

Application Recordkeeping: Focus on Environmental Conditions

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When applying crop protection products, a good steward is one who can identify and record the environmental factors that may negatively impact making an application; particularly, the possibility of spray drift. New label language states: *“Avoiding spray drift at the application site is the responsibility of the applicator.”* A wise sprayer operator must possess the ability to assess the environmental conditions at the field location to determine how best to spray the field, or maybe decide it would be best not to spray that field, or part of that field,

at that time. Instruments that assess environmental conditions are available to assist applicators in making good decisions. Making the correct measurement is the critical first step. Record the information measured to document the application conditions. Quality records help mitigate against any misapplication allegations, such as a drift complaint. Many of the items listed below are based on past legal experiences with applications involving spray drift litigation.

The following guidelines should help you measure and accurately record environmental conditions at the application site.

1. Document any instrument used by recording the manufacturer and model number. Accurate portable weather instruments are recommended. Portable weather instruments are available that log and store data, and aid in auditing and recordkeeping. Some will have Bluetooth/wireless capabilities.
2. Environmental measurements include wind speed and direction, temperature, and relative humidity.
3. At a minimum, record data at the start and finish of the job. Consider more often as conditions change or for a job that lasts over a longer period. For example, make observations when tank refilling for larger fields. Time stamp all observations with a.m., p.m., or military time.



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4. Take meteorological readings as close to the application site as possible. Be advised that the weather data received via a smart phone or local weather station may not be accurate for the location being sprayed.
5. Note the specific location where the measurement was made, such as GPS coordinates, field entry point, field location, etc. Check the label to see if it requires a specific observation location in relation to the treatment area.
6. Make all measurements as close as possible to the nozzle release height (boom height) and in an area not protected from the wind by the spray machine or your body. For aerial applications, six feet is suggested when using a hand held instrument.
7. Record wind speed averaged over a 1 to 2 minute time span. Note the time the observation was recorded. Most instruments give an average over a period of time. Make sure the instrument's anemometer is facing directly into the wind.
8. Do not record winds as variable or with a range i.e. 4 to 8 mph – an average gives a better indication of the transport energy. Light and variable winds, where directions may change several times over a short period, can be more problematic than higher speed winds in a sustained direction. Observe any label restrictions on wind speed.
9. Wind direction requires a similar averaged measurement. Record direction in degrees magnetic from a compass (0-360°). The use of alphabetic characters, i.e., N, S, NW, to indicate wind direction is discouraged. The key for determining direction is to have an accurate assessment method: trees moving, dust, smoke, a ribbon on a short stake, etc. Face directly into the wind and record the direction from which the wind is coming. A ribbon on a stake with the ribbon blowing directly at your body is a simple fail safe approach. Movement of smoke, particularly from moving aircraft, or dust may help determine direction.



10. Record temperature and humidity since they can be helpful in determining temperature inversion potential. It may be advisable to record both temperature and humidity well before and after the application for this purpose. In fact, recording a morning low and an afternoon high would be useful regarding determining the potential for an inversion. Take temperature measurements with the instrument out of direct sunlight. Shade the instrument with your body or spray equipment. This is especially critical if you are trying to assess temperature differentials for determining if an inversion is in place.
11. Be alert to field level temperature inversion conditions which typically occur from late afternoon, can be sustained through the night, and into the next morning. Beware, inversions can start mid-afternoon. Observe conditions such as the presence of ground fog, smoke layers hanging parallel to the ground, dust hanging over the field/gravel road, heavy dew, frost, or intense odors (i.e., smells from manure or stagnant water from ponds are held close to the surface when inversion conditions exist). Inversions commonly occur with low (less than 3 mph) to no wind speeds. Spraying in calm air is not advised. If a mechanical smoker is used, note wind direction and smoke dissipation with a time stamp.
12. Note any variances due to terrain or vegetation differences, tree lines, buildings, etc.
13. Initial or sign all recordings to indicate who made the observation(s).