

POLYTECHNIC OF NAMIBIA



**JOINT ACTION RESEARCH AT QUEEN SOFIA
RESETTLEMENT PROJECT BETWEEN
COMMUNITY MEMBERS AND STUDENTS
OF THE AGRICULTURE DIPLOMA PROGRAM**

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**Technical Report: NRM/2003/1
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Report on Polytechnic excursions to Queen Sofia Resettlement Project

INTRODUCTION

The Agriculture diploma program at the Polytechnic of Namibia wishes to provide practical experience for its students to learn from a rural community. Two excursions were therefore undertaken for 48 students of the courses in Agricultural Extension, Agricultural Land Management, Agricultural Management and Agroecology, to interact with the community at the Queen Sofia Resettlement Project. Fifty families have been resettled by this project, on five former commercial farms covering 21 102 ha in Kunene Region, about 30 km east of Outjo.

The reason for choosing this community is because the resettlement process, including the training of resettled persons, is a current issue of national importance that the Agriculture Department of the Polytechnic wished to learn more about and contribute towards.

Learning during the first excursion took place largely through methods of Participatory Rapid Appraisal (PRA). The students were divided into eleven groups and each group focussed on a particular aspect of natural resource use, while every student was given the responsibility for a PRA exercise. In addition, each student had to choose a specific topic for an extension interaction, based upon what had been learned. All the posters produced in the PRA exercises remained with the community, so the diagrams that appear in this report are copies that were drawn by students.

After the first excursion, students had eight weeks in which to prepare for their extension interactions, to be undertaken during the second excursion. Each student had to arrange for the hands-on interaction to be done by community members, either by demonstration or role-play. The interaction was then filmed and shown to the wider community on the final night.

Great assistance was received from the resettled farmers; their chairperson, Sesilia Lambert; the resident coordinator serving the Ministry of Lands, Resettlement and Rehabilitation, Mr. Heita; the school principal, Katrina Aboas, the head of the extension office of the Ministry of Agriculture, Water and Rural Development in Khorixas, Mr. Tsuseb; and many others who are too many to name individually.



Monday 11 August 2003

Doings

Findings

Reached Queen Sofia at 16h00
with 48 students



The community was only
expecting 4 students



Asked Mr. Heita when the
community meeting should be



He suggested tomorrow, after
the AIDS meeting



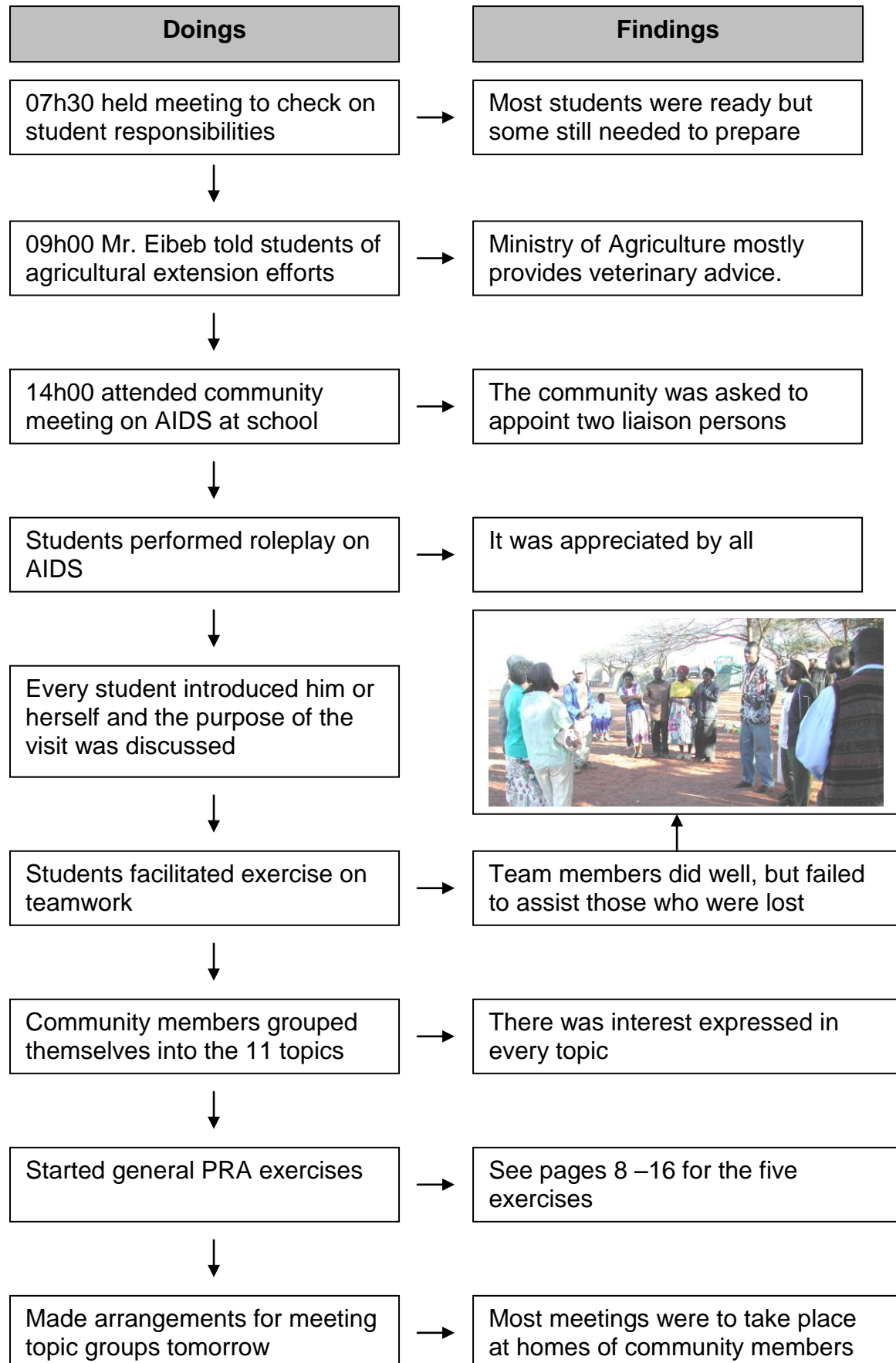
Set up camp outside school
yard



The school kids and teachers
were very helpful



Tuesday 12 August 2003



Wednesday 13 August 2003

Doings

Findings

Each of eleven groups went to start their PRA exercises



Some interesting roleplays were filmed



The film of the day's activities was shown on a wall at school



Thursday 14 August 2003**Doings**

Groups of students went to get questionnaires filled or to complete roleplays or to prepare for the October interactions.



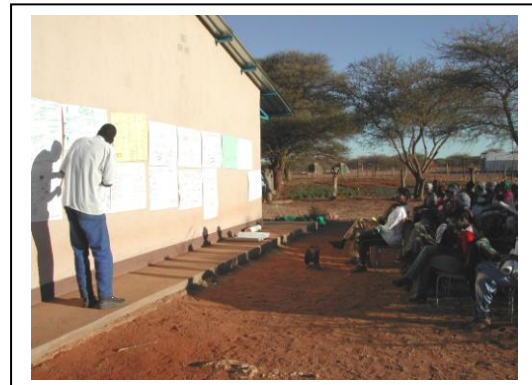
Students slaughtered goat to prepare for party



16h30 report backs on PRA exercises by community members who had participated in them



Showed film of the day's activities and ate goat

Findings

Friday 15 August 2003

Doings

Findings

03h00 there was a roaring sound

A tent had burn down, but luckily all three occupants got out unhurt.



Watched commjunity members depart for Otjiwarongo in the project lorry to market their garden produce



Votes of thanks and left Queen Sofia at 10h00

Reached Windhoek at 15h45

It had been a worthwhile excursion

Feedback excursion, 13-17 October 2003

Doings

Groups of students went out to prepare community members for conducting interactions and additions to PRA diagrams.



Students of Land Management got experience in tillage operation on the project tractor



Filmed the hands on interactions performed by community members



The upgraded PRA diagrams were reported on by participants

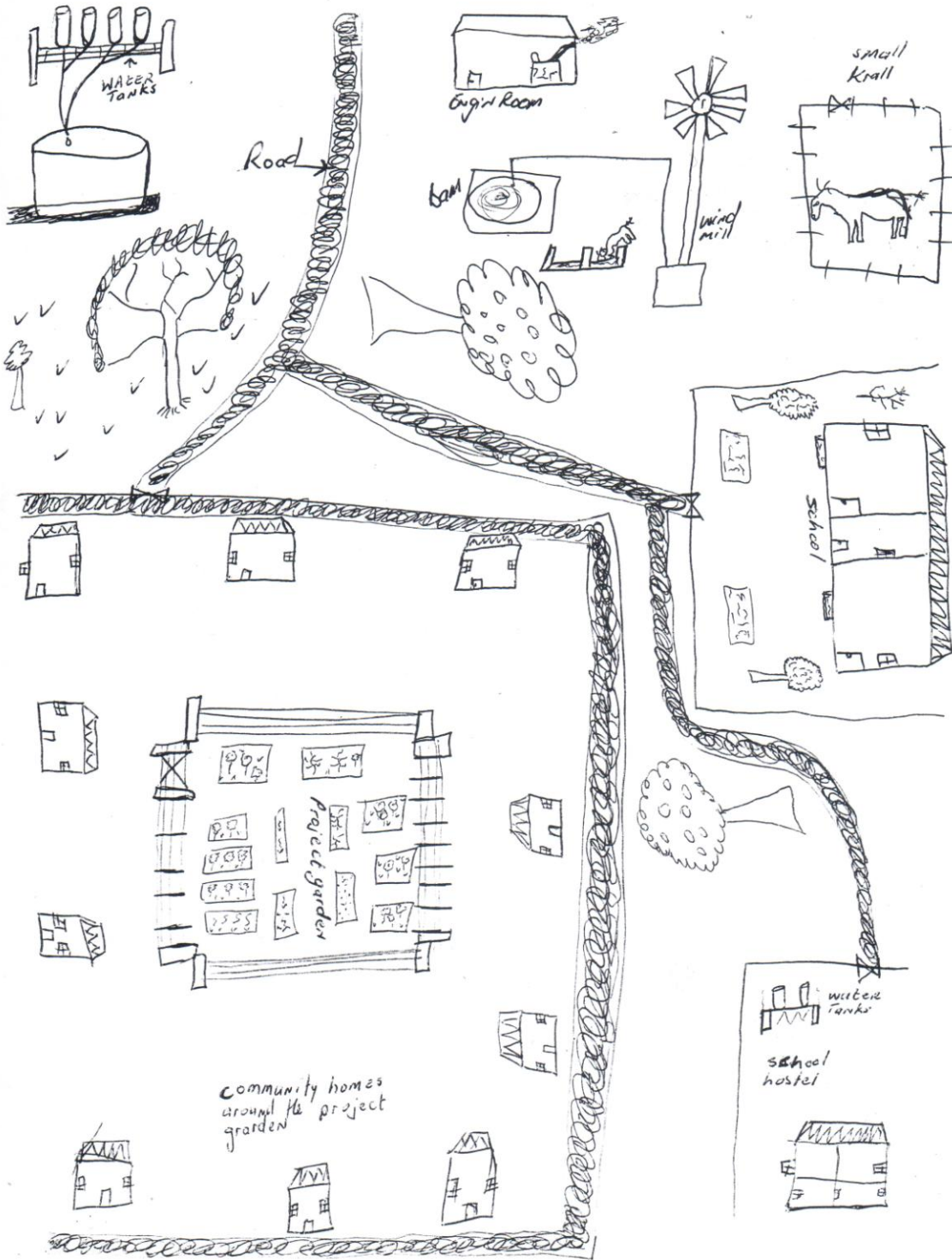


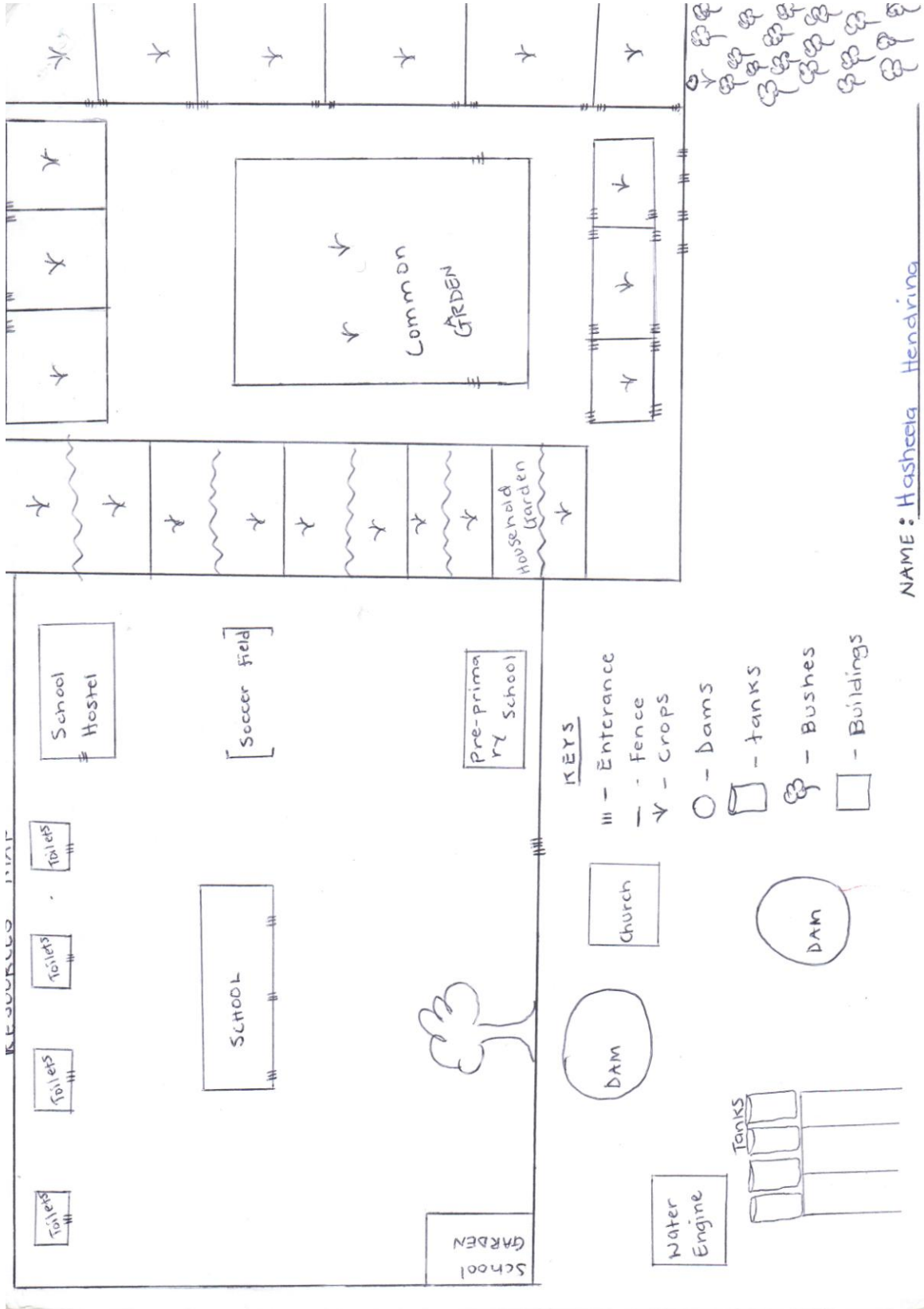
Showed films of the activities of the second excursion

Findings



SOCIAL MAP












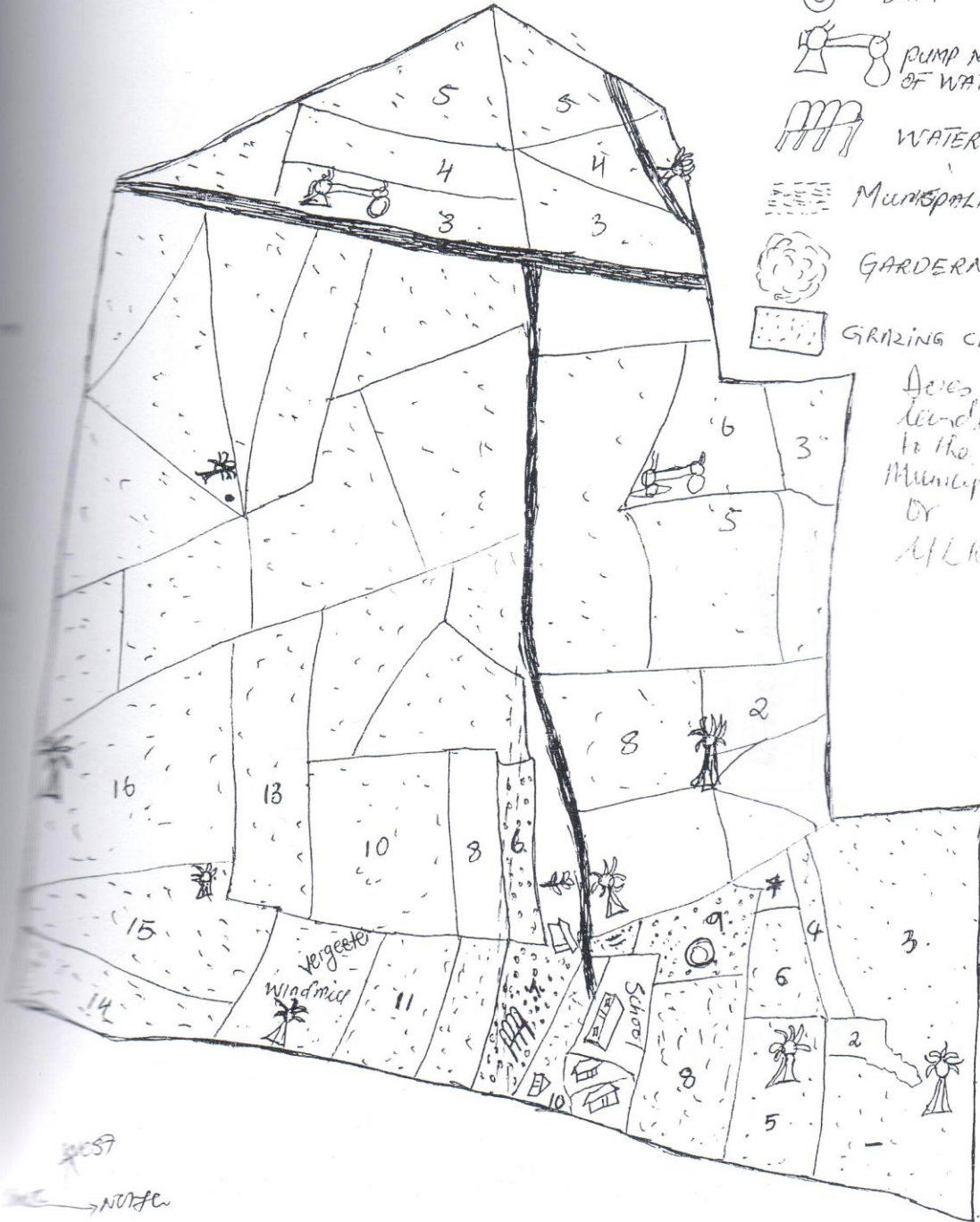


NAME: Hasheeqa Hendring

BY: JOHANNES KORVIS

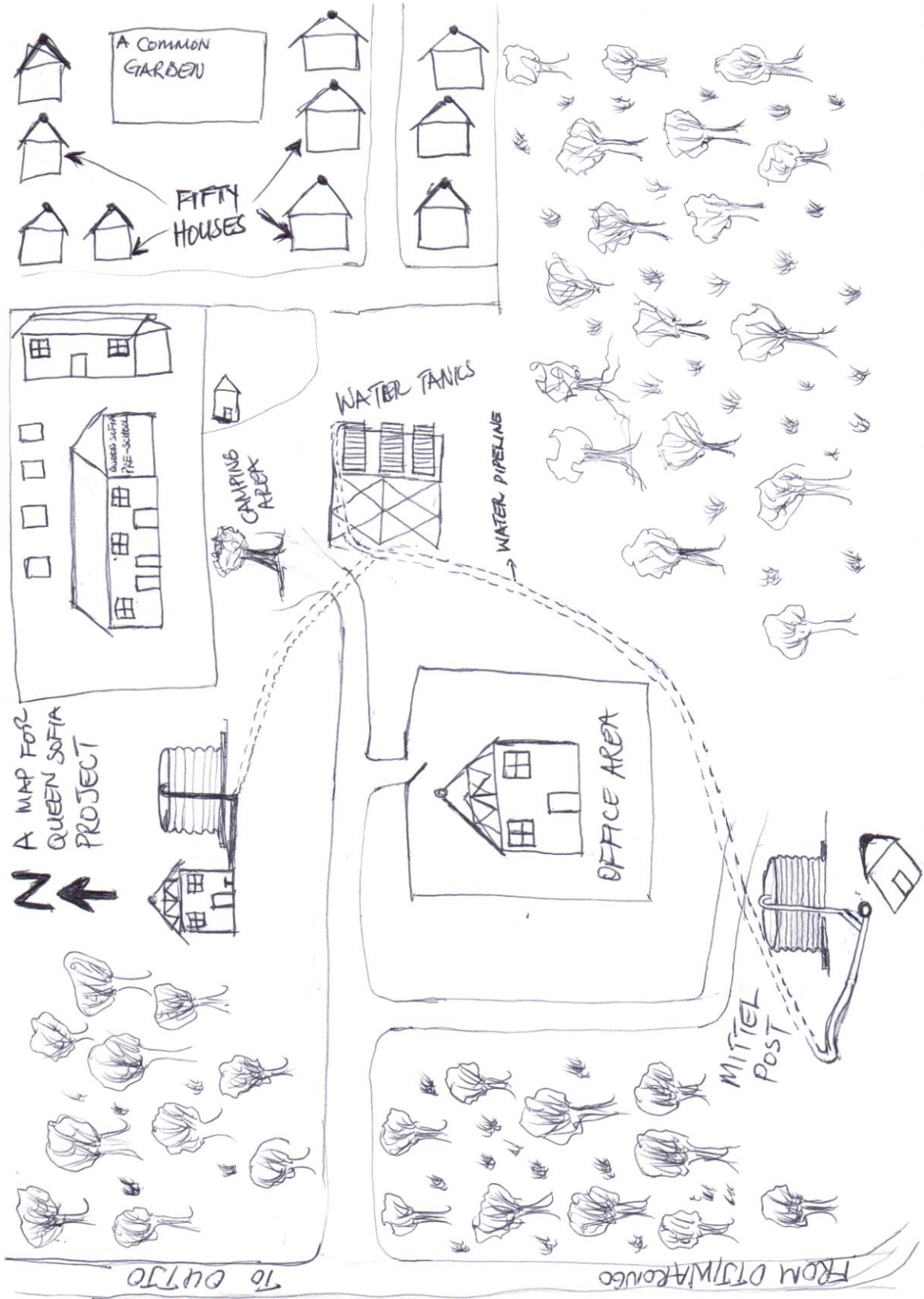
THE COMMUNITY TERRITORY MAP :
OKAALITA KO QUEEN SOFIA PROJECT,

- KEYS:
-  HOUSES
 -  Windmill
 -  GRAVEL ROADS
 -  DAM
 -  PUMP MACHINE OF WATER
 -  WATER TANKS
 -  MUNICIPALITY LAND
 -  GARDENS
 -  GRAZING CAMPS



Does the land belong to the Municipality or MLRR?

