Report on farmers' field day (FFD) in Mlali Village, Kongwa District

27 April 2017

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FFD THEME: *"GOOD WAYS TO FEED & HANDLE THE CROPS AND LIVESTOCK THAT FEED US"*

Summary

This brief report highlights activities carried out during the farmers' field day (FFDs) held at Mlali village, Kongwa district in semi-arid areas of Central Tanzania on 27th April 2017. Following low and poorly distributed rainfall experienced this year in Kongwa and Kiteto, the FFD was only implemented in Mlali, being part of the KK internal review where KK partners had a three days' field visitation from 25 to 27 April 2017 in which team visited the districts of Kiteto, Iringa Rural and finally Kongwa where the team did participate in a one day field day at Mlali. The main aim for hosting this field day this time around was also to allow the KK team participate in this field day to learn on how it is conducted but more importantly the objectives were (i) Experience sharing and lesson learning among farmers (ii) Documentation of lessons during showcasing of various scaling out technologies under study and (iii) Gathering of ideas for spearheading of future implementation of the field days for enhanced technology take up.

Technologies showcased were proven technologies that are for scaling out and those included (a) nutrition and food safety, (b) Controlled poultry breeding for scaling (c) Soil water / soil fertility management technologies (c) pigeon pea seed production under community seed bank system and (d) mother plot containing technologies a "shamba darasa for farmers". With scarce and unevenly distributed rains in Kongwa and Kiteto this cropping season, the mother plot at Mlali seem to have performed far much better compared to the other villages (Laikala, Moleti, Chitego, Manyusi, Njoro & Kiperesa). The field day event brought together various stakeholders including farming communities, who are the key players of Africa Rising project, village and ward leaders, media; District Agriculture Officers, Ward Councillors and KK Researchers. A total of 1,062 farmers participated in the FFD event among at Mlali in which 349 were men and 713 were women.

Farmers had access to see a wide range of technologies showcased which have been tested over the last three seasons and also showcased during 2016/2017 cropping season. The major achievements made during FFDs include being able to showcase to farmers various Africa RISING technologies for scaling out – nutrition and food safety, Controlled community poultry breeding, in-situ soil water harvesting, soil fertility enriching technologies, pigeon pea seed production under community bank system and selection of drought tolerant quality protein maize suited to semi-arid locations. From farmers' key interests and enthusiasm that led to women and men farmers doing own clip recording of the occasion, it is imperative that AR develops brochures on (i) best ways of rearing / keeping improved chicken / poultry, (ii) the various food recipes that developed from food crops grown in semi-arid locations and (iii) Improved crop husbandry management practices for the semiarid locations.

It was noted that training on pigeonpea utilization must be introduced in Kongwa, Kiteto and Iringa Rural districts in order to increase domestic demand before thinking of markets. As Africa RISING phase two is a scaling out phase (about 80%) – seeds of selected best performing drought tolerant (DT) maize hybrids should be made available for immediate use in integration research activities. In addition, emphasis must be put for their earlier release.

Introduction:

The ICRISAT led component of the Africa RISING project works in the semi-arid ecologies of Kongwa and Kiteto to develop suites of technologies that will increase productivity of maize, associated cereals and legumes in the agro-pastoral communities of these districts. The project currently in phase two is looking at scaling out best fit technologies developed through participatory approaches coupled with the Innovation Platform arrangement that will increase output per unit input and hence the net benefits for farmers. Varieties for groundnut, pigeonpea, sorghum, pearl millet and maize with up to 120% yield advantage have been developed. Technologies focusing on cropping systems, soil and water improvement tested in the first phase are being out scaled to the farming communities. The Kongwa and Kiteto team has deployed the Innovation Platform (IP) as a way of generating feedback from users of technologies and also as avenue for scaling out. The IP has membership from village to district council level. From 25 to 27 April 2016 the Kongwa and a Kiteto (KK) field team had a three days' field tour of the research and scaling out activities in Kiteto, Iringa and Kongwa where it also met and interacted with district authorities, village extension staff and farmers in order to brainstorm on strategies to better scale out bets bet technologies and learning on gaps prior to its internal review meeting held on Friday the 28th April 2017.

