



Livingstone Tanzania Trust

Smallholder Farmer Training Programme: Managha Community



Progress Report 2017-18

Report by Livingstone Tanzania Trust
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Alleviating poverty through Agricultural development

Elsa never used to grow vegetables for her family, instead she would go to the market and spend 7,000Tsh (£2.50) a week on greens. Because our training showed her step by step what she needed to do to grow vegetables, and because the nutrition training reinforced the importance of eating vegetables, she decided to set up her own vegetable garden. Now she no longer goes to the market to buy the greens and the money goes on other household priorities.

Simple – Replicable - Effective

Paulina used to plant maize and would find that whilst the plant grew it did not always produce any cobs and being her main source of income it was a great worry to her.

Paulina learnt on our training course the important of soil management and how farmers ought to diversify their income so as not to be reliant on a single crop.

With her new skills, knowledge, enthusiasm and a loan Paulina bought a young dairy cow. The manure she adds to her field and now she has health maize that produces better yields. Two years on the cow is providing milk which she sells half of in the community and keeps some for the family. No longer buying milk but selling it she finds she has the money for other household needs.

“I depend on the farm to meet my needs, when the crops fail I can fall back on the income from milk to meet our household’s needs, without that I would not have been able to afford my life last year.”





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Executive Summary

Livingstone Tanzania Trust's (LTT) Smallholder Farmer Training Programme is designed to enhance the knowledge and skills of local farmers, enabling them to improve their productivity, incomes and income security. The programme combines theory, practical and demonstration learning with one-to-one guidance and support for farmers. Through the programme farmers are also supported to establish their own savings scheme and access small micro-loans, enabling them to invest in and improve their farming activities. LTT has been running the programme in the Managha community for 4 years.

Training, mentoring, monitoring and additional support is provided by Community Agricultural Support Officers (CASO). In 2017 John Martin re-joined his community as a CASO after 2 years of training. His dedication and commitment has been excellent and he has brought added value to the programme with his animal husbandry knowledge. Livestock are **the** most important income generator for a farmer, caring for them is hugely important and consequently John has provided training and provides a first line of action should the veterinary services be unable to act swiftly enough for the situation. John has developed into the valuable community resource we expected he would.

Over the last 18 months we have introduced and refined our use of mobile data collection across the programme which has been hugely beneficial to the speed and accuracy of our monitoring and evaluation activities.

This report focuses on the progress of Groups A, B and C and on the training progress of Group D who joined in 2017/18. Group D are expected to complete training in October 2018 at which point members will be able to access microloans.

Tanzania's weather patterns are becoming less predictable, more erratic and more problematic for farmers. This past year has been exceptionally difficult for farmers. Poor short rains and late, extremely heavy and erratic long rains resulted in low maize yields in the Manyara region, but not across Tanzania, meaning that selling prices didn't improve. This was followed by the collapse of the pigeon pea market due to a ban on imports introduced by India and resulting in plummeting prices for farmer's cash crops. This double attack on farmers' incomes is unprecedented and has been extremely problematic for the farmers.

Despite this 85% of Group C, 75% of Group B and 83% of Group A made a profit, this was assisted by improved diversification of income into additional crops, vegetable production, and significant sales from fruit and milk. Diversification is a key lesson learnt and one whose relevance continues to be important.

Group C completed training in 2017 and we are already seeing a fantastic improvement in household diets post training, moving from 21% eating vegetables each day to 86%. 77% of Group C have increased their domestic production of vegetables. In addition, there has been a 40% increase in the number of times a week a household eats fruit, resulting in 69% eating fruit every day. Group C have also planted a staggering 1,140 new fruit trees in and around their plots, a strong indication of farmers making long-term investments in their household incomes.

More and more farmers are benefiting from additional incomes from the milk produced by their cattle and seeing the benefits of growing fodder specifically for their cows - better diet = better health = more milk = more money.

Our internal review of the saving and loans programme has resulted in a transfer of ownership to the group to manage the saving aspect. This shift has been well received but economic hardship has meant many farmers have struggled to make monthly contributions. Together with MCDO, each group is working to address the unique challenges they face to ensure the savings programme works for the group.

Looking to the year ahead we are hoping to invest further in training for MCDO to ensure the team is abreast of organic and conservation agriculture techniques and systems as well as exploring value addition as a complimentary avenue to our existing programme. This year we are also seeing an outbreak of the Fall Army Worm, a highly destructive insect which is a major concern for farmers and is likely to significantly impact maize yields and incomes in the coming years. MCDO are working with local stakeholders to investigate solutions.

1. Background Information

Livingstone Tanzania Trust (LTT) is a community development organisation working through partnerships with local grassroots organisations in Babati, Northern Tanzania. Our programmes focus on education, agriculture and women



and girls. We believe in the power of communities to drive change and we work to help unlock the potential within the community so that they can address the problems they face for themselves. We form long term partnerships with communities, centred on trust, respect and collaboration, enabling our work to evolve with the needs of the community. Our long-term vision is to see communities breaking the cycle of poverty for themselves.

To deliver our programmes in Tanzania we work with the Manyara Community Development Organisation (MCDO), a local CBO in Babati, Tanzania. Our partnership ensures our work continues to be relevant and responsive to the community's needs and aspirations.

LTTs Smallholder Farmer Training Programme

The programme is designed to enhance the knowledge and skills of local farmers enabling them to improve their productivity, incomes and income security with dignity and pride. The programme will help them to achieve: -

- Improved yields
- Improved animal husbandry
- Greater food security
- An improved understanding of the importance of a healthier, more nutritionally balanced diet.
- Improved communication and collaboration between farmers
- Open access to an ongoing training resource in the form of a Community Based Agricultural Support Officer (CASO)

The training is delivered by MCDOs agricultural team using a combination of demonstration, theory and practical workshops complemented by individual visits to farmers on their own farms.

Each intake of farmers is supported to establish their own Community Based Organisation (CBO) providing a forum for peer learning, support and creating the basics for collaborative working. These groups are able to access small microloans to enable farmers, many of whom lack access to capital, to make investments in their farming business. The group are also mentored to establish their own savings scheme, promoting a 'savings-mind-set' amongst farmers and encouraging long term sustainability in the groups access to capital.

