

Farmers' Motivation to Adopt Sustainable Agricultural Innovations in Rwanda

Objective

1. To explore the use of sustainable agriculture innovations among smallholder farmers.
2. To investigate the farmer's motivation for the implementation of agricultural innovations.
3. To identify the drivers for farmers to use sustainable agricultural innovations.

Methodology

Purposive sampling was used to choose the study sample.

- Questionnaire: Semi-structure, physical copies
- Respondents: 50 - from Gisagara district in the Southern province of Rwanda
- Target group: Abakorana Murava Cooperative
- 27 males and 23 females were questioned

Analysis

- Data was sorted, coded, and processed in Microsoft Excel.
- Sorted data was then transferred to Microsoft Excel, where descriptive analysis was done: Frequency, mean, and percentage.
- The Statistical Package for Social Sciences (SPSS) software 27.0 for further processing and analysis.

Conclusion

- Community structures supporting the farmer and scientific education, encouraging innovation, and researchers' cooperation can improve agricultural productivity and long-term sustainability
- The findings indicate that 92 percent of respondents strongly believe that applying cow dung and compost to soil improves fertility, favoring them to minimize inorganic fertilizers.
- A more significant percentage of farmers strongly agreed that innovations should be employed to promote agricultural output efficiency as much as feasible.
- Farmers are influenced by market demand and land ownership in adopting sustainable innovations in social factors.