POST
NORTH

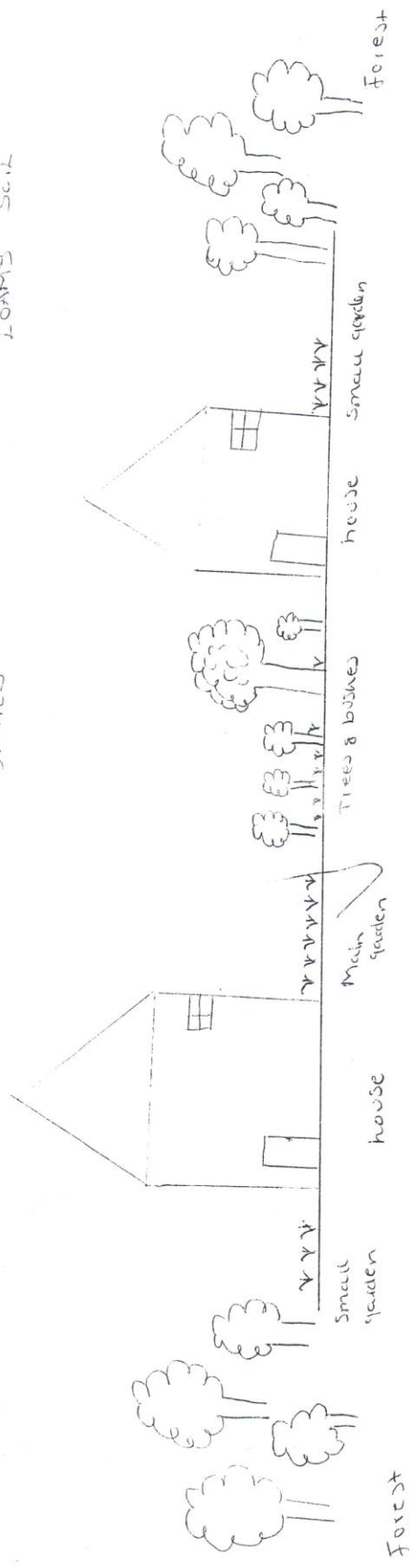


A HOUSE FOR THE FUTURE WITH A TRADITIONAL LOOK

LOAMY SOIL

STONES

LOAMY SOIL



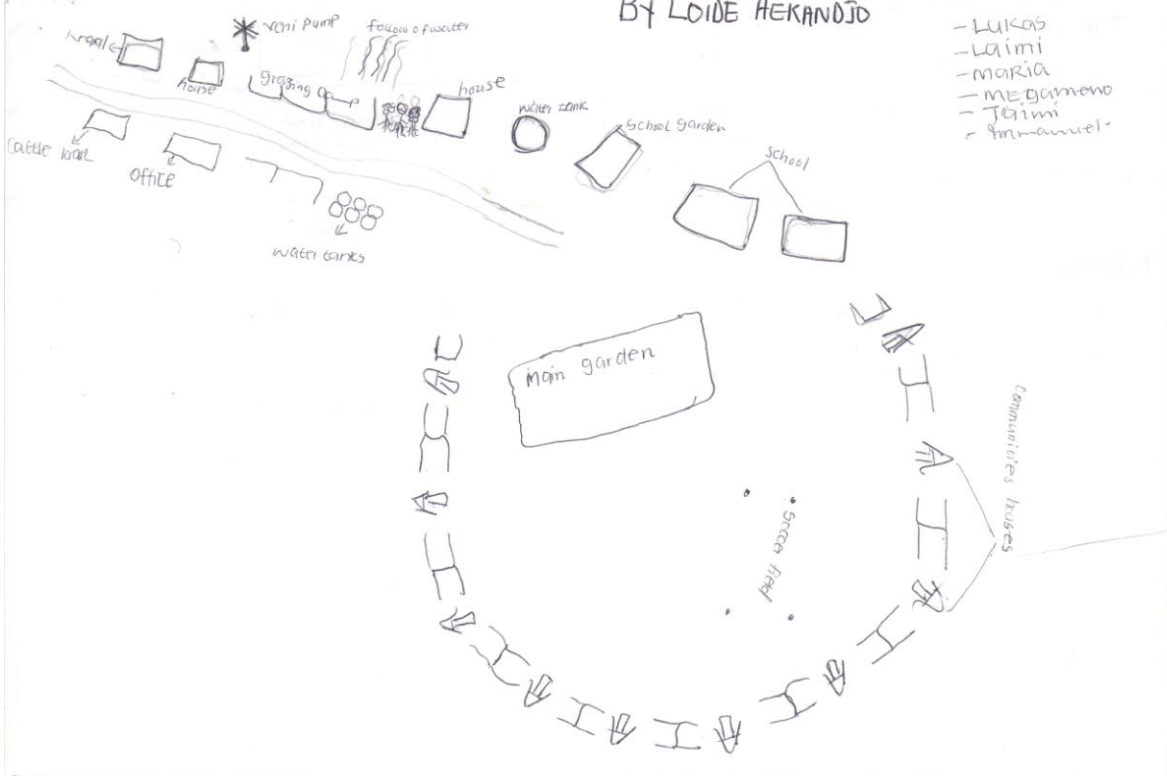
PJ PAUL MUMUSEB
 4 ERAS IMARUB

Landscape Transect done at UCHEN SUTHA settlement north

By LOIDE HEKANDJO

Participants

- Lukas
- Laimi
- maria
- megameno
- Jaimi
- immanuel



→ flooding take place

Sandy / Stony Sandy Soil
Edy ligadi omamanga na ihaw
Kala oimeno iwa ngaashi laimonika

Trees, grasses, and bushes are scattered
-flooding also take place

Sand soil

Carrots

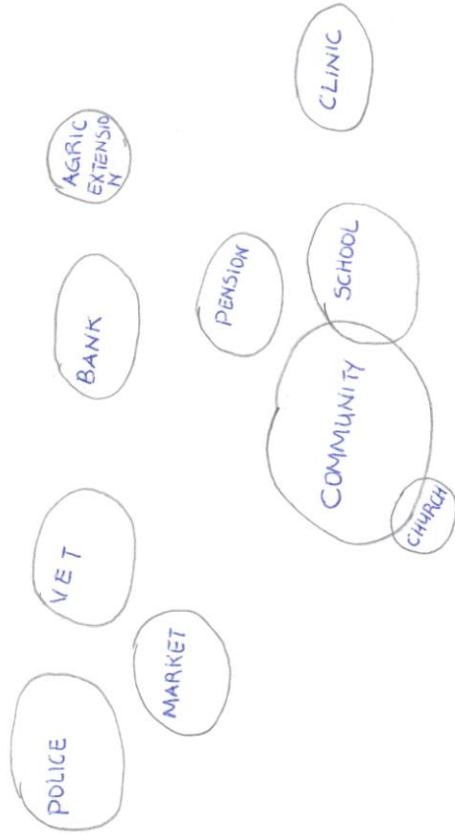
→ Comates

tree, bushes and grasses

Loam soil / gravel soil
good soil for crop production
and growing grasses

water take too long to be penetrate
in the soil

Clay ~~soil~~ Loam soil



PRODUCER
 MIRLAS KRISTOPHINE
 JOHANNES KONIS
 RAUHA SHANIKKA
 ERICKSON NANGULA

VENN DIAGRAM OF QUEEN SOFIA PROJECT

TREAD DIAGRA - GENERAL By TATE: MAHNI



ABOUT
3 YEAR
AGO

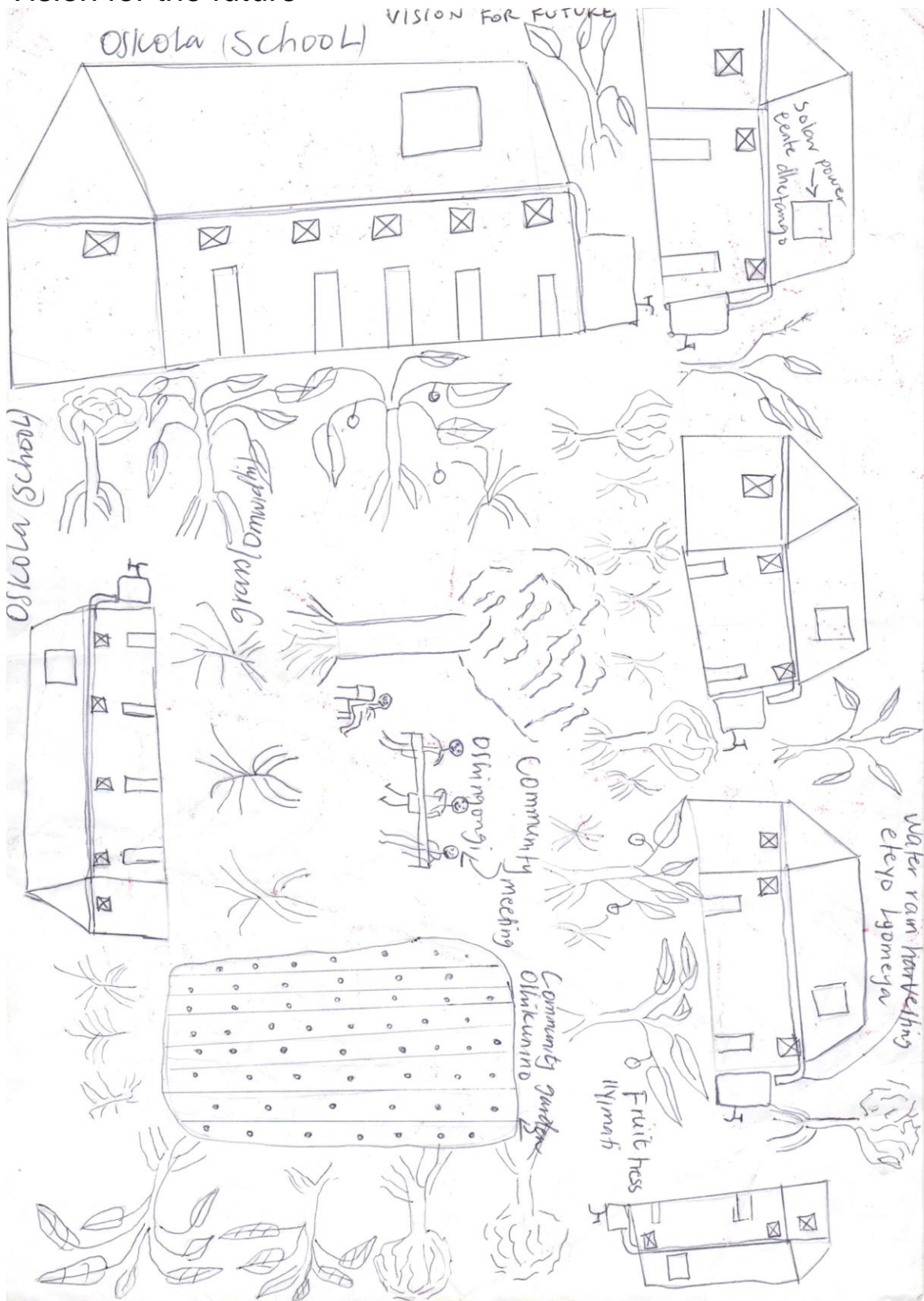


2003



FUTURE
2003-2015

Vision for the future



WATER

Water is the most critical natural resource at Queen Sofia. Ground water is used not only for livestock at the posts, but also for irrigating gardens through hosepipes. Each of the 50 homes has a garden area of 0.25ha, although not all is irrigated due to the limited times when water is available. Each home has been installed with a water meter, but their readings are not being recorded nor used in making decisions and taking action. At a representative home the water meter showed that 1180m³ had been consumed since installation two years previously. If this is extrapolated to all 50 homes, then an average of about 80m³ would be used per day. The tanks only store 40m³, so on average they would be filled twice per day. Often the water cannot be pumped, due to problems with the borehole or engine, or due to lack of diesel. Gardens can only be irrigated when there is water in the tanks, although the lower lying homes get to use more, because they receive it at higher pressure. The higher lying homes are unable to access any water when its level in the tanks is low. When water is available it is effectively an open access resource, with no incentive for conservation. New pipes had to be added to the boreholes supplying the homes, showing that the water table is dropping and its sustainability is under threat.



The capacity of the four tanks that supply water to the fifty homes and school comes to a total of 40m³.



Each home has a water meter, but readings are not taken and do not contribute towards decisions and actions



Gardens are irrigated by hosepipe, sometimes left unattended.



A low-pressure drip irrigation system is set up for the fruit trees in one garden.

DESCRIPTION OF ROLEPLAY ON WATER

- Some residents find that there is again no water available at their home.
- They carry their water containers to the school tap, where they find a queue.
- The people in the queue conclude that the water supply is diminishing, so they decide to try to establish a new borehole at the other side of the homes.
- They select somebody to approach the Agricultural Extension Officer.
- The Extension Officer agrees to approach his Ministry and NGO's for financial assistance, provided that the residents add contributions of their own.
- They started to contribute towards the project account, and the Regional Council also made a contribution.
- They were given the money and they wanted to celebrate by buying beers.
- Some wise residents prevented the project money from being used for beer, and they were able to pay for the new water installation, so they were happy even without beer.

Although this roleplay has a useful message on avoiding the abuse of funds, it avoids the issue of environmental sustainability. It tends to suggest that when one resource gets over-exploited, the solution can be found by exploiting the same resource elsewhere. This would only be a temporary solution until the new water source also gets depleted and in the meantime the environmental conditions worsen



The screw tap, below, was replaced with a push tap at the school, to save water.



The polypipe that got damaged by a porcupine gets protected with a covering of galvanized sheeting.



Donkey dung is applied as a mulch to a bed of onions, to cool the soil and slow down wind at the soil surface and thereby save water loss through evaporation.



The drip irrigation pieces join together easily, by applying hand pressure.

Drops of water get delivered at the precise spot where they infiltrate and spread through the soil around the roots of the fruit tree, with minimum wastage through evaporation.



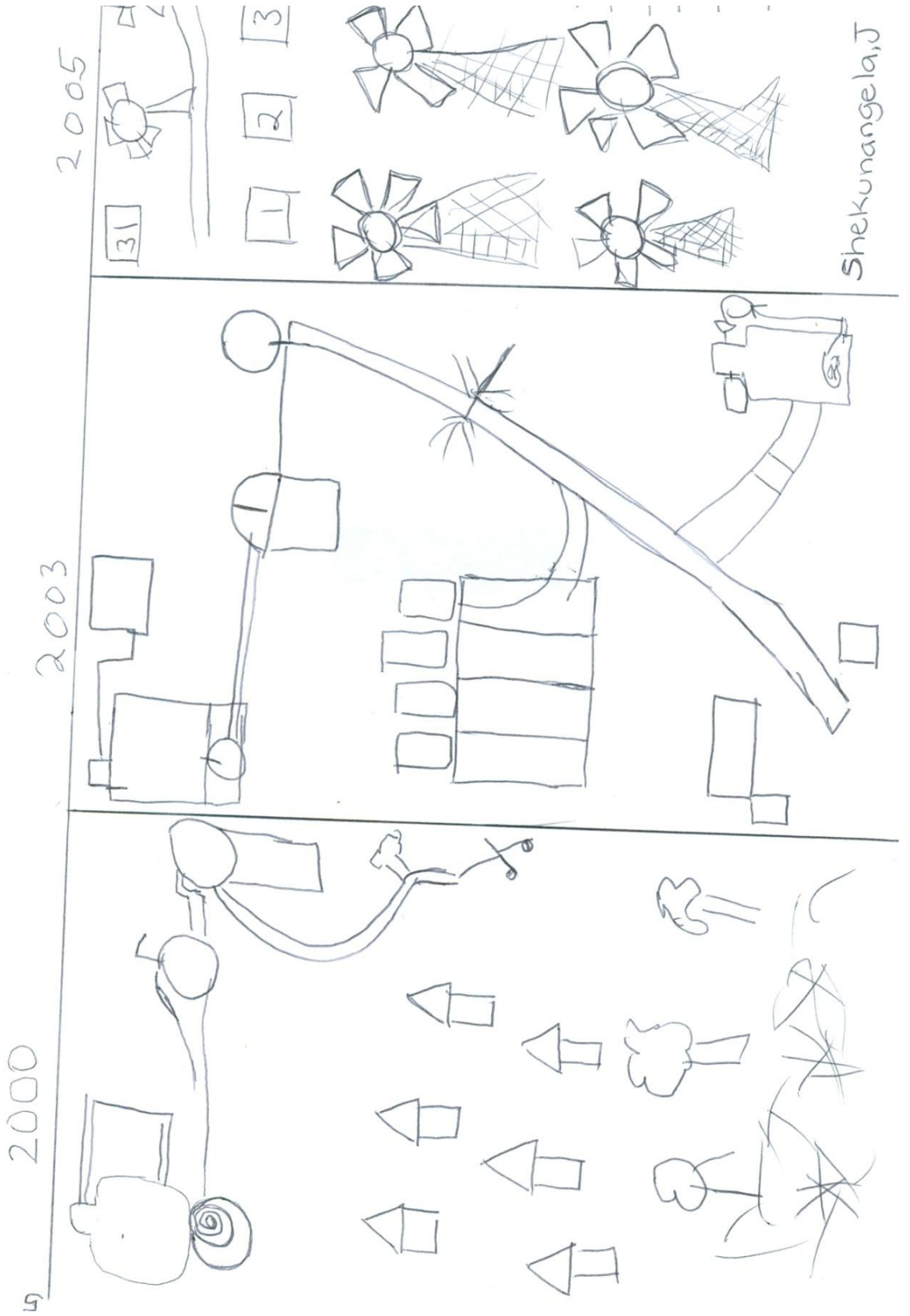
The seedbed in front was dug with a fork, so water infiltrates fast, while the undug bed behind still holds water.



Seedlings grown in seed trays use much less water than those raised in beds on the ground.

