Outcome Panel Survey

Baseline Report -Tanzania

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1.0   COUNTRY BACKGROUND

Tanzania is one of the East African countries, bordering Kenya to the South. It has a population of 44 million, and a little over half (23 million) of which are female[1]. It is a well-documented fact that there has not been some significant success in poverty reduction in Tanzania despite a decade of sustained GDP growth (ADB, 2006). Indeed even if GDP growth has averaged 7% in the last decade, the majority of Tanzanian particularly those living in rural areas are still living in poverty (Osberg and Bandara, 2012). The 2007 household budget survey (HBS) estimates indicate that over a third (33.6 percent) of the Tanzanians lived below the basic needs poverty line. While poverty is still very much a rural phenomenon, it is important to note that the majority of the poor engage in small scale farming. Indeed, according to Mnenwa and Maliti (2010), the source of economic livelihood for 74% of the poor in Tanzania is agriculture. It therefore follows that any effort to transform the livelihoods of the poor in Tanzania should necessarily involve transforming the agricultural sector.

It should be noted that the contribution of agriculture to the overall economy has declined over the years due to poor productivity (the ratio of physical output over the physical factor input) in the sector. Indeed, in the period 2001-2007 when industry and service sectors grew at almost 13%, agricultural sector grew at a meager growth of 4.5% annually an amount that is inadequate as far as raising the living standards of the poor is concerned (Osberg and Bandara, 2012). Note that this situation is not peculiar to Tanzania as Gollin et al., (2012) point out that in the developing world agricultural workers are only one-quarter as productive as workers in the rest of the economy. This situation implies that there is an acute level of labor misallocation in the agricultural sector in developing countries such as Tanzania. It follows from this that the lack of inclusive growth in Tanzania can partly be explained by having too many workers employed in a non-productive agricultural sector (Gollin et al., 2012).

It is not surprising then that historically, the rate of growth in productivity of agriculture has largely determined the differences in poverty reduction levels across the word (DFID, 2004). Indeed while Asia's productivity gains from the green revolution are credited for increased farmers' and labors' incomes and wages respectively as well as helped to lower the price of food making it affordable to the poor in the region, stagnation in agricultural productivity is blamed for absolute poverty levels in Sub-Saharan Africa (DFID, 2004). It is against this background that

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[1]   URT, National census 2012

this report seeks to establish baseline indicators to allow for an impact assessment of AGRA's initiatives in Tanzania, whose main goal is to bring about agricultural transformation in the country.

Note however that while increasing productivity in agriculture is widely accepted as the single most potent strategy to promote inclusive growth in developing world, issues pertaining to how the linkages between agricultural productivity, farm earning and employment relations have not been exhaustively examined in Tanzania's context.

2.0 METHODOLOGY

The survey involved data collection from 8 districts at the household level and agro-dealers. The districts were proportionately sampled from the list provided to REPOA by AGRA. 5 of the selected districts are located in the northern zone whereas the remaining three are from the southern highlands. From each of these districts, 3 wards were randomly selected. Villages and finally enumeration areas were then randomly selected. The 2012 national census was used to produce the appropriate sampling frame. Development of the sample that was used for the study was carried out by two senior statisticians from the National Bureau of Statistics. Table 1 presents a summary of the sampled area. A total of 1656 households were interviewed. In the field a total of 15 households per enumeration area (EA) were identified. To identify the 15 households a list/number of the farming households was first established in collaboration with the village executive officer (VEO). Once the list was obtained a randomization number was calculated by dividing the total number of farm households by 15. This number was then used to pick at random the

Table 1: Sampling

Region	District	No of EAs	No of households
Kilimanjaro	Moshi rural	16	240
Morogoro	Kilosa	15	225
Iringa	Iringa rural	13	195
	Kilolo	13	195
Mbeya	Mbarali	13	195
Rukwa	Sumbawanga rural	14	210
Manyara	Babati	14	210
	Hanang	14	210

Source: Household survey

household that was to be interviewed. The VEO would then assist in introducing the enumerators to the selected respondents. In addition to the household survey, the study also involved carrying out the agro- dealer survey. A total of 70 agro-dealers, where available, were interviewed.

