DELTAPLAN
Polymer Systems

TEST SUBJECT: DELTAPLAN Soil

"smart" polymer system, and polymer regulation technology

Lab Use Only	Sample ID*	County, State	Acreage	Soil Type	Season
002F2G100122	05	LA County, CA	8000 sq ft	Muck **Mineral**	**Hot** Cool

DELTAPLAN Soil
12-week report: October 19, 2022 - January 7, 2023
Prepared by:
Deltaplan Polymer Systems, RD

9010 Owensmouth Avenue
Canoga Park, CA 91304
phone: (818)669-6875
email: contact@deltaplansystems.com
www.deltaplansystems.com

TEST OBJECTIVES

1. INSTALLATION: transfer and housing of the polymer system in the soil's environment

2. Establish 50% irrigation time reduction, starting with Week 2 (day 8)

3. Week 3: register successful transfer / installation:
a) Observe the sustainability of plant life with reduced irrigation.
b) Observe visible change / improvement to green mass.

4. Test the water retention capacity by gradually reducing the irrigation time, based on the season, and moisture level readings.

Recommended reduction range: -50% during HOT season / -80% during COOL season

5. Observe the water retention capacity and delivery mechanisms

Water sources: Irrigation, Precipitation, Osmosis

6. Observe continuous improvement in soil stability

7. Observe continuous improvement in soil health

8. Observe continuous improvement in plant health

TEST START DATE: October 19, 2022
Location: Glendale, CA 91206
DURATION: ongoing

OBSERVATION FORM DELTAPLAN Soil

IMPORTANT: The information below this line; numeric observation, photography,and all other forms of input are a part of a technological study conducted by DELTAPLAN Systems, Inc., RD department. As such this information may be used and featured in articles and publications.

Lab Use Only	Sample ID*	County, State	Acreage	Soil Type	Season
002F2G100122	05	LA County, CA	8000 sq ft	Muck **Mineral**	**Hot** Cool

DELTAPLAN Soil

stimuli-responsive polymer system

High-Performance Soil Additive

"Smart" polymer hydrogel enriched with 14 components: NPK and 11 micro-elements.

Deltaplan Polymer,
Nitrogen, Phosphorus, Potassium,
Calcium, Sulfur, Magnesium, Chloride,
Boron, Manganese, Copper, Iron,
Molybdenum, Cobalt, Zinc
Water (NQ)

ENVIRONMENT: Soil (biota)
Minimally Invasive Integration Ratio
100 : 0.19

Operates in conjunction with all soil types.

TESTED AND COMPLIANT with: EPA 6010, EPA 7471, EPA 1682, EPA 1681, EPA 9045, MWL ME PROC 26, MWL Developed, AOAC 920.03 (mod), AOAC 2001.11, Calif HA4/JC (rev. 2:3-11-09), ASTM D 5373 (mod), SM 2540 G-(1997), Soil Sci. & Plant Anal. 1970, E. coli MPN REGULATIONS.

NON-INVASIVE INTEGRATION:
The hydrogel disperses into microscopic units when mixed with water. The microscopic units travel and transport into the soil's environment through **ONE-TIME OVERHEAD SOIL IRRIGATION - 'INSTALLATION.**"

Biochemical activity duration:
Five years from the time of INSTALLATION

ECOLOGICAL FOOTPRINT: Zero decay, zero waste, 100% biodegradable

NEW Soil Additive: processing aid for soil conditioning
NEW, Eco-friendly chemical formulation
NEW, Safe for all soil types

No Animal Testing
No plant-derived components
No animal-derived components

There are no new, previously unknown, unsafe, artificial ingredients and components in Deltaplan formulations and adaptations.
Deltaplan Polymers and all adaptations are ecologically clean, paraben, dye, and phthalate-free.

OBSERVATION FORM DELTAPLAN Soil

IMPORTANT: The information below this line; numeric observation, photography,and all other forms of input are a part of a technological study conducted by DELTAPLAN Systems, Inc., RD department. As such this information may be used and featured in articles and publications.

