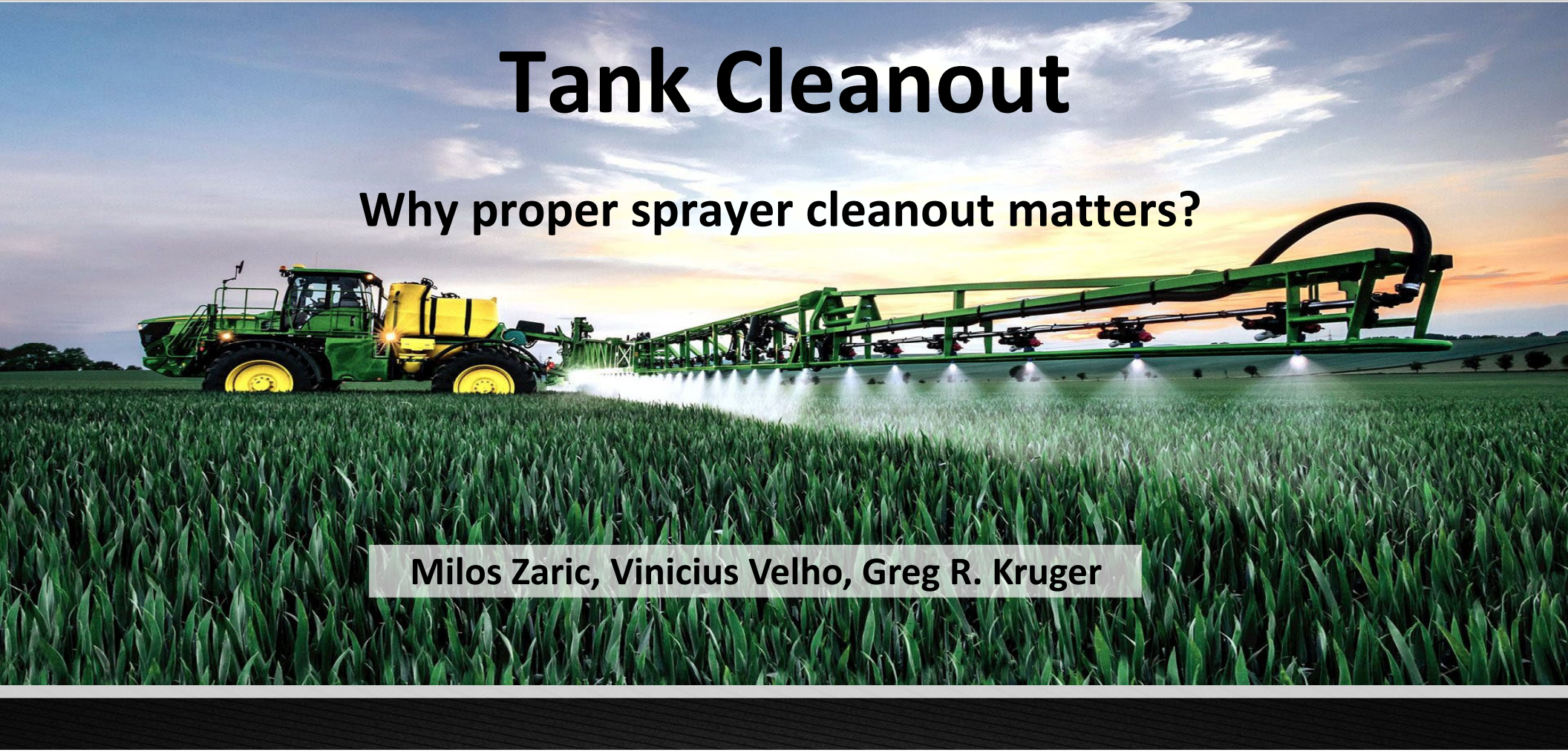
Crop Production Clinics



Tank Cleanout

Why proper sprayer cleanout matters?

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Session Goals

- At the conclusion of this activity, participants will be able to identify the most troublesome places that can hold residues of herbicides and how to clean them.

- At the end of this presentation, participants will have a broad idea about tank contamination issues.

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SPRAYER CONTAMINATION

- Some pesticides active in low rates (i.e. herbicides)
- Contamination of spray equipment can be harmful since potentially they can the next susceptible crop. Removing the residues from previous applications is critical.



