

Review of EPA's Final Insecticide Strategy and Examples



Hosted by the FIFRA Endangered Species Task Force
(FESTF)

May 23, 2025

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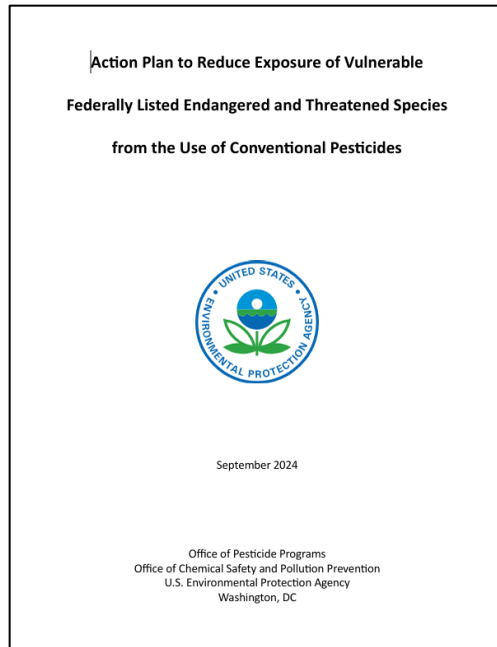


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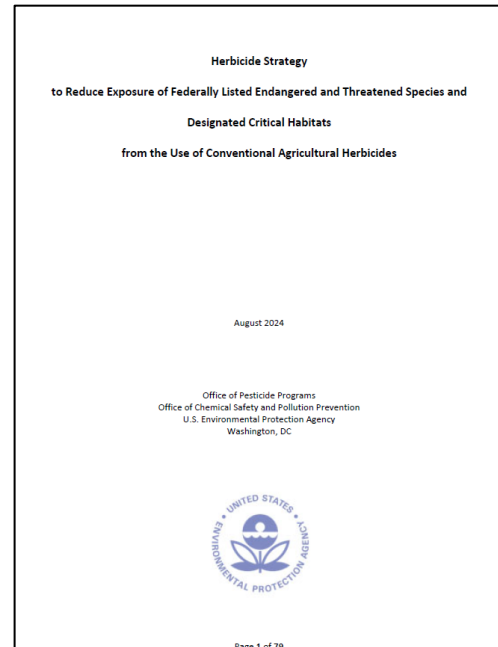
Agenda

- Introduction and Reminders
- Orientation – Life in a Final Strategy World
- Core Map Progress – refined species areas becoming more available
- Review of Final Strategy Changes
 - Mitigation Menu Updates (Erosion/Runoff and Spray Drift)
 - On-field species Updates
 - Species PULA changes
- Scenarios
 - Glufosinate-P
 - Isocycloseram
- Question and Answer

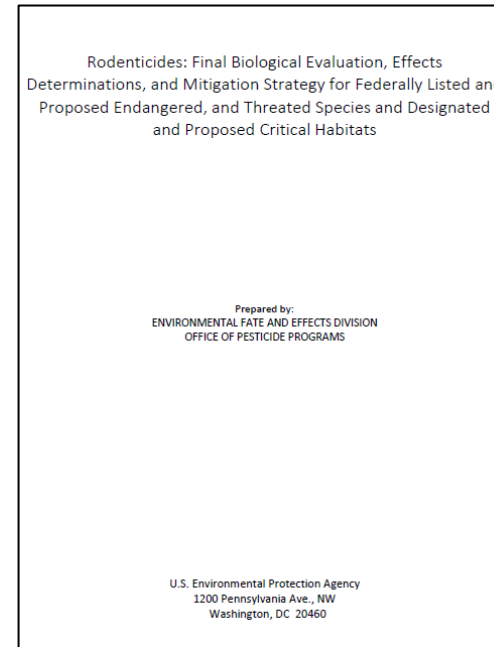
EPA's ESA Strategies



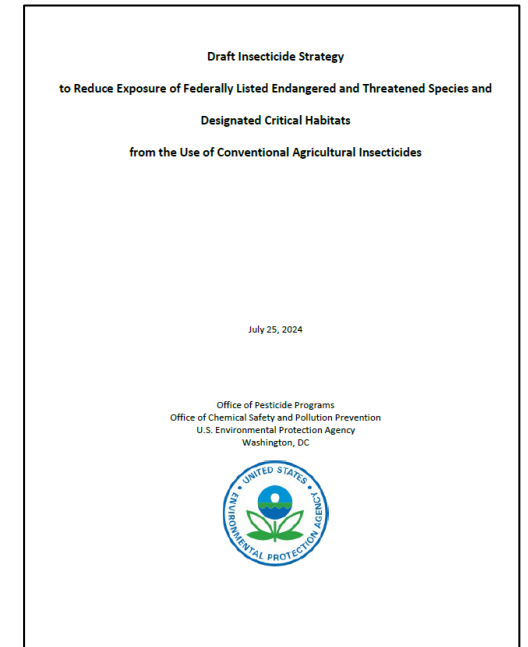
Vulnerable Species Action Plan (VSAP)
Draft: June 2023
Update 1: Nov. 2023
Action Plan: Sep. 2024



Herbicide Strategy
Draft: July 2023
Update: April 2024
Final: August 2024



Rodenticide Strategy
Draft: Dec. 2023
Final: Nov. 22, 2024



Insecticide Strategy
Draft: July 2024
Final: March 29, 2025

EPA is working on a Fungicide Strategy (Draft expected: April 2026 and Final: November 2026), a Hawaii Strategy, and exploring how to address non-ag uses

<https://www.regulations.gov/docket/EPA-HQ-OPP-2024-0299>

1) Insecticide Strategy (Final) to Reduce Exposure of Federally Listed Endangered and Threatened Species and Designated Critical Habitats from the Use of Conventional Agricultural Insecticides

<https://www.regulations.gov/document/EPA-HQ-OPP-2024-0299-0250>

2) Ecological Mitigation Support Document to Support Endangered Species Strategies Version 2.0

<https://www.regulations.gov/document/EPA-HQ-OPP-2024-0299-0249>

3) Response to Public Comments Received on the Draft Insecticide Strategy

<https://www.regulations.gov/document/EPA-HQ-OPP-2024-0299-0247>

4) Insecticide Strategy (Final) Species Overlap and Characteristics (Appendix C)

<https://www.regulations.gov/document/EPA-HQ-OPP-2024-0299-0252>

5) Spray Drift Analysis Review Report (Addenda to Data Evaluation Record for MRID 49135901)

<https://www.regulations.gov/document/EPA-HQ-OPP-2024-0299-0246>

6) Crosswalk of EPA's Ecological Mitigation Measures with USDA NRCS Conservation Practices in Support of EPA's Endangered Species Strategies Version 1.2

<https://www.regulations.gov/document/EPA-HQ-OPP-2024-0299-0251>

Products Included in the Final Insecticide Strategy:

Conventional Insecticides, Insect Growth Regulators, **Nematicides**, Miticides

Registered Use Sites:

Agricultural crop use sites in the lower 48 states

Footnote 17 on page 16: Agricultural uses include cultivated land (including orchards, vineyards, Christmas trees, row crops, specialty crops, and flooded crops) but not pasture/grass or range lands.

Application Methods:

Foliar applications (including aerial, ground, airblast, and chemigation), soil treatment, treated seed, and granular formulations

Listed Species:

More than 900 species listed by the U.S. Fish and Wildlife Service (FWS)

Adapted from Table in Docket Posting Memorandum for the Insecticide Strategy (Final): EPA-HQ-OPP-2024-0299-0248

Final Insecticide Strategy Document	Draft Insecticide Strategy Document
<p>Insecticide Strategy (Final) to Reduce Exposure of Federally Listed Endangered and Threatened Species and Designated Critical Habitats from the Use of Conventional Agricultural Insecticides ID: EPA-HQ-OPP-2024-0299-0250</p>	<p>Draft Insecticide Strategy to Reduce Exposure of Federally Listed Endangered and Threatened Species and Designated Critical Habitats from the Use of Conventional Agricultural Insecticides ID: EPA-HQ-OPP-2024-0299-0005 Posted: Jul 25, 2024</p>
<p>Insecticide Strategy (Final) Species Overlap and Characteristics (Appendix C) ID:</p>	<p>Appendix D. Listed Species Information and Overlap Analysis ID: EPA-HQ-OPP-2024-0299-0003 Posted: Jul 25, 2024</p>
<p>Response to Public Comments Received on the Draft Insecticide Strategy</p>	<p>Requests to Extend the Public Comment Period for the "Draft Insecticide Strategy to Reduce Exposure of Federally Listed Endangered and Threatened Species and Designated Critical Habitats from the Use of Conventional Agricultural Insecticides" ID: EPA-HQ-OPP-2024-0299-0022 Posted: Aug 13, 2024</p>
<p>Docket Posting Memorandum for the Insecticide Strategy</p>	<p>Memorandum to Open Docket EPA-HQ-OPP-20240299 Draft Insecticide Strategy to Reduce Exposure of Federally Listed Endangered and Threatened Species and Designated Critical Habitats from the Use of Conventional Agricultural Insecticides) for Public Access ID: EPA-HQ-OPP-2024-0299-0001 Posted: Jul 25, 2024</p>

Adapted from Table in Docket Posting Memorandum for the Insecticide Strategy (Final): EPA-HQ-OPP-2024-0299-0248

Final Insecticide Strategy Document	Draft Insecticide Strategy Document
Crosswalk of EPA’s Ecological Mitigation Measures with USDA NRCS Conservation Practices in Support of EPA’s Endangered Species Strategies Version 1.2	(No equivalent document)
Ecological Mitigation Support Document to Support Endangered Species Strategies Version 2.0	Ecological Mitigation Support Document to Support Endangered Species Strategies Version 1.0 ID: EPA-HQ-OPP-2024-0299-0006 Posted: Jul 25, 2024
Spray Drift Analysis Review Report (Addenda to Data Evaluation Record for MRID 49135901)	(No equivalent document)
(No equivalent document)	Draft Insecticide Strategy Case Study Summary and Process ID: EPA-HQ-OPP-2024-0299-0007 Posted: Jul 25, 2024
(No equivalent document)	Appendix B. Draft Insecticide Strategy Case Studies ID: EPA-HQ-OPP-2024-0299-0002 Posted: Jul 25, 2024
(No equivalent document)	Appendix C. Draft Insecticide Strategy Case Studies ID: EPA-HQ-OPP-2024-0299-0004 Posted: Jul 25, 2024

EPA did not revise the case studies for the Final Insecticide Strategy
 “...because the basic framework did not change; however, the mitigation measures available to growers and applicators have changed. Therefore, the case studies are informative, but they do not represent all aspects of the Final Strategy.”

EPA Addressed Comments on the Draft Insecticide Strategy

- Full Response to Comments is available in the IS Docket: EPA-HQ-OPP-2024-0299-0247
- Appendix A
 - Provided a summary of comments to the Draft Insecticide Strategy by Thematic Area and by Commenter

Thematic Area → Commenter ↓	Step 1	Step 2 – Spray Drift	Step 2 - Runoff	Step 3	On-field Related	Implementation	Enforcement / Compliance	Education / Outreach / Training	Conservation Programs / Specialist	Statutory Authority	Pesticide Resistance
Responsible Industry for a Sound Environment (RISE)	X				X		X				X
Corteva Agriscience			X		X						
FIFRA Endangered Species Task Force (FESTF)	X	X	X	X	X	X					X

Orientation – Life in a Final Strategy World

Table 1. Key Comparisons Between the Insecticide and Herbicide Strategies

	Direct Effects	Indirect Effects	On-field Effects
Insecticide Strategy	Considers for listed terrestrial and aquatic invertebrate species	Considers for listed animal and listed plant species that rely on invertebrates	Considers for listed terrestrial invertebrate species
Herbicide Strategy	Considers for listed terrestrial, wetland and aquatic plant species	Considers for listed animal species that depend on plant species	Did not consider for listed plant species

- EPA updated the Mitigation Menu website which is applicable to all pesticides that reference the website regardless of class (herbicide, insecticide).
- EPA is refining the maps that EPA plans to use when identifying geographically specific locations where mitigations may be needed for a given listed species, **Pesticide Use Limitation Areas (PULAs)**.
 - EPA published an approach for non-government entities to create “core maps” for PULAs for ESA-species under USFWS jurisdiction [Process EPA Uses to Develop Core Maps for Pesticide Use Limitation Areas | US EPA](#).

Pesticide Use Limitation Areas

Core Map

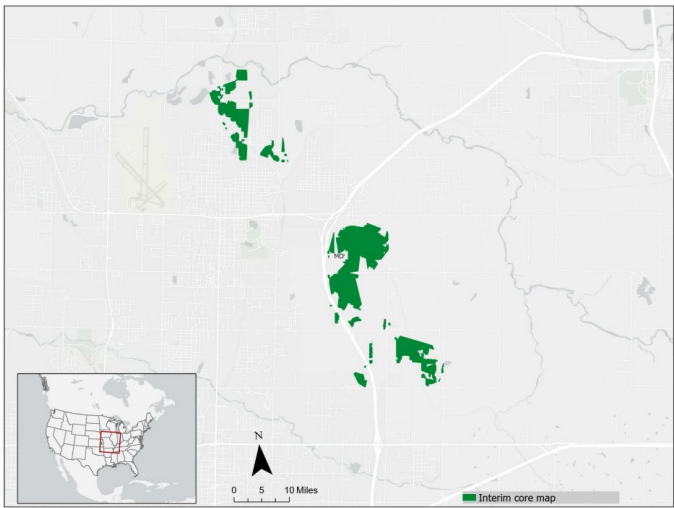
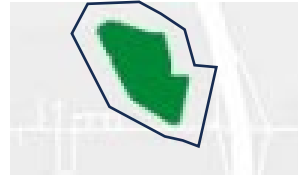


Figure A3-3. Southwest Missouri

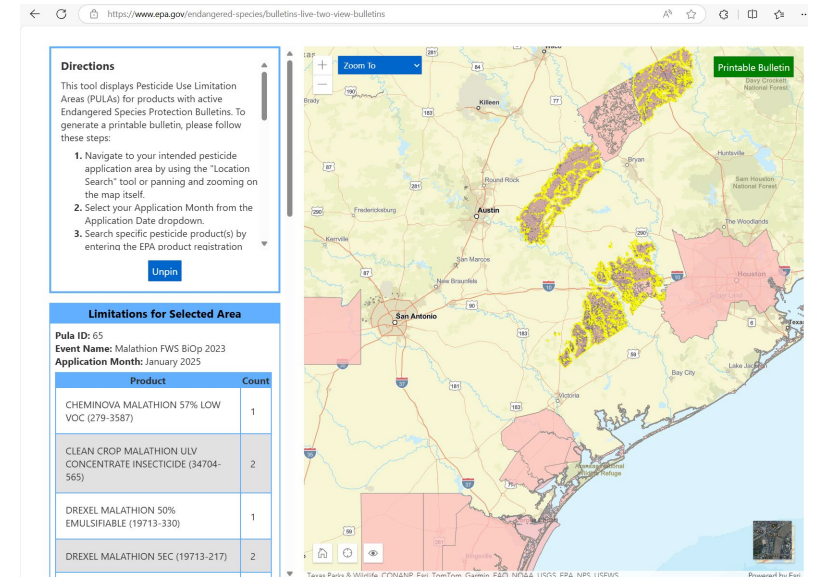
[US EPA - Interim Core Map Documentation for Mead's Milkweed](#)

“Buffer”



“Buffer” is a pesticide-specific distance added to the Core Map to account for pesticide movement. This is identified by EPA during a registration action.

Pesticide Use Limitation Area (PULA)



The Core Map development process is focused on **identifying areas that need to be conserved for a listed species and/or designated critical habitat that are relevant to pesticide mitigations.** “Buffer” distance added to Core Map is pesticide specific and is not a part of this process.

Pesticide Use Limitation Areas

PULA

Label directions

Bulletin

Directions

This tool displays Pesticide Use Limitation Areas (PULAs) for products with active Endangered Species Protection Bulletins. To generate a printable bulletin, please follow these steps:

1. Navigate to your intended pesticide application area by using the "Location Search" tool or panning and zooming on the map itself.
2. Select your Application Month from the Application Date dropdown.
3. Search specific pesticide product(s) by entering the EPA product registration

Limitations for Selected Area

Pula ID: 65
 Event Name: Malathion FWS BiOp 2023
 Application Month: January 2025

Product	Count
CHEMINOVA MALATHION 57% LOW VOC (279-3587)	1
CLEAN CROP MALATHION ULV CONCENTRATE INSECTICIDE (34704-565)	2
DREXEL MALATHION 50% EMULSIFIABLE (19713-330)	1
DREXEL MALATHION SEC (19713-217)	2



Code	Limitation
MA1	Between January and June, do not use within 50 ft (ground application) or 100 ft (aerial application) from the edge of habitat AND use only when steady wind of at least 3 mph is blowing away from habitat. Habitat: Pine or oak woodlands, including those with understory shrubs, and grasslands, including savannas, prairie, and rangeland.
MM1	Where feasible, avoid application. If avoidance is not feasible or impairs the ability of the mosquito control district or agency to protect the public's health and welfare, coordinate with the local FWS Ecological Services field offices to determine appropriate measures to ensure the proposed application is likely to have no more than minor effects on the species (FWS points of contact are available through the Information, Planning, and Consultation (IPaC) website https://ecos.fws.gov/ipac/). The applicator must retain documentation of the technical assistance and the agreed upon species-specific measures that were implemented.



Endangered Species Protection Bulletin

Application Month: January 2025
Product: All products with limitations in selected area

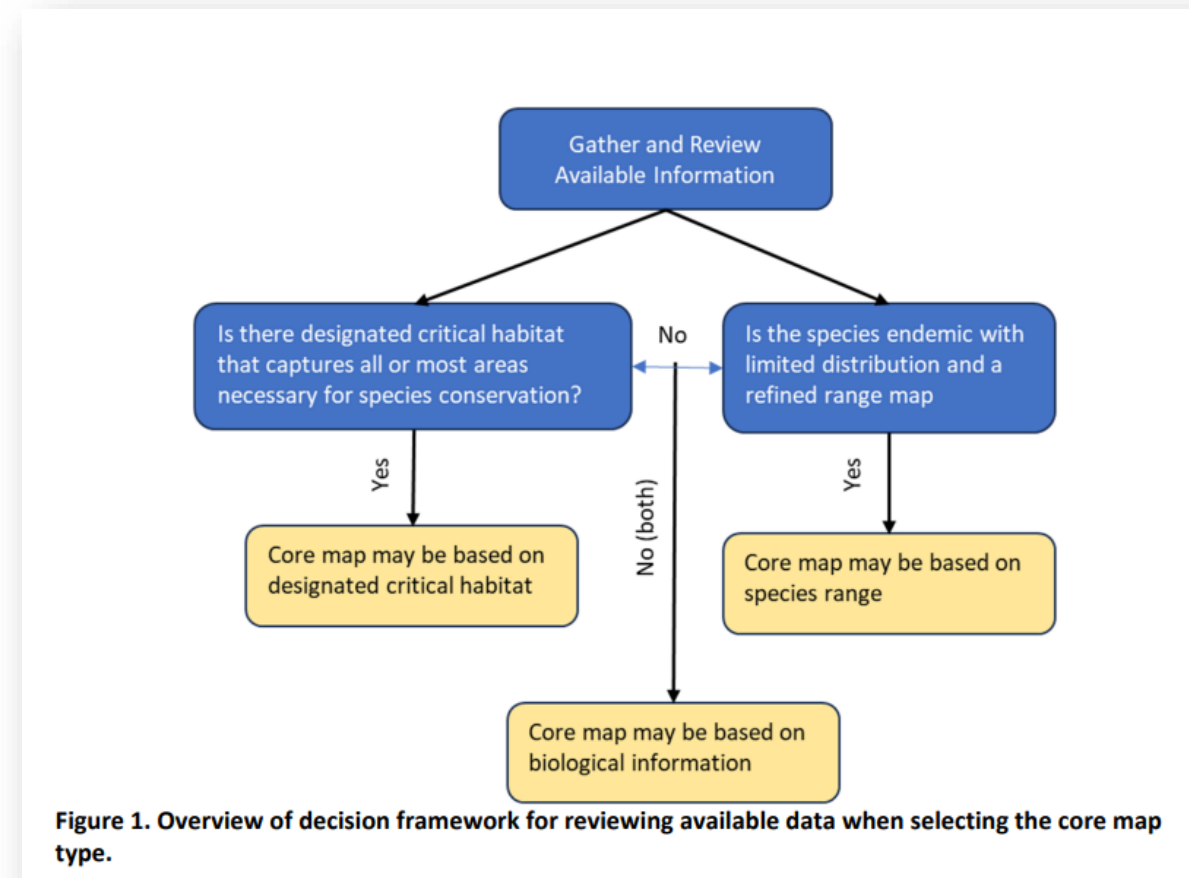
- 1 Areas where pesticide use must be limited are identified on the map. A legend is located beside the map to help pinpoint these locations.
- 2 Look below at the Pesticide Use Limitation Summary Table. This table lists the user selected Active Ingredient(s) (AIs) or Product(s) with pesticide use limitations on the printed map. Locate the Active Ingredient (AI) or Product you intend to apply in this table and identify the code in the last column. This code indicates the specific limitation associated with that AI or Product. A limitation description for each code can be found below in the Codes and Limitations Table. If multiple Pesticide Use Limitation Areas (PULAs) are visible on the map, these tables provide information for the highlighted PULA.
 If you are applying a pesticide that contains more than one Active Ingredient, or multiple Products, then multiple codes may apply. Follow the limitations for all codes when using this pesticide.

Label directions and final ESA Bulletins are pesticide-specific and not part of the “core map” development process.

Overview of Core Map Development Process

Involves:

1. compile available information for a species from FWS reports;
2. identify the type of core map most appropriate to represent the areas necessary to conserve the species and relevant to pesticide mitigations;
3. develop the core map for the species;
4. create documentation that describes the core map selection and development;
5. submit core map and documentation for review by EPA; and
6. EPA conducts QA/QC, map becomes “interim” once reviewed and available for use by EPA in PULAs. FWS has a role in finalization of core maps



Core Mapping Effort

Definition of status terms:

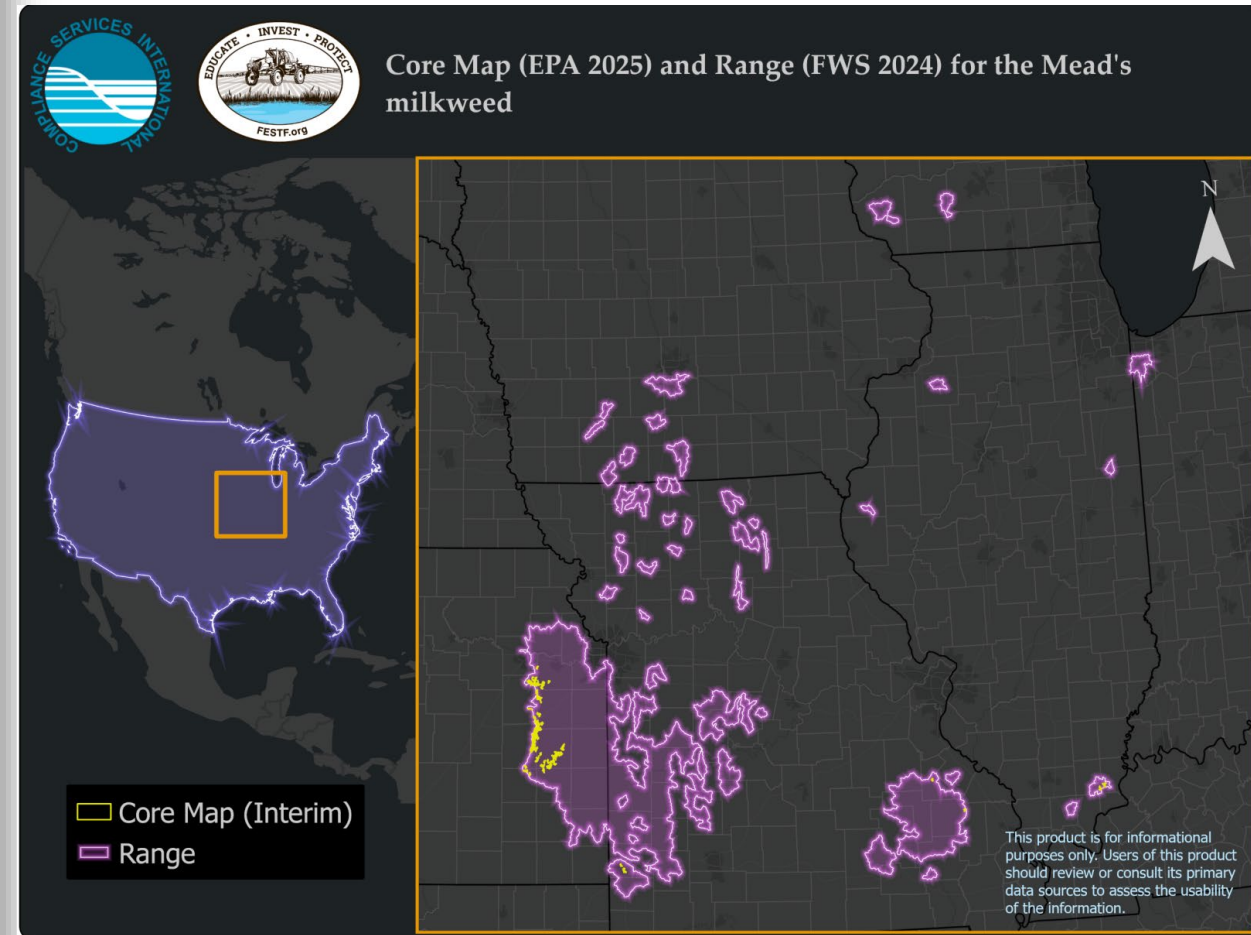
- Available: available for check out.
- Checked Out: assigned to a developer.
- Under review: QA/QC review by EPA.
- Interim: QA/QC of the core map is complete and deemed sufficient for use in PULAs but has not been review by FWS species experts.
- Final: core map has been reviewed by FWS species experts.

