EF Polymer Cotton Trial 2025

Objective: evaluate the effect of in-furrow EF polymer granules for their impact on yield, yield components and fiber quality for cotton.

Experimental Sites and Crop Management: Field studies were established at three locations and in irrigated or dryland conditions during the 2025 season. Cotton was planted for the irrigated Tifton location on 24 April 2025, the dryland Tifton location on 30 April 2025, the irrigated and dryland locations on 15 May, 2025 in Camilla, and the irrigated and dryland sites in Midville on 19 May 2025. Cotton seeds were planted at ~30,000 seeds per acre and a target depth of 2 cm. Row to row spacing was kept at 36 inches, and each plot was 4 rows wide. Plot lengths ranged from 30 ft. to 40 ft., depending on location. All plots were planted, fertilized, managed for plant growth maintenance and pests according to recommendations provided by University of Georgia Cooperative Extension Service.

Experimental Design and Treatment Application: At all locations, the study was conducted as a randomized complete block design with 3 (Camilla) or 6 (Tifton and Midville) replications of 2 treatments. The first treatment was an untreated control receiving no in-furrow polymer and the second treatment received 15 lbs/acre in furrow with the seed at the time of planting.

Data collection: Stand counts were taken to obtain an estimate of any differences in final plant stand between the treatments. The cotton crop was mechanically harvested using a two-row spindle picker (center two rows of each plot were harvested) following crop maturity and chemical defoliation. Seedcotton (fiber plus seed) was weighed in the field to estimate seedcotton yield in lbs/acre. Thereafter, samples were sent to the University of Georgia microgin to obtain a realistic estimate of gin turnout which was then used to calculate lint yields. Additionally, 2, 3 ft. sections were hand harvested from each plot prior to mechanical harvest to obtain an estimate of boll numbers per plant, boll mass, and fiber per boll (g). Fiber samples obtained from the microgin were sent to the USDA classing office in Memphis, TN to determine fiber length, strength, micronaire, and uniformity.

RESULTS

The assessments that were significantly affected by polymer, irrigation or their interactions are defined in Table 1. Specifically, *P* values less than 0.05 indicate a significant effect. The factors that were affected by polymer treatment included lint yield and fiber strength at the Camilla site, and boll number and fiber mass per boll at the Tifton site. Other than this, there was only one interaction observed between irrigation and polymer treatment and it was for fiber micronaire at the Camilla site. The aforementioned crop variables will be the focus of the remainder of the results section.

Camilla: Lint yield at the Camilla site was affected by polymer treatment when considered across both irrigation regimes. Specifically, plots receiving 15 lbs/acre of polymer in furrow produced lint yields of 1387 lbs/acre compared with control plots at 1107 lbs/acre (Figure 1). Fiber strength was also greater for polymer treated plots than for untreated plots, where plots receiving polymer

in furrow averaged fiber strengths of 32.95 g/tex and untreated plots had an average fiber strength of 32.3 g/tex (Figure 2). Fiber micronaire was the only variable for which there was a significant interaction between irrigation and treatment. Under dryland conditions, polymer treatment decreased micronaire, yet under irrigated conditions, polymer treatment increased micronaire (Figure 3).

Midville: No significant effect of treatment or interaction between treatment and irrigation was observed for the Midville location.

Tifton: At the Tifton location, there was a significant effect of treatment on boll number per plant and fiber mass per boll. In furrow polymer application increased the number of harvestable bolls retained per plant (Figure 4); however, the mass of lint produced per boll was significantly lower (Figure 5), which offset any gains which may have been achieved with higher boll numbers through the polymer application.

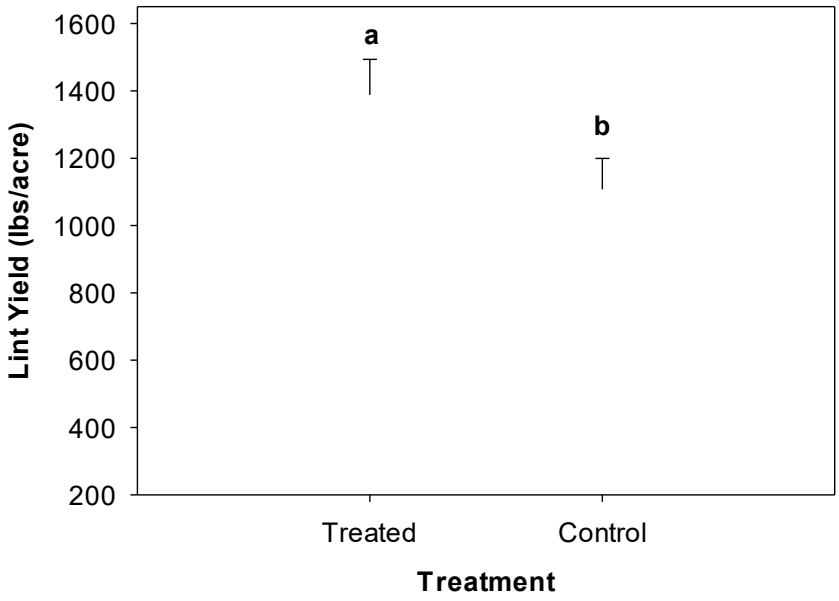

Figure 1. The effect of polymer treatment on lint yield at the Camilla location in the 2025 season. Values are means and standard errors (n = 6).

