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# What we need to know about grain corn late in the season

## What is it going to yield!?

**Yield Influencing Factors:** Yield influencing factors (YIFs) are important to identify for all operations on every field. It is key to remember that YIFs are both **positive** and **negative** and should be equally considered.

### YIFs are things like :

- planting date
- fertility
- rainfall
- warm/cool temperatures
- soil temperature at planting
- soil type across a field
- weed control
- hybrid selection, etc.

The key is understanding that each field's YIFs are different. Getting an understanding of these factors can help boost productivity from field to field and ultimately across a farm.

## It seems to be drying down now!

**Weather & Timing of grain corn maturity:** Grain moisture loss happens at a steady and relatively consistent rate from 40% to 15-20% and then begins to taper off slowly with little to no change. The exact rate of dry down can vary greatly between year to year as well as hybrid to hybrid.

The main influencers of field dry down are weather- mainly temperature, humidity, and rainfall. Simply put, warmer temperatures and lower levels of humidity encourage rapid field dry down.

**Consider this:** Because grain dry down rates are greater when the dry down period is warmer, it stands to reason that a corn crop that matures in late August will dry down faster than one that matures in mid-September. Will that late season powerhouse hybrid dry down in time to beat an earlier season hybrid in dry yield?



## My yield monitor is off the charts!

Yield monitors ESTIMATE yield by converting electrical signals received from a mass impact or optical sensor, located somewhere in the clean grain elevator of the combine, into estimates of grain flow (lbs) per second or two of travel time. Along with estimates of distance traveled (usually based on differentially corrected GPS signals), header width, and estimates of grain moisture content - the yield monitor's firmware / software then estimates "dry" grain yield per acre, at a moisture content of your choice, and records those yield estimates, and their geographic location in the field, every second or two in the display's memory.

### Key take away about grain yield monitors:

They do not measure grain yield - They estimate it.

Calibration is KEY. Yield monitor calibration involves a series of steps taken to ensure that the estimation of each of these factors is accurate. For calibration it is important to harvest more than 1 or 2 loads. This is because the combines monitor requires multiple reads of grain flow, moisture, header width and distance traveled to accurately adjust to the 'true' yield. During calibration we are teaching the combine what its reading and how to accurately assign a yield.

## Test Weight VS Bushel Weight - Understanding the Measurements

**Test weight** for corn is determined before removing cracked corn and cleaning out the sample. Test weight is expressed as either kilograms per hectolitre (kg/hL) or grams per 0.5 litre (g/0.5L) - this is the official measure in Canada. **Grain test weight** is commonly referred to as bushel weight and expressed as pounds per bushel (lb/bu). **Bushel weights** may be distinguished as pounds per bushel Avery (lb/bu A) or pounds per bushel Winchester (lbs/bu W). The Winchester bushel volume is smaller than the British bushel volume that is used to calculate the Avery bushel used in Canada.

### Test weight and grain moisture are inversely related.

The higher the grain moisture, the lower the test weight at that point in time. As grain dries in the field or in the dryer, test weight naturally increases as long as kernel integrity remains intact. This happens because kernel volume tends to shrink with drying and so more kernels pack into a volume bushel and partly because drier grain is slicker which tends to encourage kernels to pack more tightly in a volume bushel.

**Common Causes for Low Test Weight:** Stress during grain fill (drought, below normal fall temps, etc.), early frosts and any ear rots or kernel damage will impact test weight negatively. For this reason, in parts of Western Canada we can expect low test weight this season due to drought and early season frost!

## It is in the bin now – what is my real yield?

**Converting wet corn yield to dry corn yields:** Grain corn is predominantly harvested at a moisture content higher than the 15%. With this in mind we know wetter grain obviously weighs more than drier grain therefore grain buyers will "shrink" the weight of "wet" grain (greater than 15% moisture) to the equivalent weight of "dry" grain and then divide that weight by 55 to calculate the market bushels of grain they will purchase from the grower.

### The two sources of weight loss due to mechanical drying are:

- 1) the weight of the moisture (water) removed by the drying process and
- 2) the anticipated weight loss resulting from the loss of dry matter that occurs during the grain drying and handling processes (e.g.: broken kernels, fines, foreign materials)

### Crunch the numbers example:

- 1) 100,000 lbs of grain at 20% moisture = 80,000 lbs of absolute dry matter (i.e.,  $100,000 \times 0.80$ ).
- 2) 80,000 lbs of absolute dry matter = 94,118 lbs of grain at 15% moisture (i.e.,  $80,000 / 0.85$ ).
- 3) 94,118 lbs of grain at 15% moisture = 1711 bu of grain at 15% moisture (i.e.,  $94,118 / 55$ ).

### Additional Resources:

Website: <https://www.agry.purdue.edu/ext/corn/news/timeless/YldMonCalibr.html>

Website: <https://www.grainscanada.gc.ca/en/grain-quality/grain-grading/grading-factors/test-weight-grain.html#:~:text=Test%20weight%20for%20corn%20is%20determined%20before%20removing,itre%20%28g%2F0.5L%29.This%20is%20the%20official%20measure%20in%20Canada>

Website: <https://grainscanada.gc.ca/en/grain-quality/grain-grading/grading-factors/conversion-charts/corn-conversion.html>

On behalf of **PRIDE Seeds** and **Canterra Seeds** teams, all the best with harvest and stay safe!

Check out the **2020 plot data** at **[www.prideseed.com](http://www.prideseed.com)**.



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