THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF AGRICULTURE
TANZANIA AGRICULTURAL RESEARCH INSTITUTE
(TARI)

TARI ANNUAL REPORT 2024/25

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The Central Agriculture Reference Laboratory under the Tanzania Agricultural Research Institute (TARI) was inaugurated by Her Excellency Dr Samia Suluhu Hassan, the President of the United Republic of Tanzania, on 8th August 2025

STATEMENT BY THE BOARD CHAIRPERSON

It is with great honor to present this foreword to the annual report of the Tanzania Agricultural Research Institute (TARI). TARI was established by Tanzania Agricultural Research Institute Act, Cap,51. TARI continues to serve as a cornerstone in Tanzania's agricultural transformation journey by spearheading research and innovation across the country.

Over the reporting period, TARI has remained steadfast in fulfilling its mission of generating and promoting agricultural technologies that enhance productivity, food and nutrition security, and sustainable economic growth. With its headquarters in Makutupora, Dodoma, and a network of 17 research centres across diverse agro-ecological zones, TARI ensures that agricultural solutions are inclusive and responsive to regional needs.

The Board is proud of the strategic leadership and collaborative spirit that guide TARI's operations and the Institute's commitment to its core values. which are central to its growing impact among farmers, researchers, and stakeholders nationwide.

In line with its mandate, TARI has not only advanced agricultural science but also strengthened partnerships, advised national policy, and supported the development of innovative technologies. This report provides a comprehensive reflection of the progress made, challenges encountered, and opportunities ahead.

On behalf of the Board of Directors, I extend my appreciation to the management team, researchers, partners, and all who have contributed to TARI's continued success. We remain committed to providing oversight and guidance as TARI strives to become a leading agricultural research institute in the region and beyond.

Mr. Andrew Massawe

Chairperson, Board of Directors

STATEMENT BY THE DIRECTOR GENERAL

It is my pleasure to present the Tanzania Agricultural Research Institute's (TARI) annual report, highlighting our strategic achievements and institutional progress over the reporting period. Since its establishment TARI has remained dedicated to strengthening Tanzania's agricultural research system and generating impactful solutions for farmers, policymakers, and stakeholders.

Over the year, we have recorded tangible progress in the development, testing, and dissemination of improved agricultural technologies across various regions. Through our seventeen research centres nationwide, we have advanced location-specific innovations in crop improvement, soil management, seed systems, and climate-resilient practices. This wide reach has enabled us to serve diverse agro-ecological zones, making our research responsive and inclusive.

In line with our mission, we continued to prioritize on Infrastructure development, knowledge generation and transfer and enhance general capacity of the institute. We successfully enhancing the uptake of our technologies and bridging the gap between research and practice. Also, we made strides in promoting Early Generation Seeds (EGS), seeds multiplication and dissemination. Thus, directly contributing to national goals of food security and sustainable agricultural productivity.

Internally, TARI strengthened its research governance by formulating and reviewing institutional policies, codes of ethics, and research standards. We also enhanced collaborations with national and international institutions, laying the groundwork for impactful joint research and technology exchange.

The Institute maintained its core values of transparency, accountability, professionalism, and inclusiveness. These principles is guiding our operations and partnership models, fostering a research environment that is both ethical and excellence-driven.

I extend my sincere appreciation to our researchers, partners, farmers, the Ministry of Agriculture, and the Board of Directors for their continued support and commitment. As we look forward, TARI remains resolute in becoming a leading centre of excellence in agricultural research in Tanzania and beyond.

Dr. Thomas Bwana

Director General

EXECUTIVE SUMMARY

The year 2024/25 (July 1, 2024, to June 30, 2025) has been another year for TARI in developing technologies and innovations, transferring technologies, and providing policy advisory services through research.

i. TARI closed the year with 921 employees. The number of employees is impressive, particularly in terms of Agricultural Full-Time Equivalent (FTE) researchers, enabling TARI to continue its mission of developing, disseminating, and informing policies on appropriate agricultural technologies for improved livelihoods.

ii. The institute continues to have excellent financial management, having obtained an unqualified opinion (clean report).

iii. Some of the notable achievements in the year includes an impressive performance in the crop improvement program, with the release and registration of 36 varieties that address various challenges in the agricultural value chain.

iv. Research progressed well, addressing existing and emerging challenges. This included studies in field management, irrigation management, harvest and postharvest, value addition, marketing, soil and agro-environment and mechanisation.

v. The technologies and innovations developed were transferred to the stakeholders to achieve research for impact. A total of 389 technologies and knowledge materials were disseminated nationwide. While full utilization is yet to be achieved, active promotion and awareness efforts are ongoing in this year to enhance adoption and impact. These included improved seed technologies, agricultural mechanisation, good agronomic practices, and climate-resilient innovations.

vi. Through diverse dissemination pathways, including Agri-Tech Hubs, exhibitions, training sessions, and digital platforms, TARI reached a total of 3,396,334 stakeholders, mark significant increase national coverage.

vii. In bridging the gap between technology, innovation, and knowledge generation, and real-world transformation, impact studies were also conducted in conjunction with adoption studies to evaluate the adoption rates of various agricultural technologies. This was done to ensure that TARI's technologies and innovations continue to contribute to improving lives and driving policy reforms, thereby encouraging investments that foster economic growth in the agriculture sector and other sectors.

TARI remains optimistic about unfolding new technologies and innovations to benefit Tanzanian farmers and other stakeholders even more in the years to come. This is due to the ongoing investments in research infrastructure, funding and other enablers of research activities. In the next year TARI will commence operating the Central Agriculture Reference Laboratory, which comprising of 15 laboratories. Some of the other investments are being finalized and will enhance the research competitiveness of TARI. These investments are the construction of the Bioscience Centre, Irrigation systems of research farms and the Gene Bank.

TARI workers-"Happy faces, brilliant minds" Smiles fueled by discovery in Transforming Tanzania Agriculture

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Together for tomorrow: TARI hands over free palm oil seedlings to empower farming communities.

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LIST OF ACRONYMS AND ABBREVIATIONS

AYT	Advanced Yield Trials
BLB	Bacterial Leaf Blight
CGIAR	Consultative Group on International Agricultural Research
COSTECH	Tanzania Commission for Science and Technology
DUS	Distinctness, Uniformity, and Stability
EGS	Early Generation Seeds
EU	European Union
GAIA	Guiding Acid Soil Management Investments in Africa
GAP	Good Agricultural Practice
HQCF	High-Quality Cassava Flour
ICT	Information Communication Technology
IEC	Information, Education, and Communication
IPM	Integrated Pest Management
IPSAS	International Public Sector Accounting Standards
ISFM	Integrated Soil Fertility Management
LGAs	Local Government Authorities
MEL	Monitoring, Evaluation and Learning
MoU	Memoranda of Understanding
NARS	National Agricultural Research Systems (
NGOs	non-governmental organizations
NPT	National Performance Trials
OCP	Office Chérifien des Phosphates
OECD	Organization for Economic Cooperation and Development –
DAC	Development Assistance Committee
OYT	Observation Yield Trials
PE	Personnel Emoluments
PPP	Public-Private Partnerships
PYT	Preliminary Yield Trials
R4I	Research for Impact
RBMS	Research Business Management System
RYT	Replicated Yield Trials
SFD	Seed Fertilizer Drill
SRI	System of Rice Intensification
TARI	Tanzania Agricultural Research Institute
TFRS	Tanzania Financial Reporting Standards
TFSRP	Tanzania Food System Resilience Program
TZS	Tanzania Shillings
WSCFD	Wheat Seed Cum Fertilizer Drill

CHAPTER ONE

TARI LEADERSHIP AND GOVERNANCE

TARI Board Chairperson (Seating at the centre), DG and management

1. TARI LEADERSHIP AND GOVERNANCE

1.1 TARI's Mandate

TARI's mandate is to conduct, regulate, promote, and coordinate all agricultural research activities conducted by public and private research institutes or organizations in Tanzania. TARI aims to promote and strengthen National Agricultural Research Systems (NARS) to enhance the development and dissemination of technologies, innovations, and management practices (TIMPs) that address the real needs of farmers and other agricultural stakeholders.

1.1.1 Vision

To be a global centre of excellence in agricultural research for sustainable development.

1.1.2 Mission

To develop, disseminate, and inform policies on appropriate agricultural technologies for improved livelihood.

1.1.3 Core Values

The Institute is committed to providing quality services to all its stakeholders in the due course of fulfilling its mandate, pursuing its vision and accomplishing its mission under the guidance of the core values: -

Table 1: TARI's Core Values

Core Value	Description
Integrity	We are committed to exercising our authorized powers within specified boundaries and we shall not use such powers for personal gain, to favor friends, or relatives, or to undermine others
Teamwork	We understand that 'Unity is strength' and our diversity is the source of our power. We thus embrace a culture of trust and development of morale in the workplace individually and in the area of communication by listening to, and respecting each other; while working to achieve a common goal
Professionalism	We seek the highest professional standards and ethical behaviors through openness, honesty, tolerance, and respect for individuals
Excellence	We are committed to providing solutions to constraints that hamper the optimization of crop production in Tanzania by striving to acquire competency skills and use them in serving the farmers with dedication, and the highest standards of performance
Equity	We acknowledge and respect our clients' differences in their socioeconomic needs and strive to ensure they are reasonably met. We respect all people with dignity and demonstrate high regard for clients, partners and regulatory authorities at all times.

1.1.4 Functions of the Institute

The functions of the Institute are stipulated under Section 4 of the Act, Cap.51. The nstitute is responsible for conducting, regulating and coordinating all agricultural research activities in the Mainland Tanzania. The functions inter alia are as follows:

(i) to conduct, promote and coordinate basic, applied and strategic agricultural research;

(ii) to advise the Government through the Ministry of Agriculture on the formulation of national policies, laws and regulatory frameworks for promoting and regulating agricultural research in the country;

(iii) to formulate and oversee the implementation of the intellectual property policy of the Institute;

(iv) to formulate research standards, code of ethics, conduct and practice, and guidelines for the delivery of agricultural research services;

(v) to set, in collaboration with key stakeholders, national agricultural research agenda and priorities of the national agricultural research system and coordinate the implementation of such agenda and priorities;

(vi) to establish and operate an efficient system of documentation, dissemination and promotion of information on agricultural research;

(vii) to promote advancement of skills by providing facilities for training research personnel for the Institute and other stakeholders for better carrying out basic, applied and strategic research;

(viii) to mobilize funds for agricultural research and development;

(ix) to coordinate and promote cooperation and collaboration with other countries, institutions, scientific or professional societies and other agricultural research service providers, with regard to agricultural sector;

(x) to provide, undertake and promote consultancy services in research, training and dissemination of information in agriculture and allied sciences;

(xi) to register and maintain a register of agricultural research service providers and their research projects in the public and private sectors;

(xii) to promote seed deployment and multiplication; and

(xiii) to establish and maintain a gene bank for the purpose of characterizing, evaluating and conserving plant genetic resources;

1.2 Board of Directors

The Board of Directors is established pursuant to Section 5 of the TARI Act, Cap.51. The composition and appointment of the Board is stipulated under section 5(2) of the Act, Cap.51.r

As stated in Section 5 (2) of the TARI Act, the Board shall comprise 11 members, including the Board Chairperson, who is appointed by the President of the United Republic of Tanzania and members are appointed by the Minister responsible for agriculture. However, where it is considered necessary, the Board may co-opt any person who is not a member of the Board to attend the deliberations of the Board.

The TARI Board comprise of the following members:

i. The Chairperson
ii. A member from the Ministry responsible for agriculture;
iii. A vice-chancellor appointed from one of a leading agricultural university;
iv. A Chief Executive Officer representing a private agricultural research institute;
v. The Director of Local Government Authorities;
vi. The Director General of the Tanzania Commission for Science and Technology;
vii. The Director General of Tanzania Livestock Research Institute;
viii. Senior State Attorney from the Attorney-General's Chambers;
ix. Two members with experience in agriculture representing farmer organisations; and
x. One member with experience in agriculture representing agribusiness org

Table 2: Current Board Members as of June 2025.

S/N	Name	Position		Presentation
1	Mr. Andrew W. Massawe	Board Chairperson		Appointed by the President
2	Prof. Emmanuel J. Luoga	Vice Chairperson		A vice-chancellor appointed from one of a leading agricultural university
3	Dr Rogers J. Shemwelekwa	Member		The Director of Local Government Authorities
4	Prof. Erik Vitus Komba	Member		The Director General of Tanzania Livestock Research Institute
5	Ms. Felister S. Lelo	Member		Senior State Attorney from the Attorney-General's Chambers
6	Mr. Anorld Oosterhuis.	Member		One member with experience in agriculture representing agribusiness organizations
7	Dr. Amos Muhunda Nungu	Member		The Director General of the Tanzania Commission for Science and Technology

S/N	Name	Position		Presentation
1	Mr. Andrew W. Massawe	Board Chairperson		Appointed by the President
8	Dr. Helson Gabriel Rugalema	Member		A Chief Executive Officer representing a private agricultural research institute
9	Mr. Sixtus Mapunda	Member		Member with experience in agriculture representing farmer organisations
10	Ms. Vumilia Zikankuba	Member		A member from the Ministry responsible for agriculture
11	Dr. Jacqueline D. Mkindi	Member		Member with experience in agriculture representing farmer organizations
12	Pro. Sylvia S. Temu Prof	Member		Co-opted Member
13	Dr. Thomas N. Bwana	Secretary of the Board		Director General Tanzania Agriculture Research Institute (TARI)

Pursuant to section 6(5) of the Act. Cap.51 the Board s established three Committees namely: -

(i) Research, Technology Transfer and Resource Mobilization;

(ii) Finance, Human Resources and Administration; and

(iii) Audit, Monitoring and Evaluation.

1.3 Management of the Institute

The overall Management of TARI is vested in the Board of Directors as the governing board under the supervision of the Minister responsible for Agriculture. The Director General is responsible for day-to-day operations of the Insitute.

The Institute's Management team, which is under the supervision of the Director General, has requisite skills and competences. Thus, the team is capable of handling all operational and administrative matters efficiently.

The Management, which is under the supervision of the Director General, is organized into three (3) Directorates and six (6) Units as follows:

(a) Directorates

(i) Research and Innovation Directorate;

(ii) Technology Transfer and Partnerships Directorate;

(iii) Administration and Human Resources Management Directorate;

(b) Units

(i. Planning, Monitoring and Evaluation Unit;

ii. Finance and Accounts Unit;

iii. Internal Audit Unit;

iv. Procurement Management Unit;

v. Information Communication Technology Unit;

vi. Legal Service Unit.

The Director General reports to the Board. All Directors and Head of Units report to the Director General.

Dr. Thomas Bwana
Director General

Dr, Deusdedith Mbanzibwa
Director of Research and Innovations (DRI)

Dr, Sophia Kashenge
Director of Technology Transfer and Partnerships (DTTP)

Mr. Zephania Mshanga
Director of Human Resources and Administration (DAHRM)

i) Finance and Accounts Unit
CPA(T) Magreth Ndebelamantwi
Chief Accountant (CA)

ii) Monitoring and Evaluation
Mr. Asajile Mwambambale
Head of Planning Monitoring and Evaluation unit (PME)

iii) Legal Unit
Ms. Selina Mloge
Head of Legal Services (HLS)

iv) Procurement Management Unit
CPSP Yusuph Keu
Head of Procurement Management Unit (HPMU)

v) Internal Audit Unit
CPA (T) Patience Ntakwa
Chief Internal Auditor (CIA)

vi) Information Communication Technology Unit (ICT)
Mr. Festo Tullo
Head of ICT

Also, the Institute has a Master Workers Council, which is a participatory organ constituted by Members of Management and employees' representatives from both the Head Office and all the Research Centres. The Master Council meets regularly as per the Master Workers Council Charter.

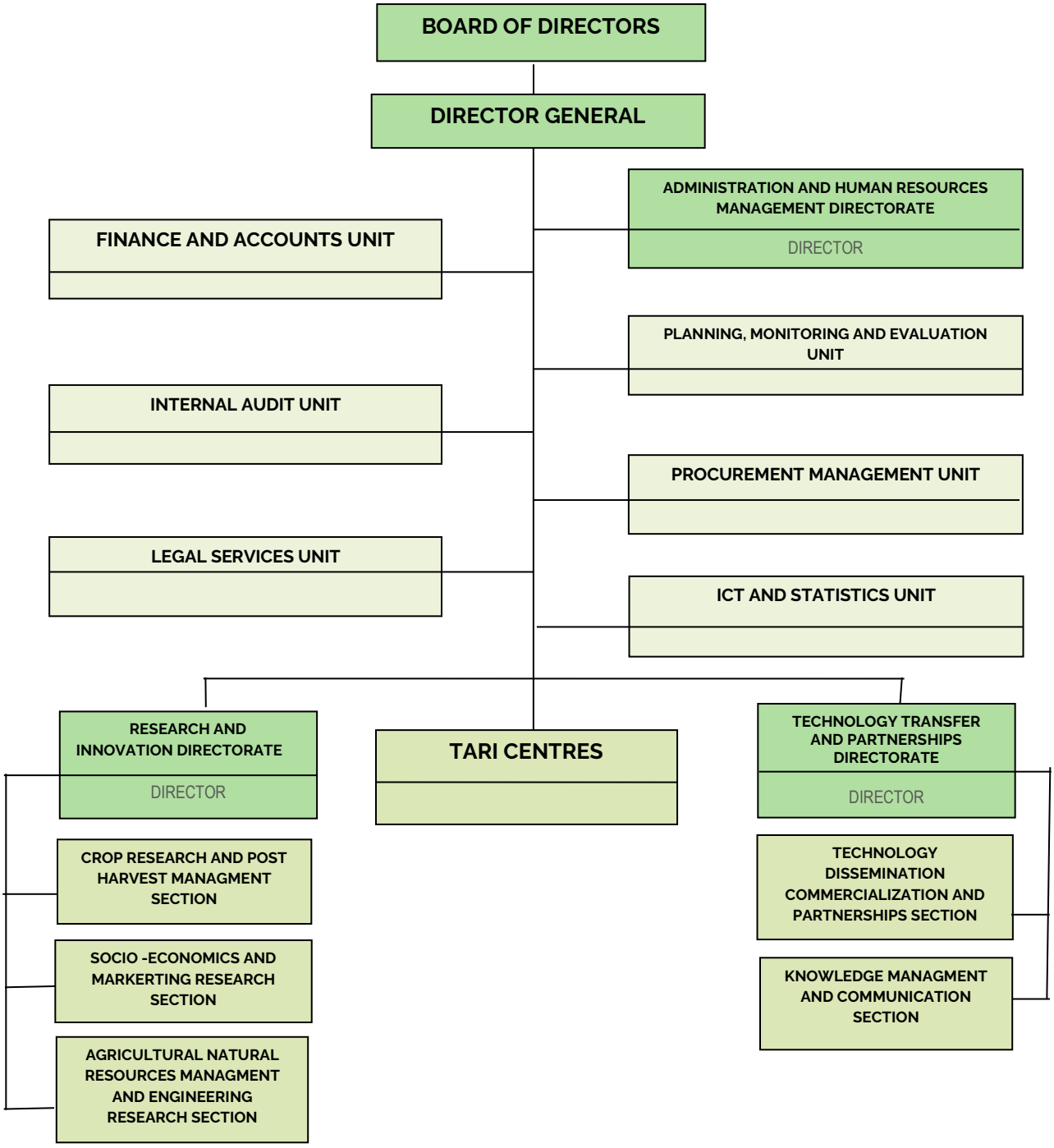

Figure 1: Current Approved TARI organization structure

1.4 TARI Centres Management

Currently, TARI has seventeen (17) Research Centres throughout the Tanzania Mainland (Figure 2). The Centers are headed by Centre Directors and are reporting to the Director General. Whereas, the Head Office is primarily responsible for coordinating and managing the Institute, with various support functions, the research and innovation, as well as the technology transfer are executed through the TARI Centres. The geographical distribution and the core research mandate for each Centre are provided in Table 3.

However, by October 2025, TARI will have 20 centres, with the additions of TARI-TaCRI, TARI-TORITA, and TARI-TRIT following the merger of these research institutes with TARI.

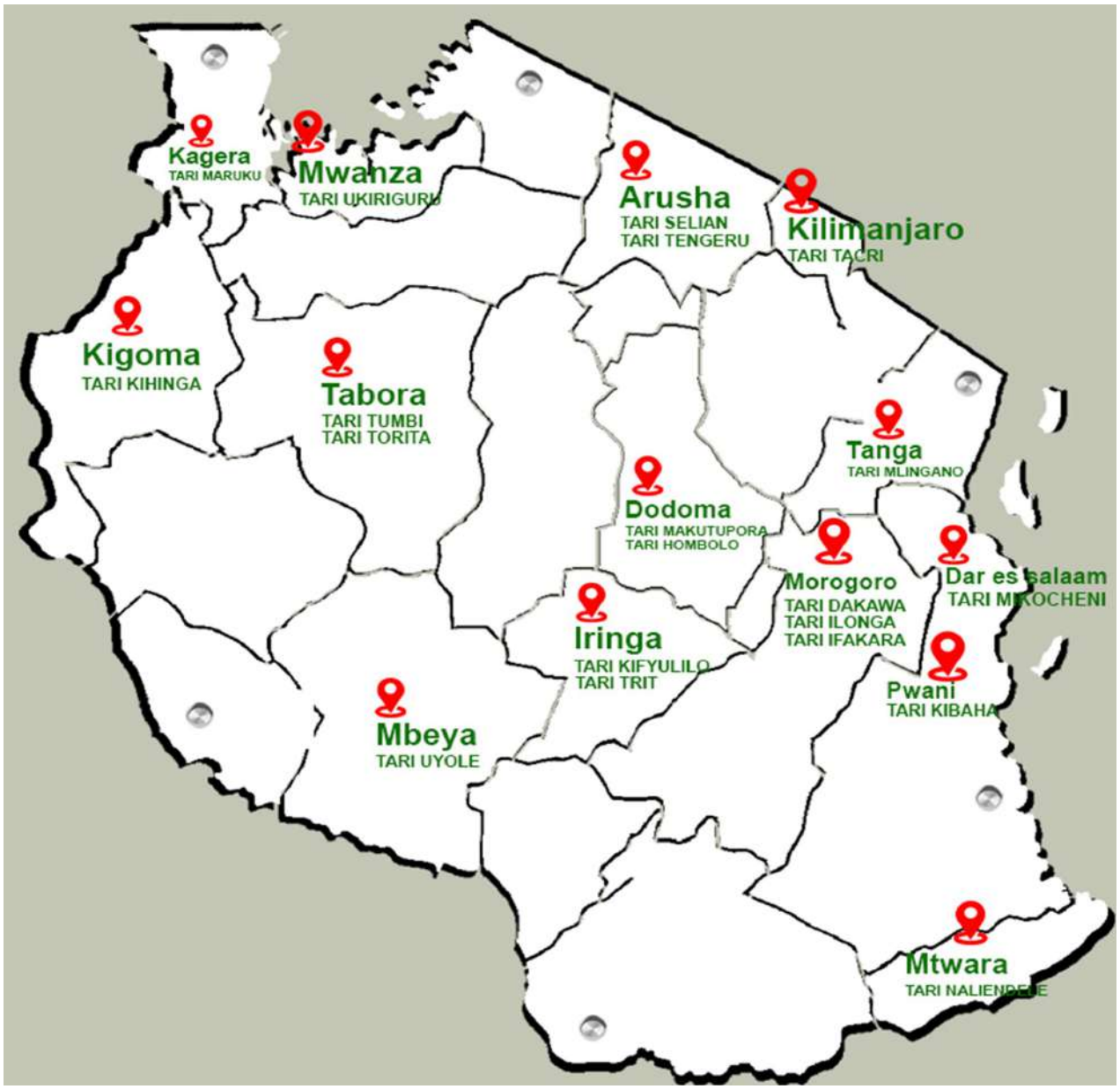

Figure 2: Distribution of the current TARI Centres across the country

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Table 3: TARI Research Centers and their Mandate

S/N	Name of the Research Centre	Location	Research Mandate
1	Maruku	Kagera	Bananas and beans
2	Ukiriguru	Mwanza	Cotton and roots and tubers
3	Hombolo	Dodoma	Dry land crop research and Climate change Sorghum, pearl millet and finger millet
4	Uyole	Mbeya	Irish potato, agricultural engineering, beans, maize and pyrethrum
5	Kifyulilo	Iringa	Irish potato, beans, maize, wheat and tea
6	Tumbi	Tabora	Agro-forestry, Medicinal Crops
7	Selian	Arusha	Beans, Wheat and Barley, Legumes
8	Kibaha	Pwani	Sugarcane
9	Mikocheni	Dar es Salaam	Coconut and Biotechnology
10	Naliendele	Mtwara	Cashew nuts, oilseeds: groundnuts and sesame
11	Mlingano	Tanga	Soils and Sisal
12	Tengeru	Arusha	Horticulture
13	Ifakara,	Morogoro	Rice
14	Dakawa	Morogoro	Rice
15	Makutupora	Dodoma	Grapes
16	Ilonga	Morogoro	Lowland maize, grain legumes, sunflower, sorghum and millets and Post-harvest Management
17	Kihinga	Kigoma	Oil palm
18	TaCRI	Kilimanjaro	Coffee
19	TRIT	Iringa	Tea
20	TORITA	Tabora	Tobacco

1.5 Human Resources Capacity

The Personnel Emoluments (PE) for TARI to effectively carry out its mandated responsibilities is set at 1,028 staff members. However, by June 2025, the institute had 921 employees with a greater population 57% of youth and 33% female (Figure 3a and b). Nevertheless, the number of Agricultural Full-Time Equivalent (FTE) researchers remains impressive, as they actively engage in research, innovation, and the last-mile delivery of technologies to farmers and other stakeholders in the country.

