

Using the Weigh Wagon

This document does not purport to address all of the hazards. Individuals are responsible for obtaining full safety and hazard training prior to attempting this procedure.

Summary of activity:

- Prepare weigh wagon for use
- Collect weight data using the weigh wagon
- Collect grab samples

Hardware for collecting samples:

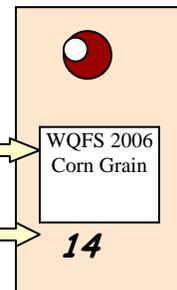
- Weigh wagon
- “Can on a stick”
- Heavy gage plastic bag, a.k.a. poultry bags
- Sample tags
- Pen
- Form K or other paper for data collection
- Clipboard
- Permanent marker, a.k.a. Sharpie
- Burlap bags for holding the sample bags.
- Plot map

Personal gear:

- Hearing protection; earplugs or ear defenders
- Dust mask
- Hat; provides sun protection
- Eye protection or safety glasses
- Closed toed, non-skid shoes

Preparing Tags Prior to Sample Collection

1. Print general information for the tags on adhesive labels, or hand-write with permanent ink, for example “WQFS 2006, Corn Grain”
2. Write the plot number or other identification with **Permanent Marker**
3. These tags will be put in the sample bag with the grain grab samples.
4. Include sample tags for identifying the burlap bags.



Note: Batteries can cause severe injury. Operators must obtain training in battery safety prior to executing this procedure.

In general remember the following:

- *Wear proper clothing to protect your face, hands and body.*
- *Make sure work area is well ventilated.*
- *Do not charge or use booster cables or adjust post connections without proper instructions and training.*
- *Never lean over battery while boosting, testing or charging.*
- *Cigarettes, flames or sparks could cause a battery to explode. Keep all ignition sources away from the battery.*
- *Always shield eyes and face from battery.*
- ***KEEP VENT CAPS TIGHT AND LEVEL.***
- *In the event of accident, flush with water and call a physician immediately.*

Preparing Weigh Wagon

Procedure assumes the weigh wagon is already on site with a grain (gravity) wagon co-located.

1. Make sure the wagon is hitched to the truck or tractor and the jack stand is in the fully raised position. See below for hitching and jacking instructions.
2. Make sure the battery is connected.



3. Confirm the weigh wagon has sufficient fuel for operation.
 - a. Remove the fuel cap and look at the fuel level on the float bars in the tank.
 - b. If required, procure additional fuel.
 - c. The weigh wagon uses gasoline fuel. Do **NOT** fuel with diesel.



4. Turn the key to start the wagon engine to confirm the engine is operational (see starting procedure below).
 - a. It is not required to leave the wagon running during collection. HOWEVER, the wagon has been known to suffer from a weak battery, making starting the engine difficult. If this occurs, it is recommended to leave the engine running during the entire harvest.
 - b. **Leaving the engine running is a last resort. Extreme care must be taken to prevent being overcome by exhaust fumes.**
5. Confirm the auger is extended over the gravity wagon (see “moving the auger” below).
Move the auger before any grain is weighed.
6. Lift the flap over the scale controller. Turn on the scale by pressing the “power on” button.



7. There is a light if the operator has difficulty seeing the screen. The light is turned on and off by pressing the “Lights” button. Do not use the lights for extended periods of time. It will run down the battery.

Correct Hitching of the Weigh Wagon to a Vehicle

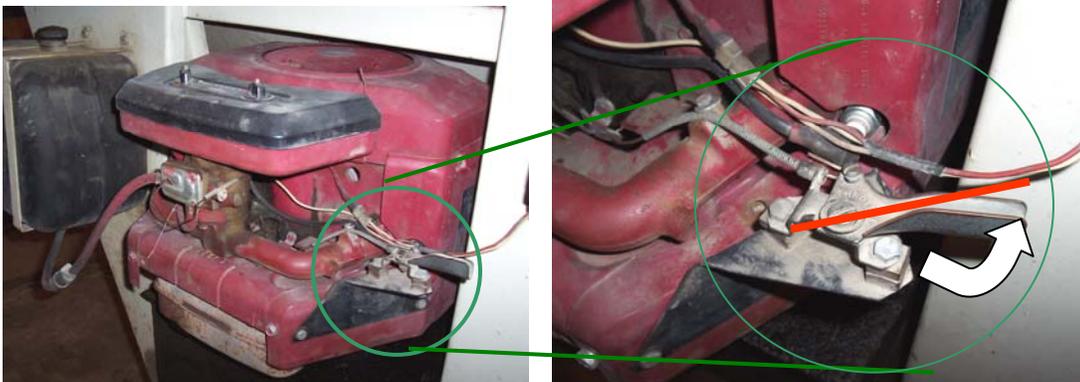
1. Make sure the rolling stand (the wheel) is in the “up” position (horizontal to the ground).
2. Back the truck to the trailer until the ball hitch on the truck is directly under the receiver on the trailer.
3. With the ball hitch directly under the receiver, slowly lower the trailer tongue by cranking the handle on the support jack on the trailer.
4. Confirm that the receiver has completely seated onto the ball hitch.
5. Engage the locking lever and lock in place using the bolt/pin.
6. Crank up the support jack and pin it up horizontal to the ground.
7. Attach safety chains and light cable.