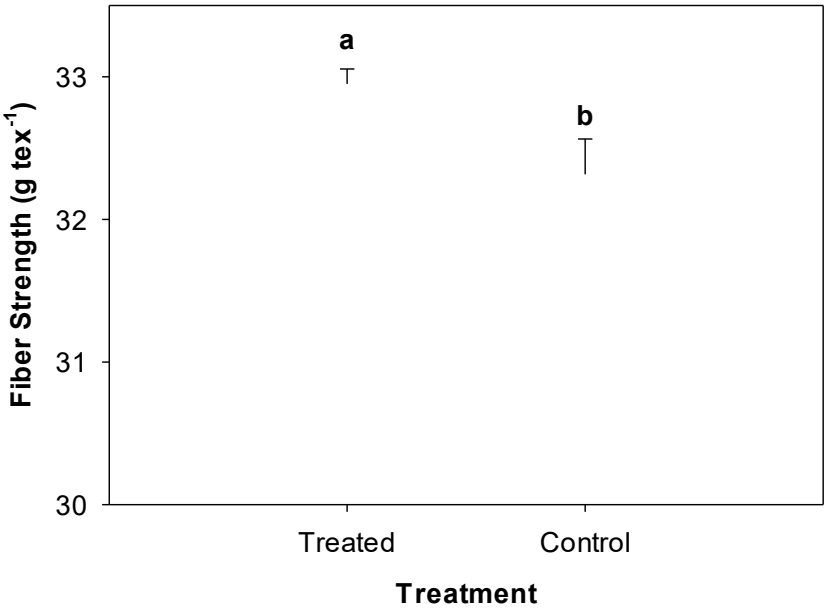

Figure 2. The effect of polymer treatment on fiber strength at the Camilla location in the 2025 season. Values are means and standard errors (n = 6).

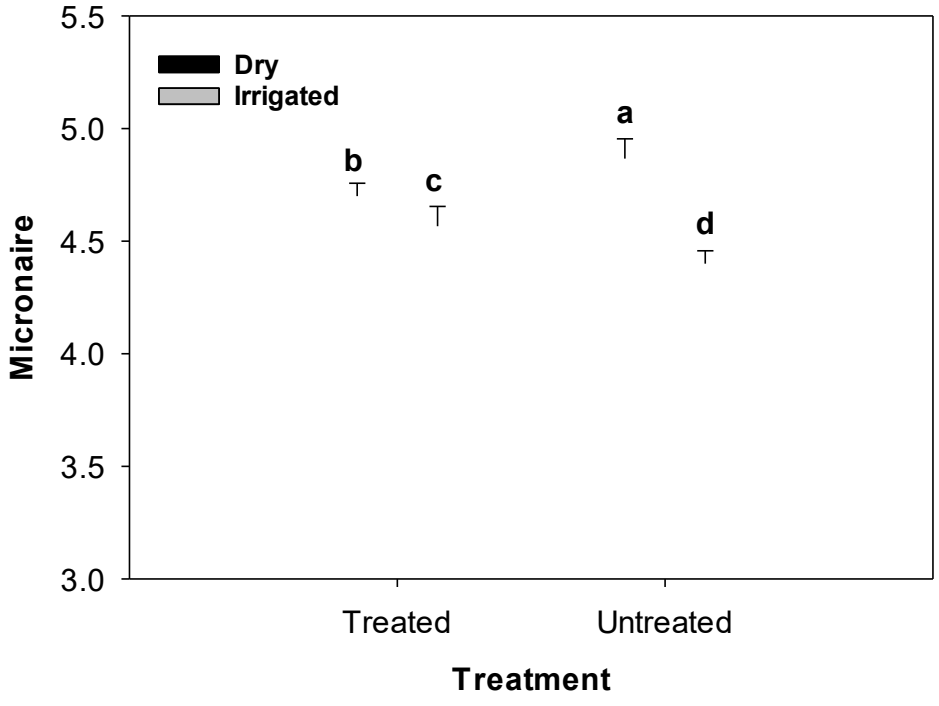

Figure 3. The effect of polymer and irrigation treatment on fiber micronaire at the Camilla location in the 2025 season. Values are means and standard errors (n = 3).

