



The Problem

2. The problem

2.1 Stating the problem:

Many urban migrants end up in informal settlements because they are illiterate and unable to find work in the city. (Department of Transport 2005). In the end they have to rely on family and friends for support. Urban agriculture can be a self-empowering solution the poor can use to put food on the table. Poor people in some parts of the country spend as much as 50 percent of their income on food. It is therefore important to look for methods of implementing sustainable nutritional programmes. Nutritional deficiencies like Kwaishiorkor, Marasmus and Pellagra are also common in South African informal settlements. (Moloto 1996:3)



001 (Photo taken by author)

2.2 Sub-problems:

2.2.1 First Problem. There has been a long standing prejudice against urban agriculture among town planners and policy makers in South Africa. Urban agriculture is not considered as part of the urban informal sector and has to compete with industry for urban land. (Moloto 1996:5)

Advantages of urban agriculture

- Poverty, hunger and malnutrition can be addressed.
- It will increase economic enterprise and opportunities in the city.
- The city will become a more sustainable urban environment and will lead to a decrease in urban waste management costs.
- Urban agriculture will provide fresh produce to local residents, without the food travelling halfway around the world to reach the consumer.
- It will ensure the close proximity of services and markets.
- Today people living in townships and informal settlements are divorced from nature with rows and rows of impersonal RDP houses without a single tree in the area. By incorporating urban agriculture into urban development frameworks, people will learn to appreciate the ecosystem and how we can benefit from it. (Moloto 1996:20)
- Problems and possible solutions to urban agriculture can only be identified in practice.
- By incorporating urban agricultural programmes in local schools, children will learn from a young age how to sustain their families and to plan for the future.

Disadvantages

- Because rainfall in South Africa is often torrential, uncontrolled urban agriculture on river banks may cause soil erosion.
- Urban agriculture that includes livestock may serve as a breeding ground for flies and thus the breeding ground for the transmission of diseases. These sites provide a habitat for pathogenic bacteria. (Moloto 1996:21)

2.2.2 Second problem

Urban agriculture in South Africa is a survival strategy by the very poor who cannot afford to buy or lease plots. Because cultivation in urban areas takes place on vacant land to which the people have no title, their crops may be destroyed without consultation. It can also be expected that the lower the income of a particular household, the more likely they are to participate in urban agriculture.

Possible solutions

- Urban agriculture saves energy and conserve resources in that food is produced locally and close to the market. Transport and storage costs will be saved with no loss of quality due to handling and transportation. For this reason, incentives from government are needed to provide free or affordable land especially for cultivation purposes.
- Urban farmers should have a choice of either affordable plots which can accommodate both shelter and crops or land set aside especially for cultivation purposes. (Moloto 1996:28)
- These agricultural plots should be equally distributed throughout the area. Because the majority of urban farmers are old, it will be safer and more convenient to for these plots to be in walking distance from their homes. (Moloto 1996:71)



002 (Photo collage by author)

2.2.3 Third problem

Crop theft seems to be one of the biggest problems for urban agriculture and it seems that up to 85 percent of urban farmers are affected by it. Theft also seem to be a much bigger problem among rain fed plots, where the farmers are not able to keep an eye on their crops. Because the crops are usually not fenced off, cattle and other livestock often trample and eat the crops. Only about 19 percent of urban agricultural crops on rain fed plots are guarded and then only during harvesting time. Crop theft represents a loss in cash that could have been spent on the purchase of seeds or the renting of a tractor. (Moloto 1996:91)

Possible solutions

- The housing part of the project needs to be elevated and in close proximity to the agricultural fields for the urban farmers to keep an eye on their crops.
- Some urban farmers are guarding their crops until late at night when it's more likely for the crops to be stolen. Urban agriculture practiced on a bigger scale, would possibly allow for a guard to be appointed at night. A sense of pride and ownership will be developed by involving more people of the community in urban agricultural activities. The whole community will then be involved in protecting the crops. (Moloto 1996:91)



003 (Panoramic photo of site by author)

2.3 Hypothesis

“Food growing projects can act as a focus for the community to come together, to generate a sense of 'can-do', and also help create a sense of local distinctiveness a sense that each particular place, however ordinary, is unique and has value.” (Viljoen 2005:57)

