

Grainews

PRACTICAL PRODUCTION TIPS FOR THE PRAIRIE FARMER www.grainews.ca

Check your spraying conditions

Handheld weather meters tell you wind speed, temperature and humidity right there in the field. Some also measure Delta T, a useful measurement when spraying

BY GERALD PILGER

Pesticides and the equipment required to apply them are a major cost to most growers. Return on your pesticide investment can be nullified by temperature or rainfall. Worse yet, severe damage to nearby crops can result from pesticide drift due to climatic conditions. Yet few growers accurately measure the actual weather conditions in the field before and as they are spraying.

Instead, most growers rely on local radio, TV and Internet forecasts for their area or have invested in a home weather station to determine the suitability for pesticide applications. Unfortunately, topography, trees and even adjacent water bodies can significantly influence the microclimate out in the field. Conditions in a well-treed farmyard may be nothing like those found in a field just a few miles away. As a result, top farm managers are now investing in portable weather meters to maximize returns from their pesticide investment and to minimize the risk of spray drift.

Wind is likely the number one concern when spraying. Growers have been told repeatedly not to spray if wind speeds exceed 15 km per hour. Yet spray drift damage continues to be an issue across the Prairies. Wind can be significantly different between the farmyard and the field, and even between fields. Furthermore, unless you have an accurate way of measuring wind speed and direction, you risk damaging adjacent crops every time you spray.

Many companies offer easy to use handheld wind speed indicators, with some priced under \$30. This is very cheap insurance compared to the cost if your pesticide damages a neighbouring crop because the wind is stronger than you think.

Temperature can also influence pesticide performance. Many pesticide labels advise against spraying when conditions are above or below specific temperatures. Some labels even specify an optimal temperature range at which pesticide performance is maximized. Temperatures can also change rapidly during the



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day, so having the ability to monitor temperature can help you improve pesticide performance.

Relative humidity is the third factor growers need to watch. Relative humidity will influence the time it takes for the pesticide to be absorbed into the plant tissue as well as the rate of evaporation of the spray droplet off the leaf. Evaporation of the pesticide and carrier is such a huge concern under hot, dry conditions that a new measurement scale called Delta T has been created.

WHAT IS DELTA T?

Delta T is the spread between the wet bulb and dry bulb temperatures in degrees C. "If the Delta T is between 2°C and 8°C, pesticides

are more effective," says Monica Devlin is public relations manager with Nielsen-Kellerman, a U.S. based manufacturer of precision hand held weather meters.

Much like a wind chill reading is used to correlate the effect of wind on temperature, the wet bulb thermometer measures the effect moisture in the air has on temperature. Delta T is calculated simply by subtracting the wet bulb temperature reading from a typical dry bulb thermometer measurement. By spraying only when the Delta T measurement is between 2°C and 8°C, growers can be assured the spray will not run off the leaf because of dew or fog. This also insures the spray droplet will not evaporate off the plant

leaf before it has time to enter the plant tissue.

Growers in arid agricultural areas such as the southern U.S. and Australia have already adopted Delta T as a valuable tool for determining the suitability for spraying. Growers in some areas on the Prairies where hot dry conditions in the afternoons limit the effectiveness of pesticide applications could use Delta T to see if spraying should be delayed until conditions are more favourable. Some handheld weather meters will provide Delta T measurements.

WEATHER AND NOZZLE SELECTION

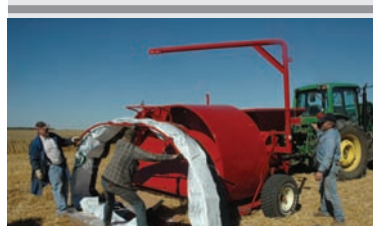


A handheld weather meter that provides wind speed and Delta T would be useful for nozzle selection. Smaller spray droplets provide better coverage, but small droplets are much more prone to drift and evaporation. A pesticide applicator who can accurately measure wind speed, temperature, and Delta T can select a nozzle that provides small droplet size when drift and evaporation losses are minimal or use a large-droplet nozzle when these conditions get worse.

With adjustable multi-nozzle bodies now on many sprayers, switching nozzles is no longer a major job and growers can benefit from

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CHECK YOUR SPRAYING CONDITIONS

matching spray droplet size to field weather conditions in addition to the specific pesticide being applied.

KESTREL 3500 DELTA T

Nielsen Kellerman has a new weather meter intended for agricultural pesticide applicators. It is the only handheld weather meter on the market that displays the Delta T reading as well as providing users with wind speed (current, average and maximum), wet bulb and dry bulb temperature, humidity and dew point. Furthermore, this small handheld unit also automatically compensates the Delta T reading for the barometric pressure and altitude. Both these measurements can be displayed as well. The meter also provides users with a forecast and pressure trend.

