

Determine the effect of EP polymer on maintaining and/or increasing leaf lettuce yield under different irrigation regimes.

Trial ID: 25-US-EP POLYMER-LETTUCE-CA

Protocol: 25-US-EP POLYMER

Location: California, USA

Sponsor: EP Polymer, Japan

The information and data collected in this report are truthful and accurate and have been generated according to acceptable procedures and standards.

Signature:

Date: 12/05/2025

Parsa Tehranchian

Dr. Parsa Tehranchian
West Coast Bioefficacy Leader, USA
Global Lead – Early-Stage Screening

SynTech Research USA			
EF Polymer Irrigation Reduction Trial- Head Lettuce- California-Fall 2025			
Trial ID:25-US-EP POLYMER-LETTUCE-CA		Location:	
Protocol ID:25-US-EP POLYMER		Trial Year:2025	
Study Director:Parsa Tehranchian		Sponsor Contact:Lindsay Hutchinson	
Investigator:			

General Trial Information			
Study Director:Parsa Tehranchian		Title:West Coast Bioefficacy Leader	
Discipline:SW		soil and water	
Status:R		reviewed and reported	
ARM Trial Created On:Sep-17-2025		Reliability:HIGH	
Initiation Date:Sep-17-2025		high quality	
Completion Date:Nov-25-2025			
Trial Location			
City:Reedley		Country:USA	
State/Prov.:California		United States	
Postal Code:93654		County:Fresno	
Latitude of LL Corner °:36.639116		N	
Longitude of LL Corner °:-119.367751		W	

Regulations	
Conducted Under GLP:No	
Conducted Under GEP:No	

Objective: To determine the effect of EP polymer on maintaining and/or increasing leaf lettuce yield under different irrigation regimes.

Materials and Methods: The experiment was arranged in a randomized complete block design (RCBD) with 4 treatments by 4 replications. Plots were 20 feet long and 6 feet wide, containing two rows of lettuce. There were 5-foot alleys between plots. All treatments were applied to the soil on 9/18/25. Two trenches, 1 foot apart/ 4 inches deep, were dug in all the plots where the treatments were to be spread. The EP polymer was spread before covering the trenches and then pre-irrigated via drip ((flow rate: 0.25 GPH), (spacing:12 IN)) before transplanting lettuce seedlings (variety = Romaine) on 9/22/2025. All plots were irrigated once a week following the treatment order (UTC/ 100% = 4-h =, EP/100% = 4-h, EP/85% = 3.5-h, EP/75% = 3-h). Soil moisture level was measured using a Fieldscout/ TDR300 soil moisture meter before each irrigation period (all plots were watered on the following dates:10/6/25, 10/13/25, 10/27/25, 10/28/25). NDVI was recorded a few times during the trial. At harvest, 10 lettuce per plot were harvested and weighed. The plant height of 5 individuals per plot was also recorded. Data were subjected to ANOVA in ARM 2024, and means were separated by Fisher LSD at $\alpha = 0.05$. Means followed by the same letter or symbol do not significantly differ.

Results: A Fieldscout TDR 300 shows 45% to 47% in close to full saturation for a Sandy Clay Loam soil. There were no statistical differences among the treatments based on moisture percentage data collected throughout the experiment until the last irrigation on 10/27/25. These data can be interpreted in two ways; first: even 3 hours of irrigation was sufficient to saturate the soil and maintain equal moisture levels in all plots up to the next irrigation period, and second: the EP polymer retained water in the treated plots. To answer this question, the soil moisture % was recorded in all plots 24 h after the last irrigation (10/28/25) as follows: Treatment 1 = UTC/100% irrigation (26.53%), Treatment 2 = EP/100% irrigation (29.07%), Treatment 3 = EP/85% irrigation (21.28%), and Treatment 4 = EP/75% irrigation (20.70%). These results indicate that the EP polymer-treated plot, which received 75% and 85% of the total irrigation, retained water for a longer period of time than UTC.

