

Tracking changes in productivity amongst iShamba subscribers



1. Background

iShamba is a SMS subscription services available to Kenyan farmers. Upon subscription, users get the following benefits:

- Phone-in and access to iShamba call centre of agronomy experts.
- Unlimited SMS questions to and responses from the call centre.
- Monthly-localized tips with market prices for 2 crops, weekly weather forecast and general agri-tips specific to 2 selected crops.
- iShamba partners use the same platform to offer discounts from time to time.

This reports presents the production outcomes for baseline and follow up across subscribers and non-subscribers on different two crops, maize and potato, and two livestock, dairy and poultry. A baseline survey was carried out in 2014 and a follow-up survey followed in 2015.

2. Approach

Table 1. Baseline outcome

Contact outcome	N= 3,254
Successful	45%
Not going through / mteja	13%
Non-farming household)/not a decision maker	13%
Not picking up	10%
Asked to call later	7%
Refused/disconnected	5%
Name/number not matching but respondent known	2%
Wrong number	2%
Not clear/ could not hear	2%
Other	1%
TOTAL	100%

Over time, Mediae built up a database of telephone numbers of Shamba Shape Up (SSU) TV viewers who had sent in a Short Message Service (SMS) requesting for leaflets or additional information. From this database, 3,254 names were randomly selected from three regions, which had large numbers of rural participants (Central, Eastern and Rift Valley).

In November/December 2014, telephonic contacts were made with the 3,254 names and 1 in 4 (43%) (1,444 respondents) were successfully interviewed telephonically by use of a 20-35 minutes structured survey on maize, potato, dairy, and poultry production.

From the successful contacts, names were then randomly selected to receive an SMS saying "*to reward you for being a SSU viewer we are giving you a 6 month's subscription to iShamba. ...*" Another random selection of names received an SMS saying "*SSU is interested to find out more about its viewers, somebody may call you in the coming weeks to have a chat*".

In September 2015, 572 subscribers to iShamba and 405 non-subscribers were contacted for a telephonic survey using a similar tool as baseline. By this time, subscribers had received the service for at least 6 months. Of these 682 were successful (361 subscribers and 321 non-subscribers).

In both rounds of data collection interviewees, had to be households that were reliant on maize, potato, dairy or poultry as a source of livelihood in the 6 months preceding the survey. All interviewees had to be decision makers and well placed to respond to the questions.

3. Sample Demographic

As per the basic demographics presented in table 2, the samples at the two rounds of data collection were identical:

- 7 in every 10 of the interviewees were male, which is a reflection of the database of SSU viewers who SMS for leaflets/more info.
- The majority are the mid-ages of 36-66 years and about 40% have been past secondary school.
- Subsistence farming is the mainstay for most of the households, though a good number do have business.

Checking on the comparability of the subscribers and non-subscribers at follow up, here too they are similar, the difference across the demographics are within the margin of error (+/-7%) and therefore statistically insignificant.

Table 2. Sample profile

		Baseline 1,444	Follow up 682	iShamba Subscriber 361	Non iShamba Subscribers 321
Average land under cultivation* (Acres)		3	2	2	2
Gender	Male	72%	70%	73%	67%
	Female	28%	30%	27%	33%
Age	35 or below	28%	23%	23%	24%
	36- 55 years	57%	62%	60%	64%
	Over 55	14%	15%	17%	12%
Education	No formal education/nursery	1%	1%	1%	0%
	Primary	12%	11%	13%	10%
	Secondary	44%	48%	46%	51%
	Post secondary	43%	40%	41%	39%
Livelihood	Own farming	57%	53%	55%	52%
	Employed agri or non-agri	25%	32%	34%	31%
	Business	10%	14%	10%	17%
	Other	8%	0%		
Relation to head	Head of household	78%	76%	80%	72%
	Spouse of household head	17%	20%	16%	24%
	Other	5%	4%	4%	4%

*Land cultivated at place where they live, land cultivated elsewhere is not included

Analysis comparing changes between subscribers and non-subscribers across baseline and follow up was restricted to the 682 respondents interviewed at baseline and follow up.

4. Crop Production (maize and potatoes)

iShamba committed to increasing productivity of maize and Irish potatoes. Questions looked at “the last season” and the time referenced varied by location. Amount of land put under maize cultivation, costs associated with the production and yield were sought. Yield in terms of different units of measurement, tins, sacks, debe, etc were used then at analysis it was converted into Kgs.

