Row Width Considerations for Soybean

- Row width is an important agronomic practice that growers can control to help improve yield potential.
- Decades of research has shown that narrow rows have a significant yield potential advantage over wide rows.
- The pros and cons of narrow rows should be considered to determine the proper row width for a farming operation.

Row Width Research
Row width is an important agronomic practice that growers can control to help improve yield potential. Decades of research has shown that narrow rows have a significant yield potential advantage over wide rows. Equipment and time management issues have driven a recent switch to 15 inch row spacing in soybeans. The pros and cons of narrow rows should be considered to determine the proper row width for a farming operation.

Current Trends
Growers in the largest soybean producing states have moved away from planting soybean in drilled rows to a 15-inch row width (Figure 2). There are substantial differences in row width between states and production areas. For example, sugarbeets are planted in 22-inch rows in western Minnesota which influences corn and soybean row widths. The trend away from drilled soybeans is a compromise to obtain higher yield potential. In addition to yield, the economics provided by more precise seeding rates, seed placement and singulation with planters, and ability to plant corn and soybean with one planter pushes the growers to switch to narrow rows.

Iowa State University research found that farms larger than 355 acres with 50% of the land base in soybean production could benefit from the conversion from wide to narrow rows. To benefit, a 1,000 acre farm required a one bushel difference while a 2,500 acre farm needed a one-half bushel difference. Even though economics favor the decision to switch to narrow rows, there are additional pest and environmental considerations that may influence the decision.

Narrow Row Width Advantages
Narrow rows intercept more light earlier in the season, and reach canopy closure more quickly than wide rows. The relatively equidistant plant arrangement leads to increased leaf development and light interception early in the season which can increase crop growth rate, dry matter accumulation and seed yield potential. Canopy closure should occur before the R3 growth stage (pod set). In Iowa, 15 inch rows often reach canopy closure 15 days before 30-inch rows.

Soybeans in 30-inch rows often do not reach canopy closure by the R3 stage of growth. Rapid canopy closure can reduce soil moisture loss and shade weeds.
Row Width Considerations for Soybean

Weed seedling growth is inhibited and weed emergence suppressed by the canopy shading of a narrow row crop. Research has also established that the critical time for weed removal in soybean occurred earlier in wide versus narrow rows, providing the potential for more flexible herbicide application. Narrow row widths can improve combine efficiency because plant distribution is even, allowing better flow into the combine. Harvest losses may be reduced because narrow row soybean set the lowest pods higher than in wide rows.

Row Width Concerns

Equipment concerns have limited the adoption of narrow row widths in soybean for some growers. The cost of a planter/drill for soybeans and a second planter for corn has been an impediment for some growers. Split-row planter technology can be a solution. The additional cost of planting equipment can often be offset by the yield advantage narrow rows can provide.

High seeding rates in drilled soybeans have been recommended in the past to overcome inaccurate seed delivery and placement, which limited adoption of narrow rows. Newer precision drills have improved seed placement which can help reduce the need for high seeding rates. A study conducted in Iowa found that a uniform harvest population of 100,000 plants/acre or more is adequate to attain yield potential (Figure 3). Potential yield loss due to wheel track damage during soybean reproductive stages can be a concern in narrow row soybean. A study conducted by Virginia Polytechnic Institute and State University and University of Delaware found that wheel track damage reduced yield in 7.5 or 15-inch row spacings but not 30-inch rows. Potential yield loss was reduced when boom length increased. In addition, water stress compromised the ability of soybean to compensate for damaged rows in this study. Another source of potential yield loss is penetration of pesticide applications. Row width has not been found to reduce fungicide efficacy even though canopy penetration may be reduced. Insecticide penetration into the canopy may be compromised more in narrow rows than wide rows, potentially reducing insecticide efficacy. Applying a fungicide or insecticide for pest control most likely will out-weigh wheel track damage.

Conclusions

Narrow row width soybean research has shown an average three to four bu/acre advantage in yield potential compared with soybean planted in 30-inch rows. Other considerations such as equipment costs, time allocation, pest management, and others can vary by region, and farm operational needs and must be part of the decision to change row width. An individual farm assessment of costs and benefits is needed to determine the best management practices for soybean production.

Sources:


For additional agronomic information, please contact your local seed representative.

Individual results may vary, and performance may vary from location to location and from year to year. This result may not be an indicator of results you may obtain as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible. ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS.

Asgrow® and the A Design®, Asgrow®, and DEKALB® are registered trademarks of Monsanto Technology LLC. Leaf Design® is a registered trademark of Monsanto Company. All other trademarks are the property of their respective owners. ©2014 Monsanto Company. 13031406108 100914JEH.