In Managha, the programme enables us to train a new-cohort of farmers and bring our total to 170 farmers trained through the programme. The final cohort of 50 farmers will be recruited in 2018

2. Progress of our work in 2017-2018

2.1 MCDOs Agricultural Team: Managha's Community Agricultural Support Officer

John Martin, the Community Agricultural Support Officer (CASO), is an essential resource in the Managha community and to our farmer training programme. He provides training, individual support to both farmers and the local primary schools and offers livestock services throughout the community. His animal husbandry training enables him to provide advice and treatment for common disease and issues which, because of the overstretched and under resourced local veterinary service, is invaluable to farmers. On average John makes 40 trips a month to assist with livestock issues.

"John is very helpful, when he comes to treat your animals he explains the problem and the type of medicine that will help, that means that next time when there is a problem you can recognise it for yourself and treat the animal without needing to call John again. When I started, I had to call John a lot but now I don't need him so much!"

-Group C Member, 2018

John is very committed to his work and serving the community, because of this we have continued to invest in his professional development, sending him to Nane Nane¹, and to Morogoro for the first of two training courses focused on organic and sustainable farming methods, organic pest control, simple soil tests, agroforestry and marketing of organic produce with Sustainable Agriculture Tanzania (SAT)².

¹ National Agricultural Show

² SAT are a leading NGO focusing on Organic Farming, they are based in Morogoro



2.2 Developments at the Managha Primary School to support agricultural training

The Managha Primary School's Demonstration Farm and Market Garden are a valuable resource; it demonstrates effective organic agricultural production alongside best practice in dairy cattle husbandry. By exposing farmers to this facility, we demonstrate what success looks like which motivates farmers.

In 2017 John worked with the school to improve the overall performance of the market garden. This included;

- Creating seed beds and providing training on transplanting of seedlings
- Establishing a demonstration kitchen garden suitable for households to copy at home where space may be limited
- Re-designing the tomato and cucumber production systems to ensure produce is kept off the ground while it ripens
- Improving the organic pest control system to better protect the produce

All of these techniques are low resource and are taught to farmers to enable them to copy ideas at their own homes. In addition, we were able to populate the chicken coop enabling the school to embark upon a small poultry enterprise and enabling the demonstration of best-practice in poultry upkeep. With the support of MCDO the school have also re-established their tree planting program, a long-term investment for the benefit of the school and a living demonstration to the community in effective care and management of trees.

Investing in the school as our demonstration centre³ not only allows us to deliver training from a centre within the community it also supports the school's income and long term sustainability. In 2017 the schools farm and market garden generated a collective profit of £800 which has been utilised for the school's maintenance and ongoing costs this is a significant achievement and the school are hoping for an even stronger income in 2018.

2.3 2017-2018's New cohort of farmers – Group D

In September 2017, we, together with MCDO and local community leaders started to recruit a new cohort of farmers. The process took longer than planned due to the need to have farmers within close proximity to each other to enable them to work effectively together. The new group, made up of 53% women, established in January 2018 is from the Gendi sub-village. Farmers have completed the programme entry survey, creating an overview of the group and establishing a baseline against which we can track their progress.

The majority are engaged in maize and pigeon pea farming, with approximately 1/3rd also growing beans. Only 1 farmer is currently using organic pest control in their activities and just 4 farmers are growing any vegetables for retail.

The group started with 50 farmers but, due to poor attendance and engagement with training 5 members have been asked to leave the group to ensure that those committed to the programme are training alongside others who are also fully committed, Group D is therefore made up of 45 farmers. The group began training in early 2017 and will complete their training in October 2018.

In contrast to previous groups, Group D will access loans after they complete their training and have established their own savings scheme. This shift is to help ensure that only those who have actively taken part in the group and training sessions and made savings contributions are offered a microloan.

The group are already showing great commitment to the training and seeking out John for extra support and guidance. Together with MCDO they have established a field crop demonstration area, illustrating differences between mono and intercropping strategies and the use of organic manure.

2.4 Farmer Training

In 2017 MCDO completed the refresher training requested by Groups A, B and C and provided training in on our new module 'Animal Husbandry and Livestock Health'. These sessions have been well received and farmers have already reported benefits in terms of their animal's overall health and in their yields.

³ LTTs original plan had been to set up a livestock centre somewhere else in the community however after consultation with the school and farmers it was decided that investing in developing the schools farm and market garden which could then be used as a demonstration and training centre would be a better community investment.



With the above training completed MCDO focused on our newest group of farmers, Group D. The group have participated in classroom teaching and practical training sessions covering:

1. Record keeping.
2. Farm planning - Land preparation, soil management, natural fertilisers and pest control
3. Staple crop training - Planting techniques, crop rotation, weeding, harvesting and post-harvest management.
4. Vegetable production - Seed nursery preparation, transplanting, composting and mulching and organic pest control, water conservation, drought resistant vegetable varieties, and drip irrigation⁴.
5. Tree planting - role of trees within the environment, tree nursery preparation, transplanting and management.
6. Enterprise training - basic business and accountancy and an introduction to the savings and loans scheme. There is a follow up business module planned for September to focus on agricultural plan development.

2.4.1 Farmer training in the coming months

Over the coming months the Group D will also be engaging in further training activities

- Livestock training - Improved livestock housing, the importance of good sanitation, understanding, preventing and dealing with common livestock diseases and improved feeding regimes.
- Nutrition and basic health awareness training – relationship between diet and well-being, preventing and treating diarrhoea and how to build “tipi-taps” - a simple germ free hand washing system.

2.5 Incorporating Mobile Data Collection systems into our monitoring

As the programmes scaled up, we recognised the need to migrate from paper surveys to mobile data collection system and we teamed up with Datawinners which allows data to be submitted via an app on smart phones and enabling almost live monitoring of the incoming information in the UK. After training the team, writing the surveys and piloting the process, we rolled it out across all three of our farmer training communities and have seen significant benefits. The CASOs quickly adapted to the system and are adept at swiftly gathering data from a widely-spread group of people. The use of the system has significantly sped up our data collation and improved the reliability of the information we are collecting. This has been an immensely useful investment and has allowed us to expand our monitoring of the programme and of the CASOs work more broadly, including their livestock visits in the wider community.

Case Study - Abu, Group C Member

“The vegetable training and the extra support from John have meant I’ve made big improvements in my vegetables this year”

Through the knowledge and advice of the training Abu has transform his small market garden from a resource for the family to an important income source. In the garden his harvests have vastly improved particularly for the Ngogwe (local variety of eggplant) and Cucumbers. Through the training he learnt about proper spacing of plants and the importance of ensuring each plant gets the nutrients it needs. He also improved his understanding of the benefits and proper application of manure as an organic fertiliser. To make sure he has a more diverse income stream in years to come Abu has also planted more banana trees to improve his potential income from fruit sales.



