

Variable Rate Soybean Planting Demonstration: Part 1 - Planting

A variable rate soybean demonstration was planted near Thamesford ON on May 17, 2019. The variable rate prescription was designed using [Granular Imagery](#). This prescription varied from 140,000-200,000 seeds per acre (Figure 1). The water limiting sandy soils are the most limiting factor on this farm.

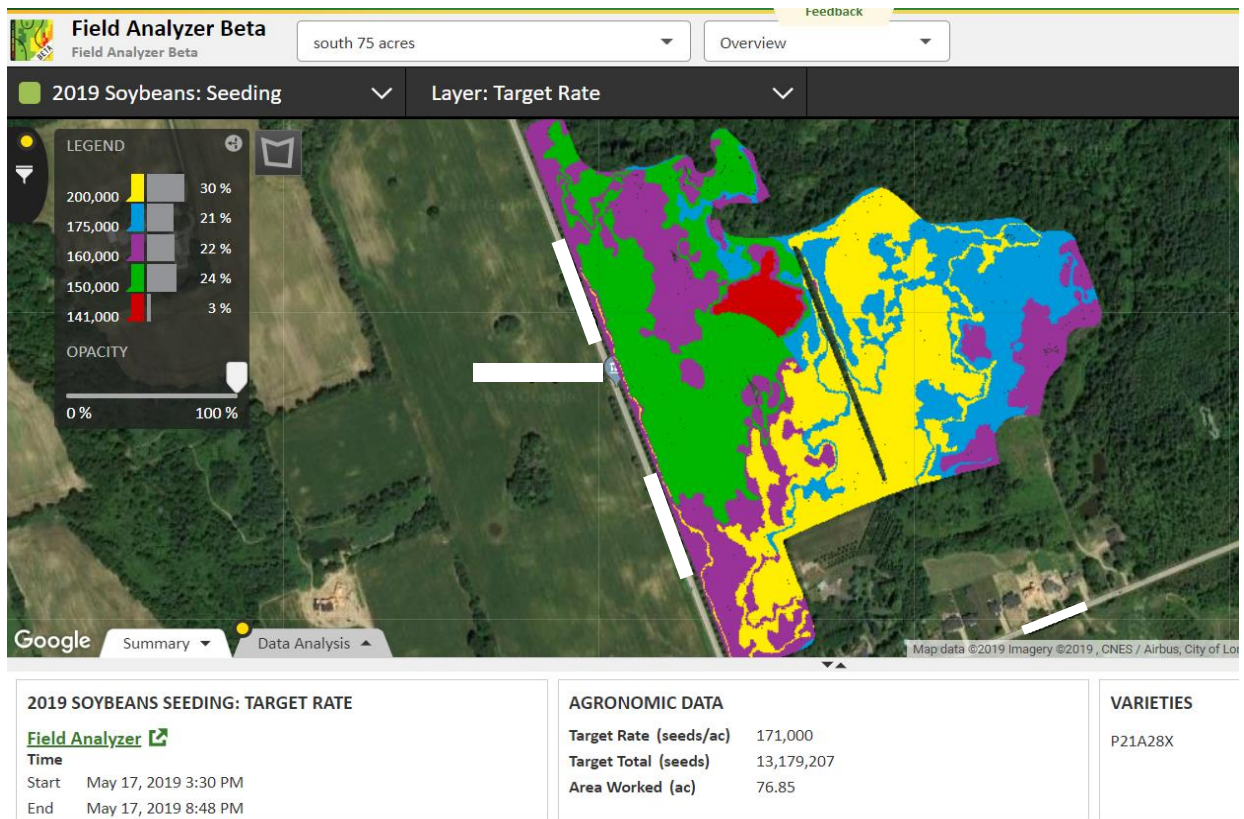


Figure 1: Variable Rate Soybean Prescription, showing target rate as visualized in John Deere Operations Center

Since the prescription was generated using imagery, you will notice a high degree of detail. There are small veins of different populations. A prescription written using yield data likely would be lower resolution. The reason being you are using data that was collected on wide swaths, for example 30-40 feet wide, versus imagery resolution at 10ft squares.

The field was planted using a John Deere Model Year 2019 1795 MaxEmerge 5e, with 8295R and integrated Generation 4 4600 and StarFire 6000 receiver (Figure 2). The 8295R tractor which was pulling this planter was utilizing JDLink Connect Subscription. Using the cellular connection we were able to wirelessly send the prescription the 4600 display and import it without using a USB. The 1795 planter has an electric motor on each row unit and theoretically could apply a different population of seed at each row. This planter was ideal for applying a precise prescription using the Granular Imagery.

