Drift Management Considerations

H. Mark Hanna
Iowa State University, hmhanna@iastate.edu

Kristine J. P. Schaefer
Iowa State University, schaefer@iastate.edu

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Abstract
Warmer weather means emerging crops and more outdoor activities. Locally produced foods are expanding and home gardening is showing increased interest as a way to save costs. These and other factors make it particularly important to review spray drift reduction procedures.

Keywords
Agricultural and Biosystems Engineering, Entomology

Disciplines
Agricultural Science | Agriculture | Agronomy and Crop Sciences | Bioresource and Agricultural Engineering | Soil Science

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Drift Management Considerations

By Mark Hanna, Department of Agriculture and Biosystems Engineering and Kristine Schaefer, Pest Management and the Environment

Warmer weather means emerging crops and more outdoor activities. Locally produced foods are expanding and home gardening is showing increased interest as a way to save costs. These and other factors make it particularly important to review spray drift reduction procedures.

Increasing droplet size so that small droplets don’t become entrained in ambient air currents is a key to drift reduction. Seasoned readers of ICM News should already be familiar with common procedures to reduce drift. Techniques include:

• Operating nozzles at a lower pressure
• Using a larger tip size (which also lowers pressure for a given application rate)
• Maintaining boom height at the lowest level consistent with nozzle overlap
• Using a low-drift nozzle style such as venturi or air-induction tip
• Driving more slowly near field borders when using a spray controller (lowers pressure)

In addition, weather factors are important. Avoid off-site drift by spraying when wind speeds are below 10 miles/hour (mph), with prevailing winds away from sensitive areas, and avoiding application during dead calm conditions (e.g., atmospheric inversion). If high wind speeds have persisted for several days and weeds or pest populations are continuing to grow, applicators may feel compelled to go ahead with applications. Before filling the sprayer and heading to the field, it’s good to review just how far a spray droplet can travel.

All nozzle tips produce a range of droplets, although low-drift style nozzles minimize the number of small sized droplets (fines). As shown in the chart below, droplets 200 microns and less in diameter can travel across fence lines 25 feet or more with wind gusts of 15 mph. In some cases, a non-herbicide resistant crop or sensitive plant species may be only a few feet across a property line. Adjusting nozzle type and sprayer pressure and leaving an unsprayed buffer area may be necessary in certain situations.

Distances droplet sizes travel with various wind speeds from 3 feet boom height.

<table>
<thead>
<tr>
<th>Droplet size, microns</th>
<th>5 mph</th>
<th>10 mph</th>
<th>15 mph</th>
<th>20 mph</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>24 ft</td>
<td>48 ft</td>
<td>72 ft</td>
<td>96 ft</td>
</tr>
<tr>
<td>200</td>
<td>9</td>
<td>18</td>
<td>26</td>
<td>35</td>
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<tr>
<td>600</td>
<td>3</td>
<td>6</td>
<td>9</td>
<td>12</td>
</tr>
</tbody>
</table>
Mark Hanna is an extension agricultural engineer in agricultural and biosystems engineering with responsibilities in field machinery. Hanna can be reached at hmhanna@iastate.edu or (515) 294-0468. Kristine Schaefer is a program specialist in the Department of Entomology serving on the Pesticide Management and the Environment team. Schaefer can be reached by email at schaefer@iastate.edu or by phone at (515) 294-4286.

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