Adjuvant

Tip of the Month

September 2017

Be selective with non-selective herbicides

Glyphosate, glufosinate-ammonium and paraquat are extensively used non-selective herbicides. With the expansion of genetically modified crops, the use of especially glyphosate has increased dramatically. Despite all three products being relatively old chemistry, incorrect adjuvant choices are still frequently made. Each of these products has certain deficiencies that can be rectified with the correct adjuvant choice. These three herbicides will be discussed individually to emphasize why it is important to select the correct adjuvant when applying non-selective herbicides.

Glyphosate

It is a common misperception to assume that glyphosate only requires a low pH spray solution. Glyphosate is a complex herbicide and it is antagonized by dissolved cations in carrier water. It also works more effectively under higher humidity conditions.

Villa is a staunch advocate of the use of ammonium sulphate adjuvants to negate the salt antagonism of glyphosate and we have extensive data to prove that it is still the most effective adjuvant for glyphosate. Many humectants are also used in adjuvant formulations to enhance glyphosate efficacy under low humidity conditions.

However, we must tread very carefully here! Many humectant products, although they may keep the spray deposit moist for an extended period, could be antagonistic to glyphosate. When selecting adjuvants that contain humectants, please make sure that the humectant does its job, without antagonizing weed control. Glyphosate is very sensitive to surfactant chemistry and physical properties.

In research, it was proved that there could be up to a 30 % difference in glyphosate weed control with the use of different surfactants! The policy concerning the use of surfactants with glyphosate differs between registration holders, therefore the specific label should be followed.

Paraquat

Paraquat is a contact herbicide and it is widely accepted that if adequate coverage on weeds is obtained, it will perform effectively. This is not the full truth! Surfactant chemistry and physical properties appear to play a much more important role with paraquat than what is believed. In independent trials, paraquat was tested with various surfactant products, with different chemistry and spreading ability.

The surfactants that performed the most effectively were not always the effective spreaders and there appeared to be other factors involved. Furthermore, other chemicals that improve movement of the herbicide through the waxy layers on the leaf surface, also play a huge role with paraquat efficacy.

These chemicals include certain nitrogen-containing salt adjuvants. This efficacy enhancement is only induced by very specific nitrogen-containing adjuvants. This excludes ammonium sulphate. Adjuvant choice certainly does make a difference to paraquat efficacy.

Glufosinate-ammonium

Glufosinate-ammonium is one of those herbicides that is sensitive to humidity and it benefits from the use of the correct adjuvant. Ammonium sulphate is commonly used with glufosinate-ammonium, not because of its salt-binding properties, but rather to increase absorption under less optimal conditions.

Once again, glufosinate-ammonium is specific to the chemistry that is required and not all adjuvants are suitable. Some companies, like Villa also advocate the use of surfactants with glufosinate-ammonium in certain cases, while others don't. Please consult the registration holder for specific recommendations.

Villa's stance

We believe that adjuvant choice could either enhance or reduce weed control with non-selective herbicides. Adjuvant physical properties, like droplet spreading and humectancy, are not the only factors that are important for efficacy. Efficacy is also largely dependent on adjuvant chemistry! This is the reason why Villa is so stringent concerning adjuvant choice.

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