The Project for Supporting Rice Industry Development in Tanzania (TANRICE2)

Final Report

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Japan International Cooperation Agency (JICA)

UNITED REPUBLIC OF TANZANIA MINISTRY OF AGRICULTURE

JAPAN INTERNATIONAL COOPERATION AGENCY

FINAL REPORT

OF

THE PROJECT FOR SUPPORTING RICE INDUSTRY DEVELOPMENT IN TANZANIA

(TANRICE2: 16 November, 2012 – 15 December, 2019)

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Table of Contents

LIST OF ABBREVIATIONS/ACRONYMS

AM	Agricultural Machinery
ASDP	Agricultural Sector Development Programme
BRN	Big Result Now
CAMARTEC	Centre for Agricultural Mechanization and Rural Technology
DADP	District Agricultural Development Plans
DAICO	District Agriculture, Irrigation and Cooperatives Officer
DED	District Executive Director
DSMS	District Subject Matter Specialist
EFTA	Equity for Tanzania
E&M	Extension and Monitoring
GTG	Gender Task Group
IO	Irrigators' Organization
IS	Irrigation Scheme
ISM	Irrigation Scheme Management
JCC	Joint Coordinating Committee
JICA	Japan International Cooperation Agency
KATC	Kilimanjaro Agricultural Training Centre
KATI	Kizimbani Agricultural Training Institute
MAFC	Ministry Agriculture, Food Security and Cooperatives
MANR	Ministry of Agriculture, Natural Resources
MANRLF	Ministry of Agriculture, Natural Resources, Livestock and Fisheries
MATI	Ministry of Agriculture Training Institute
MoA	Ministry of Agriculture
MoU	Memorandum of Understanding
MST	Modified Standard Training
M&P	Monitoring & Planning
NERICA	New Rice for Africa
OF	Other Farmer
O&M	Operation and Maintenance
OVI	Objectively Verifiable Indicator
PDM	Project Design Matrix
PHRD	Policy and Human Resource Development
PHT	Post-Harvest Technology
PRA	Participatory Rural Appraisal
RA	Rice Agronomy
RAC	Research Advisory Committee
RYMV	Rice Yellow Mottle Virus
SACCOS	Saving And Credit Cooperative Society
SC	Steering Committee

SE	Short-term Expert
SMT	Subject Matter Training
ST	Standard Training
TANRICE	Technical Cooperation in Supporting Service Delivery Systems of Irrigated Agriculture"
TANRICE2	Project for Supporting Rice Industry Development in Tanzania
TG	Task Group
TOT	Training of Trainers
VAEO	Village Agricultural Extension Officer
WAEO	Ward Agricultural Extension Officer
ZIE	Zonal Irrigation Engineer

1. Summary

1-1 Introduction

Since 1974 several technical cooperation projects have been implemented by Japan and Tanzania in the agricultural sector particularly on irrigated rice production. The Japan-Tanzania technical cooperation started with the development of Kilimanjaro Agricultural Training Centre (KATC) and training packages for dissemination of technologies for increasing irrigated rice production. The Technical Cooperation in Supporting Services Delivery Systems of Irrigated Agriculture (TANRICE) was implemented from 2007 to 2012. It contributed to rice productivity improvement in 44 irrigation schemes where 5,255 small scale rice farmers were trained.

The trainings benefited extension officers, irrigation scheme managers, village executive officers and scheme leaders. Technologies disseminated to farmers included use of improved rice varieties, rice seed selection, bund making, levelling, transplanting young seedlings in straight rows, water management, weeding and fertilizer application. As a result, rice production increased in schemes where farmers were trained. TANRICE2 commenced on 16 November, 2012 and will last until 15 December, 2019.

TANRICE2 has main focus on the following activities:
- Capacity development on rice value chains for Ministry of Agriculture (MoA) in Tanzania Mainland and Ministry of Agriculture, Natural Resources, Livestock and Fisheries (MANRLF) in Zanzibar;
- Reinforcement of networks among the rice industry related organizations and improvement of training packages; and
- Developing suitable cultivation techniques for rainfed ecosystems.

TANRICE2 has supported the achievement of National Rice Development Strategy (NRDS) objectives in the areas of:
- Capacity for technology development, training and dissemination systems;
- Improving seed systems;
- Skills on use and maintenance of agricultural machinery and equipment;
- Improving post–harvest technologies; and
- Marketing.

Training activities implemented by the Project include:
- Standard Training (ST) and Modified Standard Training (MST) on irrigated rice farming. MST was developed with the aim of reducing training cost without negatively affecting the quality of training;
- Rainfed upland (NERICA) and rainfed lowland rice cultivation; and
- Subject Matter Training (SMT) courses on Irrigation Scheme Management (ISM), Gender, Rice Marketing, Post-Harvest Technology (PHT) and Agricultural Machinery (AM).

Mid-term Review for TANRICE2 was conducted from 5 to 24 January 2016. The review team proposed changes on the Objectively Verifiable Indicators (OVIs) for the Overall Goal and Project Purpose of Project Design Matrix (PDM) version 1. The team proposed "2.5 million tons per year as a target value of Tanzanian rice production in 2021". For the Project Purpose the team recommended "straight row transplanting or planting method is adopted by 15,000 farmers in priority rice production areas by 2018". The team also recommended "other important technologies contributing to the improvement of rice farming are adopted by 2,400 farmers".

This report will give overall achievements made as per revised PDM (Annex 1) for the period from November 2012 to December 2019. Sources of funding for implementation of the Project for the period, challenges encountered and efforts to manage them will be highlighted.

1-2 Output 1: Training approach for disseminating the appropriate irrigated rice cultivation technologies (Standard Training) is strengthened nationwide.

Overall achievements of training on irrigated rice cultivation technologies

Identification of irrigation schemes potential for training was conducted by implementing training institutions of TANRICE2 from June 2013 to March 2015. Total number of schemes proposed by 88 districts was 256; Standard Training (ST) and Modified Standard Training (MST) were conducted in 90 irrigation schemes by the reporting time as indicated in Table 1-1 one irrigation scheme more than 80 targeted in the PDM which was 80.

Table 1-1. Number of trained irrigation schemes in 2013-2019

Institute	Standard Training				Modified Standard Training						Total
	2013 /14	2014 /15	2015 /16	2016 /17	2013 /14	2014 /15	2015 /16	2016 /17	2017 /18	2018 /19	
KATC, Moshi	1	1	1	1	1	2	2	2	2	1	14
MATI-Ukiriguru	1	(1)	1	1	0	0	0	1	3	1	8(1)
MATI-Ilonga	1	1	1	1	1	2(1)	2	2	2	2	15 (1)
MATI-Igurusi	1	1	1	1	1	2	2	2	3	1	15
MATI-Tumbi	1	1	1	1	0	0	2	2	3	1	13
MATI-Mtwara	1	1	1	1	0	0	2	3	4	2	15
KATI, Zanzibar	0	1	1	1	0	0	2	2	2	1	10
Total	6	7(1)	7	7	3	6(1)	12	14	19	9	90(2)

Note: The number in the brackets indicates the schemes that other training components were postponed after baseline survey due to lack of proper irrigation infrastructures.

Number of male and female participants trained in the same period are shown in Table 2. Rates of female participants in Training on Irrigated Rice Farming for 6 years was about 47.4% against the 45% indicated in the PDM as shown in Table 1-2.

Table 1-2. The total number of male and female participants trained in 2013/14-2018/19

Training year	Number of male participants	Number of female participants	Total number of participants	Rate of male	Rate of female
2013/14	2,233	2,042	4,275	52.3%	47.7%
2014/15	2,258	2,094	4,352	52.3%	47.7%
2015/16	2,661	2,599	5,260	50.5%	49.5%
2016/17	2,651	2,440	5,091	53.0%	47.0%
2017/18	1,498	1,134	2,632	57.2%	42.8%
2018/19	652	446	1,098	60.3%	39.7%
Total	11,953	10,755	22,708	52.6%	47.4%

As a result of the training the average rice yields increased from 3.2 tons per hectare to 4.6 tons per hectare in the irrigation schemes where training was conducted (42% increase).

- The extension training materials for extension workers and farmers were developed and reviewed as necessary. The extension materials developed and reviewed include the followings.
  - Rice Farming Diary
  - Rice Farming Diary (for 3 years)
  - Workbook for Baseline Survey

- o   Workbook for Infield Training
- o   Workbook for Infield Training and Monitoring & Planning
- o   Poster for Standard Training Course (1st, 2nd and 3rd infield training courses)
- o   Binder of monitoring sheets

1-3 Output 2: Training approach for disseminating the appropriate rainfed rice cultivation technologies is developed.

1-3-1   Rainfed lowland rice cultivation course
- 30 training courses on rainfed lowland rice cultivation were conducted. The total number of farmers who attended the training was 7,777 including district officials (3,794 male farmers, 3,651 female farmers, 291 male district officers and 41 female district officers) making the participation rate of women farmers in the training to be 49%.
- The total number of farmers who adopted straight row planting in the target villages was 6,341.
- The rice yields increased from 1.7 tons per hectare to 2.1 tons per hectare in the target areas where training was conducted.
- Some effective technologies of rainfed lowland rice cultivation were confirmed by verification trials such as bund making, levelling, straight row transplanting, application of fertilizers and use of improved variety. However, effective technologies were different from location to location through observing results of the verification trials. Therefore, it is important to consider environmental conditions as to which technologies can be adopted by farmers in the training course.
- It is revealed that the adoption rates of the six basic technologies were improved (Table 1-3).

Table 1-3. Comparison of adoption rates of farmers on 6 technologies before and after participating in rainfed lowland rice cultivation course

Basic rice cultivation technologies	Baseline survey time (before training) (%)	Second monitoring time (after 2 cropping seasons) (%)
Bund making	46.2	60.1
Levelling	25.1	64.9
Straight row transplanting(area)	3.3	10.5
(No. farmers)	5.8	22.9
Straight row direct planting (area)	5.7	18.0
(No. farmers)	7.0	26.4
Fertilizer application	11.3	29.5
Improve variety	3.7	18.4
Average	9.6	44.0

Challenges
- The outputs of the training course such as yield highly depend on weather conditions. The evaluation could be difficult without long term monitoring.
- The environmental conditions of target villages are highly diversified from site to site, even from year to year. Tutors need to collect information carefully and select proper technologies for farmers.

1-3-2   NERICA Cultivation Training Course
- Total number of NERICA training courses conducted was 47. The total number of farmers attended the training course was 975 including district officers. There were 749 farmers (389 male and 360 female) who participated in the training. The participation rate of women farmers in the training was 48.1%. There were 226 (179 male and 47 female) district officers also attended the training. The total number of target villages monitored was 29.
- The total number of farmers who adopted straight row planting in the target villages was 1,227.
- The average paddy yields increased from 0.5 tons per hectare to 1.2 tons per hectare in the target areas where training was conducted.

1-3-3 Extension materials for extension workers and farmers were developed

The materials developed include the following:
- o NERICA cultivation course guidelines
- o NERICA cultivation training course brochure (modified version)
- o Teaching materials for NERICA cultivation training course (TOT)
- o Guidelines for rainfed rice cultivation training course
- o Teaching materials for rainfed lowland rice cultivation (1st and 2nd infield trainings)
- o Teaching materials for rainfed lowland rice cultivation (residential training course)

1-4 Output 3: Subject matter training courses on the value chain of rice industry are strengthened.

1-4-1 Subject matter training courses are identified

SMT courses are offered to farmers of irrigation schemes with relatively better performance after receiving ST or MST. SMTs identified and offered by TANRICE2 during the reporting period includes ISM, Gender, Rice Marketing, PHT and AM.

1-4-2 Irrigation Scheme Management (ISM)
- • A total of 31 irrigation schemes have received SMT-ISM and 30 schemes attended ISM workshop as indicated in Tables 5 and 6.
- • Monitoring of the outcomes of SMT-ISM was conducted. Results of the monitoring indicate several impacts of ISM training and workshops. Some of the impacts include:
  - o Revival of organizations which were not operating before ISM training;
  - o Opening bank account;
  - o Holding of general meeting and election of new leadership;
  - o Increased participation in Operation and Maintenance (O&M) activities;
  - o Increase in percentage of farmers paying organizational fees charged by Irrigators' Organization (IO);
  - o Increase in number of active members of IO;
  - o Improvements of irrigation facilities.

Among others, the following data were obtained from profiles of irrigation schemes such as (i) Farmers paying fees charged by IO and (ii) Farmers participating in O&M activities were used as other important technologies.

As of October 2019, 1,800 farmers in 22 irrigation schemes, who newly adopted improved irrigation scheme management practices of (i) and (ii) above, 1,050 farmers newly adopted (ii).

Table 1-4. Number of SMT-ISM conducted, and participants attended

SMT– ISM training conducted		Participants		
No. of districts	No. of schemes	Male	Female	Total
26	31	696	523	1250

Table 1-5: Number of irrigation schemes participated in ISM Workshops

SMT-ISM workshop attended		Participants		
Institute	No. of schemes	Male	Female	Total
KATC	8	35	13	48
MATI-Ilonga	6	30	6	36
MATI-Ukiriguru	2	9	3	12
MATI-Igurusi	5	25	5	30
MATI-Tumbi	3	14	4	18
MATI-Mtwara	4	18	6	24

KATI	2	8	4	12
Total	30	139	41	180

- The ISM-TG members reviewed and improved the training course materials. The materials reviewed and improved were:
    - Guidelines for training course
    - Scheme management profile
    - Leaders handout
    - Case study
    - Brochure for farmers
    - Brochure for districts and other organizations

1-4-3 Gender

- Gender subject matter training was developed and reviewed by Gender Task Group (GTG) members with assistance from Japanese Senior Technical Advisors on gender and gender short term experts.
- GTG members conducted SMT-Gender from 2013 to 2019and one pilot SMT-Gender, making a total of 41SMT-Gender courses conducted.
- There were2,035 farmers (943 males and 1092 females) participated in SMT-Gender. It shows that participation rate of female farmers in SMT-Gender was 53.7% which was more than the target.
- A total of 58 agricultural extension officers (41 males and 17 females) were trained on SMT-Gender.
- Developed, utilized and reviewed teaching materials, pamphlets, etc. for the subject matter training which include:
    - SMT-Gender Guidelines;
    - Teaching materials for gender, e.g. posters;
    - Handouts for needs findings, gender sensitization, family budgeting, HIV/ AIDS, and nutrition and sanitation;
    - Narrative impact assessment guidelines;
    - SMT-Gender brochures (gender sensitization, family budgeting, HIV/AIDS, and nutrition and sanitation);
    - Gender monitoring sheets;
    - Gender questionnaire sheets;
    - Gender SMT monitoring and evaluation sheet;
    - Format for analysis of gender questionnaire;
- GTG decided to use "impact cases" and gender questionnaire for evaluating the achievements of SMT-Gender instead of using quantitative indicators as there would be difficult to find and set measurable quantitative indicators for evaluating achievements of SMT-Gender. Eighty-eight (88) gender impact cases were summarized and analysed. The results indicated the following achievements:
    - Paddy yield increased as a direct impact of training on rice farming technologies with gender perspective;
    - Cooperation among family members reduced labour cost, improved quality of work, increased efficiency of each farming activity;
    - Joint family budgeting contributed to efficient planning for rice farming as well as use of income gained from rice farming;
    - Men started to cooperate with women in doing domestic activities such as cooking, fetching water and collecting firewood;

- o Family members started to plan spending and saving through family budgeting;
- o Transparency in family finances increased through family budgeting, which led to reduction of conflicts on money issues among household members; and
- o Women are selected into leadership positions in farmers' organizations.

Challenges
- To attain a 50:50 ratio between female and male farmers in SMT-Gender is still a problem although instruction was given to the scheme chairperson prior to the training date;
- Failure to get gender monitoring data from the village agricultural extension officer;
- Lack of district contribution to fund SMT-Gender especially on motoring;
- Limitation of the realization of gender impacts due to customs, traditions, believes and social norms in some communities; and
- Failure to have representative person from DAICOs office to some SMT-Gender has caused not to have good follow up of the action plan prepared by farmers after SMT-Gender.

Possible countermeasures
- Institute in-charge of a particular scheme to keep on emphasizing to scheme leaders on the ratio of selecting farmers for SMT-Gender;
- District councils to set aside some budget for conducting the SMT-Gender to their qualified irrigation schemes;
- DAICO office to select one representative to attend the SMT-Gender; and
- More gender sensitization should be conducted.

1-4-4 Rice Marketing
- SMT-Marketing in TANRICE2 entails all activities by farmers to provide paddy/rice which has value to their consumers aiming to enhance agricultural profit.
- With the assistance of short-term expert for marketing the TG reviewed/developed the SMT-Marketing. The training contents of the SMT included record keeping, market information accessing and sharing, quality assurance and formulation of sales agreement through stakeholders meeting. The training lasts for 3 days.
- SMT-Marketing was conducted in 34irrigation schemes. The total number of farmers who participated was 661 (361 male and 300 females) from July 2014 to November 2019
- During the conduct of SMT-Marketing, the ward and village agricultural extension officers were among the participants invited. A total of 68 agricultural extension officers (48 males and 20 females) were trained.
- The TG members from each institute conducted monitoring in each irrigation scheme trained on SMT-Marketing through mobile phones. The tutors made direct calls to extension officers and irrigation scheme leaders to get feedback on the implementation of the action plan made during the training. The monitoring was made in 20 irrigation schemes which received the training.

Challenges
- Access of information is difficult.
- Lack of warehouses for collective storage in some irrigation schemes.
- Weak negotiation power with buyers.

1-4-5 Agricultural Machinery
- Two (3) agricultural machinery experts were dispatched to Tanzania from December 2015 to January 2016, from July to October 2017, from April to June 2018 and from June to August 2019 to develop SMT-AM together with agricultural machinery task group members.

- Together with short-term expert, TG members visited 8 irrigation schemes and 2 agricultural machinery dealers to observe the availability and use of agricultural machinery such as power tillers, combine harvesters and rice milling plants.
- TOT was conducted in which TG members observed operations of harvesters, threshers, power tillers and rice milling machines.
- Workability of ten different mechanical weeders was assessed and one type of rotary weeder was selected for distribution to some irrigation schemes.
- Consultation and training visits were made to 14 irrigation schemes which had received agricultural machinery donated through the Policy and Human Resource Development Project (PHRD). The activity was carried out by some TG members together with a JICA short-term expert.
- The 14 irrigation schemes were invited to attend a workshop on "Use and management of agricultural machinery" conducted at KATC from 12 to 22 September 2017. A total of 70 participants including district mechanization officers, scheme chairperson, village extension worker, supervisor of combine harvester and supervisor of milling machine were invited. Each irrigation scheme prepared an action plan to be implemented using its own resources.
- The short-term expert for agricultural machinery together with AM-TG prepared teaching manuals on land preparation and field expansion, combine harvester, rice mill and quality of rice and guidelines for conducting SMT-AM.
- Training, testing and distribution of 100 rotary weeders was done to Lower Moshi, Lekitatu, Musa Mwinjanga and Mombo irrigation schemes. A total of 86 farmers were trained on the use of weeder and were given weeders to use in their fields.
- Training on land preparation and field expansion was conducted at Musa Mwinjanga, 36 farmers participated. A field of 6 plots was expanded to one plot.
- In May 2018, training for district mechanization officers, scheme chairpersons, combine harvester operators, rice mill operators and scheme managers/extension officers (42 participants) from 8 irrigation schemes was conducted at Mombo irrigation scheme. It was conducted in collaboration with private companies which supplied the agricultural machinery.
- Together with a short-term expert on agricultural machinery, some AM-TG members visited 8 irrigation schemes for monitoring the action plans which were developed during the workshop held at KATC in September 2017.
- In June 2019, the SMTs for operation of combine harvester and milling plant were conducted at Mombo Irrigation Scheme, Korogwe District, Tanga Region in collaboration with two private companies, AGRICOM AFRICA (supplier of combine harvesters) and RUBUYE AGRIBUSINESS (supplier of rice milling machinery).Technicians from the two companies were resource persons of the SMT. A total of 76 participants attended the training including district agricultural mechanization officers, irrigation scheme managers/extension officers, Kubota combine harvester operators and rice mill operators from 14 irrigation schemes.
- SMT for paddy reaper and thresher which were provided by PHRD was conducted for farmers, operators and scheme leaders from Lekitatu, Musa Mwinjanga and Mombo irrigation schemes at KATC in July, 2019. The training was conducted by Agricultural Machinery short term expert and Agricultural Machinery Task Group Members. A total of 27 participants were invited to attend the training.
- Collaborating with financial institutions such as Equity for Tanzania (EFTA) was conducted to promote agricultural machinery in the target irrigation schemes. Study tour was conducted in collaboration with EFTA to one of their client who loaned a Kubota combine harvester at Kahe village. Twenty five (25) farmers and cooperatives officers from 5 irrigation schemes (Kapunga, Mbuyuni, Mkula, Mkindo and Lekitatu) were invited for the study tour.

- In total 64 irrigation schemes were involved in the AM trainings.

Challenges
- Poor farm infrastructures (farm roads, cross-overs on canals, small plots).
- New paddy threshers and reapers are not being used.
- Poor management of agricultural machinery due to leadership problems.
- Repair and maintenance of agricultural machinery is still a challenge (operators do not use user's manual).
- Rice milling plants are not in operation in most irrigation schemes (except Mombo, Lekitatu and Magozi irrigation schemes).
- Some EFTA clients (2) didn't like the idea of sharing their personal information to other farmers

Recommendations
- Continuous capacity building to operators, scheme leaders on maintenance and repair of agricultural machinery
- Awareness raising that agricultural machinery is a profit-earner
- Continuing asking financial institutions our objectives for collaboration for the benefit of paddy farmers in Tanzania.

1-4-6 Post-harvest Technology (PHT)

- Together with short-term expert for post-harvest technology PHT-TG collected basic data of harvesting and post-harvesting activities from Musa Mwinjanga, Lekitatu, Mahiga, Sawenge, Mwamapuli, Ruanda Majenje, Kilangali, Kigugu, Mtwango and Kitere irrigation schemes. Harvesting, threshing, drying, cleaning, transportation, storage and milling data were collected. The TG members together with the short-term expert held a meeting in Morogoro to discuss the survey results and to identify needs of the SMT-PHT.
- From June to August 2015 a short-term expert together with TG members conducted another survey on rice post-harvest losses in schemes of Lower Moshi, Bumbwisudi and Mwamapuli. The aim of the survey was to collect data on rice post-harvest losses and prepare training material for SMT-PHT.
- One pilot SMT-PHT was conducted at Bumbwisudi irrigation scheme in August 2015 and 18 farmers participated in the training. After the training two TG meetings were held for revising the training material for SMT-PHT.
- In May 2016 the short-term expert together with PHT-TG members conducted the SMT at three irrigation schemes namely Mkula, Ipatagwa and Motombaya. The attendance for the training was on average 34, 28 and 29 participants for the three Irrigation Schemes respectively.

1-5 Other project activities conducted

1-5-1 Task Group meetings
Each TG conducted meetings at least twice per year to plan overall and annual action plans of its related output. During the meetings the TG members also discussed the progress of the implementation of the planned project activities related to its output.

1-5-2 Steering Committee meetings
Steering Committee (SC) meetings whose members comprised of the Project Manager, JICA experts working for TANRICE2, principals of the implementing institutes and TG leaders were held twice a year. 13 SC meetings were held in the project period. During the meetings, planned project activities

for each implementing institute were discussed and challenges observed during their implementation were also shared among the implementers.

1-5-3 Joint Coordinating Committee meetings

The Joint Coordinating Committee (JCC) meetings were held once per year during the project period. Members of the JCC were Project Director, Project Manager, Chief Representative (JICA Tanzania office), JICA Experts working with TANRICE2, Principals of the implementing institutes, Zonal Irrigation Engineers, Directors of MoA, Representatives of sector Ministries, Permanent Secretary of MANRLF and Representatives of Research Institutes from Tanzania Mainland and Zanzibar. Each year the meeting was held to discuss and approve the planned project activities. The JCC meeting held on 26 July, 2018 discussed and approved the Joint Terminal Evaluation report of TANRICE2. Seven (7) JCC meetings were held in the project period.

1-5-4 TANRICE2 Seminar

TANRICE2 organized a seminar towards the end of the project period from 12 to 14 September, 2018 in Moshi. The seminars aimed at sharing outputs, impacts and lessons learnt among implementers, collaborators and target group/beneficiaries over the past six years. Participants of the seminar were sector ministries officials, trainers, researchers, agricultural extension agents, irrigation engineers and rice farmers. One another seminar was held in Dodoma on 27 November, 2019 to share the impacts and outputs of the project among stakeholders such as ministories officials.

1-6 Financing the Project Activities

1-6-1 Inputs of the TANRICE2
(1) Inputs from the Japanese side
1) Dispatch of experts to Tanzania: Eight (8) long-term experts (Chief Adviser, Coordinator, Water Management/Fanners' Organization, Rice Cultivation Technology, Rice Cultivation Extension/Monitoring) and 11 short-term experts (Gender, Irrigation Scheme Management, Rice Marketing, Post-harvest and Agricultural machinery) were dispatched to the project. Twelve (12) Advisory missions also were conducted for the project. The details of JICA experts dispatched to TANRICE2 are shown in Appendix 3.

2) Provision of machinery and equipment: Machinery and equipment with a total value of 56,341,745 yen, 1,126,834,904 Tanzanian Shillings (TShs.) and 489,928 US dollars have been provided for the project's activities. The details of machinery and equipment are shown in Appendix 4.

3) Training of Task Group (TG) members: Thirty-seven (37) TG members and four non-TG members have been dispatched to Japan for academic programmes and training courses on subjects relevant to the scope of the project's activities (including 2 members for long-term training). Fifteen (15) TG members and non-TG member have been dispatched to third countries such as Egypt for short-term training. The details of participants trained in Japan are shown in Appendix 5.
4) Overseas activity costs: A total of TShs. 6,649,667,749/= equivalent to 332,483,387 yen and 2,891,160 USD has been provided to supplement a portion of local expenditure for the project for JFYs 2012 to 2019. The training cost amounts to 52% of the overseas activity cost. The details of local cost shouldered by JICA are shown in Appendix 6.

1-6-2 Inputs from the Tanzanian side
1) Appointment of Personnel: TG members and administrative personnel of over 150 staff have been appointed by MoA (Tanzania Mainland) and MANRLF (Zanzibar) for implementation of TANRICE2.

Details of Tanzanian staffs attached to the project are shown in Appendix 7.

2) Allocation of the operation fund: MoA and MANRLF provided TShs. 12,599,430/= and TShs. 4,451,450 for implementation of ST and MST from 2014/15 to 2017/18 financial years respectively. District councils shared the cost for training courses. Total amount of cost sharing for ST and MST was TShs. 64,281,550/= which amounted to 4.1 % of the total cost of ST and MST. During extension period from November 2018 to December 2019, SMTs were conducted for the districts which were able to shoulder DSA of district officers. Consequently TShs. 5,100,000 was shared by the districts for SMTs (ISM, gender and marketing). Details of cost sharing from MoA, MANRLF and district councils for TANRICE2 activities are shown in Appendix 8.

3) Provision of facilities: Essential office space with office equipment, water and electricity facilities have been provided for JICA experts based at MoA and KATC. The training facilities and fields at training institutes were provided and utilized for TANRICE2 residential trainings.

1-7 Conclusion

TANRICE2 was operated properly and achieved the project purpose "rice farming technologies are adopted by farmers in priority rice production areas".

Monitoring of training activities were given high priority so that some positive/negative impacts and success stories are identified that would also play part during formulation and implementation of other projects of similar nature.

There are examples of irrigation schemes where the TANRICE and TANRICE2 trainings have created positive impact such as Lower Moshi and Ndungu in Kilimanjaro region, Mwamapuli in Tabora region, Lekitatu in Arusha region, Kitivo and Mombo in Tanga region to mention a few. The positive impacts created under TANRICE2 will continue to be spread to other small-holder rice farmers who did not have opportunity to attend the trainings during the project period to enable them raise rice productivity and marketability leading to improved livelihoods.

2. Outputs of Training on Irrigated Rice Farming

2-1 Achievement of the project purpose

Project Purpose: Rice farming technologies are adopted by farmers in the priority rice production areas.

Indicator: The straight row transplanting or planting method is adopted by at least 15,000 farmers in the priority rice production areas[1] in 2018.

Background:

When conducted mid-term evaluation in Jan 2016, the number of target farmers who adopted straight row transplanting was estimated based on the number of farmers having paddy plots which was collected through the format of Rice Farming Statistics for Scheme during Baseline Survey (BS) and Monitoring & Planning (M&P) under Standard Training (ST) and Modified Standard Training (MST). According to the collected data from 22 schemes, the number of farmers having paddy plots per scheme was about 300, and if the half of them adopted the technology in a few years at target 80 schemes through farmer to farmer extension approach, the expected total number of farmers who adopted straight row transplanting will become about 12,000 [= (300 × 80) / 2] by ST and MST, and the remaining 3,000 will be achieved by NERICA and Rain-fed low land training courses.

As the preparation of terminal evaluation, in order to confirm the training impact of ST and MST, follow up for trained schemes including TANRICE and 2 was conducted by using the format of Rice Farming Statistics for Scheme at 76 schemes (TANRICE: 44, TANRICE2: 32) in May-Aug 2017. After examined the collected data of ST and MST in 2013/14-2015/16, it was realized that the data of some trained schemes included the number of farmers having paddy plots in not only irrigated area but also rainfed area because those schemes haven't completed their irritation infrastructures, especially main and tertiary canals, so that their irrigated areas are still limited and some farmers cultivate paddy in rainfed area. When revised the format before conducting follow up for trained schemes, one question was added to identify the number of farmers having paddy plots in irrigated area. (Please refer to Figure 2-1: No. of farmers having paddy plots in irrigated area)
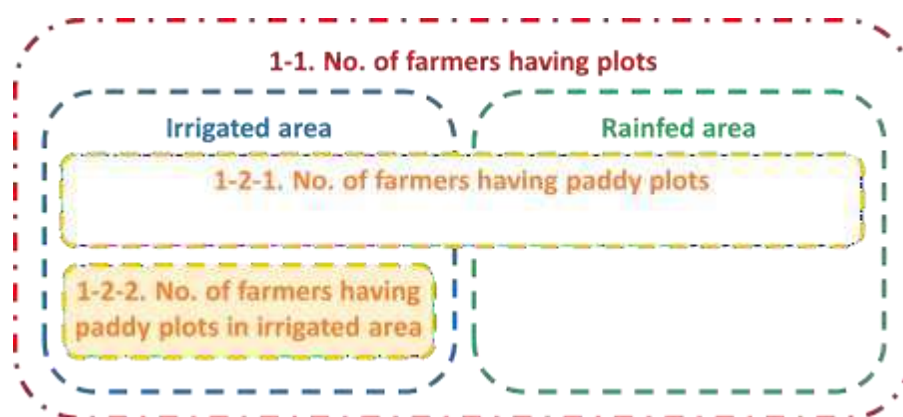
Figure 2-1: No. of farmers having paddy plots in irrigated area
Source: Rice Farming Statistics for Scheme

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[1]: Priority rice production areas include the irrigation schemes and rainfed rice areas identified by the project as well as the priority areas for the subject matter training.

Table 2-1 shows the expected total number of farmers who adopted straight row transplanting by ST and MST during TANRICE2. The number of farmer is based on the data collected during follow up (2015/16) and 1st M&P (2017/18-2018/19) because the data of rice grower in irrigated area was not included in the format when conducted 1st M&P in 2013/14-2016/17, and since cropping season in 2017/18, the revised format has been utilized during Baseline Survey and M&P, furthermore all trained schemes are requested to submit this format to training institute after conducted ST and MST so as to monitor the progress of their activities by district office and extension officer.

Table 2-1: No. of rice grower adopted straight row transplanting (Expectation)

Training type	No. of data	No. of farmer (Actual)			Adoption rate (%) (Actual)	No. of farmer (Expected)	No. of scheme and(B)	Rice grower in irrigated area
	1.2015/16 2.2017/18 -2018/19	Total farmer	Rice grower	Rice grower in irrigated area	Straight row transplanting	Rice grower in irrigated area (A)	13/14-18/19	= (A) x (B)
1.Follow up	21	347	279	214	74.2	161	90	14,474
2.1st M&P	30	578	437	377	62.1	244	90	21,999
3.Average (1+2)	51	485	373	310	66.2	210	90	18,900

According to the collected data from 51 schemes during follow up (2015/16) and 1st M&P (2017/18-2018/19), the number of rice grower in irrigated area in average is 310, and the adoption rate of straight row transplanting in average is 66.2%. The expected total number of rice grower adopted straight row transplanting is 18,900.

As irrigation infrastructures including main and tertiary canals are completed, and water management including water distribution schedule and canal maintenance is improved, the numbers of rice growers in irrigated area is expected to be increased. Table 2-2 shows the numbers of schemes per irrigable area and training institute.

Table 2-2: No. of scheme per irrigable area and training institute (51 schemes)

Training institute	<50ha	51-100ha	101-200ha	201-300ha	301-400ha	401-500ha	501-600ha	601-700ha	>1000ha	Total
KATC	1	0	1	0	2	2	2	1	1	10
MATI Ilonga	0	0	1	1	0	0	0	0	0	2
MATI Igurusi	0	1	2	0	3	2	0	1	1	10
MATI Ukiriguru	1	0	1	1	0	0	0	0	0	3
MATI Tumbi	1	2	2	0	1	0	0	0	0	6
MATI Mtwara	6	4	1	2	0	0	0	0	0	13
KATI	5	1	1	0	0	0	0	0	0	7
Total	14	8	9	4	6	4	2	2	2	51
Percentage	28.6%	16.3%	18.4%	8.2%	12.2%	8.2%	4.1%	4.1%	4.1%	

2-2 Achievement of Output 1: Training approach for disseminating the appropriate irrigated rice cultivation technologies (standard training) is strengthened nationwide

2-2-1 Standard Training course or Modified Standard Training course are conducted for at least 80 priority irrigation schemes by 2018.

As Modified Standard Training (MST) was developed after conducted 3 types of pilot MST at 9 schemes by KATC, MATI Ilonga and Igurusi in 2013/14 to 2014/15, the number of components and the number of training day were reduced from 7 components to 4 components, and from 36 days to 16 days respectively, all 7 training institutes have the capacity to conduct at least 1ST and 2MSTs per cropping season. ST and MST have been conducted at 90 schemes (ST: 27, MST: 63) in 2013/14-

2018/19 (Please refer to Table 2-3: Components of ST, Pilot MST and MST, Table 2-4: No. of trained schemes in 2013/14-2018/19, and Table 2-5: Modified part and reasons of Standard Training).

Table 2-3: Components of ST, Pilot MST and MST

| Training component | ST | Pilot MST 2013/14-2014/15 | | | MST |
		Type1	Type2	Type3	
No. of scheme/training	1	1	2	1	2
No. of farmer/scheme	16KF + 80IF	16KF + 80IF	10KF + 50IF	10KF + 50IF	8KF + 40IF
No. of technologies	All (44)	All (44)	Selected (<44)	Selected (<44)	Selected (<44)
Training for VAEO			3 days	3 days	4 days
Baseline survey	4days (3 tutors)	4days (3 tutors)	4days (3 tutors)	4days (3 tutors)	3 days (3 tutors)
Residential training	12days		12days		5 days
1st infield training	4days (3 tutors)	4days (3 tutors)		6days (4 tutors)	5 days (4 tutors)
2nd infield training	4days (3 tutors)	4days (3 tutors)			
3rd infield training	4days (3 tutors)	4days (3 tutors)			
1st monitoring & planning	4days (3 tutors)	4days (3 tutors)	4days (3 tutors)	4days (3 tutors)	3 days (3 tutors)
2nd monitoring & planning	4days (3 tutors)				
Follow up by Tutor			1 time	1 time	1 time
Total day for farmers	36	20	20	14	16
Budget(million)/scheme	30	15	8-10	6-8	15
No. of component	7	5	3	3	4

Table 2-4: No. of trained schemes in 2013/14-2018/19

| Type | ST | | | | MST | | | | | | Total |
Institute	2013/14	2014/15	2015/16	2016/17	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	
KATC, Moshi	1	1	1	1	1	2	2	2	2	1	14
MATI-Ukiriguru	1	(1)	1	1	0	0	0	1	3	1	8(1)
MATI-Ilonga	1	1	1	1	1	2(1)	2	2	2	2	15(1)
MATI-Igurusi	1	1	1	1	1	2	2	2	3	1	15
MATI-Tumbi	1	2	1	1	0	0	2	2	3	1	13
MATI-Mtwara	1	1	1	1	0	0	2	3	4	2	15
KATI, Zanzibar	0	1	1	1	0	0	2	2	2	1	10
Total	6	7(1)	7	7	3	6(1)	12	14	19	9	90(2)

Remark: ( ) shows the no. of schemes which the remaining components were postponed after Baseline survey.

Table 2-5: Modified part and reasons of Standard Training

	Modified part	Reason
1	4 components; baseline survey, residential training, infield training and monitoring & planning	The activity of main demo plot during infield training contribute to disseminate new technologies among KF&IF. Some schemes having much experience of irrigated rice cultivation will be able to manage to establish it with the knowledge of residential training, though, it might be difficult to identify those scheme in advance.
2	Day of all components is reduced	In order to increase the no. of target schemes for MST, the day of all component was reduced, as a result, their contents were revised as well.
3	No. of KF & IF is reduced	If the no. of KF is reduced, from 16 to 8, it can accommodate more than 2 schemes when conducting residential training, and if there are 50 participants during infield training, main demo plot can be established.
4	TOT for district and extension officers is conducted before baseline survey	The contents of TOT during pilot MST was designed for teaching mainly how to establish main demo plot and how to use monitoring sheets, though, the follow up by district and extension officers was less than the expectation, so that TOT for MST is designed for teaching the roles of stakeholder relating to each components of MST to be followed up by them after conducted training.
5	Training cost of MST is half of ST	Considering cost sharing by target district, the training cost of MST is designed less than half amount of ST. The estimated cost of MST is based on the new DSA rate.
6	Monitoring sheet is revised	Rice farming statistic was designed for scheme and individual farmer during pilot MST and collected during baseline survey and monitoring & planning, though, participants of both components are not always the same, so that the format for individual farmer is collected during monitoring & planning so as to compare the data before/after attending training. Furthermore, plot layout format is distributed during infield training in order to confirm the yield per cultivated area.
7	Teaching materials are revised	Rice farming diary was introduced during pilot MST, which consists of the data of baseline survey, monthly record and summary of irrigated rice cultivation technologies. To reduce the task of institute, the diary is divided into 2 parts, such as 1) Work books for recording data of baseline survey, and monitoring & planning, 2) Rice farming diary for month record and irrigated rice cultivation technologies.

After updated Scheme data in 2016 and 2018, it was realized that some institutes (Igurusi, Mtwara) have more potential schemes, while other institutes (Ukiriguru, Ilonga) has no/few potential schemes (Please refer to Table 2-6: Summary of Training potential per Institute).

Table 2-6: Summary of Training potential per Institute (from Scheme data updated in 2018)

Institute	1.Scheme data in 2018					2.Target scheme in 2013/14-2018/19				3.Remaining scheme				
	H	M	L	Blank	Total	H	M	L	Total	H	M	L	Blank	Total
KATC, Moshi	20	5	9	0	34	12	3	1	16	8	2	8	0	18
MATI-Ukiriguru	4	4	21	2	31	3	3	3	9	1	1	18	2	22
MATI-Ilonga	12	3	3	0	18	12	2	1	15	0	1	2	0	3
MATI-Igurusi	26	2	18	2	48	14	1	0	15	12	1	18	2	33
MATI-Tumbi	13	7	11	0	31	7	4	2	13	6	3	9	0	18
MATI-Mtwara	32	1	18	0	51	16	0	0	16	16	1	18	0	35
KATI, Zanzibar	8	3	2	0	13	7	3	0	10	1	0	2	0	3
Total	115	25	82	4	226	71	16	7	94	44	9	75	4	132
%	50.9%	11.1%	36.3%	1.8%		75.5%	17.0%	7.4%		6.8%	56.8%	3.0%		

Remark: 92 schemes were tackled by TANRICE2, and 2 schemes were done by PHRD (1) and RUDI (1)

After conducting ST, Pilot MST and MST, training impact relating to the availability of water was evaluated, more than 50% of trained schemes were marked medium and low due to the incompletion of infrastructure, and insufficient amount of water for irrigation from seasonal river (Please refer to Table 2-7: Summary of Training impact per institute).

Table 2-7: Summary of Training impact per Institute (the availability of water)

Institute	Target scheme in 2013/14-2018/19			
	H	M	L	Total
KATC	2	10	2	14
MATI-Ukiriguru	2	6	1	9
MATI-Ilonga	4	8	3	15
MATI-Igurusi	9	3	3	15
MATI-Tumbi	5	5	3	13
MATI-Mtwara	12	3	0	15
KATI	9	1	0	10
Total	43	36	12	91

2-2-2 At least 50% of key farmers and intermediate farmers in selected irrigation schemes evaluate that their paddy production technologies are improved.

The adoption rate of straight row transplanting, one of main improved rice cultivation technologies, was improved more than 50% in average at 73 trained schemes in 2013/14-2018/19, and reached 74.2% in average at 32 schemes during Follow up for trained schemes (Please refer to Table 2-8: Adoption rate of main rice cultivation technologies, Appendix 9: List of irrigated rice cultivation technologies).

Table 2-8: Adoption rate of main rice cultivation technologies

Training type	No. of trained scheme	Main rice cultivation technologies	Baseline survey	1st Monitoring & Planning	2nd Monitoring & Planning	Follow up (2015/16)
ST & MST	90	No. of data	83	73	19	32
		Bund making	30.7	52.6	55.8	59.4
		Levelling	33.3	58.7	63.1	62.2
		Straight row transplanting	26.6	62.1	73.1	74.2
ST	27	No. of data	26	24	19	13
		Bund making	12.2	45.3	49.0	66.2
		Levelling	33.3	54.0	61.5	65.5
		Straight row transplanting	29.1	66.4	72.2	82.9
MST	63	No. of data	57	49		19
		Bund making	35.5	53.3		54.8
		Levelling	32.4	60.2		59.9
		Straight row transplanting	24.7	58.1		68.3

2-2-3 Extension materials for extension officers and farmers are developed.

During pilot MST in 2013/14 - 2014/15, Rice farming diary was introduced to promote record keeping of individual activity in paddy plot and to explain improved rice cultivation technologies. When the contents of Rice farming diary were revised in 2015/16, it was designed to use for 3 years. During MST in 2015/16, Workbooks of Baseline survey, Infield training, Monitoring & Planning were introduced to explain how to use Rice farming diary and fill in monitoring sheets by key farmers and intermediate farmers. During MST in 2015/16, one binder with monitoring sheets was distributed to each stakeholder, district and extension officers and scheme leader to share the collected information and to check the progress of each component (Please refer to Table 2-9: Contents of Rice farming diary and Workbooks of Baseline survey, Infield training and Monitoring & Planning).

Table 2-9: Contents of Rice farming diary and Workbooks of BS, IF and M&P

Rice farming diary	Workbook of Baseline survey	Workbook of Infield training and Monitoring & Planning
Introduction	Schedule of MST	Schedule of MST
Calendar for 3 years	Timetable of BS	Timetable of IF and M&P
How to use Rice farming diary	Rice farming statistics for scheme	Rice farming statistics for scheme
Record of rice cultivation	Problem identification	Action plan 1st season
Individual plot layout	Problem analysis	Cropping calendar in demo plot
Cropping calendar	List of activity of Action plan	Type of demo
Rice cultivation technologies	Action plan	Rice farming statistics for farmer
Monthly farming record	Roles of stakeholders	Indicator of Rice farming statistics
Income & Expenditure	Criteria and roles of KF and IF	FTF extension approach
Yield estimate & Income analysis	Challenge of FTF extension	Problem of rice and irrigation
Input of labor	Types of KF	Action plan after 2nd season
List of KF & IF		Farmer type
Useful information		

Remark: KF (Key farmer), IF (Intermediate farmer), FTF (Farmer to Farmer)

2-2-4 At least 45% of participants of the training (key- and intermediate-farmers) are women.

In 2013/14-2018/19, gender balance of participant during 4 components from Baseline survey to Monitoring & Planning are that male is 52.6%, female is 47.4%, and it seems that gender balance was considered as a whole, though, there are the difference of gender balance in the areas covered by each institute (Please refer to Table 2-10: No. of male and female participants in 2013/14-2018/2019, Table 2-11: Gender balance per institute).

Table 2-10: No. of male and female participants in 2013/14-2018/2019

Training year	Total male	Total female	Grand total	Male participant rate	Female participant rate
2013/14	2,233	2,042	4,275	52.3%	47.7%
2014/15	2,258	2,094	4,352	52.3%	47.7%
2015/16	2,661	2,599	5,260	50.5%	49.5%
2016/17	2,651	2,440	5,091	53.0%	47.0%
2017/18	1,498	1,134	2,632	57.2%	42.8%
2018/19	652	446	1,098	60.3%	39.7%
Total	11,953	10,755	22,708	52.6%	47.4%

Remark: The no. of male and female participants are included in 4 components, Baseline Survey, Residential and Infield training, and Monitoring & Planning

Table 2-11: Gender balance per institute

Training Institute	Male participant rate	Female participant rate	Gender balance
KATC	50.8%	49.2%	Balanced
MATI Ilonga	52.7%	47.3%	Balanced
MATI Igurusi	56.1%	43.9%	Male is much higher
MATI Ukiriguru	60.6%	39.4%	Male is much higher
MATI Tumbi	62.3%	37.7%	Male is much higher
MATI Mtwara	51.8%	48.2%	Balanced
KATI	40.2%	59.8%	Female is much higher

As for the number of beneficially, the same key farmers and intermediate farmers participate from Residential training to Monitoring & Planning, so in case of ST, the number of participants during 3rd Infield training which is conducted during harvesting period is counted as the number of beneficially, including other farmers who participated during Field day. In case of MST, the number of participants during Infield training which is conducted during seed preparation period is counted as the number of beneficially, and Field day is organized before conducting Monitoring & Planning by target scheme, extension officer and district office. MST was conducted at 54 schemes, and out of 26 schemes (48%) managed to conduct Field day by using their own resource. (Please refer to Table 2-12: No. of male and female participants per institute)

Table 2-12: No. of male and female beneficially under ST, Pilot MST and MST

Type	Component	KF		IF		Leader		OF		Total		
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Grand total
ST	3rd Infield	215	185	986	969	33	4	1,357	1,358	2,591	2,516	5,107
Pilot MST	3rd Infield / Infield	39	39	151	191	5	1	155	109	350	340	690
MST	Infield	220	195	956	932	101	9	0	0	1,277	1,136	2,413
Total		474	419	2,093	2,092	139	14	1,512	1,467	4,218	3,992	8,210
		53.1%	46.9%	50.0%	50.0%	90.8%	9.2%	50.8%	49.2%	51.4%	48.6%	
MST	Field day							548	449			997

Key: KF (Key farmer), IF (Intermediate farmer), Leader (Scheme/Village leader), OF (Other farmer)

2-3 Training impact of Irrigated Rice Farming

2-3-1 Paddy yield of before/after training

The data of paddy yield before and after training were collected through the format of Rice farming statistics for scheme during Baseline Survey and Monitoring & Planning. Furthermore as the preparation of final evaluation which was conducted in July 2018, Follow-up for trained schemes was conducted at 76 schemes including TANRICE (2007-2012) and TANRICE2 (2013-2018) in May-Aug 2017 in order to confirm the training impact by using the same format.

The average paddy yield during Baseline Survey was 3.2 ton/ha, the one during Monitoring & Planning was 3.7 ton/ha, and the one during Follow-up (2015/16) was 4.6 ton/ha. When conducted Follow-up for trained scheme, district and extension officers were trained on how to collect the data of Rice farming statistics for scheme, and they were requested to monitor the activities through collecting the data by themselves after conducting training (Please refer to Table 2-13: Paddy yield of before/after training).