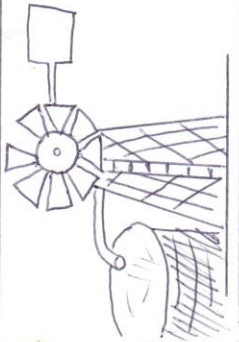
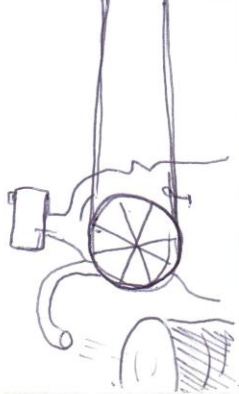

TREND Digram (water)

Meva



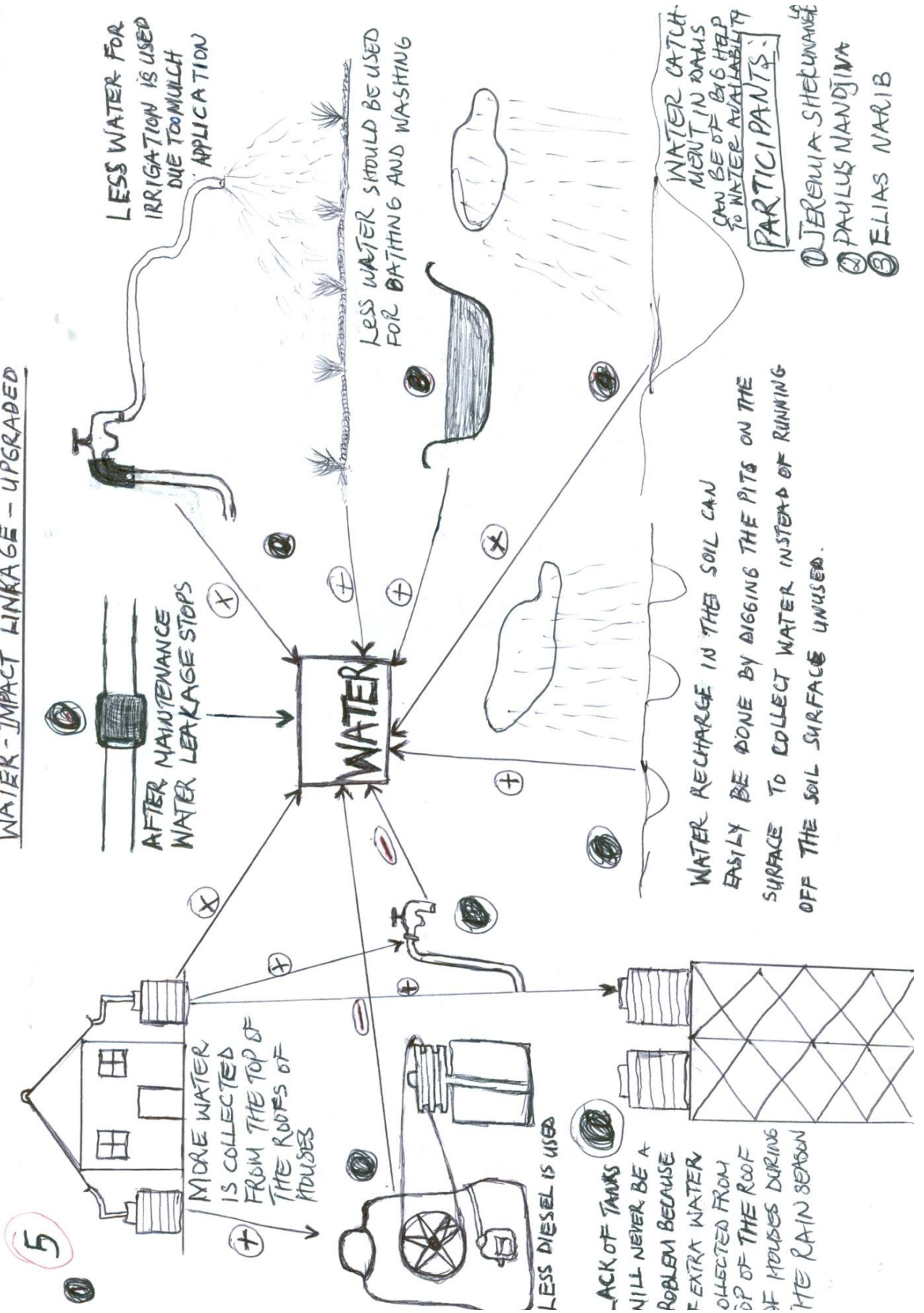
Kangotue

WATER (OMENI) TABLE 1

	Paulus	Elias	Immanuel	Hikeni
	* * * * * *	* * * * * *	* * * * * *	* * * * * *
	* * *	* * *	* * *	*
	*	- *	*	*
* *				

Paulus
Elias
Immanuel and Hikeni
Completeness: Immanuel and Hikeni

WATER-IMPACT LINKAGE - UPGRADED



DILYO YOKAKOMITIYE KOMEYA		KANHINDA MOSES 2.5 200239198 EXTENSION	
OMADINA	OKASHREKOHANHU	EEDULA	OSHAKUWANI FWA
1. PAULUS MANDIYA	OMULUMENHU	39	HASHANGA/OMHANGHELI
2. HIRANDUWA JAMUEL	OMULUMENHU	43	OMUPATULU WOMEVA
3. HILENI PAULUS	OMUKAINHU	19	OMUKUWATAKANIFI
4. SHEUNANGELA J.	OMULUMENHU	31	OMUPATULU WOMEVA
5. ELIAS NARIB	OMULUMENHU	31	OMUSHINGI WOYEENDI
6. COTONERIUS N.	OMULUMENHU	31	OMPANHELE WAHASHANGA
7. HANUTENYA J.	OMULUMENHU	19	OMUPATULU WOMEVA
			EESHIVO LOKUSHANGA NOKULESHA
			OSHIMBULU NOSHHERERO
			OSHAKWANYAMA
			OSHAKWANYAMA
			OSHAKWANYAMA
			OSHIMBULU, OSHHERERO NOSHIMBABA
			OSHIMBULU, OSHINGILISHA X/O D.
			OSHAKWANYAMA

GRAZING

Each household was given 350ha of grazing land when they were resettled. The households around the same water point came together to decide how to apply joint grazing management. Most of them agreed to try combining their smaller herds into one big herd, so that paddocks may rest for their grasses to recover from grazing. Branding of each animal in the mixed herd allows their owners to be easily identified.



A stock post around one of the water points.



A brand number was registered for one of the households and shaped into a branding iron.



Cow dung is smeared onto the newly burnt brand mark, to reduce the chances of infection.

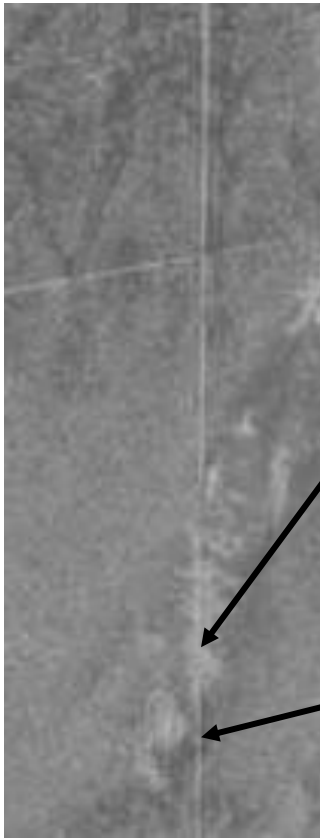


Seedlings of grasses, grown in milk cartons, are used to show recovery rates after cutting that simulates grazing.



A thin stemmed slangkop plant, including its bulb, will be dug up to reduce the chances of livestock poisoning.

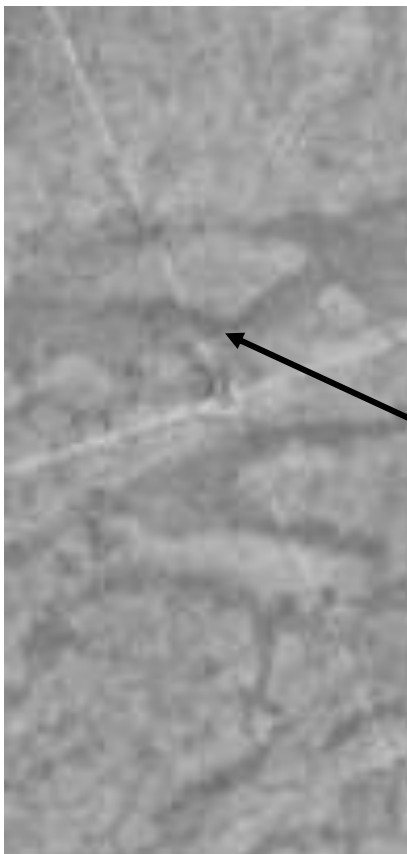
DEGRADATION OF GRAZING LAND AT QUEEN SOFIA



A large bare patch from which water runs off quickly into the track below.



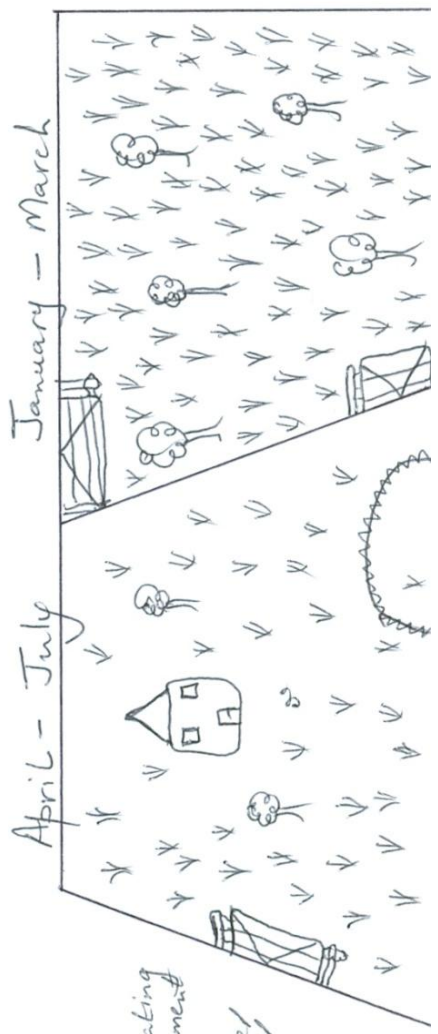
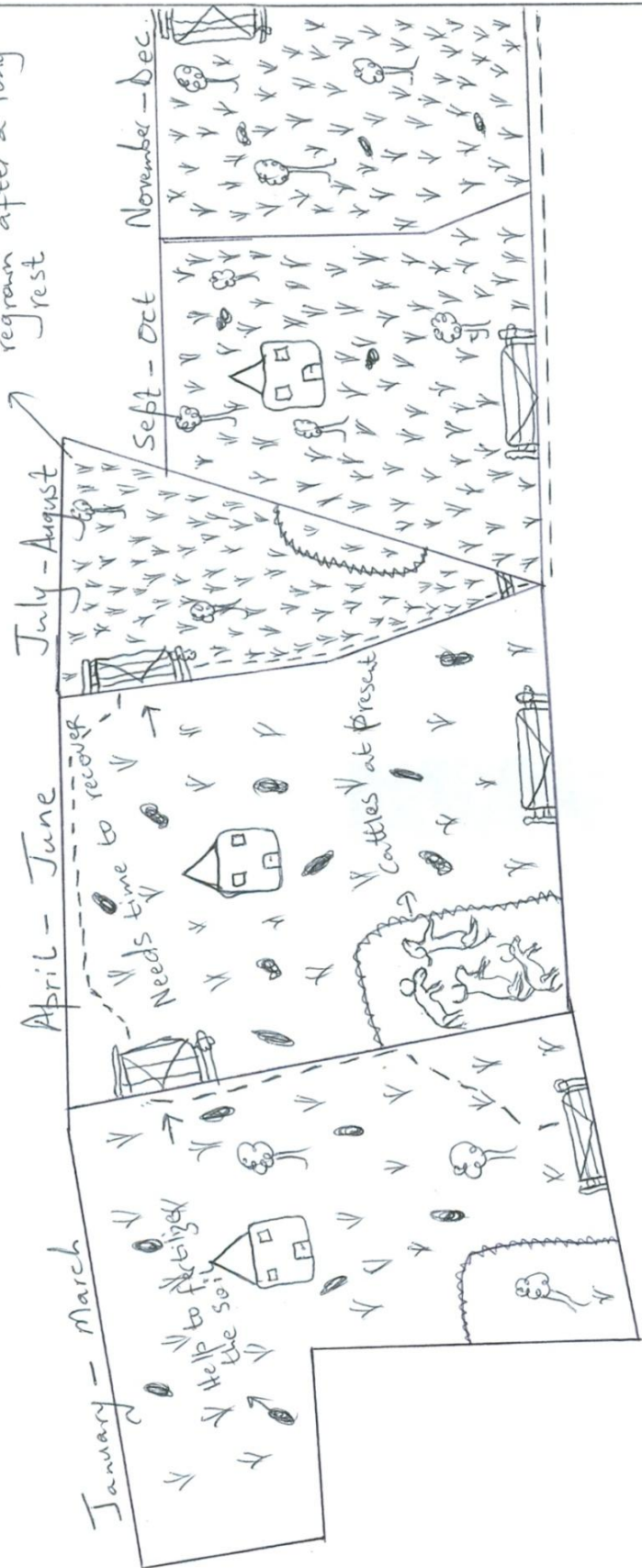
This track is now lower than the surrounding land, so it has “pulled the plug” and water flows quickly down the track and causes the surrounding slightly higher land in the vicinity to dry out and favour bushes over grasses.



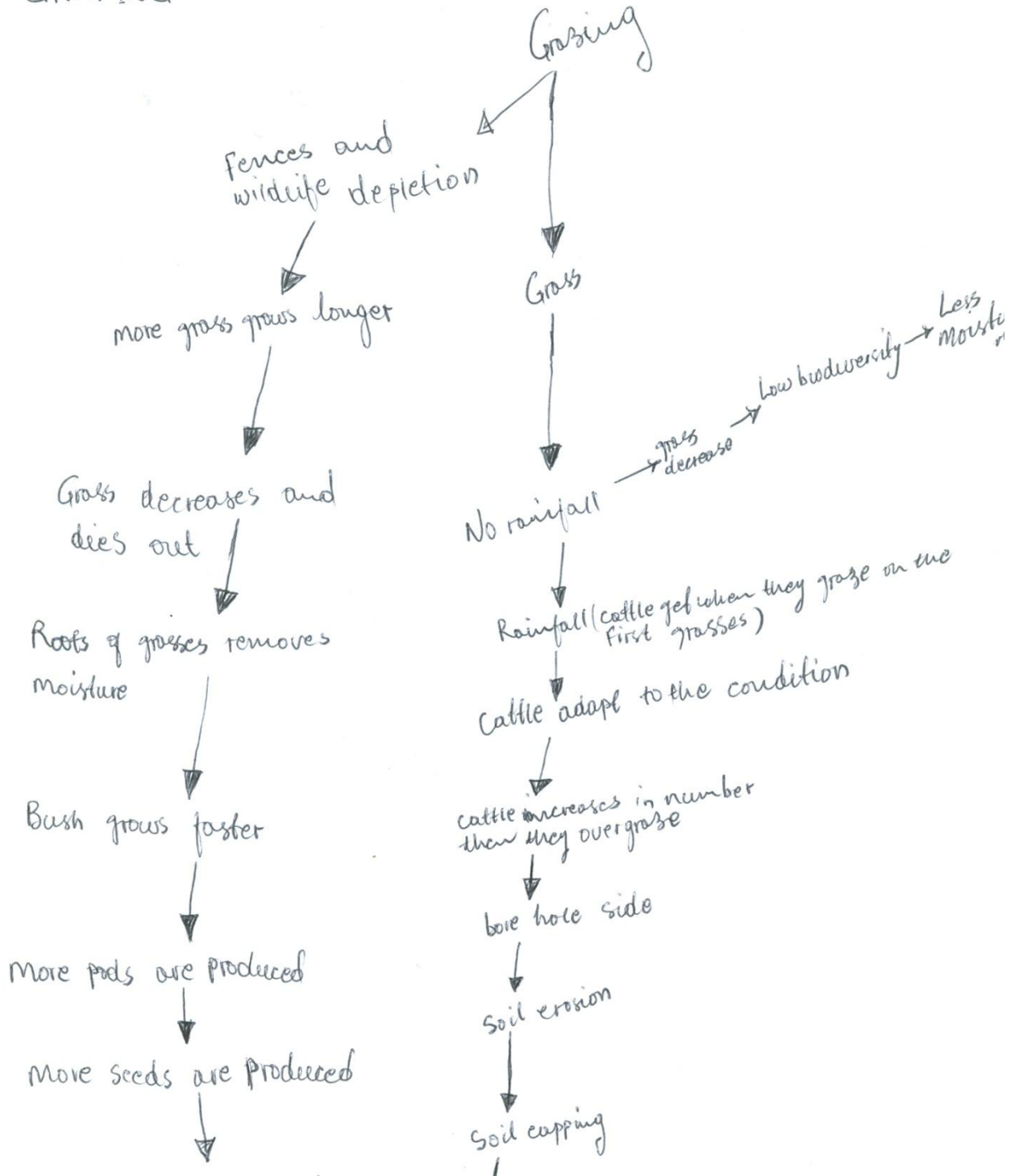
This fossil wetland is drying out and being encroached by bushes, so lowering the biodiversity of the grazing land.

