



American
Crystal
Sugar
Company

Sprayer Cleanout

Your Way To Grow 2019



Why We Need to Rinse

- Growers are using Correct Weed Resistance Management Practices
 - Tank-mixing multiple Modes of Action in all crops
 - Increasing use of different Active Ingredients



Sprayed Dual Magnum + glyphosate + Stinger + etho + Flame. Beets had speckling from the DM and etho but also significant necrosis. Sprayer sat for two hours due to breakdown. The down time may have provided an opportunity for Fierce (Zidua + Valor) to break loose and dissolve in the tank. First load the next day also had issues which suggested 'sitting' did something. Injury was less over time.



Harness Max was applied to corn. Max is Harness plus mesotrione. Sprayer was not cleaned properly and HPPD evidence was seen on sugarbeet. Four loads across the field. The first two loads caused stand loss and need to replant. Stands were good in load 3 but there was growth reduction. Load 4 was fine.



Where Pesticide Residue Hides

Primary Locations

- Tanks
- Hoses
- Boom Lines
- Valves
- Screens
- Nozzle Bodies
- Pumps
- End Caps

Secondary Locations

- Inductor Cones
- Water Hoses
- Sprayer Tires
- Sprayer Frame
- Nurse Tanks



Sprayer cleanout

Cleaning a sprayer is like washing dishes

- Use the correct detergent (solvent)
- Don't allow the hard stuff to solidify
- Be thorough; take your time
- Rinsing properly before relaxing



Seven Steps of Sprayer Tank Cleanout

1. Flush Sprayer Every Night

- Don't let spray solution sit overnight
- Flush spray solution from tank, lines, boom

2. 1st rinse in field

- Removes concentrated spray mix before cleaning process
- Rinse until water exiting nozzles is clear



Seven Steps of Sprayer Tank Cleanout

3. Remove and Clean all Screens
 - Use a brush and soapy water
4. Remove and Clean Boom End Caps
 - Scrape away any residue inside
5. 2nd Rinse with Water



example of a
dead end on a
spray boom
section



Seven Steps of Sprayer Tank Cleanout

6. Add Tank Cleaner

- Agitate and circulate
- Let the cleaner sit
- Flush the cleaner from the system



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7. Final Rinse and Flush with Water

- Clean outside of sprayer



Cotton Grower

These steps are general for all sprayers, but...

- Know your sprayer
 - Where can residues hide? Where are my valves? Screens? Hoses?
 - Consult your operators manual
- Develop a checklist
- Know the physical properties of the chemical you're applying
 - Granular vs. EC vs. Solution
 - Jar mix to test incompatibility

Choosing the Right Tank Cleaner

- Refer to label for correct cleaner
- Know what chemical you're spraying & its properties
- Know the condition of your sprayer

Xtendimax Label with cleanout procedures

application may be made to crops (including pastures) and non-cropland areas described in this label except for non-dicamba-tolerant cotton, sorghum, and non-dicamba-tolerant soybean.

9.5 Proper Spray System Equipment Cleanout

You must ensure that the spray system used to apply this product is clean before using this product.

Failure to properly clean the entire spray system can result in inadvertent contamination of the spray system. Small quantities of dicamba may cause injury to non-dicamba tolerant soybeans and other sensitive crops (see Section 9.1.4 of this label for more information).

Inadvertent contamination can also occur in equipment used for bulk product handling and mixing prior to use in the spray system. Care should be taken to reduce contamination not only in the spray system but in any equipment used to transfer or deliver product. For example, bulk handling and mixing equipment containing this product should be segregated when possible to reduce potential for cross-contamination. Consider using block and check valves to avoid backflow during transfer. Piping should be reviewed to ensure there not potential for product build-up. Dedicated nurse trucks and tender equipment should be used when possible.

Clean equipment immediately after using this product, using a triple rinse procedure as follows:

1. After spraying, drain the sprayer (including boom and lines) immediately. Do not allow the spray solution to remain in the spray boom lines overnight prior to flushing.
2. Flush tank, hoses, boom and nozzles with clean water. If equipped, open boom ends and flush.
3. Inspect and clean all strainers, screens and filters.
4. Prepare a cleaning solution with a commercial detergent or sprayer cleaner or ammonia according to the manufacturer's directions.
5. Take care to wash all parts of the tank, including the inside top surface. Start agitation in the sprayer and thoroughly recirculate the cleaning solution for at least 15 minutes. All visible deposits must be removed from the spraying system.
6. Flush hoses, spray lines and nozzles for at least 1 minute with the cleaning solution.
7. Remove nozzles, screens and strainers and clean separately in the cleaning solution after completing the above procedures.
8. Drain pump, filter and lines.
9. Rinse the complete spraying system with clean water.
10. Clean and wash off the outside of the entire sprayer and boom.
11. All rinse water must be disposed of in compliance with local, state, and federal guidelines.

