**TANZANIA AGRICULTURAL RESEARCH INSTITUTE**

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**Quarterly Report on Research, Management and Coordination Progress**

**For the period of 1st January to 31th March 2022**

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**31th March 2022**

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# **Abbreviations and Acronyms**

AVRDC African vegetable research and development centre

BMGF Bill & Melinda Gates Foundation

BBSRC Biotechnology and biological sciences research council

CIMMTY International Maize and Wheat Improvement Centre

COSTECH Commission for science and technology

EAT East African Tall

EAV-IPMIL East African vegetable integrated pest management initiative laboratory

FAO Food Agriculture organization

NAB National Australia Bank

ICIPE International centre for insect physiology and ecology

IPM Integrated pest management

NaCRRI National crop research resources Institute

NCDP National coconut development program

NRI Natural Resource Institute

NCSU North Carolina state University

SPLCV Sweet Potato Leaf Curly Virus

TARI-MKN Tanzania agricultural Research Institute Mikocheni

TOSCI Tanzania official seed certification agency

USAID United State of Agency for International Development

# **1. Introduction**

Tanzania Agricultural Research Institute-Mikocheni (TARI-MKN) is one of the 17 research centres under TARI. It was established in March 1996 as a measure to sustain and institutionalize coconut research and development activities conducted by the then National Coconut Development Programme (NCDP). The NCDP was established by the Government of the United Republic of Tanzania in the fiscal year 1979/80 with the aim to promote coconut production and utilization in the country. The program covered the whole coastal belt of Tanzania and the Island of Zanzibar.

TARI-Mikocheni mandate is in two-folds, namely 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.

The centre’s head office is in Dar es, salaam at Mikocheni B, Plot 22 along the Coca cola Road. It has two sub-stations, namely Chambezi and Mkuranga, where most of the research activities are conducted. The former is located about 55 km north of Dar es salaam near Bagamoyo town at latitude S6.520 and longitude E 38.910, while Mkuranga sub-station is located at S 7.120 and longitude E 39.200, about 50 km south of Dar es salaam.

There are two departments: 1) Research and Innovation and, 2) Technology Transfer and Partnership. Under these departments there are six subprograms: crop research, natural resources, post-harvest management, socioeconomics and marketing, technology dissemination, commercialization and partnership, and knowledge management and communication programs. The institute is within the eastern zone together with TARI Kibaha and TARI Mlingano.

The Mikocheni centre basically has two research programs, which are its mandates: coconut and biotechnology. The coconut program is the main with 4 research units which include: agronomy, disease control, pest control, social economy, post-harvest and technology transfer, the biotechnology program accommodate 3 units: tissue culture, molecular diagnostics and genetic engineering laboratories. All the research activities in each unit in the coconut program are designed to address all agricultural challenges facing the coconut agroecological systems. whereas in biotechnology as a tool cuts across all crops and supports other research mandates.

Research at TARI-Mikocheni has mainly depended on government competitive grants through Commission for science and technology (Costech) and external support from different international funding organisations mainly the “Bill & Melinda Gates Foundation” (BMGF), Bio innovate Africa II, Biotechnology and Biological sciences research council (BBSRC), Food and agriculture organization (FAO) and International Centre for Insect Physiology and Entomology (*Icipe*). In this reporting quarter (1 st January to 31st March 2022), the institute operated seven (7) research projects with financial support of **Tshs.** **220,882,545.40** of which, **Tshs. 192,039,499.40** 46.3% is from the international donor support while (40.5%) is from Tanzania government through Costech.

Thus, in this quarter, using the available support, the institute recorded significant achievements in research activities by: evaluating a seed treatment for cassava cuttings technology using pesticides, conducted farmers field day for showcasing IPM technologies for controlling of *Fusarium wilt* in eggplants cultivation, and a surveys on arthropods pollinators of cucurbit plants, launching of new project on pineapple, and provision of laboratory services to Seed sector through GMO testing of all imported seeds and DNA extraction service from vegetables samples for World vegetable Centre.