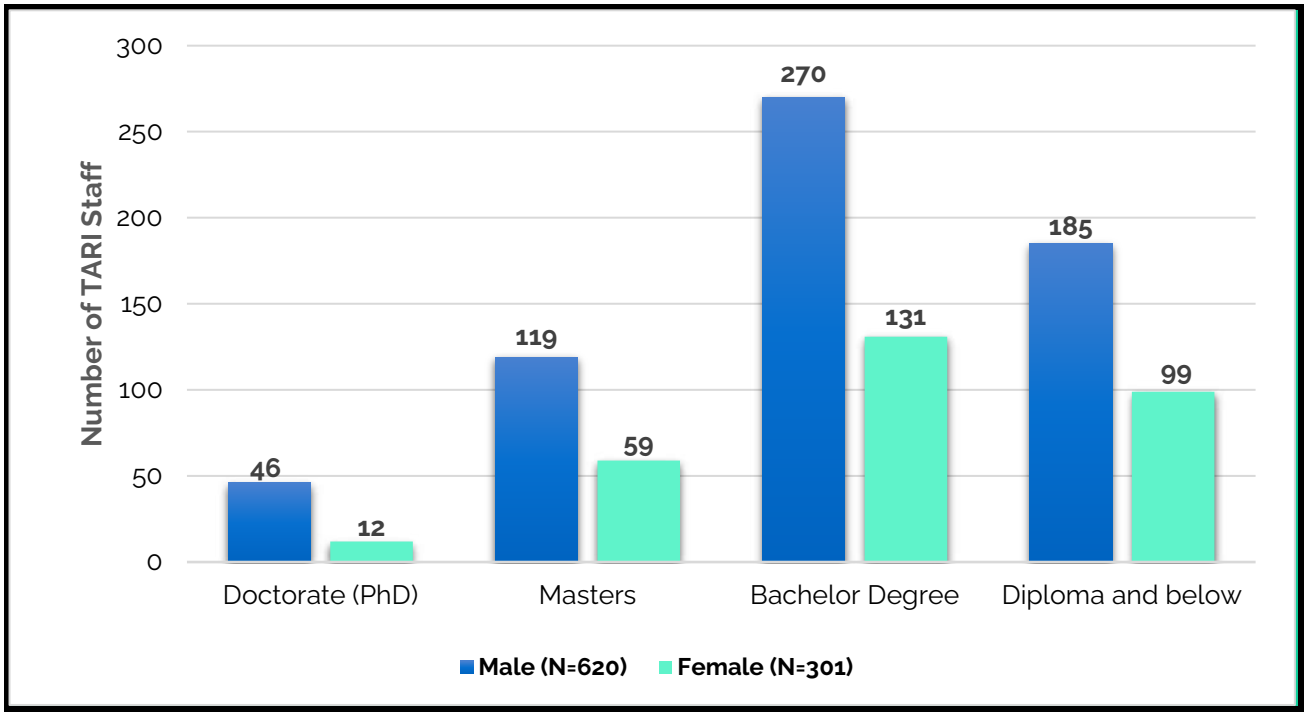
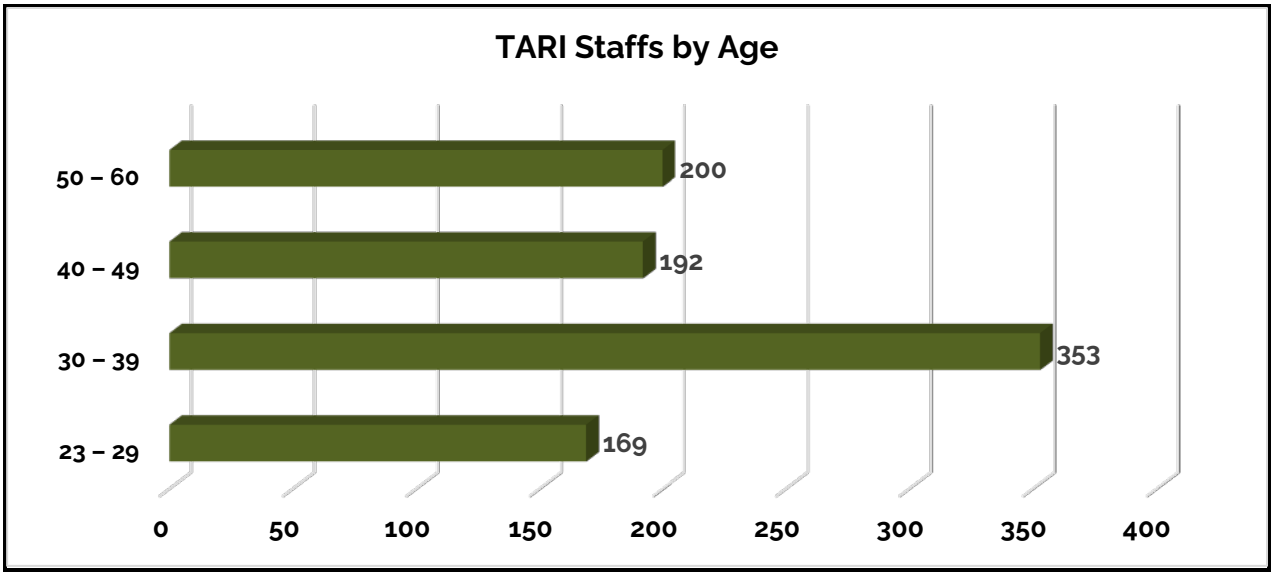


Figure 3: TARI human resources capacity

Capacity-building efforts to enhance the capabilities of TARI staff have been underway. In the 2024/25 fiscal year, a total of 187 staff members are participating in long-term training programs aimed at enhancing their research skills and promoting innovation in the agricultural sector (Figure 4).



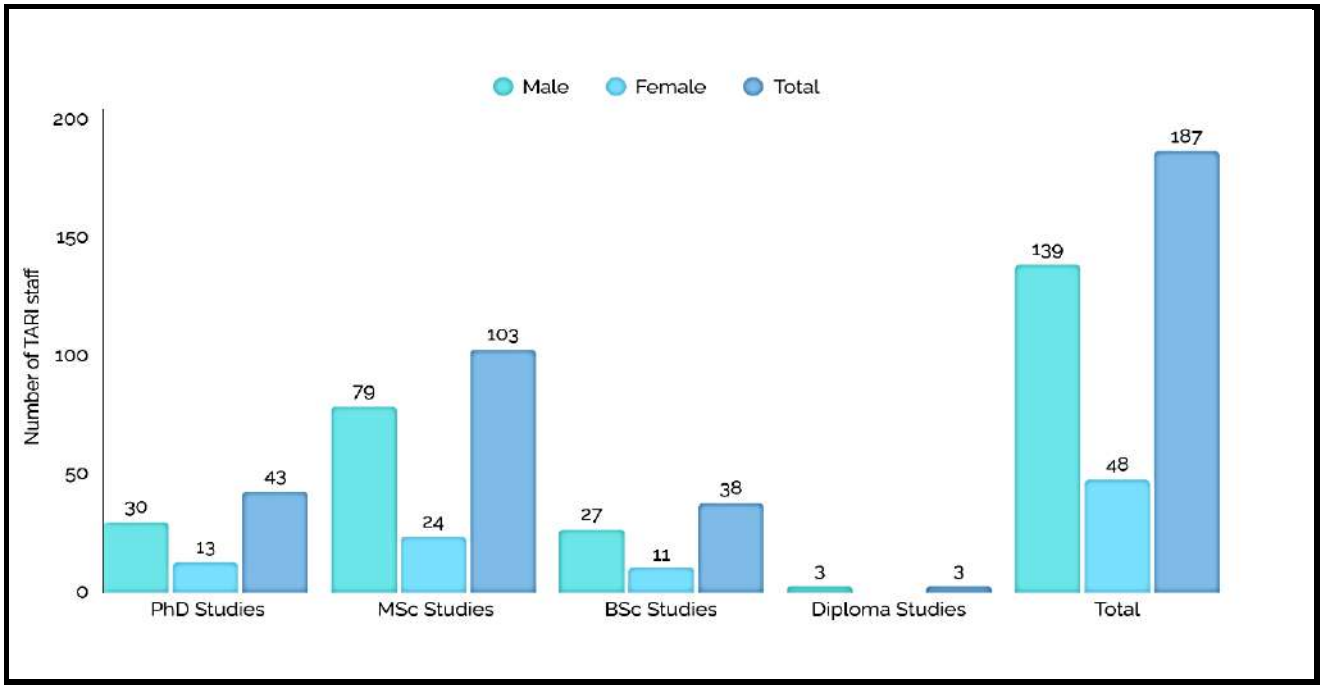


Figure 4: Number of staff under long term capacity building

TARI, TRIT, TORITA, TaCRI First Management meeting 22 July 2025 at 88 TARI Conference-Morogoro

1.6 Research and Development (R&D) Expenditure

1.6.1 Sources of research funding

The Tanzania Agricultural Research Institute (TARI) secures its funding through a combination of public, private, and donor sources, which reflects its comprehensive mandate and engagement with various stakeholders. The primary source of funding for TARI's research activities comes from the Tanzanian Government, accounting for the majority (53%) of its budget. The Government development funds are used to support essential infrastructure, strategic research programs, and institutional growth. Additionally, 3% of the funding is sourced from government other charges, which cover routine expenses.

Development partners contribute 23% of TARI's budget through targeted research often focused on research and innovations. Crop-specific stakeholders, such as those involved in cashew nuts, cotton, and sugar contribute 15% to support research tailored to the specific needs of each crop. Finally, TARI generates 6% of its budget through its own initiatives, which include the sale of seeds and seedlings particularly Early Generation Seeds (EGS) as well as income derived from services offered to stakeholders, such as rental income and consultancy fees. This diversified funding model allows TARI to remain responsive, sustainable, and aligned with the national agricultural priorities.

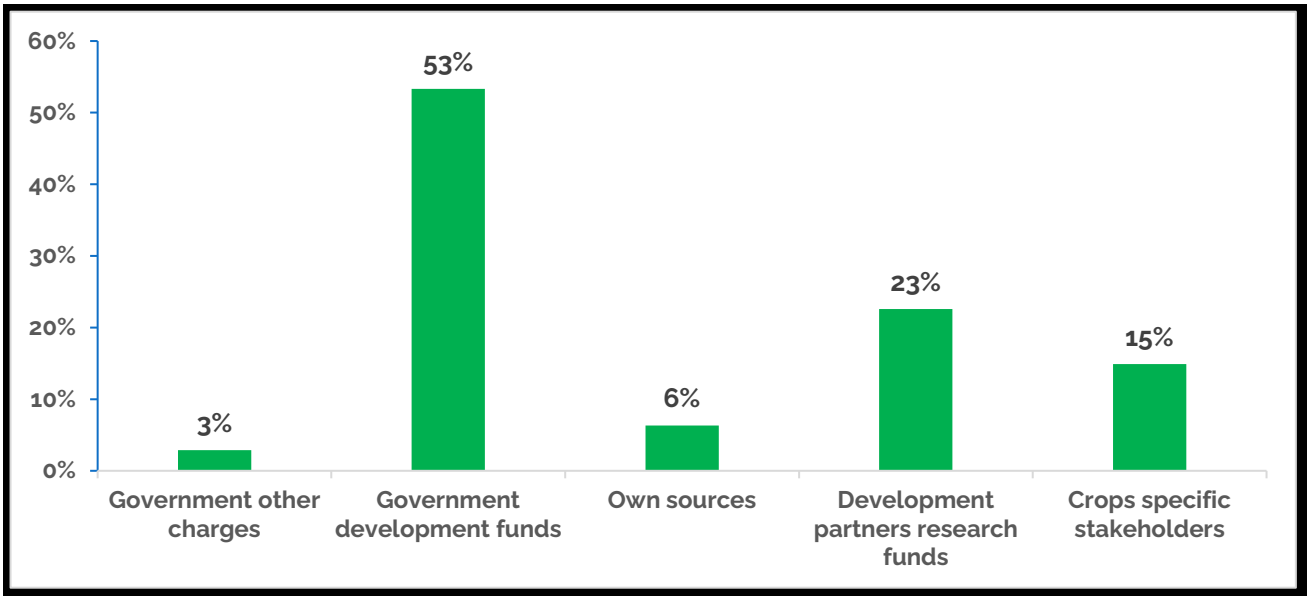


Figure 5: TARI sources of funds

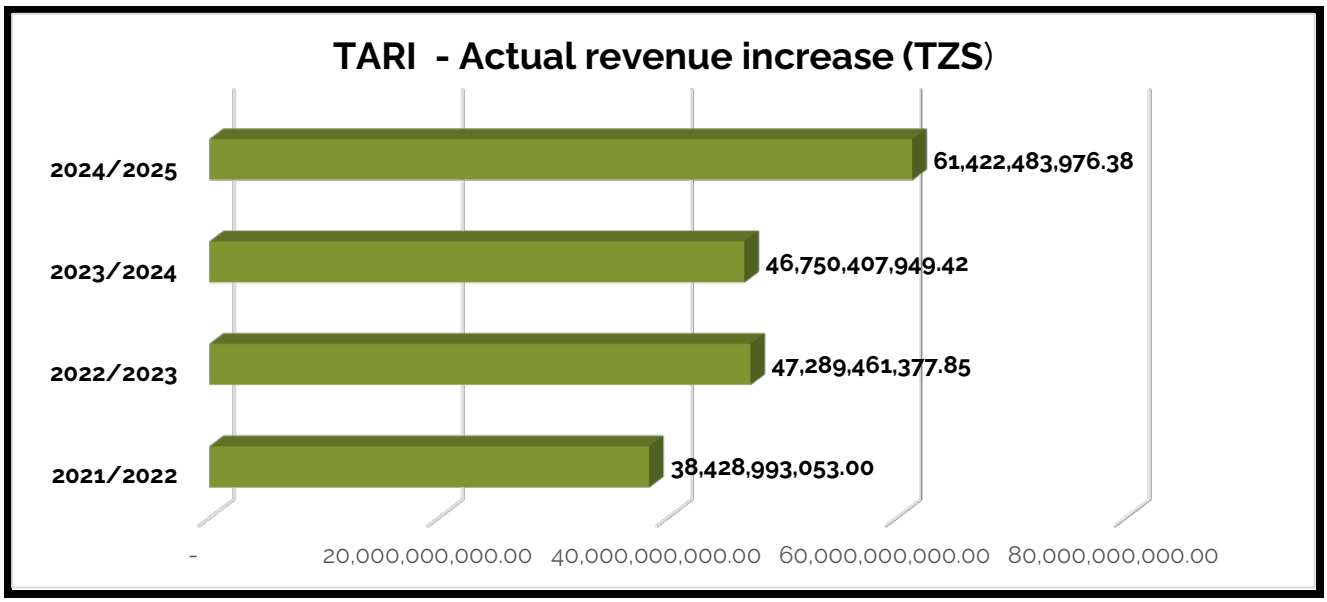
Therefore, TARI's financial structure demonstrates a diversified and strategically aligned funding model that enhances both sustainability and responsiveness. With 23% of its budget supported by development partners, TARI benefits from targeted research funding that encourages innovation. The 15% contribution from crop-specific stakeholders ensures that the research agenda remains relevant and demand-driven, addressing the real needs of key agricultural sectors like cashew, cotton, and sugar. Additionally, the 6% internally generated revenue from seed sales and consultancy services reflects a growing emphasis on self-reliance and institutional entrepreneurship.

This blend of external and internal funding sources helps reduce overdependence on any single stream, making TARI financially resilient and better equipped to align with national agricultural priorities. However, increasing the share of internally generated income could further strengthen institutional autonomy and long-term sustainability

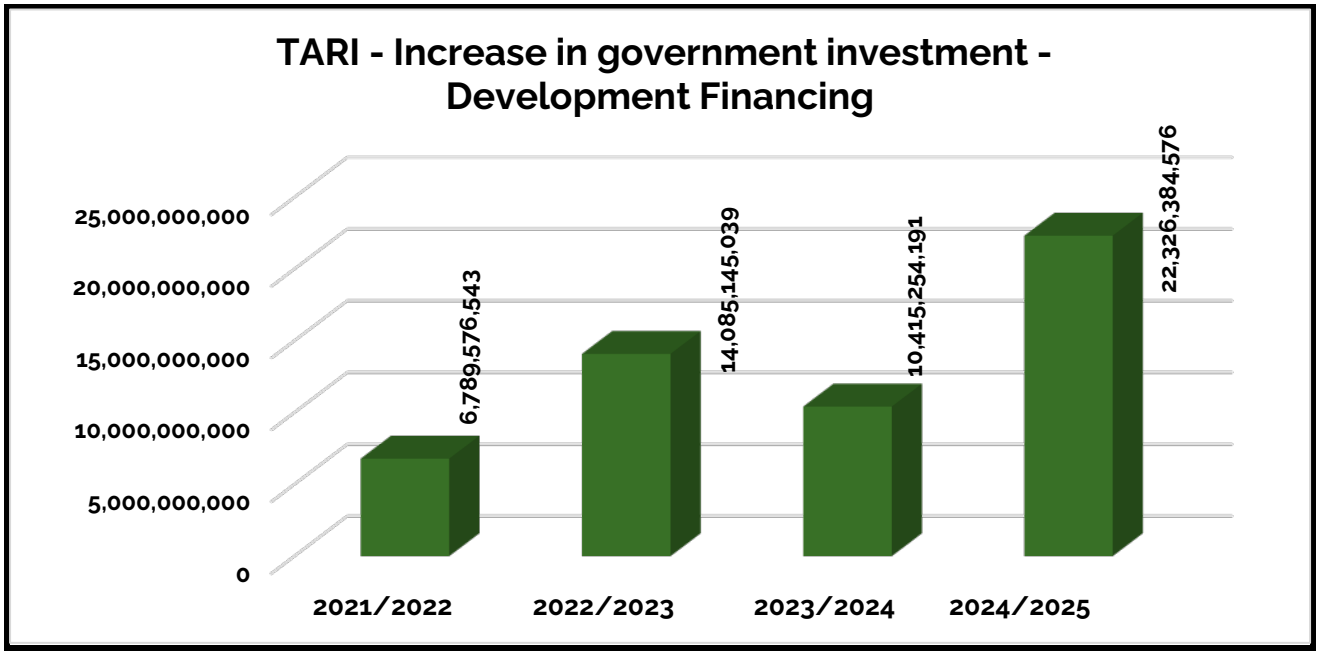
1.6.2 TARI Financial Management

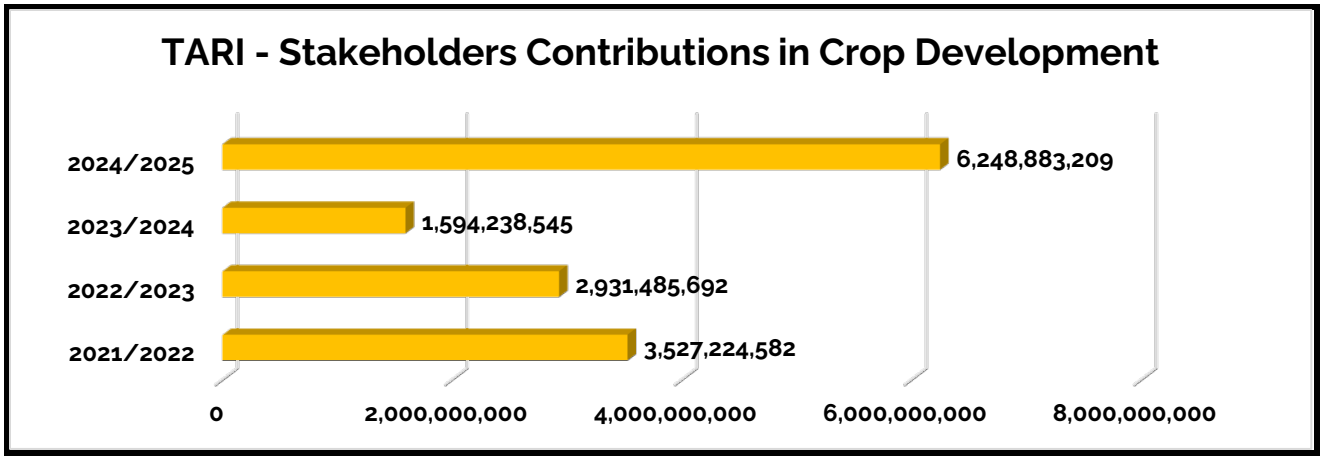
TARI's financial management system follows the government's financial management guidelines and complies with all relevant national and international standards. During the financial year 2024/25, the Institute obtained an unqualified opinion (clean report) for the year ended June 30, 2024. This entails that, books of accounts have been prepared in accordance with the Generally Accepted Accounting Principles, the Public Finance Act, the Tanzania Financial Reporting Standards (TFRS), the International Public Sector Accounting Standards (IPSAS), and other Guidelines and Directives as prescribed by the Paymaster General.

In addition, during the period under review (2024/25), actual revenue increased by 27% from TZS 48.11billion (2023/24) to TZS.61.42 billion (2024/25). The increase was mainly due to an increase in government subventions and the maturation of the research proposal.



TARI will continue to enhance its internal financial controls and is committed to develop the capacity of its accountants and Project Investigators (PIs) in new and emerging financial management principles, including current and any other guidelines and directives issued by the Tanzania Ministry of Finance.





1.7 Research Infrastructure

1.7.1 Physical Research Infrastructure

TARI's physical research infrastructure covers an area of 18,000 hectares, with 10,000 hectares potentially suitable for irrigation. TARI is investing in irrigation infrastructure across its 17 research centers to facilitate year-round trials by increasing its 300-hectare irrigated area, which will bring the total irrigated land to 2,084 hectares. This initiative is part of the effort to enhance existing research farms and trial plots used for experiments and seed production.

Pictures: TARI Laboratory Facilities

TARI is dedicated to ongoing investments in its physical research infrastructure. In the 2025/26 financial year, it will continue constructing a large bioscience laboratory (Bioscience Center) and three tissue culture laboratories for seed production . Further, TARI will finalize the construction of a large Gene Bank along with 11 seed storage warehouses.

1.7.2 Irrigation Infrastructure

To strengthen its research capacity, TARI has undertaken the installation of irrigation infrastructure across its research Centers and experimental stations. This initiative aims to support year-round agricultural research and improve the reliability of experimental results by mitigating the effects of seasonal rainfall variability. As part of this effort, irrigation infrastructure is being constructed or rehabilitated at 12 research experimental stations, covering a total area of 874.9 hectares. As of now, the overall completion rate for these works stands at an average of 37.5%, marking significant progress toward achieving enhanced research efficiency and productivity.

Picture: TARI Irrigation Infrastructure constructed in different Centers

Picture: TARI Bioscience Centre Facilities under construction in Mvomero District Morogoro

Picture: TARI Gene Bank Facility under construction in Selian TARI Centre in Arumeru District Arusha

1.7.3 Digital Research Infrastructure

TARI uses digital research infrastructure to support its operations. These infrastructure includes tools and laboratories for Geographic Information Systems (GIS) and remote sensing, data management systems, digital survey tools, and an online catalogue for accessing TARI technologies. Additionally, to enhance communication the institute has invested in video conferencing facilities at seven TARI Centers.

To improve its operations, TARI has implemented the Research Business Management System (RBMS), a digital platform that provides a centralized space for integrating key functions of the institute. This platform showcases TARI's technologies, outputs, and services to the global community.

Furthermore, TARI is enhancing the digital environment for its scientists by creating a dedicated department for digital computing and engineering. This department will focus on precision agriculture research, crop modeling, and geospatial analysis by developing and validating context-appropriate digital agriculture tools, as well as creating open-access datasets and algorithms.

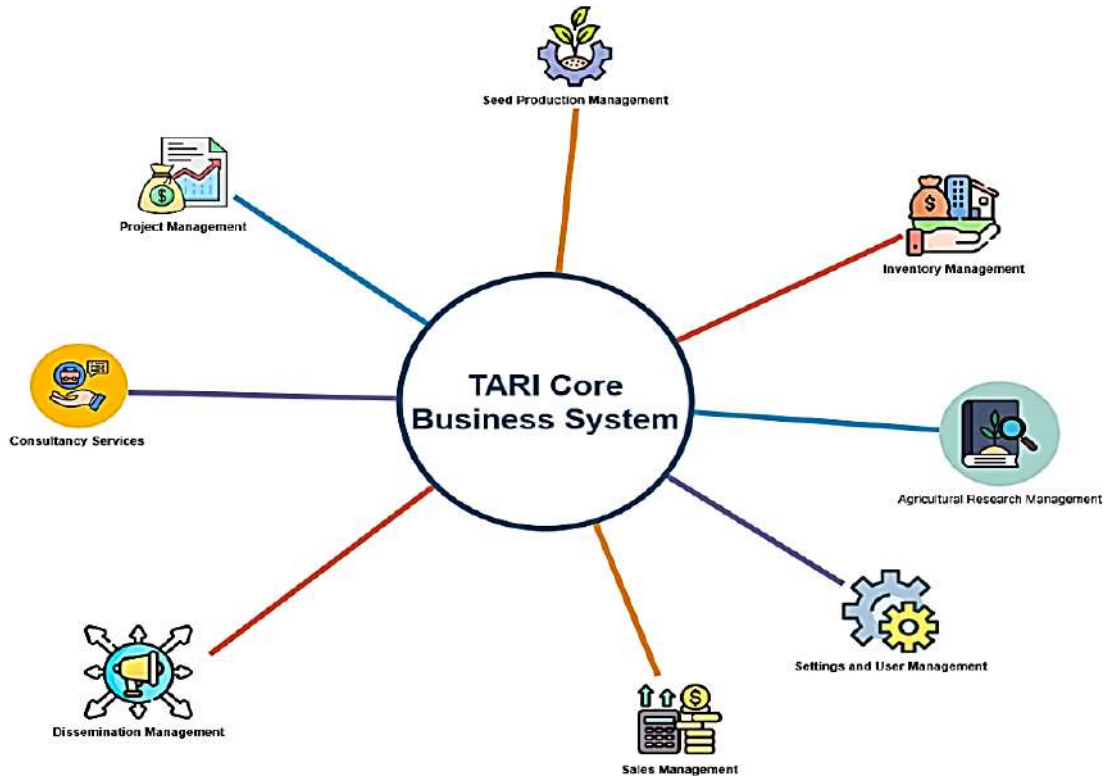


Figure 6: TARI digital Research Business Management System (RBMS)

TARI in collaboration with CIAT under Artemis Project utilizes mobile phones as a tool for efficient and real-time data collection in the field. Researchers. Field officers, farmers, or community members can use mobile applications or SMS-based systems to gather and transmit data

1.8 Monitoring, Evaluation and Learning (MEL)

TARI has a dedicated unit for Planning, Monitoring and Evaluation (PME). This unit conducts quarterly assessments of TARI project activities to generate evidence that informs the progress and achievements of various initiatives. Also, monitoring captures important lessons learnt, ensures accountability, and supports management and the Institute in making evidence-based decisions regarding project activities.