Overall, the NDVI recorded during the experiment did not differ significantly among the treatments. Based on plant height data, treatment 4 (EP/75% irrigation) showed statistically shorter plants compared to other treatments. Although lettuce yield was comparable in all plots, treatment 2 (EP/100% irrigation) showed the numerically highest yield. These results confirmed that plots treated with EP polymer could maintain soil moisture levels even with a 25% reduction in irrigation, resulting in a comparable lettuce yield to plots fully irrigated.

Contacts			
Role:STYDIR study director			
Study Director:Parsa Tehranchian		Title:West Coast Bioefficacy Leader	
Organization:SynTech Research Group			
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Country:USA United States		E-mail:parsa.tehranchian@syntechresearch.com	
City:Reedley		State/Prov:CA Postal Code:93654	
Role:SPONSR sponsor			
Sponsor:Lindsay Hutchinson		Title:Research & BD	
Organization:EF Polymer			
		Mobile No.:8053779960	
		E-mail:lindsay.hutchinson@efpolymer.com	

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Study Director: Parsa Tehranchian Sponsor Contact: Lindsay Hutchinson
Investigator:

Crop	1:C	LACSC	Lactuca sativa var. capitata	Crop Description	Head lettuce	BBCH Scale: BVHF
				Stage Scale: BBCH		
			Variety: Romaine			
			Planting Date: Sep-22-2025	Planting Rate: 2	P/ROWFT	
			Rows per Plot: 2	Planting Method: TRAHAN	transplanted - hand	
			Row Spacing: 6 FT	Planting Equipment: HA	by hand	
			Spacing within Row: 1 FT			
				Harvest Equipment: Manual		
			Moisture Meter: Fieldscout/ TDR300	Harvested Width: 6 FT		
			% Standard Moisture: 45.0	Harvested Length: 5 FT		
				Site and Design		
			Treated Plot Width: 6 FT	Site Type: FIELD	field	
			Treated Plot Length: 20 FT	Experimental Unit: 1 PLOT	plot	
			Treated Plot Area: 120.0 FT2	Tillage Type: CONTIL	conventional-till	
			Replications: 4	Study Design: RACOBL	Randomized Complete Block (RCB)	
			Treatments: 4			
			Plots: 16			
			Distance between Blocks: 0 FT			
			Distance between 'Plot' Experimental Units: 0 FT			

			Soil Description		
Description Name: Sandy Clay Loam					
% Sand: 59 % OM: 1.3 Texture: SCL sandy clay loam					
% Silt: 21					
% Clay: 20					
pH: 7.2					

