



GROW

Getting Rid Of Weeds
Through Integrated Weed Management



Combine Weed Seed Cleaning An Approach to Prevent Weed Seed Dispersal

Is There a More Effective Way to Clean-up Weed Seeds From a Combine?

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A well known fact:

How Improper Tank Clean-out
Contributes to Crop Injury



A Not Well-known Fact:

How Improper Combine Clean-out Contributes to Crop Contamination



Picture: Claudio Rubione



What happens when a Combine is Contaminated With Weed Seeds



Pictures: Dr. Jason Norsworthy



Consequences:



Source: Serio Morichetti, AGD – 500 Palmer Amaranth seeds/1000 grams soybean grains.



Common Statements Found in Literature

- Know whether the combine entering the field has recently been in a field containing herbicide-resistant weeds such as waterhemp or Palmer Amaranth. If so, **take the time to completely clean it** or consider other variable options.
- Pigweed seeds are very small and **can hide in tight areas** of the combine.
- Since weed seeds can also travel on **tillage equipment, clean this equipment** after infested fields as well.
- Combines are **great weed-spreaders**. In fact they are the major way weeds are spread.
- Open trapdoors to clean the grain auger and tailings processor **with an air compressor**.
- **Thoroughly clean your combine, when possible.**

Vague Statements



Where do weed seeds hide?





Weed Seeds
Let's See Where to Find Them



Where do weed seeds hide?





Where do weed seeds hide?





The “Straw Bale Methodology”

Deep Combine Cleaning





Combine Weed Seed Cleaning

An Approach to Prevent Weed Seed Dispersal

How a Straw Bale Helps to Clean Weed Seeds from a Combine

Due to their low weight and small size, weed seeds are able to get into spots that are difficult to access with compressed air

Straw fed into a combine after harvest, as opposed to straw as part of the harvest (grain + straw + chaff), moves around the combine more freely, reaching those spots containing hidden weed seeds.



Combine Cleaning

“First Steps”





Cleaning the Grain Tank and Unloading Auger





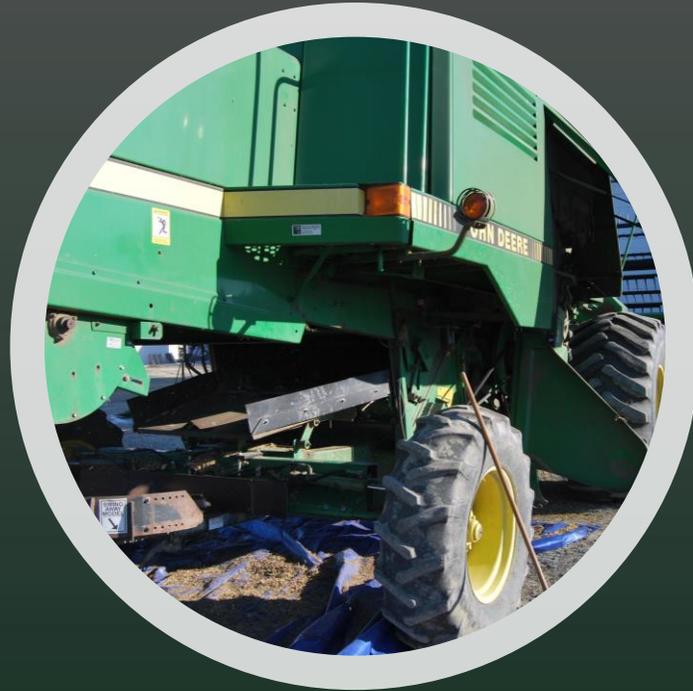
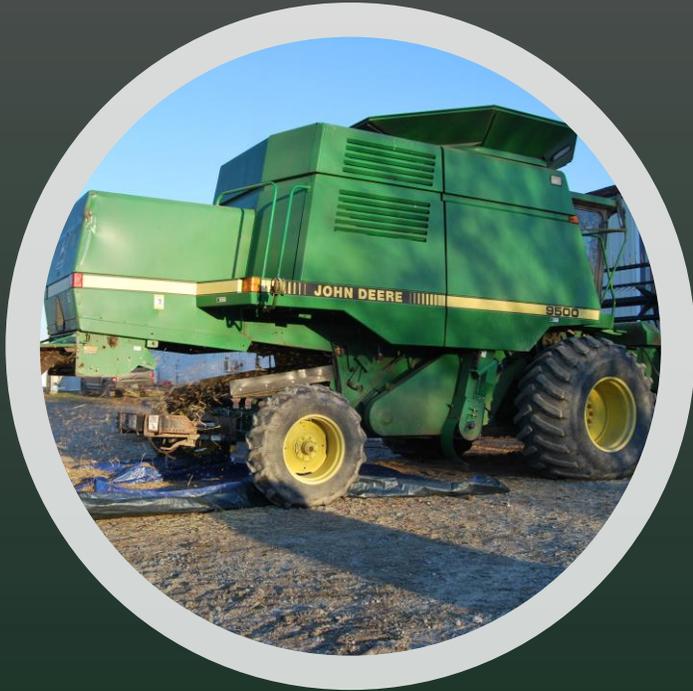
Straw and Weed Seeds Recollection





Weed Seed Identification and Counting





Results From Three Combines



1st Combine

Weed Seed Counting Before and After Straw Bales



Palmer amaranth:

167,200

3,200

Other:

153,000

63,500



Weed Seeds Count and Volume

Weed Seeds #	3,100	300	1,000	3,100	(56,000)			= 63,500
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~ 1 seed/acre



2nd Combine

Weed Seeds after Blowing and Straw



	After Straw			Pre-cleaning
	Auger	Inside	Return pipe	Stone Trap
Pigweed:	4,900	30,500	920	1,700,000
Crabgrass:	280	83,300	882	650,000
Fall Panicum:	1,000	15,200	700	720,000

Weed Seeds Total

3,707,682



2nd Combine

Weed Seeds Counting After Compressed Air and Straw

Palmer amaranth:

1,736,000

Total Weed Seeds

3,707,682





3rd Combine

Weed Seeds Counting After Compressed Air and Straw



Total Weed Seeds

None



Final Considerations





Conclusions

- Weed seeds still hide in combines after being thoroughly cleaned.
- Straw bales removed weed seeds from well cleaned combines.
- Ignoring insignificant weed seed volume can cause serious harm to weed-free fields, crops price and trading.
- No in-depth cleaning could lead to weed seed dispersion.
- When weed seeds are detected in exported crops, the importing country may impose additional inspections or treatments, or may reject or destroy the shipment.
- Recurring violations can lead authorities to suspend exports from a given region or to close their import markets entirely.



Final Considerations

- **Prevention is the key to avoid seed dispersal and contamination.**
- **Plan ahead and be proactive.**
- **Implement a plan for keeping weeds under control, managing fields strategically as well as for cleaning the machinery involved.**
- **Follow a “Weed Seed Cleaning Protocol” with all the machinery which could be contaminated with weeds.**



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Background Information:

- INTA (Instituto Nacional de Tecnología Agropecuaria, ARGENTINA)

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 **GROW**

NO SEEDS. NO WEEDS.