MEL is also central to TARI's strategic decision-making regarding the scaling of technologies, replication of initiatives, or redesigning of research interventions. The unit also carries out specific project evaluations. TARI adheres to the Tanzania National Evaluation Guideline Manual of 2024 and embraces the African Evaluation Principles. These principles emphasize being powerful for Africans, technically robust, ethically sound, Africa-centric yet open, and connected to global perspectives.

Additionally, TARI follows the evaluation criteria set forth by the Organization for Economic Cooperation and Development – Development Assistance Committee (OECD DAC), which include Relevance, Coherence, Efficiency, Effectiveness, Impact, and Sustainability.

Picture: TARI Seeds - Field evaluation

CHAPTER TWO

RESEARCH AND INNOVATION

2. RESEARCH AND INNOVATIONS

2.1 Relevance of TARI's Research into Agricultural Development

The TARI research activities are relevant to agricultural development in Tanzania and beyond. TARI focuses on over 90 different crops grown in the country. Its significance lies in the role of the agriculture sector in Tanzania, which contributes 26.3% to the GDP, provides 65% of raw materials, accounts for 61.4% of employment, and ensures 100% food security[1]. To maintain its relevance, TARI's research and innovations align with national frameworks and objectives, and its business process works around the complete value chain of every crop produced (Figure 8a).

[1] GoT (2024). Tanzania Agriculture Master Plan 2050: A Roadmap to Transform the Crops, Livestock, and Fisheries Sectors. Government of Tanzania (GoT). Dodoma, Tanzania. p. 338.

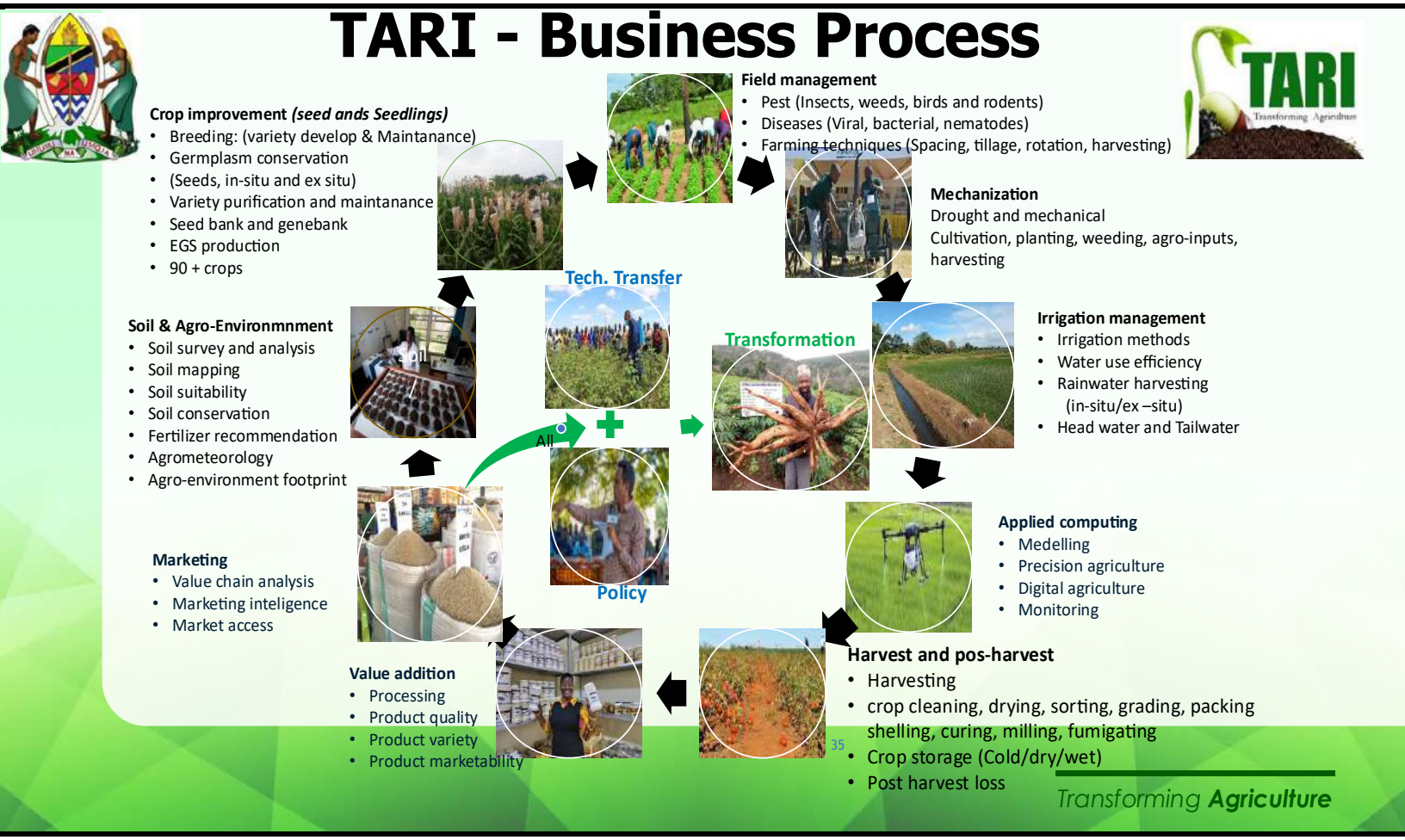


Figure 7:TARI Business process

This year, TARI's research and innovation activities aligned with Agenda 10/30 and the Agriculture Master Plan 2050, as well as Tanzania's Development Vision and Annual Plans. TARI research activities are always driven by its mission (to develop, disseminate, and inform policies on appropriate agricultural technologies for improved livelihood) and focus on increasing the production and productivity of key crops. The primary goal of TARI's activities is to enhance the income, livelihoods, food and nutrition security of farmers and the broader population in the country.

2.2 Crops Research and Innovations

2.2.1 Cereals

TARI's research in cereals focuses on various crops, including maize, rice, wheat, sorghum, millet, and barley. Since its establishment, TARI has generated 347 different technologies and knowledge which are disseminated in various parts of the country. In the year 2024/25, there were noteworthy advancements in crop improvements, resulting in the official registration of eight new crop varieties. These include three rice varieties: Lawama, Mbawa mbili, and Kalamata, as well as five sorghum varieties: TARI SOR 3, TARI SOR 4, TARI SOR 5, TARI SOR 6, and TARI SOR 7. This achievement represents a significant step forward in enhancing crop diversity, improving farm productivity, and contributing to better nutrition and food security.

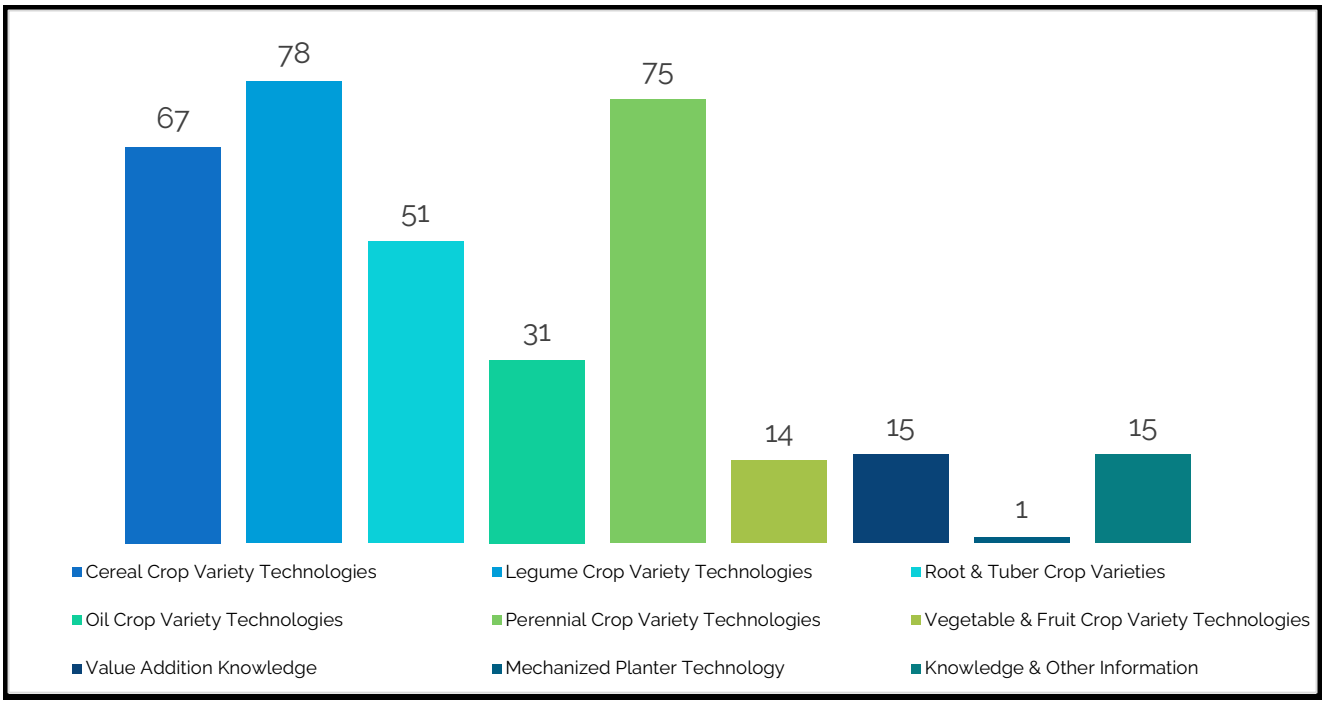


Figure 8: TARI Technologies and Innovations generated 1950-2024

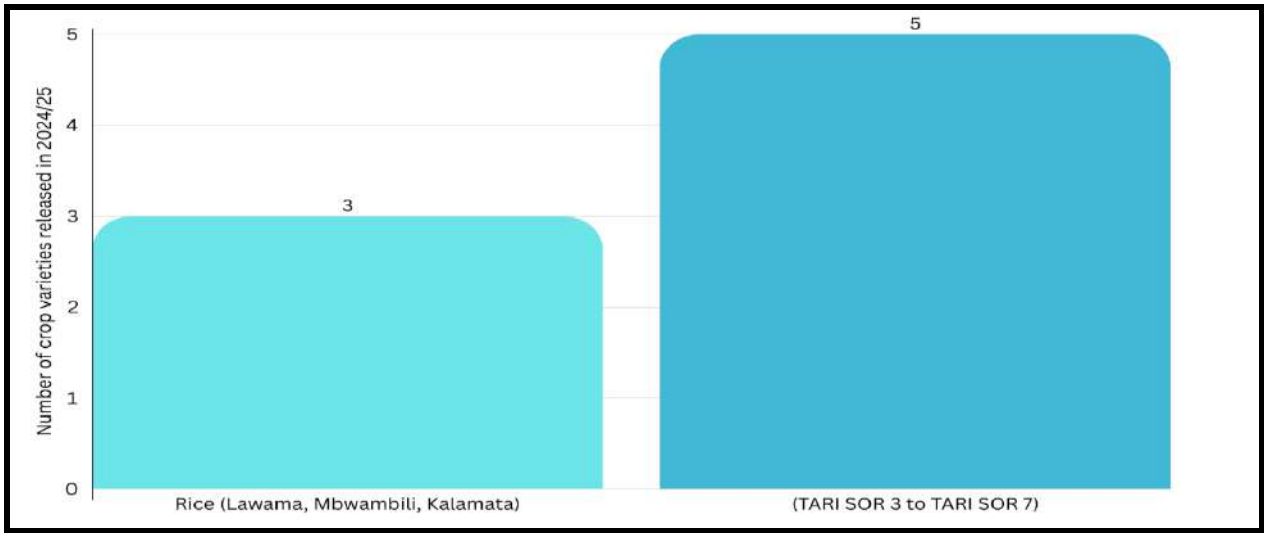


Figure 9: Some cereals released varieties for rice and sorghum

2.2.2 Roots and tubers

A total of 21,698,827 planting materials-including cuttings, seedlings, plantlets, and splits—were produced during the reporting period. These materials covered a wide variety of food crops, fruits, and spices. This level of production signifies a substantial contribution to agricultural development and enhances the planting material supply system within the country.

Picture: Some of Disease-free cassava varieties produced by TARI

2.2.3 Pulses

TARI conducts research on pulses, which include beans, pigeon peas, chickpeas, cowpeas, mung beans, bambara nuts, and various other types of peas. In the year 2024/25, TARI achieved a significant milestone by officially registering a total of five legume varieties under the pulses category. This includes two bean varieties: Mujunza and Wifi Nyegera, and three mung bean varieties: TARI-G-GRAM3, TARI-G-GRAM4, and TARI-G-GRAM5. This achievement contributes to the diversification of pulse crops and supports efforts to enhance food and nutritional security in the country.

Pictures: Some pulses released varieties for common beans and mungbean

2.2.4 Oilseed crops

During the 2024/25 period, TARI continued its routine research activities focused on oilseed crops, aiming to enhance productivity, resilience, and market potential. The key crops included sunflower, groundnut, sesame (simsim), soybean, and oil palm. The research efforts involved a wide range of activities, including germplasm conservation and maintenance to preserve genetic diversity for future breeding programs, as well as performance trials and other initiatives. TARI is committed to directly contributing to national goals for replacing imports in the oilseed sector. Additionally, TARI strives to support agricultural transformation by improving nutrition and increasing farmers' incomes within the oilseeds value chains.

2.2.5 Horticultural crops

During the 2024/25 period, a total of 22 horticultural crop varieties were officially released and registered. These included three varieties of African eggplant, five varieties of chili, three varieties of habanero, five varieties of sweet pepper, and six varieties of tomatoes (Figure 10). This milestone reflects ongoing progress in the development and diversification of horticultural crops, aimed at enhancing productivity and increasing the market competitiveness of TARI agricultural technologies.

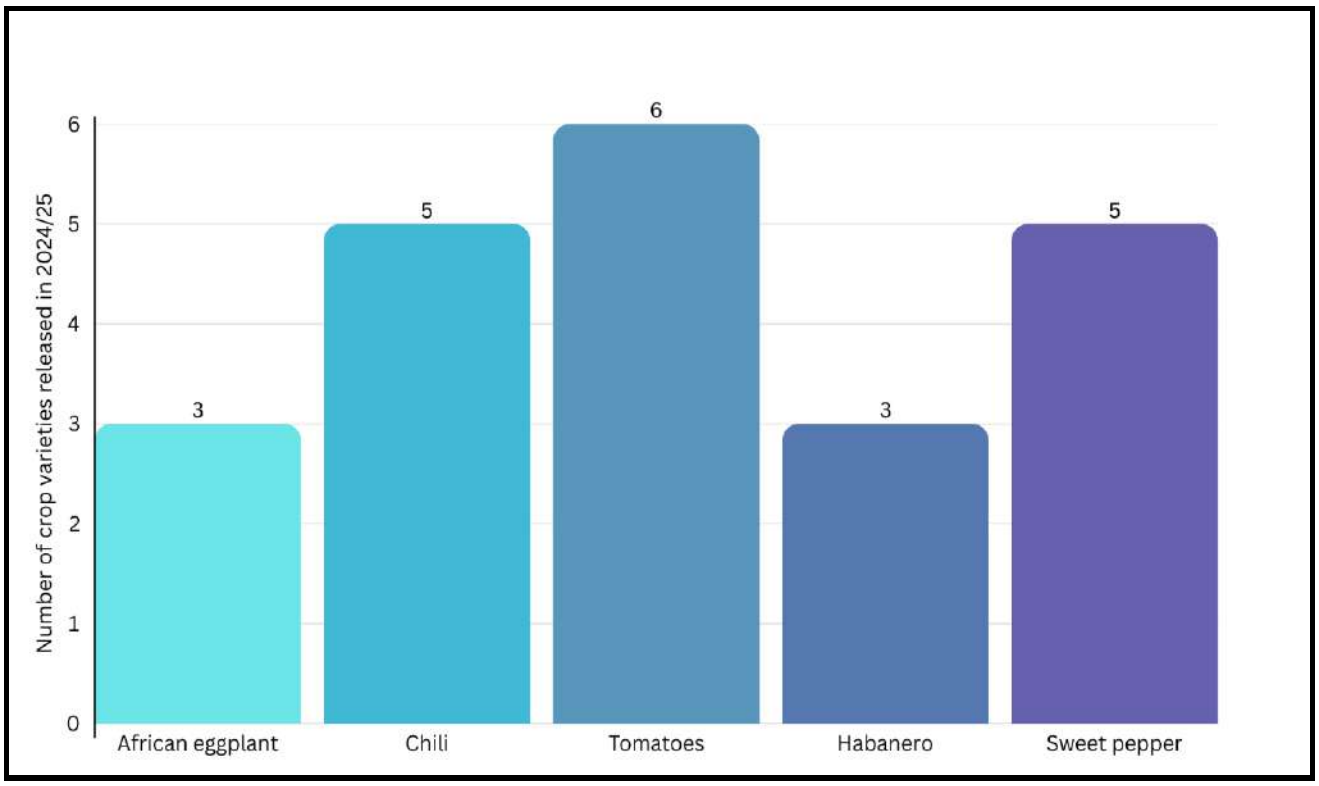


Figure 10: Horticulture released varieties

2.2.6 Cash crops

TARI conducts research on cash crops, including cotton, cashew nuts, sisal, and pyrethrum. In the 2024/25 financial year,

i) Sisal

The H.11648 sisal variety, exclusively developed and produced by TARI, has played a significant role in boosting both sisal fiber production and the availability of sisal seedlings across the country (Figure 11a & 11b). TARI marked a major milestone with the release and official registration of a new sisal variety known as H.116648. This

breakthrough represents a strategic advancement in the sisal sub-sector, offering the potential to enhance fiber yields and increase export revenues.

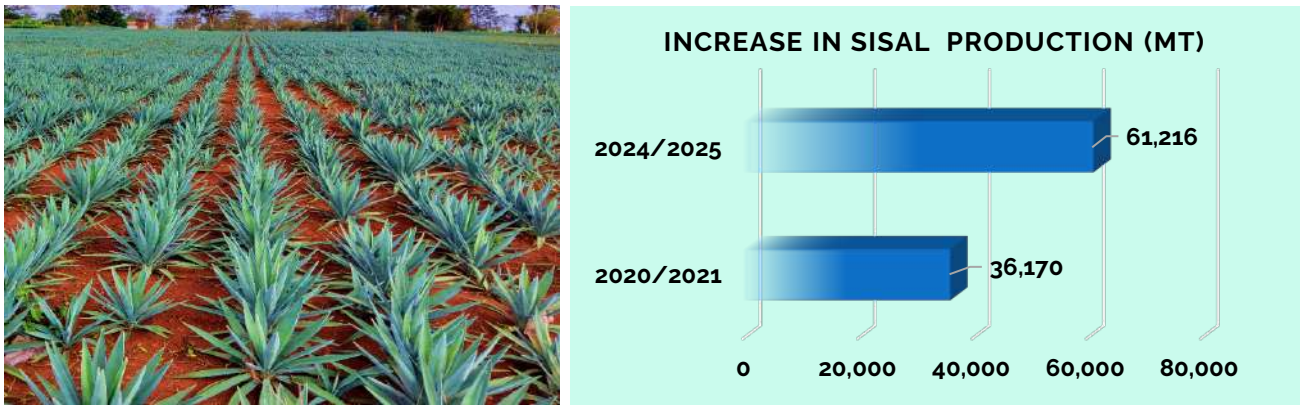


Figure 11: Picture Sisal H.116648 Variety and increase Sisal production

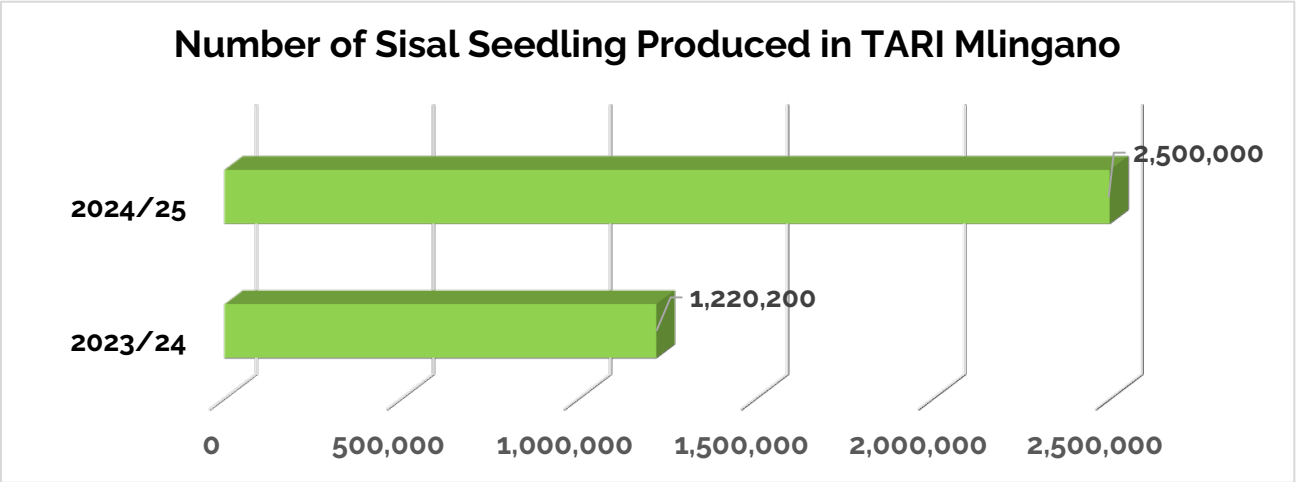


Figure 12: Photo showing increase in Sisal seedling production

ii) Cashew Nuts

To date, TARI is the only institution producing improved cashew varieties which increase cashew production in the country and has developed and released 62 exclusive improved cashew varieties, which have made a significant impact on farmers' productivity and income. These high-quality seeds, combined with complementary technologies, have contributed to a steady increase in cashew production nationwide.

However, due to emerging challenges in the cashew sector and the risks associated with over-reliance on a single crop, TARI has launched the "Beyond Cashew" program.

Through this initiative, the TARI Naliendele Center is actively conducting research on alternative crops to provide farmers with more diverse and resilient livelihood options.

Current research efforts under this program have already commenced on key crops such as rice, vegetables, and maize, aiming to promote crop diversification and strengthen food and income security among farming communities.

