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AFRICA RISING - Enhancing partnership among Africa RISING, NAFKA and TUBORESHE CHAKULA Programs for fast tracking delivery and scaling of agricultural technologies in Tanzania

Quarterly Progress Report (01 April 2016–30 June 2016)



30 June, 2016

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Contract No. MTO 069018

IITA – International Institute of Tropical Agriculture

QUARTERLY PERFORMANCE REPORT

(1 April 2016 – 30 June 2016)

Thematic Implementing Partners:

Agricultural Research Institute, Dakawa – Rice

AVRDC – Vegetables

CIMMYT – Maize

IITA – Postharvest and Nutrition

COVER PHOTO

Happy farmers in Kiteto district after getting a good crop through using improved maize varieties and good agronomic practices promoted by the project

DISCLAIMER

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Acronyms and Abbreviations

Africa RISING	Africa Research in Sustainable Intensification for the Next Generation
APEX	Agricultural Policy and Environmental Extender model
ARI-Dakawa	Agricultural Research Institute, Dakawa
ARI-Hombolo	Agricultural Research Institute, Hombolo
AVRDC	The World Vegetable Center
CIAT	International Center for Tropical Agriculture
CIMMYT	International Maize and Wheat Improvement Center
CRS	Catholic Relief Services
DAICO	District Agricultural, Irrigation and Cooperatives Officer
FtF	Feed the Future
ICRAF	World Agroforestry Center
IITA	International Institute of Tropical Agriculture
IPM	Integrated Pest Management
NAFAKA	Tanzania Staples Value Chain Activity (USAID FtF Project)
SWAT	Soil Water Analysis Tool
TOSCI	Tanzania Official Seed Certification Institute
TUBOCHA	Tuboreshe Chakula (USAID FtF Project)
VBAA	Village-based Agricultural Agent
ZOI	(FtF) Zone of Influence

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I EXECUTIVE SUMMARY

During Quarter 3 of Year 2 of the project implementation period, the Africa RISING-NAFAKA-TUBOCHA partnership and scaling project accomplished a number of activities. A review meeting was held in April in Arusha and an M&E training session for 18 field staff was held in Morogoro. The project team is also involved in preparations for *Nane Nane* agricultural show preparations that will be held in Morogoro. The rest of the accomplishments are briefly presented in the subsequent parts of this section.

The **maize** team trained 5,689 farmers (2,812M, 2,877F) in good agronomic practices (land preparation, fertilizer types and their management, nutrient deficiency, row planting, weed management and record keeping). In Kongwa and Kiteto an additional component of soil and water conservation using tied-ridges and rippers was covered. For the **rice component**, 555 farmers were trained (215M, 340F), focusing on appropriate site selection, and field and fertilizer management especially the management of salt-affected and calcareous soils. For **vegetables**, 325 farmers were trained (138M, 187F) in Iringa and Morogoro on the establishment and management of nurseries. Trainees were also provided with seed kits and other materials to facilitate the use of the materials. In addition, 73 farmer leaders in Manyara and Dodoma regions were trained (32M, 41F) in vegetable seed production. The postharvest team initiated activities in Kilolo, Kilosa, and Mbozi districts. Twenty-seven farmer trainers and community-based health workers (13M, 14F) were trained in nutrition aspects. In addition, 44 farmers (25M, 19F) in Mbozi district were introduced to postharvest technologies (shellers, collapsible driers, and PICs bags) as a means of encouraging more farmers to appreciate the importance of postharvest management and their subsequent adoption and use.

A total of 1,765 farmers (939M, 826F) attended FFDs organized by the maize team and another 709 (345M, 364F) attended those organized by the rice team. The FFDs provided an opportunity for participants to appreciate the qualities of the technologies introduced by the project and a basis for adoption decisions in the subsequent seasons. Media houses also publicized the events, especially for the rice activities.

An outcome survey was completed in the current quarter. Data on the outcome indicators will be presented in the next quarter. Regarding the output indicators, the project is on track to achieve the targets. At least 90% of all the four output indicators have been realized by the end of Qr 3.

Key activities for the next quarter will include the following: (i) an annual project review and planning meeting, (ii) training of farmers by all teams (iii) yield data collection and preparations for feedback meetings, (iii) development of technology descriptions, protocols, and training materials, (iv) development of work plans and budgets by the teams, and (v) participation in the *Nane Nane* agricultural show.

2 INTRODUCTION

2.1 Project description

Africa RISING partners are involved in identifying and developing the best performing interventions for improving agricultural production. These are compiled into information and technology packages to be delivered through a network of NAFAKA and other public and private sector actors, creating an opportunity for mainstreaming into wider rural development programs. Attractive interventions in this project include the introduction of improved crop varieties, dissemination of best-bet crop management packages, rehabilitation and protection of natural resources, and postharvest management.

