

Minimum Cotton Plants Per Acre?

Historical minimum cotton plant stand guidelines

Based on research data, experience, or impression?

Cotton Seed Cost

What is needed for irrigated and dryland?

2 Years of local THP trials in dryland and irrigated

Blayne Reed EA-IPM Hale & Swisher
2025 Southwestern Cotton Physiology



Dr. John Gannaway's Rules of Thumb for cotton stands...

Irrigated	<u>Allow NO gaps larger than 1-foot.</u>
PPA	Minimum Safe Yield Potential
>60,000	<1,500-too much plant competition
>31,000	>1,500
>27,000	~1,000-1,200
<27,000	~300-1,000

Dryland	<u>Allow NO gaps larger than 1-foot.</u>
PPA	Maximum Yield Potential Estimate
>60,000	>425 under good moisture conditions/<600 max
20-60,000	>425 under good moisture conditions
>13,000	equal to higher PPA in light to moderate moisture

- Conducted during 1970's-80's
- Confirmed in 1990's?
- Lots of field experience confirming to still be true
- Seed cost too high

How much are we getting for our cotton seed dollars?

- Plains Pest Management 2024 Field Scouting Program
- 60 irrigated cotton fields
 - 36,000-52,000
- 4,352 acres

56.4% Establishment



Why only 56.4%?

- Planting Conditions
 - Soil temperature (>69°F @ 6-inches)
 - Moisture
- Wireworms
 - And a few other soil pests
- Seedling disease
- Weather



Plant Per Acre Needs...

Other's trial results



John Gannaway-Halfway

	1999 15.4" Moisture			2000 7.1" Moisture			2001 7.1" Moisture	
	PPA	Yield		PPA	Yield		PPA	Yield
PM 2326 RR	78,408	612	PM 2326 RR	78,408	147	PM 2326 RR	78,408	172
	52,272	443		52,272	134		52,272	169
	26,136	490		26,136	113		26,136	193
	13,068	422		13,068	96		13,068	241
PM 183	78,408	473	PM 183	78,408	118	PM 183	78,408	175
	52,272	549		52,272	113		52,272	167
	26,136	441		26,136	86		26,136	189
	13,068	416		13,068	102		13,068	150

Emi Kimura-Chillicothe

2016-17 15.96" rain		?+12"? Irrigatiom	
Seed \$/A	Est. Seed/A	RP PPA	RP Irr. Yield
\$ 34.59	38,462	27,376 (71.2%)	1,913
\$ 66.72	56,770	46,884 (82.6%)	1,987
\$ 86.49	74,766	47,316 (63.3%)	2,053
\$ 111.20	96,673	59,119 (61.2%)	1,913

IPM with Diminishing Resources

Our PPM trials agronomic data

		2022		
<u>Irrigation Amount</u>	Irrigated	Established		
May	2	2		preplant
June	2	1		establishing
July	3.75	0		Squaring-early bloom
August 1 - 15	2.5	0		Bloom- Cut-Out
	10.25	3		
<u>Effective Rainfall</u>				
May	1.68	1.68		preplant
June	0.3	0.3		establishing
July	0.4	0.4		Squaring-early bloom
August 1 - 15	0.17	0.17		Bloom- Cut-Out
	2.55	2.55		
		Irrigated	Established	
<u>Total Usable Moisture</u>		12.8	5.55	
Yield	632	119		

		2024			
<i>Irrigation in Inches</i>	<i>Irrigated</i>	<i>Established</i>	<i>Dryland</i>		
April-May	4	4	0		preplant
June	1.6	0	0		establishing
July	1.6	0	0		Squaring-early bloom
August 1 - 27	3.2	0	0		Bloom- Cut-Out
	10.4	4	0		
<i>Effective Rainfall</i>					
May	3.86	3.86	3.86		preplant
June	2.97	2.97	2.97		establishing
July	0.23	0.23	0.23		Squaring-early bloom
August 1 - 27	0.17	0.17	0.17		Bloom- Cut-Out
	7.23	7.23	7.23		
<i>Total Effective Water</i>	17.63	11.23	7.23		
<u>Estimated Yield</u>	862.9	276.5	195.7		
yield data range-	663-1294	123-364	42-239		

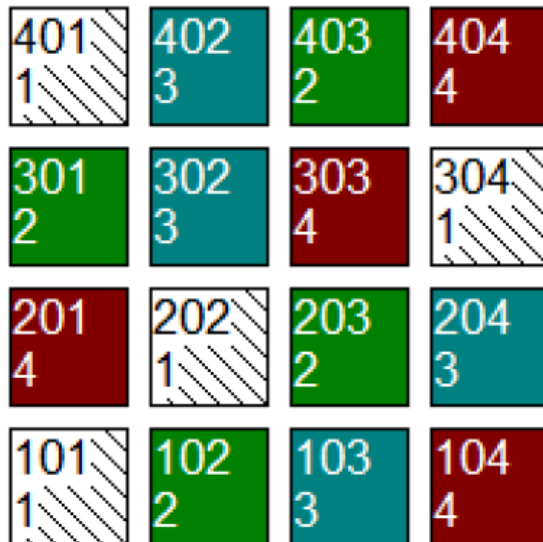
Establishing Dryland

Objective 4:

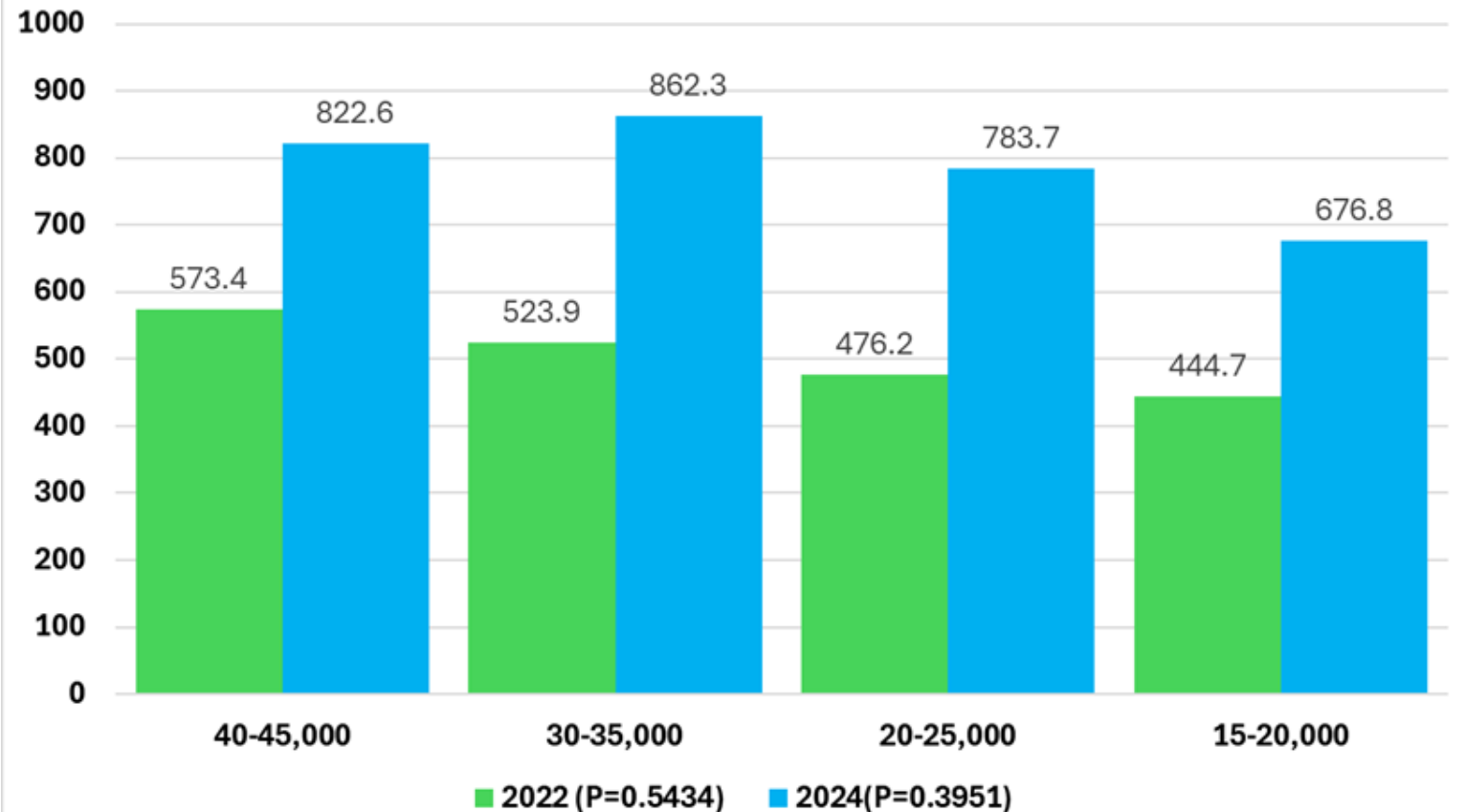
Management Trials, Ideal / Minimum Irrigated Cotton Plants Per Acre:

Trial Map Treatment Description

Trt	Code	Description
1	CHK	40-45,000 PPA
2		30-35,000 PPA
3		20-25,000 PPA
4		15-20,000 PPA