Some areas were affected by water shortage due to drought in some cropping seasons or incompletion of infrastructure such as main and tertiary canals (Please refer to Table 2-14: Paddy yield of areas covered by institutes, and Appendix 12: Paddy yield areas covered by training institutes).

Table 2-13: Paddy yield of before/after training (TANRICE: 44 schemes, TANRICE2: 90 schemes)

Component	No. of scheme	BS	1st M&P	2nd M&P	Follow up (15/16)
ST (TANRICE)	44	2,753	3,324	3,763	4,715
ST (TANRICE2)	27	3,017	3,639	4,309	4,530
Pilot MST	9	3,360	3,296		4,813
MST	54	3,726	4,124		4,088
Average yield		3,247	3,723	4,077	4,617
% of increased yield			15%	26%	42%

Table 2-14: Paddy yield of areas covered by training institutes

Institute	Region	District	Scheme	BS	1st M&P	2nd M&P	Fu (15/16)
KATC	6	12	24	3,338	3,738	3,781	4,295
Ilonga	1	7	24	3,421	4,730	4,828	5,266
Igurusi	3	12	26	3,006	3,186	3,616	4,833
Ukiriguru	5	8	12	4,034	3,029	5,625	4,235
Tumbi	2	9	15	2,332	3,029	3,000	3,530
Mtwara	3	11	19	2,963	3,292	3,674	3,899
KATI	2	8	14	3,425	4,333	4,167	5,321
Total	22	67	134				

2-3-2 Farmer to Farmer Extension Approach

During Monitoring & Planning, each key farmer group, including 1 key farmer and 5 intermediate farmers, present to share their experiences in the topic of Farmer to Farmer Extension Approach in order to confirm how each member work in group.

According to the data collected during Monitoring & Planning from 28 schemes in cropping seasons of 2016/17-2018/19, it was realized that in average 6.6% of key and intermediate farmers dropped out after attending Infield Training, so that some types of Farmer to Farmer Extension Approach were introduced during Monitoring & Planning (Please refer to Table 2-15: Situation of Farmer to Farmer Extension Approach). The standard type is that each intermediate farmer will disseminate improved rice cultivation technologies to 2 other farmers in 2nd cropping season, while key farmer's group type is that each member continues to work as group after 2nd cropping season so as to disseminate technologies to several other farmers through group. The advantage of this type is even though some members dropped out, the remaining ones continue their activities and are supported and monitored easily by extension officer (Please refer to Figure 2-2). In case of Gwiri scheme which consists of 4 villages, each village establish a demo plot to disseminate technologies to other farmers after 2nd cropping season (Please refer to Figure 2-3). In case of Amani scheme which is located in remote area and there are no laborers for transplanting, all farmers of this scheme, including not only key and intermediate farmers, but also other farmers, are involved in transplanting in their individual plots as part of communal work. (Please refer to Figure 2-4).

Table 2-15: Situation of Farmer to Farmer Extension Approach

Scheme	Year	1. Working as KF or IF, attending M&P		2. Working as KF or IF, not attending M&P		3. Not working as KF or IF any more		Total	Percentage		
									1	2	3
		KF1	IF1	KF2	IF2	KF3	IF3		KF&IF	KF&IF	KF&IF
Karamba	2016/17	5	18	3	14	0	6	46	50.0%	37.0%	13.0%
Kihurio	2016/17	5	25	1	8	2	7	48	62.5%	18.8%	18.8%
Udagaji	2016/17	7	26	0	12	0	0	45	73.3%	26.7%	0.0%
Mlali	2016/17	7	26	0	12	0	0	45	73.3%	26.7%	0.0%
Miyogwezi	2016/17	5	35	2	2	1	3	48	83.3%	8.3%	8.3%
Ng'ongo	2016/17	6	21	0	9	2	6	44	61.4%	20.5%	18.2%
Igigwa	2016/17	8	31	0	7	0	2	48	81.3%	14.6%	4.2%
Matekwe	2016/17	7	28	1	1	0	0	37	94.6%	5.4%	0.0%
Mtawatawa	2016/17	7	23	1	12	0	5	48	62.5%	27.1%	10.4%
Namahoka	2016/17	7	18	1	21	0	1	48	52.1%	45.8%	2.1%
Mafuleta	2017/18	7	26	1	6	0	8	48	68.8%	14.6%	16.7%
Kisawasawa	2017/18	8	18	0	7	0	15	48	54.2%	14.6%	31.3%
Namatuhi	2017/18	8	40	0	0	0	0	48	100.0%	0.0%	0.0%
Mwendamtitu	2017/18	7	17	1	16	0	7	48	50.0%	35.4%	14.6%
Manengwe	2017/18	8	11	0	22	B	3	44	43.2%	50.0%	6.8%
Idodi	2017/18	7	30	1	8	0	2	48	77.1%	18.8%	4.2%
Bukangilija	2017/18	8	25	0	11	0	4	48	68.8%	22.9%	8.3%

Amani	2017/18	8	12	0	26	0	2	48	41.7%	54.2%	4.2%
Mchomoro	2017/18	8	35	0	5	0	0	48	89.6%	10.4%	0.0%
Litumbandyosi	2017/18	8	40	0	0	0	0	48	100.0%	0.0%	0.0%
Uzini	2017/18	8	36	0	3	0	1	48	91.7%	6.3%	2.1%
Magoma	2018/19	6	20	2	13	0	7	48	54.2%	31.3%	14.6%
Tulo Kongwa	2018/19	8	32	0	6	0	0	46	87.0%	13.0%	0.0%
Solola Nankanga	2018/19	7	33	1	6	0	0	47	85.1%	14.9%	0.0%
Mwiruzi	2018/19	7	27	1	12	0	1	48	70.8%	27.1%	2.1%
Njomulole	2018/19	8	12	0	26	0	2	48	41.7%	54.2%	4.2%
Msanjesi	2018/19	8	40	0	0	0	0	48	100.0%	0.0%	0.0%
Machigini	2018/19	8	38	0	2	0	0	48	95.8%	4.2%	0.0%
Total		201	743	16	267	5	82	1314	71.8%	21.5%	6.6%
Average		90.5%	68.0%	7.2%	24.5%	2.3%	7.5%				

Data resource: Monitoring & Planning report under MST
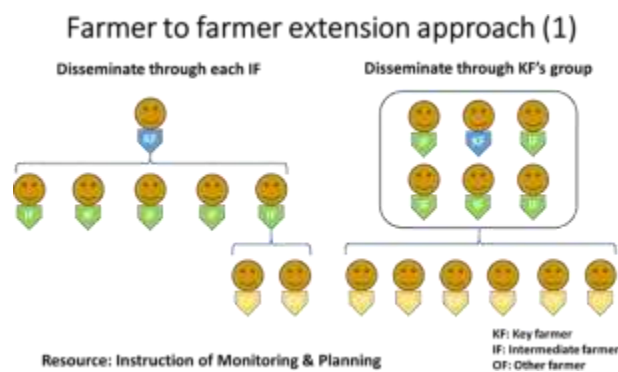
Figure 2-2: Farmer to farmer extension approach (1)
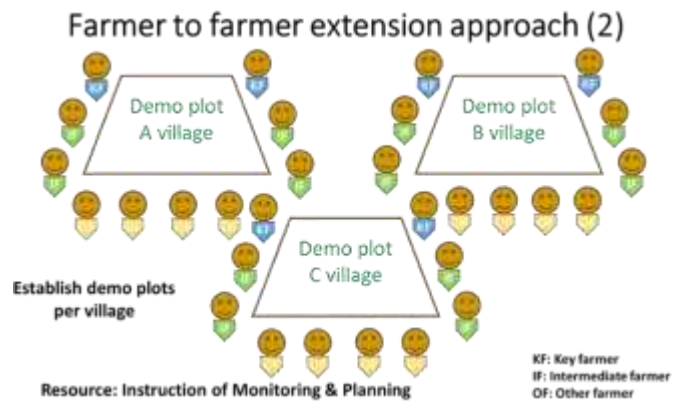
Figure 2-3: Farmer to farmer extension approach (2) Example of Gwiri scheme, Mbarali distric

2-3-3 Cost sharing of training budget during TANRICE2

During TANRICE (2007-2012), more than 50 % of training cost was shared by district offices through the fund of ASDP Phase1 (Agricultural Sector Development Programme), so that the training cost of MST was designed to reduce less than the half of ST (Please refer to Table 2-16: Training cost of ST, Pilot MST and MST). On the other hands, during TANRICE2 only 4.2 % of training cost was shared by district offices (Please refer to Table 2-17: Cost sharing of Training budget in 2013/14-2018/19).
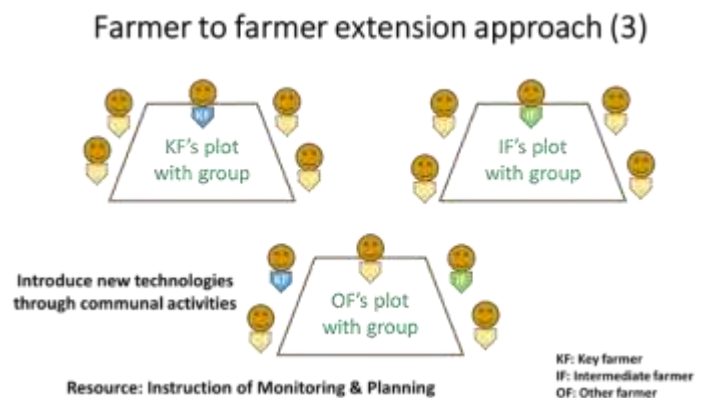
Figure 2-4: Farmer to farmer extension approach (3) Example of Amani scheme, Namtumbo district

After phasing out of ASDP Phase1, only 14 components of 8 schemes have been conducted through the cost sharing by district, and some districts contributed their financial resource from the revue of Agricultural sector (Please refer to Table 2-18: Cost sharing of Training budget by District in 2013/14-2018/19).

During TANRICE2, by using the other resources of Agricultural sector such as PHRD (Policy and Human Resource Development) and BRN (Big Result Now), ST was conducted at 11 schemes by KATC and MATI Ilonga and Igurusi. If those other resources are included as the part of training impact,

in total 17.1 % of training cost was covered by district offices and Ministry of Agriculture (Please refer to Table 2-19: Cost sharing of training budget during TANRICE2 including other resources).

Table 2-16: Training cost of ST, Pilot MST and MST

Type	BS	RT	1st IF	2nd IF	3rd IF	1st M&P	2nd M&P	Total(Tsh)	% (/ST)
ST	2,559,214	10,835,852	3,265,093	2,755,071	3,151,454	2,381,933	2,354,473	27,303,090	100.0%
Pilot MST type 1	1,861,990		2,224,583	2,166,817	1,993,100	1,658,394		9,904,884	36.3%
Pilot MST type 2	1,861,990	7,351,650				1,658,394		10,872,034	39.8%
Pilot MST type 3	1,861,990		4,037,833			1,658,394		7,558,218	27.7%
MST	2,375,564	4,764,618	4,184,262			2,051,157		13,375,601	49.0%

Table 2-17: Cost sharing of Training budget in 2013/14-2018/19 (Unit: Tsh)

Training year	JICA	District	Total	Per year
2013/14	177,464,100	5,943,300	183,407,400	3.2%
2014/15	203,378,000	39,232,450	242,610,450	16.2%
2015/16	321,607,420	16,807,850	338,415,270	5.0%
2016/17	352,758,800	1,454,950	354,213,750	0.4%
2017/18	279,387,300	0	279,387,300	0.0%
2018/19	147,660,850	843,000	148,503,850	0.6%
Total	1,482,256,470	64,281,550	1,546,538,020	4.2%
Percentage	95.8%	4.2%		

Table 2-18: Cost sharing of Training budget by District in 2013/14-2018/19

	Scheme	District	Training type	Year	Component	Amount (Tsh)	Budget resource	Note	Scheme
1	Mkuti	Kigoma	ST	2013/14	Baseline Survey	3,473,300	DASIP	Full amount	Mkuti
2	Lipeleng'enye	Newala	ST	2013/14	3rd Infield Training	2,470,000	District	Half amount	Lipeleng'enye
3	Ndanda	Masasi	ST	2014/15	2nd Infield Training	2,241,500	District	Full amount	Ndanda
4	Ruhwiti	Kigoma	ST	2014/15	Baseline Survey	4,545,200	ASDP	Full amount	Ruhwiti
	Ruhwiti	Kigoma	ST	2014/15	Residential Training	16,298,150	ASDP	Full amount	Ruhwiti
	Ruhwiti	Kigoma	ST	2014/15	1st Infield Training	5,327,700	ASDP	Full amount	Ruhwiti
	Ruhwiti	Kigoma	ST	2014/15	2nd Infield Training	3,087,100	ASDP	Full amount	Ruhwiti
	Ruhwiti	Kigoma	ST	2014/15	3rd Infield Training	3,799,800	ASDP	Full amount	Ruhwiti
5	Bumbwisudi	West	ST	2014/15	2nd Infield Training	1,698,000	Dept. of Irrigation	Full amount	Bumbwisudi
	Bumbwisudi	West	ST	2014/15	3rd Infield Training	2,235,000	Dept. of Irrigation	Full amount	Bumbwisudi
6	Ifumbo	Chunya	ST	2015/16	Baseline Survey	2,958,600	District	Full amount	Ifumbo
	Ifumbo	Chunya	ST	2015/16	Residential Training	13,849,250	District	Full amount	Ifumbo
7	Karamba	Same	MST	2016/17	Monitoring & Planning	1,454,950	District	Full amount	Karamba
8	Magoma	Korogwe	MST	2018/19	Monitoring & Planning	843,000	District	Some amount	Magoma

Table 2-19: Cost sharing of training budget during TANRICE2 including other resources

Financial resource	No. of scheme	Training cost	Percentage
JICA	90	1,482,256,470	82.9%
District		64,281,550	3.6%
Other resources (PHRD, BRN)	11	241,891,760	13.5%
	101	1,788,429,780	

Remark: The training cost of other resources are estimated by the results of training cost funded by JICA and District

If ST was conducted at all 90 schemes, the total estimated cost becomes 2,457 mil Tsh, while MST including Pilot MST was conducted at 63 schemes actually, so that 877 mil Tsh (35.7%) were saved during TANRICE2 (Please refer to Table 2-20: Reduced training cost by MST).

Table 2-20: Reduced training cost by MST

Training type		Training cost (Tsh)	Target scheme	Total cost (Tsh)	% of reduced cost
1.ST	Estimate	27,303,090	90	2,457,278,096	
2.ST	Actual	27,303,090	27	737,183,429	
3.MST	Actual	13,375,601	63	842,662,858	
4.Actual (2+3)				1,579,846,287	
5.1-4				877,431,809	35.7%

2-4 Activity of Output 1

Output 1: Training approach for disseminating the appropriate irrigated rice cultivation technologies (standard training) is strengthened nationwide.

2-4-1 Organize sensitization workshops on the rice cultivation technologies and the value chain of rice industry for key stakeholders in priority rice production areas.
2-4-1-1 Hold workshops at KATC, and MATI-Ilonga, Ukiriguru and Igurusi.

Jan-Feb 2013: Sensitization workshops were hold for stakeholders including DED, DAICO, DSMS, VAEO, ZIE, farmers, and a total of 260 participants from 83 districts, 23 regions attended at 4 workshops, KATC, MATI-Ilonga, Ukiriguru and Igurusi (Please refer to Table 2-21). In order to select priority rice production areas, the following data including 1) Profile of irrigated area (196 schemes), 2) Financial capacity and willingness of rice training, 3) Availability of extension service and 4) Selecting criteria of priority irrigated area was collected from districts during workshops.

Table 2-21: List of District for Sensitization workshops (As of Feb 2013)

Institute	Region	District			Not conducted
		Conducted ST or MST			
		TANRICE	TANRICE & 2	TANRICE2	
KATC, Moshi	Arusha (4)	Monduli		Karatu	Meru, Mbulu
	Dodoma (2)			(Bahi)	Kondoa, Mpwapwa
	Kilimanjaro (4)	Mwanga	Hai, Moshi rural	Same	
	Manyara (2)	Simanjiro			Babati rural
	Tanga (4)	Lushoto		Korogwe urban, Korogwe rural	Muheza
	Singida (3)	Iramba, Manyoni,			Singida
MATI-Ukiriguru	Kagera (1)			(Muleba)	Biharamulo
	Kigoma (5)	Kasulu		Kibondo, Kakonko, Kigoma rural,	Kigoma urban
	Mara (4)	Rorya	Bunda		Musoma rural, Serengeti
	Mwanza (5)	Magu, Kwimba		Ukerewe	Sengerema, Misungwi
	Shiyanga (5)			Maswa	Shinyanga urban, Shinyanga rural, Kishapu, Kahama
	Geita (3)			(Geita)	Chato, Bukombe, Mbogwe
	Tabora (6)			Sikonge, Tabora urban, Uyui, Urambo, Nzega	Igunga
MATI-Ilonga	Dar es Salaam (1)				Temeke
	Lindi (5)	Lindi rural	Liwale	Ruangwa, Nachingwea	Kilwa
	Morogoro (5)	Kilosa, Morogoro rural, Ulanga	Mvomero (Kilombero),	(Malinyi)	Morogoro urban
	Mtwara (5)			Newala, Masasi, Tandahimba	Nanyumbu, Mtwara rural
	Pwani (5)				Mafia, Kibaha rural, Bagamoyo, Mkuranga, Rufiji
	Ruvuma (4)		Tunduru	Mbinga, Namtumbo, Songea rural,(Nyasa)	
MATI-Igurusi	Iringa (1)	(Kilolo), (Makete)	Iringa rural		
	Mbeya (5)	Rungwe, (Mbeya), (Mbozi)	Mbarali	Ileje, Chunya	Kyela
	Rukwa (2)	(Mpanda)	Sumbawanga	Nkasi	
	Katavi (2)				Mlele, Mpanda [Nsimbo+Inyonga]
Total (attended)	23	15	9	25	34
Total (not attended)		5	1	5	
Grand total	23	20	10	30	34

Remark: ( ) means districts were not attended at Sensitization workshop, but ST or MST were conducted

There are 169 districts, 31 regions in Tanzania as of 2016

2-4-1-2 Sensitize the participants by sharing information of rice overview, outline of TANRICE2

Jan-Feb 2013: During sensitization workshop, some districts shared the training impact of irrigation schemes and some farmers presented their case study of paddy during TANRICE, and the outline of TANRICE2 including the training cost of each component was presented by training institute.

2-4-1-3 Hold workshop for ST and MST (ST: Standard Training, MST: Modified Standard Training)

Oct 2016: Workshop of ST and MST was held for stakeholders including DED, DAICO, DSMS, and Scheme manager of 21 schemes from 19 districts at KATC in order to share the training impact and challenge of ST and MST.

Table 2-22: List of District for Workshop of ST and MST (As of Oct 2016)

Institute	Region	District (21 schemes/19 districts)
KATC, Moshi	Tanga, Kilimanjaro	Korogwe (1), Same (2)
MATI-Ukiriguru	Kagera, Mwanza	Muleba (1), Ukerewe (1)
MATI-Ilonga	Morogoro	Malinyi (1), Kilombero (1), Mvomero (2)
MATI-Igurusi	Iringa, Rukwa	Iringa (1), Nkasi (1), Sumbawanga (1)
MATI-Tumbi	Tabora	Nzega (1), Sikonge (1), Uyui (1)
MATI-Mtwara	Ruvuma, Lindi	Nyasa (1), Nachingwea (1), Liwale (1), Namtumbo (1)
KATI, Zanzibar	Unguja, Pemba	Unguja central (1), Chake Chake (2)

2-4-1-4 Hold Project seminar

Sep 2018: Project seminar was held for stakeholders including DAICO, Scheme manager, farmers, and a total of 150 participants from 14 districts attended in Moshi.

Nov 2019: Project seminar was held for stakeholders including other Departments of Ministry of Agriculture, Ministry of Finance and a total of 55 participants attended in Dodoma.

2-4-2 Clarify the roles and functions of stakeholders in the context of rice industry development including District Agriculture Irrigation and Cooperatives Officers (DAICOs) and agricultural extension officers.
2-4-2-1 Conduct group discussions of the roles of stakeholders at the workshop

Jan-Feb 2013: During sensitization workshops, the participants discussed the roles of each stakeholders, DED, DAICO, Zonal irrigation office, MATI tutor, Extension officer and Farmer.

Oct 2016: During workshop for ST and MST, each group of stakeholders, such as DED/DAICO, DSMS, and Scheme manager, discussed the challenge and the measurement concerning about the roles of stakeholders under ST and MST, and the summary of their discussion is shared by using Workbook of Baseline survey since 2016/17 season.

2-4-2-2 Make participants/stakeholders recognize the functions through reporting the results and further discussions.

Oct 2015: When conducting MST since 2015/16 season, each stakeholder, including District office, Scheme manager and Scheme leader, received a binder with related monitoring formats, including Rice farming statistics, so as to keep the record and share the same information among stakeholders.

2-4-3 Review and modify the standard training based on the requests and financial conditions in districts.
2-4-3-1 Prepare Field survey

Jul 2013: The contents of Field survey was discussed during 1st E&M TG meeting in order to identify which parts of components under ST and rice cultivation technologies are much more effective for improving the productivity, and the formats of questionnaire for district office, extension officer and farmer were prepared.

2-4-3-2 Conduct Field survey of the sites of TANRICE

Aug-Oct 2013: Field survey was conducted by E&M TG members at 10 trained schemes during TANRICE by KATC (3), MATI Ilonga (2), Igurusi (2), Ukiriguru (2) and KATI (1).

May 2014: The data of Field survey was shared during 3rd E&M TG meeting (Please refer to Table2-33).

Table 2-23: Yield before/after training at 10 schemes during TANRICE

Institute	No	Scheme	Training status	Training year	Before/After training	Yield per types of farmers (t/ha)			
						KF	IF	OF1	OF2
KATC	1	Kitivo	Completed 1-7	2008/09	Before	2.7	3.4	2.9	1.0
					After	6.4	5.7	5.1	1.6
	2	Ngage (Pilot field survey)	Partial 1,2,3,4,6	2011/12	Before	0.7	0.7	0.8	
					After	1.2	1.3	2.0	
	3	Kirya (Pilot field survey)	Partial 3,4	2011/12	Before	0.5	0.7	0.8	
					After	1.0	0.9	1.5	
MATI Igurusi	4	Mshewe	Partial 1,2,3,4,6	2010/11	Before				
					After				
	5	Tungamalenga	Partial 1,2,3,4,6	2010/11	Before	0.7	0.1		0.6
					After	1.0	0.3		0.8
MATI Ilonga	6	Kiroka	Completed 1-7	2008/09	Before	1.3	1.2	0.9	0.1
					After	5.5	4.0	3.1	0.6
	7	Lupiro	Partial 1,2,3,4,6	2010/11	Before	1.6	2.3	2.2	2.5
					After	5.4	5.9	5.1	3.2
MATI Ukiriguru	8	Mahiga	Completed 1-7	2008/09	Before	0.4	0.4	0.6	
					After	1.0	1.2	1.3	
	9	Uwachelo	Partial 1-6	2010/11	Before	2.0	1.2		0.3
					After	5.0	2.2		0.1
KATI	10	Mtwango	Completed 1-7	2010/11	Before	3.0	2.6		0.5
					After	4.2	3.6		0.1

Remark: After conducted pilot Field survey at Ngage and Kirya schemes by KATC, OF (Other farmers) was divided into 2 types, OF1 (trained by KF or IF) and OF2 (not trained by KF or IF).

As for Training status, Completed means that all components were conducted, 1. Baseline survey, 2. Residential training, 3. 1st Infield training, 4. 2nd Infield training, 5. 3rd Infield training, 6. 1st Monitoring & Planning, and 7. 2nd Monitoring & Planning, and Partial means that some components were not conducted due to lack of training budget or late starting.

2-4-3-3 Suggest/prepare Modified Standard Training

Oct 2013: The contents of pilot MST including components, teaching and monitoring materials, were discussed after examined the collected data of Field survey during 2nd E&M TG meeting.

Jan 2014: 3 types of pilot MST were proposed by considering not only the financial condition but also the training impact, and the training cost of all 3 types were designed less than the half of ST (30 million Tsh) because district office had managed to share about 50% of training cost through ASDP fund during TANRICE (Please refer to Table 2-24).

Table 2-24: ST and pilot MST (Type1-3)

Component	ST	Type 1	Type 2	Type 3
Baseline survey	4days (tutor: 3)	4days (tutor: 3)	4days (tutor: 3)	4days (tutor: 3)
Residential training	12days		12days	
1st infield training	4days (tutor: 3)	4days (tutor: 3)		6days (tutor: 4)
2nd infield training	4days (tutor: 3)	4days (tutor: 3)		
3rd infield training	4days (tutor: 3)	4days (tutor: 3)		
Follow up by district/extension staff			3 times	2 times
1st monitoring & planning	4days (tutor: 3)	4days (tutor: 3)	4days (tutor: 3)	4days (tutor: 3)
Budget(million)/scheme	30	15	8-10	6-8

Feb 2014: The contents of Baseline survey was modified in order to prepare Action plan during Baseline survey because Action plan was prepared during Residential training under ST and 2 types of pilot MST (Type1&3) did not include Residential training.

Jul 2014: One of the teaching materials, Rice farming diary, was introduced during Infield training in order to teach how to keep the record of field activities and share the collected data of Baseline survey.

Sep 2015-Jun 2016: One of the teaching materials, Workbook, was distributed to all participants during Baseline survey, Infield training, and Monitoring & Planning, in order to record/share the collected data/information among stakeholders.

2-4-3-4 Conduct pilot Modified Standard Training

Feb 2014-Sep 2015: Pilot MST was implemented at 9 schemes by KATC (3), and MATI Ilonga (3) and Igurusi (3), and the achievement of demo plots and monitoring activities per 3 types was evaluated by E&M TG members during 6th E&M TG meeting (Please refer to Table 2-25).

Table 2-25. Achievement of demo plot and monitoring

Type	Institute	District	Scheme	Main demo plot	KF's demo plot	Rice farming diary	Monthly monitoring sheet
1	KATC	Hai	Mtambo	H	M	M	-
	MATI Ilonga	Mvomero	Komtonga	H	M	H	-
	MATI Igurusi	Mbarali	Maendeleo	H	M	M	-
2	KATC	Karatu	Mangola barazani	L	L	L	L
	MATI Ilonga	Kilombero	Mangula youth	M	M	M	M
	MATI Igurusi	Mbarali	Gwiri	H	H	L	L
3	KATC	Same	Gonja	H	M	L	L
	MATI Ilonga	Kilombero	Maki	H	M	M	H
	MATI Igurusi	Iringa	Mafuruto	H	M	L	L

Remark: H, M, L (High, Medium, Low) represent the quality of demonstration plot and monitoring activities at target schemes based on field observation, reports and comments of TG members.

2-4-3-5 Develop modified standard training

Sep 2015: One type of MST was proposed after discussion with E&M TG members and KATC tutors during 6th TG meeting at KATC and shared during 6th SC meeting.

The training days and budget were reduced from 36 to 16 days, from 30 to 15 million respectively (Please refer to Table 2-26).

Table 2-26: Components of ST, Pilot MST and MST

	ST	Pilot MST 2014/2015			MST 2015/16
		Type1	Type2	Type3	
No. of scheme/training	1	1	2	1	2
No. of farmer/scheme	16KF + 80IF	16KF + 80IF	10KF + 50IF	10KF + 50IF	8KF + 40IF
No .of technologies	All (44)	All (44)	Selected (<44)	Selected (<44)	Selected (<44)
Training for VAEO			3 days	3 days	4 days
Baseline survey	4days (3 tutors)	4days (3 tutors)	4days (3 tutors)	4days (3 tutors)	3 days (3 tutors)
Residential training	12days		12days		5 days
1st infield training	4days (3 tutors)	4days (3 tutors)		6days (4 tutors)	5 days (4 tutors)
2nd infield training	4days (3 tutors)	4days (3 tutors)			
3rd infield training	4days (3 tutors)	4days (3 tutors)			
1st monitoring & planning	4days (3 tutors)	4days (3 tutors)	4days (3 tutors)	4days (3 tutors)	3 days (3 tutors)
2nd monitoring & planning	4days (3 tutors)				
Follow up by Tutor			1 time	1 time	1 time
Total day for farmers	36	20	20	14	16
Budget(million)/scheme	30	15	8-10	6-8	15
No. of component	7	5	3	3	4

2-4-4 Study the existing conditions of irrigation schemes.

2-4-4-1 Determine section criteria

May 2013: The criteria of selecting target schemes for ST and MST was discussed during ISM TG meeting at KATC.

2-4-4-2 Develop tools for collecting information

Jun 2013: Scheme survey format including the criteria of selecting target schemes for ST and MST was prepared by ISM TG members (Please refer to Table 2-27).

Table 2-27: 13 Criteria of selecting target schemes for ST&MST

No	Criteria
1	The area has reliable water and water use permit.
2	The minimum land area suitable for rice production is 100 ha for mainland and 10ha for Zanzibar.
3	Improved irrigation infrastructure is in place (at least one improved structure).
4	There are 300 or more farmers (with gender consideration).
5	There is a registered irrigators' organization.
6	There are no land conflicts in the scheme.
7	The scheme located at an accessible place (distance and availability of reliable road network).
8	Water is applied either by gravity or pumping.
9	There is an extension officer / irrigation technician in the scheme.
10	Consideration of presence of similar project/duplication of similar project.
11	Possibility of district to contribute to costs of training (rice is a priority crop and district is willing to train farmers on rice production).
12	Consideration of past standard training courses for the ST course
13	Yield of 5 ton/ha or more for improved varieties and 4 ton/ha or more for local varieties for the SMT course

2-4-4-3 Visit irrigation scheme to collect information

Jun 2013-Mar 2015: Scheme survey was conducted at 256 schemes by IMS TG members of 7 training institutes (Please refer to Figure 2-5).

Figure 2-5: Schedule of Scheme survey by ISM TG members

Year/Month	2013							2014											2015		Survey		
Institute	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	Target	Done	Not
KATC, Moshi	14				10								18					2				44	44	0
MATI-Ukiriguru		10								12							11					34	33	1
MATI-Ilonga			9				13															25	22	3
MATI-Igurusi			18									23									8	51	49	2
MATI-Tumbi		14													19							37	33	4
MATI-Mtwara		11	13											34								58	58	0
KATI, Zanzibar		17																				17	17	0
Total/Month	14	52	40		10		13			13		23	18	34	19		11	2			8	266	256	10
Total/FY		141							115												256			

2-4-4-4 Process the collected information

May 2016: During Joint E&M and ISM TG meeting, TG members evaluated training potential of target schemes of ST and MST in 2013/14-2015/16 by using scheme type (A-D) having 2 categories, 1) Infrastructure (Improved/Traditional), 2) Irrigated/Rainfed (Please refer to Figure 2-6 and Table 2-28).

24
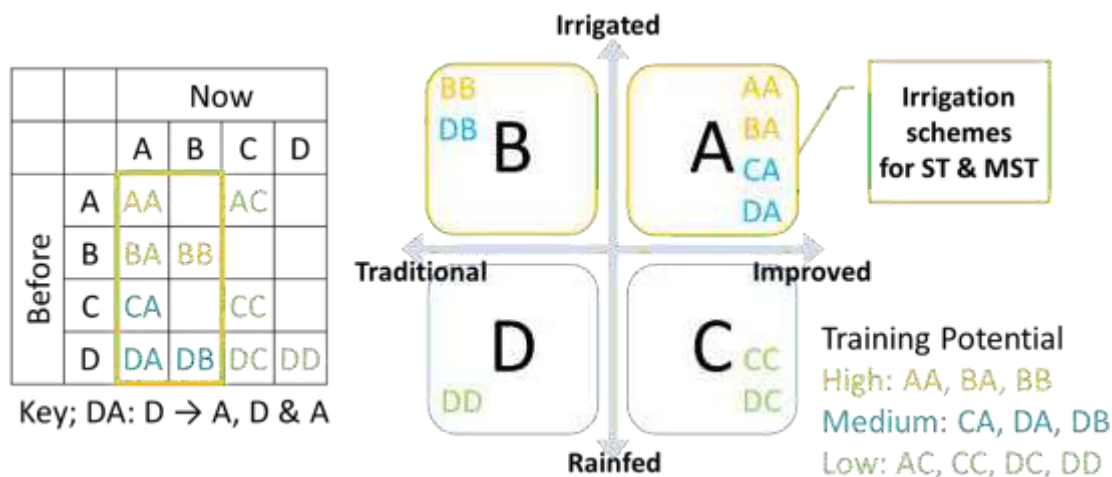
Figure 2-6: Scheme type (A-D)

Table 2-28: Training potential (H, M, L) of target scheme for ST and MST in 2013/14-2015/16

Institute	2013/14			2014/15			2015/16			Total		
	H	M	L	H	M	L	H	M	L	H	M	L
KATC, Moshi	1	1	0	3	0	0	3	0	0	7	1	0
MATI-Ukiriguru	1	0	0	0	0	0	0	0	1	1	0	1
MATI-Ilonga	2	0	0	2	1	0	3	0	0	7	1	0
MATI-Igurusi	2	0	0	3	0	0	2	1	0	7	1	0
MATI-Tumbi	1	0	0	2	0	0	1	2	0	4	2	0
MATI-Mtwara	1	0	0	1	0	0	3	0	0	5	0	0
KATI, Zanzibar	0	0	0	1	0	0	2	1	0	3	1	0
Total	8	1	0	12	1	0	14	4	1	34	6	1

2-4-4-5 Update Scheme data

May 2016: During Joint E&M and ISM TG meeting, the contents of Scheme data was discussed by considering the challenge of ST and MST, especially the availability of water.

Jul-Sep 2016: ISM TG members updated Scheme data through communicating with district offices and extension officers.

Sep-Oct 2016: The summary of updated Scheme data in 2016 was shared with stakeholders during E&M TG meeting, Workshop for ST and MST, 4th JCC meeting (Please refer to Table 2-29 and 2-30).

Oct 2018: The summary of updated Scheme data in 2018 was shared with stakeholders during Joint E&M and ISM TG meeting, 13th SC meeting, 7th JCC meeting and Project seminar in 2019.

Table 2-29: No. of target scheme for ST and MST

Institute	KATC1	KATC2	KR2	TANRICE	N/A	Sub	PHRD	TANRICE2							Sub	Total
	'94-'01	'01-'06	2007	'07-'12	N/A	Total	'13-'14	2013/14	2014/15	2015/16	2016/17	2017/18	Only BS	Others	Total	
KATC	4	1	0	7	4	16	2	2	3	3	3	2	0	13	28	44
Ukiriguru	0	1	0	4	0	5	0	1	0	1	2	2	1	21	28	33
Ilonga	0	0	0	3	2	5	0	2	3	3	3	1	1	4	17	22
Igurusi	0	0	0	3	0	3	0	2	3	3	3	9	0	26	46	49
Tumbi	0	0	0	3	1	4	0	1	2	3	2	4	1	16	29	33
Mtwara	1	1	2	4	0	8	1	1	1	3	4	2	0	38	50	58
KATI	0	0	0	4	0	4	0	0	1	3	3	3	0	3	13	17
Total	5	3	2	28	7	45	3	9	13	19	20	23	3	121	211	256
%	2.0%	1.2%	0.8%	10.9%	2.7%	17.6%	1.2%	3.5%	5.1%	7.4%	7.8%	9.0%	1.2%	47.3%	82.4%	

Remark: 45 schemes were trained or parts of some schemes, so the no. of target schemes for ST and MST is 211.

Table 2-30: Summary of Training potential per Institute (from Scheme data updated in 2018)

Institute	1.Scheme data in 2018					2.Target scheme in 2013/14-2018/19				3.Remaining scheme				
	H	M	L	Blank	Total	H	M	L	Total	H	M	L	Blank	Total
KATC, Moshi	20	5	9	0	34	12	3	1	16	8	2	8	0	18
MATI-Ukiriguru	4	4	21	2	31	3	3	3	9	1	1	18	2	22
MATI-Ilonga	12	3	3	0	18	12	2	1	15	0	1	2	0	3
MATI-Igurusi	26	2	18	2	48	14	1	0	15	12	1	18	2	33
MATI-Tumbi	13	7	11	0	31	7	4	2	13	6	3	9	0	18
MATI-Mtwara	32	1	18	0	51	16	0	0	16	16	1	18	0	35
KATI, Zanzibar	8	3	2	0	13	7	3	0	10	1	0	2	0	3
Total	115	25	82	4	226	71	16	7	94	44	9	75	4	132
%	50.9%	11.1%	36.3%	1.8%		75.5%	17.0%	7.4%			6.8%	56.8%	3.0%	

2-4-5　Identify irrigation schemes for the standard training course (including MST).

2-4-5-1 Communicate with DAICO/DED for gathering information

2013/14-2015/16: During conducting Scheme survey, ISM TG members communicated with District offices and visited with district officers at 256 schemes.

2016/17-2017/18: During updating Scheme data, ISM TG members communicated with District offices by using the updating list of Scheme data.

2-4-5-2　Select the qualified schemes on the set criteria

2013/14-2015/16: The target schemes for ST and MST were selected mainly based on 13 criteria.

2016/17-2017/18: The target schemes for ST and MST were selected based on not only 13 criteria but also training potential (H, M, L) after updating Scheme data.

2018/19: The target schemes for 3 years from 2018/19 to 2020/21 were selected after updating Scheme data in 2018 so as to include the training budget when district office prepare their budget plans.

2-4-6　Conduct training of trainers (TOT) on irrigated rice cultivation technologies for agricultural tutors and agricultural extension officers.

2-4-6-1 Prepare TOTs

Jul-Aug 2013: The meetings for preparing TOT for new training institutes were held with the related sections of KATC including Crop Science & Production, Extension & Farmers Training, Irrigation & Land Use Planning, Agro Mechanization and Agricultural Economic & Planning, and the timetable of TOT was prepared.

2-4-6-2 TOT/OJT of 2 new MATIs & KATI

Aug 2013: TOT for new training institutes, MATI Tumbi (4 tutors), Mtwara (4 tutors) and KATI (2 tutors) were conducted at KATC (1 week).

Dec 2013-Aug 2015: In 2013/14 cropping season, OJT for TOT was conducted when each component of ST from Baseline Survey to 2nd Monitoring & Planning was implemented at Lipeleng'enye scheme, Newala district by KATC for MATI Mtwara, Mkuti scheme, Kigoma district by MATI Ukiriguru for MATI Tumbi, and Kwamngumi scheme, Korogwe town by KATC for KATI. In 2014/15 cropping season, when MATI Mtwara and Tumbi conducted each component of ST at Malolo scheme, Nzega district and Ndanda scheme, Masasi district respectively, some tutors of MATI Ilonga and MATI Ukiriguru joined to support their activities.

2-4-6-3 TOT for district / extension officers

Dec 2014: TOT for district & extension officers from 6 target schemes of pilot MST (Type 2 & 3) was conducted at KATC (4 days) in order to train how to establish demo plots and follow up monitoring activities by themselves.

Feb-Mar 2015: Follow up of TOT for district & extension officers were conducted to confirm the progress of demo plots and monitoring activities.

Oct 2015: TOT for district & extension officers from 12 target schemes of MST in 2015/2016 was conducted at KATC (3days) in order to remind the roles of stakeholders and how to arrange each component.

Oct 2016: TOT for district & extension officers from 21 target schemes of ST (7) and MST (14) was conducted at KATC (2days) in order to remind the roles of stakeholders and how to arrange each component.

Oct 2017: TOT for district & extension officers from 19 target schemes of ST and MST was conducted at KATC (3days) in order to remind the roles of stakeholders and how to arrange each component.

2-4-7 Conduct the standard training course by involving DAICOs and agricultural extension officers in the identified irrigation schemes and develop extension materials.

2-4-7-1 Prepare the standard training

Sep 2013: When 2nd SC meeting was held at KATI, all Principals and Accounts from 7 training institutes were gathered to review the process of conducting ST, including how to prepare cost estimates of each component by referring to Operation Manual of ST.

Sep-Dec 2013: MoU (Memorandum of Understanding between MoA and JICA Tanzania office) for conducting ST was prepared/signed.

Sep 2016: MoU for conducting ST and MST was prepared/signed.

Sep 2017: MoU for conducting 4 training courses, ST, MST, Rainfed Low Land, and NERICA, was prepared/signed.

2-4-7-2 Conduct the standard training
After developed MST, each training institute have the capacity to train 2-4 schemes per cropping season (Please refer to Table 2-31 and 2-32).

Table 2-31: No. of trained schemes in 2013/14-2018/19

Type	ST				MST						Total
Institute	2013/14	2014/15	2015/16	2016/17	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	
KATC, Moshi	1	1	1	1	1	2	2	2	2	1	14
MATI-Ukiriguru	1	(1)	1	1	0	0	0	1	3	1	8(1)
MATI-Ilonga	1	1	1	1	1	2(1)	2	2	2	2	15(1)
MATI-Igurusi	1	1	1	1	1	2	2	2	3	1	15
MATI-Tumbi	1	2	1	1	0	0	2	2	3	1	13
MATI-Mtwara	1	1	1	1	0	0	2	3	4	2	15
KATI, Zanzibar	0	1	1	1	0	0	2	2	2	1	10
Total	6	7(1)	7	7	3	6(1)	12	14	19	9	90(2)

Remark: ( ) shows the no. of schemes which the remaining components were postponed after Baseline survey.

Table 2-32: No. of trained schemes per Institute (Region, District)

Institute	Region	District	ST	MST	Total
KATC, Moshi	Arusha	Karatu	1	1	2
	Dodoma	Bahi		1	1
	Kilimanjaro	Hai		1	1
		Moshi rural		1	1
		Same		4	4

MATI	Region	District			
	Tanga	Korogwe urban	1		1
		Korogwe rural	2	2	4
MATI-Ukiriguru	Kagera	Muleba	1	2	3
	Mara	Bunda	1	1	2
	Mwanza	Geita	1		1
		Ukerewe	(1)	1	1(1)
	Simiyu	Maswa		1	1
MATI-Ilonga	Morogoro	Kilombero	1	7	8
		Malinyi	1		1
		Morogoro rural		1	1
		Mvomero	2	2(1)	4(1)
	(Ruvuma)	Songea*		1	1
MATI-Igurusi	Iringa	Iringa	1	3	4
	Mbeya	Chunya	1		1
		Ileje	1		1
		Mbarali	1	4	5
	Rukwa	Nkasi		1	1
		Sumbawanga		3	3
MATI-Tumbi	Kigoma	Kakonko	1	2	3
		Kibondo	1		1
		Kigoma	1		1
	Tabora	Nzega	2	2	4
		Sikonge		1	1
		Uyui		1	1
		Tabora urban		1	1
		Urambo		1	1
MATI-Mtwara	Lindi	Liwale		1	1
		Nachingwea		1	1
		Ruangwa		1	1
	Mtwara	Ndanda	1		1
		Newala	1		1
		Tandahimba		1	1
	Ruvuma	Mbinga	1	1	2
		Namtumbo		5	5
		Nyasa	1		1
		Tunduru		1	1
KATI, Zanzibar	Pemba	Chake Chake		2	2
		Micheweni		1	1
		Mkoani	1	1	2
	Unguja	Central	1	1	2
		West	1	2	3
Total	19	45	27(1)	63(1)	90(2)

Remark: Songea district under Ruvuma region was tackled by MATI Ilonga in 2017/18

2-4-8 Monitor the rice cultivation activities in the irrigation schemes with the agricultural extension officers.

2-4-8-1 Review monitoring tool

2013/14-2015/16: Through developing MST, the process of Action plan making was revised so as to tackle for 2 days during Baseline survey (Please refer to Table 2-33).

Table 2-33: Process of Action plan making during Baseline survey (ST, Pilot MST and MST)

Activity	ST		Pilot MST		MST	
Year	2013/14-2015/16		2013/14-2014/15		2015/16-2017/18	
1. Baseline survey tools	Day 1	2.5 h	Day 1	1.5 h	Day 1	2.5 h
2. Presentation of result		1.5 h		1.5 h		1.0 h
3. Problem identification	Day 3	2.0 h	Day 2	1.0 h		1.0 h
4. Problem ranking						
5. Problem analysis						
5-1. Categorization				2.0 h	Day 2	2.0 h
5-2. Feasibility						
5-3. Problem/Objective trees	Day 11 (RT)	2.0 h				
6. Action plan making	Day 12 (RT)	4.0 h	Day 3	3.0 h		2.0 h
Total (day, hour)	4 days	12.0 h	3 days	9.0 h	2 days	8.5 h

Remark: ST applied the same process of Action plan making with MST since 2016/17. RT: Residential training

2013/14-2016/17: After revised 3 main monitoring tools of ST including 1) Rice farming statistics, 2) Individual rice farming record, and 3) Adoption of rice technologies, 5 main monitoring tools including 1) Rice farming statistics for group, 2) Income & Expenditure, 3) Rice farming statistics for farmer, 4) Farmer to Farmer extension, and 5) Input of labor are utilized under MST (Please refer to Table 2-34 and 2-35).

2015-2017: The reporting formats of each component, including Baseline survey, Residential training, Infield training and Monitoring & Planning, were revised in excel format in order to facilitate the data inputs by MATIs.

Table 2-34: Monitoring tools of ST and MST (Categories of Question)

No	Monitoring tool	Target	Training type	General Info	Rice info	Rice tech	Income	Organization	Water mgt.	Assistance	FTF Extension	Gender	Total
1	Rice farming statistics	Group	ST	9	10	20	5	8	7	1			60
			MST	7	6	9	2	6	8	1			39
2	Individual rice farming record	Individual farmer	ST	1		11	33	1				1 (26)	47
	Income & Expenditure		MST				31						31
3	Adoption of rice farming tech	Individual farmer	ST			44					6		50
	Rice farming statistics for farmer		MST	6	6	44							56
	Farmer to Farmer extension approach	KF's group	MST								4		4
4	Input of labor	Individual farmer	MST			28							28

Remark: ( ) means the no. of question is appeared under Income as well.

Table 2-35: Monitoring tools per component of ST and MST

Component	ST in 2013/14-2015/16	MST in 2013/14-2015/16	ST & MST since 2016/17
Baseline Survey	Historical Profile Seasonal Calendar Mapping (village) 1.Rice Farming Statistics	Historical Profile Seasonal Calendar Mapping (village, scheme) 1.Rice Farming Statistics for group 3.Rice Farming Statistics for farmer Action Plan making (1st season)	Historical Profile Seasonal Calendar Mapping (village, scheme) 1.Rice Farming Statistics for group Action Plan making (1st season)
Residential training	2.Individual Rice Farming Record Action Plan making (1st season)		Plot layout (Demo plot)
Infield training	2.Individual Rice Farming Record	Cropping calendar (demo plot, farmer) Type of demo plots	Cropping calendar (demo plot, farmer) Type of demo plots and yield
Monitoring & Planning	1.Rice Farming Statistics 3.Adoption of Rice Farming Tech. 2.Individual Rice Farming Record Action Plan making (2nd season)	1.Rice Farming Statistics for group 3.Rice Farming Statistics for farmer 2.Income & Expenditure 4.Input of labor Action Plan making (2nd season)	1.Rice Farming Statistics for group 3.Rice Farming Statistics for farmer 2.Income & Expenditure 4.Input of labor Action Plan making (2nd season) 3.FTF extension approach

2-4-8-2 Data collection by extension officers and MATIs

2013/14-2014/15: Under ST and Pilot MST, the data collection was mainly implemented by MATIs.

2015/16: Since 2015/16 cropping season under MST, the data collection was implemented by MATIs and district and extension officers by providing the file with related monitoring formats.

2017/18: After conducted Follow up for trained schemes (2-4-8-3), the data of Rice farming statistics for scheme in 2016/17 and 2017/18 was requested to collect by district and extension officers.

2-4-8-3 Follow up for trained schemes

May-Aug 2017: When conducted Follow up for trained schemes including the trained schemes of TANRICE at 76 schemes (TANRICE: 44, TANRICE2: 32), the tutors of MATIs trained district and extension officers how to collect the data of Rice farming statistics for scheme and collected the data of cropping season in 2015/16.