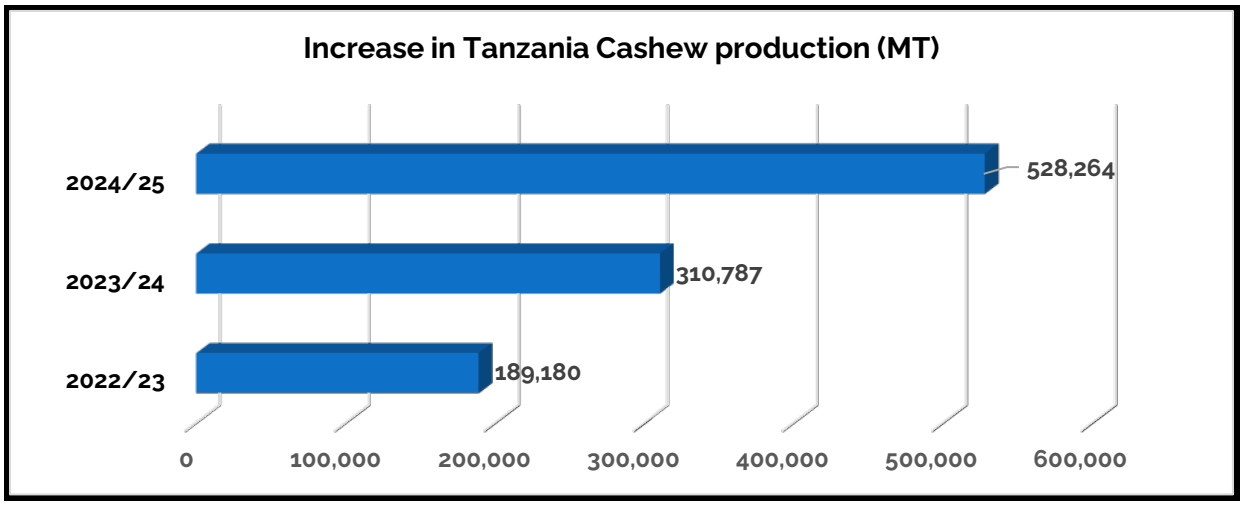


Figure 13: Increase in cashew production-TARI contribution

ii) Cotton

Likewise, cotton production in the country has been significantly boosted by the long-term use of a single variety of seed known as UKM08, which was developed through TARI research. The correct and widespread use of this seed, along with training provided to farmers-especially on good agricultural practices has contributed to an increase in cotton production to 282,510 tons, compared to 174,486 tons in 2022/2023. This is equivalent to 80.7% of the target of 350,000 tons for the 2023/2024 season

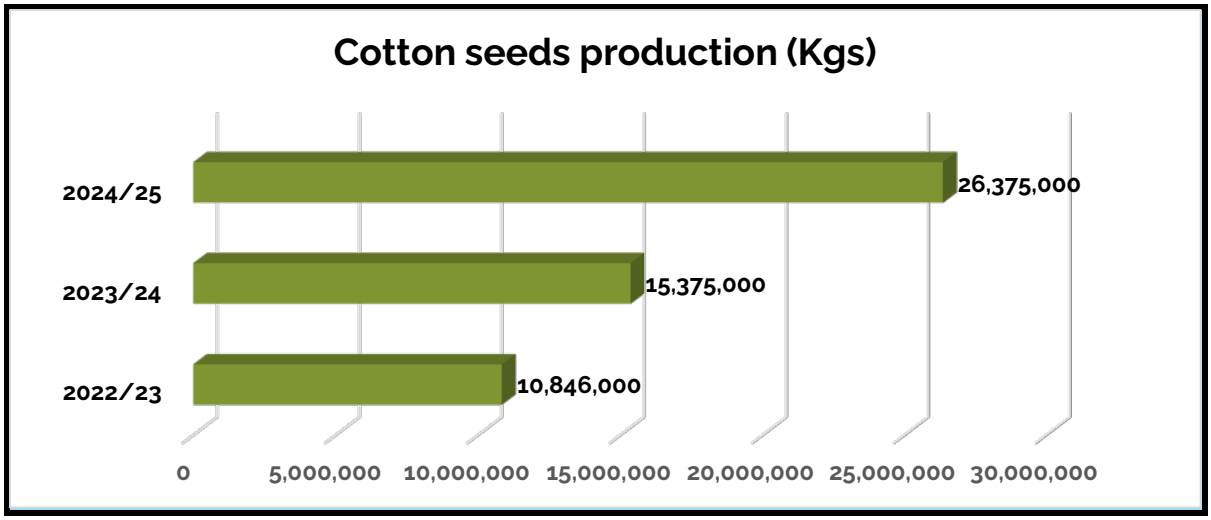


Figure 14: Cotton seeds production

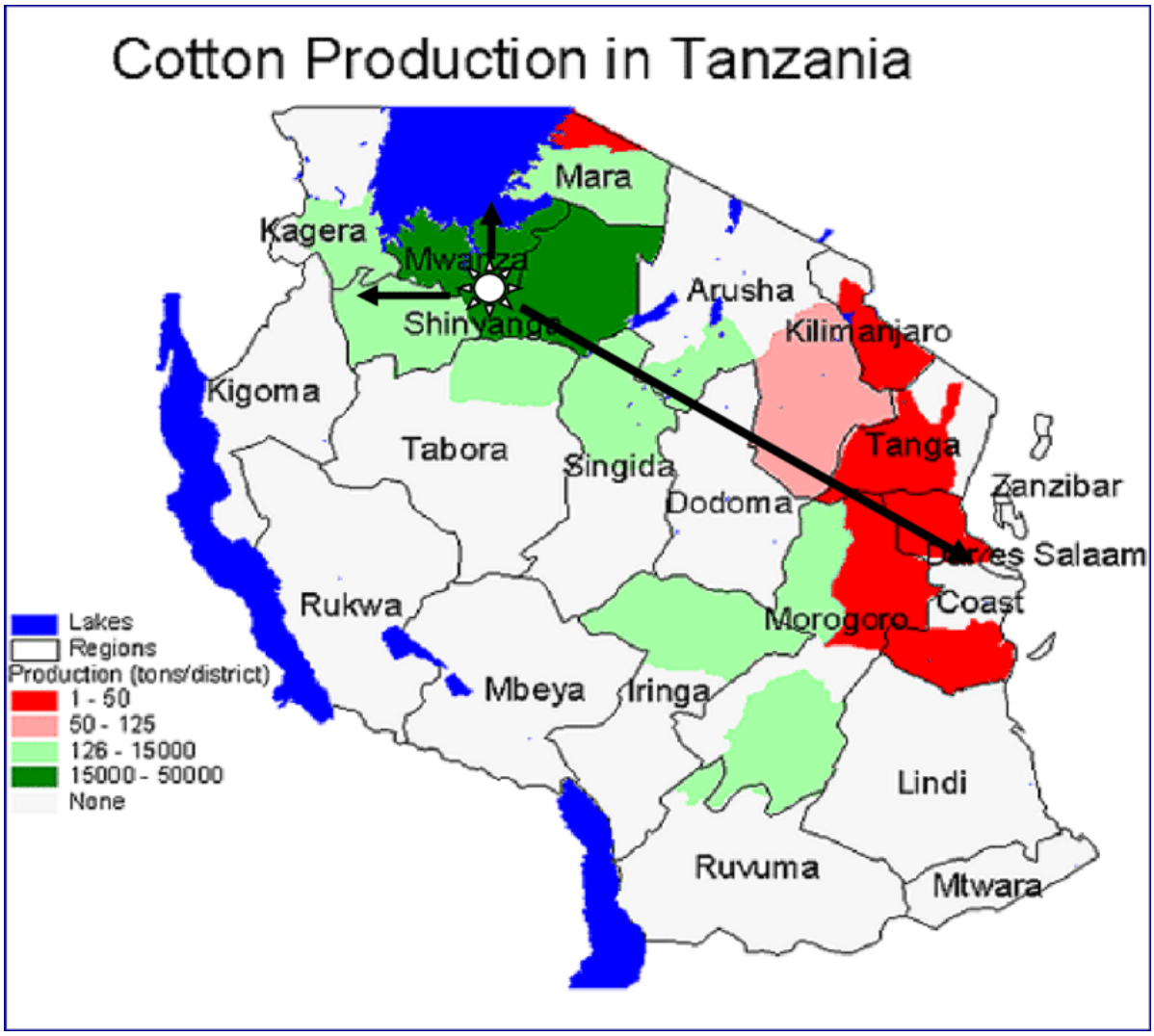


Figure 15: Distribution of TARI Cotton Variety UKM08

iii) Pyrethrum

Tanzania is among the world's leading producers of pyrethrum, ranking seventh globally and third in Africa, after Madagascar and Nigeria. In the 2023/2024 season, pyrethrum production reached 4,238 tons, up from 3,150 tons in 2022/2023—surpassing the national target of 3,500 tons by 121.08%.

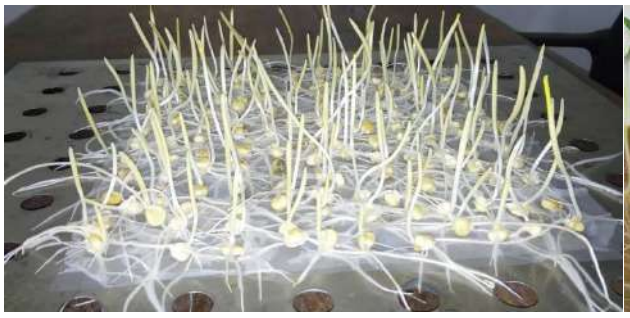
This impressive growth is largely attributed to the availability of improved pyrethrum seeds, developed through ongoing research at TARI research centers, particularly the Uyole Center in Mbeya. In the 2022/2023 season, 1,500 kg of high-quality seeds were produced and distributed to 6,000 farmers. In 2023/2024, although production slightly declined to 974 kg, the seeds were distributed to 3,896 farmers. TARI continue to support expansion in cultivation and productivity.

2.2.7 Other crop research activities conducted

(a) Variety Development and Crop Improvement

During the 2024/25 period, significant strides were made in variety development as part of ongoing crop improvement efforts. A total of 3,654 genetic crosses were successfully made across various crops. These crosses form the foundation for generating new genetic combinations aimed at enhancing yield potential, stress tolerance, disease resistance, and overall crop adaptability.

In addition to hybridization activities, the evaluation of breeding lines continued at multiple stages of the variety development pipeline. This included Observation Yield Trials (OYT), Preliminary Yield Trials (PYT), Advanced Yield Trials (AYT), and Replicated Yield Trials (RYT). Each stage is critical for selecting superior genotypes with desirable agronomic traits, ensuring that only the most promising lines advance toward variety release.



(b) Germplasm Conservation and Maintenance

TARI maintained a total of 36,365 germplasm: Rice (1,519), Sugarcane (226), Cassava (70), Sweet potato (279), Cotton (677), Wheat (180), Barley (64), Bean (170), Grapevine (36), Maize (574), Sorghum (167), Cashew (20,553), Sesame (300), Avocado (469), Banana (274), Mango (28), Citrus (17), Passion (7), Lychee (66), Spices (63), Oil palm (8,580), Sisal (60), Sunflower (197), Cowpea (29), Pigeon pea (16), Soybean (210), Mungbean (16), Bambaranut (3), Pyrethrum (350), Finger millet (378), Apple (18), Peas (3), Guava (274), Peaches (9), Loquat (20), Plum (3), Annona (3), Jack fruit (2), Cocoa (372), Sago (2), Mulberry (2), Pearl millet (17), Macadamia (19), tomato (5), chill (5), habanero (3), amaranth (6), African eggplant (3), coconut (7), and medicinal and fruit trees (14). The target was to maintain at least 30,000 germplasm for various crops for this financial year.

This rich pool of genetic diversity serves as a critical foundation for breeding programs, enabling the development of improved varieties with traits such as disease resistance, climate resilience, and enhanced nutritional value. Maintaining this diversity is crucial not only for research but also for responding to future agricultural challenges, such as emerging pests and diseases or shifting climatic conditions. TARI's commitment to germplasm conservation ensures that valuable genetic traits are preserved and remain accessible for use in variety development, thereby contributing to national food security, improving farmer livelihoods, and advancing agricultural innovation.

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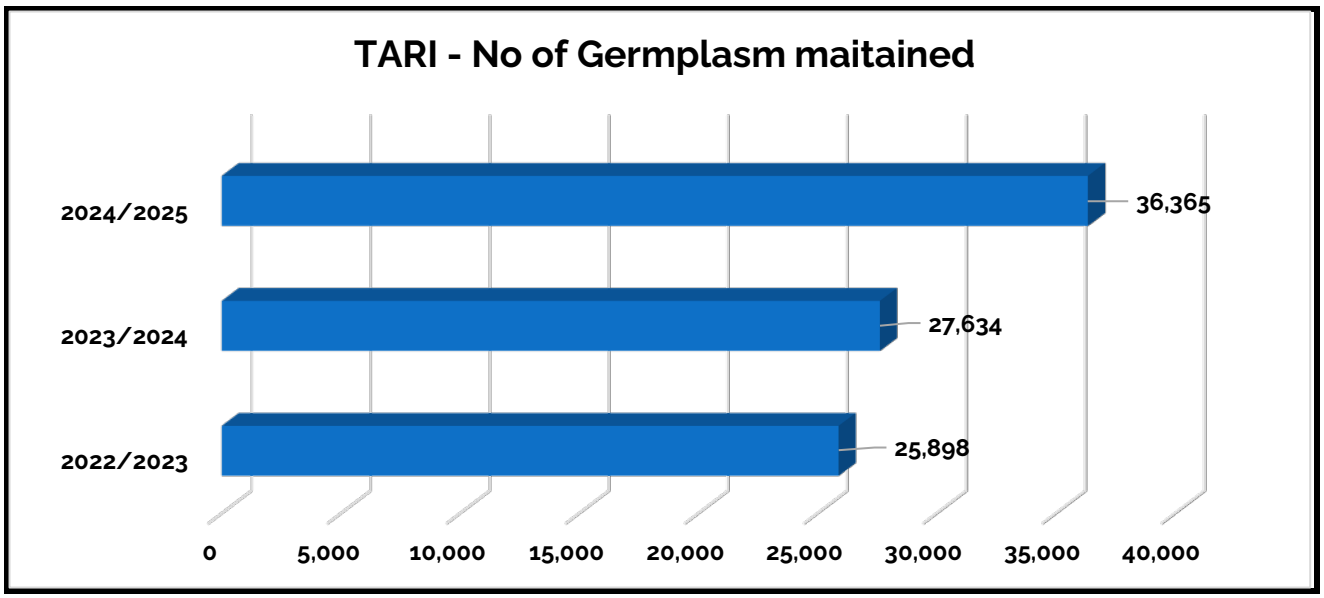


Figure 16: Number of TARI germplasm maintained

(c) Agronomic Practices

During the 2024/25 period, various TARI centres implemented and advanced key agronomic practices aimed at enhancing crop performance, resource use efficiency, and overall productivity across diverse agro-ecological zones. The activities undertaken focused on

nutrient management, cropping system optimization, crop adaptation, and soil fertility improvement, as highlighted below:

- Conducted field trials to assess the combined effects of nitrogen fertilizer rates and application timing (split applications) on the performance of the TXD306 rice variety. Additionally, the centre progressed in developing agronomic packages for the newly released rice varieties, TARI RIC 1 and TARI RIC 3, to support their adoption by farmers.
- Establishment of multi-cropping trials aimed at improving land-use efficiency and income diversification. The centre evaluated the performance of cotton intercropped with legumes, including common beans, groundnuts, cowpeas, and green grams. These trials were implemented across several districts- Misungwi, Nzega, Chato, Meatu, Maswa, and Kwimba—to capture a range of agro-climatic conditions.
- Implementation of fertilizer validation trials to evaluate the agronomic and economic performance of foliar and basal fertilizer applications on cashew production. These trials are intended to inform the development of optimized nutrient management protocols for cashew farming.
- Carried out studies on the integration of legume cover crops to improve soil health and enhance the productivity of sorghum and sunflower. In addition, TARI initiated adaptation trials for non-traditional crops, specifically wheat, under semi-arid conditions in Dodoma. Analyzed data from planting date trials involving lablab (Lablab purpureus) intercropped with sorghum, aimed at identifying optimal sowing windows and intercrop combinations.
- Establishment of experiments in Tabora, Morogoro, and Dodoma to assess the response of grapevines (*Vitis vinifera* L.) to inorganic fertilizer applications. This study aims to develop site-specific fertilizer recommendations for enhanced grape yield and quality.
- Carried out rice cold screening and ratooning experiments to identify genotypes with tolerance to low-temperature stress. Preliminary results indicate that specific lines can produce up to 50% of the main crop yield under cold conditions, suggesting promising opportunities for cold-prone highland areas.
- Processed and analyzed data from field trials focusing on integrated soil fertility management (ISFM) and optimized fertilizer application rates for sugarcane production. These trials, conducted at Mtibwa and Kagera Sugar estates, aim to improve nutrient use efficiency and sustainable sugarcane productivity.

(d) Crop Protection

During the 2024/25 period, several TARI Centres conducted targeted research and field interventions aimed at addressing major insect pest and disease challenges across multiple crops. These efforts focused on breeding for resistance, conducting pest diagnostics, evaluating pesticides, and promoting integrated pest management (IPM) strategies.

Rice: TARI advanced the breeding of rice lines resistant to Bacterial Leaf Blight (BLB), specifically addressing disease pressures prevalent in the Mbarali region.

Coconut: TARI undertook genetic diversity studies on the phytoplasma associated with lethal yellowing disease. Out of the collected field samples, 53 coconut specimens tested positive through PCR analysis, providing crucial data for surveillance and disease control strategies.

Cotton: TARI implemented several research activities to strengthen pest and disease management in cotton, including screening 40 cotton lines for resistance to Fusarium wilt and bacterial blight. Identified Fusarium oxysporum f.sp. vasinfectum (FOV) races and characterized nematode virulence in western Tanzania and initiated bollworm control research through the establishment of laboratory colonies for pesticide efficacy trials.

Banana: TARI conducted risk assessment studies on Fusarium wilt, Tropical Race 4 (TR4), in cross-border areas adjacent to Mozambique and Malawi. The findings revealed significant risk factors, including the movement of infected planting materials, flooding, and transboundary transportation.

Cashew: TARI made notable progress in pesticide registration and disease control: Submitted technical recommendations for the complete registration of Kantavil 5SC (Hexaconazole) and Kantanet 5EC (Lambda-cyhalothrin) for managing sucking insect pests in cashew and established field trials to assess the efficacy of dual-action fungicides such as Rolkutu 760WP, Rosda 240SC, and Boom 50SC for controlling cashew leaf and nut blight and powdery mildew.

Sisal: TARI finalized data collection on the resistance of various sisal lines to Aspergillus niger, a major post-harvest pathogen. Analysis is currently underway to determine the most tolerant genotypes for improved sisal health and productivity.

Fruit Trees: TARI prepared a comprehensive report on demand-driven, agro-ecological, and gender-inclusive Integrated Pest Management (IPM) technologies. These strategies aim to enhance the safety and sustainability of fruit production among smallholder farmers in Kilimanjaro and Tanga regions.

2.3 Value Addition and Postharvest Management

TARI conducts research in the areas of value addition and postharvest management to reduce postharvest losses, enhance income, and support nutrition and food security in the country. During the 2024/25 period, TARI undertook a wide range of post-harvest research activities aimed at enhancing food processing, preservation, product development, and value addition. These efforts were strategically designed to reduce post-harvest losses, improve food quality and safety, and strengthen market potential for various agricultural commodities. Key activities included nutritional analyses, innovative product development, and the design of appropriate post-harvest technologies. Remarkable achievements are highlighted below:

- TARI advanced its work on the development and refinement of value-added horticultural products. These included passion fruit and mango, mango juices, vegetable pickles and beetroot wine. The primary goal of these innovations is to extend the shelf life of perishable produce while increasing its commercial value.

- TARI made significant progress in promoting the utilization of cashew by developing new value-added products such as vanilla- and strawberry-flavored cashew ice cream. The centre also initiated trials for ethanol extraction from cashew apples. Additionally, it formulated nutritious baby foods using cashew kernels blended with sesame, bambara nuts, and soybeans. These formulations are now undergoing sensory and microbial testing. Such innovations not only support market diversification but also contribute to improved household nutrition.
- TARI focused on developing post-harvest technologies, particularly the design and refinement of a hybrid convectional dryer for processing tomatoes, with fabrication currently underway. It also investigated the effect of storage duration on the sucrose content of sugarcane, providing critical data to support quality control in sugar production.
- TARI conducted a comprehensive nutritional analysis of high-quality cassava flour (HQCF) from selected varieties, including Chereko, Kipusa, Msaada, and Nyamkagile. Results revealed high levels of iron, manganese, zinc, and dry matter—insights that are valuable for guiding the selection of cassava varieties best suited for various consumption methods, including chewing, roasting, cooking, and frying.
- TARI carried out sensory evaluations on fresh root cassava from nine varieties. Farmers expressed a strong preference for TARICASS4 due to its high yield and sweet taste, followed by Kiroba, Mkumba, and TARICASS1. While this activity was less focused on processing technologies, it plays a critical role in variety selection for direct fresh consumption.


TARI
Transforming Agriculture
Unga bora wa
MUHOGO
1KG
Hutumika kwa matumizi mbalimbali
• Ugali
• Biskuti
• Maandazi
• Keki
• Uji
MNF: 25.6.2025
EXP: 25.12.2025
Umetayarishwa na;
Taasisi ya Utafiti wa Kilimo Tanzania
S.L.P 1571, DODOMA
Simu: +255 784 795 389
Tovuti: info@tari.go.tz
Hifadhi sehemu kavu na safi

Picture: Stakeholders Tasting Cashew Milk prepared by TARI – Naliendele

Picture: Stakeholders Tasting sweet Potato juice prepared by TARI – Naliendele

2.4 Natural Resources Management and Engineering

2.4.1 Soil Health Management

Soil health management is essential for maintaining the soil's ability to function as a vital living ecosystem that supports plants, animals, and humans[2]. TARI's research activities play a crucial role in promoting soil health. In the 2023/24 financial year, TARI carried out soil sample collection and analysis, developed fertilizer recommendation rates, conducted efficacy trials, and performed soil profile excavations.

a) Soil sample collection and analysis

A total of 13,505 soil samples were collected from various projects across several regions, including Tabora, Manyara, Dodoma, Ruvuma, Pwani, Morogoro, Iringa, Njombe, Katavi, Songwe, Maswa, Meatu, TARI Ifakara, COSTECH, Mbigiri Estate at Mkulazi Holding Company Ltd, Chongoleani Pipeline, the farms of the Dodoma Diocese, and Building Better Tomorrow (BBT) Farms under the Ministry of Agriculture. The analysis, conducted as part of various initiatives such as the Agro-Ecology project, Soils4Africa, Guiding Acid Soil Management Investments in Africa (GAIA), Space-to-Place Fertilizer Optimization Trials (S2P-FOT) for maize and sunflower, and APNI-Soil Carbon Sequestration, aimed to assess the fertility status and recommend appropriate nutrient levels for agricultural production in these areas. The samples were collected and analyzed at TARI Mlingano, with involvement from other TARI Centres, including TARI Uyole, TARI Selian, TARI Ukiruguru, and TARI Ilonga.

b) Fertilizer recommendation rates

TARI through its project on Enhancing Soil Productivity and Incomes of Smallholder Farmers through Soil Characterization under OCP School Laboratory Services in Tanzania, managed to conduct soil survey in 14 Regions, including Mbeya, Rukwa, Iringa, Ruvuma, Morogoro, Katavi, Kigoma, Manyara, Arusha, Kilimanjaro, Mara, Kagera, Geita, and Tabora. The purpose of this project was to establish fertilizer recommendation rates and the average amount of nutrient supplements required from different fertilizer sources for optimal growth of various crops, including maize, Ppddy, potato, sunflower, and wheat. A total of 47 fertilizer recommendation rates were established, including rates of macro- and micro-nutrients of N, P, K, Ca, Mg, S, Zn, B, Mn, and Agricultural Lime.

c) Efficacy trials

TARI is conducting fertilizer efficacy trials of various fertilizer products to provide recommendations for growing different crops in different areas. A total of 320 trials are in progress, while others have been concluded, and recommendations have been provided to stakeholders who requested the service. The products evaluated included lime, organic

[2] Lehmann, J., Bossio, D.A., Kögel-Knabner, I. and Rillig, M.C. (2020). The concept and future prospects of soil health. *Nature Reviews Earth & Environment.* 1 (10): 544-553. doi: https://doi.org/10.1038/s43017-020-0080-8

fertilizers, inorganic fertilizers, organic foliar fertilizers, and concentrated molasses for the production of maize, tomatoes, beans, rice, wheat, and sugarcane.

d) Soil profile excavations

TARI engaged in 82 soil profile excavations as part of the Tanzania Food System Resilience Program (TFSRP), playing a key role in the creation of a digital soil map. The Institute provided its expertise in soil profile excavations, pedology surveys, and auger observations for fertility assessments at the village level. This initiative was carried out in the Ruvuma, Arusha, Kilimanjaro, Singida, Dodoma, Shinyanga, and Manyara regions, under the coordination of the TFSRP-Soil Health activity by the Department of Land Use Planning within the Ministry of Agriculture.

2.4.2 Climate change and sustainability

TARI's research on climate change focuses on climate and environmental sustainability throughout the entire crop value chain. In the area of climate change, TARI conducts studies on climate modeling, adaptation and mitigation strategies, as well as assessing the impacts of climate change. In the 2024/25 year, TARI conducted research to evaluate the effects of climatic stresses, which informs its breeding program and extends beyond.

The study identified drought, salinity, floods, extreme heat, pest outbreaks, and disease outbreaks as significant risks that affect crops at various stages of growth. It also highlighted the impacts of these stresses and the corresponding adaptation strategies. Ongoing efforts include the development of crop varieties that can withstand these key climatic challenges.

2.4.3 Agroforestry

The routine conservation of indigenous and medicinal tree species continued in 2024/25.TARI maintained over 14 indigenous fruit and medicinal tree species, including: Combretum zeyheri (*Msana*), Entandrophagma bussei (*Mondo*), Securidaca longipedunculata (*Nengonengo*), Zanha Africana (*Mkalya*), Cassia abbreviata (*Mlundalunda*), Entada abyssinica (*Ngengwambula*), Turraea fischeri (*Ningiwe*), Albizia antelmintica (*Mgada*), Terminalia sericea (*Mzima*), Zanthoxylum chalybeum (*Mlungulungu*), Kigelia africana (*Ninje*), Harrisonia abyssinica (*Msomanjara*), Acacia nilotica (*Mhale*), Tamarindus indica (*Mkwaju*), Adansonia digitata, Vitex mombassae, Vitex doniana, and Phyllanthus engleri. These germplasms are conserved for the purpose of providing seed and seedlings for agroforestry farming.

2.4.4 Engineering Innovations and Mechanization

The Institute (TARI) designed and demonstrated a motorized wheat seed cum fertilizer drill. Also, developed and refined a prototype seed Rafiki planter for precise maize and sunflower planting. The purpose of these innovations is to reduce drudgery and labour time spent on farm operations.

Pictures: Rafiki Planter (Left) and Tractor-Drawn Wheat Planter (Right)

2.5 Agricultural Economics and Marketing

2.5.1 Trade and agricultural markets

TARI conducted several studies to understand the dynamics of markets and market systems, as well as to identify challenges and opportunities related to production, marketing, and value addition of various commodities, including wheat. The findings of this research propose strategies to enhance the study of these commodities, leading to the development of policy briefs that call for immediate action to address the existing challenges facing trade and markets of key commodities.

2.5.2 Adoption of agricultural technologies

TARI conducted a series of adoption studies to evaluate the adoption rates of various agricultural technologies that it has researched and disseminated. These studies play a crucial role in informing policy on two key areas: 1) effective strategies for enhancing the adoption of agricultural technologies and 2) support mechanisms for promoting their use. These efforts align with national initiatives aimed at increasing the uptake of agricultural technologies and innovations thus improving productivity and enhancing the livelihoods of farmers.

2.5.3 Impacts of policies, technologies, and agricultural interventions (Research for Impact-R4I)

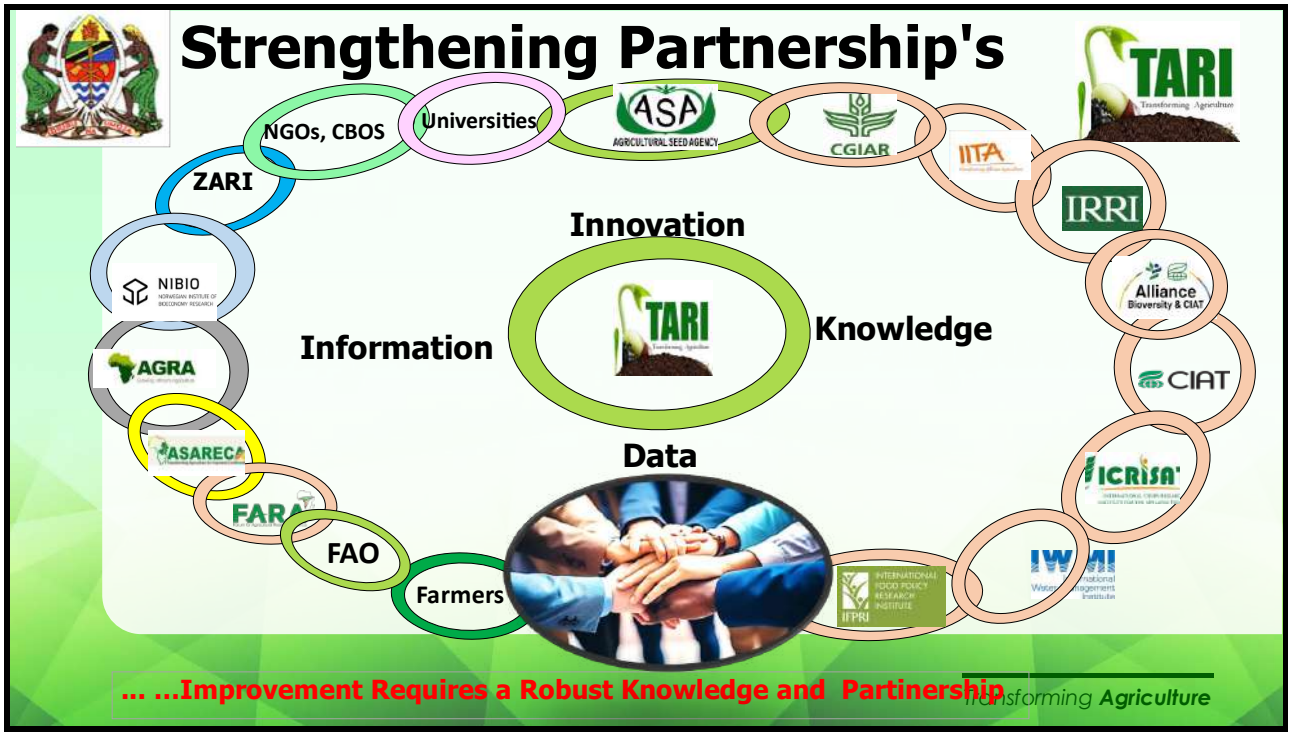
Research for Impact (R4I) is key to TARI's reach, as it bridges the gap between technology, innovation, knowledge generation and real-world transformation. This research ensures that it contributes to improving lives and driving policy reforms, thereby encouraging investments that foster economic growth.