Show entries

Search:

EntityID	Common Name	Scientific Name	EPA Species Group	ESA Workplan Group	Status	Documentation for Completed species
58	Buena Vista Lake ornate Shrew	Sorex ornatus relictus	Mammals	Vulnerable Species	Interim	Buena Vista Lake ornate Shrew Documentation (pdf) (3.37 MB)
642	Jesup's milk-vetch	Astragalus robbinsii var. jesupii	Plants	Herbicide Strategy	Interim	Jesup's milk-vetch Documentation (pdf) (634.35 KB)
531	La Graciosa thistle	Cirsium loncholepis	Plants	Herbicide Strategy	Interim	La Graciosa thistle Documentation (pdf) (1 MB)
675	Short-leaved rosemary	Conradina brevifolia	Plants	Vulnerable Species	Interim	Lake Wales Ridge Plants Documentation 1-17-25 (pdf) (7.7 MB)
695	Scrub mint	Dicerandra frutescens	Plants	Vulnerable Species	Interim	Lake Wales Ridge Plants Documentation 1-17-25 (pdf) (7.7 MB)
740	Highlands scrub hypericum	Hypericum cumulicola	Plants	Vulnerable Species	Interim	Lake Wales Ridge Plants Documentation 1-17-25 (pdf) (7.7 MB)

Process EPA Uses to Develop Core Maps for Pesticide Use Limitation Areas | US EPA

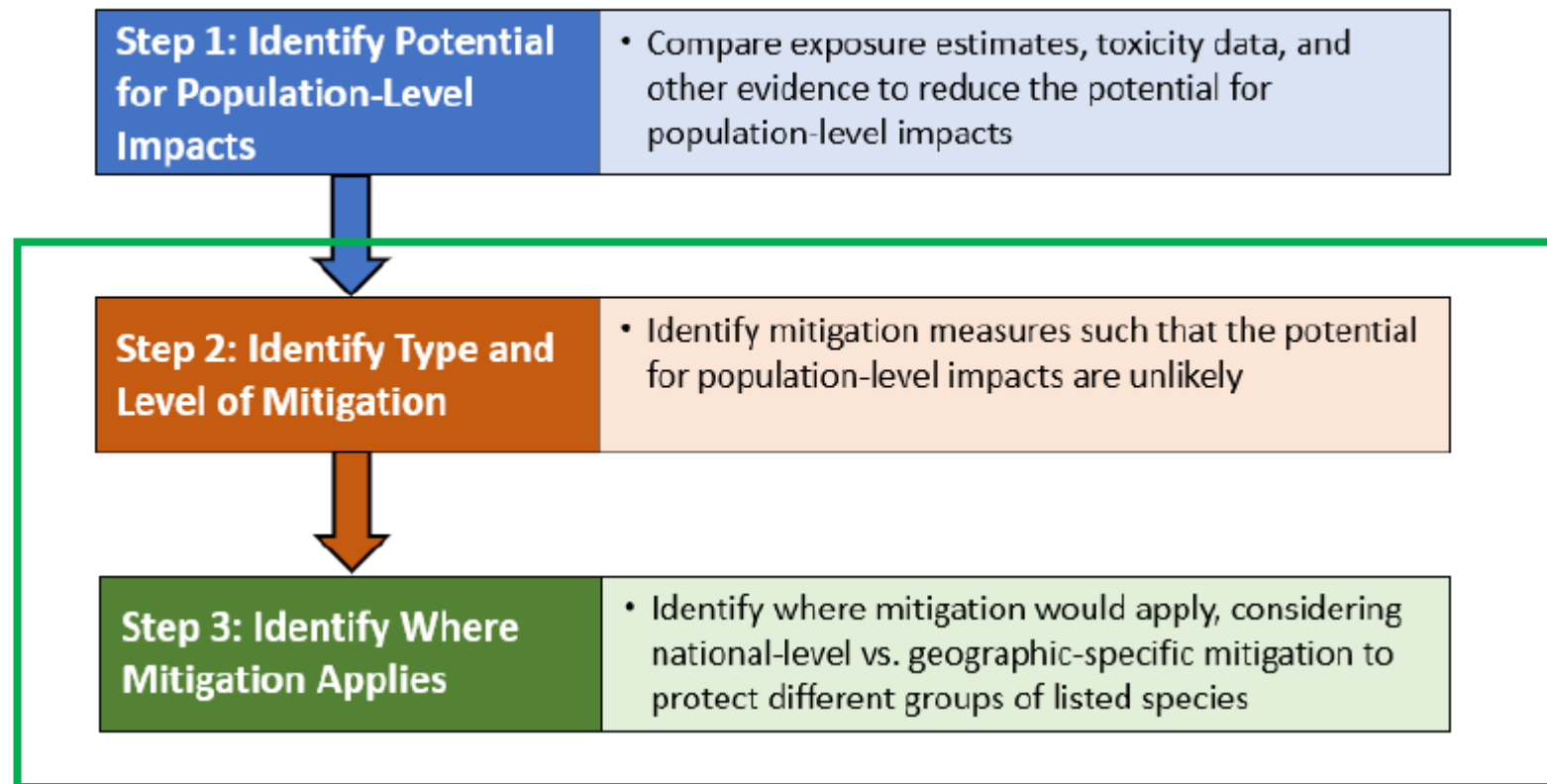


Core Mapping Effort Progress to Date

- EPA is prioritizing map development for the Vulnerable Species Action Plan, Herbicide and Insecticide Strategies, and certain new active ingredient registration actions.
- “At the time EPA prepared this document, the Agency is aware of maps being developed for approximately 250 species, 50 of which are included in the Insecticide Strategy” (pg. 94 of Final Insecticide Strategy)
- Various organizations are involved in developing core maps, including:
 - Pesticide registrants, task forces, and trade groups
 - Commodity organizations
 - Center for Biological Diversity
 - Compliance Services International
 - Others?

Final Insecticide Strategy Framework

The process is the same as the framework outlined in the *Draft Insecticide Strategy*.



Application Methods and Relevant Exposure Pathways

Table 4. Insecticide Application Methods and Relevant Exposure Pathways for this Strategy

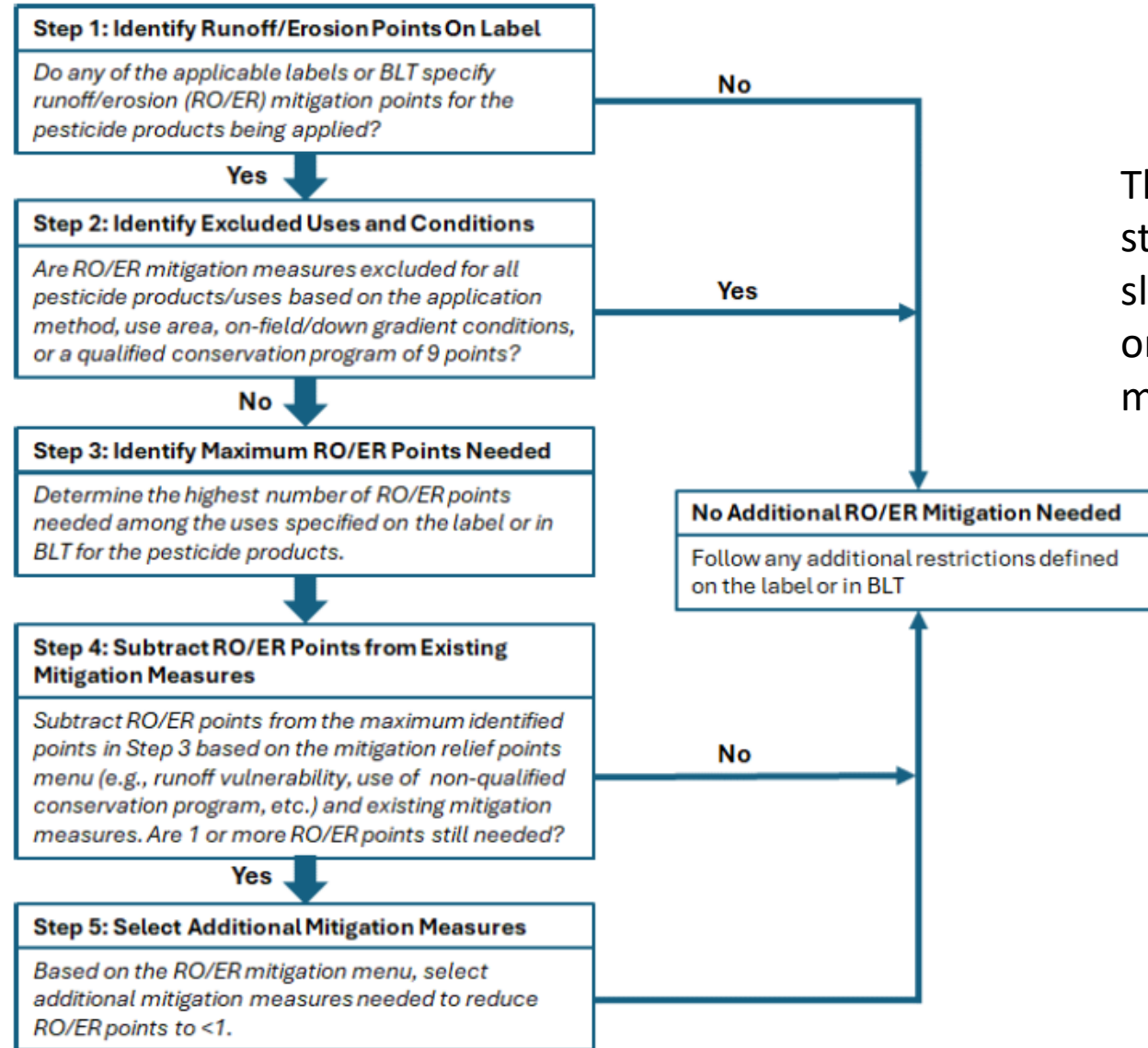
Application Method	Spray Drift	Runoff
Foliar Applications ¹	Yes	Yes
Soil Treatment	Yes ²	Yes
Treated Seed	No	Yes ³
Granular formulations	No	Yes

¹ Foliar applications include those made by aerial broadcast spray, ground broadcast spray, airblast, and chemigation.

² As described in the Ecological Mitigation Support Document, soil treatment with certain equipment (*e.g.*, drip tape, in-furrow sprays) are not expected to result in meaningful exposures of spray drift that would have the potential to result in population-level impacts.

³ The reduced potential for transport in runoff of treated seeds (and any incorporated/buried application method) is currently assessed in EPA aquatic exposure modeling by accounting for burial depth of treated seeds and reduced availability of residues in runoff at the soil surface. Runoff MoDs for foliar and soil treatments will typically be greater than those for treated seeds. However, EPA may identify mitigation needs for these uses when MoDs indicate the need for at least low levels of mitigation.

Runoff and Erosion (RO/ER) Mitigation



The steps outlined in the strategy document are slightly different than the ones on EPA’s mitigation menu website.

Figure 11. Illustrative Process Summary for Identifying Runoff/Erosion Mitigation Points and Associated Mitigation Measures Required for Labeled Insecticide Uses

https://www.epa.gov/pesticides/mitigation-menu

How do I know if Runoff/Erosion Mitigation is Required?

Pesticide users will need to plan their pesticide applications in advance to determine whether they are subject to runoff/erosion mitigation. These mitigation requirements will appear on product labels and/or Bulletins for the product in the [Bulletins Live! Two](#) System. If a label directs users to check Bulletins, they must do so to determine if additional mitigation requirements apply to their farm/field(s), beyond the requirements that appear on the label.

Pesticide applicators need to follow the steps below to determine which runoff/erosion mitigation measures to consider and employ before using a pesticide for their operation each year.

Step 1: Plan for the Growing Season/Year

At the field or farm level, what crops are being grown and what pesticide products are expected to be used throughout the entire growing season/year?

Step 2: Identify Runoff/Erosion Points to Achieve

Of these pesticide products, do any product labels or Bulletins specify that runoff/erosion mitigation points need to be achieved?

If yes, move to **Step 3**. If no, no additional runoff/erosion mitigation is required. If the answer is "yes" to any one of the following questions:

- Does the treated farm/field have a [perimeter berm](#) at the time of application and throughout the cropping season?
- Is there an [irrigation tailwater return system](#) in place?

- [USDA's Web Soil Survey tool to determine soil texture](#)
- [EPA's ESA Workplan Update](#)
- [Herbicide Strategy Docket](#)
- [Insecticide Strategy Docket](#)
- [Vulnerable Species Action Plan Docket](#)
- [Mitigation Menu Website Archives](#)
- [Mitigation Menu Descriptions](#)

Mitigation Menu Website

Excel Spreadsheet and User Guide

EPA PESTICIDE RUNOFF/EROSION MITIGATION POINTS CALCULATION WORKSHEET

When the pesticide product label or endangered species protection bulletin, found on the Bulletins Live! Two website¹, instructs a user to achieve runoff or erosion points, this worksheet can be used to assist the user in determining whether the necessary level of mitigation has been met before applying a pesticide product. This worksheet can be used to track the number of points a user has achieved in lieu of the Microsoft Excel calculator². EPA has also developed for this purpose. The calculator and descriptions of mitigation measures are found on EPA's Mitigation Menu Website. This worksheet can be found online at <https://www.epa.gov/system/files/documents/2023-04/runoff-mitigation-worksheet-april-2023.pdf>

You may not have to implement any additional runoff/erosion measures for applications if the answer is "yes" to any one bullet in any one of the following questions:	Yes	No
Does the application area use any of the following systems that capture runoff and discharge? <ul style="list-style-type: none"> • Perimeter berm system (permanent berms, elevated border/perimeter) present at the time of application and throughout the cropping season • Irrigation tailwater return system • Subsurface or tile drainage with controlled outlet 	No further runoff/erosion mitigation needed	Continue calculating mitigation points below
Does the application use any of the following application methods or parameters? <ul style="list-style-type: none"> • Soil injection • Tree injection • Chemigation applied to the subsurface and under non-permeable plastic mulch • Spot treatment (<1000 square feet) • Less than 1/10 acre treated 		
Are managed areas the only landscapes for at least 1000 feet down-gradient from the application area? Managed areas may include: <ul style="list-style-type: none"> • Agricultural fields, including untreated portions of the treated field • Roads, paved or gravel surfaces, mowed grassy areas adjacent to field, and areas of bare ground • Buildings and their perimeters, silos, or man-made structures • Vegetative filter strips, field borders, hedgerows, Conservation Reserve Program lands, and other areas for spray drift or runoff mitigation 		

not connected to adjacent water bodies

ation (Optional Information – Does not Impact Calculation)

[#-species/bulletins-live-two-view-bulletins](#)
[my/files/documents/2024-10/runoff-mitigation-calculator-tool.xlsx](#)

piece of land that is managed as a single unit in production or in preparation for based upon different crops (e.g., vegetables and leafy greens) or sub-divided based on).

Version 2 | April 2025

Field Characteristics			
Category	Hyperlink to EPA Description	Select Value	Number of points
Field with Slope ≤3% (naturally low slope or flat fields; flat laser leveled fields)	Hyperlink	make selection	0
Predominantly Sandy Soils (fields with 10-20% clay and 50-90% sand [includes loam, silt loam, or silt soil] without a restrictive layer that impedes the movement of water through the soil [also described as Hydrologic Soil Group B]). This option can only be used if the product label does not prohibit application on sandy soils.	Hyperlink	make selection	0
In-Field Mitigation Measures			
Category	Hyperlink to EPA Description	Select Value	Number of points
Conservation Tillage (no-till, perennial crop (e.g., orchards that are not tilled), reduced tillage, strip tillage, ridge tillage, mulch tillage)	Hyperlink	make selection	0
Reservoir Tillage (reservoir tillage, furrow diking, basin tillage)	Hyperlink	make selection	0
Contour Farming (contour farming, contour tillage, contour orchard and perennial crops)	Hyperlink	make selection	0
Vegetative Strips – In-Field (inter-row vegetated strips, strip cropping or intercropping, alley cropping, prairie strips, contour buffer strips, contour strip cropping, vegetative barrier (occurring in a contoured field))	Hyperlink	make selection	0
Terrace Farming (terrace farming, terracing, field terracing)	Hyperlink	make selection	0
Cover Crop or Continuous Ground Cover (cover crop, double cropping, relay cropping)	Hyperlink	make selection	0
Irrigation Water Management (use of soil moisture sensors/evapotranspiration meters with center pivots & sprinklers, above ground drip tape, drip emitters, micro-sprinklers, use of below tarp irrigation, below ground drip tape, flood or furrow irrigation with computerized hole	Hyperlink	make selection	0

PDF Worksheet

Step 2: Identify Excluded Uses and Conditions

Are RO/ER mitigation measures excluded for all pesticide products/uses based on the application method, use area, on-field/down gradient conditions, or a qualified conservation program of 9 points?

Mitigation Measures That In And Of Themselves Reduce Exposure Such That Potential Population-level Impacts Are Unlikely

OR Determine Which Applications need to Achieve Points

Systems with Permanent Berms



Seepage Irrigation Systems; Source: <https://blogs.cornell.edu/easternbroccoli-project>



Cranberry bogs; Source: <https://rhodeislandcurrent.com/2023/11/21/re-wilding-massachusetts-cranberry-bogs/>



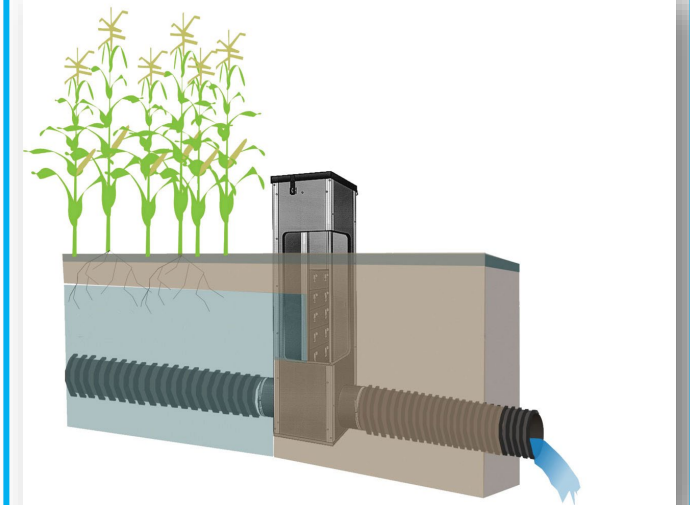
Rice paddies; Source: <https://www.usgs.gov/media/images/rice-fields-mississippi-alluvial-plain>

Irrigation Tailwater Return Systems



Source: <https://www.usda.gov/media/blog/2012/11/15/nrcs-conservation-efforts-benefit-environment-boosts-economy-miss-delta-town>

Subsurface Tile-drains, *with* Controlled Drainage Structures



<https://www.no-tillfarmer.com/blogs/1-covering-no-till/post/13541-good-drainage-essential-for-no-till-success>

Step 2: Identify Excluded Uses and Conditions

Are RO/ER mitigation measures excluded for all pesticide products/uses based on the application method, use area, on-field/down gradient conditions, or a qualified conservation program of 9 points?

Mitigation Measures That In And Of Themselves Reduce Exposure Such That Potential Population-level Impacts Are Unlikely

OR Applications that do not need to Achieve Points

- tree injection;
- chemigation applied to the subsurface and under impermeable plastic mulch;
- soil injection;
- spot treatment (<1,000 square feet being treated), e.g., backpack, handheld, or specialized application equipment, and
- Treated farm/field less than 1/10 acre



Tree injection; Source:
<https://edis.ifas.ufl.edu/publication/PI274>

Step 2: Identify Excluded Uses and Conditions

Are RO/ER mitigation measures excluded for all pesticide products/uses based on the application method, use area, on-field/down gradient conditions, or a qualified conservation program of 9 points?

Managed Areas Down-gradient from Treated Fields

Table 16. Downslope Managed Areas within 1000 Feet Downslope of a Treated Area Where Runoff/Erosion Mitigations Would Not Be Needed

- a. Agricultural fields, pastures, forage fields, and private rangelands, including untreated portions of the treated field;
- b. 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;
- c. Buildings and their perimeters, silos, or other man-made structures with walls and/or roof;
- d. 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;
- e. 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;
- f. Conservation Reserve Program (CRP)¹ and Agricultural Conservation Easement Program (ACEP) lands;
- g. 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.

¹ Growers and other applicators may need to ensure that pesticide use does not cause degradation of the CRP habitat.

- EPA is currently exploring the possibility of **describing protected areas or habitat**, as opposed (or in addition) to managed areas that can be included when examining the area within 1,000 feet downslope of the treated field.
- **Labeling language listing areas to protect** instead of listing areas to include in the downslope area may help simplify the label compliance process for growers.
- EPA plans to **continue to improve upon and clarify this language** and solicit feedback through its public comment processes through the registration and registration review process.

Update to Managed Land Definition for Agriculture

- a. Agricultural fields, pastures, forage fields, and private rangelands, including untreated portions of the treated field;
- b. 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;
- c. Buildings and their perimeters, silos, or other man-made structures with walls and/or roof;
- d. 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;
- e. 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;
- f. Conservation Reserve Program (CRP)¹ and Agricultural Conservation Easement Program (ACEP) lands;
- g. 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.

Step 4: Subtract RO/ER Points from Existing Mitigation Measures

Subtract RO/ER points from the maximum identified points in Step 3 based on the mitigation relief points menu (e.g., runoff vulnerability, use of non-qualified conservation program, etc.) and existing mitigation measures. Are 1 or more RO/ER points still needed?

Step 4: Subtract Runoff/Erosion Points from Existing Mitigation Measures

Subtract RP/ER points from the maximum identified points based on the **mitigation relief points menu** and **existing mitigation measures**.

Step 4: Subtract RO/ER Points from Existing Mitigation Measures

Subtract RO/ER points from the maximum identified points in Step 3 based on the mitigation relief points menu (e.g., runoff vulnerability, use of non-qualified conservation program, etc.) and existing mitigation measures. Are 1 or more RO/ER points still needed?

Mitigation Relief Points

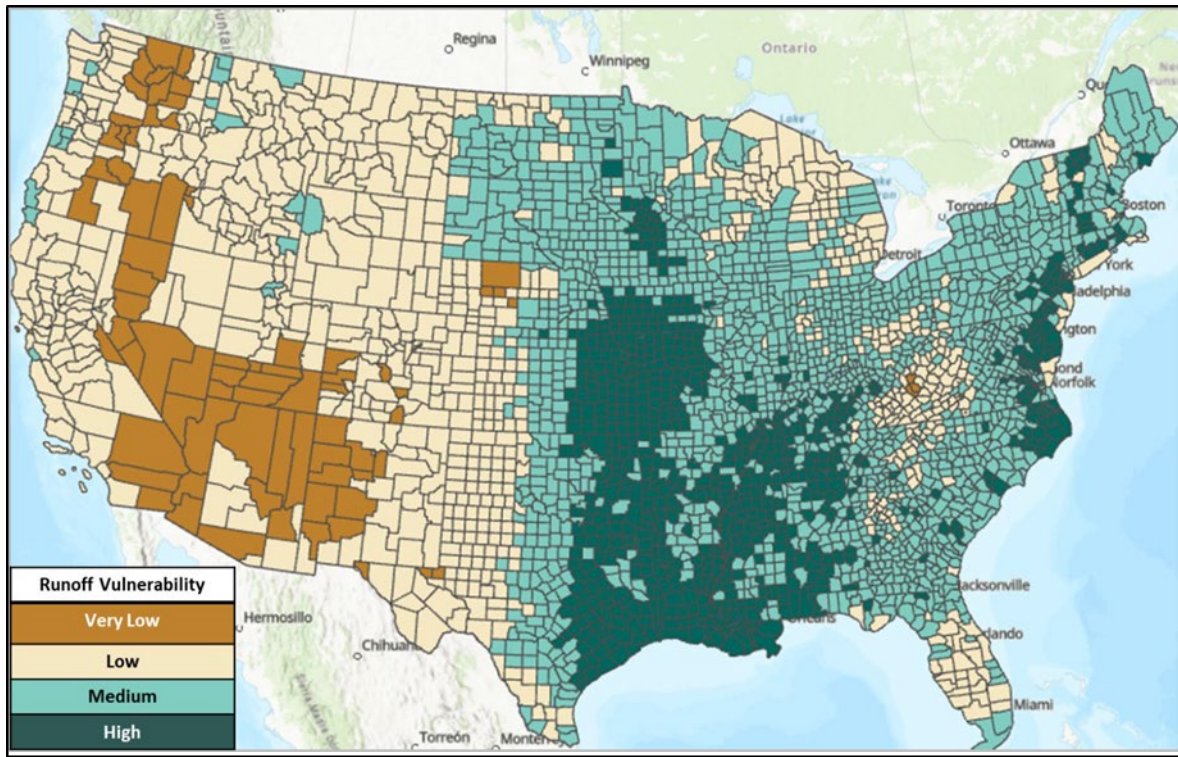


Figure 9. Pesticide runoff vulnerability at the county level (IS p. 68)

Mitigation Relief	Mitigation Relief Qualifying Options	Points
Runoff Vulnerability		
County-based relief [see runoff vulnerability map by county and county list]	Very Low	6
	Low	3
	Medium	2
	High	0

County specific – does not change with product, application method, or use site.

