Peanut Response to Twin-Row Planting Patterns in North Carolina

Paul Smith
NC Cooperative Extension
Gates County

Twin-row planting patterns (rows spaced 7-9 inches apart on 36- to 38-inch centers) account for less than 10% of acres but are popular in some counties

For example, in Gates County approximately 60% of growers use this planting pattern

More expensive than single row patterns because of slightly higher seeding rates and increased *Bradyrhizobia* inoculant and in-furrow insecticide costs

Growers indicate that using this planting pattern increases yield by 200 to 400 pounds per acre and also results in slightly higher market grade factors (percentages of extra large kernels and sound mature kernels)

According to growers, planting in twin-row patterns hastens canopy closures on the sandy soils and results in cooler soil temperatures in the pegging zone

Cooler temperatures in the pegging zone are more conducive to early peg survival and pod set resulting in earlier and more uniform pod maturation

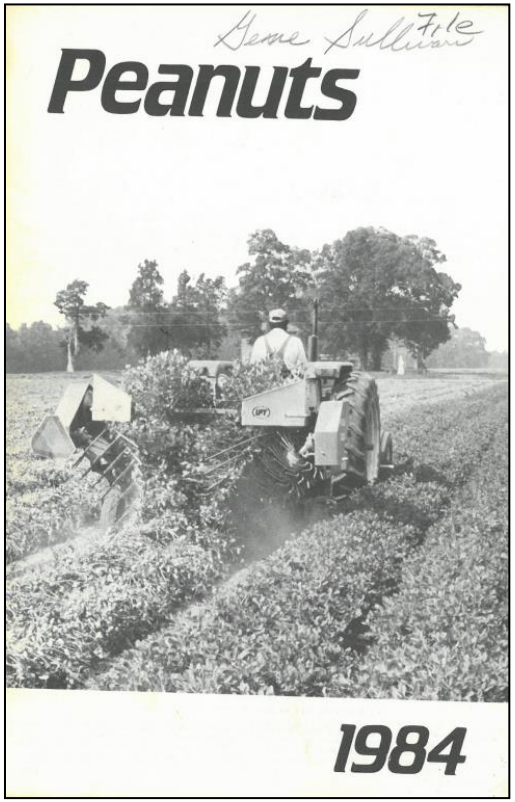
Examples of growers in Gates and surrounding counties using twin row planting patterns

Grower	Pod yield	Acreage	Seeding rate	Irrigation	Apogee
	lbs/acre		lbs/acre		
1	5,966	649	190	Yes	Yes
2	5,267	311	165	Yes	Yes
3	6,485	203	160	Yes	Yes
4	5,941	300	185	Yes	Yes

Old Data from North Carolina

NC COOPERATIVE EXTENSION

The Gene Sullivan Files



Some growers are using twin-row planters. These planters give two seven inch rows on a 36 inch bed. Extension field tests in 1983 gave higher yields for the twin-row plantings. The dry weather apparently influenced the differences in single row plantings and twin-row plantings. In previous years, the comparisons have been inconsistent in terms of any yield advantage to either row pattern.

N.C. A&T STATE UNIVERSITY

NC STATE UNIVERSITY

NC COOPERATIVE EXTENSION

Less TSWV in twin rows and greater yields compared with single rows

Table 6. Severity of tomato spotted wilt virus, pod yield, and percentages total sound mature kernels (%TSMK) as influenced by cultivar and planting pattern.

Row spacing center	Row pattern	Tomato spotted wilt virus		Pod yield†	%TSMK†
		NC-V 11	Perry		
cm		%		kg ha^{-1}	%
91	single rows	9b‡	23a	4470b	67b
91	twin rows§	4b	18a	5170a	69a
46	twin rows¶	3b	4b	5190a	67b

† Means followed by the same letter are not significantly different according to Fisher's Protected LSD test at $p \leq 0.05$. Data are pooled over years and cultivar.

‡ Means followed by the same letter are not significant according to Fisher's Protected LSD test at $p \leq 0.05$. Data are pooled over years.

§ Standard twin row pattern consisted of two rows spaced 18 cm apart on 91-cm centers.

¶ Narrow twin row pattern consisted of two rows spaced 18 cm apart on 46-cm centers.

