

# Planter Clean-out Tips When Changing Seed Varieties

As many growers move toward specialty/value added crops, some are interested in segregating grain production by seed varieties, within grain genetics rather by grain types (e.g. corn, soybeans, oats). Current interest is in segregating nongenetically enhanced crops from genetically enhanced crops for export sale. Consumers are creating a demand for identity-preserved processed grain products (e.g., demand for organic production, processing, and labeling). In the future, consumers or labeling demands may create the desire to segregate seed varieties within quality or genetic level for traits such as protein, oil, fiber, and starch content. Cleaning planter equipment prior to use is one preventative step against the rejection of a grain contract or load from uniform certification. Regardless, an important initial question to ask is what level of undesirable grain will be tolerated in the amount subsequently marketed?

## **What level of undesirable seed can be tolerated in the planting operation?**

If “all” undesirable seed must be removed from the planter, then the planter should be disassembled as much as practical without affecting calibration and seeds removed during a thorough inspection. If, however, a small

percentage of undesirable seed can be tolerated, the operator may adjust cleanout procedures accordingly. To minimize effects on calibration, planter operators will want to disassemble only enough of the metering mechanism to achieve the desired tolerance for contamination.

Before setting maximum allowable seed contamination from the planter, recall that other contamination sources may include the combine, grain handling and storage operations, and isolation of cornfields (cross-pollination). Contamination from these sources may be more difficult to control or predict. Contaminated corn seed dropped by the planter can generate additional contamination later in the season by cross-pollination. Although a goal of 1 percent total contamination may be relatively easy to attain for the planter alone, because contamination from several sources can be accumulative, it may be desirable to strive for much smaller contamination from the planter (e.g., 0.1 percent).

For a given accepted tolerance, a greater number of undesirable seeds per 1,000 feet of row is allowable at higher seeding rates. For example, in 30-inch rows, 0.1 percent of undesirable seeds equals 10 seeds/1,000 ft. of row at a seeding rate of 175,000 seeds/acre but just 2 seeds/1,000 ft. of

row at 35,000 seeds/acre. Thus one corn seed may represent contamination equivalent to five soybean seeds in wide rows.

Of particular concern is a small number of seeds that may “hang-up” somewhere in or on the row unit or planter and later drop in a short length of row at some random time. Although the chance of this occurring is probably not great, it is possible. In other words, it is not only how many undesirable seeds are left in/on a row unit, but also how quickly they exit (e.g., if a buffer area is used) or whether they exit individually over a long distance or as a concentrated group at some unknown time and location.

Limited testing of planter cleanout at the Iowa State University Agricultural Engineering Research Farm with Deere 7100, CaseIH 900, and White 5700 planters indicates that specific recommendations depend on style of the planter and seed-metering mechanism. Planter operators currently doing a conscientious job of removing visible seed when changing varieties probably have seed drop contamination levels below 1 percent within 1,000 ft. of operation (20 seeds/1,000 ft. of row at 35,000 seeds/acre or 100 seeds/1,000 ft. of row at 175,000 seeds/acre; assuming 30-inch rows). However, because it is impossible to determine just when several seeds caught inside a row unit may finally drop,



Turning a seed meter.

contamination may occur at unpredictable locations in the field unless care is used to thoroughly clean the planter.

Following are specific details for some planter mechanisms. As a final step, be sure to finish cleaning all row units with a general inspection in the area around the seed drop tube, seed opener, and press wheels as detailed in the section on general planter cleanout. Also, check your operator's manual for advice on clean-out of specific equipment.

### **Finger mechanism on Deere/Kinze row units**

Remove the seed hopper after manually disengaging the seed



Emptying a Deere seed hopper from the right rear corner.

drive and dump seed from the right-rear corner of the hopper. Next, repeatedly manually turn the seed drive, invert the hopper to dump, and shake the hopper to listen for seeds still present. In tests, after three or four cycles of turning the seed drive/hopper inversion/shaking, and listening for seeds present, just one seed was found inside one of three row units upon further disassembly. In this case, the seed was wedged behind the cut-off brush and easily visible when the finger wheel was exposed. No seed was found inside the lower-belt assemblies of the three row units. Because lower-belt misalignment may affect calibration and the unlikelihood of finding seed in this area, most operators should not remove the lower-belt cover. Operators that have been simply removing the seed hopper and dumping it once will find that three cycles of turning the seed drive/hopper inversion/shaking and listening for seeds present will add about 2 minutes per row unit to the total cleanout time.

