

Burn It Down, Clean It Up

Avoiding Crop Injury Due to Sprayer Contamination

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Introduction

Crop quality and yield can depend on proper application of pesticides. Crop injury due to contaminated agricultural sprayers resulting from improperly cleaned tanks and sprayer components is a continuing problem in Arkansas. Many of these instances occur following spring burndown applications. Crop injury can result from small amounts of herbicide that are left in the sprayer and spray system following an application. This problem can be avoided by properly cleaning the sprayer and sprayer components prior to switching from one product to another when using the same tank to mix, load and spray.

Spray contamination caused by failure to thoroughly clean a sprayer can cause crop injury up to several months after using the sprayer. Crop injury from contaminated spray can affect crop growth and development for several weeks and, in severe cases, can reduce yields and/or stands costing producers money.

With the increased emphasis on herbicide-resistant weed management, proper sprayer cleaning and maintenance will be essential in avoiding injury to non-target crops and violating label restrictions. Post-emergence herbicides sprayed directly on a crop will generally cause more injury than soil-applied applications.

When choosing the correct clean-out procedure, it is essential to consider the product's mode of action and any adjuvants used, as they have an impact on what cleaning solutions to use. The objective of this

publication is to present the correct clean-out procedure for sprayers and spray equipment following the use of different herbicides in row crops.

Always read the pesticide label prior to use. Certain pesticides may require specific instructions for sprayer clean-out. The information contained in this publication is not a substitute for a pesticide label.

Tank-Cleaning Agents

A tank-cleaning agent is designed to penetrate, loosen and dissolve pesticide residues and then remove them with the rinse water. In some cases, the agent will provide deactivation or decomposition of the herbicide. Below is some information pertaining to some of the most common tank-cleaning agents:

- **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 deactivate herbicides, it increases the solubility of some herbicides by raising the pH.
- **Chlorine bleach** can deactivate residues of many herbicides and other pesticides. It is useful for decontaminating herbicide spills and is sometimes recommended for tank clean-out. However, some tank-mix partners may interfere with deactivation. 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. As a result, **NEVER** mix household ammonia and chlorine bleach for any cleaning purpose.

Surfactants and Fertilizer Additives

When switching from a growth regulator herbicide (2,4-D, dicamba, triclopyr, etc.) to a post-emergence application in soybeans or cotton, 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, strainers, etc. It is recommended that a small amount of fertilizer or crop oil be flushed through the system before the application.

Rinsate Disposal

Clean the sprayer in an area that will not contaminate water supplies, streams, crops or other sensitive areas and in an area inaccessible to children, pets and livestock. Pay particular attention to your surroundings and make sure you are not in a runoff area when cleaning. The best method for rinsate disposal is to reapply 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.

Sprayer Clean-Out Procedure Between Crops

Upon completion of your burndown herbicide application and **BEFORE** applications over the top of any crop, be sure to clean out the tank, hoses and nozzles with a commercial-grade tank cleaner or other cleaners as directed by the label.

Commercial-grade tank cleaners are specifically created for agricultural herbicide clean-outs when used according to label directions and, most importantly, mixed at the correct concentration.

Directions for Use

1. Completely spray out mixture from the sprayer. **Do not allow spray mixture to sit overnight.**

2. Clean all strainers, filters, nozzles, nozzle screens, diaphragms and boom ends where residue could accumulate.
3. Precisely follow the directions for the cleaner or the procedures listed on the herbicide label. Any ratio of cleaner to water less than the label instructions will result in insufficient clean-out.
4. Agitate for 5-10 minutes. Then charge pumps, hoses and nozzles by spraying a small amount of solution through the sprayer (ensure solution is spraying out of the nozzles).
5. Shut off sprayer, keeping the hoses and nozzles charged.
6. Now refill the tank with the labeled ratio of cleaner to water.
7. **Let tank and sprayer system sit a minimum of 12 hours unless otherwise stated on the label.**
8. Following the soaking period, spray solution through the boom for 10 minutes and then drain remaining solution until sprayer is empty.
9. Flush spray tank with clean water and empty. Check all strainers, filters, nozzles and screens, as this process can free residue from the sprayer.
10. Thoroughly clean the mixing trailer or loading vehicle using the above procedures if the next crop is sensitive to the pesticide.

NOTE: Following the procedures specified on the herbicide or commercial cleaner label is critical to removing herbicide residue from the sprayer system.

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**. Consult labels of the products that were previously in the tank, and for the products that will be used for the next application, for specific cleaning and mixing/loading instructions.

Adapted from materials provided by Iowa State University Extension and University of Missouri Extension.

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