N.C. A&T STATE UNIVERSITY

NC STATE UNIVERSITY

NC COOPERATIVE EXTENSION

Table 3. Influence of planting pattern, preemergence herbicide treatment, and postemergence herbicide treatment on sicklepod control.

Herbicide[a]	Application method	Pod yield[b] Single rows	Pod yield[b] Twin rows
		------- kg/ha -------	
Dimethenamid	PRE[c]	410 d	550 d
Dimethenamid followed by imazapic	PRE POST	3410 b	4170 a
Dimethenamid plus diclosulam	PRE PRE	2410 c	3450 b
Dimethenamid plus diclosulam followed by imazapic	PRE PRE POST	4180 a	4590 a

[a]Dimethenamid, imazapic, and diclosulam applied at 1.1, 0.07, and 0.027 kg/ha, respectively. Acifluorfen (0.28 kg/ha) plus bentazon (0.56 kg/ha) plus paraquat (0.14 kg/ha) applied over the entire test area at the cracking stage of peanut.

[b]Means within and across planting patterns followed by the same letter are not significantly different according to Fisher's Protected LSD test at $P \leq 0.05$. Data are pooled over years.

[c]PRE = Preemergence; POST = Postemergence.

Slightly better weed control and greater yields in twin row patterns compared with single row patterns but no reduction in herbicides

N.C. A&T STATE UNIVERSITY

NC STATE UNIVERSITY

NC COOPERATIVE EXTENSION

Response to twin row patterns was consistent across varieties

Table 3. Influence of cultivar and planting pattern on pod yield of peanut in the experiment designed to manage Cylindrocladium black rot.[a]

Year	Location and field	Peanut yield			
		Cultivar		Planting pattern[b]	
		Perry	VA 98R	Single	Twin
		kg/ha			
2005	Bethel	4290	3520*	3940	3870
2005	Chadbourn	5010	5570*	5380	5200
2006	Lewiston-Woodville, Field A4	5100	3530*	4040	4590*
2006	Lewiston-Woodville, Field B3	4990	4190*	4400	4770*
2006	Lewiston-Woodville, Field C2	4320	2940*	3460	3790*
2007	Lewiston-Woodville, Field F3	3660	4190*	3740	4110*

*indicates significance at $p \leq 0.05$ within a trial for the interaction of trial by cultivar or trial by planting pattern.

[a]Data for cultivar are pooled over planting patterns and fumigation treatments. Data for planting pattern are pooled over cultivar and fumigation treatments.

[b]Planting pattern included single rows spaced 91 cm apart or twin rows spaced 20 cm apart on 91-cm centers

N.C. A&T STATE UNIVERSITY

NC STATE UNIVERSITY

NC COOPERATIVE EXTENSION

Table 3-18. Peanut Yield Response to Twin Row Planting

Planting Pattern	Pod Yield (pounds/acre)
Single Rows	3,760
Twin Rows	3,995
Difference	235
Number of Trials	20

Yields in twin rows were on average 235 lbs/acre greater than yields in single rows when planted using a Cole planter

Would yields be higher in twin rows when planted with more precision?