3. Key Results from the Programme’s 4th Year

We regularly speak to each farmer to gather data on their cost of production, harvests and sales and to hear of any problems. Using the data we calculate each farmer’s actual profit for the year. For those who sell cow’s milk we also include information on milk incomes and cattle upkeep costs.

⁴ Working in collaboration with Norwegian Church Aid.



As well as the financial performance, we also look at each farmer's diversification levels by monitoring engagement in vegetable and fruit production which we compare with the baseline. Using this information, the following sections look at the progress of farmer's in Groups A, B and C over the last year.

In the last agricultural year:

- **85% of Group C⁵ ended their first year in the programme in profit** which, given the challenges they have faced, is extremely encouraging. 65% are engaged in fruit farming and 56% have an income from milk
- **83% of farmers in Group A⁶ and 75% of Group B⁷ made a profit.** A graph depicting the changes in Group A&B farmer's profits over their years in the programme is available in Appendix A.
- 6 farmers in Groups A&B have improved or maintained their profits from the previous year due to increased diversification and improved cost control.

Our Agricultural Programme enhances farmers' knowledge and skills which they can then utilise on their farms in line with their own capacity and needs. External factors such as rainfall, market prices and extreme pest infestations are outside of LTT's control and can negatively impact on a farmer's ability to make a profit. This last year has been an acutely challenging year for the farmers;

- The rains were very poor/erratic resulting in extremely low harvests. Farmers who planted in November/December lost the majority of their crop, whilst those who planted or replanted in January/February were hit by delayed and then exceptionally heavy, localised rains causing flooding.
- In previous years of poor national maize harvests the selling price has increased so farmers are compensated for the lower production, but because the conditions were localised, selling prices have remained low and farmers have suffered from poorer incomes.
- The price of pigeon peas collapsed. Tanzania has exported pigeon peas to India for decades but in August 2017 the Government of India banned its import⁸. Prices fell from 120,000 per bag in 2016 to 36,000 in 2017. For the first time since we've been working in Babati farmers are keeping their pigeon peas as a domestic food source rather than selling them, as they are more valuable to the household that way. Others are continuing to store their pigeon peas in the hope that the price will recover. Talks are underway between the Tanzanian and Indian Governments to attempt to redress the situation but signs in October that a new deal had been struck have not come to fruition.

The impact of these external factors has been devastating for the farmers. Usually if one crop suffers the other crop will support the farmer but to have both crops collapse is rare. Cash at the household level is now extremely limited and the knock-on effect has been significant; with less cash, households have cut back on the number of meals, reduced purchases to necessities and are struggling with contributions to saving schemes. The Chart below shows the shocking fall in collective farming profits.

	Profit 2014	Profit 2015	Profit 2016	Profit 2017
Group A	Tsh 33,401,700	Tsh 39,611,295	Tsh 42,650,800	Tsh 12,761,495
Group B			Tsh 41,880,450	Tsh 10,901,400
Group C				Tsh 24,187,510

3.1 Staples

For the reasons discussed above the maize harvests are significantly lower than previous years, averaging 4.4-4.5 bags per acre. We can see in the chart below the progress year on year.

It is interesting to compare the fall in gross profit levels with the yield levels. The fact that collectively Group A maintained income levels on significantly lower gross profit levels for maize suggests the ambitions that the farmers now have and, had external factors not stuck they would have been hugely successful.

⁵ Figures for Group C are expressed as a proportion of 48, two farmers left at the end of the year

⁶ Figures for Group A are expressed as a proportion of 24 as one farmer left the group at the end of last year

⁷ Figures for Group B are expressed as a proportion of 40 as 4 members left the group at the end of last year

⁸ is understood that the Indian Government are trying to support domestic production of pigeon peas



		2015	2016	2017
Maize Yield (100kg sack)	Group A	141	561	213
	Group B		646	259
	Group C			464
Pigeon Pea Yield (100kg sack)	Group A	97	153	82
	Group B		187	96
	Group C			178
Maize Income (Tsh)	Group A	8,775,000 (62,234 per bag)	23,578,000 (42,028 per bag)	8,886,000 ⁹ (41,718 per bag)
	Group B		24,632,000 (38,130 per bag)	9,367,000 ¹⁰ (36,166 per bag)
	Group C			19,528,000 ¹¹ (42,086 per bag)
Pigeon Pea Income (Tsh)	Group A	24,295,988 (250,474 per bag)	16,980,000 (110,980 per bag)	2,950,000 (35,975 per bag)
	Group B		20,821,000 (111,342 per bag)	3,494,200 (36,398 per bag)
	Group C			6,913,000 (38,837 per bag)
Total Income (Tsh)	Group A	33,070,998	40,558,000	11,871,000
	Group B		45,453,000	12,861,200
	Group C			26,441,000
Costs (Tsh)	Group A	10,616,100	12,869,900	9,702,000
	Group B		16,429,300	9,843,100
	Group C			22,998,400
Gross Profit (Tsh)	Group A	22,454,898	27,688,100	2,169,000
	Group B		29,023,700	3,018,100
	Group C			3,442,600
Gross Profit (%)	Group A	67%	68%	18%
	Group B		63%	23%
	Group C			13%

In terms of staple profit per acre Group A achieved just over 36,000Tsh profit, Group B achieved just over 40,000 profit per acre and Group C achieved 30,000Tsh. Group C have the greatest average income from staples at 550,854Tsh per member. By focusing more on reducing their cost of production Group C can improve their profits.