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Weather Conditions

Overall Moisture Conditions: NORMAL normal

Irrigation Type: DRIPSY drip irrigation system

Weather Station Name: Parlier

Code: 39

No.	Date	Moisture Total	Unit	Min Temp	Max Temp	Temp Unit	Avg % Relative Humidity	Avg Wind	Unit	Avg Soil Temp	Unit
1.	Sep-18-2025	0	IN	66.7	85.3	F	72	3.7	MPH	77.1	F
2.	Sep-19-2025	0	IN	65.2	83	F	87	3	MPH	75.8	F
3.	Sep-20-2025	0	IN	65.7	87.7	F	77	2.3	MPH	76.9	F
4.	Sep-21-2025	0	IN	64.1	90.4	F	71	3.1	MPH	77.5	F
5.	Sep-22-2025	0	IN	64.6	92.4	F	70	2.8	MPH	77.6	F
6.	Sep-23-2025	0	IN	65.1	94.7	F	67	3	MPH	77.8	F
7.	Sep-24-2025	0	IN	68.4	89.9	F	60	4.6	MPH	77.9	F
8.	Sep-25-2025	0	IN	64.5	88.2	F	61	3.7	MPH	77.1	F
9.	Sep-26-2025	0	IN	62	88.7	F	66	2.7	MPH	76.8	F
10.	Sep-27-2025	0	IN	62.1	92.4	F	59	3.6	MPH	77.1	F
11.	Sep-28-2025	0	IN	62.7	83.8	F	70	3.1	MPH	77.2	F
12.	Sep-29-2025	0	IN	62	80.3	F	70	4.6	MPH	76.4	F
13.	Sep-30-2025	0	IN	61.3	82.3	F	67	3	MPH	76	F
14.	Oct-1-2025	0	IN	56.3	83.4	F	69	2.9	MPH	75.3	F
15.	Oct-2-2025	0.06	IN	57.6	84.3	F	69	4.2	MPH	74.9	F
16.	Oct-3-2025	0	IN	55.1	75.7	F	70	4.9	MPH	74.2	F
17.	Oct-4-2025	0	IN	49.6	76	F	73	2.7	MPH	72.4	F
18.	Oct-5-2025	0	IN	51.8	82.4	F	65	2.6	MPH	72.2	F
19.	Oct-6-2025	0	IN	51.7	87.5	F	59	3.4	MPH	72.2	F
20.	Oct-7-2025	0	IN	53.3	90.6	F	62	2.7	MPH	72.4	F
21.	Oct-8-2025	0	IN	55.1	85.7	F	59	3.5	MPH	72.5	F
22.	Oct-9-2025	0	IN	49.7	79.2	F	70	2.4	MPH	72	F
23.	Oct-10-2025	0	IN	49.5	80.5	F	63	3.9	MPH	71.4	F
24.	Oct-11-2025	0	IN	50.6	76.1	F	59	6	MPH	69.7	F
25.	Oct-12-2025	0	IN	43	75.5	F	65	3	MPH	68.1	F
26.	Oct-13-2025	0.07	IN	46.8	68.3	F	67	3.9	MPH	67	F
27.	Oct-14-2025	1.15	IN	50.6	57.6	F	90	4.7	MPH	65	F
28.	Oct-15-2025	0	IN	46.1	66.9	F	76	2.6	MPH	64.2	F
29.	Oct-16-2025	0	IN	45.1	68.5	F	86	2.7	MPH	64.6	F
30.	Oct-17-2025	0	IN	44.8	75.5	F	81	2	MPH	64.7	F
31.	Oct-18-2025	0	IN	48.2	81.7	F	75	1.9	MPH	65.7	F
32.	Oct-19-2025	0	IN	48.8	82.9	F	75	2.2	MPH	66.4	F
33.	Oct-20-2025	0	IN	50.2	80.1	F	77	2.3	MPH	66.9	F
34.	Oct-21-2025	0	IN	50.3	82.8	F	74	2.5	MPH	67.2	F
35.	Oct-22-2025	0.07	IN	51.7	67.5	F	88	4.5	MPH	67.4	F
36.	Oct-23-2025	0	IN	50.1	69.9	F	90	2.5	MPH	66	F
37.	Oct-24-2025	0	IN	48.5	77.3	F	81	2.1	MPH	66	F
38.	Oct-25-2025	0	IN	51.1	74	F	79	3.3	MPH	66.2	F
39.	Oct-26-2025	0	IN	50.2	73.8	F	82	3.1	MPH	66.1	F
40.	Oct-27-2025	0	IN	50	60.8	F	89	3.9	MPH	65.4	F
41.	Oct-28-2025	0	IN	47.3	74.2	F	84	1.9	MPH	64.7	F
42.	Oct-29-2025	0	IN	45.5	77.1	F	81	2.1	MPH	65	F
43.	Oct-30-2025	0	IN	47.5	80	F	79	1.8	MPH	65.2	F
44.	Oct-31-2025	0	IN	48.7	79.2	F	79	2.2	MPH	65.6	F
45.	Nov-1-2025	0	IN	49.9	80	F	77	2.1	MPH	65.8	F
46.	Nov-2-2025	0	IN	48.1	79.8	F	81	2	MPH	65.8	F
47.	Nov-3-2025	0	IN	47.5	81.6	F	77	2.1	MPH	65.8	F
48.	Nov-4-2025	0	IN	45	78.9	F	74	2.9	MPH	65.4	F
49.	Nov-5-2025	0	IN	48.7	70.1	F	77	4.4	MPH	64.4	F

SynTech Research USA

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Study Director: Parsa Tehranchian Sponsor Contact: Lindsay Hutchinson
Investigator:

Application Description

	A
Date	Sep-18-2025
Start Time	9:30 AM
Stop Time	9:50 AM
Method	INCORP
Placement	INFURR
Mixed/Prepared By	PT
Applied By	PT
Air Temperature Start, Stop	89, 89 F
% Relative Humidity Start, Stop	42, -
Wind Velocity+Dir. Start	1.3 MPH, -
Wet Leaves (Y/N)	N, no
Soil Temperature	71 F
% Cloud Cover	30

