

Making the Most of Your Roundup Application 3.11.2009

Roundup Ready Crops have caused Roundup to be one of the most used chemicals, if not the most used chemical on the market today. Because it is being used so much, it is important that we try to maximize every application that is made with this herbicide.

What are the Chemical Characteristics of Roundup?

- Negatively Charged
- o Readily binds to positively charged molecules, soil, and minerals like Calcium
- Low Solubility
- The Glyphosate molecule itself is non-toxic to Humans and Animals- it is the surfactants and additives that changes the signal words on the label of different Glyphosates (Remember to always check this, some glyphosates have Danger as their signal word and others are Caution)
- When Glyphosate hits the soil, it gets tightly absorbed to the clays and cations in the soil, then it breaks down rapidly
- o Decomposition in the soil can vary, but generally the half-life is 47 days in the soil. This is a fairly short time frame compared with other chemistries

Roundup is translocated in the plant. What are some things that affect the translocation?

- Glyphosates Negative Charge
- o Use AMS to overcome Hard Water
- o AMS is also important because it increases permeability, uptake, and translocation, this is why Glyphosate often calls for more AMS than what neutralizing hard water requires
- o Ask an agronomist before tankmixing with Glyphosate. If the Fertilizer, Herbicide, Insecticide, Fungicide is positively charged, it can reduce the activity of the glyphosate
- Actively Growing Plants
- o Glyphosate moves on the sugars in the plant. An actively growing plant means that sugars are actively moving within the plant. When this is happening, it is easier to get the Glyphosate throughout the entire plant quicker. This is important because there are tissues that can sense foreign material in the plant and can shut down this "sugar pump" as a defense mechanism, thereby inhibiting the further translocation of sugars glyphosate. The goal is to try to get all parts of the plant loaded with Glyphosate before that pump gets shut down. If the whole plant doesn't get loaded with glyphosate, parts of the plant will receive a sub-lethal dose. Eventually buds at those sublethal dose sites can keep growing and the plant will eventually survive.
- o That is why good growing conditions (not too hot, dry, cold, wet,) and rapidly growing maristems make it easier to get glyphosate translocated in the plant
- o Surfactant is important because it helps to get the glyphosate into the plant through the cuticle. (Many formulations already contain the surfactant in them; "unloaded" glyphosates do not have this and it must be added). Also, the less thick the cuticle, the easier it is to get the glyphosate into the plant
- o When conditions are hot and dry, or the plants are larger, they generally have a thicker cuticle and it is a bit tougher to get the glyphosate molecule through it

How do I maximize my Roundup Application?

- Apply to actively growing weeds
- Use the right rate on the right weed size (22oz of a Roundup Powermax) to 4-6" weeds

- Use 8-17lbs of AMS/100gals
- If needed (really tough conditions) add more surfactant
- Watch tankmixes for antagonism (fertilizers and insecticides especially)
- Generally 5-10 gpa of H₂O is a good rate
- Implement a residual herbicide into your Roundup system