2.1   Demographics

Table 2 presents some general characteristics of the sample from the household survey. A total of 1656 households were interviewed, out of which 88 percent were male headed households. The average household size was 5 members per household, and the median age of the head of household was 45 years. The median age of the whole sample is 18 years, which is the same as the figure reported in the 2012 census report. The average years of schooling for the head of household is 6 years, and interestingly there's no statistical difference between male and female. Over 80 percent of the heads of household and 3 out of 4 are in monogamous relationships with their spouses.

Table 2:   General characteristics

Description	Quantity
Sample size:	1,656
Size of household (average):	5
Sex of household head (male):	88%
Median age (household head)	45
Average years of schooling (household head)	6
Median age (whole sample)	18
Marital status (household head)	
Married (monogamous)	74.9%
Married (polygamous)	9%
Divorced/separated	3.2%
Widowed	10%
Never married	2.9%

Source: Household survey

2.2   Quality of Life Indicators

Housing materials are often used as proxy of household welfare. The sampled areas are predominantly in a rural setting. However, a little over two thirds (64%) of the houses where the interviews took place are built with iron roofing. In addition, half of the houses are built using brick walls and over a third have concrete floors. In terms of sanitary facilities, close to 90 percent of the households use pit latrines. Over half of the interviewed households use streams/rivers and wells/boreholes as their main source of water for domestic use during, both, the dry and wet seasons. However, during the wet season an additional 15 percent of the households use roof catchments as well. One out of three households use piped water located either within or outside the compound.

Only 36 percent of the households practice farm irrigation, out of which 28 percent use rivers/streams and nearly half (49%) use roof catchment as their main water source for irrigation. Other welfare indicators that were included in the survey are main source of cooking fuel, and source of lighting. The majority of the sampled area (94%) use firewood as their main source of cooking fuel, whereas tin lamps, lanterns, and solar power are the most common source of lighting.

Table 3:   **Quality of life indicators**

Indicators	%
Housing Material	
Walls (bricks /stones)	53%
Roof (iron sheet/tiles)	64%
Floor (concrete/tiles)	34%
Type of toilet	
Pit latine	89.3%
Source of water for domestic use in dry season	
stream/river	21%
well/borehole	30.10%
piped water	29.40%
In wet season	
roof catchment	15.3%
Source of water for irrigation	
stream/river	28.4%
roof catchment	48.90%
unprotected stream	9.1%
cooking fuel	
Firewood	94.3%
Main type of lighting	
tin lamp	45.4%
lantern	21.4%
solar power	11%
other	10.9%

Source: Household survey

2.2.1 *Vulnerability to Food Insecurity and Coping Mechanisms*

Food security is defined as the state at which all people, at all times, have physical and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active and healthy life[2]. Access to adequate and sufficient food is still a concern in Tanzania. According to the 2007 Household Budget Survey (HBS), 17% of Tanzania's total population fell below the food poverty line. There are various indicators of measuring food security, among them being:

- The number of meals a household consumes per day
- The quantity of food a household consumes
- The quality of food a household consumes

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[2]   Comprehensive Food Security & Vulnerability Analysis Guidelines, January 2009, World Food Programme. Also cited in NPS 2012.

This study focused primarily on the first two components. None the less, reference is made to capture the last

Table 4: **Did not have enough food to meet family's need**

Response	Frequency	%
No	972	58.7
Yes	684	41.3

component using data from Tanzania's 2012 NBS report[3]. As far as the quantity of food consumption is concerned results from the survey indicate that a significant proportion (41 %) of the sampled households claimed to have gone without enough food in the past 12 months.

In a somewhat similar analysis, the NBS reported that 36 percent of Tanzanians were worried about 'not having enough food in 2010/11. Dar es Salaam had the highest proportion (36%) followed by rural areas (37%) of their population expressing concern over not having sufficient food for household consumption. In addition, 34 percent had to consume less desirable or less varied stands, and 32 percent reduced their food intake. These observations suggest that food security in the country is still a matter of concern for many Tanzanians.

In our study a majority of households that went without enough food experienced shortages for an average of close to three months, while the median period was 2 months. None the less, 80 percent of the surveyed households stated to have had 3 or

Table 5(a): **Number of meals per day**

Description	N	%
one or less	12	1
two	315	19
three or more	1,329	80
Total	1656	100

Source: Household survey

more meals in the last 24 hours while 19 percent had two meals and the remainder 1 percent had no more than one meal.

