

TRAINING OF TRAINERS TECHNOLOGY IMPLEMENTATION REPORT

Project Title

Climate smart options allowing agricultural intensification for smallholders in the dry zones of the Central Highlands of Kenya



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Summary

Training of trainer was conducted on 18th February 2021 to train the selected farmers on technology implementation and their advantages. About 60 participants who had been invited turned up for the training. The training was facilitated by VLIR-UOS team and extension officer from the ministry of Agriculture, Tharaka-Nithi County. The training session involved introduction of the VLIR-UOS project to the farmers, technology and trial management, data collection and creating awareness of the best fit technologies. Participants asked questions and raised their various concerns during the session which were addressed. The farmers acknowledged the effort of the project in enhancing livelihoods of the community. They also confirmed they had understood what is expected of them from the project and were ready to train fellow farmers and popularize the best fit technologies to enhance crop productivity and livelihood. The on-farm trials being used as demonstration plots are in the second cropping season of the project life and farmers vowed to visit the sites as they train their colleagues.

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1.0 Introduction

The second farmers' training (Training of trainers) was conducted on 18th February, 2021. The objective of the training was to train the selected farmers (Trainers) on the implementation best fit technologies that had been identified from the on-station trials. The selected farmers were then to train their fellow farmers on the same towards the popularization of the identified technologies for uptake and eventual adoption. In addition, the farmers who were implementing the on-farm trials for the VLIR-UOS project in the farms were retrained on the technology implementation and trial management in readiness for the second on-farm season (Long rains 2021). The on-farm trials are Researcher Designed-Farmer managed (Type II). The training was thus, key for effective trial implementation and management by the farmers. The training was based on a set of 6 treatments that had been had been identified for the implementation in each farm during the on-station farmers' field day plus a control (Table 1). The farmer had ranked these technologies as best performing and could also suit their farming conditions.

The 10 selected farmers had tested the technologies in their farm for the first on-farm trial (Short rains 2020) and were preparing for the second season of the on-farm trial (LR 2021). The farmer-managed on-farm trials are being used as training and demonstration farms to other farmers (Trainers of Trainers) in promoting up-take and adoption of the technologies among the community which is one of the objectives of VLIR-UOS project (IR 5). The training had targeted at least 50 trainers of trainers which was inclusive of both genders and different age groups. The training session was designed to be interactive with question and answer session after every sub-topic was covered to ensure clarity, and that all participants are engaged and active (Appendix 1).

2.0 Attendance and registration

About 50 farmers, 1 extension officer, 7 VLIR-UOS project team (Students, technician and scientist) and few other interested stakeholders were in attendance (Appendix 2). The extension officers and VLIR project team were the facilitators during the training. The interested stakeholder in attendance exhibited their products outside the training hall, which included the water pumps and solar energy sets that were also of interest to the farmers. Upon arrival, all participants registered at the entrance, were give face masks and sanitized their hands before taking a seat.



Plate 1 Participants registering at the entrance of the training venue

3.0 Prayers and opening remarks

The session began at 10.00 am with a word of prayer from a farmer. Each participant then introduced themselves before the training began for acquaintance with one another.

4.0 Training sessions

4.1 Session one: Introduction of the project.

After all the participants introduced themselves, Dr Kiboi introduced the VLIR-UOS project. She highlighted the project title and goals/objective, and elaborated on the purpose of the training. Farmers had chance to ask questions for clarity and further elaboration. The session was key in ensuring the discussions that were to follow were limited within the objectives set for the day. However, farmers had freedom to put across any other concerns that were of interest to them as regards farming and improvement of their livelihood.

Table 1 Treatments to be implemented on-farm

Serial	Treatments	Treatment abbreviation	Manure rate (N equivalent in Kg/ha)	Fertilizer rate (Kg/ha)	
				N*	P**
1	Manure plus fertilizer (moderate) plus Tied ridging	MF(M)Tr	30	30	90
2	Manure plus fertilizer (moderate) plus Conventional tillage	MF(M)Ct	30	30	90
3	Manure plus fertilizer (High) plus Tied ridging	MF(H)Tr	60	60	90
4	Manure plus fertilizer (High) plus Minimum tillage with residue	MF(H)MtR	60	60	90
5	Manure plus fertilizer (High) plus Conventional tillage	MF(H)Ct	60	60	90
6	MBILI- Managing Beneficial Interactions in Legume Intercrops (Moderate manure plus fertilizer)	MI	30	30	90
7	Control (No technology)	C	0	0	0

**Phosphorous

*Nitrogen



Plate 2 Dr Milka Kiboi introduces the project to the farmer during the training sessions

4.2 Session two: Technology implementation

Nathan Okoth (PhD) candidate, who has been working of the on-station trials steered the session. He explained why and how the technologies were identified and integrated. This was done by highlighting the problem they were to avert and how, towards improving agricultural productivity. He listed all the 12 technologies that were being implemented on-station, and explained how they were reduced 6 and a control for the on-farm trial implementation. He stated the chronology of events that lead to the selection of the final 6 best fit technologies while highlighting farmers' involvement in the selection process. He then explained the components of each technology and how they are to be implemented and managed for optimal outcome. During the entire session, farmers sort clarity which were addressed after the session. The session was key in ensuring the farmers understand the right way of implementing the technologies that were being promoted. It was the core of the training.



