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AWARD
Tech Report
Series

AgriSI

Farmer Baseline Report

Sekororo-Turkey village

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June 2018



USAID | SOUTHERN AFRICA



Acknowledgements

The USAID: RESILIM-O project is funded by the U.S. Agency for International Development under USAID/Southern Africa RESILIENCE IN THE LIMPOPO BASIN PROGRAM (RESILIM). The RESILIM-O project is implemented by the Association for Water and Rural Development (AWARD), in collaboration with partners. Cooperative Agreement nr AID-674-A-13-00008.

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June 2018

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1 Introduction

Turkey is an extension area from Sedawa, travelling towards Tzaneen. The community members from Turkey saw the AgriSi work in Sedawa and requested to be included. They are a large group from two sub-villages: Turkey 1 and Turkey 2, consisting of 50 participants.

The water situation is similar to other villages in the area, with extremely erratic Municipal supply. There is a local community group that paid for pipelines to bring water from the mountains. Per arrangement they pay R20 per month to have water once a week. This is for a portion of the village - called Turkey 2.

In areas of Turkey 1 there is little to no Municipal water available. People are paying R9.00 for 210l of water and must also arrange for transportation to their homes.

TABLE 1: COMMUNITY INVOLVEMENT IN LAST 6 MONTHS

DATE	ACTIVITY	NO OF PARTICIPANTS	COMMENTS
2017/11/29,30	Climate Change workshops (2 days)	74	
2017/11/06	CA workshop	38	Demonstration of CA, and animal drawn planter, seed distribution for experimentation (Maize, beans, cowpeas)
2018/03/05	CA - replanting - Soil fertility training (trenches, eco-circles, mixed cropping, mulching)	42	Replanting, incl cover crops (millet, sunflower, Sunn hemp, maize, beans)
2018/03/08	Liquid manure and natural pest and disease control	49	
2018/04/12,13	Tunnel construction (2 days); including drip kits, re-cap on trench bed packing and experiment- planting inside and outside tunnel	47	1 tunnel constructed, with help from Sedawa participants and 3 more done by participants themselves thereafter
2018/04/19	Planting calendars, seed saving and seedling production	48	Seed provided include coriander, parsley, carrots, rape, broccoli, beetroot, spring onions and mustard spinach. (small packets to all participants)

A typical yard in Turkey 1

Homesteaders are gardening in infertile sandy soils, with very little organic matter and little to no shade
(Farmer: Dinah Masete).



*A typical mango orchard in the area
(Farmer: Mr Makgobatlou)*





2 Climate change dialogues

A two- day workshop was conducted with the Turkey community to look at understanding, the impact and potential adaptive measures.

Below is a summary of the report written for this process:

Visible signs of climate change

- Heavy storms and winds
- Less rain
- High temperatures

Impact on livelihood

- Challenges in growing sorghum and millet
- Pests are problematic
- Shortage of water; there are no dams for storage
- Lack of knowledge on pest and diseases control
- Poor grazing
- Planting seasons are changing- lack of knowledge on how to deal with that
- High increase in food prices
- Fewer jobs
- Increase in crime
- Loss of indigenous seed stocks
- Livestock diseases have increased

2.1 Past, present future of farming activities in the area

Past	Present	Future
<ul style="list-style-type: none">- More rain and rainy season started earlier- Plenty of food - many people were farming- Lower temperatures- Abundant livestock with sufficient grazing- People were much more active, stronger and healthier- There were a large variety of indigenous crops and fruit trees	<ul style="list-style-type: none">- More droughts that last long- Increase in population puts pressure on resources- Lack of employment, increased crime- Certain crops were not being replanted- Water availability are diminishing- More human diseases and people are dying younger- Popular believe is that the end of the world is coming	<ul style="list-style-type: none">- Increased conflict in communities - competition for resources- Increased poverty- Less land to farm, less grazing, more droughts- If this path continues people might not be able to grow crops any more <p>There is still hope for the possibility of lower temperatures and more rain</p>



2.2 Climate change impact mind mapping

The exploration was started again with inputs regarding the scientific understanding of climate change and broad predictions for the area, as well as doing the seasonality diagrams for temperature and rainfall in small groups to more deeply analyse changes.

This exercise is designed for participants to explore all the impacts on their farming systems and livelihoods as a starting point to beginning to identify potential adaptive measures. This was the first community meeting in this village and the beginning of the process. The ability of participants to clearly outline potential helpful measures and practices was clearly more limited than in the villages where support and mentoring have already been provided.