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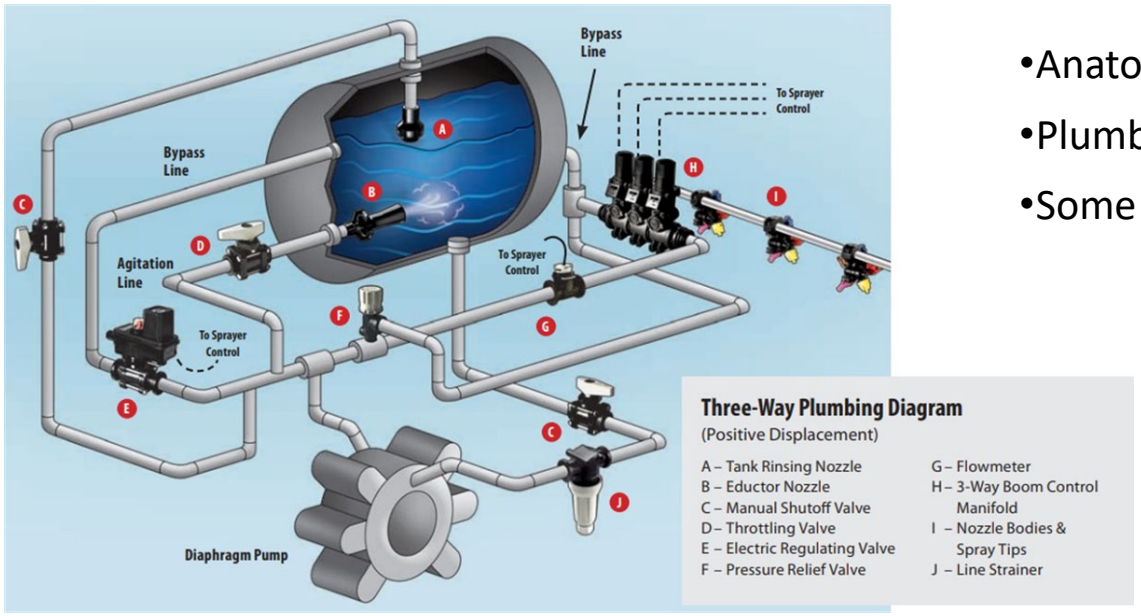

Three-Way Plumbing Diagram
(Positive Displacement)

A – Tank Rinsing Nozzle
B – Eductor Nozzle
C – Manual Shutoff Valve
D – Throttling Valve
E – Electric Regulating Valve
F – Pressure Relief Valve
G – Flowmeter
H – 3-Way Boom Control Manifold
I – Nozzle Bodies & Spray Tips
J – Line Strainer

- Anatomy of sprayer complexed
- Plumbing complicated and interconnected
- Some lines when valves are shut can trap solution

Cleanout procedures

- The objective is to remove enough residues that will not injury susceptible plants in the following application.

Choose the right area

- Cleaning a sprayer will generate contaminated water. This water cannot reach rivers or groundwater.
- The ideal place is a loading pad where the water is collected
- and stored properly.

Use the right ppe

- Based on product applied protective clothing can be variable
- It is highly recommended that when cleaning sprayers the operator use gloves, long pants and long-sleeved shirt

First step
Remove the leftovers as soon as possible

- Empty solution from the sprayer when it is done for the day or when the pesticide will be changed.
- The objective of doing this is to avoid residue to settle on the sprayer. Some pesticides can adhere to the tank and plumbing components making it harder to clean.

First step
Remove the residue as soon as possible

- Leftovers can be sprayed in the field that the sprayer was working or stored for later application.

First step

Remove the residue as soon as possible

- Some sprayers can retain solution in the boom and hoses, for example, one boom of 120` can hold 35 gallons of solution and other boom of 95` can hold 25 gallons.

- If possible, run air thru the boom. The objective of doing this is to be sure that all the residue is removed.

First rinse - First step
add water to the tank, open valves, Spray.

If there is no solution in the sprayer, adding water will start cleaning right at the first rinse, instead of just solubilizing the pesticide.

Add 10% of the tank volume in water.

Opening all valves will allow the solution to circulate and remove products that are trapped.

Rinse for 15 minutes.

Spray, so the solution run through the system and residues are removed from the sprayer.

First rinse - Third step
Rinse screens and end caps

- After the tank, boom and hoses, screens and end caps are the major sources of contamination.

Third Step – first rinse screens

- **All** screens need to be removed and cleaned with **pressure water or scrubbed** to remove pesticide particles.
- Preferentially using tank cleaners to scrub in buckets.