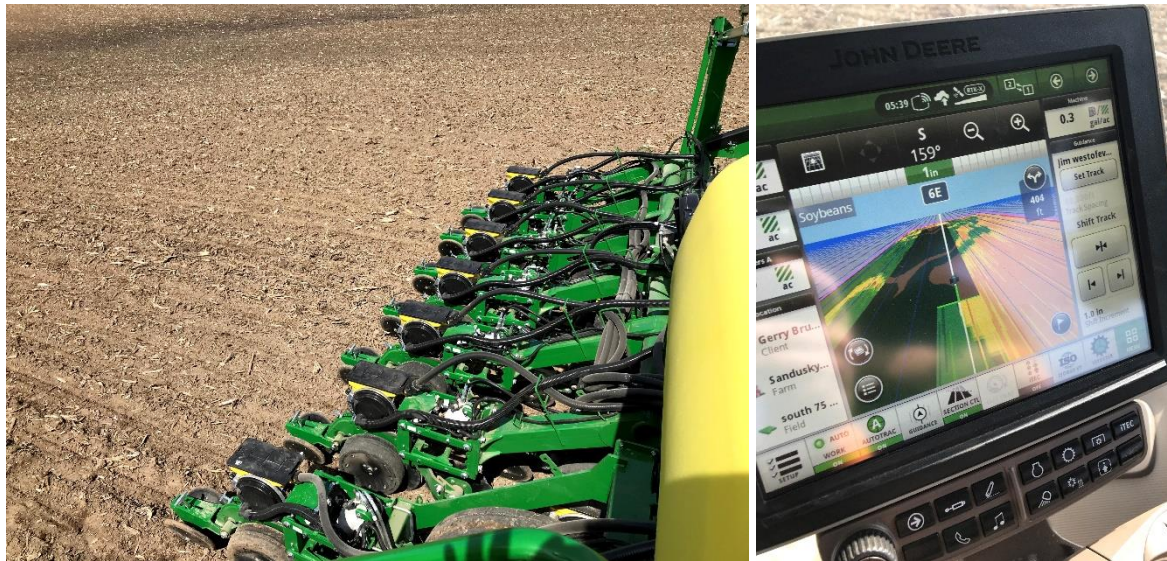


Figure 2: Technology utilized to plant variable rate soybean demonstration plot. Left hand images shows row units on 1795 MaxEmerge 5e, with independent electric motors on each row. Right hand image shows the Prescription operating on the Gen4 4600 Command Center integrated in the 8295R tractor

Within the John Deere Operations Center, the as applied planting map can be visualized (Figure 3). Complimenting this map within the Field Analyzer Beta tool of Operations Center is a map layer called Quality. This layer provides a percentage of target rate which was actually applied by the planter. In the case of our demonstration plot we obtained an operation quality of 97.46%. The map can be visualized in Figure 4, the yellow areas where we had poorer quality correlate to the start and end of passes, and the transitions between zones of different populations. For this application we had a look ahead time of 0.3 seconds for our planting prescription. This means that the planter anticipates the rate change 0.3seconds before entering a zone of different population.