Lab Use Only	Sample ID*	County, State	Acreage	Soil Type	Season
002F2G100122	05	LA County, CA	8000 sq ft	Muck **[Mineral]**	**[Hot]** Cool

DELTAPLAN Soil hydrogel stimuli-responsive polymer system

Hydrogels are a three-dimensional network of hydrophilic polymers with a capacity and ability to swell with water and shrink reversibly in response to changes in the external environment.

Stimuli-responsive hydrogels are considered "intelligent" or “smart” materials: they can carry simple "intelligence," which enables polymers to respond to multiple external triggers and adapt to this change by altering their physicochemical structure.

DELTAPLAN Soil stimuli-responsive hydrogel is a NEW, biochemical, bio-adhesive Platform, Carrier, and Targeted Delivery System.

The hydrogel forms “intermediate polymer-soil” and “intermediate polymer-plant” systems, creating a bio-adhesive water and nutrient delivery platform within the soil’s environment.

Size: > 2 microns

Water uptake, retention, and distribution capacity: <0.00551 inches

All Functions: high-performance “smart” polymer

- can change according to the environment
- can generate and regenerate diverse, interchangeable intra-molecular connections
- can engage in biochemical interactions with biotic/abiotic factors in the environment
- can utilize water and "ingredient blocks" in bio-adhesive element combinations
- can help compensate, facilitate and regulate the fluxes of chemical elements

DELTAPLAN Soil “smart” hydrogel system is designed to address;

- the physical, chemical, and biological aspects of soil health, soil preservation, rejuvenation, and conservation
- immediate and substantial change in irrigation water consumption and conservation practices, both in quantity and quality
- development and growth of plant life

Deltaplan Polymers and all developments are proprietary adaptations of Deltaplan Synthesis and Regulation Technologies.

OBSERVATION FORM DELTAPLAN Soil

IMPORTANT: The information below this line; numeric observation, photography,and all other forms of input are a part of a technological study conducted by DELTAPLAN Systems, Inc., RD department. As such this information may be used and featured in articles and publications.

Lab Use Only	Sample ID*	County, State	Acreage	Soil Type	Season
002F2G100122	05	LA County, CA	8000 sq ft	Muck **Mineral**	**Hot** Cool

- [X] IRRIGATION REDUCTION
- [X] SOIL CORRECTIONS
- [X] SOIL STABILITY
- [X] WATER RETENTION
- [X] GREEN MASS INCREASE
- [X] GREEN MASS RECOVERY
- [ ] ROOT SYSTEMS
- [ ] SEED GERMINATION

DELTAPLAN Soil-

the soil housing the DELTAPLAN "smart" polymer technology of biochemical water retention, and regulated delivery mechanisms.

DELTAPLAN Soil TEST Field

8,000 sq ft isolated soil lot, square shaped, with artificial mound in the center.
Sand/clay content: >20%.
Ground cover: GRASS Turf mix.
Mound: Infield mix/clay.

Hot Season	-50%
Cool Season	-80%
Soil health support	
Plant life support	

sprinkler irrigation system

CONTROL Soil Field

soil lots comparable in location, composition, and foot traffic, NOT housing the DELTAPLAN Soil technology.