2-4-8-4 Data analysis and reporting

2017-2018: The database of training record for ST and MST was prepared with Access format, and the main data including the no. of participants and male/female participant rate, the data of Rice farming statistics for scheme is calculated automatically, and it can be extracted by the linked Excel format.

2-4-9 Examine and improve the management of the standard training course.

2-4-9-1 Review management of Standard training on planning & monitoring methods
2013-2016: Through the process of developing MST, the management of MST per stakeholders (MoA/JICA/Other donors, MATIs, District, Scheme, Farmer) during each period, Before training, Implementation of training, After training, was reviewed (Please refer to Table 2-36).

Table 2-36: Management of MST per stakeholders

	Before training			Implementation of Training					After training
Period	Apr-Jun	Jul-Sep	Oct	Oct-Nov	Nov-Dec	Nov-Jan	Nov-Jun	May-Sep	
Activity	Selection of target scheme	Preparation of training		Baseline survey (3 days)	Residential training (5 days)	Infield training (5 days)	Follow up by scheme/Farmer	Monitoring & Planning (3 days)	Follow up (3-5 years)
	Check list	Cost estimate (15mil/scheme) Training schedule		Data collection Action plan	Lecture, Field practice for KF, Leader	Lecture, Field practice for KF, IF, Leader		Data collection from KF, IF Action plan	Disseminate OF through FTF approach
Additional activity by Project	Scheme survey		TOT for District/ Extension staff	TOT for MATI	TOT for MATI	TOT for MATI	Follow up by MATI	TOT for MATI	Follow up for trained scheme (RFS)
		Sharing training impact, challenge					Main demo plots Record keeping		
Stakeholder									
MoA/JICA/ Other donors	Identify target scheme	Preparation of MoU, Cost estimate	Reminding role of stakeholder	Checking report	Checking report	Checking report		Checking report	Checking training impact
MATI (Principal/Tutor)	Propose target scheme	Preparation of training schedule	Confirmation of role of stakeholder	Facilitator Report (training, account)	Facilitator Report (training, account)	Facilitator Report (training, account)	Checking progress of activity	Facilitator Report (training, account) Data input	Data collection (RFS)
District (DAICO/SMS)	Data collection by checklist	Cost sharing	Confirmation of role of stakeholder	Co-facilitator	Co-facilitator	Co-facilitator	Field day	Co-facilitator	Data submission (RFS)
Scheme (IT/VAEO)	Data collection by checklist	Inform village/ scheme leaders	Confirmation of role of stakeholder	Co-facilitator	Co-facilitator	Co-facilitator	Main demo plots Field day Record keeping	Co-facilitator	Data collection (RFS)
Farmer (Leader/KF/IF)				Selection of KF(8)	Selection of IF(5/KF)	Nursery plot	Main demo plots Field day Record keeping	Data submission	Data collection (RFS)

Remark: TOT (Training of Trainer), RFS (Rice farming statistics for group)

2-4-9-2 Strengthen the capacity of management

2016/17: Since 2016/17 cropping season, the schedule of ST and MST has been updated by MATIs through Google drive so as to share the progress of each component among stakeholders.

2017/18: Since 2017/18 cropping season, the activities of all trainings (ST, MST, Rainfed Low Land and NERICA) under MoU, including schedule, budget allocation, accounting and training reports submission, have been updated among the experts of TANRICE2 through Google drive so as to implement the activities smoothly as planned.

2018/19: Since 2018/19 cropping season, the activities of all trainings (ST, MST, Rainfed Low Land, NERICA, and SMT on ISM, Gender, and Market) including schedule, budget allocation, accounting and training reports submission, have been updated and shared among MATIs through Google drive so as to implement the activities smoothly as planned.

2-4-10 Promote dissemination activities of rice development technologies across the country.
2-4-10-1 Identify resource to disseminate activities (sites, budget, etc.)

2013/14-2015/16: One of main criteria of selecting the target schemes for ST and MST was cost sharing by district office in 2013/14-2015/16, though, after realized that most of district offices have no training budget after phasing out of ASDP (Agricultural Sector Development Programme), the target schemes have been selected mainly considering on training potential.

May 2017: During Joint E&M and ISM TG meeting, the contents of Checklist to select the target schemes for ST and MST was discussed by TG members considering on the training impact of ST and MST in 2013/14-2016/17.

Jan-Jun 2018: Operation manual of MST is under preparation with TG members, and the selection of target scheme for MST will be done with the Check list by district office and MATI.

2-4-10-2 Develop operation plan for dissemination of technologies

2016-2017: To conduct ST and MST smoothly, 4 operation materials have been developed/utilized, including 1) Scheme data (Activity 2-4-4-4, 2-4-4-5), 2-1) Schedule of ST and MST, 2-2) All training courses of TANRICE2 (Activity 2-4-9-2) and 3) Training record of ST and MST (Activity 2-4-8-4) (Please refer to Table 2-37).

After updated Scheme data in 2018, the training potential (High, Medium, Low) of schemes per institute covering target scheme for ST and MST as well as remaining scheme were identified and shared among stakeholders (Please refer to Table 2-30).

Table 2-37: Operation materials for disseminate technologies (as of April 2018)

	1. Scheme survey data (Excel)	2.1. Schedule of ST and MST (Google drive)	2.2. All training courses of TANRICE2 (Google Drive)	3. Training record of ST and MST (Access)
Objective	To select target scheme for ST and MST and to evaluate training impact (since 2016)	To check schedule of ST, MST updated by MATIs (since 2016/17)	To check activity of all trainings under MoU/Out of MoU updated by Project (since 2017/18)	To record the data of trained scheme after received training report from MATIs (since 2017)
Target	All scheme 204 Trained scheme 81(2) Untrained scheme 121	Trained scheme ST, MST	Trained scheme ST, MST, RFLL, NERICA	Trained scheme TANRICE: 44(Follow up) TANRICE2: 81
Content	13 criteria Scheme type Training potential Training impact	Schedule of component (Done/Not yet)	Schedule of component Budget allocation Under MoU/Out of MoU Account and Training reports submission	Training type No. of participant Rice farming statistics (Group)

2-4-10-3 Implement operation plan using resources of districts & MATIs

2015-2018: Since 2015/16 cropping season under MST, the field activities in main demo plots and monitoring activities by using Rice farming statistics and Rice farming diary were supported by district and extension officers, and when conducted Follow up for trained schemes in 2017, the data of Rice farming statistics for scheme were requested to collect by district and extension officers. In terms of data collection/inputs including Rice farming statistics for individual farmer and Rice farming diary (Income & Expenditure, Input of labor) have been implemented by MATIs (Please refer to Table 2-38).

Table 2-38: Operation materials for disseminate technologies

	1. Scheme data (Excel)	2.1. Schedule of ST and MST (Google drive)	2.2. All training courses of TANRICE2 (Google Drive)	3. Training record of ST and MST (Access)
Objective	To select target scheme for ST and MST and to evaluate training impact (since 2016) To follow up the activity of trained/untrained schemes by District or stakeholders	To check schedule of ST, MST updated by MATIs (since 2016/17)	To check activity of all training courses updated by Project (since 2017/18)	To record the data of trained scheme after received training report from MATIs (since 2017)
Target	All scheme 226 Trained scheme 90(2) Untrained scheme 132 Additional scheme to be updated by District	Trained scheme ST, MST	Trained scheme ST, MST, RFLL, NERICA, SMT on ISM, Gender and Market	Trained scheme TANRICE: 44 (Follow up) TANRICE2: 90 (Follow up)
Content	Check list (for District) Scheme type Training potential Training impact	Schedule of component (Done/Not yet)	Schedule of component Budget allocation /Settlement Account and Training reports submission	Training type No. of participant Rice farming statistics (Scheme, Individual farmer) Rice farming diary (Income & Expenditure, Input of labor)

Remark: Revised parts are highlighted in blue.

3. Outputs of Training on Rainfed Rice Farming

3-1. Achievement of the Project purpose

The project purpose of the project is "**Rice farming technologies are adopted by farmers in the priority rice production areas**". The indicator "The **straight row transplanting or planting method** is adopted by at least **15,000 farmers** in the priority rice production areas in 2018" was set to evaluate whether or not the purpose was achieved.

> How to achieve the goal?
> Number of Irrigation schemes 80 x 300 farmers x 50% = 12,000
> Rainfed lowland rice cultivation training courses 20 x 80 farmers x 25% = 400
> NERICA training courses 50 x 60 farmers = 3,000
> Total: 15,400 farmers

(1) Rainfed Lowland Rice Cultivation Training Course

- The number of training courses: **30 courses**
- The number of target villages monitored: **22**
- The number of farmers who adopted straight row planting in the target villages: **6,341 farmers**

Table 3-1: Number of farmers who adopted straight row planting in the target villages

Year	Village	District	No. farmer in the village	Baseline	2nd Monitoring*1	KF/IF at 2nd monitoring*2	3rd Monitoring*1	No. farmers
2015/2016	Tenende	Kyela	282	0	NA	12	87	87
	Idete	Kilombero	1973	0	789	0		789
	Kashishi	Msalala	8099	0	NA	33		33
	Kimbo	Muheza	106	0	102	69	106	106
2016/2017	Bujela	Kyela	256	0	38		24	38
	Ngorongo	Rufiji	1363	273	709			436
	Mapea	Babati	903	45	271			226
	Muyuni	South Unguja	199	10	NA		199	189
	Mkotamo	Tundulu	643	0	251	14		251
	Loya	Uyui	5875	0	118		940	940
	Jana	Msalala	16572	0	0			0
	Wendele	Kahama	1877	0	4			4
2017/2018	Isanga	Kyela	365	4	44			40
	Kamsamba	Momba	452	0	1			1
	Namawala	Kilombero	8463	2116	2370			254
	Namhanga	Ulanga	9687	0	2712			2712
	Magugu	Babati	NA			15		15
	Kangani	Mkoani	257			26		26
	Nduruka	Liwale	103	0	24			24
	Nkungwi	Mpanda	300	0	9			9
	Kizungu	Shinyanga rural	2559	0	128			128
	Nyantakara	Biharamulo	108	0	32			32
							Total	**6341**

*1 Results of general farming statistics in 2nd monitoring and 3rd monitoring. *2 The number of the farmers could not be calculated due to lack of information such as total number of rice farmers in the village. Therefore, the number of farmers from individual questionnaires of KFs and IFs was utilized. NA: Not Available

(2) NERICA Cultivation Training Course

- The number of training courses: **47 courses**
- The number of target villages monitored: **30**

- The number of farmers adopted straight row planting in the target villages: **1,227 farmers (the data was collected in the workshop held in August, 2017)**

Table: 3-2: Number of farmers who adopted straight row planting in the target villages (NERICA)

Year	Name of district	Name of region	Institute	No. farmers	No. farmers adopted line planting
2013/2014	Morogoro rural	Morogoro	KATC	0	NA
	Pangani	Tanga	KATC	42	32
2014/2015	Busokelo	Mbeya	Igurusi	42	42
	Ileje	Mbeya	Igurusi	54	NA
	Mvomero	Morogoro	Ilonga	0	0
	Kibaha	Pwani	Ilonga	7	NA
	Muheza	Tanga	KATC	95	52
	Wete	Pemba	KATI	45	61
	Kilwa	Lindi	Mtwara	183	9
	Kigoma (R)	Kigoma	Tumbi	3	NA
	Ukerewe	Mwanza	Ukiriguru	0	0
2015/2016	Mafia	Pwani	Ilonga	10	NA
	North A	Unguja	KATI	90	90
	Nanyumbu	Mtwara	Mtwara	52	47
	Newala	Mtwara	Mtwara	81	81
	Mpanda	Katavi	Tumbi	57	31
	Biharamulo	Kagera	Ukiriguru	72	NA
	Muleba	Kagera	Ukiriguru	51	NA
2016/2017	Busokelo	Mbeya	Igurusi	64	64
	Mkuranga	Coast	Ilonga	63	63
	Ulanga	Morogoro	Ilonga	407	407
	Muheza	Tanga	KATC	217	121
	Korogwe	Tanga	KATC	69	53
	Micheweni	Pemba	KATI	49	30
	Kilwa	Lindi	Mtwara	10	10
	Mtwara (R)	Mtwara	Mtwara	31	31
	Kigoma (R)	Kigoma	Tumbi	29	NA
	Nzega	Tabora	Tumbi	16	3
	Chato	Geita	Ukiriguru	15	NA
	Biharamulo	Kagera	Ukiriguru	8	NA
				1862	**1227**

NA: Not available

Total number of farmers: **7,568 farmers (Rainfed Lowland Rice + NERICA)**
The number of farmers adapted straight line planting exceeded the target.

3-2 Output 2 and its indicators

Output2: Training approach for disseminating the appropriate rainfed rice cultivation technologies is developed
The following indicators are set to evaluate the Output2.
(1) Effective technologies of rainfed lowland rice cultivation are confirmed.
(2) At least 25% of KFs and intermediate farmers of rainfed upland and rainfed lowland rice cultivation courses evaluate that their paddy production technologies are improved after 2 cropping seasons.
(3) Extension materials for extension officers and farmers are developed.
(4) At least 45% of participants of the training (key- and intermediate-farmers) are women.

3-3 Outputs of Rainfed lowland rice cultivation

3-3-1. Effective technologies of rainfed lowland rice cultivation are confirmed
3-3-1-1 Collect basic information of rainfed lowland rice areas

(1) Sensitization workshop:

The sensitization workshops were held at KATC, MATI-Ukiriguru, MATI-Ilonga and MATI-Igurusi during Jan-Feb 2013.

During the workshops, the questionnaires on rainfed rice cultivation were collected from the district officers on 155 villages in 59 districts, 20 regions for rainfed rice cultivation. The questionnaires were prepared for rainfed lowland and upland rice cultivation though, it was suspected that the data from both ecosystems had been mixed up judging from the information on bund making in upland rice cultivation while analysing the information. Generally speaking, farmers do not construct bunds for upland rice cultivation. It should be accurate if the information is combined as rainfed rice cultivation in Tanzania and analysed. The findings from the survey are as follows:
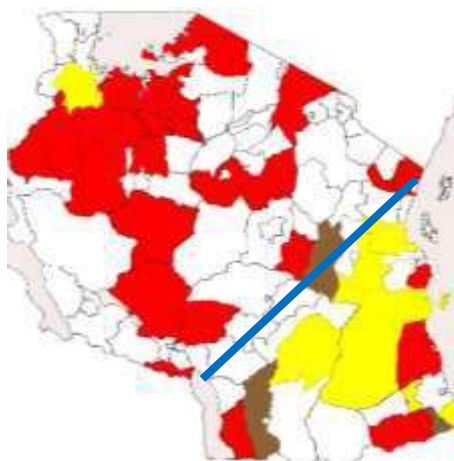
Fig 3-1. Situation of Bund Making
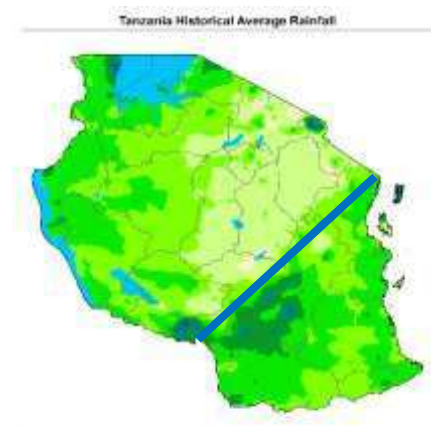
Fig 3-2. Average rainfall in Tanzania

1) Farmers make bunds in the districts with red colour. The area can be divided into 2 parts with bunds and without bunds by the blue line (Fig. 3-1).

2) Bund making can be observed more in the western parts of the country where the altitude is around 1000mASL.

3) Farmers do not make bunds so much in the eastern parts of the country where the altitude is lower than 500mASL.

4) There is less rainfall (750-1000mm) in western and more of it (1000- 1250mm) in eastern Tanzania (Fig. 3-2).

5) It can be said that the western part of Tanzania is drought prone area where farmers make bunds, on the other hand the eastern part is flood prone area where farmers do not make bunds (Fig. 3-3)

6) It is difficult to observe trends on the situation of levelling. It should be important to quantify the extent of levelling using level measurement devises to evaluate the extent of levelling (Fig. 3-4).

7) Improved varieties such as SARO5 are widely being cultivated with local varieties even in rainfed rice cultivation areas and yield is better than when only local varieties are cultivated (Fig.3-5).

8) Cropping pattern can be categorized into three types by the information collected as follows: Type 1: cultivation starts from Oct-Nov and ends in April-May under unimodal rainfall pattern. Type 2: cultivation starts from Sept-Oct in first rainy season (*Vuli*) and ends in May-June in second rainy season (*Masika*). Type 3: cultivation starts from Jan-Feb in early *Masika* and ends in May-June by the end of *Masika*. It is found that type 1 and type 2 cover 41% and 48% of the rainfed rice production area respectively according to the results. In spite of dry spell between *Vuli* (short rain period) and *Masika* (long rain period), surprisingly type 2 is the most common cropping pattern in this country. It is important to study carefully why farmers adopt this cropping pattern and use the findings to establish a training module for rainfed rice cultivation.
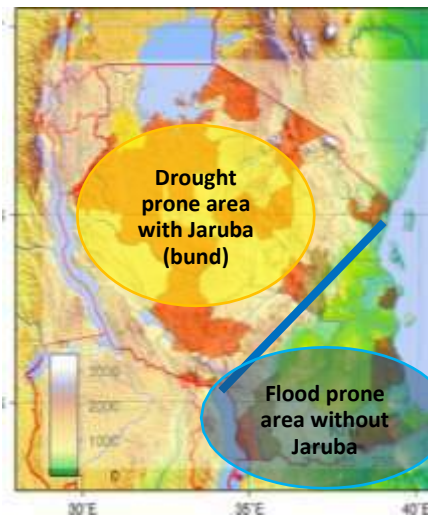
Fig 3-3. Situation of Bund Making with Hydrological Conditions
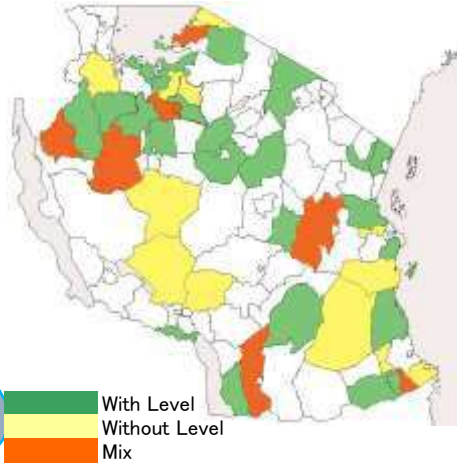
Fig 3-4. Situation of leveling
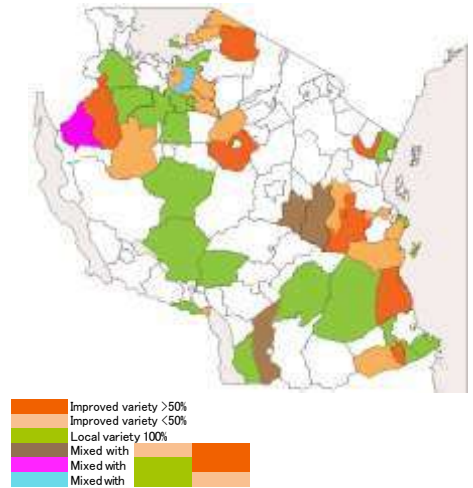
Fig 3-5. Distribution of Varieties

(2) Collection for weather and soil data etc.

Weather data from 18 stations (Bukoba, Dodoma, Iringa, Kigoma, Mbeya, Morogoro, Moshi, Mtwara, Musoma, Mwanza, Nachingwea, Same, Shinyanga, Singida, Songea, Tabora, Tanga and Tundulu) on mainland Tanzania were purchased from Tanzania Meteorological Agency. The daily data comprised information on rainfall, daily temperature, relative humidity, evaporation and solar radiation for five (5) years from 2008 to 2013.

Generally speaking, bimodal rainfall, comprised of the long rains of *Masika* between March to May and short rains of *Vuli* between October to December, is the pattern for the northeastern, northwestern (Lake Victoria basin) and the northern parts of the coast. Typical pattern is shown in Fig 3-6. Unimodal rainfall, with the most of rainfall during December to April, is more typical of the southern, central, western and southwestern parts of the country. Fig 3-7 shows the typical unimodal pattern in Mtwara. By the shapes of graphs, Bukoba, Kigoma, Morogoro, Moshi, Musoma, Mwanza, Same, Shinyanga and Tanga are categorized as bimodal pattern. On the other hand, Dodoma, Iringa, Mbeya, Mtwara, Nachingwea, Singida, Songea and Tabora are categorized as unimodal pattern. It is not possible to observe situation of Tundulu since there are much missing weather data.

Fig 3-6. Average rainfall and temperature of Musoma (Bimodal) from 2008 to 2013
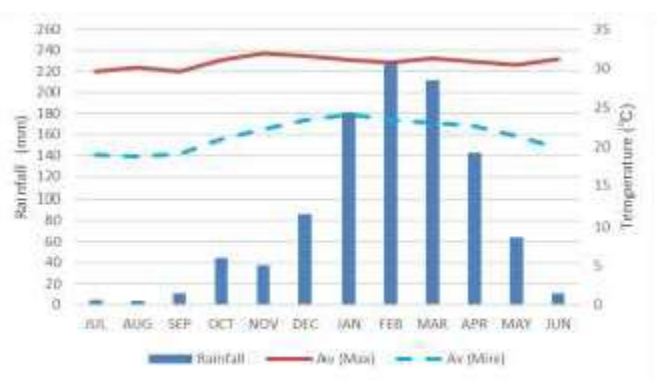
Fig 3-7. Average rainfall and temperature of Mtwara (Unimodal) from 2008 to 2013

The weather data of 3 verification sites also collected from Kilombero and Msalala districts and Lake Nyasa basin water board in Tukuyu for Kyela district.

There was soil information from many places in Sokoine University of Agriculture but the data were collected by different projects and were not integrated.

Secondary data, such as weather data and soil data have been being collected from Harmonized Soil Database (http://webarchive.iiasa.ac.at), USGS (https://earlywarning.usgs.gov/fews) and JAXA (https://sharaku.eorc.jaxa.jp/GSMaP_NOW/index_j.htm) and utilized for further analysis of the results of training courses.

(3) Field visit of the potential area

According to responses to questionnaires administered at the January-February sensitization workshops, it was found that the cultivation areas of rainfed lowland rice were widespread and the situations were diversified. TG members and JICA expert selected Sinyanga, Morogoro and Mbeya regions due to the following reasons[2]:

1) Mbeya: The region produces one of the most marketable rice in Tanzania. The land planted with paddy (9.2%) and the production (11.7%) were also high. The annual precipitation is about 2,500mm which is much higher than of Shinyanga and farmers in the region build bund according to the questionnaire survey. The rice is cultivated under unimodal rainfall regimes as described as type 1 mentioned above.

2) Shinyanga: The region had the highest percent of land planted with paddy in the country (19.3%) and the highest actual regional land planted with paddy (175,192 ha). The paddy production in the region was the second highest and amounted to 18.4% of total production in 2007/2008. In the region, paddy plot with bund is called "Jaruba" and it is common practice for farmers to build bund for rice cultivation. The rice is cultivated under bimodal rainfall regime as described as type 2 mentioned above. The precipitation is relatively low comparing with Morogoro and Mbeya region and the region suffers from drought occasionally.

3) Morogoro: The region was the second largest proportion of land planted with paddy (18.7%) and the production was the highest (21.1%). In contrast with Shinyanga, farmers in the region don't build bund normally according to the questionnaire survey. The rice is cultivated under bimodal rainfall regimes as described as type 2 mentioned above.

Through discussion among TG members and JICA expert, Kahama district in Shinyanga region, Kilombero district in Morogoro region and Kyela district in Mbeya region were selected for the preliminary survey.

The preliminary surveys were implemented to select villages for verification trials in Msalala [3] (Sinyanga), Kilombero (Morogoro) and Kyela (Mbeya) districts. Through discussion with the districts, the total of 24 villages in Msalala (10), Kilombero (6) and Kyela (8) districts were selected.

Considering information such as situation of rice cultivation, allocation of extension officer and accessibility collected by field survey with questionnaires in Oct 2013, Kashishi (Shinyanga), Idete (Morogoro) and Tenende (Mbeya) were selected for verification trial sites.

3-3-1-2 Clarify issues and challenges on rainfed lowland rice cultivation technologies.
(1) Baseline survey

Baseline surveys of the target villages for verification trials were conducted in the three villages during Oct-Dec 2013. The participants for the survey were divided into two groups to conduct two participatory rural appraisal (PRA) tools; one was resource map and the other was seasonal calendar to clarify issues

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[2] The figures of planted area and production of each region were referred to National Sample Census of Agriculture Small Holder Agriculture, Volume II: Crop Sector – National Report, April 2012
[3] Kahama rural district was divided into 3districts (Kahama rural, Msalala and Ushetu) in 2013.

and challenges in the area. The major problems raised by PRA are shown in the Table 3-3. Five farmers were selected for verification trials in each village considering the information collected by the PRA.

Table 3-3. Major problems of target villages

Target village	Major problems
Kashishi, Msalala	Drought, Lack of agro-machinery, Weed infestation, Lack of training on modern rice cultivation
Idete, Kilombero	Flood, Incidence of RYMV, High cost of rice cultivation, Price of rice is low, Lack of knowledge on modern rice cultivation
Tenende, Kyela	Unreliable availability of improved rice seeds, Insect pest (army warm), No associations or cooperatives of rice farmers, RYMV, Unreliable market of paddy especially soon after harvesting

(2) Task Group Meeting

  Task Group (TG) meetings were held two times in a year to share progress of activities and discuss on issues and challenges for rainfed rice cultivation technologies with TG members. The schedule of the meetings shows the table 3-4.

Table 3-4. Schedule of the TG meeting

	Schedule	Venue
1st TG Meeting	21-23 Jun, 2013	KATC
2nd TG Meeting	14 Sep, 2013	KATC
3rd TG Meeting	5-6 Mar, 2014	MATI-Ukiriguru
4th TG Meeting	20-21 Nov, 2014	MATI-Igurusi
5th TG Meeting	11-12 May, 2015	MATI-Mtwara
6th TG Meeting	31 Aug-1 Sep, 2015	KATI
7th TG Meeting	8-10 Mar, 2016	MATI-Tumbi
8th TG Meeting	14-16 Sep, 2016	MATI-Ilonga
9th TG Meeting	20-23 Feb, 2017	KATC
10th TG Meeting	28-30 Aug, 2017	KATC
11th TG Meeting	28 Feb-2 Mar, 2018	KATC
12th TG Meeting	29-31 Oct, 2018	MATI-Igurusi
13th TG Meeting	11-13 Mar, 2019	MATI-Mtwara
14th TG Meeting	7-8 Nov, 2019	MATI-Tumbi

(3) Research Advisory Committee

Research Advisory Committee (RAC) was held as shown table 3-5. The committee was established for the purpose as follows: 1) suggestion for the issues on verification studies, prevention/protection of rice from natural hazards and application of advanced technologies will be indicated, 2) Strengthening the linkage of stakeholders including Japanese researchers.

Table 3-5. Schedule of Research Advisory Committee

	Schedule	Venue
1st RAC	20 Aug, 2013	MAFC
2nd RAC	21 Oct, 2013	MAFC
3rd RAC	2 Mar, 2016	KATC
4th RAC	17 Jan, 2017	KATC
5th RAC	27 Feb, 2018	KATC

3-3-1-3. Conduct Verification Trials for Rainfed Lowland Rice Cultivation

(1) On farm trial

First advisory survey: The project requested Dr. Hideki Araki, Associate Professor, Yamaguchi University to visit to Tanzania as a member of advisory survey. The advisory survey was conducted from 15 to 22 Oct, 2013. After observation of baseline survey in Idete, Kilombero, Dr. Araki advised experimental design as shown in Table 3-6 and fig 3-8.

Table 3-6. Experimental design for on farm verification trial in 2013/2014

Band	Level	Nitrogen fertilizer at late February (Tillering)	Nitrogen fertilizer at late March (PI)	Sub-plot Number
Band	Leveling	Applied	Applied	1
			Not applied	2
		Not applied	Applied	3
			Not applied	4
	No leveling	Applied	Applied	5
			Not applied	6
		Not applied	Applied	7
			Not applied	8
No band	Leveling	Applied	Applied	9
			Not applied	10
		Not applied	Applied	11
			Not applied	12
	No leveling	Applied	Applied	13
			Not applied	14
		Not applied	Applied	15
			Not applied	16
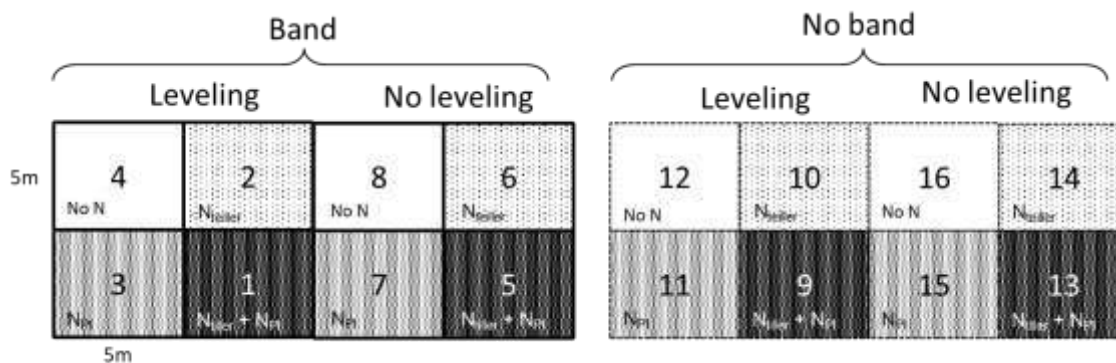
Fig.3-8. Diagram of experimental plot

First verification trial: The first verification trial was conducted in Kashishi, Idete and Tenende villages from Dec, 2013 to Jun, 2014. Bund was effective to increase yield in Kyela and Msalala districts where were relatively dry. On the other hand, it was observed that levelling and application of fertilizer at tillering stage were effective in Kilombero district (Fig.3-9). The number of panicles per unit area is very small as 100-150 panicles/ m2 which could be one of the limiting factors for the low yield in three sites commonly.
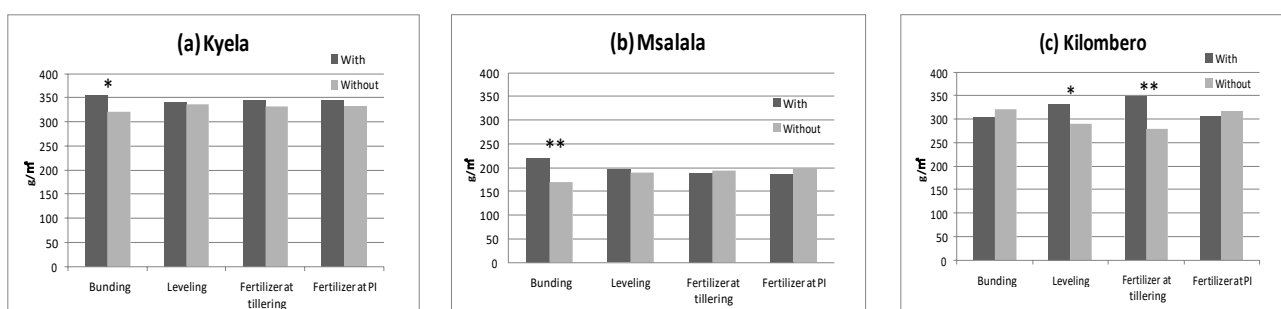
Fig.3-9 (a) Yield (g/m2) of each treatment for (a) Kyela, (b) Msalala, (c) Kilombero.
** and * show significant difference at 1% and 5% level respectively.

Second advisory survey: Second advisory survey was conducted from 12 to 27 Jun, 2014 by Dr. Araki. The result of verification trail was shared with Dr. Araki and discussed on the experimental design of 2nd verification trial. The application of fertilizer at panicle initiation was not effective in all sites. Therefore, varieties (Kalimata and TXD306) were added as a treatment instead of the fertilizer application at PI. We decided to continue the varietal trial and sowing timing trial in 2014/2015 cropping season. Dr. Araki suggested to conduct sowing methods trial to know how to increase the number of panicles per unit area.

Second verification trial: The verification trials were implemented in the same three villages as the first verification trial from Dec, 2014 to Jun, 2015. Bund was effective in Kyela and Msalala districts and not in Kilombero district (Fig.3-10). These results were the same as in the verification trial 2013/2014. Bund was more likely affect positively on the growth of rice in Kyela and Msalala. On the other hand, levelling was not effective in all locations in this year. Number of panicles were 170.5, 172.3 and 120.2 in average in Kyela, Msalala and Kilombero districts respectively. Since number of panicles seemed to be one of the biggest factors to limit the yield in this verification trial, the yield of Kilombero district was the lowest among three districts. Yield level was worse to previous season except Msalala due to drought. SARO5 performed better in Msalala district.
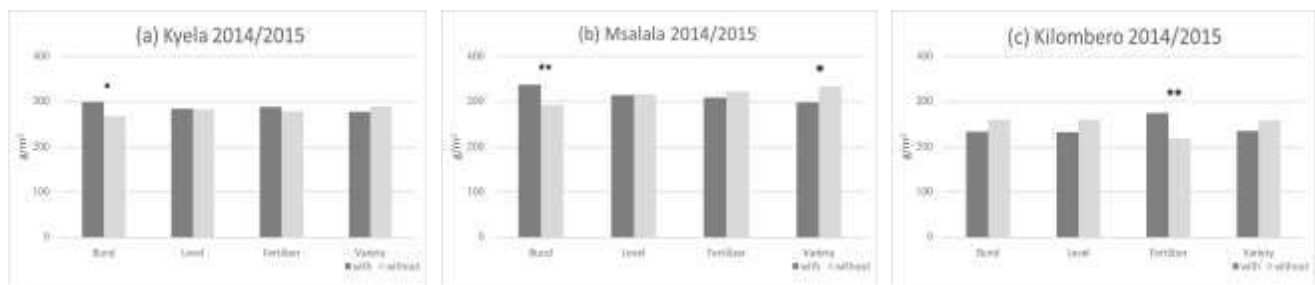
Fig.3-10 (a) Yield (g/m2) of each treatment for (a) Kyela, (b) Msalala, (c) Kilombero.
** and * show significant difference at 1% and 5% level respectively.

Variety trail and sowing timing: According to the result of the sensitization workshop in 2013, it could be important to introduce improved varieties into even rainfed lowland rice cultivation area since we observed higher yield in the rainfed rice cultivation area where farmers cultivated improved varieties like TXD306 (SARO5). Therefore, we conducted varietal trial using 10 varieties[4] including the ones released for rainfed lowland ecosystem. Since the timing of sowing is also important factor to determine yield of rice under rainfed condition, we set two sowing timing for the varietal experiments. Unfortunately, the germination of varieties employed for the varietal trials was poor due to drought in three sites. Therefore, we could not evaluate properly the performance of the varieties. We thought especially early maturing type of variety like Wahiwahi and Chrehani could escape drought if they were sown onset of long rainy season (*Masika*). However, the yield of first sowing was higher than second sowing which was conducted one month later than the first sowing.

Sowing method trial: The number of panicle/m^2 was limiting factor in the verification trial 2013/2014. Therefore, it is very important to improve establishment of seedlings. The sowing method trial was conducted to observe how the establishment could be improved by different sowing methods. Fig 3-11 shows the result of sowing method trial in Kilombero. Dibbling was effective in Msalala and Kilombero.

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[4] 10 varieties are TXD306 (SARO5), IR64, Tai, Komboka, Wahiwahi, Cherehani, NERICA1,

NERICA4, Kalimata (local check) and one variety for each village (SARO Mref (Idete village), Supa

India (Tenende), Serena (Kashishi))
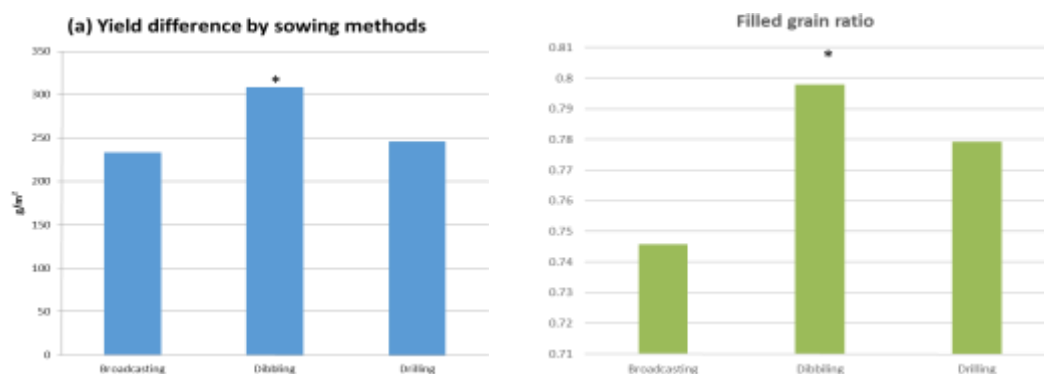
Fig.3-11 Yield (g/m2) of each sowing method
for (a) Kilombero district. Filled grain ratio for (b) Kilombero district.

Third advisory survey: Dr. Araki and Dr. Sakaguchi visited the project from 6 to 17 Sep, 2015. The result of two year verification trials was shared and confirmed some technologies were effective such as bund making in Kyela and Msalala districts, application fertilizer and straight dibbling in Kilombero district. Improved variety (TXD306) was effective in Msalala district. Generally, it was observed that the number of panicles per unit area was very small in the verification trial sites. Levelling was recommended to improve the establishment of seedling although the effectiveness was not confirmed by the verification trial. Observing the result of the verification trials for two years and three locations, effective technologies were different from site to site. It is important to consider the environmental condition which technologies can be adopted by farmers by training course. Therefore, we need continue to examine effective technologies through the implementation of training course. We discussed on the way forward for activities related to rainfed lowland rice cultivation training course.

(2) On station trial

Monthly transplanting trial and varietal trial were conducted in KATC farm. The purposes of the trials were 1) improve knowledge of tutors and 2) demonstration of cultivation technologies and varieties to visitors. The data from trials are used collaborative activities with Japanese universities such as Yamaguchi university for Japan Society for the Promotion of Science (JSPS KAKENHI). The results of the trials will be compiled and published in near future.

Effective technologies confirmed by the verification trials

- Bund making
- Levelling
- Straight row planting (transplanting, dibbling and drilling)
- Application of fertilizer
- Use of Improved variety

However, effective technologies were different from location to location as shown by the results of the verification trials. It is important to consider the environmental conditions in which technologies can be adopted by farmers with training course. Therefore, we need to continue to examine effective technologies through the implementation of training course.

3-3-2. At least 25% of key farmers and intermediate farmers of rainfed upland and rainfed lowland rice cultivation courses evaluate that their paddy production technologies are improved after 2 cropping seasons.

3-3-2-1. Conduct Pilot Training on Rainfed Lowland Rice Cultivation Involving DAICOs and Agricultural Extension Officers

(1) Criteria of selecting target village for rainfed lowland rice cultivation training course

In the sensitization workshop in 2013, criteria were agreed among stakeholders. Some criteria were modified through the discussion at the TG meeting and finalized as shown in the Table 3-7.

Table 3-7: Criteria of selecting target village for rainfed lowland rice cultivation training course

No	Criteria
1	Amount and distribution of rainfall are enough and stable.
2	Proper soils are available for rice production.
3	Farmers are cultivating rain fed lowland rice for long period (more than 5years).
4	Size of land is at least 50ha (10ha for Zanzibar)

(2) Pilot training developed

Pilot training course for rainfed lowland rice cultivation was developed since some effective technologies were confirmed by the verification trials.

The pilot training course is composed of 1) baseline survey, 2) study tour to advanced rice cultivation area, 3) residential training, 4) 1st In-field training (land preparation and sowing), 5) 2nd In-field training (harvesting and monitoring) and 6) 2nd monitoring.

In the 1st infield training, every key farmer was requested to manage demonstration plot with some recommended technologies such as bund making, levelling, line planting/transplanting, improved varieties, application of fertilizer and herbicide. The yield data was checked with circle sampler at main demonstration plot during 2nd infield training. The input such as seed of improved varieties, herbicide and fertilizer were distributed to KFs to conduct demonstration of technologies in their own plots. One rotary weeder was also provided to a KF who manages main demonstration plot where the other farmers conduct the field practices during the infield training courses.

The detail of the components shows in the Table 3-8. The implementation guidelines were developed and distributed to TG members. Teaching materials for the training were also developed.

Table 3-8: Components of training course of rainfed lowland rice cultivation

Component	No. Day	No. participants	No. Tutors	Timing	Main topics
Baseline survey	3*	Total 50	3	Before cultivation season normally October	PRA tools, rice farming statistics, selection of KF
Study tour	1	16KFs +1VAEO+1District officer	2	Oct-Nov Preferably when there is rice crop in the destination	Observation of standard rice cultivation technologies in advanced rice cultivation area and meeting with host farmers
Residential training	1	Total 18	3	Right after study tour	Practice of transplanting (Only when more than 30% of the farmers are conducting transplanting in the target village according to data of baseline survey)
1st infield training	4*	16KFs + 64IFs + 1VAEO + 1District officer Total 82	3	Land preparation timing normally Dec-Jan	1)Land preparation (bund making and leveling), 2) Planting methods (straight row planting) 3) weed control (herbicide, push/rotary weeders), 4) fertilizer management, 5) improved variety 6) gender in rice farming 7) farm

					diary 8) monitoring by questionnaires
2nd infield training	2*		3	Harvest timing normally May-Jun	1) yield components and yield estimation, 2) post-harvest and 3) marketing
1st monitoring	1		3	Right after 2nd infield training	Monitoring by questionnaires
2nd monitoring	3*		2	1 year after 2nd infield training	Monitoring by questionnaires

*the number of days includes the day for courtesy call to target district

(3) Implementation of the pilot training

Firstly, the villages where the verification trials were implemented were targeted for the pilot training course. From 2016/2017 cropping season, target districts were determined by selection criteria along with the information collected by TG members through communication with district officers.

The record of the pilot training courses for rainfed lowland rice cultivation training is indicated in Appendix 13. The number of rainfed lowland rice cultivation training course conducted during the project period is 30 for 22districts, 16regions. The accumulated number of the participants for all training components from baseline survey to monitoring was 7,445. It is difficult to count actual number of participants since the same KFs and IFs did not attend every component consistently. The ratio of the farmers who participate 1st and 2nd infield training courses was 60%. The ratios of the farmers who participated 1st or 2nd infield training courses and 2nd monitoring, 3rd monitoring were 51% and 47% respectively. Therefore, the maximum number of the participants was taken for the estimated number of participants and the total number of participants was estimated as 2,167.

3rd and 4th Advisory study: Dr. Araki visited from 2 to 21st Jan, 2017 and 6 to 20 Jun, 2017 for advisory study. He observed 1st infield training in Ngorongo, Rufiji and Mkotamo, Tundul, 2nd infield training in Bujela, Kyela, 2nd monitoring in Idete, Kilombero and Tenende, Kyela and confirmed the outputs of the training courses.

Demonstration plot: it was found that SARO5 with fertilizer reached 5 to 7 t/ha and most of the participants of the training courses appreciated the technologies. Some tutors were trained how to utilize circle sampler using this opportunity.

Table 3-9 shows the adoption ratio of major rice cultivation technologies confirmed by 2nd monitoring for 22 training courses and 3rd monitoring for 8 courses, which were conducted from 2015/2016 to 2017/2018 cropping seasons. In the almost all the target villages, the adoption ratio increased more than 25%. The details of the adoption ratios in each village are in Appendix 14.

Table 3-9. Adoption ratio of major rice cultivation technologies

Major rice cultivation technologies	Baseline Survey (%)	1st monitoring (%)	2nd monitoring (%)	3rd monitoring (%)
Bund making	46.2	57.2	60.1	41.7
Levelling	25.1	56.3	64.9	60.2
Straight row transplanting (area)	3.3	8.8	10.5	6.3
Straight row transplanting (No. farmers)	5.8	21.7	22.9	13.1
Straight row direct planting (area)	5.7	16.5	18.0	30.2
Straight row direct planting (No. farmers)	7.0	26.7	26.4	35.9
Application of fertilizer	11.3	25.9	29.5	31.7

Use of improved variety	3.7	13.5	18.4	25.1
Use of improved variety (farmers)	9.6	32.3	44.0	44.4

Fig. 3-11 shows the average paddy yield and precipitation of Kyela district. The yield before trainings were about 1500-2100kg/ha constantly but the yield increased by about 300-700kg/ha right after the training courses in Tenende, Bujera and Isanga, Kyela district. The elevations of these villages are not so much different (483m-497m above sea level). The amount of precipitation from Jan-July are different although the distance between the northernmost and the southernmost villages is only 20km (Fig 3-12). The amount of precipitation is more, the further south the village locates. The amounts of precipitation in the years are similar in the villages. It is not clear relationship between the yield and precipitation. Kyela district locates in plain surrounded by mountain and the mountain provides water to the plain therefore, the rice cultivation in the plain might not be affected only by the direct rain in the area. According to the farmers, there was severe drought in 2018/2019. Bujera village faced drought even in 2017/2018 (there is no information from Tenende village since monitoring was not conducted).

Fig.3-11 Yield (Kg/ha) with precipitation for (a) Tenende, (b) Bujera and (c) Isanga in Kyela district
(The precipitation was taken from https://sharaku.eorc.jaxa.jp/GSMaP_NOW/index_j.htm)

Those villages locate in same district and the environmental conditions are not so much different. Therefore, multiple regression analysis was applied for the result of questionnaires of 2018/2019 to know the relationship between yield and adopted technologies. In this case, the dependent variable consists in the yield, while the independent variables are the following: status (KF, IF), age, sex, variety, straight direct planting, application of fertilizer, bund making, levelling and amount of precipitation. The coefficient of determination R square indicating the percent of how much of the total variance is explained by the independent variable is only 14.80%. However, straight direct planting and rainfall had strong correlation with the yield ($p < 0.001$). The fig. 3-13 shows the yield difference with/without straight direct planting. The yield with straight direct planting was higher than without straight direct planting in Kyela district. The other technologies such as bund making did not show the strong relationship with yield. Since the adoption rate of bund making was only 7 %, it could be difficult to find statistical significance.

Fig.3-12 Locations of Tenende, Bujera and and Isanga in Kyela district
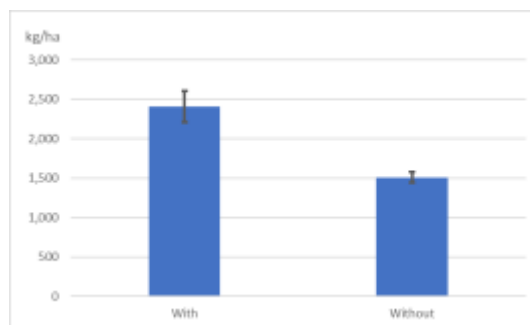
Fig.3-13 Yield (Kg/ha) with/without straight direct planting in Kyela district

Fig. 3-14 shows the average paddy yield and precipitation of Msalala and Kahama districts. The yield before trainings were about 400-2300kg/ha. The levels of yield were fluctuated by unstable precipitation. Although the yield increased in Kashishi in 2015/2016 right after the training, the amount of precipitation was relatively good in the year and yield was also better in the other villages even though trainings were not conducted. The training improved technology adoption but it seems the yields were not improved in the area.