In line with technology development, the institute also continued with the production of quality seeds for coconut, sisal, and banana, as well as dissemination of IPM technologies for vegetables on effective control measures for *Fusarium wilt* on egg plants and banana bunch top on banana and whitefly infestations

# **2.0 Research Programs/Activities conducted in this quarter**

## 2.1 Coconut research program

The centre continued to maintain its coconut germplasm, seed nursery and weeding in coconut orchards. Currently, the coconut nursery is maintaining and selling its 10,000 seedlings raised last year for planting in this long rains season is ongoing.

The planned activities in this reporting period were:

* Weeding of coconut fields and seed farm
* Maintenance of coconut nursery and selling of seedlings
* Continue writing proposal for soliciting research funds

**Achievement**

* The section had plan to weed and replant new coconut seedlings into its existing coconut fields in both Chambezi and Mkuranga substation. However, the shortage of development funds has delayed the commencement of this planned activities. Partial cleaning will be initiated using revenue funds collected.
* The two substations are currently maintaining a total of 10,000 coconut seedlings ready for selling to farmers. As to this reporting period, a total of 7,418 coconut seeds, 2,635 seedlings and dead coconut logs were sold and generated a total of Tshs. 9,688,810 (**Table 1** )

**Table 1: Quantity of Seed/seedling and coconut by product sold between 1st January to 31st March 2022**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Product** | **Categories** | **Quantity sold** | **Price per unit** | **Total amount realised (TZS)** |
| Coconut | Seeds | 7,418 | 370.00 | 3,041,310.00 |
| Coconut | Seedlings | 2635 | 2,500.00 | 6,587,500.00 |
| Dead coconut | Logs | 3 | 20,000.00 | 60,000.00 |
| **Grand total** |  |  |  | **9,688,810** |

* The program continued to interacts with different partners in soliciting for funds. Two proposals were reviewed, one targeting the European Union and the other development funds. The second, a small proposal is requesting funds to update the coconut data base with status of lethal diseases in the southern zone, production data, and prospecting mission for germplasm collection to enrich the national germplasm at Chambezi substation.

### **Disease control unit**

* + 1. **Pest control unit**

The unit continued to implement a project on ‘Combating Arthropod Pests for Better Health, Food and Climate Resilience (CAP) in Tanzania’. The objective is to generate knowledge on common arthropod pests affecting avocado, tomato and cucurbit to enable growers plan crop calendar and their measures.

In this reporting period they planned to achieve the following activities:

1. to conduct an Arthropods surveys in Tanga and Kilimanjaro regions in collaboration with *ICIPE* scientists from Nairobi-Kenya. The objective of the surveys was to identify and document important insect pests, pollinators and natural enemies that are found in tomato, avocado and cucurbits crops.
2. to introduce Integrated Pest Management (IPM) strategies as a sustainable practice for improving produce quantity and quality of cucurbits
3. to continue with project proposal writing for soliciting research funds on entomology

**Achievements**

* A total of 50 cucurbits farmers in seven villages in Lushoto district were visited during surveys (**Table 2**).
* Six (6) extension agents were also involved during the sampling work so as to share hand on experience on insect pest, pollinators and natural enemies’ identification, and attended training on IPM strategies.

**Table 2A: Village visited in Lushoto district during Arthropods surveys on Feb. 2022**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No.** | **Description** | **Area (Acre)** | **Crop stage** | **Stage of growth** |
| 1 | Buheloi | 0.5 | Cucumber | Flowering & fruiting |
| 2 | Chekelei | 0.5 | Cucumber & watermelon | Flowering |
| 3 | Kongei | 0.25 | Cucumber | flowering/Fruiting |
| 4 | Mshizii | 0.5 | tomato | Flowering |
| 5 | Nyasa | 0.25 | Butternuts squash | flowering |
| 6 | Mazinde Ngua | 1 | Beekeeping | Mango/Avocado |
| 7 | Madumu | 0.5 | Watermelon | Harvesting |

* A total of 16 insect pollinators were observed in various cucurbit vegetables grown by farmers. They were documented and collected for further processing and molecular characterization.