In the 2024/25 financial year, TARI conducted several impact studies. Some of these studies utilized Randomized Controlled Trials (RCTs) to group farmers into different test groups, enabling the assessment of the impact of various agricultural technologies and interventions developed and promoted by TARI. These studies are crucial for understanding how TARI's technologies affect the livelihoods of smallholder farmers and for guiding policy reforms that maximize the effectiveness of agricultural technologies and interventions in Tanzanian farming communities.

Additionally, TARI evaluated the effects of reducing taxes and levies on agriculture in Tanzania, as well as the implementation of subsidies. All of these efforts are vital for informing policy decisions and investment strategies.

CHAPTER THREE

TECHNOLOGY TRANSFER AND PARTINERSHIPS



3. TECHNOLOGY TRANSFER AND PARTNERSHIPS

3.1 Technologies Dissemination

3.1.1 Technologies disseminated

The dissemination of TARI technologies is a central part of TARI's activities, supporting the realization of research for impact (R4I). TARI has continued to share a wide range of agricultural technologies and knowledge materials that address the evolving needs of farmers and other stakeholders, including extension agents, businesses, input suppliers, and development partners. These efforts specifically tackle challenges related to food and nutrition security, as well as climate change.

Through collaboration with the government and its partners, a total of 389 technologies and knowledge materials were disseminated nationwide (Figure 13). This included improved seed technologies, agricultural mechanization, good agronomic practices, and climate-resilient innovations.

The dissemination activities align with national strategies focused on climate adaptation, productivity enhancement, and agricultural transformation. By providing practical and timely solutions, these technologies have helped smallholder farmers and stakeholders improve adoption rates, reduce yield gaps, and strengthen the resilience of farming systems against environmental and economic challenges.

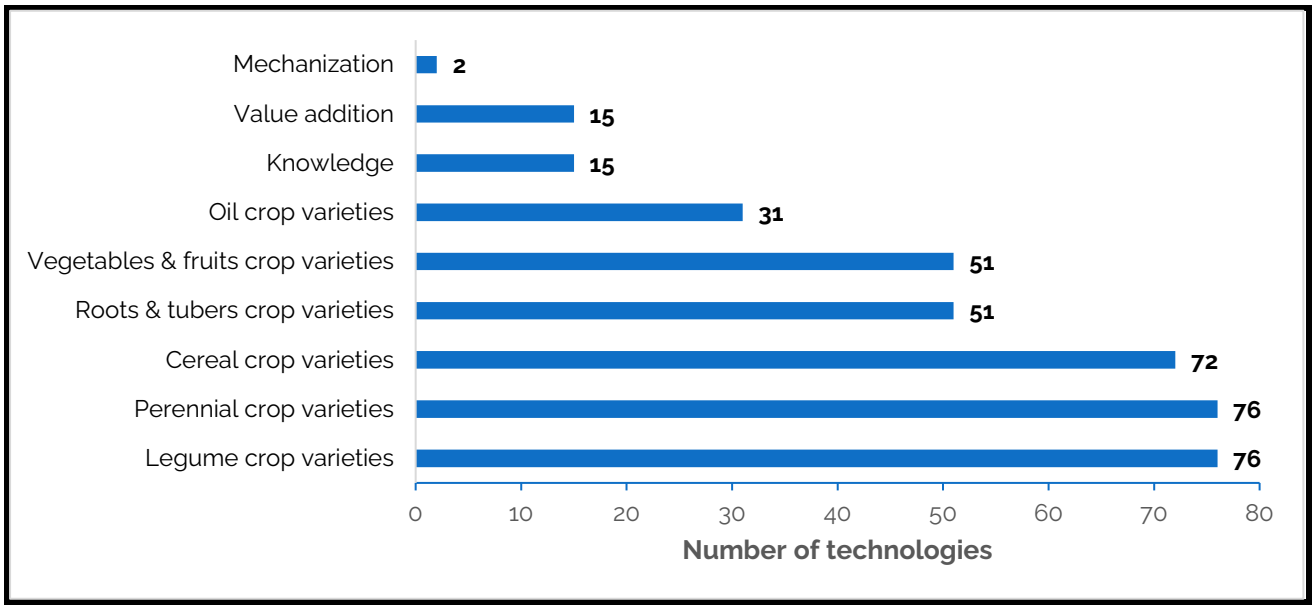


Figure 17: Number of technologies disseminated

3.1.2 Reach of TARI agricultural technologies

TARI has achieved considerable progress in extending the reach of its agricultural innovations to farming communities across Tanzania. Through strategic collaboration with public and private sector partners, non-governmental organizations, and local government authorities, the Institute has effectively facilitated the dissemination and adoption of research-driven technologies by end-users.

To enhance its outreach efforts, TARI utilizes a variety of technology dissemination pathways. A key component is the establishment of regional Technology Transfer Hubs located at major research centres, including Themi (Arusha), Nyakabindi (Simiyu), Nyamhongolo (Mwanza), Dakawa Demonstration Centre (Morogoro), Fatma Mwasa (Tabora), and Mwalimu. Julius K. Nyerere (Morogoro), Ngongo (Lindi), John Mwakangale (Mbeya), Nzuguni (Dodoma), and Seatondale (Iringa). These hubs serve as practical learning sites for demonstrations and hands-on training for farmers.

In addition, TARI actively participates in national agricultural exhibitions, trade shows, and agribusiness expos, using live demonstrations to showcase improved technologies. Other dissemination channels include specialized training programs, digital and multimedia extension tools, and print and broadcast media coordinated through the Institute's Knowledge Management Unit. TARI also works through strong partnerships with public and private stakeholders to promote broader adoption and scaling of agricultural innovations.

(i) Expanded Geographical Reach

TARI successfully disseminated agricultural technologies across 25 regions of mainland Tanzania. These efforts were tailored to suit different agro-ecological zones, ensuring that interventions were relevant to local farming systems. Through diverse dissemination pathways—including Agri-Tech Hubs, exhibitions, training sessions, and digital platforms—TARI reached a total of 3,396,334 stakeholders, significantly increasing national coverage (Figure 14).

(ii) Stakeholder Engagement and Training

Over 476,000 stakeholders, including farmers, extension officers, youth, and agribusiness actors, were engaged through field demonstrations, agricultural shows, farmer field schools, and hands-on training programs. A total of 1,658 demonstration plots were established, both within Agri-Tech Hubs and on farmers' fields, showcasing best practices and enabling localised learning based on crop-specific agro-ecologies.

Picture: During the farmers engagement

(iii) Increased Technology Adoption

There was a notable rise in the adoption of TARI technologies, particularly in regions supported by donor-funded initiatives. Farmers adopted improved crop varieties, including maize, rice, beans, and cassava, as well as enhanced practices in soil fertility management,

integrated pest control, and climate-resilient agriculture. These innovations contributed to increased yields, improved resource efficiency, and greater resilience to climate variability.

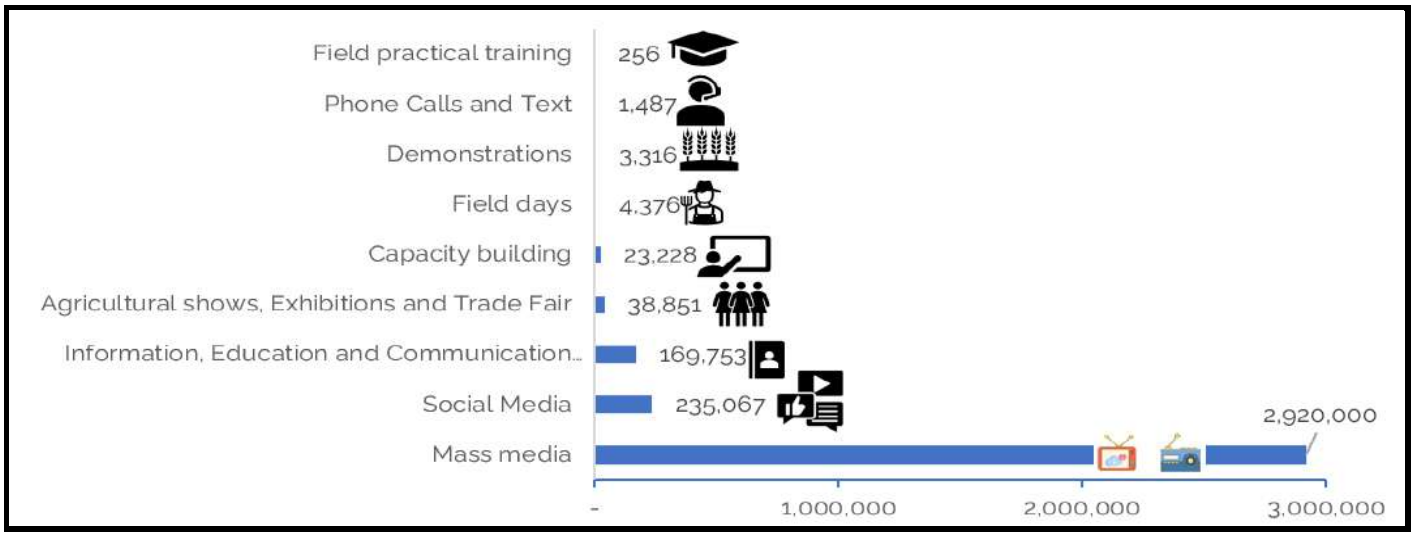


Figure 18: Stakeholders outreach by TARI

(iv) Use of Innovation Platforms

TARI continued to leverage multi-stakeholder innovation platforms and participate in national and regional agricultural exhibitions. These platforms brought together farmers, researchers, extension officers, private sector actors, and policymakers, promoting inclusive technology development, collaborative learning, and feedback-driven scaling of innovations.

(v) Digital and Media Outreach

To complement physical outreach, TARI enhanced its use of radio broadcasts, print materials, and social media campaigns to reach farmers in remote and underserved areas. These channels enabled timely sharing of agricultural knowledge, seasonal advisories, and success stories in accessible formats and local languages, extending the impact beyond traditional extension methods.

These coordinated efforts significantly contributed to improved agricultural productivity, enhanced climate resilience, and increased incomes for smallholder farmers. TARI's work aligns closely with national priorities for food and nutrition security, poverty reduction, and sustainable agricultural development.

3.2 Commercialization of Agricultural Technologies

3.2.1 Intellectual Property Rights (IPR)

In 2024/2025, TARI achieved a significant milestone in identifying and protecting intellectual property rights related to the released seed crop varieties, with a core focus on promoting innovation, strengthening plant variety rights (PVRs), and supporting the commercialisation of agricultural technologies. TARI has protected a total number of 82 seed varieties of cashew nuts, simsim, tomatoes, rice, maize, beans and cassava crops (Figure 15).

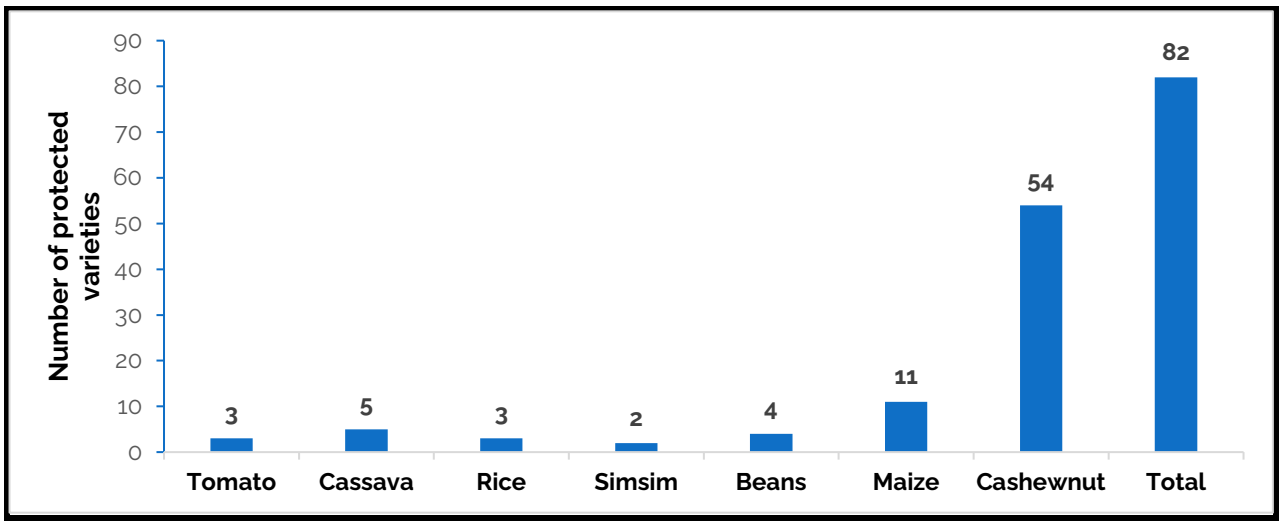
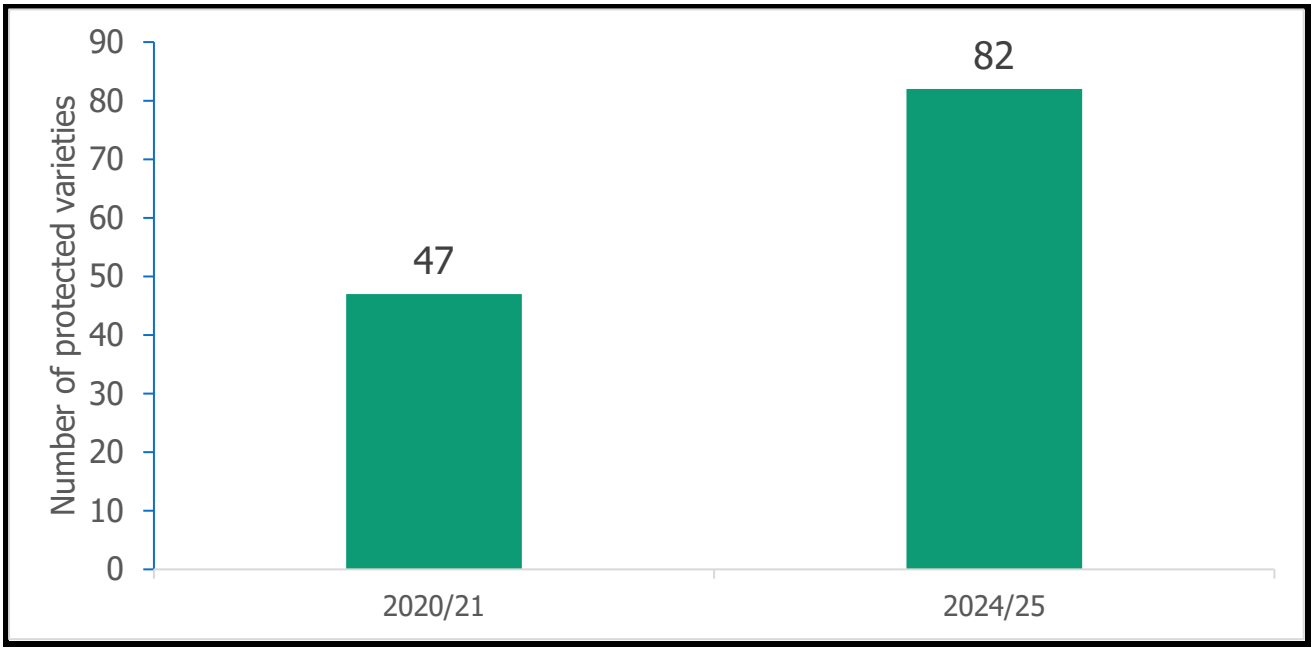


Figure 19: Number of TARI-protected varieties

Protection of released varieties initiatives ensures and helps TARI and its partners retain plant breeder rights, safeguarding innovations from unauthorized use while encouraging future investments in crop and research improvement through the structured royalties collection from the users- (seed companies and agencies) whom have also recognized the initiatives and showed interests in making royalties payments by using TARI-protected seed varieties.

Royalty payments not only recognise the value of scientific innovation but also provide a critical revenue stream to reinvest in breeding programs, maintain true-to-type seed varieties through purifications, strengthen partnerships, and accelerate the development of farmer-preferred, climate-resilient varieties.

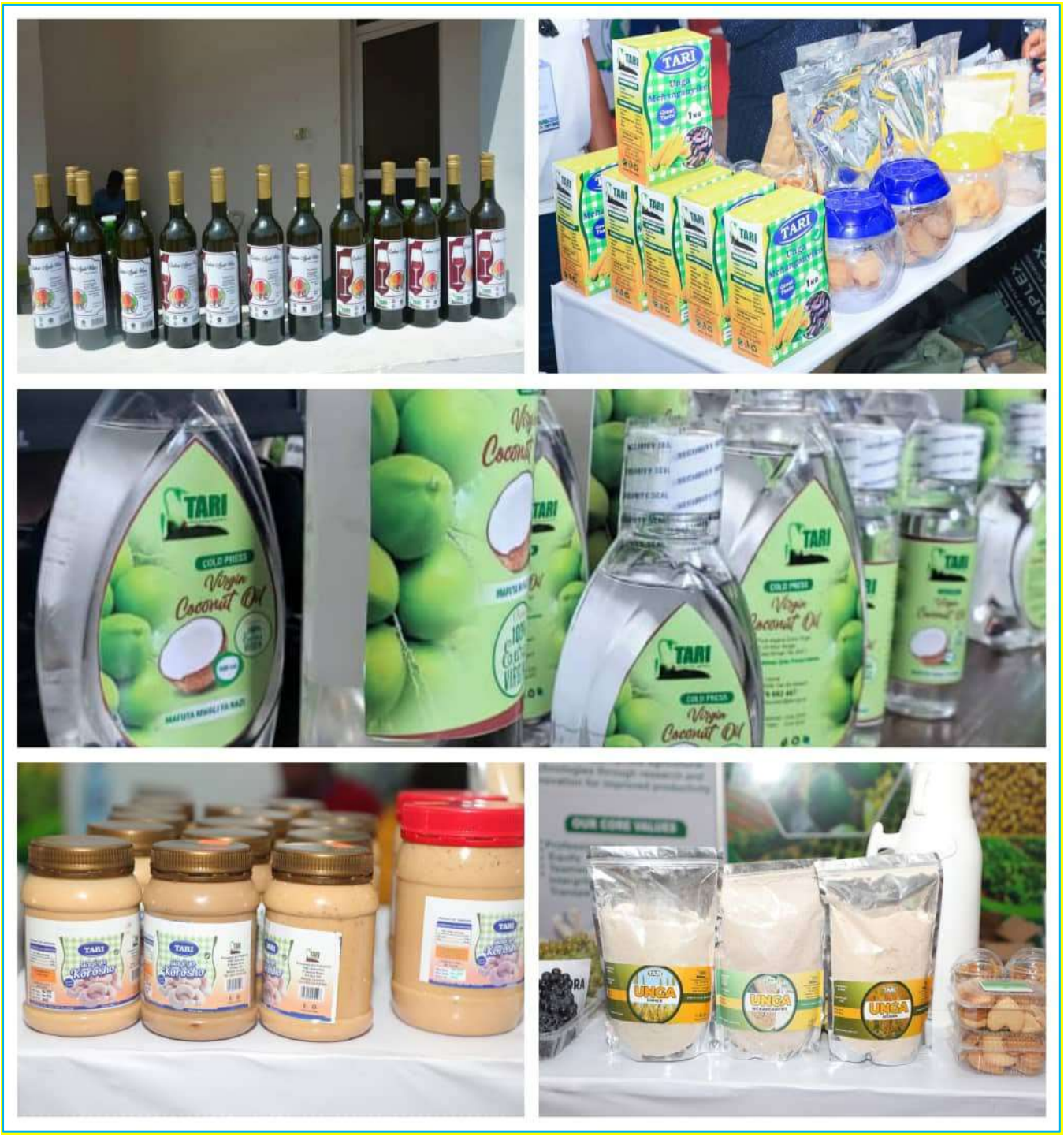


3.2.2 Commercialization of products and innovations

TARI continued to work on enhancing the adoption of its technologies and innovations for use by farmers and other stakeholders. The commercialization of its products has also become evident, ensuring that the private sector is actively engaged and can easily scale the technologies developed by TARI for commercial use.

The commercialization efforts have centered on the research products and innovations developed by TARI, particularly in the areas of seed and agricultural machinery. TARI has produced improved seeds and seedlings/cuttings, which have been sold or distributed to various stakeholders, including seed companies, agencies, farmers and development partners. This initiative has led to increased adoption of quality seeds and generated revenue, supporting

the sustainability of the research activities. A total of 11,840,952 seedlings and cuttings were produced and made accessible to farmers and other stakeholders. Additionally, 492 tons of pre-basic, basic, and certified seeds were produced (Figure 17).



Pictures: TARI commercialized products

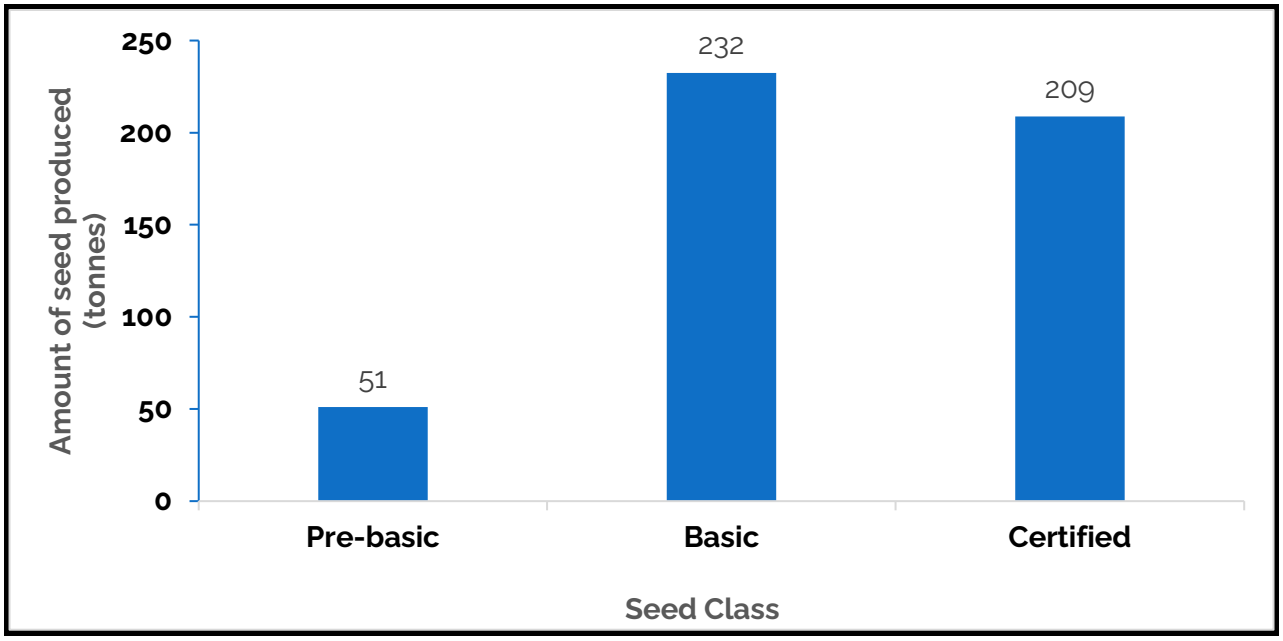


Figure 20: Number of seeds produced by TARI in 2024/25

In addition to seed production, TARI has developed and promoted innovative agricultural technologies aimed at improving farm efficiency and mechanization. Among these innovations currently under consideration for commercialization are:

(i) The *Rafiki Planter:* This mechanised, labour-saving precision planter is designed for smallholder farmers and is suitable for sowing maize, cotton, and sunflower. Its purpose is to enhance efficiency in crop establishment.

(ii) The Wheat Seed Cum Fertilizer Drill (WSCFD): This is commonly known as Seed Fertilizer Drill (SFD). This efficient machine ensures uniform row spacing (20-25cm). SFD enables farmers to place seed and fertilizer in a single row quickly. It reduces the cost of seeds, fertilizer, and labour compared to manual sowing. It ensures that seeds are sown at uniform depths, with fertilizer placed just below or beside the seed, promoting faster and more uniform germination. SFD optimises plant population, enabling farmers to achieve higher yields..

These mechanized innovations are intended to support farmers in enhancing their productivity.

These efforts are part of TARI's broader mandate to bridge the gap between research and practice, ensuring that innovations reach farmers and also generate funds through the commercialization of its technologies and hence contribute to national goals of agricultural transformation, climate resilience, and food and nutrition security.

3.3 Partnerships and Collaborations

This year has been a success for TARI in building collaborations and partnerships. The institute has signed new Memoranda of Understanding (MoUs), strengthened collaboration with academic institutions, established new partnerships, renewed collaboration with CGIAR Centres, conducted private sector and extension engagement and continued with collaborative projects. Technology dissemination and innovation platforms have also played a crucial role in fostering partnerships.

(i) Signed New Memoranda of Understanding (MoUs)

During the reporting period, TARI signed new Memoranda of Understanding (MoUs) with a range of partners both within and outside Tanzania. These agreements were established with key research institutions and universities, with the aim of strengthening collaboration in agricultural research, knowledge exchange, and capacity building.

