

## EXCESS HEAT CAN CAUSE CONCERNS

### SITUATION

It is a common belief that high heat and humidity are ideal for corn growth. In reality, high temperatures, especially high nighttime temperatures, can reduce corn yield potential by increasing respiration.

### FACTORS TO CONSIDER

- Daytime temperature
- Nighttime temperature
- Humidity

### ACTION PLAN

**1. Understand photosynthesis.** All biological systems are driven by temperature and environment.

As temperatures increase, biological processes speed up. Conversely, a cold environment causes systems to slow down. Photosynthesis is the temperature-sensitive process by which carbon dioxide and water are combined in the presence of sunlight to produce sugar. The sugars are used for cell growth and dark respiration. **Dark respiration** consumes sugars to perform cell growth through division and maintenance.

**2. Daytime and nighttime temperature.** Temperatures above 86 F during the day reduce the amount of sugar produced. Likewise, nighttime temperatures above 70 F require higher rates of dark respiration. More sugars are consumed in this dark reaction, leaving less available for cell growth. The net result is less available sugar for building more complex molecules such as starches, which are ultimately stored in the **grain**.

**3. Monitor humidity.** High humidity reduces the plant's ability to cool itself, resulting in decreased photosynthesis. Leaf diseases also are more likely to spread in high humidity situations, reducing the leaf area available for photosynthesis. Humidity also increases corn plants' susceptibility to stalk rot.

### SUMMARY

High temperatures are not necessarily good for corn growth, especially during the critical grain fill period. High nighttime temperatures are particularly troublesome because the corn plant is using more of the manufactured sugars for cell maintenance and less for dry matter deposition. This may lead to less than optimum yield and lower test weights. For more information, contact your local Mycogen Seeds customer agronomist or trusted agronomic adviser.



High temperatures can reduce yield by causing corn plants to use sugars for cell maintenance rather than grain production.

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