The community level analysis was very interesting, herewith a summary of comments pertaining to Climate Change impacts:

- The uncertainty in the rainfall patterns has affected planting seasons in the community. It has also led to a reduction in harvests.
- The consequences of Climate Change are all interlinked- Drying due to excessive heat leads to soil drying out, lack of seed, plants wilting, lower yields, drying up of dams, death of livestock and social issues such as poverty, hunger, diseases, increased crime and increased mortality.
- If rain increases in the higher rainfall months (Nov, Feb) the result will be excessive erosion and followed by dry spells, will mean the environment will dry out fast.
- Dryland cropping may become impossible under those circumstances.
- More water storage facilities are needed, including dams.
- Crop failure are commonly experienced, for example: a crop is planted, but due to heavy rains that causes erosion, followed by extreme heat, the whole crop has been lost- this has been common with tomatoes in the last few seasons.
- Heat resistant crops needs to be identified. There are traditional crops that does better under extreme conditions, for example potatoes, sweet potatoes and onions. In terms of fruit, mangoes are resilient but other fruit such as bananas, oranges, avocados and litchis are struggling.
- With increased pests the community have been forced to use chemicals, although they understand that it is not good for the environment.
- Water is definitely the main challenge and there is a lack of knowledge on ways to save and store water.
- The trees in the area used to promote rainfall, but due to deforestation cloud formation is less. It is believed that there is even less rain than there could have been if the natural environment was still intact.
- Indigenous animals and plants have been largely affected.
- There is an increase in animal deaths, more labour for people as a result and less food available at household level.



TABLE 2 : SUMMARY OF CHALLENGES, OUTCOMES & POTENTIAL ADAPTIVE MEASURES.

Impacts	Description and linkages	Outcomes	Potential adaptive measure
Group 1			
Reduced water availability	<ul style="list-style-type: none"> ▪ Dams dry out ▪ Boreholes provide less water ▪ Rivers dry out ▪ Less rain 	<ul style="list-style-type: none"> ▪ Reduced production ▪ Hunger ▪ Diseases 	<ul style="list-style-type: none"> ▪ More boreholes and dams ▪ Water management ▪ Irrigation in evenings and early morning ▪ Mulching & trench beds (keep soil cool and maintain moisture)
Drying of environment	<ul style="list-style-type: none"> ▪ Soils are hotter and drier ▪ Drought ▪ Plants wilt ▪ Increased pests 	<ul style="list-style-type: none"> ▪ No jobs ▪ Poverty 	<ul style="list-style-type: none"> ▪ Save plant residues for animals ▪ Buy fodder ▪ Control pests on animals
Reduction of resources	<ul style="list-style-type: none"> ▪ Deforestation, ▪ Fruit trees, livestock & wild animals die 	<ul style="list-style-type: none"> ▪ Crime ▪ Death 	<ul style="list-style-type: none"> ▪ Planting of trees after they have been cut down ▪ Make use of paraffin stoves and electricity ▪ Government involvement in solving the problem
Group 2			
Extreme heat	<ul style="list-style-type: none"> ▪ Early fruiting ▪ Trees wilt 	<ul style="list-style-type: none"> ▪ Poor crop health 	<ul style="list-style-type: none"> ▪ Shade netting
Shortage of water	<ul style="list-style-type: none"> ▪ Rivers dry out ▪ Municipal supply only once per week ▪ Boreholes dry out 	<ul style="list-style-type: none"> ▪ Lack of education towards saving water 	<ul style="list-style-type: none"> ▪ NGOs and government to assist ▪ Trench bed & mulching ▪ Save water in dams ▪ Drip irrigation ▪ Irrigate in evening ▪ Boreholes & greywater
Reduction of resources	<ul style="list-style-type: none"> ▪ Less grazing ▪ Seed shortage ▪ Trees are removed ▪ Indigenous animals are no longer there 		<ul style="list-style-type: none"> ▪ Donations for/of seed ▪ Rather use paraffin stoves than firewood ▪ Only chop down mature trees to allow others to grow ▪ Planting trees ▪ Government intervention ▪ Taking care of indigenous plants ▪ Plant fodder for livestock
Soils	<ul style="list-style-type: none"> ▪ Poor cultivation practices ▪ Soil erosion ▪ Dry & sandy soils 		<ul style="list-style-type: none"> ▪ Using crop residues and manure
Social repercussions	<ul style="list-style-type: none"> ▪ Less or no food ▪ Health problems ▪ No jobs 	<ul style="list-style-type: none"> ▪ Burning of buses ▪ Separation of families & divorce ▪ Poverty ▪ Crime 	<ul style="list-style-type: none"> ▪ Getting access to health care ▪ Parents must earn an income
Shortage of implements			<ul style="list-style-type: none"> ▪ Setting up cooperatives for government support ▪ Use animal drawn traction- oxen and donkeys ▪ Improvise: make our own tools, ▪ Make use of hand hoes



2.3 Assessment of potential practices

TABLE 3: PRACTICES THAT WERE SELECTED FROM THE MIND MAP AND WERE FURTHER EXPLORED IN TERMS OF PARTICIPANTS' UNDERSTANDING OF HOW WELL THEY WOULD/MIGHT WORK

PRACTICE	DOES IT WORK	REMARKS	FUTURE IMPROVEMENTS
RAIN WATER HARVESTING	Yes, people use 210l drums and basins - only for drinking water	Water does not last long and is not enough for needs such as washing and livestock	Large storage tanks such as Jo-Jo's will help
SMALL DAMS	Yes	If they are dug deep and are quite big, they are dangerous for small children	Must find infrastructure support to be able to put in tanks
CUT AND STORE GRASS FOR ANIMALS	Yes	It only works if you have a few livestock as cutting and storing enough grass is a big job	
TUNNEL	Yes, have seen a few tunnels in the village		The participants are willing to experiment with tunnels to see if production will increase
PLANT TREES IN THE GARDEN FOR SHADE	Yes	Some people struggle to focus on this enough to propagate the tree and water can be an issue	

A baseline survey was subsequently conducted for 20 participants in the group.

