

BountiSeed™

Proprietary Aquamer® treatment improves water efficiency, seed germination and vigor, nutrient and crop input retention, and yields.



Corn Field First Trial Summary

(tested by Pacific Ag, Arroyo Grande, CA)

Vigor and Height Heat Maps:

Improvement in vigor and plant height from seed coating vs control.

VICOR		1	2	3	4
	10 DPP	15.2%	5.5%	8.9%	3.2%
21 DPP	17.6%	3.1%	7.5%	5.4%	
30 DPP	13.6%	5.3%	5.3%	7.5%	

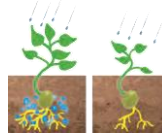
HEIGHT		1	2	3	4
	10 DPP	41.6%	10.0%	14.3%	6.9%
21 DPP	25.0%	10.5%	9.6%	8.2%	
30 DPP	27.5%	9.2%	6.7%	12.7%	

RapidScan and Chlorophyll meter

readings were also higher numerically.



TREATED UNTREATED



Stores 250x its weight in water, nutrients, crop inputs.

Leaf counts and plant weight

were all significantly higher for the treated seeds vs untreated.

Leaves per plant - 4 weeks after planting

Trt No.	Treatment Name	09/09/15 28 DA-A
1	Untreated Check	6.4 b
2	Seed Treatment	6.7 a

Weight of 20 plants - 4 weeks after planting

Trt No.	Treatment Name	09/09/15 28 DA-A
1	Untreated Check	407.1 a
2	Seed Treatment	452.3 a

Soil Fertility

Aquamer absorbed water and fertilizer

Soil Applied Crop Inputs

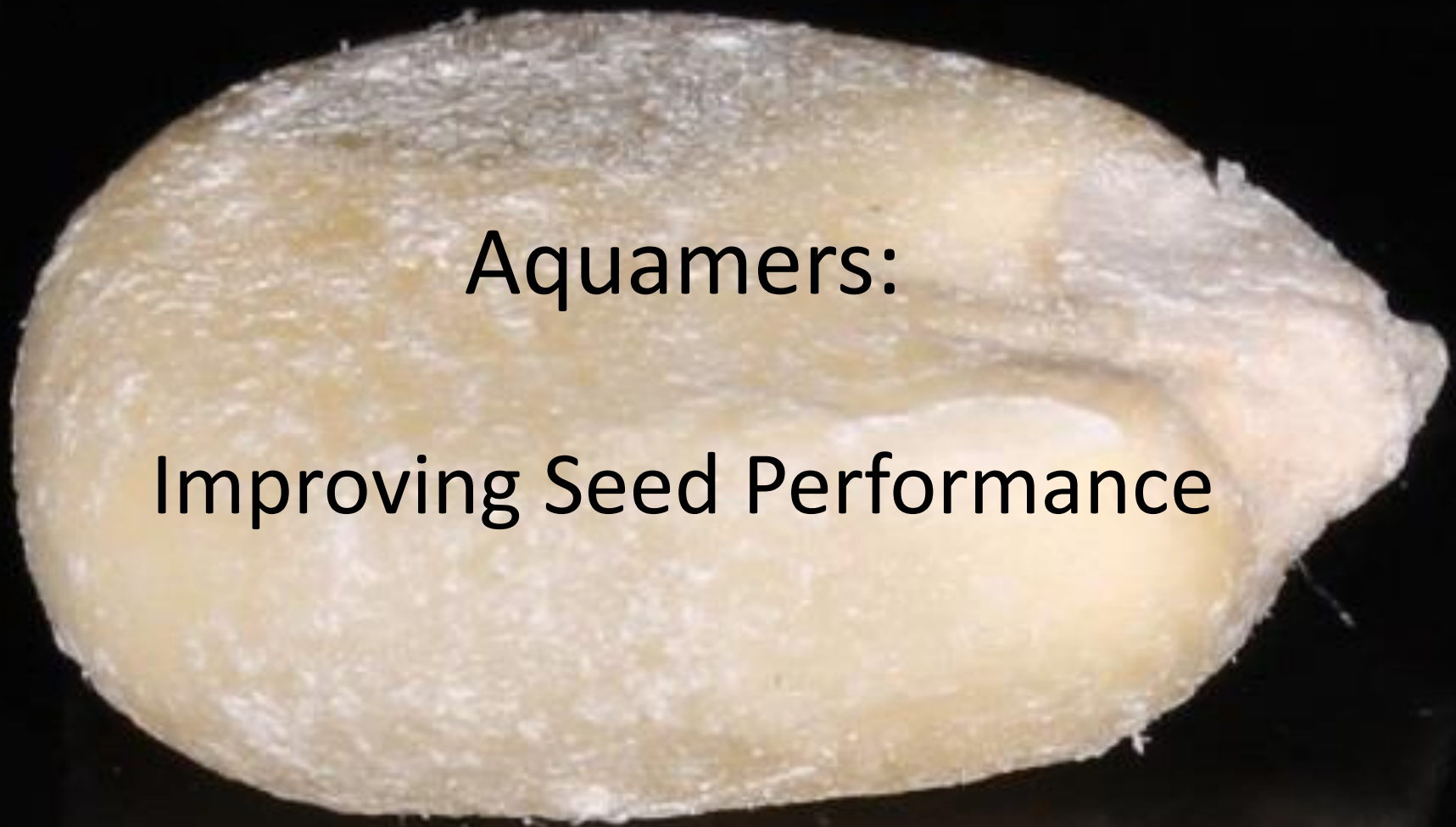
Aquamer absorbed water and crop inputs

mOasis
innovative crop science

- ◆ Pipeline of proprietary Aquamers
- ◆ Commercial in California and Mexico in 2015
- ◆ Seed treatments field tested in 2014, 2015
- ◆ Nutrient retention in seed zone

