

THE MANAGER

FORAGE MANAGEMENT

By Bill Cox

Spreading hybrid maturity length during the tasseling/silking period in corn may limit yield losses from drought stress

Reduce drought stress during the corn silking period

Drought stress from 14 days before to 14 days after corn silking greatly reduces grain yield. Silage yields however, may be impacted even more because drought stress during the 14-day period before silking also greatly reduces corn height and thus stover yield. A management strategy to reduce the risk of drought stress around the silking period is to spread out the relative maturity of corn hybrids so all hybrids do not silk at the same time. Spreading out hybrid maturity length is much more effective than spreading out planting dates because the low number of growing degree days (GDD), which plays a major role in crop development, in May does little to spread out silking dates. In contrast, a 10 day difference in relative hybrid maturity length typically translates into an 80 GDD difference or about 4 days in July until silking.

The 2011 growing season at Aurora, NY (Cayuga Co.), one of the sites of our corn silage hybrid testing trials, had the sixth driest (3.63 inches) and fourth warmest (70.9 degrees average temperature) June to July period. Consequently, corn planted during the second week of May showed severe stress from mid-July until early August. We planted our corn silage hybrid trials on May 9th. The 101-105 day hybrids silked around July 21st and the 111-115 day hybrids silked around July 25th. Both crops were quite short



Drought-stressed corn during the 2011 growing season.

but the 111-115 day hybrids had an average yield of 19.1 tons/acre, whereas the 101-105 day hybrids had an average yield of 17.4 tons/acre. Likewise at our trial in Harford, NY (Cortland Co.), only 0.61 inches of precipitation occurred in July and the 85-90 day hybrids silked around July 20th (planted on May 11) and the 96-100 day hybrids silked around July 25th. Yields averaged 19.8 tons/

acre for the 85-90 day hybrids and 21.4 tons/acre for the 96-100 day hybrids.

We believe that the yield advantage for the later-season hybrids in our studies was a function of partial avoidance of severe drought during the post-silking period as opposed to a higher yield potential for the longer season hybrids. We believe that is the case because the 85-90 day hybrids (silked ~July 15th), the 91-95 day hybrids (silked ~July 17th) and the 96-100 day hybrids (silked ~July 19th) had similar average yields (17.6 to 17.8 tons/acre) as the 101-105 day hybrids at Aurora. The 85-100 hybrid maturity groups were 2 weeks beyond the silking stage by August 3rd, when rains relieved the severe stress. In contrast, the 111-115 day hybrids were only one week after the silking period when drought stress was relieved and severe stress was avoided seven days during the critical period. Likewise, at the Harford site, drought was relieved on August 3rd so the 96-100 day hybrids avoided some of the post-silking drought stress whereas the 85-90 and 91-95 day hybrids (average yield of 20.2 tons/acre) did not avoid the drought stress.

Drought stress, however, may not be as severe as it once was in NY. In 1999, precipitation totaled 3.63 inches and temperatures averaged 72.3 in June and July, very similar to the 2011 growing season. The overall average yield of about 30 hybrids in our 1999 tests was 12.5 tons/acre compared to 18.0 tons/acre in 2011. Drought stress was as severe as I had ever seen it in 2011 (see photo to the right). Nevertheless, yields were surprisingly high perhaps because of better drought tolerance of the newly released hybrids. Until increased drought tolerance of the new hybrid releases are documented, however, silage producers may want to spread out their hybrid maturity lengths by at least 10 days to reduce the risk of significant yield reduction for the entire corn silage crop because of drought around the silking period. □

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