The project focus is on three crop enterprises – maize, rice, and vegetables – with postharvest handling and nutrition as a cross-cutting theme. The key partners in the project include international agricultural research centers (IITA, CIMMYT, CIAT, ICRAF, the World Vegetable Center (AVRDC), and one USAID-funded project, NAFAKA. These are working in partnership with national agricultural research institutions – ARI Dakawa leads the rice theme – and other ARIs such as Selian, KATRIN). Local Government institutions, specifically DAICOs, and the private sector (seed companies, millers, and processors) and NGOs are also involved. All these partners are involved to deliver on the following objectives:

1. Introduce and promote improved and resilient varieties of food crops to farm households in a manner that complements their on-going farm enterprises, contributes to sustainable agricultural resource management, and offers nutritional advantages and alternative market channels.
2. Disseminate best-bet agronomic management packages around the most promising new crop varieties suited to widely representative agro-ecological zones and market proximity.
3. Protect land and water resources and foster agricultural biodiversity through the introduction of soil and water management practices.
4. Increase food security and improve household nutrition among the most vulnerable households and their members, especially women and children, by introducing locally adapted and nutrient-rich vegetables.
5. Introduce and promote postharvest management technologies for maize, rice, legumes, and selected vegetable crops to reduce losses and bring quality up to market standards.
6. Offer and expand capacity services to members of grassroots farmers' associations, platform partners, and development institutions in the scaling process (capacity building), paying particular attention to the special opportunities available to women farmers as technical and nutritional innovators and resource managers.

2.2 Geographic Zones of Influence

The project is in Year 2. Activities were implemented in Year 1, in the regions of Manyara, Dodoma, and Morogoro. In Year 2, the project was extended to Iringa and Mbeya regions. All five regions are in the FtF's Zol (Fig. 1). Figures 2-4 show the locations of the different sites for the maize-legumes, vegetables, postharvest, and rice activities respectively.

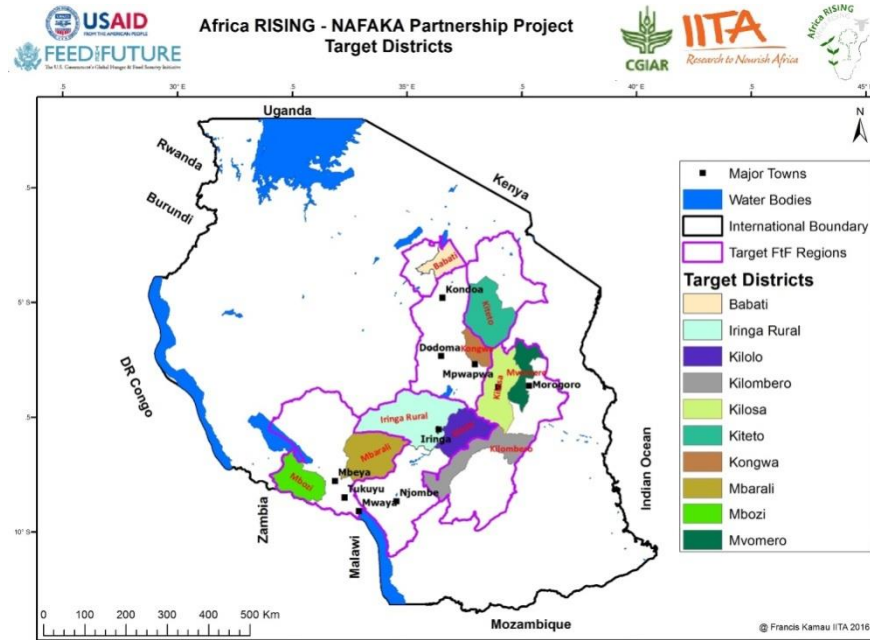


Figure 1: Africa RISING – NAFKA partnership project target districts.

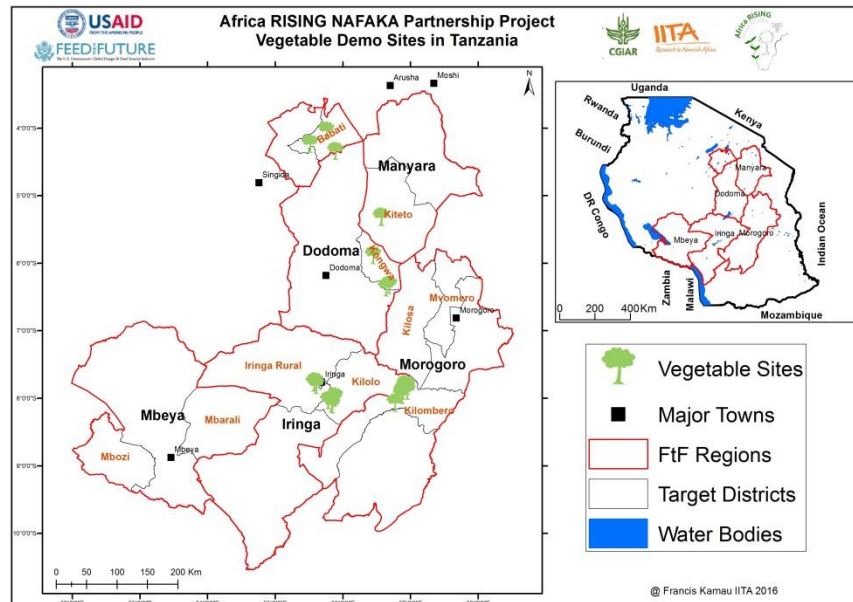


Figure 2: Africa RISING – NAFKA partnership project vegetable demo sites.