The Field Day at Mlali

A one day field day was held at Mlali village on 27th April 2017 where technologies showcased were proven technologies that are for scaling out and those included (a) nutrition and food safety, (b) Controlled poultry breeding for scaling (c) Soil water / soil fertility management technologies (c) pigeon pea seed production under community seed bank system and (d) mother plot containing technologies a "shamba darasa for farmers". With scarce and unevenly distributed rains in Kongwa and Kiteto this cropping season, the mother plot at Mlali seem to have performed far much better compared to the other villages (Laikala, Moleti, Chitego, Manyusi, Njoro & Kiperesa). The field day event brought together various stakeholders including farming communities, who are the key players of Africa Rising project, village and ward leaders, media; District Agriculture Officers, Ward Councillors and KK Researchers (Table 1). A total of 1,062 farmers participated in the FFD event among at Mlali in which 349 were men and 713 were women.

Table 1: List of visitors who attended the farmers field day at Mlali.

SN	Name	Organization	Role / Title
1	Patrick Okori	ICRISAT-Malawi	Principal investigator, Design and oversight of the AR project activities
2	Yasinta Muzanila	Sokoine University of Agriculture (SUA)	Nutrition research and scaling out activities
3	Elirehema Swai	ARI-Hombolo	Researcher associate for soil and water management
4	James Njeru	CIMMYT-Nairobi	Maize Agronomy / Breeding Research
5	Anitha Seetha	ICRISAT-Malawi	Nutrition research and scaling out activities
6	Gloriana Ndibalema	IITA HQ Office - Arusha	Research Communication Assistant | Communication unit | Africa RISING Projects
7	Wills Munthali	ICRISAT Malawi	Research associate-breeding managing: Trial set up (on farm and on station experimentation), Community seed banks and FRNs.
8	Amos Ngwira	ICRISAT-Malawi	Research associate-on technical soil water measurements
9	Anthony Kimaro	World Agroforestry (ICRAF) - DSM	Soil Fertility Management research & scaling activities

10	Chrispinus Rubanza	University of Dodoma (UDOM)	Crops / Livestock Research & Scaling out activities
11	Said Silim	Former ICRISAT-Nairobi principal scientist (pigeon pea Breeding)	Invited guest
12	Ganga Rao	ICRISAT-Nairobi	Principal scientist pigeon pea & chick pea breeding
13	Peter Ngowi	ICRISAT-Dodoma	Coordinator for Africa RISING ICRISAT led activities in Kongwa, Kiteto, and Iringa Research & scaling up activities
14	Leon Mrosso	ARI-Makutopora	Director for Research and Development, Central Zone Regions
15	Jackson Shija	Kongwa District Council	District Agriculture, Irrigation and Cooperative Officer (DAICO)

Technologies Showcased:

1. Nutrition Stand

It attracted a lot of interest from women and men wanting to learn how the other women have had such improvements in their children. The interest could be seen in the women recording videos on their phones, the many questions they raised and the willingness to join the program especially after realising that all the ingredients for the food recipes are locally available.

Plate 1: Prof. Yasinta Muzanila training new mothers on the various food recipes. Pic by Wills Munthali

2. C**ontrolled community poultry breeding Stand**

Another stop that attracted farmers was controlled community poultry breeding for scaling out where farmers were so inquisitive which led to questions and answers session regarding feeds and drugs which Dr Rubanza and village extension officer handled nicely and with great confidence leading to more farmer wanting to be beneficiaries of chicks from this scaling out initiative.

As explained by Mr Lyoba, among the most important diseases that are a must to control for effective chicken production are the following thus;

Diseases and their treatments:

- New castle: (1st day - 7th day) we administer vaccine drops on eyes & glucose,
- Antibiotics, vitamins & Minerals - first aid for chicks and other types of poultry - Neoxychick formula for 3 - 5 days

- Gumboro: 14th day we administer a vaccine via drinking water for 1 hours only.
- Chicken pox (ndui): we administer a vaccine by piercing on a soft skin of elongated wing.
- Kuhara damu (Diarrhoea): We administer OTC Plus 20% through drinking water for 3-5 days
- Typhoid: we give them medicine called Typhoprim diluted in water, for 3-5 days
- Mafua (flue): We administer **Fluban** through drinking water for 3 days only.
- Worms: We administer **Ascarex** through drinking water for 1 day only
- Lack of vitamins: We administer egg boost multivitamin via drinking water after every one week

Plate 2: Mr Lyoba on the far right shows and explains to farmers on various types of vaccines administered to chicken plus answering specific questions on diseases hampering chicken rearing. Pic by Gloriana Ndibalema

3. **Tour of the Mother plot containing various research and technologies for scaling out**

From the poultry stand, farmers had chance to tour the mother plot (Plate 3) along the main road to *Pandambili (Mbandei)* where among activities that famers saw and participated in the evaluation and selection of best entries for drought tolerant (DT) quality protein maize.

