**The Effect of Speed on Planter Performance for Furrow Depth and Seed Placement.**
2020 crop season. R.S. Tubbs and W.M. Porter

Planting speed may have a more profound effect on establishing plant stand and maximizing yield than many people consider. Traveling faster causes the seed plate to spin more rapidly, decreasing the amount of time for a seed to settle into place. Some growers try to compensate for this by increasing seeding rate, yet may be exacerbating the problem since that causes the seed plate to spin even faster, further reducing the opportunity window for a seed to adhere to the plate hole. By optimizing planter speed, some growers may be able to increase speed, thereby covering a greater area more rapidly while aggressive growers may be inadvertently traveling too fast and causing the potential for a replant situation. The latter would cost additional time and inputs compared to simply adjusting to a slightly slower planting speed initially. Experiments were conducted in Tifton and Attapulgus, GA to compare the effect of planting speed and amount of downforce applied in factorial combinations. Plant stands, seeding depth and seed placement were evaluated. Four speeds at planting were tested. To assess planter/seed placement uniformity, downforce was also a variable. Speeds included 2.5, 4.0, 5.4, and 7.0 mph (speeds differed slightly at each location, but were within 0.1 mph for each treatment). Downforce was set at 100, 200, 300, or 400 psi, and all were represented with each of the speeds. Seeding rate used was 6.0 seed/ft at both locations (and both trials conducted in single row pattern).

Plant stand was assessed weekly over the first three weeks after planting and again at harvest. The stands were affected by speed for all sample dates after 2 weeks. As speed increased, plant stand decreased. When the final stand count dropped below 3.7 plants/ft,

| | Harvest Stand Tifton | Yield Tifton | Harvest Stand Attapulgus | Yield Attapulgus |
|---|---|---|---|---|
| Speed (mph)[a] | Plants/ft | lb/ac | Plants/ft | lb/ac |
| 2.5 | 4.4 A | 3313 A | 4.9 A | 3631 A |
| 4.0 | 4.0 A | 3315 A | 4.7 A | 3717 A |
| 5.4 | 3.2 B | 2543 B | 3.7 B | 3407 A |
| 7.0 | 0.9 C | 689 C | 2.2 C | 2354 B |

[a] Averaged over all downforce treatments.

yield declined. This is similar to previous research on the topic.

Yield was maximized at the two slower speeds in both locations (4.0 mph or below). Planting at speeds in excess of 4.0 mph involves risk of sub-optimal plant stand and resulting potential for decreased yield. There was a substantial decrease in plant stand at the 7.0 mph speed in this year at both locations. Yield was correlated with plant stand such that there were resulting 727 lb/ac (Tifton) and 493 lb/ac (Attapulgus) increases for every additional 1.0 plant/ft. Tomato spotted wilt virus incidence was not significant with incidence remaining under 4% at Tifton, and is yet to be analyzed at Attapulgus. Data for seed placement (uniformity/distance between each seed placed in the furrow) and depth 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.