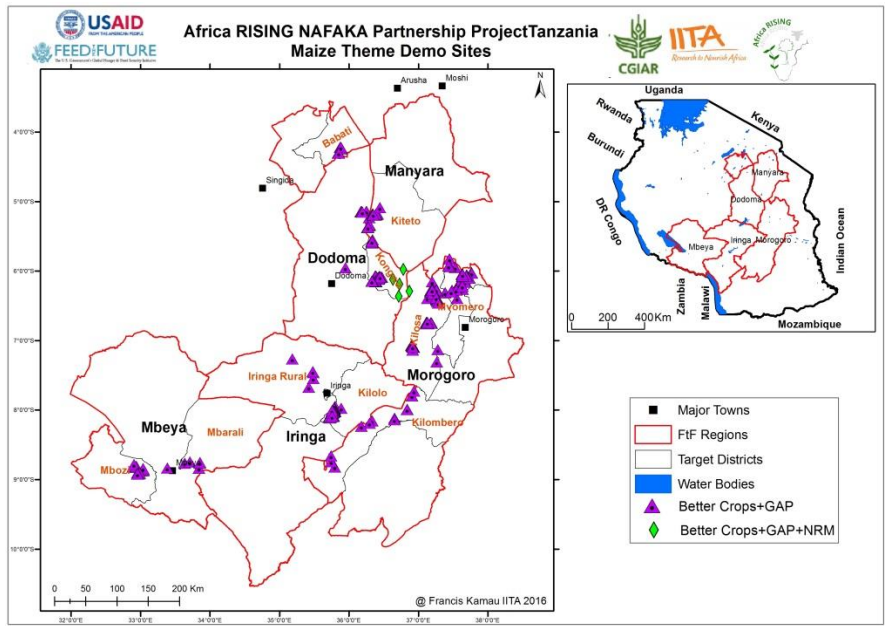


Figure 3: Africa RISING – NAFKA partnership project maize demo sites.

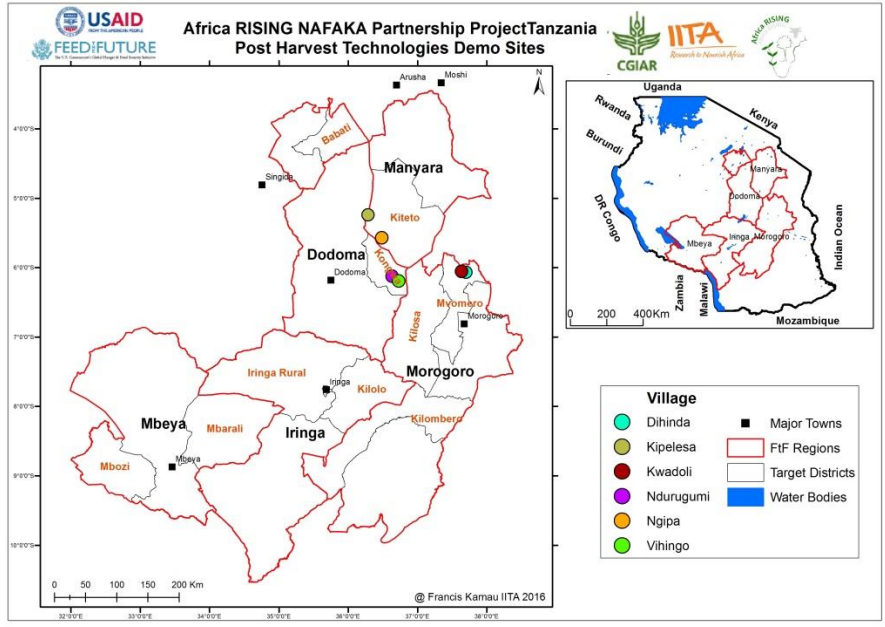


Figure 4: Africa RISING – NAFKA partnership project postharvest technologies demo sites.

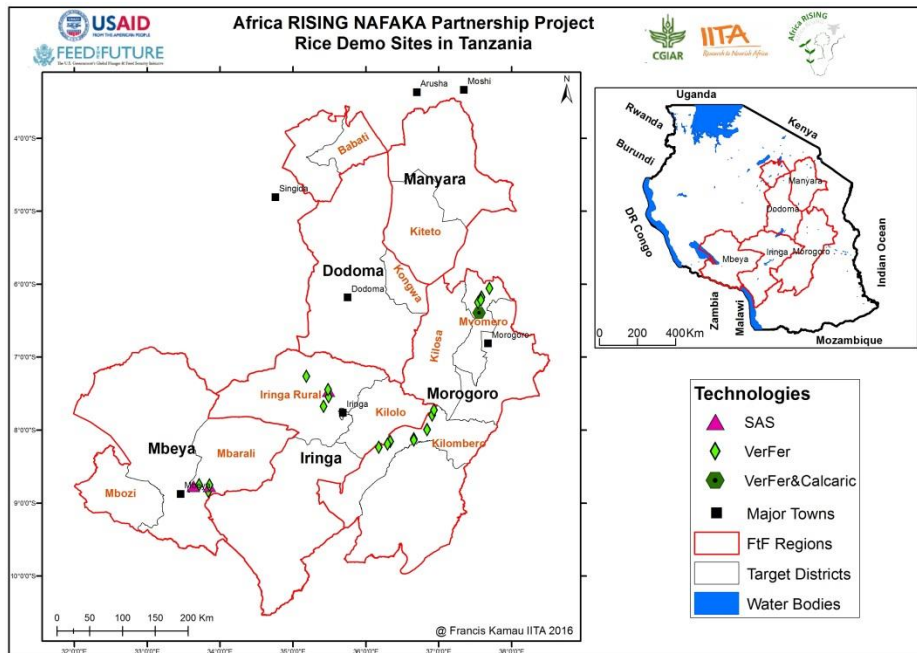


Figure 5: Africa RISING – NAFKA partnership project rice demo sites.