The elevations of these villages are not so much different (1157m-1204m above sea level). The amount of precipitation from Dec-Jun are almost the same in Kashishi, Jana and Kizungu since they are adjacent (Fig 3-15). The precipitation in Kizungu is higher than the other villages. In 2016/2017, there was severe drought in the area and the levels of yield were very low in all villages.
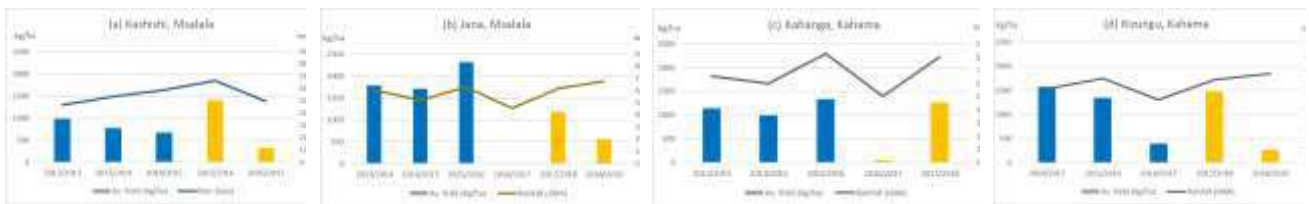
Fig.3-14 Yield (Kg/ha) with precipitation for (a) Kashishi, (b) Jana in Msalala district and
(c) Kahanga and (d) Kizungu in Kahama district
(The precipitation was taken from https://sharaku.eorc.jaxa.jp/GSMaP_NOW/index_j.htm)

Fig.3-15 Locations of Kashishi, Jana, Kahanga and Kizungu in Msalala and Kahama districts

The multiple regression was done. In this case, the dependent variable consists in the yield, while the independent variables are the following: status (KF, IF), age, sex, variety, nursery, straight line transplanting, random transplanting, straight direct planting, application of fertilizer, bund making, levelling and amount of precipitation. The coefficient of determination R square is explained by the independent variable is only 11.93%. Unfortunately, relationship between yield and technologies could not be observed.

Fig. 3-16 shows the average paddy yield and precipitation of Kilombero and Ulanga districts. The yield before trainings were about 1900-2500kg/ha constantly before the training courses. The level of yield in Idete increased 686kg/ha in average after the training. However, the levels of yield were not improved in Namawala and Namhanga because of drought in 2018/2019. The training improved technology adoption but it seems the yields were not improved in Namawala and Namuhanga.
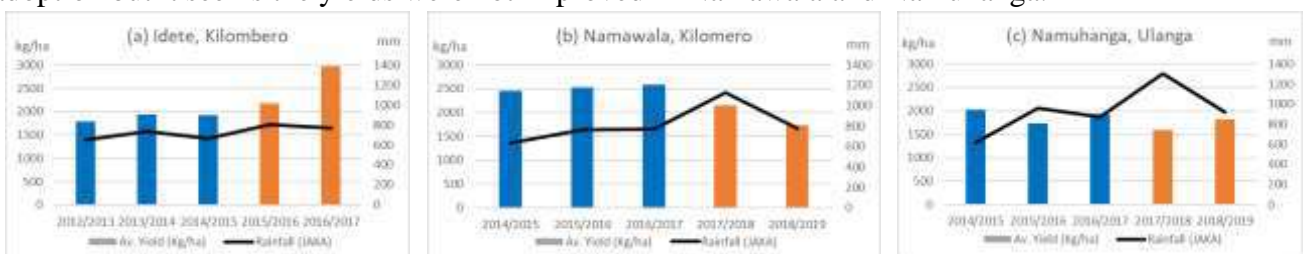
Fig.3-16 Yield (Kg/ha) with precipitation for (a) Idete, (b) Namawala in Kilombero district and
(c) Namuhanga in Ulanga district
(The precipitation was taken from https://sharaku.eorc.jaxa.jp/GSMaP_NOW/index_j.htm)

The multiple regression was also done using data from Namawara and Namhanga in 2018/2019. In this case, the dependent variable consists in the yield, while the independent variables are the following:

age, sex, variety, nursery, straight line transplanting, random transplanting, straight direct planting, application of fertilizer, bund making, levelling, precipitation, utilization of hand hoe and oxen plough. The coefficient of determination R square is explained by the independent variable is 43.7%, which is relatively higher than the results of other districts. Sex (male and female) had strong correlation with the yield ($p < 0.05$). Straight line transplanting and levelling had also correlation with the yield ($p < 0.1$). The fig. 3-17, 3-18 and 3-19 show the yield difference male and female, with/without straight line transplanting. The reasons why male farmers achieved higher yield than female ones are not clear however, low adoption rate of technologies by female could cause the low yield (average adoption rate of female was 27% while the male's one was 41%). The yield of the farmers conducted straight line transplanting increased. Levelling was not effective to improve the yield according to the results.
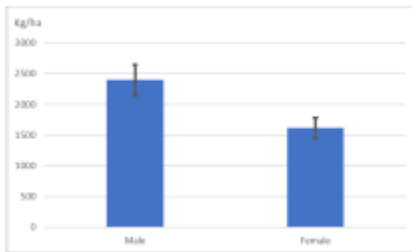
Fig.3-17 Yield (Kg/ha) difference between male and female in Kilombero and Ulanga district
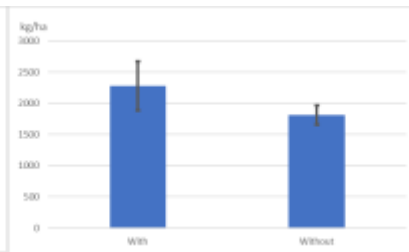
Fig.3-18 Yield (Kg/ha) with/without straight line transplanting in Kilombero & Ulanga districts
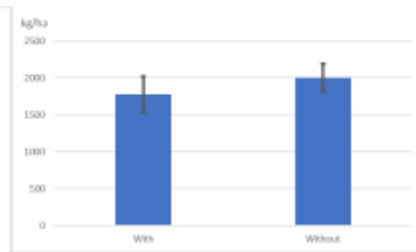
Fig.3-19 Yield (Kg/ha) with/without leveling in Kilombero & Ulanga districts

Fig. 3-20 shows the average paddy yield and precipitation of Babati district. The yield was about 1600-2000kg/ha constantly before the severe drought in 2016/2017. The level of yield increased slightly in Mapea and Magugu, 2017/2018. In 2018/2019, there severe drought happened again in Magugu and yield was very low (578kg/ha). The locations of villages show in the fig. 3-21. The distance between the villages is only 2km. The training improved technology adoption but it seems the yields were not improved because of drought.

The multiple regression was also done using data from Mapea and Magugu in 2017/2018. In this case, the dependent variable consists in the yield, while the independent variables are the following: status (KF, IF), age, sex, variety, seed resource, straight line transplanting, straight direct planting, application of fertilizer, bund making and levelling. The coefficient of determination R square is explained by the independent variable is only 19.98%. Age and application of fertilizer had strong correlation with the yield ($p < 0.05$) and levelling had also correlation with the yield ($p < 0.1$). The fig. 3-22, 3-23 and 3-24 show the yield difference by age, with/without fertilizer and with/without levelling. The younger farmers tend to have better yield. It was not clear the relationship with age and the adoption of technologies. Application of fertilizer improved the yield but levelling was not effective in the area.
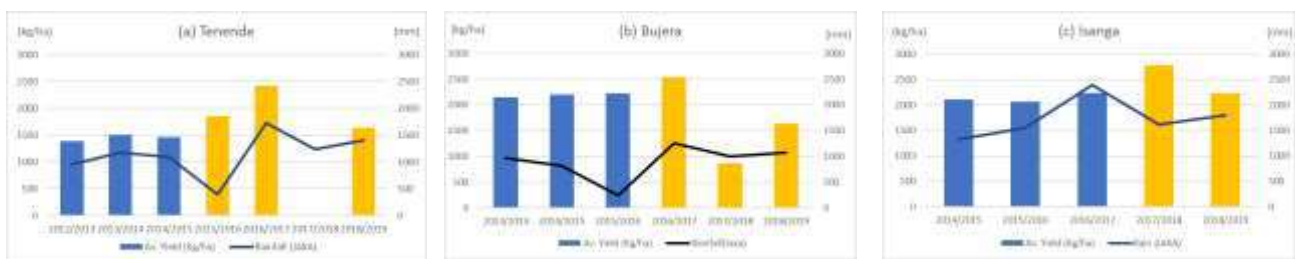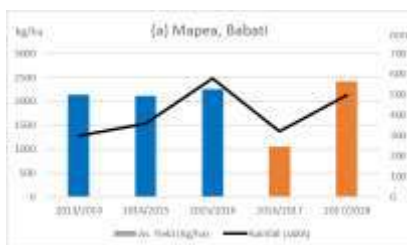

Fig.3-20 Yield (Kg/ha) with precipitation for (a) Mapea and (b) Magugu in Babati district
(The precipitation was taken from
https://sharaku.eorc.jaxa.jp/GSMaP_NOW/index_j.htm)

Fig.3-21 Locations of Mapea and Magugu (google map)

45
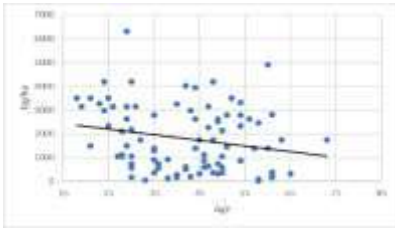
Fig.3-22 Relationship between Yield (Kg/ha) and age in Mapea and Magugu
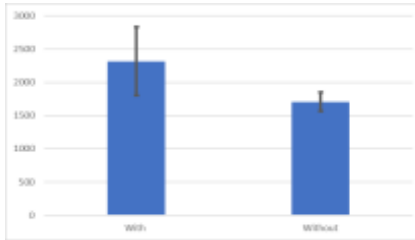
Fig.3-23 Yield (Kg/ha) and application of fertilizer in Mapea and Magugu
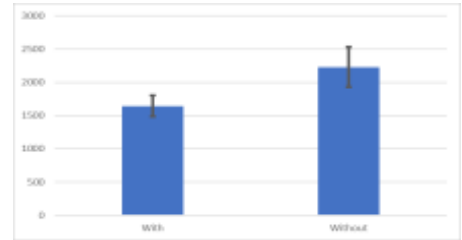
Fig.3-24 Yield (Kg/ha) and levelling in Mapea and Magugu

The fig 3-25 shows the change of the yield before/after the training courses. The average yield increased from 1696kg/ha to 2091kg/ha (about 23% up) after the training courses (p < 0.1, t-test). The training seems to improve not only the adoption of the technologies but also the yield of the participants.
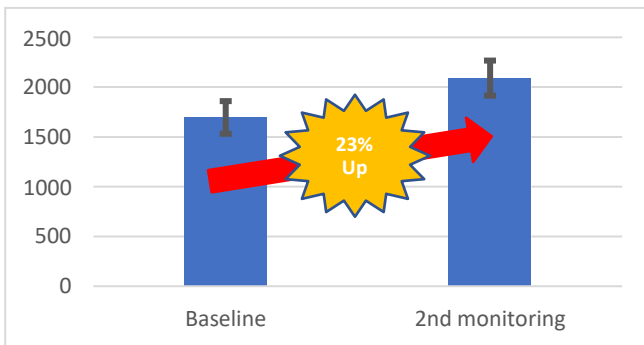
Fig. 3-25 Average yield (kg/ha) of monitored target villages before and after training courses (excluding data from the result affected severe drought)

Challenges

- The outputs of the training course such as yield highly depend on weather conditions. The evaluation could be difficult without long term monitoring.
- The environmental conditions of target villages are highly diversified from site to site, even from year to year. Tutors need to gather information properly and select proper technologies for farmers.

Msalala district Feb 2014: **Drought**

Msalala district Dec 2015: **Flood**

3-4. Upland rice cultivation

3-4-1. Effective technologies of rainfed lowland rice cultivation are confirmed

3-4-1-1. Review/Develop the Training on Rainfed Upland Rice Cultivation Technologies

(1) Information on the area trained in TANRICE is collected

1) Introduction: NERICA cultivation training courses were conducted for 67 villages in 15 districts during TANRICE. TG members conducted monitoring for the training courses from Jun to Aug, 2013

except for Misenyi and Makete districts since the training course was done for Misenyi district by MATI-Maruku which is not an implementer of TANRICE2 whereas for Makete district there was no harvest of NERICA because of low/cold temperatures at flowering stage due to high altitude.

2） Materials and Methods: The expert and TG members requested the VAEO to prepare for the monitoring by getting together as many farmers as possible who had been cultivating NERICA. The monitoring was conducted with a questionnaire. In the findings, the total number of interviewees was 927 (M: 456 and F: 461).

3） Result and Discussion: "Farmer to Farmer extension mechanism" was introduced to the target villages via the NERICA cultivation training course aiming to extend the cultivation technologies from KF to 3 IFs. The KFs and IFs were supposed to continue the extension to 3 OFs each in the following season. Logically, the number of IFs should be 3 times the number of KFs so the number of KFs is supposed be 208 (16 participants x 13 courses) and IFs is also 624 (208KFs x 3IFs). The number of OFs should be 3 times the total number of KFs and IFs so it should at least be 2,496 (208+624) x 3OFs). Actually, the number of KFs, IFs and OFs was 167(80%), 419 (67%) and 334 (13%) respectively in the monitoring. The figures between parentheses shows ratio to the supposed logical number.

4） The number of KFs and IFs peaked in the 2011/2012 season and then decreased while the number of OFs was gradually increasing every year (Fig.3-26). The increment of number of OFs from 2011/2012 to 2012/2013 season was 1.45 times. The OFs who cultivated NERICA during the 2010/2011 season were not targeted by TANRICE since the training started from the 2010/2011 season and OFs were supposed to start cultivation from the 2011/2012 season at the earliest. According to information from some TG members, this might have happened as a result of activities of research institutes such as multi-location trial of NERICA from 2008/2009 and 2009/2010 seasons. The numbers of KFs and IFs do not increase unless TANRICE conducts other training courses however, only the

Fig.3-26 Number of farmers cultivating NERICA

number of OFs can increase. About 27% of the KFs and IFs stopped NERICA cultivation completely due to crop failure as a result of which there was no harvest or very little harvest; only 16% of OFs cultivated NERICA. Considering that 97% of farmers indicated that they were willing to continue NERICA cultivation and that they received free NERICA seed, the key of the extension of NERICA is sufficient production to enable provision of seed supply for next year's production.

5）Total NERICA production was almost the same level from 2010/2011 to 2012/2013; on the other hand the amount of consumption and sales went down (Fig. 3-27). The cultivation area of NERICA was expanded drastically from 2010/2011 to 2011/2012 season as the number of farmers increased and was kept at the same level in the 2012/203 season. However, yield (kg/ha) decreased contrary to increasing the area of cultivation (Fig.3-28).
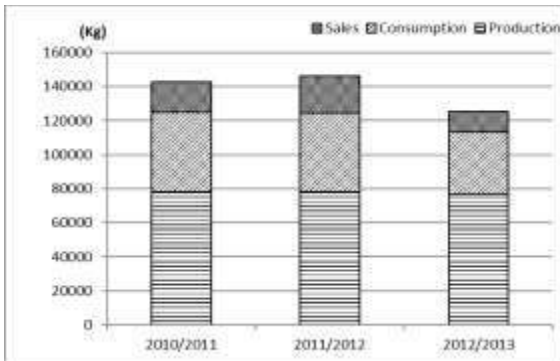
Fig.3-27 Amount of production, consumption
and sales of NERICA
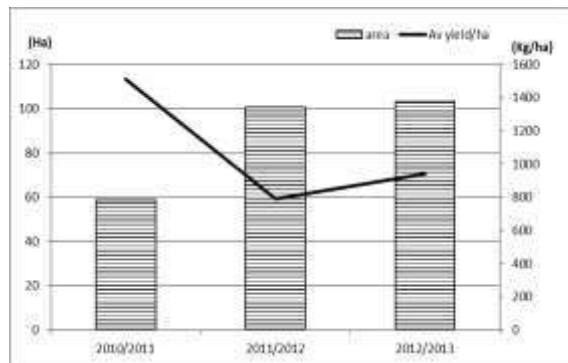
Fig. 3-28 Area and yield of NERICA

6）Fig. 3-29 shows the overlay image of suitability map and location of target districts for the NERICA training course. There are 4 districts under unsuitable area in suitability map that is, Bukombe, Nzega, Kyela and Makete. The production in suitable areas is decreasing slightly while it is increasing in unsuitable areas. The reason for the increment of the production in unsuitable areas is expansion of cultivation acreage. On the other hand, the decrease of the production in suitable areas was caused by decreasing yield (Fig. 3-30).
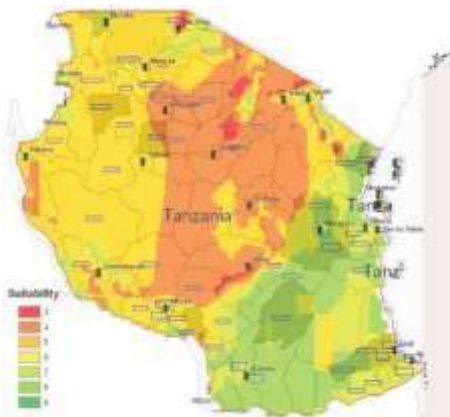
Fig.3-29. Suitability map and location of target
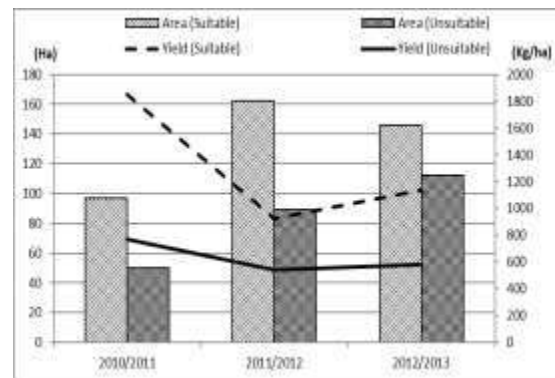
Fig.3-30. Cultivation area and yield of NERCA
in suitable and unsuitable area

7）The yield of suitable and unsuitable area were 1230 Kg/ha and 607Kg/ha respectively. There is significant difference between the yield in suitable area when compared to unsuitable area (t (1227) = 5.04, p <.01).

8）Drilling and Dibbling method were introduced by the training course and it seemed that KFs adopted them more than OFs. The farmers who adopted both of the sowing methods tended to get higher yields than those who did not adopt. The yield difference by land preparation technologies such as bund making and levelling are not so much while there were significant differences between the yield with and without chemical fertilizer like urea (t (1141) = 2.05, p < .05). There is not much

difference between the yield by sowing timing under unimodal rainfall pattern though, there were significant differences between the yields of NERCA sown during *Vuli* and *Masika* (t (775) = 2.53, p < .05).

9） Conclusion
① It is necessary to strengthen the extension from KF and IF to OF. The extension mechanism which the training course introduced was functioning to some extent observing the number of OF is increasing gradually. Since most of farmers answered that NERICA seed and cultivation technologies were transferred from KFs or IFs according to another questionnaire. the involvement of extension officers for the FTF is not clear. It is necessary to observe closely how the extension mechanism supported by extension officers and consider how to enhance extension with extension officer.
② As reported above, about 27% of farmers gave up cultivation because of crop failure while 97% of interviewees wanted to continue. The additional seed supply may boost the promotion of NERICA.
③ It is important to choose proper target for NERICA training course utilizing the suitability map.
④ Effective cultivation technologies were somewhat identified by the questionnaire. It is necessary to consider how to increase yield more even in unsuitable areas where the cultivation area is increasing. The time of sowing is worth reviewing for increased production.

(2) Improved version of training contents, teaching materials & curriculum

NERICA cultivation training guidelines was developed and revised at TG meeting. The training course curriculum and teaching materials were modified and the duration of training was changed from two days to three days. PRA activities and individual questionnaire survey were added into curriculum since tutors did not have opportunity to know their agricultural situations. It was expected that the targeted 4 villages were adjacent, and the environment was similar however, sometimes each of the village was apart and their environmental conditions were so different. In addition, there are 4groups of farmers in a training. It was little too difficult to handle by limited number of tutors to collect proper information. The information collected by PRA was not so much helpful for the tutors to improve the training courses. Therefore, the duration of training courses returned to two days. Gender in rice farming was newly incorporated into the training course from TANRICE2.

Table 3-10: Components of training course of NERICA cultivation

Component	No. Day	No. participants	No. Tutors	Timing	Main topics
Residential training	2	16 KFs + 4VAEOs + 1 District officer (4 villages are targeted and 4 farmers are selected from each village) Total: 21	2-3	Before cultivation season normally October-December	NERICA characteristics, NERICA training & seed distribution approach, guideline on NERICA cultivation, preparation of materials for demonstration plots, seed production, gender in rice farming, action plan making

3-4-1-2. Study and identify rainfed upland rice areas for the training.

(1) Criteria of selecting target village for rainfed upland rice cultivation training course

In the sensitization workshop in 2013, criteria were agreed among stakeholders. Some criteria were modified through the discussion at the TG meeting and finalized as shown in the Table 3-12.

Table 3-12: Criteria of selecting target village for upland rice (NERICA) cultivation training course

No	Criteria
1	Amount and distribution of rainfall are enough and stable.
2	Proper soils are available for rice production.
3	Farmers are cultivating upland rice for long period or amount of rainfall is 800mm or more for virgin land for upland rice.
4	Size of land is at least 50ha (10ha for Zanzibar)

(2) Visiting priority areas

TG members selected candidate districts with basic information from suitability map and communication with the districts and visited 13 districts between Aug 2013 and Nov 2014 for confirming whether or not the districts met the criteria. As a result, 10 districts were selected for NERICA cultivation training for 2014/2015 cropping seasons.

However, it was difficult to evaluate suitability of NERICA even if tutors visited the candidate sites considering the monitoring result after NERICA cultivation training course, which showed some target seemed not to be suitable for upland rice cultivation. Actually, the target villages were selected by district officers who did not know so much about upland rice. Therefore, it was suggested to have workshop/ training for crop officer to understand more about NERICA to select target villages in 2015/2016.

(3) Workshop for identifying priority area/target districts under rainfed lowland and upland rice

Crop officers' workshop was held at KATC to select target districts for NERICA cultivation training course in 2015/2016. Crop officers from 27 districts participated in the workshop and had also a basic rice cultivation training to select target villages for upland rice (NERICA) and rainfed lowland rice appropriately.

3-4-2. At least 25% of key farmers and intermediate farmers of rainfed upland and rainfed lowland rice cultivation courses evaluate that their paddy production technologies are improved after 2 cropping seasons.

3-4-2-1. Conduct TOT on rainfed upland rice cultivation technologies (including NERICA) for agricultural tutors and extension officers.

(1) TOT for tutors of training institutes

NERICA cultivation training course was held at KATC from 11th to 12th Sep, 2013 with the participation of 15 farmers from the 4 villages mentioned above and 2 ward extension officers (WAEOs). All rice agronomy TG members participated in the training course as TOT.

(2) TOT for district officers

TOTs for VAEOs in the 3 districts were conducted to promote further extension activity for NERICA in the districts where NERICA was disseminated relatively well through the training courses done by TANRICE. Record of TOT for extension officer is shown as Appendix 15.

Crop officers workshop/training was also conducted as explained under 3-4-1-2.

(3) Conduct the training on rainfed upland rice cultivation technologies involving DAICOs and agricultural extension officers in the identified rainfed upland rice areas and develop extension materials.

The record of the NERICA cultivation training courses is indicated in Appendix 16. The number of NERICA cultivation training courses conducted during the project period is 47 for 202villages in 38districts, 15regions. The number of the participants was 975.

3-4-2-2. Monitor the rice cultivation activities in the rainfed upland rice areas with the agricultural extension officers.

(1) Site visit for monitoring

TG members visited the target districts for monitoring as indicated in the Table 3-14.

Table 3-14. Record of monitoring of NERICA training courses

Institute	Target	Date	Remark
KATC	Pangani	20 to 23 Oct, 2014	NERICA was highly appreciated by the farmers due to its characteristics of high yield and early maturity. Yield ranges from 140 to 2400kg/ha while yield of Supa is around 1000kg/ha
Ilonga	Morogoro rural	4 to 7 Nov, 2014	NERICA was appreciated because of early maturity. Yield of NERICA in the villages was extremely low (only 179.9kg/ha) due to late planting and improper place (lowland) for cultivation.
KATC	Muheza	13 to 16 Jul, 2015	Performance of NERICA was good. Farmers appreciated characteristics of NERICA.
Ilonga	Kibaha	15 to 22 Jun, 2015	Seed distributed from KATC was not germinated well. However, NERICA performed well.
Ilonga	Mvomero		Almost all plots were damaged by animals. Thus, NERCA performed very bad.
Igurusi	Ileje and Busokelo	26 to 29 May 2015	The averages yield of NERICA were 0.46t/ha and 0.56t/ha in Ileje and Busokelo respectively.
Ukiriguru	Ukerewe	1 to 4 Jun, 2015	Performance of NERICA was poor due to drought.
Mtwara	Kilwa	24 -29 May, 2015	NERICA accepted nicely. Female cultivated NERICA better than male.
Tumbi	Kigoma	11 to 16 May, 2015	NERICA performed well in 2villages out of 4.
KATI	Pemba	11to 13 Jun, 2015	The seed provided from Bambi to farmers were mixed with the other varieties but NERICA performed very well.

SARO5 NERICA1

Farmers planted NERICA in line as taught!!

Farmers appreciated that NERICA matured earlier than other varieties.

(2) Stakeholders workshop for monitoring of NERICA cultivation training courses.

Stakeholders workshop was held from 22 to 25 Aug, 2017 gathering district officers and VAEOs from 25 districts which were targeted for NEIRCA cultivation training course. Each district presented the situation of NERICA cultivation in the target villages in their districts. Fig.3-13 shows the location of district in Tanzania and Fig. 3-14 shows the average yield of NERICA in the districts. The average yield of upland rice is about 1t/ha in Tanzania. Therefore, the 13 districts achieved more than that level can be suitable area for upland rice cultivation. Ulanga district is prominent regarding the number of farmers cultivating NERCA and average yield among the districts. It was difficult to know how NERICA was disseminated in some districts since there were many missing data from the districts. The target district officers promised with project to submit the information on NERICA cultivation in 2017/2018.

Fig.3-13 Location of target districts
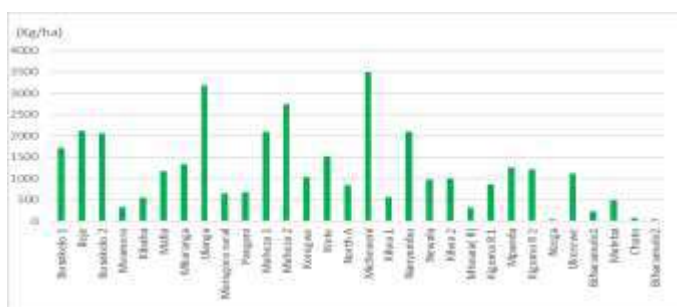
Fig.3-14 Average yield of NERCA in the target districts

(3) Monitoring of the result by communication with target districts

The information on the adoption of line planting was collected by communication between district officers and tutors after the cropping season of 2017/2018. Table 3-15 shows the adoption rate of line dibbling or drilling in the target villages of NERICA cultivation training courses.

Table 3-15. Adoption rate of straight planting with dibbling or drilling for NERICA cultivation

| Training Year | Name of Institute | Target | | Adoption of Dibbling or Drilling (%) |
		Region	District	
2013/2014	KATC	Morogoro	Morogoro Rural	60-100
		Tanga	Pangani	44-94
2014/2015	Igurusi	Mbeya	Busokelo	100
			Ileje	NA
	Ilonga	Morogoro	Mvomero	NA
		Pwani	Kibaha	NA
	KATC	Tanga	Muheza	6-100
	KATI	Pemba	Wete	50-100
	Mtwara	Lindi	Kilwa	100
	Tumbi	Kigoma	Kigoma Rural	NA
	Ukiriguru	Mwanza	Ukerewe	NA
2015/2016	Ilonga	Pwani	Mafia	NA
	KATI	Unguja North	North A	100
	Mtwara	Mtwara	Nanyumbu	55-100
		Mtwara	Newala	100
	Tumbi	Katavi	Mpanda	19-100
	Ukiriguru	Kagera	Biharamulo	NA
		Kagera	Muleba	NA
2016/2017	Igurusi	Mbeya	Busokelo	100

52

	Ilonga	Pwani	Mkuranga	86
		Morogoro	Ulanga	100
	KATC	Tanga	Muheza	100
		Tanga	Korogwe	100
	KATI	Pemba North	Micheweni	45-73
	Mtwara	Lindi	Kilwa	100
		Mtwara	Mtwara Rural	100
	Tumbi	Kigoma	Kigoma Rural	NA
		Tabora	Nzega	100
	Ukiriguru	Geita	Chato	NA
		Kagera	Biharamulo	NA

*NA (not available): the adoption data was not collected from some villages.

Some districts could not provide us the information though, target farmers' adoption rate of the straight line planting is clearly higher than 25%.

(4) Questionnaire survey in the target villages

Questionnaire surveys were conducted for 13 training courses (52 villages) after 2018/2019 cropping season. Those districts were selected for the monitoring from the districts which NERICA was more disseminated than the other target districts. Tutors visited in the districts and interviewed KFs and IFs using a simple questionnaire. Unfortunately, severe drought occurred in 2018/2019 season and cultivation area, number of farmers and yield of NERICA were not increased well. However, the adoption rate of straight line planting exceeded 50% in average. It shows the technologies which were introduced by the training are adopted by farmers.

Table 3-16. Result of monitoring 2018/2019

Institute	District	Cultivation area of NERICA（acre）	No. Farmers cultivating NERICA	Adoption rate of Drilling（%）	Adoption rate of Diblling（%）	Average yield *max yield
KATC	Korogwe	17	54	67	42	0.30
Ilonga	Ulanga	19	91	57	9	1.76
Mtwara	Ruangwa	17	66	50	50	0.13
Mtwara	Nanyumbu	7	27	42	59	0.06*
Mtwara	Kilwa	33	109	43	32	0.27*
Mtwara	Newala	62	101	68	3	0.77*
Tumbi	Kibondo	43	43	50	50	0.70
Tumbi	Kasulu	17	16	50	50	0.07
Tumbi	Mpanda	20	75	50	50	0.40
Ukiriguru	Bukoba	21	71	34	32	0.25
Ukiriguru	Rorya	40	128	21	37	2.10
KATI	North B	NA	NA	63	25	0.96*
KATI	Micheweni	NA	NA	53	34	1.95*
Total		297	781			
Average		27	71	50	36	0.75

3-5 Extension materials for extension officers and farmers are developed

Table 3-17. List of teaching materials

No	Title of extension materials	Year of issue	Language	Target
1	Poster for standard training course (1st in-field training course)	Apr-2017	Kiswahili	Farmers (KF, IF) and VAEO
2	Poster for standard training course (2nd in-field training course)	Apr-2017	Kiswahili	Farmers (KF, IF) and VAEO
3	Poster for standard training course (3rd in-field training course)	Apr-2017	Kiswahili	Farmers (KF, IF) and VAEO
4	NERICA cultivation course guidelines (final ver)	Nov-2019	English	Training institutes
5	NERICA cultivation training course brochure (Modified version)	Sep-2014	Kiswahili	Farmers (KF, IF) and VAEO
6	Teaching materials for NERICA cultivation training course (TOT)	Dec-2014	English	VAEO
7	Guidelines for rainfed rice cultivation training course (Final ver.)	Nov-2019	English	Training institutes
8	Teaching material for rainfed lowland rice cultivation (1st In-field training course)	Dec-2015	Kiswahili	Farmers (KF, IF) and VAEO
9	Teaching material for rainfed lowland rice cultivation (2nd In-field training course)	May-2016	Kiswahili	Farmers (KF, IF) and VAEO
10	Teaching material for rainfed lowland rice cultivation (residential training course)	Nov-2016	KIswahili	Farmers (KF, IF) and VAEO

3-6 At least 45% of participants of the training (key- and intermediate-farmers) are women

The gender ratio of the training courses is shown in the table 3-18. The ratio of women participation is over 45% in the rainfed rice cultivation training courses.

Table 3-18. The gender ratio of rainfed rice cultivation training courses

Training Year	Training Type	No. Male	No. Female	Total	Male (%)	Female (%)
2013/2014	NERICA	13	18	31	41.9%	58.1%
2014/2015	NERICA	67	61	128	52.3%	47.7%
2015/2016	NERICA	54	58	112	48.2%	51.8%
2015/2016	RFLL	288	403	691	41.7%	58.3%
2016/2017	NERICA	102	89	191	53.4%	46.6%
2016/2017	RFLL	875	820	1695	51.6%	48.4%
2017/2018	NERICA	87	88	175	49.7%	50.3%
2017/2018	RFLL	1148	1083	2231	51.5%	48.5%
2018/2019	NERICA	66	46	112	58.9%	41.1%
2018/2019	RFLL	1483	1345	2828	52.4%	47.6%
	Total	**4183**	**4011**	**8194**	**51.0%**	**49.0%**

4. Outputs of Subject-Matter Training on Irrigation Scheme Management

4-1 background of SMT-ISM

4-1-1 Reasons for developing/conducting SMT-ISM
- Irrigated rice cultivation training resulted to high yield after adoption of technologies that were introduced.
- However, it was found that the yield decreased with time especially where and when insufficient attention was paid to management of the irrigation scheme.
- SMT-ISM was introduced in TANRICE (2007-2012) with emphasis on strengthening the irrigators' organizations (IOs) which were responsible for scheme management.
- SMT-ISM has been succeeded by TANRICE2 (2012-2018).

4-1-2 Indication in the Project Design Matrix (PDM) of TANRICE2
"The subject-matter training courses on the value chain of rice industry are strengthened"
- During TANRICE2, short-term experts on ISM, Task Group (TG) members and long-term experts conducted training courses and workshops on irrigation scheme management.
- TANRICE2 has also conducted subject matter training courses on gender, marketing and agricultural machinery.

4-2 Purpose of SMT-ISM
To sensitize Farmers' Associations or Cooperatives (IOs) to strengthen their ability to manage their schemes in the areas of leadership, finance and operation & maintenance (O&M).

4-2-1 Targets of SMT-ISM: Developed/established irrigation schemes where irrigated agriculture is practiced, and irrigators' organizations have been established.

4-2-2 Participants of SMT-ISM
i. Leaders of IO: They are the main targets of SMT-ISM. Chairperson, Secretary, Accountant and other board members: About 10 in total
ii. Farmers: They are "watchers" of leaders and co-implementers of the action plan. About 30 farmers (about one half each of males and females)
iii. Government officers: They are resource persons and co-facilitators. District Irrigation Officer, Scheme Manager, Agricultural Extension Officers, etc.

4-2-3 Duration of SMT-ISM: Four days

4-2-4 Number of Facilitators: Four persons (two from Institute, two from District)

4-3 Key Aspects of SMT-ISM

The key aspects of ISM training are Organization (Leadership), O&M, Financial Management

Organization:
i. Membership (number of members, membership fee, etc.)
ii. Organization's and conference's structures from a viewpoint of members' participation
iii. Constitution and by-laws defining the roles of leader's rights and duties of members, penalties for defaulters, etc.

Financial Management:
  i. Collection of fees
 ii. Income and expenditure management
iii. Financial report and auditing

Operation and Maintenance (O&M):
  i. Water distribution
 ii. Farmers' duties on operation and maintenance of scheme facilities and structures
iii. Scheme Operation Calendar, water management and other organization activities

4-4 Development of SMT-ISM

4-4-1 Materials

Up to November 2019, 28 TG members from seven implementing institutes such as KATC (6), MATI-Igurusi (4), MATI-Ilonga (3), MATI -Ukiriguru (5,) MATI-Tumbi (2), MATI-Mtwara (2), KATI (6) and JICA long- and short-term experts were involved in the development and implementation of SMT-ISM.

Together with the experts, the task group developed the course with the following materials for conducting SMT-ISM:
- The guidelines for the training course.
- Scheme management profile for baseline survey and monitoring.
- Leaders handout.
- General guidelines for scheme management;
- Case study.
- Brochure for farmers; and
- Brochure for districts and other organizations which may be interested to support training on irrigation scheme management.

4-4-2 Timetable of SMT-ISM

Day	Morning	Afternoon
1	9:00- Introduction and Purpose of SMT-ISM 9:30-11:00 Baseline Survey: i) Field Observation	11:00-13:30 Baseline Survey: ii) Leaders' Interview
2	9:00- Registration/Opening 9:30-10:30 Baseline Survey: iii) Farmers' Interview 10:30-12:00 Presentation from Leaders' Interview	12:00- 13:00 General Guideline: Irrigation Scheme Management 13:00-13:30 Case Study
3	9:00- 11:00 Intensive Discussion 11:00-12:00 Presentation from Intensive Discussion	12:00-12:30 Identification of Particular Issues/ Problems 12:30 - 14:00 Leaders' Practice (Only leaders remain)
4	9:00- 11:00 Guidelines for Action Plan 11:00- 12:30 Action Plan making	12:30- 13:00 Evaluation 13:00- Closing

4-5 Promotion of SMT-ISM

Production of brochures containing highlights of the irrigation scheme management course:
Cost of SMT-ISM varies basing on location of the schemes. It ranges from Tsh. 2,000,000/= to 2,500,000/= (about US$1,000/=).

4-6 Participants of SMT-ISM and Workshop on ISM

*Participants of Workshop on ISM

Each irrigation scheme was represented by 6 participants (District Irrigation Officer, Irrigation Scheme Manager, and Ward Councilor from scheme area, Chairperson of IO, Accountant of IO and one board member of IO).

	Number of Participants				Total
	Districts	Irrigation schemes	Male	Female	
ISM Trainings	26	31	696	523	1250
ISM Workshop	30	30	139*	41*	180*

4-7 Achievements of SMT-ISM

Several impacts of ISM training and workshop have been realized. Farmers become aware of their roles and responsibilities in management of their irrigation schemes as follows:

- Revival of organization which was not operating before ISM training;
- Opening of bank account for IO;
- Holding general meetings and election of new leaders;
- Increased participation of farmers in O&M activities;
- Payment of organizational fees; and
- Improvement of irrigation facilities.

Capacities of facilitators/tutors have also been enhanced through conducting training and workshops.

4-8 Indicators for SMT-ISM

The outputs of ISM training courses are verified from information collected from profiles of irrigation schemes, among them are:

a) Farmers paying fees charged by IO, and

b) Farmers participating in O&M activities; these were translated to be "other important technologies".

As of September 2019, out of 1,800 farmers, in 22 irrigation schemes, who newly adopted improved irrigation scheme management practices of (i and ii)

- The collection of profiles from the district was not fulfilled. Only Mandera irrigation scheme from Korogwe provided the feedback on which 5 items out of 9 in the action plan was implemented, but fees collection was still a problem though they claimed to be effective after harvest

4-9 Some Impact Cases of SMT-ISM

i) **Bumbwisudi IS**, West District, Urban West Region (Zanzibar) [Attended: Workshop on ISM] (Reported by Eng. Kadir, Scheme Manager)

Farmers became aware and accepted to increase the frequency of maintenance of irrigation infrastructures from one to two times per season.

Study visit ended them to observe successes of the host irrigation scheme due to adoption of rice cultivation technologies such as land preparation, transplanting and use of combine harvester.

ii) **Ruaha Mbuyuni IS**, Kilolo District, Iringa Region [Attended: Workshop on ISM] (Reported by: Nasoro Almas, Accountant)

The irrigation scheme has new leadership. The organization is now registered and operates under irrigation department guidelines. Farmers agreed to increase amount of fees to Tsh.30,000/= per year and they also participate in O&M activities.

(Reported by: Totinant Mweresa, District Irrigation Officer)

There is a change in scheme leadership. Adoption of rice cultivation technologies has increased.

ⅲ) **Mbuyuni IS**, Mbarali District, Mbeya Region [Attended: SMT-ISM and Workshop on ISM]

(Reported by Eng. Aloyce Karlum, District Irrigation Officer)

The irrigation scheme has new leadership, fees collection has been increased, and the scheme is planning to purchase tractors from the collected contributions.

(Reported by Joel K. Mukwama, Secretary)

The scheme leadership and farmers are very active, they contribute their fees on time, and they participate in O&M activities. The scheme has a plan to hire a contractor to construct flood control dike which will increase irrigable area.

4-10 Pictures

Irrigation canal of Mbuyuni scheme has been lined through contributions of farmers

SMT –ISM - WORK SHOP ACTIVITIES

TG meeting: revising course material   Presentation by workshop participant

Study tour to Mombo IS   TG Members facilitating a workshop

5. Outputs of Subject-Matter Training on Gender

5-1 Introduction

In rice production both men and women are involved. The Gender Task Group (GTG) of TANRICE2 comprises 14 tutors (2 each) from 7 agricultural training institutes: 5 MATIs (Ukiriguru, Tumbi, Ilonga, Mtwara and Igurusi), KATC, and KATI. Integration of gender concepts into project activities has contributed to increased paddy/rice production and improved farmers' livelihood.

5-2 Overview of Gender Issues in Rice Farming in Tanzania

- Most women in rural areas do not own resources such as land for farming.
- Women have limited access to credit for development because they do not own resources.
- Women are overburdened with heavy workload in both farming and household activities.
- Women are often excluded from decision-making on family resources as well as community resources despite their significant contribution to farming and household activities.
- Though both men and women are equally involved in rice production usually there are only limited opportunities for women in training.

These gender issues are defined by social, traditional and cultural practices.

Why Gender in TANRICE2?
- To reduce gender gap existing in rice farming communities
- To sensitize gender in rice farming so as to raise farmers awareness on gender issues
- To facilitate achievement of project purpose and project overall goal

5-3 Gender Mainstreaming in Rice Cultivation Training Courses of TANRICE2 (1/2)

Promotion of gender mainstreaming in training courses of irrigated rice cultivation, rainfed lowland rice cultivation and rainfed upland rice cultivation:
- 50:50 ratio of male and female participation in the training courses;
- Inclusion of gender topics in every training course to raise gender awareness among male and female farmers;

| "Equality" in Participation | "Equality" in Presentation |

Gender Mainstreaming in Rice Cultivation Training Courses of TANRICE2 (2/2)

⁋Encourage use of simple tools in rice farming (e.g. push weeder, rotary weeder, rake for levelling, thresher, etc.) for reducing adverse effects of unequal division of labour between male and female farmers; and

⁋Conduct surveys before and after the training to identify gender issues and changes in social behaviours of male and female farmers in rice farming communities.

Promoting push weeder as one of gender friendly tools for weeding paddy field.

Subject Matter Training on Gender (1/3)

Development of Subject Matter Training on Gender (SMT-Gender)

Since TANRICE time (2007-2012), SMT-Gender has been developed and reviewed by GTG members with assistance from Senior Technical Advisors on Gender and Gender Short-term Experts of JICA.

Subject Matter Training on Gender (2/3)

SMT-Gender is a five days course which covers the following topics: Needs finding survey, Gender sensitization, Family budgeting, HIV/AIDS, Nutrition and sanitation. Through these topics, farmers are able to raise awareness on gender issues including benefits of men supporting women, importance of joint planning on income and expenditure, and importance of equitable sharing of income obtained from rice farming.

Subject Matter Training on Gender (3/3)
- Conduct training on value chain of rice industry for the DAICOs, agricultural extension officers, and farmers in the priority areas.
- GTG has conducted 41 SMT-Gender for 2035 farmers (943 male and 1092 female) from 2014 to 2019.
- A total of 58 agricultural extension officers (41 male and 17 female) have been trained on SMT-Gender by gender tutors.

5-4 Gender-responsive Impacts through TANRICE2

5-4-1 Improvement of rice productivity
- Paddy yield increased as a direct impact of training on rice farming technologies with gender perspectives.
- Cooperation among family members reduced labour cost, improved quality of work, and increased efficiency of each farming activity.
- Joint family budgeting contributed to efficient planning for rice farming as well as use of income gained from rice farming.

Gender-responsive Impact Case 1

Ms. Aisha is an intermediate farmer. After receiving SMT-Gender, cooperation with her husband improved in both paddy production and household activities. Paddy production increased from 8 bags/acre to 30 bags/acre. After selling of paddy they were able to construct a new house. They also bought a motorcycle and canoe (for fishing). She said, "Now my family has peace and harmony and we live happily".

A new house and a motorcycle bought by Ms. Aisha and her husband as a result of increased paddy production and good cooperation between them.

5-4-2 Change of mindset on gender roles in rice farming
- Men are involved in weeding, transplanting and harvesting (threshing, winnowing, etc.); these activities were previously considered as work for women.
- Husbands who have alternative sources of income are now paying for hired labour to reduce their wives' workload.

- Women are elected into leadership positions in farmers' organizations.

5-4-3 Change of mindset on gender roles in household activities
- Men started to do domestic activities, such as cooking, fetching water and collecting firewood by using bicycles, oxcarts and motorcycles.
- Men started to cooperate with women in taking care of children.

5-4-4 Improvement of family finances
- Family members started to plan spending and saving through family budgeting.
- Transparency in family finances increased through family budgeting, which led to reduction of conflicts on money issues among household members.

Gender-responsive Impact Case 2:
- Cooperation between men and women in paddy production has improved.
- Men involvement in household activities has increased.
- Women are more involved in family decision making.
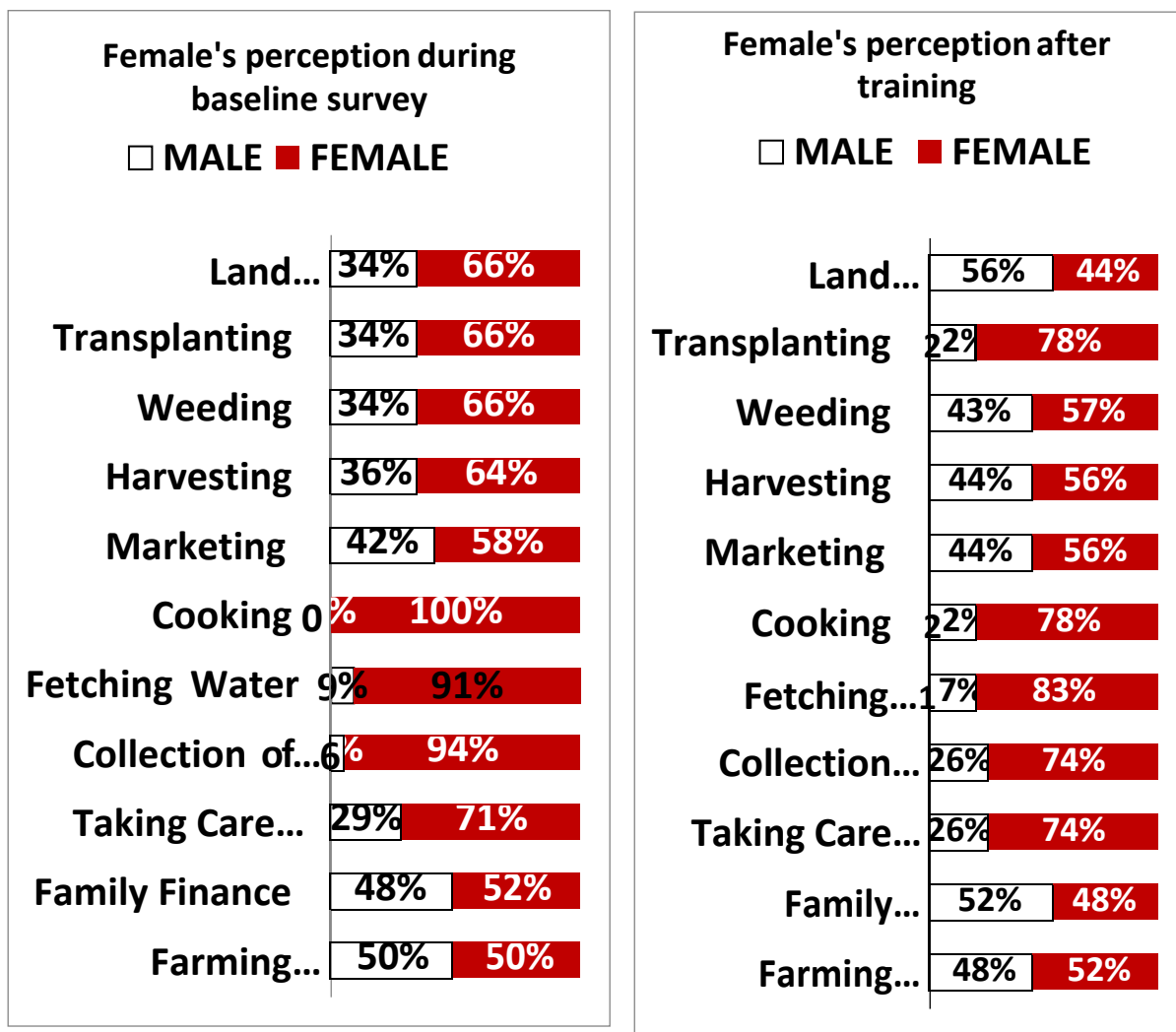
Figure 5-1: Change of female farmers' mindset before and after the training (Malolo irrigation scheme, Nzega District, Tabora Region)

5-5 Materials for Conducting SMT-Gender

The following materials for conducting SMT-Gender have been developed and reviewed:

- Guidelines for Standard Training (ST) and Modified Standard Training (MST) courses, NERICA Training course, and Rainfed Lowland Rice Cultivation course;
- Handouts for needs finding survey, gender sensitization, family budgeting, HIV/AIDS and nutrition and sanitation;
- Narrative impact assessment guidelines;
- Brochures for SMT-Gender (gender sensitization, family budgeting, HIV/AIDS and nutrition and sanitation);
- Gender monitoring sheets (Kiswahili and English versions);
- Gender questionnaire sheets (Kiswahili and English versions);
- Monitoring and Evaluation sheet (Kiswahili and English version); and
- Format for analysis of Gender questionnaire.

