Consider 15-inch Row Spacing in Soybean

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Abstract
Row spacing is a management decision that often comes up as a priority for achieving high-yielding soybean. Research across the Midwest over several years has consistently shown that soybean planted in narrow rows (<30 inches) has a yield advantage compared to wide rows (≥ 30 inches). The primary reason for this advantage is light utilization; canopy closure is approximately 15 days earlier in 15-inch rows compared to 30-inch rows. Canopy closure earlier in the growing season results in greater light interception and higher growth rates.

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Row spacing is a management decision that often comes up as a priority for achieving high-yielding soybean. Research across the Midwest over several years has consistently shown that soybean planted in narrow rows (<30 inches) has a yield advantage compared to wide rows (≥ 30 inches). The primary reason for this advantage is light utilization; canopy closure is approximately 15 days earlier in 15-inch rows compared to 30-inch rows. Canopy closure earlier in the growing season results in greater light interception and higher growth rates.

Planting date can influence the potential advantage of narrow rows. Planting in late April or early May will result in higher yields than planting in late May or June regardless of row spacing. However, narrow rows tend to have an advantage over wide rows even in late-planting situations because they are able to capture available sunlight more quickly. Still, this advantage will not fully compensate for the yield penalty of late planting.

Since narrow-row soybean reach canopy closure quicker, it becomes more competitive with weeds, preventing weeds from germinating once the canopy closes. As herbicide resistance continues to spread, the increased competitiveness with narrow rows is an alternate selection pressure of weeds that will help preserve the value of herbicides. This aspect of narrow rows could result in cost savings in your weed control program. Rapid canopy closure can also help reduce soil moisture loss and erosion.

Alternatively, having narrow-row soybean can present some challenges. For example, how will herbicides, insecticides, and fungicides be applied without driving on rows? Ground applications can be made perpendicular to the row. This tends to be effective for applications earlier in the season while aerial applications should be considered for fungicide and insecticide applications later in the season.
A skip-row planting system may prove to be an effective option if aerial application is not desirable. Skip-row planting is effective because it does not plant wheel track rows, making it possible for ground applications all season long while providing much of the yield advantage of narrow row spacing.

Equipment expenses are not trivial. Justifying the cost of a narrow-row planter for a single crop may not be feasible. This is the dominant reason farmers choose not to plant narrow row soybean. One option is to invest in a split-row planter, which works with both corn and soybean for the appropriate row spacing needed for each crop. Additionally, more recent research has shown that corn yields in 30-inch and 20-inch row spacing are similar 50% of the time and benefit the 20-inch row spacing the remainder of the time for currently available genetics and management practices. This opens the possibility of achieving higher yields and profit margins in soybean years while at least maintaining the status quo in corn years.

Keep in mind that narrow-row soybean is vulnerable to many of the same yield-limiting factors that wide-row soybean encounter. If brown stem rot, soybean cyst nematode, or white mold are issues in your fields, narrow-row soybean will be affected more severely. In fact, white mold may be more problematic in narrow row soybeans. If white mold has been consistently problematic in your fields, consider alternative management strategies.

In conclusion, narrow-row spacing can give your fields a yield advantage due to rapid canopy closure resulting in better light utilization. Other potential benefits include less moisture loss, better weed control, and reduced erosion. Applications of insecticides, fungicides, and herbicides should be made in a way that works with narrow row spacing. Be conscious about past yield-limiting factors, such as brown stem rot, soybean cyst nematode, and white mold, and choose a variety that will appropriately fit your cropping system.
Figure 1. Effect of row width on soybean yield from experiments in Iowa. Source: De Bruin and Pedersen, 2008; Swoboda et al., 2011.

References


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