

**The Effect of Speed on Planter Performance for Furrow Depth and Seed Placement.**  
2019 crop season. R.S. Tubbs and W.M. Porter

Knowing maximum threshold speeds for planting in various soil types would help growers operate with optimum efficiency. A conservative grower may be able to increase speed to cover area more rapidly while an aggressive grower may need to reduce speed to avoid a potential replant situation, which would cost additional time and input costs compared to operating at a slightly slower planting speed. To assess these issues, experiments were conducted in Tifton and Attapulgus, GA to evaluate plant stands, seeding depth and seed placement using four different speeds at planting. This trial also included downforce pressure as a factor in trying to keep the planter uniformly in the ground. Speeds tested included 2.5, 4.0, 5.4, and 6.9 mph (speeds differed slightly at each location, but were within 0.1 mph for each treatment). Downforce pressure was set at 100, 200, 300, or 400 psi, and assigned factorially to each of the speeds.

For sake of brevity, only data from Attapulgus is presented at this time. There were no interactions observed for speed x downforce effects, so data is pooled over the other factor for comparison of treatments. There were no differences for any of the sampled variables regarding downforce.

Plant stand was assessed weekly over the first three weeks after planting and again at harvest. The stands were affected by speed at all sample dates. As speed increased, plant stand decreased. Previous research has demonstrated yield decline to occur when plant stands drop below 2.5 plants/ft, although 4.0 plants/ft is considered optimum. Plant stand remained above the 2.5 plants/ft threshold for speeds 5.4 mph and below, although 2.5 mph had nearly a 25% increase in stand ahead of 5.4 mph. The 6.9 mph speed resulted in a sub-optimal plant stand. Yield was similar at the speeds from 5.4 mph and below, but greatly reduced at the 6.9 mph speed. Yield was correlated with plant stand such that there was a 704 lb/ac increase for every additional 1.0 plants in each ft of row. Tomato spotted wilt virus incidence increased with decreasing plant stand/increased speed. However, there was no difference in depth of furrow for any speed. Data for seed placement (uniformity/distance between each seed placed in the furrow) has not been fully analyzed at this time and will be included in the lead graduate student's (Hayden Godwin) M.S. Thesis and subsequent journal publication.

	Final Stand	Yield	TSWV	Furrow Depth
<u>Speed (mph)<sup>a</sup></u>	Plants/ft	lb/ac	%	cm
2.5	3.9 A	5795 A	21 B	6.2 A
4.0	3.4 AB	5651 A	25 AB	6.2 A
5.4	3.0 B	5683 A	24 B	6.3 A
6.9	2.3 C	4199 B	31 A	6.3 A

<sup>a</sup> Averaged over all downforce treatments.

These results show maintaining appropriate speed at planting is important for optimizing plant stand and maximizing yield. Speeds above 5.4 mph are detrimental to these goals, and speeds below 4.0 mph are important for reaching recommended the plant stand.