**Table 2B: List of insect pollinators found during arthropod survey in Lushoto district, Tanga**

|  |  |  |
| --- | --- | --- |
| **S/No.** | **Common name** | **Foraging** |
| 1 | Stripped beetle | Feed on stem and leaves |
| 2 | Squash bug | Feed on leaves and stems ( plant sap feeder) |
| 3 | Aphids | Feed on young leaves and flowers |
| 4 | *Bactrocera cucurbits* | Oviposit egg in young and mature fruits |
| 5 | Whiteflies | Feed on leaves |
| 6 | Grasshopper | Feed on leaves |
| 7 | Sting bee | Pollinate mature flowers |
| 8 | Ants | Pollinate mature flowers |
| 9 | Spiders | Forage on leaves and flowers |
| 10 | Hover fly | Forage on leaves and flowers |
| 11 | House fly | Forage on leaves and flowers |
| 12 | Wasp | Forage on flowers |
| 13 | Butterflies | Forage on flowers |
| 14 | Coccinellids | Forage on leaves and buds |
| 15 | Dragon flies | Forage on leaves and flowers |
| 16 | Snails | Forage on leaves |

* A total of 50 farmers in the surveyed district together with 6 extension agents were trained on IPM strategies for cucurbits production

### **Agronomy Unit**

### The unit has been running 2 projects on horticultural crop since 2018 in collaboration with AVRDC. These project are now operating in Nocost extension scheduled to end on May 2022

#### **Amazing Amaranths and Eggplant projects**

In this reporting unit planned to achieve the following activities:

* To establish a final round AMF X Trichoderma experiment at 4 sites at Chambezi, to evaluate the effectiveness of biological agents and crop rotation on management of *Fusarium* wilt in African eggplant.
* To conduct Farmers field day at Chambezi to show case the biological control technologies and project activities
* Scaling up of Amaranthus technologies to farmers in Coast and Dar es Salaam regions

**Achievements**

* Four trials were established at Chambezi substation for eggplants to evaluate the biological control of *Fusarium.* The results showed the difference between the treated seeds and untreated seeds on their reaction against *Fusarium wilt*.
* A total of 123 farmers from Bagamoyo district were facilitated to attend the FFD conducted on 24/3/2022. The participants composed of 123 farmers, 29 extension staff and 9 researchers. The subject matter of the FFD is given on tablexx
* Main activity was distribution of improved amaranth seed (Akeri, Poli, Madiira 1, Madiira 2 and Nguruma) to farmers in Kigamboni, Kinondoni, Kibaha, Ilala, Temeke, Bagamoyo and Ubungo. The number of farmers who received seed from TARI Mikocheni from December 2021 to March 2022 was as indicated in the table

**Post-harvest technologies unit (PHT)**

### **Table 1: Production of coconut virgin oil self-help project for the period ending 31th March 2021**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Total nuts used** | **Production costs (Tshs.)** | **Virgin oil Production (Lts.)** | **Total gross sales (Tshs.)** | **Net Profit (Tshs.)** |
| Nil |  |  |  |  |

## 2.1.6 Socio-Economic and Marketing Research Unit

The unit in this reporting period planned to achieve a number of activities as follwos:

### Preparation of MTEF

* Coordinating Centre' sales through FABU
* Data analysis of whitefly project
* Preparation of annual comprehensive income statement of SASSA Project backstop

**Achievement**

* The MTEF budget for 2022/23 was prepared adhering to MUSE format
* Sales of the centre's products through Farm Business Unit (FABU) were well coordinated whereby total collected amount was 9,906,910 shillings
* The analysis of data of whitefly project for the technological cost and revenues for controlling of whiteflies was effectively done

