

SPRAYER CLEAN-OUT GUIDELINES: REDUCING CROP INJURY DUE TO HERBICIDE CONTAMINATION

**Weed
Facts
WF-8**



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Modified from article prepared by Brent A. Pringnitz, extension program specialist, Cooperative Extension Service, Iowa State University of Science and Technology, Ames, Iowa. File code: Pest Management; PAT-30, Nov. 1997.

Crop injury due to contaminated sprayers is a continuing problem for both vegetables and field crops. Herbicide residues can be dissolved with time and some herbicide formulations are very effective at removing residues. This problem can be avoided by ensuring that sprayers are properly cleaned between tank loads. Sprayer cleaning is particularly important before you begin spraying a different crop. When determining the correct clean-out procedure, it is important to consider the product's mode of action, carrier, and additives. They all have an impact on what cleaning solutions to use and potential damage to sensitive crops.

Rinsate disposal

Clean the sprayer in an area that will not contaminate water supplies, streams, or crops and in an area inaccessible to children, pets, and livestock. Pay particular attention to sensitive vegetation that is in the runoff area. The best method for rinsate disposal is in the field in a manner consistent with the product's label. The easiest way to do this is to have rinse water available in the field, either on the sprayer or support vehicle.

Tank-cleaning agents

A tank-cleaning agent's function is to penetrate, loosen, and dissolve herbicide residues and then to remove them through dilution. In some cases, the agent will provide deactivation or decomposition of the herbicide.

- Commercial tank cleaners are recommended on many product labels and help remove water and oil-soluble herbicides.
- Household ammonia, a commonly recommended cleaning agent, is effective at penetrating and loosening deposits and residues in the spraying system. Although ammonia does not decompose herbicides, it increases the solubility of some herbicides by raising the pH.
- Chlorine bleach can decompose residues of most sulfonyleurea and other herbicides into inactive compounds. However, some tank-mix partners may inhibit the decomposition. Care must be used with chlorine bleach. Chlorine bleach can combine with fertilizers containing ammonia to produce dangerous chlorine gas, which is irritating to the eyes, nose, throat, and lungs. Also, rinsate containing chlorine bleach is not labeled for application to cropland.
- Kerosene or fuel oil should be used to remove oil-based herbicide formulations such as 2,4-D esters. Following the oil rinse, the system should be cleaned with detergent or ammonia.

Removing precipitated pesticides

Tank-mixing more than one pesticide can sometimes result in the chemicals forming a “gunky mess” in the bottom of the tank. The result is that the pesticides are not compatible with one another and the pesticides will settle out (form gunk). If your tank does end up with incompatible pesticides gunking up the bottom use a compatibility agent (usually at a pint/100 gallons, follow directions).

Surfactants and fertilizer additives

When switching from a growth regulator herbicide (2,4-D, Banvel, or Stinger) to a postemergence application in soybeans, special care should be taken if the application involves surfactants or fertilizer additives. Such materials are particularly adept at removing these herbicides from poly tanks, hoses, and strainers. It is recommended that a small amount of fertilizer or crop oil be flushed through the system before the application.

General cleaning guidelines

To avoid drying and hardening of pesticide residues, and potential corrosion and damage to equipment, clean the sprayer immediately following an application. If you are continuing with the same pesticide the next day, flushing with water is sufficient. However, if you are switching products or crops, a more thorough cleaning is required.

Be sure to clean the entire sprayer system, not just the tank. Operate the pump and flush the cleaning solution through all hoses, strainers, screens, nozzles, and the boom. Small amounts of residue left in these areas can be sufficient to cause serious damage to a sensitive crop.

Most injury occurs when switching between crops. The following procedure is recommended when there are no specific cleaning requirements given on the label.

1. Drain the sprayer tank and lines and rinse tank, boom, and lines with water for a minimum of 5 minutes.

2. Fill the tank with clean water and one of the following cleaning solutions per 100 gallons of water:

- 1 gallon household ammonia, **or**
- 8 lbs trisodium phosphate cleaner detergent, **or**
- commercial tank cleaner (follow instructions).

