

Determining When To Apply The Last Irrigation On Corn Based On Milk Line

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Corn prices are up, so it is important that irrigators not hurt their final yields by cutting off irrigation too soon. One excellent way to determine how long apply irrigations is by the location of the Milk Line (ML) on the corn kernel.

The ML is the visible demarcation point on a corn kernel between the golden yellow color and the

Late season rainfall plays a role in determining the final yield as a function of ML location when the last irrigation was applied. The occurrence of some timely rains in early August in very dry years will offset the negative impact of having cut off too early. However, in average years and assuming a 200-bushel per acre potential, yield losses from cutting off irrigation at the 0 percent- (i.e., first dent), 25 percent-, 50 percent-, and 75 percent-milk line location would be 20, 14, 8, and 2 bushels per acre, respectively. Figure 2 shows a profile of a corn cob

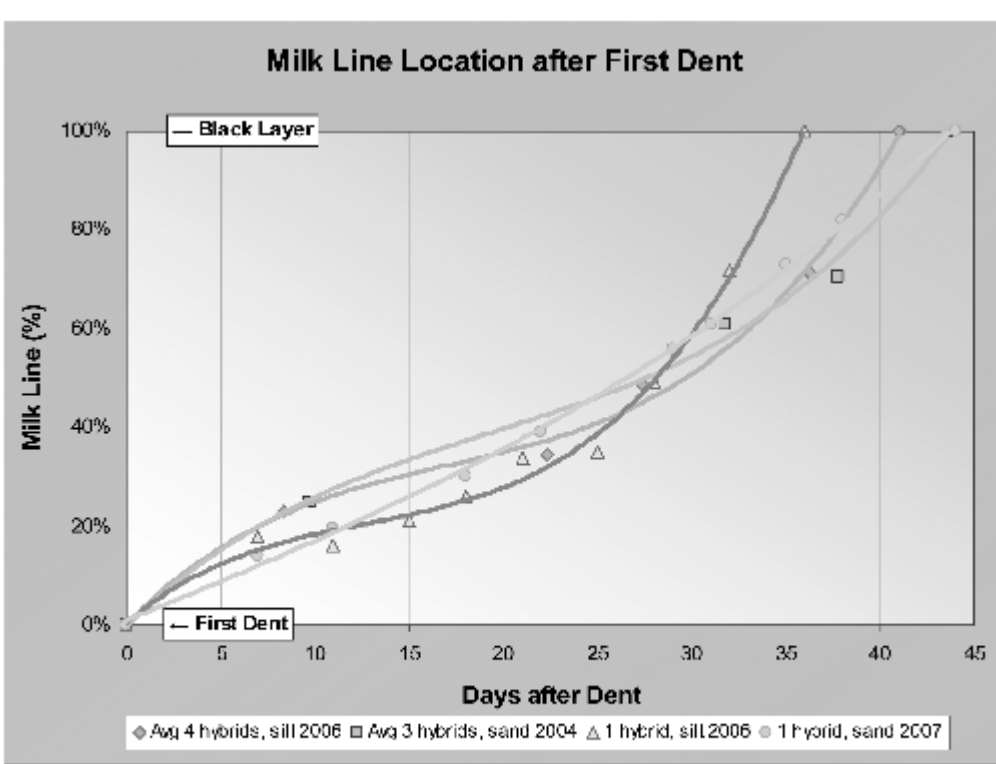


Fig. 1. Location of milk layer from days after first dent.

white color. The differences in color result from the starch of the kernel having set (yellow) and the portion in the kernel still liquid (white). The ML starts from the top of the kernel and moves downward towards the cob.

The University of Missouri Delta Center has been conducting experiments in the last several years to determine yield impact based on last irrigation applied. These studies show that the location of ML can be used as a tool to determine when to cut off irrigation.

The ML period begins at first dent and concludes with the formation of black layer. Popular literature reports that this period lasts about 20 or 30 days, but University of Missouri research shows that the period is more like 40 or 45 days. Other information from the study shows that dent occurs at about 1850 corn Heat Units (cHUs) after planting. It will take another 1100 cHUs to move from first dent (when ML = 0 percent) to black layer, when ML will be 100 percent. Black layer represents final physiological maturity of corn, and is so called because at this point if the tip end of a corn kernel is gently rubbed with your finger nail a black, sooty layer will be seen. Figure 1 shows the ML progression based on days since dent.

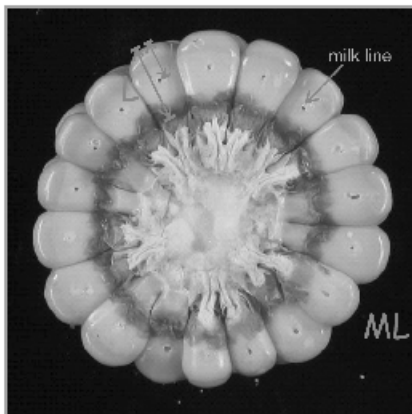


Fig. 2. Milk layer as seen on a profile view of a corn cob. The demarcation zone between the dry portion (yellow) and the liquid portion (white) of a kernel can sometimes be nebulous. Poking the kernel with the end of an opened up paper clip will clearly show ML position. Irrigation should normally continue until the ML percent is about 75 percent.

showing milk line location.

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