5-6 Challenges

- Difficulty in attaining 50:50 ratio of male and female participants in the training courses especially during infield training.
- Some schemes fail to meet the selection criteria because of low paddy yield due to either prolonged drought or floods.
- Failure to get the required gender monitoring data from the village agricultural extension officers.
- Lack of contribution from District Councils to fund SMT-Gender especially its monitoring.
- Failure to have representative technical staff from DAICOs office has resulted to poor follow-up of the action plans prepared during training.

5-7 Conclusion

Gender mainstreaming in TANRICE2 has shown significant positive impact to the farmers who were the target of the project by increasing their awareness on gender issues and as a result cooperation among family members has increased in both paddy production and household activities. Increased paddy production has in turn resulted to improved farmers' livelihoods.

6. Outputs of Subject-Matter Training on Rice Marketing

6-1 Introduction

The Marketing Task Group Team is made up of 14 tutors from seven different MATIs for the purpose of implementing marketing and value chain activities for Paddy/Rice crop according to PDM under TANRICE2 Marketing Action Plans.

This report covers the SMT marketing conducted under TANRICE2 project from 20112 to 2019.

6-2 Purpose

The main purpose is to review the result of marketing activities implemented, outputs achieved, challenges observed and recommended/ suggested solutions for the improvement of rice marketing industry development in Tanzania under TANRICE2 project and the way forward.

6-3 Review/develop the SMT-Marketing courses.

The SMT Marketing was reviewed aimed to share experience and familiarize the newly joined TG-Marketing members with SMT-Marketing activities

The task group members (TG) with directives of marketing Short term Expert (SE) from Japan meet at KATC Moshi in July 2014 and reviewed TANRICE activities, developed the Guidelines and formulated the Subject Matter Training courses/modules on Marketing. Later, the team met in Dar es Salaam with SE by October 2016 and reviewed the Guidelines, modified the training contents and prepared teaching materials for farmers.

Table 6-1: The courses/modules developed for SMT Marketing after reviewed number of training days, objectives and expected outcomes.

Days	Type of training	Objectives	Outcomes
Day1	Record-keeping	To build farmers' negotiation power with buyers	1) Farmers determine the break-even price 2) Farmer's ability to set the selling price
Day2	Market information accessing and sharing	To help farmers access and share the current market price	1) Farmers access the current buyers' Prices 2) Farmers to share market information within the scheme.
	Quality assurance	To help farmers meet the quality of paddy required by buyers	1) Farmers to dry paddy properly 2) Farmers to pack paddy properly 3) Farmers to store paddy properly
Day3	Formulating sales agreement through Stakeholders meeting	To promote farmers' paddy to ers	1) Farmers understand stakeholders` preference of paddy. 2) Farmer's ability to formulate fair Sales agreement with buyers.

6-4 Identification of the priority areas/groups for SMT-Marketing courses

6-4-1 Selection of Target Irrigation Schemes

The following criteria were specified:

• ISs which completed at least one residential training or in-field training of the Standard Training

course
- ISs which have an Agricultural Extension Officer (VAEO/ WAEO) working closely with the targeted ISs.
- ISs whose yield is five tons or more for improved variety and four tons or more for local variety
- District or Town council whose targeted irrigation scheme belongs to, agreed on TANRICE2 cost sharing policy

6-4-2 Selection of Irrigation Schemes for Training

Targeted Irrigation Schemes are selected based on the criteria as shown in the table below:

Table 6-2: Items of General Information

No	Items	Information
1	Name of extension officer and mobile number	
2	Name of irrigation scheme leader and mobile number	
3	Name of the irrigation scheme	
4	Name (s) of village, district	
5	Total number of rice farmers in the scheme/area	
6	Total area under rice cultivation	
7	Average irrigated paddy area for a common farmer	
8	Total potential area for irrigated paddy cultivation in the scheme	
9	Total actual area for irrigated paddy cultivation in the scheme	
10	Name and year of received training	
11	Percentage of farmers who pay water charge	
12	Functional SACCOS (exist or not exist)	

6-4-3 Criteria for selection of Target group/Training Participants

- Key farmers should be selected based on the number of intermediate farmers they trained.
- Intermediate farmers should be selected based on the number of other farmers they trained.
- Other farmers should be selected based on whether they are being trained by intermediate farmers or not.
- Gender consideration – selection should be based on 50:50 principle.

- Influential persons should be included in respective groups for the stakeholders meeting.

The Table shows the target participants. Note that the buyers and SACCOS leaders or key personals for marketing in the target Irrigation Schemes are invited on Day 3.

Table 6-3: Days of training, component, Participants and their category are described

Component	Key farmers	Intermediate farmers	Other farmers	WAEO/ VAEO	SMS Cooperative	SACCOS leaders or key personals for marketing	Buyers	Total
Day 1 Record Keeping	8	8	4	2	1	0	0	23
Day 2 Quality Assurance and Market Information Accessing and Sharing	8	8	4	2	1	0	0	23
Day 3 Stakeholders' Meeting	8	8	4	2	1	2	10	35

6-4 Conduct TOT on the value chain of rice industry for agricultural extension officers and tutors.

6-5-1 TOT workshop for Marketing TG members

From 31st August to 22nd Sept. 2016, the SMT-Marketing was conducted at six (6) ISs under TG members from 6 Institutes.

The SE supported their operations. The table below describes briefly the date of training, location of irrigation scheme (IS), type of components trained and responsible institute.

6-5-2 TOT for extension officers (VAEO/WAEO)

As one of the planned activities of the SMT, TG and SE conducted TOT in six ISs. Thus, VAEO and WAEOs of each irrigation scheme received training next day after the farmers training was over. The training was intended to equip the extension officers with knowledge and skills in order to;

1) Follow up the skills which the SMT on marketing taught farmers

2) Discover good practices among irrigation schemes

3) Troubleshoot arising challenges especially for Stakeholders' meeting

6-5 Conduct training of rice industry for the DAICOs agricultural extension officers and farmers in priority areas

6-6-1 Training for DAICOs, agricultural extension Officers (WAEOs and VAEOs) and farmers on SMT in the priority areas

During the conduct of the SMT Marketing in each irrigation scheme the WAEO and VAEO are among the participants invited and also, where possible the SMS cooperative and SACCOS leaders are invited too. They are invited to attend the training session so as to be aware of the SMT contents and assist farmers during implementation of the SMT trained. Since July 2014 to November 2019 a total of number of 70 agricultural extension officers had been trained the SMT on marketing.

6-6-2 Conduct SMT-Marketing in priority areas

Marketing Task Group members from seven Agricultural institutes identified and conducted SMT on marketing to 34 Irrigation Schemes country wide from July 2014 to November 2019. A total number of 681 farmers and 70 extension officers had been trained on SMT Marketing since 2014 to November 2019. More details are as described in the table here under.

Table 6-4: The table shows the responsible institute, irrigation schemes trained, location, date of training and category of farmers and extension officers from July 2014 to November 2019

S/N	TRAINING INSTITUTE	IRRIGATION SCHEME (DISTRICT, REGION)	Date of training	Farmers		WAEO/VAEO	
				M	F	M	F
1	KATC	1) Mahande, Monduli district, Arusha	25-29/8/2014	12	7		1
		2) Kitivo, Lushoto district, Tanga	22-23/7/2014	17	8	1	1
		3) Kwemkwazu, Lushoto district, Tanga	25/7/2014	20	10	1	
		4) Kwamgumi, Korogwe district, Tanga	31/7-1/8/2014	4	4	1	1
		5) Lekitatu, Meru district, Arusha	23-25/1/2018	10	10	1	1
		6) Mkomazi, Korogwe – Tanga	8-12/7/2019	11	7		3
		7) Mandera, Korogwe - Tanga	17-22/12/2018	10	10	2	2

2	KATI	1) Mtwango, Urban – West Zanzibar	22-24/9/2015	11	10	1	1
		2) Bumbwisudi, Urban – West Zanzibar	29/8-2/9/2016	10	10	1	1
		3) Cheju, Urban – West Zanzibar	22-25/7/2019	11	9	1	1
3	MATI-Igurusi	1) Naming'ong'o, Momba district, Mbeya	4-6/8/2015	18	10	1	1
		2) Magozi Iringa	5-9 /9/2016	10	8	2	
		3) Tungamalenga, Iringa - Iringa	1-4/7/2019	11	9	3	1
		4) Sakalilo, Sumbawanga – Rukwa	5-9 /9/2019	13	7	2	1
4	MATI- Ilonga	1) Ilonga, Mvomero district, Morogoro	1-3/12/2016	9	11		1
		2) Komtonga, Mvomero district, Morogoro	13-16/9/2016	8	11	2	
		3) Mvumi, Mvomero district, Morogoro	23-25/8/2017	10	17	2	1
		4) Kigugu, Mvomerodistrict, Morogoro	2-3/8/2015	13	7	1	
		5) Msolwa Ujamaa, Kilombero - Morogoro	23-26/7/2019	8	12	2	1
5	MATI-Mtwara	1) Ndanda, Masasi district, Mtwara	21-23/9/2016	5	12		1
		2) Lipeleng'enye, Newala district, Mtwara	29/7-1/8/2015	7	6	1	
		3) Lipalwe, Masasi district, Mtwara	21-23/8/2017	12	8	1	
		4) Likunja, Masasi district, Mtwara	15-17/8/2017	9	11	1	
		5) Amani, Namtumbo – Ruvuma	26-28/6/2019	13	7	1	1
6	MATI -Tumbi	1) Nyendara, Kibondo district, Kigoma	20-22/9/2016	9	13	1	
		2) Ruhwiti Kibondo district, Kigoma	22-24/1/2018	13	7	2	1
		3) Mkuti, Kigoma	5-6/8/2015	14	5	2	
		4) Malolo, Nzega - Tabora	3-5/2/2019	12	8	2	1
		5) Kahamanhalanga, Nzega - Tabora	10-13/6/2019	13	7	1	1
7	MATI- Ukiriguru	1) Uwachero, Rorya district, Mara	4-8/8/2015	9	6	1	
		2) Nyatwali, Bunda district, Mara	20-22/9/2016	9	13	1	1
		3) Irienyi, Rorya district, Mara	24-26/1/2018	16	4	2	
		4) Miyogwezi, Ukerewe - Mwanza	12-14/12/2018	13	7	3	
		5) Kyota, Muleba – Kagera	3-5/7/2019	9	11	3	
	Total	**34**		**379**	**302**	**49**	**21**

6-6 Monitor the outcomes of the training with the agricultural extension officers and IS leaders in the priority areas.

The task group members from each institute conducted monitoring via mobile phones to each respective irrigation schemes trained SMT whereby tutors made direct calls to extension officers and irrigation schemes' leaders to get feedback of the implementation of the training.

Table 6-5: Summary of Monitoring results of SMT-Marketing conducted for 34 Irrigation Schemes from 2014 to 2018

Before modification of SMT Contents				
Irrigation Scheme	Location	Type of component	Institute	Key findings
1) Kitivo	Lushoto District, Tanga	Stakeholders' meeting, Quality assurance and Market information accessing and sharing (MIAS)	KATC	• Quality of paddy improved • Implemented sales agreement • Warehouse present
2) Kwemkwazu	Lushoto District, Tanga	Record keeping and Market information accessing and sharing	KATC	• No information (network difficult) • No warehouse
3) Kwangumi	Korogwe District, Tanga	Study tour, Stakeholders' meeting and Quality assurance	KATC	• Quality of paddy improved • No warehouse
4) Mahande	Monduli District, Arusha	Study tour, Stakeholders' meeting, Quality assurance, Record keeping and MIAS	KATC	• Implemented sales agreement • Quality of paddy improved • Sale rice • Record keeping practiced • No warehouse
5) Mtwango	Urban West, Zanzibar	Study tour, Stakeholders' meeting, Quality assurance,	KATI	• Record keeping improved by 79% • Quality of paddy improved by 86% • Implemented sales agreement by 64% • No warehouse instead use ISs office

68

		Record keeping and MIAS		
6) Kigugu	Mvemero District, Morogoro	Stakeholders' meeting and Quality assurance, Record keeping and MIAS	MATI-Ilonga	• Farmers improved rice quality required by buyers
7) Uwachero	Rorya District, Mara	Stakeholders' Meeting, Quality assurance, Record keeping and MIAS	MATI-Ukiriguru	• 70% Farmers meet quality of paddy required by buyers • Weak negotiation power with buyers • No warehouse for collective storage • Sales agreement not properly maintained
8) Mkuti	Kigoma District, Kigoma	Record keeping with Market Information accessing and sharing (MIAS)	MATI-Tumbi	• Farmers practice Record keeping • No warehouse
9) Naming'ong'o	Momba District, Mbeya	Stakeholders' meeting and Quality assurance and MIAS	MATI-Igurusi	• Farmers are aware of the quality of paddy the buyers want • No warehouse
10) Lipereng'enye	Newala District, Mtwara	Stakeholders' meeting and Quality assurance	MATI-Mtwara	• No warehouse for collective storage • Farmers meet quality criteria • Buyers offer a minimum buying price of paddy.
After modification of SMT contents				
11) Nyatwali	Bunda District, Mara	Record keeping, Quality assurance and MIAS and Stakeholders'	MATI-Ukiriguru	• Effectively use the warehouse • Quality of paddy improved • Practice Record keeping • Sales agreement attained
12) Nyendara	Kibondo District, Kigoma	Meeting	MATI-Tumbi	• Warehouse present • Practice Record keeping
13) Magozi	Iringa District, Iringa	Record keeping, Quality assurance and MIAS and Stakeholders'	MATI-Igurusi	• No information
14) Ndanda	Masasi district, Mtwara	Meeting	MATI-Mtwara	• Sales agreement practiced • Maintain quality of paddy • Practice Record keeping
15) Lipalwe	Masasi District, Mtwara	Record keeping, Quality assurance and MIAS and Stakeholders'	MATI-Mtwara	• Sales agreement practiced • Maintain quality of paddy • Practice Record keeping
16) Likunja	Masasi District, Mtwara	Meeting	MATI-Mtwara	• Sales agreement practiced • Maintain quality of paddy • Practice Record keeping
17) Ilonga	Mvemero District, Morogoro	Record keeping, Quality assurance and MIAS and Stakeholders'	MATI-Ilonga	• Sales agreement practiced • Maintain quality of paddy • Practice Record keeping
18) Mvumi	Mvemero District, Morogoro	Record keeping, Quality assurance and MIAS and Stakeholders'	MATI-Ilonga	• Practice Record keeping • Warehouse present • Quality of paddy is observed
19) Komtonga	Mvemero District, Morogoro	Meeting	MATI-Ilonga	• Warehouse present • Practice Record keeping • Maintain quality of paddy
20) Bumbwisudi	Urban-West, Zanzibar	Record keeping, Quality assurance and MIAS and Stakeholders'	KATI	• Quality of paddy maintained • No warehouse • Government buy the whole paddy
21) Lekitatu	Meru district, Arusha	Meeting	KATC	• Store in IS warehouse • Sell milled rice instead of paddy • Quality of paddy maintained
22) Irienyi	Rorya District, Mara	Record keeping, Quality assurance and MIAS and Stakeholders'	MATI - Ukiriguru	• Store in IS warehouse • Sell milled rice instead of paddy • Quality of paddy maintained • Secured more profit
23) Ruhwiti	Kibondo District, Kigoma	Record keeping, Quality assurance and MIAS		• Store in IS warehouse • Sell at better price • Quality of paddy maintained

		and Stakeholders'Meeting		
24) Mkomazi	Korogwe District – Tanga	Record keeping, Quality assurance and MIAS and Stakeholders' Meeting	KATC - Moshi	• Sales Agreement was implemented and both farmers and buyers increased their profits. • Farmers practiced proper drying and packaging of paddy to meet the agreement. • Marketing information regarding price is now shared among farmers. • 4) About 70% farmers practice Record keeping while before training only 30% was practiced
25) Mandera	Korogwe District – Tanga	Record keeping, Quality assurance and MIAS and Stakeholders' Meeting		
26) Cheju	West, Urban-west – Zanzibar	Record keeping, Quality assurance and MIAS and Stakeholders' Meeting	SUZA (KATI) - Zanzibar	• Farmers search marketing information regarding price and buyers by visiting market place. • Sales Agreement was implemented and farmers increased their negation power. • Production and selling record were practiced. • 4) Farmers improved their post-harvest practices in order to meet the agreement.
27) Tungamalenga	Iringa district, Iringa	Record keeping, Quality assurance and MIAS and Stakeholders' Meeting	MATI - Igurusi	• Agreement was implemented and farmers increased the amount of paddy sales. • Market information system was practiced for information tracking and reference of sales. • Record-keeping is practiced by several farmers • Farmers improved their post-harvest practices and meet the traders demand.
28) Sakalilo	Sumbawanga district, Rukwa	Record keeping, Quality assurance and MIAS and Stakeholders' Meeting		
29)Msolwa Ujamaa	Kilombero district, Morogoro	Record keeping, Quality assurance and MIAS and Stakeholders' Meeting	MATI - Ilonga	• Agreement was implemented and farmers increased their sales. • Market information system was practiced for information tracking and reference of sales. • Record-keeping was practiced 4) Post-harvest practices were improved in order to meet the agreement.
30) Amani	Namtumbo district – Ruvuma	Record keeping, Quality assurance and MIAS and Stakeholders' Meeting	MATI - Mtwara	• Farmers practiced storing paddy instead of selling immediately after harvesting • Agreement was implemented and farmers increased their paddy sales. • Farmers were able to share marketing information. • Record-keeping was practiced 5) Farmers improved their post-harvest practices to meet the sales agreement reached and.
31) Malolo		Record keeping, Quality assurance and MIAS and Stakeholders' Meeting	MATI-Tumbi	• Sales Agreement was implemented and both farmers and buyers increased their profits. • Farmers practiced proper drying and packaging of paddy to meet the agreement. 3) Marketing information regarding price is now shared among farmers.
32) Kahamanhalanga		Record keeping, Quality assurance and MIAS and Stakeholders' Meeting		• Extension officers are reminding farmers on the skills of SMT trained • Post-harvest practices were observed 3) Quality of paddy was met
33) Miyogwezi		Record keeping, Quality assurance and MIAS and Stakeholders' Meeting	MATI - Ukiriguru	• Farmers access marketing information through their extension officer and by visiting market place at Nansio town. • Record-keeping is now practiced • Farmers improved their post-harvest practices and are now selling clean paddy.

				4) Sales Agreement is implemented
34) Kyota		Record keeping, Quality assurance and MIAS and Stakeholders' Meeting		• About 70% farmers now sell milled rice instead of paddy as used to be before training • Sales Agreement is implemented and farmers increased the amount of paddy sales. • Market information access and sharing was practiced whereby farmers formulated marketing committee • Record-keeping was practiced • Farmers improved their post-harvest practices and reduced pressure from traders on selling unit. Farmers store their paddy at Millers Store instead of keeping at home

6-8 Achievements of the SMT Marketing

The SMT Marketing achieved the following:

1. Trained 34 Irrigation Schemes (3 in Zanzibar and 31 in the main land)
2. 18 Tutors and 70 extension officers were trained market and marketing skills through ToT and training farmers
3. Developed training Guidelines and training contents
4. About 681 farmers (Male379; Female 302) have been trained marketing skills
5. 7 Tutors went for the short course in Japan under JICA sponsorship (names shown in word doc.
6. The TG members led by SE introduced ICT in SMT Marketing for the purpose of sharing marketing information through Google Drive, Google Photos and facebook to enhance:
   - Communication among TG members
   - Sharing the training materials, reports and others

For Communication among;

• TG members, participant farmers, extension officers and others. E.g., "Soko la Mpunga Tanzania" using facebook.
• Sharing the achievements and challenges
• Farmer-Initiated Monitoring
• Trouble consultation

For Future

• Communication among all stakeholders of rice marketing
• Learning arena of market situations,
• Negotiating entry of actual transactions

6-9 Indicators of the SMT Marketing

1. Farmers are practicing collective selling instead of individual selling notably Nyatwali IS, Lekitatu IS, Mombo IS, etc
2. Farmers realized the importance of using warehouses and use them
3. Record keeping improved to some schemes, e.g.,   -Mtwango IS from 19% to 79%
   -Nyatwali IS from 11% to 80%
   -Mahande IS from 30% to 90%

4. Farmers improved their negotiation power when meet with buyers in all schemes trained as they have confidence base grounds.

5. Citing Mtwango IS as an example, the following impacts were observed by the marketing team as indicated in the table below.

Table 6-8: Summary of the result of SMT Monitoring at Mtwango Irrigation Scheme

Component assessed	Before training (%)	After training (%)
1. Record Keeping (RK)	19	79
2. Profit increase after RK	Not clearly defined	71
3. Accessibility of MI	None (depend on Government)	64
4. Sharing of accessed MI	Secret	50
5. Skills of QA practiced	<50	86
6. Implementation of sales agreement (i.e. quality, quantity, price and selling centre)	Did not exist	64

The change of selling price as positive impact of training of SMT that helped farmers to strengthen their negotiation power with traders. Mentioning a few schemes the following table describes.

Table 6-9. Selling Price of Paddy and Milled Rice in different locations (Sept. 2016-July 2018)

Scheme	Before Training		After Training	
	Paddy (Tshs/bag)	Milled Rice (Tshs/kg)	Paddy (Tshs/bag)	Milled Rice (Tshs/kg)
Mahande	40,000/- (70kg bag)	1,500/	60,000/-	1,800/-
Nyatwali	60,000/ (90kg bag)	1,500/	100,000/	1,800-2000/-
Mtwango	40,000/- (50kgbag)	1,700 – 2,200/-	45,000 – 50,000/-	1,800 – 2,200/-
Kitivo/Kwamgumi	50,000/- (80kg bag)	1,500 -1,800/-	70,000 – 80,000/-	1,800 – 2200/-
Irienyi	50,000/- (80kg bag)	1500 – 2,000/-	-	1,800 – 2,500/-
Msolwa Ujamaa	56,000- (105kg bag)	1,000/- 1,500/-	60,000 – 70,000/-	

6-10 Recommendation

1) SMT contents are the key for farmers to establish and promote their paddy to traders and secure more sales and profit.

2) SMT to be offered to Rain fed Low-land rice cultivation areas which showed good performance of paddy in terms of productivity and yield.

3) Based on the result of the site-specific SMT in Lekitatu IS and the marketing survey in Morogoro region, the following three types of the technical assistance on rice marketing can be considered for the next phase.

(a) Introduction of Collective Marketing

(b) The training of Site-specific, Marketing-solutions

(c) Coordination of Trainings with Public Private Partnership, more details as tabulated here under;

a) Introduction of Collective Marketing

Purpose	To increase agricultural profit of the members in a target group, through assisting collective marketing such as collective selling and warehouse management
Implementation Body	MoA, TD Partners: Tanzania Cooperative Development Commission, MIT

Approach	1) Develop the methodologies and manuals of collective marketing, referring to the outputs of the Kilombero's pilot in DADP2. 2) Provide a series of short day training (2-3 times between the harvest time and the time of higher price. Each training might be 1-3 days to irrigation schemes where farmers' organizations are well functional.
Remark	This approach is not suitable to disseminate to a large number of irrigation schemes unlike the current patterned training.

b) The training of Site-specific, Marketing-solutions

Purpose	To identify and solve marketing related challenges in a target group through suggesting a site-specific, marketing strategy and action plans
Implementation Body	MoA, TD
Approach	1) Identify marketing related challenges and possible solutions, and then support to formulate a marketing strategy and action plan in a target irrigation scheme. 2) In addition to 1), provide a follow-up regularly, in order to support the implementation of the action plan.
Remark	Facilitators need the knowledge of marketing theories and high facilitation skill.

c) Coordination of Trainings with Public Private Partnership

Purpose	To contribute an increase of agricultural profit for a target irrigation scheme through designing and coordinating a suitable training with related governmental agencies and private sector
Implementation Body	Coordinators：MoA, TD Partners：MIT, private sectors (millers, distributors, retailers, accountants, and etc.)
Approach	1) Transform the role of TD from a training provider to training coordinator 2) TD designs training modules and make an inventory of trainers from partners 3) Each institute under TD surveys a training needs of irrigation schemes and apply a training to TD 4) TD coordinate a training suitable for the applicant and provide it
Remark	Training examples: storage management, milling business, establishment agricultural cooperation, direct selling to retailers, and documentation of a contract farming

6-11 Photos

Courtesy call at DAICO and DED Offices, Rorya district

A facilitator discussing with farmers at Irienyi IS during training session in day two.

Farmers' discussion during Stakeholders' meeting in day 3 - Irienyi IS

Scheme Office and Milling machine building at Irienyi IS

Signing of sales agreement in stakeholders' meeting - Irienyi IS

WAEO, SMS, scheme Leaders and facilitator displaying the signed agreement – Irienyi IS

The Warehouse at Irienyi IS storing 300 tones	The Weighing scale, milling machine with destoner and grading units at Irienyi IS	Group photo: farmers and traders-Irienyi IS
Ruhwit Warehouse	Signed Agreement between stakeholders	Courtesy call at Meru District
Discussion with farmers during day one of the training	UWAMALE chairperson during discussion with farmers	Chief advisor explaining about marketing issues at Lekitatu
Action plan making - Lekitatu	Rice Prices at Kilombero Market in Arusha as on 22/01/2018	Warehouse at Katurukila AMCOS
Signing of the sales agreement - Lekitatu	UWAMALE- Warehouse - Lekitatu	Paddy in store at Katurukila AMCOS

7. Outputs of Subject-Matter Training on Agricultural Machinery

7-1 Subject Matter Training on Agricultural Machinery (SMT-AM)

7-1-1 Training on Land Preparation and Plot Expansion by using Power Tiller

Objectives and methodology:

- Target participants will be introduced to the advantages of expanding small plots into large plots with reference to using AM.
- Target participants will acquire skills of expansion work by use of power tiller.
- Target participants will acquire skills on levelling of paddy fields by using power tiller and wooden leveller.
- 30 farmers and extension officers will participate in the training.
- The training covers both theory and practice and lasts for 4 days.

7-1-2 Training on Combine Harvester: Objectives and methodology
- Target participants will be introduced to components of combine harvester and their functions
- Target participants will acquire basic skills of check-up and maintenance of combine harvester
- Target participants will acquire basic skills of the harvesting operation using combine harvester
- Target participants will be introduced to the key adjustments for reducing grain loss
- 40 persons (combine operators, district mechanization officers, extension officers, scheme leaders) will participate in the training
- The training will be conducted in 2 days and will cover both theory and practice.

7-1-3 Training on Rice Mill: Objectives and Methodology
- Theory of milling and rice quality will be introduced to target participants.
- Target participants will be introduced to milling plant components and its flow mechanism.
- Target participants will acquire skills on milling and rice mill operation.
- Target participants will acquire skills on preventive maintenance of rice mill plant.
- The training to be conducted in both theory and practice will last for 2 days with 40 participants.

7-2 Activities Conducted by the Agricultural Machinery Task Group

7-2-1 Field expansion at Lekitatu Irrigation Scheme, Meru District, Arusha Region
- Eight (8) plots were combined to form 2 big plots for efficient use of machinery.
    The expanded plot was used as model training plot for farmers.

Normal size of plots at Lekitatu IS   Expanded plot at Lekitatu IS

7-2-2 SMT-AM (land levelling sand field expansion)
- Conducted at Musa Mwinjanga Irrigation Scheme, Hai District, Kilimanjaro Region
- 36 farmers participated in the training during which 6 small plots were joined to form 1 plot.

Theory session

Practical session

7-2-3 Consultation visit to 14 irrigation schemes on the use and management of agricultural machinery donated by PHRD

Combine harvester in operation

Milling plant

7-2-4 Workshop on use and management of agricultural machinery

(1) The workshop was conducted at KATC in September 2017
(2) Fourteen (14) irrigation schemes with 70 participants attended the workshop.
(3) Each scheme prepared an action plan for use and management of machinery at their irrigation scheme. Participants included the following categories:
  - District Agricultural Mechanization Officers
  - Irrigation Scheme Managers/Extension Officers
  - Chairpersons of Farmers' Organizations
  - Combine Harvester Operators
  - Rice Mill Operators

7-2-5 Field testing of a power tiller drawn rotary puddler at KATC

7-2-6 Modification of jab planter for upland rice seeding at KATC

Rotary puddler

Jab planter

7-2-7 Fabrication of 100 rotary weeders to be distributed to farmers in Lekitatu, Mombo, Lower Moshi and Musa Mwinjanga irrigation schemes and other lowland rainfed rice cultivation areas

KATC30

KATC20

7-2-8 Visited private companies for consultations to collaborate in conducting SMT on combine harvester and rice mill

7-2-9 Visited 8 irrigation schemes for monitoring progress of action plan and use of rotary weeders
- In all the irrigation schemes visited, action plans were implemented by 70%
- 29 farmers were interviewed on the use of rotary weeder. 81% were satisfied with the performance of the weeder.

7-2-10 Preparation of teaching materials and implementation guidelines
- Materials prepared were manuals for land preparation and field expansion by power tiller, rice milling and quality of rice, and checklist for service and maintenance of combine harvester.

Preparation of teaching materials

7-2-11 TOT on maintenance and repair of combine harvester and power tiller at KATC
Conducted for AM-TG members by Short-term Expert. Five TG members participated in the training.

TOT for members of AM-TG (at KATC)

7-2-12 SMT-AM (combine harvester, rice mill and quality of rice)

- The SMT was conducted at Mombo Irrigation Scheme, Korogwe District, Tanga Region in collaboration with two private companies, AGRICOM AFRICA (supplier of combine harvesters) and RUBUYE AGRIBUSINESS (supplier of rice milling machinery).
- Technicians from the two companies were resource persons of the SMT.
- A total of 118 participants attended the training including district agricultural mechanization officers, irrigation scheme managers/extension officers, Kubota combine harvester operators and rice mill operators from 8 irrigation schemes
- Two trainings were conducted first in May, 2018 and second in June, 2019

Rice mill and combine harvester training at Mombo

7-2-13 Workshop on agricultural machinery use and management at Mombo irrigation scheme
Participants shared experiences on management of agricultural machinery especially combine harvesters and rice mill.

7-2-14 Training on operation of Daedong DSC62 combine harvester by an experienced operator from Muungano irrigation scheme, Babati district, Manyara region
One experienced operator of Daedong combine harvester conducted training to other operators.

Daedong DSC62 combine harvester training at Mombo

7-2-15 Conducted training for paddy Reaper and thresher to farmers, operators and scheme leaders from Lekitatu, Musa Mwinjanga and Mombo irrigation schemes at KATC

- The training was conducted by Agricultural Machinery short term expert and Agricultural Machinery Task Group Members
- A total of 27 participants were invited to attend the training

Paddy reaper and thresher training at KATC

7-2-16 Collaborating with financial institutions

- We had a successful collaboration with Equity for Tanzania (EFTA). They sent one staff at Mombo to talk to participants on their activities
- Conducted study visit in collaboration with EFTA to one of their client who loaned a Kubota combine harvester at Kahe village
- 25 farmers and cooperatives officers from 5 irrigation schemes (Kapunga, Mbuyuni, Mkula, Mkindo and Lekitatu) were invited for the study tour.
- Farmers were impressed by what the EFTA client (Mr. Amede Amani) explained to them especially participants from Mbuyuni IS in Mbarali district who were eager to acquire agriculture machines such as powertiller, tractor and combine harvesters.

Study tour at Kahe village

7-2-17 Conducted monitoring of rotary weeders distributed to farmers in Mombo, Musa mwinjanga and Lekitatu irrigation schemes.

- Number of farmers surveyed were; 10 at Mombo, 6 at Musa Mwinjanga and 6 at Lekitatu making a total of 22 farmers.
- 89% of the farmers were satisfied with the efficiency of the weeder.

Rotary weeder monitoring

7-2-18 Conducted monitoring of expanded land at Musa Mwinjanga irrigation scheme

- The expanded plots which is $1,290m^2$ (0.13ha) was in good condition after one season

Expanded plots at Musa Mwinjanga IS

7-2-19 Conducted AMTG meeting in which all KATC facilities and machinery were surveyed as an effort towards making KATC as a center for rice mechanization. During the meeting future activities for AMTG were discussed. Recommended activities are as follows:

- Combine harvester training to operators, mechanization officers, scheme leaders, farmers and combine harvester owners in collaboration with other stakeholders
- Rice mill training to operators, scheme leaders and supervisors in collaboration with stakeholders
- Paddy reaper and thresher training to operators, farmers and scheme leaders
- Continue collaboration with financial institutions to educate farmers on importance of acquiring loans for agriculture improvement
- Technical cooperation with CAMARTEC, MATI-Mlingano, and other agromechanization institutes on improvement of agriculture machinery
- Training to tractor and powertiller operators
- Training on expansion and plot levelling by powertiller to farmers
- Fabrication of rotary weeders and levellers as simple tools to farmers

Survey at KATC facilities

7-3 Challenges

- Poor farm infrastructures (farm roads, cross-overs on canals, small plots).
- New paddy threshers and reapers are not being used.
- Poor management of agricultural machinery due to leadership problems.
- Repair and maintenance of agricultural machinery is still a challenge (operators do not use user's manual).
- Rice milling plants are not in operation in most irrigation schemes (except Mombo, Lekitatu and Magozi irrigation schemes).
- Some EFTA clients (2) didn't like the idea of sharing their personal information to other farmers

7-4 Recommendations

- Continuous capacity building to operators, scheme leaders on maintenance and repair of agricultural machinery
- Awareness raising that agricultural machinery is a profit-earner
- Continuing asking financial institutions our objectives for collaboration for the benefit of paddy farmers in Tanzania.

Appendices

Appendix 1: Project Design Matrix (Version 3.0)

Appendix 2: Plan of operation

Appendix 3: List of JICA experts

Appendix 4: List of machinery and equipment provided

Appendix 5: List of task group members trained by JICA fund

Appendix 6: Summary of Overseas Activities Cost and MoU in JFY 2012-2019

Appendix 7: List of Assignment of Counterparts, November 2012 - December 2019

Appendix 8: Cost sharing of training budget by Tanzanian side

Appendix 9: List of irrigated rice cultivation technologies

Appendix 10: Adoption rate of main 8 rice cultivation technologies (irrigated rice cultivation)

Appendix 11: List of trained schemes of ST, Pilot MST and MST in 2013/14-2018/19 per Institute, Region and District (KATC, KATI, MATI Igurusi and Ilonga)

Appendix 12: Paddy yield areas covered by training institutes (irrigated rice cultivation)

Appendix 13: Record of the pilot training courses for rainfed lowland rice cultivation training

Appendix 14: Adoption ratios of the technologies in the target villages of rainfed lowland rice cultivation training course

Appendix 15: Record of TOT for extension officer for NERICA cultivation

Appendix 16: Record of the NERICA cultivation training courses

Appendix 17: List of trained scheme of Subject Matter Training on ISM, Gender, Marketing, Post-harvest and Agricultural Machinery

Appendix 1
Revised Project Design Matrix (PDM)

Project Title: The Project for Supporting Rice Industry Development in Tanzania　　　　Project Period：16th November, 2012 - 15th December, 2019　　**Version No.3.0**

Target Areas: Priority rice production areas*1 across the country　　　　Target Group: Rice farmers in the target areas

Implementation Institutions: Kilimanjaro Agricultural Training Center (KATC, Moshi), Ministry of Agriculture Training Institute at Igurusi (MATI-Igurusi), MATI-Ilonga, MATI-Mtwara,

MATI-Tumbi, MATI-Ukiriguru and Kizimbani Agricultural Training Institute (KATI, Zanzibar)　　　　　　　　　　　Date：August XX, 2018

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goal Rice production is increased in the rice production areas across the country.	1. The annual paddy production exceeds <u>2.50</u> million tons per year across the country by 2021.	1. Statistics Reports (Annual Agriculture Sample Survey)	
Project Purpose Rice farming technologies are adopted by farmers in the priority rice production areas.	1. The straight row transplanting or planting method is adopted by at least 15,000 farmers in the priority rice production areas*1 in 2018. 2. Other important technologies*2 contributing to the improvement of rice farming are adopted by at least 2,400 farmers.	1. Monitoring reports of the Project 2. Sample surveys to the collaborators and the target group	1. Price of rice does not drastically decline. 2. Resources necessary for the rice industry development are continuously allocated
Outputs 1. Training approach for disseminating the appropriate irrigated rice cultivation technologies*3 (standard training) is strengthened nationwide.	1-1. The standard training course or modified standard training course are conducted for at least 80 priority irrigation schemes by 2018. 1-2. At least 50% of key farmers and intermediate farmers in selected irrigation schemes evaluate that their paddy production technologies are improved. 1-3. Extension materials for extension officers and farmers are developed. 1-4. At least 45% of participants of the training (key- and intermediate-farmers) are women.	1-1. Training records 1-2. Reports of monitoring and planning 1-3. Extension materials 1-4. Training records	1. Natural disasters, such as droughts, floods, etc., do not have a profound effect on the Project. 2. Outbreaks of serious rice diseases do not occur.
2. Training approach for disseminating the appropriate rainfed rice cultivation technologies is developed.	2-1. Effective technologies of rainfed lowland rice cultivation are confirmed. 2-2. At least 25% of key farmers and intermediate farmers of rainfed upland and rainfed lowland rice cultivation courses evaluate that their paddy production technologies are improved after 2 cropping seasons. 2-3. Extension materials for extension officers and farmers are developed. 2-4. At least 45% of participants of the training (key- and intermediate-farmers) are women.	2-1. Results of verification trials 2-2. Reports of monitoring and planning 2-3. Extension materials 2-4. Training records	
3. The subject-matter training <u>courses</u> on the value chain of rice industry are strengthened.	3-1. Subject-matter training courses are identified. 3-2. At least 120 subject-matter training courses are conducted. 3-3. Teaching materials, pamphlets, etc. for respective subject-matter training courses are prepared and utilized	3-1. Project Completion Report 3-2. Progress reports 3-3. Teaching materials, etc.	

Activities	Inputs:	
Activities	**Inputs:**	During the
1-1 Organize sensitization workshops on the rice cultivation technologies and the value chain of rice industry for key stakeholders in priority rice production areas.	Tanzanian side (MoA/MANRLF)	cooperation period,
1-2 Clarify the roles and functions of stakeholders in the context of rice industry development including District Agriculture Irrigation and Cooperatives Officers (DAICOs) and agricultural extension officers.	(a) Counterpart personnel (b) Office space for experts (c) Supply or replacement of machinery, equipment, instruments, vehicles, tools, spare parts and any other materials necessary for the implementation	the DAICOs, agricultural extension officers, and farmers
1-3 Review and modify the standard training based on the requests and financial conditions in districts.	of the Project other than the equipment provided by JICA	capacitated by the
1-4 Study the existing conditions of irrigation schemes.	(d) Available data (including maps and photographs) and information	Project continue
1-5 Identify irrigation schemes for the standard training course.	related to the Project;	working in the
1-6 Conduct training of trainers (TOT) on irrigated rice cultivation technologies for agricultural tutors and agricultural extension officers.	(e) Running expenses necessary for the implementation of the Project;	target areas.
1-7 Conduct the standard training course by involving DAICOs and agricultural extension officers in the identified irrigation schemes and develop extension materials.	(f) Expenses necessary for transportation within Tanzania of the equipment provided by JICA as well as for the installation, operation and maintenance thereof	
1-8 Monitor the rice cultivation activities in the irrigation schemes with the agricultural extension officers.	(g) Necessary facilities for the remittance as well as utilization of the funds introduced into Tanzania from Japan in connection with the	
1-9 Examine and improve the management of the standard training course.	implementation of the Project in case it is required	
1-10 Promote dissemination activities of rice development technologies across the country.		
2-1 Collect basic information of rainfed lowland rice areas.	Japanese side (JICA)	
2-2 Clarify issues and challenges on rainfed lowland rice cultivation technologies.	(a) Dispatch of experts in the specialty of:	
2-3 Conduct verification trials for rainfed lowland rice cultivation.	Chief Advisor, Coordinator, Rice Cultivation Technology, Rice Cultivation	
2-4 Conduct pilot training on rainfed lowland rice cultivation involving DAICOs and agricultural extension officers	Extension/Monitoring, Water Management/Farmers' Organization, Marketing/Post-harvest Processing, Irrigation Scheme Management,	
2-5 Review/develop the training on rainfed upland rice cultivation technologies.	Gender Mainstream, Agricultural Machinery and Others according to necessity.	
2-6 Study and identify rainfed upland rice areas for the training.	(b) Training	
2-7 Conduct TOT on rainfed upland rice cultivation technologies (including NERICA) for agricultural tutors and extension officers.	Training of Task Group Members in Japan and/or Third Countries (c) Machinery and Equipment	
2-8 Conduct the training on rainfed upland rice cultivation technologies involving DAICOs and agricultural extension officers in the identified rainfed upland rice areas and develop extension materials.	Necessary and mutually agreed machinery and equipment for the implementation of the Project - Vehicles	
2-9 Monitor the rice cultivation activities in the rainfed upland rice areas with the agricultural extension officers.	- Bus for the transportation of participants in training - Others	
3-1 Review the value chain of rice industry, such as irrigation scheme management, marketing, gender, post-harvest processing, etc.	(d) Facility	
3-2 Review/develop the subject-matter training courses.	- Improvement of training facility according to necessity	**Pre-condition**
3-3 Identify the priority areas/groups for the subject-matter training courses.	(e) Local expenses for the project activities which are not covered by	
3-4 Conduct TOT on the value chain of rice industry for agricultural tutors and extension officers.	Tanzanian side	
3-5 Conduct training on the value chain of rice industry for the DAICOs, agricultural extension officers, farmers, etc. in the priority areas.	- Expenses for training/workshop/seminar, teaching materials, etc.	
3-6 Monitor the outcomes of the training courses with the agricultural extension officers.	- Others*4	

*1: Priority rice production areas include the irrigation schemes (Output 1) and rainfed rice areas (Output 2) identified by the Project as well as the priority areas for the subject-matter training (Output 3).

*2: Other important technologies mean the ones obtained from SMTs.

*3: "Appropriate irrigated rice cultivation technologies" indicate the technologies identified/developed/improved by the Project and utilized in the training.

*4: The other local expenses are covered by the Japanese side only if the Tanzanian side is not able to secure the budget for the project activities.

Appendix 2: Plan of operation (2012-2019)

	Responsible persons/organizations
Year: Y2012, Y2013, Y2014, Y2015, Y2016, Y2017, Y2018, Y2019	
Mid-term Review and Terminal Evaluation (Mid-term review, Terminal evaluation)	· Director of Agricultural Training, Extension Services and Research Division (DT), Ministry of Agriculture (MoA)
OUTPUT 1. Training approach for disseminating the appropriate irrigated rice cultivation technologies (standard training) is strengthened nationwide.	
1-1 Organize sensitization workshops on the rice cultivation technologies and the value chain of rice industry for key stakeholders in priority rice production areas.	· Director of DT, MoA · Principals of KATC, MATIs and director of KATI
1-2 Clarify the roles and functions of stakeholders in the context of rice industry development including District Agriculture and Livestock Development Officers (DALDOs) and agricultural extension officers.	· Director of DT, MoA
1-3 Review and modify the standard training based on the requests and financial conditions in districts.	· Director of DT, MoA · Principals of KATC, MATIs and director of KATI
1-4 Study the existing conditions of irrigation schemes.	· Principals of KATC, MATIs and director of KATI
1-5 Identify irrigation schemes for the standard training course.	· Director of DT, MoA · Principals of KATC, MATIs and director of KATI
1-6 Conduct training of trainers (TOT) on irrigated rice cultivation technologies for agricultural tutors and agricultural extension officers.	· Principals of KATC, MATIs and director of KATI
1-7 Conduct the standard training course by involving DALDOs and agricultural extension officers in the identified irrigation schemes.	· Principals of KATC, MATIs and director of KATI
1-8 Monitor the rice cultivation activities in the irrigation schemes with the agricultural extension officers.	· Principals of KATC, MATIs and director of KATI · DALDOs supervising irrigation schemes
1-9 Examine and improve the management of the standard training course.	· Director of DT, MoA · Principals of KATC, MATIs and director of KATI
1-10 Promote dissemination activities of rice development technologies across the country.	· Director of DT, MoA · Principals of KATC, MATIs and director of KATI
OUTPUT 2. Training approach for disseminating the appropriate rainfed rice cultivation technologies is developed.	
2-1 Collect basic information of rainfed lowland rice areas.	· Principals of KATC, MATIs and director of KATI
2-2 Clarify issues and challenges on rainfed lowland rice cultivation technologies.	· Principals of KATC, MATIs and director of KATI
2-3 Conduct verification trials for rainfed lowland rice cultivation.	· Principals of KATC, MATIs and director of KATI
2-4 Conduct pilot training on rainfed lowland rice cultivation involving DAICOs and agricultural extension officers	· Director of DT, MoA · Principals of KATC, MATIs and director of KATI
2-5 Review/develop the training on rainfed upland rice cultivation technologies.	· Director of DT, MoA · Principals of KATC, MATIs and director of KATI
2-6 Study and identify rainfed upland rice areas for the training.	· Director of DT, MoA · Principals of KATC, MATIs and director of KATI
2-7 Conduct TOT on rainfed upland rice cultivation technologies (including NERICA) for agricultural tutors and extension officers.	· Principals of KATC, MATIs and director of KATI
2-8 Conduct the training on rainfed upland rice cultivation technologies by involving DALDOs and agricultural extension officers in the identified rainfed upland rice areas.	· Principals of KATC, MATIs and director of KATI
2-9 Monitor the rice cultivation activities in the rainfed upland rice areas with the agricultural extension officers.	· Principals of KATC, MATIs and director of KATI · DALDOs supervising rain-fed upland rice areas

85

Year	Y2012	Y2013	Y2014	Y2015	Y2016	Y2017	Y2018	Y2019	Responsible persons/organizations
Month	10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	
Total month	1 2 3	4 5 6 7 8 9 10 11 12 13 14 15 16 17	18 19 20 21 22 23 24 25 26 27 28 29	30 31 32 33 34 35 36 37 38 39 40 41	42 43 44 45 46 47 48 49 50 51 52 53	54 55 56 57 58 59 60 61 62 63 64 65	66 67 68 69 70 71 72 73 74 75 76 77	78 79 80 81 82 83 84 85 86 87	

OUTPUT 3. The subject-matter training programs on the value chain of rice industry are strengthened.