3 Baseline information for Turkey 1 & 2

Participants were visited in their homesteads and interviewed to glean information about their basic socio-economic situations and their farming resources and practices. *Table 4* below outline the summarised information.

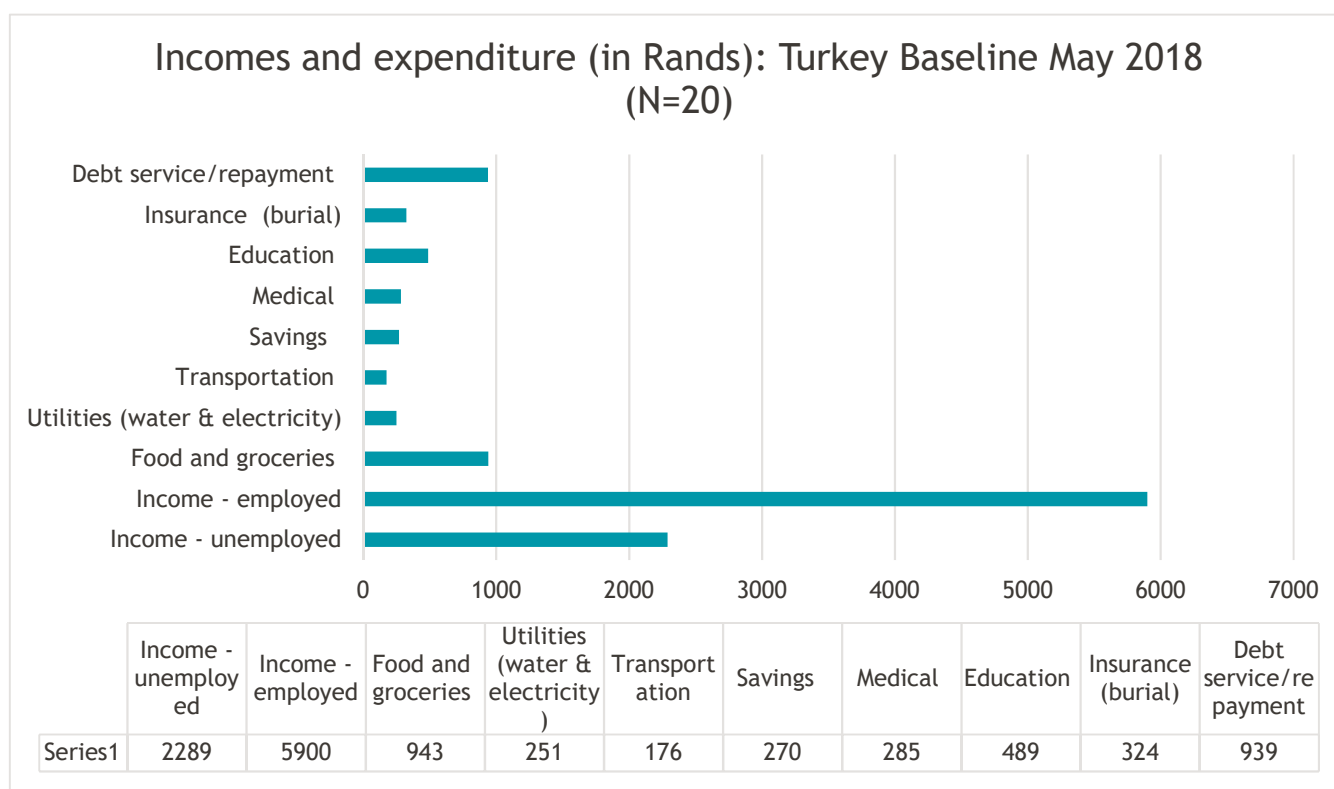


TABLE 4: SOCIO-ECONOMIC INFORMATION FOR TURKEY (N=20)

Household Information		Social organisation		No of Household members		Income source (per household)	
Gender (F)	15	Burial societies	20	Ave no. of adults in HH	3	Grants (pension, child)	20
Average age	53	Stokvels	7	Ave no. of children	2	Grants (ave no/household)	2
Disabilities	3					Remittances	6
Household head	18					Salaries	5
						Income from livestock	3
						Income from fruit & veg sales	7

The table above indicates that most of the participants are mature women and quite a number of the participants are the heads of their households. None of the participants in this programme are employed. All the households receive state grants, either child grants or pensions or both. Participants all belong to burial societies and a smaller number also saving in local groups (stokvels) for buying food. A few participants make a small income from farming activities.

TABLE 5: INCOMES AND EXPENDITURE IN TURKEY, MAY 2018





From *Table 5* it can be seen that 15 of the 20 households interviewed rely on grants and remittances to survive and make an average monthly income of R2889 per month. For the households where adult members have some employment that average income is R5900 per month. Participants spend between 20-50% of their income on food and an almost similar amount on repaying debts.

