Datasheet

Product Overview

- **Product Name:** EF Polymer
- **Description:** EF is an eco-friendly, biodegradable polymer designed to improve water retention in soils, reduce irrigation needs, and enhance crop productivity. Tailored for sustainable agriculture, it is especially effective for tomatoes and other field crops.
- **Applications:** Ideal for both direct-seeded and transplanted tomatoes, as well as other vegetables and row crops. Suitable for water-scarce regions or areas with erratic rainfall.

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:** Plant-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.

EF Polymer in Field Lettuce Production
SynTech Research Trial | California, USA | Fall 2025

Study Overview
A field trial was conducted with SynTech Research in California to evaluate the performance of EF Polymer in head lettuce production under reduced irrigation regimes.
The study was designed to assess whether EF Polymer can:

- Maintain or improve yield under deficit irrigation
- Enhance soil moisture retention between irrigation events
- Support crop performance under water-limited conditions

This work builds on EF Polymer's positioning as a soil water management tool for improving irrigation efficiency in field vegetable systems.

Objectives

1. Evaluate EF Polymer performance under reduced irrigation levels
2. Determine whether EF Polymer can **maintain yield under water deficit**
3. Assess soil moisture dynamics and crop response

1. Trial Overview

Location & Conditions

- Location: Reedley, California, USA
- Soil type: Sandy clay loam (59% sand, 20% clay)
- Irrigation**:** Drip irrigation
- Trial duration**:** ~70 days from transplanting

Crop

- Crop: Head lettuce (*Lactuca sativa*)
- Variety: Romaine
- Transplant date**:** September 22, 2025

2. Experimental Design and Treatments

Design

- Design: Randomized Complete Block Design (RCBD)
- Replications: 4
- Treatments: 4
- Total plots: 16

Plot Dimensions

- Plot size: 20 ft × 6 ft
- Rows per plot: 2
- Spacing: 1 ft within row

Treatment Structure

Treatment	Polymer Rate	Irrigation Level	Description
T1	No	100%	Control
T2	8 kg/acre	100%	Polymer+ full irrigation
T3	8 kg/acre	85%	Polymer+ moderate deficit
T4	8 kg/acre	75%	Polymer+ higher deficit

3. Field Operations and Polymer Application
EF Polymer was applied pre-plant by:

- Creating subsurface trenches (~4 inches deep)
- Broadcasting polymer into trenches
- Covering and pre-irrigating before transplanting

The polymer was positioned within the active root zone and above the drip line, enabling effective water capture and redistribution.

Irrigation treatments were applied weekly using drip irrigation:

- 100% irrigation: 4 hours
- 85% irrigation: 3.5 hours
- 75% irrigation: 3 hours

4. Data Collection

Soil Measurements

- Soil moisture (%)

Plant Measurements

- NDVI (vegetation index)
- Plant height
- Fresh biomass (10 plants per plot)

Harvest Measurements

- Yield (lb/acre and kg/ha equivalents)
- Crop quality observations

5. Results
Soil Moisture Retention: No significant differences in soil moisture were observed during most of the season**.** However, after the final irrigation event, the 100% irrigation polymer-treated plots retained **higher moisture than control.**

