



# Wild Blueberry FACT SHEET



## Minimizing Off-Target Deposition of Pesticide Applications

Fact Sheet No. 303, UMaine Extension No. 2182  
(Replaces 1989 Fact Sheet 208)

### Use Integrated Crop Management

Wild blueberry growers should rely on an Integrated Crop Management (ICM) program to control pests. Pesticides used as part of a wild blueberry ICM program can include both biological and cultural practices aimed at preventing economic pest damage. Application of all pesticides should be based on ICM principles and practices including field scouting or other detection methods, correct target pest identification, population monitoring, and treating when target pest populations reach locally determined action thresholds. Scouting weekly, or more frequently, will result in early pest detection and allow for spraying a smaller area before the pest becomes wide-spread. Consult Wild Blueberry Fact Sheet No. 204, *Integrated Crop Management Field Scouting Guide for Wild Blueberries* and other supporting Wild Blueberry Fact Sheets for appropriate action threshold levels for treating specific pests. These fact sheets are available on the World Wide Web at <http://www.wildblueberries.maine.edu/> or in Maine by request from your local County Extension office or the Wild Blueberry/Cranberry office at The University of Maine.

### Reducing Pesticide Drift

Drift is a side effect of pesticide use associated with ground and aerial application and is an important environmental concern. Drift is the uncontrolled airborne movement of spray droplets, vapors, or dust particles, away from the intended point of application. Drift can cause potential injury to non-target plants and animals, and has the potential for producing illegal residues on non-target sites.

Virtually every pesticide application produces some amount of drift. How much drift occurs depends on such factors as the formulation of the material applied, how the material is applied, the volume used, prevailing weather conditions at the time of application, and the size of the application job.

Pesticide applications which are directed upwards or made by aircraft are likely to be subject to more drift. Pesticide application by aircraft or air blast sprayer can result in residue problems on sites that are distant from the actual application site. Pesticides released close to the ground or substrate are not as likely to be suspended in the air as those released from a greater height or distance from the target.

Lightweight particles, especially dusts and low volatility vegetable oils, are very easily carried by air currents. Heavier formulations such as granules and pellets settle out of the air very quickly. High pressures and small nozzle openings produce very fine spray droplets with accompanying high drift potential. Lower pressures and larger nozzle openings produce coarser sprays with larger droplet sizes having less drift potential.

Drift control is your responsibility! In fact, many labels specify that drift control is the responsibility of the applicator. The EPA has established guidelines for information that has to appear on the label. The notice may be found at [http://www.epa.gov/opppmsd1/PR\\_Notices/prdraft-spraydrift801.htm](http://www.epa.gov/opppmsd1/PR_Notices/prdraft-spraydrift801.htm).

*Drift cannot be completely eliminated, but it can be greatly reduced.*

## Drift Reduction Overview

Remember, **ALWAYS** read and follow label directions.

**Maintain adequate buffer zones to insure that drift does not occur off the target area. Many labels may now have buffers specified for sensitive areas.**

Know your surroundings! **1)** You must determine the location of sensitive areas near the application site; **2)** some crops are particularly sensitive to herbicides if they move off-site; **3)** homes, schools, hospitals and other care facilities, surface waters, water treatment facilities, etc., are considered sensitive areas; and, **4)** be aware of the location of nearby flowering crops requiring insect pollination and the location of honey bee colonies. For a complete list of sensitive areas contact the Board of Pesticides Control at <http://www.thinkfirstspraylast.com> , or 207-287-2731.

You should know the location of sensitive areas within a one-half mile radius of sites on which you plan to make, or have someone else make, pesticide applications, and within one mile downwind. Make pesticide application decisions with these locations in mind.

Maintain buffers near lakes, reservoirs, ponds, rivers, streams, marshes, etc. Add a drift retardant on fields near any water source! Read the label for specific instructions.

Vegetative buffers are one of the most valuable and practical measures growers can implement to reduce residues in adjacent water bodies. Vegetative buffers should include a percentage of evergreen trees since many deciduous trees have not leafed out at the time of spring applications of fungicides and herbicides.

Don't apply pesticides under windy or gusty conditions. Don't apply at wind speeds over 15 mph, ideally not over 10 mph. Read the label for specific instructions.

Wind direction is also very important. In general, spray droplets will not move upwind. However, the wind will cause swath displacement that pilots must factor into spraying decisions.

Determine wind direction and take this into account in determining application timing, equipment and whether or not to make an application. **The wrong wind direction can cancel out everything else you have done to reduce drift.**

Don't spray during thermal inversions, when air close to the ground is colder than the air above it. When possible, avoid spraying at temperatures above 95° F, ideally not over 85° F.

Research has found that inversion conditions will prevail on most mornings and evenings (except when there is solid cloud cover). In addition, recent research indicates spraying in calm conditions (stable air) has the greatest probability of resulting in high off-target residues on adjacent sites. Under stable air conditions, there is little or no atmospheric mixing. Consequently, fine droplets will hang in the air and slowly diffuse outward on relatively level terrain. On sloped terrain, the air mass will behave similarly to a liquid and flow down gradient in stable air. This can result in high off-target residues down gradient from the application site (while up gradient areas will usually be not be at risk).

You should not spray early in the morning in calm air if sensitive areas are nearby (especially down gradient if the terrain is sloped). Moderate wind speeds of about 3 to 10 miles per hour away from the sensitive area are preferred for reducing the risks of off-target residues.

Choose the formulation carefully. Water-based sprays will volatilize more quickly than oil-based sprays; however, oil-based sprays can drift farther because they are lighter especially above 95° F.

Use as coarse a spray as possible while still obtaining good coverage and control. For sprays, use formulations which give large diameter (150 - 200 microns or larger) spray droplets. Droplet size is one of

the most important factors affecting drift. However, addressing droplet size alone is not sufficient to reduce the probability of drift and potential damage.