Step 4: Subtract RO/ER Points from Existing Mitigation Measures

Subtract RO/ER points from the maximum identified points in Step 3 based on the mitigation relief points menu (e.g., runoff vulnerability, use of non-qualified conservation program, etc.) and existing mitigation measures. Are 1 or more RO/ER points still needed?

Mitigation Relief Points

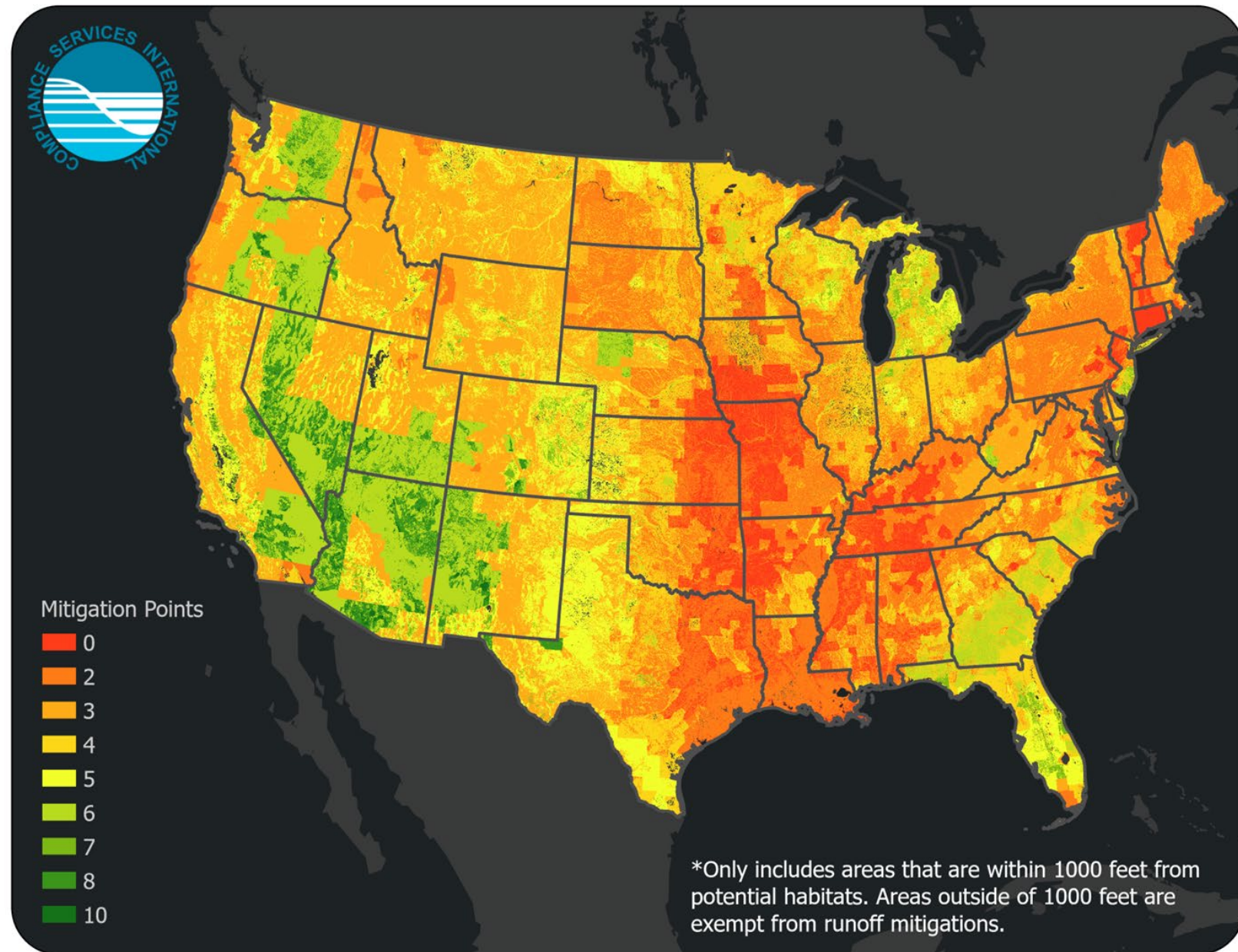
Mitigatoin Relief	Mitigation Relief Qualifying Options	Efficacy Classification*	Points
Field Characteristics			
Field with slope \leq 3%	Field slope \leq 3% (naturally low slope or flat fields; flat laser leveled fields)	Medium	2
Predominantly Sandy Soils This option can only be used if the product label does not prohibit application on sandy soils.	Fields with 10-20% clay and 50-90% sand typically loamy sand and sandy loam but can include loam, silt loam, silt or sandy clay loam soils if well aggregated, of low bulk density, or contain >35% rock fragments) without a restrictive layer that impedes the movement of water through the soil impedes the movement of water through the soil (HSG B soils)	Medium	2
	Fields with \leq 10% clay and \geq 90% sand (typically sand but can include loamy sand, sandy loam, loam, or silt loam soils if well aggregated, of low bulk density, or contain >35% rock fragments) without a restrictive layer that impedes the movement of water through the soil (HSG A soils)	High	3

Multiple field characteristics may apply to an individual field

Runoff and Erosion: Mitigation Relief

This map has not been updated to reflect the changes from the Insecticide Strategy but gives an overall idea of potential mitigation relief points.

Thank you to Chris Hassinger (BASF) and David Campana (CSI)!
-Presented at ACS AGRO



Step 4: Subtract RO/ER Points from Existing Mitigation Measures

Subtract RO/ER points from the maximum identified points in Step 3 based on the mitigation relief points menu (e.g., runoff vulnerability, use of non-qualified conservation program, etc.) and existing mitigation measures. Are 1 or more RO/ER points still needed?

Mitigation Relief Points

Mitigation Relief	Mitigation Relief Qualifying Options	Points
Other Mitigation Relief Options		
Mitigation Tracking	Documented at the field or farm level, using paper or electronic format	1
Working with and following recommendations from a technical specialist	<p>The technical specialist must meet the following characteristics:</p> <ul style="list-style-type: none"> • Have technical training, education and/or experience in an agricultural discipline, water or soil conservation, or other relevant disciplines that provides training and practice in the area of runoff or erosion mitigation technologies/measures; and • Participate in continued education or training in the area of expertise which should include runoff and erosion control; and • Have experience advising on conservation measures designed to develop site specific runoff and erosion plans that include mitigation measures (described on the mitigation menu website) 	1
<p>OR</p> <p>Participating in a conservation program (non-qualified)</p> <p>Select one; points are not additive for doing both</p>	<p>The conservation program must meet the following characteristics:</p> <ul style="list-style-type: none"> • Provide advice from individuals who meet the same characteristics provided above for technical specialists; and • Provide site-specific guidance tailored to the grower/applicator’s crop and/or location; and • Focus on reducing or managing runoff and/or erosion (including for example, soil loss, soil conservation, water quality protection) from agricultural fields or other pesticide use sites; and • Provide documentation of program enrollment for the program enrollee. This documentation does not need to be provided to EPA; and • Include verification of implementation of the recommended measures or activities (measures were established and maintained). Verification can be done through the conservation program and provided to the program enrollee. Verification is not required to be submitted to EPA. <p>Conservation programs will be 2 points until they have been designated by EPA as an EPA-Qualified Conservation Program.</p>	2

Step 4: Subtract RO/ER Points from Existing Mitigation Measures

Subtract RO/ER points from the maximum identified points in Step 3 based on the mitigation relief points menu (e.g., runoff vulnerability, use of non-qualified conservation program, etc.) and existing mitigation measures. Are 1 or more RO/ER points still needed?

Mitigation Relief Points

Mitigation Relief	Mitigation Relief Qualifying Options	Points
Other Mitigation Relief Options		
Participating in an EPA-Qualified Conservation Program	<p>The conservation program must meet the characteristics described for non-qualified conservation programs and meet the maximum of 9 points.</p> <p>Additionally:</p> <p>Operations that consist of multiple distinct "farms" that consist of multiple fields with similar runoff/erosion concerns, need to have a program implemented on each farm, and</p> <p>Programs would achieve a minimum of 9 points at the time of application, which would include 2 points for being part of a conservation program, and</p> <p>A program would maintain the above elements once it has been "qualified."</p> <p>The rationale and additional characteristics that are necessary to support designation as an EPA-Qualified Conservation Program are described in more detail in the Final Insecticide Strategy and Ecological Mitigation Support Document V.2 1.</p>	9
	<p>EPA’s first designated “EPA-Qualified Conservation Program”</p> <p>USDA-Natural Resources Conservation Service’s (NRCS) Environmental Quality Incentives Program (EQIP), when incorporating NRCS Conservation Program Standard (CPS) 595 Pest Management Conservation System with the “Additional Criteria” for water quality in the development of the conservation plan, and implements the recommended practices identified in the conservation plan before or at the time of pesticide application</p>	

Participating in an **EPA-Qualified** Conservation Program

Continued work to develop a process for identifying and providing lists of qualified programs/external parties

EPA will be developing processes to identify, evaluate, and communicate “EPA-Qualified Conservation Programs” to the public. EPA recognizes that it needs to have a system in place to qualify programs/parties to ensure the programs/parties will provide the necessary level of protection. In order to develop those process, EPA will continue discussions with federal partners, state lead agencies, and other stakeholders concerning these efforts and will also seek comment, through Paperwork Reduction Act (PRA) obligations, on any necessary information collections. EPA will engage with stakeholders to ensure that qualified programs are identified. EPA will create a website associated with EPA’s mitigation menu website that will house a list of the EPA-Qualified Conservation Programs. In the interim, conservation programs will be 2 mitigation relief points until they have been designated by EPA as an EPA-Qualified Conservation Program.

- We understand that EPA intends to have more information available later in 2025 about this process.
- This is a big opportunity to give growers credit for participating in existing – or to-be-developed – conservation programs.

Step 4: Subtract RO/ER Points from Existing Mitigation Measures

Subtract RO/ER points from the maximum identified points in Step 3 based on the mitigation relief points menu (e.g., runoff vulnerability, use of non-qualified conservation program, etc.) and existing mitigation measures. Are 1 or more RO/ER points still needed?

Existing Mitigation Measures

Mitigation Measure Title	Conditions that Qualify	Efficacy Classification	Points
Application Parameters			
Reduction in Pesticide Application Rate	Any application 10% to <30% less than the maximum labeled annual application rate	Low	1
	Any application 30% to <60% less than the maximum labeled annual application rate	Medium	2
	Any application \geq 60% less than the maximum labeled annual application rate	High	3
Reduction in Proportion of Field Treated	10 to <30% of Field Area not treated (Banded application, partial treatment, precision sprayers)	Low	2
	30 to <60% of Field Area not treated (Banded application, partial treatment, precision sprayers)	Medium	3
	\geq 60% of Field Area not treated (Banded application, partial treatment, precision sprayers)	High	4
Soil incorporation	Watering-in or mechanical incorporation before runoff producing rain event	Low	1

Step 4: Subtract RO/ER Points from Existing Mitigation Measures

Subtract RO/ER points from the maximum identified points in Step 3 based on the mitigation relief points menu (e.g., runoff vulnerability, use of non-qualified conservation program, etc.) and existing mitigation measures. Are 1 or more RO/ER points still needed?

Existing Mitigation Measures

Mitigation Measure Title	Conditions that Qualify	Efficacy Classification	Points
In-Field Mitigation Measures			
Conservation Tillage	Reduced tillage, mulch tillage, ridge tillage	Medium	2
	No-till	High	3
Reservoir Tillage	Reservoir tillage, furrow diking, basin tillage	High	3
Contour Farming	Contour farming, contour tillage, contour orchard and perennial crops	Medium	2
In-field Vegetative Strips	Inter-row vegetated strips, strip cropping, alley cropping, prairie strips, contour buffer strips, contour strip cropping, prairie strip, alley cropping, vegetative barrier (occurring in a contoured field)	Medium	2
Terrace Farming	Terrace farming, terracing, field terracing	Medium	2

Multiple in-field mitigation measures may apply to an individual field

Step 4: Subtract RO/ER Points from Existing Mitigation Measures

Subtract RO/ER points from the maximum identified points in Step 3 based on the mitigation relief points menu (e.g., runoff vulnerability, use of non-qualified conservation program, etc.) and existing mitigation measures. Are 1 or more RO/ER points still needed?

Existing Mitigation Measures

Mitigation Measure Title	Conditions that Qualify	Efficacy Classification	Points
In-Field Mitigation Measures			
Cover Crop/Continuous Ground Cover	Cover crop, double cropping, relay cropping	Low (Tillage used)	1
		Medium (No till, short term)	2
		High (No till, long term)	3
Irrigation Water Management	Use of soil moisture sensors/evapotranspiration meters with center pivots & sprinklers; above ground drip tape, drip emitters; micro-sprinklers; computerized hole selection & surge values for furrow irrigation	Medium	2
	Below tarp irrigation, below ground drip tape; dry farming, non-irrigated lands	High	3
Anionic Polyacrylamide (PAM)	Use of water-soluble formulations of anionic polyacrylamide in irrigation water	Medium	2
Mulching with Natural and Artificial Materials	Mulching with artificial materials	Low	1
	Mulching with natural materials	High	3
Erosion Barriers	Wattles, Silt Fences	Medium	2

Step 4: Subtract RO/ER Points from Existing Mitigation Measures

Subtract RO/ER points from the maximum identified points in Step 3 based on the mitigation relief points menu (e.g., runoff vulnerability, use of non-qualified conservation program, etc.) and existing mitigation measures. Are 1 or more RO/ER points still needed?

Existing Mitigation Measures

Mitigation Measure Title	Conditions that Qualify	Efficacy Classification	Points
Adjacent to the Field Mitigations			
Grassed Waterway	Grassed waterway	Medium	2
Vegetative Filter Strips (VFS) – Adjacent to the Field	Vegetative barrier, field border 20 to <30 ft	Low	1
	Vegetative barrier, field border 30 to 60 ft	Medium	2
	Vegetative barrier, field border >60 ft	High	3
Vegetated Ditch	Vegetated ditch	Low	1
Riparian Area	Riparian forest buffer, riparian herbaceous cover 20 to <30 ft	Low	1
	Riparian forest buffer, riparian herbaceous cover 30 to <60 ft	Medium	2
	Riparian forest buffer, riparian herbaceous cover <u>≥</u> 60 ft	High	3

Adjacent to the field mitigations should be located downgradient from a treated field to effectively reduce pesticide exposure in runoff and erosion.

Step 4: Subtract RO/ER Points from Existing Mitigation Measures

Subtract RO/ER points from the maximum identified points in Step 3 based on the mitigation relief points menu (e.g., runoff vulnerability, use of non-qualified conservation program, etc.) and existing mitigation measures. Are 1 or more RO/ER points still needed?

Existing Mitigation Measures

Mitigation Measure Title	Conditions that Qualify	Efficacy Classification	Points
Adjacent to the Field Mitigations			
Wetland and Riparian Habitat Improvement	Constructed wetlands, Wetland and Riparian Landscape/Habitat Improvement	Medium	2
Landscape/Habitat Improvement	Terrestrial landscape/ habitat improvement 20 to < 30 ft	Low	1
	Terrestrial landscape/ habitat improvement 30 to < 60 ft	Medium	2
	Terrestrial landscape/ habitat improvement ≥ 60 ft	High	3
Filtering Devices with Activated Carbon or Compost Amendments	Filters, sleeves, socks, or filtration units containing activated carbon	High	3
	Filters, sleeves, socks containing compost	Low	1

Adjacent to the field mitigations should be located downgradient from a treated field to effectively reduce pesticide exposure in runoff and erosion.)

Step 4: Subtract RO/ER Points from Existing Mitigation Measures

Subtract RO/ER points from the maximum identified points in Step 3 based on the mitigation relief points menu (e.g., runoff vulnerability, use of non-qualified conservation program, etc.) and existing mitigation measures. Are 1 or more RO/ER points still needed?

Existing Mitigation Measures

Mitigation Measure Title	Conditions that Qualify	Efficacy Classification	Points
Systems that Capture Runoff and Discharge			
Water Retention Systems	Water retention pond, sediment basins, catch basins, sediment traps	Medium	2
Subsurface Drainages and Tile Drainage Installed <i>without</i> Controlled Drainage Structure	Subsurface tile drains, tile drains <u>without a controlled drainage structure</u>	Low	1
Other Mitigation Measures			
Mitigation measures from multiple categories (<i>i.e.</i> , in-field, adjacent to the field, or water retention systems) are utilized. ⁶	Practices must be used from at least 2 of the following categories: in-field, field-adjacent, or systems that capture runoff and discharge Examples: 1 in-field measure + 1 field-adjacent measure OR 1 in-field measure + 1 system that captures runoff and discharge OR 1 field-adjacent measure + 1 system that captures runoff and discharge	Low	1

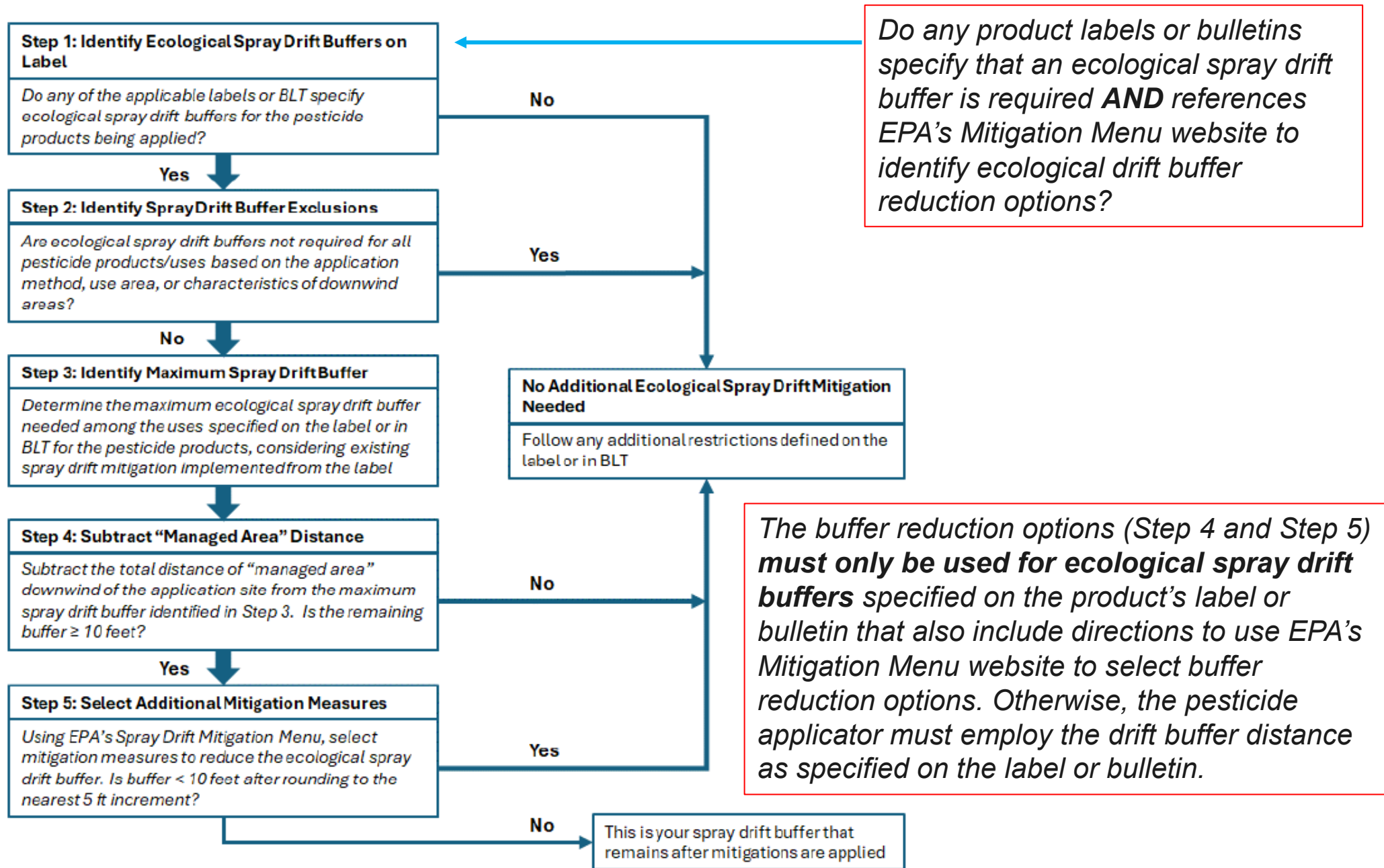
Step 4: Subtract RO/ER Points from Existing Mitigation Measures

Subtract RO/ER points from the maximum identified points in Step 3 based on the mitigation relief points menu (e.g., runoff vulnerability, use of non-qualified conservation program, etc.) and existing mitigation measures. Are 1 or more RO/ER points still needed?

Important Notes Related to Mitigation Table

- 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 in that state.
- Not all measures are applicable to all fields and crops.
- Mitigation relief points for field characteristics are presented in this Mitigation Measures table for convenience, but since they are inherent characteristics of the field, they are mitigation relief points and presented as such on the mitigation menu website (<https://www.epa.gov/pesticides/mitigation-menu>).
- Soil texture and hydrologic soil group (HSG) areas defined by USDA's soil classification system. See USDA's Web Soil Survey tool to determine soil texture and HSG: <https://websoilsurvey.nrcs.usda.gov/app/>.

Figure 8.
Illustrative Process
Summary for
Identifying
Ecological Spray
Drift Mitigation
Measures
Required for
Labeled Insecticide
Uses



Mitigation Menu | US EPA
 https://www.epa.gov/pesticides/mitigation-menu

How do I know if Ecological Spray Drift Buffers are Required?

Pesticide applicators need to follow the steps below to determine whether ecological drift buffer reduction options on this website can be employed during the application. The buffer reduction options do not apply to areas occupied by humans for residential or commercial purposes (such as lawns, sidewalks, outdoor recreational areas, athletic fields, buildings/homes, farmworker housing, schools, daycare centers, nursing homes, and hospitals). If your label does not allow for spray drift reductions or does not direct you to the mitigation menu website, you cannot use the drift reduction options.

These buffer reduction options do not apply to the following managed areas, as these areas can be included in the buffer if they are immediately adjacent/contiguous to the treated field in the downwind direction and people are not present in those areas (including inside closed buildings/structures):

- Agricultural fields, pastures, forage fields, and private rangelands, including untreated portions of the treated field;
- 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;
- Buildings and their perimeters, silos, or other man-made structures with walls and/or roof;
- 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;
- Areas present and/or maintained as a drift buffer reduction 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;

Step 1: Plan for the application
 At the field or farm level, growing season/year? Why?