Irrigation	100%

OBSERVATION FORM DELTAPLAN Soil

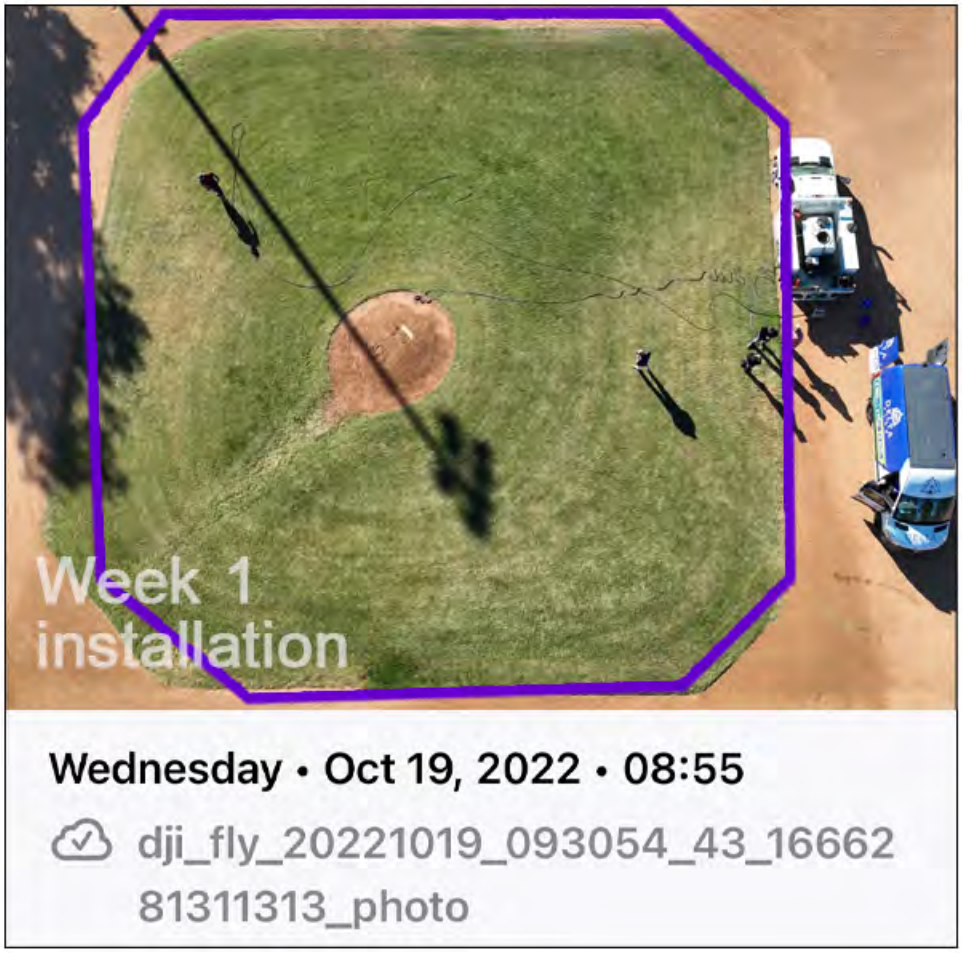
DELTAPLAN Polymer Systems
RD Laboratory
9010 Owensmouth Avenue
Canoga Park, CA 91304
phone: (818)669-6875
email: contact@deltaplansystems.com
www.deltaplansystems.com

TESTING LOCATION

Scholl Canyon Baseball Field
Field 1/ Diamond
Glendale, CA 91206
City of Glendale
Community Services and Parks

IMPORTANT: The information below this line; numeric observation, photography,and all other forms of input are a part of a technological study conducted by DELTAPLAN Systems, Inc., RD department. As such this information may be used and featured in articles and publications.

Lab Use Only	Sample ID*	County, State	Acreage	Soil Type	Season
002F2G100122	05	LA County, CA	8000 sq ft	Muck **Mineral**	**Hot** Cool



CURRENT IRRIGATION SCHEDULE:
4 sessions per week
25 minutes each

TOTAL IRRIGATION TIME PER WEEK:
100 minutes

DELTAPLAN SOIL IRRIGATION SCHEDULE:

1. Starting October 26, 2022 (Week 2, Day 8) reduce the irrigation time by 50%.

4 sessions per week
12.5 minutes each

TOTAL IRRIGATION TIME PER WEEK:
50 minutes

2. Gradually reduce the irrigation time based on moisture level readings and overall performance of the technology.

October, 2022
Average rainfall: 0.61in
Rain 5 days
Snow 0 days
Avg temps 81° / 59° F

Recommended reduction range:
-50% during HOT season
-80% during COOL season

OBSERVATION FORM DELTAPLAN Soil

IMPORTANT: The information below this line; numeric observation, photography,and all other forms of input are a part of a technological study conducted by DELTAPLAN Systems, Inc., RD department. As such this information may be used and featured in articles and publications.