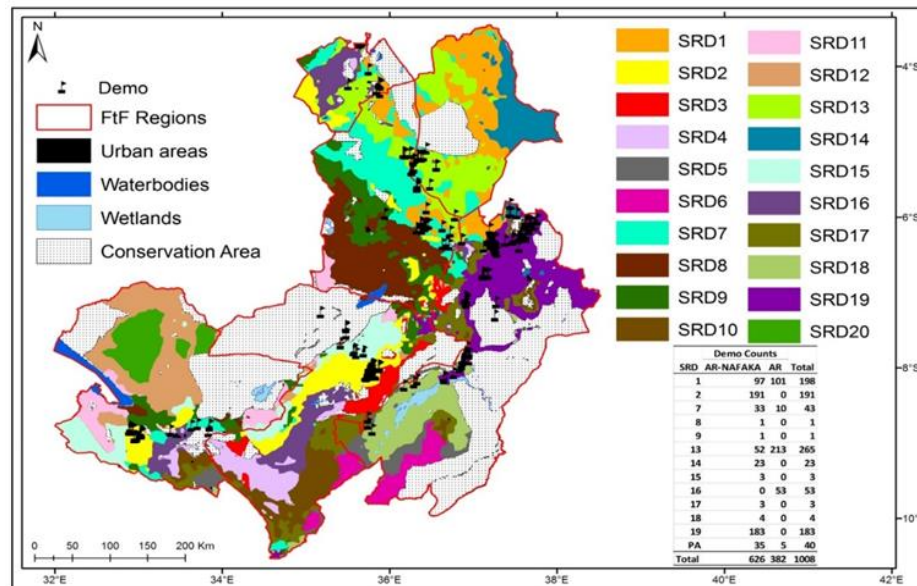


Figure 6: Africa RISING NAFKA partnership project SRDs.

3 IMPLEMENTATION PROGRESS

3.1 Project Management

A project team meeting was held on 18 April 2016 at SG Resort Hotel in Arusha to review progress and plan for the rest of the year. Proceedings of the meeting are available at this link: http://africa-rising.wikispaces.com/AR-NAFAKA_project_team_meeting-April2016. On day 2 (19 April 2016), the team visited one of the project sites in Babati and interacted with farmers, who were enthusiastic to transfer their experiences from the project to their farm activities. Highlights of the project visit are available at this link: <http://bit.ly/29LbNig>.

Furthermore, to improve project monitoring and evaluation, 18 field liaison members of staff were trained in monitoring and evaluation from 10 districts where project activities were being implemented. The training was also an opportunity to prepare the team for the annual outcome survey for the project that was completed in June 2016. The training was held at the NAFKA project offices in Morogoro, 3-4 May 2016, and was jointly conducted by senior IITA and NAFKA staff competent in M&E. A report on the training activities is available at this link: <http://bit.ly/2a07pxB>. In addition, the project's annual outcome survey was conducted, targeting 572 households in the districts of Kongwa, Kiteto, Kilosa, and Mvomero.



Participants take part in a group exercise during an M&E training workshop held at NAFKA offices, Morogoro, 3-4, May 2016. (Credit: Gloriana Ndibalema/IITA)

Project team members are also making preparations to participate under the USAID-funded projects' banner at the *Nane Nane* agricultural show event that will take place in August 2016 in Morogoro. Both Africa RISING and NAFKA have already secured the site and planted a variety of crops (maize, legumes, and rice). The postharvest team has also prepared the technologies that will be demonstrated.

To fine-tune scaling activities in future, sustainable recommendation domains (SRDs) for the FtF zone in Tanzania were formulated (Fig. 6). These will be further refined (ground-truthing) through field visits and project scientists' input by providing information on technology attributes. As can be noted from the figure, demo plots are located in 11 out of 20 SRDs with heavy investment in SRDs 2 and 19.

3.2 Training of Trainers

After the establishment of demo sites had been completed by the various teams, one of the main activities during this quarter has been the continued Training of Trainers (e.g., extension staff and lead farmers). For the maize-legumes team, training was conducted by the Africa RISING-NAFKA team for 30 lead farmers (15M, 15F) and 12 agricultural extension staff (9 M, 3F) from Local Government. The training focused on the proper use of fertilizer and pesticides, application methods, and handling procedures. They were also trained on how to use GPS devices to record and report data. In addition, four members of Vijana Kazi youth group (2M, 2F) from Msufini village (Mvomero district) were trained on the management and application of pesticides at Ilonga Agricultural Training Institute (Kilosa district) with support from the project. In Kongwa and Kiteto districts, 13 VBAs (7M, 6F) were trained on soil fertility management especially with respect to fertilizer application. For the rice team, Training of Trainers was conducted for 24 extension staff (19M, 5F) and three NAFKA agronomists (1M, 2F). In Kilolo district, four VAEOs and 1 VBAA, all male, were also trained on data management and reporting and how to conduct farmer trainings. The vegetables component conducted seed multiplication training for 73 farmers from Manyara and Dodoma regions (32M, 41F) to prepare them for seed production activities in subsequent phases of the project and beyond. The districts from where the participants were drawn are indicated in Table 1.