Plate 3 Mr Nathan Okoth train farmers on technology implementation during the farmers training

4.3 Session three: Manure and fertilizer management

Mr John Kangai, an agricultural extension officer in Tharaka-Nithi County conducted the session. He addressed the issues of improper manure and fertilizer use among the farmers which has been a major concern to the small-holder farmers. The notion among the farmers that fertilizer degrade arable lands as it makes it acidic and unproductive was also clarified. Manure use on the other hand was perceived as a traditional method of farming, thus there was little knowledge on proper usage, which has limited attainment of its optimal potential. Farmers concerns and questions were answered during the session as he continued with the training.

Mr Kangai explained how both manure and fertilizer were to be used, application rate, time of application and cautioned on the improper management of the resources in farming. The session help shed light on proper agronomic practices for better productivity. Thus, it was an important session to help avert the stereotyping the use of manure and fertilizer among farmers. It also helped create awareness on the benefits of fertilizer use and the various fertilizer types on the market.



Plate 4 Mr John Kangai train on manure and fertilizer management during farmers training

4.4 Session three: Post harvest handling

The session was jointly conducted by Jackline Kanana, Maureen Wairimu, Mercy Rugendo and Susan Muriuki from the university of Embu (VLIR team) assisted by Mr Kangai, the extension officer. They highlighted the importance of ensuring losses are minimised as much as possible considering productivity in itself is a big challenge in the developing countries. They emphasized how about 20% of the produce go to waste due to poor post-harvest management amidst productivity challenge, thus the need to address the issue.

The topics covered included harvesting the right way depending on the crop, drying methods and the recommended moisture percentage as per the crops of interest; threshing, winnowing and storage. Recommended storage pesticides were also highlighted aside from the use of hermetic bags. Farmers asked questions that were answered during the session.



Plate 5 Ms Jackline Kanana (Left) train on post-harvest handling assisted by Mr Kangai (Second left) who demonstrate how to use hematic storage bags



Plate 6 Ms Maureen Wairimu train on post-harvest handling during the farmers training



Plate 7 Ms Mercy Rugendo (Left) and Susan Wairimu (Right) as they train on post-harvest handling during the farmers training

4.5 Session four: Data collection

Mr Boniface Murangiri, the site technician tasked with day to day management of trials and data collection was the facilitator during the session. He listed the data to be collected, with special emphasis to the farmers who are implementing the projects on-farm trial. He also explained on proper maintenance of a clean and weed free pots.



Plate 8 Mr Boniface Murangiri train on data collection and experimental management during the farmers training

5.0 Farmers sentiments during the training

The farmers promised they would try the technologies in their farmers to help sensitize the rest of the community in effort to boost crop productivity and improve their living standards.

6.0 Closing remarks

A farmer gave a vote of thanks to the project and their entire team of facilitators. There being no further questions nor business, the training ended at 3.30 pm as farmers were released to visit the water pump and solar panel stands outside the training hall.



Plate 9 Farmers visiting solar and water pump stands after the training

Appendix 1 Training Programme for 18th February, 2021

Time	Activity	Facilitators
9.00 -9.10 am	Opening prayer and Introductions	Murangiri and A volunteer farmer
9.10-9.40 am	Project Introduction, Objective of the training	Dr. Milka Kiboi
9.40 -9.50 am	Question and Answers	Facilitators
9.50-10.30 pm	Technologies Implementation	VLIR students
10.30-10.40 pm	Question and Answers	Facilitators
10.40-10.50	Break	
10.50-11.20	Manure Management	MoA/VLIR Student
11.20-11.50	Fertilizer management	MoA/VLIR Student
11.50-12.20	Post-harvest handling of sorghum	MoA/VLIR Student
12.20-12.30	Question and Answers	Facilitators
12.30-1.00pm	Lunch break	
1.00-1.30 pm	Data collection and Way forward	All Facilitators
1.30-2.00 pm	Question and Answers	Facilitators
2.00-2.30 pm	AOB and Closing Prayer	Anybody