Maize: the averages for the various measures are presented below. Generally, the trend seems to point at reduction in amount of land under maize production while the cost of production has remained constant.

The variable of interest was yield per acre and the median had increased amongst subscribers and non-subscribers. Even the average measure for yield per acre shows a similar trend and the percentage increase (44%) was identical for the two groups. Given that both segments recorded an increase, the change is not attributable to iShamba but to other factors.

The October to December 2014 short rains¹ were well below average this is the period/season referenced at baseline. At follow up the time reference/season ended around September 2015 and it was characterized by normal rainfall; this would be a key factor driving productivity.

The amount of money received from selling the crops was little since majority of them were used for subsistence Secondly at follow-up a number of households had stored their crops waiting to sell them when the market prices increase, hence the median is zero (0).

Table 3. Maize production

	Baseline			Follow up		
	Total (521)	Subscriber s (268)	Non Subscriber s (253)	Total (549)	Subscriber s (295)	Non Subscribers (254)
Maize production last season						
Average acreage under maize (acres)	2.42	2.20	2.64	1.27	1.22	1.34
Average costs of production (Ksh)	10,263	9,103	11,512	10,889	9,125	12,937
Average harvested last season Kgs	1,326	1,220	1,437	1,164	1,103	1,234
Average yield/acre - (harvested/acres) Kgs	757	762	766	1,127	1,091	1,110
Average money received from sale last season (Ksh)	21,429	24,010	18,875	13,456	13,348	13,582

Respondents pointed out various sources of information on maize production. Given that all had interacted with Shamba Shape Up, it is not surprising the TV was a key source. Half of the iShamba subscribers mentioned the SMS service as a source of information. Subscribers do have multiple sources of information on maize and creativity /novelty is needed for message prominence.

¹ GOK, WFP, FEWS NET online publication, January to June 2015 Kenya Food Security Outlook, 2015 October 2015, Tracking changes in productivity amongst iShamba subscribers

Table 4. Source of information on maize production

Sources of info on maize production in the past 6 months	Baseline			Follow up		
	Total	iShamba	Non iShamba	Total	iShamba	Non iShamba
	(521)	(268)	(253)	(549)	(295)	(254)
1. Radio	14%	15%	13%	21%	20%	21%
2. TV	52%	53%	51%	62%	63%	61%
3. Newspaper/magazine	11%	11%	11%	16%	13%	20%
4. Family/friends/neighbours	24%	24%	24%	35%	38%	32%
5. Agro-dealer shop or agent	9%	7%	11%	11%	8%	15%
6. Agricultural/ vet officer	22%	22%	22%	22%	19%	26%
7. Posters	1%	1%	%	5%	5%	6%
8. Agricultural shows	11%	11%	12%	11%	9%	13%
9. SMS message from a company	2%	1%	3%	31%	51%	8%
10. Made a call to a call centre	12%	15%	10%	1%	2%	0%

TV was seen as the source that gave the most useful information amongst the two groups, whereas the SMS service gave the most useful info to the subscribers, on-users pointed at agricultural officers. Where possible, channels should be put into place to ensure that messages sent on the platform are aligned/consistent with those from agricultural officers. One possibility is to subscribe all identifiable agricultural officers to the services.

Table 5. Most important source of information on maize production

Most useful source of info on maize production in the past 6 months	Baseline			Follow up		
	Total	iShamba	Non iShamba	Totals	iShamba	Non iShamba
	521	268	253	549	295	254
1. Radio	2%	2%	2%	3%	1%	6%
2. TV	41%	40%	42%	30%	28%	32%
3. Newspaper/magazine	3%	4%	3%	4%	3%	5%
4. Family/friends/neighbours	13%	13%	14%	15%	18%	12%
5. Agro-dealer shop or agent	5%	4%	6%	4%	2%	7%
6. Agricultural/ vet officer	11%	12%	11%	10%	8%	13%
7. Posters	0%	0%	0%	1%	2%	1%
8. Agricultural shows	3%	4%	3%	2%	1%	2%
9. SMS message from a company	1%	1%	2%	15%	25%	4%
10. Made a call to a call centre	5%	7%	4%	0%	1%	0%

*Table excludes those that said none

Potatoes acreage dropped at follow-up, possibly with a poor yield in the prior season farmers cut back on investing in the crop. They spent about the same amount of money in the two seasons, and yield per acre grew substantially for both subscribers and non-subscribers. There is a significant difference in the yield per acre for

the subscribers, with subscribers recording nearly twice the yield compared to non-subscribers. The significance of increased potato production is reinforced by the finding that iShamba subscribers recorded sales twice that of non-subscribers.

