



Seeding rate for twin row peanut cultivars - Are farmers planting too many seed?



R.S. Tubbs^{1*}, J.P. Beasley², and R.C. Kemerait³

¹University of Georgia (UGA) Dept. of Crop and Soil Sciences, ²Auburn Univ. Dept. of Crop, Soil and Environmental Sciences, ³UGA Dept. of Plant Pathology; *E-mail: tubbs@uga.edu

Introduction and Objectives

Peanut planted in twin row pattern has a greater capacity for achieving a denser plant stand than single row peanut. The UGA Extension recommendation for seeding rate is around 20 seed m⁻¹, although some farmers tend to plant at greater seeding rates to insure an optimum plant stand and maximize yield (reported as high as 33 seed m⁻¹). However, increased seeding rates are an added expense for farmers and take kernels away from the edible market which influences seed cost, especially when demand exceeds supply. Any seed not used for planting can be returned to the edible supply. Although, reductions in plant stand can also influence incidence of several pathogens commonly detrimental to peanut production, especially tomato spotted wilt (TSW) caused by the *Tospovirus*. Therefore, the objectives of this experiment were to determine if farmers are planting too many seed when they exceed the recommended seeding rate, and if there are superior cultivars for yield and grade while minimizing risk to TSW.



Materials and Methods

Location: Attapulgus, GA
Planting Dates: 14 May 2008 and 19 May 2010
Digging Dates: 2 October 2008 and 1 October 2010; based on Hull-Scrape Maturity Profile.
Harvest Dates: 20 October 2008 and 5 October 2010
Replications: 4
Experimental Design: Split Plot
Main Treatment: Four Cultivars = (1) Georgia Green, (2) Georgia-06G, (3) Tifguard, (4) Florida-07.
Sub-Treatment: Five Seeding Rates = (1) 17 seed m⁻¹, (2) 20 seed m⁻¹, (3) 23 seed m⁻¹, (4) 27 seed m⁻¹, (5) 29 seed m⁻¹.
Crop Management: followed UGA Extension recommendations for peanut. Plots were irrigated
Data Collection: plant stand at harvest; yield; grade (total sound mature kernels [TSMK]); TSW incidence.
Data Analyses: PROC GLIMMIX, SAS 9.2