Crop Stage At Each Application

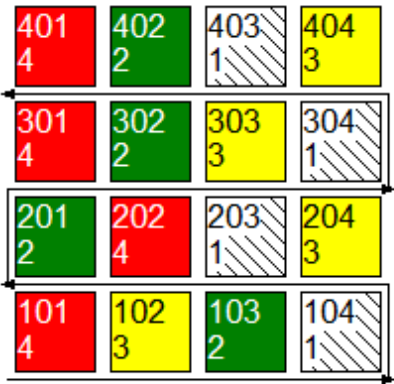
	A
Crop 1 Code, BBCH Scale	LACSC, BVHF

Application Equipment

	A
Equipment Name	Manual

Treatment & plot map

Trt No.	Type	Treatment Name	Form Type	Rate	Rate Unit	Other Rate	Other Rate Unit	Appl Code	Appl Description	Appl Timing
1	CHK CHK	UNTREATED CONTROL 100% irrigation								
2	BIOSTIM BIOSTIM	EF Polymer 100 % irrigation	D	17.6	lb/a	8	kg/a	A	PPA	PREPLA
3	BIOSTIM BIOSTIM	EF Polymer 85% irrigation	D	17.6	lb/a	8	kg/a	A	PPA	PREPLA
4	BIOSTIM BIOSTIM	EF Polymer 75% irrigation	D	17.6	lb/a	8	kg/a	A	PPA	PREPLA



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Sponsor Contact: Lindsay Hutchinson

Investigator:

Rating Date	Oct-6-2025	Oct-6-2025	Oct-13-2025	Oct-20-2025	Oct-20-2025
Part Rated	PLANT, C	PLANT, C	PLANT, C	PLANT, C	PLANT, C
Rating Type	MOICON	NDVI	MOICON	NDVI	MOICON
Rating Unit	%	NDVI	%	NDVI	%
Sample Size	1 PLANT	1 SAMPLE	1 PLANT	1 SAMPLE	1 PLANT
Collection Basis	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT
Number of Subsamples	4	1	4	1	4
Crop ID Code	1, LACSC	1, LACSC	1, LACSC	1, LACSC	1, LACSC
BBCH Scale	BVHF	BVHF	BVHF	BVHF	BVHF
Crop Scientific Name	Lactuca sativa >	Lactuca sativa >	Lactuca sativa >	Lactuca sativa >	Lactuca sativa >
Crop Name	Head lettuce	Head lettuce	Head lettuce	Head lettuce	Head lettuce
Crop Variety	Romaine	Romaine	Romaine	Romaine	Romaine
Days After First/Last Appl.	18, 18	18, 18	25, 25	32, 32	32, 32
Treatment Appl. Interval	18 DA-A	18 DA-A	25 DA-A	32 DA-A	32 DA-A
Planting Interval	14 DP-1	14 DP-1	21 DP-1	28 DP-1	28 DP-1
Description	Moisture%	NDVI	Moisture%	NDVI	Moisture%
ARM Action Codes					
Trt Treatment	1	2	3	4	5
No. Name					
1 UNTREATED CONTROL	13.98a	0.235a	15.66a	0.485ab	18.64a
100% irrigation					
2 EF Polymer	13.81a	0.265a	16.25a	0.533a	19.38a
100 % irrigation					
3 EF Polymer	14.63a	0.250a	15.82a	0.463b	18.46a
85% irrigation					
4 EF Polymer	14.35a	0.235a	14.80a	0.523a	17.80a
75% irrigation					
LSD P=.05	1.837	0.0479	1.271	0.0403	3.151
Standard Deviation	1.148	0.0300	0.795	0.0252	1.970
CV	8.09	12.16	5.08	5.03	10.61
Grand Mean	14.191	0.2463	15.631	0.5006	18.569
Levene's F^	0.746	0.29	1.156	2.38	0.055
Levene's Prob(F)	0.545	0.832	0.367	0.121	0.982
Rank X2	.	.	.	.	.
P(Rank X2)	.	.	.	.	.
Shapiro-Wilk^	0.9557	0.9739	0.8981	0.925	0.93
P(Shapiro-Wilk)^	0.5842	0.8976	0.0749	0.2027	0.2436
Skewness^	-0.4897	-0.1784	0.6369	0.4693	0.5891
P(Skewness)^	0.439	0.776	0.3175	0.4579	0.354
Kurtosis^	-0.5962	0.5129	-0.6648	-0.9007	-0.2895
P(Kurtosis)^	0.6238	0.6727	0.5848	0.4611	0.8112
Replicate F	1.904	0.307	0.938	1.482	1.058
Replicate Prob(F)	0.1994	0.8202	0.4620	0.2841	0.4139
Treatment F	0.410	0.920	2.342	6.713	0.432
Treatment Prob(F)	0.7496	0.4697	0.1413	0.0113	0.7353