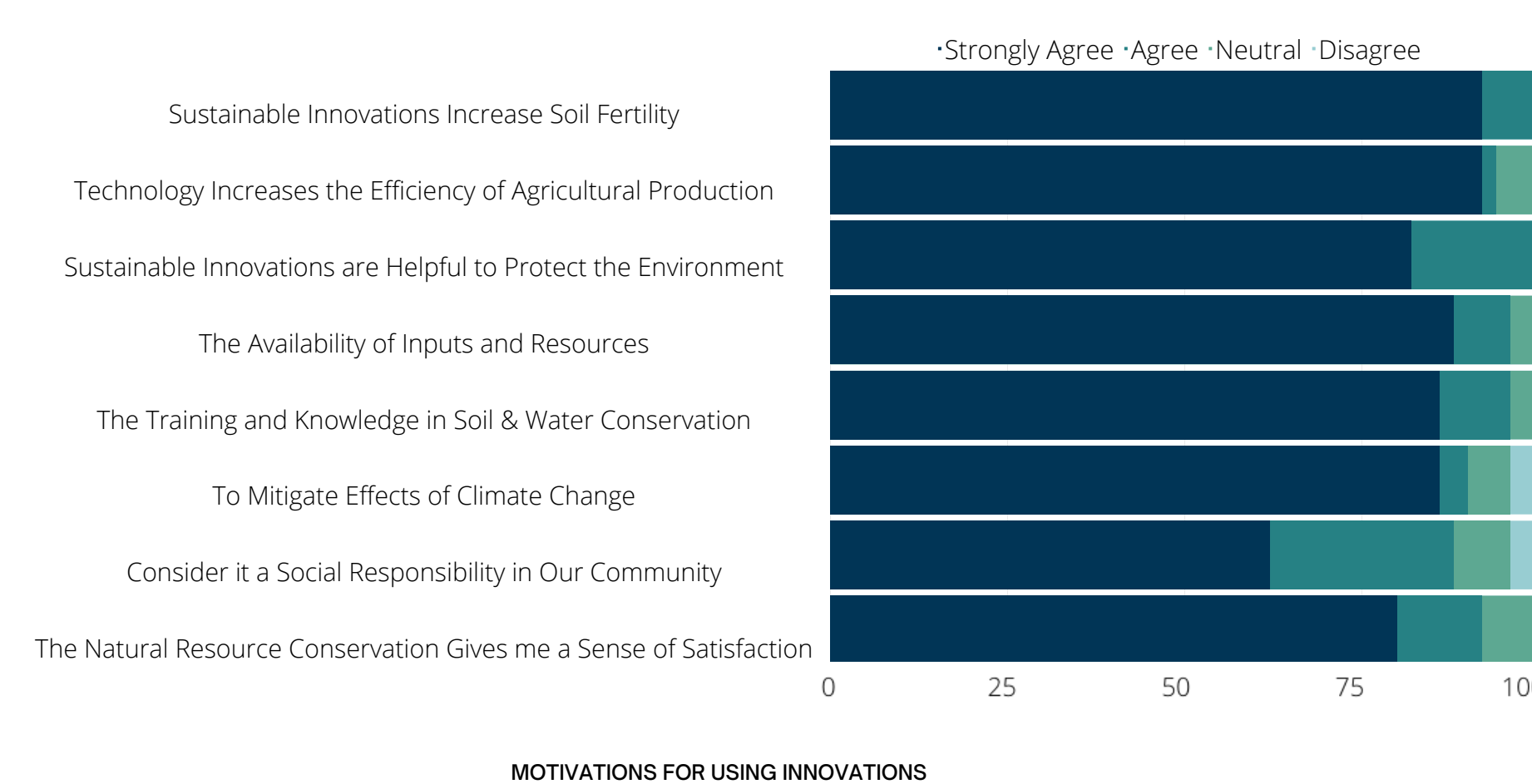
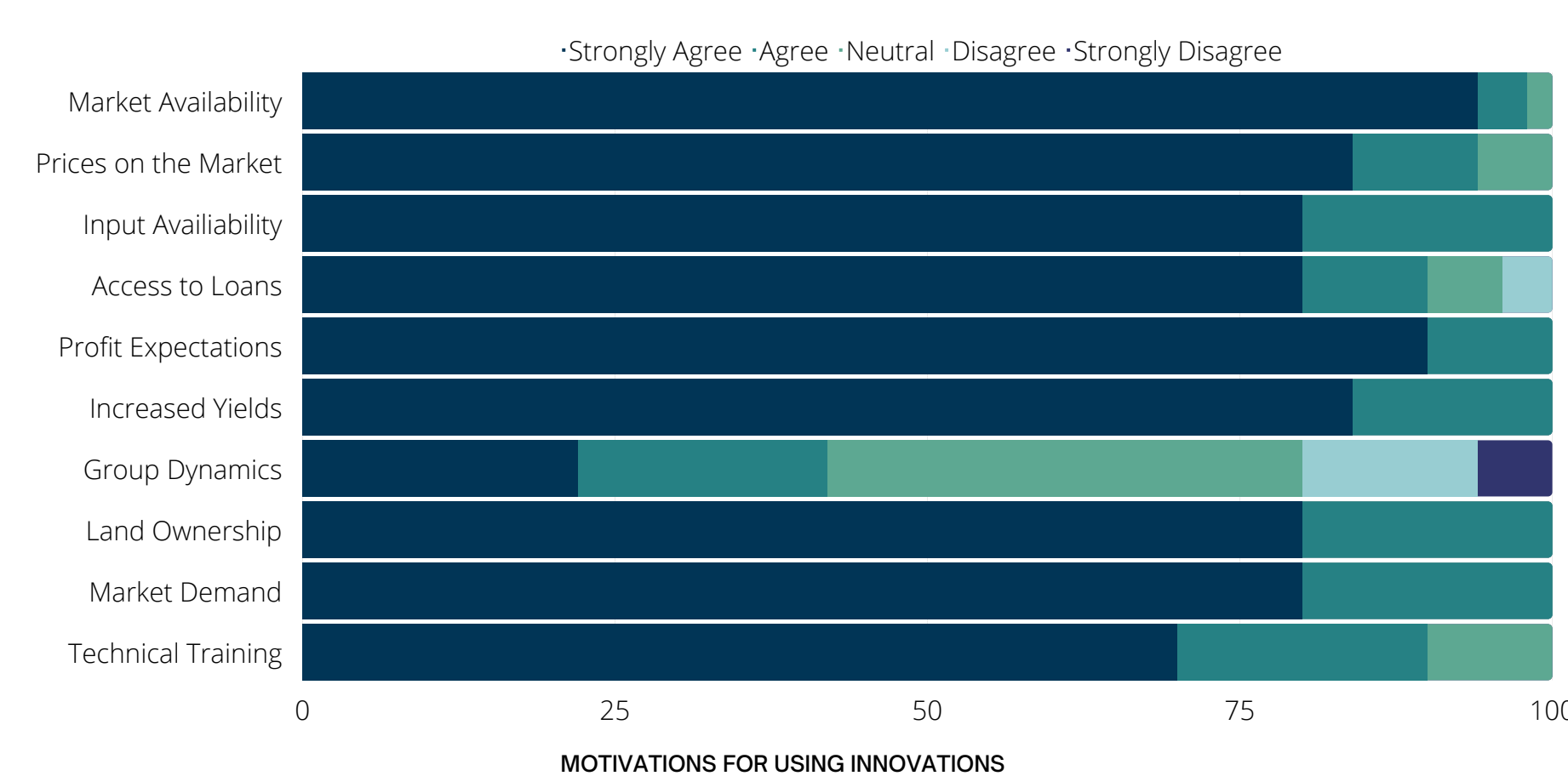
