

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

Step 2: Of these pesticides, do any product labels or bulletins specify that runoff/erosion mitigation points need to be achieved? If yes, move to step 3. If no, the product does not require runoff/erosion mitigation points. Follow existing label/bulletin instructions.

Step 3: Evaluate the farm/field(s) being treated. You do **not** have to implement any additional runoff/erosion measures for the application if the answer is “yes” to any one of the following questions:

- Does the treated farm/field have a [perimeter berm system](#) (permanent berms, elevated border/perimeter) present at the time of application and throughout the cropping season?
- Is there an [irrigation tailwater return system](#) in place?
- Does the treated farm/field have [subsurface or tile drains installed with a water control structure and controlled outlet](#)?
- Is the application occurring as a [soil injection](#)?
- Is the application occurring as a [tree injection](#)?
- Is the application occurring via [chemigation applied subsurface or under impermeable plastic mulch](#)?
- Is the application occurring as a [spot treatment](#) (<1,000 square feet being treated), e.g., backpack, handheld, or specialized application equipment?
- Is the treated farm/field less than [1/10th of an acre](#)?

- Are the [areas within 1,000 ft down-gradient from the treated farm/field comprised entirely of managed areas](#)? Managed areas are defined as:
 - a. Agricultural fields, including untreated portions of the treated field,
 - b. 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;
 - c. Buildings and their perimeters, silos, or other man-made structures with walls and/or roof;
 - d. Areas maintained as a mitigation measure for runoff/erosion or spray drift control, such as vegetative filter strips (VFS), field borders, hedgerows, Conservation Reserve Program lands (CRP), and other measures identified in Table 2 below;
 - e. Managed wetlands including constructed wetlands on the farm, and
 - f. 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.

Step 4. If the answer is no to all questions in step 3, runoff/erosion mitigation applies for the application. Determine which product being used throughout the crop cycle/year is the most restrictive, thereby requiring the highest number of mitigation points. Ensure the point value of mitigation measures being implemented equals or exceeds the highest number of mitigation points noted in labels/bulletins.

Step 5. Visit the mitigation menu (Tables [1](#) and [2](#) below) to determine what measures are available for you to choose to fulfill the strictest runoff/erosion requirements. For each measure, click on the associated link to see the minimum specifications needed to successfully implement that measure.

- The “[Crosswalk of EPA’s Ecological Mitigation Measures with USDA NRCS Conservation Practices in Support of EPA’s Endangered Species Strategies](#)” provides information on how voluntary participation in NRCS and other conservation programs can help achieve runoff/erosion mitigation points.

Step 6. For all pesticides, if additional restrictions are defined on the label that are more restrictive than the runoff/erosion measures listed on this website, then you must follow the more restrictive measure on the label. Examples include use prohibitions, timing restrictions, application method prohibitions, and sandy soil application restrictions.

As EPA receives new information on mitigation measures and their efficacy, the Agency will update this Mitigation Menu Website to include additional or updated mitigation options and descriptions. EPA intends to update this website annually in the fall so pesticide users can prepare for the next growing season.

Runoff/Erosion Mitigation Options

You may use the measures in Tables 1 and 2 unless you see more restrictive limitations on individual labels or bulletins. If you use these tables, you may select any combination of measures in the tables to achieve the minimum points required by the label or bulletin.

[EPA's runoff points calculator](#) and [Mitigation Calculator User Guide \(pdf\)](#) can help you calculate the number of points earned for practices already in place on the field.

Table 1. Mitigation relief options.

Mitigation Relief	Pesticide Runoff Vulnerability and Field Characteristics	Points
County-based mitigation relief [see runoff vulnerability map by county and county list] <i>Select one option</i>	Pesticide runoff vulnerability - very low	6
	Pesticide runoff vulnerability – low	3
	Pesticide runoff vulnerability – medium	2
	Pesticide runoff vulnerability – high	0
Field slope	Field slope $\leq 3\%$ (naturally low slope or flat fields; flat laser leveled fields)	2
Predominantly sandy soils <i>This option can only be used if the product label does not prohibit application on sandy soils</i>	>50% sand, loamy sand, or sandy loam soil without a restrictive layer that impedes the movement of water through the soil	2
Mitigation tracking	Documented at the field or farm level, using paper or electronic format	1
	The technical specialist must meet the following characteristics:	

