

SOILS

Helpful tips reduce risk of pesticide drift

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As long as pesticides have been used, off-target spray drift has been a potential problem. As we move into the busiest time of year for pesticide applications, it is a

good time for a brief review of the primary types of pesticide drift and some tips on how to minimize them.

Primary, or particle, drift is the movement of spray droplets away from the target site. Wind speed, droplet size and spray boom height are the main factors affecting primary drift. To reduce primary drift:

- Spray with low wind speeds, generally less than 10 miles per hour. Avoid dead calm conditions because some air mixing helps spray deposition.
- Use large spray droplets because they are less prone to drift than small droplets. Droplet size is determined by nozzle size, spray nozzle type and spray pressure. Lower volume spray nozzles tend to produce smaller droplets than larger volume nozzles. Different nozzle types also produce different size droplets. Fine spray nozzles, such as hollow cones, produce the most driftable fine droplets while coarse spray nozzles, such as floods, produce the least. Driftable fines are those spray



- droplets less than approximately 105 microns in diameter.
- In addition to the spray pattern selected, the use of air induction technology can significantly reduce the number of driftable fines. For example, common flat fan spray nozzles produce approximately 20 to 30 percent driftable fines, while air induction flat fan spray nozzles produce approximately 2 to 10 percent driftable fines. Within any nozzle type, the higher the spray pressure, the smaller the droplet size produced. Low pressure, within

the range specified for that nozzle, produces the least driftable fines.

- Keep the boom as close to the target as possible to reduce the opportunity for other factors to affect spray deposition. Optimal boom height should be as low as feasible while maintaining the correct spray pattern.

Vapor drift occurs when a pesticide volatilizes, or changes into a gaseous state, before being absorbed into a leaf, or adsorbed onto soil or surface residues. It can move long distances, even with slight winds. Vapor drift is a function of the product or ►

formulation, and not the conditions at application or application method. Conditions that promote vapor drift include a rapid drop in humidity and increase in temperature soon after application. Refer to the pesticide label to know if it is prone to volatilization. If so, do not apply if conditions soon after application are favorable for vapor drift.

Thermal inversion drift occurs under calm conditions with cool surface temperatures and warm air above. Since the warm air is above the cool air (warm air rises and cool air sinks), there is no vertical air mixing. Without vertical mixing, small spray droplets can become suspended and drift

away from the target, even with slight winds. Inversions are common at sunrise and often associated with clear skies overnight. If humidity is high, a low-hanging fog is often observed. Observing the behavior of dust from a dirt road or smoke will often indicate if an inversion is present. Some applicators use smoke generators to evaluate the potential for thermal inversions. If a thermal inversion is present, delay the application until it has passed.

There are additional technologies that can reduce risks associated from pesticide drift. Specialized equipment such as electrostatic sprayers, shielded sprayers and air-shield booms can reduce drift potential. Spray deposi-

tion agents can be added to increase droplet size or weight. When using a deposition agent, calibrate the sprayer using the deposition agent since some can affect sprayer output.

It is wise to know the location of sensitive crops, gardens, orchards, homes, schools, hospitals, nursing homes, etc., downwind of the application site to assess the risks associated with off-target drift. As an applicator, you are responsible for the results of pesticide drift, so it pays to be aware of the risks.

There is no way to eliminate all risks of off-target spray drift, but with good planning and preparation, those risks can be managed. ■