Mitigation Menu Website

Excel Spreadsheet and User Guide

Ground Boom Application Ecological Spray Buffer Mitigation					
Product Specific Application Information	Select or Enter Value	Ground Application Ecological Drift Buffer Reduction Options	Select or Enter Value	Percent Reduction in Ecological Spray Buffer Distance	Hyperlink to EPA Description
Enter Ecological Spray Drift Buffer Distance from Product Label or Bulletins Live!Two (ft) as Applicable	Enter information from product label	Reduced Single Application Rate (automatically calculated based on product entry information in cells B16, B17, B20 and B21)		Provide application rate entry in cells B20 and B21	Hyperlink
Select Minimum Spray Droplet Size Indicated on Product Label	Enter information from product label	Select the width of the application area or number of acres to be applied	make selection	0	Hyperlink
Select Spray Droplet Size for Planned Application	Enter planned application information	Low Boom Application (24 inches or less above ground or crop canopy; applicable only for fine droplets)	make selection	Provide boom height in cell B19	Hyperlink
	Select droplet size from dropdowns in B16 and B17	Droplet Size Reduction (automatically calculated based on product entry information in cells B16 and B17)	Only applicable if product label allows medium or finer droplets, and intended application droplet is coarser than the label	Only applicable if product label allows medium or finer droplets, and intended application droplet is coarser than the label	Hyperlink
For Ground Sprays Select Required Boom Height Stated on the Label (Select High Boom (greater than 24 inches above ground or crop canopy) or Low Boom (24 inches or less above ground or crop canopy)	Enter information from product label	For Herbicide Application ONLY Use of Drift Reducing Agents (select droplet size)	make selection	0	Hyperlink
Enter Required Maximum Labeled Application Rate for Planned Use (keep units of application the same; e.g., oz product/A)	Enter information from product label	Hooded Sprayers, Layby Nozzles, Drop Nozzles	make selection	0	Hyperlink

When the pesticide product label or endangered species protection bulletin, found on the Bulletins Live! Two website¹, 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 calculator² EPA has also developed for this purpose. The calculator and descriptions of mitigation measures are found on EPA's Mitigation Menu Website³. This worksheet can be found online at <https://www.epa.gov/system/files/documents/2023-04/spray-drift-mitigation-worksheet-spm-2023.pdf>

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:	Yes	No
Do the planned application conditions fit any of these descriptions: <ul style="list-style-type: none"> • Chemigation methods, including: micro-sprinklers, drip-tape, drip emitters, subsurface or flood, and under non-permeable plastic surfaces • In-furrow sprays when nozzle height is <8 inches above soil surface; • Tree trunk drench, tree trunk paint, tree injection; • Soil injection; • Solid formulations that are used as a solid; • Less than 1/10 acre (<4356 square feet) treated and Spot treatment: <1000 square feet treated (e.g., when applied with backpack or hand held sprayers). Are managed areas the only landscapes downwind for at least the length of the label required buffer? Managed areas are defined as: <ul style="list-style-type: none"> • Agricultural fields, pastures, forage fields, and private rangelands, including untreated portions of the treated field; • 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; • Buildings and their perimeters, silos, or other man-made structures with walls and/or roof; • 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; • Areas present and/or maintained as a drift buffer reduction 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; 		
	No ecological spray drift buffer required*	Continue calculating buffer size below

Program (ACEP) lands in of the CRP habitat). ent water bodies, including on-off retention basins, farm (an health).

Information – Does Not Impact Calculation)

live-two-view-bulletins/2023-10/runoff-mitigation-calculator-tool-xism e in the following websites: [ides/menu-measure-descriptions](#). If the state has a more ble to all fields and crops. s managed as a single unit in production or in preparation for it crops (e.g., vegetables and leafy greens) or sub-divided based

PDF Worksheet

Step 2: Identify Spray Drift Buffer Exclusions

Are ecological spray drift buffers not required for all pesticide products/uses based on the application method, use area, or characteristics of downwind areas?

Applications that do not need Ecological Drift Buffers

No **ecological** spray drift buffer would be needed for the following *application methods*:

- applied as a **solid** (e.g., the planting of treated seed or use of a treated propagule, or granular formulation)
- application occurs as an **in-furrow spray** where the nozzle height is ≤ 8 inches above the soil surface
- application occurs as a **soil injection or soil drench**
- application occurs as a **tree injection, tree trunk/basal drench, or tree trunk paint**
- application occurs via **chemigation** that uses one of the following methods:
 - micro-sprinklers, drip-tape, drip emitters, subsurface or flood, or made under non-permeable plastic surfaces
- application occurs as a **spot treatment** (<1,000 square feet being treated), e.g., backpack, handheld, or specialized application equipment
- treated farm/field **less than 1/10th of an acre**

Step 2: Identify Spray Drift Buffer Exclusions

Are ecological spray drift buffers not required for all pesticide products/uses based on the application method, use area, or characteristics of downwind areas?

Applications that do not need Ecological Drift Buffers

Mitigation Menu Website: Spray Drift

- Are the [areas within 1,000 feet down-wind from the treated farm/field comprised entirely of managed areas?](#)
Managed areas include:
 - Agricultural fields, pastures, forage fields, and private rangelands, including untreated portions of the treated field;
 - 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;
 - Buildings and their perimeters, silos, or other man-made structures with walls and/or roof;
 - 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;
 - 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;
 - 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).
 - 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.

Spray Drift and Runoff Mitigation Calculator

Are managed areas the only landscapes downwind for at least the length of the label required buffer?

Spray Drift Mitigation Worksheet

applied with backpack or hand held sprayers).

Are managed areas the only landscapes downwind for at least the length of the label required buffer?

Managed areas are defined as:

- Agricultural fields, pastures, forage fields, and private rangelands, including untreated portions of the treated

Step 3: Identify Maximum Spray Drift Buffer

Determine the maximum ecological spray drift buffer needed among the uses specified on the label or in BLT for the pesticide products, considering existing spray drift mitigation implemented from the label

Maximum Ecological Drift Buffers

Table 7. Potential for Population-Level Impacts Identified in Step 1 and Corresponding Spray Drift Distance to Reduce Impacts (Assuming No Spray Drift Reducing Measures Are in Use).

Potential for Population-Level Impacts from Step 1	Distance from edge of treated area (in feet)		
	Aerial Spray ¹	Ground Spray ²	Airblast
Not Likely	None	None	None
Low	50	10	25
Medium	Calculated for specific chemical ³		
High	300 ⁴	100	85

¹EPA based aerial distances on the assumption that most aerial applications will use a medium droplet size distribution. If very fine or fine applications are needed for a pesticide, EPA may increase the distance. There are mitigation measures for reducing this distance when using droplets larger than medium.

²EPA based these distances on the assumption that ground applications are made using a high boom and very fine to fine droplet size distribution. Where allowed by the pesticide labeling, there could be mitigation measures available to reduce this distance when using larger droplets and a low boom.

³EPA anticipates that chemical specific buffers will be between the lower limit (used for low potential population-level impacts) and at or lower than the maximum (used for high impacts) buffer distances.

⁴Reported value is for aerial application with Medium droplet size distribution. Aerial applicators are expected to apply with Medium or coarser droplets, but increased buffers are indicated for if smaller droplets than Medium are needed.

Step 4: Subtract “Managed Area” Distance

Subtract the total distance of “managed area” downwind of the application site from the maximum spray drift buffer identified in Step 3. Is the remaining buffer ≥ 10 feet?

While the option to subtract “managed area” distance in the strategy and on the website is clear, the option to subtract “managed area” distance is **NOT clear** in the calculator or in the worksheet.

Table 11. Downwind Managed Areas that Can Represent Spray Drift Buffers

When spray drift buffers are identified as mitigations, the following managed areas can be included in the buffer if they are immediately adjacent/contiguous to the treated field in the downwind direction and people are not present in those areas (including inside closed buildings/structures). If the pesticide product label or bulletin, or the state or local government in which the application area is located, has a requirement that prohibits or restricts spray drift in any area, including these specific managed areas, that prohibition/restriction must be followed.

- a. Agricultural fields, pastures, forage fields, and private rangelands, including untreated portions of the treated field;
- b. 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;
- c. Buildings and their perimeters, silos, or other man-made structures with walls and/or roof;
- d. 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;
- e. 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;
- f. Conservation Reserve Program (CRP)¹ and Agricultural Conservation Easement Program (ACEP) lands;
- g. 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.

¹ Applicators may need to ensure that pesticide use does not cause degradation of the CRP habitat.

Table 8. Mitigation Measures Identified When Making Broadcast Aerial Applications

Mitigation Measure	Percent Reduction in Distance
Application Parameters	
Reduced single application rate	% reduction corresponds to application rate reduction from maximum on pesticide product label
Coarse DSD ¹	40%
Very coarse DSD ¹	60%
Spray drift reducing adjuvants	Under evaluation ²
Reduce boom length to 50% of wingspan, wind speed is <10 mph	65%
Reduce boom length to 50% of wingspan, wind speed is 10-15 mph	50%
Reduced Proportion of Field Treated (Number of Airplane/Helicopter Passes or Acres³)	
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%
Other Mitigation Measures	
Downwind windbreak/ hedgerow/riparian/forest/ woodlots/shrubland	50% for basic windbreak/hedgerow/artificial screen 75% for advanced windbreak/hedgerow/artificial screen 100% for riparian/forests/woodlots/shrubland ≥60ft width
Relative humidity is 60% or more at time of application	10%

DSD = droplet size distribution

¹This % reduction assumes baseline of using medium droplet size for aerial.

² EPA received spray drift reduction adjuvant data for insecticide formulations after the public comment period closed and will be evaluating this as a potential future mitigation measure for insecticides.

³ A spray drift buffer applies to downwind non-target areas. The reduced number of passes or acres applies to the upwind part of the treated field. If the passes are not on the downwind edge of the field, the untreated downwind area of the field can be counted as spray drift buffer.

Spray drift: Mitigation Measures for Broadcast Aerial Applications

The options that will be available for an active ingredient/product are dependent on the label. Do not assume that all of these options will be available for all products.

Step 5: Select Additional Mitigation Measures

Using EPA's Spray Drift Mitigation Menu, select mitigation measures to reduce the ecological spray drift buffer. Is buffer < 10 feet after rounding to the nearest 5 ft increment?

Table 9. Mitigation Measures Identified When Making Broadcast Ground Applications

Mitigation Measure	Percent Reduction in Distance
Application Parameters	
Reduced single application rate	% reduction corresponds to application rate reduction from maximum on pesticide product label
High boom, fine to medium-coarse DSD ¹	75%
High boom, coarse DSD ²	85%
Low boom, very fine to fine DSD ¹	50%
Low boom, fine to medium-coarse DSD ¹	75%
Low boom, coarse DSD ²	85%
Over-the-top Hooded Sprayer	50%
Row-middle Hooded Sprayer	75%
Sprays below crop using drop nozzles or layby nozzles	50%
Spray drift reducing adjuvants	Under evaluation ³
Reduced Proportion of Field Treated (Number of Ground Application Equipment Passes⁴)	
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%
Other Mitigation Measures	
Downwind windbreak / hedgerow / riparian / forest / shrubland/woodlots	50% for basic windbreak/hedgerow/artificial screen 75% for advanced windbreak/hedgerow/artificial screen 100% for riparian/forests/woodlots/shrubland ≥60ft width
Relative humidity is 60% or more at time of application	10%

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

¹This % reduction assumes a baseline of using high boom, very fine to fine droplet size for ground.

²Based on evaluation of additional ground spray drift data for an additional 10% reduction in distance beyond fine/medium DSDs.

³ EPA received spray drift reduction adjuvant data for insecticide formulations after the public comment period closed and will be evaluating this as a potential future mitigation measure for insecticides.

⁴ A spray drift buffer applies to downwind non-target areas. The reduced number of passes applies to the upwind part of the treated field.

Spray drift: Mitigation Measures for Broadcast Ground Applications

The options that will be available for an active ingredient/product are dependent on the label. Do not assume that all of these options will be available for all products.

Step 5: Select Additional Mitigation Measures

Using EPA's Spray Drift Mitigation Menu, select mitigation measures to reduce the ecological spray drift buffer. Is buffer < 10 feet after rounding to the nearest 5 ft increment?

Table 10. Mitigation Measures Identified When Making Airblast Applications

Mitigation Measure	Percent Reduction in Distance
Application Parameters	
Reduced single application rate using non-targeted application equipment ¹	Divide % reduction in application rate by 2 (e.g., 50% reduction in application rate corresponds to 25% reduction in buffer size)
Reduced single application rate with targeted application equipment ^{1,2}	% reduction corresponds to application rate ¹ (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 ¹	10% ¹
Reduced Proportion of Orchard Treated (Number of Treated Rows³)	
1 row	70%
2-4 rows	30%
5-10 rows	15%
Other Mitigation Measures	
Downwind windbreak/hedgerow/riparian/forest/woodlots/shrubland	50% for basic windbreak/hedgerow, or use of artificial screen ¹ ≥height of orchard 75% for advanced windbreak/hedgerow 100% for riparian/forests/shrubland/woodlots >60ft width
Skipping last downwind row of orchard/vineyard ¹	50%

¹New airblast buffer reduction mitigation

² Targeted application equipment includes airblast equipment with pulse-width modulated (PWM) nozzles with canopy sensing equipment that turns nozzles off when crop canopy is not present.

³ 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.

Spray drift: Mitigation Measures for Airblast Applications

The options that will be available for an active ingredient/product are dependent on the label. Do not assume that all of these options will be available for all products.

Step 5: Select Additional Mitigation Measures

Using EPA's Spray Drift Mitigation Menu, select mitigation measures to reduce the ecological spray drift buffer. Is buffer < 10 feet after rounding to the nearest 5 ft increment?

Important Reminders

- **Must adhere to the Most Restrictive Label/Bulletin Mitigation**
 - If a pesticide product label or bulletin, or the state or local government in which the application area is located has a requirement that prohibits or restricts spray drift in any area, including the managed areas, that prohibition/restriction must be followed.
 - Examples include, but are not limited to, no-drift standards, drift buffers that are not wind-directional, Application Exclusion Zone requirements, drift buffers to residential/commercial areas, use prohibitions, timing restrictions, and application method prohibitions.
- **No ecological drift buffer is required if:**
 - use of the buffer reduction options results in a buffer reduction $\geq 100\%$.
 - use of the buffer reduction options results in a buffer < 10 feet, after rounding to the nearest 5 ft increment

Spray Drift Exposure Associated with Overhead and Impact Sprinkler Chemigation Systems

Table 12. Mitigation Measures Identified for Pesticide Applications via Overhead and Impact Sprinkler Chemigation Systems

Potential for Population- Level Impacts from Step 1	Mitigation Measures	
	Overhead Chemigation ¹	Non-End Gun Impact Sprinklers
Not Likely	None	None
Low	No end gun or 10 ft buffer	Limit throw distance to edge of field (treated area) ² or 10 ft buffer
Medium	No end gun and one of the following: reduce pressure (<20 psi); reduce release height (<5 ft); have a windbreak ³ or 10 ft buffer	
High	25 ft buffer or No end gun and two of the following: reduce pressure (<20 psi); reduce release height (<5 ft); have a downwind windbreak ³	Limit throw distance to edge of field (treated area) AND have downwind windbreak ³ . Alternatively, use a 25 ft buffer

¹ Refers to center pivot, overhead systems, traveler systems that have sufficient pressure/end guns.

² This can be accomplished by either reduced pressure and/or reduced throw angle.

³ This can be a windbreak/hedgerow/riparian/forest/shrubland/woodlots. See the Ecological Mitigation Support Document for additional details.

“The table below provides mitigation measures based on currently available data and technology. If new data (e.g., spray drift data on impact sprinklers) or new technology (e.g., commercially available chemigation nozzles that are classified according to ASABE Standard S572.1) become available, these mitigation measures may be reconsidered.”

Updates to Identifying Where Mitigations Apply

- **EPA narrowed the list of specific invertebrate species that could occur on agricultural fields** with potential population-level impacts. EPA also **described the types of potential on-field mitigations** that may be identified for these species.
- EPA **updated the overlap analysis** to evaluate the potential for population-level impacts to newly listed/proposed and delisted species and considered updated species ranges and critical habitat information.
- EPA added a **Pesticide Use Limitation Area (PULA)** for generalist species (*i.e.* species that rely on invertebrates, as opposed to species that rely on a specific species of insect, for food or pollination) that reside in wetland habitats.

Mitigation Measures and Additional Considerations for Listed Terrestrial Invertebrates from On-Field Exposure

Table 18. On-Field Terrestrial Invertebrate Species and Pollinator-Attractive Blooming Crops (for Butterflies) Cultivated in Counties with Species Range

Species (life stage)	Crops or Crop Groups/UDLs with Significant Acreage in Counties within Species' Range that Could Be Impacted
Dakota skipper (adult-stage only)	Other Grains: buckwheat, canola, safflower, sunflower, flax Vegetable and Ground Fruit: chickpeas, dry beans, dry peas, lentils, mustard, radishes (daikon)
Fender's blue butterfly (adult-stage only)	Other Crops: clover (grown for seed production) Other Orchards: pome fruit, stone fruit Other Row Crops: sugarbeets grown for seed production Vegetable and Ground Fruit: dry and fresh beans, berries, cucurbits, mint, peas
Mitchell's satyr butterfly (adult life-stage only)	Other Orchards: pome fruit, stone fruit Vegetable and Ground Fruit: snap beans, berries, cucurbits, black eyed peas
Karner blue butterfly (adult life-stage only)	Other Orchards: pome fruit, stone fruit Vegetable and Ground Fruit: dry beans, snap beans, berries, cucurbits, peas

Examples of mitigations for on-field species can be seen in the final FWS Methomyl Biological Opinion.

“EPA continues to work with FWS and USDA on language that might be applied to mitigate on-field exposures for these species. For example,...

- pome and stone fruit uses within the Fender’s blue butterfly’s PULA: EPA may consider label language that specifies not to apply the product during bloom.
- cucurbit uses within the Karner blue butterfly’s PULA, EPA may consider label language that specifies ... apply only within a time period of 2 hours before sunset through 2 hours after sunrise, when bees and other pollinators are least active.”

Extent of Mitigation

Runoff/Erosion Points

For each insecticide active ingredient with required runoff/erosion points, EPA will determine the extent of where points will be required to protect listed species

Broad – across an entire use area in contiguous US

Geographic specific – in Pesticide Use Limitation Areas in Bulletins

Depending on the insecticide, EPA may use both, one or the other, or a combination of both.

Ecological Spray Drift Buffers

For each insecticide active ingredient with required ecological spray drift buffers, EPA will determine the extent of where ecological spray drift buffers will be required to protect listed species

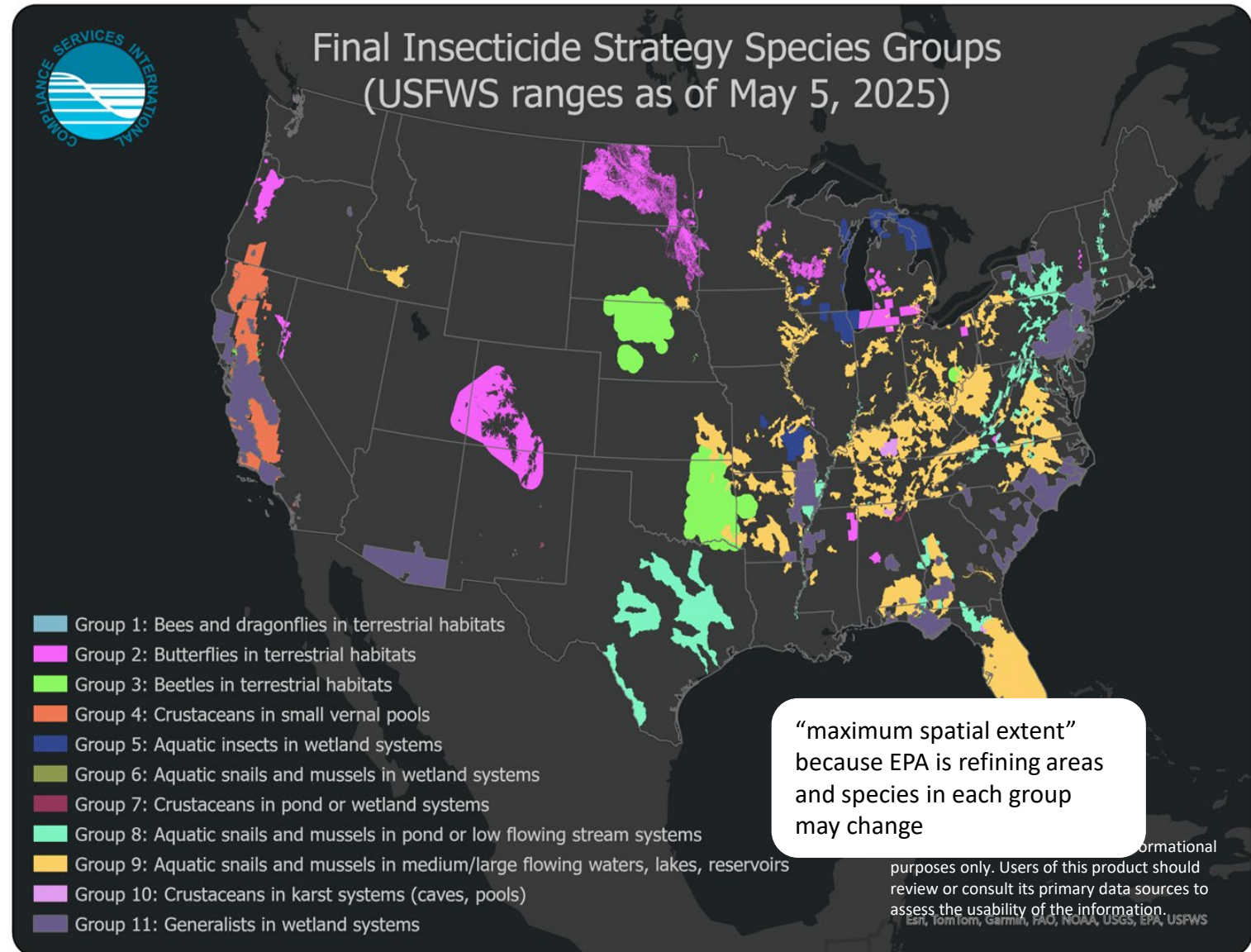
Broad – across an entire use area in contiguous US

Geographic specific – in Pesticide Use Limitation Areas in Bulletins

Depending on the insecticide, EPA may use both, one or the other, or a combination of both.

Extent of Mitigations – Geographic Specific

- **123** species grouped into 11 proposed groups based on similarity of habitat and taxonomy
 - A given species can be in multiple group (ex: groups 6 and 8)
 - Group 11: Generalists in wetland systems
- Species in groups are expected to share the same level of mitigation for a particular insecticide



Extent of groups generated using species ranges (downloaded from FWS on May 5, 2025) for

Questions?

What does it all mean?

Revisiting EPA's Herbicide and Insecticide Strategies with Two Examples

Glufosinate-P

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Glufosinate-P: Reminder of timeline

- Draft Decision and BE issued May 9, 2024 (HS not applied)
- Final Herbicide Strategy August 20, 2024
- Final BE issued October 16, 2024 (EPA-HQ-OPP-2020-0250-0010)
- Final Decision issued October 18, 2024 (HS mitigations applied)

Glufosinate-P: Reminder of labels

Registrant	Product Name	Percent AI	Formulation	Use Category
BASF	L-Glufosinate-Ammonium Technical	77.62%	Not Specified	Manufacturing
	L-Glufosinate-Ammonium Technical Product	89.6%	Not Specified	Manufacturing
	L-Glufosinate-Ammonium Manufacturing Use Product	50%	Not Specified	Manufacturing
	L-Glufosinate-Ammonium 211	18.7%	Soluble liquid (SL)	All Uses
Mitsui	L-Glufosinate Free Acid	92.3%	Not Specified	Manufacturing
	L-Glufosinate Liquid Formulation	10.26%	Soluble liquid (SL)	All uses

Overview of Glufosinate-P Labels

- Applied PRE and/or POST by aerial or ground/hooded sprayer
 - Dependent on crop and application equipment
- Use Sites
 - Burndown and Non-Glufosinate Tolerant Crops
 - Canola, Corn (sweet and field), Cotton, Soybean, Fallow fields/post-harvest
 - Glufosinate-Resistant Crops and Seed Propagation*
 - Canola, Corn (sweet and field), Cotton, Soybean
- Geographic Limits by Crop
 - No use in California on corn (sweet and field)
 - No use on glufosinate-resistant canola in AL, DE, GA, KY, MD, NJ, NC, SC, TN, VA, or WV
 - No use on glufosinate-resistant/seed propagation cotton in FL south of Tampa or in HI (outside of test plots/breeding nurseries).

**To remove glufosinate-susceptible segregates*

Glufosinate-P: BE Conclusions

J/AM: 60 species and 38 CHs

and/or habitat, and water quality. For the LAA species, EPA predicts a potential likelihood of future jeopardy for 60 species and for the CH, EPA predicts potential likelihood of future adverse modification of 38 CHs from the use of glufosinate-P. Predictions of the potential likelihood of future J/AM are primarily for listed plants, listed animal species that are highly dependent on plants for forage and/or habitat, and CHs with essential PBFs related to plants. All listed species and CH for which EPA predicts to have a potential likelihood of future J/AM have medium to high overlap with at least one agricultural UDL within the likely exposure area, a medium to high magnitude of effect, and most of the species are classified as having medium to high vulnerability.

Spring Creek bladderpod is the only species with a likelihood on direct, on-field effects

likely to contribute to incidental take and adverse effects to plant individuals and CH. While many of the animal species with LAA determinations may occupy, move through, or forage at use sites, it is unlikely that any of the species would regularly use these sites thus limiting the number of individuals affected. Likewise, it is unlikely that most of the plants with LAA determinations will establish at managed agricultural use sites except for the Spring Creek Bladderpod. Consequently, off-site transport from spray drift and runoff are the main drivers of exposure for listed species that are predicted to be jeopardized by the final labeled uses; however, mitigation measures are included to avoid the potential likelihood of future J/AM.