TABLE 6: INFRASTRUCTURE AND FARMING RESOURCES, TURKEY. MAY 2018

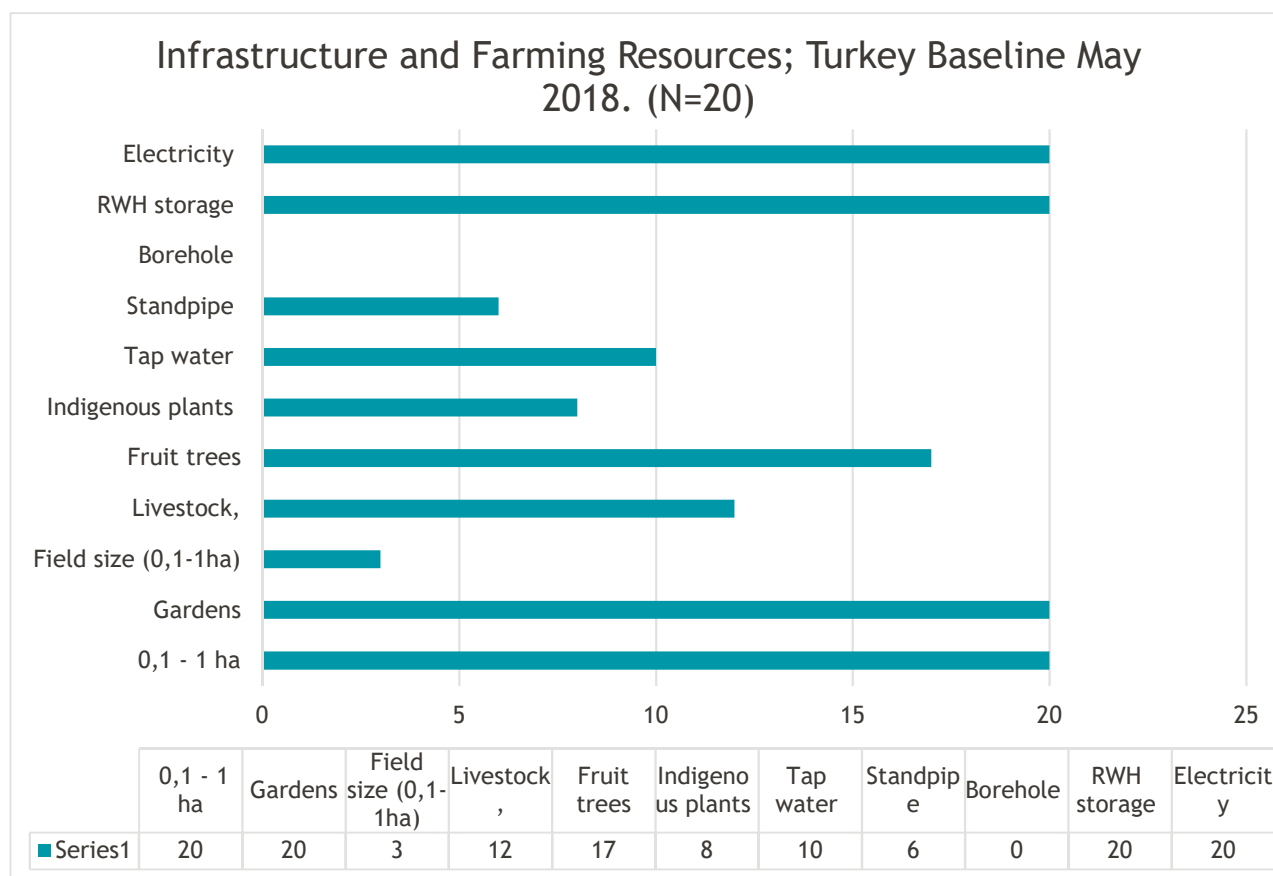
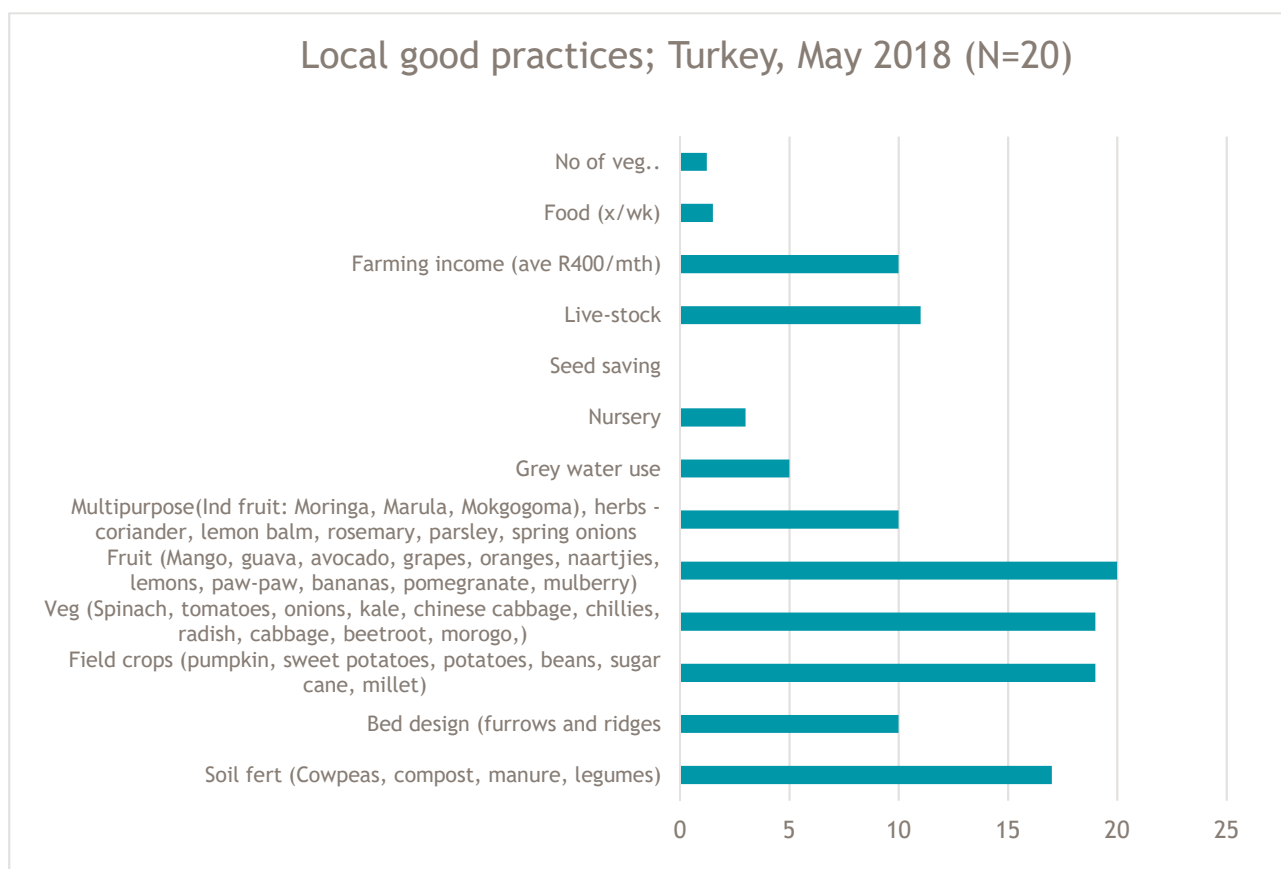