In addition to the number of meals, interviewed households were asked to state the variety of food any member consumed the previous day. Table 5.1 below presents the proportion of households that consumed different varieties of food. All households consumed cereals, and a majority consumed legumes, oil and sugar. A food diversity index was calculated using 12 food types. On average households consumed 5 types of food items recorded in Table 5(b).

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[3]   URT, National Panel Survey report-wave 2: 2010/11

Table 5(b):   Proportion of household by variety of food consumed

type of food consumed	% households
cereals	99
roots/tubers	26
Pulses/Legumes	62.5
Milk/milk products	30.6
Eggs	15.5
Meats/offal	28.7
Fish/seafood	27.7
Oil/fat	74.6
Sugar/honey	62.6
Fruit	36.5
Vegetables	81

Source: Household survey

2.2.2   Gender Empowerment

Gender empowerment is an important aspect in development. For the longest period women in developing economies were marginalized and most important decisions with regards to the allocation and use of resources was predominantly done by men. In more recent years efforts, by different stakeholders, were made to encourage the involvement of women in decision making. This aspect was also investigated in this study. Respondents were asked to state 'who' in the family was responsible in making the important decisions on how household resources were to be used. In all cases, either the head of the household or the head together with the spouse made the decision (see appendix). The question of land ownership amongst women, especially in Africa, has been a subject of debate for decades. In this study, results indicate that 45 percent of the respondents stated that the head of the household owns the family land or made decision on how it should be used. However, half the respondents stated that household land was jointly owned by both the head and the spouse.

Table 6:   Who owns/makes decisions regarding household land

Response	N	%
Head	750	45.3
Spouse	29	1.8
Children	9	0.5
head and spouse	821	49.6
head, spouse and children	41	2.5
household non-members	2	0.1
Others	2	0.1
Total	1,654	100

Source: Household survey

2.2.3   Access to Amenities

Access to infrastructure and social services is undoubtedly an important development aspect for, both, individual wellbeing and for the economy as a whole. As far as farmers are concerned, easy access to selling points of farm inputs, markets for their produce and reliable roads are crucial for their main

Table 7:   Access to facilities and services

Nearest distance to	Mean (Kms)	Median (Kms)
fertilizer seller	14	7
improved seeds seller	14	7
Permanent shop	4	1
Permanent market	11	5
motable road	3	0.5
tarmac/ coal tar road	23	12
electricity source	18	7
piped water source	7	1.5
primary school	2	1
secondary/ high school	6	4

Source: Household survey

productive activities-agriculture in particular. It is evident, from the results in table 7, that farmers have to travel some distance to obtain farm inputs. The median distance of the nearest supplier of farm inputs is 7 kms, whereas the average distance is 14 kms. The results suggest a similar scenario as far as gaining access to the nearest market is concern. Reliable road infrastructure, that is tarmac/ coal tar roads, and source of electricity are also distant from farmers that were interviewed. Distance to the nearest source of piped water and schools are more encouraging. Deliberate government action to increase the number of primary and secondary schools may provide a probable cause the shorter distance to these facilities. Though efforts to improve road infrastructure have been observed in more recent years, the reported distances to reliable roads and permanent markets suggest that a lot more needs to be done to improve the current situation.

2.3   Production of Staples

2.3.1   Land Tenure and Soil Fertility Practices

72 percent of the reported farm plots are owned by the respective household, but only 12 percent are owned with title deeds. Another 10 percent of the plots have been rented and another 10 percent are communal or held through customary law. The average plot size reported is about 2 acres

Table 8(a):   Type of ownership of plots

responses	N	%
owned w/ deed	447	12.3
owned w/o deed	2,173	59.7
leased	15	0.4
rented	366	10.1
owned by parent/ relative	275	7.6
government	20	0.6
communal/customary	345	9.5
co-operative	1	0.0
Total	3,642	100

Source: Household survey

When farmers were asked to state the type of soil fertility management practiced in these plots, 17.5 percent of the responses were 'none', 16.4 percent 'mulching/cover cropping', 13 percent referred to the use of inorganic fertilizers and 15.7 percent to the use of farm yard manure.

