



## Product Overview

- **Product Name:** EF Polymer
- **Description:** EF is a sustainable biodegradable polymer designed to improve water retention in soil, reduce irrigation needs, and enhance crop productivity. Tailored for sustainable agriculture, it is especially effective for crops like tomatoes and other field crops.
- **Applications:** Suitable for a wide variety of crops, including row crops. Beneficial for regions with unpredictable rainfall or for growers looking to optimize irrigation and fertilizer efficiency.

## Key Benefits

- Enhances soil water retention, reducing irrigation needs by up to 40%.
- Improves nutrient availability and minimizes leaching losses.
- Encourages healthy root development and boosts crop yields.
- Fully biodegradable and safe for the environment.

## Technical Specifications

- **Composition:** Pectin-based, organic, non-toxic polymer blend.
- **Appearance:** Fine powder or granules.
- **Water Absorption Capacity:** Absorbs up to 50x its weight in water.
- **pH Range:** Neutral (4.0 - 9.0).
- **Biodegradability:** 100% within one year under typical field conditions.

## Application Guidelines

- **Direct seeding:**
  - Broadcast EF Polymer on soil at the rate of 17 lbs (8kg) per acre.
  - Incorporate into the top 1.5 - 2.5 inches of soil during field preparation to optimize water retention.
- **With dry fertilizer:**
  - Mix EF Polymer with dry fertilizer at desired rate
  - Shank both polymer and fertilizer during strip till



**EF Polymer Cotton Trial — University of Georgia (Tifton, Camilla, Midville, GA) – 2025**

**Trial Location:** University of Georgia Research Sites (Tifton, Camilla, Midville, GA, USA)

**Collaborator:** Dr. John L. Snider, University of Georgia

**Crop:** Cotton

**Season:** 2025

### 1. Study Overview

EF Polymer (EFP) was evaluated in a 2025 multi-location cotton field trial across three University of Georgia research sites (Tifton, Camilla, and Midville) to assess its potential to improve cotton lint yield, yield components, and fiber quality.

The trial was designed to test EFP performance under both irrigated and dryland conditions, allowing evaluation across contrasting moisture environments. The study followed a randomized complete block design (RCBD) with two treatments: a no-polymer control and an in-furrow EF Polymer application at planting.

EFP in this study was applied in-furrow alongside the seed, providing direct placement within the early root zone.

Key measurements included lint yield, yield components (boll number and boll mass), and fiber quality parameters (strength, micronaire, length, and uniformity).

### 2. Trial Objectives

The trial was conducted to address the following key questions:

1. Can EF Polymer increase cotton lint yield under irrigated and dryland conditions?
2. Does EFP influence cotton yield components and fiber quality?
3. Are treatment responses consistent across locations or site-specific?

### 1. Experimental Design

Treatment	EF Polymer Rate (lb/ac)	Application Method
Control	0	No polymer
EFP	15	

		In-furrow at planting
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### Design Summary

- Design: Randomized Complete Block Design (RCBD)
- Replications:
  - Camilla: 3
  - Tifton & Midville: 6
- Environments: Irrigated and Dryland
- Row spacing: 36 inches
- Seeding rate: ~30,000 seeds/ac
- Plot size: 4 rows × 30–40 ft

### Application Method

EF Polymer granules were applied in-furrow at planting alongside the seed (~2 cm depth).

## 4. Results

### 4.1 Camilla Site (Strong Positive Response)

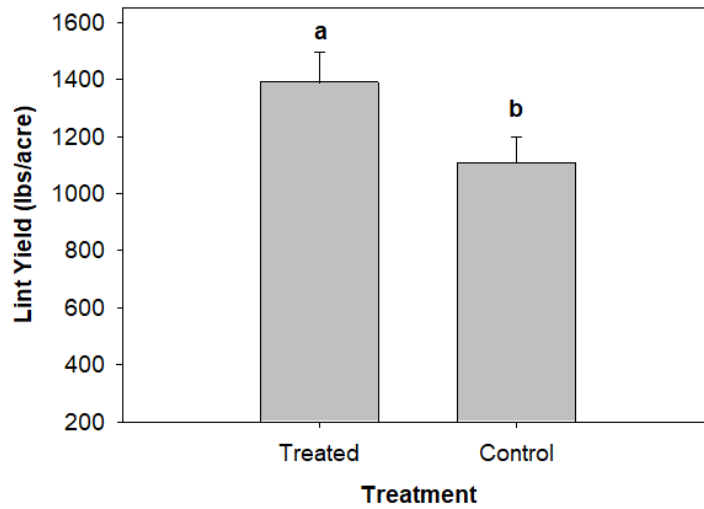
At Camilla, EF Polymer significantly increased lint yield across irrigation regimes.