(ii) Strengthened Collaboration with Academic Institutions

TARI enhanced its relationships with technical colleges and universities, focusing on critical areas such as infrastructure development, resource mobilisation, technology development and transfer, human capacity development, climate change mitigation, and joint agricultural research initiatives. These partnerships also supported postgraduate training programs, including staff and student exchanges, internships, co-supervision of postgraduate students, joint research initiatives, and collaborative funding proposals in areas like agri-food systems, nutrition, and agricultural policy.

(iii) Established New Partnerships

TARI successfully identified and engaged with new partners across the research, development, and private sectors. These partnerships have played a key role in broadening TARI's reach and enhancing its capacity to implement various agricultural research activities and promote technology dissemination at scale.

(iv) Renewed Collaboration with CGIAR Centres

TARI strengthened its collaboration with CGIAR centers through continuous engagement and dialogue. Regular meetings were held between TARI management and CGIAR teams to assess progress and identify new opportunities for collaboration. To improve coordination and communication, TARI appointed dedicated liaison officers to act as focal persons for each CGIAR center.

Picture: Director General IITA visit in TARI Head Quarter 20th March 2025

(v) **Ongoing Donor-Funded Collaborative Projects**

TARI continued to implement several collaborative projects supported by development partners through subgrants from both local and international institutions. These projects focused on key priorities, including sustainable agriculture, food security, and scaling innovative technologies, thereby contributing to national development goals.

(vi) **Private Sector and Extension Engagement**

TARI strengthened its collaboration with a diverse range of partners, including the private sector, non-governmental organizations (NGOs), and local government authorities (LGAs), to enhance the implementation of research activities and the dissemination of agricultural technologies. Through Public-Private Partnerships (PPPs), TARI worked closely with agribusinesses, agro-dealers, and input suppliers to facilitate access to improved agricultural

technologies and services for farmers. NGOs played a crucial role in mobilizing farming communities, supporting field demonstrations, and integrating research outputs into community-based agricultural development initiatives. Additionally, TARI partnered with LGAs to coordinate extension services, organize farmer field schools, and support training programs. This collaborative approach ensured that technologies generated by TARI were effectively transferred to end-users, ultimately contributing to increased productivity and sustainable farming practices.

(vii)**Technology Dissemination and Innovation Platforms**

To promote the uptake of agricultural innovations, TARI continued to utilize multi-stakeholder platforms. These platforms brought together researchers, extension agents, farmers, private sector actors, and policymakers to co-create, validate, and disseminate agricultural technologies and best practices.

3.4 Capacity Building and Support

One of the key services provided by TARI is capacity building to its staff and other stakeholders to ensure their contributions to the agriculture sector remain relevant. In the 2024/2025 period, TARI significantly enhanced the capacity to various agricultural stakeholders to improve productivity through better farming practices and increased operational efficiency. A total of 21,782 stakeholders, including smallholder farmers, students, and extension officers, benefited from targeted training programs on improved crop varieties, good agricultural practices, climate adaptation and resilience practices, farming as a business, and value addition in agricultural products.

To foster a conducive environment for knowledge exchange and innovation, TARI developed and implemented ICT systems designed to encourage significant stakeholder involvement. These systems include operational guidelines to enhance the storage, management, and coordination of technology transfer, knowledge dissemination, and skills development among stakeholders. As part of this initiative, TARI is currently developing a comprehensive repository system and an Agriculture Technology Transfer Hubs Operational Guide to enhance the management and functionality of its 10 AgriTech Hubs nationwide, which also provide support for capacity building.

Furthermore, the institute continues to be a key provider of practical field training for hundreds of students, equipping them with the skills needed to address current and future challenges in the agricultural sector.

Picture: Ruangwa District Commissioner Hassan Ngoma and Mtwara District commissioner Abdalah Mwaipaya enjoying TARI produce

3.5 Knowledge Management

In the financial year 2024/2025, TARI made significant strides in advancing and sharing agricultural knowledge. A total of 18,653 impactful scientific publications and various Information, Education, and Communication (IEC) materials were produced, demonstrating the Institute's commitment to promoting evidence-based innovations, strengthening the national agricultural research system, and enhancing technology adoption among farmers and stakeholders.

These materials included brochures, compendiums, leaflets, posters, booklets, manuals, newsletters, factsheets, and technical bulletins. Additionally, TARI developed various digital formats, including multimedia presentations, Webiner and infographics, as well as audio-visual content such as radio programs, video demonstrations, and documentaries. The IEC package also included training modules, flipcharts, field demonstration guides, and translated materials in *Kiswahili* to improve accessibility and impact. This achievement reflects TARI's ongoing commitment to promoting evidence-based innovations, strengthening the national agricultural research system, and promoting the adoption of technology among farmers and stakeholders.

3.6 Strategic Engagement and Communication

In the financial year 2024/2025, TARI made significant efforts in enhancing its communication, outreach, and digital presence. A key achievement was the official verification of TARI's social media account on X (formerly Twitter), which enhanced real-time engagement with stakeholders, facilitated the timely dissemination of agricultural research updates, promoted new technologies, and highlighted success stories from farmers and partners. Alongside X, TARI made notable gains in visibility across other major social media platforms, including Facebook, YouTube, and Instagram, thereby broadening its reach and impact in promoting agricultural innovations. This initiative reflects TARI's commitment to utilising modern digital platforms for enhanced visibility and interaction with stakeholders.

Additionally, TARI embarked on the development of a new institutional newsletter titled TARI HABARI a quarterly publication designed to serve as a formal channel for sharing updates on agricultural research activities, farmer success stories, strategic partnerships, and expert guidance on best agronomic practices. Currently in its inaugural phase, the newsletter is anticipated to become a vital tool for knowledge exchange and policy influence.

In a bid to reinforce its institutional branding, TARI produced a corporate video that highlights the institute's mission, research areas, impact stories, and contributions to national agricultural development. This video is expected to play a crucial role in outreach efforts, particularly during stakeholder forums, donor engagements, and public awareness campaigns.

Furthermore, TARI initiated a collaborative effort with the Government's ICT Unit (ICTU) to upgrade its official website. The enhancement aims to improve user experience, ensure timely access to research outputs and services, and create a more interactive and accessible platform for farmers, researchers, and development partners. ICT initiatives also included the digitalisation of TARI improved varieties into the digital catalogue, which is under the finalisation stage

To enhance these initiatives, TARI has sustained its active engagement with stakeholders by utilising a variety of communication channels, including social media, print media, radio, and television. These outreach efforts have significantly increased public awareness of TARI's activities, facilitated greater adoption of technology, and strengthened the connections between the institute and farming communities throughout Tanzania.

4 TARI CENTRES AT A GLANCE

4.1 TARI Uyole

4.1.1 Research Competitiveness

TARI Uyole is located in the Southern Highlands Zone of Tanzania. It is strategically positioned to promote agricultural innovation across the regions of Mbeya, Iringa, Katavi, Njombe, Rukwa, Ruvuma and their surroundings. The Center plays a crucial role in developing, evaluating, and disseminating improved technologies for major staple and cash crops, including wheat, millet, potatoes, avocado, beans, maize, and sunflower.

In addition to its work on cereals and oilseeds, TARI Uyole serves as the national lead center for pyrethrum research under TARI's mandate. Pyrethrum is a high-value botanical pesticide crop that is experiencing increasing demand in both domestic and international markets. Furthermore, the center is recognized as a center of excellence in engineering and mechanization.

4.1.2 Major Achievements

In the year 2024/25, the Center achieved significant milestones, including the development of new crop varieties, with a total of 391 crosses made. Four pyrethrum clones are currently undergoing Distinctness, Uniformity, and Stability (DUS) testing and National Performance Trials (NPT), while nine variety candidates from different crops are in Advanced Yield Trials. The center maintains a germplasm collection for crops, totaling 1,205.

TARI Uyole successfully designed several agricultural tools, including a wheat seed and fertilizer drill, a motorized planter, and a multi-crop thresher machine. It also plays a crucial role in seed production, having planted 1,418.5 acres of various crops across all seed classes, which include Breeder, Pre-basic, Basic, and Certified seeds. In collaboration with partners, the center produced 1.32 million seedlings.

Picture: A wheat seed and fertilizer drill, a motorized planter designed by scientist (Left) and Potato planter Purchased by TARI (Right)


MINISTRY OF AGRICULTURE
TANZANIA AGRICULTURAL RESEARCH INSTITUTE
TARI
PYRETHRUM PROFILE
SUCCESS
IMPACT
2022/23
1.5MT
of Pyrethrum Clean Seed Produced by TARI
2022/23
6000 Farmers
reached and distributed with Pyrethrum Seeds from TARI
2023/24
0.97MT
of Pyrethrum Clean Seed Produced by TARI
2023/24
3900 Farmers
reached and distributed with Pyrethrum Seeds from TARI
Sisi ndio Future ya Pareto

Additionally, the center continues to promote its technologies, having disseminated seven key innovations: improved crop varieties, minimum tillage practices, standardized spacing regimes, seedlings, suckers, System of Rice Intensification (SRI) practices, and value addition techniques. The scientific community benefits from this work, with more than six publications in peer-reviewed journals in 2024/25, highlighting these advancements.

Picture: Seed potato multiplication Trial at Uyole Centre

Picture: Avocado Seedlings (Left) Apple Seedling production (Right) in TARI Uyole

Picture: Songwe Regional Commissioner (Jabir Makame) observing TARI technologies at Uyole Centre

4.2 TARI Kifyulilo

4.2.1 Research Competitiveness

TARI Kifyulilo is one of the TARI Centres located in Mufindi District, Iringa Region, with distances of 60 km and 150 km from Mafinga and Iringa townships, respectively. Geographically, the centre is positioned at Latitude 080 42' S and Longitude 350 20' E, situated at 2000 m above sea level. It receives approximately 1,500 mm of rainfall and has a temperature range of 8–23 ˚C. The centre has a mandate to research beans, round potatoes, and maize. Other key crops include avocado, wheat, and vegetables. Additionally, due to its geographic location, the centre has the potential research and produce fruits such as apples, peaches, and pears within the 220ha area. The frequent rains and extreme cold conditions favour various fungicide product efficacy research trials for recommendations on beans, round potatoes, and other related crops.

TARI Kifyulilo has structures for storing round potato seeds as well as multiplying avocado seedlings. The centre has two sub-centres, namely Seatondale with 28 acres located in Ipogolo, Iringa Municipal. The Seatondale sub-centre is situated along the Mbeya main road, also near the permanent Ruaha river, adding to its potential for technology dissemination and irrigated research trials., Another, sub center is Ismani with 250 acres located in Iringa DC, suitable for horticultural and field crops research activities respectively.

Picture: A photo collage showing potato seed and storage

4.2.2 Major Achievements

TARI Kifyulilo continued its routine research activities in the 2024/25 financial year. These activities included screening of 400 maize planting materials, including farmers' landraces for cob rot diseases. The Centre successfully launched the Seatondale Agri-Tech hub, which was selected as one of three living labs/Agritech hubs under the TARI-ICIPE collaborative agroecology project, funded by the EU. The main activities of this living lab include technology dissemination and demand-driven research aimed at addressing farmers' challenges, ranging from soil health to value addition of their produce.

Additionally, the centre made significant contributions to seed and planting materials production, multiplying 22,000 improved variety avocado (HASS) seedlings for distribution to fruit growers, along with 10 tons of preferred round potato seeds for farmers.

4.3 TARI Selian

4.3.1 Research Competitiveness

TARI specialises in barley, wheat and mid-altitude maize research in the northern part of Tanzania, which includes the regions of Arusha, Kilimanjaro, Tanga and Manyara. The Centre significantly contributes to improved crop productivity and climate-resilient agriculture through the development of superior varieties of common beans, mung beans, pigeon peas, wheat, barley, and mid-altitude maize.

Pictures: The improved maize varieties bred at TARI Selian (left) and one of the nutri-dense common bean varieties bred at TARI Selian (right)

Beyond varietal development, TARI Selian generates critical Good Agricultural Practice (GAP) recommendations for these crops. The center also plays a leading role in conservation agriculture and soil fertility research, supporting long-term sustainability in crop production.

Its socio-economic and market-oriented research has been instrumental in analyzing farming systems, developing partial farm budgets, and assessing the adoption of new crop varieties—both those developed at TARI Selian and others adopted nationwide. Extension efforts include working closely with farmers via demonstration plots, organizing field days, participating in agricultural exhibitions, and leveraging media partnerships to promote visibility and stakeholder engagement. The center has also excelled in disease diagnostics for the crop varieties it breeds.

4.3.2 Major Achievements

TARI Selian has continued its research activities, resulting in the release of three new varieties of Mungbean: TARI-G-GRAM 3, TARI-G-GRAM 4, and TARI-G-GRAM 5 and two varieties of Common bean (TARIBEAN6 and TARBEAN7) which are rich in iron and zinc and disease resistant against major foliar leaves. The institute has also focused on maize research, leading to the submission of four candidate maize varieties—A1830-7, AM1500-5, LW1501-8, and LY1913-16—for Distinctness, Uniformity, and Stability (DUS) testing. These maize varieties are biofortified with zinc and provitamin A.

In addition, TARI Selian has developed three candidate wheat varieties—KASUKU, PWEZA, and HYRAX-which have been submitted for National Performance Trials (NPT). The institute has

conducted wheat rust surveillance in the southern highlands of Tanzania to identify existing rust diseases and provide early warnings for potential new disease invasions.

To support farmers in accessing improved varieties, TARI Selian has produced seed and purified ten previously released varieties. TARI Selian has established 55 demonstration plots, published six papers in peer-reviewed journals, and enhanced the capacity of various stakeholders and advisory services in soil testing.

Moreover, TARI Selian hosts the Agribusiness Expo in the Northern Zone of the country, which this year celebrated its 13th edition, attracting thousands of participants from the agriculture sector.

Picture: Farmers appreciating Wheat varieties produced by TARI

4.4 TARI Tengeru

4.4.1 Research Competitiveness

TARI Tengeru is strategically situated in the Northern Zone of Tanzania, known for its diverse agro-ecological environments. It is the centre of excellence on horticultural crops, including vegetables, fruits, spices, herbs, mushrooms, and ornamental plants. TARI Tengeru is equipped with state-of-the-art laboratories specializing in plant pathology, entomology, and tissue culture, which facilitate advanced diagnostics and biotechnological research (Figure 20). Additionally, it manages approximately 87.5 acres of experimental land and operates multiple screenhouses dedicated to various research initiative

Pictures: Representative facilities at TARI Tengeru: (A) Molecular laboratory; (B) Tissue culture laboratory; (C) Growth rooms; and (D) Greenhouses

Picture: TARI Tengeru training and demonstration

4.4.2 Major Achievements

TARI Tengeru's achievements in the 2024/25 year have been in the areas of varietal development, having released 22 improved varieties of tomatoes, chilli, habanero, sweet peppers, and African eggplants. Banana breeding activities have also been successful, with 10 banana lines passing DUS tests, and seed multiplication initiated, as well as genetic purity testing and evaluations for climate-resilient and disease-tolerant varieties. Furthermore, to facilitate technology transfer, TARI Tengeru organised four awareness events across Dar es Salaam, Iringa, Morogoro, and Arusha reaching nearly 2,000 stakeholders. It also established 15 demonstration plots and distributed 10,000 extension materials to promote the best practices and adoption of improved technologies.

22 Released Varieties
10 Lines Passed DUS
2,000 Stakeholder Reach
10,000 Extension materials distributed
375 Capacity enhancement
588 Million TZS research funding mobilized

Picture: New Released chilli variety

Capacity building was another significant area of impact. The centre trained over 300 farmers, 45 extension officers, and 30 researchers on Good Agricultural Practices (GAP) and integrated pest and disease management. It also supported hands-on learning through student internships, strengthening future human capital in the horticultural sector. On the research front, TARI Tengeru conducted necessary studies to address critical challenges, including the identification and management of major pests, diseases, nematodes, and viruses, using molecular diagnostics and other scientific tools.

Collaboration and funding efforts were strengthened through partnerships with CGIAR centres, the International Centre of Insect Physiology and Ecology (ICIPE), universities, private sector actors, and other horticultural stakeholders. These collaborations enabled the centre to mobilise external funding amounting to TZS 588.35 million, which supported core research programs and infrastructure development.

TARI Tengeru catalyses innovation, responsiveness, and regional impact in 2025/26 by emphasising research excellence, focusing on demand-driven and climate-resilient research, leveraging molecular tools, and fast-tracking varietal trials. Infrastructure modernisation is also a priority, with planned upgrades to laboratories, rehabilitation of screenhouses, and improvements to seed units.

Additionally, the Centre will establish 20 new demonstration plots, host field days and exhibitions, and utilise mass media to reach a broader audience, thereby scaling up technology transfer. In seed systems development, TARI Tengeru will expand early generation seed (EGS) production for eight crops and strengthen partnerships for clean seed production using tissue culture and screenhouse technologies. Capacity building will continue to be central, with plans to train 300 stakeholders through workshops and seminars, as well as support scientific publishing. Additionally, institutional strengthening will focus on improving planning,

monitoring, and evaluation systems, as well as enhancing resource mobilisation through donor engagement and public-private partnerships.

Finally, TARI Tengeru will promote climate resilience by advocating agroecological practices, climate-smart horticulture, and the adoption of low-cost irrigation technologies. Through these initiatives, the centre aims to position itself as a leading institution driving sustainable horticultural development both nationally and regionally. By June 2026, TARI Tengeru aims to enhance its visibility, productivity, and stakeholder impact by delivering resilient varieties, sustainable innovations, and science-led solutions that support national food security, exports, and rural development.

4.5 TARI Ukiriguru

4.5.1 Research Competitiveness

The Tanzania Agricultural Research Institute (TARI) Ukiriguru is strategically located in the Lake Zone of Tanzania. It serves as the national centre of excellence for research on cotton and root and tuber crops, including cassava and sweet potatoes. The institute is well-equipped with essential research infrastructure, including a molecular biology laboratory, a plant pathology laboratory, a Soil laboratory, a GIS unit, an insect rearing unit, screenhouses and a cold room facility for seed storage (Figure 21). These facilities support a wide range of research activities, including pest diagnostics, breeding, and integrated pest management studies, as well as the reduction of post-harvest losses and the multiplication of Early Generation Seeds (EGS) for sweet potatoes and cassava.

TARI Ukiriguru manages approximately 1,343.42 acres, including Kanziga, Bwanga, and Mwanhala substations for experimental land and is well-equipped with key research infrastructure to support diverse agricultural studies.

It hosts a team of experienced researchers who collaborate with both national and international partners, including CIP, CIRAD, ABC TFSRP, IITA, CIMMYT, DSMZ, TCB, CGIAR, icipe, SUA, NMAIST and others. Strategic alliances with partners played a pivotal role in enhancing collaboration and attracting financial support. Through these partnerships, the centre successfully mobilized external funding totaling TZS 2,338,268,678.57, which was instrumental in advancing priority research initiatives and upgrading critical research infrastructure.

The institute has a strong history of implementing impactful projects aimed at improving the productivity of cotton and root and tuber crops, thereby enhancing farmer incomes and food security through technology development, capacity building, and policy engagement.

4.5.2 Major Achievements

In the 2024/25 period, TARI Ukiriguru made significant advancements in agricultural research and innovation. Notably, the institute developed a planting tool known as the "Rafiki Planter" to simplify the sowing of crops such as cotton, sunflower and maize.

Substantial progress was also achieved in seed production for cotton, sweet potato, cassava, and chickpea (Table 4). Additionally, the adoption of a new cotton spacing system (60 × 30 cm) resulted in a significant yield increase from 300 kg to 2,725 kg per acre. Additionally, the introduction of manual trimming technology further contributed to enhanced cotton productivity. TARI Ukiriguru also promoted the dissemination of push-pull technology and integrated pest management for fruit trees and cotton, resulting in yield increases reaching over 1,000,000 farmers. Furthermore, through its strong technology transfer initiatives, more than 400 demonstration plots were established and supervised to showcase various technologies aimed at enhancing adoption and improving agricultural productivity in the region.

Pictures: Root and tuber (Cassava and sweet potatoes) screenhouse trial

Pictures: Different soil research infrastructure available at Ukiriguru Centre

Table 4: Seed production for 2024/2025

Crop	Seed production 2024/2025
Cotton	15,250 Kg
Cassava	13,890,700 cuttings
Sweet potato	8,179,441vines
Chickpea	2,816 Kg

Capacity building was another significant area of impact during the reporting period. TARI Ukiriguru trained over 1,000 farmers and 145 extension officers on different technologies implemented at TARI Ukiriguru. The training also covered Good Agricultural Practices (GAP) and soil fertility management techniques aimed at improving crop yields and promoting sustainable farming systems in the Lake, Central, and Western zones.as well as cassava value addition technologies.

During the 2025/26 period, TARI Ukiriguru aims to accelerate innovation, strengthen institutional responsiveness, and deepen its regional impact by prioritizing high-quality research and development. The centre will place a strong emphasis on climate-resilient agricultural research, with a particular focus on the application of advanced molecular tools and the acceleration of breeding trials to fast-track the development of improved crop varieties.

In parallel, infrastructure modernization remains a key focus area, with planned investments targeting irrigation, the upgrading of research laboratories, the rehabilitation of screenhouses, and the enhancement of seed processing and storage facilities. These efforts are designed to support more efficient research delivery, improved technology generation, and wider dissemination to farming communities.

During the 2025/26 period, TARI Ukiriguru will increase its outreach and technology dissemination efforts by establishing seven new demonstration plots, hosting field days and exhibitions, and utilising mass media platforms to reach a broader audience. These initiatives are designed to expand the adoption of proven agricultural technologies in the region. In the field of seed system development, the centre aims to grow early generation seed (EGS) production for cotton, root and tuber, as well as chickpea crops, while building partnerships for clean seed multiplication using screenhouse technologies for Commercial seed producers.

Pictures: Cotton field trial at the centre

Capacity building will remain a key focus, with plans to train 1,000 stakeholders through targeted workshops and seminars, as well as provide support for scientific research and publication. Additionally, the institute will prioritise institutional strengthening by enhancing planning, monitoring, and evaluation systems, as well as increasing resource mobilisation through donor engagement and partnerships.

By June 2026, TARI Ukiriguru aspires to elevate its profile, enhance research outputs, and deepen its influence among stakeholders by developing adaptive technologies, promoting eco-friendly practices, and providing evidence-based interventions that advance national food, nutritional, and income security.

4.6 TARI Maruku

4.6.1 Research Competitiveness

TARI Maruku is a TARI centre specializing in banana research. It also conducts research on beans, cassava, avocado, and sweet potatoes. The centre key research activities include addressing climate adaptation strategies for agricultural systems, developing and improving the banana crop, strengthening seed systems for vegetatively propagated crops, and nutrition enhancement research among other areas.

4.6.2 Major Achievements

In 2024/2025, the Centre completed data collection for both the Distinctiveness, Uniformity, and Stability (DUS) test and the National Performance Trials (NPT), and secured DUS certificates from TOSCI for ten banana varieties known for their high yield potential and resistance to key pests and diseases. Furthermore, five multilocation trials have been established to assess four Mchare hybrids that exhibit resistance to Fusarium Wilt Race 1 and demonstrate high-yielding performance. Data collection for the first crop cycle is currently underway.

The establishment of a macro-propagation unit with an annual production capacity of 10,000 banana plantlets has made a significant impact. This facility successfully produced and distributed 2,095 disease-free banana plantlets to 67 farmers in Ukerewe, aiming to combat Banana Bunchy Top Disease (BBTD) and enhance banana productivity.

Picture: A photo collage of banana seedlings and key banana varieties observation at the Centre

Furthermore, five macro-propagation units were launched in the Kigoma Region to expand the production of clean banana planting materials. Consequently, around 121,500 clean plantlets were produced and distributed to 200 farmers in the Buhigwe District. This effort has significantly improved access to high-quality planting materials, strengthened the resilience of banana farming systems in the region, and further supported initiatives to combat Banana Bunchy Top Disease (BBTD), while enhancing banana productivity.

In the bean research initiative, over 2,000 common bean breeding lines have been received and systematically evaluated at the institute. A total of 132 breeding lines have progressed through various stages, ranging from segregating populations to Advanced Yield Trials (AYT). For the 2024/2025 period, nine promising breeding lines have been selected for multi-location

trials. As part of the Participatory Variety Selection (PVS) process, an assessment has already been conducted involving 35 participants, 20 of whom are farmers. In contrast, the remaining participants included stakeholders from across the common bean value chain.

Moreover, an initiative has been launched to collect and conserve common bean landraces from the Lake Zone, with a particular focus on the Kagera and Kigoma regions. A total of 86 landraces were collected from all districts within these areas. Following the collection, purification processes have been carried out, leading to the successful registration of two landraces-MJUNZA and Wifi Nyegera by the Tanzania Official Seed Certification Institute (TOSCI) this year. Additionally, three more landraces—Chona Mkundilile, Soya fupi, and Maziwa—have been purified and characterized, making them ready for submission to TOSCI for official registration.

In participatory research, a total of 150 farmers have been actively engaged in hosting and managing on-farm trials, making significant contributions to the participatory evaluation of common bean breeding lines. Furthermore, seven extension officers have been trained and are currently involved in the registration process and the digital collection of comprehensive datasets. These datasets encompass vegetative, reproductive, post-harvest, and socio-economic parameters. The collected data is systematically analyzed and incorporated into breeding performance reports.

In the production of seeds and other planting materials, a new avocado nursery has been established in Kakonko, where 26,000 rootstocks have been planted. At TARI Maruku nursery, ongoing activities focus on managing both grafted and non-grafted seedlings through routine tasks, including weeding, watering, fertilization, and the application of pesticides and fungicides. Currently, the nursery has a total of 14,601 seedlings, of which 12,801 are grafted. The grafted seedlings consist of 9,500 Hass, 850 Fuerte, 1,100 Choquette, 220 Booth 7, 180 Uyole lines, 100 Ex-Ekulu, and 851 local varieties. Additionally, approximately 50,000 new rootstocks have been planted in anticipation of future grafting efforts.