2.3.1.1 Integrated soil fertility management practices

Knowledge and Use of Integrated Soil Fertility Management Practices

As far as knowledge and use of soil fertility management practice is concerned, the most common practices are terracing, the use of farm manure and inorganic fertilizers, mulching/cover cropping, crop rotation, and to some extent slash and burning. Table 8(b) presents the proportion of households that are aware and use various forms of soil fertility practices. Half of the households use farm manure, and 45 percent use mulching/ cover cropping to manage soil fertility. About a

Table 8(b): Farmers knowledge and usage of ISFM practices (% of Farmers)

Integrated Soil Fertility Management Practices(ISFM)	Awareness	practice
terracing	77.5	35.7
mulching/cover cropping	62.4	45.0
minimum tillage	43.5	29.3
wind breaks	16.8	9.8
contour farming	4.4	1.9
crop rotation	53.2	29.1
water pans/planting basins	37.1	20.0
grass strips	23.1	10.9
afforestation	21.9	6.7
agro forestry (legume trees)	19.4	7.4
agro forestry (other trees)	20	7.1
gabions/storm bands	5.7	1.3
cut-off drains/soil bounding	47.3	26.8
fallow	47.2	15.1
composting	47.5	24.5
use of inorganic fertilizers	70.5	35.3
use of green manure fertilizers	45	27.9
use of farm yard manure	81.8	50.2
slash and burn	52.2	26.0
growing legume crops	44.5	27.5
use of innoculum	1.4	0.2
use of lime	3.3	0.8

Source: Household survey

third use terracing, minimum tillage, crop rotation, and inorganic fertilizers. Use of lime, inoculum, storm bands and contour farming are among the least practiced forms of soil fertility management.

2.3.2 Off-farm Activities

It is no secret that off farm activities have increasingly become an important source of household income in rural areas. According to the 2007 Household budget survey[4], crop sales were the main source of income for rural households. After crop

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[4]   URT, Household Budget Survey 2007

sales income from businesses and wage earnings formed the second main source of household income.

Results from the outcome panel survey indicate over half (84%) of the interviewed households had at least one member involved in off farm activities, particularly through self-employment and casual labour. The median monthly earnings from off-farm activities is Tsh. 60,000 (appr. USD 38).

Table 9:   Type of off-farm employment

Response	N	%
salaried/ contract	91	6.5
self-employed	846	60.3
casual labor	394	28.1
Other	72	5.1
Total	1,403	100

Source: Household survey

Off-farm activities can act not only as means of diversifying household investment, but can also be used to support farm investment.

2.3.4   Production and Productivity

The main staples produced by the sampled areas were maize, beans and rice. Maize was the most dominant of the three crops. The average area under maize cultivation was 3 acres, though the median size under maize production was 2 acres. This is no surprise considering the majority of the farmers are

Table 10:   Method of land preparation (by plot)

Response	N	%
zero tillage	11	0.2
Hand	1,541	32.8
animal traction	2,570	54.7
Tractor	571	12.1
slash & burn	6	0.1
Other	3	0.1
Total	4,702	100

Source: Household survey

smallholders. The most common methods for land preparation were the use of animal traction, or hand hoe. Over half (54%) of the plots cultivated were prepared using animal traction, while a third were prepared using a hand hoe, and a little over 10 percent were prepared using a tractor(s). Since a majority of small holder farmers rely on rain fed agriculture, only 6 percent of the plots were irrigated and the rest were rain fed.

The use of improved seeds, a point that will be further elaborated in a later section, is yet to become

Table 11:   Type of seeds used in planting maize, rice, beans (by plot)

Response	N	%
Purchased /New improved	900	27.8
Recycled improved	273	8.4
Local	2,045	63.1
Purchased /New improved + local	23	0.7
Total	**3,241**	**100**

Source: Household survey

common practice amongst many farmers. If we consider, for instance, the area that was under maize production only 41 percent of the plots were planted using new improved seeds. Over half (58 %) of the plots, under maize cultivation, were planted using local or recycled improved seeds. The same scenario applies for the other common staple foods, beans and rice in particular. In fact if we consider the three crops together, two thirds of the plots under maize, beans, or paddy were planted using local seeds. The use of newly purchased improved seeds is, none the less, more common in maize production than for the other two staple crops.