A **B**

Plate 3: Participants receiving briefing on the side of the trial sites (B). Farmers move around the maize plots as they observe different varieties (A).

Evaluation criteria development

Farmers developed own selection criteria through focused group discussion (Table 2) and used it to assess the 42 maize entries. This was led by James Njeru (from CIMMYT) and Wills Munthali (from ICRISAT). A group consisting of 36 participants disaggregated by gender was randomly selected. Fifteen (15) males and 15 females were requested to separately give the aspects of the maize crop

that they would prioritize in determining the best maize variety. The aspects listed were then ranked to give two criteria, one developed by men and another developed by women. The idea was to capture the needs of both male and female in maize variety selection.

Table 2: Participatory developed criteria by farmers' focused group discussion disaggregated by gender

Participatory developed Criteria		
Priority	***Desired Aspects***	
	Men	***Women***
Highest priority	Drought tolerant	Drought tolerant
	Early maturity	Early maturity
	Better husk cover (*closed cob tip*)	High yielding
		Tolerant to disease and insect pests
Medium priority	Many cobs per plant	
	Big cob	
	Big stem	
	Disease tolerant	
	Large maize grain	

Each criterion developed was then used by 15 males (*for males developed criterion*) and 15 females (*for females developed criterion*) to assess the maize entries in the demonstration plots. The group walked around the plots independently assessing the maize crop and recording the plots they found to possess the desired aspects (Table 3).

Table 3: Number of times the entries were selected by the focused group during the participatory evaluation of the 42 maize entries tested in a mother plot field at Mlali on 27/04/2017.

Entry	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**
Male scores		2				1	3	5	1				3	2	2	1		3	6		
Female scores	1	1	2	6		2	1	4	1				1	2	1						
Total Scores	**1**	**3**	**2**	**6**		**3**	**4**	**9**	**2**				**4**	**4**	**3**	**1**		**3**	**6**		

Entry	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**
Male scores	2	1			1		2		4		3		4	1	1		2	1	1	3	2
Female scores				4				1	3	1										1	
Total Scores	**2**	**1**		**4**	**1**		**2**	**1**	**7**	**1**	**3**		**4**	**1**	**1**		**2**	**1**	**1**	**4**	**4**

The remaining 6 participants consisted of three (3) females and 3 males and were treated as control. They were simply requested to walk around the demonstration plots and choose the maize entries they considered the best then give their reasons for consideration (Table 4).

Table 4: Number of times the entries were selected by the **control group** during the participatory evaluation of the 42 maize entries tested in a mother plot field at Mlali on 27/04/2017.

Entry	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**
Male Scores																			1		3
Female Scores								3													

TOTAL								**3**											**1**		**3**

Entry	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**
Male scores											2						1				
Female Scores											2										
TOTAL											**4**						**1**				

The following were the reasons given for selection made by the control group.

8 - Early maturity, good cob position and vigorous growth
19 - Healthy crop
21 - Two cobs per plant, early maturity
32 - Healthy, big and strong cobs.
38 - Drought resistant

Focused Group

SN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Entry	8	30	19	4	7	13	14	25	34	41	42	2	15	18	32	6	3	9	22	28	38
Ranking	9	7	6	6	4	4	4	4	4	4	4	3	3	3	3	3	2	2	2	2	2

Focused Group - continued

SN	22	23	24		25	26	27	28	29	30	31
Entry	1	16	23		26	29	31	35	36	39	40
Ranking	1	1	1		1	1	1	1	1	1	1

Control Group

SN	1	2	3	4	5
Entry	32	8	21	19	38
Ranking	4	3	3	1	1

From the selection made by both groups (*i.e. the focused group and the control group*) it is obvious that from the 42 entries tested at Mlali the CIMMYT researcher should narrow down to **21** entries that should further be tested across locations to determine their performance meanwhile ensuring that seed increase for the parental lines for these hybrids is effectively done.

Earlier observation at Mlali has indicated that the following entries were the extra early ones among the 42 entries tested at Mlali & Chitego as their cob husk covers had dried up. Six (*coloured in yellow*) out of seven entries extra early entries are among the entries selected by the focused group at Mlali during the participatory DT maize variety selection exercise.

