

Nebraska Department of Agriculture (NDA)

Plant Health Protection Update



Temperature Inversions and Pesticide Drift. North Dakota State University has completed a detailed, technical summary of inversions and drift in a new publication called, *Air Temperature Inversions: Causes, Characteristics and Potential Effects on Pesticide Spray Drift* (found online at bit.ly/NDSUpub1705)

Quick Take-home points:

- ▶ Calm air and temperatures colder at 1' above ground than 10' above ground indicate an inversion is present or could form.
- ▶ Clear skies all night and into morning, coupled with low dew points, increase potential for temperature inversions.
- ▶ Dew or frost on the ground serves as a warning a temperature inversion may exist.
- ▶ The presence of ground fog always indicates temperature inversions are present and may intensify if the fog forms at night.
- ▶ Surface temperatures warm and cool more rapidly on recently tilled soil, resulting in temperature inversions forming more quickly over those sites.
- ▶ Similarly, temperature inversions form more rapidly over close-canopy crops than bare ground, due to less stored energy in the crop canopy.
- ▶ Temperature inversions always form in low-lying areas first, because cold air is heavier than warm air, and it sinks to the lowest elevation.
- ▶ Evening temperature inversions are actually worse than morning inversions, because they persist longer and can carry evening pesticide spray drift further.
- ▶ Measuring the air temperature at two heights at the application site, using calibrated and shaded sensors will help determine if an inversion is present.

Additional information:

North Dakota State University has also provided access to materials from a webinar called Temperature Inversions: Their impact on pesticide applications. This information can be viewed as a PowerPoint slideshow or handout in PDF format, or as a video (as Windows Media Video or MP4 format). The video can be seen as one complete file, or as four individual parts.

This information is available free of charge, but people must register at this link (bit.ly/S8aabQ). Contact information is provided, if there are questions about the registration form or the material.

NDA encourages all outdoor applicators to utilize all resources at your disposal to reduce the potential for drift, including online weather forecasts, near real-time weather data, and observations at each application site.

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