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

^Calculated from residual.

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Protocol ID:25-US-EP POLYMER

Location: Trial Year:2025

Study Director: Parsa Tehranchian

Sponsor Contact: Lindsay Hutchinson

Investigator:

Rating Date	Oct-27-2025	Oct-28-2025	Nov-5-2025	Nov-5-2025	Nov-5-2025
Part Rated	PLANT, C	PLANT, C	PLANT, C	PLANT, C	PLANT, C
Rating Type	MOICON	MOICON	NDVI	HEIGHT	YIELD
Rating Unit	%	%	NDVI	IN	LB
Sample Size	1 PLANT	1 PLANT	1 SAMPLE	1 PLANT	10 PLANT
Collection Basis	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT
Number of Subsamples	4	4	1	5	1
Crop ID Code	1, LACSC	1, LACSC	1, LACSC	1, LACSC	1, LACSC
BBCH Scale	BVHF	BVHF	BVHF	BVHF	BVHF
Crop Scientific Name	Lactuca sativa >	Lactuca sativa >	Lactuca sativa >	Lactuca sativa >	Lactuca sativa >
Crop Name	Head lettuce	Head lettuce	Head lettuce	Head lettuce	Head lettuce
Crop Variety	Romaine	Romaine	Romaine	Romaine	Romaine
Days After First/Last Appl.	39, 39	40, 40	48, 48	48, 48	48, 48
Treatment Appl. Interval	39 DA-A	40 DA-A	48 DA-A	48 DA-A	48 DA-A
Planting Interval	35 DP-1	36 DP-1	44 DP-1	44 DP-1	44 DP-1
Description	Moisture%	Moisture%	NDVI	Plant height	Plant fresh wei>
ARM Action Codes					
Trt Treatment	6	7	8	9	10
No. Name					
1 UNTREATED CONTROL	14.19a	26.53a	0.615a	11.80a	5.550a
100% irrigation					
2 EF Polymer	14.98a	29.07a	0.580a	11.65a	6.085a
100 % irrigation					
3 EF Polymer	13.94a	21.28b	0.613a	11.33a	5.915a
85% irrigation					
4 EF Polymer	12.83a	20.70b	0.570a	10.10b	5.820a
75% irrigation					
LSD P=.05	2.014	2.850	0.1043	1.057	1.0772
Standard Deviation	1.259	1.781	0.0652	0.661	0.6734
CV	9.0	7.3	10.97	5.89	11.53
Grand Mean	13.984	24.392	0.5944	11.219	5.8425
Levene's F^	0.687	0.269	0.686	1.094	1.724
Levene's Prob(F)	0.577	0.846	0.578	0.389	0.215
Rank X2	.	.	.	.	.
P(Rank X2)	.	.	.	.	.
Shapiro-Wilk^	0.9641	0.96	0.9097	0.972	0.9656
P(Shapiro-Wilk)^	0.7369	0.6615	0.1152	0.8705	0.7629
Skewness^	0.2622	0.4494	-0.2337	-0.1203	0.443
P(Skewness)^	0.6764	0.4768	0.7097	0.8477	0.483
Kurtosis^	-0.9659	0.1318	-1.4877	-0.8776	-0.5158
P(Kurtosis)^	0.4299	0.9133	0.2306	0.4724	0.671
Replicate F	0.664	4.176	2.393	0.234	0.069
Replicate Prob(F)	0.5946	0.0414	0.1360	0.8703	0.9750
Treatment F	1.980	20.909	0.488	5.455	0.441
Treatment Prob(F)	0.1876	0.0002	0.6993	0.0206	0.7291