In enhancing the dissemination of improved, high-yielding banana varieties and promoting the adoption of modern banana production technologies across key regions, including Kagera, Kigoma, and Mara. To support this initiative, 12 demonstration plots have been established across five districts in the Kagera and Mara regions. These plots serve as platforms for farmer training and knowledge transfer. On-farm training sessions were conducted during the establishment phase, engaging a total of 292 farmers (163 men and 129 women). Each plot was planted with 70 banana plantlets, consisting of five plantlets from each of 14 improved varieties. These demonstration plots enable farmers to observe varietal performance under real field conditions, serving as practical learning hubs. They also strengthen collaboration among researchers, farmers, and extension officers, thereby contributing to the development and adoption of sustainable banana production practices. In addition,

TARI Maruku has established two climate-smart banana variety trials in Misenyi and Bukoba Rural Districts. These trials aimed at assessing the drought tolerance of selected varieties under changing climatic conditions. Each trial includes 10 banana varieties—nine test varieties (Simili, Pelipita, FHIA 1, Guinea, FHIA 3, Itoke Sege, Kluai, FHIA 17, and Nyerere) and one control variety (TARIBAN 4). The objective is to identify the most resilient and productive banana varieties suitable for drought-prone environments, thereby contributing to the advancement of climate-smart agriculture in Tanzania.

4.7 TARI Naliendele

4.7.1 Research Competitiveness

TARI Naliendele is a recognised research centre of excellence for high-quality research outputs focused on Cashew, Sesame, and Groundnut crops. The Centre conducts basic and applied research that is client-driven to improve the lives and livelihoods of people in Tanzania and beyond. It contributes to TARIs' broad mandate through conducting, regulating, coordinating and promoting agricultural research in mainland Tanzania.

Naliendele is the only research centre in Tanzania that deals with cashew variety development and cashew seed multiplication. It is primarily focused on research along the value chain of cashew nuts, sesame, and groundnuts. It is the first in the world to register cashew varieties following the international standards of UPOV. The Centre engages in collaborative research projects both within and outside the country, and its research findings are shared with the public through various channels. Aligning with the above context, TARI Naliendele has been significantly demonstrating a positive impact on communities.

4.7.2 Major Achievements

In the year 2024/2025, a total of eight (TARIKO-1, TARIKO-2, TARIKO-3, TARIKO-4, TARIKO-5, TARIKO-6, TARIKO-7 and TARIKO-8) improved cashew varieties, which are resistant to cashew leaf and nut blight disease and higher yielding between 2000-3000 kg/ha, were released. This brings the total to 62 released improved cashew varieties. Two Groundnut (TARIKA1 and TARIKA2) improved varieties, which are resistant to leaf rusts, were also released. Five lines of Cassava are at the NPT stage by TOSCI before being proposed for registration, whereas five lines (sesame), three lines (groundnuts), and one line (Amaranthus) were submitted to TOSCI for DUS and NPT tests.

Three types of foliar fertilizers are at the validation stage before being recommended for use on cashew, and two bio-fungicides have shown potential efficacies in the management of cashew fusarium wilt disease.

In the case of seed and planting material production, 59 tons of cashew seeds and 1,467,500 cashew seedlings were produced. A total of 1,440,000 cassava cuttings and 7536 fruit seedlings (962 citrus, 3202 mango and 3372 banana) were made. The area planted with polyclonal cashew seeds has increased from 363 to 403 acres, and a total of 16 acres of scion garden for cashew (TARIKO series) were established.

In strengthening collaborationin the year 2024/2025, two MoUs for research and innovation activities on cashew were signed as follows:

(i) TARI and the Institute of Mozambique IAM, IP and

(ii) TARI and AMAMA Farms Company Ltd on Improving the livelihood of smallholder cashew farmers.

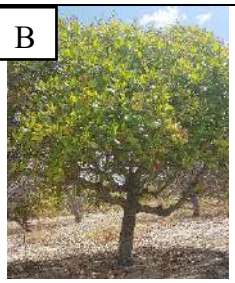
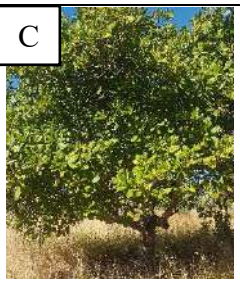
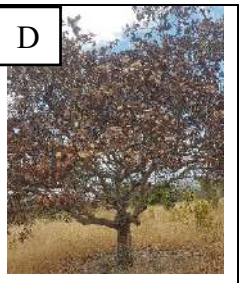
The centre continues to collaborate with CIMMYT, CIAT, IITA, MEDA, GoSeed, SAHEL Consulting, the National Roots Crop Research Institute, NASC, TOSCI, CRS, CBT, TPHPA, SUA, UDSM, TMA, SwissAid, and World-VEG.

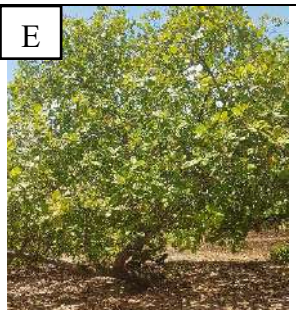
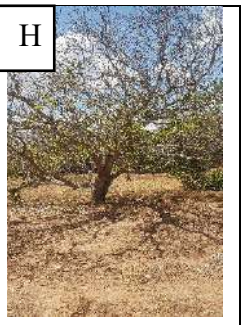
Picture: TARI researcher at the Tanzania's cashew stakeholdesr meeting in Dodoma

Furthermore, existing cashew apple wine has been fortified from 12% ABV to 18% ABV. A total of 928 Extension officers, including 395 from BBT, received training at two different phases (during March 2025 for good agronomic practices and June 2025 for proper and safe use of pesticides on cashew).

While this is happening, cashew production in Tanzania is currently threatened by Fusarium wilt, a disease caused by Fusarium oxysporum. The lack of effective control strategies has prompted researchers at TARI Naliendele to explore sustainable and environmentally friendly

solutions. One of the key approaches is the development of biofungicides derived from beneficial microorganisms, particularly fungi and bacteria such as Trichoderma and Bacillus, which can effectively suppress the disease while safeguarding the environment.

Ungongolo-Liwale	A 	B 	C 	D 

Chipite-Masasi	E 	F 	G 	H 
Msimbati-Mtwara rural	I 	J 	K 	L 
Performance of integrated disease control over two consecutive farming seasons (2021/2022 and 2022/2023). Panels A, E, I show cashew trees treated with Bacillus strains; B, F, J with Trichoderma asperellum; and C–D, G–H, K–L show untreated controls before and after the two seasons.				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4.8 TARI Mikocheni

4.8.1 Research Competitiveness

The Center is mandated to conduct and promote research for the development of the coconut sub-sector and promote research and utilization of agricultural biotechnology for socio-economic development in the country. It has human and infrastructure capacities mainly in two programs: biotechnology and coconut research.

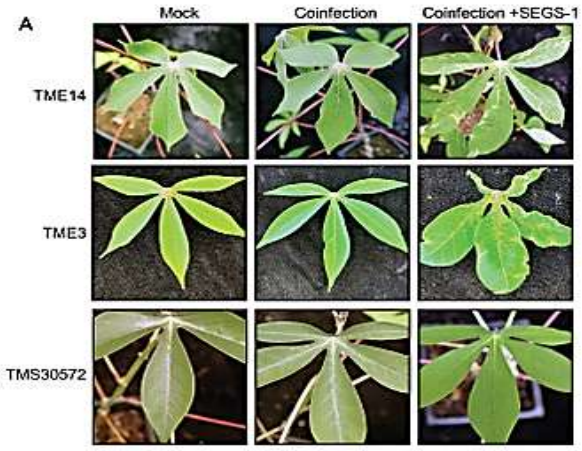
The Center has four functional biotech laboratories for: Tissue culture, Molecular biology, disease diagnostics/plant clinic, Entomology and Biosafety level 2 Genetic engineering lab. The laboratories are supported by screenhouses for research. The Center recently acquired a "Minion Portable Sequencer" for DNA sequencing. Similarly, it has 669.1Ha of arable land for field trials for various crops. As per its 2nd mandate, it housed a total of 54 Ha of the National coconut seed farm for East African Tall coconut, and various coconut germplasm for research purposes. The Centre's research strength is anchored on its strong collaboration with its international and regional partners, including Gates Foundation (BMGF), World Vegetable and Centre and International Centre for Insect Physiology and Entomology (icipe) and North Carolina State University (NCSU), USA, for research support and technical backstopping.

4.8.2 Major Achievements

The major research achievements of the TARI Mikocheni Centre for the financial year 2024/2025 focused on two areas: research and promotion, as well as the transfer of technologies. In this reporting year, the Centre conducted research on one basic research project aimed at finding durable resistance to cassava mosaic disease and provided diagnostic services to its stakeholders.

In the absence of durable resistance to the notorious cassava viral disease, the Centre continued its research to understand the mechanism of resistance-breaking SEGs 1 and to enhance the durability of cassava (CMD2) resistance. In this financial year, the Centre successfully managed to identify resistance-breaking molecules (SEGS-1) in previously bred cassava resistance varieties carrying CMD-2 genes and in cassava varieties carrying the CMD-2. gene.

This information is a crucial tool for cassava breeders to enhance breeding for resistance by screening and discarding susceptible lines early in the breeding program, thereby saving costs

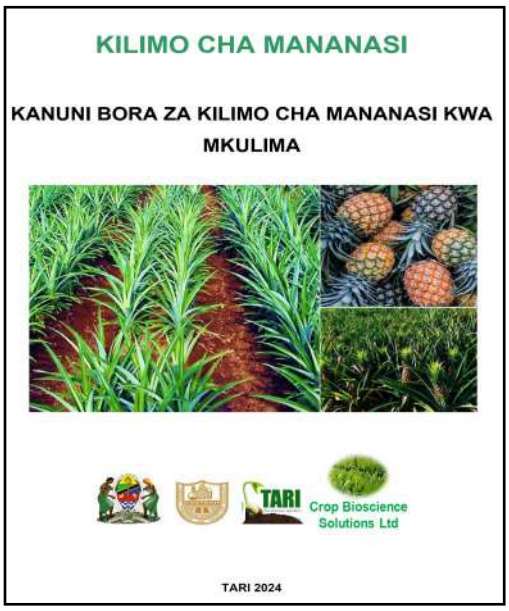


The Centre conducted field surveys in three major coconut-producing regions (Tanga, Lindi, and Coast) to determine the status of incidence, severity, and diversity of coconut phytoplasma causing coconut lethal disease (CLD) as well as the severity of damage caused by the notorious coconut rhinoceros beetle (Orycetes spp. L.). The finding has updated the 25-year status of these pests in the surveyed regions since the NCDP, where it showed that they are still prevalent in farmers' fields, with infestation rates ranging from 80-96% and CYLD incidence rates from 60-100%. The updated information on the status of these pests enabled revisits and improvements to the previously formulated Integrated pest management strategies.

The Centre, through its plant clinic and biotech laboratory, investigated the reported case of an unknown disease affecting onion production in the major onion production districts of Kilolo, Ruaha-Mbuyuni, and Kilosa districts in Malolo wards. The centre's scientists, through focused field surveys and the assaying of representative samples, managed to identify the disease as a fungal disease and suggested improvements and stricter cultural practices for effective management of the disease.

The centre completed upscaling research on mass multiplication and promotion of a high-quality hybrid pineapple variety (MD-2) for commercial production, disseminating it to farmers in Kinole-Morogoro, Gongo Village in Bagamoyo, and Madeke-Njombe through community-based nurseries. Over 200 farmers were capacitated with training on good agronomic

practices for pineapple production (Mwongozo wa Kilimo cha Mananasi: Kanuni bora za Kilimo cha Mananasi kwa Mkulima, Manual handbook) and supplied with high-quality seedlings for planting, where 60,000 seedlings were disseminated. To date, farmers in the project districts have experienced the first harvest of the hybrid variety MD-2 and appreciated the quality.



The Centre empowered coconut farmers with nursery management skills for raising coconut seedlings of the East African Tall (EAT) variety in six districts: Ruangwa, Mtwara Rural, and Muheza. A total of 203 farmers were empowered through community-based nursery training on raising coconut seedlings, resulting in the production of 18,000 seedlings that were successfully disseminated for planting in their fields.

The technology disseminated ensured the sustainable availability of coconut seedlings at a cost-effective price in the respective districts. The use of a community-based approach in transferring technology to farmers has been very successful, as it involves joint efforts between district executive offices and TARI.

The Centre empowered coconut farmers financially by transferring the value-added technology of their coconuts through training in "extraction and packing of high-quality extract virgin coconut oil". The dissemination was achieved through various platforms, including Nane-nane 2024 and farmer field days. Similarly, the Centre continued to upgrade its small extraction plant for VCO. For the financial year 2024/2025, we planned to bottle 300 litres of VCO, of which 150 litres have been extracted and sold so far, thereby improving the Centre's own source of funds.

The Centre contributed to the rehabilitation of the coconut industry through the production and dissemination of coconut seedlings to farmers in Lind and Mtwara regions for replanting and new fields. The Centre successfully raised and delivered about 200,000 coconut seedlings as part of its target of 500,000 to farmers in Lindi and Mtwara for the rehabilitation of coconut production.

4.9 TARI Kibaha

4.9.1 Research Competitiveness

TARI Kibaha is the Centre of excellence on sugarcane. Other crops include cassava and sweet potato. TARI Kibaha has different sections, including breeding, agronomy, pathology, entomology, socioeconomics, post-harvest management, and root and tuber. It also features nematology, tissue, and molecular laboratories, which facilitate advanced diagnostics and biotechnological research. Additionally, it manages approximately 136.7 hectares of land, with some structures, including staff buildings, office buildings, and screen houses, dedicated to various research initiatives.

The Centre also has post-harvest and seed facilities that support research aimed at reducing losses. A multidisciplinary team of highly qualified researchers collaborates with both national and international partners, including COSTECH, IITA, SIDTF, SBT, and Harvest Plus.

Picture: Delegates from India Visited TARI Kibaha

4.9.2 Major Achievements

In the year 2024/25, TARI Kibaha's key achievements in research and development were:

(i) Managed and maintained 725 germplasm planting materials of sugarcane (226), cassava (411) and sweet potato (88).
(ii) Established the concentrated molasses solid trial to assess nutrient availability and uptake efficiency under CMS treatments compared to conventional fertilizers.

(iii) Assessed 71 sugarcane fields for yellow sugarcane aphids at TPC Moshi (41 fields) and Mtibwa Sugar estates (30 fields).
(iv) Assessed 170 sugarcane commercial fields for Ratoon Stunting Disease at Kagera Sugar Ltd (40 fields), TPC (39 fields) and Kilombero Sugar Company Ltd (91 fields).
(v) Established one (1) trial for yield loss in the screen house for investigating plant parasitic nematodes associated.
(vi) Developed a hybrid conventional dryer for drying tomatoes.
(vii) 47,581 cassava plantlets as early generation seed, 86,850 sweet potato cuttings as pre-basic seed and 447,600 sweet potato cuttings as basic seed produced.
(viii) Eight (8) acres of cassava pre-basic seed field established.
(ix) 103,800 cassava cuttings sold to stakeholders.
(x) Drafted SOP manual in collaboration with IITA and MEDA titled "Accelerating Cassava Seed Multiplication: A practical guide for high-ratio propagation technologies".
(xi) Drafted policy brief in collaboration with IITA and MEDA titled "Empowering Entrepreneur Farmers: A novel strategy for cassava seed outreach in Tanzania".

Picture: Stakeholders training at TARI Kibaha

In addition, TARI Kibaha successfully organised five awareness activities across four regions—Dar es Salaam, Dodoma, Morogoro, and Pemba—reaching an estimated 24,686 stakeholders (14,554 males and 10,132 females). These events served as platforms to disseminate knowledge and promote best agricultural practices in sugarcane, root and tuber crops, and tomatoes.

In support of field-based learning, the centre established eight demonstration plots and produced 1,603 extension materials, of which 571 copies were distributed. These materials were designed to enhance awareness and encourage the uptake of improved farming technologies.

Capacity building remained a cornerstone of TARI Kibaha's impact in the 2024/2025 period. The centre trained 214 farmers and 44 extension officers in Good Agricultural Practices (GAP), covering sugarcane production, tomato processing, environmental safety, and innovative extension approaches such as the farm clinic model.

Picture. Stakeholders training in rapid cassava cuttings multiplication at TARI Kibaha

TARI Kibaha also provided mentorship and hands-on training to agricultural students through field practical placements, contributing to the development of future professionals in sugarcane and other crop value chains.

During this period, the centre managed 22 acres of seedcane nurseries, from which 537.8 tons of high-quality seedcane were distributed to 100 farmers in the Kilosa, Mvomero, and Misenyi districts. This intervention aimed to improve access to clean planting material and enhance productivity.

Looking ahead, TARI Kibaha will continue to strengthen technology dissemination and farmer engagement through the following initiatives: management of eight demonstration plots, conducting farmers' field days and participation in agricultural exhibitions, maintenance and utilization of a 5-acre seedcane nursery in Mvomero and deployment of printed extension materials and mass media outreach to enhance the scale and impact of information dissemination on sugarcane, and root and tuber crops.

Furthermore, capacity building for extension workers in the Kilombero Valley will adopt the farm clinic model, a strategic approach to ensure the timely and targeted delivery of sugarcane technologies. Training farmers on safe disposal of agrochemical containers will also be prioritised to safeguard human and environmental health. At the institutional level, efforts will focus on strengthening resource mobilisation through donor engagement and public-private partnerships.

4.10 TARI Dakawa

4.10.1 Research Competitiveness

TARI Dakawa specializes in rice research and drives innovation throughout the rice value chain, from seed development to climate-resilient farming practices. The Centre collaborates with international institutions and local institutions such as IRRI, KAFACI, Syngenta, Africa Rice, and Sokoine University of Agriculture (SUA), among others. These partnerships enhance its access to cutting-edge technologies and global best practices. The center is home to SARO5 (TXD 306), a leading improved rice variety in Tanzania, as well as other aromatic rice varieties. The centre also conducts research on maize and horticultural crops.

Picture: Photo collage of TARI Dakawa researchers in the SARO5 field (left), SARO5 seed production farm (middle), and SARO 5 grade milled rice

4.10.2 Major Achievements

The Center has developed four promising lines of rice that are high-yielding, exhibit good grain quality, and are resilient to climate change. These lines have successfully completed their initial evaluation at the multilocation stage and are now ready for submission to TOSCI for DUS (Distinctness, Uniformity, and Stability) test and NPT (National Performance Trials.

Additionally, several studies on socio-economics and marketing have been conducted to better understand adoption, impact, and marketing opportunities within the rice value chain. The Center also continued its seed production activities, yielding 15,089 kg of early generation seed (comprising 13,299 kg of pre-basic seed and 2,790 kg of basic seed), as well as 135,933 kg of certified seed, which was distributed to various stakeholders in the rice sub-sector.

To enhance technology transfer activities, the center has revamped the Agri-Tech Hub by upgrading laboratories, establishing germplasm blocks, developing fruit seedling nurseries, and creating demonstration plots around the hub. Furthermore, contributions to knowledge have been made through the publication of articles in peer-reviewed journals.

4.11 TARI Ilonga

4.11.1 Research Competitiveness

TARI Ilonga has a total of 937 hectares of arable land suitable for experimentation and demonstration activities. It is located close to the Kilosa Standard Gauge Railway (SGR) station and adjacent to a tarmac road, ensuring year-round accessibility. The Centre has a reliable water source, including a dam and three deep wells, which support irrigation through both dripper and sprinkler systems. Additionally, there are screen houses for research, laboratories dedicated to crop research, and warehouses for seed storage. The Centre is staffed with an adequate number of scientists and features conducive office buildings. It is key in sunflower, legume and maize research among other crops.

4.11.2 Major Achievements

TARI Ilonga continued its routine research activities while achieving significant advancements, marking a period of innovation at the center. Notable developments included the design and installation of a sprinkler irrigation system covering an area of 15 hectares, as well as renovations to the TARI Ilonga administration building.

Technology transfer activities also progressed, with the establishment of 36 demonstration plots and training provided to 512 farmers on improved agronomic practices, soil fertility, and post-harvest handling. Furthermore, the Center reached out to 15,102 agricultural stakeholders through various forums. In addition, TARI Ilonga produced two documentaries that were aired on one television channel, two radio stations, and uploaded to a YouTube platform.

4.12 TARI Mlingano

4.12.1 Research Competitiveness

TARI Mlingano its primary purpose was to conduct research on the sisal crop. Today, TARI Mlingano is recognised as a centre of excellence with a national mandate to conduct, coordinate, and disseminate research on sisal crops, soils, and agricultural natural resources in Tanzania. Additionally, the Centre aims to become a leading institution for research in citrus and spices.

4.12.2 Major Achievements

A total of 312 blended fertilizer trials were established and managed across Tanzania, using maize, sunflower, wheat, beans, and rice as test crops. These trials are currently undergoing harvesting in the Southern Highlands, Central Zone, Eastern Zone, and Northern Zone, contributing valuable data on crop response to nutrient blends under diverse agro-ecological conditions.

Picture: A photo collage showing a Soil fertility improvement through mixed farming at Ilonga Centre

To support climate-smart agriculture, predictive models have been developed to estimate soil organic carbon sequestration under various crop production systems, including cocoa, coffee, maize, and wheat. These models were specifically tailored to the Southern Highlands, where soil health and carbon dynamics are critical to sustainable land use.

A nationwide soil sampling campaign was conducted across all regions of Tanzania, resulting in the collection of 2,850 soil samples at depths of 0–20 cm and 20–50 cm. These samples were analyzed to strengthen the country's soil information database and support evidence-based land management. In addition, 1,150 soil samples, 66 plant samples, 10 water samples, and nine fertiliser samples submitted by various clients were analysed to support diagnostic services and inform agronomic decision-making.

Seedling production efforts yielded impressive results, with over 2 million high-quality sisal seedlings produced, alongside 7,430 citrus, 51,100 lemon, 240 lime, 150 tangerine, 12,000 mango, 830 avocado, 2,545 black pepper, 1,460 cardamom, 17,000 cocoa, 350,000 cloves, 760 allspice, and 4,780 cinnamon seedlings.

A photo collage showing a Soil samples and soil testing at Soil Laboratory-TARI Mlingano

To further enhance sisal productivity, the sisal variety H11648, exclusively produced by TARI and widely adopted by farmers, has significantly contributed to increased sisal production in year 2024/25. A fertilizer trial was established in both field and screen house conditions, focusing on optimizing nutrient management for sisal seedling production. This was complemented by the successful certification and registration of a new sisal variety, H11648, which offers improved agronomic traits for farmers.

Picture: Soil analysis infrastructure

Land suitability evaluations were conducted to support strategic crop expansion. These included assessments for the establishment of a sugarcane out growers' scheme around Bagamoyo Sugar Company, and a case study in the Dodoma Region evaluating the commercial viability of date palms as an alternative crop and climate adaptation measure in semi-arid areas.

Picture: Sisal Seedlings Production, Sisal intercropping and countries sisal production in the (right)

Picture: Clove seedling production in Mlingano Centre

Five improved technologies were disseminated to clients, including high-quality sisal, spice, and citrus seedlings, as well as soil suitability maps for various crops, soil acidity management maps, and maps for managing salt-affected areas. The Centrer has also increased spices (clove) Seedling production and distribution.

Capacity-building efforts reached 2,560 farmers and 116 extension officers, who were trained on good agricultural practices (GAP) for sisal, spices, and citrus production. The institution also actively participated in key national events, such as Sabasaba, MAKISATU, Nanenane, World Soil Day, and the Fertiliser Exhibition, showcasing innovations and engaging with stakeholders.

Finally, 14 candidates received specialised training in soil laboratory analytical procedures and lab management, as part of efforts to prepare for the accreditation of the Central Soil Laboratory at TARI Mlingano (CSL-TM). This initiative supports quality assurance and institutional excellence in soil science services

4.13 TARI Hombolo

4.13.1 Research Competitiveness

The Tanzania Agricultural Research Institute, Hombolo Centre, is located in Dodoma City and is responsible for conducting research on dryland crops and climate-resistant technologies in Tanzania. The institute's research activities aim to enhance crop yield, improve food security, boost nutrition, and ensure income security in arid regions. researches areconducted in various fields, including agronomy, breeding, pest control, Climate-Smart Agriculture, post-harvest management, and socioeconomics.

4.13.2 Major Achievements

During the 2024/2025 financial year, TARI Hombolo undertook several initiatives centered on research and innovation, seed production, technology transfer, and capacity building for farmers and other agricultural stakeholders. The Center has also continued to implement infrastructure construction projects designed to enhance research and production capabilities. Throughout this period, TARI Hombolo has proudly achieved significant milestones through various government- and donor-funded initiatives.

The Centre successfully submitted four sorghum candidates to TOSCI for National Performance Trials (NPT) and Distinctness, Uniformity, and Stability (DUS) testing. These submitted materials demonstrate excellent characteristics, including high yields and resistance to drought and disease. Additionally, eight promising lines are currently undergoing multilocation evaluation, as they have been planted in Dodoma, Singida, Kilimanjaro, and Serengeti for participatory varietal assessment.

TARI Hombolo has successfully engaged a total of 7,115 agricultural stakeholders, including farmers, through various technology transfer platforms. These initiatives included farmers' field days, the Nane Nane exhibition in Dodoma in 2024, World Environment Day in Dodoma, the Agri-Tech hub in Dodoma, mass media outreach, and the International Trade Exhibition in Dar es Salaam.

Pictures: TARI Hombolo researchers investigating sorghum varieties (left) and farmers in Singida during a participatory variety selection event (Right)

The Center established 77 technology demonstrations for farmers, focusing on enhanced varieties of sorghum, pearl millet, and finger millet across 22 districts in 14 regions of Tanzania. Promoting these technologies is expected to increase the adoption of improved practices, ultimately boosting crop productivity. Additionally, TARI Hombolo facilitated long-term training for two staff members and helped build the capacity of ZARI staff, as well as MATI, SUA students, and farmers.

The Centre successfully cultivated 42 hectares for seed production, d. Also, the Cntre has diversified its crop portfolio by introducing three new crops into its seed production programs for the 2024/2025 production season: maize, pigeon peas, sesame, and groundnuts. To support seed production and processing, the Centre procured essential equipment, including a multi-thresher machine designed for sorghum, millet, and sunflower crops, as well as a new tractor with complete accessories such as a plough disc, harrow, hole digger, mower, and a 4-ton trailer.