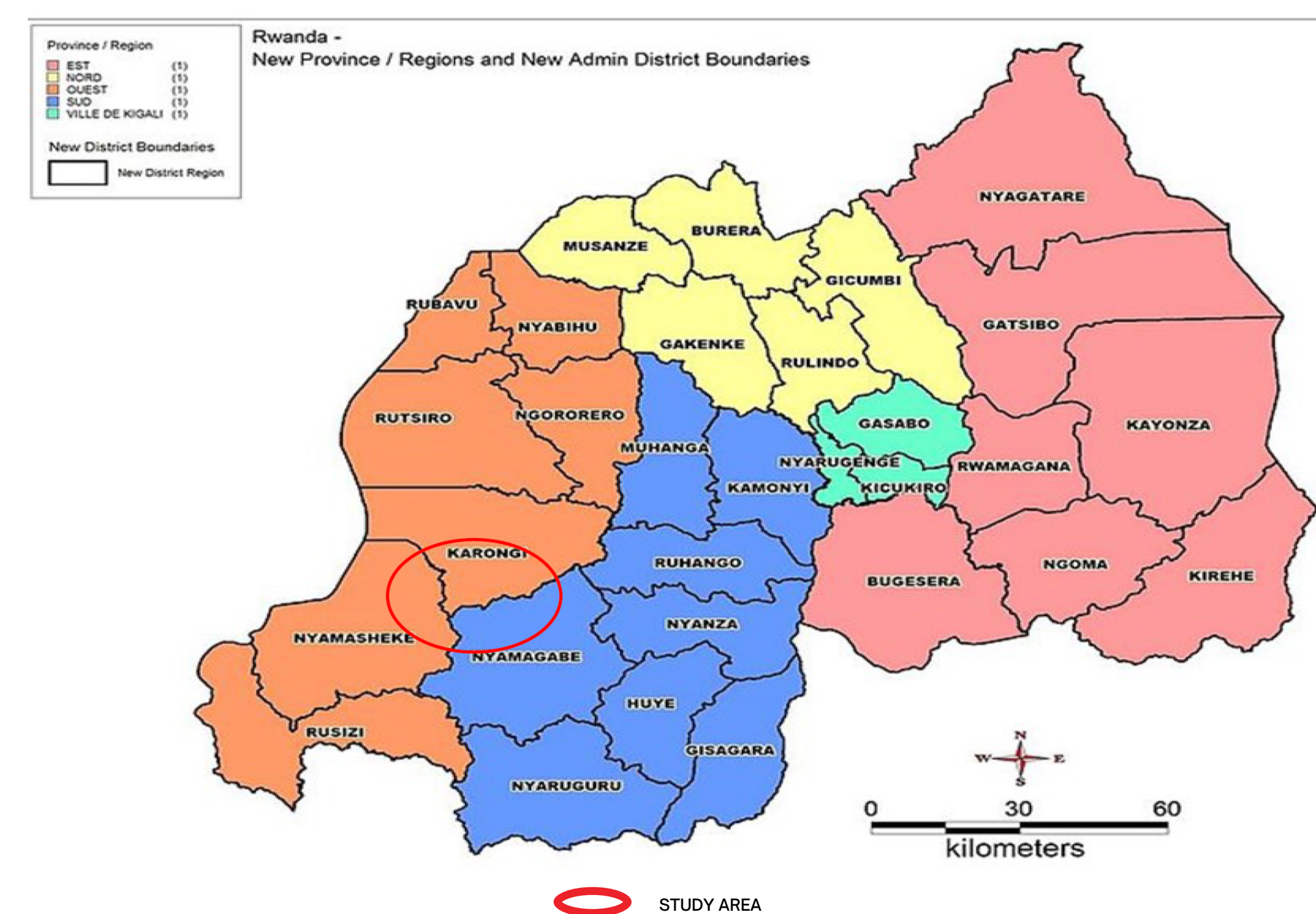
Recommendations