3.2 Diversification and other field crops

Diversification is an extremely important strategy for farmers, supporting improvements in income security, but convincing farmers to make a change is challenging. Farmers living in poverty, who have been following a pattern and style of agriculture for years are less willing to risk changes because failure can be life threatening. This is why the demonstration gardens are so important. It's therefore extremely positive to see that in their first year 17 members of Group C have added at least 1 additional field crop to their farms following training. 2 additional farmers

⁹ Group A - Unsold maize total monetary value calculated based on 40,000Tsh per bag for unsold maize

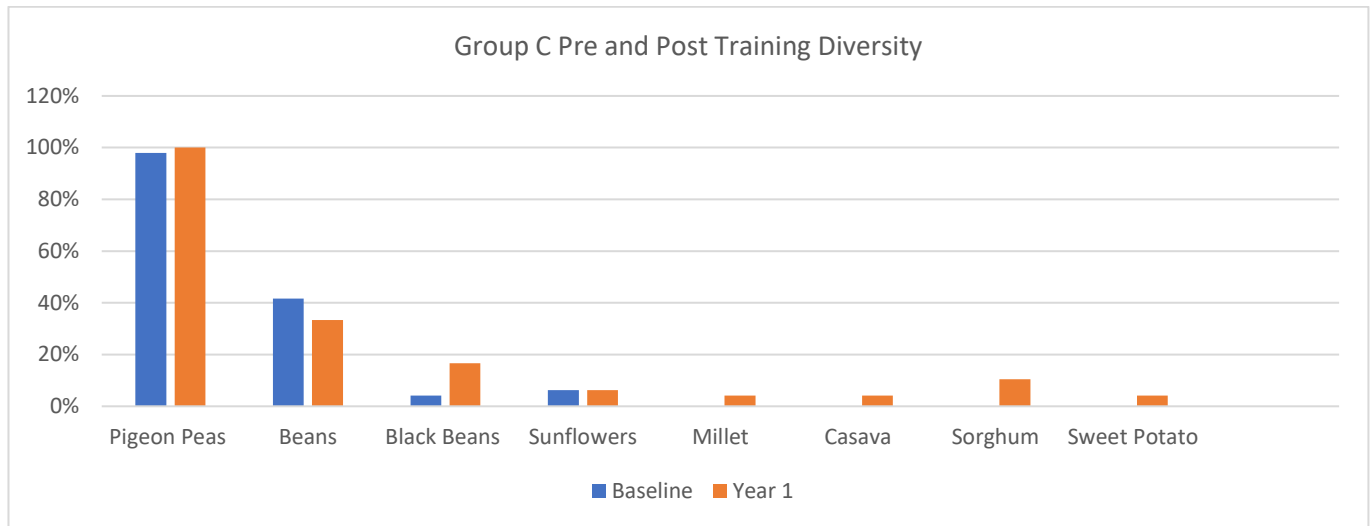
¹⁰ Group B - Unsold maize total monetary value calculated based on 35,000Tsh per bag for unsold maize

¹¹ Group C - Unsold maize total monetary value calculated based on 40,000Tsh per bag for unsold maize



have changed their diversification strategy, continuing to grow the same number of varieties but changing those varieties. The graph below illustrates the groups pre-and post-training engagement with different field crops¹².

Group A & B’s engagement with other field crops remains similar to previous years, with 67% of Group A and 43% of Group B growing at least one additional crop. Group B have also increased their engagement with black beans up from 25% in 2016 to 35% in 2017. In end-of-year discussions with Group A & B, farmers expressed that this year, with the combined difficulties of climatic conditions and plummeting pigeon pea prices, many group members were reminded of the importance of diversification and the dangers of relying only on their staple crops. The table below summarises group profits from these additional field crops.



Crop	Group	% of group growing the crop	Profit per group (tsh)	Average Profit per person (tsh)
Beans	Group A	38%	1,338,600	148,733
	Group B	18%	127,500	18,214
	Group C	33%	528,300	33,019
Black Beans	Group A	50%	2,403,300	200,275
	Group B	35%	834,200	59,586
	Group C	17%	388,900	48,613
Cassava	Group A	4%	120,000	120,000
	Group B	3%	400,000	400,000
	Group C	4%	20,000	10,000
Sorghum	Group A	4%	98,600	98,600
	Group B	5%	181,600	90,800
	Group C	10%	-181,500	-36,300
Millet	Group C	4%	3,400	1,700
Sunflowers	Group C	6%	450,000	150,000

Harvests per acre of beans and black beans are similar across the three groups and selling prices are largely comparable, the reason that Group A’s profits are higher is purely because a greater proportion of their harvest is for retail rather than home consumption.

Within our training we emphasise the importance of climate adaptation for small scale farmers and encourage farmers to engage in growing drought resistant crops such as cassava. Over the years this has proved an unpopular crop due to the prevalence of certain pests that attack the tubers, limited space and concerns over potential thefts of such a valuable crop. As a result, cassava, has only been grown by a few households. However, those households who do grow cassava have seen repeated success. Group C’s engagement with other field crops extends to millet,

¹² Figures for sorghum were not collected in the baseline so we are not assuming that the 6 members who grew sorghum in 2017 have added this post training - the baseline has been adapted for the next group so that we can include these comparisons



sorghum and sunflowers with varying degrees of success. Please note that a negative figure does not necessarily represent a loss, it will represent domestic consumption.

3.3 Vegetable Production

Group C set up their own vegetable plot where John provided group training and mentoring. The plot was very successful in motivating and engaging the group to work collectively and as a small enterprise. The group focused on cultivating 'leafy greens'¹³ using techniques that could be easily copied by group members. They formed a direct relationship with a number of wholesalers and made a profit of approximately 175,000Tsh.

On an individual level, we have seen:

- An increase in engagement with vegetables production, 50% of Group C have already started growing vegetables or started growing additional varieties of vegetable post training. The vast majority of these are growing some variety of leafy green vegetable, as they are fast growing and therefore ideal for the household's daily needs.
- The number of farmers growing tomatoes for retail has doubled, collectively they made a profit of 746,000Tsh.
- Two farmers also diversified into onions. One of these, inspired by the training on vegetables and with his income under pressure due to the shock of the pigeon pea crisis, grew onions down by the lake for the first time and generated a profit of 416,200Tsh.

As a result of the nutrition and well-being training for Group C we have seen an incredible improvement in self-reported consumption of vegetables with 86% of farmers reporting that their families eat vegetables daily, as compared with just 21% before the training. Collectively 77% of Group C have increased their household's consumption of vegetables since joining the programme. The Managha CASO has also been working hard with farmers to overcome the challenge of not having direct access to water, these farmers have been encouraged to focus only on those vegetables with lower water needs such as pumpkin and kunde leaves.

"Those without water previously said they couldn't grow anything because of the lack of water but now that they see the benefit of growing their own vegetables and that some varieties of vegetables only need little water more of them can grow"

-John, Managha Community CASO

In Groups A & B tomatoes continue to be a popular choice amongst farmers wanting to diversify their income stream with 16 farmers growing tomatoes for sale. 75% of these farmers made a profit, with one member of Group B who started growing vegetables for the first time doing particularly well and generating over 1,000,000tsh in profit. 2 farmers in group A also grew peppers, with 1 making a fantastic profit of nearly 350,000tsh.

