

**Project Title:** Precision Peanut Planter Kit to Improve Seed Metering and Placement

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**Summary of Project:**

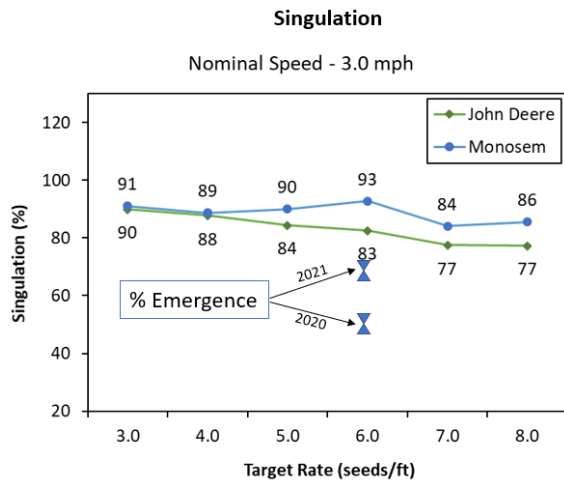
A Precision Planter meter test stand was obtained by Dr. Virk and a seed monitor and controller was obtained to test seed meters with peanut seed discs and seed tubes commonly used on the Monosem and John Deere row-crop planters. Data collected at different planting speeds for singulation was compared to data previously collected using a 4-row Monosem NG 4 Plus planter at Midville in 2020 and Tifton in 2021 planting single-row peanut. Field tests results are at a nominal rate of 6 seed/foot unless otherwise stated.

**Accomplishments:**

**Tractor Ground Speed Effect on Emergence**

Data used in this objective was collected at Midville, GA 2020 and Tifton GA in 2021. It is reported to make comparison with data collected from meter test stand data on the Monosem NG Planter. Percent emergence was reduced approximately 10% going from 3 to 5 mph and was reduced another 25% when going from 5 to 7 mph. In 2021 emergence was reduced approximately 30% when going from 3 to 6 mph. There were significant quantitative differences between emergence rates in 2020 and 2021, but percent changes in emergence were similar. At 3 mph, emergence was around 50% and 70% for 2020 and 2021, respectively.

**Quantify the effect of seeding rate on seed singulation on test stand with current components**



**John Deere Seed Meter**

Planting Speed (mph)	Seeding Rate (seeds/ft)					
	3	4	5	6	7	8
2.0	9	13	16	18	22	25
2.5	12	16	20	23	27	31
3.0	14	19	24	27	32	38
3.5	17	22	28	32	37	42
4.0	19	25	30	38	42	48
4.5	21	28	35	41	43	54
5.0	24	31	38	45	52	61

**Monosem Seed Meter**

Planting Speed (mph)	Seeding Rate (seeds/ft)					
	3	4	5	6	7	8
2.0	9	12	15	18	21	22
2.5	11	15	18	22	25	28
3.0	13	18	22	26	29	33
3.5	15	21	25	30	34	38
4.0	18	22	28	34	39	45
4.5	16	25	33	38	43	51
5.0	21	28	36	43	47	57

Shaded areas are the combinations of >85% seed singulation (Values in cells are meter disc RPM's)

Two most commonly used seed meters (John Deere and Monosem) for planting peanuts were tested on a precision planter seed metering static test stand. Six seeding rates and six planting speeds were examined on the test stand to evaluate metering and singulation performance. As seeding rate increases, seed singulation generally goes down as shown in the figure. This was at a speed of 3 mph and is caused by an increase in the number of skips on the meter. Percent emergence in 2020 and 2021 is 20-40% below singulation rates for the Monosem.

**Conclusions:**

- ❖ Monosem seed meter due to its singulated seed plate and the presence of singulator/doubles eliminator performs considerably better than John Deere
- ❖ Degradation in metering performance for both seed meters is largely due to the higher number of skips.
- ❖ There is a seed meter speed (rpm) threshold for both JD and MN above which singulation performance (85%) drops as either seeding rate or planting speed increases. (see Tables, >85% singulation is shaded)
- ❖ Decrease in emergence below singulation rates will be a function of seed vigor, dynamic seed damage from the moving planter, soil moisture and proper handling and placement.
- ❖ 2023 testing will include the effect of different vacuum settings as increase in seeding rate and/or speed increases the rate of peanuts planted (lbs/ac)