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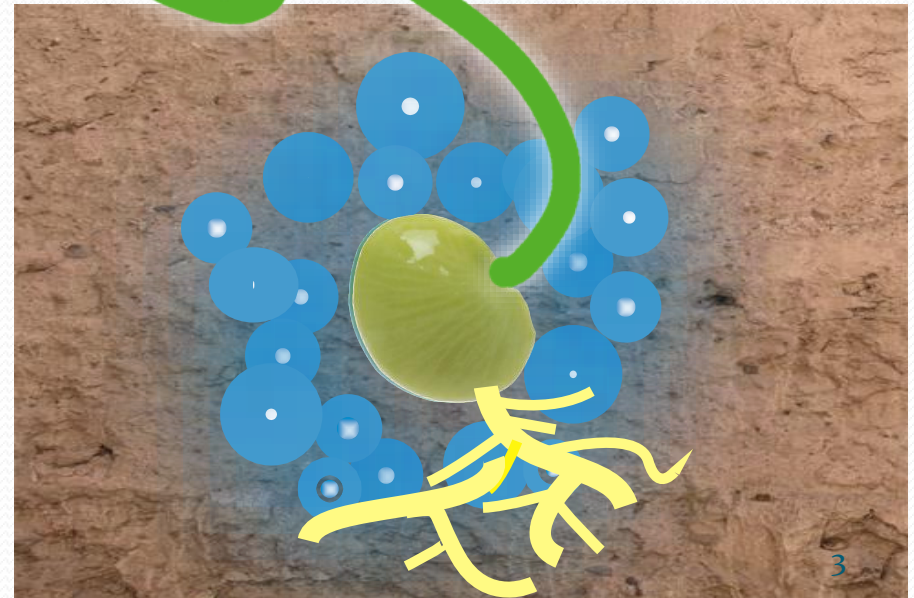
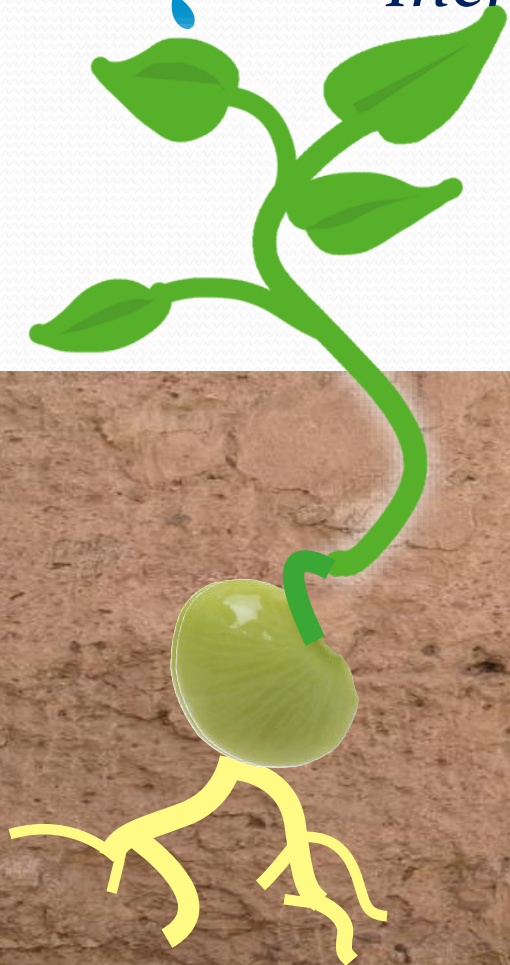
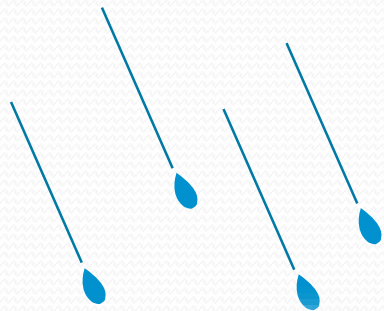
Aquamers:

Improving Seed Performance

BountiGel™

Commercial Aquamer™

*Decrease Water,
Increase Yields*



BountiGel Soil Amendment

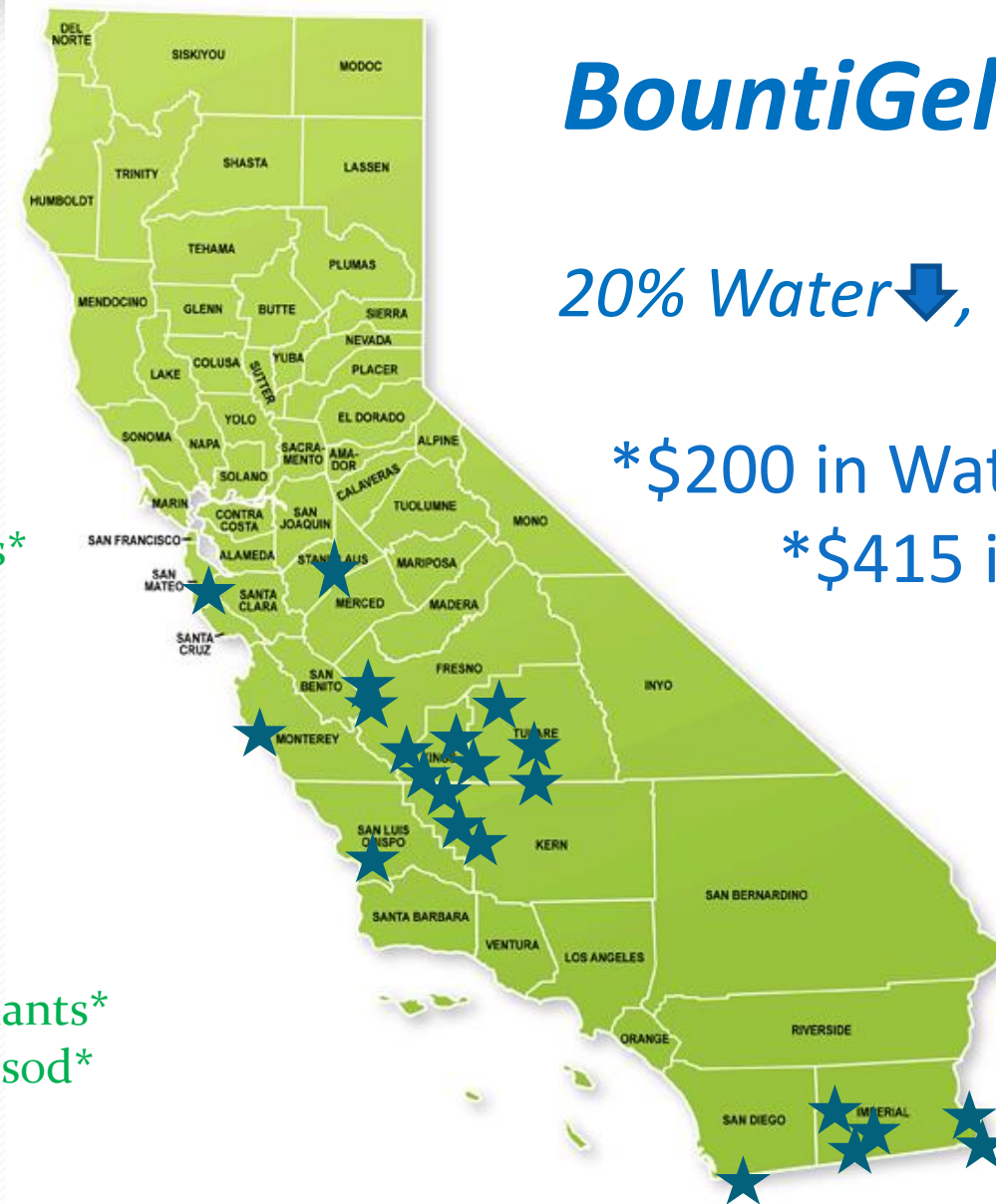


Control:
100% Irrigation
100% Fertigation

75% Irrigation
75% Fertigation
with *BountiGel™*

Crops:

- Tomatoes
- Onions
- Table Grapes
- Strawberries
- Brussels Sprouts*
- Cauliflower*
- Artichokes*
- Broccolini*
- Lettuce
- iceberg
- romaine
- Bell Peppers
- Cherry Tree replants*
- Golf Course- re-sod*