Results

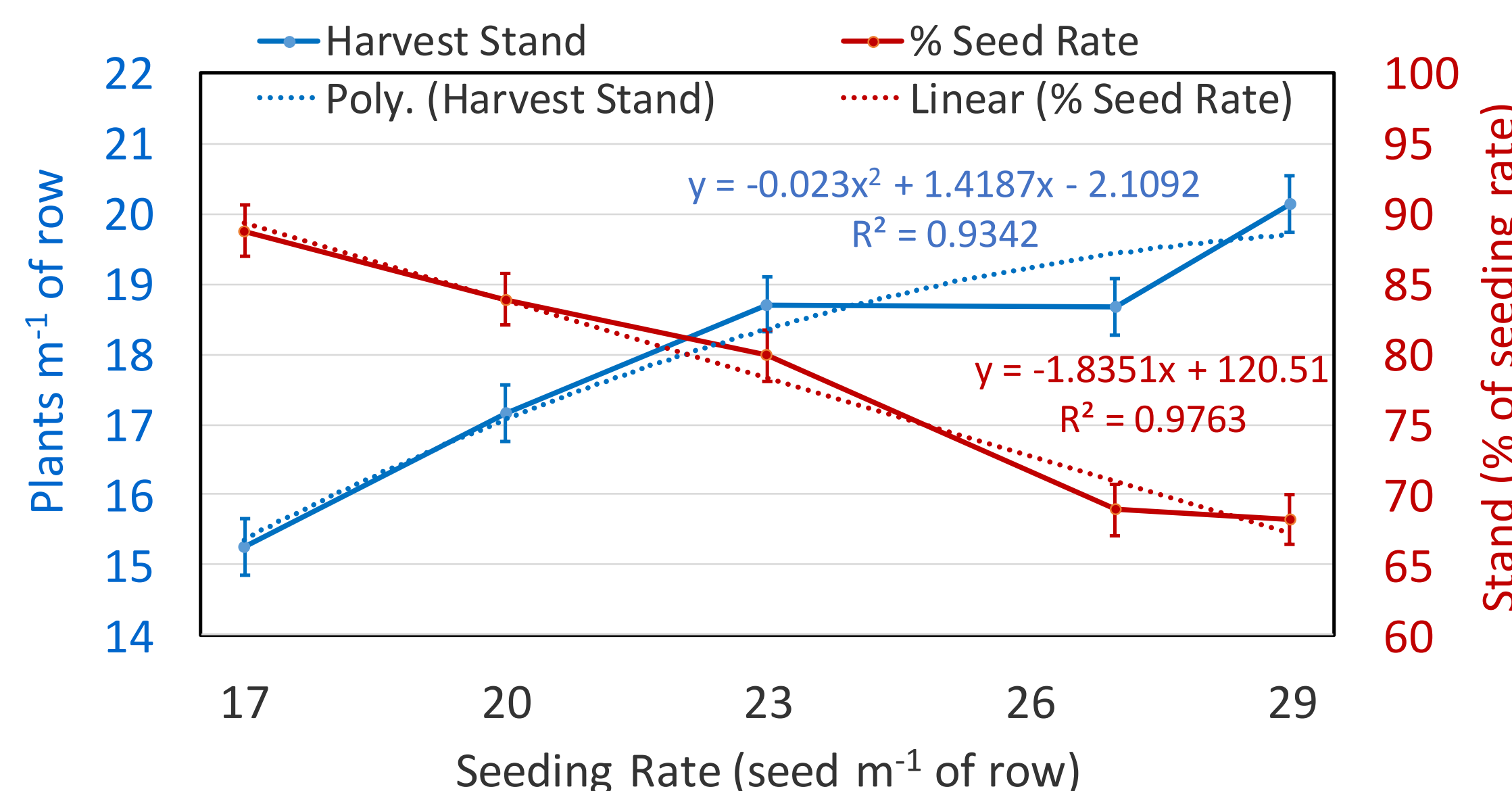


Fig. 1. Harvest plant stand and plant mortality (surviving plant stand at harvest as a percentage of the planted seeding rate) for five seeding rates, averaged over four cultivars, and combined over two years, Attapulgus, GA, 2008 & 2010.

Results (Cont.)

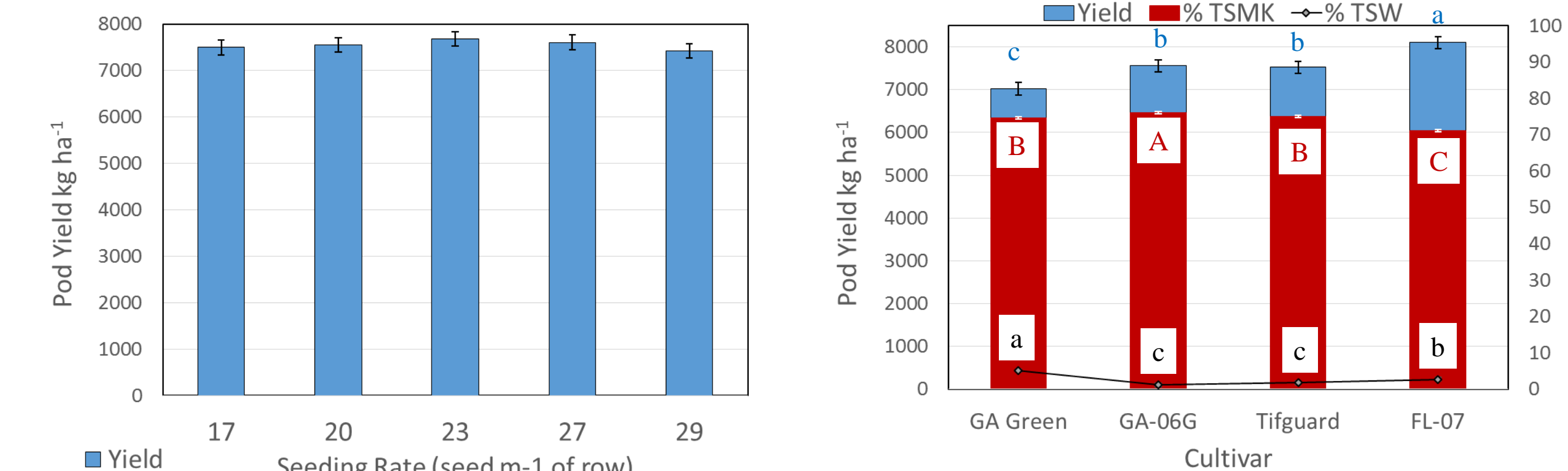


Fig. 2. Pod yield of peanut for five seeding rates, averaged over four cultivars, and combined over two years, Attapulgus, GA, 2008 & 2010.

Fig. 3. Pod yield, grade (total sound mature kernels [TSMK]), and tomato spotted wilt (TSW) incidence for four peanut cultivars, averaged over five seeding rates, and combined over two years, Attapulgus, GA, 2008 & 2010.

Discussion and Conclusions

- ❖ Plant stand was influenced by seeding rate in multiple ways.
- ❖ As seeding rate increased, final plant stand at harvest did as well (Fig. 1).
 - ❖ *Twin rows tend to support a greater plant population than single row in peanut.*
- ❖ For every 1 seed m⁻¹ of row increase there was nearly a 2% reduction in plant survival as a percentage of the original seeding rate (Fig. 1).
 - ❖ *Efficiency is decreased with diminishing returns as plants compete for resources.*
- ❖ Despite an increase in plant population, there was no yield benefit (Fig. 2).
 - ❖ *Peanut has a strong potential to compensate for reduced stands because of its runner growth habit and it is indeterminate, setting more pods per plant.*
- ❖ This suggests that farmers planting more than the recommended seeding rate (20 seed m⁻¹ of row) are planting too many seed.
 - ❖ *This increases cost to grower since seed sold on a weight basis, not a count basis.*
 - ❖ *Some growers are reported to plant as many as 33 seed m⁻¹ in twin row peanut to ensure a satisfactory plant stand, but this is not optimal.*
- ❖ The cultivar Florida-07 had the greatest yield, but the lowest grade of the tested cultivars (Fig. 3).
 - ❖ *Low grades reduce premiums paid to growers and can cause them to lose interest in a cultivar.*
- ❖ Cultivar Georgia-06G did not yield as well as Florida-07, but had the highest grade of the tested cultivars (Fig. 3).
 - ❖ *Georgia-06G is the standard cultivar that most growers use since it has a tendency to produce well across a range of environments and risk factors.*
- ❖ Cultivar Georgia Green had the lowest yield and largest incidence of TSW, although TSW incidence was low overall (Fig. 3).
 - ❖ *Growers stopped growing Georgia Green because of its susceptibility to TSW and lower yield potential compared to newer released cultivars.*