Runoff and spray drift minimization measures to avoid future J/AM

EPA-HQ-OPP-2020-0250-0010

Glufosinate-P: PULA mitigations

PULAs w/ avoidance measures for VSAP species with overlap

In addition to minimization measures, EPA is also utilizing avoidance measures for listed species which are considered particularly vulnerable. EPA has identified species that are particularly vulnerable based on a review of USFWS and NMFS documents (*e.g.*, 5-yr reviews; BiOps) in which the Services have identified either high or medium vulnerability for species to all relevant stressors and where pesticides may be a potential stressor as well. These species generally have smaller ranges relative to other listed species and the ranges of these species or their designated critical habitat overlap with those of other listed species. Therefore, protections for the vulnerable species would benefit other listed species that are located in the same area. EPA identified additional geographically specific mitigation measures (*i.e.*, pesticide use limitation areas; PULA) for two vulnerable species – Whorled Sunflower and Springcreek Bladderpod. The product labeling directs the user to EPA’s Bulletins Live! Two (BLT) website to access these measures through Endangered Species Protection Bulletins.

EPA-HQ-OPP-2020-0250-0010



Glufosinate-P: Final Label

12.0 ENDANGERED AND THREATENED SPECIES PROTECTION REQUIREMENTS

Before using this product, you must obtain any applicable Endangered Species Protection Bulletins (Bulletins) within six months prior to or on the day of application. To obtain Bulletins, go to Bulletins Live! Two (BLT) at <https://www.epa.gov/pesticides/bulletins>. When using this product, you must follow all directions and restrictions contained in any applicable Bulletin(s) for the area where you are applying the product, including any restrictions on application timing if applicable. It is a violation of Federal law to use this product in a manner inconsistent with its

labeling, including this labeling instruction to follow all directions and restrictions contained in any applicable Bulletin(s). For general questions or technical help, call 1-844-447-3813, or email ESPP@epa.gov.



Glufosinate-P: Final Label

Wind directional spray drift buffers of 10 (ground) to 50 (aerial) ft

Static list of “managed areas” that can be included in the spray drift buffer.

9.2 Mandatory Spray Drift Buffers

9.2.1 For aerial and ground applications, maintain a downwind buffer between the last spray row and the protection area as follows:

Application Method	Droplet Size Distribution (DSD)	Minimum Buffer Distance
Aerial	medium	50 ft
Ground	medium to coarser	10 ft

Protection areas include all areas with the following exceptions which can be included in the buffer footage, provided that people are not present within the application exclusion zone during the application, and they will not be contacted by the pesticide, either directly or through drift (see 40 CFR 170.405(a) and 40 CFR 170.505(a)):

- Agricultural fields, including untreated portions of the treated field.
- Roads, paved or gravel surfaces, mowed grassy areas adjacent to field, and areas of bare ground from recent plowing or grading that are contiguous with the treated area.
- Buildings and their perimeters, silos, or other man-made structures with walls and/or roof.
- Areas maintained as a mitigation measure for runoff/erosion or drift control, such as vegetative filter strips (VFS), field borders, hedgerows, Conservation Reserve Program lands (CRP), and other mitigation measures identified by EPA on the mitigation menu.¹
- Managed wetlands including constructed wetlands on the farm.
- 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, and tailwater collection ponds.

¹ Growers must ensure that pesticide use does not cause degradation of the CRP habitat.

Glufosinate-P: Final Label

Note that the label explicitly spells out spray drift buffer reduction options and **does not** point user to the Mitigation Menu website for spray drift

9.2.2 Aerial Spray Drift Buffer Reduction Options:

- A 20% (i.e., 10-foot) reduction in the required wind-directional buffer distance can be made if the applicator selects a nozzle and pressure that deliver coarse or coarser droplets in accordance with ASABE S572.
- A 35% (i.e., 18-foot) reduction can be made if the applicator selects a nozzle and pressure that delivers coarse droplets and uses an oil emulsion drift reducing adjuvant that constitutes 2.5% of the volume of the finished spray tank mix.
- A reduction in the required wind-directional buffer distance can be made if a windbreak or shelterbelt (e.g., trees or riparian hedgerows) between the application site and non-managed area is present and meets the criteria listed in the **Windbreak-Shelterbelt Criteria** section of this label. The reduction is 50% (i.e., 25 feet) if the windbreak or shelterbelt meets the basic windbreak-shelterbelt criteria and is 75% (i.e., 38 feet) if the windbreak or shelterbelt meets the advanced windbreak-shelterbelt criteria.
- The percent reduction in wind-directional buffer distances may be added if you use one droplet size buffer reduction option (coarse or coarse with an oil emulsion drift reducing adjuvant that constitutes 2.5% of the volume of the finished spray tank mix) and one windbreak-shelterbelt option (basic or advanced). The maximum buffer reduction that can be achieved by a combination of buffer reduction options is 100% (i.e., no drift buffer).

9.2.3 Ground Boom Spray Drift Buffer Reduction Options:

Any of the following options can reduce the ground buffer distance to 0 feet:

- Use of an oil emulsion drift reducing adjuvant that constitutes 2.5% of the volume of the finished spray tank mix.
- Application is made using an over-the-top hooded sprayer, as a layby application, or is made below the crop canopy using drop nozzles.
- Use of a row-middle hooded sprayer.
- If a windbreak or shelterbelt (e.g., trees or riparian hedgerows) between the application site and non-managed area is present and meets the criteria listed in the **Windbreak-Shelterbelt Criteria** section of this label.

Glufosinate-P: Final Label

For runoff mitigations the label specifies you need 3 points of mitigation, and points you to the Mitigation Menu

11.0 MANDATORY RUNOFF MITIGATION:

- **DO NOT** apply when soils are saturated or above field capacity.
- **DO NOT** apply during rain.

You must achieve a minimum of three points for the crop uses listed on this label unless otherwise stipulated below. Applicators must access and search Bulletins Live! Two (BLT) at <https://www.epa.gov/pesticides/bulletins> within six months of the application to determine whether the application site falls within a Pesticide Use Limitation Area (PULA) that has a Bulletin in BLT. If you are located inside a PULA, follow the instructions in the bulletin.

If the application site is located outside a PULA, runoff/erosion mitigation is required for this product unless certain field/application parameters are present at the time of application (i.e., subsurface or tile drains with controlled outlet, perimeter berm systems, irrigation tailwater return systems, spot treatment, etc). Access EPA's Mitigation Menu Website at www.epa.gov/pesticides/mitigation-menu for a full list of field/application parameters to evaluate whether your field is subject to runoff/erosion mitigation.

Glufosinate-P: Final Label

Note that the label points users to the Mitigation Menu website to access the updated list of measures.

If the application does not meet the specified field/application parameters, a minimum of three points for the crop uses listed on this label must be achieved. The applicator must choose among the mitigation and/or mitigation relief measures on EPA's Mitigation Menu Website to meet or exceed these points before applying this product. The website includes the full menu of runoff/erosion mitigation and mitigation relief measures. The following are examples:

- Location in a very low, low, or medium runoff vulnerability county
- Field slope
- Soil incorporation
- Conservation tillage
- Vegetative strips
- Cover crop or continuous ground cover
- Irrigation water management
- Mulching
- Grassed waterway
- Vegetated ditch
- Constructed and natural wetlands
- Water retention systems
- Following recommendations from a runoff/erosion specialist or participating in a qualifying conservation program (see the www.epa.gov/pesticides/mitigation-menu for minimum elements).

To achieve mitigation points for the application, the mitigation and mitigation relief measures must be:

- Employed in accordance with the instructions and descriptions on EPA's Mitigation Menu Website.
- In place during the application unless a different timing (such as before or after application) is specifically provided in the measure's description on EPA's Mitigation Menu Website.
- EPA may periodically update the Mitigation Menu Website, for example, by adding new mitigation measures or updating a mitigation measure description.

Glufosinate-P: Take-away messages

Change is a constant part of the process of ESA implementation ... but the “vintage” of labels is important!

In the example of glufosinate-P, updates to the Mitigation Menu webpage only impact the runoff portion of the label (which points to the webpage), and not the spray drift portion of the label (which does not point to the webpage).

Proposed Registration Isocycloseram

May 9th, 2025 (*comment period closes June 9th, 2025*)

EPA-HQ-OPP-2021-0641

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Isocycloseram Proposed Products and Use Sites

Table 3-2. Summary of proposed products in the United States for isocycloseram.

Product Name	Percent Isocycloseram	Formulation	Use Category	Comments
Isocycloseram Technical	98.0%	Not specified	Manufacturing	Technical product
A21377 CP (Incipio™)	18.3%	Suspension concentrate	Agricultural	All foliar agricultural uses except corn
A21550 CP (Vertento™)	34.8%	Suspension concentrate		All foliar agricultural uses except corn
A21708 CP	9.27%	Dispersible concentrate		All foliar agricultural uses
A22466 CP	25.7%	Suspension concentrate		For at-plant applications to field corn, popcorn, and seed corn only.
A22725 ST (Equento 400FS)	34.8%	Flowable concentrate	Seed Treatment	For on-farm and commercial seed treatment for cereals, rapeseed (including canola), dried shelled peas, beans, lentils, and chickpeas.
A22241 ST (Equento™ 100FS)	9.35%	Flowable concentrate		For use on small grain cereals, dried shelled peas, beans, lentils, and chickpeas only
Atexzo	18.3%	Suspension concentrate	Turf, nurseries, greenhouses, residential, commercial, trees	-
A21550 400SC (Vanecto 400SC)	34.8%	Suspension concentrate	Perimeter treatment, spot treatment, crack and crevice in and around buildings	Handheld spray
A22128 (Vanecto Cockroach Gel Bait)	1.0%	Ready-to-use bait		Cockroach bait use only

Use Site/Location	Application Equipment
Brassica Head and Stem Vegetables, Crop Group 5A; Brassica Leafy Greens, Crop Subgroup 4-16B (Except Watercress)	Ground, Aerial
Corn, Field Corn, Popcorn	Ground, Aerial
Fruiting Vegetables, Crop Group 8-10	Ground, Aerial
Peanut	Ground, Aerial, Chemigation
Stone Fruit, Crop Group 12-12	Ground, Airblast
Rapeseed (including canola) Crop Subgroup 20A	Seed Treatment
Small Grain Cereals	Seed Treatment
Turf (golf course, residential, commercial, and sod farms)	Hand-held, Ground, Chemigation
Ornamental Plants and Christmas Trees	Ground, Chemigation
Household/Domestic Dwellings, Outdoor Premises	Hand-held

Isocycloseram - May 9th Draft BE

Insecticide Strategy was applied throughout the ESA determinations

After Strategy Mitigations Applied to Label, only 8 species required additional mitigations so **8 total PULAs are proposed for BLT**

7 PULAs would require additional runoff points
1 PULA would require daytime at-bloom application restrictions

Table 1-2. Number of Federally Listed Threatened/Endangered/Proposed Species Effects Determinations and Predictions of Potential Likelihood of Future Jeopardy or Future Adverse Modification by Taxon.

Taxon	Number of Species / CH ¹	NE	NLAA	LAA, Predicted Not Likely J/AM	LAA, Predicted Likelihood of J/AM Before Taxa Level Mitigations	Predicted Likelihood of J/AM After Taxa Level Mitigations	PULAs Needed	Predicted Likelihood of J/AM After Listed Species Mitigations
Amphibians ²	47	0	1	45	1	0	0	0
Aquatic Invertebrates	202	0	162	34	6	6	6 ^{4a}	0
Birds	96	7	12	76	1	0	0	0
Fish	172	0	10	147	15	0	0	0
Mammals	96	30	20	44	2	0	0	0
Plants	942	306	41	480	115	0	0	0
Reptiles ²	59	24	5	30	0	0	0	0
Terrestrial Invertebrates ³	121	18	17	74	12	2	2 ^{4b}	0
Total Listed Species	1,735	385	268	930	152	8	8	0
Designated Critical Habitat	951	423	292	211	25	0	0	0

CH = designated critical habitat; NE = no effect; NLAA = not likely to adversely affect; LAA = likely to adversely affect; J = jeopardy; AM = adverse modification; PULA = pesticide use limitation area.

¹ Reflects the species federally listed as endangered or threatened or proposed and critical habitats designated as final or proposed as of October 2024.

² "Amphibians" and "Reptiles" include those species that have both a terrestrial and aquatic phase.

³ "Terrestrial Invertebrates" includes one species which has both a terrestrial and aquatic phase and one species which is wholly terrestrial.

^{4a} Six aquatic invertebrate require additional runoff mitigations (2-4 points, depending on use) in PULAs.

^{4b} One terrestrial invertebrate, the Hine's Emerald Dragonfly (*Somatochlora hineana*), which has an aquatic phase, requires additional runoff mitigations (2-4 points, depending on use) in a PULA; one wholly terrestrial invertebrate (*i.e.*, Rusty Patched Bumble Bee; *Bombus affinis*), requires a PULA prohibiting use on cucurbits in bloom from two hours after sunrise until two hours before sunset.

<https://www.regulations.gov/document/EPA-HQ-OPP-2021-0641-0021>

Isocycloseram – Proposed PULA Mitigations

The EPA concluded that the proposed FIFRA mitigations outlined in section VI.F address the initial predictions of potential likelihood of future J/AM for over 95% of listed species. The EPA continues to predict that potential likelihood of future J/AM for all 8 remaining listed species and designated CH will be addressed by using Pesticide Use Limitation Areas (PULAs) developed to support Bulletins that EPA will publish on the Bulletins Live! Two system.⁴ **The Bulletin in these PULAs will include the need to achieve an additional two to four points of runoff/erosion mitigation (from the mitigation menu referenced in section VI.A) will be required within the PULAs to avoid the potential likelihood for future J/AM to 7 listed species from runoff and erosion.** The number of points depends on the use, see Table 8. **In addition, one wholly terrestrial invertebrate (i.e., Rusty Patched Bumble Bee), requires a PULA prohibiting use on cucurbits in bloom from two hours after sunrise until two hours before sunset.** The EPA recently released a process for developing PULAs and may be used to develop the PULAs needed for the species identified in this proposed registration. (<https://www.epa.gov/endangered-species/process-epa-uses-develop-core-maps-pesticide-use-limitation-areas>)

<https://www.regulations.gov/document/EPA-HQ-OPP-2021-0641-0007>

Table 8. Runoff Mitigation Points Needed After FIFRA Mitigations by Use Pattern

Use ¹	App Rate (App Number x Amount Applied in lb a.i./A)	Runoff Mitigation Points Needed in PULAs After FIFRA Mitigations
Brassica	2 x 0.053	4
Peanut	2 x 0.053	4
Bulb Vegetables	2 x 0.107	4
Citrus	4 x 0.067	4
Corn (foliar)	2 x 0.027	2
Cotton	2 x 0.053	4
Cucurbits	2 x 0.053	4
Fruiting Vegetables	2 x 0.08	4
Leafy Vegetables	2 x 0.053	4
Pome Fruit	3 x 0.067	4
Soybean	2 x 0.053	2
Stone Fruit	2 x 0.067	2
Tree Nuts	3 x 0.067	4
Tuber and Corm Vegetables	3 x 0.053	4
Turf (sod farms) ^{2, 3}	2 x 0.107 + 0.105	4
Nursery (outdoor/field) ^{2, 4}	4 x 0.067 + 0.052	4
Christmas Trees ⁵	4 x 0.067 + 0.052	4
Corn (in-furrow)	1 x 0.133	4
Rapeseed (seed)	1 x 0.033	4
Small Grain Cereal (seed)	1 x 0.019	4
Dried shell pea (seed)	1 x 0.067	4

App = application; a.i. = active ingredient; PPHD = prey, pollination, habitat, and/or dispersal

¹ Uses not listed (i.e., residential, cockroach gel bait) do not need runoff mitigation points.

² Both turf and nursery modeled as 2 applications of 0.134 lb a.i./A plus one application at 0.052 lb a.i./A. Registrant has since lowered the maximum annual rate to 0.107 lb a.i./A for turf and 0.067 lb a.i./A for nursery, and so these updated rates were used to determine needed mitigations.

³ All other turf uses do not need runoff mitigation points in PULAs.

⁴ This includes all outdoor nurseries, including shade houses, lath houses, and other outdoor growing structures, as well as deciduous tree and forest nurseries. All other nursery/commercial/residential uses (residential and commercial landscapes, parks, interior plantscapes, and greenhouses) do not need runoff mitigation points in PULAs.

⁵ This includes evergreen (including conifer) and Christmas tree farms

Isocycloseram – What do proposed labels look like?

Table 3-2. Summary of proposed products in the United States for isocycloseram.

Product Name	Percent Isocycloseram	Formulation	Use Category	Comments
Isocycloseram Technical	98.0%	Not specified	Manufacturing	Technical product
A21377 CP (Incipio™)	18.3%	Suspension concentrate	Agricultural	All foliar agricultural uses except corn
A21550 CP (Vertento™)	34.8%	Suspension concentrate		All foliar agricultural uses except corn
A21708 CP	9.27%	Dispersible concentrate		All foliar agricultural uses
A22466 CP	25.7%	Suspension concentrate		For at-plant applications to field corn, popcorn, and seed corn only.
A22725 ST (Equento 400FS)	34.8%	Flowable concentrate	Seed Treatment	For on-farm and commercial seed treatment for cereals, rapeseed (including canola), dried shelled peas, beans, lentils, and chickpeas.
A22241 ST (Equento™ 100FS)	9.35%	Flowable concentrate		For use on small grain cereals, dried shelled peas, beans, lentils, and chickpeas only
Atexzo	18.3%	Suspension concentrate	Turf, nurseries, greenhouses, residential, commercial, trees	-
A21550 400SC (Vanecto 400SC)	34.8%	Suspension concentrate	Perimeter treatment, spot treatment, crack and crevice in and around buildings	Handheld spray
A22128 (Vanecto Cockroach Gel Bait)	1.0%	Ready-to-use bait		Cockroach bait use only

Agriculture - Foliar

Agriculture – Seed Treatment

Non-Ag Uses

<https://www.regulations.gov/document/EPA-HQ-OPP-2021-0641-0021>

Isocycloseram – What do proposed labels look like?

Agriculture – Foliar A21708 CP

2 runoff points required
from Mitigation Menu

4-6 runoff points in PULAs

Check BLT for PULAs

Production systems that
do not require runoff
mitigations

Mitigation Menu

2.6.1 MANDATORY RUNOFF/EROSION MITIGATION

- **DO NOT** apply isocycloseram when soils are saturated or above field capacity.
- **DO NOT** apply isocycloseram during rain.
- A minimum of **TWO** points, for the crop uses listed on this label, must be achieved unless following the Mitigation Menu steps indicates no additional runoff/erosion mitigation is needed (see <https://www.epa.gov/pesticides/mitigation-menu>).
- Some crop uses listed in this label will require a total of **FOUR** to **SIX** points in specific Pesticide Use Limitation Areas.

Applicators must access and search Bulletins Live! Two (BLT) at <https://www.epa.gov/pesticides/bulletins> within six months of the application to determine whether the application site falls within a Pesticide Use Limitation Area (PULA) that has a Bulletin in BLT. If you are located inside a PULA, follow the instructions in the bulletin.

If the application site is located outside a PULA, runoff/erosion mitigation is required for this product unless certain field/application parameters are present at the time of application (i.e., subsurface or tile drains with controlled outlet, perimeter berm systems, irrigation tailwater return systems, spot treatment, etc.).

Applicators must access the Mitigation Menu and follow the steps to determine if the minimum number of points must be achieved for the application. Unless the farm/field does not require the minimum points, the applicator must choose among the mitigation and/or mitigation relief measures on EPA's Mitigation Menu Website to meet or exceed the points required before applying this product. The website includes the full menu of runoff/erosion mitigation and mitigation relief measures, such as following recommendations from a runoff/erosion specialist or participating in a qualifying conservation program (see the www.epa.gov/pesticides/mitigation-menu for minimum elements).

<https://www.regulations.gov/document/EPA-HQ-OPP-2021-0641-0026>

Isocycloseram – What do proposed labels look like?

**Agriculture – Foliar
A21708 CP**

Check BLT for PULAs

Aerial Crop Restrictions

No End-Gun chemigation

2.6.5 ENDANGERED AND THREATENED SPECIES PROTECTION REQUIREMENTS

Before using this product, you must obtain any applicable Endangered Species Protection Bulletins (Bulletins) within six months prior to or on the day of application. To obtain Bulletins, go to Bulletins Live! Two (BLT) at <https://www.epa.gov/pesticides/bulletins>. When using this product, you must follow all label directions and restrictions contained in any applicable Bulletin(s) for the area where you are applying the product, including any restrictions on application timing if applicable. It is a violation of federal law to use this product in a manner inconsistent with its labeling, including this labeling instruction to follow all directions and restrictions contained in any applicable Bulletin(s). For general questions or technical help, call 1-844-447-3813, or email ESPP@epa.gov.

6.1 Use Restrictions

- Aerial application is prohibited for all uses except Corn, Cotton, Potato, and Soybean.
- **DO NOT** apply via end-gun chemigation.
- **DO NOT** apply when soils are saturated or above field capacity.
- **DO NOT** apply during rain.
- **DO NOT** treat plants grown for transplanting. A21708 CP is not for use in nurseries, plant propagation houses, or greenhouses by commercial transplant producers on plants being grown for transplanting.
- **DO NOT** use on crops grown to harvest in greenhouses unless specified in the crop use section of this label.
- **DO NOT** use in residential areas or residential landscapes.
- **DO NOT** apply more than 0.32 lb ai per acre per year of isocycloseram-containing products including all crop plantings and application types (seed treatment, soil, foliar). See **Section 7.0** for individual crop restrictions.
- **Ultra-low volume (ULV) applications**, spray volumes <2 gallons per acre, are prohibited.

[https://www.regulations.gov/document/
EPA-HQ-OPP-2021-0641-0026](https://www.regulations.gov/document/EPA-HQ-OPP-2021-0641-0026)

Isocycloseram – What do proposed labels look like?

Agriculture – Foliar
A21708 CP

3 – 15 mph wind speeds
15 mph max

Medium or coarser
droplet size (for ground
applications as well)

Wind-speed dependent
swath displacements

<https://www.regulations.gov/document/EPA-HQ-OPP-2021-0641-0026>

6.2 Spray Drift Management

SPRAY DRIFT MANAGEMENT

All Applications:

- During application, the Sustained Wind Speed, as defined by the National Weather Service (standard averaging period of 2 minutes), must register between 3 and 15 miles per hour.
- **DO NOT** apply when wind speeds exceed 15 miles per hour at the application site.
- Wind speed and direction must be measured on location using a windsock, an anemometer (including systems to measure wind speed or velocity on an aircraft), or an aircraft smoke system.
- Wind speed must be measured at the release height or higher, in an area free from obstructions such as trees that are not the target crop, buildings, and farm equipment.
- **DO NOT** apply during temperature inversions.

Aerial Applications:

- Select nozzle and pressure that deliver medium or coarser spray droplets as indicated in nozzle manufacturer's catalogues and in accordance with the most current American Society of Agricultural & Biological Engineers standards (ASABE S-641). When applying to crops via aerial application equipment, the spray boom must be mounted on the aircraft to minimize drift caused by wing tip or rotor blade vortices.
- When the wind speed is between 11-15 miles per hour, the boom length must be 65% or less of the wingspan for fixed wing aircraft and 75% or less of the rotor diameter for helicopters. Otherwise, the boom length must be 75% or less of the wingspan for fixed-wing aircraft and 90% or less of the rotor diameter for helicopters.
- When the wind speed is between 11-15 miles per hour, applicators must use a minimum of $\frac{3}{4}$ swath displacement upwind at the downwind edge of the field. Otherwise, applicators must use a minimum of $\frac{1}{2}$ swath displacement upwind at the downwind edge of the field.
- Do not release spray at a height greater than 10 feet above the crop canopy unless a greater application height is required for pilot safety.

Isocycloseram – What

**Agriculture – Foliar
A21708 CP**

Managed Areas
immediately adjacent to
the field that can be
included in the buffer if
people are not present

[https://www.regulations.gov/document/
EPA-HQ-OPP-2021-0641-0026](https://www.regulations.gov/document/EPA-HQ-OPP-2021-0641-0026)

For aerial, ground, and airblast applications, always maintain a no-application area (buffer) from the downwind edge of the last spray row and any non-managed area (i.e., the protection area).

Downwind Managed Areas That Can Represent Spray Drift Buffers

When spray drift buffers are identified as mitigation, the following managed areas can be included in the buffer if they are immediately adjacent/contiguous to the treated field in the downwind direction and people are not present in those areas (including inside closed buildings/structures). If the pesticide product label or bulletin, or the state or local government in which the application area is located has a requirement that prohibits or restricts spray drift in any area, including these specific managed areas, that prohibition/restriction must be followed.

- a. Agricultural fields, pastures, forage fields, and private rangelands, including untreated portions of the treated field;
- b. 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;
- c. Buildings and their perimeters, silos, or other man-made structures with walls and/or roof;
- d. 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;
- e. 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;
- f. Conservation Reserve Program (CRP)¹ and Agricultural Conservation Easement Program (ACEP) lands;
- g. 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.

Isocycloseram – What do proposed labels look like?