Third Step – first rinse
Nozzle screens

Third Step – first rinse
End caps

- End caps can hold residues and when sprayed this become a source that will contaminate the solution.

The use of flush valves or express end cap

- This piece allows the applicator to remove all the residue that is sitting in the boom dead end.

Express EndCap
Vs
Standard Boom Comparison

First step – second rinse
fill the tank with water and use a tank cleaner

- The tank should be filled again with 10% of its capacity and rinsed for 15 minutes.
- It is recommended adding tank cleaners in the solution according to the label of the pesticide sprayed before.
- Tank cleaners have different classes, each of them for a specific purpose.
- Adding tank cleaners in second rinse will help us to remove all “small pieces” that are left in the sprayer.

FIRST STEP – SECOND RINSE
RINSE SCREENS AND END CAPS

- Nozzles should be installed again.
- Remove the end caps and flush until the water is clean.

Third rinse
Fill the tank with water and spray

- All the dead ends should be closed again.
- Once again, the sprayer should be filled with 10% of its volume with water and rinsed for 15 minutes.

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- Assumption - proper sprayer cleanout performed reduce chances for next crop injury
- External tanks that are used to refill/mix the sprayer in the field potential contamination source
- Used tanks need to be cleaned or be designated

External contamination Additional Sources

- <u>Potential sources</u>
- Shuttles and minibulks
- Inductor cones
- Used hoses for sprayer fill-out
- Nurse tanks on trucks (Tender trucks)

Cutting corners should not be done

- Trying to cut corners in this procedures may cause leftovers and residues to stay in the sprayer and may cause crop injury in the next application.

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Rinse 1

Rinse 2

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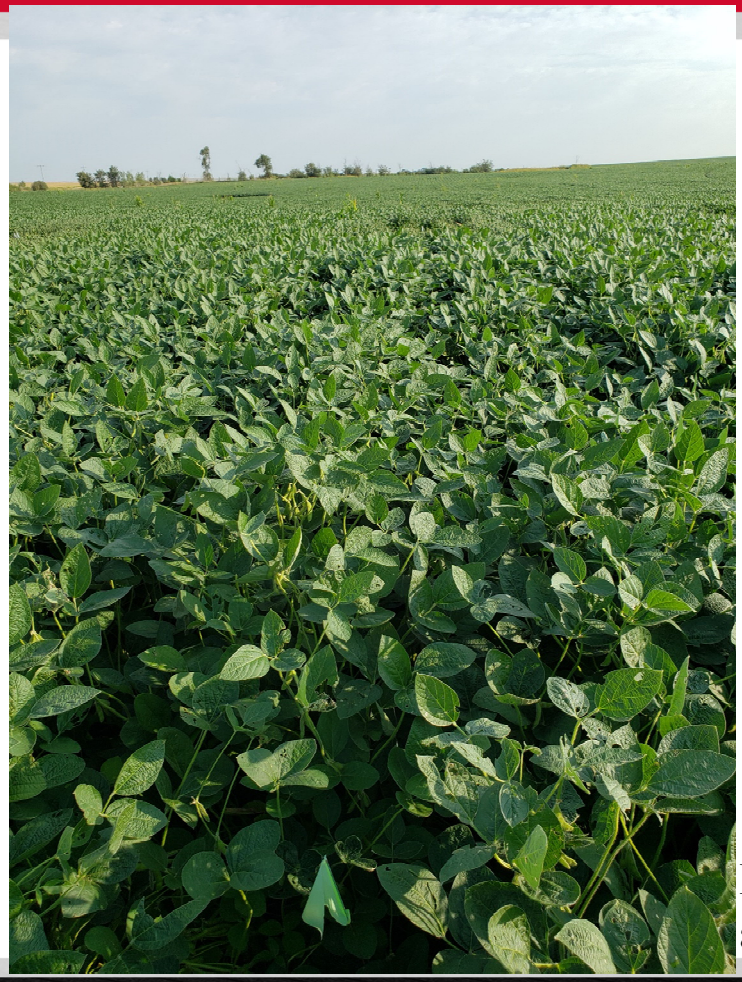
Rinse 3



Follow-up application

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		Rinse							
		1		2		3		4	
NO.	Treatment	---------- cm ----------							
1	Check	55.0	A	56.5	A	53.2	A	54.5	AB
2	Xtendimax	-	-	45.5	CBD	57.0	A	55.7	AB
3	Clarity	-	-	43.8	D	55.9	A	57.3	A
4	Diflexx	-	-	49.0	CB	57.2	A	56.7	AB
5	Engenia	-	-	44.6	CD	52.2	A	57.3	A
6	Status	-	-	50.4	B	52.5	A	52.0	B
		Estimated 80%		Estimated 20%		No yield loss		No yield loss	