BountiGel 2014/15

20% Water ↓, 10~20% Yield ↑

*\$200 in Water Savings

*\$415 in Yield Increases

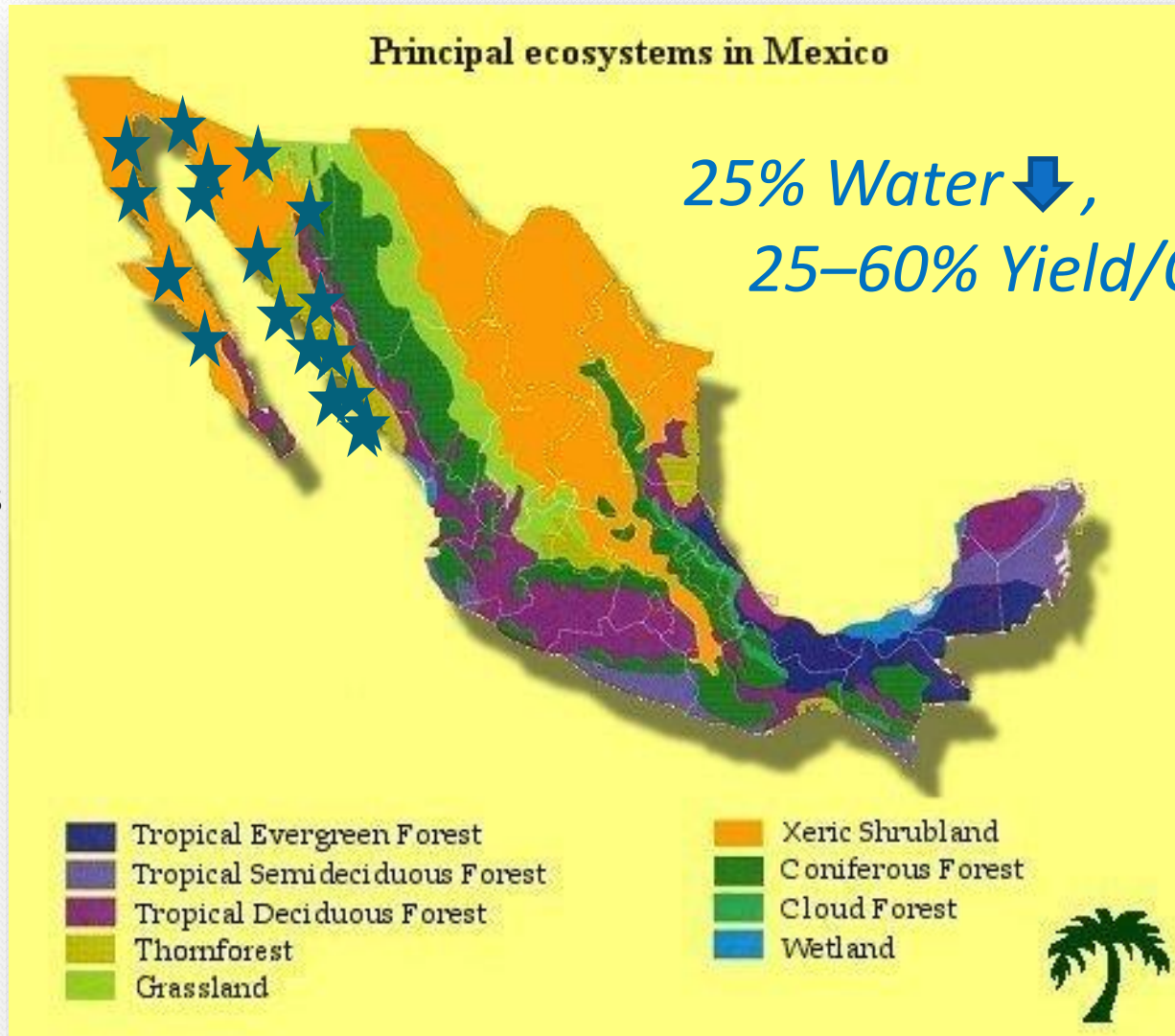
* New in 2015


Mexico

Crops:*

Tomatoes
 Bell Peppers
 Cucumbers*
 Green Onions
 Asparagus
 Table Grapes*
 Cantaloupes*
 Transplants*
 Strawberries

* New in 2015





Seed treatment developed to
bring BountiGel benefits to
corn, soybeans and other crops.

Seed Coating Action Plan:

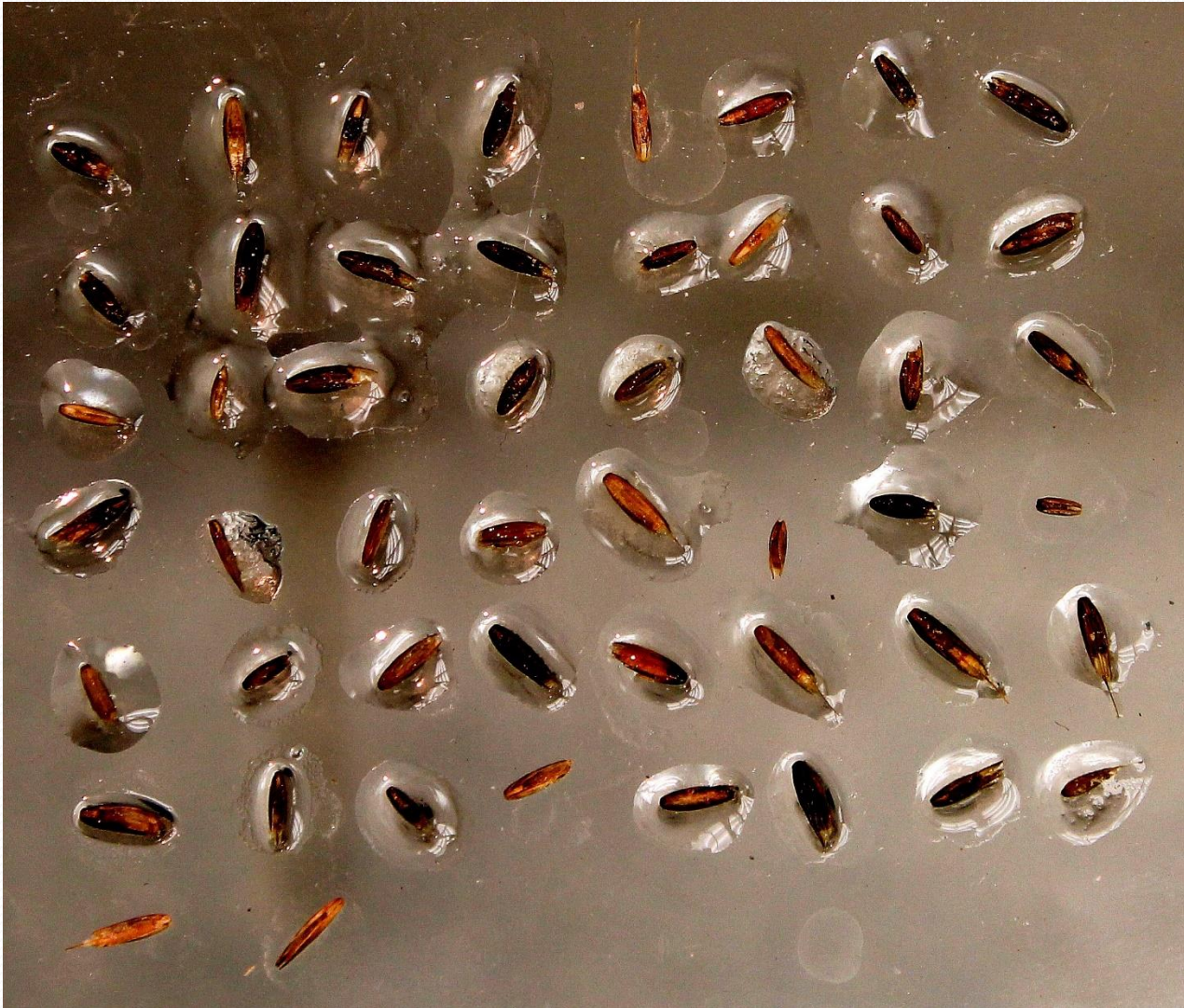
1. Grass Seed Coating- Proof of Concept
2. Corn and Soybean Iowa State Results
3. CA Field Results
4. 2015 Plans
5. 2016 and beyond