10.0 ADDITIONAL RESTRICTIONS

Maximum Application Rates: The maximum application or use rates stated throughout this label are given in units of volume (fluid ounces or quarts) of this product per acre. However, the maximum allowed application rates apply to this product combined with the use of any and all other herbicides containing the active

Conservation Reserve Program (CRP)	44	88	Yes
Corn	22	33	Yes ¹
Cotton	11	11	Yes
Cotton with XtendFlex Technology	44	88	Yes
Fallow Ground	44	88	Yes
Grass grown for seed	44	88	Yes
Oats	5.5	5.5	Yes
Pastureland	44	44	Yes
Proso Millet	5.5	5.5	Yes
Small grains grown for grass, forage, fodder, hay and/or pasture	22	22	Yes
Sorghum	11	22	Yes
Soybean	44	44	Yes
Roundup Ready 2 Xtend Soybean and XtendFlex Soybean	44	88	Yes
Sugarcane	44	88	Yes
Triticale	5.5	5.5	Yes
Sod farms and farmstead turf	44	44	Yes
Wheat	11	22	Yes

¹ Refer to section 11. CROP-SPECIFIC INFORMATION and section 12. CROPS WITH XTEND TECHNOLOGY for more details.
² Once the crop reaches the ensilage (milk) stage or later in maturity

11.0 CROP-SPECIFIC INFORMATION

Read Sections: 8.0 for Tank Mixing Instructions and 9.1.4 for Buffer Requirements and Sensitive Crops for information on tank mixing, buffer requirements, and sensitive crops.

11.1 Asparagus

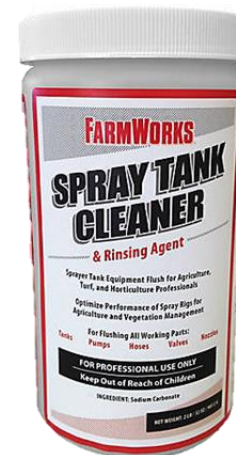
Apply Xtendimax[®] With VaporGrip[®] Technology to emerged and actively growing weeds in 40 - 60 gallons of diluted spray per treated acre immediately after cutting the field, but at least 24 hours before the next cutting. Multiple applications may be made per growing season.

If spray contacts emerged spears, crooking (twisting) of some spears may result. If such crooking occurs, discard affected spears.

Rates: Apply 11-22 fluid ounces of Xtendimax[®] With VaporGrip[®] Technology to control annual sowthistle, black mustard, Canada and Russian thistle, and redroot pigweed (carelessweed).

Types of Tank Cleaner

- Ammonia - increases the pH of the solution
- Bleach - lowers the pH of the solution
- Detergents – cleaners
- Commercial tank cleaners – usually contain ammonia and a detergent



List of Tank Cleaners for Herbicides

- Authority MTZ - Ammonia with TC
- Authority Assist – Ammonia or TC
- Cadet - Ammonia and TC
- Raptor – Water
- Flexstar – Tank Cleaner
- Valor – Ammonia or TC
- Armezon Pro – Tank Cleaner
- Harness Max - Ammonia or TC
- Tripleflex – Ammonia or TC
- Callisto – Ammonia
- Capreno – Bleach
- Gramoxone – Tank Cleaner
- Dicamba – Ammonia with TC
- 2, 4-D – Ammonia
- Harmony – Water
- Express - Water
- Affinity Broadspec - Water
- Sentrallas – Ammonia
- Supremacy - Ammonia
- Huskie Complete – Ammonia
- Goldsky – Ammonia
- Everest – Ammonia
- Varro – Ammonia
- Widematch - Ammonia

Methods to Prevent Sprayer Contamination

- Mixing Correctly
- Don't let solution sit
- Rinse Rinse Rinse
 - Dilution is Key!
- Use proper cleaner
- Be thorough on cleaning

Incorrect mixing can lead to nasty messes



Methods to Prevent Sprayer Contamination

- Replace worn out parts
- Keep tender equipment clean
- Have Dedicated Sugar Beet Sprayer
- Have Separate Nozzles, Screens, In-line Screens



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Helpful Equipment Add-Ons

- Stainless Steel Tanks & Boom Lines
- Polyethylene Hoses
- Direct Injection
- Tank Rinse Nozzles
- Continuous Rinse System
- Nozzle Endcaps
- Clean Water Reservoirs



Nozzle Body End Cap Sprayers101.com



Direct Injection System deere.com

How Clean is Clean Enough?



Questions?

