



# Is my corn going to make it?

By Shawn Damen, CCA-ON A.Ag

In a year that has seen corn planting dates range from April 15<sup>th</sup> in some areas to mid-June or later in others, corn maturity (or the lack thereof) is definitely a hot topic. Below, I have outlined a rough estimate of corn stages of development from tassel to black layer. Note that these are a rough estimate of how much time your corn needs to finish. Actual time to finish can vary from hybrid to hybrid and from one environment to another, even between areas in fields (by as much as plus/minus 5 days). All corn, regardless of maturity, takes approximately 60 days (plus/minus 5 days) from time of silk (R1 stage) to black layer (R6 stage).

**R1:** (2 days post tassel, approx. 60 days to go) silks emerge from the ear shoots to be pollinated.

**R2:** (12 days post R1, approx. 48 days to go) R2 kernels are white on the outside and resemble a blister in shape. Clear fluid emerges from pollinated ovules.

**R3:** MILK (20 days post R1, approx. 40 days to go) The R3 kernel displays yellow on the outside and the inner fluid is now milky white (milk stage).

**R4:** DOUGH (28 days post R1, approx. 32 days to go) Continues starch accumulation in the endosperm has now cause the milky inner fluid to thicken to a pasty (Doughy) consistency dough stage of kernel development. Kernels have achieved half of their mature dry weight by this point.

**R5:** DENT (38 days post R1, approx. 22 days to go) The kernels begin drying down rapidly as starch at the kernel cap is packing into chalky endosperm. The milk line is now visible.

**R6:** Black Layer (60 days post silk, corn has made it!) this is the black layer stage. At this stage, kernels have achieved maximum dry matter and the milk line is now gone. The average kernel moisture content at R6 (black layer formation) is 30-35 percent; however, this can vary considerably between hybrids and environmental conditions. Grain yield and test weight is now completely safe from killing frost.

## Now that we know stages of development what about yield losses?

Yield losses from total plant death(killing frost) prior to kernel black layer are estimated to be:

- Soft Dough 55%
- Full Dent 41%
- Half-milk line 12%

Yield Losses from death of leaves (light frost) only are:

- Soft Dough 35%
- Full Dent 27%
- Half Milk Line 6%

Yield losses are less when only leaves are killed because the surviving stalk can remobilize carbohydrates from the stalk tissue to the developing ear for some time after the damage occurs. While exactly when the 2004 season does end (and it will) is out of our control knowing the likelihood of whether your corn crop will make quality and yield targets can help you plan in advance for harvest timing, on farm feed requirements etc.

*Source: How a Corn Plant Develops Special Report No. 48 Iowa State University 1993*



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