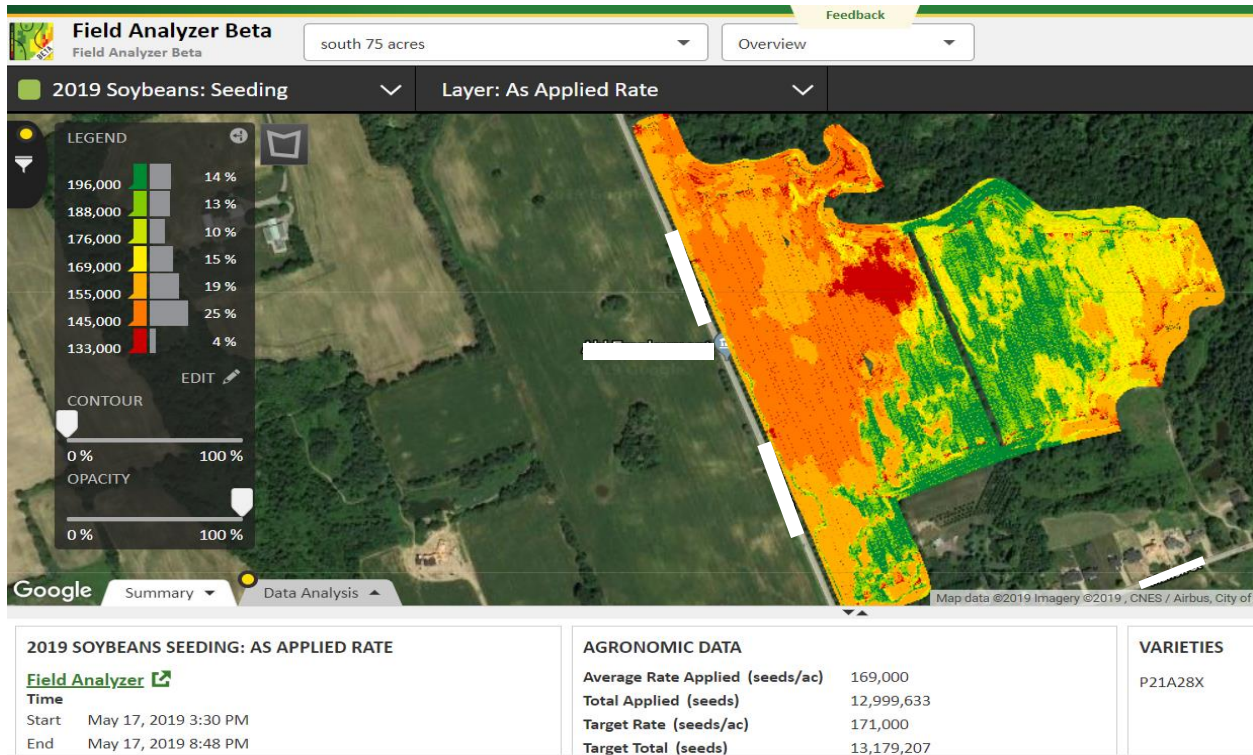


Figure 3: As applied seeding map for soybean prescription

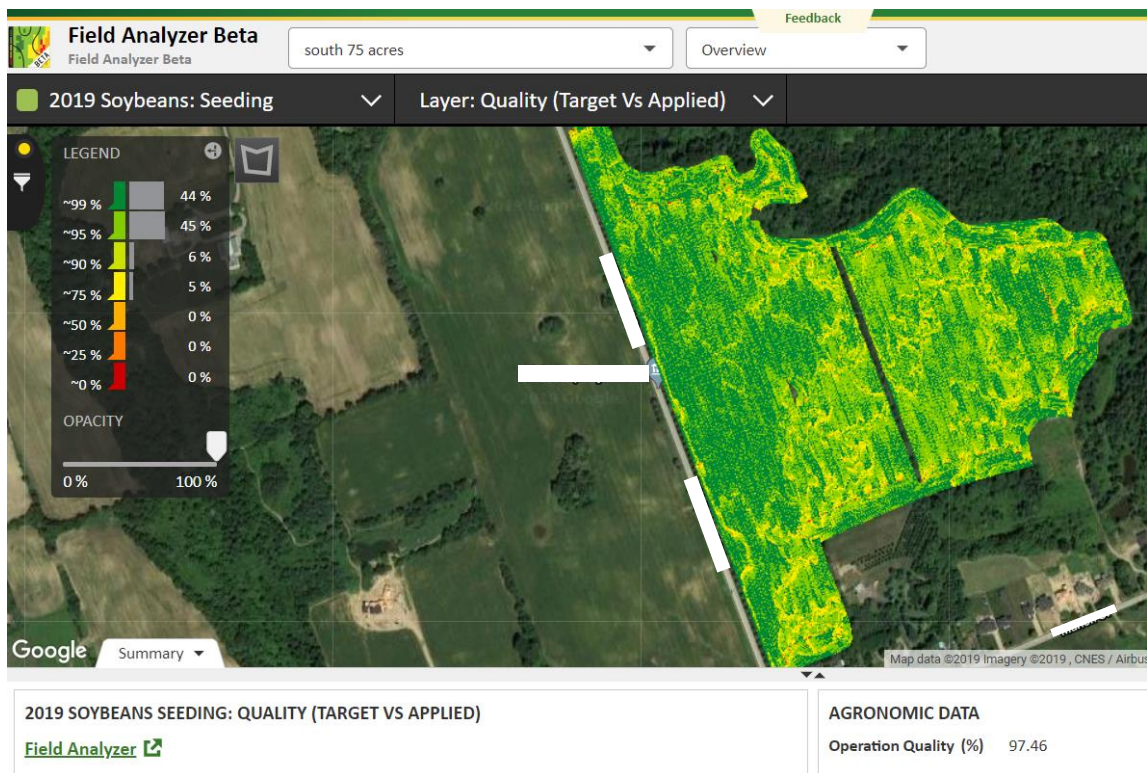


Figure 4: Soybean Prescription planting quality. This is a percentage of target rate versus what was actually applied.