Agricultural productivity in many African countries is said to be much lower than desirable levels. Some of the reasons given for low farm productivity include: reliance on unreliable rains, use of low level technology (example hand hoe), and limited use of improved farm inputs-fertilizer and improved seeds. Results from the household survey support this this proposition. Focusing, for the time being on maize, the average area that was under maize production in the sampled area was 3 acres. Total output per acre was on average 476 Kgs, and median output was 360 Kgs/acre. In other words, if we consider a 90 Kg bag then farm productivity in maize producing areas was roughly 5 bags per acre. These are fairly low yields for maize production.

2.3.5   Awareness and Intensity of Use of Seeds

All interviewed farm households reported that they were involved in cropping activities during the main 2013 planting season, and only 17 percent did so in the short planting season. 43 percent of the households used improved seeds, and 87 percent of the plots in which improved seeds were applied were used for maize production. Other popular staples are beans and paddy, but only 8 percent of plots where improved seeds were had the latter two staples. Application of improved seeds, in particular maize seeds, was on average about 92 percent per planted area. The results suggest that agro-dealers are the main source of improved seeds, and the average period for which improved seeds were used is 4 years.

2.3.6   Awareness and Intensity of Fertilizer Use

Unlike the use of seeds, a larger proportion (64%) of the interviewed households applied some form of fertilizer in their fields. Amongst the households that applied fertilizer the split between those who applied organic versus inorganic fertilizer was almost even- 48 percent used inorganic fertilizer as opposed to the 52 percent that applied organic fertilizer. The most commonly used inorganic fertilizers were CAN

Table 12:   Type of inorganic fertilizer used

Type	N	%
CAN	74	14.5
DAP	92	18.0
UREA	261	51.2
NPK	13	2.6
MINJINGU	22	4.3
Other	48	9.4
Total	**510**	**100**

Source: household survey

(14.5%), DAP (18%), and UREA (52.2%). Close to 90 percent bought the fertilizer with their own cash, 7 percent used input vouchers, and 3 percent used fertilizer from their own previous stock. Again here agro-dealers were the major suppliers of the purchased fertilizer, and the average distance from the supplier to the farm was about 10 kms.

2.4   Output Marketing and Storage

A majority of the interviewed farmers (87 percent) said they had some form of storage facility for their grains. Of those who claim to have storage facilities, only 2 percent have on-farm improved stores. 18 percent claim to use traditional storage and over three quarters use their houses for storage. In addition, an overwhelming 93 percent said they stored their grains in 2013.

Table 13:   Type of grain storage facility (% of farmers)

Facility	%
On-farm improved store	2.1
Traditional store	17.6
Room in the main house	74.9
Room in other houses	10.6

Source: Household survey

With regards to market information, farmers mostly use family/friends, other farmers, research institutes, and marketing information points. Extension workers are main source of information for input prices. This is no surprise considering the existing government input voucher scheme where extension workers play an integral role.

Table 14:   Source of marketing information

Source	commodity prices	commodity availability	potential markets	input prices
Marketing Information Point	7.86	6.84	3.94	1.65
Family/friend	32.04	38.29	23.86	13.27
Farmer	26.42	33.94	20.23	18.35
Research institute /University	24.79	14.04	44.22	2.14
extension workers	1	1	1.2	51.87
other sources	7.89	5.89	6.55	12.72

Source: Household survey

2.5   Agro-Dealers

A total of 70 agro-dealer businesses were interviewed, half of which started operating by 2007, and two out of three are under male ownership. Access to market information is an essential ingredient to ensure that markets are sufficient. Thus, limited access to such information would then lead to insufficient markets in turn creating barriers. Agro-dealers, who play an essential role in supplying the necessary farm inputs, were asked to comment on a number of aspects with regards to how they access different market information. Over a third (65 %) of the agro-dealers use fertilizer companies/ other fertilizer stocklist to obtain information about suppliers of fertilizers. In addition, about a third (32%) establish market demand for chemical fertilizers through information from extension workers/ fertilizer companies/ stocklists.   Furthermore, a little over half (52%) use price information from fertilizer companies or other fertilizer suppliers to determine their own prices. Extension workers, to some degree, are used as a source of information in determining the correct type of fertilizer to be sold in a particular area (see tables 8A, 10A, 11A and 12A in appendix A).

