

Grain Drill Calibration for Canola – Update

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Grain drill calibration is the first step to ensuring an adequate canola stand. Planting too much canola seed can be a very expensive mistake and planting too little seed may cause an undesirable stand. To assist canola producers in grain drill calibration, OSU developed a calibration kit to limit some of these risks. Generally drill calibration is performed by collecting the seed from the grain drill from a known distance. By knowing the row spacing, number of seed cups collected from, and distance traveled one can determine how much grain was seeded.

Usually this isn't too hard to determine for cereal crops since the amount of seed collected is a fair amount. Unfortunately canola seed is very small and is generally seeded at 5 lb/A. In order to determine how much seed was collected one would have to have a set of scales that weighed in fine increments or travel a much longer distance. To alleviate this problem the OSU drill calibration kit is based on a volumetric method and not weight. Provided in the kit are four bags with wire ties, two volumetric measuring tubes (see Figure 2 below), and a chart (see Chart 1 below). The bags with the wire ties are attached to the seed cups on the grain drill, the measuring tubes are to help determine how much seed was collected, and the chart lets the producer know how much seed should be collected to achieve a 5 lb/A seeding rate. OSU has put together a fact sheet on drill calibration for canola. OSU Current Report 2152: Calibration Procedure for Canola Planted with an End-Wheel Grain Drill which can be available from a local extension office or online ([Click Here](#)).

These calibration kits have been used since 2005 and have been a great tool for assisting canola producers in grain drill calibration. Since no scales are needed, calibration can be done in the field. Instead of pulling the drill a set distance, many producers often jack up the drive wheel and turn it by hand. This leaves the drill in a stationary position which often speeds up the calibration process.

Recently some producers have asked how seed size affects the accuracy of the calibration kits. The calibration chart was determined using open pollinated varieties which generally have a seed size of 115,000-130,000 seeds per pound. Since then, newer genetics have been released that are hybrids. Hybrid canola cultivars have seeds that are generally 30-40% larger than open pollinated varieties. To determine if the vast differences in seed sizes affected the accuracy of the calibration kit we tested two cultivars, Visby a canola hybrid and Dekalb 46-15 an open pollinated canola variety. Both seed sources had seed treatments and we determined that Visby averaged about 72,000 seeds/lb and Dekalb 46-15 averaged about 132,000 seeds/lb.

To test the accuracy of the calibration chart we measured the weights of the two cultivars using the two measuring vials provided in the calibration kits. Table 1 shows the weight of each cultivar when measured from the 15mL vial and the 50mL vial. Using those measurements, values were calculated to determine what the density of each cultivar were for each measuring vial. The densities are presented in Table 2 as grams of canola seed per milliliter. Table 3 was calculated by determining what the predicted seeding rate would be for each cultivar and measuring vial when measuring 10mL of seed. From the calibration chart, 10mL of seed would equate to collecting 100 feet of seed from two seed cups that are on eight inch row spacing. By correcting for the weight actually collected from 10mL for each measuring vial the predicted seeding rates are shown.

Table 1. Determined canola seed weight (g) of a 15mL and a 50mL vial.

	15mL Vial		50mL Vial	
	Visby	DKW 46-15	Visby	DKW 46-15
1	9.475	9.514	34.428	35.096
2	9.519	9.698	34.404	34.633
3	9.622	9.666	34.577	34.483
4	9.530	9.481	34.437	34.741
5	9.684	9.841	34.237	35.106
AVG	9.566	9.640	34.417	34.812

Table 2. Calculated Density (G/mL) from each Vial.

	15mL Vial		50mL Vial	
	Visby	DKW 46-15	Visby	DKW 46-15
1	0.632	0.634	0.689	0.702
2	0.635	0.647	0.688	0.693
3	0.641	0.644	0.692	0.690
4	0.635	0.632	0.689	0.695
5	0.646	0.656	0.685	0.702
AVG	0.638	0.643	0.688	0.696

Table 3. Predicted seeding rate (Lb/A) if Calibration Chart deemed 10mL needed to achieve a 5lb/A seeding rate.

	15mL Vial		50mL Vial	
	Visby	DKW 46-15	Visby	DKW 46-15
1	4.55	4.56	4.95	5.05
2	4.57	4.65	4.95	4.98
3	4.62	4.64	4.98	4.96
4	4.57	4.55	4.96	5.00
5	4.65	4.72	4.93	5.05
AVG	4.59	4.62	4.95	5.01

The size of the vial had more of an impact on seeding rate than seed size. There were basically no differences in seeding rate between the two seed sizes. Near correct seeding rates (5 lb/A) were achieved with the 50mL vial, but the smaller 15mL vial produced a lighter seeding rate (4.6 lb/A).

The differences between the two measuring vials may have been due to the shape of each measuring vial. The 15mL vial is tall and slender and the 50mL vial is almost as tall but is much wider. Figure 1 below shows how a narrow vial would contain less seeds than a wider vial of same volume. Since canola seeds are round this may be the reason for the differences seen between the two measuring vials included in the calibration kits.

Figure 1. Visual comparison of a narrow vial and a wide vial of same volume.

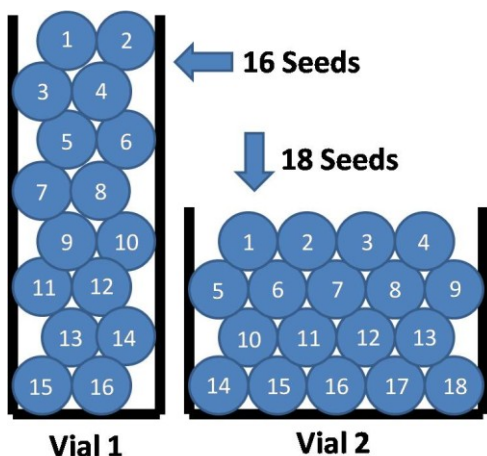


Figure 2. Visual comparison of the two measuring vials provided in calib. kit.



Chart 1. Calibration chart found on kits.

Total Volume Collected / 100 Feet (CC or mL)			
Row Spacing	1 Row	2 Rows	4 Rows
6"	3.6	7.2	14.4
7"	4.2	8.4	16.8
7.5"	4.6	9.3	18.6
8"	5.0	10.0	20.0
10"	6.2	12.4	24.8
14"	9.0	18.0	36.0

On a typical grain drill calibration many producers set their equipment to seed between 4.5-5 lb/A. Obtaining a seeding rate below 5 lb/A is going to ensure that the producer will have enough seed to fill in the head/turn rows and terraces. We have also observed that calibrating a stationary drill may result in a slightly lower than actual seeding rate due to the vibrations traveling across uneven ground.

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