Table 6. Potato production

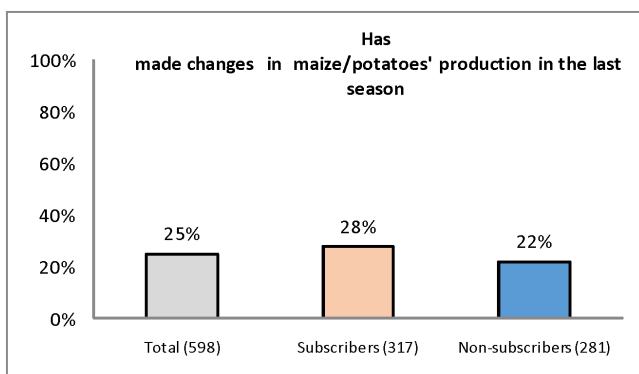
	Baseline			Follow up		
	Total	Subscribers	Non subscribers	Total	Subscribers	Non subscribers
Potatoes production in the last season	(311)	(174)	(137)	(202)	(112)	(90)
Average acreage under potatoes (acres)	1.07	1.05	1.10	0.5	0.6	0.5
Average costs of production Ksh	7,449	7,825	6,972	7,395	8,771	5,681
Average harvested last season Kgs	730	726	734	983	1,230	676
Average yield/acre - (harvested/acres) Kgs	614	657	559	1,825	2,039	1,559
Average money received from sale last season (Ksh)	8,791	9,790	7,523	16,491	21,329	10,470

In relation to sources of information on potatoes production, generally the trend was similar to that of maize with a half 51% of the subscribers pointing at the SMS service as a source that they have used. Similarly, a quarter (25%) of the subscribers mentioned the SMS service as the most useful source of information.

Table 7. Most important source of information on potato production

Most useful source of info on potatoes production in the past 6 months	Baseline			Follow up		
	Total	iShamba	Non iShamba	Total	iShamba	Non iShamba
	311	174	137	202	112	90
1. Radio	5%	4%	7%	4%	2%	7%
2. TV	32%	30%	35%	29%	31%	26%
3. Newspaper/magazine	2%	2%	3%	3%	4%	2%
4. Family/friends/neighbours	18%	17%	18%	12%	10%	14%
5. Agro-dealer shop or agent	3%	5%	1%	6%	4%	9%
6. Agricultural/ vet officer	9%	10%	8%	7%	4%	11%
7. Posters	0%	1%	0%	3%	3%	3%
8. Agricultural shows	5%	5%	5%	4%	3%	6%
9. SMS message from a company	3%	3%	2%	14%	25%	1%
10. Made a call to a call centre	5%	6%	4%	4%	2%	7%

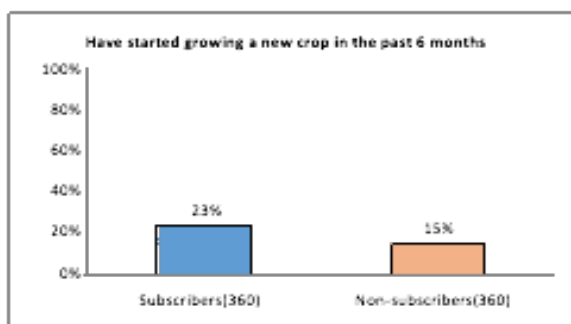
Making changes in maize /potatoes production: 28% of iShamba subscribers answered in the affirmative when asked about making changes in the production of the two crops compared to 22% amongst non-subscribers. The difference between the two is only marginal.



The changes made related mainly to fertilizer/manure application, spacing and intercropping. The top two sources of information on these changes for subscribers have been family/friends (48%) and SMS service (48%) while for non-subscribers it was predominately friend/family (50%) being the second most mentioned source at a distant 19%.

Fig 1. Changes in potatoes/maize production

The number of people that started growing a new crop was higher amongst subscribers (23%) compared to non-subscribers (15%), the difference is statistically significant. The crops they had started growing varied, however the most mentioned crop was tomato. Social networks (friends/family) and TV have been the main source of information on the new crop for both subscribers and non-subscribers.