Table 6 points towards the severe lack of municipal water provision in the village. All of the households that have taps (in the survey only 50%), mentioned that there has been no water for some time. People in the village either buy water or belong to groups that provide private water provision arrangements (Pipes in the mountain). All participants collect some rainwater, but mostly this is in 210 l drums, so it is not enough for household use. Around 45% of these participants have Jo-Jo tanks (5 000-10 000l) in their homesteads.

TABLE 7: LOCAL GOOD FARMING PRACTICES IN TURKEY, MAY 2018



Local good practices; Turkey, May 2018 (N=20)



All participants have fenced gardens within their homestead confines. Only 15% still use fields further from their homes for dryland production. Around 80% of participants have fruit trees in their yards, often a good selection of different kinds of trees and around 60% of participants own some livestock- chickens (45%), goats (5%) and cattle (15%).

Table 7 above indicates the local farming practices used by participants. Use of legumes is common as a soil fertility practices (mostly cowpeas and some juko beans) with inclusion of manure and making of compost being a lot less common. Soils are generally very sandy and infertile. Traditional practices of planting in ridges and furrows is practices by around 50% of participants.

A range of fruit trees can be found in all gardens and around 50% of participants also have indigenous trees such as Marula and Mokgogoma. A typical range of vegetable and field crops are grown in the gardens; including cowpeas, sweet potatoes, pumpkin, maize, spinach, tomatoes and onions. Participants have also taken on planting the new range of seeds provided such as rape, kale, spring onions, coriander, parsley, carrots and Chinese cabbage.

Generally participants are able to harvest food from their gardens on average twice a week, with an average of 2 different vegetables. This indicates a rather low level of food security being maintained by homestead production. Farming income for the 50% of participants consists of an average of around R400 per month and consist primarily of the selling of spinach and Mangoes.

New practises being implemented in Turkey

Eco-circle with mixed cropping including green beans, and spinach
(Magdeline Shai-Turkey 2)



Seedling production - including newly received seeds of rape, mustard spinach and beetroot
(Magedline Shai)



Self-constructed shade netting structure
(Mafogo Maapule - Turkey 1)



Further small netting structures for individual beds in Mafogo's garden



3 Trench mulched trench beds, one planted to mustard spinach
(Magalangake Mogale - Turkey 13)



A small dam dug in Ms Mogale's yard- it holds water for around 3 months per year



4 trench beds
(Mabiletse Mogofe- Turkey 1)

Spinach planted in a container and protected
from heat and browsing by netting.
(Mabiletse Mogofe)



They have focused on herb planting and mixed cropping;
including lemon balm, rosemary, coriander, and spring onions.
Left is an eco-circle with mulching and mixed cropping
(Lydia and Phelicia Shaai's -Turkey 2)



Tunnel and outside trenches- for her experiment (left) & 3 drip kits and her mixed cropping eco-circle (right)
(Sarah Mohlale's - Turkey 1)





Hand dug well (right) and 3 of the 5 trench beds that has been constructed (below).
(Sarah Madire-Madire's - Turkey 2)