Starting the Engine on the Weigh Wagon

1. Pull the choke wire out to “choke” the engine for starting.



2. Move the throttle to “half engaged”.



Location of the Throttle

Throttle in lowest position



Throttle in the “half engaged” position

Throttle in “Full Open” position

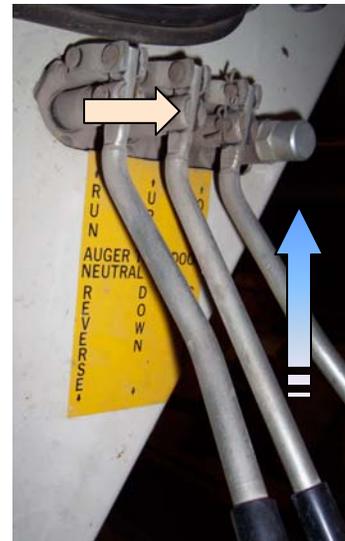
- Turn the key from “Off”, through “Run” to “On”. You will have to hold the key to “ON” until the engine starts, and then let the key go back to “Run”.



- Once the engine has been started, move the throttle to Full Open. It may be necessary to “play” with the choke to keep the engine running. Push or pull the choke wire as necessary in small movements until the engine runs.

Moving the Auger

- Extend the grain auger. This is done with the center lever. Lifting the lever up will raise the auger arm and pushing the lever down will lower the auger arm.
 - Caution!!** Make sure to use the correct (center) lever!
 - Use the choke to keep the engine operating.
 - Caution!!** Make sure that the exit chute on the auger does NOT hit the side of the gravity wagon or the truck.
 - The auger tube should NEVER touch the wagon or truck side, even when it is fully loaded with grain. This means leaving sufficient space for the wagon to “settle” or “sink” as it gets heavy with grain.



Collecting Samples

- Prior to the combine discharging grain, zero/tare the scale with the empty “can on a stick” sitting on the wagon.



- Make sure the wagon is hitched to the truck or tractor and the jack stand and rolling wheel are raised.
- Make sure no other equipment; parts, people, etc. are on the wagon. When it is tared, whatever is on the wagon AND its orientation, as well as anything on the

truck tailgate when the truck is connected to the wagon, must be the same during the final weighing.

- c. If the wagon will not tare, or if not tared before the introduction of the grain, it will be necessary to enter the pre- and post- weights onto the data collection sheet.
2. As the combine approaches the weigh wagon, climb the ladder, bringing the can on a stick.

3. When the combine begins to discharge grain:
 - a. Wait a few seconds for any spurious grain from the previous sample plot to exit.
 - b. Place the can under the grain discharge and hold the can there so that grain is collected during the entire discharge.
 - c. NOTE: On **short** plots such as WQFS, especially with low yield areas, there may be very little grain available. The operator must “get the feel” for how much grain can be allowed to pass before grabbing a sample without suffering insufficient sample.

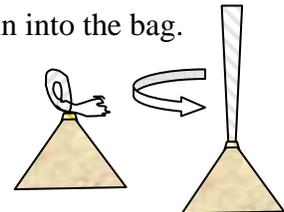


- d. NOTE: On **large** plots, the operator needs to catch numerous trickles or small snatches of grain from the flow so that the grain in the can represents the entire plot.
4. Climb down from the top, holding the can level (do not spill the grain).
5. Place the can on the stick full of grain back on the tongue of the wagon.