1. **Marketing and value chain studies**

In this reporting period the unit carried out the following activities:

1. Preparation of African cassava whitefly project checklist for conducting cost benefit analysis and administering checklists to key informants in the two districts Muheza and Chalinze
2. Data collection on *Mandis Plus* filed trial from contact farmers in miono village Bagamoyo for computation of Cost benefit analysis of the promoted technology of cassava cutting dressing with limited chemical and frequencies for the control of whitefly infestation

## 2.1. 7 Biotechnology program

The program has been running 2 biotech related projects and provision of biotech laboratory services to stakeholders’ peer institutions. In this quarter the implemented activities include:

### **Molecular entomology**

This is the regional project titled “African Cassava Whitefly: Outbreak Causes and Sustainable Solutions with funding from BMGF through Natural Resource Institute of (NRI)-United Kingdom from 2018 to 2022.

In this project TARI has implementing 4 of the 5 aims:

1. The team has continued to collect data on Whitefly resistant cassava variety technology evaluated in 16 demo field trials established in 7 districts
2. Collect seeds from the cassava crossing block between African and Latin America cassava genotypes at Ilonga, Morogoro
3. Replanting of the 2nd season trial at Chambezi substation
4. Conducted its virtual 3rd project annual meeting at TARI Mikocheni to evaluate progress of year three activities

**2.1.7.2 East Africa IPM Innovation Lab: Research and Technology Transfer for Vegetable Crops Project**

TARI-MKN has also been implementing a USAID-funded project titled “East Africa IPM Innovation Lab: Research and Technology Transfer for Vegetable Crops since 2018 to date. The project is implemented in collaboration with regional and in country partners for 4 years from 2018 until 2020. In this project TARI has been implementing objective 2 and 3 which include:

1. Preparation of farmer field guide for recognition of tomato disease and control in swahili version “Muongozo wa Mkulima kuhusu Magonjwa yashambuliayo Nyanya na Udhibiti Wake”
2. Preparation of manuscripts for reporting project data
3. Compilation of the project conclusion reports

Other activities of the program include:

1. Application of tissue culture techniques for mass propagation of different crop such as banana, sweet potato, pineapple, and cassava
2. Provision of diagnostic services to diffent stakeholders

**2.1.5.1 Mass propagation of Planting materials**

The unit had planned to continue multiply clean mother stocks for sisal for TARI Mlingano for further multiplication. To date the unit received xxx bulbils from TARI Mlingano and a total of xxx clean culture have been successful imitated and xxx acclimatised on soil read for secondary nursery establishment.

Similarly, four newly released banana cultivars are being multiplied to rais a total to provide technical backstopping to TARI Mlingano TC laboratory.

**2.1.5.2 Provision of diagnostic services**

In this reporting period the biotech lab planned to process 500 samples for GMO detection service. As this reporting period a total of three hundred and twenty-seven (327) various seed samples from TOSCI-Northern zone (Arusha), and TOSCI-Southern Highland-(Njombe and Mtwara) were received and processed results for decision making.

**2.1.5.3 Screening for customers samples**

In the reporting period a farmer from Kimara submitted his banana sample to biotech lab for the diagnosis of the symptoms appears on his banana gardens. The diagnosis of the 5 samples conclusively detected infection of banana bunch top disease cause by BBTV viruses. The farmer was advised to destroy all the plants and burn.

Similarly, the World vegetable center based in Tengeru Arusha also procured a DNA extraction service from our biotech laboratory. A total of 350 leaf samples from melon and cucurbits, their DNA were extraction *(See table xx for revenue collected*).

# **Technology Dissemination and Partnership unit**

This unit serves as a link between on-station research, extension services and the farmer. It functions as subject matter specialist in disseminating research results and technical packages to the farmers through: Farmer’s Field Days Demonstration and research verification plots on farmers’ fields.