Picture: The Permanent secretary Ministry of Agriculture (Fifth from Left) Visit in TARI Hombolo Center

Picture: Farmers during awareness creation at TARI-Hombolo Centre

4.14 TARI Makutupora

4.14.1 Research Competitiveness

TARI Makutupora Centre is dedicated to research and innovation in grape crops, with a secondary focus on dryland crops such as sunflower, sorghum, groundnut, cowpea, bambara nut, finger millet, pearl millet, cassava, sweet potato, and lowland maize, among others. The Centre maintains a germplasm collection that includes 36 grapevine varieties, nine sorghum varieties, 12 cassava varieties, and five orange-fleshed sweet potato varieties. Additionally, TARI Makutupora is actively involved in developing agroforestry and climate-smart technologies to help farmers mitigate and adapt to climate change. The Centre is adequately staffed to support its operations.

4.14.2 Major Achievements

In the fiscal year 2024/2025, the Centre achieved significant milestones, benefiting 390 farmers through training sessions focused on soil fertility management and rainwater harvesting techniques. Concurrently, successful on-station research trials were conducted, which included:

(i) Grape adaptation and the development of descriptors for six imported grapevine lines and six local varieties, aimed at enhancing the international competitiveness of grapevine diversity for raisins, table grapes, and wine production.
(ii) The development of climate-resilient sesame varieties to improve productivity in Tanzania, through a collaborative trial led by the TARI Naliendele centre, which seeks to release these varieties.
(iii) A maize adaptation trial involving the selection of elite lines for heat and drought tolerance.
(iv) An assessment of cowpea varieties' performance under various phosphorus nutrient levels in Tanzania.
(v) An evaluation of pests and diseases affecting sorghum lines under natural field conditions, aimed at identifying pest and disease-tolerant, high-productivity, and consumer-preferred traits.

Picture: Showing grapes, a major research crop at TARI Makutupora

(vi) The seed increase of SEGUIFA, alongside two additional sorghum lines, complemented by the National Performance Trials (NPT) and Distinctness, Uniformity, and Stability (DUS) assessments for two elite sorghum lines.
(vii) The collection and establishment of five orange-fleshed potato germplasms.
(viii) An investigation into how drought-tolerant traits influence the yield and yield components of intercropped maize, beans, and cassava.

Additionally, the Centre implemented a range of activities in agronomy, plant protection, seedling production, and technology transfer and partnerships. The agronomy initiative

concentrated on the impact of inorganic fertilizers on grapevine performance, yield, and grape quality. Its objective was to recommend appropriate application rates and assess the suitability of inorganic fertilisers for enhancing yield, productivity, and grape quality in grape production.

To promote the sustainability of the grape industry, the Tropical Agricultural Research Institute (TARI) has advised on the use of pesticides effective against fungal diseases such as powdery and downy mildew, as well as insect pests and termites. Furthermore, the centre continues to evaluate the potential effects of mealybug-related viral infestations in the vineyards of Dodoma.

Picture: Researchers during grapes harvesting

A substantial number of grapevine seedlings were produced, with 422,354 and 318,283seedlings distributed to farmers across several regions, including Dodoma (City Council, Bahi District, and Chamwino District), Arusha (Karatu), Manyara (Babati), and Zanzibar (Fuoni), as well as Ruvuma (Songea), Morogoro (Morogoro District and Ifakara). Other stakeholders were located in Dar es Salaam, Moshi (Kilimanjaro), and Kasulu (Kigoma). To ensure sustainability and promote scaling efforts, the centre has empowered various lead

farmers and Agricultural Marketing Cooperative Societies (AMCOS) to engage in grapevine seedling production, resulting in the cultivation of an additional 560,354 seedlings.


Picture: Grapevine seedling production at TARI Makutupora

In terms of technology transfer, the Centre has successfully published eight articles in peer-reviewed journals, managed 69 crops and 63 crop varieties, and organised 10 farmers' field days. Through diverse dissemination methods, the Centre has effectively engaged 1,618 stakeholders.

4.15 TARI Ifakara

4.15.1 Research Competitiveness

TARI-Ifakara (formerly KATRIN) is located in the Kilombero Valley and lies at 80˚04' South and 36045' East, with an altitude of 270m above sea level. It is about 14 km from Ifakara town and 230 km southwest of Morogoro Municipality. TARI Ifakara is strategically located in the Kilombero Valley, with rice farming accounting for over 80% of the cultivated land. It has a long history of conducting rice improvement research activities in collaboration with different local and international research institutes to advance rice research and development in Tanzania. TARI Ifakara is also known to play a crucial role in addressing challenges faced by rice farmers in Eastern and Southern Africa, contributing to increased rice production and food security.


Photo gallery, Ensuring High Yields Through Quality Seeds: TARI's Priority

4.15.2 Major Achievements

The Centre successfully submitted five drought-tolerant rice varieties to TOSCI for further evaluation (NPT) and registration. Additionally, it has collected 152 cocoa germplasms from major cocoa-growing regions in Tanzania, including the Mbeya region (specifically Kyela, Busokelo, and Rungwe districts), the Tanga region (Muheza and Mkinga districts), and the Morogoro region (Kilosa and Mvomero districts).

Future goals include establishing a Mini Rice Grain Quality Laboratory, creating a Mini Kitchen for Rice Processing and Value Addition, and conducting molecular analysis of the collected cocoa germplasm in Tanzania. The Center also plans to expand its focus to other crops, such as cocoa, bananas, and various horticultural crops.

Picture: Cocoa Fruits and Seedlings for Germplasm establishment in Ifakara

4.16 TARI Tumbi

4.16.1 Research Competitiveness

The TARI-Tumbi Centre is mandated to conduct and coordinate all agroforestry research in the country. To address the challenges of agroforestry technologies, climate change, and the demands of farmers, the Center conducts various research projects in collaboration with other Centers. These projects focus on oil palm, cereals, legumes, horticultural crops, cashew nuts, and socio-economic research.

4.16.2 Major Achievements

During the financial year 2024/2025, TARI Tumbi evaluated 78 test-cross maize hybrids for combining ability studies. The goal was to categorize inbred lines into heterotic groups A and B for more effective deployment in maize breeding programs. Additionally, the Center assessed 14 single cross maize hybrids and seven top cross maize hybrids for grain yield and adaptability during preliminary yield trials.

Moreover, five sorghum lines and two check varieties were planted for participatory varietal selection (PVS). The Center collaborated with various partners to evaluate different maize and sunflower trials. A total of 14 demonstration plots showcasing TARI technologies were established at Fatma Mwasa Agri-Tech Hub.

The Center distributed 188 kg of Monkey Orange seeds and 168 kg of Vites Mwambasae seeds to farmers in the Simiyu region. Additionally, 20,000 cuttings of Phyllanthes engleri (Amla) were supplied to the Tanzania Forestry Services (TFS) in Dodoma. Intercropping technologies, which

involve planting tree-fertilizing plants alongside crops, were taught to hundreds of farmers in Dodoma, Singida, Babati, Hanang, Songwe, and Rukwa.

Picture: Amla Fruits, Monkey Orange Fruits and Wild fruits Production in Tumbi Tabora

Furthermore, the Center distributed two million improved cassava cuttings to 242 seed entrepreneurs (CSEs) in the Tabora, Kigoma, Katavi, and Singida regions. During the same period, TARI Tumbi produced a total of 490,200 oil palm Tenera seeds, of which 70,000 were distributed to Urambo district council. Additionally, 35,200 Tenera oil palm seedlings were raised.

Also, the Center produced 25.24 tons of maize basic seeds (15.32 tons of T105 and 9.92 tons of T104) and 0.505 tons of certified seeds. Furthermore, a total of 5.21 tons of sorghum basic seeds were produced, consisting of 2.47 tons of TARISOR2 and 2.74 tons of other varieties. To enhance access to nutritious crops, the Center produced and distributed one million vines to the Simiyu and Tabora regions.

Picture: Promotion of TARI technologies, TARI researchers handing over quality seeds to Hon. Simon Sirro, Kigoma Regional Commissioner, during a farmer awareness campaign at Tumbi Centre, Tabora.

4.17 TARI Kihinga

4.17.1 Research Competitiveness

TARI Kihinga is the youngest research centre among 17 research centres under TARI. The Centre was officially established in July 2018 and mandated to conduct and coordinate oil palm research and development in the country. The establishment of TARI Kihinga is one of the main Tanzanian government initiatives to combat the shortage of edible oil in the country by

improving oil palm production. Currently, the Centre is fully operational with 29 staff members of various cadres, vehicles, tractors, motorbikes, land, residential houses, and an office building, which are nearing completion. The assessment made by TARI Kihinga in early 2019, revealed that oil palm production in Tanzania is strangled: The use of low yielding oil palm varieties (over 85% of all oil palm trees are Dura); Poor agronomic practices and extension services caused by shortage of knowledge on modern oil palm production techniques; Old oil palm trees existing in farmer field (over 85% of trees aver over 60 years), poor palm oil processing facilities and low area devoted for oil palm production.

To improve oil palm production in the country, TARI Kihinga is currently focusing on: production of improved oil palm pre-germinated seeds (Tenera) and distributing to farmers for free; training extension officers, farmers and students from agricultural colleges on modern oil palm production techniques and awareness creation to farmers and other stake holders to engage in oil palm production and on the whole oil palm value chain.

4.17.2 Major Achievements

Production and distribution of oil palm seeds and seedlings: During the 2024/2025 financial year, TARI Kihinga has managed to produce 1,941,259 improved Tenera oil palm seeds. Among the produced seeds, 1,919,890 seeds have been distributed to various places for pre-germination. A total of 636,222 oil palm seedlings have been raised at various nurseries and distributed to farmers. The seedlings distributed are enough to cover an area of 4,480.4 hectares.

Technologies Dissemination and Partnership: During the 2024/2025 season, 5 TV programs and two radio programs were recorded and aired. The programs aimed to provide education on modern oil palm farming and update participants on the status of oil palm activities conducted by TARI Kihinga.

In the 2024/2025 season, the Centre attended 8 days of farmers' agriculture shows at Fatma Mwasa in Tabora at the Zonal level and Nzuguni Dodoma at the national level. Another Exhibition attended by the Centre was Sabasaba, which ran for 13 days at the Mwalimu Nyerere Trade Fair, where oil palm business opportunities were explained, in these exhibitions. More than 3000 farmers were sensitised on oil palm farming using the improved oil palm variety (Tenera).

More than 900 copies of the brochure on the establishment and management of oil palm nurseries and 700 copies of the brochure on modern oil palm farming were published and disseminated to different stakeholders. TARI Kihinga also participated in the exhibition of World Food Day in Bukoba Municipal in Kagera region with a theme *"the right to food for all, for a better life now and in the future".*

Pictures: Photos for soil profiling (A), germplasm collection and maintenance (b), potential weevil identification and rearing (C-F), insect management technologies (G-J) variety development, maintenance and distribution (K-L)

Internal Program Review (IPR):
In this reported financial year, TARI Kihinga and TARI Tumbi jointly conducted an Internal Program Review to review research works being carried out for the season 2024/2025 and to discuss the proposed research works for the 2024/25 season. In that meeting, which was held at Living Stone Conference Hall on 4th and 5th December 2024, a total of 16 progress reports were reviewed, and five research proposals were presented and discussed.

Capacity Building and Development: In the the 2024/2025 season, TARI Kihinga successfully trained 17 Extension Officers, 54 farmers, and two college students. The training focused on modern oil palm farming, as well as improved oil palm seed production and nursery management. One researcher attended a training on micropropagation techniques and agronomic practices of banana in Bukoba, and another workshop on tools and strategies to combat banana bunchy top virus outbreaks in East Africa in Moshi.

TARI Kihinga also coordinated a 10-day study tour to Indonesia, where three TARI management officials went to visit various locations to learn about improved oil palm seed production, seed processing, pre-germination, nursery and plantations management. The officials also visited Palm oil refinery plants to learn about palm oil processing systems. One researcher from TARI

Kihinga conducted a study tour to Burundi (SAVANOR COMPANY) to learn about plantation management, palm oil processing, and refinery. One researcher attended a training on micropropagation techniques and agronomic practices of banana in Bukoba, as well as a workshop on tools and strategies to combat banana bunchy top virus outbreaks in East Africa in Moshi.

5.0 PHYSICAL INFRASTRUCTURE DEVELOPMENT

During the year 2024/25, the institute planned and executed the following projects:

i. Construction of TARI Headquarters at Njedengwa Investment Area, Dodoma Municipal. The construction works is on progress at 65%.
ii. Construction of TARI Kihinga at Kigoma, the construction works is on Progress at 95%.
iii. Design and construction of irrigation infrastructure covering 838.5 ha of the TARI Research Centres, works is on progress at 10%.
iv. Construction of five (5) warehouses at TARI Selian, TARI Tumbi, TARI Hombolo, TARI Naliendele and TARI Dakawa that attained 50% completion;
v. Rehabilitation and retooling of National Central Soil Laboratory at TARI Mlingano is completed;
vi. Construction and retooling of tissue culture laboratory at TARI Mlingano is at 100% completion;
vii. Construction of Ritual fence reached 100% and construction of brick wall fence reached 35% at TARI Uyole;
viii. Three (3) motor vehicles, were purchased; one (1) vehicle has been delivered and two (2) vehicles will be delivered in the second quarter of FY 2025/2026.
ix. Eight (8) seed processing machineries were procured and delivered.
x. Rehabilitation of TARI Centres at TARI Ilonga and TARI Mlingano is at 20% and 30% respectively;
xi. Construction of fences at TARI Kifyulilo, TARI Maruku, TARI Kihinga, TARI Hombolo, Dakawa, Ifakara is at 30%;
xii. Construction of 6 warehouses at TARI Uyole (At the center and Nkundi and Igeri experimental stations), TARI Maruku, TARI Ukiriguru and TARI Kifyulilo is at 25%;
xiii. Design and construction of irrigation infrastructure covering 246 Ha at TARI Tumbi, TARI Mikocheni (Bagamoyo and Mkuranga), TARI Mlingano, Naliendele, Ukiliguru, Kifyulilo (Ismani) is at 10%;
xiv. Construction of pathology laboratory at TARI Naliendele is at TARI Naliendele is at 60%
xv. Construction of tissue culture laboratory at TARI Maruku is at 15%.
xvi. Construction of 36.4Ha irrigation system at Tanganyika Agriculture
xvii. Corporative (TAC) at TARI Ifakara is at 65%
xviii. Rehabilitation of External works and access road at TARI Kihinga 30%
xix. Construction of Office Building at TARI Hombolo is at 5%
xx. Construction and rehabilitation of Offices and Residential Houses at TARI Tumbi is at 20%
xxi. Construction Tissue Culture Laboratory for TARI Tengeru is at 5%

xxii. Design and Construction of fences at three (3) centers namely TARI Tumbi, TARI Mlingano and TARI Ukiriguru are at 5%
xxiii. Design and Construction of irrigation systems and Infrastructure at TARI
xxiv. Uyole and TARI Ukiriguru, 1000 Ha Construction of Gene Bank at TARI Selian is at 5%.

6.0 STAFF WELFARE AND RECREATION

6.1 Workers Council

The Institute has in place a Workers Council which is a participatory organ constituted by Members of the Management and employees' representatives from both the Head Office and all the Research Centres. The TARI Workers Council meets quarterly as per Workers Council schedule.

A Workers' Council in a government research institute like TARI typically serves as a representative body of employees. Its primary role is to facilitate communication between the workforce and management, promote workers' welfare, and contribute to a collaborative work environment. It acts as a voice for employees on issues affecting their work conditions, rights, and benefits, collaborates with management on policies, workplace changes, and institute developments, helps mediate disputes between workers and management to maintain harmony, organizes programs and initiatives to improve workers' health, safety, and overall welfare and keeps workers informed about organizational developments, policies, and changes. Providing feedback on research priorities that affect staff workload and career development.

6.2 TARI Bonanza Initiative 2024/25

In the fiscal year 2024/25, the Tanzania Agricultural Research Institute (TARI) introduced monthly Bonanza-a celebration event designed to foster staff welfare, boost morale, and strengthen team spirit across all research centers. This is a great step toward improving staff engagement and the overall work environment.

Key Highlights:

- Purpose: To create a fun and inclusive platform for staff to unwind, celebrate achievements, and build stronger interpersonal relationships.
- Activities: The bonanza featured sports competitions, cultural performances, awards and recognition ceremonies, and recreational games.
- Impact: Early feedback from participants shows improved staff motivation, enhanced collaboration among departments, and a positive workplace atmosphere.
- Future Plans: TARI aims to make the Bonanza flagship event, expanding participation and incorporating community engagement activities.

By starting this initiative, TARI demonstrates its commitment to valuing its human resources as a cornerstone for advancing agricultural research and innovation.

Picha ya Pamoja ya baraza dogo la wafanyakazi TARI-Uyole pamoja na Mkurugenzi wa Rasilimali watu kutoka TARI HQ, na wawakilishi wa wafanyakazi (TUGHE na RAAWU) nyanda za juu kusini.

official_taritanzania

TARI

SPORTS Bonanza

TARI MAKAO MAKUU, TARI MAKUTUPORA & TARI HOMBOLO

JUMAMOSI 05 JULAI 2025

KUANZIA SAA 12 ASUBUHI.
VIWANJA VYA CHUO KIKUU CHA MIPANGO DODOMA

MICHEZO NI AFYA NA HUDUMISHA MSHIKAMANO

Njoo tuboreshe afya na kudumisha Mahusiano mahali pa kazi.

Usipange Kukosa Mjulishe na Mwenzako

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Fly Emirates

Picture: Capturing the spirit of teamwork and celebration among TARI staff during the joint TARI-Bonanza

7.0 MAJOR CHALLENGES FACING THE AGRICULTURAL RESEARCH INSTITUTE (TARI)

The Agricultural Research Institute (TARI) faces numerous challenges that contribute to the slow pace in the implementation of its research and development responsibilities within the agricultural sector. These challenges have a significant impact on the institute's efficiency in achieving its intended goals. Some of these challenges include:

Sn	Challenge	Possible solution	Impact
1	Lack of Funding for Local Research and Operational Costs: Agricultural research requires substantial resources, including funding, equipment, and modern facilities. TARI receives a significant portion of its funds from development partners. However, these funds are usually designated for specific research projects and cannot be used for other purposes. Most local research activities focus on providing services to farmers, aiming to deliver improved technologies. As such, they require major investments, including subsidies and deliberate government investment in local research. TARI often faces challenges in securing adequate funding, especially for day-to-day operational expenses. This problem is severe enough that it significantly affects management, monitoring, and overall efficiency	• Increasing Domestic Investment This is a very important area in improving agricultural research in the country, as highlighted in the national priorities. It is crucial to raise awareness and educate various leaders especially those in enabling sectors such as finance (Treasury), procurement, and public service about the importance and sensitivity of TARI. This collective understanding will help us work together to enhance research efforts across the country.	• Government investment in agricultural research aims to strengthen the country's capacity to be self-reliant in the agricultural sector. • This ensures that research is conducted based on national needs, and not solely driven by the interests of international stakeholders. It also allows the government to set research priorities that address the unique challenges facing agriculture in the country. • Government investment in agricultural research is one of the most effective ways to promote economic growth and national security.
		Ensuring that the funds allocated in the respective budget are released in full and on time	Agricultural research requires long-term and sustainable planning to address persistent challenges such as climate change, crop diseases, and resource scarcity. Adequate and timely funding is essential to ensure that critical research continues without disruptions or delays, thereby enhancing effectiveness and impact.

		Increasing Domestic Revenue through Expanded Seed Production and Grant Proposal Writing One strategy to boost internal revenue is by increasing the production and sale of quality seeds. Additionally, continuing to grow the number of research proposals submitted to various development partners and donors can help attract more funding to support research activities	This will help increase contributions toward financial sustainability, as well as scientific, economic, and social self-reliance. It will also facilitate the conduct of effective research, attract experts, and appeal to potential sponsors and donors.
		Securing Strategic Funding: This involves seeking financial support through development projects or aid from international institutions such as the World Bank, FAO, and the European Union (EU).	Strategic funding in agricultural research is crucial as it supports key strategic areas that drive technological advancements. It also helps in building the capacity of experts, promoting competitiveness, and fostering economic growth.
2	Challenges in Accessing and Utilizing Modern Technologies: Many of the technologies that have been developed have yet to reach large parts of the country. Additionally, modern agricultural technologies are evolving rapidly especially now, with the fast-growing use of artificial intelligence. This presents a challenge for TARI, whose goal is to ensure that these technologies reach farmers and benefit the entire agricultural sector	Farmer Education and Training: Establishing various systems especially digital platforms that make it easier for farmers to access information is essential. These systems will help improve farmers' knowledge and skills, enabling them to adopt modern agricultural practices and technologies more effectively.	Technology is evolving rapidly, and therefore, it is important to build the capacity of stakeholders to adapt to these changes early on, so they can make informed decisions. This is a critical aspect that requires timely support and empowerment.
		Advancing Technological Infrastructure: Increasing investment in technological infrastructure such as expanding access to agricultural internet services and digital platforms is essential. These systems will enable farmers to access modern knowledge, tools, and technologies, thereby improving productivity and decision-making in the agricultural sector	This is crucial in responding to the rapid pace of technological change. Strengthening technological infrastructure ensures that farmers and other stakeholders are better equipped to adapt, innovate, and remain competitive in a constantly evolving agricultural landscape

		Collaboration with the Private Sector: Establish partnerships with private sector companies that produce agricultural technologies and equipment to facilitate the distribution and adoption of these technologies at various levels.	The private sector often has the capability to provide modern technologies and highly efficient agricultural equipment. It can also deliver these solutions in a shorter time frame with greater precision, often at a lower cost.
3	Shortage of Expertise and Skilled Researchers The agricultural sector, especially research, requires specialists in various fields such as agricultural engineering, seed research, and the development of agricultural technologies. The lack of professionals with modern skills in agricultural research is a major challenge. Currently, TARI has a large number of young staff (over 67%) who need capacity building to become experts, particularly in research-related areas	Training and Capacity Building: TARI has begun investing in professional training for its staff, including improving the skills of research experts and enabling them to use new technologies effectively.	Accelerating Youth Learning and Expertise Development Enhance efforts to help young people quickly acquire skills and become experts capable of addressing technological changes and climate change challenges effectively
		Collaboration with Universities: Establish partnerships with universities and educational institutions to promote joint research and enhance skills development within the agricultural sector	The ability to exchange experiences across different teams reduces costs, increases productivity, and enhances expertise. Sharing knowledge and best practices fosters collaboration and innovation, making agricultural research and development more effective.
		Attracting Experts: Increase incentives for professionals by improving their benefits and providing better working conditions to attract skilled experts both locally and from abroad.	Improving professionals' benefits, providing better working environments, and promoting career development are key steps to attract experts both locally and internationally to address the rapid changes in technology. By implementing these strategies, institutions and the country can draw top talent who will make significant contributions to technological advancement and economic sectors.
4	Lack of Adequate Research Infrastructure This includes shortages in housing, transportation, and necessary tools. The lack of such infrastructure slows down the pace, efficiency, and motivation of	Ensuring Timely Budget Releases: The availability of sufficient funds enables researchers to acquire necessary equipment, conduct studies, and collaborate with other experts effectively. Timely disbursement of	Addressing the challenges of equipment shortages, poor housing, and low motivation among researchers is crucial for the advancement of the research sector. By investing in quality equipment, better working environments, adequate funding, and personal incentives, we can attract and retain top researchers,

	researchers in developing and disseminating various technologies.	budgets is essential for smooth and uninterrupted research activities.	ultimately driving sustainable progress in research and innovation sectors.
		Increasing efforts to raise awareness about the importance of research within the government and across various sectors is essential. This advocacy can lead to greater financial and resource support from the government, different stakeholders, and the private sector.	These strategies require close collaboration between the government, private sector, and international institutions to ensure success in addressing these challenges
		Awards and Honors for Researchers framework, including various research awards and honorary awards,	To increase Morale
5	Climate Change Challenges: Climate change, such as droughts, unpredictable rainfall, and floods, poses major challenges that affect the research conducted by TARI, as farmers require sustainable solutions to address these challenges.	To ensure that TARI is equipped with adequate infrastructure to conduct sustainable research in addressing climate change.	Good research infrastructure drives the development of new technologies, ensuring that research delivers accurate and timely results.
6	Numerous land conflicts	TARI should be provided with funding to establish boundaries within its areas to prevent encroachment and eliminate conflicts between research activities and economic activities carried out by local residents or trespassers on TARI land.	Areas to obtain legal titles and be legally protected

8.0 CONCLUSION

The 2024/25 year has marked a significant period of advancement for the Tanzania Agricultural Research Institute (TARI), especially in the development and transfer of technologies and innovations. Also, the institute has made notable progress in its role of informing policies. These achievements underscore TARI's growing influence in shaping evidence-based agricultural practices and informing national agricultural policies. By strengthening collaboration with stakeholders and committing to inclusive research, TARI continues to deliver impactful solutions tailored to the needs of Tanzanian farmers and the broader agricultural sector.

Looking ahead, TARI is optimistic about its trajectory towards further advancements in technologies, innovations, and outreach. This confidence is rooted in ongoing investments in research infrastructure, funding mechanisms, and institutional capacity. Notably, the upcoming operationalization of the Central Agriculture Reference Laboratory with 15 specialized laboratories. This expansion will significantly enhance TARI's diagnostic and analytical capabilities, providing laboratory services to the entire country and beyond. Other strategic investments nearing completion, such as the Bioscience Centre, modern irrigation systems for research farms, and the national Gene Bank, are set to elevate TARI's competitiveness and responsiveness to emerging agricultural challenges. Together, these developments reaffirm TARI's commitment to driving transformative change across Tanzania's agricultural sector.

Happy faces, brilliant minds" Smiles fueled by discovery in Transforming Tanzania Agriculture
TARI – Board Member Mr. Sixtus Mapunda Appreciating TARI Technologies

Bottom Line:
Since Agriculture Means Money!!!

RESEARCH HAS TO BE A PRIORITY

- Agriculture **remains** to be a **crucial** industry in the world esp in Africa.
- Tanzania is focusing to be the **largest producer**, and trying to be exporter of agricultural products in Africa
- With the growing population and food demand, there will be definitely more demand for more farmers in the future to generate food
  - **THEREFORE, MORE DEMAND FOR RESEARCH .**

Transforming ***Agriculture***

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