Although probably unnecessary for most operators, if the seed meter is removed from the hopper and the cover exposing the finger mechanism is removed, another 4 minutes per row unit is required.

### **Soybean seed cup on Deere units**

Remove the seed hopper after disengaging the seed drive. After an initial dumping of seeds from

the right-rear corner of the hopper, two or three cycles of turning the seed drive/hopper inversion/shaking and listening for seeds present should remove all seeds. If desired, the seed cup can be exposed for further inspection by removing two wing nuts. Turning the seed meter, inverting, and shaking until empty adds about an extra minute per row unit beyond simply dumping the seeds.

### **Kinze brush seed meter unit**

Remove the seed hopper after disengaging the seed drive and dump seeds. Because seeds hang up inside the brushes (particularly the brush—eliminating doubles), it is recommended to remove the seed plate by removing two wing nuts holding it. Remove seeds inside the meter and inspect brushes before reassembly. Removal of the seed plate beyond simply dumping seed from the hopper adds approximately 1.5 minutes per row.

### **Central seed hopper and seed drum on CaseIH planters**

Close the gate between the central seed hopper and seed drum then remove the seed drum. Remove seed from the drum. Reopen the seed hopper gate, allowing seed to fall into a catch container. Inspect both inside the seed hopper and around the assembly components where the seed drum is mounted to remove leftover seeds. Inside the seed hopper, seed may be



Seeds left in a White air meter after removing the seed plate.

caught on ledges where different materials meet or around a seed-sensor brace near the bottom of the hopper. Consider caulking areas where seed habitually remains. Where the seed drum is mounted, inspect flanges of the air intake and exhaust areas, the brush, and other components. Do not forget to carefully inspect inside the drum, particularly around the gasketed seal. After removing all visible seed, reassemble and pressurize the air seed-metering system before adding new seed. This should aid cleaning out the seed delivery tubes (distribution hoses) in case a few seeds were left in the system prior to cleanout. Extra inspection inside the seed hopper and in and around the seed drum area and repressurizing the system adds approximately 6 to 8 minutes to a conventional seed cleanout.

### **Deere vacuum planter**

Remove the seed hopper and dump seed from the left-rear corner of the hopper. Open the seed meter housing door and remove the seed plate. Carefully inspect the brush, gasketed seal, and interior ledges and remove seeds inside the meter. Opening the seed meter to clean and remove seeds adds approximately 1.5 minutes per row.

### **White air planter**

Remove seed from each seed hopper by removing an end cap from the seed removal tube. Inspect the seed hopper, brushing all remaining seed into the seed removal tube. Remove the seed plate by removing the center attachment bolt. Inspect and remove seed in the metering area paying particular attention to brushes. After cleaning seed from this area and with the planter properly supported on blocks or stands, turn the depth gauging wheels and double-disc seed openers several revolutions. Seed that fell from the metering mechanism when the seed plate was removed typically gets caught in this area. In a test approximately, 5 to 30 seeds per row unit were observed during cleanout of 3 units. An alternative to spilling seed from inside the

metering mechanism into the seed opener area is to close a gate between the seed hopper and metering mechanism, and then operate the planter to remove seed from the meter. If this technique is used, make certain all seed in the hopper has been removed. Removing the seed plate and cleaning in the depth wheel/seed opener area adds approximately 2 minutes per row unit beyond simply emptying seed from the hoppers via the seed removal tube.

### **General planter cleanout**

After carefully cleaning and inspection in the seed hopper and metering area, inspect the planter frame, particularly near the seed drop tube, double-disc seed openers, depth wheels, and press wheels. Seed may have fallen during cleanout, earlier seed filling, or may be sticking to planter components if soil is moist or seed openers dirty. If required to get underneath row units, make sure row unit or planter is supported safely and securely on blocks or stands.

Experience with your own planter over time will help you to find common areas where seed may be lodged. If tolerances are low, you may wish to plant a buffer area before planting an area that will be harvested for another variety.

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