SN	Entry	Remarks
1	28	Extremely dry
2	41	Dry
3	7	Extremely dry
4	26	Dry
5	5	Extremely dry
6	8	Dry
7	25	Extremely dry

4. **Natural Resource Management (Soil-Water)**

Also, farmers had chance to tour in-situ water harvesting trials at the mother plot where this scaling out strategy vividly put across an understanding to farmers that it is the way to go if farmers should realize crop yield under semi-arid conditions of Kongwa and Kiteto districts whose rains are unreliable, intermittent and erratic.

Mr Elirehema Swai (ARI-Hombolo) centre and far right explains to farmers in-situ water harvesting using tied ridging integrated with inorganic fertilizer application. Pic by Peter Ngowi

5. **Natural Resource Management (Organic & Inorganic fertilization)**

Farmers had chance to visit a trial of Gliricidia trees, pigeon pea intercropped with maize and organic fertilization of the soil (micro-dozing). Farmers were reminded on the importance of ensuring that they have a good plant populations by adhering to row planting with proper spacing; and that their soils wold only provide reasonable yields by applying fertilizer micro-dozing rate recommended. Farmers have also been taught on the importance of in-situ water harvesting coupled with tied ridging and fertilization (organic & inorganic fertilization) towards improved productivity.

Dr Kimaro (ICRAF-TANZANIA)-front explains to farmers and Africa RISING scientists on Agroforestry and micro-dozing technology at Mlali Mother Demonstration site.

6. **Pigeon pea seed production under the community seed bank system**

Improved pigeon peas varieties have been introduced in both Kongwa & Kiteto, however, farmers have been reminded that their maximum yields would only be realized under good management including proper spraying against pod borers at flowering as explained to the farmers by Dr Silim in the below photo.

Dr Said Slim sharing with farmer's skills for pigeonpea production. Pic by Wills Munthali

Lessons Learned and Suggestions for effective / productive FFDs in the future by Dr Silim

- Dr Silim was very impressed with the turn up of farmers during the field day especially that there were a lot of women and of varying ages. It's a good platform for technology dissemination he said.
- Dr Silim also observed that driving through the villages, there was a lot of maize failure but a lot more sorghum and pearl millet survived. What message does this give us (kk researchers)?!
- Dr Silim said use of community seed banks for scaling out is a very good start but it is very important for farmers to observe isolation distances especially for pigeonpea; further training must be provided.
- Dr Silim also said training on pigeonpea utilization must also be offered to increase domestic demand before thinking of markets.
- Dr Silim was impressed that most of the new technologies have done well compared to the local ones. But he said the question is how do KK scientists translate this success into meaningful outcomes - focussing on adoption of improved new technologies is an issue that KK research partners should pay the most attention to!

Lessons learned from the FFD at Mlali

- Logistics mobilization needs to be strengthened / improved in the future - when we have so many farmers in a FFD we need to clearly set up plan on how to walk them through walk ways, farmers must be arranged in groups of equal numbers for effective learning.
- Some of the demonstrations at the mother plot were at the back the soil fertility / intercropping experiments - such set up is difficult for farmers to observe and learn. However, it was learned that it is because seeds / materials for planting were sent late which led to (AR) being allocated to left-over land which does not suit AR purpose and objective[s]. All demos should be by the road side or in a place where a mass of people (church, shifting market place etc) where farmers and other persons could easily access and can learn

Conclusions

The main objective of conducting farmers' field days (FFDs) is to gather the rest of the other farmers in farming a community to come and learn on new technologies (crops and livestock) so that they apply what they have learned to improve on their farming ways for enhanced productivity and livelihood; while at the same time they pioneer in spread what they have learned to other fellow farmers in a community. In order to ensure farmers, learn correctly on the new technologies, AR (KK) should consider doing the following thus

(i) Developing small leaflets (brochures) on thus;

- best ways of rearing / keeping improved chicken / poultry,
- the various food recipes that developed from food crops grown in semi-arid locations.
- Improved crop husbandry management practices

(ii) Training on pigeonpea utilization must also be offered to increase domestic demand before thinking of markets.

(iii) Africa RISING phase two is a scaling out phase (about 80%) – seeds of selected best performing DT maize (hybrids) should be made available for immediate use in integration research activities. In addition, emphasis must be put for their earlier release.