Mitigation Relief	Pesticide Runoff Vulnerability and Field Characteristics	Points
<p><u>Working with and following recommendations from a technical specialist</u></p> <p>OR</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 in Table 2 below. 	<p>1</p>
<p><u>Participating in a qualifying conservation program</u></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"> • Provides advice from individuals who meet the same characteristics provided above for technical specialists; and • Provides <u>site-specific guidance</u> tailored to the grower/applicator’s crop and/or location; and • Focuses on <u>reducing or managing runoff and/or erosion</u> (including for example, soil loss, soil conservation, water quality protection) from agricultural fields or other pesticide use sites; and 	<p>2</p>

Mitigation Relief	Pesticide Runoff Vulnerability and Field Characteristics	Points
	<ul style="list-style-type: none"> Provides <u>documentation</u> of program enrollment for the program enrollee. This documentation does not need to be provided to EPA; and Includes <u>verification</u> 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. 	

Table 2. Runoff/erosion mitigation options

Mitigation	Qualifying Practices	Points
Application parameters		
<u>Annual application rate reduction</u> Select one option	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
<u>Reduction in the proportion of field treated</u> (banded application, partial field treatment, ground precision sprayer, smart sprayer, or other specialized method) Select one option	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
<u>Soil incorporation</u>	Watering-in or mechanical incorporation before a runoff producing event. A runoff producing event is considered as follows:	1

Mitigation	Qualifying Practices	Points
	<ul style="list-style-type: none"> A 50% or greater chance of rainfall of 1 inch or more is expected to occur within 48 hours of the application as predicted by the NOAA/National Weather Service. AND, The precipitation potential is 50% or greater at any point during the 48-hr period. 	
In-field mitigation measures		
<u>Conservation tillage</u> Select one option	No-till, including perennial crops (e.g., orchards that are not tilled)	3
	Reduced tillage, strip tillage, ridge tillage, mulch tillage	2
<u>Reservoir tillage</u>	Reservoir tillage, furrow diking, basin tillage	3
<u>Contour farming</u>	Contour farming, contour tillage, contour orchard and perennial crops	2
<u>Vegetative Strips – In-Field</u>	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)	2
<u>Terrace farming</u>	Terrace farming, terracing, field terracing	2
<u>Cover crop or continuous ground cover</u> Select one option	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
<u>Irrigation water management</u> Select one option	Use of soil moisture sensors/evapotranspiration meters with center pivots & sprinklers; above ground drip tape, drip emitters; micro-sprinklers General irrigation management	2

Mitigation	Qualifying Practices	Points
	Use of below tarp irrigation, below ground drip tape; dry farming, non-irrigated lands	3
	No irrigation	
Mulching	Mulching with permeable artificial materials (i.e., landscape fabrics, synthetic mulches)	1
Select one option	Mulching with natural materials	3
Erosion barriers	Wattles, silt fences	2
Field-adjacent mitigation measures		
Grassed waterway	Grassed waterway	2
Vegetative filter strips (VFS) or field border adjacent to field	20 to 30 ft wide	1
	30 to <60 ft wide	2
	≥60 ft wide	3
Select one option		
Vegetated ditch	Vegetated ditch	1
Riparian area; riparian forest buffer; riparian herbaceous cover	20 to <30 ft	1
	30 to <60 ft	2
	≥60 ft	3
Select one option		
Constructed and natural wetlands	Constructed and natural wetlands, wetland and riparian landscape/habitat improvement	3
Terrestrial habitat landscape improvement (i.e., critical area planting, cross wind trap strips, hedgerow planting, herbaceous wind barriers, windbreak-shelterbelt establishment and renovation, tree shrub planting, forest stand improvement, upland wildlife habitat management)	20 to <30 ft	1
	30 to <60 ft	2
	≥60 ft	3
Select one option		

Mitigation	Qualifying Practices	Points
<u>Filtering devices</u> Select one option	Filters, sleeves, socks, or filtration units containing activated carbon	3
	Filters, sleeves, socks, or filtration units containing compost amendments	1
Systems that capture runoff and discharge		
<u>Water retention systems</u>	Sediment basins, catch basins, sediment traps, water retention ponds	2
<u>Subsurface drainages and tile drainage installed without controlled drainage structure</u>	Subsurface tile drains, tile drains <u>without</u> controlled drainage structure	1
Other mitigation measures		
<u>Using mitigation measures from multiple categories</u>	Practices must be used from <u>at least 2</u> 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	1