Where did you learn about the "new" crop	Subscribers (82)	Non subscribers (46)
Family/friends/neighbors	45%	35%
TV	21%	15%
Agricultural/ vet officer	12%	9%
SMS message from a company	11%	4%

*Top mentions

Fig 2. Growing new crops

5. Dairy production

The survey looked at productivity in the dry and wet season in the 6 months preceding the survey. Dry months are characterized by scarcity of pasture and the table below presents different measures relating to this season. The focus is the average yield per cow, and here there is hardly any change between the two groups (subscribers and non subscribers) across the two rounds of data collection. Cows milk went up by 2 litres among the iShamba subscribers as compared to 1 litre for non-iShamba subscribers, this was as a result of the information they received from iShamba experts and Agri-tips on how to manage dairy especially the lactating cows. However, the average amount of money did not increase since the amount of milk produced during wet season was more as a result of feed availability thus milk supply was higher than the demand in market leading to a decrease in market prices.

Table 8. Dairy production

Dairy production dry season	Baseline			Follow up		
	Total	Subscribers	Non Subscribers	Total	Subscribers	Non Subscribers
	(417)	(223)	(194)	(359)	(188)	(171)
Average no of cows milked in the dry months	1	1	1	2	2	2
Average no. of litres in the dry month	11	13	8	10	11	9
Average no. of litres sold in the dry month	8	10	6	10	13	7
Average amount of money received per day from milk sales in the dry month	353	440	239	310	342	275
Average yield/cow in the wet months (litres)	8	8	8	9	11	8

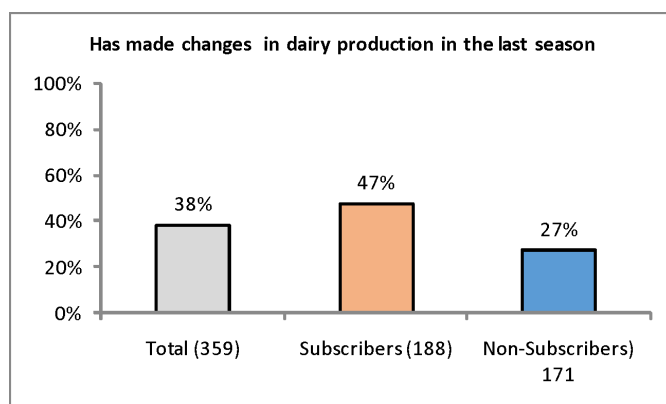
Most important source of information on dairy production

Respondents listed the sources that gave them the most useful information on dairy production as per table 9 below. The trend was similar as that of crop production: TV, family and agricultural officers topped the list with SMS message from a company taking second place for subscribers. The numbers of people that mentioned SMS messages, as the most important source is similar to that under crop production; a reflection that it was the same respondents rating this source for both crop as well as dairy production.

Table 9. Most important source of information on dairy production

Most useful source of info dairy in the past 6 months	Baseline			Follow up		
	Total 417	iShamba 223	Non iShamba 194	Total 359	iShamba 188	Non iShamba 171
1. Radio	6%	5%	6%	4%	3%	5%
2. TV	37%	43%	40%	29%	28%	29%
3. Newspaper/magazine	4%	3%	3%	3%	2%	4%
4. Family/friends/neighbours	13%	14%	13%	12%	12%	13%
5. Agro-dealer shop or agent	3%	3%	3%	4%	2%	6%
6. Agricultural/ vet officer	14%	12%	13%	14%	11%	18%
7. Posters	0%	0%	0%	1%	0%	1%
8. Agricultural shows	6%	5%	6%	6%	5%	6%
9. SMS message from a company	1%	2%	1%	14%	25%	2%
10. Made a call to a call centre	0%	0%	0%	0%	0%	0%

Changes in dairy production



Whereas nearly half of the subscribers had made changes to their dairy production under a third of non-subscribers reported likewise, this difference is significant. These changes included feeding, improving breeding through artificial insemination, vaccination and building sheds. For subscribers the main sources of info that triggered changes were TV (46%) and the SMS message (44%), while for non-subscribers it was TV (48%) and agriculture officers (26%).

6. Poultry production

The variables of interest are highlighted; the median number of birds that reached maturity in the past 6 months has grown for both subscribers and non-subscribers, with the former recording a 33% increase while the latter recorded a 50% increase. Further the median number of eggs has increased and the trend is similar where non-subscribers recorded a higher increase. Increase in egg production is partly attributed to increased number of birds reaching maturity. With the two variables the trend points at a steeper increase amongst non-subscribers.

These were not commercial farmers and with median amounts for sales of chicken recorded as zero, the birds were consumed at home rather than sold.