- **Polymer:** 1387 lb/ac
- **Control:** 1107 lb/ac
- **Increase:** +280 lb/ac (~25%)
- **Significance:**  $p = 0.016$

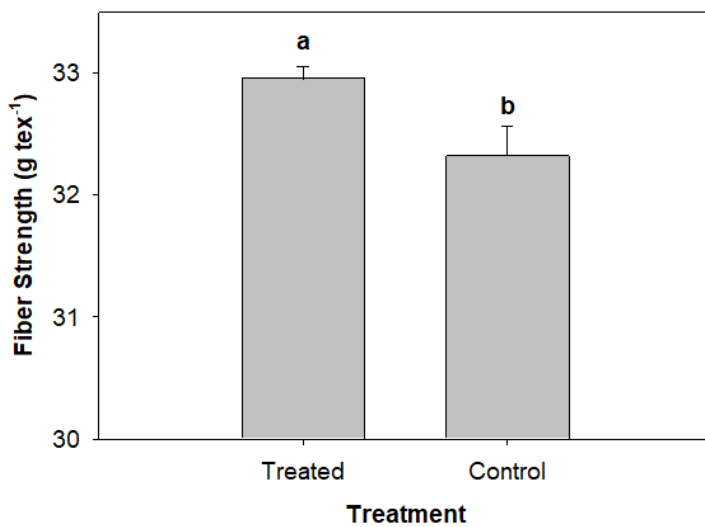
In addition to yield:

- Fiber strength improved significantly ( $p = 0.012$ )
- Micronaire showed a treatment × irrigation interaction:
  - Dryland: decreased micronaire
  - Irrigated: increased micronaire

This indicates both yield and fiber quality benefits under certain conditions.



**Figure 1:** Effect of EF Polymer on cotton lint yield at the Camilla site (means  $\pm$  SE). Polymer treatment resulted in a significant increase in lint yield (~25%).



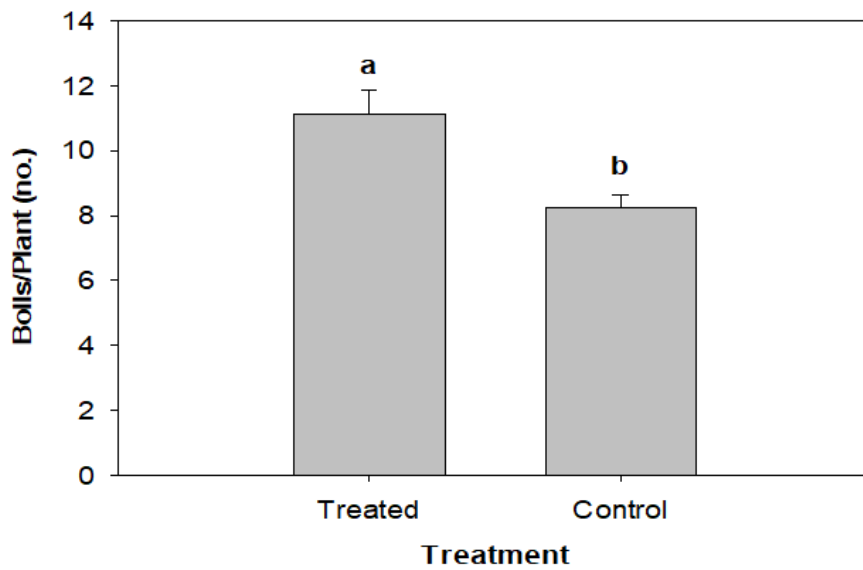
**Figure 2:** Effect of EF Polymer on fiber strength at the Camilla site. Polymer treatment significantly improved fiber strength compared to control.

