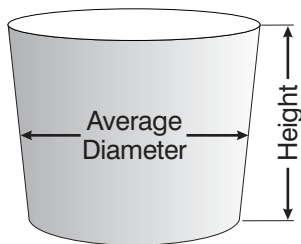


Bulk Density



	lbs per bushel	kgs per hectolitre
Barley	48	62
Oats	37	48
Rye	49	63
Triticale	48	62
Wheat	51	65

Bulk density standards for western Canadian feed grains.

Bulk density is the weight of a standard volume of grain. In the past, this was measured as *bushel weight* but, since adoption of the metric system, kilograms per hectolitre (kg/hL) is used as the standard unit of measure. Although bulk density is a generally accepted measure of grain quality, its relationship to nutritional value is not clear. Most assume that grain of higher density is worth more as a dietary ingredient.

To determine bulk density you will need a small pail, a ruler and a scale. The method is as follows:

- 1 Determine the empty weight of the pail in kg (WE).
- 2 Measure the average diameter and height of the pail in centimetres and calculate its volume in litres using this formula:

$$\text{volume (litres)} = \frac{\text{height (cm)} \times (\text{avg diameter (cm)} \div 2)^2}{1000 \text{ cubic centimetres per litre}}$$

For example, if the average diameter of the pail is 30 cm and the height is 20 cm, its volume is: $20 \times (30 \div 2)^2 = 4500$ cubic centimetres $\div 1000 = 4.5$ litres

- 3 Fill the pail with grain. Use the ruler to even off the top of the grain with the top of the pail.
- 4 Determine the kg weight of the pail filled with grain (WF).
- 5 Calculate bulk density using the following formula:

$$\text{Bulk Density (kg/hL)} = \frac{\text{WF (kg)} - \text{WE (kg)}}{\text{volume (litres)}} \times 100 \text{ litres per hL}$$

For example, if the grain weighs 3 kg, the bulk density is $3 \text{ kg} \div 4.5 \text{ litres} \times 100 \text{ litres per hL} = 66.7 \text{ kg/hL}$.

- 6 Compare your measured value with the reference values in the table on the left.