6. When the combine has completed discharging grain, record the final weight, in pounds, displayed on the scale controller onto the data collection sheet AND on the back of the sample tag.



7. Place the appropriate sample tag into the sample bag and pour the grain into the bag.
 - a. Squeeze as much air out of the bag as can be done quickly,
 - b. Twirl the bag top to facilitate a loop knot
 - c. Tie a loop knot in the sample bag
 - d. Drop sample bag into the burlap bag



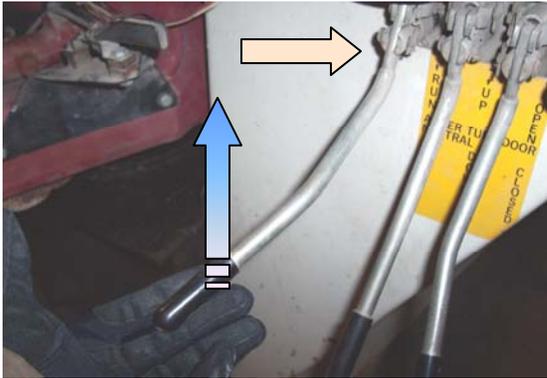
8. Place the empty can back on the wagon tongue, tare the scale, and repeat.

Emptying the Weigh Wagon during Sample Collection and at the End of the Collection

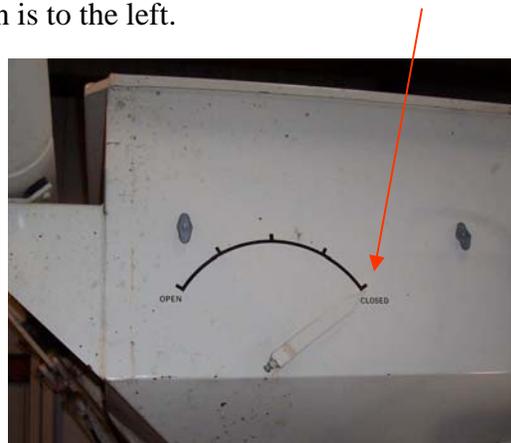
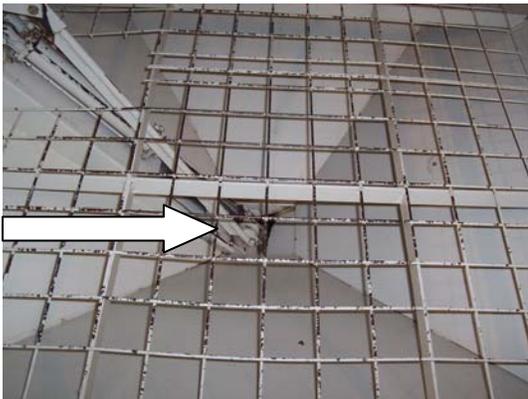
Depending on the yield, the operator will be required to empty the weigh wagon a number of times during the harvest, as well as at the end of the harvest.

- It is not necessary to completely empty the weigh wagon during the harvest, only enough to prevent overflow of the weigh wagon.
- The operator will have to gauge their time such that the wagon can be started, emptied, shut down, and tared prior to the arrival of the combine.

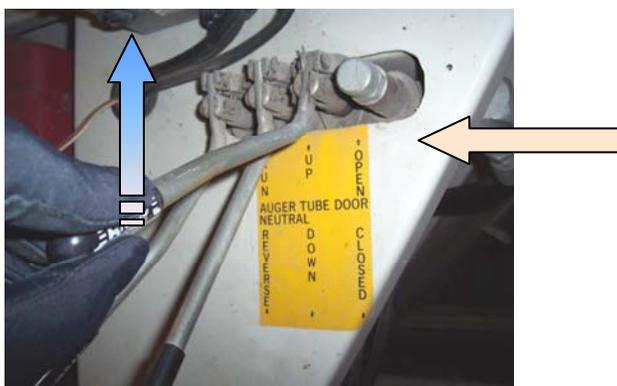
1. Start the engine. The engine will be run at full throttle once the auger is running.
2. Start the auger running by lifting the left lever up ('run'). Having the auger running will help prevent grain from clogging the auger.



3. To release the grain to the auger, a small door at the bottom of the wagon must be opened. The scale on the outside indicates the degree of openness of the door. Full closed is to the right (as shown in the photo) and full open is to the left.