Lab Use Only	Sample ID*	County, State	Acreage	Soil Type	Season
002F2G100122	05	LA County, CA	8000 sq ft	Muck **Mineral**	**Hot Cool**

Biochemical activity duration:
Five years from the time of INSTALLATION Date: Oct 19, 2022 **EXPIRATION:** September 2027

Week 1: Day 1: 100%

Week 3: Day 16 -50% day 8

Pre-installation field preparation: the day before the grass on the field was shaved down to maximize soil exposure.

Week 1:

Day 1 - Installation. 150 lb of Deltaplan Soil polymer gel diluted in 187.5 gallons of water.
Applied to soil with a hand-held sprayer.
Followed by 1 full irrigation session (25 minutes).
Regular irrigation schedule kept for the first week.

Week 2:

Starting October 26, 2022, the weekly irrigation time reduced by 50%.
The amount of irrigation water is down to 1/2 of the current consumption rate maintained for the CONTROL fields.

OBSERVATION FORM DELTAPLAN Soil

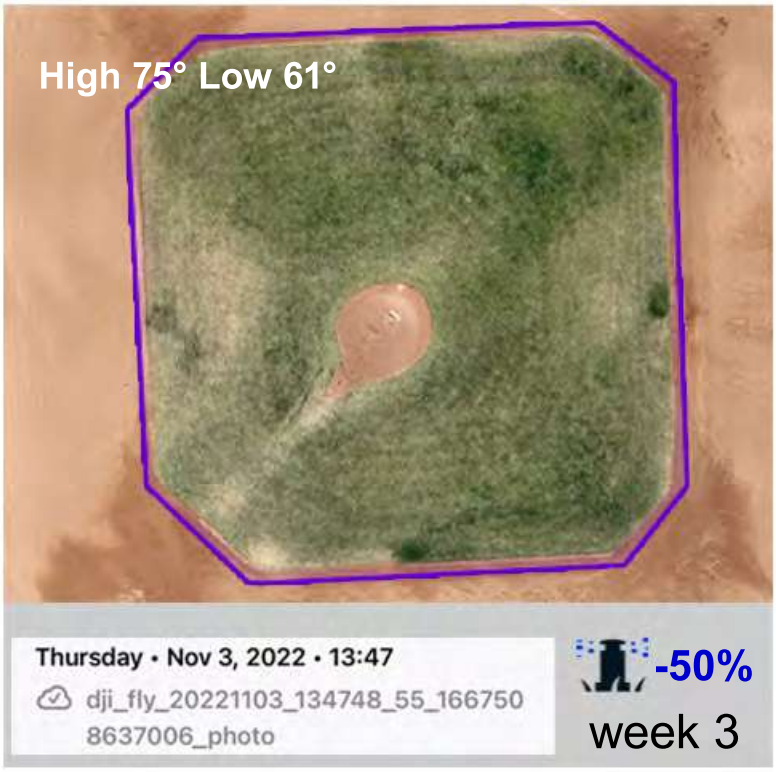
IMPORTANT: The information below this line; numeric observation, photography,and all other forms of input are a part of a technological study conducted by DELTAPLAN Systems, Inc., RD department. As such this information may be used and featured in articles and publications.

Lab Use Only	Sample ID*	County, State	Acreage	Soil Type	Season
002F2G100122	05	LA County, CA	8000 sq ft	Muck **Mineral**	**Hot** **Cool**

OBSERVATION FORM DELTAPLAN Soil

IMPORTANT: The information below this line; numeric observation, photography,and all other forms of input are a part of a technological study conducted by DELTAPLAN Systems, Inc., RD department. As such this information may be used and featured in articles and publications.