Across these two groups we now see 26 farmers growing leafy green vegetables for their domestic needs. Of these 5 farmers are using the production of greens as an additional income source and all 5 made a profit. One farmer made an incredible 400,000tsh from his greens by striking up a supply relationship with a local secondary school. The other 4 farmers made a collective profit of 79,000tsh which is still a significant achievement from such low value produce.

3.4 Fruit Production

Groups A, B and C are continuing to engage with fruit production as an extremely beneficial income resource and in 2017 fifty-two farmers across the three groups were able to generate an income from their fruit trees. Group B significantly improved their collective profit from 442,000Tsh in 2016 to 1,123,000Tsh in 2017 with five new farmers beginning to benefit from a fruit income. Mango, Banana and Avocado continue to be the most popular fruit trees that farmers plant.

Watermelons were again cultivated in the farms of Group A members with last year's highly successful farmer repeating his activities and making just over 600,000Tsh in profit. This single crop accounts for nearly 1/3rd of his yearly profits. A second farmer in Group A replicated the idea, generating a profit of 272,000Tsh.

¹³ Mchicha, Mnafu, Sukumaweki and others



65% of Group C are engaging in fruit production and made from bananas alone a collective profit of 4,799,000Tsh, a significant improvement from the baseline banana income. Avocados generated a further 1,343,000Tsh and mangoes 909,000Tsh.

Group members report using improved tree management techniques post training, including applying manure to banana trees to boost production and adopting organic pest controls to reduce the impact of insects on their fruit. Since training started Group C members have planted 1,140 fruit trees, the vast majority of which are bananas. Farmers in the group explained that having had the training and seeing the success of their own fruit trees or that of their neighbours they have been motivated to invest in planting more trees because of its long-term benefit to their farms and household incomes. In addition, since learning about the health benefits of eating fruit it is very encouraging to see that 40% of households have increased the number of times a week that they eat fruit – now 69% of the households are eating fruit every day.

3.5 Dairy Cattle and Milk Production

Milk Profit		Profit 2014 (Tsh)	Profit 2015 (Tsh)	Profit 2016 (Tsh)	Profit 2017 (Tsh)
	Group A	3,821,400	4,128,000	1,614,700	3,569,000
	Group B			2,427,200	2,888,500
	Group C				10,583,100

Milk can be a significant contributor to a farmer's incomes and can take you out of 'poverty', supporting household resilience when crops fail or prices tumble. 14 farmers in Group A, 21 in Group B and 32 in Group C own cattle that produce milk. This milk is an extremely nutritious resource for families and often the milk is kept for the family's needs. For farmers who sell some of their milk to support the household's income we monitor the litres they are able to sell each month, the selling price they achieve and the costs of the cow's upkeep, this gives us their profits from milk production. It should be noted that although some farmer makes a 'loss' they are still providing milk for their family rather than having to buy it or the family having to go without, which is a positive outcome for the family.

Group A's milk profits have returned to near 2015 levels and in Group B there has been a 50% increase in the number of farmers making a profit from milk sales. Last year's concerns around insemination appear to have been addressed and John's support to livestock owners and the training he has delivered to the group has enabled farmers to produce milk for more months of the year, boosting the groups profits.

In Group C 23 of the farmers with milk producing cattle made a profit and there has been significant improvement in terms of milk incomes within the group. 13 farmers have improved their milk income compared with their pre-training milk incomes. This year a number of new farmers have been able to start generating an income from milk, suggesting their milk production is now exceeding their household needs. This is extremely encouraging for the group and has significantly contributed to the group's overall profits for the year.

Farmers across all three groups have commented that the lessons from the Managha Community CASO have been invaluable to them. This year farmers reported being able to identify signs of disease for themselves and therefore being able to take effective and timely action, understanding and implementing ways of improving their livestock enclosures, reducing the chance of bacterial infections afflicting their cattle and adopting improved feeding regimes to boost their milk production. Some farmers have also begun growing their own fodder for cattle following a system similar to what is employed at the Managha demonstration garden. Other farmers are hoping to do the same in the coming year once they have the money to buy grass seedlings.

4. Farmer Savings Schemes

In 2017 we identified the need to revise our approach to loans and savings with our farmer's groups. We discussed the challenges and how to overcome them with the leaders of each group and together revised the savings programme. Under the revised approach control and management responsibility for the savings programme lies with the group itself, enabling decisions about how the group operates and the rules that govern the savings process to be made by the group's membership. Each group received training in October 2017 and the shift towards group



management and the potential to access small loans from a community based source has been extremely well received.

Under the new system, farmers make small regular monthly savings; the amount of this monthly contribution is set by the group themselves. Once the group have built up enough funds they can begin to make small, short-term loans to those members of the group who want them. The loan period and the interest rate they attract is set by the group. Groups A, B & C have all set the minimum monthly saving contribution at 10,000tsh a person and once enough funds are available small loans will be offered at 2x the value of a member's savings. The groups have decided 10% interest for a 3-month loan is a reasonable rate, seeking to balance the need for affordability with the desire to generate an income.

Each group is committed to the savings process but due to problems related to the harvests some farmers have struggled to meet their minimum monthly contributions. Some groups have also found that bylaws they introduced to support the programme have been counter-productive. For example, allowing a member to miss three consecutive contributions before a penalty is applied has led to some farmers waiting until the three months is up before trying to find all the money to make three months-worth of contributions all in one go, re-creating the challenge farmers faced in the preceding system.

Follow up meetings have been held and each group is working to address the issues they are facing, trying to balance the need for inclusivity with ensuring the savings are able to grow sufficiently to be able to make loans to its membership. We will be working closely with them over the coming months to monitor their progress.

