High temps result in high variability of herbicide effectiveness

We aren’t the only ones enjoying the warm summer weather. Plants need warm temperatures and sunlight to grow. However, plants can’t jump in the lake or go into an air conditioned space so they prevent overheating in other ways. This is important information if you are spraying herbicides for weed control.

Stomata, microscopic openings or pores on plant leaves and stems, are generally open during daylight in order for the plant to photosynthesize. When temperatures are high and humidity is low, plants will close stomata to prevent water loss through transpiration. During periods of prolonged heat and low humidity, plants can develop a thicker wax layer on leaves to prevent transpiration. These mechanisms to protect from water loss can, in turn, protect plants from herbicides. Applying herbicides when temperatures are greater than 85-90 degrees may result in decreased weed control and crop injury.

Weed control may decrease due to several factors if using a systemic herbicide. If the cuticle layer has thickened, the necessary rate of herbicide may not be absorbed into the plant for full effect. Addition of a surfactant may allow the herbicide higher absorption into the plant. Plant metabolism also slows and translocation will be reduced. If temperature is a concern, avoid spraying between mid-afternoon to early evening.

In contrast to systemic herbicides, contact herbicides may become more active in high temperatures and crops can be injured. Timing of application for weed control is important so using a lower herbicide rate may be more economical than waiting for good weather. Decreasing the adjuvant rate may also prevent crop injury, but may potentially impact weed control as well. Evening applications may be better for a contact herbicide since application will be followed by milder temperatures whereas a morning application will be followed by increasing temperatures thus increasing potential for crop injury.

Volatilization and spray drift are commonly mentioned when determining when to spray in warm temperatures. Volatility occurs after a herbicide is applied to the target site, converts to a gas, and then moves to an off-target site. The potential for volatilization increases on inert surfaces such as rocks and pavement. Absorption rate and vapor pressure of the herbicide formulation is the driving factor of volatility. For example, Milestone (aminopyralid) is considered nonvolatile. Spray drift occurs when spray solution is moved to an off-target site without ever contacting the intended target site. In addition to temperature, humidity and wind speed, other factors such as spray pattern, nozzle size, application pressure, and application height can affect spray drift potential.

To ensure adequate weed control, assess the conditions before making a herbicide application. Certain products may list a maximum temperature or humidity so it is important to always read the label. In addition, record temperature, humidity, wind speed, and wind direction during each application.

For more information, contact your local weed and pest control office or Goshen County Weed and Pest at: (307) 532-3713, gocoweeds@embarqmail.com, or <https://www.facebook.com/gocoweeds>.