



## PESTICIDE ECOLOGICAL SPRAY DRIFT BUFFER CALCULATION WORKSHEET

When the pesticide product label or endangered species protection bulletin, found on the Bulletins Live! Two website<sup>1</sup>, includes an ecological spray drift buffer requirement, this worksheet can be used to assist the user in determining the size of the required buffer. This worksheet can be used to calculate ecological buffer size in lieu of the Microsoft Excel calculator<sup>2</sup> EPA has also developed for this purpose. The calculator and descriptions of mitigation measures are found on EPA's Mitigation Menu Website<sup>3</sup>. This worksheet can be found online at <https://www.epa.gov/system/files/documents/2025-04/spray-drift-mitigation-worksheet-april-2025.pdf>

<b>You may not have to use an ecological spray drift buffer if the answer is “yes” to any one bullet in any one of the following questions:</b>	<b>Yes</b>	<b>No</b>
<p>Do the planned application conditions fit any of these descriptions:</p> <ul style="list-style-type: none"> <li>• Chemigation methods, including: micro-sprinklers, drip-tape, drip emitters, subsurface or flood, and under non-permeable plastic surfaces</li> <li>• In-furrow sprays when nozzle height is &lt;8 inches above soil surface;</li> <li>• Tree trunk drench, tree trunk paint, tree injection;</li> <li>• Soil injection;</li> <li>• Solid formulations that are used as a solid;</li> <li>• Less than 1/10 acre (&lt;4356 square feet) treated and Spot treatment: &lt;1000 square feet treated (e.g., when applied with backpack or hand held sprayers).</li> </ul>	No ecological spray drift buffer required*	Continue calculating buffer size below
<p>Are managed areas the only landscapes downwind for at least the length of the label required buffer? Managed areas are defined as:</p> <ul style="list-style-type: none"> <li>• Agricultural fields, pastures, forage fields, and private rangelands, including untreated portions of the treated field;</li> <li>• Roads, paved or gravel surfaces, mowed grassy/fallowed areas adjacent to field, and areas of bare ground from recent plowing or grading that are contiguous with the treated area;</li> <li>• Buildings and their perimeters, silos, or other man-made structures with walls and/or roof;</li> <li>• Areas present and/or maintained as a runoff/erosion measure as listed on EPA's Mitigation Menu website. Examples include vegetative filter strips (VFS), field borders, grassed waterways, vegetated ditches, riparian areas, managed/constructed wetlands, or other areas of intentional habitat improvement;</li> <li>• Areas present and/or maintained as a drift buffer reduction measure as listed on EPA's Mitigation Menu website. Examples include vegetative windbreaks, hedgerows, shelterbelts, riparian areas, private forests, woodlots, and shrublands;</li> <li>• Conservation Reserve Program (CRP) and Agricultural Conservation Easement Program (ACEP) lands (applicators may need to ensure that pesticide use does not cause degradation of the CRP habitat).</li> <li>• On-farm contained irrigation water resources that are not connected to adjacent water bodies, including on-farm irrigation canals and ditches, water conveyances, managed irrigation/runoff retention basins, farm ponds, and tailwater collection ponds."</li> </ul>		

\*Note: Spray drift buffers may be required for other reasons (e.g. protection of human health).

<b>General Field/Management Unit Information (Optional Information – Does Not Impact Calculation)</b>	
Name:	
Today's Date:	
Field/Management Unit Identification(s) <sup>4</sup>	
Crop(s)	
Pesticide Product Name(s)	
Target Application Date(s)	

<sup>1</sup> Bulletins Live! Two Website: <https://www.epa.gov/endangered-species/bulletins-live-two-view-bulletins>

<sup>2</sup> Excel Mitigation Points Calculator: <https://www.epa.gov/system/files/documents/2024-10/runoff-mitigation-calculator-tool.xlsx>

<sup>3</sup> EPA's mitigation menu and measure descriptions specific to pesticides are available in the following websites: <https://www.epa.gov/pesticides/mitigation-menu> and <https://www.epa.gov/pesticides/menu-measure-descriptions>. If the state has a more restrictive requirement, that must be followed instead. Not all measures are applicable to all fields and crops.