5. The Impact of the investment

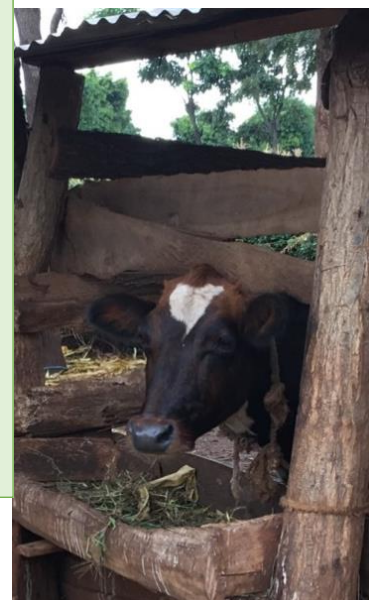
Our farmer training programme is designed to build the knowledge and skills of small scale farmers in Babati so that they are better equipped to improve and diversify their farming activities, promoting improved incomes and income security. The resulting benefits are significant and the long-term, sustainable impact can be substantial. Group A, B and C have now completed all of their training and over time they have steadily improved their farms and their farming incomes, enabling individuals to improve their homes, support their children's education and better feed and provide for their families.

Written up below are four significant stores from the programme which demonstrate the impact of the investment in the programme

Case Study – Charles, Group A

Charles owns both local breed and dairy cattle, as a result the animal husbandry and livestock health training available to the group in 2017 was an important opportunity.

From the training, he learnt about the importance of good hygiene and sanitation to proper dairy cow upkeep. One problem Charles often faced was inflammation and leaking from his cow's udder. Through the CASOs training he learnt that this was caused by a bacterial infection known as Mastitis. Whilst active the cow cannot be milked or suckle a calf. As a result, this simple bacterial infection poses a risk to the cow, any calf and to the household's income. Through the training Charles learnt about preventative measures that can reduce the risk of a cow developing infections and since putting these in place, including washing hands before milking, regular cleaning of the cow shed and changing bedding materials the problem has been greatly reduced.



Case Study – Geoffrey, Group C

Geoffrey is a typical farmer who, before joining our training programme, grew maize, pigeon peas in the traditional way, had some bananas and avocados trees and had tried unsuccessfully to grow vegetables.

The training reinvigorated his passion for farming. He set about improving his terracing and planted banana trees and grasses for his cows along it, diversified his staples by intercropping maize, pigeon peas and sorghum in the same field as well as planting beans amongst his banana trees having recognised the benefits of growing the two plants together. He is also successfully growing vegetables, using organic pest control methods, for the household (Sarro, Sukumaweki and Mchicha). He has also started using organic pest control (a spray) on his avocados to combat insects which in previous years have caused all the fruit to go bad and is adding manure from his cows to the banana trees.



He has seen improvement in the milk yield in his cows as a result of the improved diet, his family now eat vegetables twice a day and so also have a better diet. He has seen increased banana, avocado and bean yields but this year with the poor rains his staple harvest plummeted and is not even enough for the household.

“What I learnt from the training was not to depend only on income from one crop, I have been relying heavily on maize and this year would have been a real problem.... I made efforts to grow more things so that we would have a wider variety of crops and be able to increase the varieties we eat at home.”

Geoffrey went on to say that the training made him realise how important fruit trees could be to his long-term income and he has subsequently planted 150 banana trees to boost his future income.

With his profits, Geoffrey has bought a new calf which in time will provide more manure for the farm and milk, supporting the families’ income. He also brought water to his home; this makes things easier for the whole family as water no longer needs to be fetched for all their needs and it also enables Geoffrey to grow vegetables more often and for longer periods at a time in years to come.

Case Study – Mohamed, Group B

Mohamed is an extremely progressive farmer who lives and farms close to the lake. Because he diversified his crops he managed to significantly increase his profits from last year despite the poor maize yields and the collapse of the pigeon pea price. He grows maize, pigeon peas, passion fruit, bananas, avocados, mangos, beans tomatoes and sukumaweki which he sells directly to a local secondary school.

Having managed to improve his pigeon peas yields this year he was bitterly disappointed with the crash in their value. Mohamed recognises that his other crops were instrumental in his success this year and that his location gives him certain advantages.

“When I joined the programme in 2016 I started using the groups water pipes to bring water from the lake to my farming land, each time it cost 15,000Tsh a day.....Last year with the profits from my farm I was able to buy my own pipe, now I can bring water to the farm whenever I need it. I started farming tomatoes and I irrigate my late season beans.....With the profits from the tomatoes and beans (over 1 million shillings) I was able to dig a well at my home so now we have water which saves time and money.With the profits, I also bought 300 banana trees and planted them around the farm, next year we should begin to get more income from them too.”



Case Study – Eric, Group A

Eric is a committed, hardworking and enterprising farmer and alongside his farm he also works building fuel-efficient stoves in the community. His training has helped him improve and develop the farm over the years and in 2017 although the price was exceptionally poor for pigeon peas and the harvests were lower than he's come to expect the income from the farm was still enough for him to cover the school fees of all his children. Like many farmers his beans provide an additional income source and despite the failure of the first season beans Eric persevered and replanted as the heavy rains arrived. Unlike some farmers Eric doesn't need to sell the beans immediately and so is holding on in the hope that the price will improve.



This year Eric has been looking at reducing his post-harvest losses. He invested in PICS bags for the first time, these bags have three internal layers each of which is separately secured. The multi-layered system is highly effective at preventing insects getting to the maize. In previous years, using standard single layered bags, Eric found that the maize he stored was often ruined and had to be thrown away. With the new bags, Eric doesn't need any chemicals to preserve the maize and so far, they haven't had to throw away any maize at all. Seeing the difference these bags have made to his own food stores he's told his neighbours about the benefits and encouraged them to buy the bags as well, he hopes that in the future the group might collaborate and buy bags in bulk to reduce the costs of the bags.¹⁴

Over the years Eric has used the profits from his farm to improve his home and this year they have nearly completed the house, adding glass to the windows and a porch at the front. Both Eric and his wife are extremely proud of their achievement and explained that they had made it a success by working on the house in stages as their profits allowed.

6. Challenges, Reflections and Lessons Learnt

6.1 Outbreak of the Fall Army Worm in Babati

This agricultural season farmers are facing a new and extremely serious challenge, an outbreak of the Fall Army Worm¹⁵ (FAW). FAW, actually a moth, is most destructive during its larvae stage, feeding on nearly 80 different plant species and with a particular preference for maize. With few natural predators, limited known effective control measures (either chemical or organic), laying thousands of eggs in its lifetime and the moth's ability to travel up to 100km per night, the insect has the potential to cause significant crop losses across Sub-Saharan Africa. FAW has spread up from Southern Africa and was detected in farmers' fields earlier this year.