Table 10. Poultry Production

Poultry	Baseline			Follow up		
	Total	Subscribers	Non subscribers	Total	Subscribers	Non Subscribers
N	(465)	(238)	(227)	(395)	(217)	(177)
Average birds that reached maturity	59	39	80	77	56	103
Average number of birds sold past 6 months	30	16	45	32	22	44
Average Kshs gotten for sale of chicken past 6 months	13,153	7,437	19,173	10,735	10,900	10,534
Average eggs per week	151	231	68	119	104	137
Average eggs sold per month	98	97	98	345	274	432
Average Ksh gotten from sale of eggs per month	2,781	3,019	2,532	5,899	6,478	5,190

Sources of information on poultry; overall the ordering of sources of information is similar to crop and dairy. Consistent with earlier findings; subscribers mentioned TV (30%) and SMS (30%) as the top two in terms of providing most useful information.

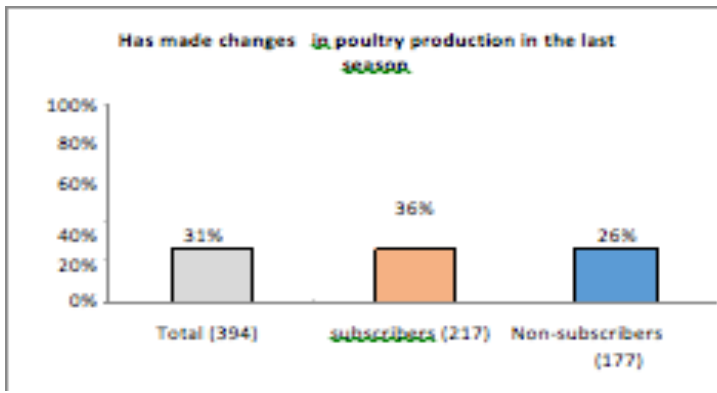


Fig 4. Changes in poultry production

A third of subscribers and a quarter of non-subscribers reported making various changes in their poultry production. And as was case with the two crop and dairy, subscribers attributed it to TV (50%) and the SMS messages (47%), while for non-subscribers it was mainly TV (48%).

7. iShamba a source of information

iShamba subscribers are most likely to indicate that they receive weather (61%) or market prices information (73%) compared to non-subscribers and amongst subscribers the source of that information was iShamba (over 85% of the mentions) while for non-subscribers for weather it was mainly TV/radio.

Probed specifically about iShamba weather/market prices, 5 in 10 found the information accurate while 6 in 10 reported the same for weather forecasts. However a substantial (22%) proportion of subscribers did not received the market prices.

90% rated iShamba as useful and the main reasons put forward for this were:

- The **SMS** programs are educative (26%)
- Answers farmers questions and enquiry (23%)

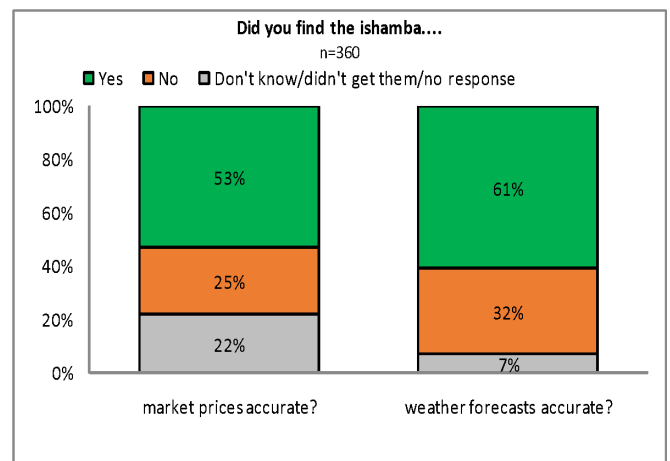
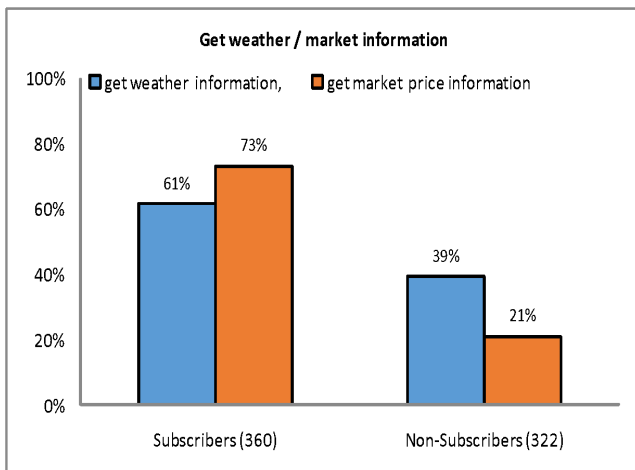


