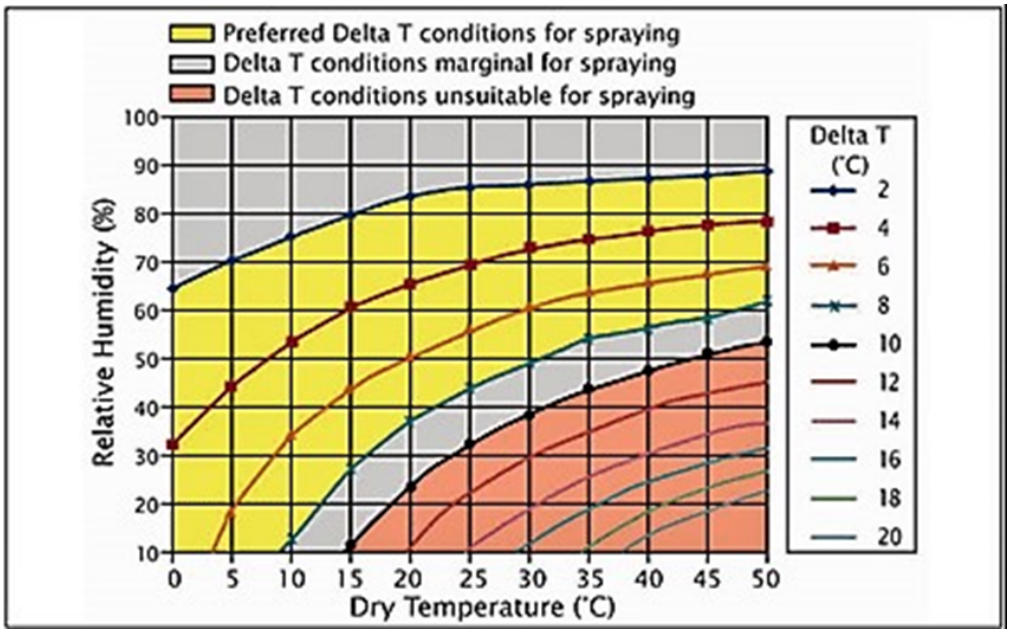
JULY AGRONOMY UPDATE

HOT WEATHER SPRAYING

I was sitting in on a Webinar the other day, when the presenter commented on the fact that many of the farmers he talked to this spring had been told by their suppliers that as soon as the temperature hit 26 C, they should stop spraying. At this temperature, they were told, the target weeds would start to shut down and the crop would be more prone to injury. My initial thought was that if everybody stopped spraying at 26 C, there would have been very little spraying done this spring in a lot of areas. My next thought was that even though it has been almost 30 years since Australian researchers introduced us to Delta T as a better way to measure environmental risks; far too many of us are still not using this valuable indicator when assessing spray conditions.

Possibly the problem is how people explain the concept. I have sat through many lectures on the advantages of Delta T as a tool, and as soon as they get around to describing in agonizing detail how to measure “dry bulb” temperature vs “wet bulb” temperature, I tune out. The technicalities of the process don’t interest me in the least! All I really need to know is that temperature is only one of the environmental factors affecting spray efficacy; the other big one is humidity. Crops and weeds will remain active at higher temperatures as long as the humidity is high. Weeds that won’t easily take up herbicide at 26 C and 20% humidity will take it up readily at 70% humidity. The other part of this equation is that humidity also affects the herbicide itself; or at least the rate at which the spray droplets evaporate. Low humidity causes the droplets to evaporate faster, increasing drift risk and decreasing plant uptake. On the other hand, if humidity is too high, the spray droplets can survive a long time, giving the herbicide an extended period to enter the plants, making it more potent than normal and possibly causing crop injury. Or the droplets can hang in the air for a long time and drift off target during an inversion.

So the thing to remember out of all this is that there are risks associated with both temperature and humidity when you spray. What Delta T does is combine these factors on a sliding scale that takes into account how these variables work together, and supplies you with a chart (figure 1) that assesses the risk associated with spraying at any given temperature and humidity.



The chart provides a range of what is considered “safe” spraying conditions; expressed as Delta T (the difference in Celsius between the “dry bulb” and “wet bulb” temperatures). You can see by the chart how totally arbitrary it is to tell people that 26 C is the magic temperature to stop spraying at. At 20% humidity the Delta T is 12, out of the range of safe spraying, yet at 50% humidity the Delta T is less than 8, which is fine. When referring to the chart, remember that the lower the Delta T number is, the longer the spray droplets will hang around. Conversely, the higher that number is, the faster the droplets will evaporate. People have found they can “cheat” and spray when the Delta T is as high as 10 C, as long as they use a coarser droplet size that will offset the speed of evaporation to an extent.

Almost all places have an Alberta Ag weather station nearby that will give you an approximation of your temperature and relative humidity, so you can figure out your Delta T. If keeping a copy of the chart handy and working out the number yourself seems too onerous, many commercially available weather stations today will do the legwork for you.Below is an example of a spraying forecast from the Battle River Implements Ltd weather station south of Killam. Note that while the Delta T of 3 C is technically within the acceptable range, the RH of 72% and the complete absence of wind would make me hesitant to spray. There is a good chance that droplets are going to hang in the air for a long time and drift off target once a breeze comes up.