Newer Data from North Carolina

NC COOPERATIVE EXTENSION

More Recent Research in North Carolina

Bailey, Sullivan, Wynne

4 and 6 seed/foot

Single and Twin Rows

Apogee versus No Apogee

N.C. A&T STATE UNIVERSITY

NC STATE UNIVERSITY

NC COOPERATIVE EXTENSION

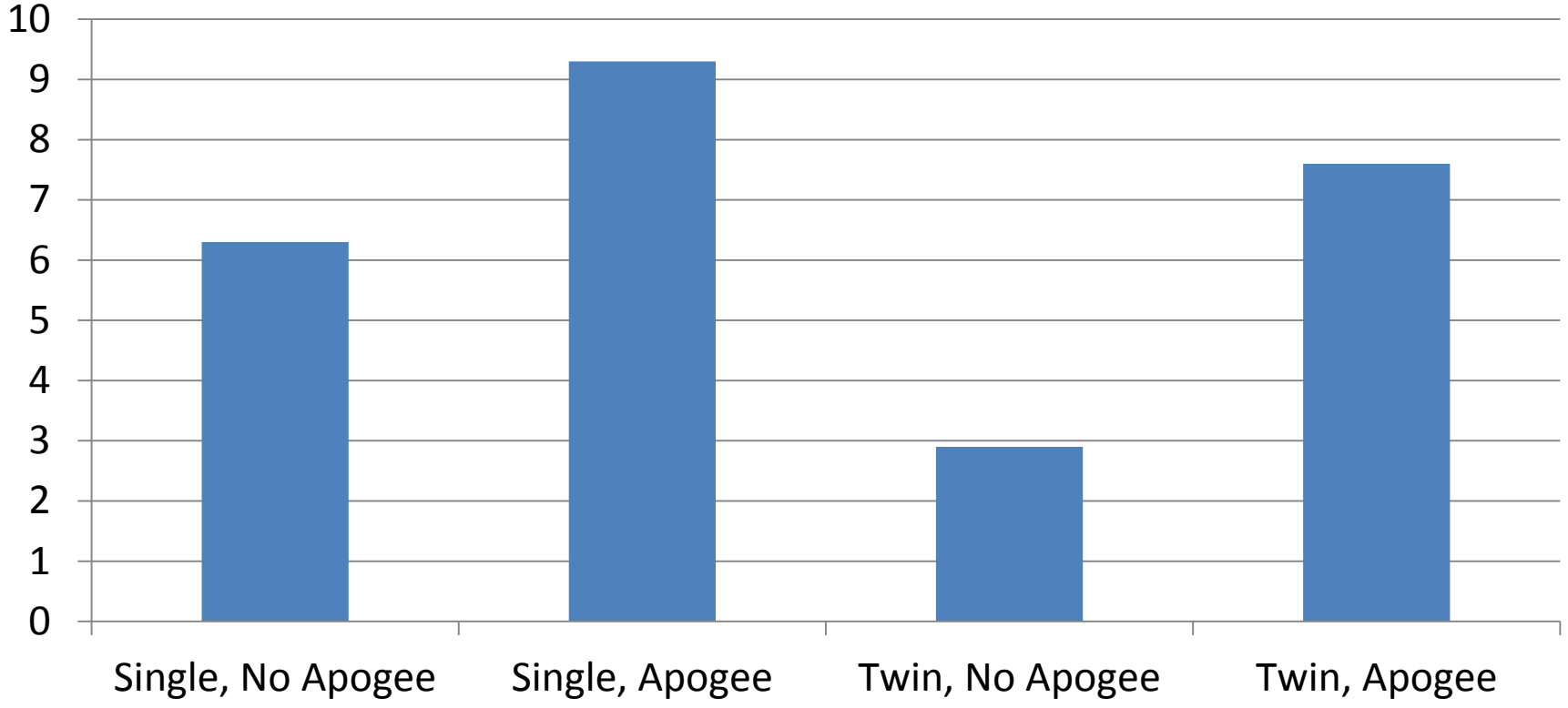
Newer Data from North Carolina

N.C. A&T STATE UNIVERSITY

NC STATE UNIVERSITY

NC COOPERATIVE EXTENSION

Row Visibility (Scale 0 to 10)
Row Pattern and Apogee
Pooled over varieties and seeding rates