Seed Coating Swelling Test

- BountiGel coated turf seeds
- Industry Standard turf seeds

Method: 50 seeds on a glass plate, soaked with 0.1 mL water for 30 minutes

BountiGel Coated Turf Seeds



Observed:

Swelling seeds
44/50 (88%)

Industry Standard Seeds



Observed
Swelling seeds
6/50 (12%)

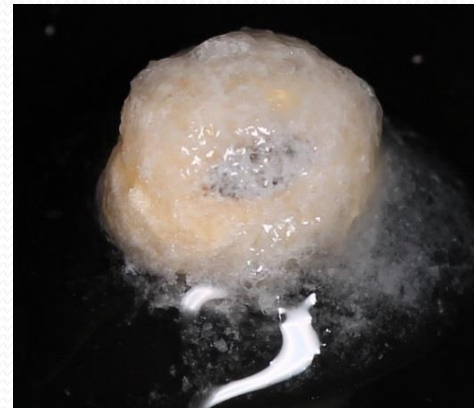
Control



**Coated w/
BountiGel**



**Coated w/
BountiGel
(wet)**



1st Step: Corn and Soybean Germ Test from ISU

BountiGel coated soybean

PURITY ANALYSIS		PERCENT	GERMINATION	PERCENTAGE					DAYS TESTED	NO. OF SEEDS
				HARD SEED	DORMANT SEED	TOTAL VIABLE	ABNORMAL SEEDLNGS	DEAD SEED		
PURE SEED SOYBEAN		X	84	0	0	84	15	1	7	400

Untreated soybean control

PURITY ANALYSIS		PERCENT	GERMINATION	PERCENTAGE					DAYS TESTED	NO. OF SEEDS
				HARD SEED	DORMANT SEED	TOTAL VIABLE	ABNORMAL SEEDLNGS	DEAD SEED		
PURE SEED SOYBEAN		X	77	0	0	77	22	1	7	400

BountiGel coated corn

PURITY ANALYSIS		PERCENT	GERMINATION	PERCENTAGE					DAYS TESTED	NO. OF SEEDS
				HARD SEED	DORMANT SEED	TOTAL VIABLE	ABNORMAL SEEDLNGS	DEAD SEED		
PURE SEED CORN		X	98	0	0	98	2	0	7	400

Untreated corn control

PURITY ANALYSIS		PERCENT	GERMINATION	PERCENTAGE					DAYS TESTED	NO. OF SEEDS
				HARD SEED	DORMANT SEED	TOTAL VIABLE	ABNORMAL SEEDLNGS	DEAD SEED		
PURE SEED CORN		X	98	0	0	98	1	1	7	400

2nd Step: Further Validation

- Corn
 - Field trials- germ, uniformity, vigor
 - Minimum 4 replications
- Soybeans
 - Germination Trials- validate results
 - 10 replications

Corn Seed Field Trial

401

402

301

302

201

202

101

102

Location: Pacific Ag Research, Inc. (Arroyo Grande, CA)
Configuration of the 1st planting



Treated

Untreated

Corn Field First Trial Summary

(tested by Pacific Ag)

Vegetative Stage Heat Map. Increase in plant growth vegetative leaf stage from seed coating as compared to control.

		1	2	3	4
V.S.	30 DPP	17.6%	10.0%	5.3%	7.5%

Height Heat Map. Increase in plant height from seed coating, as compared to control.

		1	2	3	4
HEIGHT	10 DPP	41.6%	10.0%	14.3%	6.9%
	21 DPP	25.0%	10.5%	9.6%	8.2%
	30 DPP	27.5%	9.2%	6.7%	12.7%

Corn Field First Trial Summary

(tested by Pacific Ag)

Vigor Heat Map. Improvement in vigor from seed coating as compared to control.