Use drift control/reduction agents. These materials are basically thickeners and are designed to minimize the formation of droplets smaller than 150 microns. They help produce a more consistent spray pattern and aid in deposition. Some of these are: Chem-Trol, Intac, Lo-Drift, Nalco-Trol, Nalco-Trol II, StaPut, Wind-Fall, Arborchem 38-F.

Use solid cone or fan spray nozzles. These produce larger droplet sizes than hollow cone nozzles. See New Nozzles for Spray Drift Reduction Ohio State University Extension Fact Sheet AEX-523-98 at <http://ohioline.osu.edu/aex-fact/0523.html> and Sprayer Nozzle selection for Pesticide Performance and Drift Reduction at <http://www.weeds.iastate.edu/reference/spray/ICM99.pdf>

Be careful with all pesticides. Insecticides and fungicides usually require smaller droplet sizes for good coverage and control than herbicides; however, herbicides have a greater potential for non-target crop damage.

Choose a combination of an application method and a formulation that is less likely to cause drift. After considering the drift potential of a product/formulation/ application method, it may become necessary to use a different product to reduce the chance of drift.

Be sure you are getting the spray deposition pattern you think you are. Service and calibrate your equipment regularly.

Check your system for leaks. Small leaks under pressure can produce very fine droplets.

### **How to Reduce Drift-Ground Applications**

For applications of liquid and dry formulations, commercially available or homemade shrouds or skirts attached over or behind the application equipment can help prevent spray droplets and pesticide particles from becoming airborne.

Using air blast sprayers is a highly visible application method with significant potential for drift problems. Be sure the machine is properly adjusted to direct the spray onto the blueberry foliage.

For ground rigs and hand sprayers, use low pressures and don't spray too close to the target surface in order to reduce spray-back of small droplets.

### **How to Reduce Drift--Aerial Applications**

Plan to achieve good field-end coverage on initial spray runs. Crossing the ends of fields which are bordered by trees or other obstacles usually means flying higher and increasing the chance of drift.

Fly slow, fly low. Slow speeds can be combined with lower pump pressures to produce larger droplets. Herbicides should be applied at a lower height than other pesticides.

For fixed wing aircraft, don't use a whirl-plate, rather, use a 1/16 to 1/18 inch diameter orifice plate directed straight back.

Be sure the positive shut-off is working properly, and use it!

Nozzle orientation affects wind shear across the nozzle face and subsequently droplet size. Use a nozzle orientation that will give the desired droplet size.

Boom length should be no more than 75% of the wingspan of fixed wing aircraft, or of the rotor diameter of helicopters in order to reduce drift caused by wingtip and rotor vortices.

Use a Microfoil boom, Tru-Value boom or equivalent drift control system when possible. Consult the pesticide label.

When there is any possibility or concern of drift, use a drift retardant as a standard part of your spraying service. Using drift retardants can promote a positive environmental concern and help eliminate legal problems.

### **How to Avoid Problems When Treating Around Fish-Bearing Surface Waters and Estuaries**

Use maximum gallonage (3 gallons finished spray or more by air, or 20 gallons with ground equipment) per acre and low pressure (max 25 PSI for aircraft and 40 PSI for ground sprayers).

Delay treatments near fish-bearing surface waters etc. until wind is blowing AWAY from sensitive area.

Use the chemical less toxic to fish if the choice is available. Apply IPM principles such as scouting, etc., and treat only when necessary and with the minimum recommended rate to obtain control.

Where practical, plant trees between fields and fish-bearing waters to provide physical barriers to potential spray drift from spray applications.

Monitor application equipment continually to ensure there are no leaks in hoses and fittings.

Aerial applicators, whether equipment is loaded or empty, should not fly over fish-bearing waters if it can possibly be avoided. Avoid the use of LV or ULV sprayers in the vicinity of fish-bearing waters.

Check to ensure that chemicals are mixed adequately before initiating spray operations (e.g., premix chemical before loading sprayers).

Aerial applicators should check calibration and follow all practices that enhance accurate delivery of pesticides.

### **Selected Pesticide Drift Web Sites and Publications:**

EPA Spray Drift page: <http://www.epa.gov/pesticides/factsheets/spraydrift.htm>

Spray Drift Task Force (SDTF) - The Spray Drift Task Force was organized under provisions of FIFRA to develop a generic spray drift database capable of satisfying spray drift data requirements for virtually all pesticide product registrations in the United States and Canada. Studies on specific application methods are included in the following PDF format files:

A Summary of SDTF Aerial Application Studies

[http://www.agdrift.com/PDF\\_FILES/Aerial.pdf](http://www.agdrift.com/PDF_FILES/Aerial.pdf)

A Summary of SDTF Ground Application Studies

[http://www.agdrift.com/PDF\\_FILES/Ground.pdf](http://www.agdrift.com/PDF_FILES/Ground.pdf)

A Summary of SDTF Airblast Application Studies

[http://www.agdrift.com/PDF\\_FILES/Airblast.pdf](http://www.agdrift.com/PDF_FILES/Airblast.pdf)

### **Applicator's Drift Reduction Checklist:**

- ✓ Target pest population or conditions met to justify pesticide application
- ✓ Know the wind speed and direction at the application site
- ✓ Use nozzles that produce large spray droplets but still provide adequate coverage
- ✓ Use lower application pressure and higher carrier volume
- ✓ Use lower boom heights
- ✓ Be aware of sensitive areas and communicate with your neighbors

More detailed information may be found at:

<http://www.ipm.iastate.edu/ipm/icm/2001/7-2-2001/checklist.html>

<http://www.ipm.iastate.edu/ipm/icm/2000/6-5-2000/driftreduction.html>

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