Fig 5. iShamba weather and market information

Table 11. Willingness to pay for iShamba

iShamba is now free. If you could get information on more crops or livestock messages each week, how much would you be willing to pay to do that per month?	iShamba Subscribers			
	Total	Central	Eastern	R. Valley
	360	179	72	109
20 Ksh	43%	47%	43%	35%
50 Ksh	36%	36%	32%	38%
80 Ksh	20%	13%	25%	28%
800 Ksh	1%	3%	0%	0%

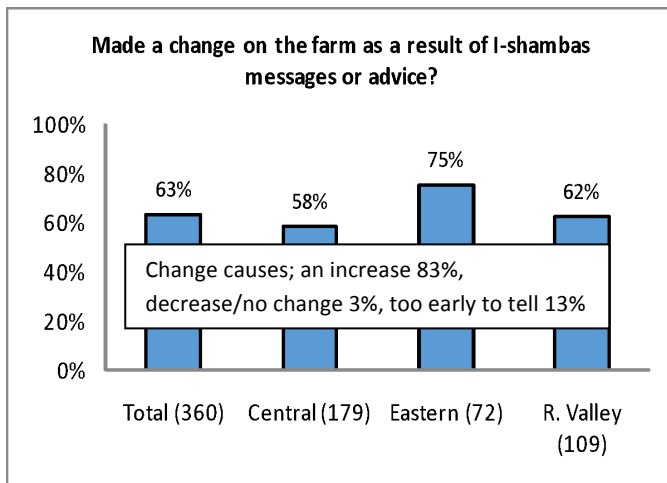


Fig 6. Self reported changes as a result of iShamba messages/ advice

95% of the iShamba users found the information easy to understand, while close to two thirds (63%) made a change as the result of the messages, with subscribers in Eastern more likely to have made a change compared to their counterparts in the other two regions.

Of those that made a change, 8 in 10 reported increased outputs.

Specifically the changes reported as a result of iShamba related mainly to (i) feeding, (ii) vaccination.

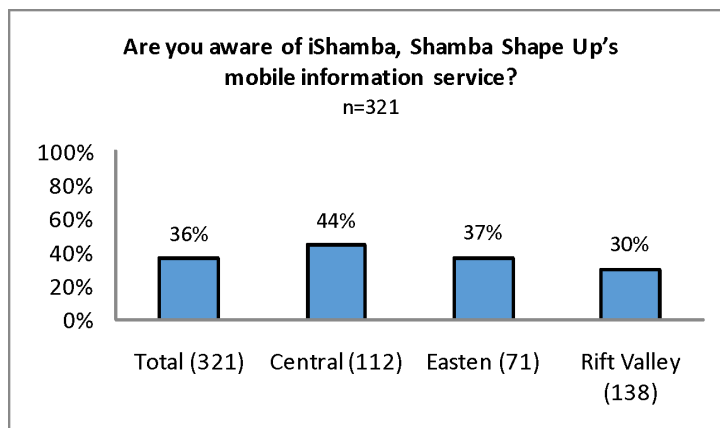


Fig 7. Non-subscribers awareness of iShamba

Over one third (36%) of those that were not subscribers to iShamba were aware of the service.

Conclusion

iShamba subscribers generally had positive feedback about the service and stated that they found the information to be useful. Although it was widely reported that these changes made a difference to farm production, tracking outputs/yield across baseline and follow-up do not necessarily confirm the same for maize and dairy production. However, looking at potato production shows that there was a significant increase in yield output amongst iShamba subscribers. This substantial finding could be explained by the fact that potato is a relevantly new crop in Kenya compared to e.g. maize. Therefore, it is likely that farmers are more willing to change practices around growing this crop and adopt new practices, as they would be regarding crops that have been farmed in the same way for generations such as maize. Moreover, potatoes are grown as a cash crop, with an existing market and are not grown solely for own consumption.

It is important to understand how exactly iShamba has contributed to change through more in-depth qualitative research intended to measure the “nature of change” as opposed to how widespread the change is. Subscribers receive information from multiple sources including agricultural officers and where possible the latter should receive similar messages for reinforcement. A follow up survey would help identify the impact of iShamba more clearly and also shed insights in to how the service can be adjusted to evoke an even greater impact on crop production and income of farmers across different crops.