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## Early Signs of Corn Stress

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# Early Signs of Corn Stress

## **Abstract**

Iowa weather conditions this spring resulted in wide ranges in corn plant color - from green to yellow-green to purple and some with stripes. The color variability in most of our fields is not a cause for alarm as the plants simply reflect the 2009 environment to date. Above- and below-ground growth is slowed with low temperatures, despite the plentiful moisture and sunshine we have had. A few days of sun and warmer temperatures will change plant colors quickly.

## **Keywords**

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## Early Signs of Corn Stress

By Roger Elmore and Lori Abendroth, Department of Agronomy

Iowa weather conditions this spring resulted in wide ranges in corn plant color - from green to yellow-green to purple and some with stripes. The color variability in most of our fields is not a cause for alarm as the plants simply reflect the 2009 environment to date. Above- and below-ground growth is slowed with low temperatures, despite the plentiful moisture and sunshine we have had. A few days of sun and warmer temperatures will change plant colors quickly.

Planting in Iowa this year went far better than in 2008. Ninety-nine percent of our corn is planted as of May 31 and 90 percent emerged. This equals the five year average (based on USDA-NASS data). Corn development currently ranges from the second to eighth leaf growth stages.

Although the crop appears as if it is off to a good start, there are reports of less-than-ideal plant colors. Symptoms like this occur occasionally and are often affected by tillage system, hybrid, and other management variables - [see past reports of this](#).



**Striped corn leaves due to environmental stress. Story Co. IA, 4 June 2009, R.W. Elmore.**

### 2009 Early- season Observations

[Growing degree day unit accumulation](#) (GDD) is close to average across the state. A few warm days will make up the small deficit quickly. Although we have experienced near normal GDD accumulation, low temperatures May 16 and 17 resulted in radiational cooling damage to corn seedlings ([see CropWatch Blog, May 21, 2009](#)). In addition, the days surrounding that event

were abnormally cool with slow GDD accumulation (Figure 1).

Soil temperatures from May 14 through the 17 also declined across the state. Figure 2 shows this for Ames and Lewis. These temperatures are measured at four inches below bare soil.

Fields with residue cover will likely exhibit cooler soil temperatures than those in Figure 2. Licht and Al-Kaisi (2005) documented soil temperature at two-inches deep in no-till fields were 2 to 2.5°F less than either strip tillage or chisel plow systems in Ames. The temperature differences caused poorer emergence rates in no-till compared to the two other tillage systems although grain yields were similar among all three tillage systems. There were no differences in soil temperatures at their Nashua site. This year, the majority of reports on yellow corn are from no-till or reduced-till fields.

Cool soil temperatures slow root and shoot growth as well as decrease soil N mineralization. Short-term environmental stress likely caused the color differences in corn this year. These symptoms are usually temporary; seedlings should regain a healthy green color as weather conditions improve without affecting yield.

Figure 1. Growing degree day accumulations, May 12th through May 18th lagged behind normal across the state (Figure by Rich Pope).

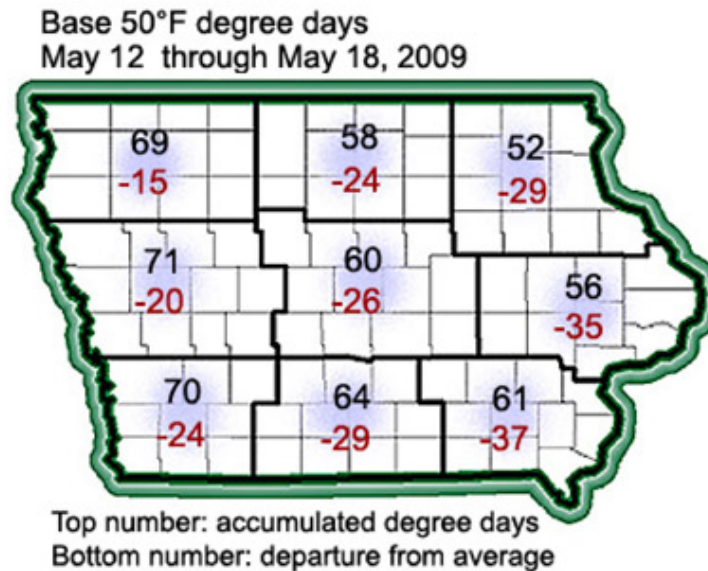
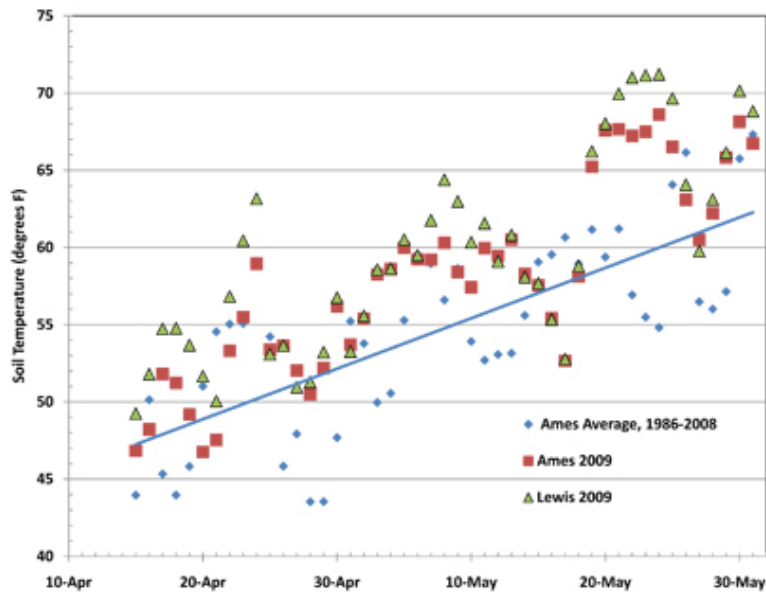


Figure 2. Soil temperatures, at 4 inches under bare soil, fell below normal in mid-May, 2009 at Ames and Lewis, IA.



Reference: Licht, Mark A., and Mahdi Al-Kaisi. 2005. Strip-tillage effect on seedbed soil temperature and other soil physical properties. *Soil & Tillage Research*. 80:233-249.

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