SUSTAINABLE AGRICULTURE TANZANIA

Farmer-Centred Agroecology Research (FCAR)

Healthy People | Healthy Environment | Sustainable Livelihoods

Research with farmers for a lasting change

MASTER'S RESEARCH SUPPORT FUND

BACKGROUND AND PURPOSE

Sustainable Agriculture Tanzania (SAT) has run the Farmer-Centred Agroecology Research (FCAR) programme since 2014. The programme seeks to address real farming challenges faced by farmers and livestock keepers. The programme intends to support ten research topics that will address real and unresolved challenges faced by farmers and livestock keepers (Pastoralists), generate practical solutions, and have the potential for wider application.

SAT through FCAR invites master's students at Sokoine University of Agriculture (SUA) to submit research concept notes that will address the below highlighted research areas. The research will be conducted in the villages where SAT works in Mvomero, Dodoma, Masasi, Kilosa, and Morogoro Districts.

PRIORITY RESEARCH AREAS

1. Agroecological trade-offs and synergies at farm level

PROBLEM: Competition for limited farm resources, including crop residues, manure, labor, land and water, makes it difficult for farmers to optimize the performance of their entire farming systems. Allocating these resources to one farm enterprise often limits their availability for other enterprises, creating trade-offs that affect overall productivity and profitability. However, there is insufficient locally generated evidence on how farmers can best allocate resources and combine agroecological practices to achieve synergies between farm enterprises and improve whole-farm productivity, profitability and sustainability.

2. Labour requirements and labour-saving innovations

PROBLEM: High labor requirements for implementing agroecological practices, including mulching, compost preparation, biomass management, weeding and the production of farm-made inputs, constrain farmers' ability to apply these practices consistently and at scale. Labor shortages increase household workloads, delay essential farm operations and limit the area under improved management. However, there is insufficient evidence on affordable, locally appropriate and practical labor-saving technologies and methods that can reduce labor requirements while maintaining or improving the benefits of agroecological practices.

3. Quality and consistency of farmer-produced agroecological inputs

PROBLEM: Variations in the raw materials, preparation methods and storage conditions used to produce agroecological inputs, such as compost, manure-based products and botanical preparations, create inconsistencies in their quality and effectiveness. These variations make it difficult for farmers to achieve predictable results, assess input performance and reproduce successful outcomes across seasons. However, there is insufficient locally validated evidence on simple quality-control methods, standardized preparation procedures and appropriate storage practices that farmers can use to improve the consistency, reliability and effectiveness of their locally produced inputs.

4. Farmer innovation and pathways to technology development and scaling

PROBLEM: Farmers develop and adapt tools, techniques and practices to address production challenges, but many of these innovations remain undocumented, insufficiently tested or confined to the communities where they originate. The absence of systematic processes for documenting, validating and improving farmer-developed solutions limits opportunities for wider learning and adoption, while potentially valuable local knowledge remains underutilized. However, there is insufficient evidence on effective approaches for identifying farmer innovations, testing their performance, refining them through farmer–researcher collaboration and facilitating their adaptation and scaling across different farming contexts.

5. Whole-farm economics and profitability of agroecological systems

PROBLEM: Assessing the profitability of agroecological farming systems is challenging when production costs and benefits are considered separately for individual crops or livestock enterprises rather than across the entire farm. This limits farmers' ability to account for household labor, locally available resources, interactions between enterprises, contributions to household food supply and the financial risks associated with different production choices. Consequently, the overall economic performance of integrated agroecological systems remains insufficiently understood in many local contexts. There is a need for locally grounded evidence and practical assessment methods that capture whole-farm costs, returns,

6. Crop–livestock nutrient cycling and resource efficiency

PROBLEM: Inefficient management of crop residues, livestock feed, manure and other farm resources limits nutrient recycling and resource efficiency in integrated crop–livestock systems. Crop residues are often required simultaneously for livestock feeding, soil cover and organic matter production, while manure is not always effectively collected, stored and returned to crop fields. These competing demands and management challenges contribute to nutrient losses, increased dependence on external inputs and difficulties in maintaining soil fertility and reliable livestock feed supplies. However, there is insufficient locally validated evidence on practical strategies for improving nutrient flows between crops and livestock while balancing competing