Seasonality Grazing map

This camp has fully regrown after a long rest



PROBLEM TREE:
GRAZING



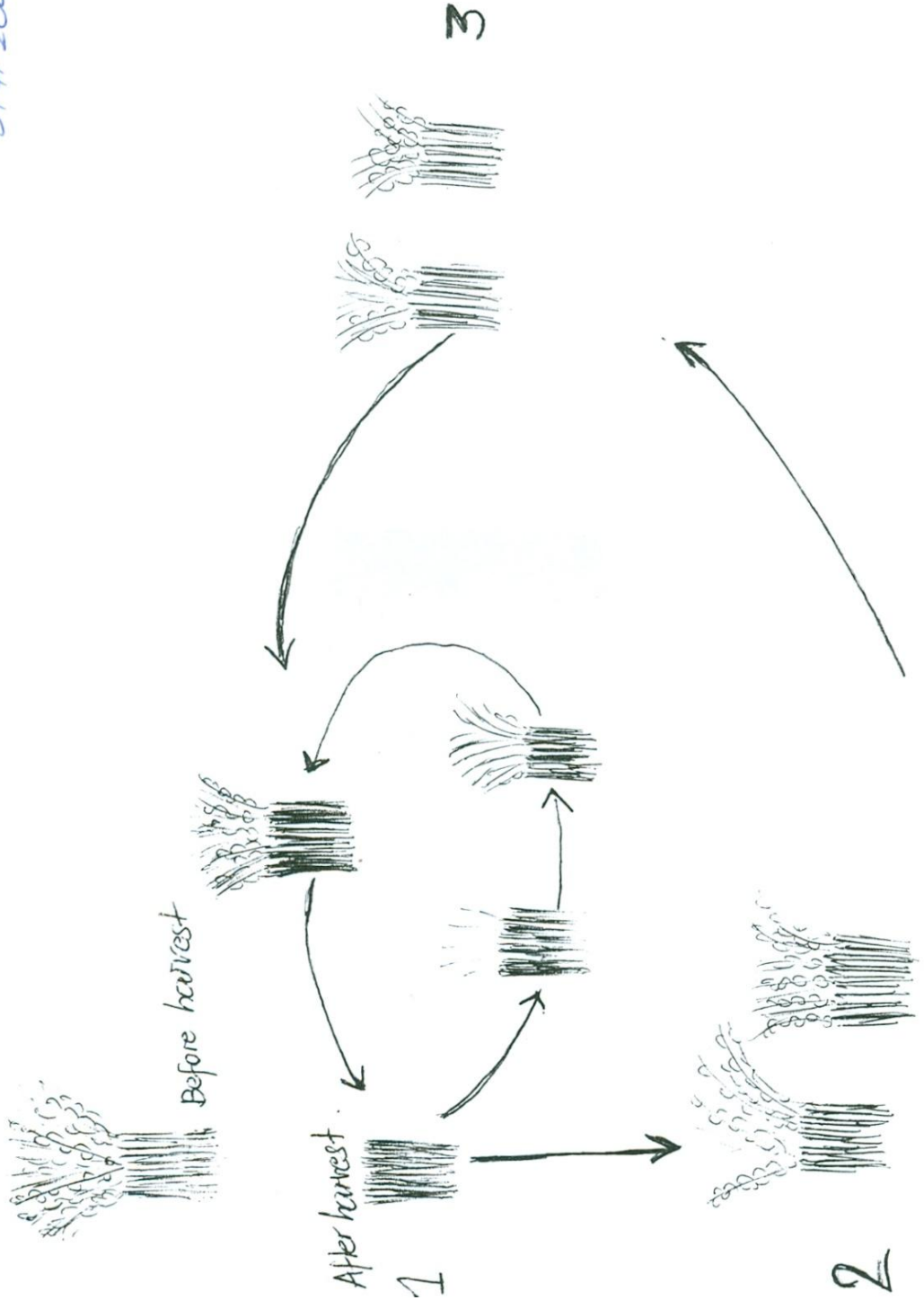
Aira A. 13.08.2005

Umuithilo

Scamb = 4 months in @ cemb

Gross regeneration dieback

Thomas Graeseb
St# 200/00003

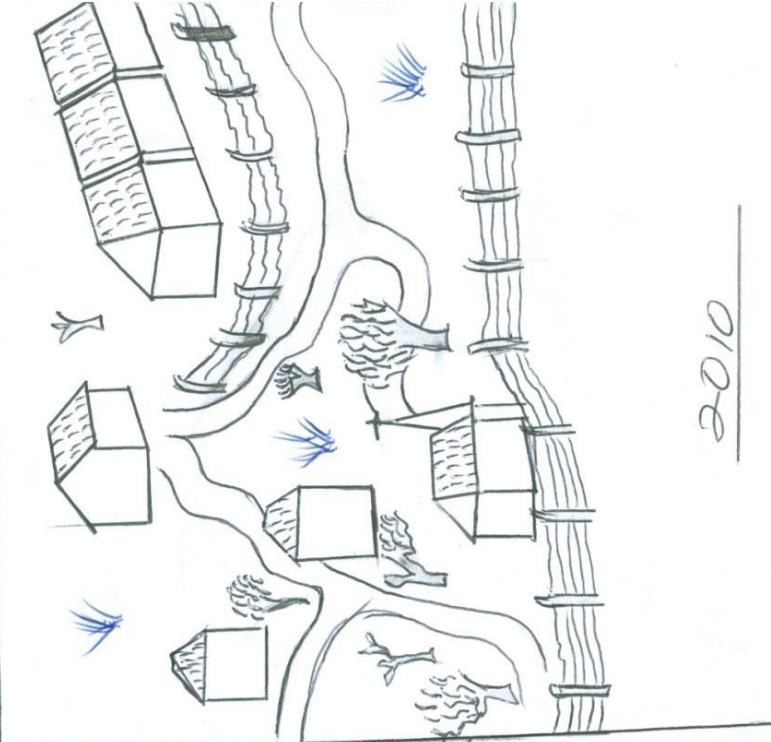


~ = road

 = big tree

 = bush of grass

Keys



2010

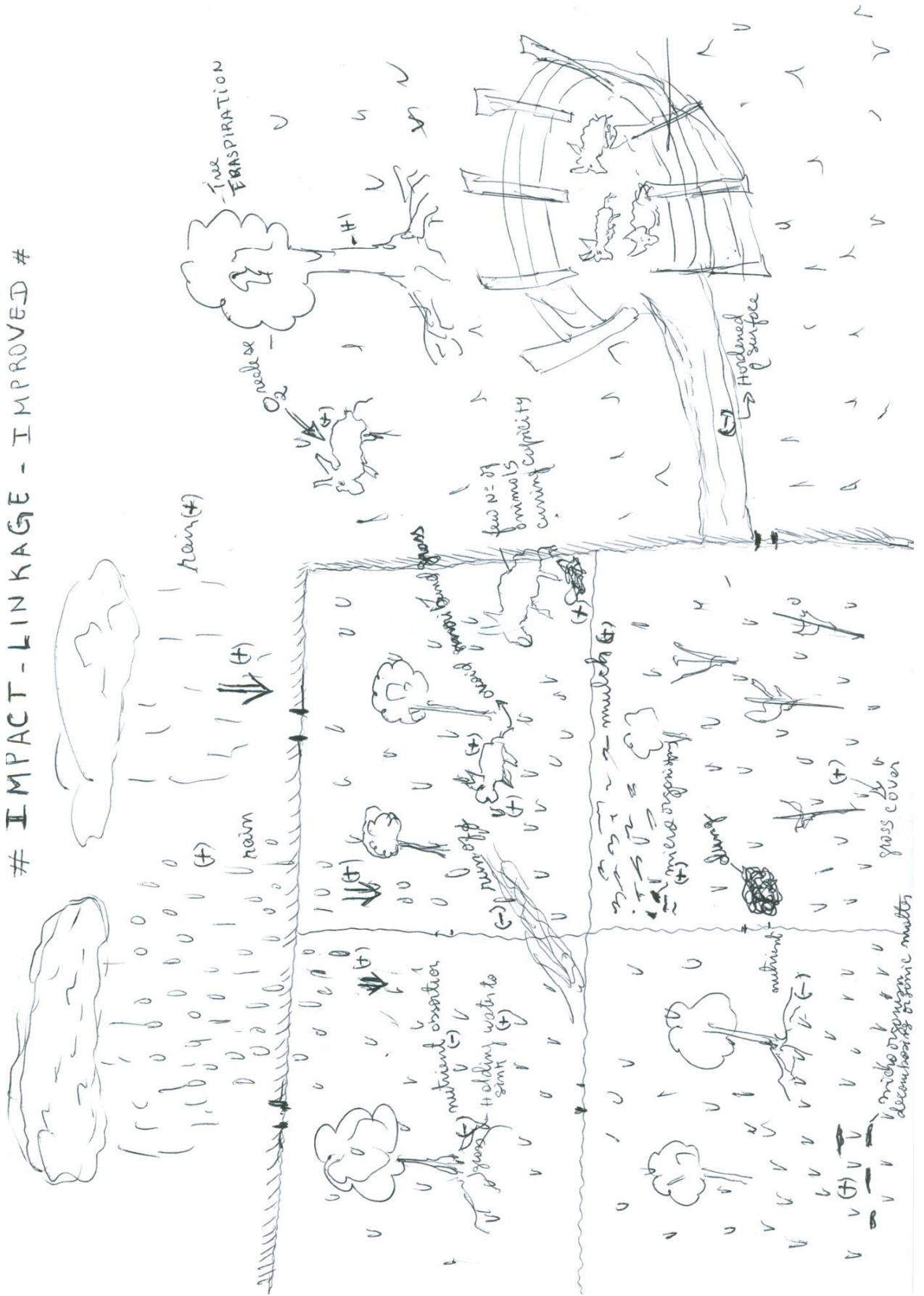


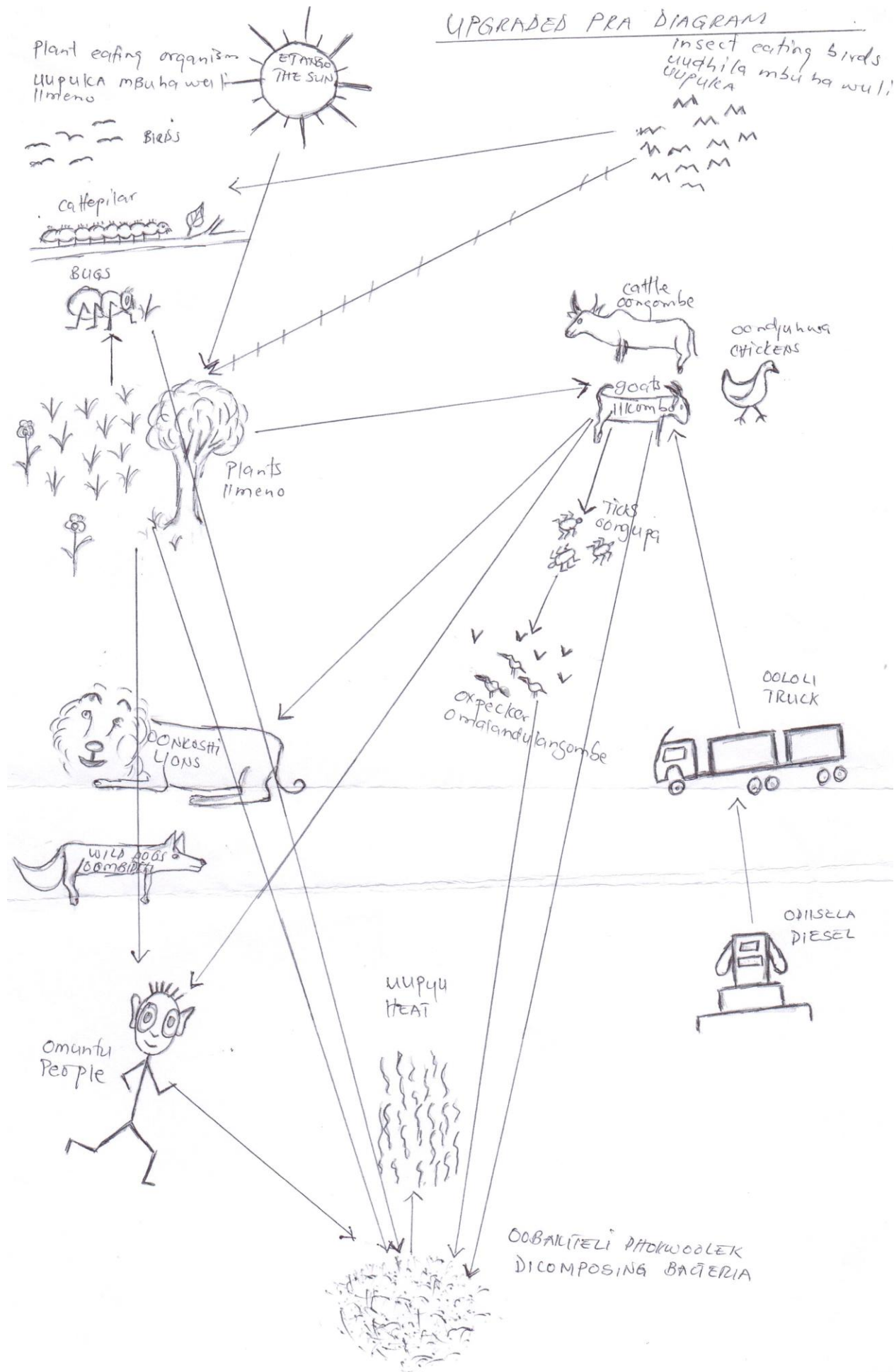
2005



2000

IMPACT-LINKAGE - IMPROVED





LIVESTOCK

Each household was given about seven cattle and five she-goats when they were resettled. The project has a total of ten goat rams that get circulated amongst the families for breeding. There are opportunities for diversifying the types of livestock to farm with, and some residents have taken the initiative and diversified on their own. The water reservoir at the home of one of the former commercial farms has been stocked with fish that appear to be doing well.



Cattle are in the process of being multiplied, from the small starter herds that were provided to each household.



Goats breed faster and are multiplying well.



Molasses powder is added to a mixture for moulding into lick.



One innovative farmer has diversified into farming with tortoises that feed on waste products from the garden.



A cool-box is made with charcoal insulation, for evaporative cooling, so that vaccines can be transported for use at the posts.

DESCRIPTION OF ROLEPLAY ON LIVESTOCK

- An old man complains that his goats are not reproducing and growing well.
- His neighbor asks him for how long he has been using the same goat ram.
- The old man replies that he cannot remember, but that it is for many years.
- The neighbor explains that inbreeding is likely to be the cause of the weakness in the herd. He suggests that the old man exchanges his goat ram with that of a family on the far side of the farm.
- The two families agree to the exchange and both benefit from increased genetic diversity amongst their herds.



Roleplay on outbreeding of goats.



A floorless cage serves as a "chicken tractor" that gets moved around the garden, so that the chickens till the soil, add manure and consume pests and seeds of weeds.









Some households keep Muscovy ducks as a useful meat supply.



Dogs are kept with small-stock as protection against predators.

Kazania Better

MATRIX BANKING

LIVESTOCK	FEEDING	LABOURS	USES	PROFITABLE
Cattle 	***	OO	✓	✓
Donkey 	*** **	OO	✓ ✓	
Goat 	**	OOOO	X	✓
Horse 	***	OO	4	✓
Sheep 	**	OOOOO	X	✓
Chicken 	*	O	X	✓

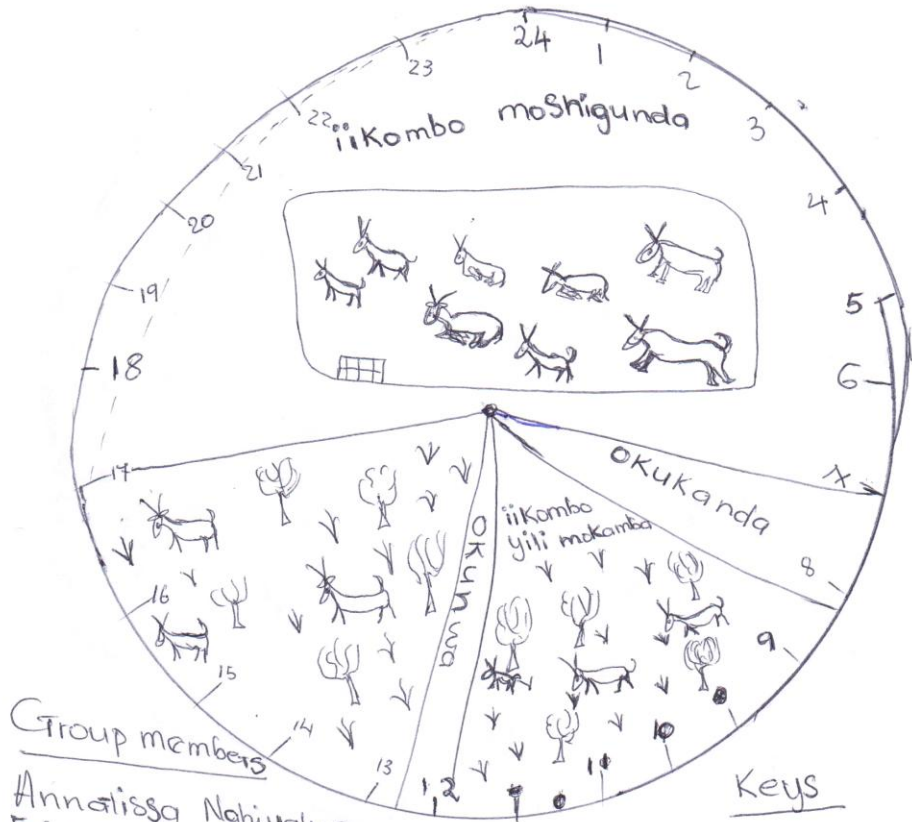
key
 More feeding *****
 Medium ***
 less feeding **
 no feeding *

key
 Better ✓
 Average ✓
 Low X
 poor 4

Bertha L Situla
200210289

COMPERATIVE ACTIVITY CLOCK

IIKOMBO (Goats)



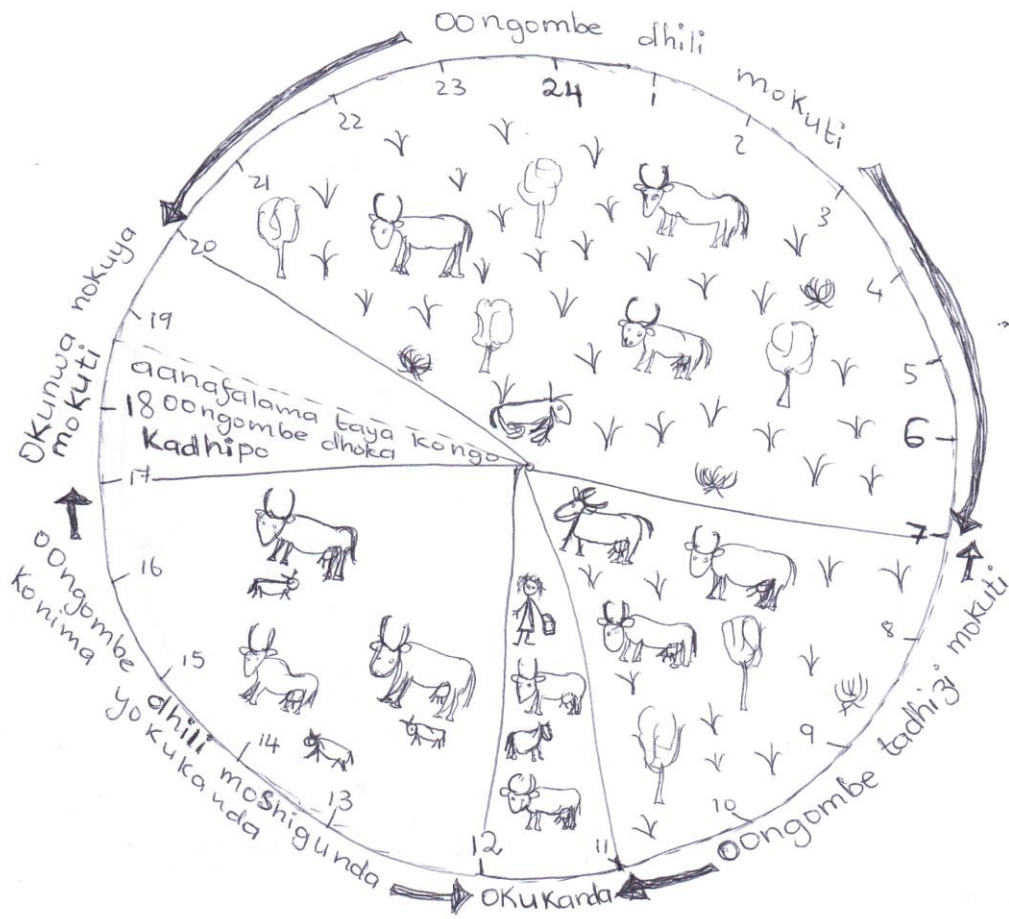
Group members
Annalissa Nghiyalwa
Erikson Mahini
Ndapandula
Johannes Konis

Keys

- Oshikombo Goat.
- (Tree) omiti
- oshigunda Kraal
- Omwiidhi (grass)
- oshihwa bush

P.T.O

Oongombe (Cows)



Keys

-  - Oongombe (Cows)
-  - omwiidhi (grass)
-  - (Calf) okatana
-  - oshihwa (bush)
-  - omiti (trees)

STEPS ON HOW TO MAKE MULTINUTRIENT LICKS



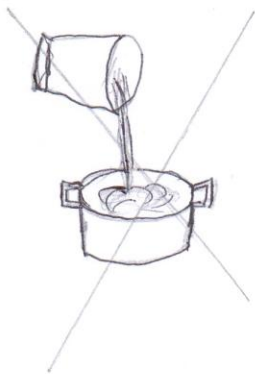
STEP 1

ADD THE UREA TO THE WATER AND STIR UNTIL IT DISSOLVES



STEP 2

POUND THE SALT



STEP 3

IN ANOTHER BASIN MIX TOGETHER THE POUNDED SALT WITH CEMENT, MOLASSES AND ACACIA POWDS



STEP 4

NEXT, SLOWLY ADD THE LIQUID UREA TO THE DRY MIXTURE AND STIR THIS UNTIL IT FORMS A THICK PASTE



STEP 5 which you put in a TIN MOLD OR something else which is KNOCK THE TIN ON THE GROUND TO PACK DOWN THE PASTE



STEP 6

THE BLOCK IS REMOVED FROM THE MOLD AND PLACED IN THE SHADE TO DRY



TREES AND BUSHES

A lot of bush encroachment had already taken place by the time the commercial farms were handed over for resettlement. Crop and garden areas were cleared of most trees and bushes, although a few useful plants were left standing.



Dense encroachment by *Dichrostachys cinerea*, from previous mismanagement.



Lots of firewood gets collected from the “Municipal area” in the vicinity of the school.



A volunteer seedling of *D. cinerea* is pruned and left standing in this garden, to improve the micro-environment.



Young bushes of *Dichrostachys cinerea* have been pruned, so that they will grow taller and provide better shade in future.



The school garden gets protected by the large *Acacia tortilis* trees that had been left standing and whose leaves provide a fine, nitrogen rich mulch.

DESCRIPTION OF ROLEPLAY ON TREES AND BUSHES

- Some residents are busy chopping trees indiscriminately.
- A Forestry Officer comes along and asks why they are chopping so much wood.
- The residents explain that because of the low rainfall their crops failed and so they have to depend on sale of wood for their income.
- The Forestry Officer suggests that instead of indiscriminate chopping they should selectively chop some branches, prune the trees and encourage fast re-growth of useful branches.
- The residents asked questions and were shown how to do the pruning.
- While demonstrating how to prune, the Forestry Officer also explained the importance of trees to the environment and the ecological support services.
- The Forestry Officer then gave the residents some seedlings of useful trees, and suggested they plant them to replace trees that had been killed by the indiscriminate chopping.
- The residents planted the seedlings and thanked the Forestry Officer.




































































Some bushes of *Acacia mellifera* are selectively stem-burned, in order to kill them and improve the rangeland.



Pads of prickly pear (*Opuntia ficus-indica*) are removed and placed on the soil so that they grow into a dense windbreak that also produces fodder and fruits.