Flush the solutions through the entire sprayer system. For growth regulator herbicides (2,4-D, Banvel, Clarity, Distinct, Stinger, etc.), let the solution stand overnight. Add more water to fill tank and agitate solution for at least 15 minutes and flush through the nozzles. Drain the tank.

3. Remove the nozzles, screens, and strainers and clean them separately in a bucket of cleaning agent and water.

4. Rinse the entire system with clean water.

Consult the label

This publication provides general guidelines for cleaning your sprayer, but it is important to remember that the best source of information is the pesticide label. Some product labels require specific cleaning agents at specified concentrations, and/or provide stepwise procedures for cleaning the tank. Consult labels for the products that were previously in the tank, and for the products that will be used for the next application.

The following table indicates what cleaning agent is required for various herbicides.

Herbicide	Tank cleaning agent recommended on herbicide label		
	Water only or not specified on label	Ammonia	Commercial Tank Cleaner or Detergent
2,4-D ^b			
Accent		either	or ^a
Aim			X
Atrazine			X
Authority First		either	or
Authority MTZ		X	X
Banvel		X	X
Basagran			X
Basis		either	or ^a
Beacon		either	or
Bicep II Magnum	X		
Bicep Lite II Magnum	X		
Blazer			X
Boundary		either	or
Breakfree	X		
Breakfree ATZ	X		
Buctril	X		
Bullet	X		
Callisto		X	
Canopy		either	or ^a
Canopy EX		either	or ^a
Celebrity Plus			X
Cinch	X		
Cinch ATZ	X		
Clarity			X
Classic		either	or ^a
Cobra	X		
Command	X		
Define	X		
Degree	X		
Degree Xtra	X		
Distinct			X
Dual II Magnum	X		
Enlight		either	or ^a
Envive		either	or ^a
Equip		X	
Evik			X
Exceed		either	or
Expert		either	or

Herbicide	Tank cleaning agent recommended on herbicide label		
	Water only or not specified on label	Ammonia	Commercial Tank Cleaner or Detergent
Extreme	X		
FieldMaster	X		
Firstrate		X	
Flexstar			X
FulTime	X		
Fusilade DX			X
Fusion			X
Gangster		either	or
Gramoxone Inteon	X		
Guardman Max			X
G-Max Lite			X
Halex GT		either	or
Harmony Extra		either	or ^a
Harmony GT		either	or ^a
Harness	X		
Harness Xtra	X		
Hornet WDG		either	or
Impact			X
Keystone	X		
Keystone LA	X		
Lasso	X		
Laudis		either	or
Lexar		either	or
Liberty			X
Liberty ATZ			X
Lightning	X		
Lumax		either	or
Marksman			X
MicroTech	X		
Northstar		X	
Option		X	
Osprey		X	
Outlook			X
Peak		X	
Poast / Poast Plus			X
Princep			X
Prefix		either	or
Prowl	X		
Prowl H2O			X
Pursuit	X		
Pursuit Plus	X		
Python	X		
Rage D-Tech		X	X
Raptor	X		
ReadyMaster ATZ			X
Reflex			X
Resolve		either	or ^a
Resource	X		
Roundup products	X		

Herbicide	Tank cleaning agent recommended on herbicide label		
	Water only or not specified on label	Ammonia	Commercial Tank Cleaner or Detergent
Sandea		X	
Scepter	X		
Select / Select Max	X		
Sencor			X
Sequence	X		
Sonic		either	or
Spirit		either	or
Squadron	X		
Status			X
Steadfast		either	or ^a
Steadfast ATZ		either	or ^a
Stellar	X		
Stinger		X	
Storm			X
Stout		either	or ^a
SureStart		either	or
Synchrony XP		either	or ^a
Targa		either	or ^a
TopNotch	X		
Touchdown products			X
Treflan	X		
Ultra Blazer			X
Valor SX		X	
Valor XLT		either	or
Unity WDG		either	or
Yukon		X	X

^aDuPont requires the use of specific tank cleaners. Refer to label.

^bSee label for specific 2,4-D formulation being used

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