Activity	Responsible persons/organizations
3-1 Review the value chain of rice industry, such as irrigation scheme management, marketing, gender consideration, etc.	· Principals of KATC, MATIs and director of KATI · DALDOs
3-2 Review/develop the subject-matter training.	· Director of DT, MoA · Principals of KATC, MATIs and director of KATI
3-3 Identify the priority areas/groups for the subject-matter training.	· Director of DT, MoA · Principals of KATC, MATIs and director of KATI
3-4 Conduct TOT on the value chain of rice industry for agricultural tutors and extension officers.	· Principals of KATC, MATIs and director of KATI
3-5 Conduct training on the value chain of rice industry for the DALDOs, agricultural extension officers, farmers, etc. in the priority areas.	· Principals of KATC, MATIs and director of KATI
3-6 Monitor the outcomes of the training with the agricultural extension officers.	· Principals of KATC, MATIs and director of KATI · DALDOs
Irrigation Scheme Management	
Marketing	
Gender	
Agricultural Machinery	
Post Harvest Technology	

Note: The start of the Project, schedules described in this chart, and so on are subject to modifications through further examinations and discussions in future.

■ : To complete project activities within the solid line.

■ ■ : To continuously conduct project activities during the dotted line.

△ : To conduct mid-term review and terminal evaluation.

Appendix 3: List of JICA experts

\<Long-term Experts>

	Name	Assignment	From	To
1	Mr. Hideyuki Kanamori	Chief Advisor	2012/11/16	2015/3/29
2	Mr. Toshiyasu Murai	Coordinator	2013/3/5	2015/3/2
3	Mr. Nobuaki Oizumi	Rice Cultivation Technology	2012/12/7	2019/12/15
4	Mr. Kenji Shiraishi	Rice Cultivation Extension/Monitoring	2013/5/31	2019/12/15
5	Mr. Yasunori Saiki	Water Management/Fanners' Organization	2012/12/7	2015/12/2
6	Mr. Motonori Tomitaka	Chief Advisor	2015/4/10	2018/11/15
7	Ms. Chiho Tanaka	Coordinator	2015/2/9	2018/11/15
8	Mr. Yasutsugu Oyadomari	Water Management/Farmers' Organization	2015/11/22	2018/11/15

\<Short-term Experts>

Year	Name	Assignment	From	To
2013	Ms. Akiko Akiyama	Marketing	2013/9/28	2013/12/01
	Ms. Yoko Harada	Gender Mainstream	2013/9/21	2013/10/18
2014	Mr. Kenji Tamura	Irrigation Scheme Management	2014/1/10	2014/3/14
	Ms. Akiko Akiyama	Marketing	2014/7/7	2014/9/9
	Ms. Mariko Homma	Gender Mainstream	2014/11/12	2014/11/23
	Mr. Kenji Tamura	Irrigation Scheme Management	2014/11/16	2015/1/18
2015	Mr. Yasunobu Kudo	Post-harvest Processing	2015/1/10	2015/2/18
	Mr. Teruhisa Aoki	Post-harvest Processing	2015/6/20	2015/8/23
	Ms. Akiko Akiyama	Marketing	2015/6/26	2015/8/20
	Ms. Aya Yamaguchi	Gender Mainstream	2015/12/5	2015/12/24
2016	Mr. Michihiko Sakaki	Irrigation Scheme Management	2016/2/21	2016/4/8
	Mr. Takeshi Ajioka	Irrigation Scheme Management	2016/5/29	2016/7/28
	Ms. Akiko Akiyama	Marketing	2016/8/14	2016/10/4
	Mr. Michihiko Sakaki	Irrigation Scheme Management	2016/9/14	2016/11/3
	Ms. Mariko Homma	Gender Mainstream	2016/10/27	2016/11/16
	Mr. Koji Yamaguchi	Agricultural Machinery	2016/12/10	2017/2/5
2017	Mr. Michihiko Sakaki	Irrigation Scheme Management	2017/6/10	2017/7/21
	Mr. Koji Yamaguchi	Agricultural Machinery	2017/7/2	2017/10/14
	Ms. Mariko Homma	Gender Mainstream	2017/7/16	2017/8/27
2018	Ms. Akiko Akiyama	Marketing	2018/1/8	2018/2/16
	Mr. Shingo Furuichi	Agricultural Machinery	2018/4/15	2018/6/4
2019	Mr. Koji Yamaguchi	Agricultural Machinery	2019/6/24	2019/8/5

Appendix 3: List of JICA experts

<Technical Advisory Mission>

Year	Name	Field of Expertise	From	To
2013	Ms. Yumiko Tanaka	Gender Mainstream	2013/3/4	2013/3/27
	Mr. Hideki Araki	Rice Cultivation Technology	2013/10/14	2013/10/23
2014	Mr. Hideki Araki	Rice Cultivation Technology	2014/6/11	2014/6/28
	Ms. Yumiko Tanaka	Gender Mainstream	2014/11/10	2014/11/23
2015	Mr. Hideki Araki Mr. Atsushi Sakaguchi	Rice Cultivation Technology	2015/9/6	2015/9/17
	Ms. Yumiko Tanaka	Gender Mainstream	2015/11/30	2015/12/11
2016	Mr. Hideki Araki	Rice Cultivation Technology	2016/1/3	2016/1/21
	Ms. Yumiko Tanaka Ms. Ava Yamaguchi	Gender Mainstream	2016/7/31	2016/8/13
2017	Mr. Hideki Araki	Rice Cultivation Technology	2017/6/6	2017/6/20
	Ms. Aya Yamaguchi	Gender Mainstream	2017/11/16	2017/11/25
2018	Ms. Yumiko Tanaka	Gender Mainstream	2018/9/10	2018/9/15
2019	Ms. Aya Yamaguchi	Gender Mainstream	2019/11/10	2019/11/16

Appendix 4: List of machinery and equipment provided

No	Date of procurement	Name of equipment	Model	Maker	Unit Price JPY	Unit Price Tshs	Quantity	Location	Remarks (condition)
1	8-Mar-13	Prototype threshing machine	ACT mini thresher	A.C.T	120,127.50	2,402,550.00	1	KATC	Good condition from the Philippines (60,000Pesos)
2	14-Jun-13	Digital camera	DSC-TX5	SONY		1,140,000.00		Expert	Good
3	30-Jan-14	Laser Printer	LaserJet P2055	HP		370,000.00	1	MATI-Mtwara	Good
4	30-Jan-14	Laser Printer	LaserJet P2055	HP		370,000.00	1	MATI-Mtwara	Good
5	30-Jan-14	Laser Printer	LaserJet P2055	HP		370,000.00	1	MATI-Tumbi	Good
6	30-Jan-14	Laser Printer	LaserJet P2055	HP		370,000.00	1	MATI-Tumbi	Good
7	6-Feb-14	Desktop Computer	Optiplex 9010	Dell		1,295,850.00	1	MATI-Mtwara	Good
8	6-Feb-14	Desktop Computer	Optiplex 9010	Dell		1,295,850.00	1	MATI-Mtwara	Good
9	6-Feb-14	Desktop Computer	Optiplex 9010	Dell		1,295,850.00	1	MATI-Mtwara	Good
10	6-Feb-14	Desktop Computer	Optiplex 9010	Dell		1,295,850.00	1	MATI-Tumbi	Good
11	6-Feb-14	Desktop Computer	Optiplex 9010	Dell		1,295,850.00	1	MATI-Tumbi	Good
12	6-Feb-14	Desktop Computer	Optiplex 9010	Dell		1,478,000.00	1	MATI-Tumbi	Good
13	6-Feb-14	Monitor for the desktop computer	-	Dell			1	MATI-Mtwara	Good
14	6-Feb-14	Monitor for the desktop computer	-	Dell			1	MATI-Mtwara	Good
15	6-Feb-14	Monitor for the desktop computer	-	Dell			1	MATI-Mtwara	Good
16	6-Feb-14	Monitor for the desktop computer	-	Dell			1	MATI-Tumbi	Good
17	6-Feb-14	Monitor for the desktop computer	-	Dell			1	MATI-Tumbi	Good
18	6-Feb-14	Monitor for the desktop computer	-	Dell			1	MATI-Tumbi	Good
19	17-Feb-14	Copy Machine	MX-M363N	Sharp	5,978.00	9,618,600.00	1	MAFC	Good
20	17-Feb-14	Copy Machine	MX-M364N	Sharp	6,378.00	10,262,200.00	1	MATI-Tumbi	Good
21	19-Feb-14	Copy Machine	MX-M365N	Sharp	6,378.00	10,262,200.00	1	MATI-Mtwara	Good
22	18-Feb-14	UPS	APC 750VA 230V	APC		422,900.00	1	MATI-Mtwara	Good
23	18-Feb-14	UPS	APC 750VA 230V	APC		422,900.00	1	MATI-Mtwara	Good
24	18-Feb-14	UPS	APC 750VA 230V	APC		422,900.00	1	MATI-Mtwara	Good
25	18-Feb-14	UPS	APC 750VA 230V	APC		422,900.00	1	MATI-Tumbi	Good
26	18-Feb-14	UPS	APC 750VA 230V	APC		422,900.00	1	MATI-Tumbi	Good
27	18-Feb-14	UPS	APC 750VA 230V	APC		422,900.00	1	MATI-Tumbi	Good
28	6-Feb-14	Laptop Computer	Portege R930-C085	Toshiba		1,202,500.00	1	MATI-Mtwara	Good
29	6-Feb-14	Laptop Computer	Portege R930-C085	Toshiba		1,202,500.00	1	MATI-Mtwara	Good
30	6-Feb-14	Laptop Computer	Portege R930-C085	Toshiba		1,202,500.00	1	MATI-Tumbi	Good
31	6-Feb-14	Laptop Computer	Portege R930-C085	Toshiba		1,202,500.00	1	MATI-Tumbi	Good
32	11-Feb-14	Projector	Epson EB-S02	Epson		922,000.00	1	MATI-Mtwara	Good
33	11-Feb-14	Projector	Epson EB-S02	Epson		922,000.00	1	MATI-Tumbi	Good
34	3-Mar-14	Power Tiller with 2 blade disc plough, mold board plough, trailer 1.5 ton, puddler, and sprayer	NC 131	Siam Kubota		10,943,400.00	1	MATI-Mtwara	Good

35	3-Mar-14	Power Tiller with 2 blade disc plough, mold board plough, trailer 1.5 ton, puddler, and sprayer	NC 131	Siam Kubota		10,943,400.00	1	MATI-Tumbi	Good
36	6-Mar-14	Laptop Computer	Portege R930-C085	Toshiba		1,202,500.00	1	MAFC	Good
37	6-Mar-14	Laptop Computer	Portege R930-C085	Toshiba		1,202,500.00	1	MAFC	Good
38	6-Mar-14	Printer with Scanner	Office jet Pro 8600	HP		423,000.00	1	MAFC	Good
39	6-Mar-14	Printer with Scanner	Office jet Pro 8600	HP		423,000.00	1	MAFC	Good
40	7-Mar-14	Projector	Epson EB-S02	Epson		1,098,800.00	1	KATC	Good
41	7-Mar-14	Generator	Elemax 3200	Sawafuji		1,450,000.00	1	MATI-Mtwara	Good
42	7-Mar-14	Generator	Elemax 3200	Sawafuji		1,450,000.00	1	MATI-Tumbi	Good
43	20-Mar-14	Software - word processer, spreadsheet, and presentation	Microsoft Office Home and Student	Microsoft		196,200.00	4	MATI-Mtwara	Good
44	20-Mar-14	Software - word processer, spreadsheet, and presentation	Microsoft Office Home and Student	Microsoft		196,200.00	2	MATI-Tumbi	Good
45	20-Mar-14	Software - Anti-virus	Anti-Virus 2014 for 2 users	Kaspersky		30,000.00	3	MATI-Mtwara	Good
46	20-Mar-14	Software - Anti-virus	Anti-Virus 2014 for 2 users	Kaspersky		30,000.00	3	MATI-Tumbi	Good
47	31-Mar-14	Software - word processer, spreadsheet, and presentation	Microsoft Office Home and Student	Microsoft		196,200.00	2	MATI-Tumbi	Good
48	31-Mar-14	Software - word processer, spreadsheet, and presentation	Microsoft Office Home and Student	Microsoft		196,200.00	2	MAFC	Good
49	1-Apr-14	Software - word processer, spreadsheet, and presentation	Microsoft Office Home and Student	Microsoft		196,200.00	2	MAFC	Good
50	1-Apr-14	Extension cable for the generator.	Cable Reel 2.5/ 50 meter	-		182,500.00	1	MATI-Mtwara	Good
51	1-Apr-14	Extension cable for the generator.	Cable Reel 2.5/ 50 meter	-		182,500.00	1	MATI-Tumbi	Good
52	19-Jun-14	Software - Anti-virus	Anti-Virus 2014 for 2 users	Kaspersky		30,000.00	1	MAFC	Good
53	14-Aug-14	Safe box	Safe Box BGX60	-		1,274,000.00	1	Dar project office	Good
54	14-Aug-14	Cabinet	-	-		1,180,000.00	1	Dar project office	Good
55	15-Sep-14	Digital Video Camera	CX-240	SONY		750,000.00	1	KATC Expert	Good
56	23-Sep-14	Digital Video Camera	CX-240	SONY		750,000.00	1	KATC Expert	Good
57	23-Jan-15	pH/ EC meter	HI 98129	-		625,000.00	1	MATI-Tumbi	Good
58	23-Jan-15	Laser distance meter	Disto	Leica		2,125,000.00	2	KATC Expert	Good
59	23-Jan-15	Inclinometer digital protractor angle	-	-		250,000.00	1	KATC Expert	Good
60	23-Jan-15	Levelling staff	-	-		250,000.00	2	KATC Expert	Good
61	31-Jan-15	Schmidt Hammer	-	-		3,300,000.00	1	KATC Expert	Good
62	10-Feb-15	pH/ EC/ TDS meter	HI 98129	-		625,000.00	1	MATI-Mtwara	Good
63	10-Feb-15	A4 Laser Printer	LaserJet Pro1102	HP		195,000.00	1	KATC	Good
64	10-Feb-15	A4 Laser Printer	LaserJet Pro1102	HP		195,000.00	1	KATC	Good

65	10-Feb-15	Table top weigh balance	Table top 5kg	-		299,650.00	1	MATI-Mtwara	Good
66	10-Feb-15	Table top weigh balance	Table top 5kg	-		299,650.00	1	MATI-Tumbi	Good
67	10-Feb-15	Desktop Computer	G3220	DELL		109,500.00	1	KATC	Good
68	10-Feb-15	Desktop Computer	G3220	DELL		109,500.00	1	KATC	Good
69	10-Feb-15	Desktop Computer	G3220	DELL		109,500.00	1	KATC	Good
70	10-Feb-15	Monitor for the desktop computer		-	DELL		1	KATC	Good
71	10-Feb-15	Monitor for the desktop computer		-	DELL		1	KATC	Good
72	10-Feb-15	Monitor for the desktop computer		-	DELL		1	KATC	Good
73	10-Feb-15	Laptop Computer	LALITUDE3540	DELL		1,334,000.00	1	KATC	Good
74	10-Feb-15	Laptop Computer	LALITUDE3540	DELL		1,334,000.00	1	KATC	Good
75	10-Feb-15	Laptop Computer	LALITUDE3540	DELL		1,334,000.00	1	ADT	Good
76	10-Feb-15	Laptop Computer	LALITUDE3540	DELL		1,334,000.00	1	MATI-Ilonga	Good
77	10-Feb-15	Laptop Computer	LALITUDE3540	DELL		1,334,000.00	1	MATI-Ilonga	Good
78	10-Feb-15	Laptop Computer	LALITUDE3540	DELL		1,334,000.00	1	MATI-Igurusi	Good
79	10-Feb-15	Laptop Computer	LALITUDE3540	DELL		1,334,000.00	1	MATI-Igurusi	Good
80	10-Feb-15	Laptop Computer	LALITUDE3540	DELL		1,334,000.00	1	KATI	Good
81	10-Feb-15	Laptop Computer	LALITUDE3540	DELL		1,334,000.00	1	KATI	Good
82	10-Feb-15	Laptop Computer	LALITUDE3540	DELL		1,334,000.00	1	MATI-Ukiriguru	Good
83	10-Feb-15	Laptop Computer	LALITUDE3540	DELL		1,334,000.00	1	MATI-Ukiriguru	Good
84	10-Feb-15	Anti-virus software	Internet Security 2014, 2users	Kaspersky		40,000.00	3	KATC	Good
85	10-Feb-15	Anti-virus software	Internet Security 2014, 2users	Kaspersky		40,000.00	1	ADT	Good
86	10-Feb-15	Anti-virus software	Internet Security 2014, 2users	Kaspersky		40,000.00	1	MATI-Ilonga	Good
87	10-Feb-15	Anti-virus software	Internet Security 2014, 2users	Kaspersky		40,000.00	1	MATI-Igurusi	Good
88	10-Feb-15	Anti-virus software	Internet Security 2014, 2users	Kaspersky		40,000.00	1	KATI	Good
89	10-Feb-15	Anti-virus software	Internet Security 2014, 2users	Kaspersky		40,000.00	1	KATI	Good
90	19-Feb-15	Tire	285/85R16	Dunrop		352,700.00	4	MATI-Ukiriguru	Good
91	19-Feb-15	Tire	285/85R16	Dunrop		1,410,800.00	4	KATI	Good
92	23-Feb-15	Voltage Stabilizer	-	-		125,000.00	3	KATC Expert	Good
93	Feb -15	Hardtop (Vehicle)	Land Cruiser 78, Series Hardtop	Toyota	3,500,000.00	2,322,750.00	1	MATI-Mtwara	Good
94	Feb -15	Hardtop (Vehicle)	Land Cruiser 78, Series Hardtop	Toyota	3,500,000.00	2,322,750.00	1	MATI-Tumbi	Good
95	Feb -15	Hardtop (Vehicle)	Land Cruiser 78, Series Hardtop	Toyota	3,500,000.00	2,322,750.00	1	MATI-Ilonga	Good
96	26-Feb-15	Projector	S12 Powerlite	EPSON		1,258,000.00	1	KATC Expert	Good
97	26-Feb-15	Software	Microsoft Home & Student 2013, 1user	Microsoft		187,300.00	1	KATC	Good
98	26-Feb-15	Software	Microsoft Home & Student 2013, 1user	Microsoft		187,300.00	1	KATC	Good
99	26-Feb-15	Software	Microsoft Home & Student 2013, 1user	Microsoft		187,300.00	1	KATC	Good
100	26-Feb-15	Software	Microsoft Home & Student 2013, 1user	Microsoft		187,300.00	1	KATC	Good

101	26-Feb-15	Software	Microsoft Home & Student 2013, 1user	Microsoft		187,300.00	1	KATC	Good
102	26-Feb-15	Software	Microsoft Home & Student 2013, 1user	Microsoft		187,300.00	1	ADT	Good
103	26-Feb-15	Software	Microsoft Home & Student 2013, 1user	Microsoft		187,300.00	1	MATI-Ilonga	Good
104	26-Feb-15	Software	Microsoft Home & Student 2013, 1user	Microsoft		187,300.00	1	MATI-Ilonga	Good
105	26-Feb-15	Software	Microsoft Home & Student 2013, 1user	Microsoft		187,300.00	1	Mati-Igurusi	Good
106	26-Feb-15	Software	Microsoft Home & Student 2013, 1user	Microsoft		187,300.00	1	Mati-Igurusi	Good
107	26-Feb-15	Software	Microsoft Home & Student 2013, 1user	Microsoft		187,300.00	1	KATI	Good
108	26-Feb-15	Software	Microsoft Home & Student 2013, 1user	Microsoft		187,300.00	1	KATI	Good
109	26-Feb-15	Software	Microsoft Home & Student 2013, 1user	Microsoft		187,300.00	1	MATI-Ukiriguru	Good
110	26-Feb-15	Software	Microsoft Home & Student 2013, 1user	Microsoft		187,300.00	1	MATI-Ukiriguru	Good
111	26-Feb-15	Leveling Machine	AP281 Leveling Machine C/W, Leveling staff and Aluminum Tripod	Pentax		1,000,000.00	1	MATI-Ilonga	Good
112	26-Feb-15	Leveling Machine	AP281 Leveling Machine C/W, Leveling staff and Aluminum Tripod	Pentax		1,000,000.00	1	MATI-Igurusi	Good
113	26-Feb-15	Leveling Machine	AP281 Leveling Machine C/W, Leveling staff and Aluminum Tripod	Pentax		1,000,000.00	1	MATI-Ukirigru	Good
114	26-Feb-15	Leveling Machine	AP281 Leveling Machine C/W, Leveling staff and Aluminum Tripod	Pentax		1,000,000.00	1	MATI-Tumbi	Good
115	26-Feb-15	Leveling Machine	AP281 Leveling Machine C/W, Leveling staff and Aluminum Tripod	Pentax		1,000,000.00	1	MATI-Mrwara	Good
116	26-Feb-15	Leveling Machine	AP281 Leveling Machine C/W, Leveling staff and Aluminum Tripod	Pentax		1,000,000.00	1	KATI	Good
117	27-Feb-15	Tyre	285/85R16	Dunlop		6,305,100.00	16	MATI-Igurusi, Ukiriguru, Ilonga, KATC	Good
118	30-Mar-15	Weather station	Data Logger with 10 smart sensor inputs and 10AHr Battery	-		13,600,000.00	1	KATC	Good
119	30-Mar-15	Photocopy machine	MP3053SP	Nashuatech/RICOH		11,000,000.00	4	DT, KATC, MATI-Ukiriguru, MATI-Ilonga	Good
120	30-Mar-15	Current Velocity Meter	Model2100	Swoffer Instruments, NC		12,750,000.00	1	KATC Expert	Good
121	11-Jun-15	Tyre	275/65R17	BF Goodrich		4,076,300.00	5	Dar project office	Good

122	26-Jun-15	Roof lack	-	-		4,840,000.00	2	Moshi Project office	Good
123	26-Jun-15	Window Screen	J56101-60905	Toyota Genuine		2,631,700.00	1	Moshi Project office	Good
124	11-Jun-15	Mobile color printer	HP Officejet 100	-		364,800.00	1	Dar project office	Good
125	25-Jan-16	Grain Moisture Tester and Reaping Area Determinator	F515	Ricester		22,641,750.00	7	MATI/KATI/ KATC	Good
126	21-May-16	HD Router	NSA-320, 1TB HD	Zyxel NAS 2 Bay		785,000.00	1	Moshi Project office	Good
127	30-May-16	Hardtop Long body	Land Cruiser 70, Series Hardtop 12	Toyota		99,312,200.00	1	MATI-Ukiriguru	Good
128	30-May-16	Hardtop Long body	Land Cruiser 70, Series Hardtop 12	Toyota		99,312,200.00	1	MATI-Igurusi	Good
129	30-May-16	Hardtop Long body	Land Cruiser 70, Series Hardtop 12	Toyota		99,312,200.00	1	KATC	Good
130	5-Jul-16	Money counter	WJD 2108	Bill Counter		590,000.00	1	Moshi Project office	Good
131	5-Jul-16	Paper Shredder	Paper Shredder CC 2040	ATLAS		590,000.00	1	Moshi Project office	Good
132	12-Aug-16	Solar pomp system	GROUNDFOS SP 46-5 etc.	-		129,614,650.00	1	KATC	Good
133	24-Jan-17	Laptop PC	INSP3558	DELL		1,953,850.00	1	KATC	Good
134	24-Jan-17	Laptop PC	INSP3558	DELL		1,953,850.00	1	MATI-Ilonga	Good
135	24-Jan-17	Laptop PC	INSP3558	DELL		1,953,850.00	1	MATI-Igurusi	Good
136	24-Jan-17	Laptop PC	INSP3558	DELL		1,953,850.00	1	MATI-Tumbi	Good
137	24-Jan-17	Laptop PC	INSP3558	DELL		1,953,850.00	1	MATI-Mtwara	Good
138	24-Jan-17	Laptop PC	INSP3558	DELL		1,953,850.00	1	MATI-Ukiriguru	Good
139	24-Jan-17	Laptop PC	INSP3558	DELL		1,953,850.00	1	KATI	Good
140	24-Jan-17	Laptop PC	INSP3558	DELL		1,953,850.00	1	Dar project office	Good
141	24-Jan-17	Digital camera	IXUS160	Canon		300,000.00	1	KATC	Good
142	24-Jan-17	Digital camera	IXUS160	Canon		300,000.00	1	MATI-Ilonga	Good
143	24-Jan-17	Digital camera	IXUS160	Canon		300,000.00	1	MATI-Igurusi	Good
144	24-Jan-17	Digital camera	IXUS160	Canon		300,000.00	1	MATI-Tumbi	Good
145	24-Jan-17	Digital camera	IXUS160	Canon		300,000.00	1	MATI-Mtwara	Good
146	24-Jan-17	Digital camera	IXUS160	Canon		300,000.00	1	MATI-Ukiriguru	Good
147	24-Jan-17	Digital camera	IXUS160	Canon		300,000.00	1	KATI	Good
148	25-Jan-17	Tire	235/85R16	DUNLOP		18,518,950.00	35	MATI/ KATC/MoA	Good
149	29-Mar-17	Mini Bus	Civilian 2WD	Nissan		134,915,000.00	1	Moshi Project office	Good
150	25-Jul-17	Spanner set	-	-		200,000.00	1	Moshi Project office	Good
151	26-Sep-17	Voltage Stabilizer	-	-		140,000.00	1	Moshi Project office	Good
152	25-Oct-17	Printer	HP Office jet	-		400,000.00		Dar project office	Good
153	25-Nov-17	Mobile speaker	-	-		300,000.00		Moshi Project office	Good
154	26-Jan-18	Combine Harvester	DC-60	Kubota		73,000,000.00	1	KATC	Good
155	14-Feb-18	Tire	235/85R16	DUNLOP		22,400,000.00	40	MATI/KATI/ KATC/MoA	Good
156	14-Feb-18	UPS	-	-		200,000.00	1	Moshi Project office	Good
158	5-Aug-19	Hardtop (Vehicle)	Land Cruiser, Series Hardtop 10	TOYOTA		222,319,704.00	2	Moshi Project office	Good

Grand total	
Tsh	1,126,834,904
USD	489,928
JPY	56,341,745

Appendix 5: List of task group members trained by JICA fund

I. Training in JAPAN

S/N	NAME	SEX	INSTITUTE	ORGANIZATION	COURSE TITLE	START	END	POSITION	TASK GROUP
1	Eng. Chogohe Mnega	M	MATI - Ilonga	MAFC	Post-harvest Rice Processing for African Countries	2012/9/1	2012/10/2	Agricultural Tutor	ISM
2	Felix Mrisho	M	MATI - Ilonga	MAFC	Implementation and Promotion of Agribusiness for African Countries	2012/10/1	2012/12/2	Agricultural Tutor	Marketing
3	Jaspa Abihood	M	MATI - Tumbi	MAFC	Farm Machinery for Small scale Farmers	2013/2/3	2013/9/20	Agricultural Tutor	Post-Harvest
4	Foum Ali Garu	M	KATI	MANR	Farmer-Led Extension Methods (B)	2013 (1 month)	2013	Tutor	Gender
5	Zaitun Mziray	F	MATI Tumbi	MAFC	Lowland Rice Cultivation Techniques	2013/3/17	17/10/2013	Agricultural Tutor	Rice Agronomy
6	Patson Johnson Mwalonde	M	MATI-Igurusi	MAFC	Agribusiness Promotion and Rural Development in African Countries (A)	2013/10/20	10/12/2013	Agricultural Tutor	Marketing
7	Doroth Richard Mushi	F	MATI Mtwara	MAFC	Local Industry Development in Agricultural Regions by Strengthening Capacity of Management and Marketing (B)	2014/1/10	10/02/2014	Agricultural Tutor	Marketing
8	Chacha W. Ryoba	M	MATI - Ukiriguru	MAFC	Local Industry Development in Agricultural Regions by Strengthening Capacity of Management and Marketing (B)	2014/1/14	15/02/2014	Agricultural Tutor	Marketing
9	Mwajuma C. Masolwa	F	MATI - Ukiriguru	MAFC	Lowland Rice Cultivation Techniques and Extension for Africa	2014/3/16	01/08/2014	Agricultural Tutor	Rice Agronomy
10	Kivaria F. Mbemba	M	MATI - Ukiriguru	MAFC	Life Improvement Activity and IGA for Small Rural Communities in African Countries	2014/1/13	01/03/2014	Agricultural Tutor	Gender
11	Innocent Imani Ilomo	M	MATI - Tumbi	MAFC	Farmer-led Extension Methods	2014/1/14	13/02/2014	Agricultural Tutor	E&M
12	Bahati Kagosi Manyama	M	MATI - Tumbi	MAFC	Post-Harvest Rice Processing for African Countries	2014/8/13	27/09/2014	Agricultural Tutor	ISM
13	Ludovick Simon Shoo	M	KATC	MAFC	Post-Harvest Rice Processing for African Countries	2014/10/3	09/11/2014	Agricultural Tutor	Post-Harvest
14	Othman M. Ahmed	M	KATI	MANR	Local Industry Development in Agricultural Regions by Strengthening Capacity of Management and Marketing (A)	2014/10/14	15/11/2014	Tutor & Registrar	Marketing
15	Rose Crispin Marijani	F	MATI - Ukiriguru	MAFC	Mixed Farming for Small Scale Farmers in Africa	2014/10/21	19/12/2014	Agricultural Tutor	_
16	Raymond S. Raymond	M	MATI - Ukiriguru	MAFC	Agribusiness Promotion and Rural Development in African Countries	2014/10/12	29/11/2014	Agricultural Tutor	Marketing
17	Lucas William Mndewa	M	MATI - Ilonga	MAFC	Agribusiness Promotion and Rural Development in African Countries	2014/10/12	29/11/2014	Agricultural Tutor	Marketing
18	Juma Omar Abdalla	M	KATI	MANR	Farmer-Led Extension Methods (B)	2015/1/13	13/02/2015	Tutor	_
19	Ashraf M. Ashraf	M	MATI - Tumbi	MAFC	Upland Rice Cultivation and Variety Selection Techniques for Africa	2015/3/15	31/10/2015	Agricultural Tutor	_
20	Emmanuel M. Lwesha	M	MATI Igurusi	MAFC	Post-Harvest Rice Processing for African Countries	2015/8/12	27/09/2015	Agricultural Tutor	Post-Harvest
21	Beno Anton Kiwale	M	MATI Igurusi	MAFC	Local Industry Development in Agriculture by Strengthening Capacity of Management and Marketing	2015/9/7	10/10/2015	Agricultural Tutor	Rice Agronomy

22	Elias Lugano Maijo	M	MATI Mtwara	MAFC	Agribusiness Promotion and Rural Development in African Countries (A)	2015/10/12	28/11/2015	Agricultural Tutor	Marketing
23	Aloyce Kasmir Aloyce	M	MATI Ukiriguru	MALF	Upland Rice Cultivation, Seed Technology and Variety Characterization	2016/3/21	2016/11/9	Agricultural Tutor	Rice Agronomy
24	Seleman Seleman	M	MATI - Ilonga	MAFC	Post-harvest Rice Processing for African Countries	2016/8/14	2016/10/1	Agricultural Tutor	Post-Harvest
25	Joan Johnson Lwali	F	MATI Igurusi	MAFC	Knowledge Co-Creation Program for "Empowerment of Rural Women"	2016/9/25	10/12/2016	Agricultural Tutor	Gender
26	Hilary Mzee Mtagulwa	M	MATI Ilonga	MAFL	(J1604332) ICT for Agriculture Information Use	2017/2/20	26/05/2017	Agricultural Tutor	E&M
27	Mchuno Alfred Peter	M	KATC	MAFL	Knowledge Co-creation on "Improvement of Rice Cultivation Techniques"	2017/3/5	28/10/2017	Agricultural Tutor	Rice Agronomy
28	Peter Aloyce Kabelelo	M	KATC	MAFL	"Development of Agric. Cooperatives & Improvement of Management Capacity"	2017/5/15	14/07/2017	Agricultural Tutor	Marketing
29	Gilbert Laison Nzundah	M	MATI Tumbi	MAFL	Knowledge Co-Creation Program for "Empowerment of Rural Women"	2017/9/24	09/12/2017	Agricultural Tutor	Gender
30	Burhan Said Ahmed	M	KATI	MANRLF	Knowledge Co-Creation Program for "Upland Rice Farming"	2017/3/21	11/11/2017	Tutor	Rice Agronomy
31	Edward R. Mdoe	M	MATI Uyole	MAFL	Post-Harvest Processing for African Countries	2017/8/12	30/09/2017	Agricultural Tutor	_
32	Lena M. Edward	F	KATC	MoA	Improvement of Rice Cultivation Technology	2018/3/11	2018/10/20	Agricultural Tutor	_
33	David K. Kasabuku	M	MATI Mtwara	MoA	Upland Rice Cultivation, Seed Production and Variety Selection Techniques	2018/3/25	2018/11/8	Agricultural Tutor	Rice Agronomy
34	Mahmoud Mnamba Masoud	M	MATI Tumbi	MoA	Rainfed Rice Production, Seed Production and Variety Selection Techniques	2019/3/26	2019/11/8	Agricultural Field Officer	Rice Agronomy
35	Amoni John Mtono	M	MATI Mtwara	MoA	Knowledge Co-Creation Program for "Empowerment of Rural Women"	11/11/2018	29/12/2018	Agricultural Tutor	Gender
36	Alfred Mchuno Peter	M	KATC	MoA	MSc in Global Plant Bioresource Sciences	2019/10/1	2022/3/1	Agricultural Tutor	Rice Agronomy
37	Benno Anton Kiwale	M	MATI Igurusi	MoA	MSc in Global Plant Bioresource Sciences	2019/10/1	2022/3/1	Agricultural Tutor	Rice Agronomy

II. Third Country Training in EGYPT

1	David K. Kasabuku	M	MATI Mtwara	MAFC	Rice Cultivation Techniques for Africa	2014/4/20	20/09/2014	Agricultural Tutor	Rice Agronomy
2	Zahabu Mbiu	M	MATI Ilonga	MAFC	Rice Cultivation Techniques for Africa	2014/4/20	2014/9/20	Agricultural Tutor	ISM
3	Zawadi A. Mbwambo	M	KATC	MALF	Rice Cultivation Techniques for Africa plus 1-week training on NERICA Rice Production at NACRRI in UGANDA	2014/4/25	2014/8/25	Agricultural Tutor	_
4	Shedrack H. Msemo	M	KATC	MAFC	Technical Exchange Visit to Egypt	2015/9/13	18/09/2015	Agricultural Tutor	ISM
5	Mnega H. Chogohe	M	MAT Ilonga	MAFC	Technical Exchange Visit to Egypt	2015/9/13	18/09/2015	Agricultural Tutor	ISM
6	Bahati K. Manyama	M	MATI Tumbi	MAFC	Technical Exchange Visit to Egypt	2015/9/13	18/09/2015	Agricultural Tutor	ISM
7	Muhaji A. Lenga	M	MATI Mtwara	MAFC	Technical Exchange Visit to Egypt	2015/9/13	18/09/2015	Agricultural Tutor	ISM
8	Shaame Matta Shaame	M	KATI	MAFC	Technical Exchange Visit to Egypt	2015/9/13	18/09/2015	Agricultural Tutor	ISM
9	Goodluck B. Swai	M	MATI Igurusi	MAFC	Technical Exchange Visit to Egypt	2015/9/13	18/09/2015	Agricultural Tutor	ISM

10	Abdallah S. Mambo	M	MATI Ukiriguru	MAFC	Technical Exchange Visit to Egypt	2015/9/13	18/09/2015	Agricultural Tutor	ISM
11	Zawadi A. Mbwambo	M	KATC	MALF	Course for "Ex-participants of past courses"	2016/7/16	2016/8/11	Agricultural Tutor	_
12	Sikitu E. Kayange	M	MATI Tumbi	MALF	Rice Cultivation Techniques for Africa	2017/4/22	2017/9/30	Agricultural Tutor	_
13	Sita Kusekwa	M	MATI Ilonga	MoA	Rice Research and Extension	2019/8/6	2019/9/3	Agricultural Tutor	_

III. Third country Training in THAILAND

| 1 | Enea D. Mziray | M | KATC | MAFC | Training of Trainers for Promotion of Mechanization in Rice Sector | 15/02/2015 | 14/03/2015 | Agric. Field Officer | Post-Harvest |

IV. Non-task group beneficiaries: Training in JAPAN

1	Ruta K. Kyaragaine	M	MATI Maruku	MAFC	Rice Cultivation Techniques for Africa	20/04/2014	20/09/2014	Agricultural Tutor	Collaborator
2	Caroline Munuo Marealle	F	ICT Unit at MAFC Hqs	MAFC	ICT (Information and Communication Technology) for Agricultural Information Use	2015/2/15	2015/5/22	Computer Systems Analyst	Collaborator
3	Bernadeta Charles Kessy	F	Mechanization Division, MAFC hqs	MAFC	Post-Harvest Rice Processing for African Countries	2015/8/12	2015/9/27	Principal Agric. Field Officer	Collaborator
4	Grace Jacob Kabate	F	Crop Development Division, MAFC hqs.	MAFC	Promotion of African Rice Development Through Strengthening Coordination between CARD and CAADP	16/08/2015	27/08/2015	Agricultural Officer	Collaborator
5	Peter L. Obutu	M	Malolo Irrigation Scheme	Nzega District, Tabora Region	Irrigation Scheme Water Management	2015/8/15	2013/9/16	Farmer	Collaborator

V. Non-task group beneficiaries: Training in EGYPT

| 1 | Charles Levi | M | Agricultural Seed Agency (ASA) | MAFC | Rice Varietal Improvement and Seed Production | 2015/7/25 | 2015/8/20 | Agricultural Officer | Collaborator |

Appendix 6: Summary of Overseas Activities Cost and MoU in JFY 2012-2019

Overseas Activity Cost			MoU			Total
JFY	Others	Training	Amount (Tsh)	Year	Training type	Amount (Tsh)	
2012	140,162,750	12,040,200	152,202,950				
2013	351,658,306	102,535,500	454,193,806	2013/14	ST	135,545,700	
2014	442,919,456	256,329,200	699,248,656	2014/15	ST	134,493,900	
2015	464,092,925	423,274,750	887,367,675	2015/16	ST	145,840,670	
2016	536,960,236	425,577,650	962,537,886	2016/17	ST, MST	310,322,500	
2017	493,226,794	496,964,200	990,190,994	2017/18	ST, MST, RFLL, NERICA	437,581,500	
2018	482,992,542	369,027,500	852,020,042				
2019	271,412,069	216,709,400	488,121,469				
Total (Tsh)	3,183,425,079	2,302,458,400	5,485,883,479			1,163,784,270	6,649,667,749
Total (JY)			274,294,174			58,189,214	332,483,387
Total (USD)			2,385,167			505,993	2,891,160
Training cost		2,302,458,400				1,163,784,270	3,466,242,670
Percentage		34.6%				17.5%	52.1%

Appendix 7: List of Assignment of Counterparts, November 2012 - December 2019

S/N	Institution	Name	Position	Area of specialization	Assigned From	To	Admin/Task Group	Remarks
TANZANIA MAINLAND								
1	MoA	Eng. Mathew Mtigumwe	Permanent Secretary	Administration	Dec, 2016			
2	MoA	Dr. David Kashilila	Deputy Permanent Secretary	Administration	2017	Jun, 2018		
3	MoA	Dr. Wilhelm Mafuru	Acting Director Training			Nov, 2017		
4	MAFC	Mr. Mohamed Muya	Permanent Secretary	Administration	Nov, 2012	Aug, 2013		Retired in 2013
5	MAFC	Ms. Sophia Kaduma	Permanent Secretary	Administration	Nov,2012	Dec,2015		
6	MAFC	Dr. Florens Turuka	Permanent Secretary	Administration	Dec, 2015	Dec,2016		Transferred to MoD&NS
7	MAFC	Eng. Mbogo Futakamba	Deputy Permanent Secretary	Administration	Nov,2012	Dec,2015		Transferred to MoWI
8	MAFC	Eng. Raphael L. Daluti	Deputy Permanent Secretar	Irrigation Engineering	Nov,2012	Dec, 2015		retired
9	MAFC	Dr.Yamungu Kayandabira	Deputy Permanent Secretary	Administration	2014	Oct,2015		Transferred to MoCS&T
10	MAFC	Mr. Zidikheri M. Mndeme	Deputy Permanent Secretary	Administration	Oct,2015	Dec,2015		transferred
11	MAFC	Ms. Anne N. Assenga	Director, Training Division	Agronomy	Nov,2012	Dec,2016		Retired in Dec, 2016
12	MAFC	Apenda W. Mrinji	Assistant Director (ADT)	Agronomy	Nov,2012	2013		Retired in 2013
13	MAFC	Mr. Adam Pyuza	Assistant Director (ADT)	Agric Economics	Nov,2012	Oct,2015		Retired in Oct, 2015
14	MAFC	Mr. Said Yongolo	Assistant Director (ADT)	Agronomy	Nov, 2012	Dec,2017		Retired Dec, 2017
15	MoA	Mr. Eliphas Msemo	Training Officer	Agronomy	2014			Transferred from MATI Uk.
16	MoA	Ms. Beata Katabazi	Training Officer	Food & Nutrition	Nov, 2012			
17	MoA	Mr. Godfrey Edward	Training Officer	Agribusiness	Nov, 2012			
18	MoA	Mr. Anthony Kissinga	Training Officer	Agric.Edu& Ext.	2014			retired 2018
19	MoA	Ms. Lucy Malongo	Training Officer	Agribusiness	2014			
20	KATC	Mr. Dominick O. Nkollo	Principal	Agro-mechanization	Apr, 2013		Administration	Retired in Dec, 2017
21	KATC	Nicodemus N. Shauritanga	Acting Principal	Agribusiness/Machiner	2017		Admininstration	
22	KATC	Mr. William Ndoro	Agric. Field Officer	Crop Production	May, 2013		E&M	retired 2018
23	KATC	Mr. Baraka Mwakipesile	Agricultural Tutor	Animal Science & Extension	May, 2013		E&M	Leader, E&M TG
24	KATC	Mr. E. Zablon	Agricultural Tutor	Agriculture General	May, 2013		RA	Retired in Jun, 2016
25	KATC	Ms. Rukia Makweta.	Agricultural Tutor	Agriculture General	May, 2013		RA	Leader, RA TG
26	KATC	Mr. Shedrack H. Msemo	Agricultural Tutor	Agricultural Extension & Education	May, 2013		ISM	Leader, ISM TG
27	KATC	Mr. Fita Siro	Agricultural Tutor	Crop Science	May, 2013	Apr, 2014	RA	transferred to AfricaRice and then, Kilimo trust
28	KATC	Naswiru Tibanyendela	Agricultural Tutor	Crop Science	May, 2013	Sep, 2015	RA	transferred to Dept Crop science and horticulture, SUA
29	KATC	Ms. Witness J. Bashaka	Agricultural Tutor	Human Nutrtition	Jul, 2016		ISM	joined ISM TG
30	KATC	Hassan K. Ndyali	Agricultural Tutor		Jan, 2016	Sept. 2016	ISM	transferred to MoA -DMECH

31	KATC	Mr. Peter S. Mawere	Agricultural Field Officer	Irrigation & Land use Management	May, 2013	Jan, 2016	ISM	Retired in Jan, 2016
32	KATC	Mr. Ludovick S. Shoo	Agricultural tutor	General Agriculture	Jan, 2015		PH/AM	Sub leader PH/AM TG
33	KATC	Ms. Mary Mtika	Agricultural Field Officer	Life Sciences	May, 2013		Gender	
34	KATC	Ms. Upendo Nkya	Agricultural Tutor	Agricultural Extension	May, 2013		Gender	
35	KATC	Ms. Paskalia Sitembela	Agricultural Tutor	Agricultural Economics	May, 2013		Marketing	
36	KATC	Mr. Peter Kabelelo	Agricultural Tutor	Agricultural Economics & Agribusiness	May, 2013		Marketing	
37	KATC	Mr. Aristarick Shayo	Agricultural Tutor	Agriculture General	Nov, 2013		RA	
38	KATC	Ms. Asmin Turra	Agricultural Tutor	Irrigation Engineering	Aug, 2014		ISM	Passed away, in 2016
39	KATC	Mr. Enea D. Mziray	Agricultural Field Officer	Agro-mechanization	Jan, 2015		PH/AM	
40	KATC	Mr. Peter Shao	Agricultural Tutor	Agronomy	Jan, 2017		RA	
41	KATC	Mr. Ewald Swai	Agricultural Tutor	Agronomy	Jan, 2017		RA	
42	KATC	Mr. Mchuno A. Peter	Agricultural Field Officer	Agronomy	Jan, 2017		RA	MSc studies (Japan, Oct 2019)
43	KATC	Mr. Zawadi Mbwambo	Agricultural Field Officer	Agronomy	Jan, 2017		RA	
44	MATI Igurusi	Eng. George Shundi	Principal	Agric. Engineering	Nov. 2012	2017	Administration	Retired in 2017
45	MATI Igurusi	Mr. James Ndossi	Agricultural Field Officer	Soil & Water Conser, Extension	May, 2013		E&M	
46	MATI Igurusi	Mr. Wilbroad Mosha	Agricultural Field Officer	Crop Production	May, 2013	Sept, 2017	E&M	Passed away in Sept, 2017
47	MATI Igurusi	Mr. Eric Kibona	Agricultural Tutor	Agronomy	May, 2013	Aug, 2017	RA	Went for further studies
48	MATI Igurusi	Mr. Beno A. Kiwale	Agricultural Tutor	Agriculture General	May, 2013		RA	MSc studies (Japan, Oct 2019)
49	MATI Igurusi	Mr. Dickson Chihamba	Agricultural Field Officer	Land Water Mngt.	May, 2013	Jan, 2015	ISM	Retied in Feb, 2015
50	MATI Igurusi	Mr. Saidi Makalamangi	Agricultural Tutor	Irrigation Agronomy	May, 2013	Jun, 2015	ISM	Retired in Jul, 2015
51	MATI Igurusi	Mr. Timotheo Chillewa	Agricultural Tutor	Agric.Economics	May, 2013		Gender	
52	MATI Igurusi	Ms. Joan Lwali	Agricultural Tutor	Home Economics & Human Nutrition	May, 2013	May, 2018	Gender	Transferred to Inyala
53	MATI Igurusi	Mr. Patson Mwalonde	Agricultural Tutor	Agricultural Economics	May, 2013	Sept, 2016	Marketing	Went for further studies
54	MATI Igurusi	Ms. Georgina Philipo	Agricultural Tutor	Agricultural Economics	May, 2013		Marketing	
55	MATI Igurusi	Mr. Alex Luhanga	Agricultural Field Officer	Crop Production	Nov, 2017		E&M	retired Nov 2019, replaced by Mr. Ngaa
56	MATI Igurusi	Mr. Wilfred Ngoi Ngaa	Agricultural Tutor	Horticulture	Jun, 2017		Marketing	Replaced tutor on further studies
57	MATI Igurusi	Amani G. Mwabeza	Assistant Agricultural Tutor	Land Use Planning	Oct, 2017		RA	Replaced tutor on further studies
58	MATI Igurusi	Mr. Emmanuel Lwesha	Agricultural Tutor	Agric. Engineering	Jan, 2015	Jun,2016	PH/AM	Leader PH, Sub Leader AM
59	MATI Igurusi	Mr. Goodluck Swai	Agro- Engineer	Civil&Irrigation Engineering	Aug, 2014	2015	ISM	Replaced retired tutor
60	MATI Igurusi	Mr. Ahmad Kivambe	Agro- Engineer	Civil&Irrigation Engineering	Aug, 2014	2015	ISM	Replaced retired tutor
61	MATI Ilonga	Eng. Geoffrey Maregesi	Principal	Irrigation Engineering	Nov, 2012	2017	Administration	Transferred to MoA- HQ in 2017
62	MATI Ilonga	Mr.Mashaka E. Mdangi	Acting Principal	Crop Protection	2017		Admiinistration	Transferred to MoA- HQ 2018
63	MATI Ilonga	Mr. Mathew Luhembe	Acting Principal	Agronomy	Nov, 2012	2013	Administration	Transferred to MATI Mubondo
64	MATI Ilonga	Mr. John Ngailo	Agricultural Tutor	Agricultural Extension	May,2013		E&M	
65	MATI Ilonga	Mr. Musa Mwigune	Agricultural Tutor	Agriculture General	May,2013		E&M	

