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GLOBAL LEARNING AND EVIDENCE EXCHANGE
CLIMATE-SMART AGRICULTURE

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Climate-Smart Agriculture is an Approach Not a List of Practices: By the Numbers

Todd Rosenstock and Andy Jarvis, ICRAF, Nairobi and CIAT, Colombia; Christine Lamanna (ICRAF), Evan Girvetz (CIAT), Caitlin Corner-Dolloff (CIAT) and others

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Not CSA

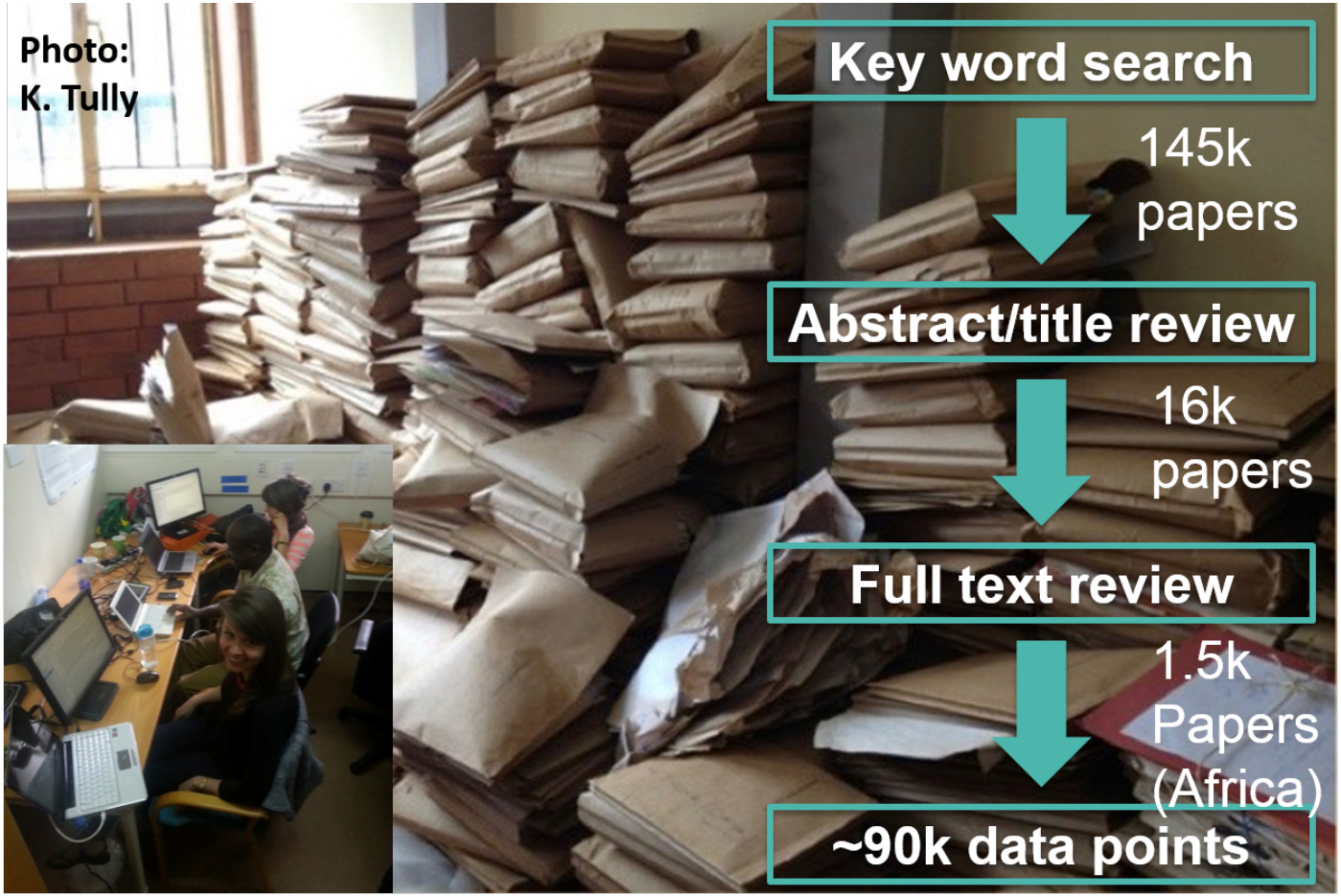
?

CSA

Conservation agriculture
Agroforestry
Organic fertilizer
Improved feeding of cattle
Manure management
Rotational grazing
Crop rotations
…