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Rating Date	Nov-5-2025	Nov-5-2025
Part Rated	PLANT, C	PLANT, C
Rating Type	YIELD	YIELD
Rating Unit	LB	KG
Sample Size	1 A	1 ha
Collection Basis	1 PLOT	1 PLOT
Number of Subsamples	1	1
Crop ID Code	1, LACSC	1, LACSC
BBCH Scale	BVHF	BVHF
Crop Scientific Name	Lactuca sativa >	Lactuca sativa >
Crop Name	Head lettuce	Head lettuce
Crop Variety	Romaine	Romaine
Days After First/Last Appl.	48, 48	48, 48
Treatment Appl. Interval	48 DA-A	48 DA-A
Planting Interval	44 DP-1	44 DP-1
Description	Plant fresh wei>	Plant fresh wei>
ARM Action Codes	TY1	TY2
Trt Treatment	11	12
No. Name	Rate Unit Code	
1 UNTREATED CONTROL	8058.6a	9032.5a
100% irrigation		
2 EF Polymer	17.6lb/a A	8835.4a
100 % irrigation		9903.2a
3 EF Polymer	17.6lb/a A	8588.6a
85% irrigation		9626.5a
4 EF Polymer	17.6lb/a A	8450.6a
75% irrigation		9471.9a
LSD P=.05	1564.09	1753.11
Standard Deviation	977.81	1095.98
CV	11.53	11.53
Grand Mean	8483.31	9508.49
Levene's F^	1.724	1.724
Levene's Prob(F)	0.215	0.215
Rank X2	.	.
P(Rank X2)	.	.
Shapiro-Wilk^	0.9656	0.9656
P(Shapiro-Wilk)^	0.7629	0.7629
Skewness^	0.443	0.443
P(Skewness)^	0.483	0.483
Kurtosis^	-0.5158	-0.5158
P(Kurtosis)^	0.671	0.671
Replicate F	0.069	0.069
Replicate Prob(F)	0.9750	0.9750
Treatment F	0.441	0.441
Treatment Prob(F)	0.7291	0.7291

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Rating Date	Oct-6-2025	Oct-6-2025	Oct-13-2025	Oct-20-2025	Oct-20-2025
Part Rated	PLANT, C	PLANT, C	PLANT, C	PLANT, C	PLANT, C
Rating Type	MOICON	NDVI	MOICON	NDVI	MOICON
Rating Unit	%	NDVI	%	NDVI	%
Sample Size	1 PLANT	1 SAMPLE	1 PLANT	1 SAMPLE	1 PLANT
Collection Basis	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT
Number of Subsamples	4	1	4	1	4
Crop ID Code	1, LACSC	1, LACSC	1, LACSC	1, LACSC	1, LACSC
BBCH Scale	BVHF	BVHF	BVHF	BVHF	BVHF
Crop Scientific Name	Lactuca sativa >	Lactuca sativa >	Lactuca sativa >	Lactuca sativa >	Lactuca sativa >
Crop Name	Head lettuce	Head lettuce	Head lettuce	Head lettuce	Head lettuce
Crop Variety	Romaine	Romaine	Romaine	Romaine	Romaine
Days After First/Last Appl.	18, 18	18, 18	25, 25	32, 32	32, 32
Treatment Appl. Interval	18 DA-A	18 DA-A	25 DA-A	32 DA-A	32 DA-A
Planting Interval	14 DP-1	14 DP-1	21 DP-1	28 DP-1	28 DP-1
Description	Moisture%	NDVI	Moisture%	NDVI	Moisture%
ARM Action Codes					
Trt Treatment	Rate Appl				
No. Name	Rate Unit Code Plot				
1 UNTREATED CONTROL					
100% irrigation					
	104	12.23	0.270	17.28	0.500
	203	13.55	0.210	15.38	0.470
	304	15.55	0.240	15.03	0.480
	403	14.60	0.220	14.95	0.490
	Mean =	13.98	0.235	15.66	0.485
2 EF Polymer	17.6lb/a A				
100 % irrigation					
	103	13.63	0.220	16.13	0.530
	201	13.63	0.280	16.13	0.490
	302	14.38	0.280	17.20	0.550
	402	13.60	0.280	15.55	0.560
	Mean =	13.81	0.265	16.25	0.533
3 EF Polymer	17.6lb/a A				
85% irrigation					
	102	15.30	0.300	16.13	0.480
	204	13.30	0.220	15.60	0.480
	303	16.95	0.240	15.63	0.440
	404	12.95	0.240	15.93	0.450
	Mean =	14.63	0.250	15.82	0.463
4 EF Polymer	17.6lb/a A				
75% irrigation					
	101	15.50	0.220	14.95	0.570
	202	13.30	0.230	13.65	0.490
	301	14.30	0.250	14.85	0.530
	401	14.30	0.240	15.75	0.500
	Mean =	14.35	0.235	14.80	0.523