MCDO are participating in multi-stakeholder meetings in Babati in order to share learnings on the FAW outbreak and its management as the situation develops. To help MCDO keep abreast of developments MCDO are also taking part in training and discussions on the FAW outbreak and its management with the district agricultural office and the Arusha Conservation Agriculture Forum. We are also talking to Sustainable Agriculture Tanzania about their response to FAW and organic methods that they have found effective. We will be monitoring the situation closely as the agricultural year progresses.

6.2 Community Savings Schemes

The shifts in our approach to the savings scheme have been met with enthusiasm by all three farmer's groups in Managha. Groups A&B in particular are keen to begin to generate their own income and the savings scheme, if

¹⁴ Concerned about post-harvest losses and seeing the success of those farmers who have used multi-layered bags we have begun including the use of multi-layered bags in our training of new groups of farmers

¹⁵ Further information on FAW can be found in Appendix B



managed well, allows them to do this. Changing the system has understandably been challenging for the membership and for some farmers the idea of having to participate in a regular savings scheme as part of accessing on going loans, combined with the economic challenges of last year have resulted in a small minority deciding not to continue with the loans program. These farmers will however continue to benefit from the trainings they have received through the program.

In the first few months collecting the savings has proved challenging and the groups are not yet meeting their own targets. However, each group remains committed to the savings process and are working with their membership to address the issues. This has also been a learning process for each group and MDCO are helping them to review their by-laws to ensure they are working for the group to support the savings process.

6.3 Mobile Data Collection

Utilising mobile data collection has sped up and improved the accuracy of our data collecting and processing across the programme. However, the analysis continues to be a large and time consuming task with increasing numbers of farmers joining the program each year. We have decided that going forwards we will monitor farmers in the program for two years after their training as this is likely to be the time when they utilise and benefit from the training, after 2 years we will no longer be tracking their individual progress in such detail. Therefore, we will no longer be collecting data for farmers in Groups A&B and will collect data from Group C for one further year.

7. Plans for the coming year

Training for a final group in the Managha Ward

In September 2018, we will begin recruitment for the 5th and final group in the Managha ward and hope to start training in October. This group will follow the revised format of undertaking training in Yr.1 followed by access to microloans and ongoing mentorship in Yr.2.

Further training of the MCDO Agricultural Team

We plan to continue to offer John, the CASO, continued professional development through SAT focussing on improving and developing his expertise in organic agriculture, soil recovery and fertility.

We also think it would be beneficial for our Agricultural Officer, Robsone, to attend a 'training the trainer' course, focussed on improving his skills in facilitation and the design and delivery of training sessions, group formation, dynamics, management and conflict resolution.

Each staff member attending training will be expected to share their knowledge with the wider MCDO team on return to ensure all communities can benefit.

We want to ensure that our agricultural programme stays abreast of farmers needs and the opportunities available to them and are therefore keen to take steps to explore value addition. This would mean developing our own organisational knowledge initially and are again looking at training offered by SAT. The incorporation of value addition could be extremely beneficial particularly in light of the FAW outbreak which makes alternative routes to improve income all the more important for small scale farmers.

Improving the mobility of the CASO

As our farmer training programme scales out within the Managha ward farming households are becoming increasingly dispersed, this is challenging in terms of the CASOs ability to move between the different farmers to offer his individualised support. John's services continue to be requested by members of Groups A, B & C and he is also busy with the newest group to join the programme, meaning he is constantly on the move. When John graduated, we knew he would be an invaluable resource to the community and the inclusion in his training of animal husbandry and livestock health was immensely beneficial, enabling us to expand the content of our farmer training. However, we had not expected there to be such a demand for his advice and treatment of the community's livestock. As word spreads about his work the area he serves grows and he is already visiting farmers in the neighbouring ward. To ensure he can continue to effectively do his job, visit and advise the farmers within the farmer training programme and be available to the community as needed for livestock treatment we are exploring the viability of investing in



motorcycle lessons and the purchase of a motorbike to make the most of John's time and to enable him to work effectively.

