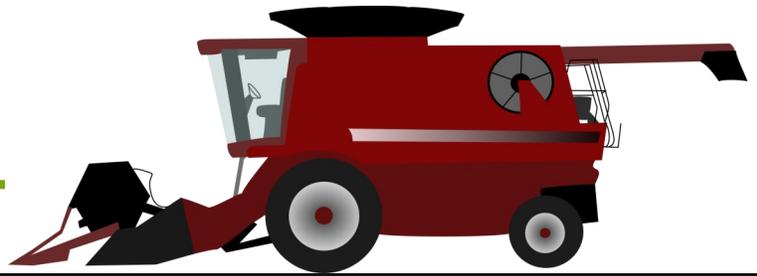


HARVEST HELPLINE: COMBINE CLEAN-OUT



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Recommended Procedures for a End-of-Season Combine Clean-out

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The front-to-back and top-to-bottom combine clean-outs are significant undertakings and may be necessary for some farmers to complete between fields when producing identity-preserved grains or other specialty crops. All farmers should consider performing this full clean-out after harvest. Following harvest season, proper clean-out of harvest equipment can remove significant biomaterial and reduce the likelihood of animals nesting in machines, improve function and longevity of parts, and allow for peace of mind when putting equipment away for the season.

Combine Clean-out Series—

End-of-Season Combine Clean-Out

End-of-season combine clean-out

The steps for a complete, top-to-bottom and front-to-back clean-out of all the combine parts, including the head, feeder-house, rock trap, rotor/cylinder/concave, cleaning shoe, tailings/elevators, grain tank, unloading auger, chopper, rear axle, and chassis are listed below.

Supplies: shop vacuum, high-pressure air compressor, flathead screwdrivers, and pocket knife

Personal protective equipment: protective eyewear, dust mask, hearing protection, and gloves



Figure 1. Always wear personal protective equipment when cleaning machinery.

1. Prior to leaving the crop field, perform a self-cleaning process with the combine:

- Run the unloading auger empty for at least one minute.
- Remove the header from the combine (optional).
- Open the clean grain and tailings elevator doors, rock trap, and unloading auger sump.
- Make sure bystanders are at least 50 ft. away from machine.
- Start the combine and separator, adjust the cleaning shoe fan to full speed for maximum airflow, and alternately open and close the cleaning shoe sieves electronically.
- Adjust the rotor to full speed for maximum air suction and alternately open and close the concaves.
- Operate the combine this way for at least two minutes and drive over end rows or rough terrain to dislodge more material.



Figure 2. Preparing the combine for a full end-of-season clean-out.



Figure 3. Vacuum the grain tank, starting from top to bottom.

2. Thoroughly vacuum the grain tank from top to bottom, including all ledges, steps, lights, sensors, wiring, and around the window to the cab (Figure 3).
 - a. Vacuum around and inside the bubble-up intake auger. Lower the bubble-up auger if possible to several different positions to access and remove the biomaterial from underneath it.
 - b. Vacuum all biomaterial from the floor of the cross augers.
 - c. Attach a smaller flexible hose to the vacuum and remove the biomaterial from the grain tank sump.
 - d. Use a smaller hose to clean the sump from below using the access door.

3. Clean the unloading auger by packing 1.5 ft³ of pine wood chips (0.5 inches long) into the sump.

- a. Power-up the unloading auger to scour and remove biomaterial. Then vacuum remaining wood chips and biomaterial from the sump, cross augers, and the exit end of the unloading auger.

4. Remove the head, lower the feederhouse to the ground, and use compressed air to blow out the interior.

- a. Remove biomaterial from all joints, crevices, and feederhouse chains.
- b. Shake chains to loosen material. Each area may require repeated blowing and vacuuming.

5. Raise the feederhouse and lock it in place using the hydraulic cylinder stop. (Figure 4).

- a. Open the rock trap door and loosen existing biomaterial. If present, pull down the rubber seal between the feederhouse and the rotor to dislodge additional plant material.
- b. Use compressed air and the vacuum to remove dislodged material.



Figure 4. Raise the feeder house and lock it into place

6. Remove access panels and rotor/cylinder concaves and clean the rotor/cylinder and threshing area.

Use compressed air first and then vacuum.

- a. Pry out lodged plant material from the front rotor/cylinder section and remove it with the vacuum.
- b. Clean the concaves and the remaining rotor/cylinder cage.
- c. Use compressed air directed to the back side of the rasp bar sections to remove residue.
- d. If concaves were removed, reattach, and vacuum remaining residue from the rotor/cylinder area.

7. Remove residue from the clean grain augers or shaker pan below the rotor/cylinder.

8. Clean the chopper by removing the plant material from the rotor. (Figure 5)

Figure 5. Using compressed air to remove plant material from the chopper.



9. **Open the sieves to their maximum width and remove the covers of the bottom cross augers (if present).**
 - a. Force compressed air through the sieves. Inspect lower cross augers to vacuum any remaining debris before replacing the cross-auger covers.
10. **Clean the elevators by opening the lower doors and shaking the conveyor chains to dislodge any material.**
11. **Open and empty the moisture sensor and reassemble.**

Header Attachment Clean-out

Depending upon which type of combine header you have—corn head or a grain platform head—end-of-season clean-out is crucial to help prevent the spread of potential herbicide resistant weed seeds and soil pathogens.

Clean corn heads by removing all ears and large residue from the exterior.

- a. Raise the snouts and shielding between rows.
- b. Next, remove the safety shields.
- c. Use the vacuum and compressed air alternately to remove residue around gathering chains, deck plates, and snapping rolls (*figure 6*).
- d. Clean the auger, feed-pan, and other areas at the rear of the head.
- e. Replace all covers, snouts, and safety shields.



Figure 6. Using a leaf blower to remove residue from the gathering chains, deck plates, and snapping rolls on a corn head.



Figure 7

Clean grain platforms by first removing all large amounts of residue from the exterior.

- a. Clean the reel, auger or belt, and the cutter bar areas.
- b. Remove auger inspection cover and safety shields for additional inspection and cleaning.
- c. Clean the outside and the inside of the crop dividers.
- d. Replace all covers and safety shields.



Figure 8

Figure 7 (above): Remove large amounts of biomaterial from the platform, prior to using compressed air.

Figure 8 (below): Using compressed air to clean the reel and cutter bar of the grain platform.

Final Clean-Out Steps

Clean the exterior areas of the combine.

- a. Use compressed air to remove residue from the spreader assembly and rear axle.
- b. Also remove residue from the combine chassis (ledges behind access panels, above the fuel tank, all standing platforms, cab roof, and around the outside of the feederhouse, including guards and shields).



Figure 9 (left): Open up the shields to used compressed air to clean underneath, and the exterior portions of the combine shields.



Figure 10 (Right): Used compressed air to remove residue from the spreader assembly and rear axle of the combine.

Summary

A full combine clean-out is likely not necessary between most crop fields, but is an important end-of-season practice. This process will allow for final maintenance and upkeep prior to storing the machine for the winter, removal of potential bedding and food material for animals, and clean up of any leftover weed seed to prevent movement to fields in the next harvest season.