Irrigated Lint Yield by Population Treatment and Year



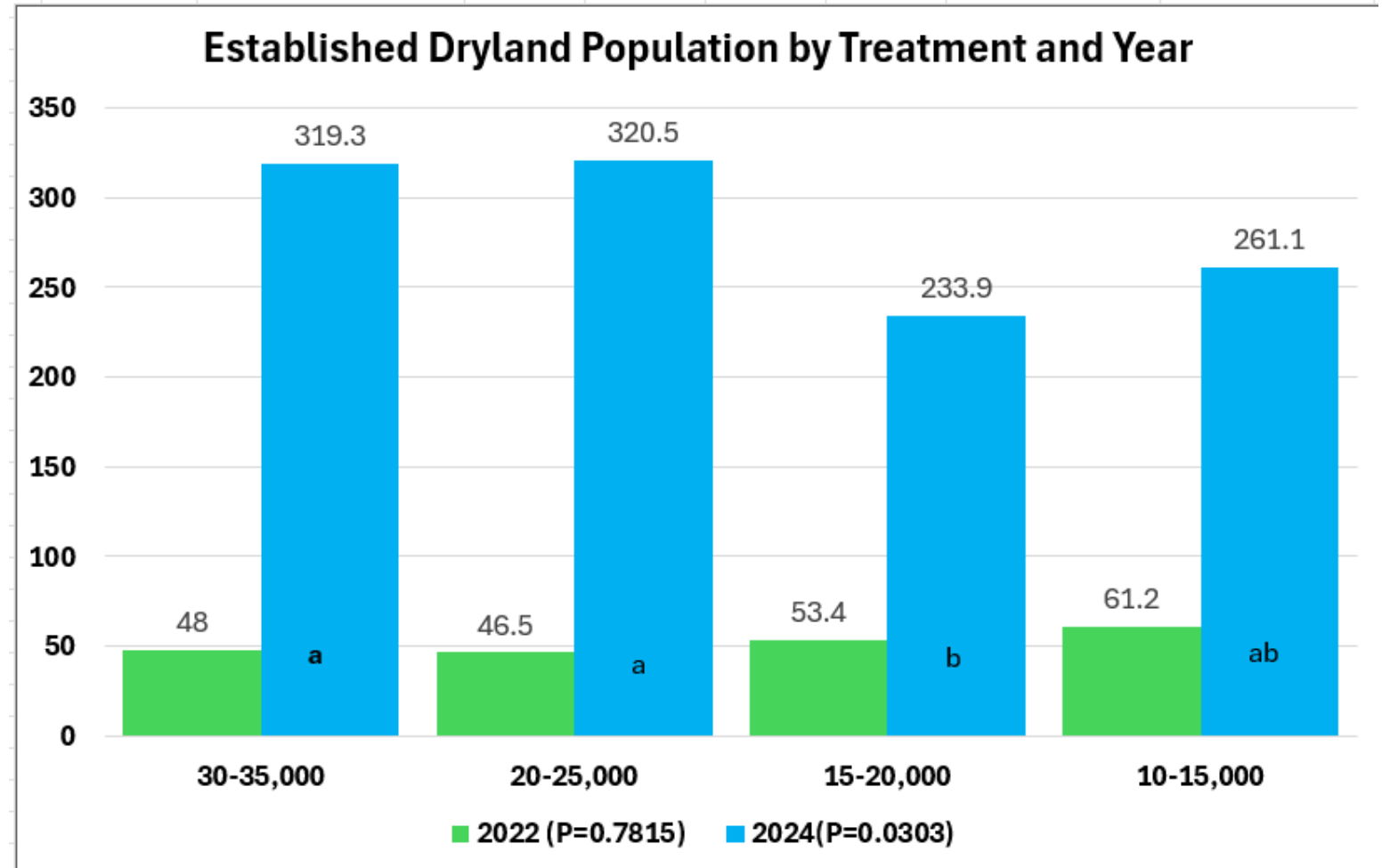
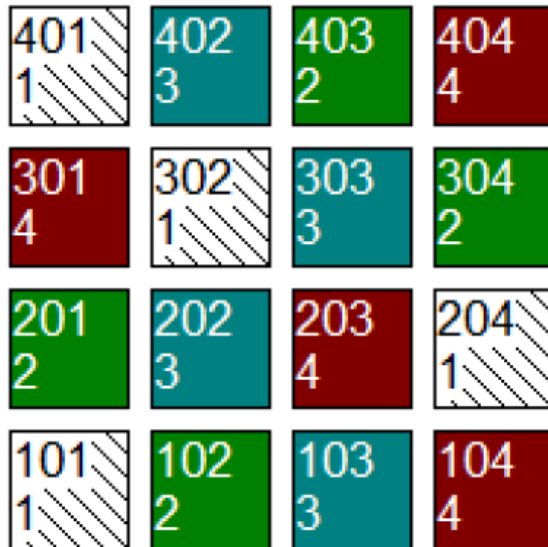
Establishing Dryland

Objective 4:

Management Trials, Ideal / Minimum Dryland Cotton Plants Per Acre:

Trial Map Treatment Description

Trt	Code	Description
1	CHK	30-35,000 PPA
2		20-25,000 PPA
3		15-20,000 PPA
4		10-15,000 PPA



Conclusions - from what is in front of us...

- Existing plant per acre standards are loosely based on data, strongly mixed with experience
- No evidence to overturn standards found here
- **Irrigated-31,000 PPA minimum**
 - 27,000 for limited irrigation
 - 60,000 maximum
- **Dryland-13,000 PPA minimum**
 - 20-60,000 for higher yield environments
- **NOT SEED PER ACRE!**
 - 50-60% establishment on THP

