Advantages of Narrow Rows

University and commercial research as well as on-farm experience has shown higher yield potential for soybeans planted in rows spaced 20 inches or less compared to 30-inch or wider rows. Narrow rows intercept more light earlier in the season and reach canopy closure more quickly than wide rows. More equidistance plant spacing encourages increased leaf development and light interception early in the season, which can increase crop growth rate, dry matter accumulation, and seed yield potential. For the highest yield potential, canopy closure should occur before the R3 growth stage (pod set). Research in the largest soybean growing states shows that 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 in narrow rows helps preserve soil moisture and reduces sunlight penetration to the soil, which can suppress weed emergence and weed seedling growth.

Narrow row widths can also have benefits at harvest time. More even plant distribution allows better flow into the combine and improves combine efficiency. Harvest losses may be reduced because the lowest-set pods on narrow-row soybeans are set higher than in wide rows.

Row Width Research

A study conducted from 2009 to 2011 in six soybean producing states, compared soybean row spacings of 30-inch, and narrow (less than 20 inches), with either normal practices (no additional treatment) or high input management. The results showed an average of 6.9 bu/acre advantage for narrow rows with high input versus the wide row under normal practices. With no additional treatment, soybeans planted in narrow rows had an average yield advantage over wide rows of 2.9 bu/acre. Research from the Midwest and Canada further supports a yield advantage for narrow rows versus wide rows and indicates yield increases of 2 to 9 bu/acre. Research in North Carolina shows a 6 to 8% yield increase when growers switched from 30-inch rows to 20-inch or narrower rows. Growers who switched from 36 or 38-inch rows to 20-inch or narrower rows saw a yield increase of 10 to 12%.
Soybean Row Width Affects Yield Potential

Planter Selection Considerations

Equipment concerns have limited the adoption of narrow row widths in soybean for some growers. The cost of purchasing a planter or drill for soybeans and a second planter for corn has been a primary impediment. 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 and narrow-row planters offer improved seed placement, which can help reduce the need for high seeding rates. Research has established that a uniform harvest population of 100,000 plants/acre or more is adequate to attain optimum yield potential.

Iowa State University research found that investment in a split-row planter was economical for farms larger than 711 acres with more than 30% of land base in soybean production, as long as a yield increase of 1.8 bu/acre was achieved. Farms larger than 355 acres with at least 50% of the land base in soybean production would benefit from the conversion from wide to narrow rows.

Row Width Concerns

Narrow row soybean can create environmental conditions that are more favorable to foliar disease development compared to wide rows. Cool, wet conditions during flowering promotes white mold (Sclerotinia sclerotiorum). Soybean product selection, seeding rate, and row spacing all play a role in white mold management. Switching from a drill to 15-inch row width can be a benefit, along with other white mold management recommendations. Unless white mold incidence is frequent, planting soybeans in 30-inch or wider rows may not be beneficial because of the yield trade-off. Soybeans in narrow rows may also be more susceptible to brown stem rot and soybean cyst nematode under certain environmental conditions.

You may also be concerned about wheel track damage as you drive over narrow-row soybeans to spray for diseases or insects. Such damage was found to decrease yield in 7.5- or 15-inch row spacings, but not 30-inch rows. Water stress inhibited the ability of soybeans to compensate for damaged rows in this study. Studies in North Carolina have shown that soybeans typically recover from early-season wheel traffic with little or no loss of yield potential. Even as soybeans move into the reproductive stages, wheel traffic reduced yield potential by only 1 to 2% in North Carolina research. That small, traffic-induced damage should be offset by the expected increase in yield potential in narrow rows.

Spray penetration into the canopy may be more of a challenge in narrow rows than wide rows, which may affect the efficacy of some pesticides. Additional research has shown that, while row width affected fungicide spray coverage, disease severity was not affected.

Sources:

2 Pederson, P. Row spacing in soybean. Iowa State University Extension.
10 Personal interview with Jim Dunphy, Extension soybean specialist, North Carolina State University.