In this quarter the unit successfully promoted and disseminated developed technologies: A total of 3 packaged technologies (**Table 3**) were disseminated through 2 Tv programs and published in 2 local newspapers.

* *Nazi bora zitapunguza uhaba wa mafuta ya kula*
* Eradicate cassava diseases (Cassava whitefly)
* Conducting training on the safe handling and use of agro inputs with emphasis on Integrated pest management practices on vegetables

### **Organizing Training and Workshops to farmers**

Through projects a farmer training was conducted which enabled dissemination of new technologies as in (**Table 3A)**. Another training was on agro dealers (**Ref. section 2.1.7.2 & Table 3B**)

**Table 3A: Technology Dissemination in Coast and Dar es Salaam Region on march 2022**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Technology disseminated** | **Total No. Planned** | **Total No. Achieved** | | **Location** | **Elaborations** |
| **Male** | **Female** |
| Distribution of 5 improved seeds varieties for Amaranthus (Akeri, Poli, Madiira 1, Madiira 2 and Nguruma) | 3500 | 1,182 | 1,089 | Coast and Dar es Salaam district | Kigamboni, Kinondoni, Kibaha, Ilala, Temeke, Bagamoyo and Ubungo. |
| **TOTAL** | | **2,271** | |  |  |

### **Table 3B: Total number of training conducted to extension agents by March 2021**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Centre** | **No. Farmers expected to be trained** | **No.**  **farmers trained** | | **Location** | **Stakeholder origin** | **Topic/**  **technology** |
| **Male** | **Female** |
| TARI Mikocheni | 300 | 96 | 65 | Chambezi sub station | Bagamoyo District | * Biological control technologies for *Fusarium wilt* in eggplant production |
| **Total** | | **219** | |  |  |  |

NIl

### **Identifying gaps between Research, Extension and other agricultural stakeholders**

### **Collecting news (Radio / TV programmes aired)**

### **Table 4: Broadcasted program on different media by March 2020**

|  |  |  |  |
| --- | --- | --- | --- |
| **Mass media** | **Number** | **Subject/Title** | **Frequency** |
| TBC1-TV | 1 | Good way of using Agro-inputs in plants e.g. tomato | 1 |
| TBC1-TV | 1 | Coconut production | 2 |
| TBC1-TV | 1 | Nazi bora zitapunguza uhaba wa mafuta ya kula | 1 |

### **Participating in Agricultural related shows**

No participation was conducted in this reporting period

### **Partnership established**

In the Pineapple project, a new partnership has been initiated between TARI-Mikocheni and Crop Bioscience Solution (CBS) Arusha in implementing the project. The draft MOU is being reviewed by TARI-legal officer prior to signing.

### **Visitors**

### In this quarter, the institute received a total of 31 (20 male and 11 female) visitors who visited to seek agricultural advises. On 21st March 2022 the institute was also visited by the Hon. Ambassador Amina Salum from Zanzibar for the purpose of strategizing the coconut proposal to reflect industrialization.

### **Number of projects documented**

In this reporting period a total of 8 projects have been going on. Seven are donor-funded and 1 are government funded projects (**Table 5**)

### **Table 5: Total number of projects executed during 1st Jan.-31st March. 2021**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **SN** | **Project title** | **Year started** | **Year ending** | **Source of funds** |
| 1 | Tissue culture-based massive production and unrestricted access of high-quality pineapple planting material | 2022 | 2022 | Govt./Costech |
| 2 | Marker assisted selection of useful cassava germplasm adapted to biotic and abiotic stresses caused by global climate change (FAO) | 2016 |  | FAO |
| 3 | African Cassava Whitefly: Outbreak Causes and Sustainable Solution | 2018 | 2022 | BMGF/NRI |
| 4 | Amazing Amaranth: Hardy and nutritious amaranth lines and food practices to improve nutrition in EA | 2018 | 2022 | GIZ/World Vegetable Centre |
| 5 | Improving production efficiency of African Eggplant for smallholder farmers in SSA | 2018 | 2022 | BBSRC/NIAB |
| 6 | Integrated pest management of Avocado and cucumber pest in East Africa | 2018 | 2022 | ICIPE |
| 7 | Vegetable Crops IPM for East Africa | 2016 |  | USAID |