- Ensuring that conservation efforts are efficient and sustainable can be achieved by supporting research and development in sustainable technologies and providing incentives to encourage adoption.
- Building farmers' and communities' capacity to discover and develop market possibilities, as well as experiment via the use of creative participatory methodologies, is crucial for developing a long-term collective capacity for innovation and new alternatives.

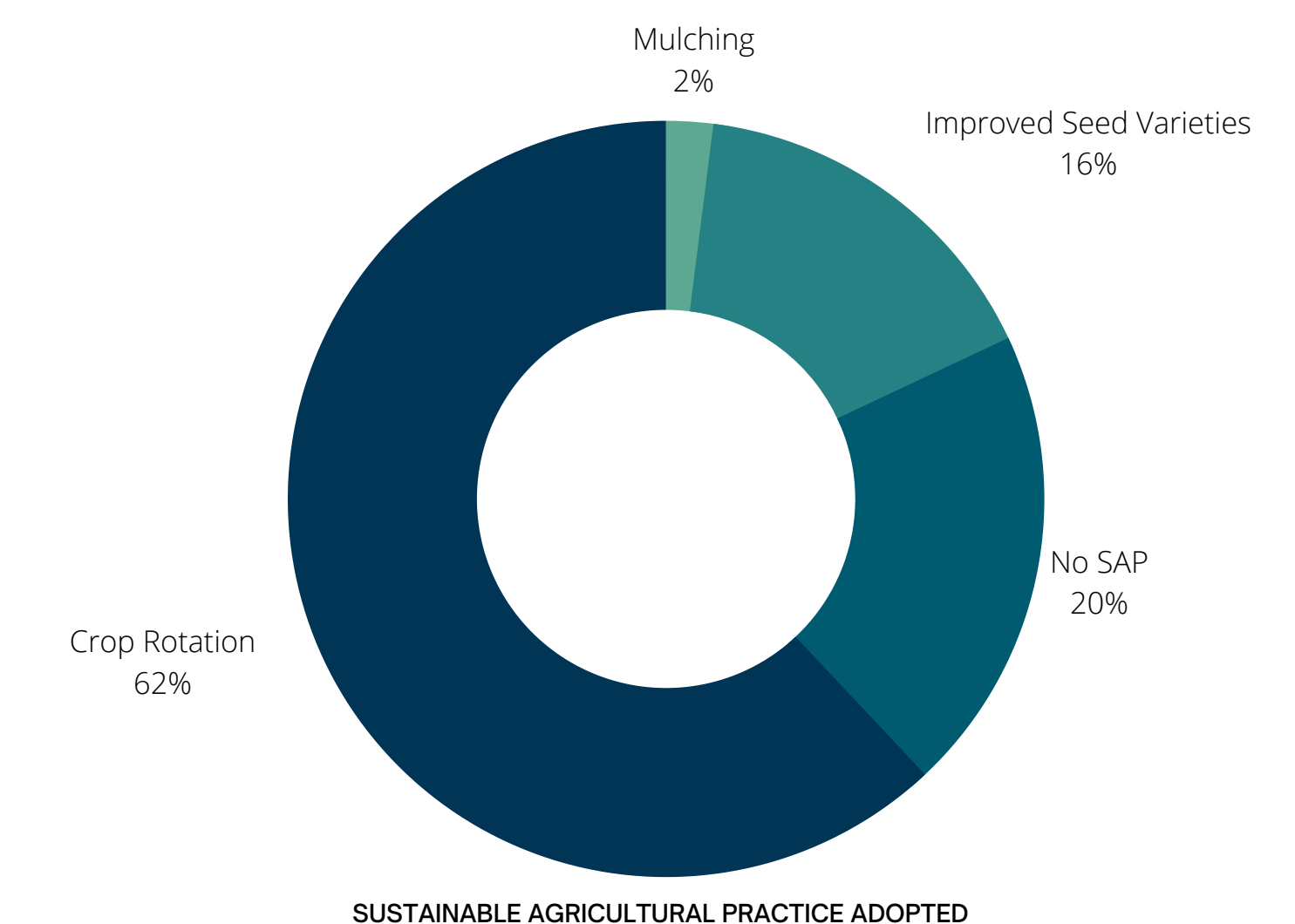
Introduction

- Agriculture is the backbone of the Rwandan economy, accounting for 34 percent of the national GDP and employing more than 80% of the population.
- There are numerous obstacles to Rwandan agriculture's long-term viability, including soil degradation, poor soil fertility, and lower yields.
- The country is plagued by population growth (albeit slower), declining agricultural land size, inadequate agricultural technology, and soil erosion resulting in declining fertility, over-cultivation, and limited use of agricultural resources.
- Intensive agricultural production requires the use of more industrial inputs (i.e., mineral fertilizers and crop protection products) and their inefficiency or overuse, which can pose a severe threat to the environment, for example, soil quality, biodiversity, and animal welfare
- Public finances, personal efficiency, training, and resources play an essential role in adopting sustainable innovations.

Study Area



Results/Findings & Discussion



- The results show that crop rotation was the most adopted Sustainable Agricultural Practice (SAP), followed by 20% for farmers not adopting any form of SAP and improved seed varieties with a 16% adoption rate.
- 62% of respondents strongly agreed that they are likely to consider technology as a part of social responsibility in their community.
- About 80% of respondents believe that natural resource conservation gives them a sense of satisfaction.
- 78% of respondents pointed out that sustainable agriculture practices are beneficial to agriculture.
- Market availability was found to affect 94% of respondents' adoption of sustainable agriculture practices.
- Out of 50 respondents, 86% of respondents strongly agreed and said that the only way to mitigate the effects of climate change is through sustainable intensification.