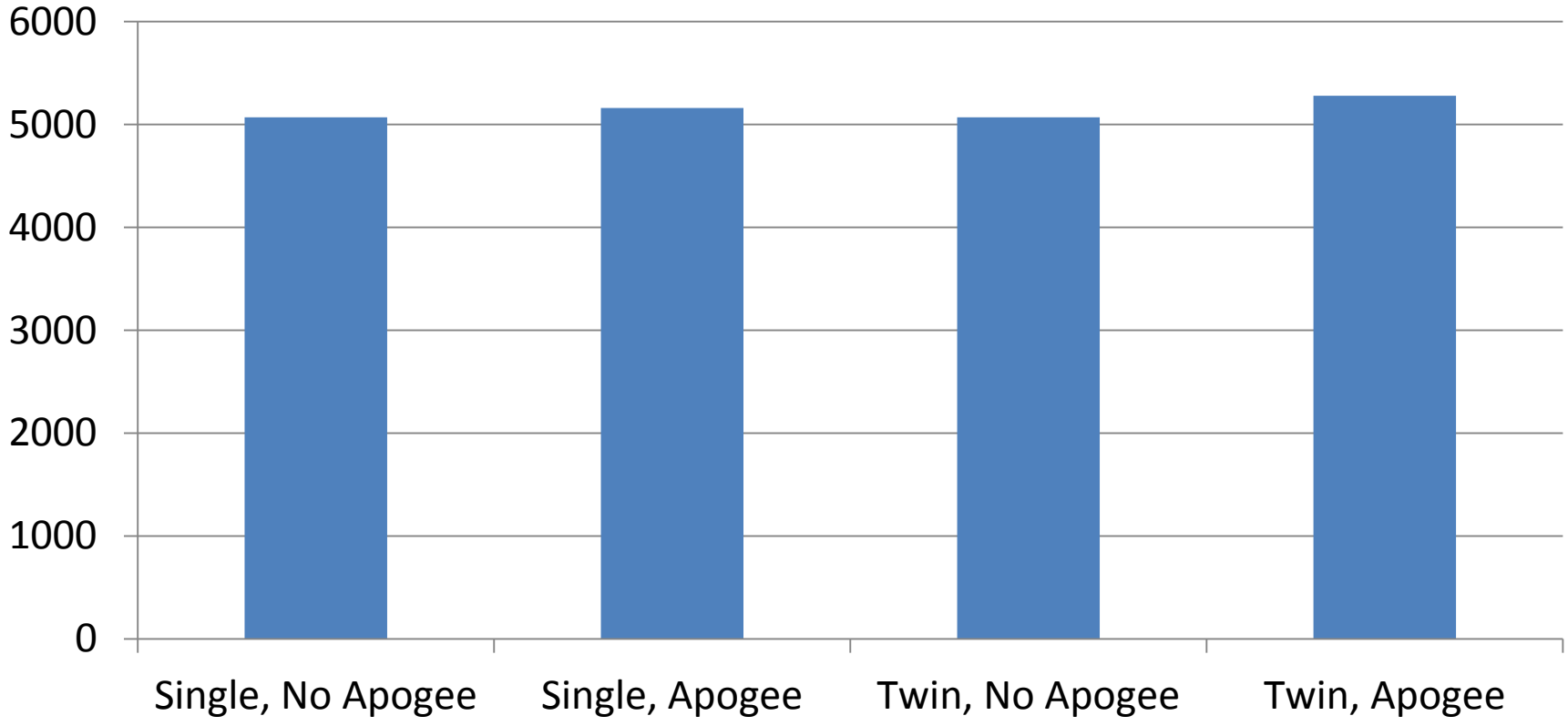


Apogee improved visibility regardless of planting pattern
Visibility was lower with twin rows compared with single rows

Peanut Yield (lbs/acre)