TREES AND BUSHES


MATRIX RANKING


OMADINA OMITI	OILONGIFOMWA				
	OIKUNI 	OKUSIKA OMAUMBO 	OIKULYA YOIMUNA 	OKUPA- NGA OMIKIFI 	IKWAO 
 ONGEIE					
 OMUNALUKO					
 OMWONDE					
 OMUNGHENO					
 OMUFYATI					
 OMUSHE					
 OMUKETEIE					
 OMUNGHUSI					
 OMUPOPO					
 OMUNGHAMA					


OYUUKIFO

KEYS:

 = UNENE

 = POKATI

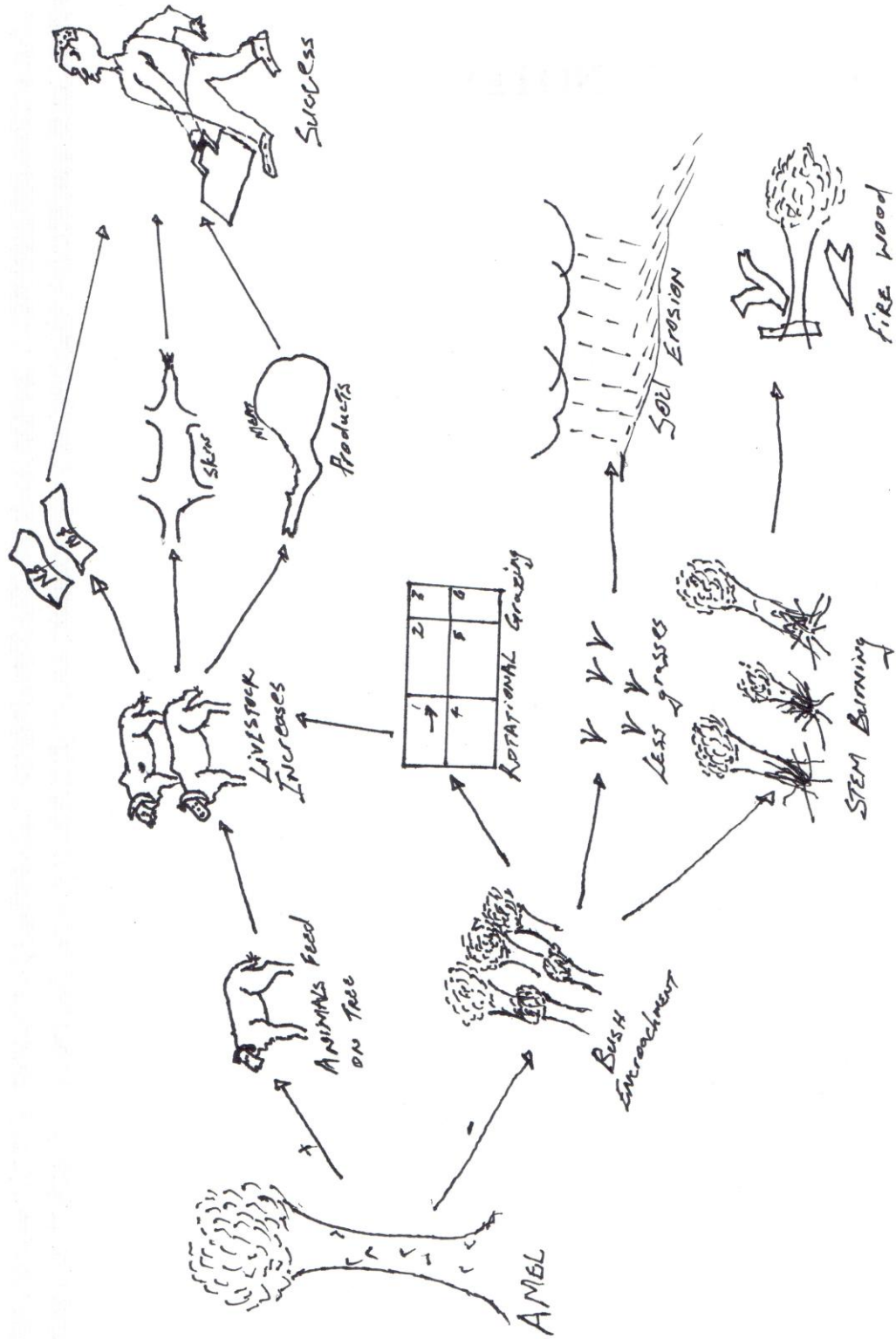
 = KASIBWA

 = IHAILONGIFWA

OYAKUFIMBINGA
(PARTICIPANTS)

- Aina AMADHILA
- HIMA EKANISJO
- Meme KATRINA
- MEME KATRINA

UPGRADED PRA DIAGRAM (TREES AND BUSHES)
IMPACT LINKAGES



BY JENS HENNING

100m

- = Dams
- = big trees
- = Bushes
- = Seawall

TREE & BUSH

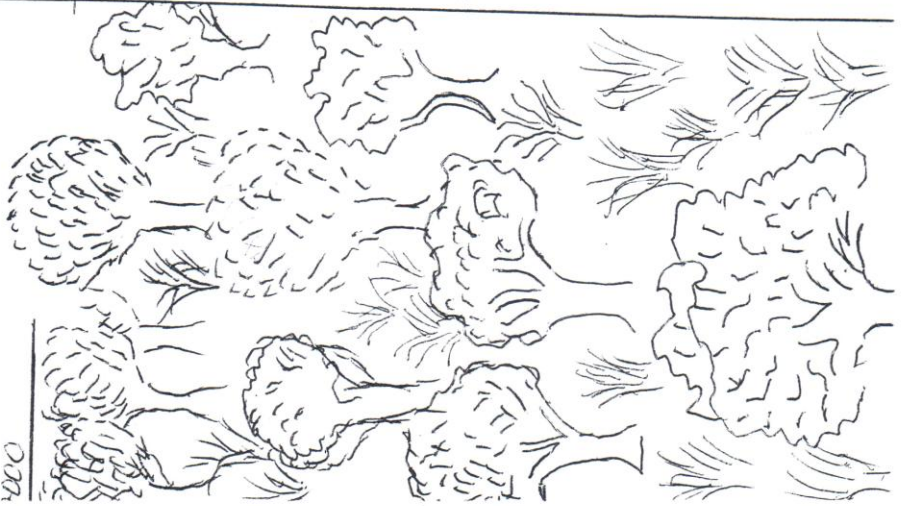
TREND DIAGRAM.

GREEN CITY PLANNING

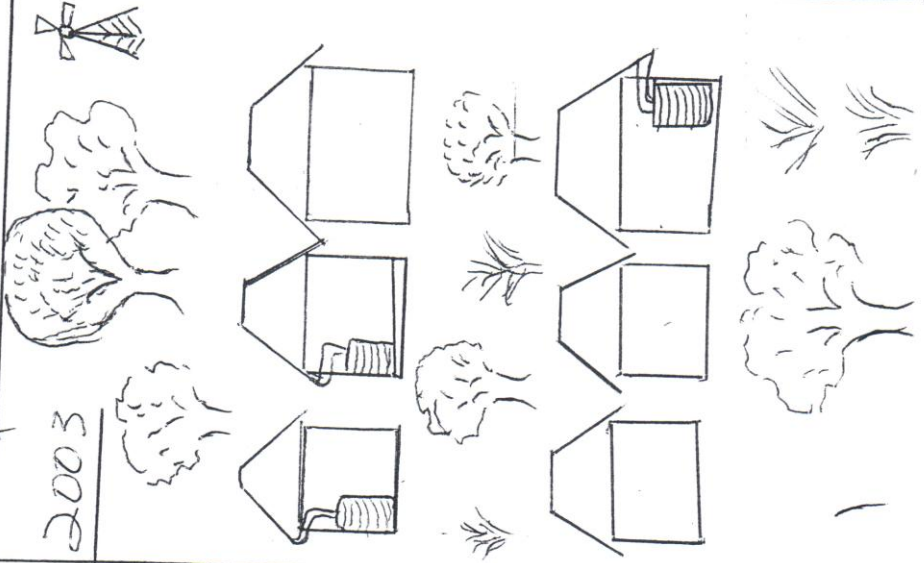
1. Aina Amadrita
2. Hilma Angula
3. Meme Katrina



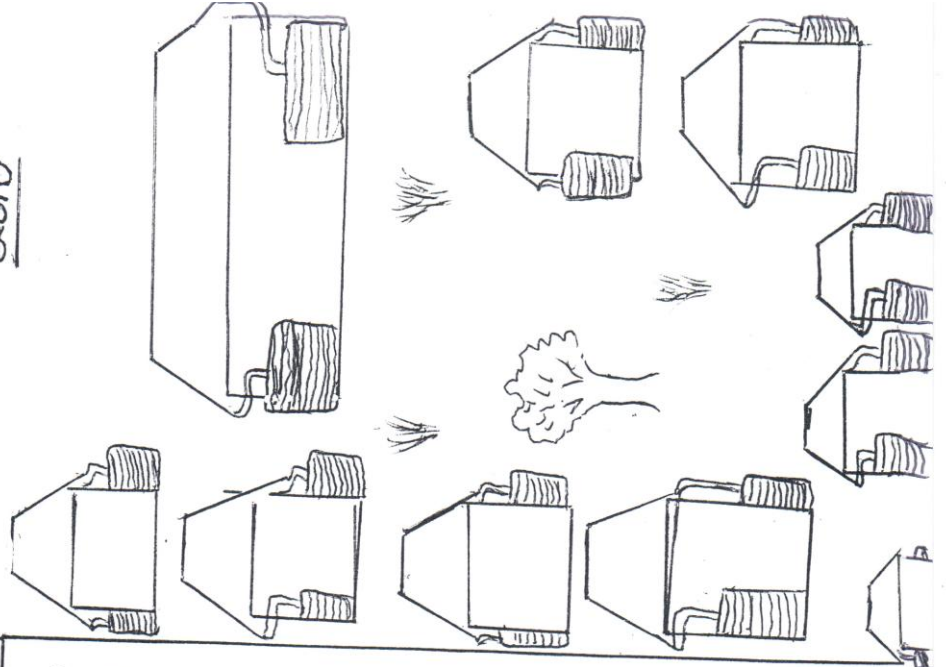
2000



2003



2010



WILD FOODS AND MEDICINES

Reliance on wild foods and medicines is not very high at the Queen Sofia Project. It seems that the resettled families are not familiar with many of the plants growing there. Most families tend to use only species that also grew at their former homes, but due to the high cultural diversity amongst the families, there are quite a lot of plant species that do get used. Although marula trees (*Sclerocarya birrea*) do not occur naturally in the area, some had been planted by the former commercial farmer. They now produce a lot of fruit and they get harvested once per year by families who are used to the marula fruits. They agree on a day when they meet under the trees and squeeze out the juice and keep the seeds for later kernel extraction for oil production at individual homes.



A seedling of *Berchemia discolor* is left to grow in this garden, in the hope that it will produce fruits.



This good specimen of *Peltophorum africanum* was spared when the garden area was cleared.



A marula seedling is left to grow in this garden.



Marula seedlings and truncheons are planted in the school garden.

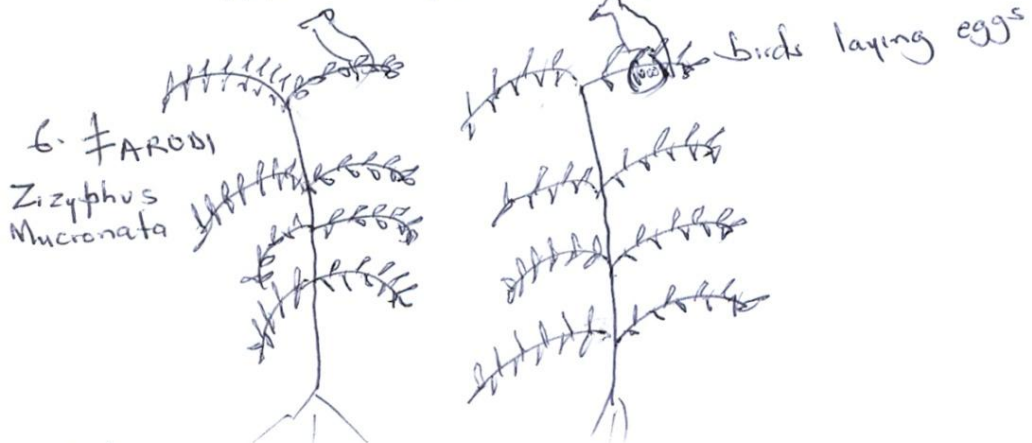
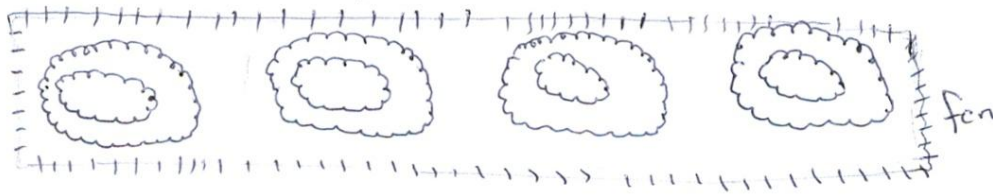
Wild Foods and Medicines by Patrick 4852677 Matrix Ranking

Participants: ① Oupelene ② Martin Awarab ③ Fransine

○ = Bad (Low) ○○ = Excellent
 ○○ = Slight ○○○ = Outstanding (Extreme)
 ○○○ = Average

① Xun (Products) Gaub (Criteria)	!!! Kubirera !!! Kham (Harpagophytum procumbens)	!! Hab	! Gorab	!! Aidi (Grewia retinervis)	! Arodi (Ziziphus mucronata)
! gorse a hosen xa (Gettes) Difficulty of collection	○ ○ ○	○ ○ ○	○○	○	○
Au !! khobaba Cha Taste	○	○	○ ○ ○	○○ ○	○○
Huira Effectiveness	○ ○ ○	○ ○ ○	○ ○ ○	○ ○ ○	○
#guise i a hā-e !!! kase Abundance	○ ○ ○	○ ○ ○	○ ○ ○	○ ○ ○	○ ○ ○
!! Hawsē a hā !!! ho Storability	○ ○ ○	○ ○ ○	○ ○ ○	○ ○	○

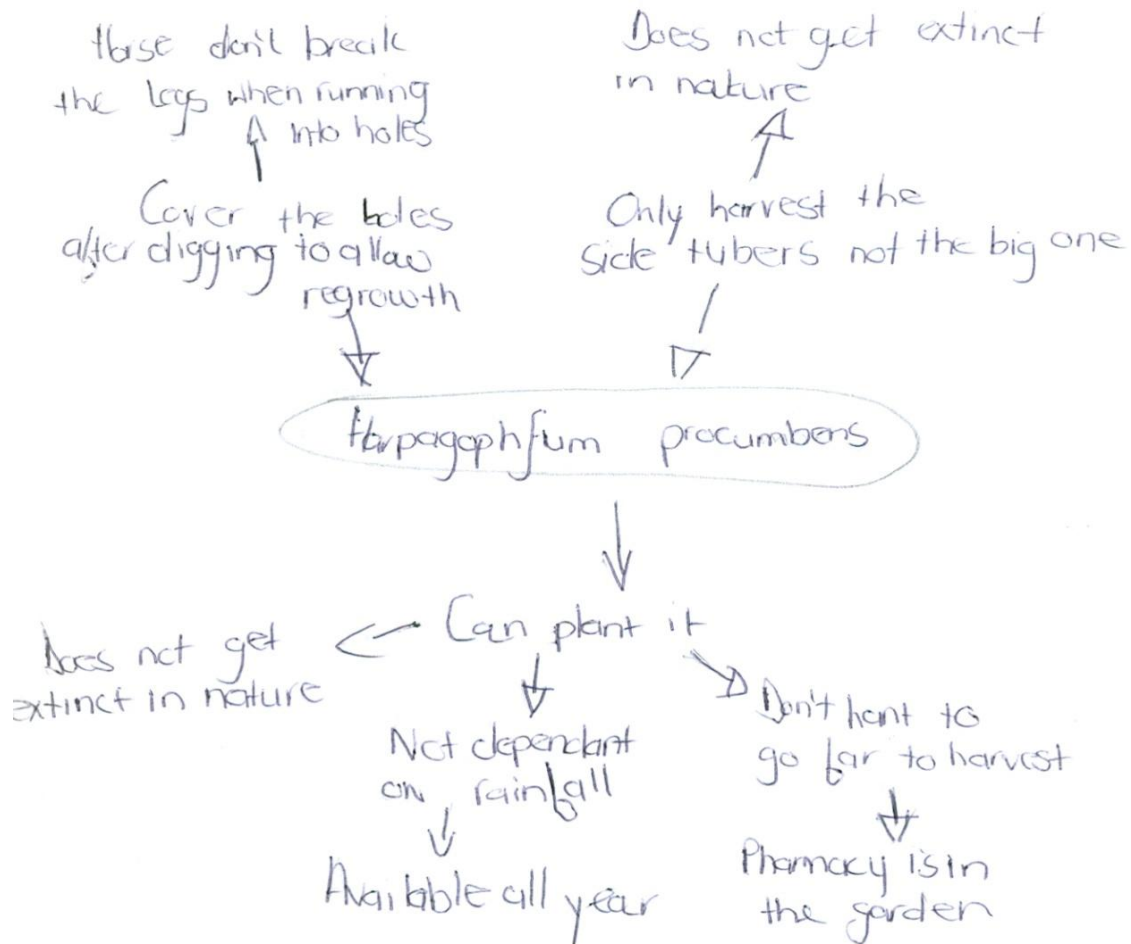
1. UPGRADED TREND DIAGRAM



participate 1. Oupelen
2. FRANUSINA

Student: Poniso B

Impact linkage Diagram of Harpagophytum procumbens
Upgraded PRA Diagram



Participants: @ Marvel

Wild Food and Medicine
SEASONALITY CHART

Penise Name
200102274

Plant Name	February	March	April	May	June	July	August	September	October	November	December	January
IKHABER KHAM Kragg-oh- tum ocumbens	•••	•••	•••	•	••	•••	—	—	••	••	••	••
IKHAB OMBRETUM IMBER	•	••	••	•	—	•••	—	—	•	••	••	••
GORAB	•	•	••	•	••	•••	—	—	•	••	••	••
IKHANI Berchemia discolor	•	••	••	••	••	•••	—	—	•	••	••	••
IKHANI GAEWIA retinervis	•	••	••	•	••	•••	—	—	•	••	••	••
IKHANI Zisiphus mucronata	•	••	••	•	•••	•••	—	—	•	•	••	••

KEY: ••• very little
••••• better
••••• Excellent
•••• Good
• nothing

STAFF: 1. PONISO D'S
2. Y. T. PATRICK.

PARTICIPATES: 1. OUPELEN
2. MARTIN INWARAB
3. FRANSINA

AGRICULTURAL EXTENSION

ENERGY

The main uses of energy at the Queen Sofia Project are for pumping water, driving the tractor and other vehicles, cooking food, heating water and providing light at night. Firewood is used mainly for cooking. It is collected in the nearby “municipal” area. Photovoltaic panels charge batteries for lighting at the school. Diesel is used to pump five boreholes, while the remaining twelve are fitted with wind pumps. The diesel gets financed by profits from the sale of produce from the project garden.



Wind energy is used to pump water at most of the Queen Sofia boreholes.



Firewood is gathered near the school.



A solar drier can preserve many of the vegetables and herbs grown in gardens.













The diesel engines need regular servicing to prolong their life.



A simple but effective solar oven is made out of cardboard, aluminium foil, microwave bag and a black pot.



