

Soybean Planting Population and Spacing Study

Matt Yancey, Crop and Soil Environmental Extension Agent
Virginia Cooperative Extension, Rockingham Unit

With the ever increasing price received for soybeans, more acres are being planted and growers are looking more critically at how they are planted. Soybeans are planted with both corn planters and grain drills, oftentimes out of the sake of convenience. It is not uncommon to see soybeans planted in rows from 30" down to 15" with corn planters, and down to 7.5" with grain drills. Corn planters typically ensure more even spacing and hence a more uniform stand. A drill is often referred to as a "controlled drop" machine. However, newer machines have improved technology that offer more precisely placed seed. Planting rates that are employed are also across the board.

A demonstration plot comparing planting machinery performance, spacing, and rates was established in Augusta County. The plot was planted with Pioneer 93Y92 under excellent conditions June 15, 2011 into oat stubble, and harvested using a John Deere 9500 combine equipped with a 25' head on November 7, 2011. The combine head was set up with an Air Reel, which ensured less harvest loss. The field was Turbo-Tilled prior to planting and received 35 lbs of nitrogen as urea.

The yield results are shown in Figure 1. When reviewing the Relative Yields, which is grain yield relative to the average yield across treatments, the 15" row spacing appears to produce the highest yields. In particular, the 100,000 seeds/acre rate was 14 points above the average. All other treatments were within six points of the average. Across seeding rates, the 15" rows averaged 68 bushels per acre (bu/ac) while both the 30" and 7.5" averaged about 60 bu/ac. This is consistent with the 5 bu/ac increase found in several long term research studies. *Note that this was a non-replicated study, with one individual strip per treatment at one location.*

Another consideration would be the hybrid choice planted. This particular hybrid has a bushiness rating of 6, (out of 1-9, 9 being the bushiest). A grower planting on wider spacing may opt for a bushier hybrid, as weed control is a more critical consideration as the ground will be shaded more slowly.

| Planter | Row Spacing | Planting Rate (seeds/acre) | Yield (bu/acre) | Relative Yield | Percent Moisture |
|-------------------------|-------------|----------------------------|-----------------|----------------|------------------|
| Kinze corn planter | 15" | 100,000 | 70.8 | 114 | 12.8 |
| Kinze corn planter | 15" | 150,000 | 66.0 | 106 | 13 |
| | | <i>median yield</i> | <i>64.6</i> | - | |
| | | <i>average yield</i> | <i>62.3</i> | 100 | |
| Sunflower 9421 drill | 7.5" | 150,000 | 61.8 | 99 | 12.7 |
| Kinze corn planter | 30" | 150,000 | 61.7 | 99 | 13.4 |
| Sunflower 9421 drill | 7.5" | 100,000 | 60.3 | 97 | 12.6 |
| Vermeer Haybuster drill | 7.5" | 150,000 | 60.0 | 96 | 12.8 |
| Vermeer Haybuster drill | 7.5" | 100,000 | 59.2 | 95 | 12.7 |
| Kinze corn planter | 30" | 100,000 | 58.5 | 94 | 13.5 |

Figure 1 – Yields from various planting rates, spacing, and equipment.