The Kestrel 3500 Delta T is just one of many handheld weather meter on the market, but it is the first dedicated to pesticide application. For more information on this weather meter, go to www.nkhome.com/www/wwindex.html

Suggested retail price of the Kestrel 3500 Delta T is US\$259. It can be ordered online and is also available through a number of retailers in Western Canada. A list of Canadian dealers is available on the website noted above.

Growers need to maximize pesticide efficiency. At the same time, they are under increasing pressure to minimize environmental impact of pesticide applications. Investing in a handheld weather meter is one way of improving both these goals.

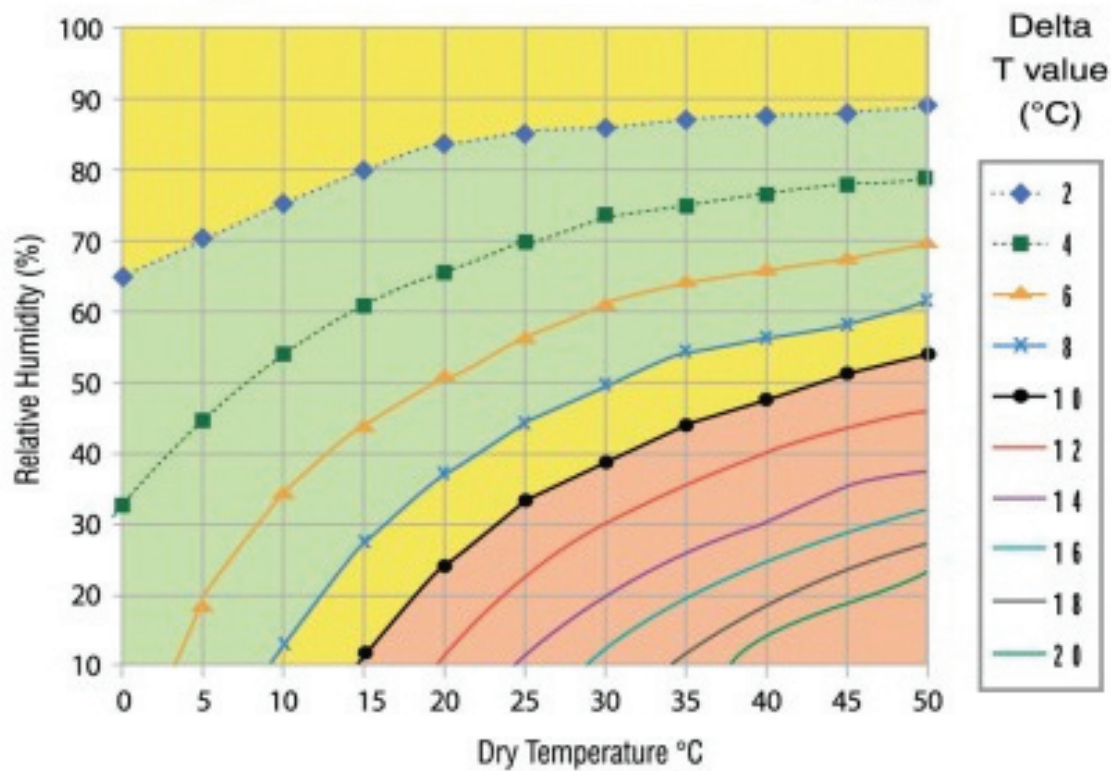
—Gerald Pilger farms near Ohaton, Alta.



The Kestrel 3500 Delta T from Nielsen Kellermann is the first handheld weather meter dedicated to pesticide application. Suggested retail price of the Kestrel 3500 Delta T is US\$259.

SELECTING THE RIGHT DELTA T CONDITIONS FOR SPRAYING.

- preferred delta T conditions for spraying
- delta T conditions marginal
- delta T conditions unsuitable for spraying



Delta T is the difference between a dry thermometer reading and a reading that factors in relative humidity. Ideally, you want to spray when Delta T is between 2°C and 8°C. The diagram comes from a Nufarm Australia service called Spraywise Decisions (www.spraywisedecisions.com.au)

WEATHER GUIDELINES FOR SPRAYING

The Australian publication "Weather for Pesticide Spraying" provides the following guidelines for pesticide applicators. This list is just as relevant to Canadian growers.

- Read the product label and follow label directions.
- Spray when wind is steady and three to 15 km/h.
- Avoid variable or gusty wind conditions.
- Avoid calm conditions. Small droplets may remain suspended for long periods.
- Spray when wind blows away from sensitive areas.
- Avoid spraying when temperatures are above 28°C.
- Aim to spray when Delta T is between 2°C and 8°C, and not greater than 10°C.
- Do not spray when inversion conditions exist.
- Aim to spray when the atmosphere is neutrally stable.
- Most chemicals require a rain-free period. Check the field.
- Be aware of local topographic and convection influences on wind speed and direction.
- Record on-site weather conditions at spray time.

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