Lab Use Only	Sample ID*	County, State	Acreage	Soil Type	Season
002F2G100122	05	LA County, CA	8000 sq ft	Muck **Mineral**	**Hot** Cool

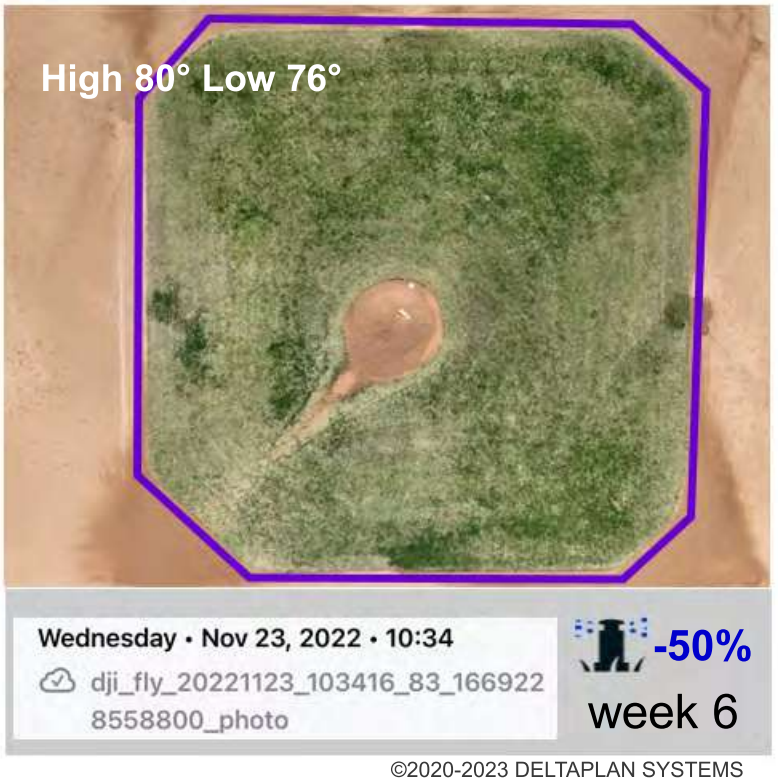


November, 2022
Average rainfall: 0.94in
Rain 7 days
Snow 0 days
Avg temps 74° / 51° F

Week 3: The irrigation time has been reduced by 50% for the previous eight days (October 26, 2022.) The green mass sustainability and color change indicate the polymer system's successful embedding (installation) into the soil. The soil plot is now housing;

1. water retention and loss-free consumption mechanisms

2. bio-adhesive water and nutrient delivery mechanisms



OBSERVATION FORM DELTAPLAN Soil

IMPORTANT: The information below this line; numeric observation, photography,and all other forms of input are a part of a technological study conducted by DELTAPLAN Systems, Inc., RD department. As such this information may be used and featured in articles and publications.

