

# Corn Growth and Development



**Chad Lee**  
 Grain Crops Extension Specialist  
 859-257-3203 • cdlee2@uky.edu  
[www.uky.edu/Ag/GrainCrops/](http://www.uky.edu/Ag/GrainCrops/)

# Corn Growth Stages

- Vegetative (V)
- Reproductive (R)



# Corn Emergence (VE)



# Corn Growth Stages

<b>V3</b> 3 Collars	Nodal roots active. Growing point below ground
<b>V6</b> 6 collars	Growing point above ground. Tassel and ear development starting.
<b>V12</b> 12 collars	Ear size, kernel size and kernel number being determined. Limits on water and/or nutrients will reduce yields.
<b>V15</b> 15 collars	Rapid growth, about 10 to 12 days before silking. Most sensitive to stress.
<b>VT</b> tassel	Last tassel branch is visible but prior to silking. Complete leaf loss will cause nearly 100% yield loss.

## Corn Growth Stages

- Comparing visible collars to actual nodes.
- Tassel and ear development start early.



## Corn Growth Stages

<b>R1</b> Silking	N and P uptake are rapid. K uptake is nearly complete. Water needed for pollination. Pollination occurs.
<b>R2</b> Blister	Ear size nearly complete. Silks begin to dry out. A miniature corn plant is being formed in each fertilized kernel.
<b>R4</b> Dough	Kernels have accumulated ½ of total dry weight. Five leaves have formed in the kernel.
<b>R5</b> Dent	Most kernels have dented and are near 55% moisture at start. Starch layer has formed and progresses down the kernel.
<b>R6</b> Physiological Maturity	Blacklayer has formed at bottom of kernel. Kernel is about 30 to 35% moisture.

## Corn Growing Degree Days

- Each day has a slightly different average temperature.
- Temperature affects corn growth rate.
- Attempt to relate temperature to corn growth rate.

- Corn Growing Degree Day
- Base 50° F
- Max 86° F
- Min 50° F

- Example 1:
  - 74° F average daily temperature
  - $74 - 50 = 24$  GDD
- Example 2:
  - 90° F average daily temperature
  - $86 - 50 = 36$  GDD

## Corn Growing Degree Days

Corn Maturity (Days)	GDD
85 to 100	2100 – 2400
101 to 130	2400 – 2800
131 to 145	2900 – 3200

### GDD Requirements of a 2700 GDD Hybrid

Growth Stage	GDD
V2	200
V6	475
V12	870
VT	1135
R1	1400
R6	2700

From NCH-40 Growing Season Characteristics and Requirements in the Corn Belt. National Corn Handbook.

## Planting Date and GDD

**DKC67-91: 119 CRM**  
**3000 GDD to Black Layer**

Planting Date	GDD As of 06/26/05	Difference
April 20	1155	---
May 3	1029	126
May 18	825	330
May 31	596	559
June 15	281	874

From University of Kentucky Ag Weather Center: <http://www.wagwx.ca.uky.edu/>  
 Growing Degree Day calculator: [http://www.wagwx.ca.uky.edu/cgi-bin/cropdd\\_www.pl](http://www.wagwx.ca.uky.edu/cgi-bin/cropdd_www.pl)

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## Corn Ears: Good and Bad