**Agriculture – Foliar
A21708 CP**

Insecticide Strategy Label
buffers =
“Wind-Directional
Ecological Spray Drift
Buffers”

Aquatic Area Buffers are
in addition to the Table A.
buffers and
CANNOT BE REDUCED

Wind-Directional Ecological Spray Drift
Buffers
CAN BE REDUCED
using the mitigation menu website

For Spray Drift Buffers for Broadcast Applications

Applicators must access and search Bulletins Live! Two (BLT) at <https://www.epa.gov/pesticides/bulletins> within six months of the application to determine whether the application site falls within a Pesticide Use Limitation Area (PULA) that has a Bulletin in BLT. Wind-directional ecological spray drift buffers are required for applications as follows in Table A:

Table A. Wind-Directional Ecological Spray Drift Buffers

Application Method	Droplet Size Distribution (DSD)	Minimum Buffer Distance
Aerial	Medium or coarser	300 ft
Ground (2–4 ft boom height)	Medium or coarser	25 ft
Airblast	NA	85 ft

Buffers to Aquatic Areas

In addition to the wind-directional buffers described in Table A, buffers are required to aquatic areas regardless of the wind direction. These buffers cannot be reduced using buffer reduction mitigation options. When buffering to a waterbody, always use the larger buffer distance (either wind-directional ecological or buffer to aquatic areas).

Buffer Zone for Ground and Airblast Applications

Regardless of buffer mitigations, DO NOT make ground applications within 25 ft of lakes, rivers, reservoirs, permanent streams, marshes, natural ponds, estuaries, or coastal areas.

Buffer Zone for Non-ULV Aerial Applications

Regardless of buffer mitigations, DO NOT make aerial applications within 150 ft of lakes, rivers, reservoirs, permanent streams, marshes, natural ponds, estuaries, or coastal areas.

Reduction Options for All Ecological Wind-Directional Drift Buffers

The applicator may choose among the ecological drift buffer reduction options on EPA’s Mitigation Menu Website (<https://www.epa.gov/pesticides/mitigation-menu>) to reduce the wind-directional ecological buffer distance before applying this product. All buffer reduction options selected must align with the minimum droplet size and release height requirements on this label.

Isocycloseram – What do proposed labels look like?

**Agriculture – Foliar
A21708 CP**

Chemigation mitigations
incorporated directly on
the label

For Chemigation Applications

- **DO NOT** apply via end-gun chemigation.

If using overhead chemigation equipment, choose one of the following two options:

- 1) 25 ft buffer, or;
- 2) Choose two of the following additional mitigations:
 - Use a pressure of 20 psi or less.
 - Use a release height of 5 feet or less.
 - Include a windbreak downwind of the application site. This can include a downwind windbreak, hedgerow, riparian zone, forest, shrubland, or woodlots.

If using non-end gun impact sprinkler chemigation equipment, choose one of the following two options:

- 1) 25 ft buffer, or;
- 2) Limit throw distance to edge of field (treated area) plus include a downwind windbreak (this can include a downwind windbreak, hedgerow, riparian zone, forest, shrubland, or woodlots).

[https://www.regulations.gov/document/
EPA-HQ-OPP-2021-0641-0026](https://www.regulations.gov/document/EPA-HQ-OPP-2021-0641-0026)

Isocycloseram – What do proposed labels look like?

**Agriculture – Foliar
A21708 CP**

Crop Specific Use Restrictions – Aerial Application Restrictions

Aerial Use Permitted –
CORN

6) Aerial application to corn is only permitted in the following states: Colorado, Kansas, Nebraska, Oklahoma, and Texas.

Aerial Use Permitted –
SOYBEAN

6) Aerial application to soybean is only permitted in the following states: Alabama, Arkansas, Georgia, Louisiana, Mississippi, Missouri, North Carolina, Oklahoma, South Carolina, Tennessee, and Texas.

	AL	AR	CO	GA	KS	LA	MS	MO	NE	NC	OK	SC	TN	TX
Corn			✓		✓				✓		✓			✓
Soybean	✓	✓		✓		✓	✓	✓		✓	✓	✓	✓	✓

Aerial Use Permitted –
POTATO

6) Aerial application is prohibited for all crops in Tuberous and Corn Vegetables Crop Subgroup 1C **except Potato.**

<https://www.regulations.gov/document/EPA-HQ-OPP-2021-0641-0026>

Isocycloseram – What do proposed labels look like?

Agriculture – Foliar A21708 CP

Crop Specific Use Restrictions – Pollinator Focus

Determinate crops –
CITRUS specific

8) **DO NOT** apply 3 days prior to flowering until the end of the flowering period. In areas where the authorities provide a declaration or definition of the flowering period, observe defined flowering periods as established by local university extension offices, county agricultural commissioners, or other state/tribal lead agencies.

Determinate crops –
ORCHARDS

7) **DO NOT** apply 3 days prior to flowering until the end of the flowering period.

Indeterminate Crops –
VEGETABLES

7) Foliar application of this product is prohibited from onset of flowering until flowering is complete unless: (i) the application is being made between 2-hrs prior to sunset and 2-hrs after the following sunrise, **OR** (ii) the application is being made at a time when the temperature at the application site is 50°F or less.

Indeterminate Crops –
SOYBEAN

7) Foliar application of this product is prohibited from the onset of flowering until flowering is complete unless: (i) the application is made before 10 am or after 3 pm, **OR** (ii) the application is being made at a time when the temperature at the application site is 50°F or less.

Indeterminate Crops –
SEED CROPS

7) For crops grown for seed, **DO NOT** apply 3 days prior to flowering until the end of the flowering period.

Indeterminate Crops –
CORN (A21708 CP)

7) Foliar application of this product is prohibited during pollen shed unless: (i) the application is made before 10 am or after 3 pm, **OR** (ii) the application is being made at a time when the temperature at the application site is 50°F or less.

Isocycloseram – What do proposed labels look like?

Agriculture – Seed Treatment
A22241 ST

Check BLT within 6
months of planting

2.6.3 Endangered and Threatened Species Protection Requirements

Before planting seed treated with this product, you must obtain any applicable Endangered Species Protection Bulletins (Bulletins) within six months prior to or on the day of planting. To obtain Bulletins, go to Bulletins Live! Two (BLT) at <https://www.epa.gov/pesticides/bulletins>. When planting seed treated with this product, you must follow all label directions and restrictions contained in any applicable Bulletin(s) for the area where you are planting seed treated with this product, including any restrictions on planting timing if applicable.

<https://www.regulations.gov/document/EPA-HQ-OPP-2021-0641-0028>

Isocycloseram – What do proposed labels look like?

**Non-Ag – Broadcast
A21550 400SC**

Some turf uses will only require points if in a PULA that requires it

Golf tees, greens and fairways **DO NOT** require points

Check BLT for PULAs

Spot Treatments **DO NOT** require points

For everything else, 2 points are required

2.4.1 Mandatory Runoff Mitigation

- **DO NOT** apply when soils are saturated or above field capacity.
- **DO NOT** apply during rain.
- You must achieve a minimum of **TWO** points for the crop uses listed on this label unless otherwise stipulated below.
- Some uses listed in this label will require a total of **FOUR** to **SIX** points in specific Pesticide Use Limitation Areas (PULA).
- Certain turf uses (including golf course managed roughs, institutional and commercial turf, institutional, commercial and residential landscapes; sports fields, parks, municipal grounds, and cemeteries) and certain ornamental uses (residential and commercial landscapes, parks, and interior plantscapes) only require runoff mitigation points if the application site falls within a PULA.
- For golf course use only, no points are required if limiting applications to tees, greens, and fairways.

Applicators must access and search Bulletins Live! Two (BLT) at <https://www.epa.gov/pesticides/bulletins> up to six months before the application to determine whether the application site falls within a Pesticide Use Limitation Area (PULA) that has a Bulletin in BLT. If you are located inside a PULA, follow the instructions in the bulletin.

If the application site is located outside a PULA, runoff/erosion mitigation is required for this product unless certain field/site application parameters are present at the time of application (i.e., subsurface or tile drains with controlled outlet, perimeter berm systems, irrigation tailwater return systems, spot treatment, etc.). Access EPA’s Mitigation Menu Website at www.epa.gov/pesticides/mitigation-menu for a full list of application parameters to evaluate whether your application site / field is subject to runoff/erosion mitigation.

If the application does not meet the specified application parameters, a minimum of TWO points for the uses listed on this label must be achieved. The applicator must choose among the mitigation and/or mitigation relief measures on EPA’s Mitigation Menu Website to meet or exceed these points before applying this product.

Isocycloseram – What do proposed labels look like?

Non-Ag – Broadcast A21550 400SC

The website includes the full menu of runoff/erosion mitigation and mitigation relief measures (<https://www.epa.gov/pesticides/mitigation-menu>). The following are examples of mitigation options for non-agricultural application sites (e.g., golf courses, commercial turf, landscapes) and agricultural use sites such as sod farms and nurseries.

Mitigation	Qualifying Practices	Points
Annual application rate reduction	Any application 10 to < 30% less than the maximum labeled annual application rate	1
	Any application 30 to < 60% less than the maximum labeled annual application rate	2
	Any application ≥ 60% less than the maximum labeled annual application rate	3
Reduction in proportion of treated area (banded application, partial area treatment, ground precision sprayer, smart sprayer, or other specialized method)	Portion of field/site not treated: 10 to < 30%	2
	Portion of field/site not treated: 30 to < 60%	3
	Portion of field/site not treated: ≥ 60%	4
Soil incorporation	Watering-in or mechanical incorporation before runoff producing rain event.	1
Field or treated area with slope ≤ 3%	Naturally low slope or flat fields/treated areas	2
Predominantly sandy soils	Fields with 10-20% clay and 50-90% sand (includes loam, silt loam, or silt soil) without a restrictive layer that impedes the movement of water through the soil (also described as Hydrologic Soil Group B)	2
In-field vegetative strips	Inter-row vegetative strips, strip cropping or intercropping, alley cropping, prairie strips, contour buffer strips, contour strip cropping, vegetative barrier (occurring in a contoured field)	2
Irrigation water management	Use of soil moisture sensors/evapotranspiration meters with center pivots & sprinklers; above ground drip tape, drip emitters; microsprinklers	2
Cover crop or continuous ground cover	Cover crop or continuous ground cover; with tillage	1
	Cover crop or continuous ground cover; no tillage; short-term cover crop	2
	Cover crop or continuous ground cover; no tillage; long-term cover crop	3
Mulching	Mulching with permeable artificial materials (i.e., landscape fabrics, synthetic mulches)	1
	Mulching with natural materials	3
Water retention systems	Retention pond, sediment basins, catch basins, sediment traps	2
Vegetative Filter Strip (VFS) – Adjacent to treated area	Vegetative barrier/field border 20 to < 30 ft	1
	Vegetative barrier/field border 30 to < 60 ft	2
	Vegetative barrier/field border > 60 ft	3
Grassed waterway	Grassed waterway	2
Vegetated Ditch	Vegetated ditch	1
Riparian Area	Riparian forest buffer, riparian herbaceous cover 20 to < 30 ft	1
	Riparian forest buffer, riparian herbaceous cover 30 to < 60 ft	2
	Riparian forest buffer, riparian herbaceous cover ≥ 60 ft	3

<https://www.regulations.gov/document/EPA-HQ-OPP-2021-0641-0025>

Isocycloseram – What do proposed labels look like?

**Non-Ag – Broadcast
A21550 400SC**

Check BLT for PULAs

2.4.6 Endangered and Threatened Species Protection Requirements:

Before using this product, you must obtain any applicable Endangered Species Protection Bulletins (Bulletins) within six months prior to or on the day of application. To obtain Bulletins, go to Bulletins Live! Two (BLT) at <https://www.epa.gov/pesticides/bulletins>. When using this product, you must follow all label directions and restrictions contained in any applicable Bulletin(s) for the area where you are applying the product, including any restrictions on application timing if applicable. It is a violation of Federal law to use this product in a manner inconsistent with its labeling, including this labeling instruction to follow all directions and restrictions contained in any applicable Bulletin(s). For general questions or technical help, call 1-844-447-3813, or email ESPP@epa.gov.

<https://www.regulations.gov/document/EPA-HQ-OPP-2021-0641-0025>

Isocycloseram – What do proposed labels look like?

**Non-Ag – Broadcast
A21550 400SC**

No aerial

15 mph wind restriction

Not golf: medium to coarse droplets

Golf: coarse or coarser droplets

Not golf: 4 ft. application height requirement

Golf: 2 ft. application height requirement

Airblast – turnoff outward nozzles at row end

MANDATORY SPRAY DRIFT MITIGATION

DO NOT APPLY VIA AERIAL APPLICATION EQUIPMENT

For All Applications:

- During application, the Sustained Wind Speed, as defined by the National Weather Service (standard averaging period of 2 minutes), must register between 3 and 15 miles per hour.
- **DO NOT** apply when wind speeds exceed 15 miles per hour at the application site.
- Wind speed and direction must be measured on location using a windsock, an anemometer (including systems to measure wind speed or velocity on an aircraft) or an aircraft smoke system.
- Wind speed must be measured at the release height or higher, in an area free from obstructions such as trees that are not the target crop, buildings, and equipment.
- **DO NOT** apply during temperature inversions.

Ground boom Applications (Outdoor Applications):

- *For all uses except golf course:* Select nozzle and pressure that deliver medium or coarser spray droplets as indicated in nozzle manufacturer's catalogues and in accordance with the most current American Society of Agricultural & Biological Engineers standards (ASABE S572).
- *For golf course use only:* Select nozzle and pressure that deliver coarse or coarser spray droplets as indicated in nozzle manufacturer's catalogues and in accordance with the most current American Society of Agricultural & Biological Engineers standards (ASABE S572).
- *For all uses except golf course:* Spray at the appropriate boom height based on nozzle selection and nozzle spacing, but do not exceed a boom height of 4 feet above ground or plant canopy. Set boom to lowest effective height over the target pest or crop canopy based on equipment manufacturer's directions.
- *For golf course use only:* Spray at the appropriate boom height based on nozzle selection and nozzle spacing, but do not exceed a boom height of 2 feet above ground or plant canopy. Set boom to lowest effective height over the ground or plant canopy based on equipment manufacturer's directions.

Airblast Applications:

- Sprays must be directed into the canopy.
- User must turn off outward pointing nozzles at the row end and when spraying outer row.

Isocycloseram – What do proposed labels look like?

**Non-Ag – Broadcast
A21550 400SC**

Managed Areas
immediately adjacent to
SOD or NURSERIES
that can be included in
the buffer if people are
not present

Downwind managed areas that can represent spray drift buffers for agricultural use patterns (e.g., sod farms, commercial nurseries)

When spray drift buffers are identified as mitigation, the following managed areas can be included in the buffer if they are immediately adjacent/contiguous to the treated field in the downwind direction and people are not present in those areas (including inside closed buildings/structures). If the pesticide product label or bulletin, or the state or local government in which the application area is located has a requirement that prohibits or restricts spray drift in any area, including these specific managed areas, that prohibition/restriction must be followed.

- a. Agricultural fields, pastures, forage fields, and private rangelands, including untreated portions of the treated field/site;
- b. 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;
- c. Buildings and their perimeters, or other man-made structures with walls and/or roof;
- d. 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;
- e. 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;
- f. Conservation Reserve Program (CRP)¹ and Agricultural Conservation Easement Program (ACEP) lands;
- g. On-site contained irrigation water resources that are not connected to adjacent water bodies, including on-site irrigation canals and ditches, water conveyances, managed irrigation/runoff retention basins, ponds, and tailwater collection ponds.

<https://www.regulations.gov/document/EPA-HQ-OPP-2021-0641-0025>

Isocycloseram – What do proposed labels look like?

**Non-Ag – Broadcast
A21550 400SC**

Managed Areas
immediately adjacent to
NON-AG USE SITES
that can be included in
the buffer if people are
not present

These are different from
agricultural managed
areas

Downwind managed areas that can represent spray drift buffers for non-agricultural use patterns (e.g., golf courses, commercial turf)

When spray drift buffers are identified as mitigation, the following managed areas can be included in the buffer if they are immediately adjacent/contiguous to the treated site in the downwind direction and people are not present in those areas (including inside closed buildings/structures). If the pesticide product label or bulletin, or the state or local government in which the application area is located has a requirement that prohibits or restricts spray drift in any area, including these specific managed areas, that prohibition/restriction must be followed.

- a. Roads, paved or gravel surfaces, buildings and their perimeters or other man-made structures with walls and/or roof;
- b. Mowed grassy areas adjacent to the application site or untreated portions of the application site
- c. For golf course use only: including tees, greens, fairways, collars, intermediate roughs, and roughs, if the product is not applied at these sites
- d. 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;
- e. 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;
- f. Managed wetlands and artificial ponds/waterbodies that are entirely contained within the treatment area and do not leave the treatment area and/or empty into other waterbodies (including waterways, water hazards (golf course use only), and constructed wetlands).

<https://www.regulations.gov/document/EPA-HQ-OPP-2021-0641-0025>

Isocycloseram – What do proposed labels look like?

Non-Ag – Broadcast
A21550 400SC

Check BLT for PULAs

Wind-Directional
Ecological Spray Drift
Buffers

Aquatic Area Buffers are in addition to Table A. buffers and **CANNOT BE REDUCED**
Note: 25 ft. ground aquatic is > 15 ft. Table A Buffer

For Spray Drift Buffers for Broadcast Applications

Applicators must access and search Bulletins Live! Two (BLT) at <https://www.epa.gov/pesticides/bulletins> within six months of the application to determine whether the application site falls within a Pesticide Use Limitation Area (PULA) that has a Bulletin in BLT. Wind-directional ecological spray drift buffers are required for applications as follows in **Table A**:

Table A. Ecological Spray Drift Buffers

Application method	Droplet size distribution (DSD)	Minimum buffer distance
Ground (2–4 foot boom height)	Medium or coarser	25 ft
Ground (< 2 foot boom height) ¹	Coarse or coarser	15 ft
Airblast Sprayer	NA	85 ft

DSD = droplet size distribution; NA = not applicable

¹ Application conditions for golf course use

Buffers to Aquatic Areas

In addition to the wind-directional buffers described in **Table A**, buffers are required to aquatic areas regardless of the wind direction. These buffers cannot be reduced using buffer reduction mitigation options. When buffering to a waterbody, always use the larger buffer distance (either wind-directional ecological or buffer to aquatic areas).

Buffer zone for ground and airblast applications

Regardless of buffer mitigations, **DO NOT** make ground and airblast applications within 25 ft of lakes, rivers, reservoirs, permanent streams, marshes, natural ponds, estuaries, or coastal areas.

<https://www.regulations.gov/document/EPA-HQ-OPP-2021-0641-0025>

Isocycloseram – What do proposed labels look like?

Non-Ag – Broadcast
A21550 400SC

Wind-Directional
Ecological Spray Drift
Buffers

Not Golf: Use the
Mitigation Menu to
reduce the buffer

Table A. Ecological Spray Drift Buffers

Application method	Droplet size distribution (DSD)	Minimum buffer distance
Ground (2–4 foot boom height)	Medium or coarser	25 ft
Ground (< 2 foot boom height) ¹	Coarse or coarser	15 ft
Airblast Sprayer	NA	85 ft

DSD = droplet size distribution; NA = not applicable

¹ Application conditions for golf course use

Reduction Options for Ecological Wind-Directional Drift Buffers for Use Sites Other than Golf Courses:

The applicator may choose among the ecological drift buffer reduction options on EPA’s Mitigation Menu Website (<https://www.epa.gov/pesticides/mitigation-menu>) to reduce the wind-directional ecological buffer distance before applying this product. All buffer reduction options selected must align with the minimum droplet size and release height requirements on this label.

To reduce the buffer distance for the application, the buffer reduction options must be employed in accordance with the instructions and descriptions on EPA’s Mitigation Menu Website. These buffer reduction options do not apply to areas occupied by humans for residential or commercial purposes (such as lawns, sidewalks, outdoor recreational areas, athletic fields, buildings/homes, farmworker housing, schools, daycare centers, nursing homes, and hospitals). Buffer reduction options also cannot reduce distances to aquatic areas.

When using more than one option during the application, the buffer distances may be added together. Combining multiple buffer reduction options can eliminate the implementation of an ecological wind-directional buffer altogether.

<https://www.regulations.gov/document/EPA-HQ-OPP-2021-0641-0025>

Isocycloseram – What do proposed labels look like?

Non-Ag – Broadcast
A21550 400SC

Wind-Directional
Ecological Spray Drift
Buffers

Golf: Use THIS LIST to
reduce Buffers in Table A

Golf: If any of these apply,
no buffer from Table A is
required

Table A. Ecological Spray Drift Buffers

Application method	Droplet size distribution (DSD)	Minimum buffer distance
Ground (2–4 foot boom height)	Medium or coarser	25 ft
Ground (< 2 foot boom height) ¹	Coarse or coarser	15 ft
Airblast Sprayer	NA	85 ft

DSD = droplet size distribution; NA = not applicable

¹ Application conditions for golf course use

Ground Spray Drift Buffer Reduction Options for *Golf Course Use Only*:

The following mitigation options allow for reduction of the total buffer:

- A reduction in the required wind-directional buffer distance can be made if reducing the single application rate. The percent reduction in buffer directly corresponds to the application rate reduction from the maximum on the pesticide product label.
- A 10-foot reduction in the required wind-directional buffer distance can be made if the relative humidity is 60% or more at the time of application.

The incorporation of one of the following mitigation options results in no buffer (i.e., 0 feet) on golf courses:

- Over-the-top hooded sprayer.
- Restricting the number of equipment passes to the treated site/field to 10 or less.
- If a windbreak or shelterbelt (e.g., trees or riparian hedgerows) between the application site and non-managed area is present and meets either the basic or the advanced criteria listed in the '**Windbreak-Shelterbelt Criteria**' section of this label.
- If a windbreak or shelterbelt consists of riparian/forests/shrubland/woodlots that are 60 ft wide or greater

<https://www.regulations.gov/document/EPA-HQ-OPP-2021-0641-0025>

Isocycloseram – What do proposed labels look like?

**Non-Ag – Broadcast
A21550 400SC**

Outdoor Blooming
Nursery Plants Require
Plant-Specific Bloom
Restrictions

- 2) **Do not** apply 3 days prior to flowering until the end of the flowering period. In areas where the authorities provide a declaration or definition of the flowering period, observe defined flowering periods as established by local university extension offices, County Agricultural Commissions, or other state/tribal lead agencies.

<https://www.regulations.gov/document/EPA-HQ-OPP-2021-0641-0025>

Isocycloseram – Field Examples for Spray Drift Buffers

5 Scenarios

Field examples were selected to illustrate the thought process with different application methods (ground, aerial, airblast), with or without PULA mitigations

Field scenarios shown here are only for informational purposes to help demonstrate the thought process of implementing spray drift buffers and is based on the interpretation of the presenters.

Isocycloseram Scenario 1 – Ground Application



Table A. Wind-Directional Ecological Spray Drift Buffers

Application Method	Droplet Size Distribution (DSD)	Minimum Buffer Distance
Aerial	Medium or coarser	300 ft
Ground (2–4 ft boom height)	Medium or coarser	25 ft
Airblast	NA	85 ft

Buffer Zone for Ground and Airblast Applications

Regardless of buffer mitigations, DO NOT make ground applications within 25 ft of lakes, rivers, reservoirs, permanent streams, marshes, natural ponds, estuaries, or coastal areas.

Wind-Directional Ecological Buffers
25 ft.

Aquatic Buffers
25 ft.

Isocycloseram Scenario 1 – Ground Application



Table A. Wind-Directional Ecological Spray Drift Buffers

Application Method	Droplet Size Distribution (DSD)	Minimum Buffer Distance
Aerial	Medium or coarser	300 ft
Ground (2–4 ft boom height)	Medium or coarser	25 ft
Airblast	NA	85 ft

Buffer Zone for Ground and Airblast Applications

Regardless of buffer mitigations, DO NOT make ground applications within 25 ft of lakes, rivers, reservoirs, permanent streams, marshes, natural ponds, estuaries, or coastal areas.

Wind-Directional Ecological Buffers
25 ft.

Aquatic Buffers
25 ft.

25 ft. Down-Wind is comprised entirely of Managed Areas – Agricultural Fields

0 ft. Buffer

Step 4: Subtract “Managed Area” Distance

Subtract the total distance of “managed area” downwind of the application site from the maximum spray drift buffer identified in Step 3. Is the remaining buffer ≥ 10 feet?

Isocycloseram Scenario 2 – Ground Application



Table A. Wind-Directional Ecological Spray Drift Buffers

Application Method	Droplet Size Distribution (DSD)	Minimum Buffer Distance
Aerial	Medium or coarser	300 ft
Ground (2–4 ft boom height)	Medium or coarser	25 ft
Airblast	NA	85 ft

Buffer Zone for Ground and Airblast Applications

Regardless of buffer mitigations, DO NOT make ground applications within 25 ft of lakes, rivers, reservoirs, permanent streams, marshes, natural ponds, estuaries, or coastal areas.

Wind-Directional
Ecological Buffers
25 ft.

Aquatic Buffers
25 ft.