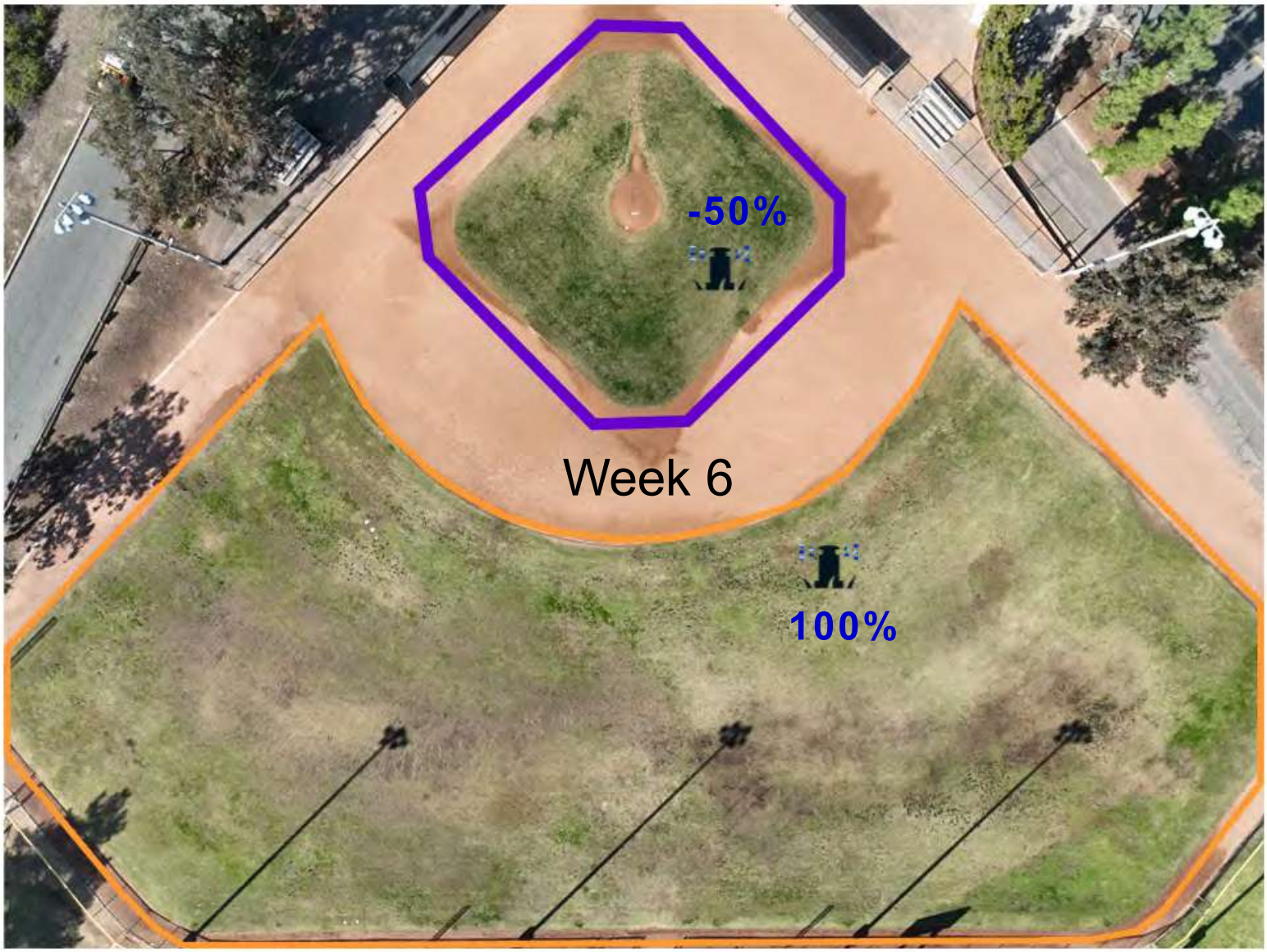
Lab Use Only	Sample ID*	County, State	Acreage	Soil Type	Season
002F2G100122	05	LA County, CA	8000 sq ft	Muck **Mineral**	**Hot** Cool

Week 4: The irrigation time remains reduced by 50%

Week 5: The irrigation time remains reduced by 50%

Week 6: The irrigation time remains reduced by 50%.

At 50% reduction the TEST field exhibits visible improvement in green mass sustainability and recovery, compared to the CONTROL field receiving 100% of irrigation water.



CONTROL fields: soil plots comparable in location, composition, and foot traffic, NOT housing the DELTAPLAN Soil technology.