Yield in bushels/acre

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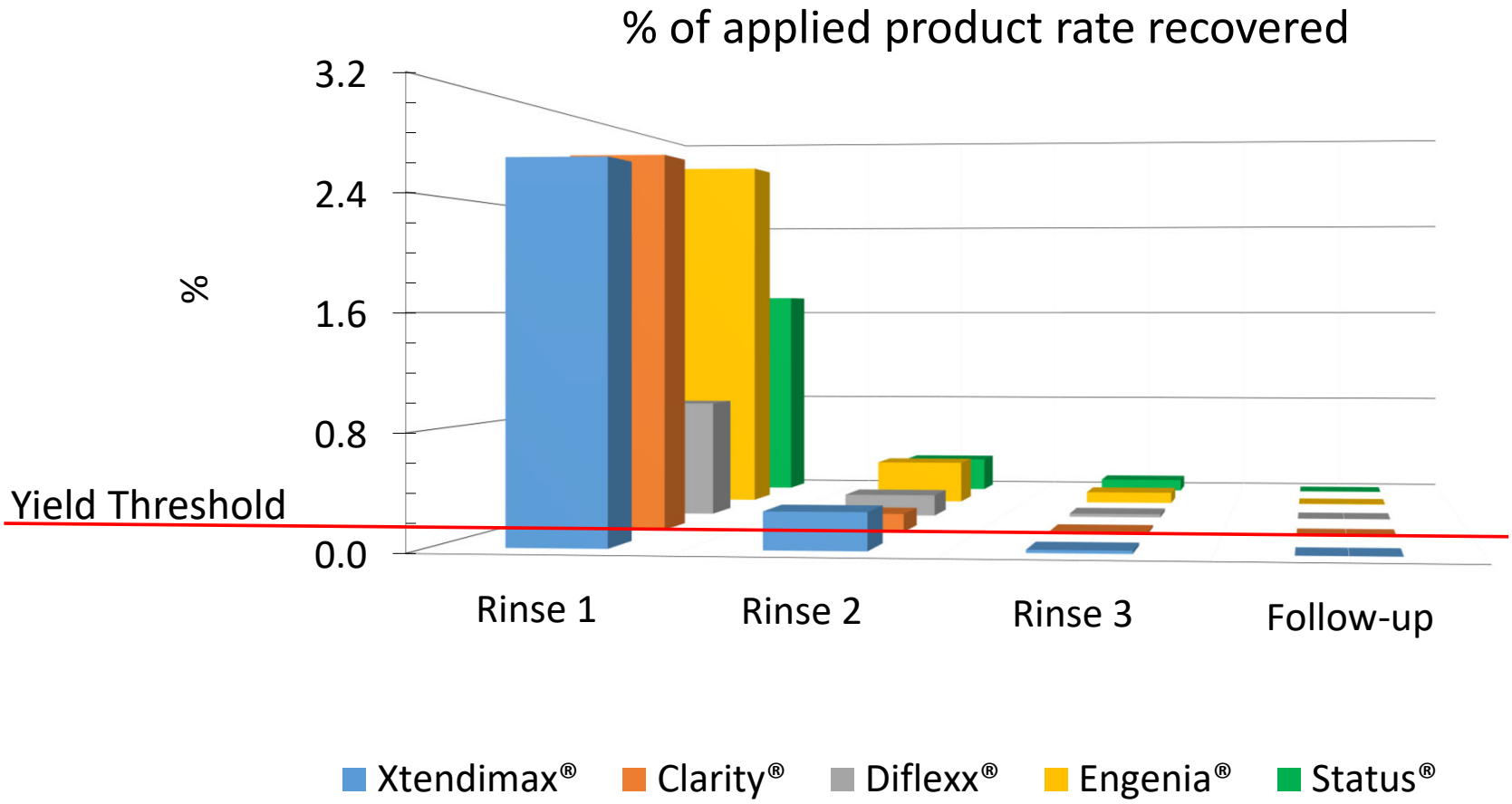

Take Home Points

- Know your machine and understand that cutting corners in cleanout can be troublesome for future applications.

- Cosmetic damage maybe might not cause yield loss.

Questions ?