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## **Stress and the Growing Corn Plant**

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Stress can occur in various forms during the growing season for a corn crop. This writeup will highlight a few but is not all inclusive to what a corn crop may endure during the growing season.

First, it is important to look at the stages of kernel, and overall ear development. This whole time is critical in overall yield.

### **Size of the Ear**

The harvestable ear size begins near the knee-high stage and finishes somewhere around 10 days prior to silk development. Ear length (number of kernels long) is really determined by genetics and plant populations but can be altered due to stresses at various times. Stress prior to silking, or during pollination, can shorten the overall length or tip pollination.



### **Early Stress**

After the corn has emerged and the growing point is still below ground, the plant can usually accept stress and still rebound without severe loss. An example is an early hail storm. The top portion above the ground may be defoliated but regrow new leaves. In a week or so, the field may look as though it had never been hailed. Since the growing point was below ground, and no ear development had occurred to that point, the plant's yield potential is not really affected. An exception to this, is if the plant was damaged and stunted due to the hail. This would continue to add stress to the ear development, and overall plant growth.

### **Limiting Photosynthesis**

Photosynthesis is the process in which green plants transform light energy into chemical energy. During the growing season, especially the V5 to V12 stage, if photosynthesis is limited because of hail defoliating leaf area, disease lesions on the leaves preventing sunlight reaching the plant leaves, or any other means that limits sunlight interception may result in fewer kernels per row, and shortened ears.

### **Nitrogen Stress**

Nitrogen availability can be very important during the stages of plant development. In a study by Iowa State, a shortage of nitrogen prior to V8 can have detrimental effects on ear length, ear diameter, and the number of kernels on an ear. This results in overall yield loss.

<https://crops.extension.iastate.edu/corn/production/management/growth/kernels.html>

## **Water Stress/Drought**

Water shortage in conjunction with the population planted, can also affect the ear diameter, ear length, and overall number of kernels produced. Excessive water likewise, may have a detrimental effect. Most notably creating a nitrogen deficiency by leaching or denitrification.

## **Summary**

All during the growing season, a corn crop may have stress's to varying degrees. Each can have a detrimental effect on overall yield. Some more than others. It's good to monitor your crop through the growing season. If you have a question regarding your crop or a specific stress you may be seeing, be sure to give your LG Seeds Sales Rep and Agronomist a call. We're here to help.

## **Resources and Additional Information**

<http://www.soilcropandmore.info/crops/Corn/How-Corn-Grows/index.htm>

<http://publications.iowa.gov/18027/1/How%20a%20corn%20plant%20develops001.pdf>

<https://lib.dr.iastate.edu/cgi/viewcontent.cgi?article=1045&context=specialreports>

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

<https://crops.extension.iastate.edu/corn/production/management/growth/kernels.html>

<https://www.britannica.com/science/photosynthesis>

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