		1	2	3	4
VIGOR	10 DPP	15.2%	5.5%	8.9%	3.2%
	21 DPP	17.6%	3.1%	7.5%	5.4%
	30 DPP	13.6%	5.3%	5.3%	7.5%

Vigor, height, and crop stage were all statistically higher for the treated seeds than the untreated.

RapidScan and Chlorophyll meter readings were also higher numerically as well.

Standard Germination of Soybean Seeds

(Viking 2265)

Control: **84.6 ± 1.90 %**
Aquamer treated: **88.4 ± 1.96 %**

Control seed germination percentage	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
	86	82	87	87	85	83	84	86	82	84
Treated seed germination percentage	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10
	90	91	89	87	87	89	89	89	84	89

(t-test, unpaired, p =0.0003, significant difference)
 (AOSA rules, 400 seeds, 10 replications, Iowa State Seed Lab)

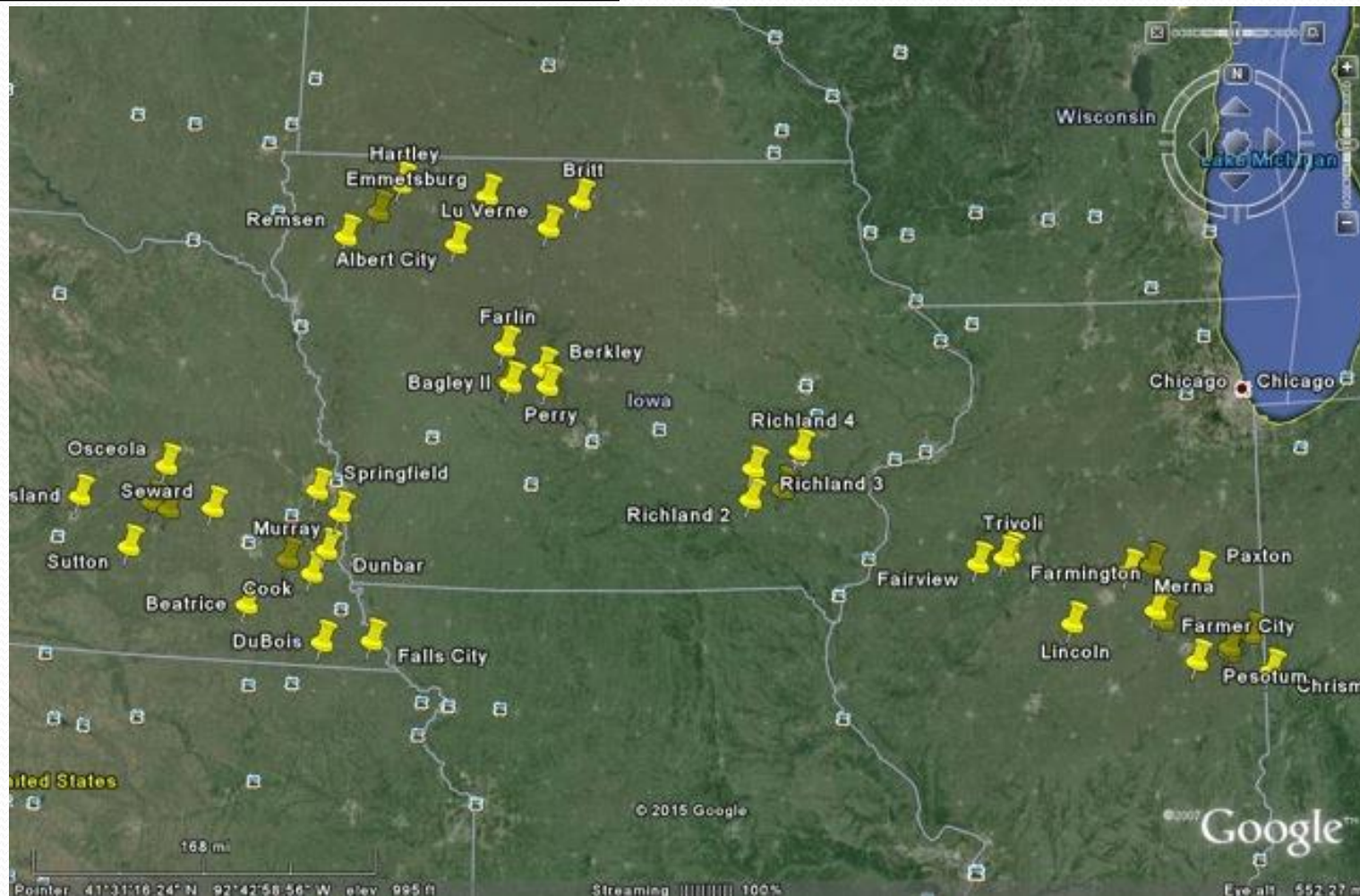
2015 Seed Treatment Plan

1) Coat corn seeds for field trial testing at 45 locations in mid-West.

These treated seeds in germination test at Iowa State Germ Lab validated 2014 results that Aquamer treatment had no negative impact on germination.