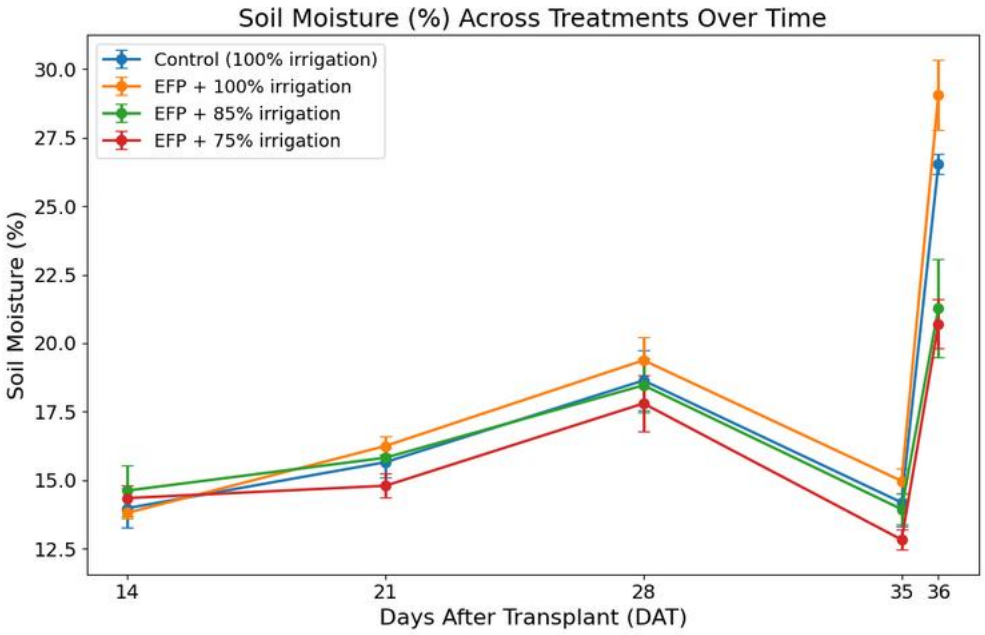

Figure 1. Soil moisture (%) across treatments over time

Crop Vigor (NDVI): NDVI values did not differ significantly across treatments. This indicates that reduced irrigation (up to 25%) did not negatively impact plant vigor when EF Polymer was present

Yield Performance: No statistically significant differences in yield. EF Polymer maintained yield under 15% irrigation reduction (85%) and 25% irrigation reduction (75%).

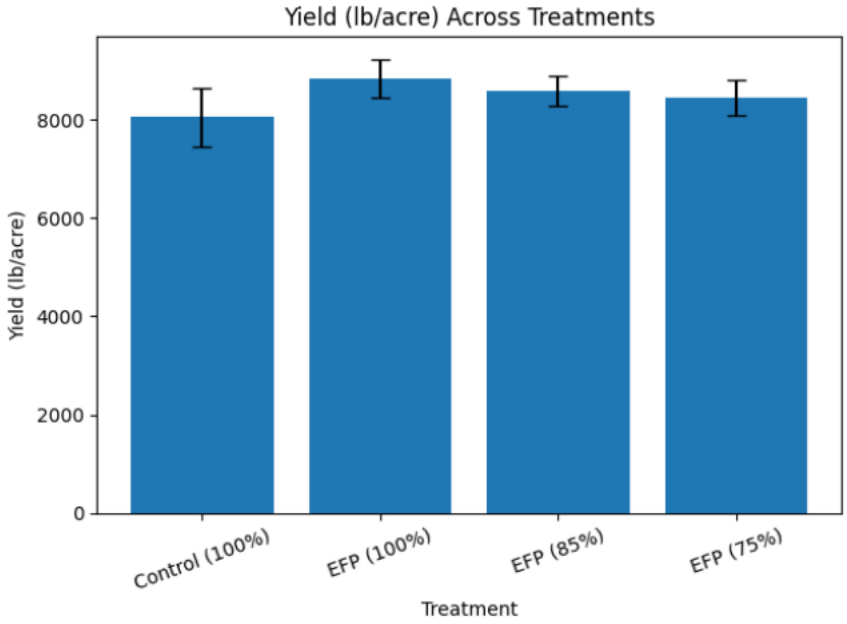

Figure 2. Yield (lb/acre) across treatments

5. Key Findings

- **Yield stability:** EF Polymer maintained comparable yields even under reduced irrigation.
- **Water savings potential:** Up to 25% irrigation reduction without yield penalty.
- **Moisture retention:** Polymer-treated plots retained water longer post-irrigation.

6. Conclusions

EF Polymer shows strong potential as a **water management tool in field-grown lettuce**, particularly in drip-irrigated systems where moderate irrigation reduction strategies are being implemented