5-1-1969

Soybean Culture

William D. Reiss
SOYBEAN CULTURE

William D. Reiss, Agronomy Department

Indiana soybean producers set an all-time record high yield in 1968 with a state average of 31.5 bushels per acre. This is a 6.5 bushel increase over the 1967 average. 1968 was recognized as an exceptionally good soybean year; however, many growers in recent years have consistently produced 45 to 55 bushels per acre. Following are some ideas which may help you obtain higher soybean yields.

Fertilization

Lime your soils to a pH of 6.0 to 6.5. Next, build your soil fertility to a high-medium soil test level for phosphorus and potassium. In most cases it is not economically feasible the first year to add sufficient phosphate and potash to build your soil levels this high. However, you should fertilize to supplement the nutrients removed and to build toward the desired fertility level. Remember, the grain from 60 bushels of soybeans removes 50 pounds of phosphorus (P₂O₅) and 70 pounds of potash (K₂O) per acre.

Select Adapted Varieties

Select varieties that are well-adapted to your area and that have records of high production. In 1968, 50 per cent of Indiana's three million acres of soybeans were seeded to Wayne and Amsoy soybeans. Both of these varieties have yielded 7 - 10 per cent more grain than older-adapted varieties. Obtain Research Progress Report No. 355, "Soybean Varieties for Indiana" from your local county extension office for soybean variety yield comparisons.

Seed Quality

Insist on high quality seed when you purchase your soybeans. Purchase high germination seed which has few cracks or splits. Don't plant soybeans that have weed seeds present because if the herbicide fails, the cultivator cannot possibly destroy weeds that are in the row.

Certified seed guarantees the purchaser that he is buying the variety stated on the tag and that the seed represents at least a minimal level of seed quality. Seed with high vigor germinates, emerges and grows more uniformly. There is no one criteria to indicate high vigor; however, it tends to be correlated with high germination content.

Date of Planting

Mid-season varieties for your area may be planted from May 20 to June 1st with little change in yield. However, yields decrease rapidly when planting is delayed after June. As a general recommendation, there is no particular advantage for planting a mid-season variety earlier than May 24th, but these varieties should be planted by June 1.
Full-season varieties will respond to earlier planting dates and have shown highest yield capability when planted between May 10th and May 20th. The yields decrease gradually when planting is delayed in May; however, yields decrease rapidly when planting is delayed into June.

When planting early, plan for an adequate weed control program. Weeds that become established during the early part of the growing season can reduce yields by 25 - 50 per cent.

Narrow Row Response

Soybean varieties differ in response to narrow rows according to plant structure. Upright types of soybeans such as Amsoy tend to show more yield response than bushy-type beans such as Wayne. In a three-year study at Purdue, Amsoy averaged a seven per cent increase yield when row widths were narrowed from 40- to 30-inch rows and a 12 per cent increase when row widths were narrowed from 40- to 20-inch rows. Wayne, a bushy-type variety did not demonstrate a yield increase when row widths were narrowed to 30 inches; however, there was a five per cent increase in yields when row widths were narrowed from 40- to 20-inch rows. Keep in mind, upright-type soybeans are more capable of 10 to 15 per cent yield increase than are bushy-type varieties.

Seeding Rate

Do not over-plant soybeans because more seed is required at planting.

Excessive lodging results and less seed is harvested. Plan to have a uniform harvest stand of 6-8 plants per foot in 40-inch rows; 5-7 plants in 30-inch; 3-5 plants in 20-inch and 3-4 plants for 10-inch rows or solid seeded soybeans. Bushy-type varieties should be on the lower side of the range and upright-type varieties on the higher side.

To determine your seeding rate use the following formula:

\[
\text{Row width} \times \frac{\text{Plants per foot}}{\% \text{ Germination}} \times \frac{43,560}{\text{No. seeds/lb.}}
\]

For example, a farmer planting in 30-inch rows, desiring six plants per foot and planting a variety which contains 2600 seeds per pound with 90 per cent germination calculates his seeding rate to be 45 pounds per acre. For possible losses during emergence and rotary haying, add 10 per cent. Therefore the seeding rate would be 50 pounds per acre. The number of seeds per pound for each variety is listed in Research Progress Report No. 355, "Soybean Varieties for Indiana in 1969."

Planting Depth

Best germination comes from soybeans planted at the one-inch depth. Emergence is slower and relative germination is less when planting depth is two inches. Never plant deeper than two inches. Because seed should be planted relatively shallow if a large front is moving through, always check the five-day weather forecast.

5-69 6M