Table 1: Participants of the vegetable seed multiplication training in Manyara and Dodoma regions

District	Village	Male	Female	Total
Babati	Maweni	7	0	7
Kiteto	Kaloleni	1	9	10
Kiteto	Kibaya	2	12	14
Kiteto	Sunya	4	8	12
Kongwa	Songambebe	7	7	14
Kongwa	Tubugwe	11	5	16
TOTAL		32	41	73

For the postharvest team, training was conducted on nutrition for 27 trainers (13M, 14F) who were 13 village health workers, 12 lead farmers, one home-based care provider, and one village agriculture extension worker. They were selected from the districts of Kiteto, Kongwa, Kilosa, Mvomero, Kilolo, and Mbozi.

3.3 Training activities for farmers

Most of the training for farmers was conducted during the current quarter. Table 2 shows the number of participants during the training.

Table 2: Training participants for the various project components

Team	Region	District	Number of participants		
			M	F	Total
Maize	Morogoro	Mvomero	1,753	1917	3670
		Kilosa	367	401	768
	Dodoma	Kongwa	167	105	272
	Manyara	Kiteto	132	111	243
	Iringa	Kilolo	194	114	308
	Mbeya	Mbozi	199	229	428
	Sub-total			2,812	2,877
Rice	Iringa	Iringa rural	38	62	100
	Morogoro	Mvomero	49	61	110
		Kilombero	105	118	223
	Mbeya	Mbarali	23	99	122
	Sub-total			215	340
Vegetables	Morogoro	Kilombero	65	104	169
	Iringa	Iringa rural and Kilolo	73	83	156
	Sub-total			138	187
Post-harvest	Mbeya	Mbozi	25	19	44
TOTAL			3,190	3,423	6,613

All the training was focused on realizing the project goals. The training in **maize-legume** aspects was focused on good agronomic practices (land preparation, fertilizer types and their management, nutrient deficiency, row planting, weed management, and record keeping). In Kongwa and Kiteto an additional component of soil and water conservation using tied-ridges and rippers was covered. For the **rice component**, the training covered aspects of appropriate site selection, field and fertilizer management especially focusing on the management of salt-affected and calcareous soils. For **vegetables**, the training in Iringa (for 139 farmers) was conducted in April 2016 on how to establish and manage nurseries. Hands-on activities for the participants focused on land and seed bed preparation and how to raise seedlings and establish a nursery. After the training, nine seed kits, nine watering cans, 45 seeding trays, nine hand sprayers, nine bottles of pesticides, and nine bottles of foliar fertilizer were deployed to the trainees for nursery establishment. In addition, 171 seed kits were handed out to the training participants. Another training session was conducted in Iringa region in June 2016 for 156 participants to ensure the establishment of demo plots focusing on spacing, fertilizer/manure application, and GAP/management of the plots; the project team discussed the different cultural practices that need to be undertaken for the maintenance and care of the demo plots. Besides soil preparation practices, farmers were also trained on GAP, covering recommended weeding practices, proper watering and irrigation practices – including when and how to irrigate appropriately – and recommended organic fertilizer application procedures.

In addition, the project team (vegetables) collaborated with CRS to scale up vegetable technologies in additional villages in Kilombero district in June 2016. In addition to the three pilot villages in Kilombero (Misufini, Ichonde, and Kisawasawa), the team added six villages – Mahutanga, Lungongole, Nyamwezi, Mkasu, Mhelule, and Magombela – where training on nursery management was jointly conducted. Those six villages were selected by CRS and have received different types of support from CRS over the last few years. During the training, farmers, public village extension officers and CRS staff were trained on soil and seed bed preparation, preparation of media for seedlings, and nursery management. In total, 169 farmers participated in the training. All participants received seed kits for their own home gardens to establish their own trials. In each village, one nursery was established with eight seed beds of 4 m² each plus eight trays (66 holes per tray). Eight vegetable crops were sown in the nurseries; tomato (Tengeru 2010 and Tanya), Africa eggplant (DB3 and Tengeru white), African nightshade (Nduruma), Ethiopian mustard (Rungwe and Arumeru), and Jute mallow (SUD 2). For the nursery establishment nine seed kits, nine watering cans, and 72 trays were used.



Hassan Mndiga of AVRDC training farmers in Iringa on vegetable seed establishment. (Credit: Andreas Gramzow/AVRDC)



Farmers in Majenje village, Mbarali district, being trained on proper fertilizer application for rice. (Credit: Charles Chuwa/ARI-Dakawa)



Farmers in Kitete village, Kilosa district, examine a maize plant for phosphorus deficiency. (Credit: Anthony Kimaro/ICRAF)

For the postharvest component, farmers were introduced to, and trained on how to use, the various technologies, notably maize shelling machines, collapsible drier cases, and hermetic storage technology. The facilities were left with the trainees (lead farmers) after the training to process and store their maize and legumes for food security and income generation. It is hoped that the farmers' experiences of using the items will then motivate them to get more machines from agro-input suppliers. The project is working with the NAFKA project to further facilitate access to the postharvest technologies.