Row Pattern and Apogee

Pooled over varieties and seeding rates

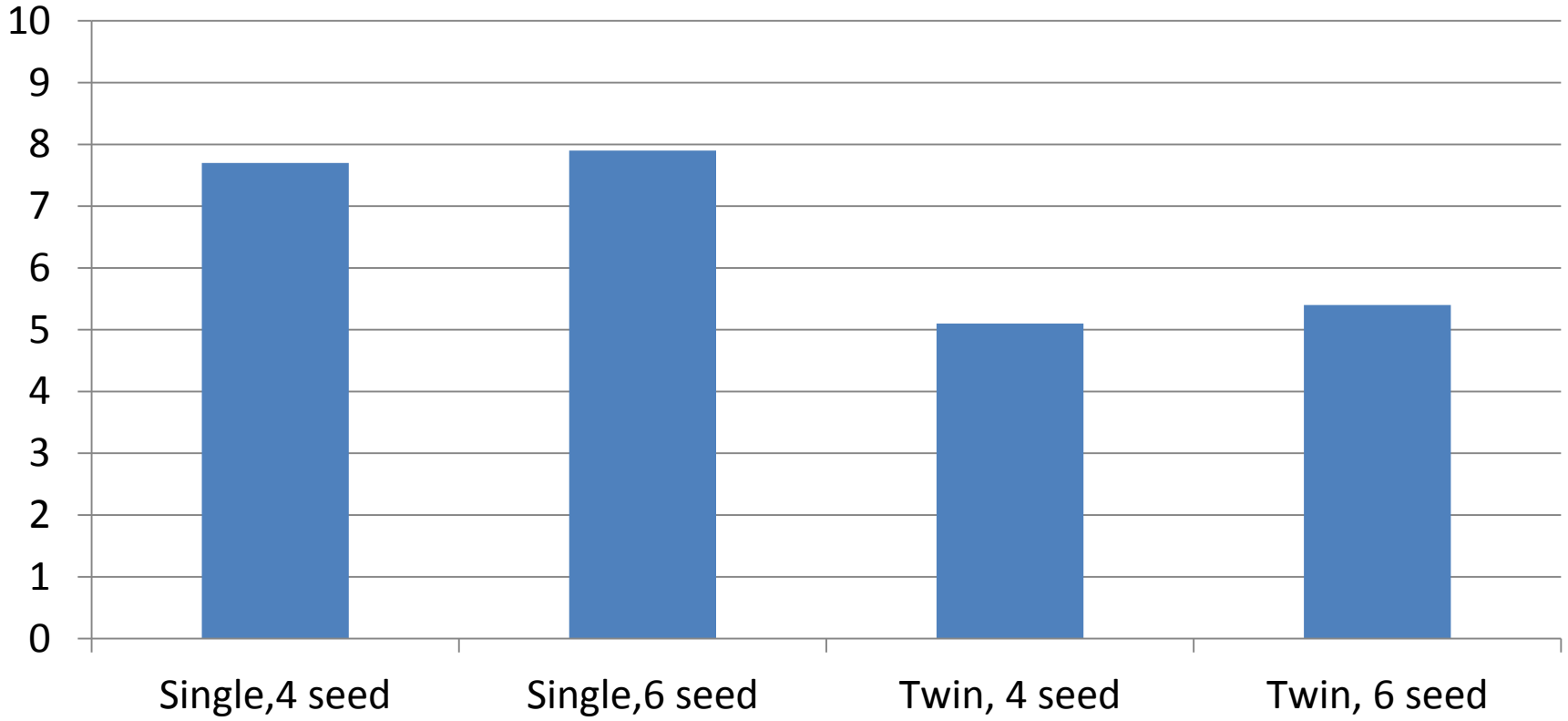


No difference in yield across row patterns or Apogee treatments

Row Visibility (Scale 0 to 10)

