

Grain Drill Calibration: Don't Make a Mistake—Calibrate

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Grain drill calibration is a critical, yet often ignored part of successful forage establishment and pasture renovation. Planting lower seed rates than recommended can result in thin stands that are susceptible to weed encroachment. Planting more than the recommended seeding rate is undesirable due to increased seed costs. As drills wear, and tires and cogs get replaced, actual seeding rates can vary significantly from seeding charts found on drills. The following calibration method can be applied across a wide range of grain drill types and manufacturers and minimizes the need to carry out detailed mathematical calculations.



Figure 1. Make sure that seed tubes are clear of obstructions by blowing them out with compressed air.

Items Needed to Calibrate Drill

- Tape measure (150 feet)
- Flags to mark stopping and starting points
- Gram scale with 0.1 g accuracy
- Plastic sandwich bags
- Rubber bands
- Screwdriver and pliers

Steps to Calibrate a Grain Drill

1. Read your drill's operators manual to learn where the adjustments for leveling, seed depth, and seeding rate are located.
2. Ensure that seed tubes are not blocked by spraying them out with an air hose and running a wire through them (Figure 1). **Do not skip this step.**
2. Using a tape or ruler, measure the distance between disk openers.
4. Use the "seeding rate chart" on the drill to determine the initial drill setting, and set the drill accordingly.
5. Select the proper gear box setting or drive gear for the desired seeding rate based on the manual.
6. Place a small amount of seed above each opening in the drill box.
7. Lower the drill to engage the seeding mechanism.
8. If calibrating the drill in place, jack up the drive wheel (wheel that turns the seeding mechanism) just far enough off the ground that it can be rotated. **Caution:** When jacking the drill up, make sure that is chocked or attached to a tractor with its parking brake set.
9. Turn the seeding mechanism until seed comes out. Make sure that seed is coming out of each disk opener.
10. Disconnect three to five seed tubes from the disk openers across the span of the drill.
11. Place and secure a collection container on each seed tube. A sandwich bag secured with a rubber band works well.
12. Pull the drill 150 feet or turn the drive wheel the number of revolutions it would take to travel 150 feet (Figure 2).
 - a. Revolutions can be determined by using the following formula: number of revolutions = 150 feet / circumference of the drive wheel in feet.



Figure 2. Turn the drive wheel the number of revolutions it would take to travel 150 feet. The number of revolutions can be determined by using the following formula: number of revolutions = 150 feet/circumference of the drive wheel in feet.



Figure 3. Determine the circumference of the drive wheel by direct measurement or by using the following formula: circumference in feet = 3.14 x diameter of drive wheel in feet.



Figure 4. Tare the scale for the weigh container and determine the average weight per disk opener in grams. Compare this weight to the grams of seed/disk opener found in Table 1 for the desired seeding rate and row spacing combination.

13. The circumference can be determined by direct measurement or by calculation using the following formula: circumference in feet = 3.14 x diameter of the drive wheel in feet (Figure 3).
14. Carefully remove collection containers.
15. Tare the scale for an empty collection container and then weigh and record in grams each collection container with the seed in it (Figure 4).
16. Add the seed weight for each collection container together and divide by the number of seed tubes collected to get the average weight per disk opener.
 - a. Compare the average weight per disk opener to the grams of seed/disk opener found in Table 1 for the desired seeding rate and row spacing combination.
 - b. If the collected weight is within 10 percent of the target weight found in Table 1, then the calibration is complete.
 - c. If the collected weight is more than 10 percent different than the target weight found in Table 1, repeat steps 7 to 12 after adjusting seeding rate setting on drill.

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Table 1. Grams of seed to catch per disk opener in 150 feet for given combinations of disk opener width (inches) and seeding rate (pounds/acre). To use this table, you will need to know the distance between the disk openers in inches and the desired seeding rate in pounds per acre. A YouTube video on grain drill calibration can be viewed at <https://youtu.be/TLv6SmqYIU> or by searching for “grain drill calibration.”

Distance between disk openers (in inches)	Seeding rate in pounds/acre																						
	2	4	6	8	10	12	14	16	18	20	25	30	35	40	50	60	80	90	100	120	140	160	180
6	1.6	3.1	4.7	6.3	7.8	9.4	10.9	12.5	14.1	15.6	19.5	23.5	27.4	31.3	39.1	46.9	62.5	70.4	78.2	93.8	109.4	125.1	140.7
7	1.8	3.6	5.5	7.3	9.1	10.9	12.8	14.6	16.4	18.2	22.8	27.3	31.9	36.5	45.6	54.7	72.9	82.0	91.1	109.4	127.6	145.8	164.1
7.5	2.0	3.9	5.9	7.8	9.8	11.7	13.7	15.6	17.6	19.5	24.4	29.3	34.2	39.1	48.9	58.6	78.2	87.9	97.7	117.3	136.8	156.3	175.9
8	2.1	4.2	6.3	8.3	10.4	12.5	14.6	16.7	18.8	20.9	26.1	31.3	36.5	41.7	52.1	62.6	83.4	93.8	104.3	125.1	146.0	166.8	187.7