Matrix Ranking of Energy

Item → Criteria ↓	Wood 	Solar Stove 	Photo Voltage 	Gas Stove 	Parafink 
Cheap 	•	• • • •	• •	• •	•
Available 	•	• • • •	• •	• •	•
difficult 	• • • •	• •	• •	• • • •	• •
Usefull 	•	• • • •	• •	• •	•
Health 	• • • •	•	•	•	• •

• Best •• Second best ••• Worst

Participants

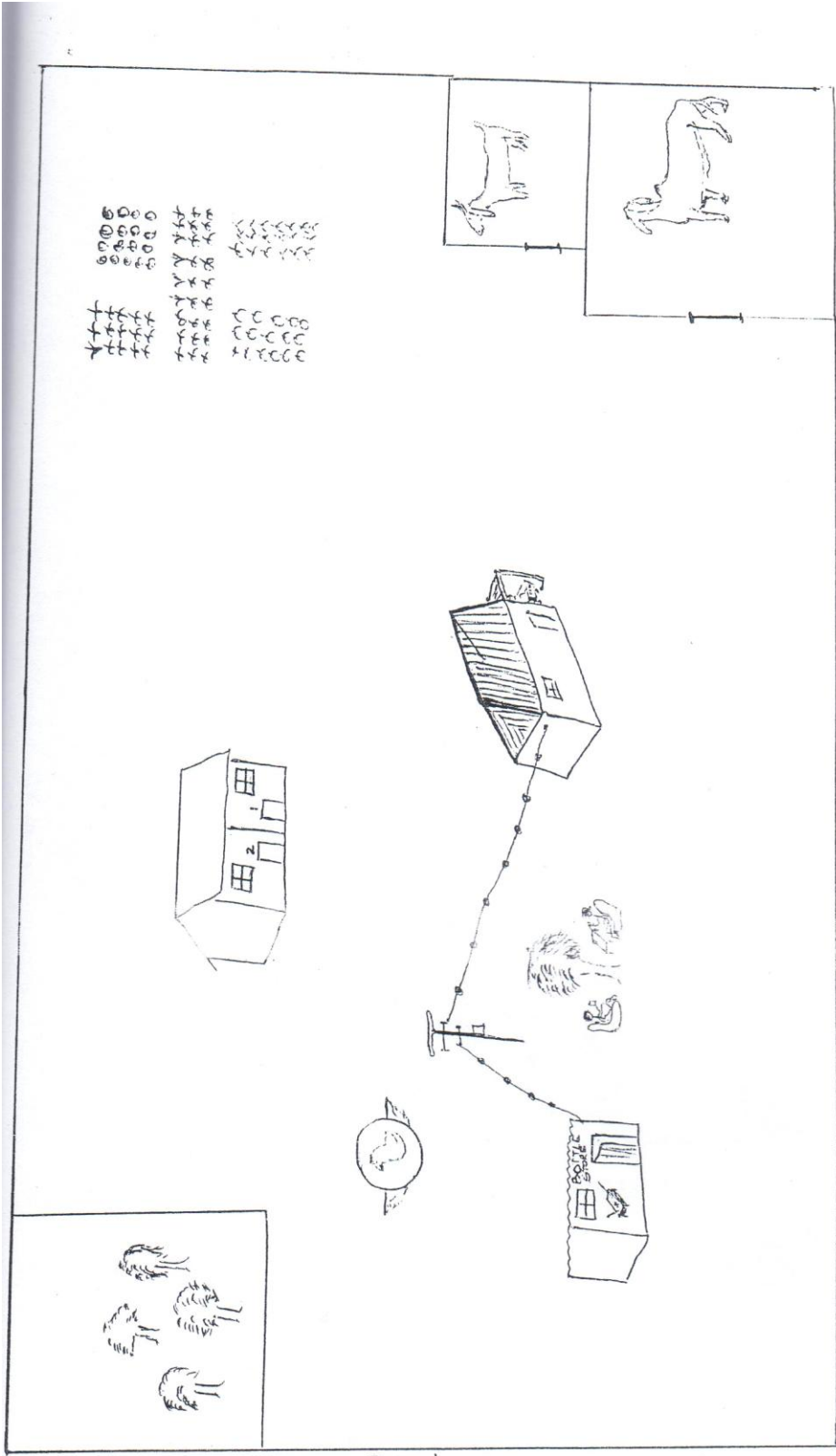
Moring Shuanika

vmeon Shoonika

Tyumbo Tami

iramondjila

John Day

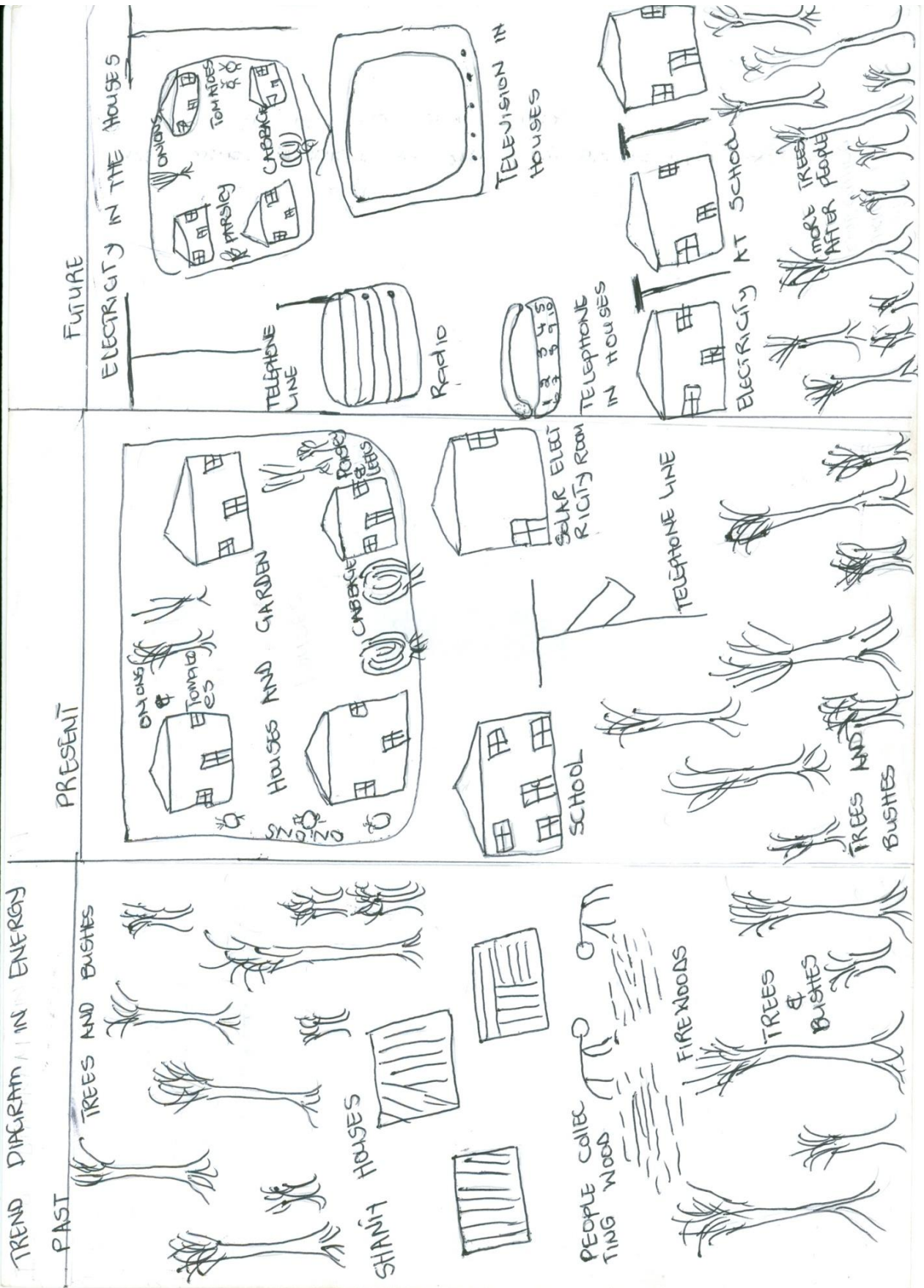


Producers

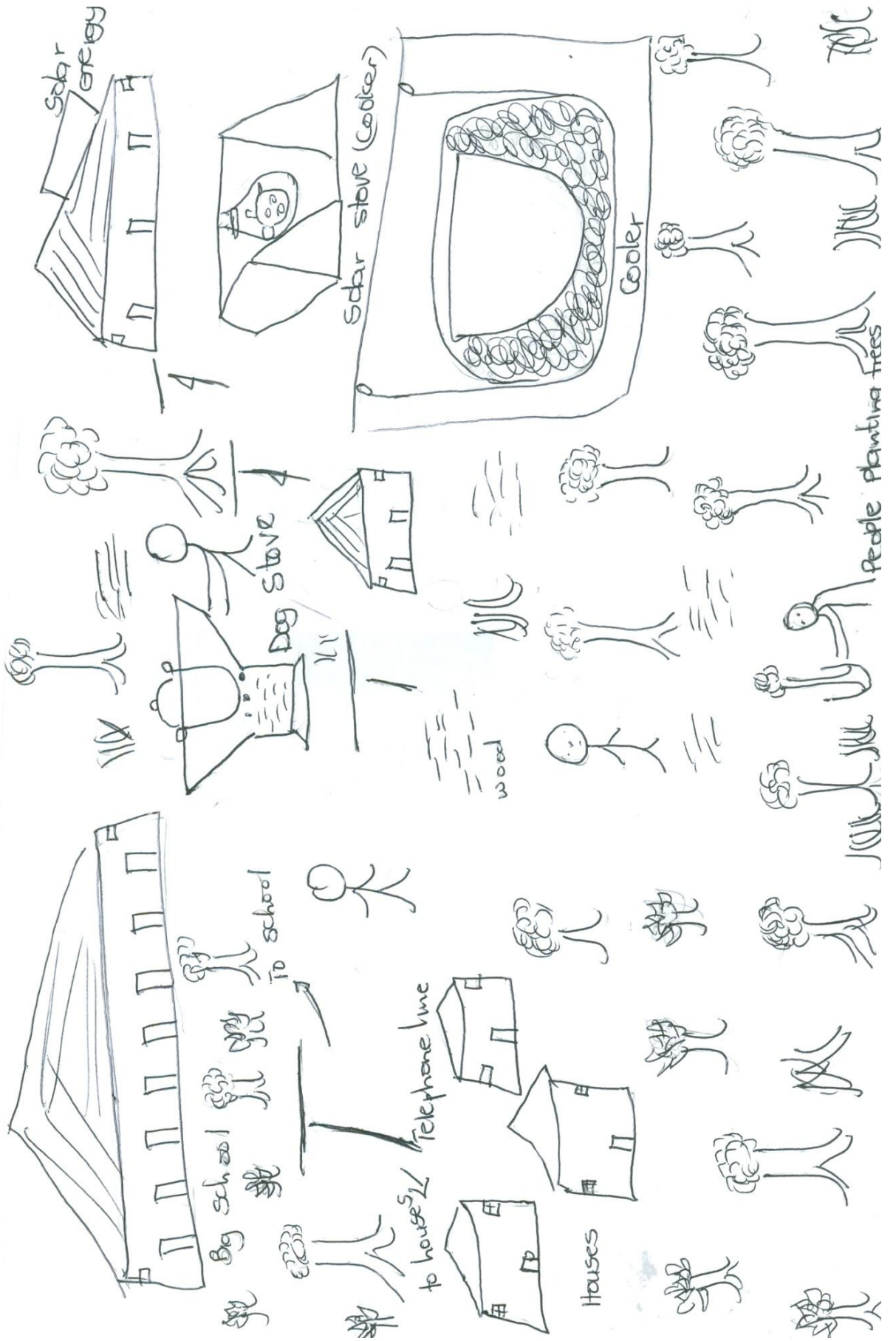
1. Johannes Konis
2. David Abiathar
3. Erika Jacobine

KEY

- = CHICKEN HOUSE
- = BOTTLE STORE & GAMBLING HOUSE
- = NESTING PLACE
- = TELEPHONE LINES
- = TELEPHONE TOWER
- = MAIN HOUSE & CARS GARAGE
- = OLD HOUSE
- = ORANGES/APPLE TREES
- = GOATS PEN
- = CATTLE KRAAL
- = PLOTS
without is plowed in small plots



PRA DIAGRAM UPGRADED



DRYLAND CROPS

The main crops grown at the Queen Sofia Project are mahangu, maize, melons and cowpeas. The mahangu suffers from attack by Quelia birds. The maize suffers in most seasons from insufficient rainfall. There is potential to make improvements through deep ripping in permanent strips, incorporation of organic matter, conversion to more drought resistant crops and integrated pest management.



Plastic bags can be tied around some heads of mahangu, to save them from damage by Quelia birds.



Most of the 0.25ha of garden area per family gets used for dryland crop production, as in the background of this photo.



Mould-board ploughs are used to till the soil.

Crops Nutrient Budget

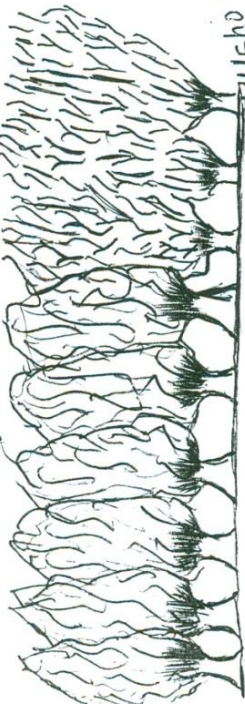
LITERALEA PRA

By:

- 1. Pionika
- 2. Mappq 4.

DATE: 15/10/03

(Live fence)
Omih dholuqumbo



Omapuqu
(Maize)



Neem



Oluachila
(Bird)



Aphid



Imckinez
(Beans)



Neem



iiherapuc



iiherapuh
(Storax)



Uusho weenyombe
(Cattle dung)
Uusho wa parama parama
(Artificial fertiliser)



Oka puka
(Pest)



Watering can

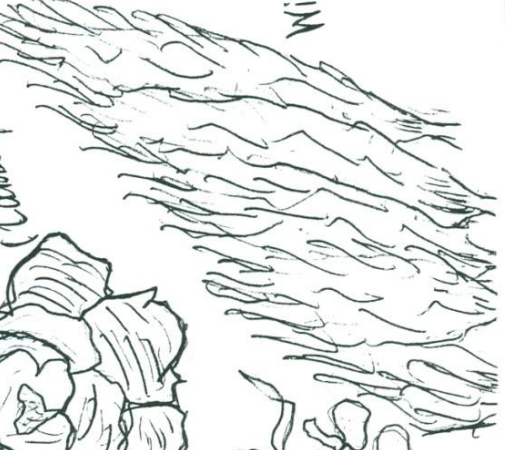


Ombong
(Cabbage)



Compost
Great manure
Uusho wa parama parama

Wind break



Alina N Kulo
200239180

SEASONAL CHART (CROPS)

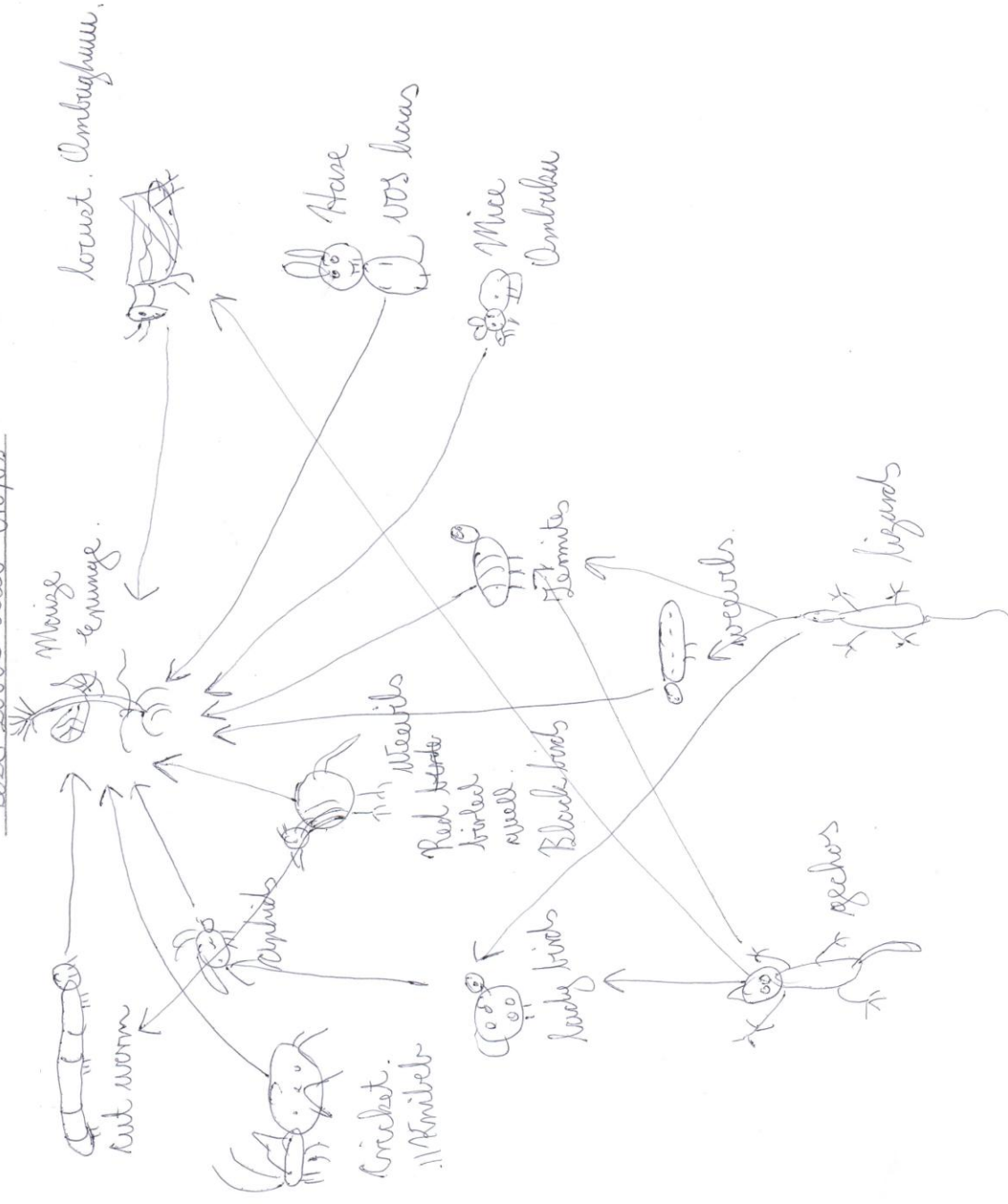
Seasonal diagrams can be used for obtaining seasonal patterns of Rainfall, employment, income and expenditure, dept, credit, marketing etc. This chart made by Queen Sofia Project community.

CREDIT (ogungga)	•• ••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••
INCOME (ijemo)	•• ••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••
EXPENDITURE (izemo)	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••
EMPLOYMENT (ijlonga)	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••	••• •••
RAINFALL (mvula)	•••	•••	•••	•••	•••	•••	•••	•••	•••	•••	•••	•••	•••	•••	•••	•••	•••	•••
MONTHS (Domwedhi)	(Desemba) DEC	(Febwadli) JAN	(Febwadli) FEB	(Machisi)(Apilili) MAR	(Machisi)(Apilili) APR	(Machisi)(Apilili) MAY	(Juni) JUNE	(Juli) JULY	(Aguste) AUG	(Septemba) SEPT	(Oktoba) OCT	(Novemba) NOV						

Names of Participants
① Amalia Shekunangeli
② Ngemi

KEY:
••••• highest
•••• good
••• fair
•• poor
•••••• Lowest
X nothing

Pest. Woods Wet Crocus



By: Aarlin Lambert

IRRIGATED GARDENING

Vegetables are grown both in the gardens at individual homes and in the 2ha community project garden. The main winter vegetables are cabbage, onion, beetroot and carrot, while the main summer vegetables are swiss chard, tomatoes and green peppers. In addition, the home gardens have fruit trees, most of which are citrus. One distressing find was that when each household was given 18 young fruit trees, they were not taught how to prune them. As a result, the budded citrus trees were busy re-converting to the root stock, as it outcompeted the scion. They are likely to have produced nothing but poor quality rough lemons after many years of being watered and fertilized. Luckily it was not too late and students taught the residents how to prune the trees correctly.

Pests are starting to build up their numbers, and some residents apply poisons that are not only harmful to natural predators, but also to themselves and their children.



The community garden of 2ha.



A home garden within the 0.25ha allocated to each household.



Weed encroachment by the couch grass, *Cynodon dactylon*, robs the soil of a lot of its water and nutrients.



An attempt to smother the couch grass with cardboard, that prevents the grass from getting the sunlight it needs for photosynthesis. When some shoots escape over the edges, they too must be smothered. When the grass dies after several months, it decomposes into useful compost.



Out-of-season tomato plants get killed by frost and carry over pests and diseases from season to season.



Correct spacing of tomato plants allows each plant to grow well and protect itself better against diseases.



Melons are placed by plants in an attempt to protect them from frost, by slowly releasing the heat they absorbed during the daytime.



The burning of tyres is a less eco-friendly means of frost protection than the use of melons.



Nasturtium flowers are planted amongst cabbages, in the hope of repelling woolly aphids.



A neem tree provides leaves that are used for making a safe insecticide.



A scarecrow attempts to reduce bird damage to green peppers.



Covering the green peppers with netting provides better protection against birds.



If the citrus trees are not pruned they will only produce rough lemons.



With a few snips of the pruning shears, the rootstock shoots are rendered harmless.



Budding of citrus seedlings can be done by Queen Sofia residents, to save costs and for sale.



Young plants are protected from house-starlings by covering with branches.



A compost pit garden allows a diversity of plants to grow around the pit and create a moist micro-environment.