Isocycloseram Scenario 2 – Ground Application

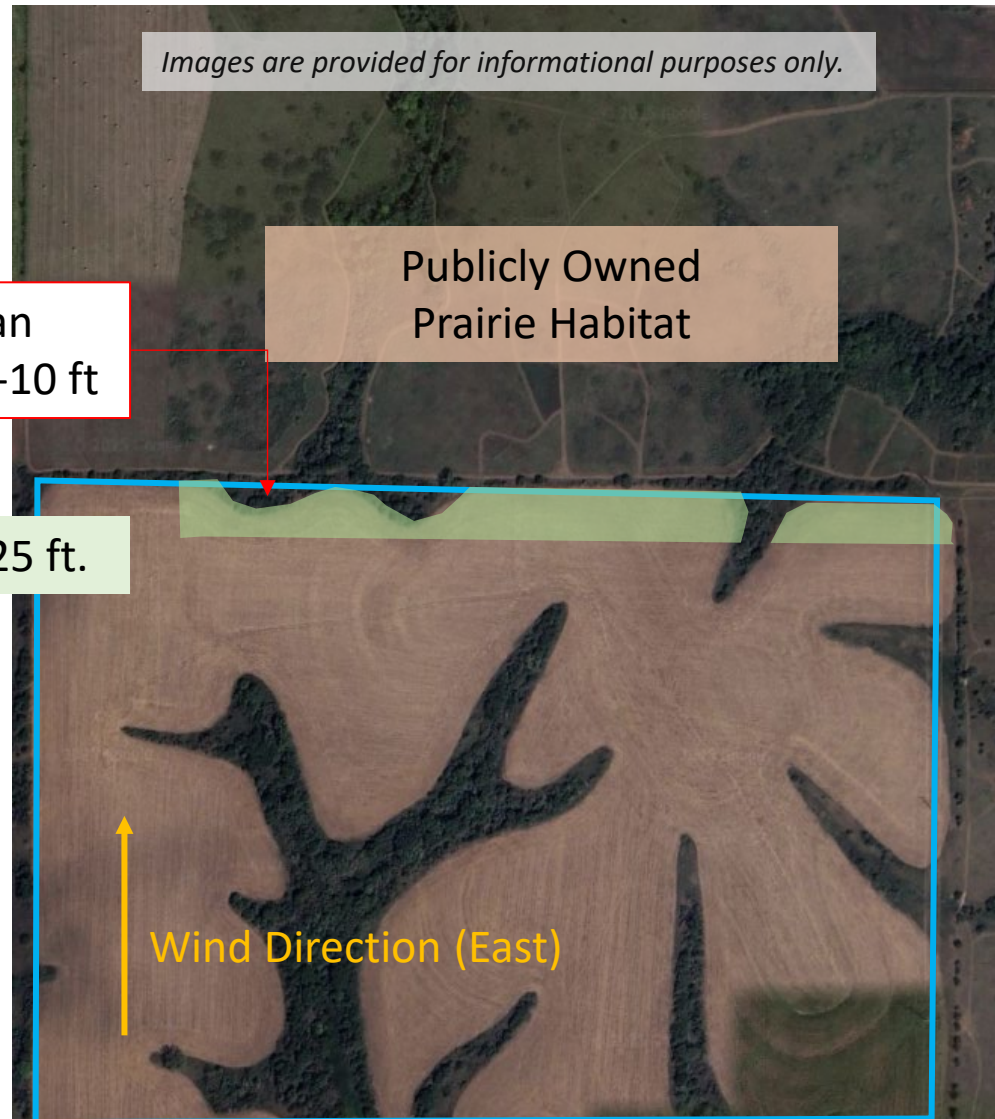


Table A. Wind-Directional Ecological Spray Drift Buffers

Application Method	Droplet Size Distribution (DSD)	Minimum Buffer Distance
Aerial	Medium or coarser	300 ft
Ground (2–4 ft boom height)	Medium or coarser	25 ft
Airblast	NA	85 ft

Buffer Zone for Ground and Airblast Applications

Regardless of buffer mitigations, DO NOT make ground applications within 25 ft of lakes, rivers, reservoirs, permanent streams, marshes, natural ponds, estuaries, or coastal areas.

Wind-Directional Ecological Buffers
25 ft.

Medium Droplet Size

Riparian Area: 5-10 ft.

15-20 ft. Buffer

Aquatic Buffers
25 ft.

Isocycloseram Scenario 3 – Ground Application in PULA



Table A. Wind-Directional Ecological Spray Drift Buffers

Application Method	Droplet Size Distribution (DSD)	Minimum Buffer Distance
Aerial	Medium or coarser	300 ft
Ground (2–4 ft boom height)	Medium or coarser	25 ft
Airblast	NA	85 ft

Buffer Zone for Ground and Airblast Applications

Regardless of buffer mitigations, DO NOT make ground applications within 25 ft of lakes, rivers, reservoirs, permanent streams, marshes, natural ponds, estuaries, or coastal areas.

Wind-Directional Ecological Buffers
25 ft.

Aquatic Buffers
25 ft.

Bulletins Live! Two has this field is in a PULA

Isocycloseram Scenario 3 – Ground Application in PULA



Table A. Wind-Directional Ecological Spray Drift Buffers

Application Method	Droplet Size Distribution (DSD)	Minimum Buffer Distance
Aerial	Medium or coarser	300 ft
Ground (2–4 ft boom height)	Medium or coarser	25 ft
Airblast	NA	85 ft

Buffer Zone for Ground and Airblast Applications

Regardless of buffer mitigations, DO NOT make ground applications within 25 ft of lakes, rivers, reservoirs, permanent streams, marshes, natural ponds, estuaries, or coastal areas.

Wind-Directional Ecological Buffers
25 ft.

Aquatic Buffers
25 ft.

Bulletins Live! Two has this field is in a PULA

PULA prohibiting use on cucurbits in bloom from two hours after sunrise until two hours before sunset

Isocycloseram Scenario 3 – Ground Application in PULA



Table A. Wind-Directional Ecological Spray Drift Buffers

Application Method	Droplet Size Distribution (DSD)	Minimum Buffer Distance
Aerial	Medium or coarser	300 ft
Ground (2–4 ft boom height)	Medium or coarser	25 ft
Airblast	NA	85 ft

Buffer Zone for Ground and Airblast Applications

Regardless of buffer mitigations, DO NOT make ground applications within 25 ft of lakes, rivers, reservoirs, permanent streams, marshes, natural ponds, estuaries, or coastal areas.

Wind-Directional Ecological Buffers
25 ft.

Aquatic Buffers
25 ft.

Bulletins Live! Two has this field is in a PULA

PULA prohibiting use on cucurbits in bloom from two hours after sunrise until two hours before sunset

Not growing cucurbits so no additional PULA restrictions apply, just the label buffers

Isocycloseram Scenario 3 – Ground Application in PULA

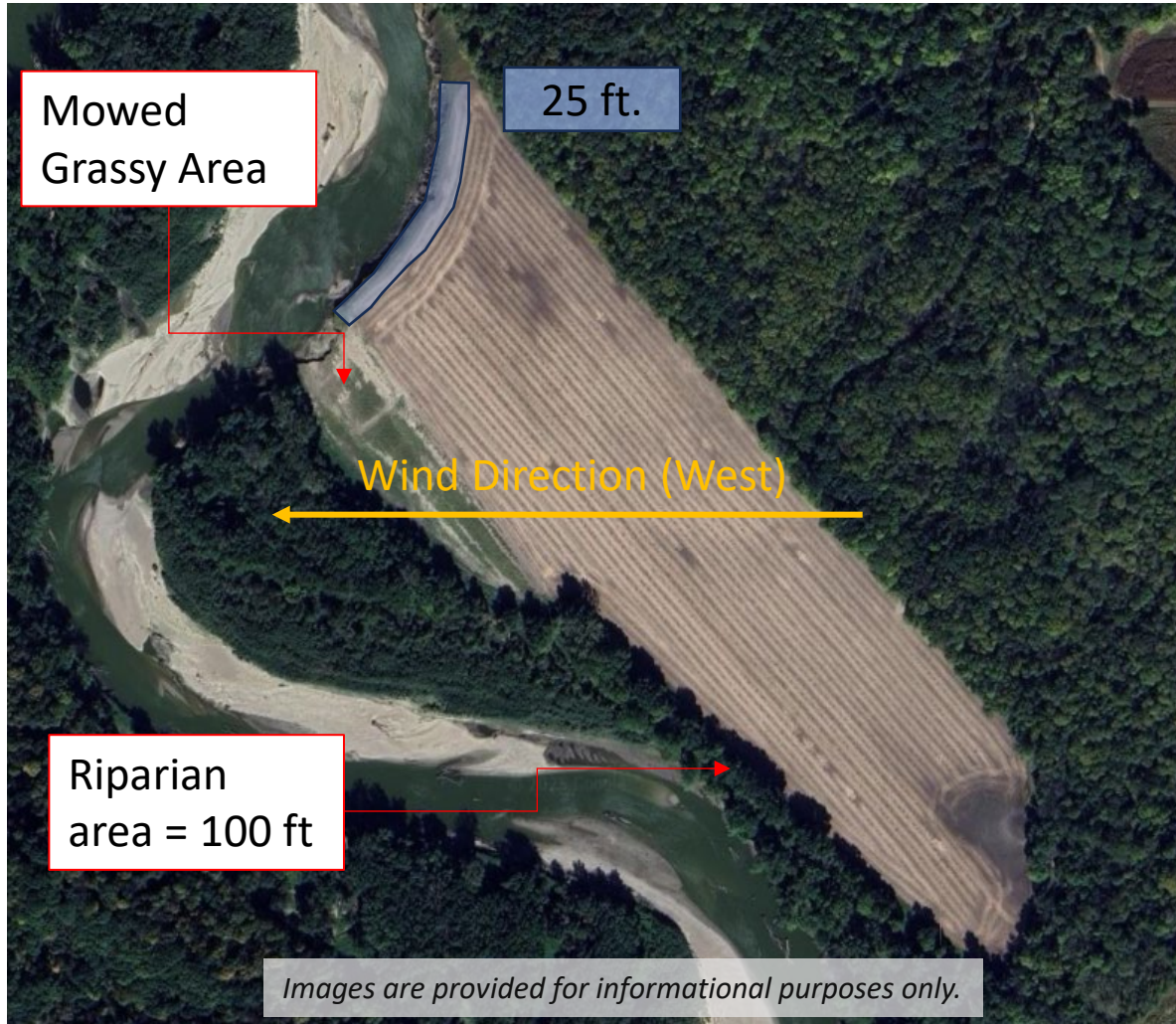


Table A. Wind-Directional Ecological Spray Drift Buffers

Application Method	Droplet Size Distribution (DSD)	Minimum Buffer Distance
Aerial	Medium or coarser	300 ft
Ground (2–4 ft boom height)	Medium or coarser	25 ft
Airblast	NA	85 ft

Buffer Zone for Ground and Airblast Applications

Regardless of buffer mitigations, DO NOT make ground applications within 25 ft of lakes, rivers, reservoirs, permanent streams, marshes, natural ponds, estuaries, or coastal areas.

Wind-Directional Ecological Buffers
25 ft.

Aquatic Buffers
25 ft.

At least 25 ft. of managed areas around every side of this field except the northern portion

0 ft. Buffer

Isocycloseram Scenario 4 – Aerial Application



Table A. Wind-Directional Ecological Spray Drift Buffers

Application Method	Droplet Size Distribution (DSD)	Minimum Buffer Distance
Aerial	Medium or coarser	300 ft
Ground (2–4 ft boom height)	Medium or coarser	25 ft
Airblast	NA	85 ft

Buffer Zone for Non-ULV Aerial Applications

Regardless of buffer mitigations, DO NOT make aerial applications within 150 ft of lakes, rivers, reservoirs, permanent streams, marshes, natural ponds, estuaries, or coastal areas.

Wind-Directional Ecological Buffers
300 ft.

Aquatic Buffers
150 ft.

Isocycloseram Scenario 4 – Aerial Application

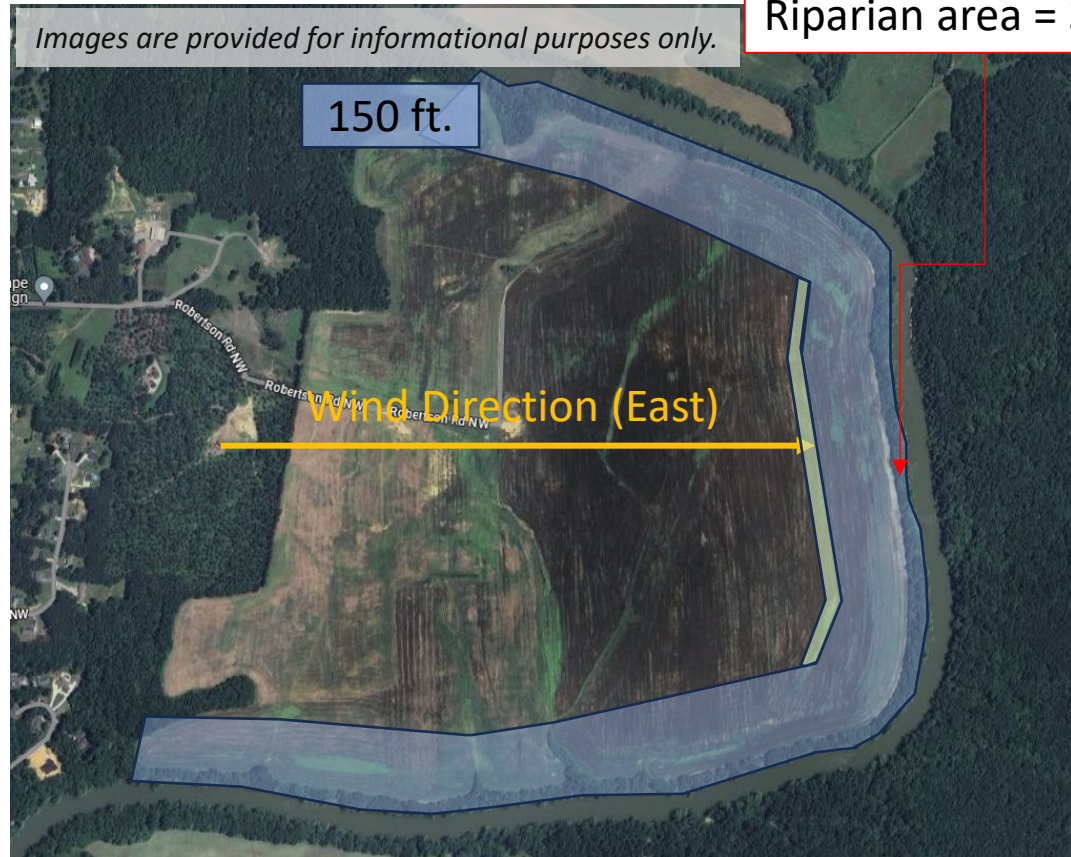


Table A. Wind-Directional Ecological Spray Drift Buffers

Application Method	Droplet Size Distribution (DSD)	Minimum Buffer Distance
Aerial	Medium or coarser	300 ft
Ground (2–4 ft boom height)	Medium or coarser	25 ft
Airblast	NA	85 ft

Buffer Zone for Non-ULV Aerial Applications

Regardless of buffer mitigations, DO NOT make aerial applications within 150 ft of lakes, rivers, reservoirs, permanent streams, marshes, natural ponds, estuaries, or coastal areas.

Wind-Directional Ecological Buffers
300 ft.

Aquatic Buffers
150 ft.

Managed Areas:
30 ft. Riparian Area
 $300 \text{ ft.} - 30 \text{ ft.} = 270 \text{ ft.}$

Coarse Droplet: 40%
TOTAL % Reduction = 40%
 $270 \text{ ft.} - (270 * 0.4) = 162 \text{ ft.}$

162 ft. Buffer

Isocycloseram Scenario 4 – Aerial Application

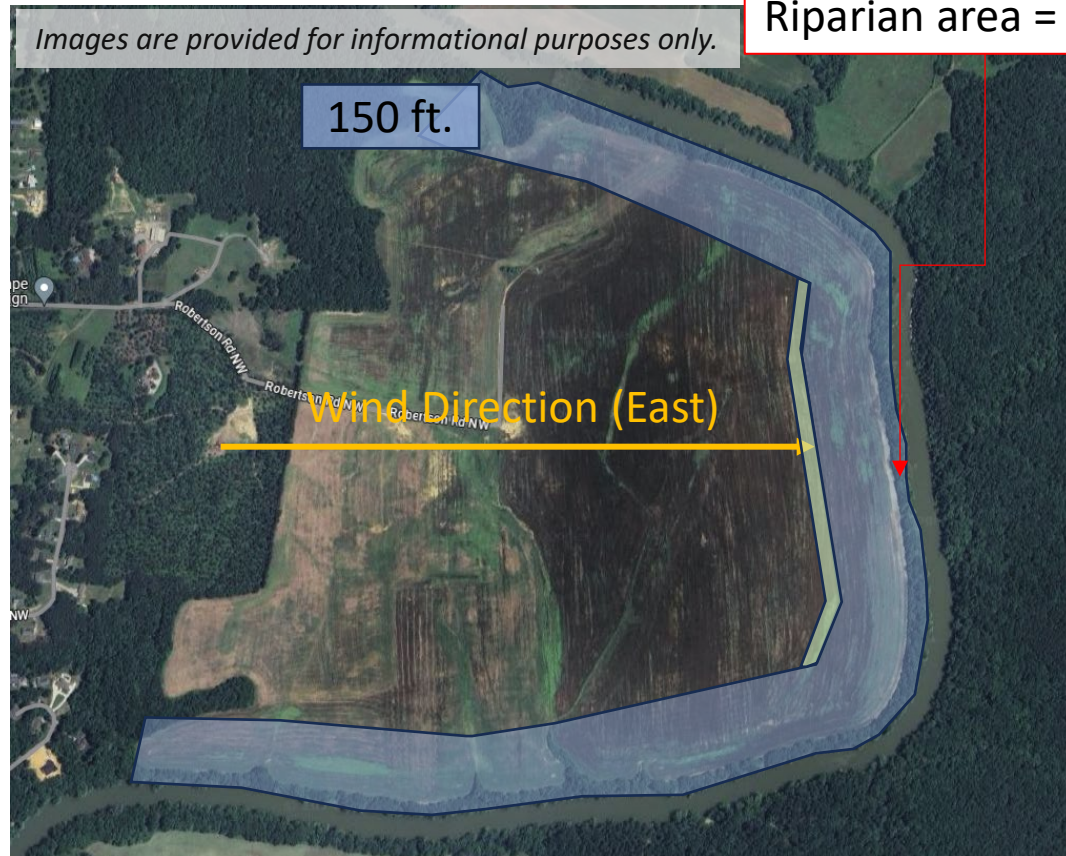


Table A. Wind-Directional Ecological Spray Drift Buffers

Application Method	Droplet Size Distribution (DSD)	Minimum Buffer Distance
Aerial	Medium or coarser	300 ft
Ground (2–4 ft boom height)	Medium or coarser	25 ft
Airblast	NA	85 ft

Buffer Zone for Non-ULV Aerial Applications

Regardless of buffer mitigations, DO NOT make aerial applications within 150 ft of lakes, rivers, reservoirs, permanent streams, marshes, natural ponds, estuaries, or coastal areas.

Wind-Directional Ecological Buffers
300 ft.

Aquatic Buffers
150 ft.

Managed Areas:
30 ft. Riparian Area
 $300 \text{ ft.} - 30 \text{ ft.} = 270 \text{ ft.}$

150 ft. aquatic buffer (-30 ft. riparian area) = 120 ft. untreated field area

Coarse Droplet: 40%
TOTAL % Reduction = 40%
 $270 \text{ ft.} - (270 * 0.4) = 162 \text{ ft.}$

[Reduced Proportion of Field Treated \(# of Airplane/Helicopter passes\)](#)

The reduced number of passes applies to the upwind part of the treated field

162 ft. Buffer

Isocycloseram Scenario 4 – Aerial Application

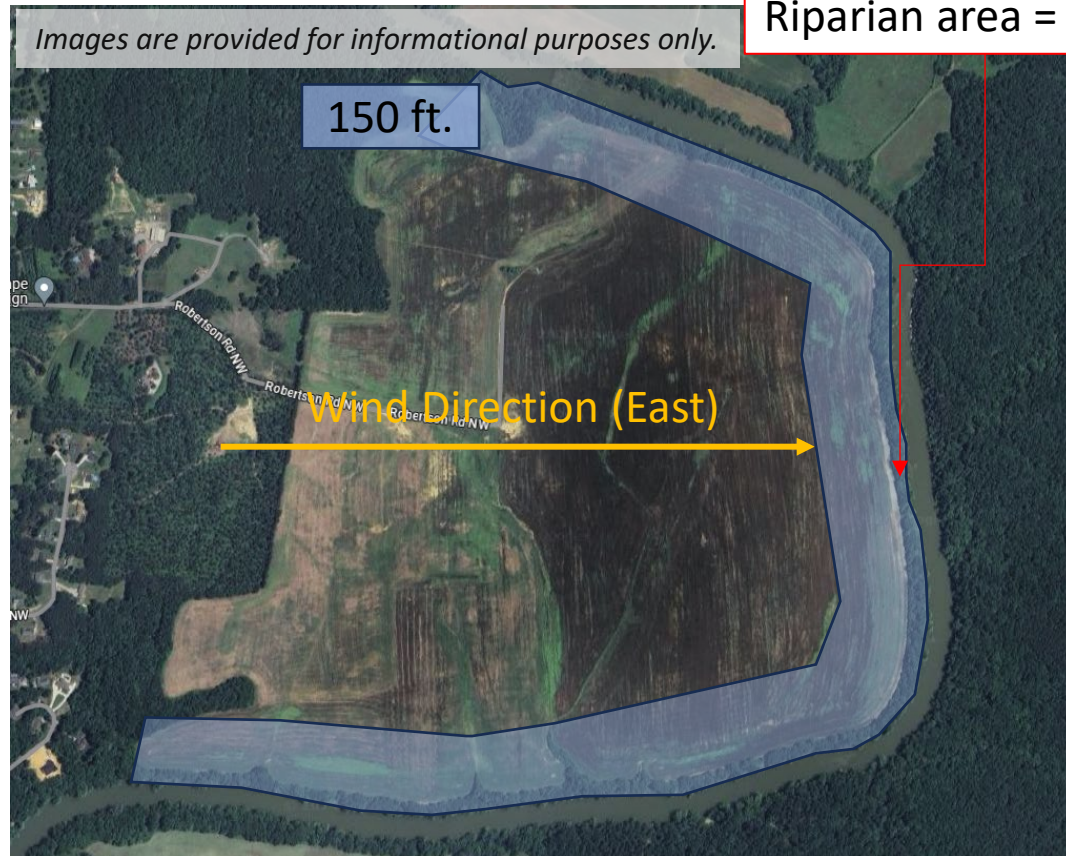


Table A. Wind-Directional Ecological Spray Drift Buffers

Application Method	Droplet Size Distribution (DSD)	Minimum Buffer Distance
Aerial	Medium or coarser	300 ft
Ground (2–4 ft boom height)	Medium or coarser	25 ft
Airblast	NA	85 ft

Buffer Zone for Non-ULV Aerial Applications

Regardless of buffer mitigations, DO NOT make aerial applications within 150 ft of lakes, rivers, reservoirs, permanent streams, marshes, natural ponds, estuaries, or coastal areas.

Wind-Directional Ecological Buffers
300 ft.

Aquatic Buffers
150 ft.