2 Eco-circles. Rest of garden is not that well developed
(Mothouane - Turkey 1)

An interesting garden layout of furrows and ridges that are on contour and includes basins for rainwater harvesting
(Mtshego Shaai - Turkey 2)



Tower garden
(Nkurwane Shaai - Turkey 2)

2 Eco-circles with spinach, mustard spinach, rape, tomatoes and mulch. (Dina Masete - Turkey 1)



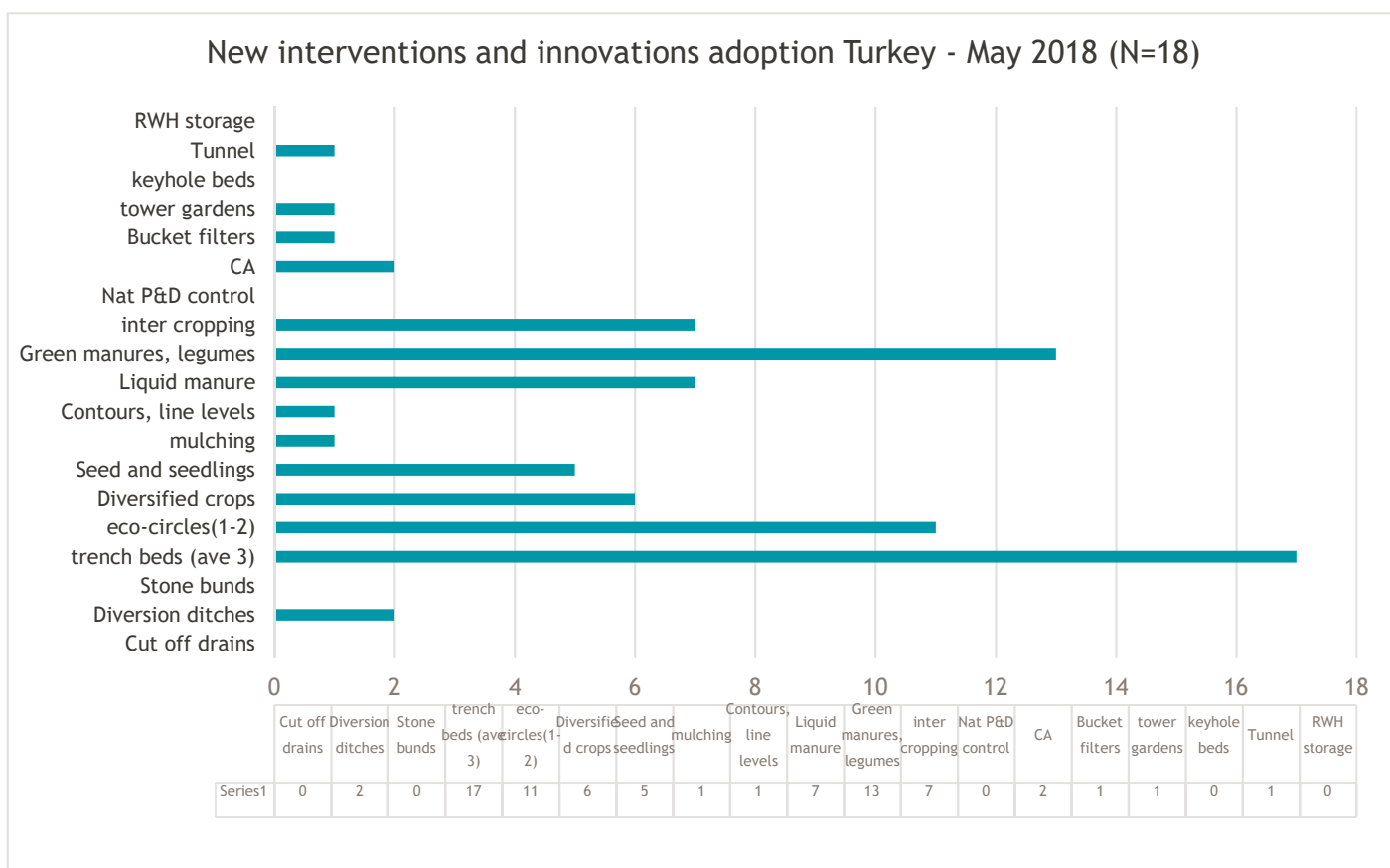


3.1 Implementation of new ideas

The learning curriculum is designed to start with the gardening practises known to participants and to build on those and add new ideas and practices that participants can try out.

Table 8 below gives an indication of which new ideas/innovations participants have been trying out in Turkey. 90% of participants have tried out at least one of the new ideas introduced.

TABLE 8: SUMMARY OF NEW IDEAS/INTERVENTIONS BEING TRIED OUT IN TURKEY: JANUARY- MAY 2018



From Table 8 it can be seen that around 85% of participants are implementing the trench beds, 65% have planted legumes, 55% have tried out the eco-circles and smaller number of participants have followed through with the seedling production, diversified cropping, mixed cropping, liquid manure and mulching. Some of the soil and water conservation practices such as contours, diversion ditches etc. still needs to be introduced. The number of participants who mentioned implementing the Conservation Agriculture is small, due to the complete crop failure for these experiments, which were abandoned mid-season. Also, thus far only a few tunnels with drip kits have been constructed, (more as pilots and demonstration sites) for the learning group to get an idea of how these work, prior to more extensive implementation.