Beneficiary farmers involved in postharvest activities in Itumpi village, Mbozi district, use a maize sheller machine (left photo). Courtesy of the project, these farmers have also been trained on how to use the PICs bags for grain storage (right photo) and they like both technologies very much! (Credit: Audifas Gaspar/IITA)

3.4 Farmers' Field Days

A series of field days were held by the **maize team** in five districts and by the **rice team** in four districts as indicated (Table 3). Farmers and stakeholders (district political and technical leaders), seed companies, processors, and the media attended the functions. Some of the highlights of the FFDs can be found here <https://spark.adobe.com/page/YECYy/>.

Table 3: Field day participants for the maize and rice activities

Team	District	Participants		
		Male	Female	Total
Maize	Babati	325	116	441
	Kongwa	101	131	232
	Kiteto	142	173	315
	Kilolo	288	324	612
	Kilosa	83	82	165
	Sub total	939	826	1,765
Rice	Kilombero	117	106	223
	Mbarali	46	91	137
	Iringa rural	60	79	139
	Mvomero	122	88	210
	Subtotal	345	364	709
	TOTAL	1,284	1,190	2,474



Field day in Kilombero district. (Credit: Charles Chuwa/ARI-Dakawa)



Farmers in Babati district closely examine a maize variety at one of the field days. (Credit: Fred Kizito/CIAT)



Farmers attending a field day in Kilolo district. (Credit: Anthony Kimaro/ICRAF)

As part of the FFD proceedings farmers informally rated the technologies that were introduced in the communities. For instance, in Babati district as part of the activities, farmers went through selected demonstration fields and noted key performance indicators/characteristics (ranging from cobs per plant, cob size, plant height and vigor, rows per cob, grains per row etc.). This was followed by group discussions and ranking of the different fertilizers and varieties by the farmers. In Kongwa and Kiteto districts, a relatively similar activity was conducted whereby farmers rated the performance of the different maize and legume varieties, thereby tentatively selecting varieties they thought would perform well next season in their fields.

4 ACHIEVEMENTS AND RESULTS

General

- i. The annual outcome survey covering 572 households was conducted in Kongwa, Kiteto, Kilosa, and Mvomero districts.
- ii. A project meeting for all project team members was conducted, thereby providing an opportunity for progress and plans for the rest of the year to be reviewed.
- iii. Training for field liaison officers responsible for field-level coordination of project activities was conducted, with 18 staff participating.
- iv. Recommendation domains for the project were developed and these will be further refined when data from project scientists become available as well as validation through site visits.

Maize

- i. 16 extension staff (13M, 3F) and 40 lead farmers (23M, 17F) were trained to enable them facilitate training and learning by farmers. The training was done in collaboration with NAFAKA. Linkage was strengthened between NAFAKA/AFRICA RISING and Government extension officers and farmers' groups and extension officers. The linkage is important for the sustainability of the project's intervention.
- ii. 5,689 farmers (2,812M, 2,877F) were trained in agronomic practices related to maize production.
- iii. Field days involving 1,765 participants in five districts (939M, 826F) were held. These also provided an opportunity for farmers.

Rice

- i. 27 extension staff (21M, 6F) were trained in four districts.
- ii. 555 farmers (215M, 340F) were trained in rice production technologies.
- iii. Field days were organized in all the four project districts with 709 participants in attendance (245M, 364F). The field days were widely publicized through the media. In addition, a number of stakeholders from the public and private sectors attended the field days.

Vegetables

- i. 73 male and female farmers in six pilot villages in Babati, Kiteto, and Kongwa districts were trained on seed multiplication.
- ii. 139 male and female farmers from six pilot villages located in Iringa rural and Kilolo districts were trained on nursery management, soil preparation, and seedbed preparation; 52.5% were females and 47.5% were males.
- iii. 156 farmers were trained on seedling transplantation, spacing, fertilizer application, and good agricultural practices in six pilot villages in Iringa rural and Kilolo districts; 53.2% were females and 46.8% were males.
- iv. 711 seed kits were distributed to farmers from pilot villages in Kilombero, Kilolo, and Iringa rural districts.
- v. Eight demonstration plots belonging to six villages were established in Iringa rural and Kilolo

districts; six nurseries were established in six villages located in Kilombero district in collaboration with CRS.

Postharvest

- i. 27 trainers (13M, 14F) were trained in nutrition.
- ii. 44 farmers in Mbozi district (Mbeya region) were introduced to three categories of postharvest technologies which would then form a basis for increased efforts in encouraging large-scale adoption of these technologies through the NAFAKA project.

5 PROBLEMS AND CHALLENGES

- i. In Babati district (maize-legume activities), largely due to absence of NAFKA project activities, no farmers' groups are yet formed which will make it very difficult to reach farmers on time either for input access or organized group trainings.
- ii. For the **rice team**, due to extreme weather events, extreme levels of salt and lack of water to wash the salt in the Magozi irrigation scheme, Iringa rural district, affected some of the demo plots (control) but also emphasized the good attributes of the salt tolerant rice varieties selected for promotion by the project.



