

Communicating Climate Smart Agriculture to Tree Nut Growers in San Joaquin Valley, California

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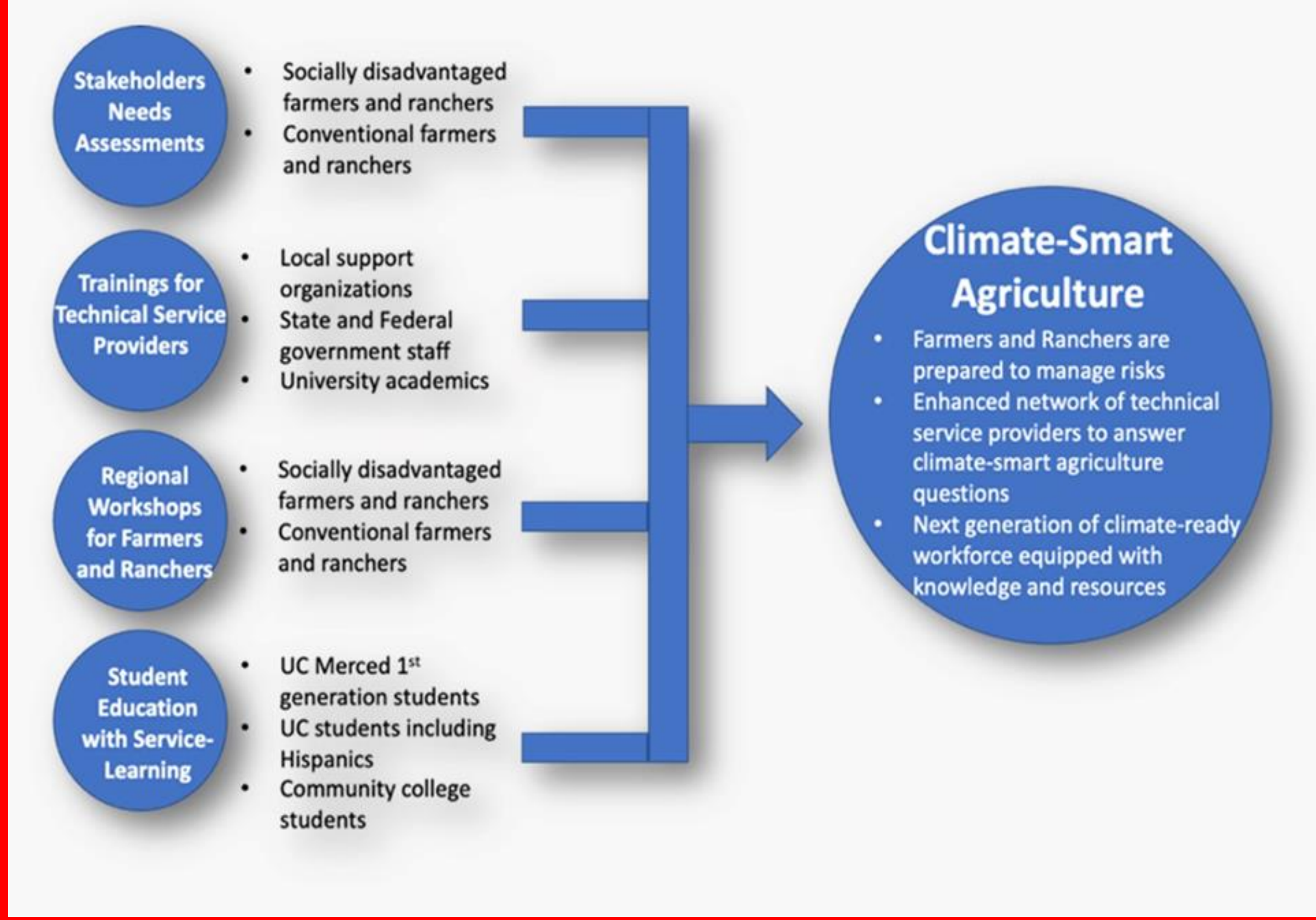
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Introduction

California agriculture is at a critical juncture due to the projected climate change trends and impacts in the coming decades.

Farmers increasingly seek locally relevant information on climate change impacts for their cropping systems and adaptation practices and resources.

UC researchers and educators designed a multifaceted Climate Smart Agriculture (CSA) education project to work on the complex agriculture-climate nexus in evolving environmental conditions in California.



Part of the multi-program extension education strategies of the project is organizing regional and crop-specific workshops to communicate to growers and Technical Service Providers (TSPs) about the CSA practices.

A workshop was conducted with tree nut growers and TSPs in the San Joaquin Valley in March 2023.



This study sought to determine the participants' knowledge levels of CSA programs and practices before and after the workshop to assess the knowledge gained, and the potential for promotion and adoption of CSA.

Methods

Formative evaluation survey of a tree nut workshop

Subjects of Study

- Tree nut growers and TSPs
- 36 participated

Development of the Instrument

- Four questions (2 for open-ended, a scale, choice)
- A scale question was set post-then-pre-format.
- Likert-type 5-point scale [1=no knowledge, 5=superior]

Data Collection

- Used a paper survey at the end of the workshop

Response rate

- 30(83.3%): 13(43.3% growers); 17(56.7% TSPs).

Reliability

- Cronbach's alpha: Before (0.862); after (0.876).

Key Findings

Pre-workshop knowledge levels

- Generally low (minimal) knowledge levels.
- Overall, 2.88; Growers = 2.96; TSPs = 2.82.

After-workshop knowledge levels

- Increase in knowledge to an "adequate" level.
- Overall, 4.12; Growers = 4.12; TSPs = 4.07.

Differences in Knowledge levels

- Growers had higher knowledge in pre-workshop.
- No differences in knowledge after the workshop.
- Themes that had practical applications statistically increased growers' knowledge.
- Themes with technical information statistically increased TSPs' knowledge.

Selected Workshop Session Themes on CSA Programs and Practices	Knowledge Levels Before the Workshop					Knowledge Levels After the Workshop				
	Growers		TSPs		Effect Size	Growers		TSPs		Effect Size
	n	Mean	n	Mean		n	Mean	n	Mean	
Climate Change Trends	13	3.0	16	3.4		13	4.1	16	4.4	0.604
Climate Change Impacts	13	3.3	16	3.3	0.087	13	4.4	16	4.3	
Chills on Orchard Crops	12	3.2	17	3.1		12	4.4	17	4.1	0.392
Climate Change on Pests	13	3.0	17	2.5		13	4.1	17	3.7	
Pest Management	12	2.9	17	2.7		13	4.0	17	3.5	
Water Management	13	3.5	16	3.6		13	4.3	16	4.4	
Optimal Power Supply	12	2.6	16	2.2		12	3.9	16	3.7	0.321
Optimal Power Usage	12	2.6	16	2.2		12	3.8	16	3.7	
Winter Cover Crops	13	3.0	16	2.6		13	4.5	16	4.1	0.505
WOR Potential Benefits	13	3.4	15	3.1	0.210	13	4.3	15	4.3	
WOR Field Considerations	13	3.2	16	3.1	0.095	13	4.2	16	4.2	
Nutrient Management	13	2.5	17	2.9	0.352	13	4.0	17	4.2	0.256
CSA Programs & Resources	13	3.0	17	3.2		13	4.5	17	4.4	
CalAgroClimate Tools	13	1.8	17	1.9		13	3.3	17	4.0	

Implications and Recommendations

To increase knowledge during workshops, a potential for the adoption of CSA programs and practices, we should:

- Tailor our communication to specific regions, commodities, and community-based needs.
- Purposively select speakers who have conducted research in similar regions to relay results back.
- Adopt narrative communication strategies for non-scientific audiences
 - Storytelling of results from climate-agriculture science models and experiments.
- Provide options for incentives and credits like Certified Crop Advisor, Pest Control Advisor credits

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