The garden monitoring process tracks both the local good practices and new innovations/ideas implemented by participants. The idea is that each garden is monitored at least once a season to ascertain progress over time. In addition an assessment is made of food security for the household (recording the number of different crops/ vegetables harvested on a weekly basis and how often the family can have food from their garden).



In addition a garden drawing/plan is done for each participant (See Appendix 1).

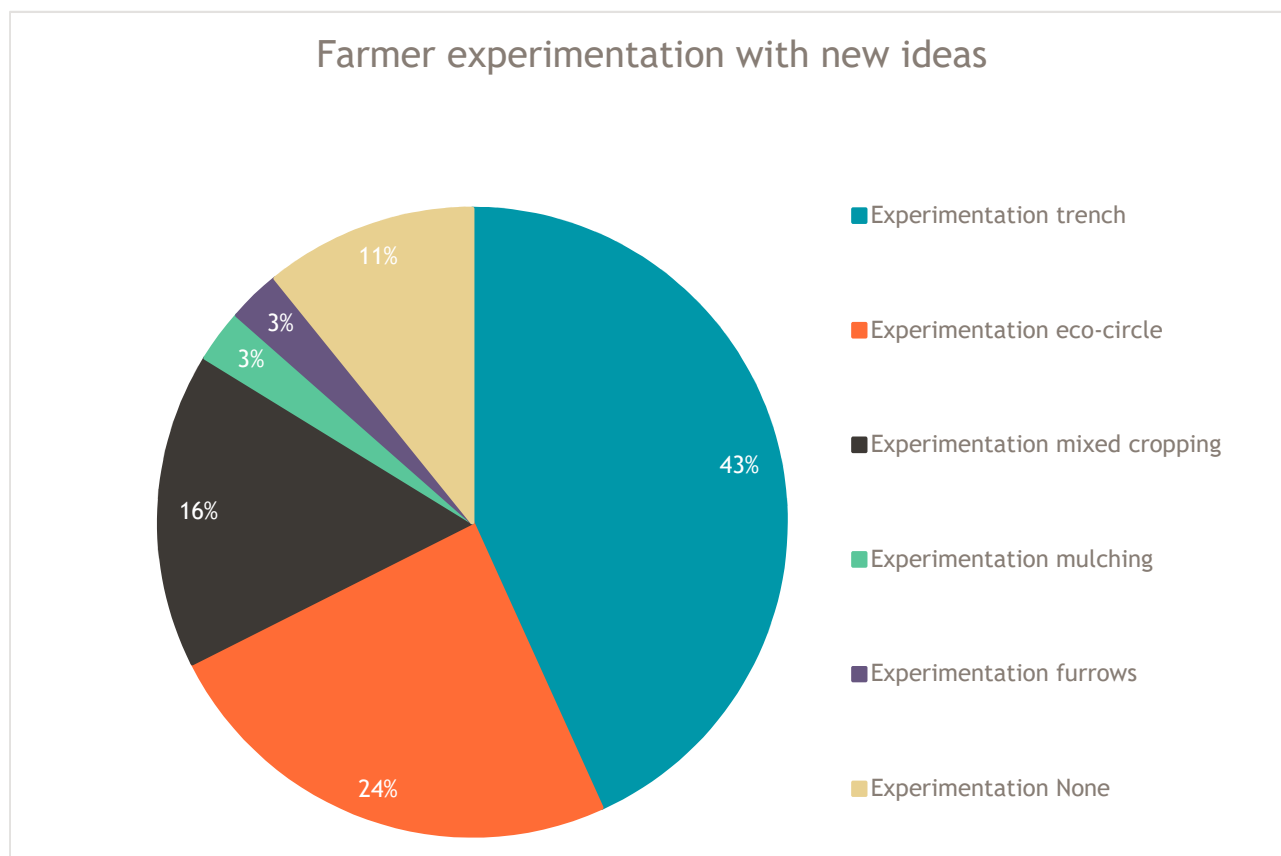
The monitoring is undertaken jointly between the local facilitators for the area and the new local intern that has been employed for this purpose. An e-survey format has recently been set up, so that these monitoring processes can be done on tablets and the data uploaded for easier access and formatting into a coherent database.

4 Farmer experimentation

An integral part of the learning process is for participants to take on farmer level experimentation with the new ideas introduced. They are to try out these new ideas alongside their normal practices, to be able to observe and compare any differences in growth and production as a result of implementing the new or improved practices.

The figure below indicates the individuals who have taken on experiments and what they are trying out in the Turkey Learning group to date (January-May 2018). Around 43% of participants are experimenting with trench beds, 24% with eco-circles, 16% with mixed cropping, and 3% respectively with furrows and mulching. Around 11% of participants are not implementing farmer experiments.

