

Genomes to Fields Phenotyping Handbook

Trait Summary					
Trait	Abbrv.	Unit	Timing	Description/Procedure	Measurement Notes
Green Snap (optional)	GSP	count and date of causal event [MM/DD/YY]	before flowering	Number of plants broken between ground level and top ear node before flowering	Optional, cooperators may record this if an event causes substantial green snap.
Anthesis	DMF	date [MM/DD/YY]	at flowering	Days between planting and 50% of plants of a plot exhibit anther exertion on more than half of the main tassel spike.	
Silking	DFP	date [MM/DD/YY]	at flowering	Days between planting and 50% of plants of a plot show silk emergence.	
Ear Height	EHT	centimeter [cm]	plant maturity	Placing measuring stick on ground next to the root crown, "ear height" is measured at the primary ear bearing node.	One plant is considered sufficient since these are hybrids and are not segregating for traits.
Plant Height	PHT	centimeter [cm]	plant maturity	Measure the distance between the base of a plant and the ligule of the flag leaf.	One plant is considered sufficient since these are hybrids and are not segregating for traits.
Root Lodging	RLD	count	before harvest	Number of plants that show root lodging per plot, i.e., those stems that lean substantially to one side ($\geq 15\%$ from vertical). Count includes "goosenecked" plants that have "straightened up" after becoming lodged earlier in the season.	Emphasis is on the number of plants, not the %, which does not tell us much. Accurate stand counts and lodging counts are essential and will be used to calculate a % lodging in later analyses.
Stalk Lodging	SLD	count	before harvest	Number of plants broken between ground level and top ear node at harvest	Emphasis is on the number of plants, not the %, which does not tell you very much.
Stand Count	STC	count	before/at harvest	Number of plants per plot at harvest.	Main consideration is how many plants were in the plot at harvest time. Counting can occur earlier but if a plot damage occurs before harvest they will need to be recounted.
Plot Weight	PWT	lbs	at harvest	Shelled grain weight per plot	
Grain Moisture	GMT	percent [%]	at harvest	Water content in grain at harvest.	
Test Weight	TWT	lbs/bu	at harvest	Shelled grain weight per bushel	

Anthesis (DMF)

Description/Procedure:

Taken as [MM/DD/YY] to 50 percent of a plot exhibiting anther exertion on greater than half of main tassel spike. Day of anthesis recording is shown in *Picture 1*, whereas the day after is shown *Picture 2*.

Timing: At Flowering

n = 1 date per plot

Unit: [MM/DD/YY]



Picture 1



Picture 2

Image Credit:

- 2004, 2006; Purdue University, RL Nielsen
- <http://www.mississippi-crops.com/2013/06/26/identifying-corn-reproductive-growth-stages-and-management-implications/>

Silking (DFF)

Description/Procedure:

Taken as [MM/DD/YY] to 50 percent of plot exhibiting silk emergence (*Picture 1*). Following day is shown in *Picture 2*.

Timing: At Flowering

n = 1 date per plot

Unit: [MM/DD/YY]



Picture 1



Picture 2

Ear Height (EHT)

Description/Procedure:

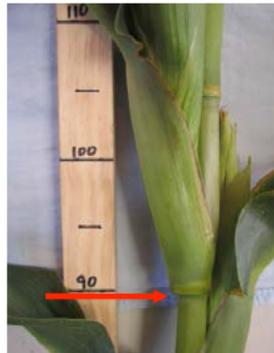
Placing measuring stick on ground next to the root crown, “ear height” is measured at the primary ear bearing node. See *Picture 1*.

Timing: At plant maturity

n = 1 representative plant per plot

Unit: centimeter [cm]

Notes: One plant is considered sufficient since these are inbreds and hybrids and are not segregating for traits.



Picture 1



Plant Height (PHT)

Description/Procedure:

Placing measuring stick on ground next to the root crown, “plant height” is measured at the ligule of the flag leaf. See *Picture 1*.