### **Table 6: Undocumented Knowledge, communication and Documentation**

|  |  |  |  |
| --- | --- | --- | --- |
| **Media** | **Status** | **Users** | **Remarks** |
| Library | Working | Scientist | Small outdated, need librarian |
| TEEAL | Working | Offline access | Internet service is not available |
| AGORA | Journals Available | Scientists | Easily available |
| Video conferencing facilities | Working | Scientist | Internet service is not available |

# **Newsletters and Publication**

In this reporting period, no publication have been published

# **Research technical Resources**

### **Table 7. Total number and category of research technical resource**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Profession** | **PhD** | | **MSc** | | **BSc** | |
|  | **Male** | **Female** | **Male** | **Female** | **Male** | **Female** |
| Agronomy | - | 1 | - | 1 | - | - |
| Plant breeding | - | - | 1 | - | - |  |
| Entomology | 0 | - | 1 | - | - | - |
| Biotechnology | - | - | 1 | - | - | 2 |
| Plant Pathology/Virology | 1 | 1 | 1 | 5 | 1 | - |
| Agricultural Engineering | - | - | 1 | - | 1 | - |
| Food Science and Nutrition | 0 | - | - | - | - | - |
| Socio/Agricultural Economics | - | - | 2 | 1 | - | - |
| Agricultural Extension and Education | - | - | - | 3 | - | - |
| **Total** | **2** | **2** | **7** | **10** | **2** | **2** |

## Human resource capacity building

### **Long Term-Training**

Three (3) students supported by different projects are continuing with their studies in various universities (**Table 8**). Three of them 1 of them is expected to defend her PhD on 2022.

### **Table 8: Total number of Researchers in long term training and their status by 31th March 2021**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **No** | **Name** | **Sex** | **Program** | **University** | **Start Date** | **End Date** | **Sponsor** | **Remarks** |
| 1 | Vailet Mwaijande | Fe | PhD | Wagengen, Holland | 2015 | 2019 | CIMMTY-TAMASA/BMGF | Graduating April 2022 |
| 2 | Evangelista Chiunga | Fe | PhD | NCSU-USA | 2017 | 2020 | BMGF/NCSU | Writing thesis in TZ |
| 3 | Emmanuel Mrema | Fe | PhD | Accra-Ghana | 2019 | 2022 | BMGF/NextGen. | Doing research work in TZ |
|  | **Total** | **3** |  |  |  |  |  |  |

## Research Infrastructure

In this reporting period, the laboratory furniture worth USD 51,000 are still held by the custom dept. awaiting tax and duties clearance. Efforts have been stepped up by the TARI administration to seek exemption from the responsible Ministry to enable clearance. Similarly, the vital machine Real time PCR for analysis is down thus, requires repair and software update.

* 1. **Funding**

In this reporting period TARI-MKN received funds from two main sources: government as operation charges (OC) amounting to **Tshs. xxx** and from donors amounting **Tshs. xxx** (**Table 9**). The available funds were utilized primarily on research activities and normal operations.

