

2012 Drought: Corn (Silage) Plant Physiology and Harvest Decisions

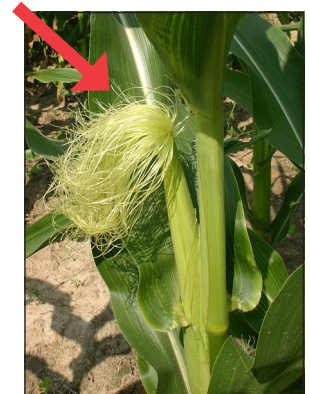
Dr. John Goeser and Chris Wacek-Driver
Agronomics, reference: Dr. Joe Lauer (July 2012, personal communication)

1988 vs. 2012 seed genetics: Greatly improved water use efficiency thanks to transgenic hybrids and plant health

- Our hybrids are in much better shape than in '88
- No longer plant damage due to corn borer and insects; fewer holes for water to leak out
 - Plant more efficiently transports water to cool

What is the corn plant physiological status right now? Is it alive or dead? *Focus on the ear leaf.*

- The ear leaf is the leaf immediately below and attached to the ear (see red arrow in the image to the right)
- This is the last leaf on the plant to die and it provides a majority of carbohydrates (sugars) to the ear to make starch
- If you see any green (chlorophyll) in this leaf, the plant is still alive and has a chance to recover some with additional moisture



Management decisions need to focus on “Has the corn tasseled or not?”

- **Yes, it tasseled!** Assess pollination; visit <http://wisccorn.blogspot.com/2012/07/corn-pollination-how-to-determine.html> for a video demonstration on how to determine whether a plant has pollinated by Dr. Joe Lauer, University of Wisconsin Agronomy Department
 - **Yes, it's pollinated!** Let go to silage maturity, monitor moistures and harvest
 - Yields will be depressed, but 50% kernel fill is still better than zero
 - **No, it didn't pollinate!** Harvest for silage at any point thereafter, monitor moistures
 - Yield may not increase
 - Need to consider harvesting plants off fields in order to replant an emergency crop
 - Contact grain growers to contract additional corn for silage
 - Energy values estimated to be 75-90% the value of corn silage
- When tassels emerge, the plant redirects photosynthate (sugars) away from root growth and to the ear
 - Plant will not develop new roots and cannot find new soil moisture
- **No, it didn't tassel!** Plant is actually in better position here and may recover
 - During less than 85°F days and cooler nights, plant will use photosynthate (sugars) produced during the day to develop new roots that will search out new soil moisture
 - Plants are incredibly resilient at this stage
 - Short plants can produce significant grain yield given moisture through pollination and ear fill, leading to extremely high quality silage
 - Hot days (100°F) and nights stall out any photosynthesis and root growth
 - Heat is more damaging than lack of moisture at this point