2.5.1   Sale of Processed Products

By 2008 half the agro-dealers were selling fertilizers, and all (except 2) of the interviewed businesses have been selling fertilizer throughout from the time they started. Several stakeholders, including the Tanzanian government, have been encouraging the use of farm inputs to push for higher yields. In 2008 the government, for instance, with the support of the World Bank introduced an input subsidy scheme known as the National Input Voucher Scheme (NAIVS). When asked to comment on the demand of fertilizer, over the past 2 years, over 80% of the agro-dealers were of the opinion that it is on the raise. In addition, two thirds of these businesses agree with the statement that demand for new kinds of fertilizers has also grown.

Half (49%) of the agro-dealers admitted to have some form of marketing agreements, such as transport, price discounts, credits, with their buyers.

Table 13:   Demand for fertilizer has grown over the last 2 years

Response	N	%
Agree	61	87.14
Indifferent	6	8.57
Disagree	3	4.29
Total	70	100

Source: Agro-dealer survey

2.5.2   Input subsidy program

The NAIVS program is one recent major initiative to scale up the supply and use of farm input by farmers. Certified agro-dealers were given the mandate to redeem input vouchers thus playing a crucial role in improving the accessibility of seed and fertilizer inputs[5]. Forty percent of the interviewed agro-dealers participated in the input subsidy program. Though the sample is relatively small to draw any statistically significant conclusion, a little over half of the agro-dealers who were involved in the input subsidy program said they sold more fertilizer through this system. However, consistent with the implementation procedures of the NAIVS program the agro-dealers stated that the input vouchers were provided to beneficiaries by the government.

A majority, 64 of the 70 interviewed agro-dealers admitted to selling certified seeds. Almost half (48%) of these businesses started selling seeds by 2008 and have been doing so since. Two thirds (61%) of these agro-dealers obtain their seeds form local seeds companies, while the remainder gets them from other sources including imports. A little over a third (24 businesses) claimed to have some form of licensing arrangement with their suppliers. They also stated that such arrangements do not limit their daily operations.

3.0   CONCLUDING REMARKS

Agriculture will remain a crucial sector, at least in the foreseeable future, given that Tanzania is still largely an agrarian economy. Not only does the sector command the largest share of the country's economy but also employs the majority of the Tanzanian population and therefore making it an important source of livelihood for the majority. The agriculture sector however continues to face a number of constraints thus limiting its pace of growth and its potential to transform people's lives. Low levels of agricultural productivity, poor physical and market infrastructure are just among the several constrains that the sector faces. Though the government has made significant progress in addressing some of these issues, road infrastructure in particular, there is still room for improvement.

Off-farm activities are now becoming an important source of income for many rural households. Proper incentives such as physical infrastructure, such as roads, water and electricity need to be put in place. This will provide opportunities to rural

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[5]   World Bank 2014, Tanzania public expenditure review

households to engage in other activities other than farming thus encouraging even the youth to remain in rural areas and engage in productive activities. Such incentives will also open up opportunities for small and medium enterprises that can bring about the envisioned rural transformation.

Access to other services such as finance and credit facilities are also important. As it stands only 4 percent of the interviewed households sought credit in 2013. In addition, only 6 percent of farm households involved in the survey had someone who was a membership in a farming organization. There is need to encourage participation in such groups to allow more farmers even, say, to credit access.

Storage of agricultural produce after harvest is also an important component. Though a large proportion claimed to use their own storage facilities, there little knowledge of the warehouse receipt system (WRS). Of the interviewed households, only 2 percent claimed to have knowledge of the WRS, and therefore sensitization may be necessary to that effect.

The use of improved farm inputs, in particular improved seeds and fertilizer, as well as best farming practices should also be encouraged to improve the levels of productivity in agriculture.

