Management Factors Determining Canola Yields in North America

Canola (Brassica napus L. ‘Canola’) is one of the largest oil, protein meal, and vegetable oil crop sources. Previously published research on this crop was focused on one factor at a time; therefore, the mechanism of how multiple factors interact to influence canola yield and the level of their significance was rarely reported. Improving research knowledge on the production management of this crop is needed to propose potential avenues for narrowing the yield gap, defined as potential minus actual on-farm yields.

In the January–February 2018 issue of the Crop Science, researchers report on a synthesis of >100 reports in peer-reviewed journals, Extension publications, and websites from North America, constructing a large database on canola (winter and spring type) production to quantify (via synthesis- and meta-analyses) the effect of diverse management factors on canola yields.

The team found that yield gaps of 50% were evident between actual and attainable canola yields. Resources and climate were the major yield-limiting factors, and various plant management practices are next in importance. This review suggests that water supply, balanced nutrition (emphasizing the high N and S demands), early planting (for both winter and spring types), shallow depth (10–19 mm), high seeding rate (6 kg ha⁻¹), and diverse rotation (canola every three or four years) are among the best management practices (BMPs) to increase yields.

The review article suggests that more efforts should be invested on specific production management factors (e.g., nutrient demand, planting configuration, plant density, and understanding the effect of crop rotation and previous crop residue) for narrowing the yield gap.


Effect of Planting Date on Drought-Tolerant Maize

Planting date and selection of an appropriate hybrid are critical components in optimizing corn yield. New hybrids, such as for the recently released DroughtGard hybrids, raise the question whether cultural practice recommendations should change or remain the same. Yield component analysis can be a useful research tool to understand yield differences and similarities.

The objective of a recent article in Agronomy Journal was to determine the influence of planting date on yield and yield components of DroughtGard maize hybrids with different maturity classifications compared with a conventional maize hybrid in a dryland soybean–corn rotation system in eastern Nebraska.

Contrary to common perception, planting date within a year and hybrid type with similar relative maturity had no influence on corn yields in this research but did alter yield components. Maize grain yield was correlated with all yield components, but the variation of correlation magnitude among yield components changed across planting dates and hybrids. For example, the number of ears was relatively more important for early planted maize while the kernel weight, kernel depth, and bulk density were relatively more important for late-planted maize.

The research suggests that for dryland corn following soybean in east-central Nebraska, planting date is less important than commonly thought and that DroughtGard and conventional corn hybrids with the same relative maturity classification produce similar yields due to yield component compensation.


Shelling a corn ear to determine yield components. Source: Stephen Mason.

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