66	MATI Ilonga	Ms. Theresia Shang'a	Agricultural Field Officer	CropSci/Horticulture	May,2013	Jul, 2015	RA	Retired in Jul, 2015
67	MATI Ilonga	Mr. Fadhili Kilikaya	Agricultural Tutor	Crop Production	May, 2013		RA	
68	MATI Ilonga	Mr. Zahabu Mbiu	Agricultural Field Officer	Irrigation	May, 2023		ISM	Retired in Jun, 2016
69	MATI Ilonga	Mr. Mnega Chogohe	Agricultural Tutor	Agricultural Engineering	May, 2013		ISM	
70	MATI Ilonga	Ms. Zawadi Kilonji	Agricultural Tutor	Agricultural economics	May, 2013		Gender	
71	MATI Ilonga	Ms. Martha Mbifile	Agricultural Tutor	Horticulture	May, 2013	Sept. 2013	Gender	Went for further studies
72	MATI Ilonga	Mr. Felix N. Mrisho	Agricultural Tutor	Agricultural economics	May, 2013		Marketing	further studies, back in 2019
73	MATI Ilonga	Mr. Lucas Mndewa	Agricultural Tutor	Agricultural economics	May, 2013		Marketing	on sabbatical leave
74	MATI Ilonga	Mr. Mtagulwa H. Mzee	Agricultural Tutor	Home Economics	Oct, 2015		Gender	Replaced retired tutor
75	MATI Ilonga	Mr Zephania K. Mabago	Agricultural Tutor	Agriculture General	Mar, 2018		RA	Replaced retired tutor
76	MATI Ilonga	Mr. Mathew K. Jacob	Agricultural Tutor	Crop Science	Feb. 2014		RA	transferred to TARI
77	MATI Ilonga	Mr. Omar N. Msofe	Agricultural Tutor	Agricultural economics	Sept. 2013	Oct. 2015	Gender	Passed away, Oct 2015
78	MATI Mtwara	Mr. Waziri Mwinyi	Principal	Crop Production	Nov, 2012	Jun,2016	Administration	Retired in Jun, 2016
79	MATI Mtwara	Mr. Elias L. Maijo	Acting Principal	Crop Science	Sept, 2013		Marketing	From Jul, 2018
80	MATI Mtwara	Mr. Mohamed Nangameta	Agricultural Tutor	General Agriculture	May, 2013	Sept, 2013	E&M	further studies
81	MATI Mtwara	Mr. Daudi Kasabuku	Agricultural Tutor	Agronomy	May, 2013		RA	
82	MATI Mtwara	Mr. Selemani Nannume	Agricultural Tutor	Crop Production	May, 2013	Sept, 2014	RA	Went for further studies
83	MATI Mtwara	Mr. Muhaji Lenga	Agricultural Tutor	Agriculture	May, 2013		ISM	
84	MATI Mtwara	Mr. Kennedy Siame	Agricultural Tutor	Agriculture	May, 2013		ISM	
85	MATI Mtwara	Ms. Pendo Yaredi	Agricultural Tutor	Home Economics	May, 2013	Sept, 2014	Gender	Deployed
86	MATI Mtwara	Ms. Doroth Mushi	Agricultural Tutor	Agronomy,	May, 2013		Marketing	
87	MATI Mtwara	Mr. Iddi Nandala	Agricultural Field Officer	Agricultural Economics	May, 2013	Sept, 2013	Marketing	Assigned to RA in Sept. 2013. Retired in Jun, 2018.
88	MATI Mtwara	Mr Luka Chihwalo	Agricultural Tutor	Agricultural Educati&	May, 2013		E&M	
89	MATI Mtwara	Mr. Joseph Mkude	Agricultural Tutor	Food Sci&Technology	Sept, 2014		E&M	
90	MATI Mtwara	Mr. Amoni J. Mtono	Agricultural Tutor	Agricultural Education	Sept, 2014		Gender	TG Leader
91	MATI Mtwara	Mr. Regan E. Kinanda	Agricultural Tutor	Agronomy	Sept, 2014		Gender	Went for further studies
92	MATI Mtwara	Mr. Shadidi M. Lugazo	Agricultural Tutor	Agro-mechanization	Feb, 2015	Oct, 2016	PH/AM	Went for further studies
93	MATI Mtwara	Mr. Mkali M.Milanzi	Agricultural Tutor	Agricultural Economics	Jul, 2016	Nov, 2017	Marketing	Deployed
94	MATI Mtwara	Mr. Selemani Nannume	Agricultural Tutor	Crop Production	2018		Marketing	replaced Mr. Milanzi
95	MATI Mtwara	Mr. Issa Mselemu	Agricultural Tutor	Agriculture General	2019		Gender	replaced Mr. Kinanda
96	MATI Tumbi	Mr. Sydney Kasele	Principal	Agricultural Extension	Nov. 2012		Administration	retired 2019
97	MATI Tumbi	Mr. Innocent Ilomo	Agric. Field Officer	Agriculture General	May, 2013	May, 2015	E&M	Deployed
98	MATI Tumbi	Mr. William Laswai	Agricultural Tutor	Agric. Economics & Agribusiness	2015		Marketing	
99	MATI Tumbi	Ms. Zaitun Mziray	Agricultural Tutor	Agriculture General	May, 2013		RA	
100	MATI Tumbi	Mr. Barnabas Makavu	Agricultural Tutor	Agronomy	May, 2013	Sept, 2014	E&M	Ag Principal

101	MATI Tumbi	Mr. Bahati Manyama	Agricultural Tutor	Agricultural Economic	May, 2013		ISM	
102	MATI Tumbi	Mr. Maganda Matinka	Agricultural Tutor	Agricultural Edu & Extension	Mar, 2016		E&M	Replaced deployed tutor
103	MATI Tumbi	Mr. Jaspa Abihood Salum	Agricultural Tutor	Agric. Engineering	May, 2013		ISM	
104	MATI Tumbi	Mr. Laison Nzunda	Agricultural Tutor	Food Sciences	May, 2013		Gender	
105	MATI Tumbi	Mr. Bakari E. Msuya	Agricultural Tutor	Food Sciences			Gender and Rice Marketing	transferred from KATC
106	MATI Tumbi	Mr. Ellis Ndelemba	Agricultural Field Officer	Agro-mechanization	May, 2013	Sept, 2014	Gender	Retired in Jun, 2015
107	MATI Tumbi	Mr. Francis Kwetukia	Agricultural Tutor	Agribusiness	May, 2013		Marketing	transferred
108	MATI Tumbi	Mr. Bartholomeo W. Mnkai	Agricultural Field Officer	Agriculture General	Sept, 2014		Gender	Replaced retired tutor
109	MATI Tumbi	Mr. Alhaj Ruwa	Agricultural Field Officer	Agromechanization	Sept, 2014		E&M	Deployed
110	MATI Tumbi	Mr. Sikitu Kayange	Agricultural Field Officer	Agriculture General	Sept, 2014		RA	Replaced Mr Barnabas Makavu
111	MATI Ukiriguru	Mrs. Patricia M. Makwaia	Principal	Food Science & nut.	Nov. 2012		Administration	Retired in 2013
112	MATI Ukiriguru	Mr. Frank Mkiramwinyi	Principal	Land Use, Environmental Mngt.	Sept, 2013		Administration	Principal 2013/14
113	MATI Ukiriguru	Mr. Benito Mwenda	Agricultural Tutor	Agricultural Extension	May, 2013		E&M	Retired in 2016
114	MATI Ukiriguru	Ms. Janeth Nzagamba	Agricultural Field Officer	General Agriculture	Sept, 2016		E&M	Replaced retired tutor
115	MATI Ukiriguru	Mr. Samson Mwijage	Agricultural Tutor	Agric. Education & Extension	May, 2013		E&M	
116	MATI Ukiriguru	Mr. Tryphon L. Bayona	Agric. Field Officer	Irrigation & Water Management	May, 2013	Jun, 2016	ISM	Retired in Jun, 2016
117	MATI Ukiriguru	Mr. Said Abdallah Mambo	Agricultural Tutor	Agronomy	Jan, 2015		ISM	further studies 2018
118	MATI Ukiriguru	Mr. Amani G. Mwabeza	Assistant Agricultural Tutor	Land Use Planning	Jan, 2015	Dec, 2015	ISM	Transferred to MATI Igurusi
119	MATI Ukiriguru	Mr. Raymond S. Raymond	Agricultural Tutor	Agricultural Economics & Agribusiness	Jul, 2016		ISM	Replaced Mr. Mwabeza
120	MATI Ukiriguru	Ms. Mwajuma Masolwa	Agricultural Tutor	Agriculture General	May, 2013		RA	
121	MATI Ukiriguru	Mr. Aloyce Kasmir Aloyce	Agricultural Tutor	Crop Science and Production	Dec, 2014		RA	
122	MATI Ukiriguru	Mr. Ramadhani H. Bakari	Agricultural Tutor	Horticulture	Jun, 2014		ISM	PH-TG phased out
123	MATI Ukiriguru	Mr. Kiva F. Mbemba	Agricultural Tutor	General Agriculture	May, 2013		Gender	Further studies 2019
124	MATI Ukiriguru	Ms. Mary Sayi	Agricultural Tutor	Food Science & Nutrition	May, 2013		Gender	
125	MATI Ukiriguru	Mr. Chacha W. Ryoba	Agricultural Tutor	Agriculture General	Oct, 2013		Marketing	Leader Marketing TG

126	MATI Ukiriguru	Mr. Winza Nzaga	Agricultural Tutor	Food Science & Technology	May, 2013		Marketing	
127	MATI Ukiriguru	Mr. Raymond S. Raymond	Agricultural Tutor	Agricultural Economics & Agribusiness	May, 2013		Marketing	Transferred to ISM-TG
128	MATI Ukiriguru	Mr. Juvenal Mwoshezi	Agricultural Tutor	Agricultural Engineering	Apr, 2014		ISM	Passed away in Dec, 2014
129	MATI Ukiriguru	Mr. Clifford Mhando	Agricultural Tutor	Agromechanization	Nov,2014			Passed away in Dec, 2014
ZANZIBAR								
130	MANR	Mr. Affan Othman Maalim	Principal Secretary	Administration				
131	MANR	Mr. Juma Ali Juma	Deputy Principal Secretary	Administration				
132	KATI	Dr. Bakari S. Asseid	Director	Administration	Jun, 2016			retired 2018
133	KATI	Mr. Mohamed K. Rashid	Director	Administration	2009	Jun,2016		transferred to MANRLF hq.
134	KATI	Mr. Ahmada Khamis	Tutor, Human Nutrition	Rural Development	May, 2013		E&M	Replaced Ms. Ramlat Ali Haji
135	KATI	Ms. Sada Seif	Tutor, Agric. Extension	Agricultural Ed. & Extension	May, 2013		E&M	
136	KATI	Mansab Seif Nassor	Tutor	Irrigation	Jul, 2016		E&M	
137	KATI	Mr. Salum Abdulla Salum	Head, Crop Science Dept.	Crop Production	May, 2013		RA	
138	KATI	Mr. Burhan Said	Tutor, Crop Science	Plant Pathology	May, 2013	Nov. 2014	RA	further studies 2019
139	KATI	Mr. Mahmoud Vuai Pandu	Tutor, Land Use & Irrigation	Land Resource Management	May, 2013		ISM	retired 2018
140	KATI	Mr. Shaame Matta Shaame	Tutor, Agro-mech	Agric. Engineering	May, 2013		ISM	
141	KATI	Mr. Makame Mpango Ali	Tutor, Agronomy	Human Nutrition	May, 2013		E&M and Gender	Replaced Ms. Fatima A. Abubakari (gender) who is on maternity leave
142	KATI	Ms. Maryam Ally Hassan	Tutor, Agric. Extension	Agronomy	May, 2013		Gender	Replaced Mr. F. A. Garu
143	KATI	Ms. Salma Yahya Shehe	Tutor, Agribusiness	Entrepreneurship	May, 2013		Marketing	
144	KATI	Mussa Amme Mussa	Tutor,	ICT	Jul, 2016		Marketing	
145	KATI	Mr. Othman M. Ahmed	Tutor, Agribusiness	Rural Development	May, 2013		Marketing	
146	KATI	Mr. Ali Mohamed Ali	Tutor, Agronomy	Crop Production	Nov, 2014		RA	Replaced Mr. Burhan Said
147	KATI	Mr. Ali Khamis Makame	Tutor, Agro-mech	Agro-mechanization	Jun, 2015		PH/AM	
148	KATI	Ms. Hamima Mzee	Tutor, Agronomy	Crop Production	May, 2013	Oct, 2014		Went for further studies
149	KATI	Mr. Juma Omar	Tutor, Agric. Extension	Rural Development	May, 2013	Feb, 2015		Went for further studies
150	KATI	Ms. Ramlat Ali Haji	Tutor	Animal science & Extension	May, 2013	Nov, 2015		Replaced Juma Omar
151	KATI	Mr. Foum Ali Garu	Tutor, Agronomy	Development Studies	May, 2013	Oct, 2015	Gender	Went for further studies
152	KATI	Ms. Patima A. Abubakari	Tutor, Livestock Husbandry	Education	Oct, 2014	Jul, 2015		Replaced Ms. H. Mzee
153	KATI	Mr. Kombo A. Rashid	Tutor	Ag. Education & Extension	2018		ISM	replaced Mr. M. Vuai Pandu
154	KATI	Ms Saum Salum Ali	Tutor	Agric General/Human Nutrition	2019		RA	replaced Mr. Burhan Said

Appendix 8: Cost sharing of training budget by Tanzanian side for ST and MST

Training year	JICA	District	MATIs	Total	Per year
2013/14	177,464,100	5,943,300	0	183,407,400	3.2%
2014/15	203,378,000	39,232,450	279,600	242,890,050	16.3%
2015/16	321,607,420	16,807,850	10,244,530	348,659,800	7.8%
2016/17	352,758,800	1,454,950	5,270,250	359,484,000	1.9%
2017/18	279,387,300	0	1,256,500	280,643,800	0.4%
2018/19	147,660,850	843,000	0	148,503,850	0.6%
Total : Tsh	1,482,256,470	64,281,550	17,050,880	1,563,588,900	5.2%
JY	74,112,824	3,214,078	852,544	78,179,445	
USD	644,459	27,949	7,413	679,821	
Percentage	94.8%	4.1%	1.1%		

Appendix 9: List of irrigated rice cultivation technologies

No	Rice cultivation technologies
	Land preparation
1	Land clearing timing (1 to 2 weeks before ploughing)
2	Ploughing timing (1 to 2 weeks before puddling)
3	Bund making/repairing
4	Puddling timing (1 to 2 days before transplanting)
5	Leveling degree (Properly levelled field)
6	Leveling tools utilization (New tools learnt)
7	Organic manure utilization
	Seed preparation
8	Quality seed utilization (Quality Declared Seeds/ Certified)
9	Seed selection method (Use of water or salt water)
10	Pre-germinated seeds utilization
	Nursery
11	Nursery level (Difference between the highest and lowest parts is less than 3cm)
12	Recommended width of nursery beds
13	Seed rate for nursery (about 100g/m² = one handful)
14	Nursery irrigation interval (2 to 3 days)
15	Fertilizer application in the nursery
	Transplanting
16	Age of seedlings at transplanting (21- 28 days)
17	Number of seedlings per hill during transplanting (Recommended 2-3 seedlings per hill)
18	Straight row transplanting
19	Planting spacing (about 30cm between rows)
20	Gap filling (one week after transplanting)
	1st weeding
21	First weeding timing (within 2 weeks after transplanting)
22	First top dressing fertilizer application timing (2 weeks after transplanting)
23	Fertilizer application amount (Recommended amount)
	Water Management
24	Water depth at weeding (about 3cm)
25	Irrigation timing before fertilizer application
26	Irrigation timing before heading
27	Irrigation interval (every 5 to 7 days)
	2nd weeding
28	Weeding frequency (more than 2 times after transplanting to panicle initiation)
29	Weeding tool (use of weeder)
30	Cultural insect pest and disease control
31	Chemical insect pest and disease control
32	Second top dressing fertilizer application timing (At panicle initiation stage)
	Water Management
33	Irrigation timing (Before fertilizer application)
34	Water depth (More than 3 cm until panicle initiation to 7days before harvesting, but more than 5cm at heading)
35	Drainage (Drain the field 7 days before harvesting)
	Harvesting
36	Harvesting timing (30 to 35 days after heading or nearly 80% of grains become straw color)
37	Yield estimation
38	Threshing tool (threshing stand)
39	Drying paddy before storing
40	Storing materials (use clean bag)
41	Storage (paddy stored in a cool and well aerated place)
	Monitoring
42	Working schedule preparation
43	Rice farming records keeping
44	Rice farming income analysis

Appendix 10: Adoption rate of main 8 rice cultivation technologies (irrigated rice cultivation)

Training type	No. of trained scheme	Main rice cultivation technologies	Baseline survey	1st Monitoring & Planning	2nd Monitoring & Planning	Follow up (2015/16)
ST & MST	90	No. of data	83	73	19	32
		Bund making	30.7	52.6	55.8	59.4
		Levelling	33.3	58.7	63.1	62.2
		Quality seed utilization	26.0	41.7	31.0	55.3
		Seed selection method	19.7	64.5	77.4	45.7
		Recommended width of nursery beds	17.6	51.4	61.7	49.3
		Age of seedlings at transplanting	33.6	65.8	75.3	59.6
		Straight row transplanting	26.6	62.1	73.1	74.2
		Fertilizer application	38.3	62.1	70.3	71.1
ST	27	No. of data	26	24	19	13
		Bund making	12.2	45.3	49.0	66.2
		Levelling	33.3	54.0	61.5	65.5
		Quality seed utilization	44.9	73.7		69.3
		Seed selection method	38.7	79.4	77.4	58.2
		Recommended width of nursery beds	29.6	64.6	61.7	62.8
		Age of seedlings at transplanting	44.2	66.6	75.3	74.8
		Straight row transplanting	29.1	66.4	72.2	82.9
		Fertilizer application	40.7	65.1	70.3	66.8
MST	63	No. of data	57	49		19
		Bund making	35.5	53.3		54.8
		Levelling	32.4	60.2		59.9
		Quality seed utilization	23.4	37.8		45.7
		Seed selection method	11.0	57.5		37.1
		Recommended width of nursery beds	12.3	45.3		40.2
		Age of seedlings at transplanting	28.8	65.4		49.3
		Straight row transplanting	24.7	58.1		68.3
		Fertilizer application	37.0	60.3		74.2

Resource: Rice farming statistics for scheme

Adoption rate of Rice cultivation technologies
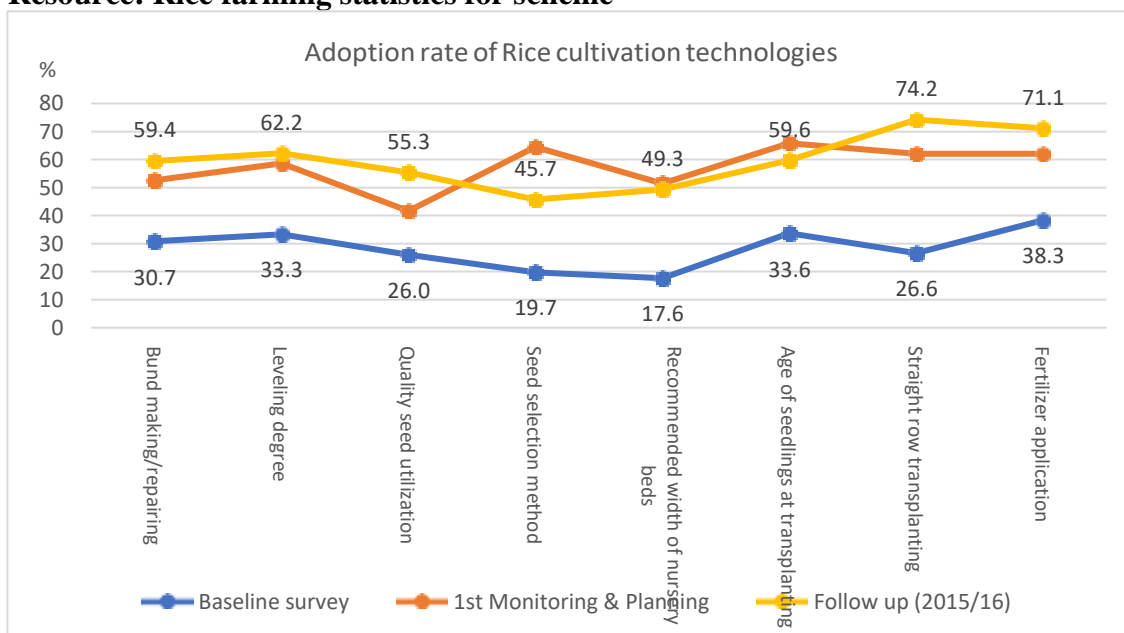
Appendix 11: List of trained scheme of ST, Pilot MST and MST in 2013/14-2018/19 per Institute, Region and District (KATC, KATI, MATI Igurusi and Ilonga)

Training Institute	Region	District	Scheme	Training Type	Project	Training year
KATC	Arusha	Karatu	Mangola barazani	Pilot MST	TANRICE2	2014/15
KATC	Arusha	Karatu	Mbuga nyekundu	ST	TANRICE2	2014/15
KATC	Dodoma	Bahi	Mtitaa	MST	TANRICE2	2015/16
KATC	Kilimanjaro	Hai	Mtambo	Pilot MST	TANRICE2	2013/14
KATC	Kilimanjaro	Moshi	Mawala	MST	TANRICE2	2017/18
KATC	Kilimanjaro	Same	Gonja	Pilot MST	TANRICE2	2014/15
KATC	Kilimanjaro	Same	Karamba	MST	TANRICE2	2016/17
KATC	Kilimanjaro	Same	Kihurio	MST	TANRICE2	2016/17
KATC	Kilimanjaro	Same	Kisiwani	MST	TANRICE2	2015/16
KATC	Tanga	Korogwe rural	Mafuleta	MST	TANRICE2	2017/18
KATC	Tanga	Korogwe rural	Magoma	MST	TANRICE2	2018/19
KATC	Tanga	Korogwe rural	Mandera	ST	TANRICE2	2015/16
KATC	Tanga	Korogwe rural	Mkomazi	ST	TANRICE2	2016/17
KATC	Tanga	Korogwe urban	Kwamngumi	ST	TANRICE2	2013/14
KATI	Pemba	Chake Chake	Dobi	MST	TANRICE2	2016/17
KATI	Pemba	Chake Chake	Tibrinzi	MST	TANRICE2	2016/17
KATI	Pemba	Micheweni	Kinyakuzi	MST	TANRICE2	2015/16
KATI	Pemba	Mkoani	Machigini	MST	TANRICE2	2018/19
KATI	Pemba	Mkoani	Makombeni	ST	TANRICE2	2015/16
KATI	Unguja	Central	Cheju	ST	TANRICE2	2016/17
KATI	Unguja	Central	Uzini	MST	TANRICE2	2017/18
KATI	Unguja	West	Bumbwisudi	ST	TANRICE2	2014/15
KATI	Unguja	West	Kianga	MST	TANRICE2	2017/18
KATI	Unguja	West	Mwera	MST	TANRICE2	2015/16
MATI Igurusi	Iringa	Iringa	Idodi	MST	TANRICE2	2017/18
MATI Igurusi	Iringa	Iringa	Mafuruto	Pilot MST	TANRICE2	2014/15
MATI Igurusi	Iringa	Iringa	Mlenga	ST	TANRICE2	2016/17
MATI Igurusi	Iringa	Iringa	Ndorobo	MST	TANRICE2	2015/16
MATI Igurusi	Mbeya	Chunya	Ifumbo	ST	TANRICE2	2015/16
MATI Igurusi	Mbeya	Ileje	Jikomboe	ST	TANRICE2	2014/15
MATI Igurusi	Mbeya	Mbarali	Gwiri	Pilot MST	TANRICE2	2014/15
MATI Igurusi	Mbeya	Mbarali	Maendeleo	Pilot MST	TANRICE2	2013/14
MATI Igurusi	Mbeya	Mbarali	Majengo	ST	TANRICE2	2013/14
MATI Igurusi	Mbeya	Mbarali	Mtombaya	MST	TANRICE2	2015/16
MATI Igurusi	Mbeya	Mbarali	Mwendamtitu	MST	TANRICE2	2017/18
MATI Igurusi	Rukwa	Nkasi	Lwafi Katongoro	MST	TANRICE2	2016/17
MATI Igurusi	Rukwa	Sumbawanga	Manengwe	MST	TANRICE2	2017/18
MATI Igurusi	Rukwa	Sumbawanga	Ng'ongo	MST	TANRICE2	2016/17
MATI Igurusi	Rukwa	Sumbawanga	Solola Nkanga	MST	TANRICE2	2018/19
MATI Ilonga	Morogoro	Kilombero	Kisawasawa	MST	TANRICE2	2017/18
MATI Ilonga	Morogoro	Kilombero	Maki	Pilot MST	TANRICE2	2014/15
MATI Ilonga	Morogoro	Kilombero	Mangula youth	Pilot MST	TANRICE2	2014/15
MATI Ilonga	Morogoro	Kilombero	Mgongola	Pilot MST	TANRICE2	2014/15
MATI Ilonga	Morogoro	Kilombero	Msolwa Ujamaa	MST	TANRICE2	2015/16
MATI Ilonga	Morogoro	Kilombero	Msufini	ST	TANRICE2	2015/16
MATI Ilonga	Morogoro	Kilombero	Sisu	MST	TANRICE2	2015/16
MATI Ilonga	Morogoro	Kilombero	Udagaji	MST	TANRICE2	2016/17
MATI Ilonga	Morogoro	Malinyi	Itete	ST	TANRICE2	2016/17
MATI Ilonga	Morogoro	Morogoro rural	Tulo Kongwa	MST	TANRICE2	2018/19
MATI Ilonga	Morogoro	Mvomero	Kigugu	ST	TANRICE2	2013/14
MATI Ilonga	Morogoro	Mvomero	Komtonga	Pilot MST	TANRICE2	2013/14
MATI Ilonga	Morogoro	Mvomero	Lukenge	ST	TANRICE2	2014/15
MATI Ilonga	Morogoro	Mvomero	Mlali	MST	TANRICE2	2016/17
MATI Ilonga	Morogoro	Mvomero	Wamilu hindo	MST	TANRICE2	2018/19
MATI Ilonga	Ruvuma	Songea	Namatuhi	MST	TANRICE2	2017/18
MATI Mtwara	Lindi	Liwale	Mtawatawa	MST	TANRICE2	2016/17
MATI Mtwara	Lindi	Nachingwea	Matekwe	MST	TANRICE2	2016/17
MATI Mtwara	Lindi	Ruangwa	Likunja	MST	TANRICE2	2015/16
MATI Mtwara	Mtwara	Ndanda	Ndanda	ST	TANRICE2	2014/15
MATI Mtwara	Mtwara	Newala	Lipeleng'enye	ST	TANRICE2	2013/14
MATI Mtwara	Mtwara	Tandahimba	Lipalwe	MST	TANRICE2	2015/16
MATI Mtwara	Ruvuma	Mbinga	Litumbandyosi	MST	TANRICE2	2017/18
MATI Mtwara	Ruvuma	Mbinga	Sangamabuni	ST	TANRICE2	2015/16

MATI Mtwara	Ruvuma	Namtumbo	Amani	MST	TANRICE2	2017/18
MATI Mtwara	Ruvuma	Namtumbo	Mchomoro	MST	TANRICE2	2017/18
MATI Mtwara	Ruvuma	Namtumbo	Msanjesi	MST	TANRICE2	2018/19
MATI Mtwara	Ruvuma	Namtumbo	Namahoka	MST	TANRICE2	2016/17
MATI Mtwara	Ruvuma	Namtumbo	Njomulole	MST	TANRICE2	2018/19
MATI Mtwara	Ruvuma	Nyasa	Kimbande	ST	TANRICE2	2016/17
MATI Mtwara	Ruvuma	Tunduru	Legezamwendo	MST	TANRICE2	2017/18
MATI Tumbi	Kigoma	Kakonko	Katengela	MST	TANRICE2	2017/18
MATI Tumbi	Kigoma	Kakonko	Mwiruzi	MST	TANRICE2	2018/19
MATI Tumbi	Kigoma	Kakonko	Ruhwiti	ST	TANRICE2	2014/15
MATI Tumbi	Kigoma	Kibondo	Nyendala	ST	TANRICE2	2015/16
MATI Tumbi	Kigoma	Kigoma	Mkuti	ST	TANRICE2	2013/14
MATI Tumbi	Tabora	Nzega	Budushi	ST	TANRICE2	2016/17
MATI Tumbi	Tabora	Nzega	Kahama Nhalanga	MST	TANRICE2	2017/18
MATI Tumbi	Tabora	Nzega	Lusu	MST	TANRICE2	2017/18
MATI Tumbi	Tabora	Nzega	Malolo	ST	TANRICE2	2014/15
MATI Tumbi	Tabora	Sikonge	Igigwa	MST	TANRICE2	2016/17
MATI Tumbi	Tabora	Tabora Urban	Inala	MST	TANRICE2	2015/16
MATI Tumbi	Tabora	Urambo	Usoke	MST	TANRICE2	2015/16
MATI Tumbi	Tabora	Uyui	Miswaki	MST	TANRICE2	2016/17
MATI Ukiriguru	Geita	Geita	Lwenge	ST	TANRICE2	2015/16
MATI Ukiriguru	Kagera	Muleba	Buhangaza	MST	TANRICE2	2017/18
MATI Ukiriguru	Kagera	Muleba	Kyamyorwa	MST	TANRICE2	2018/19
MATI Ukiriguru	Kagera	Muleba	Kyota	ST	TANRICE2	2016/17
MATI Ukiriguru	Mara	Bunda	Maliwanda	MST	TANRICE2	2017/18
MATI Ukiriguru	Mara	Bunda	Nyatwali	ST	TANRICE2	2013/14
MATI Ukiriguru	Mwanza	Ukerewe	Bugorola	ST	TANRICE2	2014/15
MATI Ukiriguru	Mwanza	Ukerewe	Miyogwezi	MST	TANRICE2	2016/17
MATI Ukiriguru	Simiyu	Maswa	Bukangilija	MST	TANRICE2	2017/18

Appendix 12: Paddy yield areas covered by training institutes (irrigated rice cultivation)

Paddy yield				Component			
Institute	Region	District	Scheme	BS	1st M&P	2nd M&P	Fu (15/16)
KATC	Arusha	Karatu	Mangola barazani	4,200	3,150		5,000
			Mbuga nyekundu	2,400	6,000	6,000	4,000
		Monduli	Mahande	2,925	4,875	3,900	3,800
	Arusha total			**3,175**	**4,675**	**4,950**	**4,267**
	Dodoma	Bahi	Mtitaa	3,188	1,260		3,000
	Dodoma total			**3,188**	**1,260**		**3,000**
	Kilimanjaro	Hai	Mtambo	4,000	3,600		5,720
			Mussa Mwijanga	3,750	3,150	4,200	4,000
		Moshi	Mawala	5,525	6,500		
			Soko				5,525
		Mwanga	Kirya				6,250
		Same	Gonja	4,200	3,413		5,460
			Karamba	3,400	5,880		
			Kihurio	6,375	6,375		
			Kisiwani	3,640	4,550		2,730
	Kilimanjaro total			**4,413**	**4,781**	**4,200**	**4,948**
	Manyara	Simanjiro	Ngage	3,600	1,440		4,500
	Manyara total			**3,600**	**1,440**		**4,500**
	Singida	Manyoni	Chikuyu	960			4,000
	Singida total			**960**			**4,000**
	Tanga	Korogwe rural	Mafuleta	3,413	4,550		
			Magoma	5,000	3,000		
			Mandera	3,526	4,900	5,390	
			Mkomazi	3,526	4,550	2,275	
		Korogwe urban	Kwamngumi	1,000	1,050	2,940	3,150
		Lushoto	Kitivo	800	1,680	1,760	4,875
			Kituani Mwezae	1,008			3,000
			Kwemgiriti	1,008			4,000
			Kwemkwazu	6,000	1,092		4,000
	Tanga total			**2,809**	**2,975**	**3,091**	**3,805**
KATC total				**3,338**	**3,738**	**3,781**	**4,295**
MATI Ilonga	Morogoro	Kilombero	Kisawasawa	6,000	5,250		
			Maki	3,250	1,950		4,725
			Mangula youth	2,700	5,400		6,000
			Msolwa Ujamaa	3,038	5,063		4,050
			Msufini	4,900	4,672		
			Njagi	3,000	3,000	3,800	4,900
			Sisu	4,500	6,000		6,000
			Udagaji	4,875	4,875		
		Kilosa	Ilonga	2,000	5,250	3,360	7,188
			Lumuma				5,460
			Mvumi	3,000			6,000
		Malinyi	Itete	1,050	4,463	3,938	
		Mvomero	Dakawa				6,825
			Kigugu	4,500	6,240	6,300	8,400
			Komtonga	6,500	4,100		5,005
			Lukenge	3,000	3,850	4,900	2,730
			Wamilu hindo				
		Ulanga	Lupiro	2,080	5,600		3,850
			Minepa	1,300	4,400	4,500	4,875
		Morogoro rural	Kiroka	2,400	3,200	7,000	4,500
			Mbalangwe	1,300	4,480		3,750
			Tulo Kongwa	2,700	6,300		
	Morogoro total			**3,367**	**4,682**	**4,828**	**5,266**
	Ruvuma	Songea	Namatuhi	4,500	5,625		
	Ruvuma total			**4,500**	**5,625**		
MATI Ilonga total				**3,421**	**4,730**	**4,828**	**5,266**
MATI Igurusi	Iringa	Iringa	Idodi	3,360	4,410		
			Mafuruto	1,715	3,500		4,410
			Magozi	4,725	4,725		6,860
			Mlenga	3,430	4,655		
			Ndorobo	3,430	3,675		
			Tungamalenga	2,240	2,800		
		Kilolo	Ruaha Mbuyuni				4,200
		Makete	Mfumbi	3,200	2,800		5,600
	Iringa total			**3,157**	**3,795**		**5,268**
	Mbeya	Chunya	Ifumbo	1,750	3,120	5,070	
		Ileje	Jikomboe	5,625	225	4,500	3,500
		Mbarali	Gwiri	1,400	3,150		4,200
			Maendeleo	2,275	1,400		2,800
			Majengo	3,000	3,500	4,500	6,300
			Mtombaya	3,750	3,120		5,250

			Mwendamtitu	5,040	5,985		
			Ruanda Majenje	2,100			4,200
			Uturo	2,560			6,000
		Mbeya	Mshewe	2,113	1,950		5,250
		Mbozi	Naming'ongo	1,350	2,700	1,800	5,250
		Rungwe	Kasyabone-Kisegese	1,950	1,500		5,250
	Mbeya total			**2,743**	**2,665**	**3,968**	**4,800**
	Rukwa	Mpanda	Urwira	1,715		2,450	
		Nkasi	Lwafi Katongoro	3,780	4,200		
		Sumbawanga	Manengwe	4,950	4,900		
			Ng'ongo	3,150	2,520		
			Sakalilo	3,600	1,575	3,375	
			Solola Nkanga	2,940	3,675		
	Rukwa total			**3,356**	**3,374**	**2,913**	
MATI Igurusi total				**3,006**	**3,186**	**3,616**	**4,934**
MATI Ukiriguru	Geita	Geita	Lwenge	2,025	1,700		
	Geita total			**2,025**	**1,700**		
	Kagera	Muleba	Buhangaza	3,188	1,688		
			Kyamyorwa	2,250	2,250		
			Kyota	2,125	2,125		
	Kagera total			**2,521**	**2,021**		
	Mara	Bunda	Maliwanda	6,375			
			Nyatwali	6,413	5,625	5,625	7,875
		Rorya	Irienyi				6,000
			Uwachero	7,800	6,000		2,700
	Mara total			**6,863**	**5,813**	**5,625**	**5,525**
	Mwanza	Kwimba	Mahiga	2,250	3,000		3,600
		Magu	Sawenge	4,500	1,600		1,000
		Ukerewe	Miyogwezi	3,400	2,925		
	Mwanza total			**3,383**	**2,508**		**2,300**
	Simiyu	Maswa	Bukangilija	4,050	3,375		
	Simiyu total			**4,050**	**3,375**		
MATI Ukiriguru total				**4,034**	**3,029**	**5,625**	**4,235**
MATI Tumbi	Kigoma	Kakonko	Katengela				
			Mwiruzi	3,375			
			Ruhwiti	2,000	4,250		3,825
		Kasulu	Rungwempya	1,000	1,500	3,000	4,500
			Titye	2,000	3,000	2,000	5,500
		Kibondo	Nyendala	2,000	2,600		
		Kigoma	Mkuti	4,000	5,000	3,000	3,150
	Kigoma total			**2,396**	**3,270**	**2,667**	**4,244**
	Tabora	Nzega	Budushi	3,000			
			Kahama Nhalanga	1,575			
			Lusu	3,375			
			Malolo	1,400	2,000	4,000	675
		Sikonge	Igigwa	1,600	1,755		
		Tabora Urban	Inala	1,800			
		Urambo	Usoke				
		Uyui	Miswaki	3,188			
	Tabora total			**2,277**	**1,878**	**4,000**	**675**
MATI Tumbi total				**2,332**	**2,872**	**3,000**	**3,530**
MATI Mtwara	Lindi	Lindi	Kinyope				3,150
		Liwale	Mtawatawa	2,100	1,680		
			Ngongowele	640			2,250
		Nachingwea	Matekwe	2,520	840		
		Ruangwa	Likunja	3,150	1,260		1,260
	Lindi total			**2,103**	**1,260**		**2,220**
	Mtwara	Ndanda	Ndanda	4,000	2,925	5,040	5,040
		Newala	Lipeleng'enye	2,000	2,800	3,200	5,250
		Tandahimba	Lipalwe	4,000	5,000		5,000
	Mtwara total			**3,333**	**3,575**	**4,120**	**5,097**
	Ruvuma	Mbinga	Litumbandyosi	2,975	2,813		
			Sangamabuni	3,263	4,500	4,500	
		Namtumbo	Amani	5,670	4,620		
			Mchomoro	5,460	5,460		
			Msanjesi	5,040	5,040		
			Namahoka	2,310	5,040		
			Njomulole	3,360	4,200		
		Nyasa	Kimbande	2,520	3,360	4,200	
		Tunduru	Legezamwendo	2,520	3,150		
			Lekindo	800	1,520	1,428	5,040
			Madaba	1,008	1,764		4,200
	Ruvuma total			**3,175**	**3,770**	**3,376**	**4,620**
MATI Mtwara total				**2,963**	**3,292**	**3,674**	**3,899**
KATI	Unguja	Central	Cheju	3,000	4,500	4,000	
			Uzini	4,000			
		West	Bumbwisudi	3,000	3,000	2,500	5,000

			Kianga	4,000			
			Mwera				3,500
		Kaskazini	Kibokwa	3,200			3,250
		Magharibi B	Mtwango	5,000	6,000	6,000	6,500
	Unguja total			**3,700**	**4,500**	**4,167**	**4,563**
	Pemba	Chake Chake	Dobi	3,000			
			Tibrinzi	3,000			
		Micheweni	Kinyakuzi				6,000
		Mkoani	Machigini	3,500	6,500		
			Makombeni	3,000	3,000		
		Wete	Mangwena	3,200	2,000		6,000
			Weni	3,200	4,000		7,000
	Pemba total			**3,150**	**3,875**		**6,333**
KATI total				**3,425**	**4,143**	**4,167**	**5,321**
Ave. Yield				**3,193**	**3,638**	**3,953**	**4,633**

Appendix 13: Record of the pilot training courses for rainfed lowland rice cultivation training

No	Institute	Target (Cropping Season)	Type of training	Date	Farmer M	Farmer F	Farmer Subtotal	Maximum No. participants	District officers M	District officers F	Total
1	Igurusi	Tenende, Kyela Mbeya (2015/2016)	Baseline survey	1 Dec, 2015	27	23	50	80	2	0	52
			Study tour	31 Dec, 2015	9	8	17		3	0	20
			1st in-field training	13-15 Jan, 2016	37	39	76		3	0	79
			2nd in-field training	7-8 Jun, 2016	16	16	32		2	0	34
			2nd monitoring	13-14 Jun, 2017	23	27	50		2	1	53
			3rd monitoring	27-28 Aug, 2019	36	44	80		2	0	82
2		Bujela, Kyela Mbeya (2016/2017)	Baseline survey	10-11 Nov, 2016	29	21	50	80	1	3	54
			Study tour	19 Jan, 2017	9	8	17		1	2	20
			1st in-field training	25-27 Jan, 2017	41	39	80		2	2	84
			2nd in-field training	15-16 Jun, 2017	27	23	50		2	1	53
			2nd monitoring	28-29 Jun, 2018	42	38	80		2	1	83
			3rd Monitoring	29-30 Aug, 2019	35	45	80		2	0	82
3		Isanga Kyela Mbeya (2017/2018)	Baseline survey	4-5 Oct, 2017	23	27	50	78	2	0	52
			Study tour	28 Dec, 2017	7	9	16		2	0	18
			1st in-field training	23-25 Jan, 2018	39	37	76		2	0	78
			2nd in-field training	26-27 Jun, 2018	34	32	66		2	0	68
			2nd monitoring	1-2 Aug, 2019	39	39	78		2	0	80
4		Kamsamba Momba Songwe (2017/2018)	Baseline survey	25-26 Oct, 2017	32	17	49	80	2	0	51
			Residential/Study tour	6-7 Dec, 2017	8	7	15		1	0	16
			1st in-field training	9-11 Jan, 2018	29	24	53		2	0	55
			2nd in-field training	26-27 Apr, 2018	39	32	71		2	0	73
			2nd monitoring	15-16 Jul, 2019	42	38	80		3	0	83
5		Bwato Kyela Mbeya (2018/2019)	Baseline survey	6-7 Dec, 2018	24	28	52	81	2	0	54
			Study tour	20 Dec, 2018	7	9	16		2		18
			1st in-field training	16-18 Jan, 2019	38	43	81		2	0	83
			2nd in-field training	11-12 Jan, 2019	41	33	74		3	0	77
6		Msangano Momba Songwe (2018/2019)	Baseline survey	29-30 Nov, 2018	26	26	52	82	2	0	54
			Residential/Study tour	14-15 Dec, 2018	8	8	16		1	0	17
			1st in-field training	9-11 Jan, 2019	49	33	82		2	0	84
			2nd in-field training	7-8 May, 2019	44	25	69		4	0	73
7		Idete Kilombero Morogoro (2015/2016)	Baseline survey	8 Dec, 2015	17	22	39	54	1	0	40
			Study tour	4 Jan, 2016	9	8	17		2	0	19
			1st in-field training	12-14 Jan, 2016	26	28	54		2	0	56
			2nd in-field training	2-3 Jun, 2016	19	32	51		1	1	53
			2nd monitoring	9-10 Jun, 2017	17	19	36		0	0	36
8		Ngorongo Rufiji Coast (2016/2017)	Baseline survey	12-13 Oct, 2016	26	30	56	77	2	0	58
			Study tour	15 Nov, 2016	9	8	17		2	0	19
			1st in-field training	5-7 Jan, 2017	36	41	77		2	0	79
			2nd in-field training	31 May-1 Jun, 2017	27	29	56		1	1	58
			2nd monitoring	11-12 Jul, 2018	32	36	68		2	0	70
			3rd Monitoring	17-18 Jul, 2019	25	27	52		2	0	54
9	Ilonga	Namawara Kilombero Morogoro (2017/2018)	Baseline survey	25-26 Oct, 2017	27	26	53	66	2	0	55
			Residential/Study tour	9-10 Nov, 2017	9	8	17		2	0	19
			1st in-field training	10-12 Jan, 2018	32	33	65		3	1	69
			2nd in-field training	12-13 Jun, 2018	32	34	66		2	0	68
			2nd monitoring	3-4 Jul, 2019	10	15	25		2	0	27
10		Namuhanga Ulanga Morogoro (2017/2018)	Baseline survey	18-19 Oct, 2017	22	23	45	60	1	1	47
			Residential/Study tour	6-7 Nov, 2017	8	8	16		1	1	18
			1st in-field training	4-6 Jan, 2018	29	27	56		2	0	58
			2nd in-field training	18-19 May, 2018	27	33	60		1	1	62
			2nd monitoring	14-15 Aug, 2019	25	23	48		1	1	50
11		Marui Mngwata Kisarawe	Baseline survey	5-6 Dec, 2018	23	21	44	76	1	0	45
			Study tour	3 Jan, 2019	9	8	17		2	0	19

No.	Center	Location/Year	Activity	Date	M	F	Total		Staff M	Staff F	Grand Total
		Pwani (2018/2019)	1st in-field training	16-18 Jan, 2019	47	29	76		2	0	78
			2nd in-field training	26-27 Jun, 2019	28	18	46		2	0	48
12	Mtwara	Mkotamo, Tundulu Ruvuma (2016/2017)	Baseline survey	18-19 Oct, 2016	28	21	49	81	2	0	51
			Study tour/Residential Training	29-30 Nov, 2016	9	8	17		2	0	19
			1st in-field training	10-12 Jan, 2017	36	28	64		2	0	66
			2nd in-field training	10-11 May, 2017	28	27	55		2	0	57
			2nd monitoring	5-6 Jun, 2018	20	22	42		2	0	44
			3rd Monitoring	23-24 Jul, 2019	40	41	81		2	0	83
13		Nduruka Liwale Lindi (2017/2018)	Baseline survey	8-9 Nov, 2017	23	23	46	68	3	2	51
			Study tour	28 Nov, 2017	8	8	16		2	1	19
			1st in-field training	13-15 Dec, 2017	16	23	39		1	1	41
			2nd in-field training	8-9 May, 2018	19	22	41		2	0	43
			2nd monitoring	18-19 Jul, 2019	25	43	68		1	1	70
14		Ligera Namtumbo Ruvuma (2018/2019)	Baseline survey	5-6 Dec, 2018	32	14	46	83	2	0	48
			Study tour	16 Dec, 2018	11	7	18		2	0	20
			1st in-field training	20-22 Dec, 2018	48	35	83		2	0	85
			2nd in field traning	8-9 May, 2019	44	37	81		2	0	83
15	Tumbi	Loya, Uyui Tabora (2016/2017)	Baseline survey	6-7 Oct, 2016	24	18	42	54	1	0	43
			Residential training	7 Nov, 2016	9	7	16		3	0	19
			Study tour	29 Nov, 2016	9	7	16		3	0	19
			1st in-field training	2-3 Feb, 2017	25	19	44		1	0	45
			2nd in-field training	13-14 Jun, 2017	21	22	43		0	0	43
			2nd monitoring	12-13 Jun, 2018	10	7	17		1	0	18
			3rd Monitoring	18-19 Jul, 2019	27	27	54		1	0	55
16		Nkungwi Mpanda Katavi (2017/2018)	Baseline survey	11-13 Oct, 2017	42	6	48	70	3	0	51
			Residential/Study tour	9-10 Nov, 2017	8	8	16		3	0	19
			1st in-field training	9-11 Jan, 2018	29	23	52		3	0	55
			2nd in-field training	8-9 May, 2018	21	21	42		1	1	44
			2nd monitoring	6-7 Jul, 2019	42	28	70		2	0	72
17		Mvugwe Kasulu Kigoma (2018/2019)	Baseline survey	14-15 Nov, 2018	42	8	50	92	1	0	51
			Study tour/Residential Training	5-6 Dec, 2018	15	2	17		2	0	19
			1st in-field training	14-16 Dec, 2018	65	10	75		2	0	77
			2nd in-field training	23-24 May, 2019	29	63	92		2	0	94
18		Kashishi Msalala Shinyanga (2015/2016)	Baseline survey	27 Nov, 2015	25	16	41	62	2	0	43
			1st in-field training	16-18 Dec, 2015	27	30	57		2	0	59
			Study tour	3 Feb, 2016	8	10	18		2	0	20
			2nd in-field training	17-18 May, 2016	19	20	39		2	0	41
			2nd monitoring	26-27 Jul, 2017	44	18	62		2	0	64
19		Jana, Msalala Shinyanga (2016/2017)	Baseline survey	4-5 Oct, 2016	31	12	43	53	4	0	47
			Study tour/Residential training	3-4 Nov, 2016	11	5	16		3	0	19
			1st in-field training	20-22 Dec, 2016	34	13	47		3	0	50
			2nd in-field training	17-18 May, 2017	39	14	53		2	0	55
			2nd monitoring	29-30 Jun, 2018	22	12	34		2	0	36
			3rd Monitoring	19-20 Jul, 2019	24	10	34		2	0	36
20	Ukiriguru	Kahanga, Kahama Shinyanga (2016/2017)	Baseline survey	6-7 Oct, 2016	33	16	49	53	3	1	53
			Residential training	3-4 Nov, 2016	8	8	16		3	0	19
			1st in-field training	28-30 Dec, 2016	31	22	53		3	0	56
			2nd in-field training	8-9 Jun, 2017	29	22	51		2	0	53
			2nd monitoring	26-27 Jun, 2018	20	15	35		1	0	36
21		Kizungu Shinyanga rural Shinyanga (2017/2018)	Baseline survey	18-20 Oct, 2017	31	19	50	77	1	1	52
			Residential/Study tour	7-8 Nov, 2017	8	8	16		3	0	19
			1st in-field training	20-22 Dec, 2017	44	33	77		2	0	79
			2nd in-field training	15-16 May, 2018	27	41	68		2	0	70
			2nd monitoring	9-10 Jul, 2019	40	26	66		2	0	68
22		Nyantakara Biharamulo Kagera (2017/2018)	Baseline survey	4-6 Oct, 2017	31	12	43	61	2	0	45
			Residential/Study tour	7-8 Nov, 2017	8	8	16		3	0	19
			1st in-field training	13-15 Dec, 2017	38	23	61		2	0	63
			2nd in-field training	10-11 May, 2018	21	20	41		2	0	43

