and to mix products wisely.

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