See *Picture 1*

Timing: At plant maturity

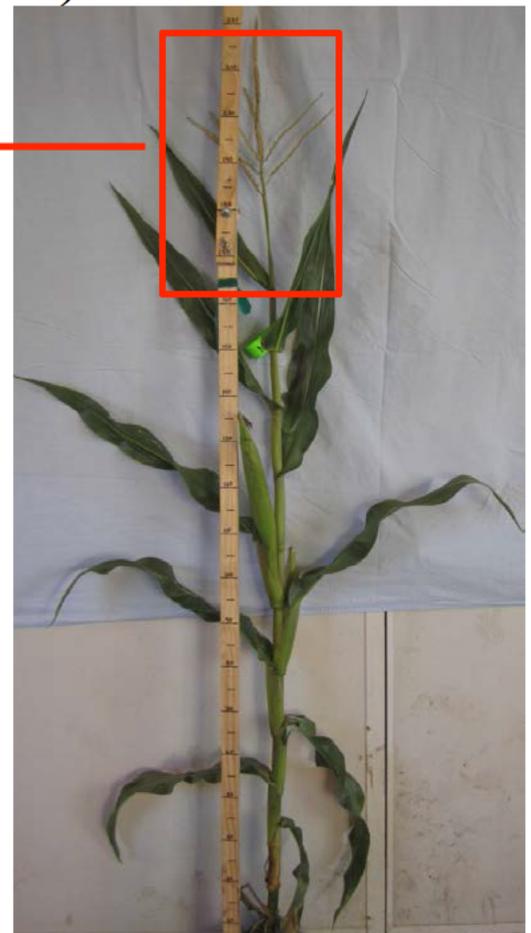
n = 1 representative plant per plot

Unit: centimeter [cm]

Notes: One plant is considered sufficient since these are inbreds and hybrids and are not segregating for traits. Please record date measured.



Picture 1



Stand Count (STC)

Description/Procedure:

Number of plants per plot at harvest.

Timing: At Harvest

n = 1 count per plot

Unit: count

Notes: Main consideration is how many plants were in the plot at harvest time. Accurate stand counts and lodging counts are essential and will be used to calculate a % lodging in later analyses.

Counting can occur earlier but if a plot damage occurs before harvest they will need to be recounted.

Stalk Lodging (SLD)

Green Snap (GSP) (optional)

Stalk Lodging

Description/Procedure:

Number of plants broken between the ground level and the top ear node (picture 1).

Timing: Before Harvest

n = 1 count per plot

Unit: number of plants with SLD

Notes: Emphasis is on the number of plants, not the %, which does not tell us much. Accurate stand counts and lodging counts are essential and will be used to calculate a % lodging in later analyses.



Picture 1

Green Snap (optional)

Description/Procedure:

Number of plants broken between the ground level and the top ear node **before flowering** (picture 2).

Timing: Before flowering

n = 1 count per plot

Unit: number of plants with GSP and date of triggering event [MM/DD/YY]

Notes: Collaborators may choose to take counts of green snap following a weather event occurring before flowering that causes substantial numbers of stalks to snap. Please also record date of event.

Emphasis is on the number of plants, not the %, which does not tell us much. Accurate stand counts and lodging counts are essential and will be used to calculate a % lodging in later analyses.



Picture 2

Photo 1 credit: Gordon Johnson, UDel Extension
Photo 2 credit: UGA Cooperative Extension

Root Lodging (RLD)

Description/Procedure:

Number of plants that show root lodging per plot, i.e., those stems that lean substantially to one side ($\geq 15\%$ from vertical) (picture 2). Count includes “goosenecked” plants that have “straightened up” after becoming lodged earlier in the season (Picture 1).

Timing: Before Harvest

n = 1 count per plot

Unit: number of plants with RLD

Notes: Emphasis is on the number of plants, not the %, which does not tell us much. Accurate stand counts and lodging counts are essential and will be used to calculate a % lodging in later analyses.



Picture 1



Picture 2

Plot Weight (PWT) Test Weight (TWT)

Plot Weight

Description/Procedure:

Shelled grain weight per plot

Timing: At Harvest

n = 1 weight per plot

Unit: lbs

Test Weight

Description/Procedure:

Shelled grain weight per bushel

Timing: At Harvest

n = 1 weight per plot

Unit: lbs/bu

Grain Moisture (GMT)

Description/Procedure: Water content in grain at harvest.

Timing: At Harvest

n = 1 measure per plot

Unit: percent [%]