No	Institution	Site	Activity	Date	M	F	Total		M	F	Total
			2nd monitoring	27-28 Jun, 2019	19	18	37		1	1	39
23		Ngulyati	Baseline survey	5-6 Dec, 2018	40	9	49	81	2	0	51
		Bariadi	Study/Residential Training	13-14 Dec, 2018	10	7	17		2	0	19
		Simiyu	1st in-field training	19-21 Dec, 2018	45	36	81		2	0	83
		(2018/2019)	2nd in-field training	12-13 Jun, 2019	37	39	76		2	0	78
24		Kimbo	Baseline survey	2-3 Feb, 2016	8	36	44	76	3	0	47
		Muheza	1st in-field training	4-6 Feb, 2016	17	55	72		3	0	75
		Tanga	Study tour	18 Feb, 2016	12	15	27		3	0	30
		(2015/2016)	2nd in-field training	26-27 Jul, 2016	12	45	57		2	0	59
			2nd monitoring	19-20 Sep, 2017	23	53	76		2	0	78
			3rd Monitoring	31 Jul-1 Aug, 2019	12	56	68		1	1	70
25	KATC	Mapea, Babati	Baseline survey	15-16 Nov, 2016	24	25	49	68	1	1	51
		Manyara	Residential/Study tour	8-9 Dec, 2016	8	7	15		1	1	17
		(2016/2017)	1st in-field training	21-23 Dec, 2016	25	33	58		1	1	60
			2nd in-field training	20-21 Jul, 2017	24	32	56		1	1	58
			2nd monitoring	4-5 Jul, 2018	26	42	68		1	1	70
26		Magugu	Baseline survey	4-5 Oct, 2017	32	12	44	77	1	1	46
		Babati	Study tour	20 Oct, 2017	8	9	17		1	1	19
		Manyara	1st in-field training	25-27 Oct, 2017	42	35	77		1	1	79
		(2017/2018)	2nd in-field training	16-17 May, 2018	27	18	45		2	0	47
			2nd monitoring	24-25 Jul, 2019	37	28	65		1	1	67
27		Kisangaji	Baseline survey	5-6 Dec, 2018	40	10	50	69	2	0	52
		Babati	Study tour/Residential Training	20-21 Dec, 2018	9	8	17		2	0	19
		Manyara	1st in-field training	23-25 Jan, 2019	34	35	69		2	0	71
		(2018/2019)	2nd in-field training	29-30 May, 2019	32	30	62		3	0	65
28	KATI	Muyuni, South Unguja (2016/2017)	Baseline survey	11-12 Oct, 2016	13	36	49	79	2	0	51
			Study tour	19 Nov, 2016	7	9	16		3	0	19
			1st in-field training	3-5 Dec, 2016	32	47	79		3	0	82
			2nd in-field training	1-2 Jul, 2017	26	46	72		2	0	74
			2nd monitoring	14-15 Jul, 2018	22	41	63		3	0	66
			3rd Monitoring	17-18 Aug, 2019	17	41	58		2	0	60
29		Kangani	Baseline survey	6-7 Oct, 2017	15	32	47	79	1	1	49
		Mkoani	Study tour	10 Nov, 2017	8	8	16		2	1	19
		Pemba	1st in-field training	28-30 Dec, 2017	25	54	79		2	1	82
		(2017/2018)	2nd in-field training	26-27 Jun, 2018	26	27	53		1	1	55
			2nd monitoring	30-31 Jul, 2019	24	50	74		2	0	76
30		Mchangani	Baseline survey	11-12 Dec, 2018	22	24	46	70	2	0	48
		Central	Study tour	24 Dec, 2018	10	7	17		2	0	19
		Unguja	1st in-field training	3-5 Jan, 2019	27	42	69		2	0	71
		(2018/2019)	2nd in-field training	26-27 Jun, 2019	28	42	70		1	1	72
	Total				3794	3651	7,445	2,167	291	41	7,777
	Gender balance (%)				51.0	49.0			87.7	12.3	

Appendix 14: Adoption ratios of the technologies in the target villages of rainfed lowland rice cultivation training course (highlighted figures show the data affected by severe drought)

District	Major rice cultivation technologies	Baseline	1st monitoring	2nd monitoring	3rd monitoring
Msalala Kashishi	Bund making	100	100	100	
	Levelling	2	11	21	
	Straight row transplanting (area)	0	6	7	
	Straight row transplanting (No. farmers)	0	13	26	
	Straight row direct planting (area)	0	0	22	
	Straight row direct planting (No. farmers)	0	0	63	
	Application of fertilizer	0	5	53	
	Use of improved variety	1	2	18	
	Use of improved variety (farmers)	2	22	79	
	Yield (kg/ha)	804	1401	320	
Msalala Jana	Bund making	100	100	100	100
	Levelling	0	60	25	35
	Straight row transplanting (are)	0	2	0	24
	Straight row transplanting (No. farmers)	0	3	0	39
	Straight row direct planting (area)	0	4	0	2
	Straight row direct planting (No. farmers)	0	9	0	6
	Application of fertilizer	0	0	0	6
	Use of improved variety	0	0	1	10
	Use of improved variety (farmers)	0	3	3	44
	Yield (kg/ha)	1937	8	1176	556
Kahama Kahanga	Bund making	98	100	100	
	Levelling	7	59	70	
	Straight row transplanting (are)	1	4	5	
	Straight row transplanting (No. farmers)	2	18	29	
	Straight row direct planting (area)	1	3	0	
	Straight row direct planting (No. farmers)	2	21	0	
	Application of fertilizer	0	5	0	
	Use of improved variety	0	2	5	
	Use of improved variety (farmers)	2	11	29	
	Yield (kg/ha)	1448	52	1267	
Kahama Kizungu	Bund making	100	100	100	
	Levelling	14	16	67	
	Straight row transplanting (area)	1	2	22	
	Straight row transplanting (No.faremrs)	3	16	55	
	Straight row direct planting	0	0	0	
	Straight row direct planting	0	0	0	
	Application of fertilizer	4	11	40	
	Use of improved variety (area)	1	3	28	
	Use of improved variety (No. farmers)	1	16	78	
	Yield (kg/ha)	1106	1475	262	
Biharamulo Nyantakara	Bund making	100	97	97	
	Levelling	36	78	100	
	Straight row transplanting (area)	0	13	44	
	Straight row transplanting (No.faremrs)	0	65	90	
	Straight row direct planting	0	1	18	
	Straight row direct planting	0	8	33	

	Application of fertilizer	2	46	23	
	Use of improved variety (area)	0	14	28	
	Use of improved variety (No. farmers)	0	59	90	
	Yield (kg/ha)	1038	1740	1627	
Kyela, Tenende	Bund making	2	0	35	0
	Levelling	97	68	55	79
	Straight row transplanting (area)	0	0	0	0
	Straight row transplanting (No. farmers)	0	0	0	0
	Straight row direct planting (area)	2	18	29	29
	Straight row direct planting (No. farmers)	5	58	50	33
	Application of fertilizer	58	84	85	67
	Use of improved variety	0	6	24	21
	Use of improved variety (farmers)	0	33	60	38
	Yield (kg/ha)	1454	1855	2419	<mark>1643</mark>
Kyela, Bujela	Bund making	8	28	27	13
	Levelling	3	35	88	90
	Straight row transplanting (are)	0	0	5	0
	Straight row transplanting (No. farmers)	0	0	10	0
	Straight row direct planting (area)	1	32	24	10
	Straight row direct planting (No. farmers)	3	54	32	29
	Application of fertilizer	0	48	14	0
	Use of improved variety	0	15	26	10
	Use of improved variety (farmers)	3	35	61	19
	Yield (kg/ha)	2206	2528	<mark>867</mark>	<mark>1635</mark>
Kyela Isanga	Bund making	0	9	4	
	Levelling	0	14	70	
	Straight row transplanting (are)	0	0	0	
	Straight row transplanting (No. farmers)	0	0	0	
	Straight row direct planting (area)	0	1	21	
	Straight row direct planting (No. farmers)	0	5	32	
	Application of fertilizer	3	0	26	
	Use of improved variety	3	10	15	
	Use of improved variety (farmers)	5	18	48	
	Yield (kg/ha)	2137	2777	2226	
Momba Kamsamba	Bund making	100	100	100	
	Levelling	3	52	100	
	Straight row transplanting (area)	0	13	19	
	Straight row transplanting (No.faremrs)	0	38	40	
	Straight row direct planting	0	0	0	
	Straight row direct planting	0	0	0	
	Application of fertilizer	0	5	0	
	Use of improved variety (area)	0	5	26	
	Use of improved variety (No. farmers)	0	14	19	
	Yield (kg/ha)	1739	2402	1878	
Kilombero Idete	Bund making	0	0	10	
	Levelling	15	31	34	
	Straight row transplanting (area)	0	0	0	
	Straight row transplanting (No. farmers)	0	0	0	
	Straight row direct planting (area)	0	5	20	

	Straight row direct planting (No. farmers)	0	7	45	
	Application of fertilizer	15	21	66	
	Use of improved variety	1	1	13	
	Use of improved variety (farmers)	7	7	38	
	Yield (kg/ha)	1882	2168	2968	
Rufiji Ngorongo	Bund making	25	25	26	3
	Levelling	78	75	79	11
	Straight row transplanting (are)	16	0	8	4
	Straight row transplanting (No. farmers)	29	0	13	3
	Straight row direct planting (area)	70	27	38	75
	Straight row direct planting (No. farmers)	64	30	53	94
	Application of fertilizer	46	40	61	60
	Use of improved variety	4	13	29	28
	Use of improved variety (farmers)	11	41	63	61
	Yield (kg/ha)	1016	1771	1122	<mark>814</mark>
Kilombero Namawala	Bund making	9	29	12	
	Levelling	25	61	46	
	Straight row transplanting (are)	3	12	9	
	Straight row transplanting (No. farmers)	13	42	15	
	Straight row direct planting (area)	6	10	24	
	Straight row direct planting (No. farmers)	21	32	35	
	Application of fertilizer	30	26	21	
	Use of improved variety	11	26	19	
	Use of improved variety (farmers)	43	63	39	
	Yield (kg/ha)	2527	2149	1733	
Ulanga Namhanga	Bund making	7	13	19	
	Levelling	9	38	53	
	Straight row transplanting (area)	0	13	9	
	Straight row transplanting (No.faremrs)	2	44	29	
	Straight row direct planting	1	6	2	
	Straight row direct planting	4	25	5	
	Application of fertilizer	2	6	9	
	Use of improved variety (area)	2	5	12	
	Use of improved variety (No. farmers)	7	25	43	
	Yield (kg/ha)	1893	1594	1819	
Muheza Kimbo	Bund making	1	15	76	55
	Levelling	21	60	75	94
	Straight row transplanting (area)	0	37	0	0
	Straight row transplanting (No. farmers)	0	56	0	0
	Straight row direct planting (area)	8	28	89	91
	Straight row direct planting (No. farmers)	9	18	92	97
	Application of fertilizer	3	11	12	0
	Use of improved variety	1	37	49	41
	Use of improved variety (farmers)	1	80	61	94
	Yield (kg/ha)	1746	<mark>1375</mark>	3497	2575
Babati Mapea	Bund making	91	84	88	
	Levelling	55	63	60	
	Straight row transplanting (are)	6	2	4	
	Straight row transplanting (No. farmers)	10	6	15	

	Straight row direct planting (area)	14	40	11	
	Straight row direct planting (No. farmers)	16	81	20	
	Application of fertilizer	14	26	11	
	Use of improved variety	4	17	5	
	Use of improved variety (farmers)	15	50	15	
	Yield (kg/ha)	2168	<mark>1049</mark>	3029	
Babati Magugu	Bund making	85	100	89	
	Levelling	58	100	100	
	Straight row transplanting (are)	14	8	11	
	Straight row transplanting (No. farmers)	2	32	21	
	Straight row direct planting (area)	1	17	48	
	Straight row direct planting (No. farmers)	2	52	53	
	Application of fertilizer	5	4	16	
	Use of improved variety	2	12	16	
	Use of improved variety (farmers)	13	24	37	
	Yield (kg/ha)	1338	1688	2086	
Uyui Loya	Bund making	100	100	92	100
	Levelling	97	91	100	100
	Straight row transplanting (area)	32	41	14	12
	Straight row transplanting (No. farmers)	68	56	50	24
	Straight row direct planting (area)	3	0	3	0
	Straight row direct planting (No. farmers)	7	0	7	0
	Application of fertilizer	0	0	0	0
	Use of improved variety	24	67	8	15
	Use of improved variety (farmers)	61	81	43	53
	Yield (kg/ha)	2962	<mark>1198</mark>	3051	2485
Mpanda Nkungwi	Bund making	100	100	100	
	Levelling	13	100	100	
	Straight row transplanting (are)	1	8	5	
	Straight row transplanting (No. farmers)	2	45	14	
	Straight row direct planting (area)	0	0	0	
	Straight row direct planting (No. farmers)	0	5	0	
	Application of fertilizer	0	10	0	
	Use of improved variety	0	7	9	
	Use of improved variety (farmers)	0	45	25	
	Yield (kg/ha)	3095	3855	2985	
Tundulu Mkotamo	Bund making	35	34	41	47
	Levelling	24	35	56	38
	Straight row transplanting (area)	0	15	21	17
	Straight row transplanting (No. farmers)	2	24	39	52
	Straight row direct planting (area)	0	5	5	0
	Straight row direct planting (No. farmers)	0	9	6	0
	Application of fertilizer	45	74	88	76
	Use of improved variety	0	6	11	12
	Use of improved variety (farmers)	0	22	19	24
	Yield (kg/ha)	959	1563	2079	2978
Liwale Nduruka	Bund making	0	71	27	
	Levelling	0	90	31	
	Straight row transplanting (are)	0	11	13	

	Straight row transplanting (No. farmers)	0	18	31	
	Straight row direct planting (area)	0	37	10	
	Straight row direct planting (No. farmers)	0	64	27	
	Application of fertilizer	0	0	4	
	Use of improved variety	0	9	26	
	Use of improved variety (farmers)	0	27	58	
	Yield (kg/ha)	651	1826	2390	
South Unguja Muyuni	Bund making	1	38	53	57
	Levelling	11	74	82	95
	Straight row transplanting (area)	0	0	19	0
	Straight row transplanting (No. farmers)	0	0	22	0
	Straight row direct planting (area)	25	99	35	65
	Straight row direct planting (No. farmers)	28	87	37	64
	Application of fertilizer	31	87	78	76
	Use of improved variety	31	13	NA	89
	Use of improved variety (farmers)	51	16	43	67
	Yield (kg/ha)	1463	2943	1749	1758
Pemba Kangani	Bund making	0	73	86	
	Levelling	10	85	81	
	Straight row transplanting (are)	1	16	26	
	Straight row transplanting (No. farmers)	1	24	28	
	Straight row direct planting (area)	0	45	16	
	Straight row direct planting (No. farmers)	0	48	17	
	Application of fertilizer	1	87	72	
	Use of improved variety	0	40	37	
	Use of improved variety (farmers)	0	50	60	
	Yield (kg/ha)	697	1193	1246	

Appendix 15: Record of TOT for extension officer for NERICA cultivation

No	Institute	Target	Date	VAEO		District officer		Total
				M	F	M	F	
1	Tumbi	Nzega	Sojo, Mwaluzwro, Kipilimka, Buhondo, Mogwa, Wita, Isalalo, Shila, Wela, Mwangoye, Nkiniziwa, Itilo, Upambo, Nata, Lyamalagwa, Mwanzori, Udomo, Itobo, Ndala and Bulende	16-18 Dec, 2014	15	5	0	0	20
2	KATC	Muheza	Bombani, Bwitini, Kibaoni, Kilongo, Kilulu, Kimbo, Kisiwani, Kiwanda, Kwakifua, Kwalubuye, Kwatango, Mamboleo, Misozwe, Mpakani, Mtindiro, Mwarimba, Nkumba, Pangamlima, Potwe, Ubembe	28-30 Jan, 2015	14	6	1	0	21
3	Ilonga	Ulanga	20 villages	11-13 Feb, 2015	15	4	1	0	20
4	KATC	Kahama, Shinyanga Rural, Biharamulo, Muleba, Misenyi, Chato, Magu, Sengerema, Bunda, Butiama, Rorya, Kilindi, Kisarawe, Mkurunga, Kilombero, Rufiji, Mafia, Rungwe, Tunduru, Nanyumbu, Newala, Mpanda, Igunga, Sikonge, Tabora, Micheweni, North A	19-21 Oct, 2015	0	0	24	3	27

Appendix 16: Record of the NERICA cultivation training courses

No.	Name of Institute	Region	District	Village name	Date	Farmer			District officer			Total
						Male	Female	Sum	Male	Female	Sum	
1	Igurusi	Mbeya	Busokelo Ileje	Lusungo, Kipapa Mgaya, Kapeta	5-6 Jan, 2015	8	8	16	4	1	5	21
2	Igurusi	Mbeya	Busokelo	Kambasegera,Kilugu,Busoka and Ngereka	21-23 Dec, 2016	9	7	16	3	2	5	21
3	Igurusi	Mbeya	Rungwe	Matwebe , Njugiro, Kikole and Mperangwasi	13-15 Dec, 2017	8	8	16	3	0	3	19
4	Ilonga	Morogoro	Mvomero	Melela, Mangae, Mlali, Mkata	7-8 Jan, 2015	8	8	16	3	2	5	21
5	Ilonga	Puwani	Kibaha	Madimla, Kisabi, Kikongo, Mwanabwitu	29-30 Jan, 2015	8	8	16	2	2	4	20
6	Ilonga	Pwani	Mafia	Kanga, Bweni, Miburani and Jimbo	17-19 Feb, 2016	7	9	16	5	0	5	21
7	Ilonga	Pwani	Mkuranga	Kizomla, Nyamihimbo, Kiparang'anda A and Mvuleni	24-26 Jan, 2017	8	8	16	5	0	5	21
8	Ilonga	Morogoro	Ulanga	Igumbilo, Euga, Mbuyuni and Chilombola	31-2 Jan, 2017	8	8	16	5	0	5	21
9	Ilonga	Pwani	Kibiti	Kitembo, Dimani, Mahege and Ngondae	28-30 Nov, 2017	7	8	15	3	2	5	20
10	Ilonga	Pwani	Kisarawe	Marui-mapera, Titu, Kisangire and Kihare	11-12 Dec, 2018	8	8	16	5	0	5	21
11	KATC	Morogoro	Morogoro rural	Kolelo, Lubasazi, Kitonga, Kasanga	11-12 Sept, 2013	7	8	15	3	0	3	18
12	KATC	Tanga	Pangani	Boza, Bweni, Ushongo and MadangaDistrict	28-29 Jan, 2014	6	10	16	5	0	5	21
13	KATC	Tanga	Muheza	Kimbo, Bwitini, Mamboleo, Mpirani, Potwe	26-27 Jan, 2015	8	8	16	3	2	5	21
14	KATC	Tanga	Muheza	Munyuzi, Kwamzindawa, Kweminguji, Bwembera	27-1 Feb, 2017	8	8	16	5	0	5	21
15	KATC	Tanga	Korogwe	Makinyumbi, Songa Kibaoni, Magira gereza, Songa batini	27-1 Feb, 2017	7	8	15	5	0	5	20
16	KATC	Tanga	Korogwe	Mgobe, Mnyuzi, Ngomeni and shambakapori	21-23 Nov, 2017	8	8	16	4	1	5	21
17	KATC	Tanga	Babati	Quash, Majengo, Tsamasi and Endadoshi	21-23 Nov, 2017	9	7	16	1	2	3	19
18	KATC	Tanga	Korogwe	Kasiga, Mazinde Bagamoyo, Mazinde Muheza and Mabogo	25-26 Feb, 2019	8	8	16	4	1	5	21
19	KATI	Pemba	Wete	Gando, Machengwe, Junguni, Kangani, Mjini Ole, Kiuyu, Kiwani, Kambini, Kinyikani, Shengejuu	29-30 Jan, 2015	7	9	16	4	1	5	21
20	KATI	Unguja	North A	Mkwajuni, Gamba, Chaani kubwa, Chutama	29-30 Jan, 2016	7	9	16	4	1	5	21
21	KATI	Pemba	Micheweni	Mtemani, Mapofu, Tumbe, Konde	17-19 Feb, 2017	9	7	16	4	1	5	21
22	KATI	Unguja	North B	Mbiji, Mkataleni, Kinduni, Kwagube	9-11 Jan, 2018	7	9	16	1	4	5	21
23	KATI	Pemba	Chakechake	Vitongoji, Ziwani, Shungi and Matale	14-15 Jan, 2019	9	7	16	5	0	5	21

24	Mtwara	Lindi	Kilwa	Kipatimu, Darajani, kinywanyu, Mt-Kimwaga	10-11 Dec, 2014	8	8	16	5	0	5	21
25	Mtwara	Mtwara	Nanyumbu	Likokona, Chigweje, Nangomba, Kamundi	10-12 Dec, 2015	8	8	16	5	0	5	21
26	Mtwara	Mtwara	Newala	Nambali A, Nambali B, Chikwedu, Mapili,	10-12 Dec, 2015	9	7	16	4	0	4	20
27	Mtwara	Lindi	Kilwa	Naipuli, Kililima, Namayuni, Ngorongoro	5-7 Jan, 2017	8	8	16	3	2	5	21
28	Mtwara	Mtwara	Mtwara (R)	Mangopachanne, Ilala, Mbagala, Ushirika	5-7 Jan, 2017	8	8	16	2	0	2	18
29	Mtwara	Mtwara	Mtwara (R)	Ming'wena, Namayakata, Mnyundo, Mbawala	10-12 Oct, 2017	8	8	16	2	3	5	21
30	Mtwara	Lindi	Ruangwa	Mbecha, Nandagala, Nangumbu"B", Juhudi"A"	10-12 Oct, 2017	8	8	16	4	1	5	21
31	Mtwara	Lindi	Kilwa	Nandembo, Mtyalambuko, Hongwe, Mwengei	27-28 Dec, 2018	10	6	16	4	1	5	21
32	Mtwara	Lindi	Ruangwa	Nandenje, Luchelegwa, Nanjaru, Chinokole	27-28 Dec, 2018	8	8	16	5	0	5	21
33	Tumbi	Kigoma	Kigoma (R)	Msimba,Kidawhe,Kamala and Samwa	3-4 Dec, 2014	12	4	16	4	1	5	21
34	Tumbi	Katavi	Mpanda Tanganyika	Igagala, Ifukutwa-kibo, Isengule, Mpandandogo, Kalila, Kasekese, Kabungu, Sibwesa, Ikola	7-9 Dec, 2015	7	9	16	5	0	5	21
35	Tumbi	Kigoma	Kigoma (R)	Matendo, Nyamoli, Pamila , Simbo	5-7 Dec, 2016	10	6	16	3	2	5	21
36	Tumbi	Tabora	Nzega	Busondo, Isalalo, Ndala, Usagali	5-7 Dec, 2016	8	8	16	4	1	5	21
37	Tumbi	Kigoma	Kasulu	titye,nyenge, shughuliba, lalambe	4-6 OCT, 2017	8	8	16	5	1	6	22
38	Tumbi	Katavi	Tanganyika	mchangani, vikonge, katuma, kapalamsenga	4-6 OCT, 2017	8	8	16	6	0	6	22
39	Tumbi	Kigoma	Kibondo	Mkabuye, Rusohoko, Kifura and Nyaruyoba	10-11 Dec, 2018	14	2	16	5	0	5	21
40	Ukiriguru	Mwanza	Ukerewe	Bukonyo,Busiri, Kagunguli and Murutunguru	3-4 Dec, 2014	8	8	16	4	1	5	21
41	Ukiriguru	Kagera	Biharamulo	Nyakayenze, Migango, Nyambale and Mabale	2-4 Dec, 2015	8	8	16	3	2	5	21
42	Ukiriguru	Kagera	Muleba	Nyakahama, Rwigembe, Muleba and Buhangaza	24-26 Feb, 2016	8	8	16	2	3	5	21
43	Ukiriguru	Geita	Chato	Nyambiti, Kibumba, Ichwankima and Nyisanzi	11-13 Jan, 2017	8	8	16	3	2	5	21
44	Ukiriguru	Kagera	Biharamulo	Nyamahanga, Katahoka, Kabindi and Nyabusozi	11-13 Jan, 2017	11	5	16	3	2	5	21
45	Ukiriguru	Kagera	Misenyi	Kashenye, Kigarama, Minziro and Mushasha	13-15 Nov, 2017	8	8	16	4	1	5	21
46	Ukiriguru	Mara	Roya	Kirongwe, Sota, Masonga and Nyahera	11-13 Oct, 2017	8	8	16	4	1	5	21
47	Ukiriguru	Kagera	Bukoba	Ngarama, Buzi, Kyema, and Rubale	17-18 Jan, 2019	9	7	16	4	1	5	21
						389	360	749	179	47	226	975
						51.9%	48.1%		23.9%	6.3%		

Appendix 17: List of trained schemes of Subject Matter Training on ISM, Gender, Marketing, Post-harvest and Agricultural Machinery

Scheme ID	Scheme	Region	District	Training Type	Training year	Training Institute	Project	ISM	ISM Workshop	Gender	Marketing	Post-Harvest	AM Research & Training	AM Weeder	AM Combine harvester	AM Milling machine	AM Land leveling	AM Reaper	No. of SMT
	Lower Moshi	Kilimanjaro	Moshi rural			KATC	KADP							2017					1
	Lekitatu	Arusha	Arumeru			KATC	KATC1		2016 1st		2018		2017	2017	2018	2018	2018	2019	8
	Ndungu	Kilimanjaro	Same			KATC	KATC1		2016 1st										1
	Kitanda	Ruvuma	Namtumbo			MATI Mtwara	KATC1		2017										1
	Mkindo	Morogoro	Mvomero			MATI Ilonga	KATC1		2017				2017		2019	2019			4
	Mombo	Tanga	Korogwe rural			KATC	KATC2		2016 2nd				2017	2017	2018	2018		2019	6
	Mwamapuli	Tabora	Igunga			MATI Ukiriguru	KATC2		2016 2nd										1
	Nduguti	Sinyanga	Sinyanga			MATI Ukiriguru	KATC2												0
	Mbuyuni	Mbeya	Mbarali			MATI Igurusi	KATC2		2017				2017		2018	2018			4
	Mwega	Morogoro	Kilosa			MATI Ilonga	KATC2		2017										1
	Nakahuga	Ruvuma	Songea		2013/14	MATI Ilonga	KATC2						2017		2019	2019			3
	Mkombozi	Manyara	Babati			KATC	KATC2	2014	2016 1st										2
	Muungano	Manyara	Babati			KATC	KATC2						2017		2018	2018			3
	Lemkuna					KATC	KATC2												0
	Igomelo	Mbeya	Mbarali	IF only	Apr-03	MATI Igurusi	RBMSIP		2016 1st										1
	Uraroni	Rombo	Kilimanjaro		Aug-07	KATC	KR2												0
	Makangaga	Lindi	Kilwa		Aug-07	MATI Mtwara	KR2	2017											1
	Sasenga	Mbeya	Llege/Mbozi		Aug-07	MATI Igurusi	KR2												0
	Lundo	Ruvuma	Mbinga		Aug-07	MATI Igurusi	KR2												0
	Butiama	Musoma	Mara		Aug-07	MATI Ukiriguru	KR2												0
	Ulyanyama	Tabora	Sikonge		Aug-07	MATI Tumbi	KR2												0
	Kitere	Mtwara	Mtwara		Aug-07	MATI Mtwara	KR2												0
	Bagamoyo	Pwani	Bagamoyo	ST (BS-1stM&P)	2013/14	KATC	PHRD						2017		2019	2019			3

No.	Name	Region	District	Type	Date	Center	Program												Count
	Kivulini	Kilimanjaro	Mwanga	ST (BS-1stM&P)	2013/14	KATC	PHRD					2017			2019	2019			3
	Ruvu	Pwani	Bagamoyo	ST (BS-1stM&P)	2013/14	KATC	PHRD												0
	Mkula	Morogoro	Kilombero	ST (BS-1stM&P)	2013/14	MATI Ilonga	PHRD				2016	2017			2019	2019			4
	Pawaga	Iringa	Iringa	ST (BS-1stM&P)	2013/14	MATI Ilonga	PHRD												0
	Kilangali	Morogoro	Kilosa	ST (BS-1stM&P)	2013/14	MATI Ilonga	PHRD					2017			2019	2019			3
	Ipatagwa	Mbeya	Mbeya	ST (BS,RT)	2013/14	MATI Igurusi	PHRD				2016	2017			2018	2018			4
	Madibira	Mbeya	Mbarali	ST (BS,RT)	2013/14	MATI Igurusi	PHRD								2019				1
	Rudewa	Morogoro	Kilosa	AM		MATI Ilonga	PHRD								2019				1
	Pakunga	Mbeya	Mbarali			MATI Igurusi	PHRD								2019				1
	Igumbilo-Isitu	Mbeya	Mbarali	ST (RT,?)	2014/15	MATI Igurusi	BRN												0
	Lyanyula	Mbeya	Mbarali	ST (RT,?)	2014/15	MATI Igurusi	BRN												0
	Uwia Mahango	Mbeya	Mbarali	ST(RT,1stIF)	2014/15	MATI Igurusi	BRN												0
	Mahenge	Tanga	Korogwe urban	ST (RT)	2013	KATC	RUDI												0
1	Mahande	Arusha	Monduli	ST	Aug-07	KATC	TANRICE1	2016	2016 1st		2014								3
2	Mussa Mwijanga	Kilimanjaro	Hai	ST	Sep-08	KATC	TANRICE1			2014			2017	2017	2018	2018	2018	2019	7
3	Kitivo	Tanga	Lushoto	ST	Sep-08	KATC	TANRICE1	2013	2016 1st		2014								3
4	Kiroka	Morogoro	Morogoro R	ST	Sep-08	MATI Ilonga	TANRICE1												0
5	Ilonga	Morogoro	Kilosa	ST	Sep-08	MATI Ilonga	TANRICE1				2016				2019				2
6	Ruanda Majenje	Mbeya	Mbarali	ST	Sep-08	MATI Igurusi	TANRICE1												0
7	Sakalilo	Rukwa	Sumbawanga	ST	Sep-08	MATI Igurusi	TANRICE1	2017		2014	2018								3
8	Titye	Kigoma	Kasulu	ST	Sep-08	MATI Tumbi	TANRICE1	2014		2015									2
9	Mahiga	Mwanza	Kwimba	ST	Sep-08	MATI Ukiriguru	TANRICE1			2014									1
10	Chikuyu	Singida	Manyoni	ST	Oct-09	KATC	TANRICE1												0
11	Mwangeza	Singida	Iramba	ST	Oct-09	KATC	TANRICE1												0
12	Lekindo	Ruvuma	Tunduru	ST	Oct-09	MATI Mtwara	TANRICE1												0
13	Minepa	Morogoro	Ulanga	ST	Oct-09	MATI Ilonga	TANRICE1	2014	2016 1st	2014									3

No	Name	Region	District	Type	Date	Institution	Project											Count
14	Njagi	Morogoro	Kilombero	ST	Oct-09	MATI Ilonga	TANRICE1	2017										1
15	Urwira	Rukwa	Mpanda	ST	Oct-09	MATI Igurusi	TANRICE1											0
16	Naming'ongo	Mbeya	Mbozi	ST	Oct-09	MATI Igurusi	TANRICE1				2015							1
17	Magozi	Iringa	Iringa	ST	Oct-09	MATI Igurusi	TANRICE1				2016			2017		2018	2018	4
18	Uturo	Mbeya	Mbarali	ST	Oct-09	MATI Igurusi	TANRICE1							2017		2018	2018	3
19	Rungwempya	Kigoma	Kasulu	ST	Oct-09	MATI Tumbi	TANRICE1		2017	2014								2
20	Kwemkwazu	Tanga	Lushoto	ST	Nov-10	KATC	TANRICE1				2014							1
21	Mbalangwe	Morogoro	Morogoro R	ST	Nov-10	MATI Ilonga	TANRICE1	2016	2016 1st									2
22	Lupiro	Morogoro	Ulanga	ST	Nov-10	MATI Ilonga	TANRICE1											0
23	Mvumi	Morogoro	Kilosa	ST	Nov-10	MATI Ilonga	TANRICE1				2017				2019			2
24	Madaba	Ruvuma	Tunduru	ST	Nov-10	MATI Mtwara	TANRICE1			2014								1
25	Ngongowele	Lindi	Liwale	ST	Nov-10	MATI Mtwara	TANRICE1											0
26	Kasyabone-Kisegese	Mbeya	Rungwe	ST	Nov-10	MATI Igurusi	TANRICE1											0
27	Mshewe	Mbeya	Mbeya	ST	Nov-10	MATI Igurusi	TANRICE1			2015								1
28	Mfumbi	Iringa	Makete	ST	Nov-10	MATI Igurusi	TANRICE1	2014	2016 1st									2
29	Tungamalenga	Iringa	Iringa	ST	Nov-10	MATI Igurusi	TANRICE1				2019							1
30	Uwachero	Mara	Rorya	ST	Nov-10	MATI Ukiriguru	TANRICE1	2017			2015							2
31	Nyatwali	Mara	Bunda	ST	Nov-10	MATI Ukiriguru	TANRICE1											0
32	Sawenge	Mwanza	Magu	ST	Nov-10	MATI Ukiriguru	TANRICE1	2016		2016								2
33	Mtwango	Unguja		ST	Nov-10	KATI	TANRICE1	2014			2015							2
34	Ngage	Manyara	Simanjiro	ST	Dec-11	KATC	TANRICE1	2017										1
35	Kituani Mwezae	Tanga	Lushoto	ST	Dec-11	KATC	TANRICE1											0
36	Kwemgiriti	Tanga	Lushoto	ST	Dec-11	KATC	TANRICE1											0
37	Soko	Kilimanjaro	Moshi	ST (No BS)	Dec-11	KATC	TANRICE1											0
38	Kirya	Kilimanjaro	Mwanga	ST (No BS)	Dec-11	KATC	TANRICE1		2017					2019				2
39	Kinyope	Lindi	Lindi	ST (No BS)	Dec-11	MATI Mtwara	TANRICE1	2014	2016 1st									2

No	Name	Region	District	Type	Date	Center	Project								No.
40	Dakawa	Morogoro	Mvomero	ST	Dec-11	MATI Ilonga	TANRICE1								0
41	Lumuma	Morogoro	Kilosa	ST (No BS)	Dec-11	MATI Ilonga	TANRICE1								0
42	Ruaha Mbuyuni	Iringa	Kilolo	ST (No BS)	Dec-11	MATI Igurusi	TANRICE1		2017						1
43	Irienyi	Mara	Rorya	ST (No BS)	Dec-11	MATI Ukiriguru	TANRICE1			2017					1
44	Kibokwa	Unguja		ST	Dec-11	KATI	TANRICE1		2017	2015					2
45	Weni	Pemba		ST	Dec-11	KATI	TANRICE1	2017		2014					2
46	Mangwena	Pemba		ST	Dec-11	KATI	TANRICE1								0
47	Kwamngumi	Tanga	Korogwe urban	ST	2013/14	KATC	TANRICE2			2014					1
48	Kigugu	Morogoro	Mvomero	ST	2013/14	MATI Ilonga	TANRICE2		2016 2nd	2017	2015				3
49	Majengo	Mbeya	Mbarali	ST	2013/14	MATI Igurusi	TANRICE2								0
50	Nyatwali	Mara	Bunda	ST	2013/14	MATI Ukiriguru	TANRICE2		2016 2nd	2015	2016				3
51	Mkuti	Kigoma	Kigoma	ST	2013/14	MATI Tumbi	TANRICE2		2016 2nd		2015				2
52	Lipeleng'enye	Mtwara	Newala	ST	2013/14	MATI Mtwara	TANRICE2		2016 2nd	2015	2015				3
53	Mtambo	Kilimanjaro	Hai	Pilot MST	2013/14	KATC	TANRICE2		2017				2019		2
54	Komtonga	Morogoro	Mvomero	Pilot MST	2013/14	MATI Ilonga	TANRICE2			2015	2016				2
55	Maendeleo	Mbeya	Mbarali	Pilot MST	2013/14	MATI Igurusi	TANRICE2								0
56	Mbuga nyekundu	Arusha	Karatu	ST	2014/15	KATC	TANRICE2			2016					1
57	Lukenge	Morogoro	Mvomero	ST	2014/15	MATI Ilonga	TANRICE2	2019		2016					2
58	Jikomboe	Mbeya	Ileje	ST	2014/15	MATI Igurusi	TANRICE2		2016 2nd	2016					2
59	Bugorola	Mwanza	Ukerewe	ST	2014/15	MATI Ukiriguru	TANRICE2								0
60	Malolo	Nzega	Tabora	ST	2014/15	MATI Tumbi	TANRICE2	2016		2016	2018				3
61	Ruhwiti	Kigoma	Kakonko	ST	2014/15	MATI Tumbi	TANRICE2	2017		2017					2
62	Ndanda	Mtwara	Ndanda	ST	2014/15	MATI Mtwara	TANRICE2		2016 2nd		2016				2
63	Bumbwisudi	Unguja	West	ST	2014/15	KATI	TANRICE2		2016 2nd	2016	2016	2015			4
64	Mangola barazani	Arusha	Karatu	Pilot MST	2014/15	KATC	TANRICE2								0
65	Mgongola	Morogoro	Kilombero	Pilot MST	2014/15	MATI Ilonga	TANRICE2								0

No	Name	Region	District	Type	Year	Institute	Project												Count
66	Mangula youth	Morogoro	Kilombero	Pilot MST	2014/15	MATI Ilonga	TANRICE2													0
67	Gwiri	Mbeya	Mbarali	Pilot MST	2014/15	MATI Igurusi	TANRICE2													0
68	Gonja	Kilimanjaro	Same	Pilot MST	2014/15	KATC	TANRICE2			2015										1
69	Maki	Morogoro	Kilombero	Pilot MST	2014/15	MATI Ilonga	TANRICE2		2016 2nd											1
70	Mafuruto	Iringa	Iringa	Pilot MST	2014/15	MATI Igurusi	TANRICE2													0
71	Mandera	Tanga	Korogwe rural	ST	2015/16	KATC	TANRICE2	2018		2019	2018									3
72	Msufini	Morogoro	Kilombero	ST	2015/16	MATI Ilonga	TANRICE2													0
73	Ifumbo	Mbeya	Chunya	ST	2015/16	MATI Igurusi	TANRICE2			2017										1
74	Lwenge	Geita	Geita	ST	2015/16	MATI Ukiriguru	TANRICE2		2017	2017										2
75	Nyendala	Kigoma	Kibondo	ST	2015/16	MATI Tumbi	TANRICE2	2018			2016									2
76	Sangamabuni	Ruvuma	Mbinga	ST	2015/16	MATI Mtwara	TANRICE2	2019		2016										2
77	Makombeni	Pemba	Mkoani	ST	2015/16	KATI	TANRICE2													0
78	Kisiwani	Kilimanjaro	Same	MST	2015/16	KATC	TANRICE2													0
79	Mtitaa	Dodoma	Bahi	MST	2015/16	KATC	TANRICE2													0
80	Msolwa Ujamaa	Morogoro	Kilombero	MST	2015/16	MATI Ilonga	TANRICE2				2019									1
81	Sisu	Morogoro	Kilombero	MST	2015/16	MATI Ilonga	TANRICE2													0
82	Ndorobo	Iringa	Iringa	MST	2015/16	MATI Igurusi	TANRICE2													0
83	Mtombaya	Mbeya	Mbarali	MST	2015/16	MATI Igurusi	TANRICE2					2016								1
84	Usoke	Tanga	Urambo	MST	2015/16	MATI Tumbi	TANRICE2													0
85	Inala	Tanga	Tabora Urban	MST	2015/16	MATI Tumbi	TANRICE2													0
86	Lipalwe	Mtwara	Tandahimba	MST	2015/16	MATI Mtwara	TANRICE2				2017									1
87	Likunja	Lindi	Ruangwa	MST	2015/16	MATI Mtwara	TANRICE2				2017									1
88	Mwera	Unguja	West	MST	2015/16	KATI	TANRICE2	2019												1
89	Kinyakuzi	Pemba	Micheweni	MST	2015/16	KATI	TANRICE2													0
90	Mkomazi	Tanga	Korogwe rural	ST	2016/17	KATC	TANRICE2			2017	2019									2
91	Itete	Morogoro	Malinyi	ST	2016/17	MATI Ilonga	TANRICE2	2018												1

92	Mlenga	Iringa	Iringa	ST	2016/17	MATI Igurusi	TANRICE2										0
93	Kyota	Kagera	Muleba	ST	2016/17	MATI Ukiriguru	TANRICE2	2018		2018	2019						3
94	Budushi	Tabora	Nzega	ST	2016/17	MATI Tumbi	TANRICE2			2019							1
95	Kimbande	Ruvuma	Nyasa	ST	2016/17	MATI Mtwara	TANRICE2	2018									1
96	Cheju	Unguja	Central	ST	2016/17	KATI	TANRICE2				2019						1
97	Karamba	Kilimanjaro	Same	MST	2016/17	KATC	TANRICE2										0
98	Kihurio	Kilimanjaro	Same	MST	2016/17	KATC	TANRICE2										0
99	Udagaji	Morogoro	Kilombero	MST	2016/17	MATI Ilonga	TANRICE2										0
100	Mlali	Morogoro	Mvomero	MST	2016/17	MATI Ilonga	TANRICE2			2019							1
101	Lwafi Katongoro	Rukwa	Nkasi	MST	2016/17	MATI Igurusi	TANRICE2	2018		2019							2
102	Ng'ongo	Rukwa	Sumbawanga	MST	2016/17	MATI Igurusi	TANRICE2	2019									1
103	Miyogwezi	Mwanza	Ukerewe	MST	2016/17	MATI Ukiriguru	TANRICE2			2019	2018						2
104	Igigwa	Tabora	Sikonge	MST	2016/17	MATI Tumbi	TANRICE2	2019									1
105	Miswaki	Tabora	Uyui	MST	2016/17	MATI Tumbi	TANRICE2										0
106	Matekwe	Lindi	Nachingwea	MST	2016/17	MATI Mtwara	TANRICE2										0
107	Mtawatawa	Lindi	Liwale	MST	2016/17	MATI Mtwara	TANRICE2										0
108	Namahoka	Ruvuma	Namtumbo	MST	2016/17	MATI Mtwara	TANRICE2										0
109	Tibrinzi	Pemba	Chake Chake	MST	2016/17	KATI	TANRICE2										0
110	Dobi	Pemba	Chake Chake	MST	2016/17	KATI	TANRICE2										0
111	Mafuleta	Tanga	Korogwe rural	MST	2017/18	KATC	TANRICE2	2019		2018							2
112	Mawala	Kilimanjaro	Moshi	MST	2017/18	KATC	TANRICE2										0
113	Kisawasawa	Morogoro	Kilombero	MST	2017/18	MATI Ilonga	TANRICE2										0
114	Namatuhi	Ruvuma	Songea	MST	2017/18	MATI Ilonga	TANRICE2										0
115	Mwendamtitu	Mbeya	Mbarali	MST	2017/18	MATI Igurusi	TANRICE2										0
116	Manengwe	Rukwa	Sumbawanga	MST	2017/18	MATI Igurusi	TANRICE2										0
117	Idodi	Iringa	Iringa	MST	2017/18	MATI Igurusi	TANRICE2								2019		1

No	Name	Region	District	Type	Year	Institution	Program												Value
118	Bukangilija	Simiyu	Maswa	MST	2017/18	MATI Ukiriguru	TANRICE2												0
119	Buhangaza	Kagera	Muleba	MST	2017/18	MATI Ukiriguru	TANRICE2	2019											1
120	Maliwanda	Mara	Bunda	MST	2017/18	MATI Ukiriguru	TANRICE2												0
121	Katengela	Kigoma	Kakonko	MST	2017/18	MATI Tumbi	TANRICE2												0
122	Kahama Nhanga	Tabora	Nzega	MST	2017/18	MATI Tumbi	TANRICE2				2019								1
123	Lusu	Tabora	Nzega	MST	2017/18	MATI Tumbi	TANRICE2												0
124	Amani	Ruvuma	Namtumbo	MST	2017/18	MATI Mtwara	TANRICE2				2019								1
125	Mchomoro	Ruvuma	Namtumbo	MST	2017/18	MATI Mtwara	TANRICE2												0
126	Legezamwendo	Ruvuma	Tunduru	MST	2017/18	MATI Mtwara	TANRICE2												0
127	Litumbandyosi	Ruvuma	Mbinga	MST	2017/18	MATI Mtwara	TANRICE2			2019									1
128	Uzini	Unguja	Central	MST	2017/18	KATI	TANRICE2			2019									1
129	Kianga	Unguja	West	MST	2017/18	KATI	TANRICE2												0
130	Magoma	Tanga	Korogowe	MST	2018/19	KATC	TANRICE2												
131	Wamilu hindo	Morogoro	Mvomero	MST	2018/19	MATI Ilonga	TANRICE2												
132	Tulo Kongwa	Morogoro	Morogoro	MST	2018/19	MATI Ilonga	TANRICE2												
133	Solola Nkanga	Rukwa	Sumbawanga	MST	2018/19	MATI Igurusi	TANRICE2												
134	Kyamyorwa	Kagera	Muleba	MST	2018/19	MATI Ukiriguru	TANRICE2												
135	Mwiruzi	Kigoma	Kakonko	MST	2018/19	MATI Tumbi	TANRICE2												
136	Njomulole	Ruvuma	Namtumbo	MST	2018/19	MATI Mtwara	TANRICE2												
137	Msanjesi	Ruvuma	Namtumbo	MST	2018/19	MATI Mtwara	TANRICE2												
138	Machigini	Pemba		MST	2018/19	KATI	TANRICE2			2018									1
	Tenende		Kyela	RFLL		MATI Igurusi	TANRICE2			2018									1
	Mkotamo		Tunduru	RFLL		MATI Mtwara	TANRICE2			2018									1
	Muyuni		Unguja	RFLL		KATI	TANRICE2			2018									1
Total	177							31	30	38	34	4	14	4	22	14	2		196