Managed Areas:
30 ft. Riparian Area
 $300 \text{ ft.} - 30 \text{ ft.} = 270 \text{ ft.}$

150 ft. aquatic buffer (-30 ft. riparian area) = 120 ft. untreated field area

Coarse Droplet: 40%
5-8 Passes: 10%
TOTAL % Reduction = 50%
 $270 \text{ ft.} - (270 * 0.5) = 135 \text{ ft.}$

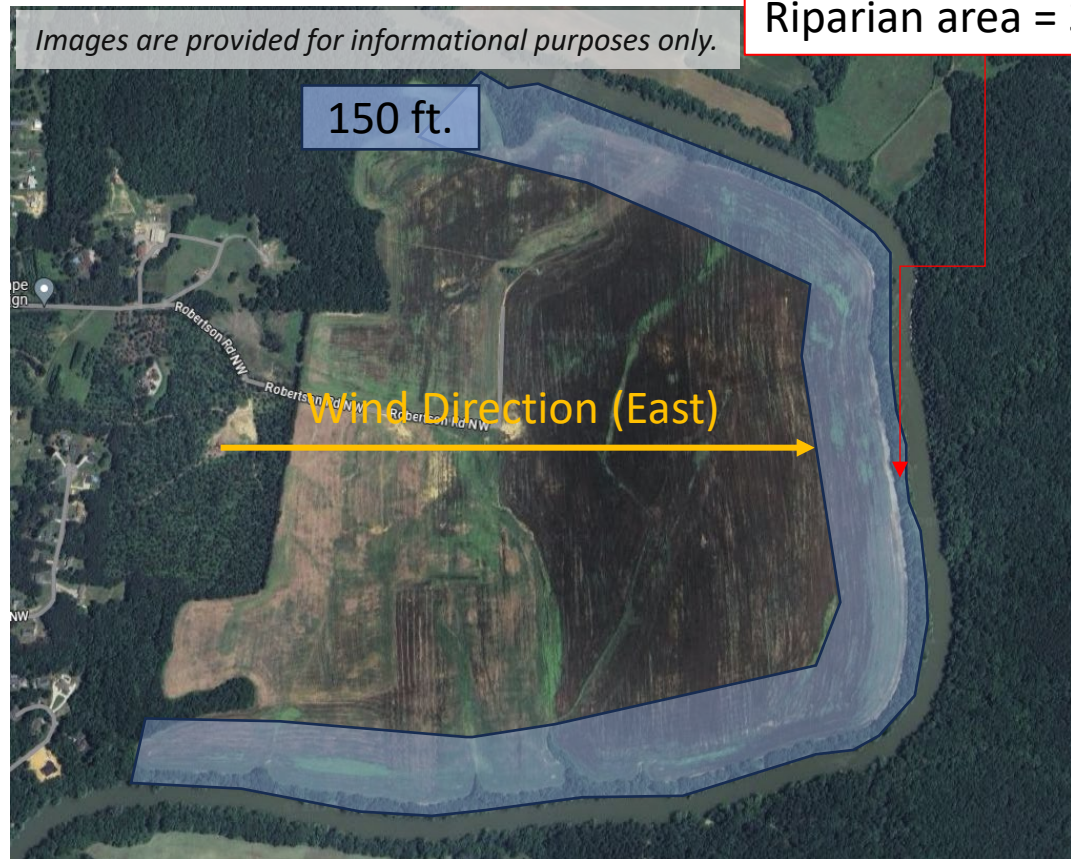
Reduced Proportion of Field Treated (# of Airplane/Helicopter passes)

The reduced number of passes applies to the upwind part of the treated field

135 ft. Buffer

Aerial Application Ecological Spray Buffer Mitigation					
Product Specific Application Information	Select or Enter Value	Aerial Application Ecological Drift Buffer Reduction Options	Select or Enter Value	Percent Reduction in Ecological Spray Buffer Distance	Hyperlink to EPA Description
Enter Ecological Spray Drift Buffer Distance from Product Label or Bulletins Live!Two (ft) as Applicable	270	Reduced Single Application Rate (automatically calculated based on product entry information in cells B31 and B32)		Check application rate entry in cells B31 and B32	Hyperlink
Select Minimum Spray Droplet Size Indicated on Product Label	Medium	Reduced Buffer For Larger Droplet Size Applied (automatically calculated based on product entry information in Cells B28 and B29)	40%	40	Hyperlink
Select Spray Droplet Size for Planned Application	Coarse	Select the width of the application area or number of acres to be applied	5-8 flight passes or 6 to less than 12 acres	10	Hyperlink
		For Herbicide Application ONLY Use of Drift Reducing Agents (select droplet size)	make selection	0	Hyperlink
Enter Required Maximum Labeled Application Rate for Planned Use (keep units of application the same; e.g., oz product/A)	Enter information from product label	50% reduced boom length during application (select windspeed at time of application)	make selection	0	Hyperlink
Enter Planned Application Rate for this Application (keep units of application the same; e.g., oz product/A)	Enter planned application information	Select Applicable Downwind windbreak/hedgerow/ riparian/forest/	make selection	0	Hyperlink
	Do not apply at a rate higher than the maximum single application rate on the product label	Relative humidity is 60% or more at time of application? (select "yes" or "no")	no	0	Hyperlink
		Adjusted Aerial Spray Drift Buffer (ft)		135	

Isocycloseram Scenario 4 – Aerial Application - *Runoff*



2.6.1 MANDATORY RUNOFF/EROSION MITIGATION

- **DO NOT** apply isocycloseram when soils are saturated or above field capacity.
- **DO NOT** apply isocycloseram during rain.
- A minimum of **TWO** points, for the crop uses listed on this label, must be achieved unless following the Mitigation Menu steps indicates no additional runoff/erosion mitigation is needed (see <https://www.epa.gov/pesticides/mitigation-menu>).
- Some crop uses listed in this label will require a total of **FOUR** to **SIX** points in specific Pesticide Use Limitation Areas.

Application parameters

Reduction in the proportion of field treated (banded application, partial field treatment, ground precision sprayer, smart sprayer, or other specialized method)

Qualifying Practices	Points
Portion of field not treated: 10 to <30%	2
Portion of field not treated: 30 to <60%	3
Portion of field not treated: $\geq 60\%$	4

Isocycloseram Scenario 5 - Airblast + PULA

Table A. Wind-Directional Ecological Spray Drift Buffers

Application Method	Droplet Size Distribution (DSD)	Minimum Buffer Distance
Aerial	Medium or coarser	300 ft
Ground (2–4 ft boom height)	Medium or coarser	25 ft
Airblast	NA	85 ft

Buffer Zone for Ground and Airblast Applications

Regardless of buffer mitigations, DO NOT make ground applications within 25 ft of lakes, rivers, reservoirs, permanent streams, marshes, natural ponds, estuaries, or coastal areas.

Wind-Directional Ecological Buffers
85 ft.

Aquatic Buffers
25 ft.

Managed Areas:
25 ft. Riparian Area
85 ft. – 25 ft. = 60 ft.



Isocycloseram Scenario 5 - Airblast + PULA

Table A. Wind-Directional Ecological Spray Drift Buffers

Application Method	Droplet Size Distribution (DSD)	Minimum Buffer Distance
Aerial	Medium or coarser	300 ft
Ground (2–4 ft boom height)	Medium or coarser	25 ft
Airblast	NA	85 ft

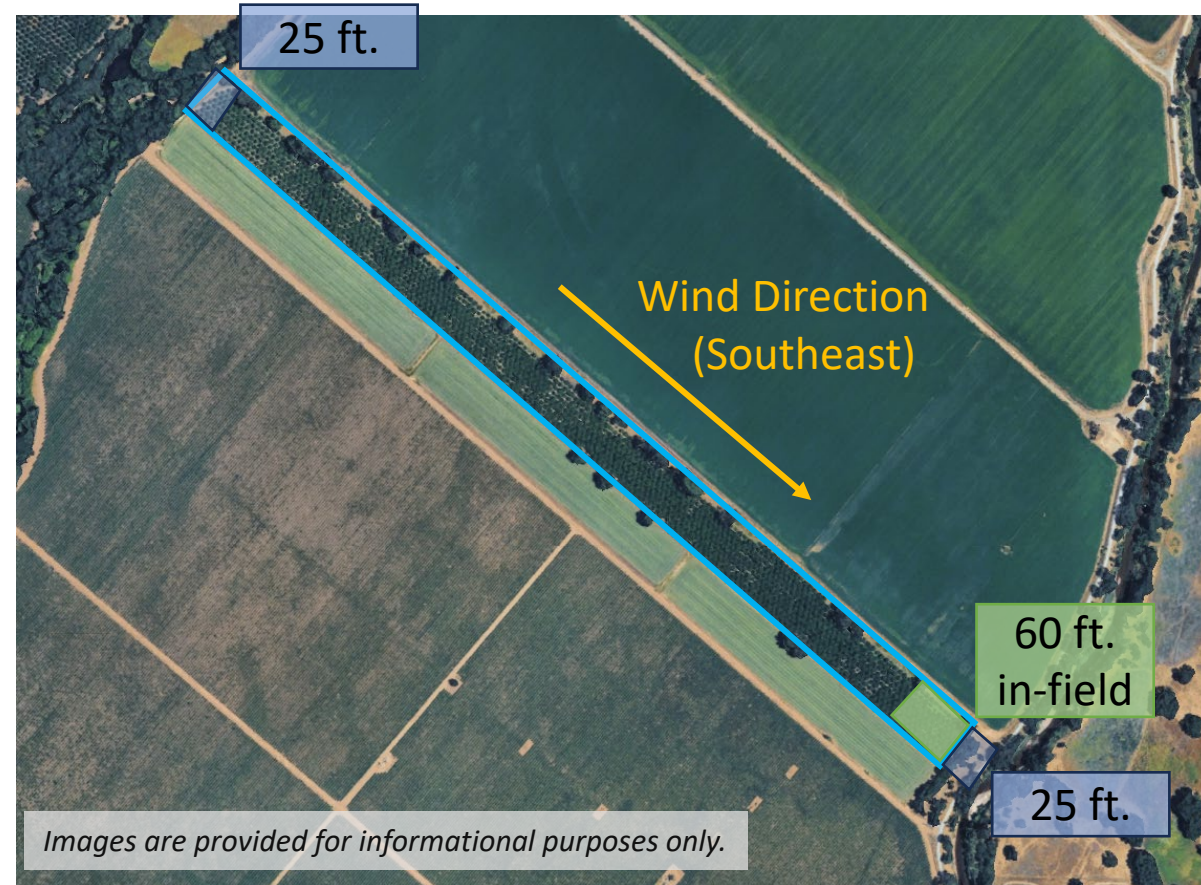
Buffer Zone for Ground and Airblast Applications

Regardless of buffer mitigations, DO NOT make ground applications within 25 ft of lakes, rivers, reservoirs, permanent streams, marshes, natural ponds, estuaries, or coastal areas.

Wind-Directional Ecological Buffers
85 ft.

Aquatic Buffers
25 ft.

Reduce proportion of orchard/vineyard treated (number of treated rows) The reduced number of treated rows applies to the upwind part of the treated field. Select one option	1 row treated	70%
	2-4 rows treated	30%
	5-10 rows treated	15%



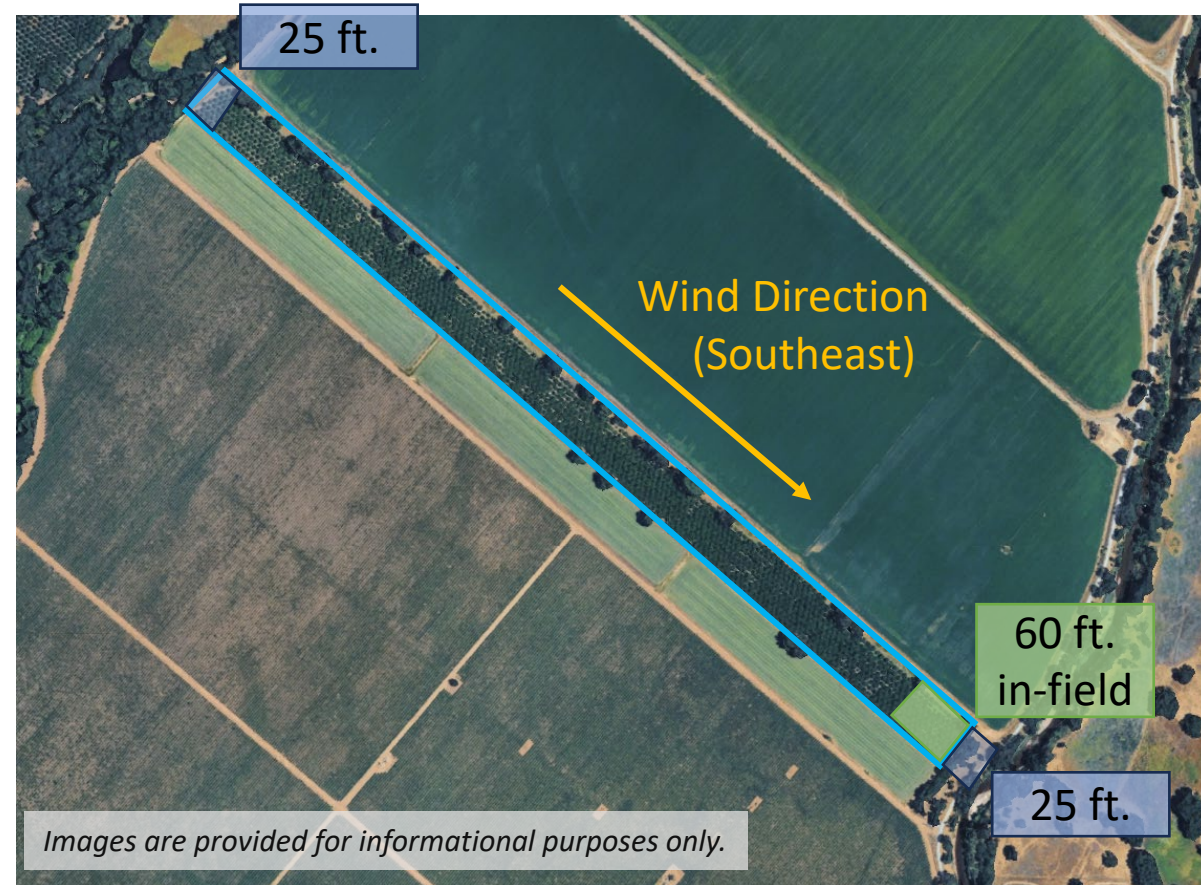
Isocycloseram Scenario 5 - Airblast + PULA

Table A. Wind-Directional Ecological Spray Drift Buffers

Application Method	Droplet Size Distribution (DSD)	Minimum Buffer Distance
Aerial	Medium or coarser	300 ft
Ground (2–4 ft boom height)	Medium or coarser	25 ft
Airblast	NA	85 ft

Buffer Zone for Ground and Airblast Applications

Regardless of buffer mitigations, DO NOT make ground applications within 25 ft of lakes, rivers, reservoirs, permanent streams, marshes, natural ponds, estuaries, or coastal areas.



Wind-Directional Ecological Buffers
85 ft.

Aquatic Buffers
25 ft.

Managed Areas:
25 ft. Riparian Area
85 ft. – 25 ft. = 60 ft.

60 ft. Buffer

60 ft. in-field buffer from the unmanaged area

Isocycloseram Scenario 5 - Airblast + PULA

Table A. Wind-Directional Ecological Spray Drift Buffers

Application Method	Droplet Size Distribution (DSD)	Minimum Buffer Distance
Aerial	Medium or coarser	300 ft
Ground (2–4 ft boom height)	Medium or coarser	25 ft
Airblast	NA	85 ft

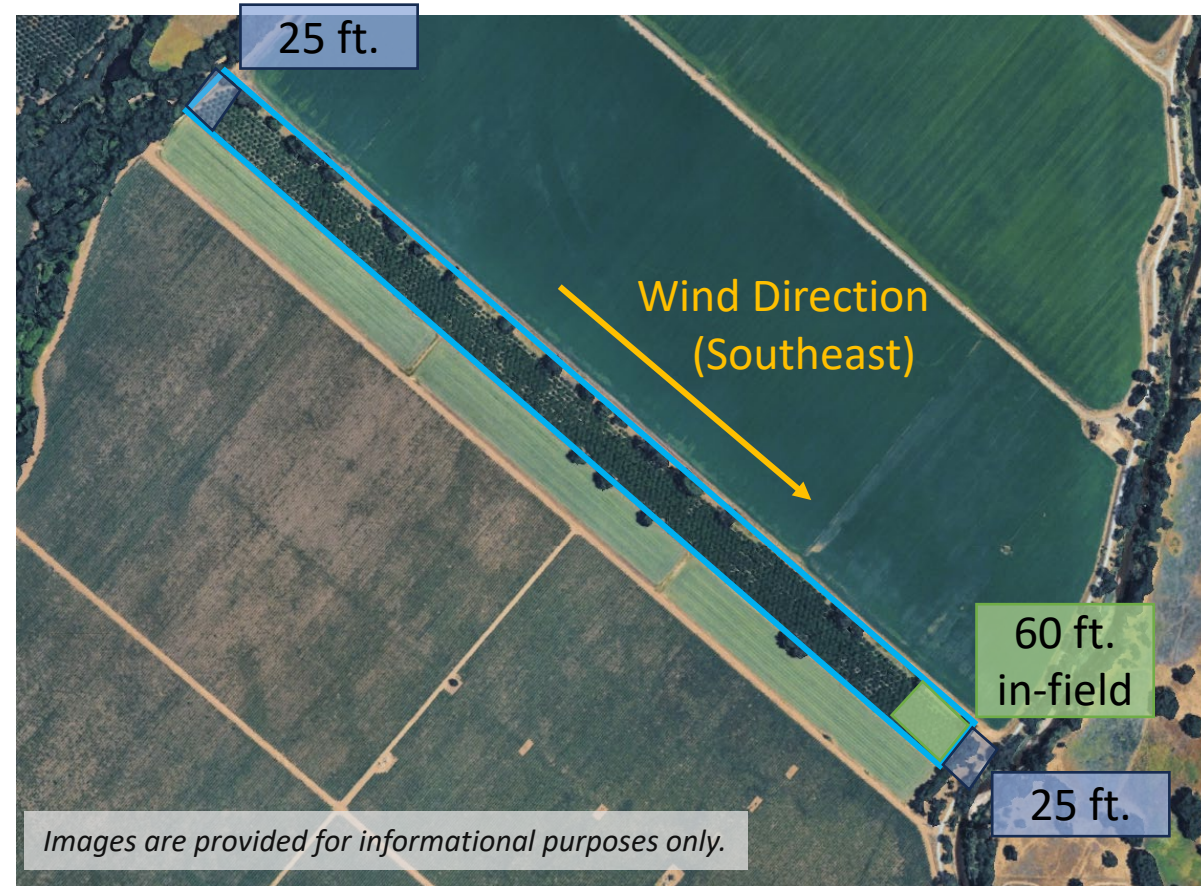
Buffer Zone for Ground and Airblast Applications

Regardless of buffer mitigations, DO NOT make ground applications within 25 ft of lakes, rivers, reservoirs, permanent streams, marshes, natural ponds, estuaries, or coastal areas.

Wind-Directional Ecological Buffers
85 ft.

Aquatic Buffers
25 ft.

Bulletins Live! Two has this field is in a PULA



Isocycloseram Scenario 5 - Airblast + PULA

Table A. Wind-Directional Ecological Spray Drift Buffers

Application Method	Droplet Size Distribution (DSD)	Minimum Buffer Distance
Aerial	Medium or coarser	300 ft
Ground (2–4 ft boom height)	Medium or coarser	25 ft
Airblast	NA	85 ft

Buffer Zone for Ground and Airblast Applications

Regardless of buffer mitigations, DO NOT make ground applications within 25 ft of lakes, rivers, reservoirs, permanent streams, marshes, natural ponds, estuaries, or coastal areas.

Wind-Directional Ecological Buffers
85 ft.

Aquatic Buffers
25 ft.

Bulletins Live! Two has this field is in a PULA

*The Bulletin in these PULAs will include “the need to achieve an **additional two to four points of runoff/erosion mitigation**”*

Table 8. Runoff Mitigation Points Needed After FIFRA Mitigations by Use Pattern

Use ¹	App Rate (App Number x Amount Applied in lb a.i./A)	Runoff Mitigation Points Needed in PULAs After FIFRA Mitigations
Tree Nuts	3 x 0.067	4



Isocycloseram Scenario 5 - Airblast + PULA

2.6.1 MANDATORY RUNOFF/EROSION MITIGATION

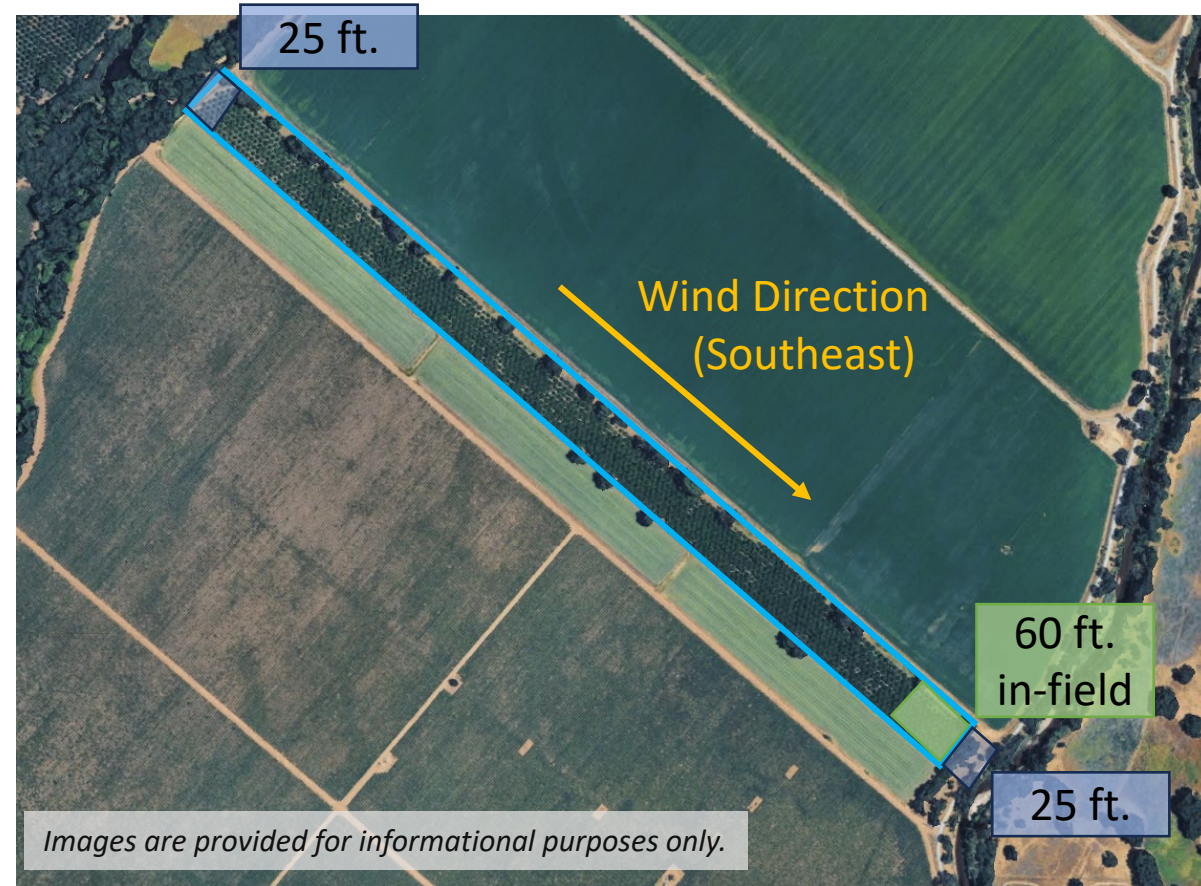
- **DO NOT** apply isocycloseram when soils are saturated or above field capacity.
- **DO NOT** apply isocycloseram during rain.
- A minimum of **TWO** points, for the crop uses listed on this label, must be achieved unless following the Mitigation Menu steps indicates no additional runoff/erosion mitigation is needed (see <https://www.epa.gov/pesticides/mitigation-menu>).
- Some crop uses listed in this label will require a total of **FOUR** to **SIX** points in specific Pesticide Use Limitation Areas.

*The Bulletin in these PULAs will include “the need to achieve an **additional two to four** points of runoff/erosion mitigation”*

6 POINTS REQUIRED

Reduction in the proportion of field treated (banded application, partial field treatment, ground precision sprayer, smart sprayer, or other specialized method)

Qualifying Practices	Points
Portion of field not treated: 10 to <30%	2
Portion of field not treated: 30 to <60%	3
Portion of field not treated: ≥60%	4



Isocycloseram – Public Comments – JUNE 10th

- As the first insecticide with a comment period after the Final Insecticide Strategy there are opportunities to comment on key pieces that were introduced/modified in the Final Insecticide Strategy:
 - **Mitigation Menu Website Updates for Spray Drift**
 - **Spray Drift Calculator**
 - **Managed Areas Definition**
 - **Additional Runoff Mitigations**
 - **Conservation Programs**

<https://www.regulations.gov/commenton/EPA-HQ-OPP-2021-0641-0006>

Reminders

- This is a final strategy and is not open for comment; however, you can comment on open and future decisions by EPA, FWS, and NMFS.
 - Isocycloseram is currently open for comment
- The strategies are not self-implementing.
 - “EPA plans to consider the applicability of this strategy to inform conventional new active ingredient registration actions and conventional registration review actions, focusing on agricultural uses of insecticides in the CONUS.” IS, page 95
 - “EPA expects to consider the appropriateness of applying the Insecticide Strategy for other actions on already registered active ingredients (*e.g.*, select new uses).” IS, page 95
- EPA updated the Mitigation Menu website which is applicable to all pesticides that reference the website regardless of class (herbicide, insecticide).

Reminders

- Always start with the label.
 - Does it reference the mitigation menu for runoff/erosion and/or spray drift?
- EPA has provided a number of different methods to walk through the runoff/erosion mitigations and ecological spray drift buffers, including the mitigation menu, calculator, and worksheets. They are continuing to update these resources so make sure you are using the most recent version.
- The Strategy identifies mitigations aimed at protecting more than 900 species listed by the FWS that EPA considers when it registers a new insecticide or reevaluates an existing one. Species listed by the National Marine Fisheries Service are not currently included in the strategies.

TIPS FOR COMMENTING

- Be on the lookout for pesticide actions with open comment periods where EPA has applied the strategies. These are opportunities to comment and provide input on components of the strategies.
- If something is not workable, explain why with specifics, and provide an alternative solution if possible.
- Be specific, clear, and concise.
- Provide supporting data/research – and even photos – with references.

Reach out!

- Direct questions on the presentation to:
 - Leah Duzy, Principal Consultant at Compliance Services International and Consultant to the FIFRA Endangered Species Task Force lduzy@complianceservices.com
- Special thanks to the FESTF Grower Engagement Subcommittee



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