SynTech Research USA

EF Polymer Irrigation Reduction Trial- Head Lettuce- California-Fall 2025

Trial ID:25-US-EP POLYMER-LETTUCE-CA

Protocol ID:25-US-EP POLYMER

Location: Trial Year:2025

Study Director:Parsa Tehranchian

Sponsor Contact:Lindsay Hutchinson

Investigator:

Rating Date	Oct-27-2025	Oct-28-2025	Nov-5-2025	Nov-5-2025	Nov-5-2025
Part Rated	PLANT, C	PLANT, C	PLANT, C	PLANT, C	PLANT, C
Rating Type	MOICON	MOICON	NDVI	HEIGHT	YIELD
Rating Unit	%	%	NDVI	IN	LB
Sample Size	1 PLANT	1 PLANT	1 SAMPLE	1 PLANT	10 PLANT
Collection Basis	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT
Number of Subsamples	4	4	1	5	1
Crop ID Code	1, LACSC	1, LACSC	1, LACSC	1, LACSC	1, LACSC
BBCH Scale	BVHF	BVHF	BVHF	BVHF	BVHF
Crop Scientific Name	Lactuca sativa >	Lactuca sativa >	Lactuca sativa >	Lactuca sativa >	Lactuca sativa >
Crop Name	Head lettuce	Head lettuce	Head lettuce	Head lettuce	Head lettuce
Crop Variety	Romaine	Romaine	Romaine	Romaine	Romaine
Days After First/Last Appl.	39, 39	40, 40	48, 48	48, 48	48, 48
Treatment Appl. Interval	39 DA-A	40 DA-A	48 DA-A	48 DA-A	48 DA-A
Planting Interval	35 DP-1	36 DP-1	44 DP-1	44 DP-1	44 DP-1
Description	Moisture%	Moisture%	NDVI	Plant height	Plant fresh wei>
ARM Action Codes					
Trt Treatment	Rate Appl				
No. Name	Rate Unit Code Plot				
1 UNTREATED CONTROL					
100% irrigation					
	104	14.05	25.48	0.610	4.860
	203	16.68	26.65	0.620	6.600
	304	13.55	27.08	0.560	5.800
	403	12.48	26.90	0.670	4.940
	Mean =	14.19	26.53	0.615	5.550
2 EF Polymer	17.6lb/a A				
100 % irrigation					
	103	14.30	26.40	0.670	6.860
	201	14.85	31.30	0.490	5.620
	302	16.30	31.20	0.630	5.840
	402	14.45	27.38	0.530	6.020
	Mean =	14.98	29.07	0.580	6.085
3 EF Polymer	17.6lb/a A				
85% irrigation					
	102	12.30	17.60	0.690	6.540
	204	14.38	25.98	0.610	5.800
	303	14.30	21.68	0.590	5.520
	404	14.80	19.85	0.560	5.800
	Mean =	13.94	21.28	0.613	5.915
4 EF Polymer	17.6lb/a A				
75% irrigation					
	101	13.15	19.58	0.670	5.600
	202	12.80	20.03	0.430	5.240
	301	11.83	23.35	0.560	6.180
	401	13.55	19.85	0.620	6.260
	Mean =	12.83	20.70	0.570	5.820