Row Pattern and Seeding Rate

Pooled over varieties and Apogee

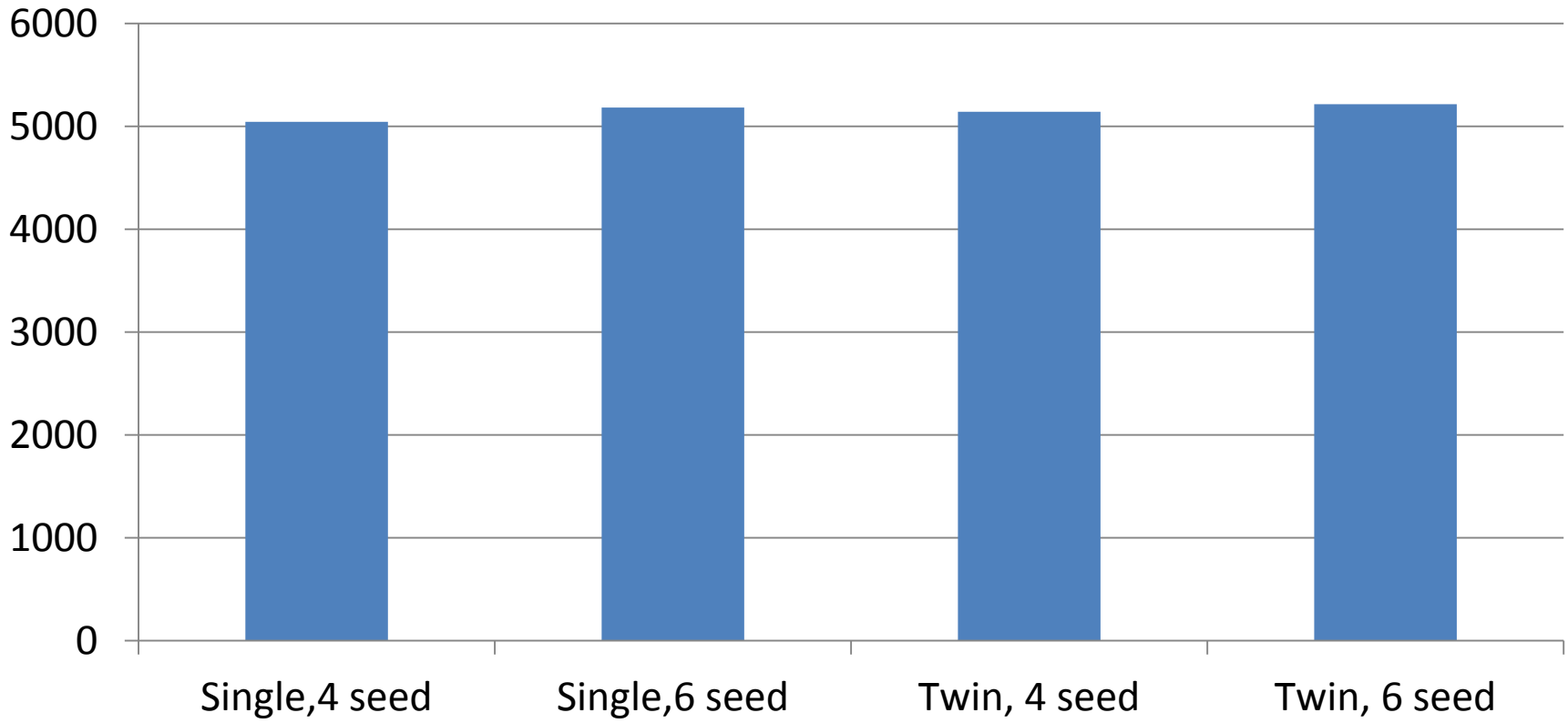


Seeding rate had no impact on row visibility regardless of planting pattern

Peanut Yield (lbs/acre)