DESCRIPTION OF ROLEPLAY ON RAT CONTROL

- A lady complains of damage by rats to her vegetables growing in the garden.
- She buys rat poison, in the form of pink pellets, and spreads them around the garden.
- Her children play in the garden and discover the pellets.
- They think that the pellets are sweets, and excitedly eat some.
- They soon discover that the pellets do not taste nice and actually make them sick.
- They vomit and cry for their mother.
- Several mothers come rushing out and try to calm the children.
- One of the mothers advises that traps are a much safer way of controlling rats.
- They try out the rat traps.
- The traps catch many rats, which are then killed safely by drowning.



Roleplay on rat control.













The rat poison resembles sweets.



Rat traps are a lot safer than poisons.

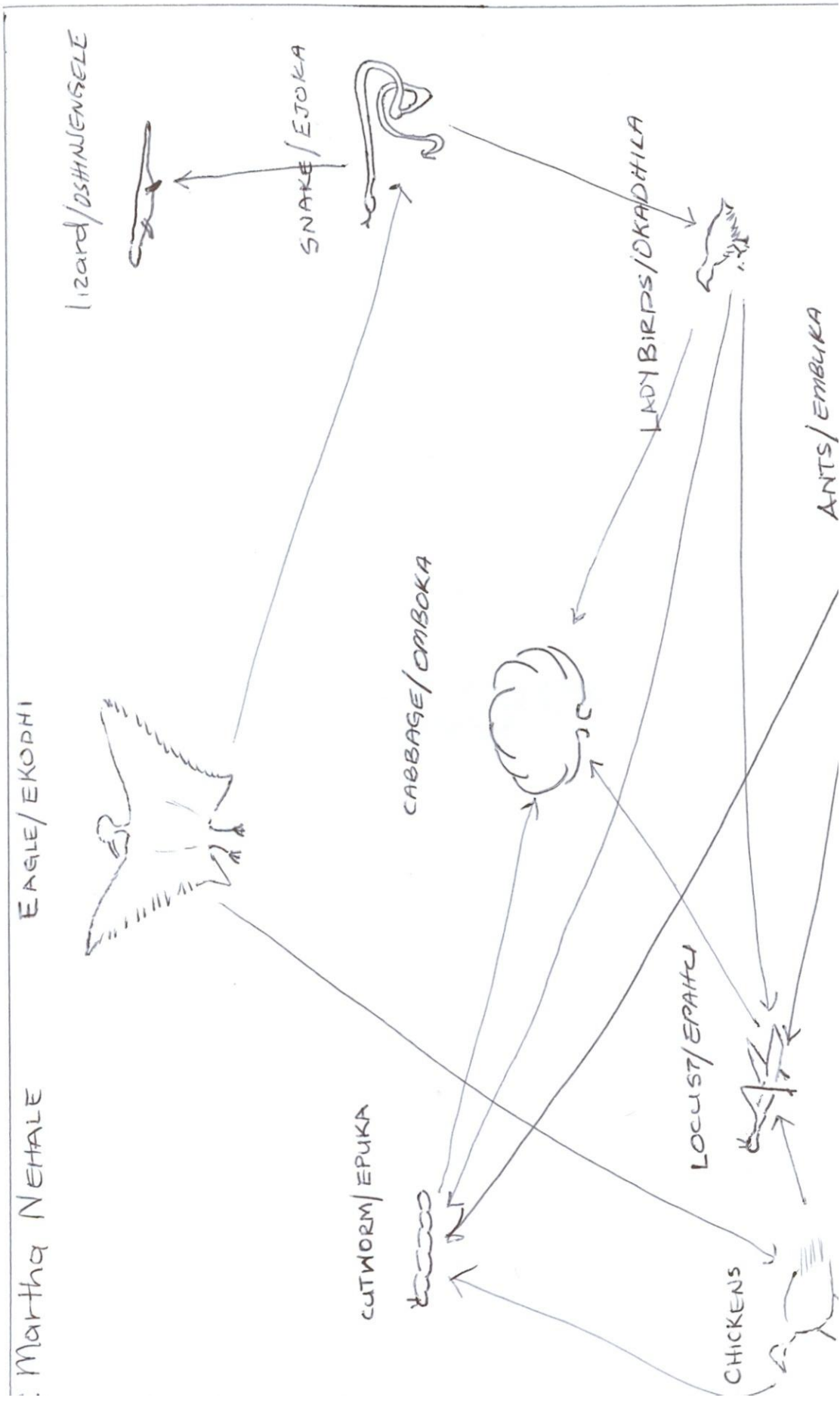
Mudengi' Angela

MATRIX RANKING ON GARDENING

	 CABBAGE	 CARROTS	 ONIONS	 HOT PEPPER	 PARSLEY
 WEEDS ↓ ↑	●	●●●●	●●●●	●	●●
 PESTS	●●●●	●	●	-	●●
 DISEASES	●●●●	●●	●	●	●
 WATER REQUIREMENT	●●●●	●●	●●●●	●	●●●●
 GOATS	●●	●●	●●	-	●●●●

KEY
 ● SLIGHT
 ●● FAIR
 ●●● MEDIUM
 ●●●● BIG

BJ: LUCIA SHATHIKA



Martha NEHALE

EAGLE/EKODHI

LIZARD/OSHUNJENSELE

SNAKE/EJOKA

CABBAGE/OMBOKA

WORM/EPUKA

LADY BIRDS/OKADHILA

LOCUST/EPATU

CHICKENS

ANT/SEMBUKA

S. Upgraded nutrient budget

PARTICIPANTS

Lucia Shaanica
Julia muyele



trees provide shade to the vegetables
Omiti badi eta amuelile kothulunda

watering can
to prevent nutrient leaching



↳ contains water
ketete otuluya
tali medu

Oxuxwa tali cupuka

Chickens feed on pests



leaves can improve the soil nutrients



pruned branches
↳ decompose and improve soil structure

Uwayi yafetwa
bati nungi oyal
ya yomimo

Compost heap
Oshilambis shiamisidli



VALUE ADDING

Most of the products sold from the Queen Sofia Project are raw materials. There is a lot of potential to process these raw materials, both for adding value and to improve storability and transportability of the produce. Both domesticated species, such as livestock and crops, and wild species such as wood, fruits and medicines, could have value added to their products. Further value may be added by combining various products, such as a diversity of dried vegetables, herbs and spices to produce soup packets.



Rosella plants (*Hybiscus sabdariffa*) grow well at Queen Sofia, but only their leaves are harvested for spinach.



The outer skin of the fruits of rosella make a delicious and healthy jam.

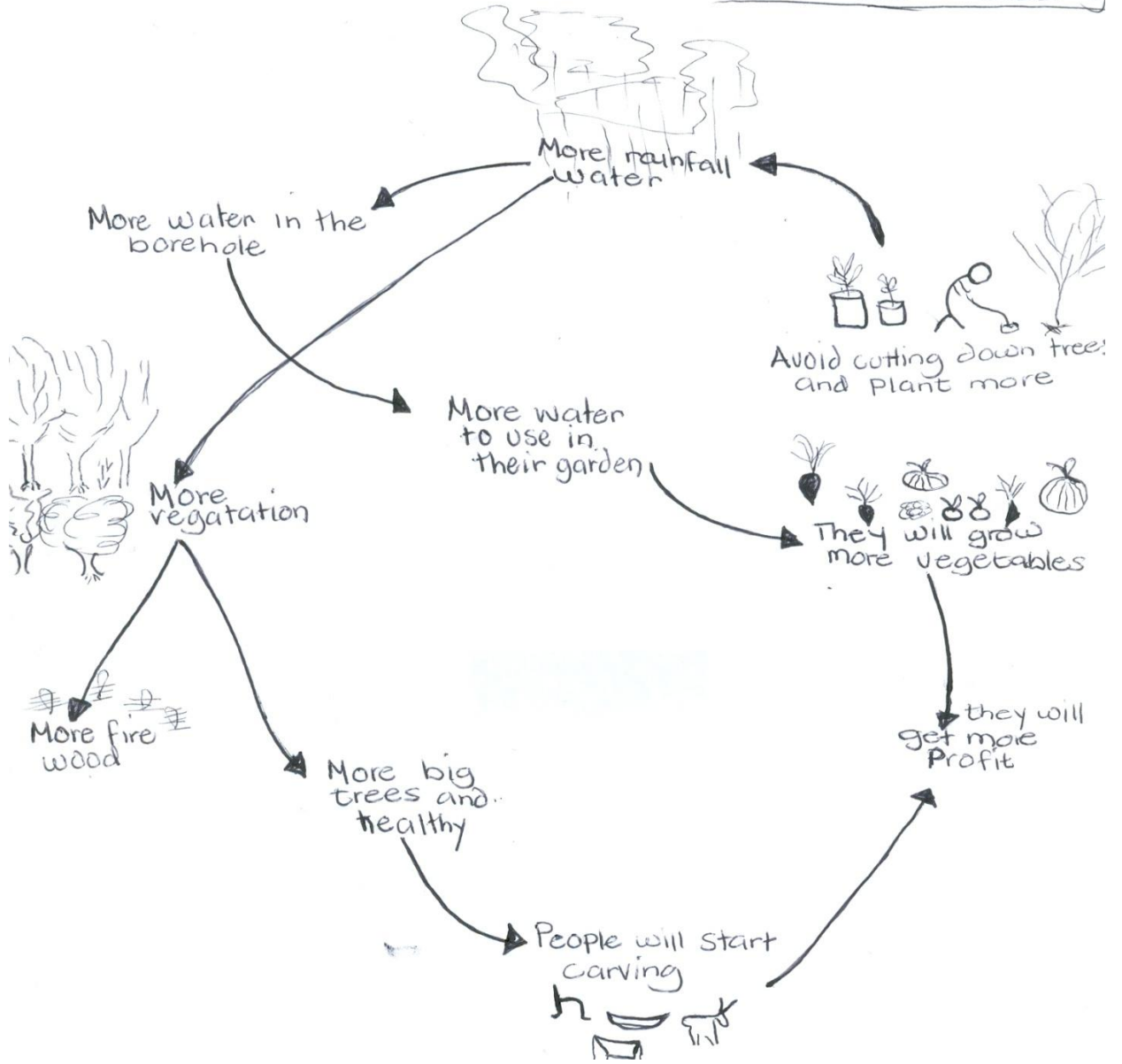


A tasty jam can also be made from the guavas produced at Queen Sofia.



Cut cabbage leaves are dried in the sun to extend their shelf life.

UPGRADED DIAGRAM. FOR ~~PROBLEM~~
Problem tree
UNDER value adding





SEASONALITY CHART UNDER VALUE ADDING

	Jan	Feb	Mar	Apr	MAY	JUNE	JUL	Aug	Sep	Oct	NOV	Dec.	total income
Sweet Potatoes	-	-	-	-	-	-	••	••••	••••	••••	-	-	•••• ••••
Cabbage	-	-	-	-	-	••	••••	••••	••	-	-	-	•••• ••••
Carrot	-	-	-	-	-	••	••••	••••	••	-	-	-	•••• ••••
Tomatoes	-	-	-	-	-	-	-	-	-	••	••••	••••	•••• •••• ••••
beetroot	-	-	-	-	-	•	•	••••	••	-	-	-	•• •
ONION	-	-	-	-	-	••	••••	••	•	-	-	-	•• ••
green Pepper	-	-	-	-	-	-	-	-	-	••	••••	••••	•••• •••• ••••
Mahangu	-	-	-	-	-	••	••	••••	••••	••••	••	-	•••• •••• ••••
Sorghum	-	-	-	-	-	••	••••	••••	••••	••••	••	-	•••• •••• ••••
Months	Jan	Feb	Mar	Apr	MAY	JUNE	JUL	Aug	Sep	Oct	NOV	Dec.	

- excellent
- very good
- ~~good~~
- Better
- Poor
- — poor
- — very poor
- nothing

Participants

E. XOASES

Emila XOASES

CRITERIA → ITEMS →	TIME CONSUMING IN PREPARING	RATE OF GENERATING INCOMES	COST OF INPUTS	PREFERENCE
Pop CORN	••	••	•	••
SALAD	••	••	••	••
CABBAGE SOUP	••	••	••	••
SITTING MAT	••	••	•	••
WILD ANIMALS MEAT (BILTONG)	••	••	••	••

KEY
 •• → HIGH
 •• → AVERAGE
 • → LOW

members: EMILY XOAS
 Name: MALIA
 Theopelus
 SHIGIMBHA

MATRIX RANKING

MARKETING

There has not yet been much marketing of livestock from the Queen Sofia Project, because the small starter herds are still being bred into larger herds. The residents furthermore complain that the current buyers of livestock offer low prices. Most of the marketed products so far have therefore come from the irrigated gardens. The vegetables are trimmed and washed where necessary and then packaged into nice looking clear plastic bags. On Fridays the truck brings to town those household members with produce to sell, in Otjiwarongo one week and Outjo the following week. There they have to compete with similar produce grown at comparative advantage elsewhere. Although such vegetables are needed for the health of residents, it is likely that surplus production of alternative vegetables or herbs could attract a niche market at greater advantage to the Queen Sofia community.



Fresh vegetables are neatly packaged, for sale in the nearby towns.



A book for keeping records of marketed produce was issued to each home.

DESCRIPTION OF ROLEPLAY ON MARKETING

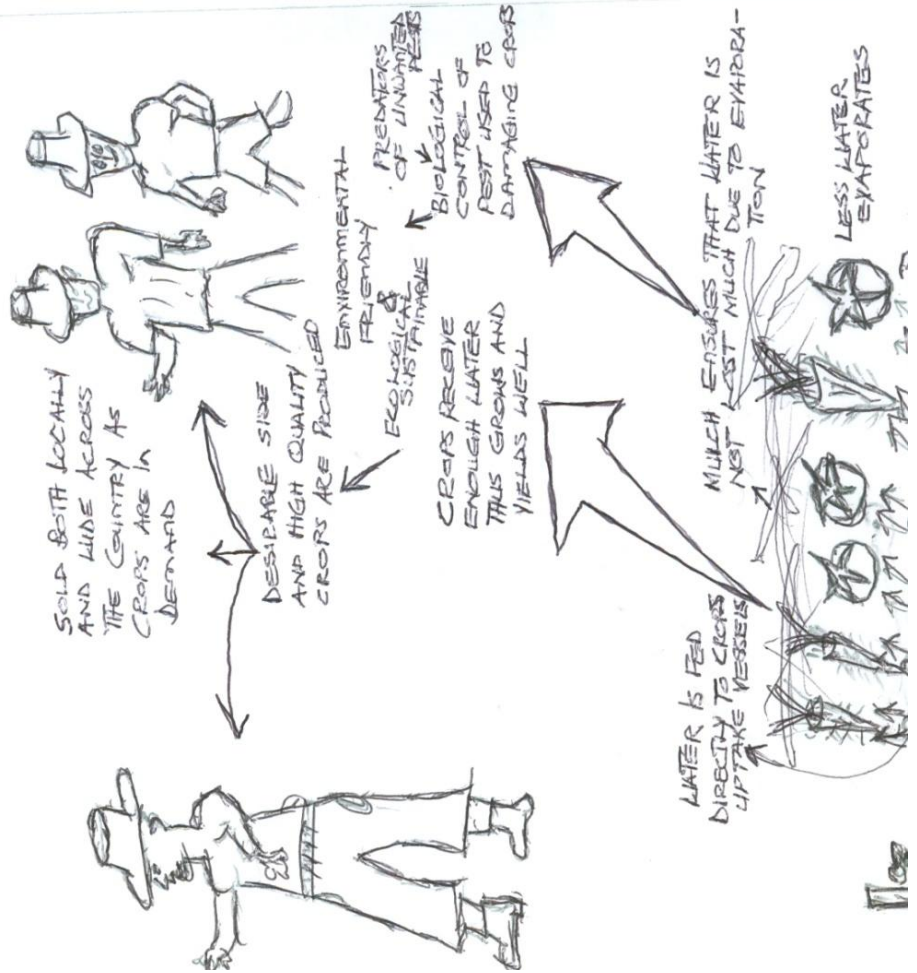
- Three residents take nicely packaged vegetables to try selling them in town.
- Only a little of the produce gets sold, and the rest starts to deteriorate from the heat.
- They bring back the unsold produce to Queen Sofia, throw away that which is rotten and give away that which can still be eaten.
- They are disappointed with this outcome and call their representative in for a meeting to search for solutions.
- The representative suggests that they be given pesticides, so that they will produce more and better quality vegetables.
- The representative furthermore suggests that markets be brought closer to Queen Sofia, to avoid the transport problems they face.

This roleplay demonstrated confusion over weak links. The first part of the roleplay indicated that marketing was the weak link in the chain of production, while the first recommended solution addressed primary production, which is clearly not the weak link if some of the produce had to be thrown away. The second recommended solution did address the weak link, but did not suggest how to go about bringing markets closer.

The roleplay also gave the impression that the residents still expect to be provided with inputs, such as pesticides, instead of relying on their own resources, based upon existing or new knowledge and skills. The idea that pesticides can provide a “magic bullet” solution, without harmful consequences, needs to be critically challenged.

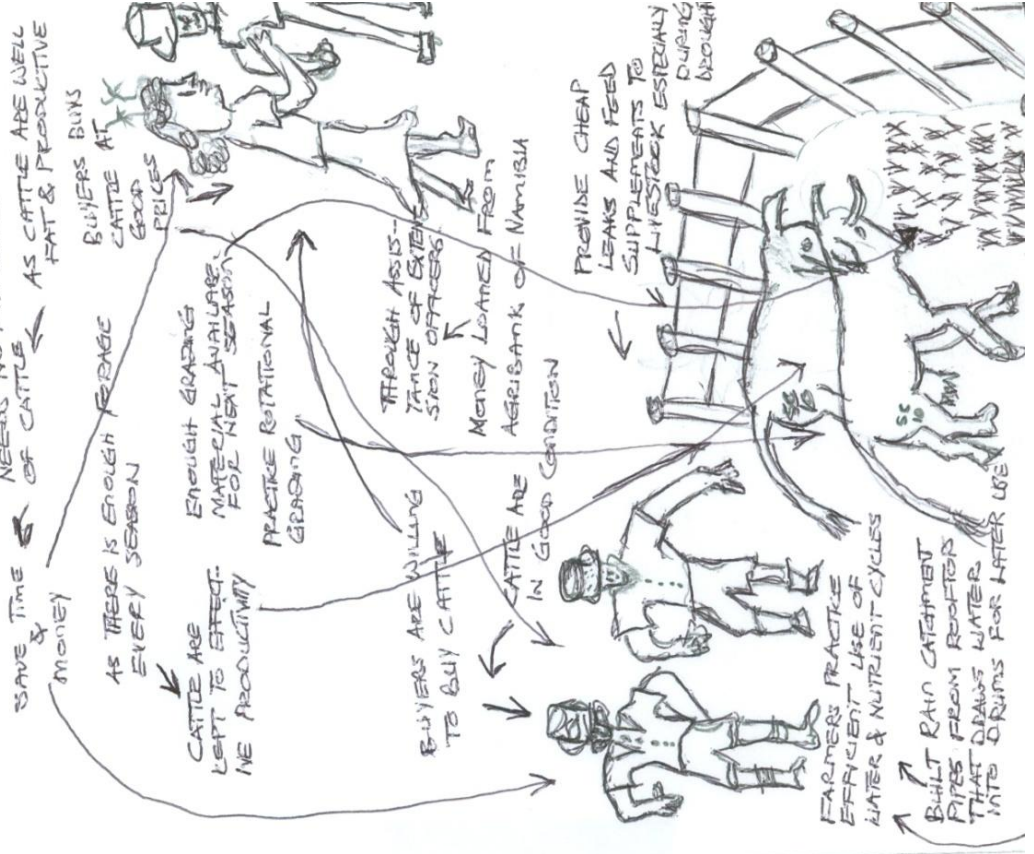
MARKETING (OMARANDISIRO NOMARANDASANENO)

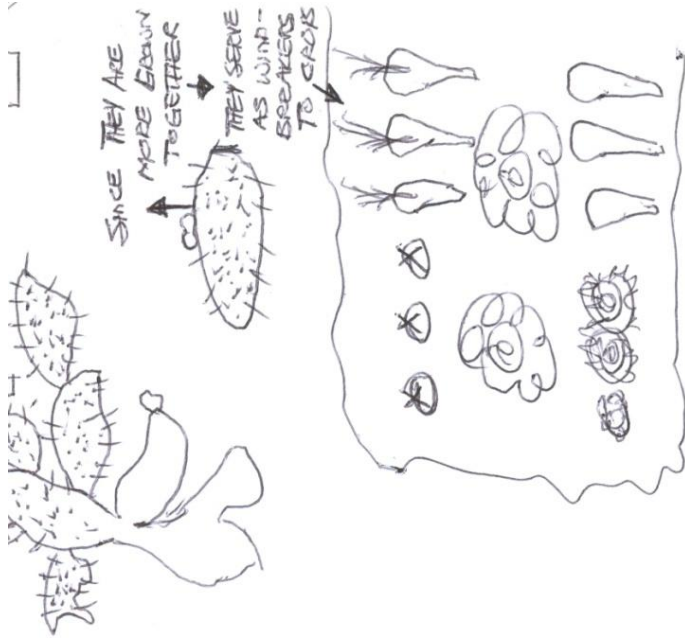
CROPS AND VEGETABLES (OVIKILINIA)



