The Desert Agriculture Soil Health Initiative (DASHI)

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Environmental Science

THE UNIVERSITY OF ARIZONA
Yuma Center of Excellence for Desert Agriculture

College of Agriculture, Life & Environmental Sciences

USDA United States Department of Agriculture
Natural Resources Conservation Service

BLANKINSHIP SOIL HEALTH CONSULTING LLC

77% of respondents prefer more information about soil health conservation

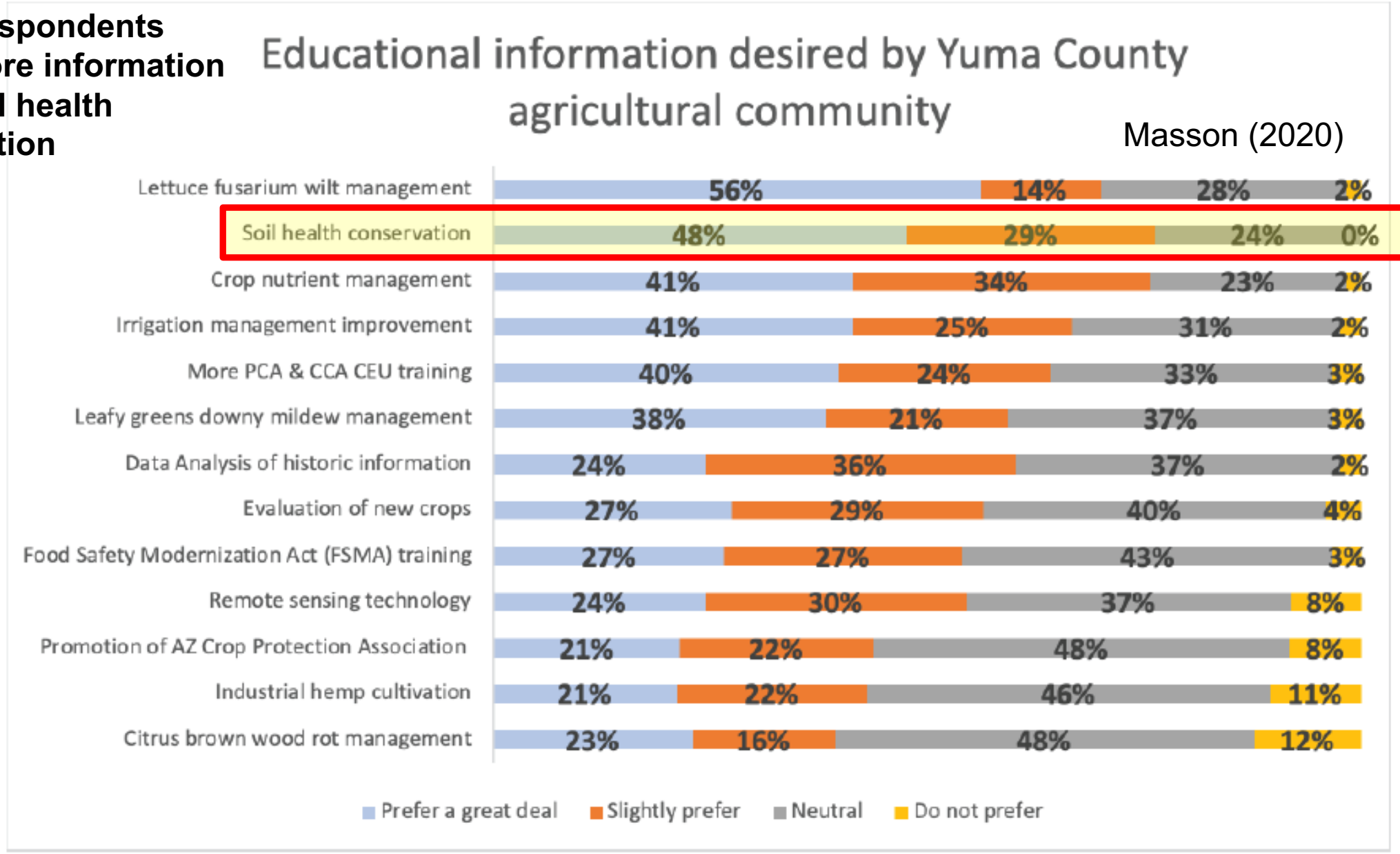


Figure 4. Results from question 4 “What agricultural topics would you like more educational resources provided to you from the Yuma County Cooperative Extension Department?”.

THE UNIVERSITY OF ARIZONA
Cooperative Extension

az2067 October 2023

A Soil Health Needs Assessment Survey in Arizona

Debankur Sanyal, Robert Masson, Charles Stackpole and Taylor Arp.

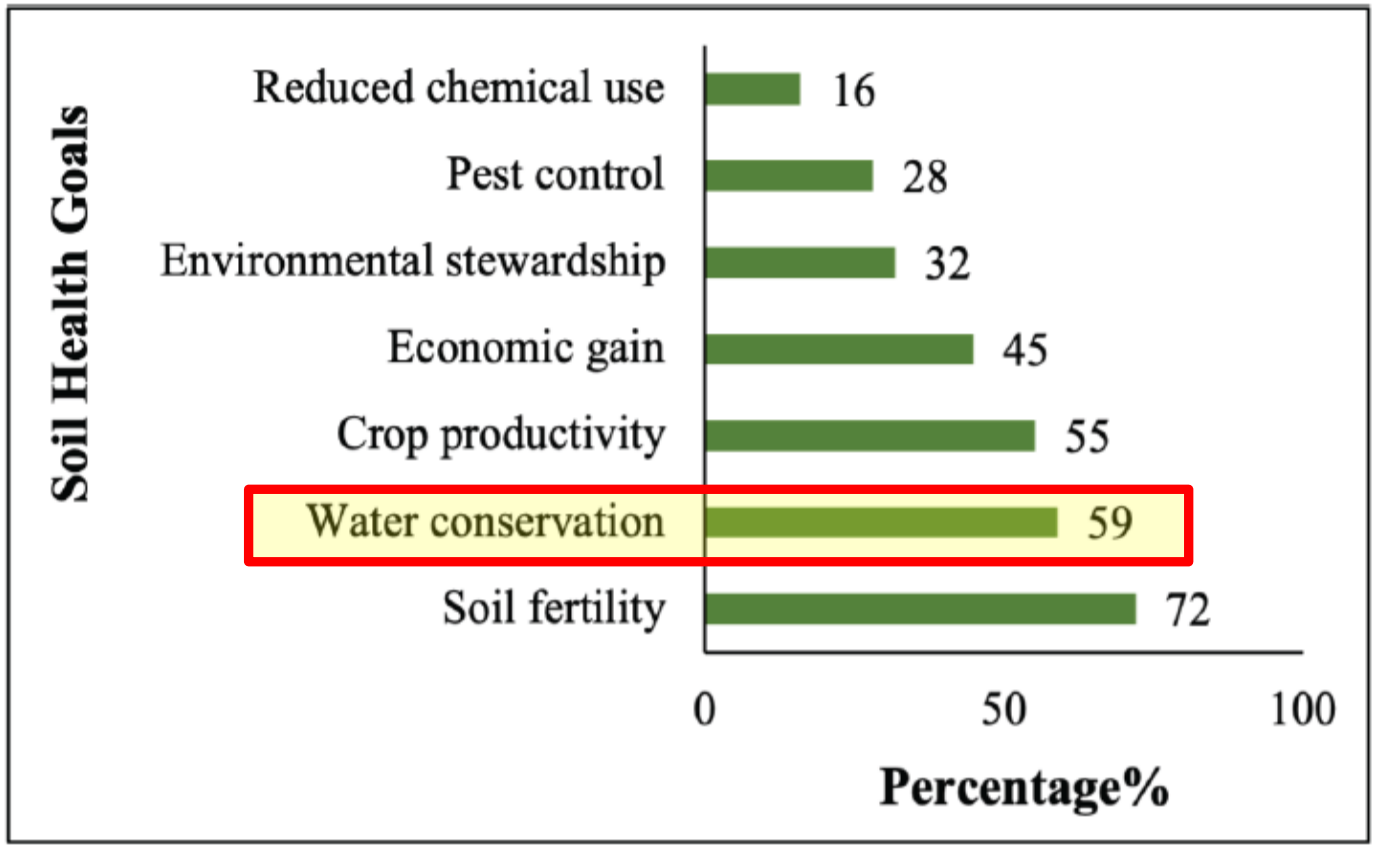
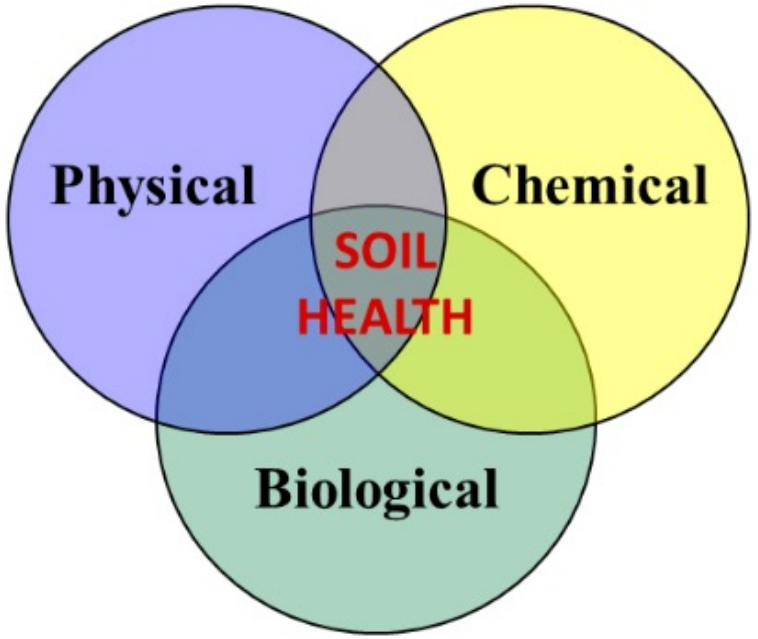


Figure 4. Data indicating the most important soil health goals in their operations as voted by the respondents (total responses 107)

SOIL HEALTH

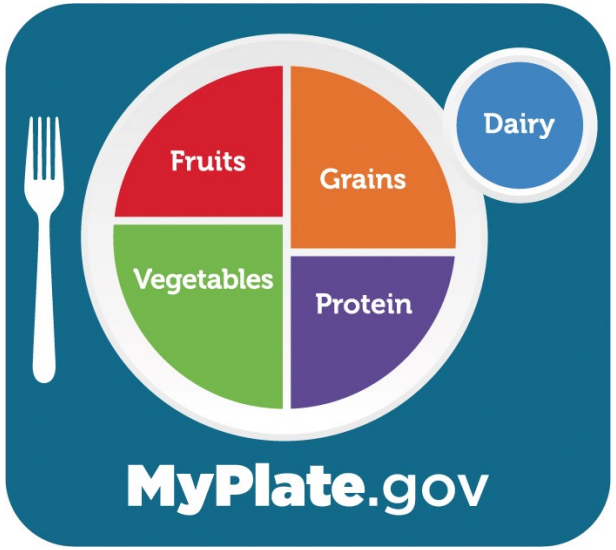
The continued capacity of a soil to function as a vital, living ecosystem that sustains plants, animals, and humans.



The Overarching Challenges

1. Deserts account for almost half (44%) of the world's croplands and feed over 3 billion people, but how can this continue in the future as the world continues to become hotter and drier?

2. If we don't produce nutritious fruits and vegetables in the U.S., then we'll need to import these foods to sustain humans.

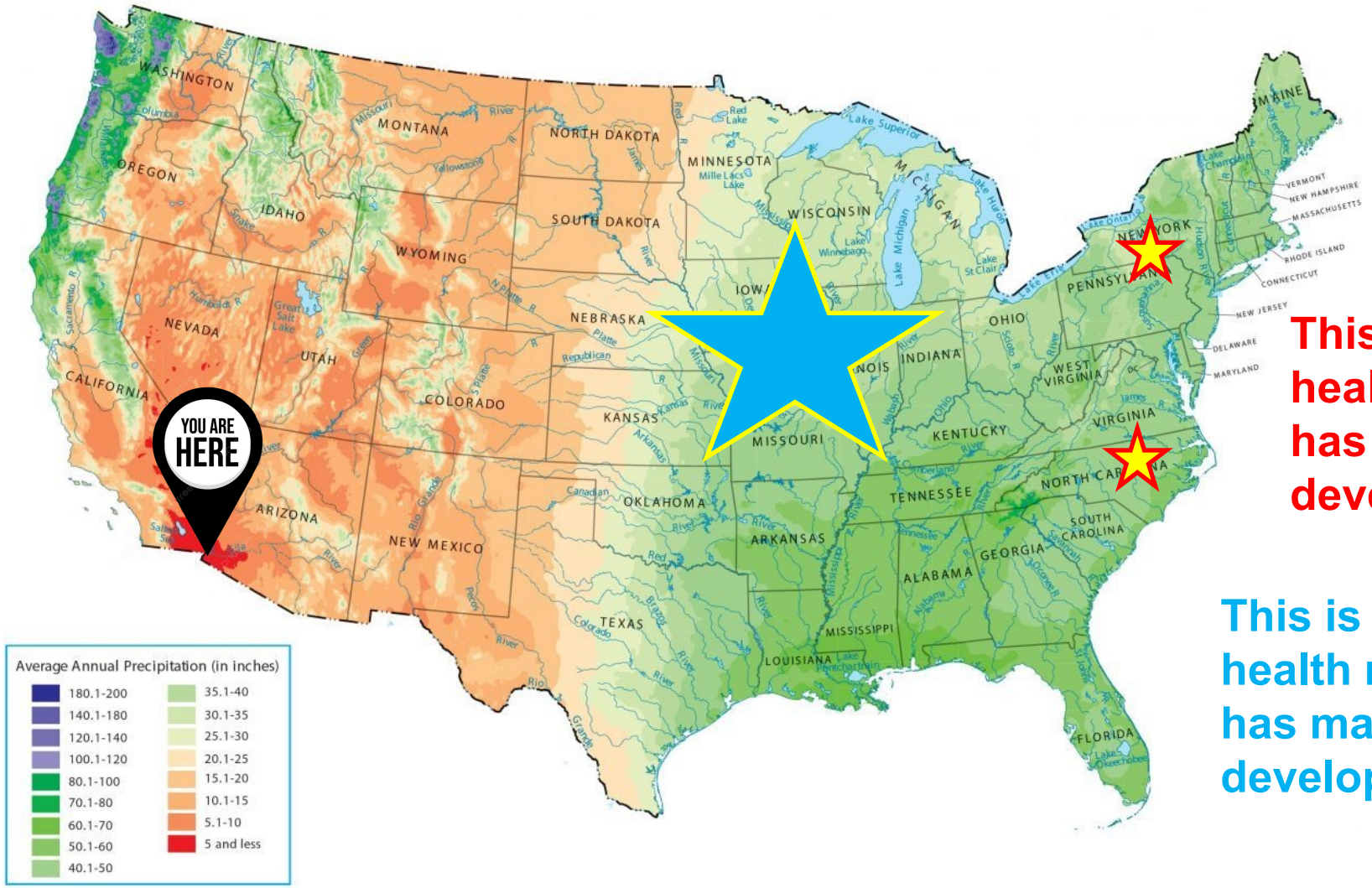


The Overarching Challenges

3. Current soil health science fails to address agricultural sustainability in arid and semiarid regions in the United States and globally. **We need to know more about desert soils!**

   Desert croplands have unique soils and environments that require tailored solutions.

Why is the current state of soil health science failing desert ag production and sustainability?



This is where soil health assessment has mainly been developed

This is where soil health management has mainly been developed

Desert Agriculture Soil Health Initiative (DASHI)

Current Partners & Funders

THE UNIVERSITY OF ARIZONA
Yuma Center of Excellence for Desert Agriculture

THE UNIVERSITY OF ARIZONA
Cooperative Extension

*Jesus Tovar

*Mark Stover

J-V Farms
Produce for a healthier tomorrow.™

Barkley Co. of Arizona

Smith Farms Company
Yuma, Az

Four Little Devils Farms

T&P Farms Inc.

Employee Owned Family Farm
Tanimura & Antle
Premium Fresh Produce

Nutrien
Feeding the Future™

D'Arrigo California

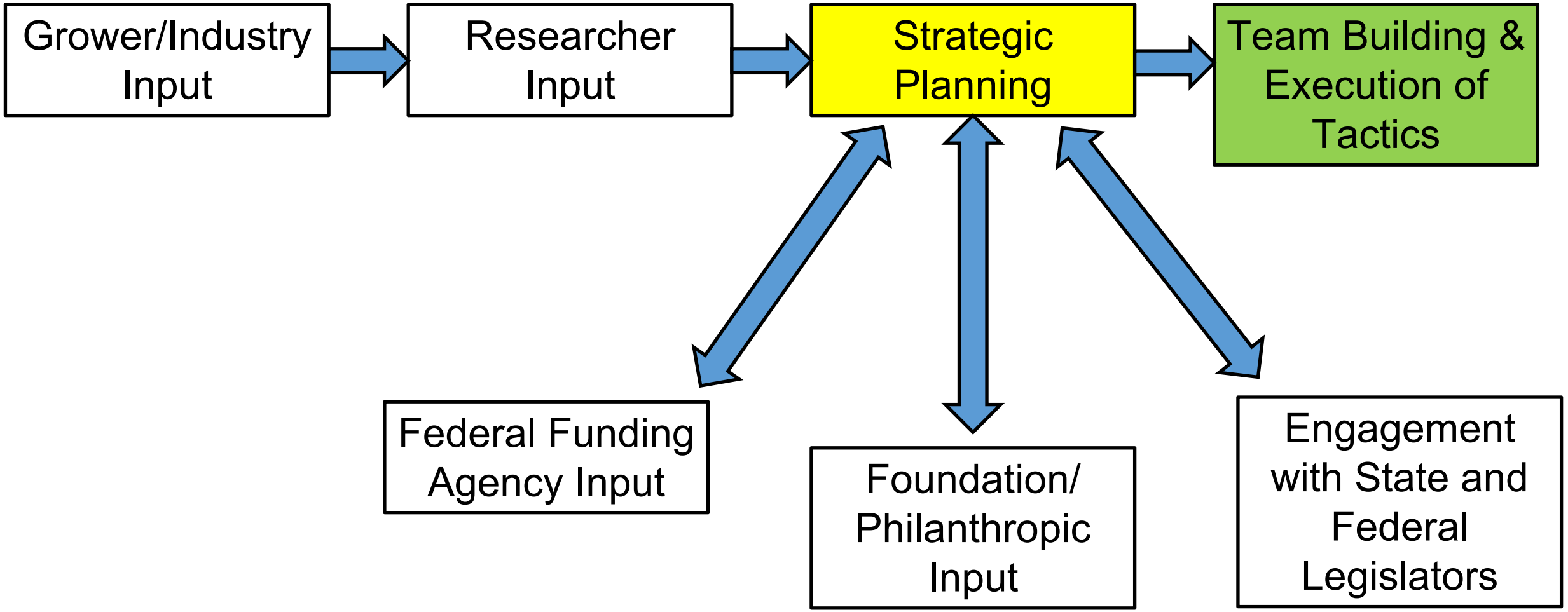
Gowan Seed Company

RDO Equipment Co.

The Mission of DASHI is to:

- Sustain desert ag for the next 100+ years
- Sustain human nutrition and wellness
- Accelerate outreach at state and federal levels to increase awareness and funding of desert agricultural soil health research, which is under-resourced and under-researched given its large and growing importance to global food production.

Strategic Plan for Desert Agriculture Soil Health



DASHI Strategic Goals
(Working Draft)

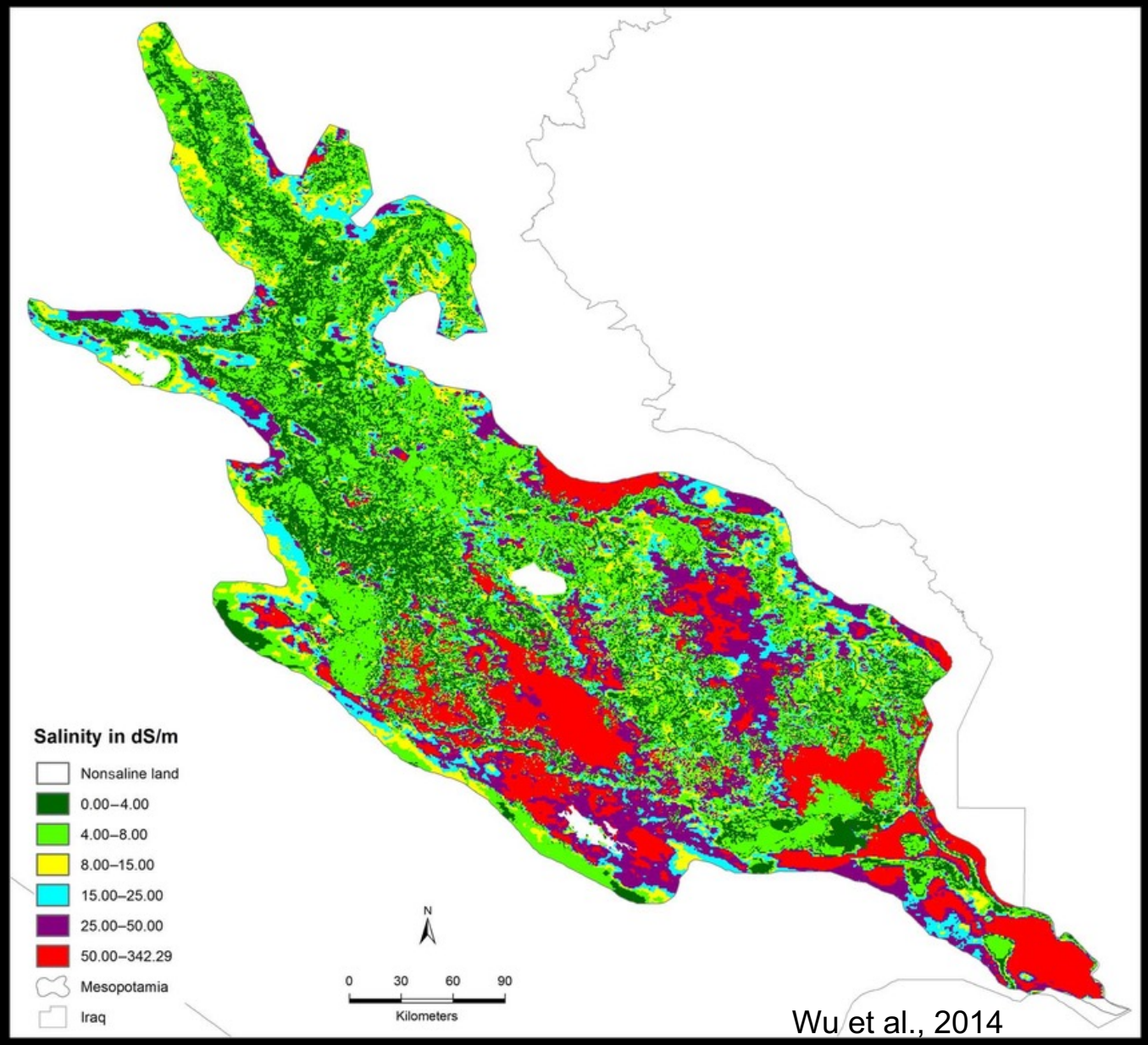
I. A **standard** for assessing soil health in desert croplands

II. Ways to reduce soil salinity using less **water**

III. Techniques to manage soil health while ensuring **food safety**

IV. The optimization of fertilizer use, plant **nutrition**, and crop nutrient density to enhance human health

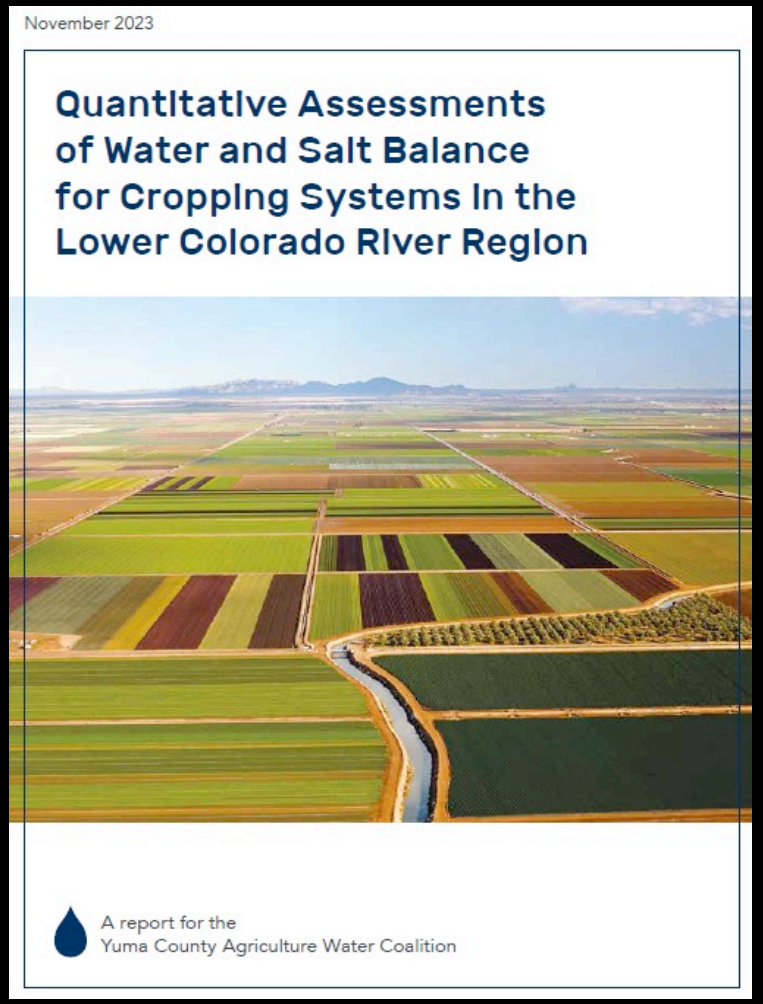
Soil Salinization



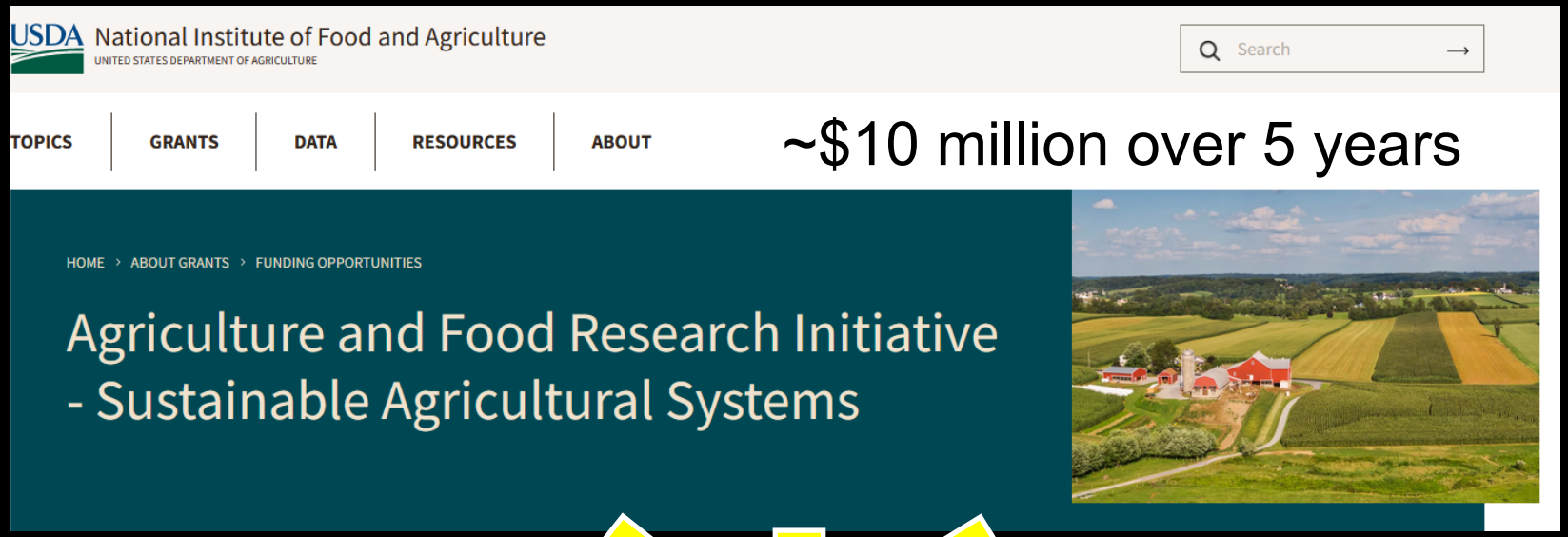
Wu et al., 2014

Leaching with Extra Water:

The current way of dealing with high salinity in surface soils



Ways to manage and adapt to soil salinity in croplands using less water



I am looking for collaborators and partners!

Water Desalination Technologies

Leaching Enhancers

Soil Fungal Inoculants