SynTech Research USA

EF Polymer Irrigation Reduction Trial- Head Lettuce- California-Fall 2025

Trial ID:25-US-EP POLYMER-LETTUCE-CA

Protocol ID:25-US-EP POLYMER

Location: Trial Year:2025

Study Director:Parsa Tehranchian

Sponsor Contact:Lindsay Hutchinson

Investigator:

Rating Date	Nov-5-2025	Nov-5-2025
Part Rated	PLANT, C	PLANT, C
Rating Type	YIELD	YIELD
Rating Unit	LB	KG
Sample Size	1 A	1 ha
Collection Basis	1 PLOT	1 PLOT
Number of Subsamples	1	1
Crop ID Code	1, LACSC	1, LACSC
BBCH Scale	BVHF	BVHF
Crop Scientific Name	Lactuca sativa >	Lactuca sativa >
Crop Name	Head lettuce	Head lettuce
Crop Variety	Romaine	Romaine
Days After First/Last Appl.	48, 48	48, 48
Treatment Appl. Interval	48 DA-A	48 DA-A
Planting Interval	44 DP-1	44 DP-1
Description	Plant fresh wei>	Plant fresh wei>
ARM Action Codes	TY1	TY2
Trt Treatment		
No. Name	Rate Unit Code Plot	
	11	12
1 UNTREATED CONTROL	104	7056.7
100% irrigation	203	7909.5
	304	10741.3
	403	9439.3
Mean =	7172.9	8039.7
	8058.6	9032.5
2 EF Polymer	103	9960.7
100 % irrigation	201	11164.4
	302	9146.4
	402	9504.4
Mean =	8741.0	9797.4
	8835.4	9903.2
3 EF Polymer	102	9496.1
85% irrigation	204	10643.7
	303	9439.3
	404	8983.6
Mean =	8421.6	9439.3
	8588.6	9626.5
4 EF Polymer	101	8131.2
75% irrigation	202	9113.8
	301	8527.9
	401	10057.8
Mean =	9089.5	10188.0
	8450.6	9471.9

SynTech Research USA**EF Polymer Irrigation Reduction Trial- Head Lettuce- California-Fall 2025**

Trial ID:25-US-EP POLYMER-LETTUCE-CA

Protocol ID:25-US-EP POLYMER

Location: Trial Year:2025

Study Director:Parsa Tehranchian

Sponsor Contact:Lindsay Hutchinson

Investigator:

Part Rated

PLANT = plant

C = Crop is Part Rated

Rating Type

MOICON = moisture content|%PROPORTION

NDVI = normalized difference vegetation index|(NIR - Red) / (NIR + Red)

HEIGHT = height

YIELD = yield

Rating Unit

%, , , = percent|PERCENT

NDVI, , , = normalized difference vegetation index|INDEX

IN, , , = inch|LENGTH

LB, , , = pound|WEIGHT

KG, , , = kilogram|WEIGHT

PLANT = plant/plant biomass/shrub

SAMPLE = sample

A = acre

ha = hectare

PLOT = total plot

Crop ID Code

1, LACSC, BVHF, Lactuca sativa var. capitata, Head lettuce, Romaine, = Sep-22-2025|transplanted - hand|by hand|6|FT

Planting Interval

14 DP-1 = 1 LACSC Sep-22-2025

21 DP-1 = 1 LACSC Sep-22-2025

28 DP-1 = 1 LACSC Sep-22-2025

35 DP-1 = 1 LACSC Sep-22-2025

36 DP-1 = 1 LACSC Sep-22-2025

44 DP-1 = 1 LACSC Sep-22-2025

ARM Action Codes

TY1 = 1452.0*[10]

TY2 = 1627.46976926*[10]

Additional Treatment InformationRate Unit

LB/A = Pounds Dry Product per Acre (Metric=kg/mu)|AE



Figure1: Application of EP Polymer into the soil on 10/18/25.



Figure 2: Trial conditions before lettuce harvest on 11/5/25.



Figure 3: Harvested lettuce plants on 11/5/25.