How to maximize glyphosate performance

Factors	Effect on Weeds	Effect on Glyphosate Performance	Maximizing the Performance
Light	Growth and vigour of plants Stomatal opening and hence transpiration rate Photosynthesis	Generally high light intensities lead to better glyphosate absorption and translocation	Avoid night-time applications
Temperature	Growth and vigour of plants Transpiration Cuticle properties	Hot conditions reduce glyphosate absorption and translocation. Slower glyphosate uptake and translocation, so symptoms may be slow to appear	In hot and dry conditions apply early in the morning
Relative Humidity	Transpiration Cuticle hydration	High humidity gives slower drying of spray droplets and greater absorption and translocation of glyphosate	If possible, glyphosate applications should be made under high humidity conditions, e.g. early in the morning.
Rainfall	Spray retention	Rainfall too soon after application washes glyphosate off the plant. Roundup Transorb claims to have better rainfastness	Do not apply if rainfall is forecast for the time of application
Frost	Light to mild frost: weed species vary in their response to frost Killing frost: ice forms inside the plant cell and in the plant plumbing system	Light frost: increased translocation of glyphosate Killing frost: little or no translocation	Avoid application after killing frost

Dew or Fog	Cuticle hydration	Light dew or fog has no effect on glyphosate performance. Heavy dew can washes the chemical off the plant	If there is a heavy dew on the plants, wait until mid morning before applying glyphosate
Wind	Windy conditions allow glyphosate drift to non-target areas	Reduced injury to weeds and crop injury to non-target crops	Avoid high winds during spraying operations. Use shielded nozzles under light or medium windy situations
Surfactant	Enhances spray droplet spread on the treated leaf.	Surfactant enhances glyphosate penetration and absorption. Different glyphosate formulations have different types and amount of surfactant. Some formulations (e.g. Roundup Transorb) claim to deliver 50% more glyphosate to the root system.	Use surfactant if recommended on the label. Use caution if it is not recommended and you are using below label rates
Spray Volume	Spray coverage of the leaf surface	Lower water volume (5 GPA) generally improves glyphosate performance. It produces smaller droplets containing a higher concentration of glyphosate.	Always use recommended label water volume. Within a range, use lower end of the range. Use higher water volume if coverage or drift is a concern.
Spray Water	N/A	In dirty water, most of the glyphosate binds tightly to soil particles, reducing performance	Always use clean water free from soil sediments or organic matter

Water Hardness	N/A	Dissolved minerals have the potential to reduce the performance of glyphosate	Adding ammonium sulfate to the spray solution can improve glyphosate effectiveness. Use 4-8 kg AMS per 375 litres of water
Growth Stage of Weeds	At application time, weeds should be actively growing and have new, healthy and fully expanded leaves	Actively growing weeds enhance glyphosate absorption and translocation	Check the label for correct weed/crop staging before glyphosate application
Source: Reduced Tillage Linkages, Dr. Mirza N. Baig			