HEALTHY SOILS HAWAI'I

A PILOT PROGRAM FOR SOIL HEALTH & CARBON SEQUESTRATION ON HAWAII'S WORKING LANDS

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THE SOIL CARBON ~~PROBLEM~~ SOLUTION

- Hawaii's Farmers and Ranchers collectively manage about 1 million acres, close to ¼ of the states land
- Much of Hawaii's cultivated lands have depleted carbon pools from years of tillage, and loss of native forest
- Act 15: Hawaii will be carbon neutral by 2045, established Greenhouse Gas Sequestration Task Force
- Hawaii cannot do this without sequestering carbon on working lands

HEALTHY SOILS HAWAII

Mission: To highlight the ecosystem services provided by Hawaii's farmers and ranchers as stewards of the land, and to support their efforts to mitigate climate change impacts.

What we do: Work with farmers and ranchers to implement Best Management Practices that support soil health, build & sequester carbon, and reduce greenhouse gas emissions.

Goals for year 1:

- Engage stakeholders
- Develop a process
- Work with at least 5 farm and ranch partners on Oahu managing at least 20 acres.

YEAR 1

- Secured funding from NRCS and State of Hawaii Greenhouse Gas Sequestration Task Force, Office of Planning
- Interviewed, were advised by, or partnered with over 20 organizations in HI and CA
- Partnered with 5 producers on Oahu and Maui managing over 5,900 acres
- $4,000 made in incentive payments

BEST MANAGEMENT PRACTICES (BMPS)

- Cover cropping
- Compost additions
- Nutrient management
- Tree/agroforestry plantings
- Intensive rotational grazing, holistic grazing
- Reduced tillage
- Crop rotation

BARRIERS TO ADOPTION

- Money 75%
- Time 66%
- Labor 61%

Baseline Soil Health and Soil Carbon Data

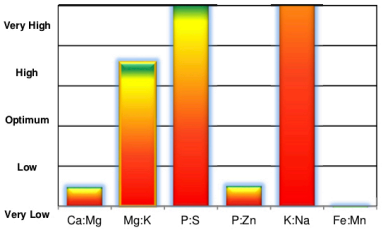
Soil Health and Fertility Report

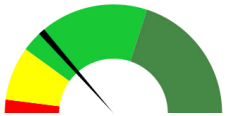
Submitted by Crop Nutrient Solutions. **File Number:** 40541
Client: Crop Nutrient Solutions. **Sample Date:** 11/9/2018
Location: HARC
Sample ID: 11

Intended Crop: Corn
Crop Yield (bu/a): 200

Soil Health Factors		Ranking:
Solvita-CO_2 Burst	101.9	High
*WEOC (ppm)	145.0	Low
*WEON (ppm)	19.9	Medium
C:N ratio	7.3	Optimum

Value of Available Nutrients per acre			
$N + P_2O_5 + K_2O =$			$554.65
Available Nutrients (lbs/acre)			
N	P_2O_5	K_2O	
147	158	720	





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Soil Health Score

*NUTRIENT ANALYSIS

Analysis	Units	Level Found
Nitrate-N	ppm	15.9
Ammonium-N	ppm	1.4
Total Inorganic N	ppm	17
Estimated Biological N	lb/a	112
Estimated N for Crops	lb/a	147
Phosphorus as P	ppm	34
Potassium as K	ppm	600
Calcium	lb/a	1284
Magnesium	lb/a	658
Sodium	lb/a	48
Sulfur as S	ppm	7
Boron	ppm	1.25
Iron	ppm	51
Manganese	ppm	428
Copper	ppm	6.51
Zinc	ppm	4.69
*PECEC		7.77

Ca:Mg	Ca+Mg:Al	Ca %	Mg %
1.95	3.75	41.3	21.2
4.5 to 8	>1.7		

Estimated Calcium Need (lb/a) 831

Notes and Recommendations

USDA Cover Crop Recommendation

Suggested Cover Crop Blend:

30% Legume 70% Grass

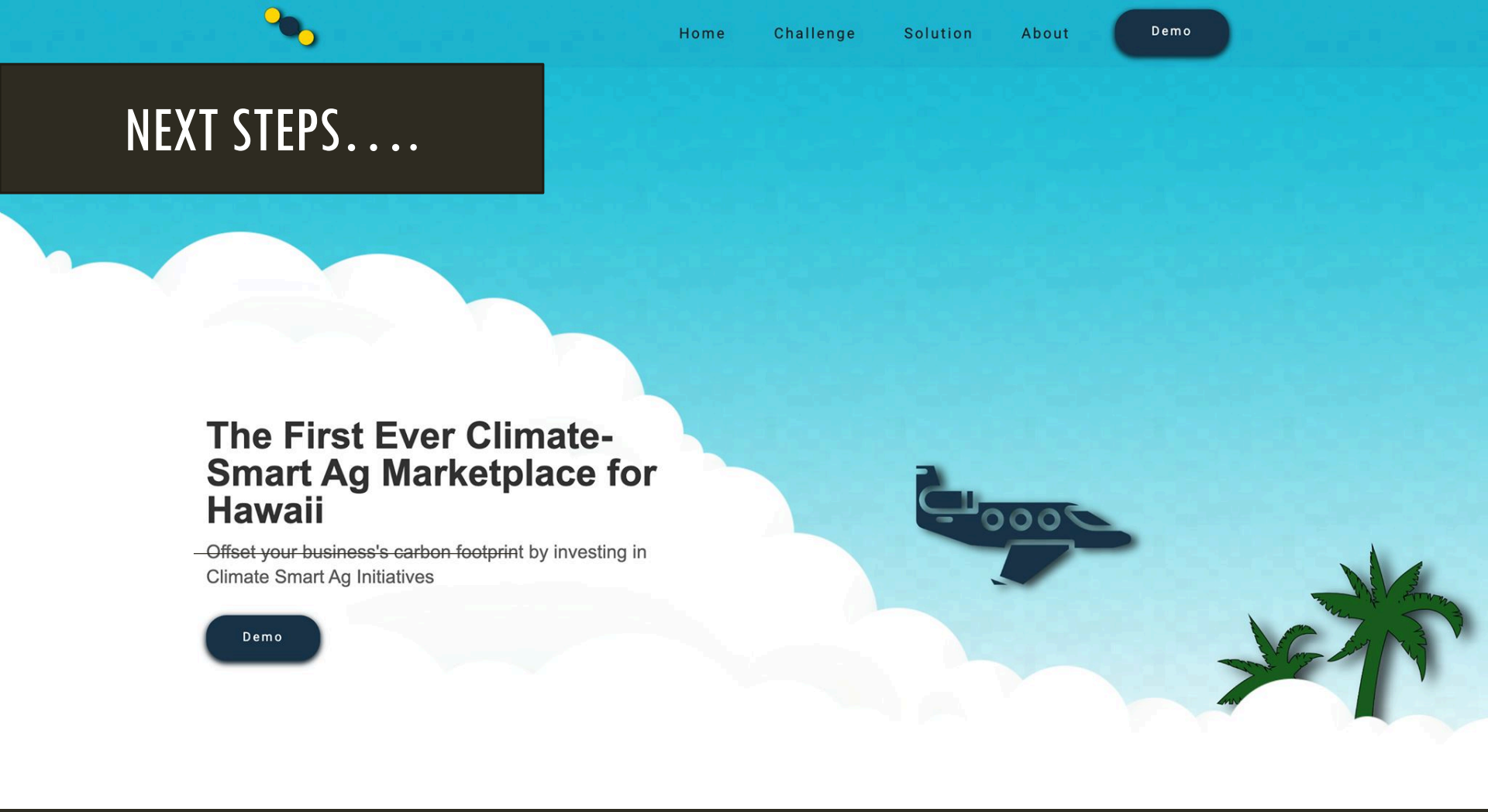
**Nutrient Required (estimated) lbs per acre			
200	100	80	$N-P_2O_5-K_2O$
**Additional Nutrient Need lbs per acre			
53	0	0	$N-P_2O_5-K_2O$

*Notes: WEOC is water extractable organic carbon and WEON is water extractable organic nitrogen
All nutrients extracted using H3A organic acid extract. PECEC is plant effective CEC calculated using H3A
**Brookside Laboratories, Inc. does not guarantee any recommendation as university calibration work has not been done

HEALTHY SOILS HAWAII PRELIMINARY SURVEY RESULTS

- 88% want to improve soil health
- 70% farm <10 acres
- 10% farm > 5,000 acres
- 50% beginning farmers <10 years experience
- 50% > 10 years experience
- Organic, Conventional, Ranching nearly equally represented

NEXT STEPS….



- Carbon Farm Plans / Soil Health Plans
- Find ways to continue leveraging state and federal funding
- Add private funding – Climate Smart Ag Marketplace