Salt-affected soils with inadequate water to wash away the salt. On the right (in front of the lady with a blue skirt) is one of the salt tolerant varieties (SATO 1) being promoted by the project. (Credit: Charles Chuwa, ARI Dakawa)

- iii. For **vegetable activities**, two challenges have been noted. First, in Iringa rural district, the project team works with villages at a very high altitude (up to 2,000 m above sea level). This has strong implication on the demo plots. Owing to heavy rainfall and soil erosion, the soils lack bio-organic matter and minerals. The project team therefore emphasized the importance of using organic manure to improve soil quality. Furthermore, due to the high altitude, African eggplant seedlings in the nurseries required 6-7 weeks instead of 4-5 weeks before they could be transplanted to the demo plots.

- iv. Secondly, in the pilot villages located in Kilombero district, the project team noticed very intense competition for labor forces during the main vegetable growing season, because vegetables in Kilombero district are grown during the rice harvest season. Therefore, labor forces during this period of time are limited. However, the interest of farmers in vegetable production was still high so that the participation in training was sufficient. The reason for the high interest in vegetables in Kilombero district lies in the unbalanced food diets consisting of fish and rice. The local population is therefore eager to grow vegetables to improve the variety of food crops at home.

6 PLANNED ACTIVITIES FOR QR4, Year 2

6.1 General

- i. Annual outcome data analysis.
- ii. Annual review and planning meeting.
- iii. Participation of the project teams in the *Nane Nane* agricultural events.
- iv. Review of protocols, technology descriptions, training materials, work plans, and budgets developed by the teams.
- v. Planning to incorporate deliberate behavioral change activities in the next year, drawing from the experience of the NAFKA project.
- vi. Parameterization, calibration and validation of the Soil Water Analysis Tool (SWAT) or Agricultural Policy and Environmental Extender (APEX) models to simulate the impact of different agronomic practices on crop yields, run-off generation, soil erosion, soil fertility, and water conservation.

Specific activities for each team include the following:

6.2 Maize team

- i. Conducting field days in remaining sites (Mvomero district).
- ii. Harvesting the crops and processing the yield data.
- iii. Finalizing the writing of extension materials.
- iv. Developing work plans and budgets.
- v. Community feedback and planning meetings.

6.3 Rice team

- i. Finalizing development of training materials.
- ii. Yield data collection and processing.
- iii. Community briefing and planning meetings.
- iv. Development of work plan and budgets.

6.4 Vegetables team

- i. Selecting nine new pilot villages in Mbeya region in August/September 2016 and discussing a concrete training approach for 20-30 more pilot villages in the Mbeya region under the responsibility of CRS.
- ii. Finalizing development of training materials and work plans.
- iii. Training farmers in Iringa region.
- iv. Conducting a baseline survey covering all six pilot villages located in Iringa rural and Kilolo districts, Iringa region.

6.5 Post-harvest management and nutrition

- i. Refinement of a scaling strategy for the technologies will be formulated.
- ii. Training of farmers in Kilosa and Kilolo districts.
- iii. Developing work plans and budgets.

7 SPECIAL ISSUES

The vegetables team has made efforts to strengthen partnerships. The six villages in Kilombero, in which the project team established nurseries in collaboration with CRS, will be under the overall supervision of CRS. However, the technical trainings will be conducted by AVRDC/HORTI Tengeru. CRS and AVRDC plan to continue their collaboration in the Mbeya region. CRS is active in several villages located in five districts of the Mbeya region. For project Year 3 it is planned that AVRDC will train CRS extension staff in 6-9 pilot villages selected by AVRDC/HORTI Tengeru in the Mbeya region. The CRS extension staff will then disseminate the training content and AVRDC seed kits to farmers from up to 30 other villages located in the Mbeya region.

Furthermore, the private seed company 'Meru AgroTech' bought foundation seeds of AVRDC varieties from TOSCI/HORTI Tengeru and has already started seed multiplication. 'Meru AgroTech' also multiplies maize varieties for the Africa RISING maize team and has established favorable contacts with most of the input providers that were supported by the NAFKA project in Morogoro, Iringa, and Mbeya regions.

8 CROSS-CUTTING ISSUES

8.1 Gender integration

One of the key aspects on which the project is focused is to ensure participation by all community members (men, women and the youth). In locations such as Manyara region (Babati district), participation of female community members was low. Youth participation in all regions was also low. As a result, deliberate efforts have been put in place to ensure enhanced participation by these two categories of community members. The project team strongly encouraged the village extension officers and the chairpersons of the training groups to ensure that at least 50% of the training participants are female or young farmers (especially males). In many villages, the project team also encouraged women to become training group leaders, and this turned out to be very successful. In general, the stronger focus of the project team on integrating female farmers and young farmers led to favorable results. The participation of these categories has in some locations (especially in Morogoro, Mbeya, and Iringa regions) passed the 50% mark, partly due to deliberate efforts to seek out the female and youth beneficiaries.

The vegetables team also plans to enhance participation of women and the youth for the following reasons.