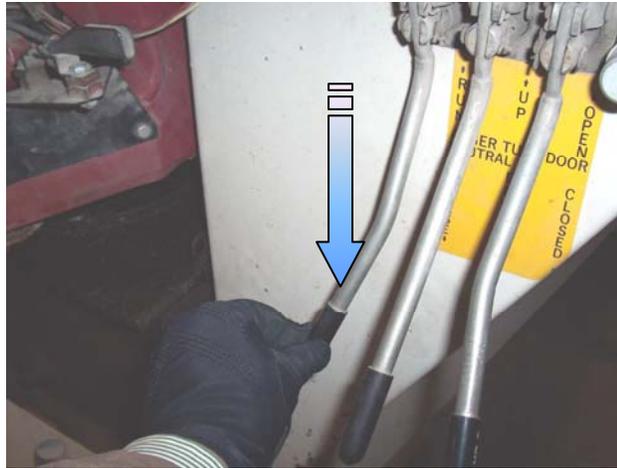


- a. To open the door, lift up on the lever on the right.



- b. If this is the end of the harvest completely empty the wagon, including the auger.
- c. Rock the weigh wagon back and forth by pushing on one side to knock the grain down to the bottom of the wagon and thus to the auger.

4. After sufficient grain has been removed from the wagon and **before** the harvester returns with the next load of grain,
 - d. With the auger running, close the door at the bottom of the wagon. Pushing the right lever down does this.
 - e. **KEEP THE AUGER** running. If it is stopped full of grain, it can be very difficult to start the auger moving again.
 - f. Let the grain stop flowing from the auger, and then stop the auger by bringing the left lever back to neutral.
 - g. Idle down the engine before shutting of the engine by using the throttle pushed towards the back.



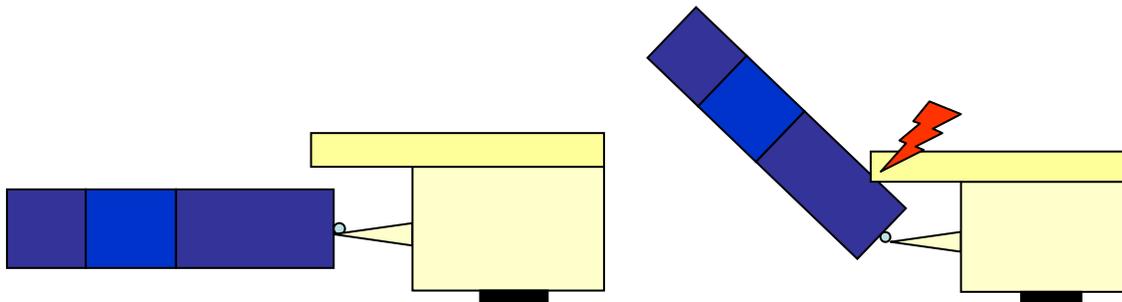
- h. Note: pushing the lever on down past neutral will reverse the direction of the auger and thus the direction of the flow of grain. This may be necessary if the auger clogs.
5. Do **NOT** retract the auger after every load. To retract the auger, move the center lever downward with the engine at **FULL** throttle (throttle lever pulled forward).
 - a. **NOTE: The weigh wagon MAY NOT be moved with grain in the wagon.** This will damage the load cells.
 - b. The wagon may be moved a few feet with the auger extended, for example to line the weigh wagon up with the gravity wagon, but it should **not** be moved great distances with the auger extended.
 - c. The following photo shows the auger fully retracted.



6. Shut down the engine.

Shutting down at the End of the Collection

1. Fully empty the weigh wagon of grain including the auger. Make sure the engine is at full throttle when doing this.
2. Close the door at the base of the weigh wagon.
3. Retract the auger.
4. Idle down the engine.
5. Shut down the engine by turning the key to “off”.
6. **Remove the key.** If the key is left in the wagon it may be lost when the wagon is moved.
7. **Make sure the scale controls have been turned off. Failure to do this will result in a dead battery for next time.**
8. **NOTE:** When pulling the weigh wagon with the truck, too sharp of a right turn will turn the truck into the auger, damaging both the auger exit chute and the truck topper.



Sample Handling

1. Take the individual sample bags and place them into burlap bags. Full burlap bags should have an identification tag wired to it.
2. Bring the grain samples back to main campus for further processing.
3. Put grain samples in the cooler if they cannot be processed immediately.