resource-use efficiency and livelihood benefits to guide farmers' investment and production decisions.	resource needs and maximizing the benefits of integrated farming systems.
7. Long-term sustainability of agroecological practices after project support **PROBLEM:** Maintaining agroecological practices after the end of project support remains a challenge where continued implementation depends on external inputs, demonstrations, facilitation or other forms of assistance. When such support ends, farmers may modify or discontinue practices because of labor demands, input availability, costs, competing priorities or limited access to technical support. This weakens the continuity of project achievements and can reduce the long-term benefits of agroecological interventions. However, there is insufficient context-specific evidence on the factors that determine sustained adoption, farmer-led adaptation or abandonment of these practices after project closure, and on the approaches that enable farmers to maintain beneficial practices independently.	**8. Climate resilience of integrated farming systems** **PROBLEM:** Climate variability and extreme weather events, including erratic rainfall, prolonged dry spells, drought and excessive heat, expose farming households to production risks that affect both crops and livestock. These stresses contribute to crop losses, water shortages, livestock feed deficits, unstable farm income and household food insecurity. Although agroecological practices offer opportunities to strengthen resilience, their effectiveness depends on the farming system, local conditions and how different practices are combined. There is insufficient locally generated evidence on which combinations of agroecological practices provide the most reliable protection against climate-related shocks, maintain farm productivity under stress and support recovery after adverse events
9. Pathways linking agricultural diversity to household nutrition **PROBLEM:** Agricultural diversification does not automatically translate into improved household dietary diversity and nutrition. Farming households produce a range of crops and livestock products but continue to experience dietary limitations because of seasonal food shortages, the sale of nutritious products to meet income needs, limited purchasing power, food preferences or unequal access to food within households. As a result, the contribution of diversified agroecological production to household nutrition remains unclear in many contexts. There is insufficient local evidence on how agricultural diversity influences food availability, income, household food choices and dietary patterns across seasons, and on the conditions under which diversified farming systems translate into improved nutrition outcomes.	**10. Farmer-led development of practical technologies for unresolved production problems** **PROBLEM:** Farmers continue to face practical challenges in crop production, livestock management, postharvest handling, storage, water management, pest management and value addition that existing technologies and recommended practices do not adequately resolve under local conditions. Available solutions are sometimes unaffordable, difficult to use, poorly adapted to smallholder farming systems or inaccessible to the farmers who need them. These constraints contribute to avoidable production losses, high operating costs, low productivity and missed income opportunities. There is a need for farmer-centred research that identifies specific unresolved problems, co-develops affordable and locally appropriate technologies with farmers, and tests and refines these solutions under real farming conditions before promoting wider adoption.

WHO IS ELIGIBLE TO APPLY?

- Master's students registered at Sokoine University of Agriculture (SUA) who are in their research stage and have completed coursework.
- Students whose academic programmes can appropriately accommodate research in agriculture, agroecology, livestock, agricultural economics, environmental management, nutrition, food systems, engineering, rural development, or related fields.
- Applicants must be able to undertake the proposed research within the agreed academic and implementation period.
- Applicants must be prepared to work with farmers and relevant stakeholders during research design, fieldwork, validation and dissemination.

APPLICATION REQUIREMENTS

- A brief research concept note aligned with any of the research areas above
- Coursework results / Academic Transcripts

The concept note should include:

- Name of the student, program, contacts
- Selected priority research area
- Proposed research title
- Problem statement based on the farmer-reported challenge
- Research gap
- Research questions and objectives
- Proposed methodology and study area
- Indicative workplan

SELECTION CONSIDERATIONS

- Relevance to the farmer-reported challenge and its importance to farming communities.
- Clarity of the research gap and originality of the proposed study.
- Scientific quality and appropriateness of the proposed methodology.
- Potential to generate a practical solution, improvement, or usable evidence.
- Meaningful farmer participation in testing and validating the research.
- Feasibility within the Master's study period and available resources.
- Potential for the findings or innovation to be applied or scaled beyond the study site.

RESEARCH SUPPORT FUND

SAT through FCAR programme will support master's student a total amount of TZS 4,500,000/= for each research.

APPLICATION DEADLINE	SUBMIT APPLICATIONS TO	ADDRESS
20th November 2026	Email: wprd@kilimo.org Subject: Master's Research Concept Note_ (Insert your name)	Sustainable Agriculture Tanzania P. O. Box 6369 Morogoro Tanzania www.kilimo.org info@kilimo.org