- i. The project concentrates on a) vegetable cash crops for local and regional markets (e.g., tomato and African eggplant), which are still mainly a man's business, and on b) traditional vegetables (e.g., amaranth and African nightshade) to increase the diversity of food crops available for households – mainly under female management. To reach those two goals, an equal participation of men and women is necessary.
- ii. The training sessions include also information on nutrition, the nutritional content of different vegetable crops, vegetable preservation, and food preparation. Those lessons are also directed to male household heads to improve their nutritional knowledge and help them to appreciate required changes required in household diets.
- iii. In most cases, men are still the owners of the land. To increase the production area for traditional vegetables in existing farm households, men need to be informed about the marketability and the value of nutritious vegetable crops.

8.2 Behavior change communication

During the field days and training activities for maize, rice, and post-harvest activities, deliberate group discussions and exchange visits have been organized to ensure that farmers' negative attitudes will change towards some technologies such as fertilizer use and the consumption of fortified foods. The project will draw from the efforts of the NAFKA project to implement successful behavioral change activities aimed at ensuring the sustained use of the technologies and innovations for improved production and nutrition among the beneficiary communities.

For the vegetables team, during the project interventions in Kilombero, Iringa rural and Kilolo districts, the project team noticed mainly the following changes in farmers' behavior.

- i. Seeding of vegetable crops such as African nightshade and tomato was previously done based on a very high density of seeds per area. The project team introduced farmers to other techniques such as mixing the seeds with sand or keeping a specific space between seeds (depending on varieties). This led to healthier seedlings and a reduced amount of seeds employed to produce the same number of seedlings. Farmers were therefore able to save money and improve the quality of their seedlings.
- ii. The majority of farmers, similar to our observations in Manyara and Dodoma regions, were not aware that Jute mallow is a domesticated vegetable crop and that it can be grown even during the off-season, when they cannot be found as a weed in maize fields. Jute mallow has a high nutrient content and is a popular crop especially in resource-poor households. The availability of an improved jute mallow variety (SUD 2) as part of the seed kits, increases the availability of this vegetable for farm households.
- iii. The two AVRDC African eggplant varieties, DB3 and Tengeru white, which were introduced with great success in the northern regions of Tanzania, are not the predominant varieties in the southern regions of Tanzania. The project team observed in the pilot villages a number of African eggplant varieties that were low yielding and had small fruits compared to DB3 and Tengeru white. Both AVRDC varieties have seen therefore a great uptake in Kilombero district villages and will most probably also be very successful in pilot villages located in the Iringa region.

8.3 Environmental compliance and natural resource management

The project plans to conduct a Pesticide Evaluation Report and Safe Use Action Plan (PERSUAP) with the NAFKA project in the course of the year (2016). In maize based activities, GAPs for the sustainable use of soil and water such as tied ridges in semiarid locations as well as legumes and the judicious use of fertilizers have been a strong focus of the training and demonstration activities. Using high yielding and more resistant crop varieties combined with improved production practices such as appropriate spacing to increase seedling and plant health, organic fertilizers, as well as other IPM practices may reduce the application of pesticides and chemical fertilizer which would help to reduce environmental pollution. The rice component has likewise focused efforts on the management of salt affected and calcareous soils as a key strategy for promoting proven innovations that will lead to their successful and sustainable use.

The vegetables team observed a high degree of soil erosion and loss of bio-organic matter in the soils of pilot villages located at higher altitudes in the Iringa region. The project thus emphasized the importance of using organic manure while preparing seed beds for vegetables to enrich the soil with bio-organic matter. Furthermore, farmers were trained on how to prepare raised seed beds and apply mulching to decrease soil erosion during heavy rainfall.

8.4 Monitoring and evaluation

During the current quarter, an annual outcome survey for the project was conducted, covering 572 households. Data will be used to report on the performance of the two outcome indicators for this project. The activity was completed close to the end of the current quarter and data analysis is not yet complete. Thus, outcome data will be reported next quarter. All teams actively collected and submitted data for reporting on all the output indicators and the achievements are indicated in Annex I. In general, the project is on track to realize the targets, despite the challenge of a change in leadership of the rice activities which is expected to affect the realization of the set targets, especially trainees, by 20%. At least 90% of all set targets for output indicators have been realized with some indicators surpassed, such as organizations worked with and number of farmers with home gardens. This is a healthy development for the project.

9 ANNEXES

Annex I: Performance against PMP indicators

Indicator	FY Target	FY Achievement	% FY Achievement	% Female	% Male
1. Number of farmers and others who have applied new technologies or management practices as a result of USG assistance	13,120				
2. Number of hectares under improved technologies or management practices as a result of USG assistance	9,400				
3. Number of individuals who have received USG supported short-term agricultural sector productivity or food security training	10,925	10,103	92.5	49.9	50.1
4. Number of food security private enterprises (for profit), producers' organizations, water users' associations, women's groups, trade and business associations, and community-based organizations (CBOs) receiving USG assistance	122	141	115.6	n.a.	n.a.
5. Number of rural households benefiting directly from USG interventions	7,200	7,057	98.0	46.9	53.1
6. Number of beneficiaries with home gardens or alternate crops as a proxy for access to nutritious foods and income	200	1,643	821.5	48.1	51.9

Annex 2: Success stories

None during the reporting period.