Row Pattern and Seeding Rate

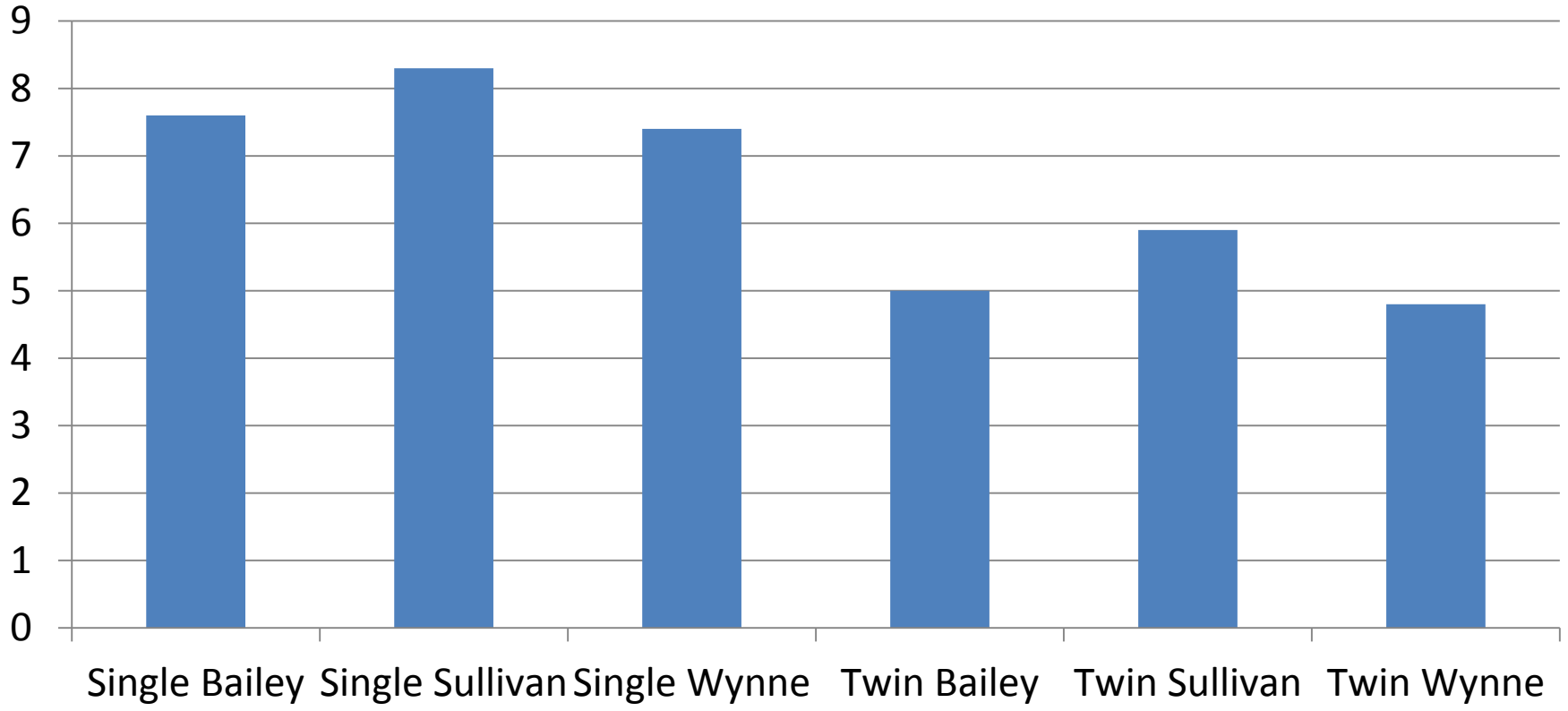
Pooled over varieties and Apogee



Seeding rate had no impact on yield regardless of planting pattern

NC COOPERATIVE EXTENSION

Row Visibility (Scale 0 to 10)
Row Pattern and Variety
Pooled over Apogee and Seeding Rates



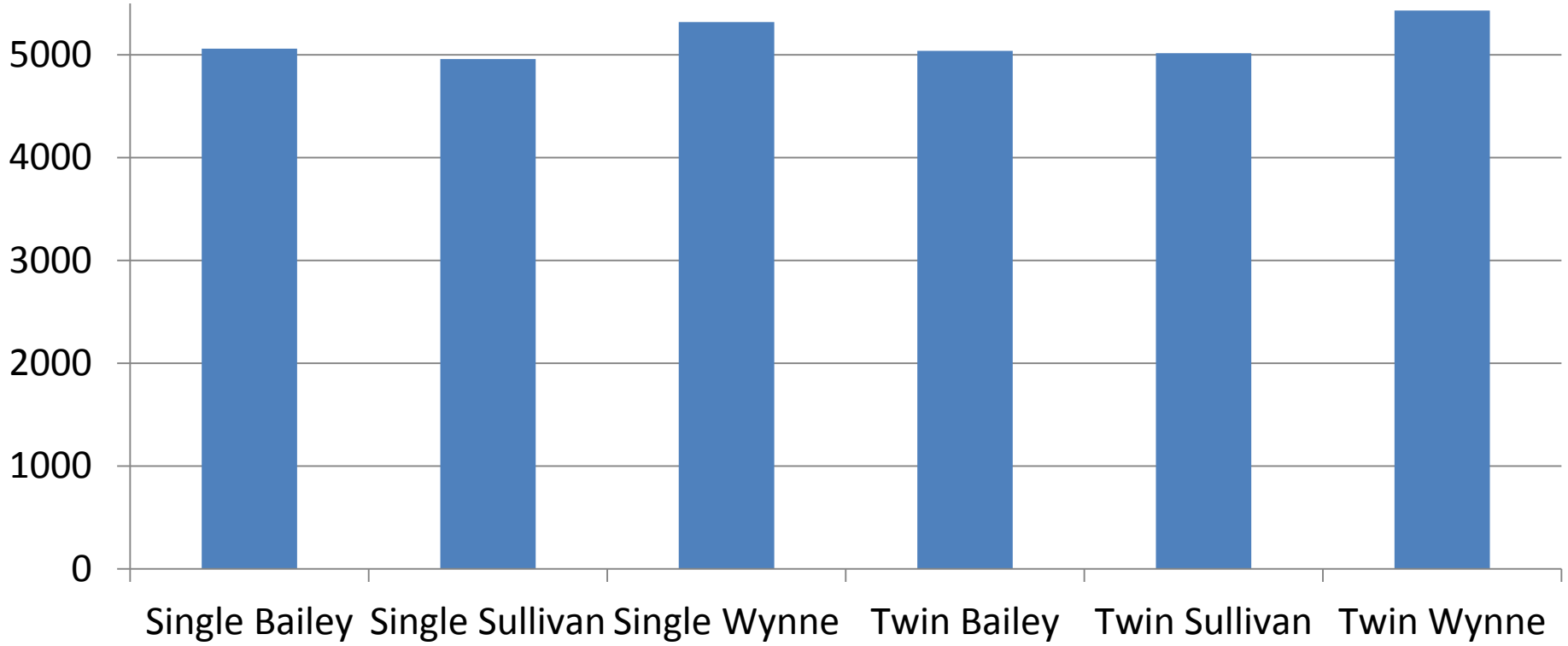
Sullivan has greater row visibility than Bailey or Wynne regardless of Apogee treatment