Appendix 2 Attendance during the 2nd ToT Training

SN	FARMER NAME	GENDER	LOCATION	AFFILIATION/ GROUP	CONTACT
1	Benjamin Murithi	M	Mutino	Sunculture	0721 217 616
2	Bernard Ngochi	M	Nkarini	Gatundu	0720 090 203
3	Tarasila Karimi	F	Nkarini	Kanyange	0729 670 859
4	Lucy Gatiria	F	Nkarini	Maendeleo B	0791 089 890
5	James Muchai	M	Nkarini	Mutaranga	0724 995 699
6	Paul Mutiria	M	Nkarini	Mutaranga	0711 855 769
7	Catheline Gaceri	F	Nkarini	Ndiuni	0716 986 289
8	Martin Mwasia	M	Nkarini	Maendeleo B	0712 379 288
9	Paulina Kanyaru	F	Nkarini	Kanyange	0724 211 574
10	Janet Karithi	F	Nkarini	Kanyange	0702 536 308
11	Regina Kanyamu	F	Nkarini	Kanyange	0797 612 211
12	Ziporrah Geofrey	F	Nkarini	Kanyange	0712 664 041
13	Christine Mumbi	F	Nkarini	Matendo	0704 718 157
14	Esther Mutiria	F	Nkarini	Matendo	0791 840 926
15	Kangai Njeru	M	Chiakariga	MOA	0724 504 681
16	Elias Kirimi	M	Nkarini	Tunka	0707 773 023
17	Peter Murithi	M	Nkarini	Tunka	0798 750 440
18	Joseph Ironzo	M	Nkarini	Tunka	–
19	Steven Simba	M	Nkarini	Tunka	0710 102 304
20	Florence Mwitha	F	Nkarini	Matendo	0713 618 033
21	Alice Kawira	F	Nkarini	Umoja	0718 077 122
22	Mary Njeru	F	Nkarini	Umoja	–
23	Nancy Gakii	F	Nkarini	Umoja	0717 191 674
24	Jane Kambura	F	Nkarini	Umoja	0708 703 101
25	Sabina Karimi	F	Nkarini	Umoja	0797 244 695
26	Faith Gatwiri	F	Nkarini	Maendeleo B	0759 531 313
27	Patrick Murithi	M	Nkarini	Kamunya	0759 629 674
28	Ziporrah Kambura	F	Nkarini	Kanyange	–
29	Doreen Muthoni	F	Nkarini	Kanyange	0759 589 635
30	Fridah Mwendu	F	Nkarini	Kanyange	0746 207 771
31	Lydia Kamuda	F	Nkarini	–	0758 401 599
32	Elizabeth Karigu	F	Nkarini	Matendo	0729 496 095
33	Peter Mwambe	F	Nkarini	Mutaranga	–
34	Angelica Kathambi	F	Nkarini	Mutaranga	0711 222 549
35	Ziporrah Gaceri	F	Nkarini	Gatundu	0703 381 855
36	Charity Gatwiri	F	Nkarini	Kaguni	0799 930 138

37	Catheline Kabiru	F	Nkarini	Maendeleo B	0716 204 535
38	Mary Joseph	F	Nkarini	Tuinuwane	–
39	Shandrak Kithaka	M	Nkarini	Maendeleo B	0712 300 502
40	Phillipine Kathini	F	Nkarini	–	0706 702 800
41	Esther Nanjara	F	Nkarini	Matendo	0706 621 358
42	Augustine Nthiga	M	Kithinu	Kithinu	0722 748 449
43	Fridah Kagendo	F	Nkarini	Mutaranga	0724 304 383
44	Monicah Muthoni	F	Nkarini	Gatundu	0792 121 405
45	Charity Muriungi	F	Nkarini	Digital	0742 478 802
46	Lucy Njagi	F	Nkarini	Upendo	0704 191 676
47	Virginia Kaguna	F	Nkarini	Mutaranga	0715 357 333
48	Seselina Ruguru	F	Nkarini	Mutaranga	–
49	Peter Kinyua	M	Nkarini	Mutaranga	–
50	Jerusa Kanini	F	Nkarini	2 in 1	0741 581 362
51	Joseph Mugambi	M	Nkarini	Tuinuwane	0700 308 246
52	Moreen Njenga	F	UoEm	VLIR-UOS	0707 069 347
53	Kanana Jackline	F	UoEm	VLIR-UOS	0702 585 869
54	Mercy Rugendo	F	UoEm	VLIR-UOS	0715 054 296
55	Susan Wairimu	F	UoEm	VLIR-UOS	0717 406 051
56	Murangiri Boniface	M	UoEm	VLIR-UOS	0711 329 490
57	Nathan Oduor	M	UoEm	VLIR-UOS	0713 192 633
58	Dr Milka Kiboi	F	UoEm	VLIR-UOS	0723 766 490