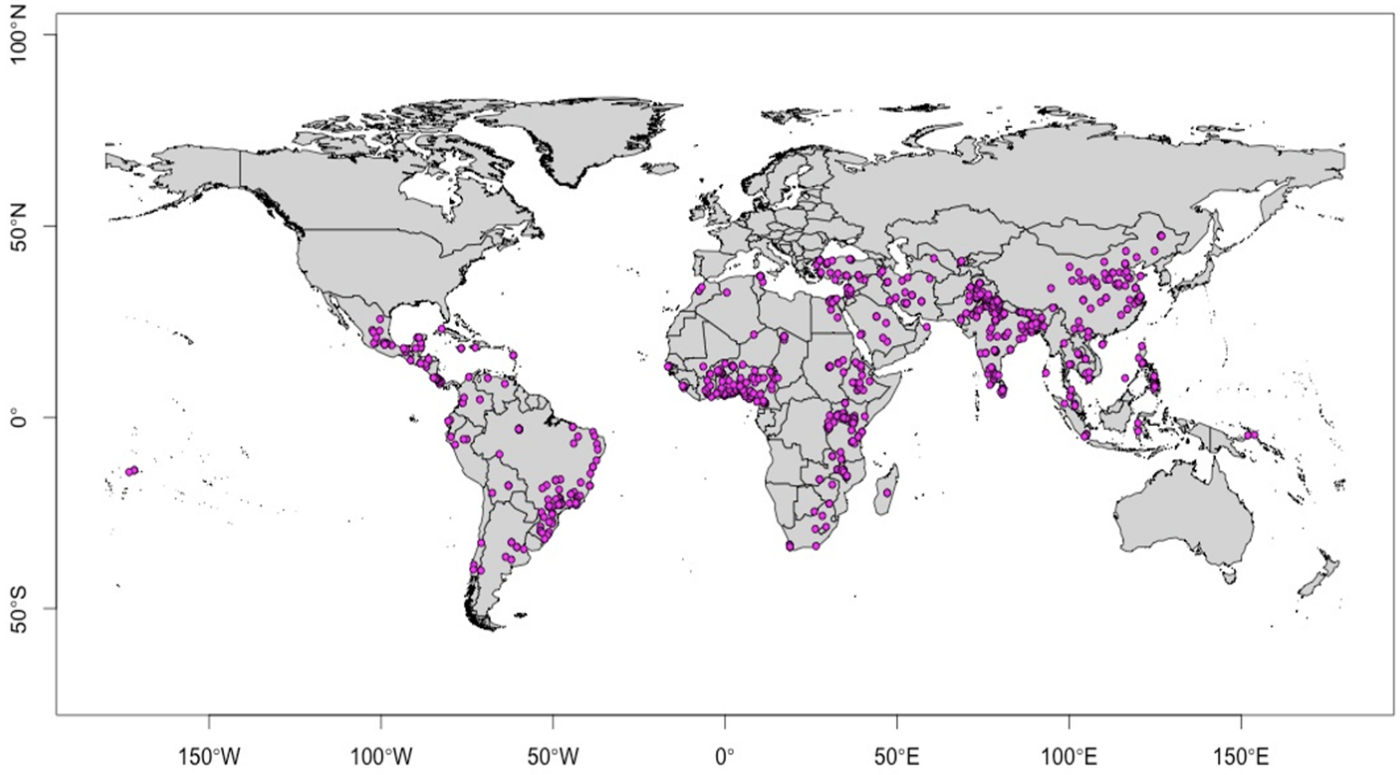
Rosenstock and Lamanna

CSA: BY THE NUMBERS CSA COMPENDIUM



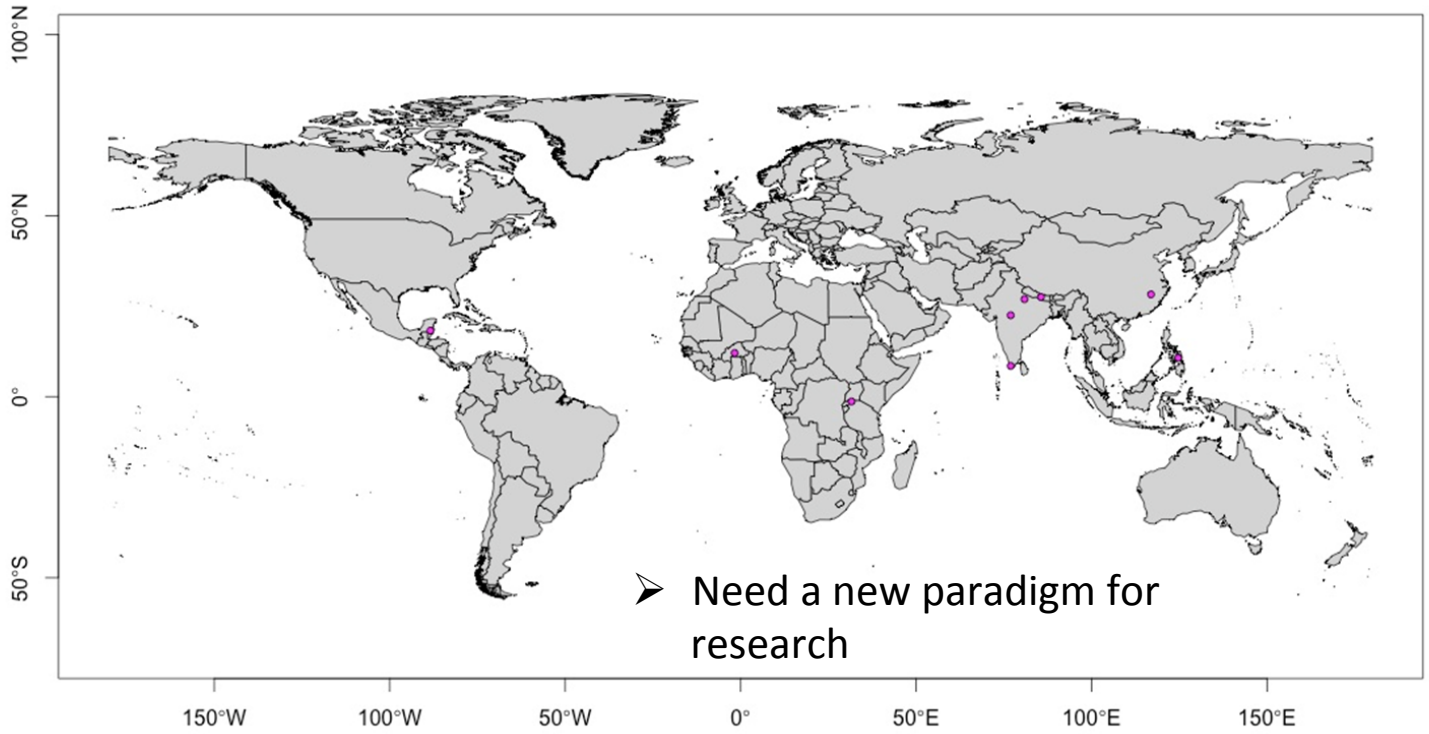
Rosenstock et al. 2016a

STUDIES WITH INDICATORS FOR AT LEAST ONE COMPONENT OF CSA



Random sample of 815 studies

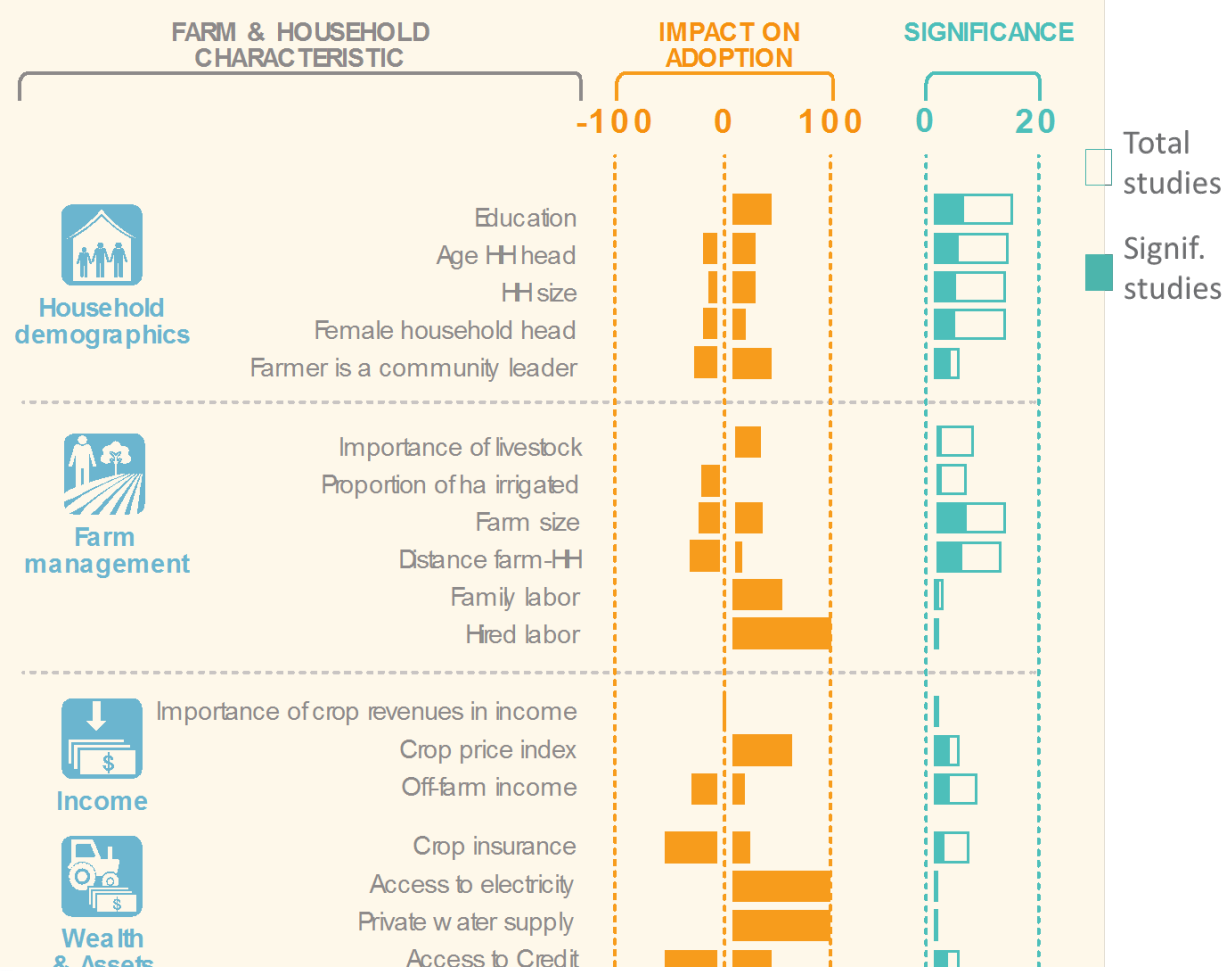
STUDIES WITH INDICATORS FOR ALL THREE COMPONENTS OF CSA



- Need a new paradigm for research

Random sample of 815 studies

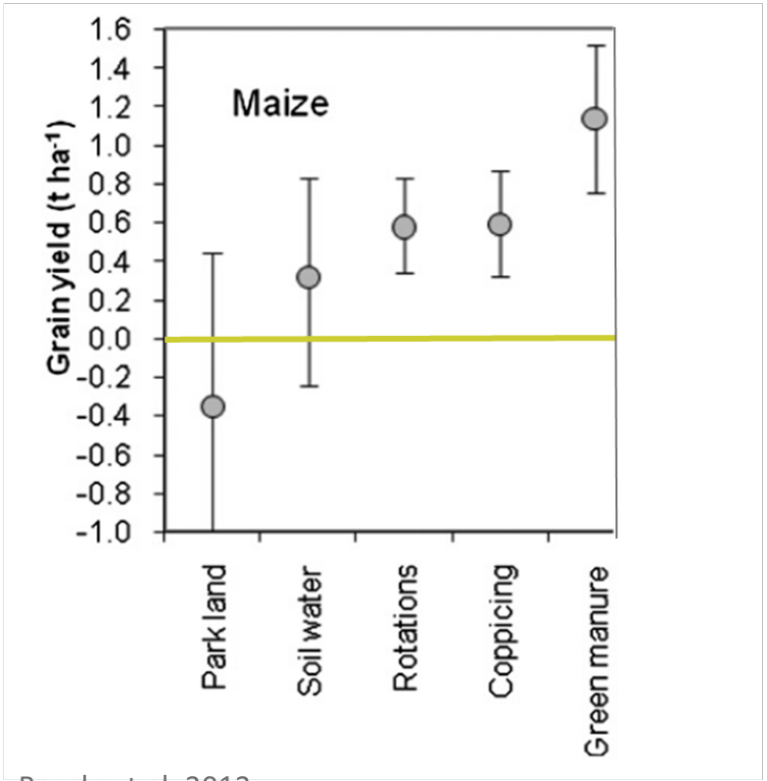
THE IMPORTANCE OF THE SOCIAL CONTEXT



Rosenstock and Lamanna CSA X-ray

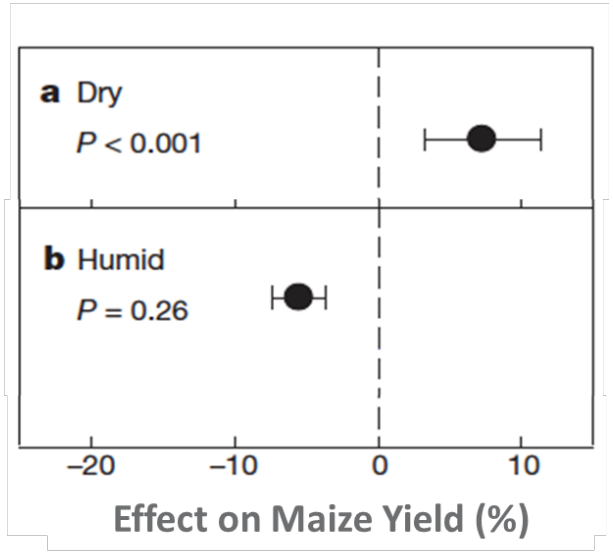
THE IMPORTANCE OF BIOPHYSICAL CONTEXT

Potential CSA in the Sahel



Bayala et al. 2012

Conservation Agriculture



Pittelkow et al. 2014

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THE IMPORTANCE OF THINKING ABOUT IMPACT

CSA for crop production in TZ

Practice	Effect	Adoption
Organic Fertilizer	0.7	15%
Water Harvesting	0.67	18%
Inorganic Fertilizer	0.52	32%
Zai Pits	0.48	18%
Green Manure	0.48	7%
Intercropping	0.33	57%
Mulching	0.32	34%
Reduced Tillage	0.26	24%
Improved Varieties	0.18	13%
Crop Residue	0.16	34%
Agroforestry	0.02	13%
Crop Rotation	0.02	36%

High

Low

Lamanna and Rosenstock in prep

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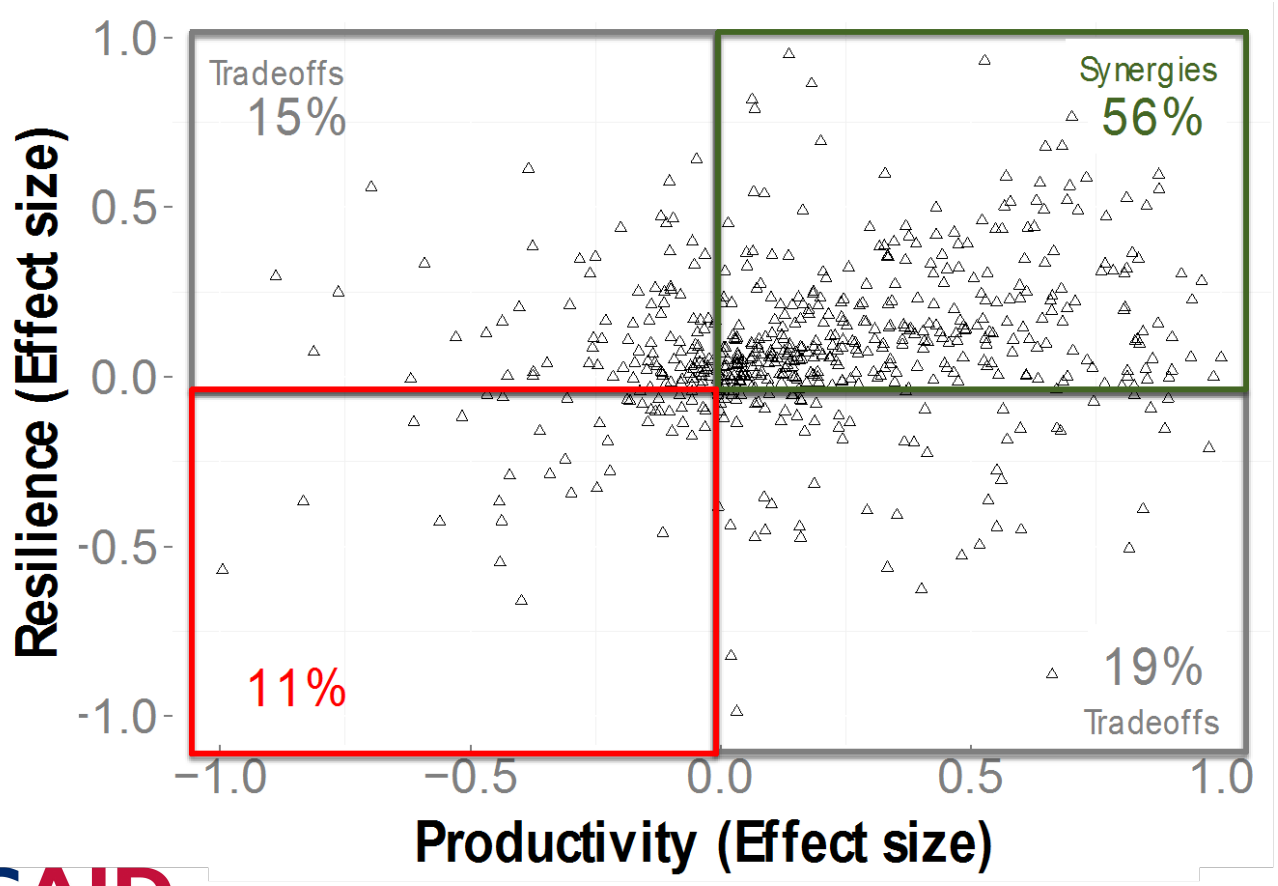
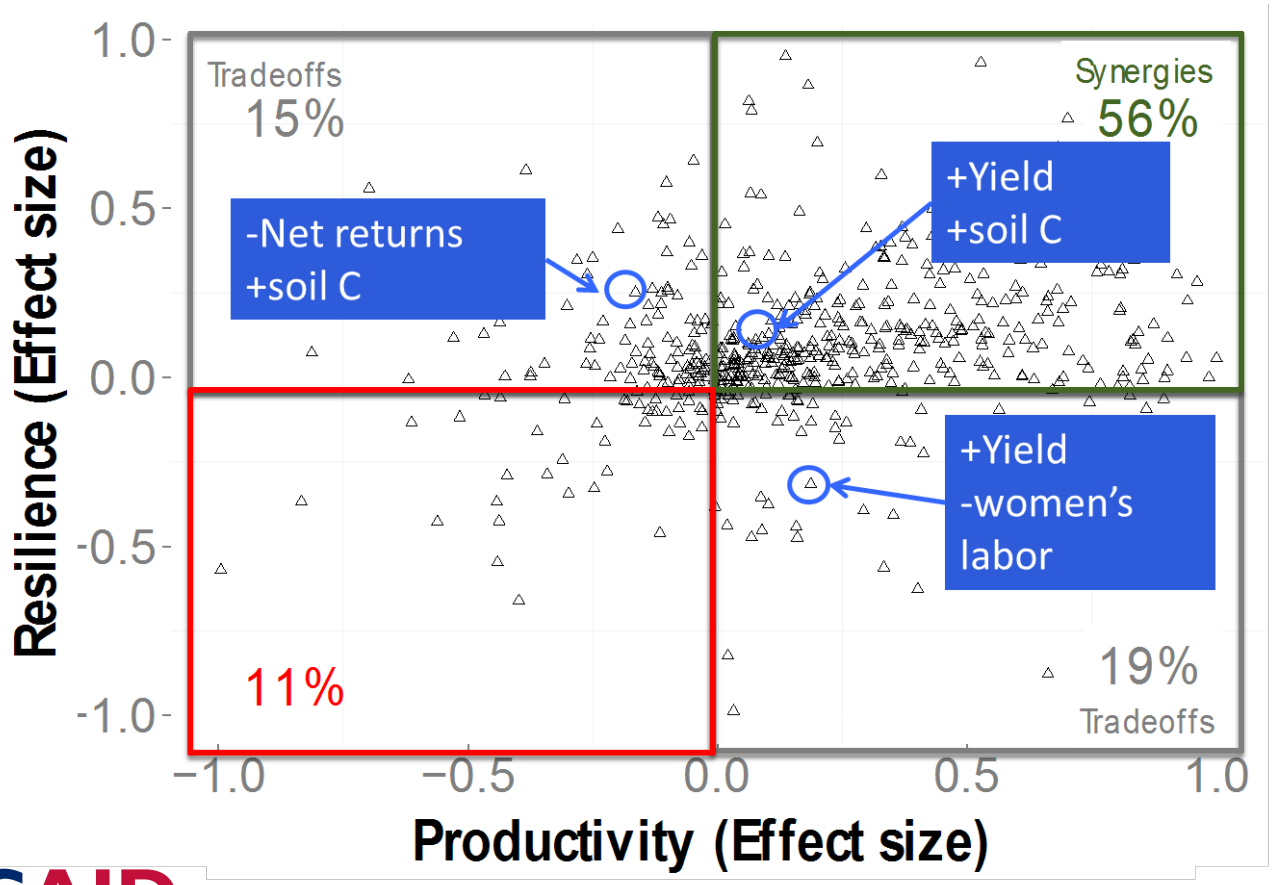
THE IMPORTANCE OF CONSIDERING MULTIPLE OBJECTIVES



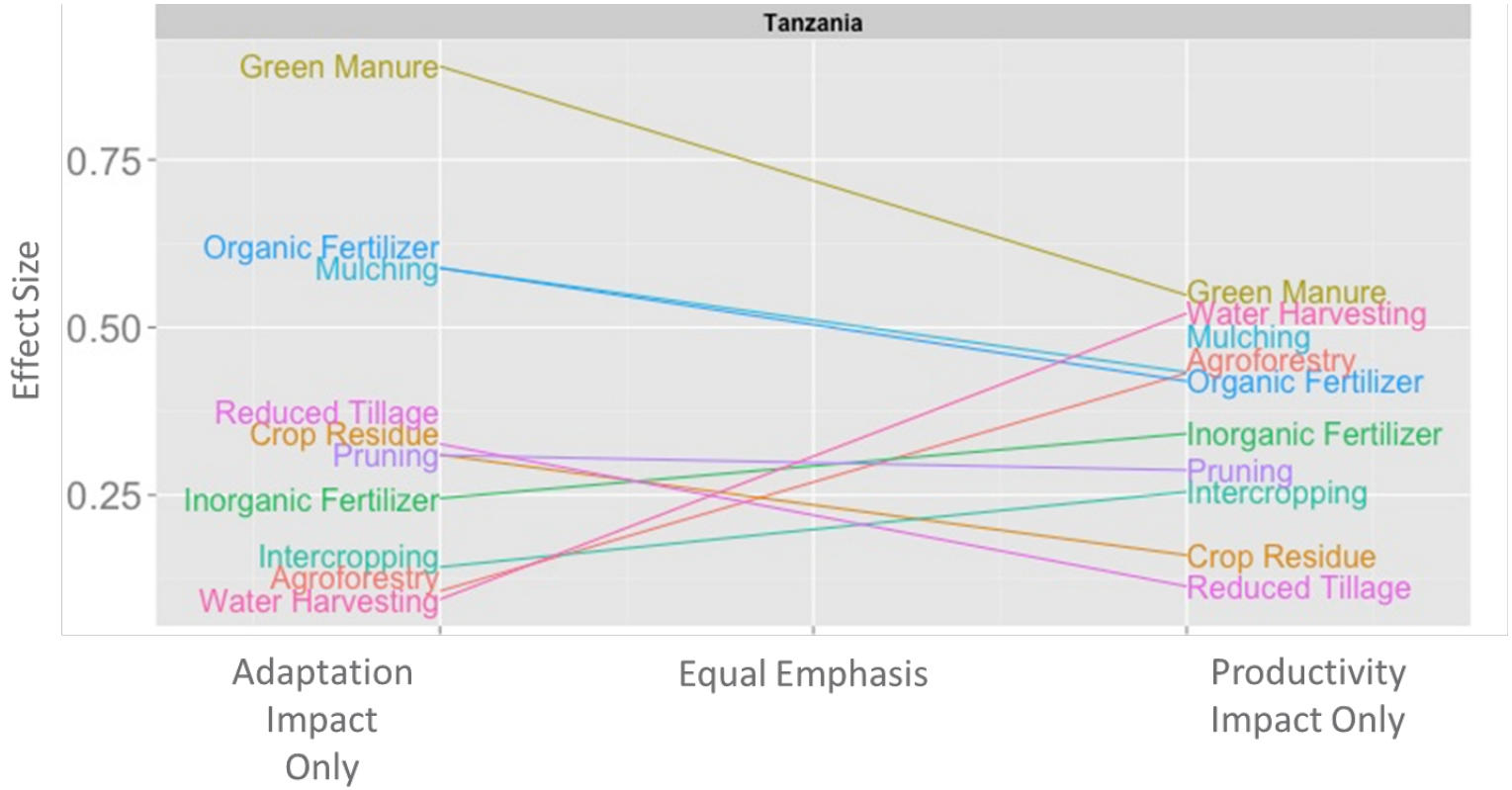
Rosenstock et al. 2016b

THE IMPORTANCE OF CONSIDERING MULTIPLE OBJECTIVES, SPECIFICALLY

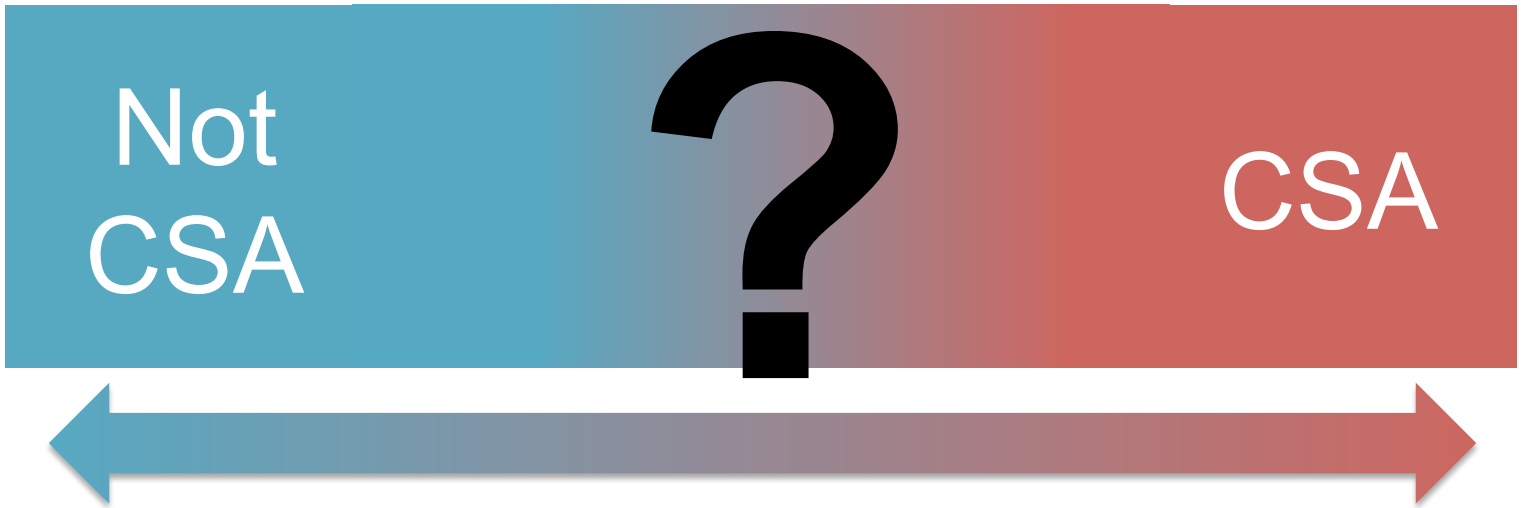


Rosenstock et al. unpublished

THE IMPORTANCE OF PRIORITIES FOR DETERMINING BEST FITS



Lamanna and Rosenstock in prep



Many interventions can be climate-smart
somewhere,
but
none are likely climate-smart **everywhere**

Rosenstock and Lamanna

CSA-PLAN: A GUIDE TO SCALING CSA

Situation Analysis
Risks and Enabling Conditions

Vulnerability & Impacts + Readiness

Stocktaking for CSA Action

Targeting & Prioritizing
Practices, Programs and Policies

Trade-offs & Value for Money

CSA Investment Portfolios

Programming Design
Guidelines & Implementation

Knowledge into Action

Taking CSA to Scale

Monitoring and Evaluation
Across Scales and Systems

Evidence Based Results Framework

Learning from Experience

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CLIMATE-SMART PROFILES

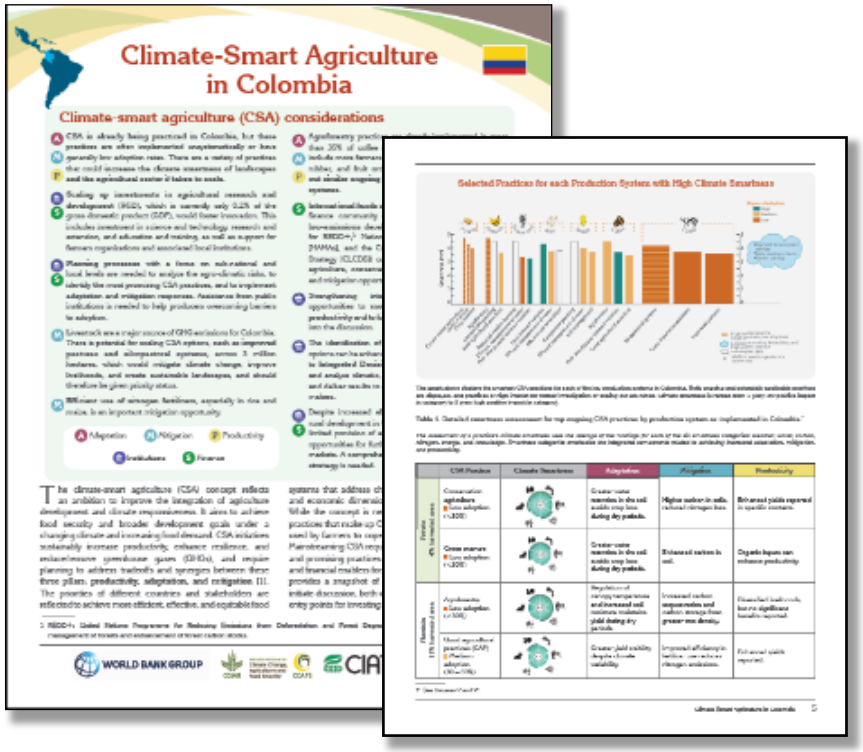
Situation Analysis

Risks and Enabling Conditions

Vulnerability & Impacts & Readiness

Stocktaking for CSA Action

- Indicators and targets to achieve
- Agricultural snapshot
- Future climate impacts
- Ongoing and promising CSA practices
- Institutions and policy entry points
- Finance mechanism



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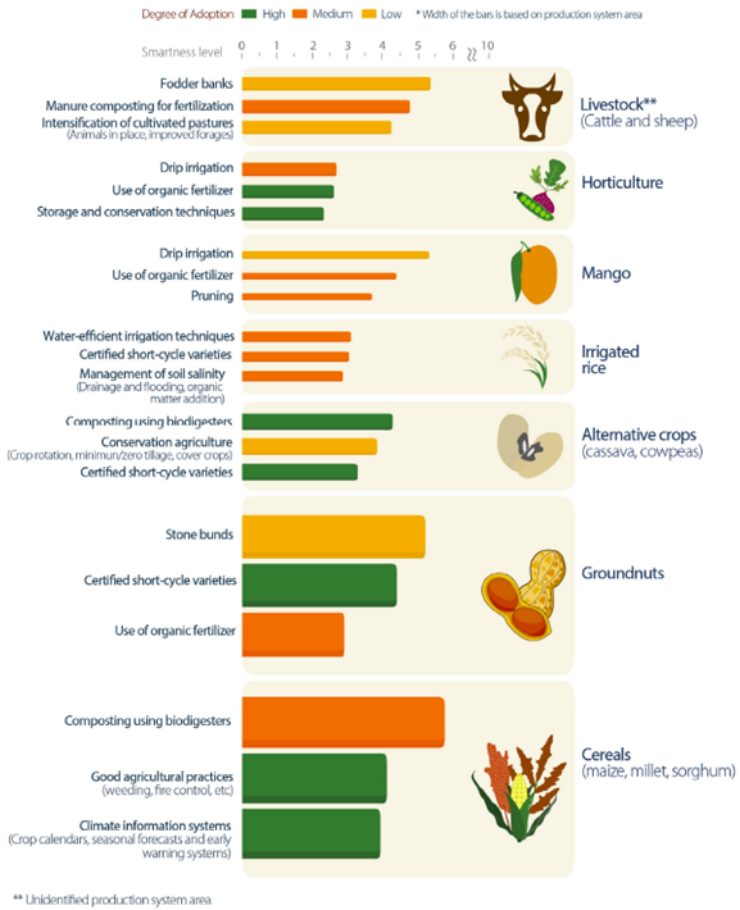
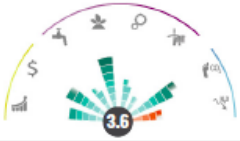
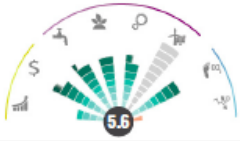
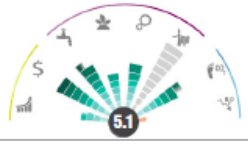
Selected CSA practices and technologies for production systems key for food security in Senegal



CSA practice	Region and adoption rate (%) <30 30-60 60>	Predominant farm scale S: small scale M: medium scale L: large scale	Climate smartness	Impact on CSA Pillars
Irrigated Rice (2% of total harvested area)				
System of Rice Intensification	Silvo-pastoral zone 30-60%	S	 3.6	**Productivity** Increases yield by mantaining optimun condition of plant development. **Adaptation** Promotes the efficient use of scarce water resources. **Mitigation** The practice may contribute to reductions in emissions when replacing mechanized by manual planting and when saving energy used in irrigation pumps. It may also contribute to reducing methane emissions.
	River Valley 30-60%	S	 3.5	
Management of soil salinity (drainage and flooding, organic matter addition)	Silvo-pastoral zone >60%	S M L	 5.6	**Productivity** Salinity reduction can lead to optimun conditions for plant development and production. **Adaptation** Management of soil salinity through drainage and flooding, ridges and furrows, addition of organic matter etc., increases nutrient availability and decreases crop exposure to climate risks. **Mitigation** Additions of organic matter can increase soil carbon stock.
	River Valley >60%	S M L	 5.1	

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Thank you

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PARTNERSHIPS FOR SCALING
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RESEARCH PROGRAM ON Climate Change, Agriculture and Food Security
CCAFS
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