### **Table 9. Total funds received (Tshs.), their sources and expenditure for the period ending 31th March 2022**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Type** | **OC** | **\*Donor** | **Govt./Res.** | **Sales** | **Com. Levies** |
| **Jan-Mar** | 16,900,000 | 102.439,499.40 | 89,600,000.00 | 11,943,046 |  |

# ***\*IUSD-2300Tshs.***

# **Seed Produced (in Kgs) including cuttings**

Of the **Tshs. xx** generated in this reporting period from the sold products, Tshs. 605,600.00(**Table 10**) were from selling of high-quality coconut seedlings

### **Table 10. Total amount of seed/seedlings produced and sold by 31th March 2022**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Product** | **Categories** | **Quantity sold** | **Price per unit** | **Total amount realised (TZS)** |
| Coconut | Seeds | 7,418 | 370 | 3,041,310 |
| Coconut | Seedlings | 2635 | 2,500 | 6,587,500 |
| **Grand total** |  |  |  | **9,688,810** |

# **Monitoring and Evaluation**

In this reporting period, no monitoring and evaluation exercise was conducted due to COVID 19 pandemic, there was restricted movement.

# **Annexes (2021)**

**Annex 1a: TARI-Mikocheni Researchers Status by Highest Qualifications**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Zones** | **Station** | **Highest qualification** | | | **Total** |
| **BSc** | **MSc** | **PhD** |  |
| Eastern | TARI-Mikocheni | 9 | 16 | 5 | **30** |

**Annex 1b: TARI Field Officers and Support Staff**

|  |  |  |
| --- | --- | --- |
| **Zones** | **Field officers** | **Support staffs** |
| **TARI-Mikocheni** | 10 | 12 |

**Annex 2: Recruited Researchers**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  | | --- | --- | --- | --- | | **SN** |  |  |  | | **Name** | |  | | --- | | **Gender** | | **Designation** | **Station** |
|  | Nil |  |  |  |

**Annex 3a: Researchers Employed on Contracts and those retired**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  | | --- | --- | --- | --- | | **SN** |  |  |  | | **Name** | |  | | --- | | **Gender** | | |  |  |  | | --- | --- | --- | | **Highest Degree** |  |  | | **Discipline** | **Status** | **Station/Project** |
|  | NIL |  |  |  |  |  |

## Annex 3b: List of Researchers on Leave without Pay by Station

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  | | --- | --- | | **S/N** |  | | |  | | --- | | **Name** | | **Gender** | |  |  | | --- | --- | | **Higher Degree** |  | | |  |  | | --- | --- | | **Discipline** |  | | **Station** | **Current Affiliation** |
|  | Nil | **-** | **-** | **-** | **-** | **-** |

## Annex 4a: Researchers on Long-Term Training for the period by March 2022

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SN** | **Name** | **Sex** | **Univ.** | **Station** | **Degree/ Discipline** | **Year of Study** | **Sponsor** | **Amount of money** |
| 1 | Ms. Vailet Mwaijande | Fe | Wagengen-Holland | TARI-MKN | PhD | 2015 | CIMMTY/BMGF |  |
| 2 | Mr. Emmanuel Mrema | Ma | Accra-Ghana | TARI-MKN | PhD | 2018 | NextGen |  |
| 5 | Ms. Evangelista Chiunga | Fe | JKUAT-Kenya | TARI-MKN | PhD | 2018 | BMGF/NCSU |  |
| 6 | Nsajigwa Mwakyusa | Ma | MAK-Uganda | TARI-KBH | MSc | 2015 | ACWP/BMGF |  |
| 7 | Navin Tarimo | Fe | MAK-Uganda | Private | MSc | 2015 | ACWP/BMGF |  |

## Annex 4b: Support Staff on Long-term Training for the period by March . 2022

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  | | --- | --- | --- | | **S/N** |  |  | | |  | | --- | | **Name** | | |  |  | | --- | --- | | **Sex** |  | | **Research Station** | **Degree and Discipline** | **Sponsor** | **Amount of money** | **Year of Study** |
| 1. | NIL | - | - | - | - | - | - |

## Annex 5: Short-term Training for Staff

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  | | --- | --- | --- | | **S/N** |  |  | | **Course Title** | **Staff Category** | |  |  | | --- | --- | | **Number of Participants** |  | | **Duration** | **Year of Study** | **Sponsor** |
|  | NIL | - | - | - | - | - |