APPENDICES

Appendix A

Table1A System of watering used by plot

response	N	%
Rain fed	4,419	93.9
Irrigated(piped)	80	1.7
Irrigation (gravity)	199	4.2
other	10	0.2
Total	4,708	100

Source: Household survey

Table2A: Type of maize seeds used for planting by plot

response	N	%
Purchased /New improved	841	41.4
Recycled improved	162	8.0
local	1,010	49.7
Purchased /New improved + local	20	1.0
Total	2,033	100

Source: Household survey

Table 3A. Main decision maker on/ owner of Renting-in land

Response	N	%
Head of household	622	42.1
spouse	27	1.8
children	12	0.8
head and spouse	762	51.6
head, spouse and children	41	2.8
household non-members	2	0.1
Others	10	0.7
Total	1,476	100

Source: Household survey

Table 4A. Main decision maker on/ owner of Renting-out land

Response	N	%
Head of household	617	42.3
spouse	27	1.9
children	12	0.8
head and spouse	749	51.3
spouse and children	42	2.9
Others	12	0.8
Total	1,459	100

Source: Household survey

Table 5A. Main decision maker on/ owner of type of fertilizer to use

Response	N	%
Head of household	650	40.4
spouse	44	2.7
children	13	0.8
head and spouse	851	52.9
head, spouse and children	42	2.6
household non-members	5	0.3
Others	3	0.2
Total	1,608	100

Source: Household survey

Table6A. Main decision maker on/ owner of type of seeds to use

Response	N	%
head	653	40.0
spouse	43	2.6
children	12	0.7
head and spouse	877	53.7
head, spouse and children	42	2.6
household non-members	5	0.3
Others	2	0.1
Total	1,634	100

Source: Household survey

Table7A. Main decision maker on/ owner of Farm operations and timing

Response	N	%
head	646	39.1
spouse	45	2.7
children	12	0.7
head and spouse	901	54.5
spouse and children	49	3.0
Others	1	0.1
Total	1,654	100

Source: Household survey

Table8A. Source of purchased inorganic fertilizer

Response	N	%
agro-dealer	390	76.8
seed company	13	2.6
NGO	1	0.2
CBO	1	0.2
farmer	41	8.1
government	28	5.5
farmer group	15	3.0
cooperative	2	0.4

Response	N	%
Research institute/University	1	0.2
local markets	7	1.4
other	9	1.8
Total	508	100

Source: Household survey

Table 9A. Demand for new type of fertilizer

demand for new type of fertilizer has grown (agro dealer)	N	%
Agree	43	61.43
indifferent	14	20
Disagree	13	18.57
Total	70	100

Source: Agro dealer Survey

Table 10A. Source of information on suppliers of fertilizer

response	N	%
Marketing Information Point	2	2.9
Neighbour/Family/friend	1	1.4
Radio	1	1.4
Extension worker	4	5.7
Telephone/Cellphone	4	5.7
Other fertilizer stockists	16	22.9
Fertilizer companies	30	42.9
Community meeting	1	1.4
Brochures/pamphlets	1	1.4
Other	10	14.3
Total	70	100

Source: Agro-dealers survey

Table11A. Source of information on new types of fertilizer in the market

Response	N	%
Demonstration plot	1	1.43
Radio	3	4.29
Extension worker	7	10
other fertilizer stockists	14	20
Fertilizer companies	31	44.29
Field day	2	2.86
Brochures/pamphlets	3	4.29
Other	9	12.86
Total	70	100

Source: Agro dealer Survey

Table 12A. Source of information on the correct type of fertilizer to sell

response	N	%
Demonstration plot	3	4.3
Extension worker	13	18.6
other fertilizer stockists	4	5.7
Fertilizer companies	20	28.6
Community meeting	2	2.9
Field day	2	2.9
Brochures/pamphlets	3	4.3
Other	23	32.9
Total	70	100

Source: Agro-dealer survey

Table 13A. Source of information on the demand for fertilizer

response	N	%
Marketing Information Point	2	2.9
Neighbour/Family/friend	4	5.7
Demonstration plot	2	2.9
Extension worker	8	11.4
Telephone/Cellphone	1	1.4
Other fertilizer stockists	8	11.4
Fertilizer companies	7	10.0
Community meeting	5	7.1
Field day	2	2.9
Other	31	44.3
Total	70	100

Source: Agro-dealer survey

Table 14A. Source of information on how to price own fertilizer

response	N	%
Marketing Information Point	3	4.3
Neighbour/Family/friend	4	5.7
Extension worker	1	1.4
General market	2	2.9
Telephone/Cellphone	1	1.4
Other fertilizer stockists	21	30.0
Fertilizer companies	16	22.9
Brochures/pamphlets	1	1.4
Other	21	30.0
Total	70	100