<sup>4</sup> A field or management unit is defined as the single contiguous piece of land that is managed as a single unit in production or in preparation for production of a single crop. A uniform field may be sub-divided based upon different crops (e.g., vegetables and leafy greens) or sub-divided based upon different features (e.g., flat portion and contoured portion).

Ground Applications			
Ecological Spray Drift Buffer Distance from Label (default or product specific)			
NOTE: IF SPRAY DRIFT BUFFERS ARE NOT REQUIRED ON THE PRODUCT, THEN NO SPRAY DRIFT BUFFERS ARE NEEDED.			
Enter Spray Drift Buffer Distance from Product Label or Bulletins Live! Two (ft) as Applicable			
Ecological Spray Drift Buffer Reduction Option		% Reduction in Distance	Adjusted Buffer Size (ft)
<b>Application Parameters</b>			
Reduced Single Application Rate		% reduction in buffer size = % reduction in application rate (e.g., 50% reduction in application rate corresponds with a 50% reduction in buffer size)	
High boom	Fine to medium-coarse DSD <sup>1</sup>	75%	
	Coarse DSD <sup>2</sup>	85%	
Low boom	Very fine to fine DSD <sup>1</sup>	50%	
	Fine to medium-coarse DSD <sup>1</sup>	75%	
	Coarse DSD <sup>2</sup>	85%	
Hooded sprayer, layby or drop nozzles	Over-the-top Hooded Sprayer	50%	
	Row-middle Hooded Sprayer	75%	
	Sprays below crop using drop nozzles or layby nozzles	50%	
Use of Adjuvants (Herbicide Applications Only)	Herbicides using Medium DSD	30%	
	Herbicides using Coarse or Very Coarse DSD	15%	
<b>Reduced proportion of field treated (number of tractor passes<sup>3</sup>)</b>			
Field border application (or 1/10 acre to 1 acre)		75%	
2-4 passes (or >1 acre to 4 acres)		35%	
5-10 passes (or 4 acres to 10 acres)		15%	
<b>Other Mitigation Measures</b>			
Downwind windbreak/hedgerow/riparian/forest/woodlots/shrubland	Basic windbreak/hedgerow	50%	
	Advanced windbreak/hedgerow	75%	
	Riparian/forests/shrubland/woodlots ≥60ft width	100%	
Relative humidity is 60% or more at time of application		10%	
<b>Adjusted Ground Spray Drift Buffer (ft)</b>			

DSD = droplet size distribution

Low boom height=release height is less than 2 feet above the ground

high boom=release height is greater than 2 feet above the ground

<sup>1</sup> This % reduction assumes baseline of using high boom, very fine to fine droplet size for ground

<sup>2</sup> EPA anticipates receiving spray drift reduction adjuvant data for insecticide formulations near or after the finalization of the Insecticide Strategy but continue evaluating this as a mitigation measure for insecticides as Ecological Mitigation Support Document updates continue. Spray drift reduction adjuvant data for other classes (i.e. fungicides) will also be evaluated as it becomes available.

<sup>3</sup> A spray drift buffer applies to downwind non-target areas. The reduced number of passes or area treated applies to the upwind part of the treated field. Pass to area conversion is 45 ft per pass multiplied by the swath length used in SDTF trials (1,000 ft).

