Historical Corn Grain Yields for Indiana and the U.S.

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- Yields are steadily increasing over time.  
- Year-to-year departures from trend yield are primarily weather-related.

Historical grain yields provide us with a glimpse of yields yet to come, although like the stock markets, past performance is no guarantee of the future. From 1866, the first year USDA began to estimate corn yield, through about 1936, corn yields in the U.S. were fairly constant and averaged about 26 bu/ac throughout that 70-year period. Curiously, the historical data show no appreciable annual change in productivity during that entire time period (Fig. 1).

The adoption of hybrid corn by growers after the Dust Bowl years resulted in the first significant improvement in corn productivity and led to an annual rate of yield improvement of about 0.8 bu/ac/year from about 1937 through about 1955 (Fig. 1). A second significant shift in the annual rate of yield improvement occurred in the mid-1950’s due to a combination of improved genetics, availability of N fertilizer and chemical pesticides, and mechanization (Fig. 1). Since 1955, corn grain yields in the U.S. have increased at a fairly constant 1.9 bushels per acre per year primarily due to sustained improvements in genetics and production technologies (Fig. 1). Some question whether the yield trend line has shifted again in recent years due to the advent of transgenic hybrid technology in the mid-1990’s, but the data show little evidence that a third significant shift in corn productivity has occurred (Fig. 1).

Annual grain yield estimates fluctuate above and below the yield trend line over the years (Fig. 2), primarily in response to weather variability year to year. The Great Drought of 2012 has certainly resulted in dramatic and historic reductions in grain yield relative to trend lines. As of August 2012, the National Ag. Statistics Service of the USDA (USDA-NASS, 2012) estimated that the average U.S. corn grain yield will be 123.4 bu/ac (Fig. 1). This yield estimate would be 23% lower than the predicted 2012 trend yield of 159 bu/ac and would rank as the sixth worst departure from trend yield since the USDA began publishing yield estimates in 1866 (Fig. 2).

Indiana's 2012 corn crop is expected to fare worse than the national average, in part because drought conditions developed earlier than the other major Corn Belt states. As of August 2012, the USDA-NASS predicts a statewide corn grain yield of only 100 bu/ac (USDA-NASS, 2012). This yield estimate for Indiana would be 38% below the 2012 trend yield estimate of 162 bu/ac and would constitute the single worst departure from trend yield since the USDA began publishing yield estimates in 1866 (Fig. 3).
Historical U.S. Corn Grain Yields
1866 to date

Data source: USDA-NASS
2012 yield est. as of Aug 2012
Fig. 2

Historical Departures From Trend Yields for U.S. Corn
1866 to date

Year

Pct. departure from trend yield

1861 -24.4%
1894 -22.0%
1901 -29.5%
1934 -25.8%
1936 -26.2%
1983 -21.9%
1988 -25.4%
2012 -22.5%

Yield data adapted from USDA-NASS
2012 trend yield = 159 bpa
2012 est. as of Aug 2012 = 123 bpa
Historical Departures From Trend Yields for Indiana Corn
1866 to date

Fig. 3.

References


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