

ARE THESE CORN YIELD TRENDS REAL? CAN WE COUNT ON THEM?

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The 2016 corn production year was the best on record in Wisconsin. On November 10, 2016, the Wisconsin Agricultural Statistics Service projected corn to be harvested from 3.1 million acres with an average yield of 180 bushels per acre and total production of 558 million bushels. Final estimates will be released in January of 2017.

Since 1996, Wisconsin corn yields have increased an average of 1.7 bu/A per year (Figure 1). The previous yield record was set in 2015 when corn yielded 164 bushels per acre. The increase of 16 bushels per acre over the previous record year represents a 10% jump. Only five other times in Wisconsin's history has corn yields increased at comparable or better rates (Figure 2).

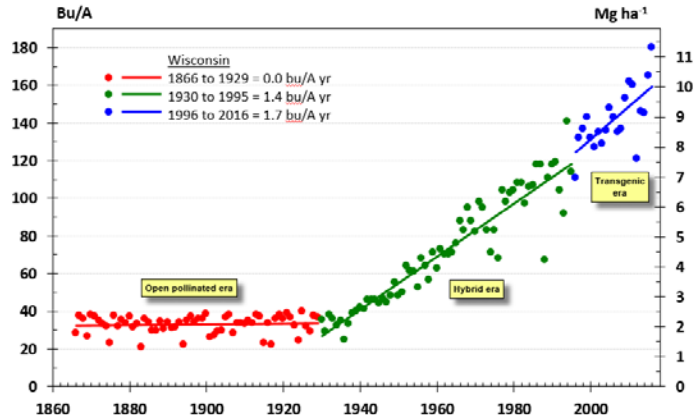


Figure 1. Corn grain yield for Wisconsin since 1866. Source USDA-NASS.

Many people are asking what

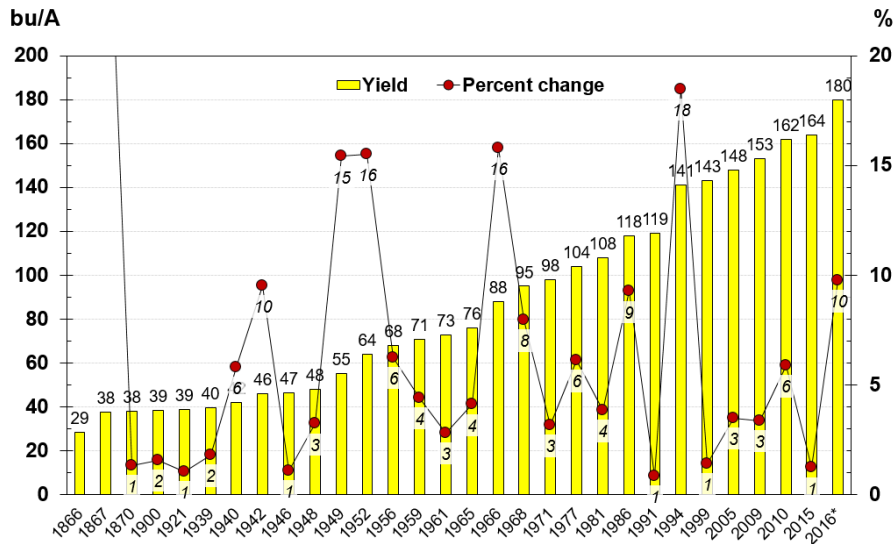


Figure 2. Years of record corn yield (N= 29 of 151) and the percent increase over the previous record year. Source USDA-NASS.

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happened during 2016 to produce record yields? More importantly, why did corn yields jump 10% over the previous record? Are corn hybrids that much better? What management practices were different during 2016? Was it the weather? If one were to list the top reasons for the bumper crop, 8 of the top 10 reasons would have to be weather related. Improved hybrid genetics and management might also make the top 10.

Common characteristics between these record years include: (1) earlier than normal planting, (2) adequate spring soil moisture, (3) mild moisture stress during early corn development with soil moisture eventually replenished to normal levels, (4) corn development was typically ahead of normal at some point during the growing season, (5) fall killing frosts were at the end of September or during October, and (6) fall harvest conditions were typically dry.

In most years, the majority of Wisconsin's corn acreage is planted past the optimum date. On average, approximately 27% of the corn acreage is planted by May 10, 45% by May 15, 62% by May 20, and 77% by May 25. In numerous studies, the optimum planting date for corn production in Wisconsin was found to be between May 1 for southern Wisconsin and May 10 for northern Wisconsin. Shortly after the optimum date, corn yields decrease 0.3 to 0.5% per day which accelerates to 1.5 to 2.3% per day when corn is planted during late May. In the record years, planting was reported to be earlier than normal with more of the acreage planted around the optimum planting date.

In record years, inadequate soil moisture supplies were often reported during late May and early June. Mild moisture stress, during early corn development, increases the allocation of photosynthate to roots at the expense of shoots and leaves, thus, promoting deeper root growth and increased soil exploration for water, minerals and other nutrients. As moisture stress becomes more severe, total root weight can decrease. In all of these years, rainfall replenished soil moisture supplies to normal or above normal levels by late June to early July.

Will 2017 be another record year? A record year follows another record year or tie about 31% of the time. There is no reason why another record year could not take place in 2017.