NC COOPERATIVE EXTENSION

Peanut Yield (lbs/acre)

Row Pattern and Variety

Pooled over Apogee and Seeding Rates



No difference in yield when comparing varieties and Apogee treatment

Availability of planters that place seed precisely compared with older units accommodates planting crops other than peanut (corn, grain sorghum, and soybean, for example)

Farmers are able to extend investment costs for twin-row planters across more acres

Historically, peanut planted in twin row patterns required use of units that were less precise in seed placement and had limited utility for smaller-seeded crops

Single row	161 bu/acre
Twin row	168 bu/acre

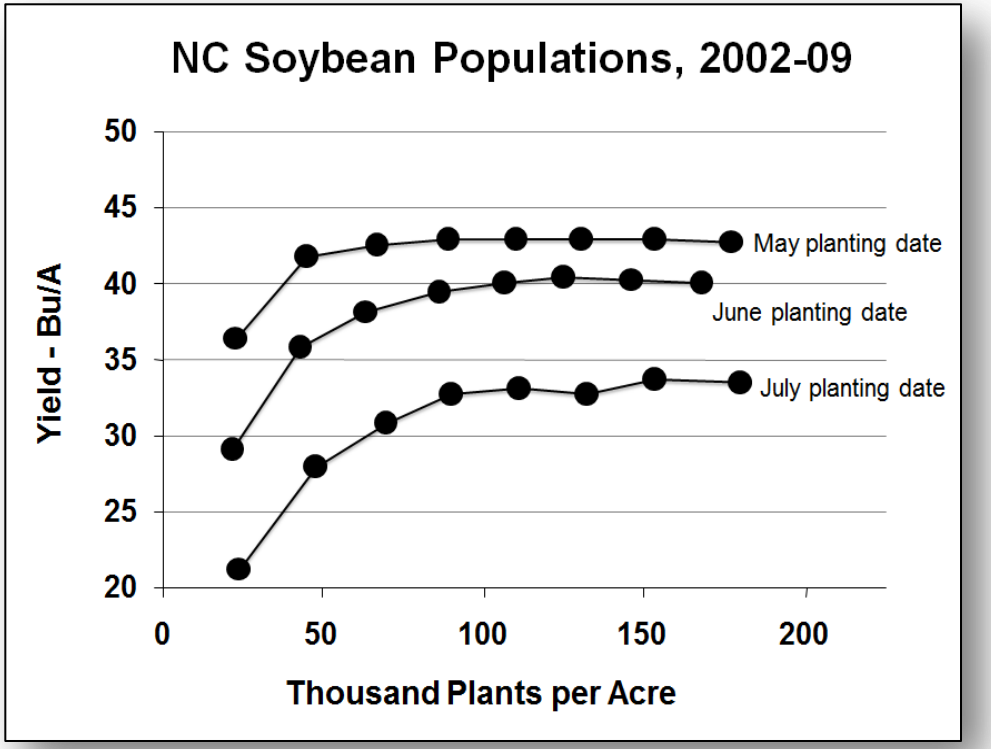
Real farmer example

1.5 bushels/acre using a grain drill on 1500 acres of soybean using a grain drill

0.75 bushels/acre soybean using Monosem planter with similar yield

Huge savings in one year

But, too slow for planting that many acres of soybean



NC COOPERATIVE EXTENSION

Questions?

Thanks to Extension Administration for supporting travel to APRES!

N.C. A&T STATE UNIVERSITY

NC STATE UNIVERSITY