#### 4.2 Tifton Site (Physiological Response Without Yield Gain)

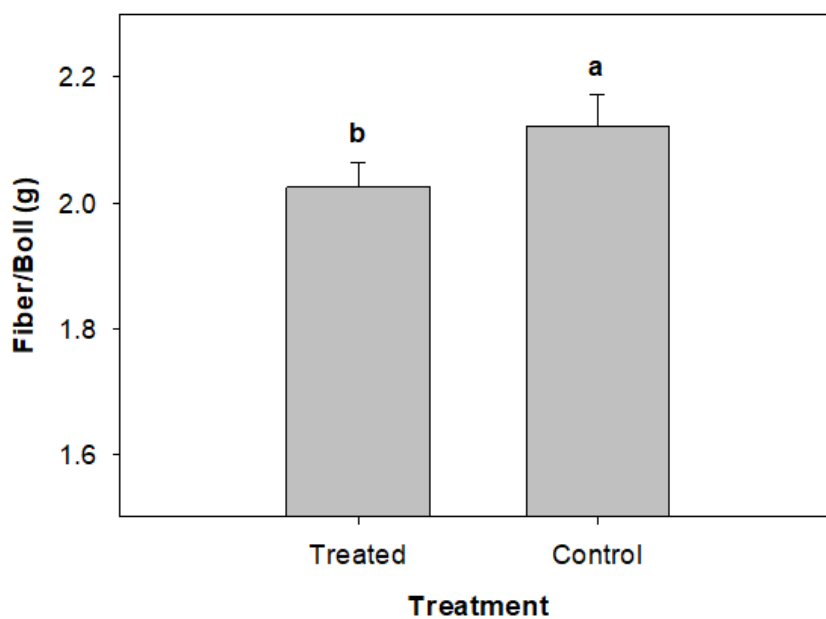
At Tifton, EF Polymer did not significantly affect lint yield. However, it significantly influenced yield components:

- Boll number per plant increased ( $p = 0.006$ )
- Fiber mass per boll decreased ( $p = 0.039$ )

These opposing effects resulted in no net yield increase.



**Figure 3:** Effect of EF Polymer on boll number per plant at Tifton. Polymer increased the number of harvestable bolls per plant.



**Figure 4:** Effect of EF Polymer on fiber mass per boll at Tifton. Reduced fiber mass per boll offset gains from increased boll number.

### 4.3 Midville Site (No Response)

At Midville:

- No significant treatment effects were observed for:
  - Lint yield
  - Yield components
  - Fiber quality

This indicates **neutral performance under these environmental conditions**.

## 5. Key Findings

- EF Polymer significantly increased lint yield at Camilla by **~25% (+280 lb/ac)**.
- Fiber strength improvements were also observed at Camilla.
- At Tifton, EFP altered yield components but did not translate into yield gains.
- No treatment effects were observed at Midville.
- Only one major treatment interaction was observed (**micronaire at Camilla**).

## 6. Interpretation

The results demonstrate that EF Polymer performance in cotton is **highly site-dependent**.

- **Strong positive response (Camilla)** suggests EFP is most effective under **stress-prone conditions** (e.g., water limitation or biological stress such as nematodes).
- **Neutral responses (Tifton, Midville)** indicate limited benefit under non-limiting or compensatory environments.
- Yield component shifts at Tifton confirm that EFP actively influences plant growth, even when yield response is neutral.

These findings align with the broader hypothesis that:

**EF Polymer functions as a stress mitigation tool rather than a universal yield enhancer.**

## 7. Conclusion

The 2025 University of Georgia cotton trials demonstrate that EF Polymer can deliver **significant agronomic and fiber quality benefits under specific field conditions**, with the strongest response observed at the Camilla site.

While yield improvements were not consistent across all locations, the clear positive response at Camilla highlights the importance of **targeting EF Polymer to environments where moisture stress or other limiting factors are present**.

These results support continued validation and refinement of **application methodology**, particularly for in-furrow placement in cotton systems, and provide a strong foundation for developing site-specific recommendations and commercial deployment strategies.

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