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## **WSSA Pesticide Stewardship Series: The Applicator Must Ensure that Pesticide Spray Drift Does No Harm**

LAWRENCE, Kansas – June 4, 2013 – Recently, pesticide spray drift from different pesticide applications caused damage to field corn on a bordering farm, vegetables in an adjacent backyard, trees and bushes in a nearby state park and vegetation on an adjoining campus. In all cases, the applicators were fined because they had not taken the necessary precautions to avoid drift.

Pesticide spray drift is the physical movement of spray droplets from the intended target to any non-target site. Drift is not just about crop injury; it can negatively impact workers, organic crops, the general public, beehives, gardens, aquatic areas and other sensitive habitats, even if the effects are not immediate or obvious.

Pesticide labels vary with regard to information on spray drift management. Some labels provide a detailed list of required drift management techniques. Labels may specify a maximum wind speed in which to spray, or simply indicate not to apply under windy conditions. Labels may also require an “adequate” or specific size buffer zone between the target site and sensitive sites, such as areas occupied by humans, animals or susceptible vegetation.

“No portion of the label stands alone – it is critical that spray drift-specific requirements be considered concurrently with all other label requirements,” notes Don Renchie, Ph.D., Pesticide Safety Education Program Coordinator, Texas A&M AgriLife Extension Service. “For example, the agricultural label requirement to [protect workers](#) will override any maximum wind speed allowed on the label if workers are in close proximity downwind of a planned application.”

Research, education and debate continue on how best to avoid spray drift. A growing number of registries in certain states enable applicators to determine the location of sensitive crops in close proximity to their planned treatments. Application technology and buffer size

calculations are also becoming more sophisticated, but ultimately it is the applicator who must take every necessary precaution.

There is no one technique that can minimize spray drift. The applicator must consider the non-target sites downwind of the application, location of buffers, weather conditions and application equipment. Follow all government regulations and label directions and carefully assess the following:

**Non-Target Sites.** Know what is downwind of your application – not only on your land, but on neighboring land as well. A small amount of spray drift to a tolerant, labeled crop on your land is very different than drift to a sensitive crop or to anything on someone else’s property. If possible, make the application when the wind is blowing away from any non-target site of concern.

**Buffers.** Establish buffers, which are areas or strips of land intended to intercept spray drift. At times, a specific buffer size will be required by the Environmental Protection Agency (EPA) when it approves the label; in other instances, the need for buffers will be assessed by the applicator based on professional judgment and local conditions. Tolerant fast-growing trees, grassed buffer strips and uncropped field borders are examples of buffers that can be positioned downwind of areas that will be treated. Know the effectiveness of the buffer as well. For example, a tall, continuous buffer of tolerant trees will provide much better protection from drift than a narrow strip of low-growing grass. Never use someone else’s land as your buffer.

When no buffer exists (or an existing buffer is insufficient under the particular application conditions), create the needed buffer by leaving a portion of the target site untreated. The size and location of this “flexible” buffer is determined on an application-by-application basis by considering all the factors influencing spray drift potential.

**Weather.** Wind is the most important weather factor affecting spray drift. Apply pesticides only when winds are light and blowing away from sensitive areas. A general rule is to spray when the wind speed is 3-10 mph, *but* the upper limit must be modified based on all application-specific factors influencing drift. Accurately measure wind speed and direction before and during the application. If a change in wind speed or direction results in unacceptable drift, immediately adjust the buffer size or location as necessary, or stop the application.

Calm conditions or variable winds can actually increase the chance of spray drift. Calm conditions might indicate the presence of a [temperature inversion](#) (a trapped layer of air). Inversions, which are most common during the early morning or evening, favor horizontal movement of pesticides.

High temperatures and low relative humidity during the application may also increase the chance of spray drift by increasing evaporation, which reduces the size of spray droplets. Keep accurate records of wind speed and direction, air temperature and relative humidity.

**Application Equipment.** Spray pressure and volume, droplet size, nozzle type, boom height and additives can all influence spray drift. Within the constraints of the label:

- Reduce spray pressure to produce larger spray droplets, which are less likely to drift.
- Increase spray volume, which allows the use of nozzles that produce larger droplets.
- Use low-drift nozzles, such as those with air-induction technology. Replace *all* worn nozzles.
- Keep the spray boom as low as possible without detrimentally affecting spray coverage. Consider boom shields and windscreens.
- Include a drift control agent in the spray tank.

Some of these spray drift-reducing tactics cannot be used for every pesticide application because pest control will be reduced. But, if you cannot follow the label AND avoid drift, select a different product or formulation. Granules (such as weed-and-feed products) are sometimes available alternatives to the use of liquid sprays to eliminate drift.

“Flexibility is a key component in minimizing spray drift,” says Renchie. “There are so many factors that influence drift that can be modified by the applicator in response to particular circumstances. Communicating with neighbors will also help prevent potential problems by identifying sensitive crops or beehives in the area.”

Applicators are legally responsible for problems that are caused by spray drift, regardless of what particular factor(s) was the culprit. Be a good steward and do everything necessary to prevent problems caused by drift.

Some Resources on Pesticide Spray Drift:

<http://www.pesticides.montana.edu/reference/drift.htm> Montana State University

<http://www.pesticidestewardship.org/drift/Pages/default.aspx> Pesticide Environmental Stewardship (PES)

<http://edis.ifas.ufl.edu/pi232> University of Florida

This is the tenth in a series on pesticide stewardship sponsored by the Weed Science Society of America. Next month: Pesticide Disposal.

**About the Weed Science Society of America**

The Weed Science Society of America, a nonprofit scientific society, was founded in 1956 to encourage and promote the development of knowledge concerning weeds and their impact on the environment. The Weed Science Society of America promotes research, education and extension outreach activities related to weeds, provides science-based information to the public and policy makers, fosters awareness of weeds and their impact on managed and natural ecosystems, and promotes cooperation among weed science organizations across the nation and around the world. For more information, visit [www.wssa.net](http://www.wssa.net).