Prioritize among climate-smart agricultural options and benefits for greater impact

Summary

- Clearly showing the benefits of certain climate-smart agricultural (CSA) interventions over others in a particular context is key to facilitating prudent investment of scarce resources.
- Ranking certain CSA practices over others is complex because CSA implies multiple outcomes, which vary with context and scale.
- All stakeholders should have access to tools and information to help them rank and prioritize CSA practices, taking different criteria and trade-offs into account.
- Investing in best-bet practices identified through 'best-fit' prioritization processes is the best way to realize locally relevant benefits of CSA.
- 'Best fit' means matching potential practices and their possible benefits to the local context using a prioritization process.

Outcome

Prioritization processes that match interventions and their benefits to local contextual realities leads to better choices (i.e. 'better bets') among intervention options

What?

Prioritization is the process of evaluating CSA practices against a ranked set of desired outcomes in a particular context. The result from a well-designed and implemented process is a set of best-fit practices tailored to a specific context and to the needs of different users, such as government workers, donors, farmers, extension agents and NGOs. The process consists of the following steps:

- **1. Define the context: What is the geographical scope? What is the production system? Who is the target group?**
- **2. Define and rank the desired outcomes from CSA e.g. yield, food access, income, soil quality, drought resilience, GHG emissions, gender equity, etc.**
- **3. Identify promising CSA options that should be assessed.**
- **4. Generate evidence on practice, outcomes, and context.**
- **5. Evaluate practices against the desired outcomes to generate a best-fit portfolio.**

Why?

Many outcomes

CSA aims to deliver outcomes across three main pillars: ensuring sustainable increases in productivity, improving resilience and adaptive capacity, and mitigating climate change. Each pillar can be divided into specific outcome indicators. For example, productivity could be measured by yield or income; resilience by soil quality, gender-equitable decision making, or yield stability. Trade-offs and synergies exist between outcomes at all levels, so a good practice in one context may not be so in another context.

Many practices

Many agricultural technologies, practices, and programmatic interventions can be potentially climate smart. They include switching to drought-tolerant seed varieties or more complex practices such as conservation agriculture; practices that target crops (intercropping), livestock (improved fodder) or postharvest processes (improved storage). They also include programs such as early warning systems and index-based insurance.

Many contexts

The outcomes from any CSA practice will vary with the local context (e.g. Pittelkow et al. 2014, Byala et al. 2014) including the farming system, biophysical conditions, social, economic and political contexts. This means that the trade-offs and synergies between outcomes for a particular practice can change with context. If practices aren't matched to context, the potential for adoption could be low, (refer to brief 3), resulting in poor or even negative outcomes.

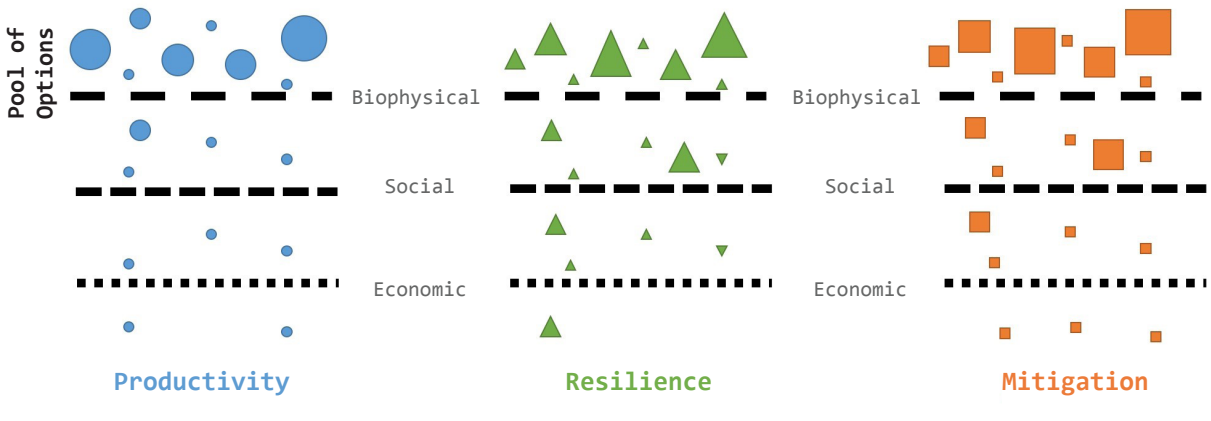


Figure 1.

How?

Given all this complexity, how should decision makers choose which CSA practices to implement or promote? A prioritization process allows decision makers to consider their local context and desired outcomes from implementing CSA. The process ranks practices based on desired outcomes. This can be done at any level of decision making from farm to national level.

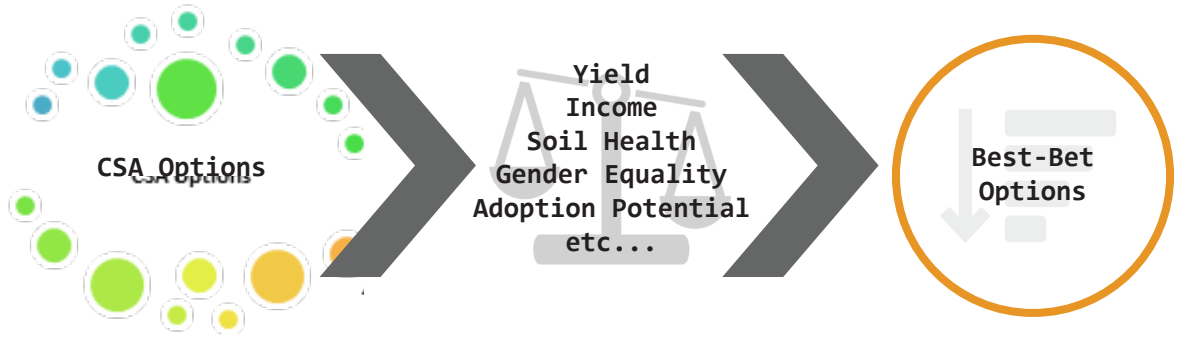


Figure 2.

1 Prioritizing locally appropriate CSA practices for wider adoption in northern Uganda

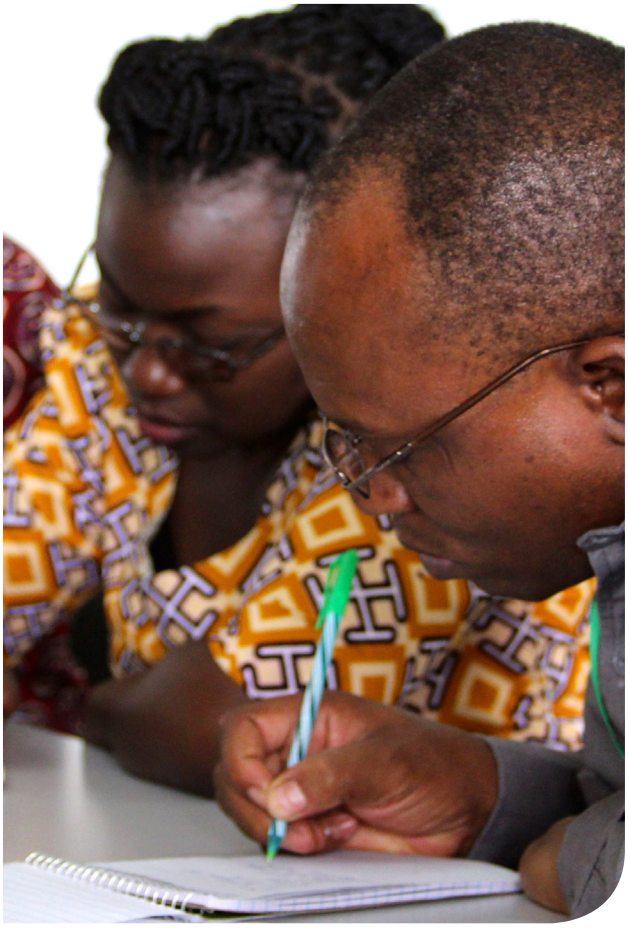
Evidence suggests that demonstration plots and farmer-led initiatives are good ways to improve the uptake of CSA interventions (refer to briefs 4 & 6). In Nwoya district, northern Uganda, farmers in five sub-counties prioritized the CSA practices used in the demonstration plots. First, the farmers described the agroecological zones in their sub-counties. Then they generated a list of indicators they would use to rank the CSA practices. They identified the practices that were in use or could be used in the area and evaluated them against the indicators, generating a list of benefits and constraints for each one. The participants ranked the practices in order of preference for use in the demonstration plots. The indicators, their importance, and the resulting ranked practices differed by gender and agroecological zone.

2 Prioritizing climate-smart livestock technologies in Tanzania

The adoption of improved livestock feed baskets in Lushoto, Tanzania was expected to increase milk yields, reduce poverty levels, improve food security, and contribute to greenhouse gas reduction, especially if it was complemented with the adoption of dairy cows. There might be additional costs related to the purchase of improved breeds. However, easing liquidity constraints by increased access to credit (at affordable interest rates and with flexible repayment periods) might provide an incentive to the adoption of improved breeds, and may maximize the benefits using improved feeding.

3 Prioritizing practices for CSA country plans in Tanzania and Uganda

Appropriate policies can create an enabling environment for CSA uptake (refer to brief 1). To assist in the development of national CSA country plans in Tanzania and Uganda, we collected evidence of CSA uptake from the published and gray literature. We then generated mean effect sizes for each practice by combining indicators. Using this data, government officials and other stakeholders were able to rank their desired outcomes from the CSA program, and assessed the practices that would best achieve their desired combination of outcomes (see Figure 3).



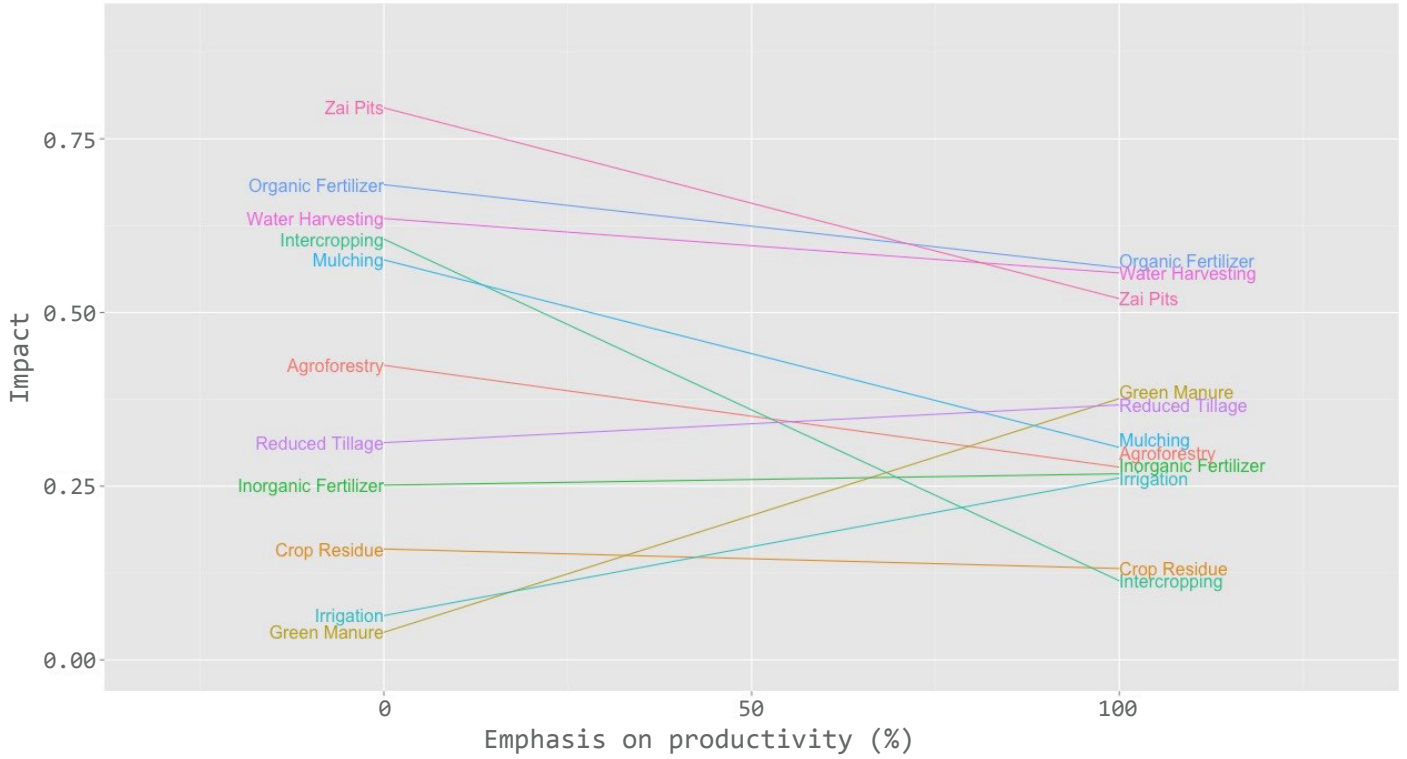


Figure 3.

Table 1. Summary of three examples of participatory processes at different scales and with different types of data and participants. Refers to the three examples above.

	Scale	Participants	Context	Indicators	Data	Outcome
1.	District/ sub-county	Farmers	Grassland and forest AEZs in 5 sub-counties	Farmer defined and ranked: yield, income, soil fertility, costs, etc.	Local knowledge & dialogue process	Demonstration plots
2.	Household	Researchers	Households with and without cows in Lushoto district	Adoption potential, return on investment	Household surveys, ruminant model, trade-off analysis	Prioritized practices for livestock
3.	National	Government, academics, researchers	National agricultural production and climate change scenarios	Productivity, resilience, mitigation effect sizes	Meta-analysis of published and grey literature	National CSA country plans

More information

- Lamanna C; Namoi N; Kimaro A; Mpanda M; Egeru A; Okia C; Ramirez-Villegas J; Mwongera C; Ampaire E; van Asten P; Winowiecki L; Läderach P; Rosenstock TS. 2016. Evidence-based opportunities for out-scaling CSA in East Africa. CCAFS Working Paper No. 172. CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS), Copenhagen, Denmark.

- Mwongera C; Shikuku KM; Twyman J; Läderach P; Ampaire E; van Asten P; Twomlow S; Winowiecki LA. 2016. Climate-smart agriculture rapid appraisal (CSA-RA): A tool for prioritizing context-specific climate smart agriculture technologies.

- Mwongera C; Shikuku KM; Winowiecki L; Twyman J; Läderach P; Ampaire E; van Asten P; Twomlow S. 2015. Climate-smart agriculture rapid appraisal (CSA-RA): A prioritization tool for outscaling CSA. Step-by-step guidelines. International Center for Tropical Agriculture (CIAT). Cali, Colombia.

- Shikuku KM; Mwongera C; Winowiecki L; Twyman J; Atibo C; Läderach P. 2015. Understanding farmer indicators in climate-smart agriculture prioritization in Nwoya district, northern Uganda. International Center for Tropical Agriculture (CIAT), Cali, Colombia.

- Shikuku KM; Valdivia RO; Paul BK; Mwongera C; Winowiecki L; Läderach P; Herrero M; Silvestri S. 2016. Prioritizing climate-smart livestock technologies in rural Tanzania: A minimum data approach. Agricultural Systems 151:149–152. DOI: 10.1016/j.agsy.2016.06.004

C. Lamanna, Mwongera, C., Läderach, P., Acosta, M., Ampaire, E., Eitzinger, A., Mwungu, C., Shikuku, K., Winowiecki, L. 2017.

Prioritize among climate-smart agricultural options and benefits for greater impact.
International Center for Tropical Agriculture (CIAT). Cali.

CGIAR RESEARCH PROGRAM ON Climate Change, Agriculture and Food Security

CCAFS

IFAD Investing in rural people

Neil Palmer & E. van de Grift

Claire Wheatley