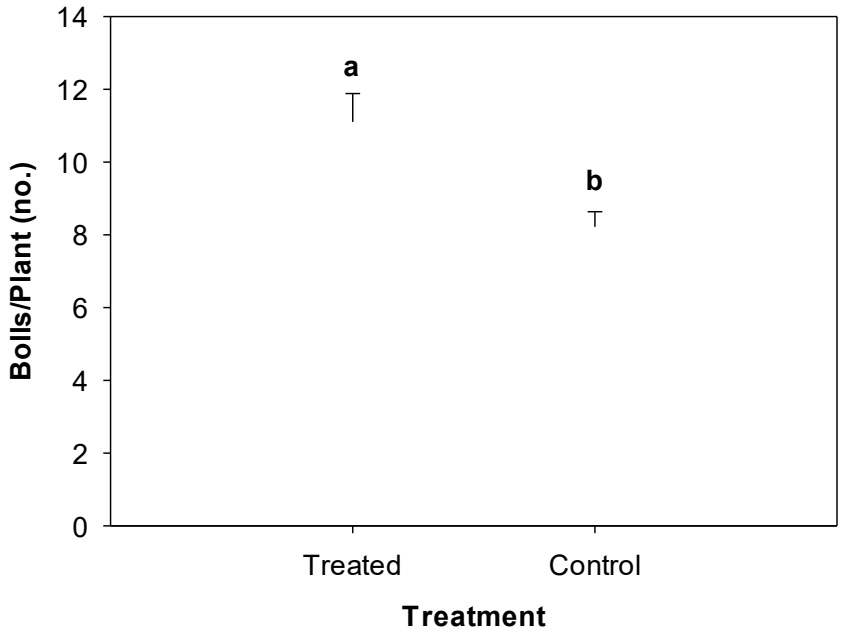

Figure 4. The effect of polymer treatment on the number of bolls per plant at the Tifton location in the 2025 season. Values are means and standard errors (n = 12).

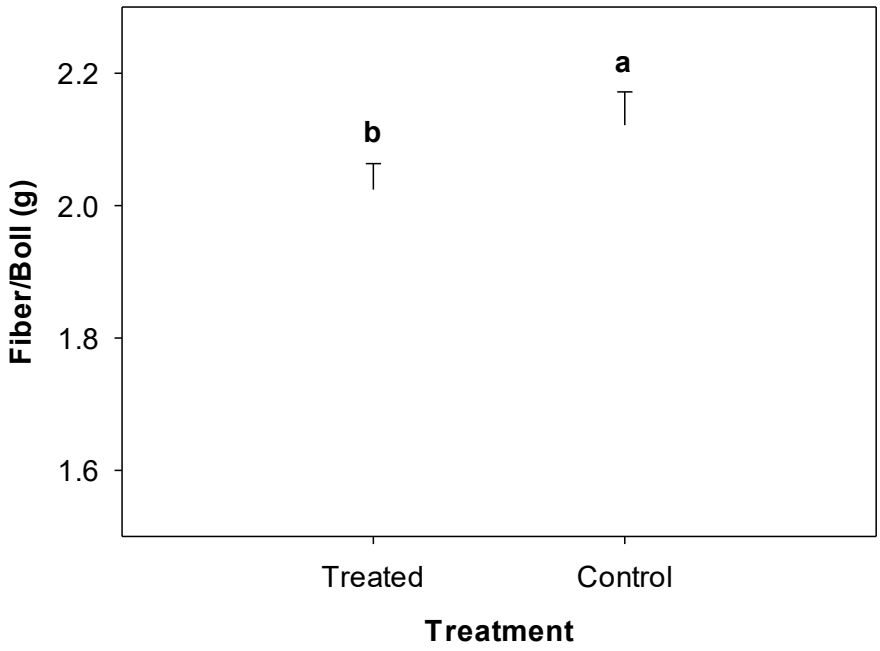

Figure 5. The effect of polymer treatment on the mass of fiber per boll at the Tifton location in the 2025 season. Values are means and standard errors (n = 12).

Table 1: Analysis of Variance Results (P-Values) for the effect of treatment, irrigation, and the interaction between the two factors for yield and fiber quality parameters across three sites. Values in bold represent statistically significant ($P < 0.05$) effects.

Site	Assessment	P-Value		
		Treatment	Irrigation	Irrigation x Treatment
Camilla	**Lint Yield**	**0.016**	0.069	0.6813
	Lint Percent	0.359	0.641	0.839
	Boll Number	0.923	0.092	0.613
	Boll Mass	0.529	0.814	0.642
	Fiber/boll	0.866	0.717	0.650
	Micronaire	1.000	**<0.001**	**0.003**
	Length	0.225	0.667	0.829
	Strength	**0.012**	0.305	0.051
	Uniformity	0.410	0.273	0.410
Midville	**Lint Yield**	0.374	0.499	0.787
	Lint Percent	0.721	**<0.001**	0.975
	Boll Number	0.514	0.196	0.698
	Boll Mass	0.985	0.584	0.331
	Fiber/boll	0.916	0.139	0.371
	Micronaire	0.402	**0.005**	0.528
	Length	0.891	**<0.001**	0.496
	Strength	0.827	**0.012**	0.115
	Uniformity	0.689	**<0.001**	0.893
Tifton	**Lint Yield**	0.941	**<0.001**	0.314
	Lint Percent	0.898	**<0.001**	0.228
	Boll Number	**0.006**	0.885	0.150
	Boll Mass	0.064	0.752	0.647
	Fiber/boll	**0.039**	**0.012**	0.840
	Micronaire	0.474	**<0.001**	0.718
	Length	0.847	0.188	0.847
	Strength	0.661	**<0.001**	0.467
	Uniformity	1.000	**<0.001**	0.766