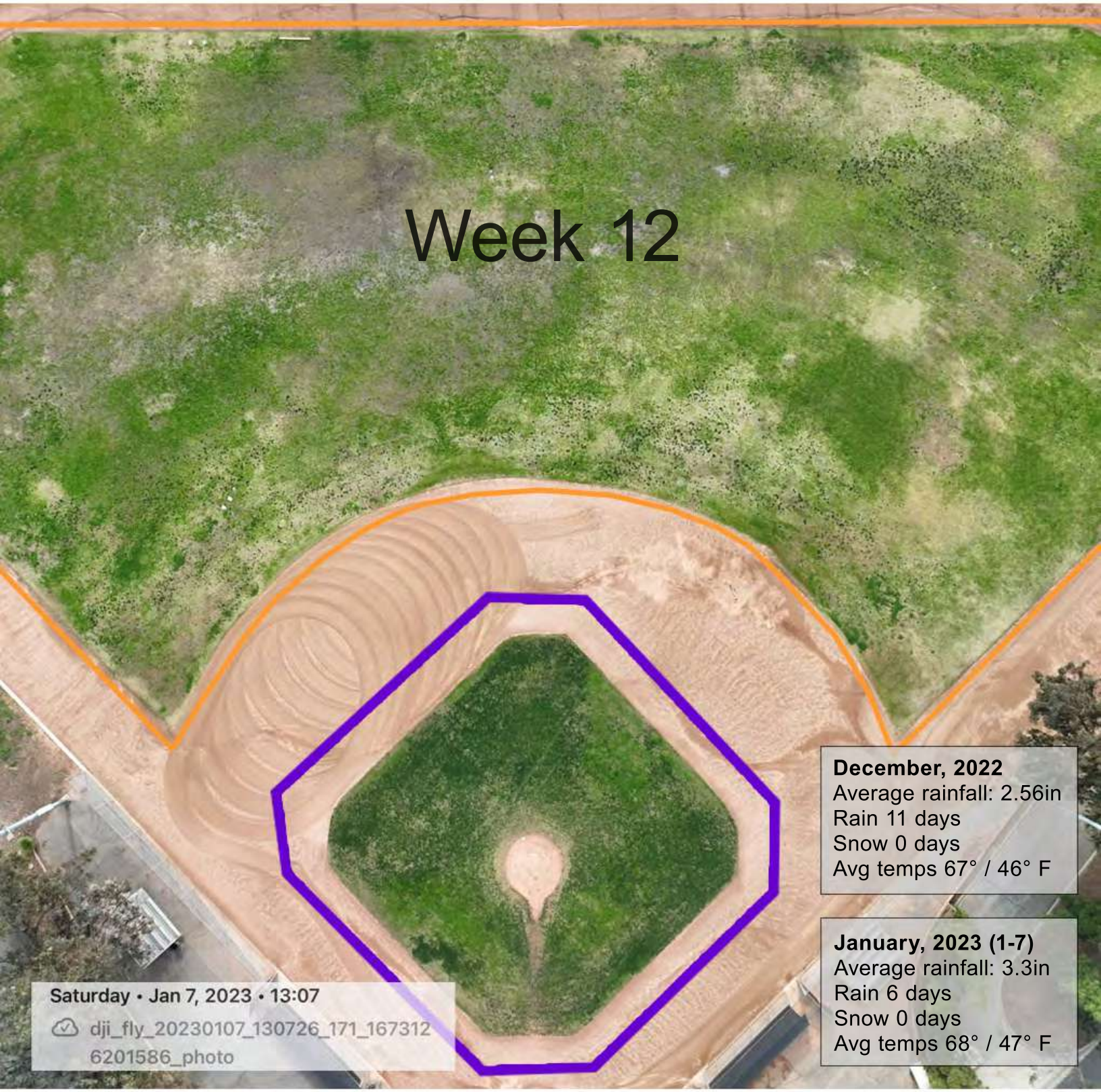
Week 7: The irrigation time remains reduced by 50%.

OBSERVATION FORM DELTAPLAN Soil

IMPORTANT: The information below this line; numeric observation, photography,and all other forms of input are a part of a technological study conducted by DELTAPLAN Systems, Inc., RD department. As such this information may be used and featured in articles and publications.

Lab Use Only	Sample ID*	County, State	Acreage	Soil Type	Season
002F2G100122	05	LA County, CA	8000 sq ft	Muck **Mineral**	**Hot** **Cool**

Week 8 through Week 12: irrigation turned off due to weather conditions: rainy season, heavy rainstorms in late November, December 2022, first week of January 2023.