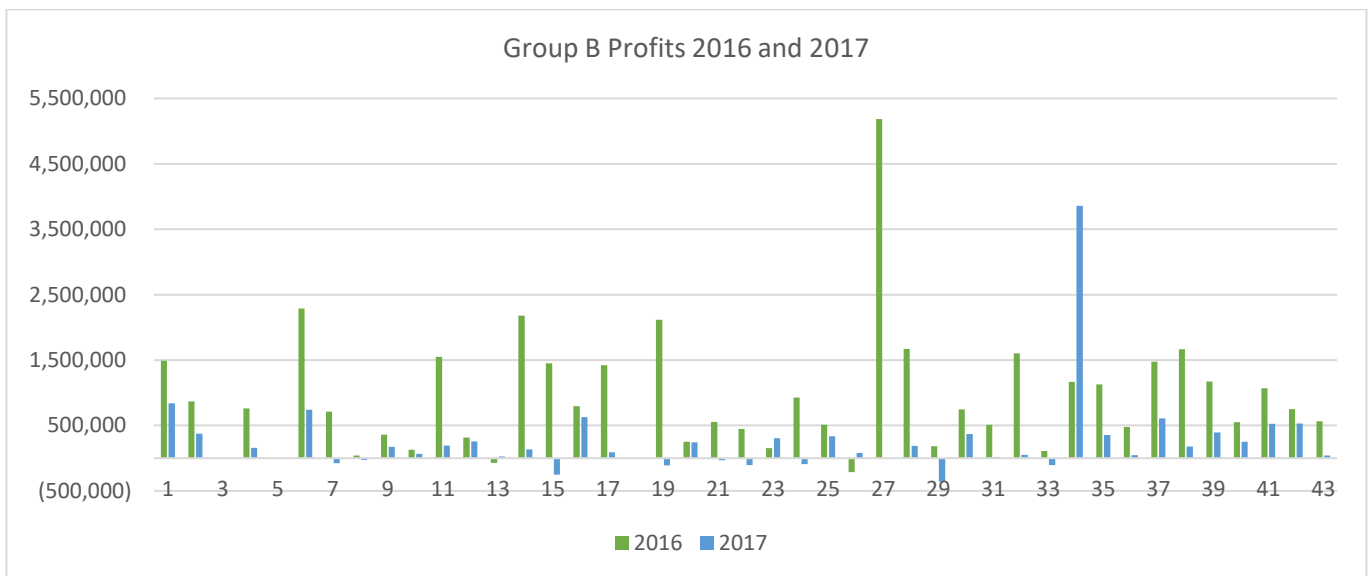
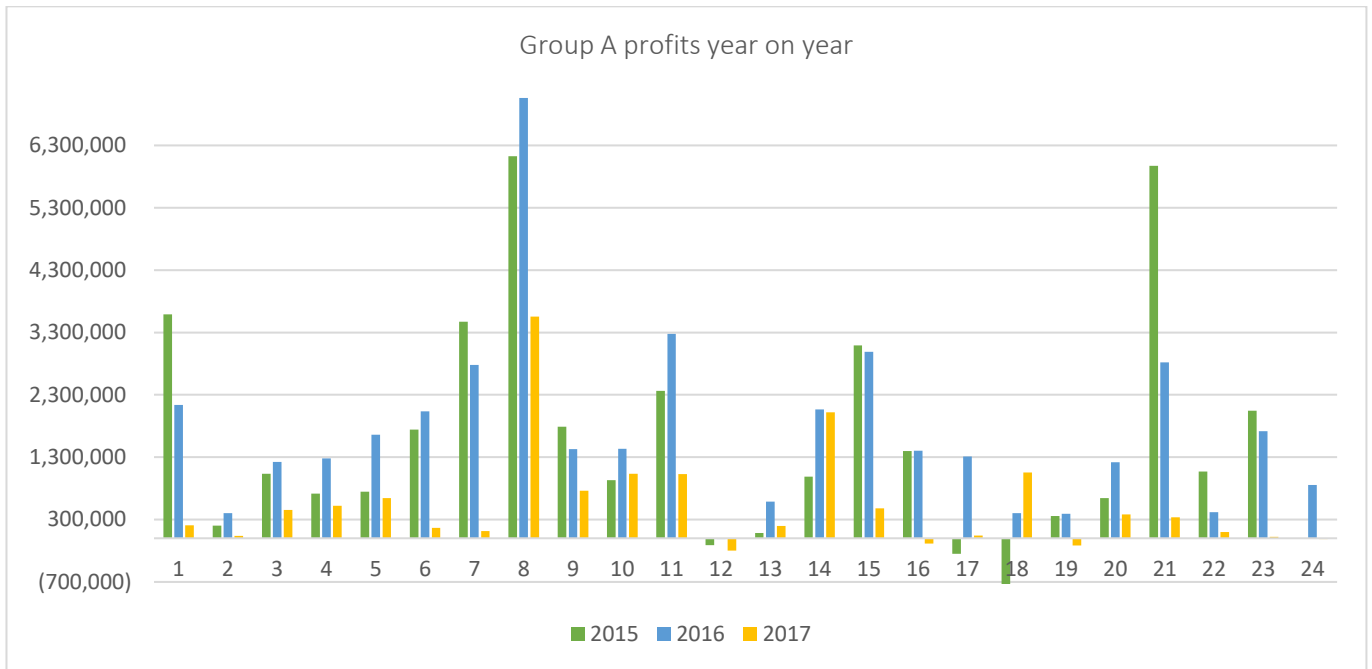
8. Conclusions

Looking back over the year, a few key things stand out:

- The introduction of our CASOs to the farmer training programme has been enormously beneficial, enabling the scale out of the programme and enabling MCDO to offer new training modules to the community. In Managha John has been extremely well received and his impact on the School Demonstration Garden has been beneficial to the school and wider community.
- The introduction of Livestock training and support services has had a hugely beneficial impact on the farmers with livestock and, as those numbers grow, the need for John is likely to grow and the need for him to travel fast and safely from A to B also grows.
- Despite the unprecedented and extraordinary challenges faced by the farmers this year, for so many to make a profit, however small, is hugely encouraging.
- The poor climatic conditions and other factors beyond the control of farmers clearly suggest that increased levels of diversification can help farmers get through difficult times, even if the diversification is at a domestic level.
- Training that links diet and well-being with growing fruits and vegetables is clearly beneficial and helps to bring about changes in behaviour which can improve the health of the household in the long term.
- The planting of so many trees suggests that farmers are thinking ahead and planning for the future, which is an uncommon trait of people living in poverty. The change process from being a victim of circumstance where nothing can be done to change the situation, to being their own agents of change, is a seismic shift in attitude and behaviour and is enormously positive.
- Reviewing the savings process with the farmer's groups has been greatly appreciated and the move from an LTT managed saving programme to one owned and run by the community has been a good step. However, farmer's current economic situations are challenging and have prevented the revised scheme being the immediate success we had hoped it would be. We recognise that the shift is a learning process and will be working closely with the farmer's groups over the coming months as the programme develop.
- Going forwards we will no longer be monitoring farmers in Groups A&B on an individual level as it is now three years since they joined the programme, continuing to monitor these groups would be a heavy resource burden.
- We expect that the impact of the Fall Army Worm outbreak in Babati will have a significant effect on farmers harvest this year, maize yields in particular will be poor, we are not yet in a position to say whether recent rains have helped or hindered the growth of other crops



Appendix A – Group A & B Profits year on year through the programme.





Appendix B - Fall Army Work (FAW)

FAW is an insect native to the Americas. FAW was first detected in Central and Western Africa in 2016 and has quickly spread across Sub-Saharan Africa¹⁶. FAW is most destructive during its larvae stage, feeding on nearly 80 different plant species and with a particular preference for maize. With few natural predators, limited known effective control measures (either chemical or organic), laying thousands of eggs in its lifetime and the ability of the FAW moth to travel up to 100km per night, the insect has the potential to cause significant crop losses across Sub-Saharan Africa.

FAW was detected in farmers' fields in Babati early this year but clear and effective management advice has been difficult to come by. There is limited information on control and experience from farmers in Babati has demonstrated ineffective results with both chemical treatments and organic methods. FAW is a new pest to MCDO and their knowledge of the pest and of control approaches is limited and untested meaning that MCDO are not currently in a position to effectively advise farmers themselves. We have been talking with the local agricultural office in an attempt to get further information out to farmers but their response has been limited and concerned only with chemical pesticides, over which there are understandable reservations. Despite pressure from us getting government sanctioned advice out to farmer's groups has been extremely slow. We are extremely concerned about the impact of the outbreak on farming households across Tanzania, not just this year but in years to come as this 'plague' develops.

¹⁶ FAO (2018) Integrated management of the Fall Armyworm on maize; a guide for Farmer Field Schools in Africa, Rome