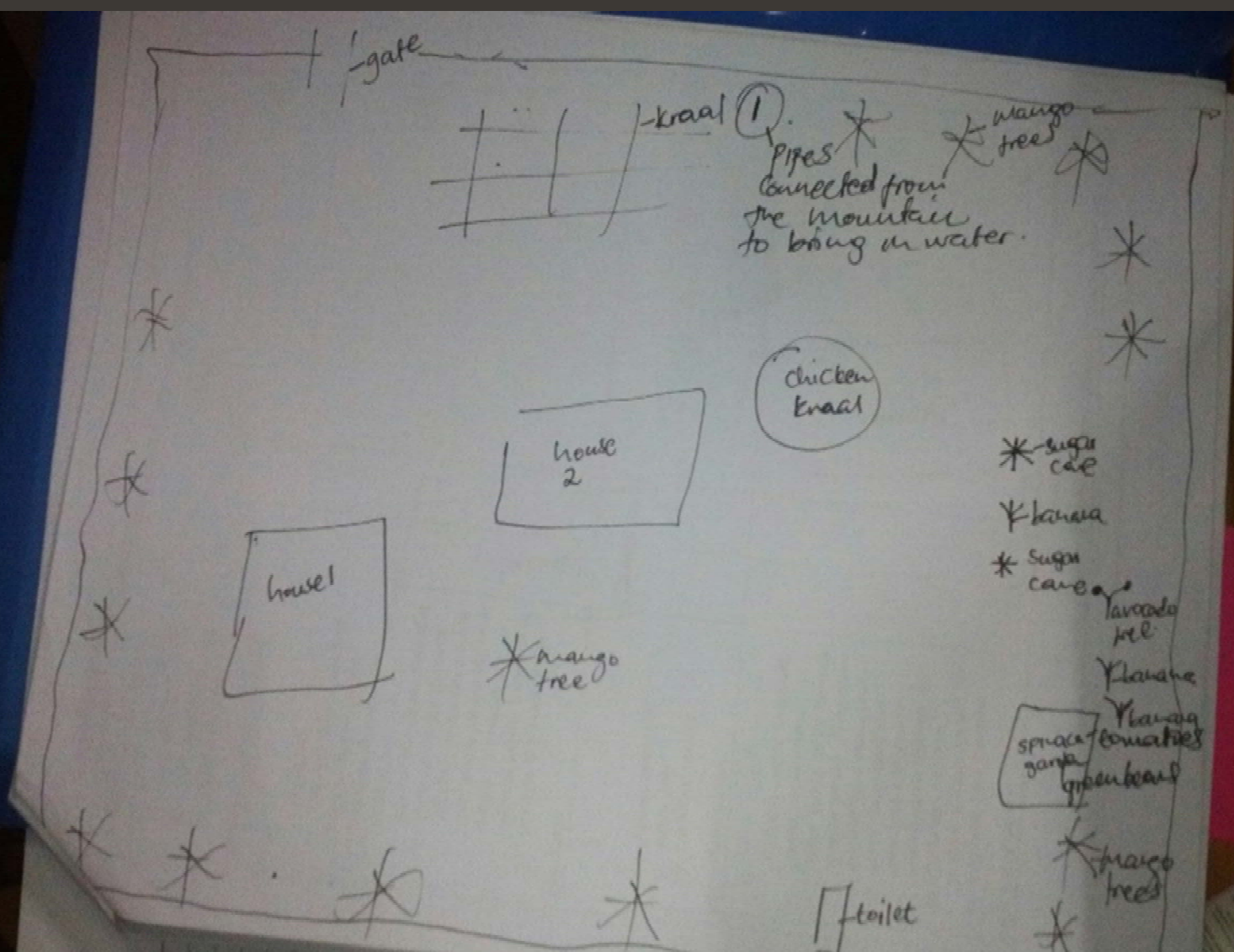
CHART 1: FARMER EXPERIMENTATION; NUMBER OF PARTICIPANTS EXPERIMENTING WITH A RANGE OF NEW IDEAS/INNOVATIONS (TURKEY, MAY 2018).





5 Appendix 1

Figure 1: Homestead and garden drawing Magdeline Shai-Turkey





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The Association for Water and Rural Development

AWARD is a non-profit organisation specialising in participatory, research-based project implementation. Their work addresses issues of sustainability, inequity and poverty by building natural-resource management competence and supporting sustainable livelihoods. One of their current projects, supported by USAID, focuses on the Olifants River and the way in which people living in South Africa and Mozambique depend on the Olifants and its contributing waterways. It aims to improve water security and resource management in support of the healthy ecosystems to sustain livelihoods and resilient economic development in the catchment.

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About USAID: RESILIM-O

USAID: RESILIM-O focuses on the Olifants River Basin and the way in which people living in South Africa and Mozambique depend on the Olifants and its contributing waterways. It aims to improve water security and resource management in support of the healthy ecosystems that support livelihoods and resilient economic development in the catchment. The 5-year programme, involving the South African and Mozambican portions of the Olifants catchment, is being implemented by the Association for Water and Rural Development (AWARD) and is funded by USAID Southern Africa.

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The content of this publication does not necessarily reflect the views of AWARD, USAID or the United States Government.

Acknowledgements: Project funding and support

The USAID: RESILIM-O project is funded by the U.S. Agency for International Development under USAID/ Southern Africa RESILIENCE IN THE LIMPOPO BASIN PROGRAM (RESILIM). The RESILIM-O project is implemented by the Association for Water and Rural Development (AWARD), in collaboration with partners. Cooperative Agreement nr AID-674-A-13-00008



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