Aerial Applications			
Ecological Spray Drift Buffer Distance from Label (default or product specific)			
NOTE: IF SPRAY DRIFT BUFFERS ARE NOT REQUIRED ON THE PRODUCT, THEN NO SPRAY DRIFT BUFFERS ARE NEEDED.			
Enter Spray Drift Buffer Distance from Product Label or Bulletins Live! Two (ft) as Applicable			
Ecological Spray Drift Buffer Reduction Option		% Reduction in Distance	Adjusted Buffer Size (ft)
<b>Application Parameters</b>			
Reduced Single Application Rate		% reduction in buffer size = % reduction in application rate (e.g., 50% reduction in application rate corresponds with a 50% reduction in buffer size)	
Droplet Size	Coarse DSD <sup>1</sup>	40%	
	Very Coarse DSD <sup>1</sup>	60%	
Use of Adjuvants (Herbicide Applications Only)	Medium DSD <sup>1</sup>	30%	
	Coarse or Very Coarse DSD <sup>1</sup>	15%	
50% Reduced Boom Length During Application	Wind speed is <10 mph	65%	
	Wind speed is 10-15 mph	50%	
<b>Reduced proportion of field treated (number of airplane/helicopter passes<sup>3</sup>)</b>			
1 pass (or ≤1.5 acres)		55%	
2-4 passes (or 1.5 to 6 acres)		20%	
5-8 passes (or 6 to 12 acres)		10%	
<b>Other Mitigation Measures</b>			
Downwind windbreak/hedgerow/riparian/forest/woodlots/shrubland	Basic windbreak/hedgerow	50%	
	Advanced windbreak/hedgerow	75%	
	Riparian/forests/shrubland/woodlots ≥60ft width	100%	
Relative humidity is 60% or more at time of application		10%	
<b>Adjusted Aerial Spray Drift Buffer (ft)</b>			

DSD = droplet size distribution

<sup>1</sup>This % reduction is based on the assumption/baseline of using medium droplet size for aerial applications.

<sup>2</sup> EPA anticipates receiving spray drift reduction adjuvant data for insecticide formulations near or after the finalization of the Insecticide Strategy but continue evaluating this as a mitigation measure for insecticides as Ecological Mitigation Support Document updates continue. Spray drift reduction adjuvant data for other classes (i.e. fungicides) will also be evaluated as it becomes available.

<sup>3</sup>A spray drift buffer applies to downwind non-target areas. The reduced number of passes applies to the upwind part of the treated field.

Notes:

Airblast Applications			
Ecological Spray Drift Buffer Distance from Label (default or product specific)			
NOTE: IF SPRAY DRIFT BUFFERS ARE NOT REQUIRED ON THE PRODUCT, THEN NO SPRAY DRIFT BUFFERS ARE NEEDED.			
Enter Spray Drift Buffer Distance from Product Label or Bulletins Live! Two (ft) as Applicable			
Ecological Spray Drift Buffer Reduction Option		% Reduction in Distance	Adjusted Buffer Size (ft)
Application Parameters			
Reduced Single Application Rate	Non-targeted application equipment <sup>1</sup>	Divide % reduction in application rate by 2 (e.g., 50% reduction in application rate corresponds to 25% reduction in buffer size)	
	Targeted application equipment <sup>1,2</sup>	% reduction corresponds to application rate <sup>1</sup> (e.g., 50% reduction in application rate corresponds with a 50% reduction in buffer size)	
Targeting application by turning off nozzles spraying above crop canopy combined with use of deflectors <sup>1</sup>		10% <sup>1</sup>	
Reduced proportion of field treated (number of tractor passes <sup>3</sup> )			
1 row		70%	
2-4 rows		30%	
5-10 rows		15%	
Other Mitigation Measures			
Downwind windbreak/hedgerow/riparian/forest/woodlots/shrubland	Basic windbreak/hedgerow, or use of artificial screen ≥ height of orchard <sup>1</sup>	50%	
	Advanced windbreak/hedgerow	75%	
	Riparian/forests/shrubland/woodlots ≥60ft width	100%	
Skipping last downwind row of orchard/vineyard <sup>1</sup>		50%	
Adjusted Airblast Spray Drift Buffer (ft)			

<sup>1</sup>New airblast buffer reduction mitigation

<sup>2</sup> Targeted application equipment is defined as airblast equipment with pulse-width modulated (PWM) nozzles with canopy sensing equipment that turns nozzles off when crop canopy is not present.

<sup>3</sup> A spray drift buffer applies to downwind non-target areas. The reduced number of treated rows applies to the upwind part of the treated field.

Notes: