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Lessons on enabling African smallholder farmers, especially women and youth, to benefit from sustainable agricultural intensification

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ABSTRACT

The papers in this Special Issue on what works and what is unlikely to work to enable poorer smallholders, especially women and youth, to benefit from Sustainable Agricultural Intensification (SAI) come from the Sustainable Agricultural Intensification Research and Learning programme. Three aspects of SAI are considered: (i) the *equity* of outcomes from SAI and how decisions to support equity can be better informed; (ii) the social, economic and environmental *trade-offs* associated with SAI, how they are perceived and can be managed and (iii) how farmers access to *services* and information needed to implement SAI can be facilitated. Whether considering the gender and generational equities of participation in SAI or how trade-offs limit adoption of SAI, it is the local social, economic and environmental conditions that determine the outcome. We conclude that the participation of local stakeholders in the adaptation of SAI to local social, economic and environmental conditions is critical to enabling poorer smallholders, women and youth to benefit from SAI. While some tools and processes are presented that may support this, there remains a challenge as to how such processes can be integrated into national policies and institutions.

KEYWORDS

Equity; services; trade-offs; tools; extension services



Enabling smallholders to benefit from SAI

Although there are different definitions of Sustainable Agricultural Intensification (SAI), there is common concern as to the equity and trade-offs in outcome when seeking implementation by smallholder farmers in Sub Saharan Africa (Haggar et al., 2020). Concerns about equity, focus on the access to resources to implement SAI and how this affects outcomes of SAI among different farming households or household members (Cook et al., 2015). Trade-offs arise when there are competing claims over the resources required for the implementation of SAI practices, or when different sustainability objectives are conflicting (Campbell et al., 2014). Even when the potential to benefit from SAI exists accessing the information and services required can be a significant limitation for the millions of smallholders in Sub-

Saharan Africa (Hazell et al., 2007). The papers in this Special Issue are focused on the poorest smallholders and on potentially disadvantaged groups like women and youth, as these are deemed to be most affected by inherent inequities and trade-offs. The studies published here provide insights and improved understanding of equity issues and trade-offs that are inherent to SAI, as well as decision support tools and services that enable smallholders and the decision makers supporting them to address such hurdles towards implementation of SAI.

Evaluating and monitoring equity of outcomes from SAI

Evidence has been presented about the gender and age differentiation in responsibilities and benefits

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from SAI, and the perceptions of women, youth and elderly regarding the restrictions and enablers of their participation in the transition towards agricultural intensification (Fischer et al., 2020; Lindjö et al., 2020; Zulu et al., 2020). Lindjö et al. (2020) observed that young and productive farmers were often lacking access to land, whereas elderly farmers withholding this land were increasingly unable to use this resource productively. Here, the age-determined inequity in access to resources implies a clear break on agricultural intensification. As a remedial measure, respondents of the surveys by Fischer et al. (2020) proposed that households should be incentivized to transfer land earlier from one generation to the next. The inequalities are determined not just by access to land but also other productive resources such as labour and inputs which interact to discriminate against female landholders. Nevertheless, with one of the conditions of SAI being limitation of agricultural land expansion this may potentially foster greater gender imbalances (Fischer et al., 2020). Investments in agricultural intensification need to facilitate institutional changes, such as more equitable land inheritance patterns championed by village heads, to enable equitable outcomes.

Supporting decision making on what works and does not work to enable women and youth participation depends on appropriate metrics and indicators that reflect these stakeholders' situations (Grabowski et al., 2020; Zulu et al., 2020). To mitigate potential biases, decision makers must be able to assess if and how access to agricultural resources is differentiated by gender or age, particularly in the context of agricultural changes such as intensification. Although tools for assessing inequities exist, they often do not provide timely results and youth-specific tools are lacking. Grabowski et al. (2020) present a tool-guided approach for decision makers, whereby increased stakeholder collaboration and iterative cycles of action and learning should lead to more equitable sharing of responsibilities and benefits from investments in SAI. While Zulu et al. (2020) present the advantages of locally contextualized indicators including more appropriate data collection methods, combining perspectives of farmers and field-experts, for detecting and assessing gender and generational inequities in SAI. This has the advantage of ensuring responsive indicators of local gender and generational equities, but challenges for decision makers' capacity as to how to make such adjustments.

Understanding and managing trade-offs in SAI

Trade-offs and synergies are critical to understanding farmer adoption of SAI interventions such as Conservation Agriculture (Rodenburg et al., 2020). A review of the literature supports the notion that low adoption is often resulting from promotion of a technological package that does not necessarily meet farmers production conditions and objectives. Facilitating farmer adaptation of conservation practices to their own conditions and capabilities, by means of farmer-participatory experimental approaches, is presented as potential way forward. Based on detailed individual farm household studies, Adolph et al. (2020) support this approach. They discuss how trade-offs between multiple objectives of food security, sustainability and meeting immediate livelihood objectives are affected by agricultural policies which encourage short-term productivity and adoption-focused interventions that disregard the diversity of African smallholder farms. Overall, this disincentivizes farming households from prioritizing long-term sustainability in their farming.

Trade-offs at landscape or District scales are considered by Pfeifer et al. (2020) and Morris et al. (2020). Pfeifer et al. (2020) explore how livestock production benefits for smallholders can be maximized without concomitant negative environmental impacts. Using a computer-assisted participatory process, stakeholders in the sector generate future livestock development scenarios, ranging from intensification to extensification. Through a combination of simulation and negotiation different stakeholder objectives were reconciled, such as between migrant pastoralists and settled farmers. Such processes if applied in policy and decision making could generate shared understanding of trade-offs emerging in intensification pathways of local agri-food systems and therefore support the development of sustainable transition plans to meet multiple objectives (Morris et al., 2020).

Services improving access to information and inputs for SAI

What most of the studies on equity and trade-offs in SAI show is that access to knowledge and inputs is critical to enabling farmers to participate in SAI. ICTs have been heralded as a means to scale-out to the millions of smallholder farmers in Africa, but a

review of the literature show that the services currently provided in sub-Saharan Africa often reflect the promises of ICT rather than responding to real farmer demands and needs (Steinke et al., 2020). An example of a more user-centred design with feedback from users is presented by Ortiz-Crespo et al. (2020) who tested a digital information system with messaging feedback to improve targeting of information and exchange between farmers and extension agents. This approach enabled delivery of information services to a diversity of resource-limited smallholders, while also reducing the workload of extension agents. Silvestri et al. (2020) show that a combination of ICT channels can be a more effective means to disseminate information and boost adoption of SAI than relying on a single medium. They show that combining radio and SMS improve farmer access to information on legume agronomy and can lead to greater adoption of improved production practices. Access to inputs is an equally important enabling factor for SAI. Orr et al. (2020) present the design of a revolving seed fund as a SAI-enabling service for Teff farmers to enhance access of certified seed. By a simulation game, they confirm the robustness of such business model against natural shocks (i.e. rainfall variability). They simultaneously show the usefulness of the game itself as an *ex ante* diagnostic tool to evaluate potential farmer responses and outcomes from innovations in supply systems.

Discussion

The conditions for participation of smallholders, including women and youth, in the implementation and benefits of SAI are a complex process (Haggar et al., 2020). Nevertheless, our understanding of the challenges is improving, and some tools and approaches have been designed and validated that may assist in generating an enabling environment for smallholder participation in SAI.

One of the cross-cutting challenges is how to design and implement policies and programmes at larger scales when the complexity and variability of the social, economic and environmental sustainability necessitates local adaptation. For the identification of equity indicators and assessment of outcomes, local social norms can affect the applicability of different indicators, but also lead to distinctly different outcomes in neighbouring communities under the same national policies (Fischer et al., 2020; Zulu

et al., 2020). Similarly, the trade-offs associated with a particular SAI practice, such as Conservation Agriculture, has complex relationships with local environmental and socio-economic conditions down to the level of the individual farm (Rodenburg et al., 2020). Generally, only local processes of testing and adapting SAI practices are likely to lead to incremental changes in the sustainability and productivity of farming (e.g. Rodenburg et al., 2020). This requires extension services with capacity to facilitate local farmer adaptation rather than the promotion of fixed packages of particular practices (e.g. Adolph et al., 2020; Rodenburg et al., 2020).

Informing and empowering stakeholders in the decisions about trade-offs between environment and productivity but also accounting for the different objectives and values held by stakeholders is provided by the tools developed and reported by Morris et al. (2020) and Pfeifer et al. (2020). The next essential determinant for enabling SAI environments is the access to information and resources. Digital information services, such as the ones tested by Ortiz-Crespo et al. (2020) and Silvestri et al. (2020), aim to use the power of ICTs to enhance farmers' access to information, and extension services, while access to improved and certified seed can be enhanced by innovative supply systems (Orr et al., 2020).

Conclusion for policy

Policy needs to be informed by understanding the past trends in outcomes from SAI for different actors. It is essential to recognize that outcomes of SAI vary widely according to local circumstances (e.g. social, economic and environmental) and hence across a country. Therefore, implementation of policies and investments in SAI should enable local stakeholder participation in their application and allow adaptation of farming practices to local conditions. ICT services may improve farmer feedback mechanisms and dialogues with service providers, such as agricultural extension, and even decision makers. Nevertheless, such innovations must be embedded in enabling institutions which requires buy-in from these stakeholders. National and local learning alliances provide a space to enable dialogue between stakeholders on how an enabling environmental for SAI may be achieved, and how to facilitate the changes to national policy, donor funding

requirements, and institutional culture to deliver appropriate services to smallholder farmers in sub-Saharan Africa.

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