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### **Temperature and Humidity Effect on Glufosinate**

We learned in our Weed Science class that conditions of the environment such as temperature, light, CO<sub>2</sub>, humidity, and wind at the time of application and many other factors impact how herbicides perform. This could vary depending on the weed species, the compound, if the product is soil applied etc.

One of our subscribers asked specifically about Rely response to temperature and humidity.

A study showed that plants grown at 90% relative humidity presented more translocation of glufosinate than those grown at 35%. Relative humidity had greater effect than temperature on glufosinate toxicity to Palmer amaranth, redroot pigweed, and common waterhemp <sup>(1)</sup>.

Another study showed glufosinate acted slower with lower temperatures delaying injury to two weed species, but only small differences in injury existed among temperature regimens in the final evaluations 288 h after spraying. It also suggested that the activity of glufosinate ammonium on both species was significantly reduced by low relative humidity <sup>(2)</sup>.

In 2010 Barry Tickes and I conducted a nutsedge trial at the Yuma Mesa in which we sprayed Rely in June with similar temperatures to what we are having today and humidity below 20%. Then, a second application was done in August, which averaged ~40% relative humidity. The

following table shows the % control was higher after the August application, which is consistent with the studies we refer to above.

**Rely Citrus Trial  
Yuma Mesa 2010**

Nutsedge Control									
Herbicide	Rate	1 App				2 Apps			
		Rep 1	Rep 2	Rep 3	Ave.	Rep 1	Rep 2	Rep 3	Ave.
Untreated	--	0	0	0	0	0	0	0	0
Rely 280	5 pt.	30	30	40	33.3	80	75	90	91.6
Rely 280 + Ammonium Sulfate	5 pt. + 17 lb.	70	75	75	73.3	90	95	90	91.6
Rely 280 + Ammonium Sulfate + MSO	5 pt. + 17 lb. + 1%	85	80	85	83.3	95	90	90	91.6
Rely 280 + Buffer	5 pt. + 2 pt.	70	70	75	71.6	95	95	95	95
Rely 280 + RoundUp + Ammonium Sulfate	5 pt. + 32 oz. + 17 lb.	65	70	70	68.3	95	95	95	95
RoundUp + Ammonium Sulfate	32 oz. + 17 lb.	50	50	60	53.3	80	70	75	71.6



## References

1. Coetzer, E., Al-Khatib, K., & Loughin, T. (2001). Glufosinate efficacy, absorption, and translocation in amaranth as affected by relative humidity and temperature. *Weed Science*, 49(1), 8-13. doi:10.1614/0043-1745(2001)049[0008:GEAATI]2.0.CO;2
2. The influence of temperature and relative humidity on the efficacy of glufosinate-ammonium  
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