

# IOWA STATE UNIVERSITY

## Extension and Outreach

Integrated Crop Management

# Corn Grain Dry Down in Field From Maturity to Harvest

September 20, 2017

---

Corn harvest is fast approaching. This year's corn maturity is about 5-10 days behind normal. With field dry down occurring in late September and October this year, there is the potential for a later harvest of corn at a higher moisture content. The rule of thumb has been that corn dries at a rate of 0.5 to 1.0% per day in September, 0.25 to 0.5% per day in October, and almost no drying occurring in November. Of course, these rules of thumb can change with favorable or unfavorable weather conditions.

Water loss from corn kernels is divided into two phases. The first phase is kernel moisture loss before maturity in which water loss is related to accumulation of dry matter in kernels. After black layer, moisture loss occurs through evaporation of water from the kernel surface.

From 2014 through 2016 we collected corn ears from a central Iowa field that had four dates of planting and four hybrid maturities. Corn ears were collected on a weekly interval in September and October. Our data indicates that the average dry down rate during the entire dry down period is 0.58% per day (Figure 1). However, this drying rate is not constant. During the first 20 days, moisture is lost at a rate of 0.69% per day, while the next 20 days it drops to 0.44% per day.

We did not find significant differences in dry down rates among hybrid maturities during the three years of the study. On the other hand, the kernel moisture at maturity, which also influences how fast harvestable moisture is reached, ranged from 28 to 38%. It is known that kernel moisture at maturity can be different depending on genetics and growing season weather conditions. For instance, environmental stresses during the grain filling period can cause lower accumulation of dry matter and higher kernel moisture at maturity. The opposite may be true in high yielding environments.

Based on this dataset, corn field dry down to 15.5% moisture may take up to 35 days when kernel moisture at maturity is high (38-36%) while when it is low (30-28%) it may take about 25 days (Table 1). It is important to note that these estimates are meant to represent normal fall conditions. Low temperatures (<40 °F) and/or high humidity (>90% relative humidity) for prolonged periods (>2 or 3 days) can significantly delay dry down.

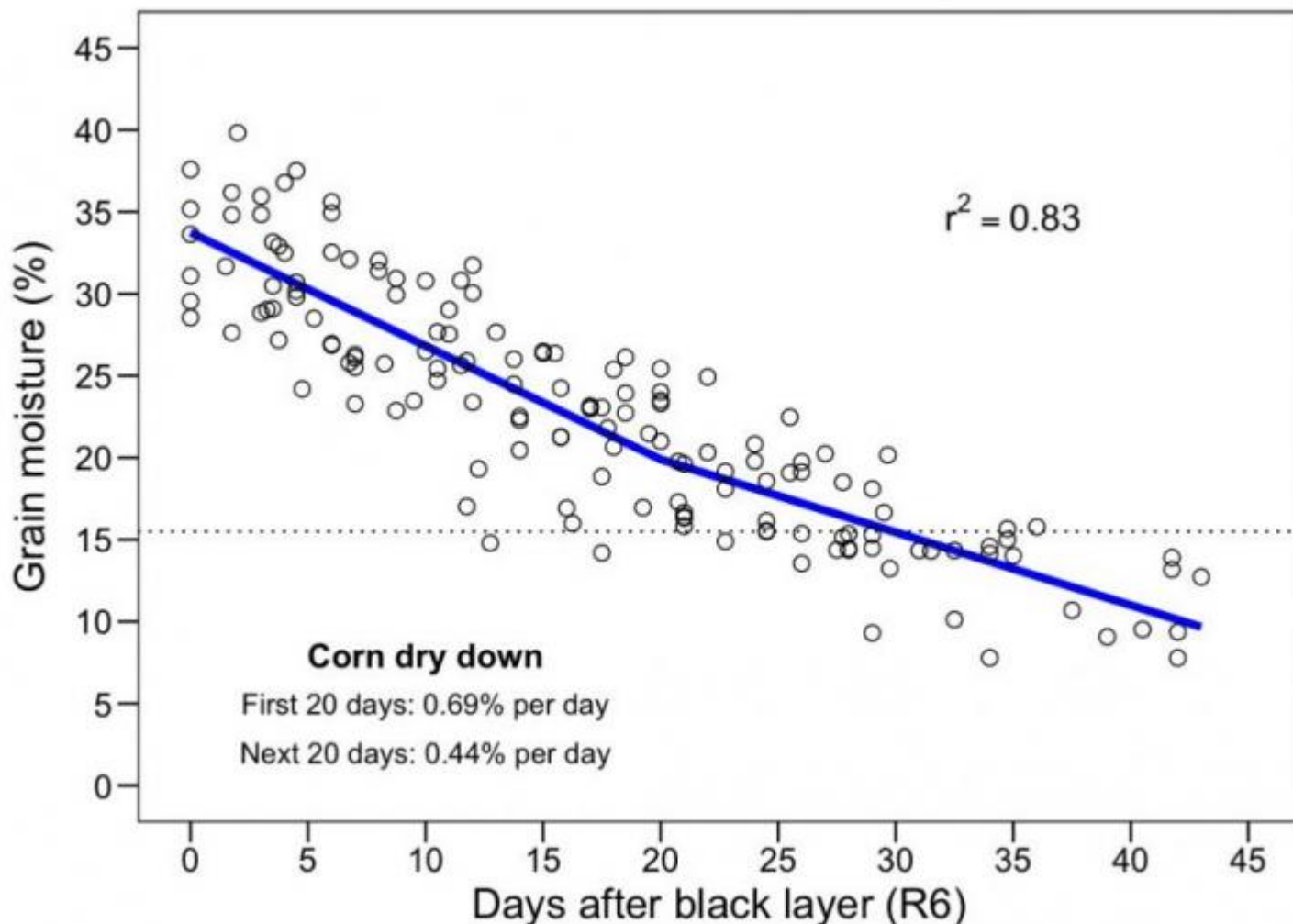


Figure 1. Average grain moisture dry down (blue line) across four hybrid maturities, four dates of planting and three years near Ames, IA. Horizontal dashed line represents 15.5% kernel moisture, open circles are actual data.

Corn grain dry down in the field is expected to be at a rate of 0.69% per day in the first 20 days following maturity. This can be used to help schedule harvest of fields based on when fields and hybrids reach maturity.

*Links to this article are strongly encouraged, and this article may be republished without further permission if published as written and if credit is given to the author, Integrated Crop Management News, and Iowa State University Extension and Outreach. If this article is to be used in any other manner, permission from the author is required. This*

*article was originally published on September 20, 2017. The information contained within may not be the most current and accurate depending on when it is accessed.*

**Category:** Crop Production

**Crop:**

Corn

**Tags:** Corn harvest grain moisture

**Authors:**

Rafael Martinez-Feria



Mark Licht Assistant Professor

Dr. Mark Licht is an assistant professor and extension cropping systems specialist with Iowa State University Extension and Outreach. His extension, research and teaching program is focused on how to holistically manage Iowa cropping systems to achieve productivity, profitability and en...



Sotirios Archontoulis Assistant Professor of Integrated Cropping Systems

Dr. Sotirios Archontoulis is an assistant professor of integrated cropping systems at the Department of Agronomy. His main research interests involve understanding complex Genotype by Management by Environment interactions and modeling various components of the soil-plant-atmosphere continuum. Dr...