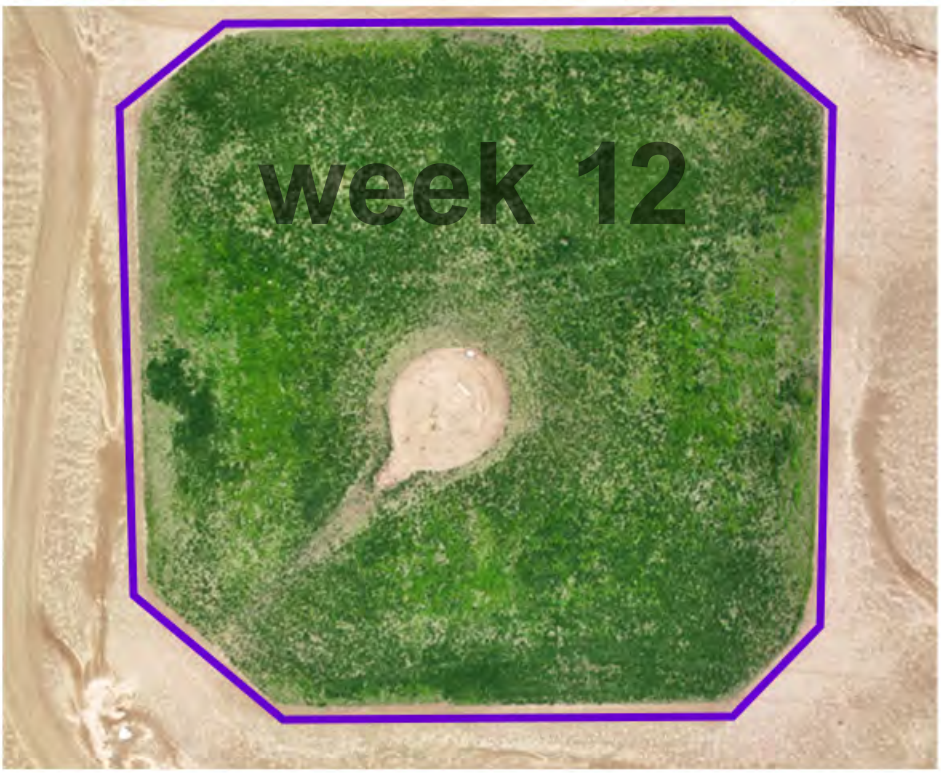


OBSERVATION FORM DELTAPLAN Soil

IMPORTANT: The information below this line; numeric observation, photography,and all other forms of input are a part of a technological study conducted by DELTAPLAN Systems, Inc., RD department. As such this information may be used and featured in articles and publications.

Lab Use Only	Sample ID*	County, State	Acreage	Soil Type	Season
002F2G100122	05	LA County, CA	8000 sq ft	Muck **Mineral**	**Hot** **Cool**

- [X] IRRIGATION REDUCTION
- [X] SOIL CORRECTIONS
- [X] SOIL STABILITY
- [X] WATER RETENTION
- [X] GREEN MASS INCREASE
- [X] GREEN MASS RECOVERY
- [ ] ROOT SYSTEMS
- [ ] SEED GERMINATION



12-WEEK REPORT

WEEK 1	100%
WEEK 2	-50%
WEEK 3	-50%
WEEK 4	-50%
WEEK 5	-50%
WEEK 6	-50%
WEEK 7	-50%
WEEK 8	—
WEEK 9	—
WEEK 10	—
WEEK 11	—
WEEK 12	—

OBSERVATION FORM DELTAPLAN Soil

IMPORTANT: The information below this line; numeric observation, photography,and all other forms of input are a part of a technological study conducted by DELTAPLAN Systems, Inc., RD department. As such this information may be used and featured in articles and publications.

Lab Use Only	Sample ID*	County, State	Acreage	Soil Type	Season
002F2G100122	05	LA County, CA	8000 sq ft	Muck **Mineral**	**Hot** **Cool**

WEEK 12: In comparison with the CONTROL fields, the TEST field exhibits improved irrigation efficiency, improved water infiltration & retention, improved soil-plant symbiosis, improved water uptake efficiency, improved oxygen permeability, improved nutrient cycling, improved nutrient uptake efficiency.

CONTROL fields: soil plots comparable in location, composition, and foot traffic, NOT housing the DELTAPLAN Soil technology.