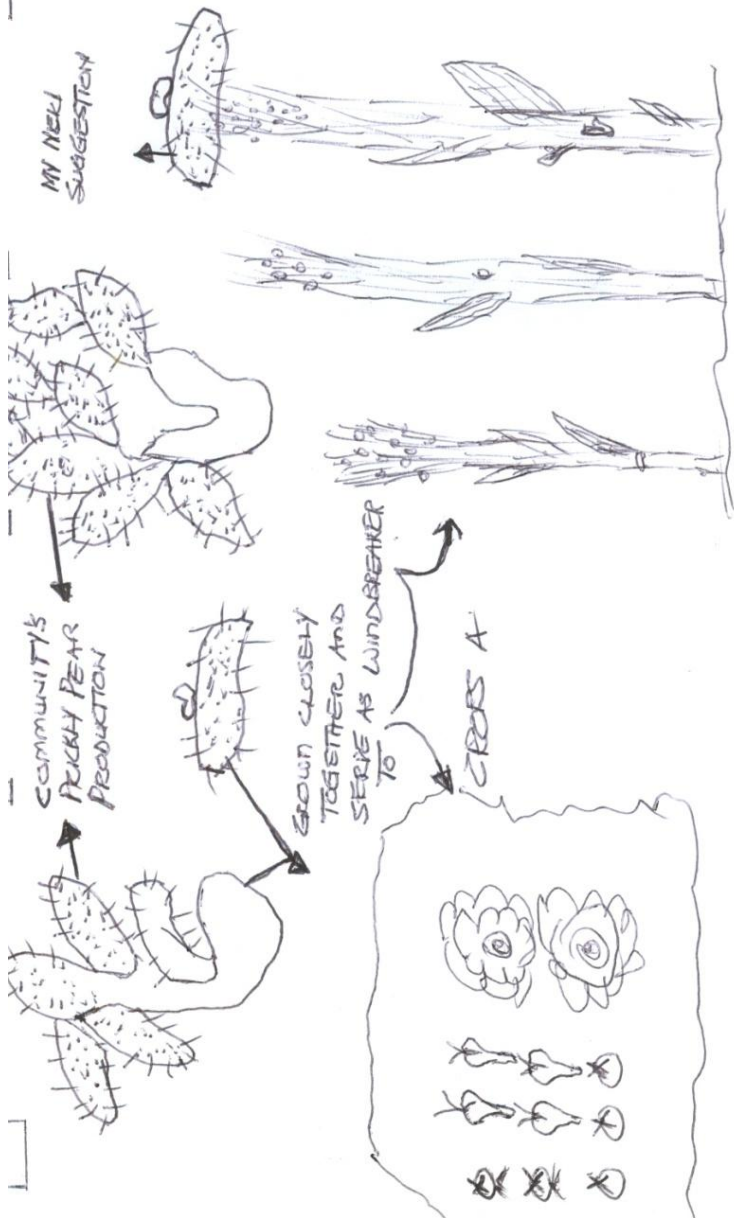
LIVESTOCK (OVINAMUNYO)

PROBLEM TREE - IMPROVED





INTERACTION
Dungem



Nehemia Nghuifiteng
200239201

Marketing: Matrix Ranking

Items →	Cabbage	Tomatoes	carrots	S. potatoes	Beet roots	onions	Gr. peppers	Spinach
Transport	•• ••	•• ••	•• ••	•• •• ••	•• ••	•• •• ••	•• ••	•• ••
Competition	•• ••	•• ••	•• ••	•• ••	•• ••	•• •• ••	•• ••	•• ••
Cost	•• ••	•• •• ••	•• ••	•• ••	•• ••	•• •• ••	•• ••	•• ••
easily available	•• ••	•• ••	•• ••	•• ••	•• ••	•• •• ••	•• ••	•• ••
profitable	•• ••	•• •• ••	•• ••	•• ••	•• ••	•• •• ••	•• ••	•• ••
Labour	•• ••	•• ••	•• ••	•• ••	•• ••	•• •• ••	•• ••	•• ••

- Participants
1. Kerty
 2. Rauha
 3. Ndohambela
 4. Lydia
 5. Matilde
 6. Elizabeth

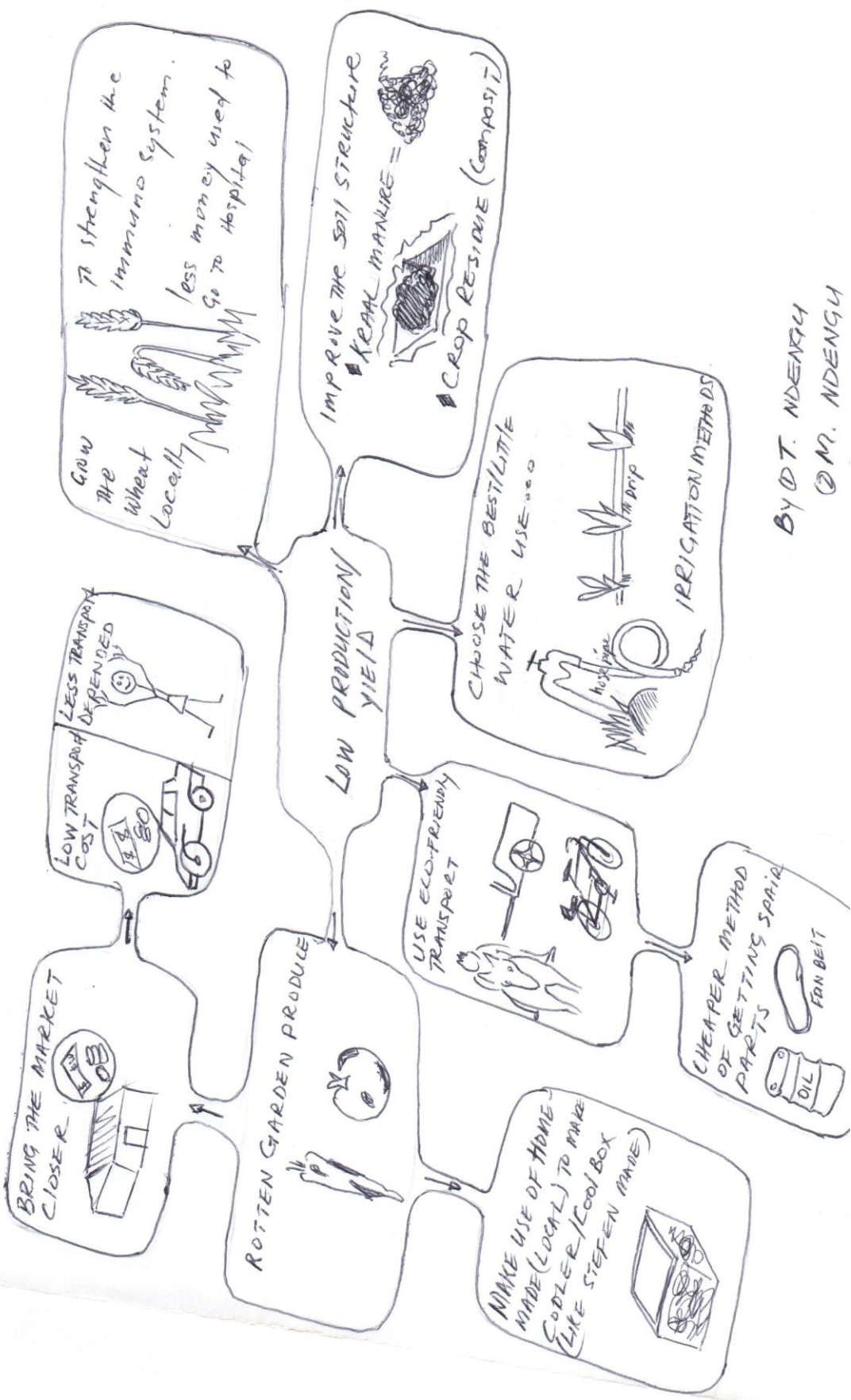
Compiled by: Kerty

Key words

••• = HIGH •• = FAIR •• = AVERAGE •• = poor • = Low

15-10-2003

5. IMPROVED PRA DIAGRAM



By D.T. NIDENGA
© M. NIDENGA

TRANSPORT

The Queen Sofia Project was given one tractor, one truck and two bakkies. Some households own donkey carts and a few have their own motor vehicles and/or bicycles.



Donkey carts are cheaper than vehicles to operate and maintain, although donkeys may contribute towards overgrazing.



The firm ground makes bicycle riding a useful means of transport.



A project bakkie is used by the coordinator.



The project truck is loaded with family representatives and the packaged vegetables they hope to sell in town.

DESCRIPTION OF ROLEPLAY ON TRANSPORT

- Two boys from Queen Sofia arrive late at school in town, due to the long distance they had to walk.
- The teacher sends them home with the message for their parents that their late coming can no longer be tolerated.
- The parents then organize a donkey cart to take their kids to school.
- The donkey cart experiences problems with a puncture, and the kids arrive late at school again.
- The teacher again sends the kids back home.
- The parents then offer to pay the neighbour to take the kids to school in his car.
- The car travels to school without any problem and the kids arrive on time.

This roleplay shows the obvious preference for transport by car, but ignores the high costs of running and maintaining cars.









The project tractor gets used for tillage and for pulling a trailer.



The big-eared donkey, in the roleplay on transport.

OVITOORE
IIVENDITHO
TRANSPORT

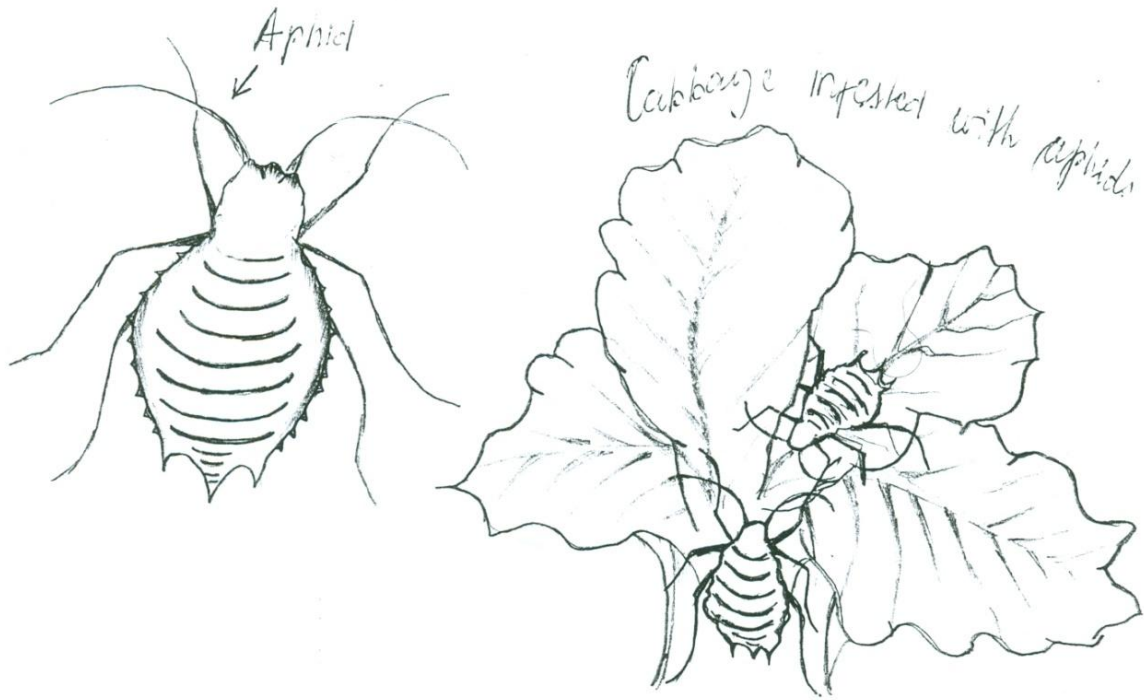
- Producers
 ① Johannes Konis
 ② David Abiather
 ③ Erika Jacobine

CRITERIA → ITEMS ↓	COST	MOSTLY USED OR RELIABLE	MOVING FAST OR SLOW	EASY AVAILABLE
	K	..	N	*
	::	..	✓	*
	::	..	✓	*
	::	↘	✓	*
	::	↘	✓	#
	::	↘	✓	*

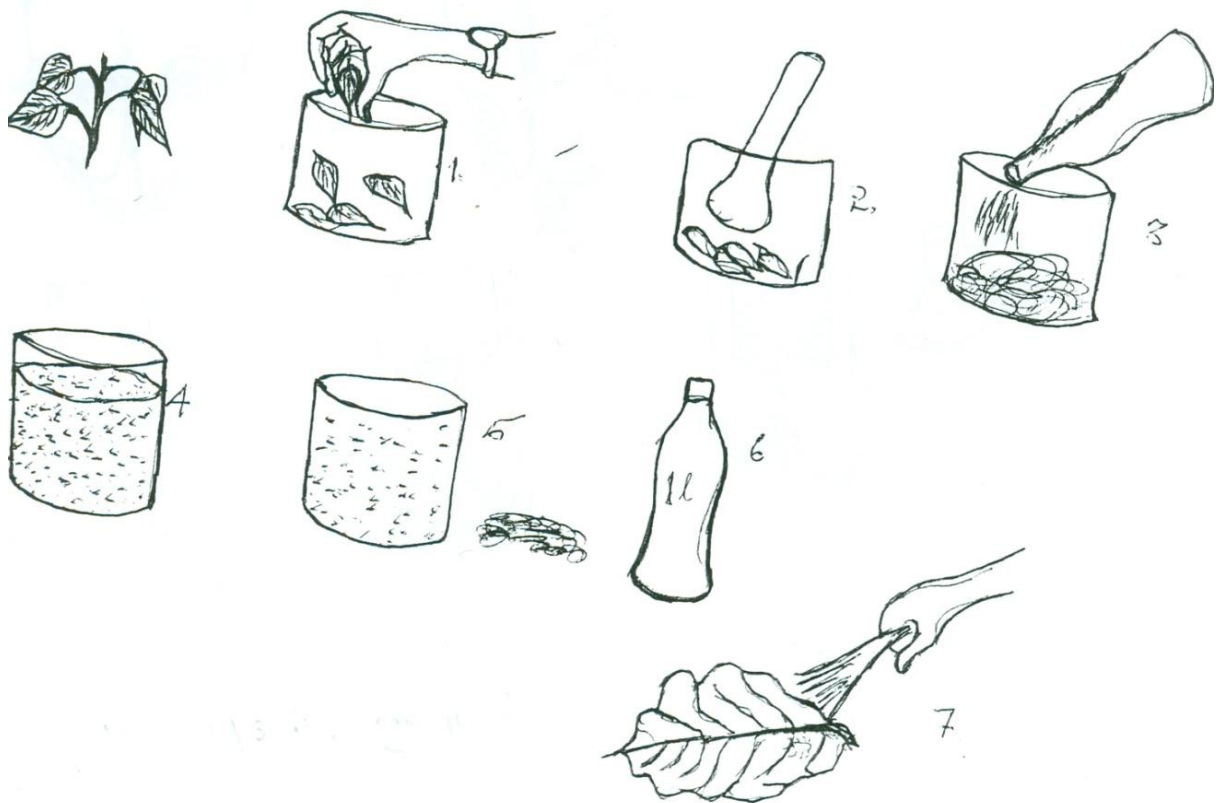
LEGENT/KEY

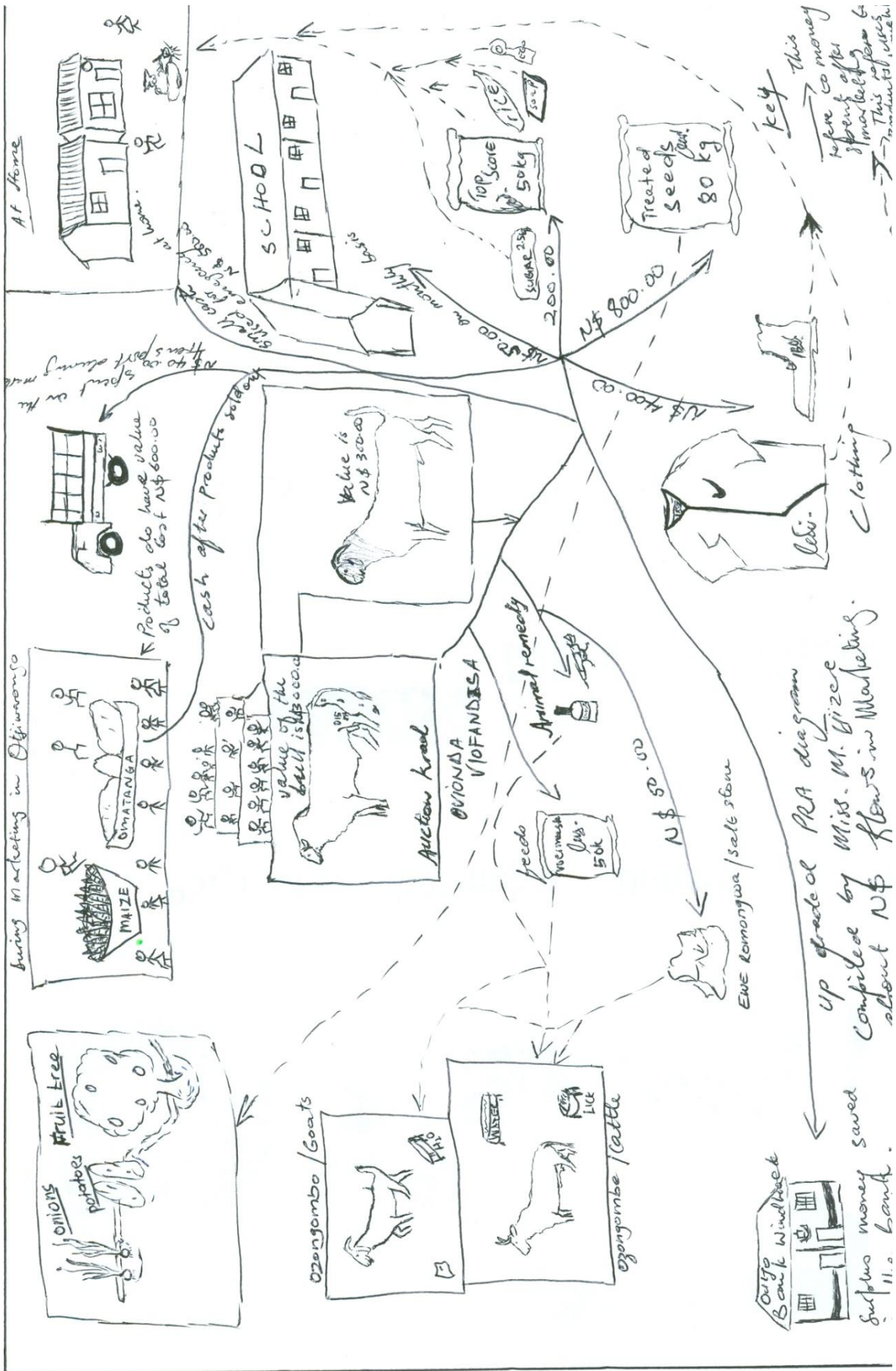
- * = Easy available
- :: = CHEAP
- :: = Expensive
- .. = RELIABLE/MOSTLY USED
- ↘ = NOT RELIABLE
- N = MOVING SLOW
- ✓ = MOVING FAST
- K = LESS THAN CHEAP
- # = Not easy available

Illustrations



Preparation for "Neem" leaves / pest Controlling Solution





CONCLUSION

The visits to the Queen Sofia Project were worthwhile and enjoyable. The residents were very accommodating and friendly. The students were therefore able to learn a lot about the complexities of resettlement and how to interact with community members. Some residents were stimulated to experiment with different developmental activities.

Some encouraging signs are the family contributions to the project garden and the joint management of grazing land around shared water points, showing that they are very dedicated and work well together. They have the capacity to contribute significantly to development of the project, although they could still benefit from technical inputs and advice. The fact that they were given citrus trees to plant, without instructions on how to prune them, shows that follow-up advice is lacking. The expectation by the residents of being provided with external inputs needs to be converted to greater dependence on self-reliance, and the environmental sustainability of the project area needs to be taken into account.

Suggestions for the project include:

- That the water committee institute incentives for saving water and disincentives for wasting water.
- That bushes and trees be selectively thinned, rather than completely cleared.
- That alternative markets for livestock be negotiated, to avoid marginalisation of resettled farmers by current buyers of livestock.
- That alternative vegetables, herbs and crops be experimented with, to fill a niche market, perhaps with organic certification.