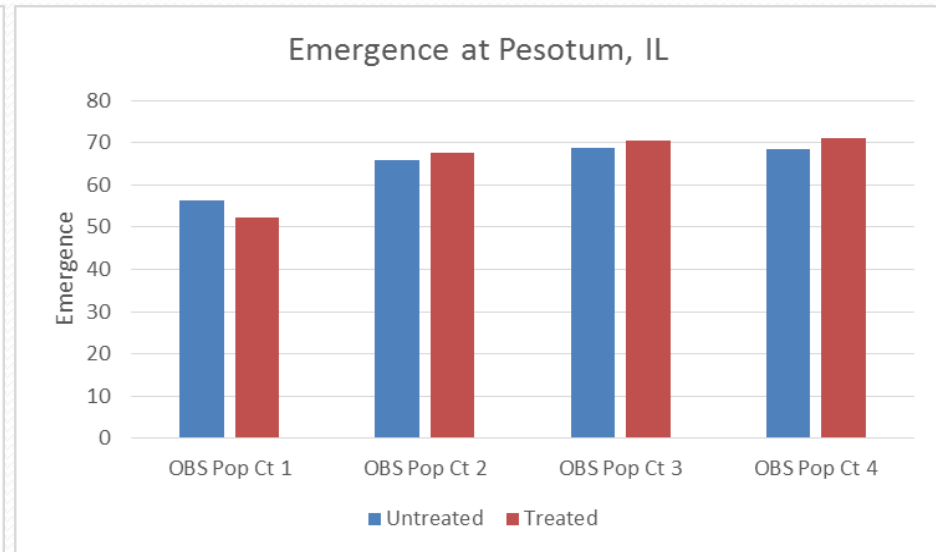
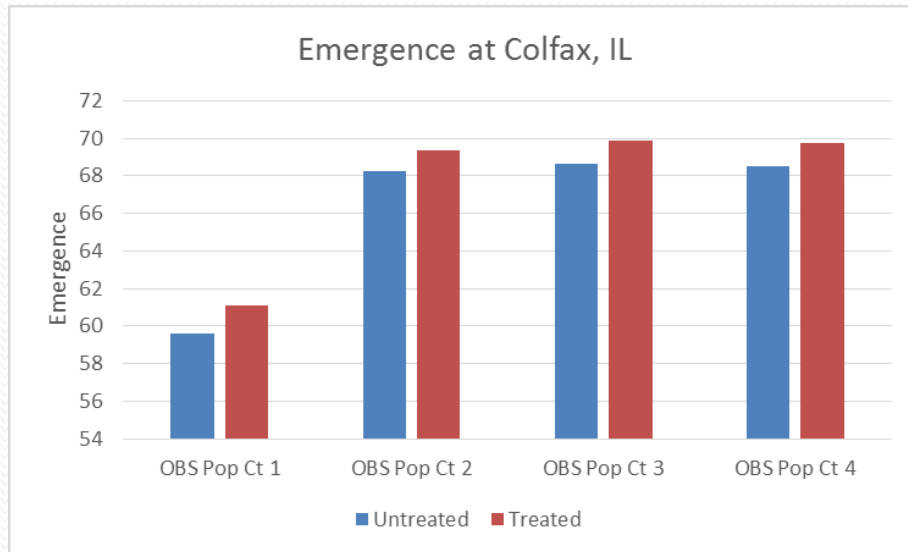
R&D in 2015: Research Projects- Corn Trials

Corn Seed Trial Locations:



Corn Seed Trial- Results

"Due to the unusual high rainfall, the trials in Midwest did not show statistical difference between Aquamer treated and control." "There was no adverse impact on seed germination due to the high moisture at planting" CRO



CA Trials: Summer 2015

(tested by Pacific Ag)

Initiated CA trials due to excess rainfall in Midwest

Height, leaf counts and plant weight were all significantly higher for the treated seeds than the untreated.

Numerical advantages in emergence (stand count) and vigor in treated areas



CA Trials: Summer 2015

(tested by Pacific Ag)

Number of Leaves per Plant- 4 weeks after planting

Trt No.	Treatment Name	09/09/15 28 DA-A
1	Untreated Check	6.4 b
2	Seed Treatment	6.7 a

Weight of Twenty Plants with seed treatment as compared to control

Trt No.	Treatment Name	09/09/15 28 DA-A
1	Untreated Check	407.1 a
2	Seed Treatment	452.3 a

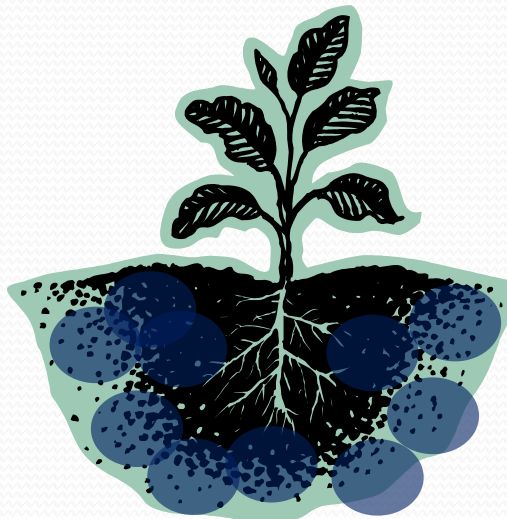
Soil Fertility:



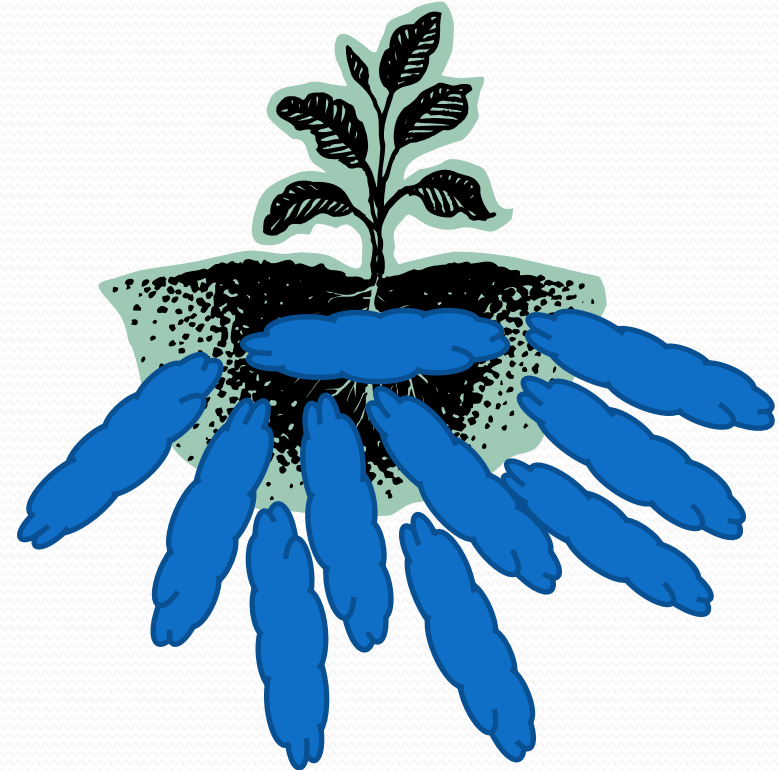
Aquamer absorbed
liquid fertilizer



Non-immobilized
fertilizer solution



Aquamer
immobilized fertilizer
surrounds plant seed



Fertilizer was not used efficiently
leaches out of seed zone.

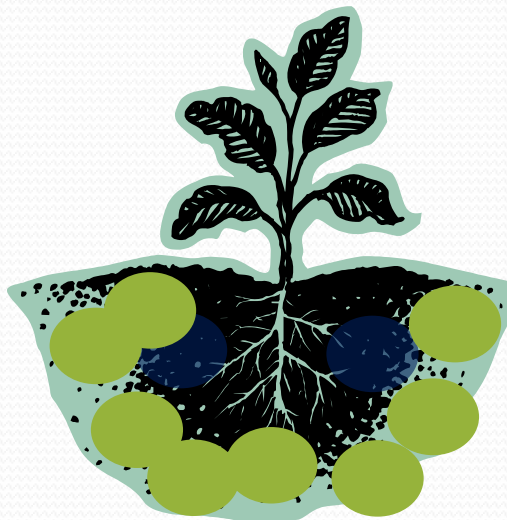
Soil Applied Crop Inputs: (insecticides, fungicides and biologicals)



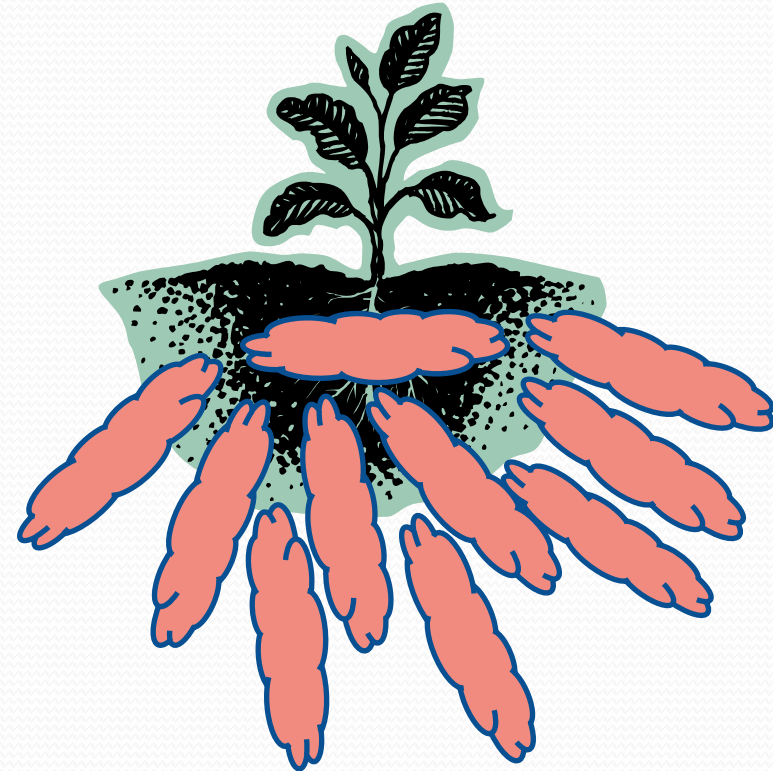
Aquamer absorbed
water soluble crop
inputs



Non-immobilized
crop inputs



Aquamer
immobilized crop inputs
surround plant seeds



Crop inputs not used efficiently,
leach out of seed zone.

BountiGel Seed Treatment Summary

- Two years of testing validates Aquamer as a seed treatment improves overall seed performance.
- Improved germination
- Improved vigor, height, and crop stage
- Potential to immobilize fertilizers and crop inputs near seeds