- In addition to farm practices, good manufacturing practices are essential for downstream businesses to ensure the integrity of product attributes protected by SAPs programs.
- 80% of the respondents highlighted that land ownership strongly influences the adoption of sustainable agriculture.
- According to 70% of respondents, technical training influences their adoption of sustainable agriculture practices
- Profit expectation is the central critical economic factor influencing the adoption of sustainable agriculture practices, of which 90% of respondents strongly agreed.



Authors

Safiyya C. Kassim, BSc. - Czech University of Life Sciences, Prague: 129 Kamýcká, Suchbát 165 00, Prague, Czech Republic
Ing. et. Ing. William Nkomoki, PhD. - Czech University of Life Sciences, Prague: 129 Kamýcká, Suchbát 165 00, Prague, Czech Republic
Winnie Batamuliza, BSc. - Czech University of Life Sciences, Prague: 129 Kamýcká, Suchbát 165 00, Prague, Czech Republic
xkass010@studenti.czu.cz** ; nkomoki@ftz.czu.cz

Affiliations

Czech University of Life Sciences, Prague, Abakorana Murava Cooperative

Related literature

1. D'Souza, G. D. Cyphers, and T. Phipps. 1993. Factors affecting the adoption of sustainable agricultural practices. *Agr. Resource Econ. Rev.* 22:159–165.
2. Hara, S. M., Faverin, C., Villagra, E. S., Easdale, M. H., & Titttonell, P. (2022). Exploring drivers and levels of technology adoption for ecological intensification of pastoral systems in north Patagonia drylands. *Agriculture, Ecosystems & Environment*, 324, 107704.
3. McKenzie, F. C., & Williams, J. (2015). Sustainable food production: constraints, challenges, and choices by 2050. *Food Security*, 7(2), 221–233.
4. Pelosi, C., Pey, B., Hedde, M., Caro, G., Capowiez, Y., Guernion, I., & Cluzeau, D. (2014). Reducing tillage in cultivated fields increases earthworm functional diversity. *Applied Soil Ecology*, 83, 79–87.
5. Shah, K. K., Modi, B., Pandey, H. P., Subedi, A., Aryal, G., Pandey, M., & Shrestha, J. (2021). Diversified crop rotation: an approach for sustainable agriculture production. *Advances in Agriculture*, 2021.
6. Thierfelder, C., Cheesman, S., & Rusinamhodzi, L. (2012). A comparative analysis of conservation agricultural systems: Benefits and challenges of rotations and intercropping in Zimbabwe. *Field crops research*, 137, 237–250.