Urban agricultural projects can be active in rehabilitation work in areas with high crime levels by offering alternatives to selling drugs and other criminal activities. Acts of vandalism have reportedly stopped in Doncaster in the United Kingdom after orchards and other community activities have been introduced. Urban agriculture can also provide excellent means of involving groups often discriminated against like ethnic minorities, woman and old people in sociable productive activities. Local or ethnic identity can also be expressed by growing cultural significant produce. (Viljoen 2005:57)

There are numerous examples in the United Kingdom where urban agricultural projects are associated with vocational training courses like basic numeracy, literacy and commercial horticulture subjects. Urban food growing activities can be incorporated into traditional school subjects like science, geography and environmental studies. A practical approach to training within the context of urban agriculture would enhance the quality of life for citizens by providing a change in environment and a heightened sensual experience. Just by observing outdoor activity and its experience, a connection with nature can be re-established. (Viljoen 2005:58)

Between 1976 and 1987, over 44 000 food retailers in the United States closed and more than 90 percent of all food sales came from only two percent of the stores. Many poor urban neighbourhoods were left without access to food outlets. One of the commercial advantages that urban food producers have over distant located producers is the ready access to markets for perishable produce that does not respond well to freezing and other conventional storage techniques. Agricultural projects within the city will also act as a springboard for new entrants into sustainable urban agriculture. (Viljoen 2005:58)

Vegetable garden projects to alleviate poverty and malnutrition should be adapted to local conditions and cultural preferences. Cultural resistance to unfamiliar technologies as well as the availability of resources like water, land and access to seeds and plant material should be taken into account. (Venter et al 2006:15)

The community should be involved in all decisions taken and regular meetings to provide feedback and to discuss relevant issues should be held. The involvement of village leaders and other prominent figures within the community will lend credibility to vegetable garden projects. (Venter et al 2006:16)

2.4 Delimitations

- Although the agricultural centre will provide ongoing training on the practical aspects of growing food in an urban environment, it is not a tertiary institution.
- The urban agricultural centre will limit its produce to local vitamin and mineral-rich vegetables which include carrots, butternuts, orange-fleshed sweet potato, cabbage, spinach and tomatoes. Other fruit and vegetables will be obtained from the Pretoria Fresh Produce Market.

2.5 Assumptions

- The proposed plans for the urban renewal of the area around Eerste Fabrieke Station form the basis for this dissertation. The brief of the urban agricultural centre will fit into the proposed upgrade of the study area.
- Eerste Fabrieke Station and the new proposed transport facilities around the station form an integral part of the urban renewal of the area.
- The Urban Development Framework and proposed urban agricultural centre will aim to incorporate the informal trading activities that are currently functioning around the station.
- Due to the urban renewal of the area, the current cattle farming activities at the Eerste Fabrieke Heritage site will be stopped. Agricultural activities will be limited to the produce of vegetables for the proposed new market area.

2.6 The Mamelodi Urban Agricultural Co-op: Client Profile

Anna Nkosi founded the Eerste Fabrieke Urban Agricultural Co-operative on the 3rd of January 2009 as part of a community development project to uplift the poor in Mamelodi and Nellmapius. A constitution was drawn up by the members of the co-operative to which everyone subscribed. In order to improve functionality, the co-operative consist of the following members:

- Director (1 person)
- Deputy Director (1 person)
- Admin Personnel (2 people)
- Agricultural Trainers (3 people)
- Agricultural Workers (30 people)
- Drivers (2 people)
- Security guards (5 people)

In total the co-operative will consist of 44 members. The project will initially be built in two phases, with a possibility of including a third phase. For the first phase of the project, a loan of R10 million was obtained from ABSA. A delivery van, delivery truck and a tractor with trailer was donated to the co-operative by the Department of Agriculture.

Phase 1 includes the construction and completion of the following:

- Training Facility.
- Offices.
- Market area.
- Cleaning and Packaging area.
- Ablution facilities.
- Agricultural outbuildings.
- Installation of drip-irrigation system.
- De-bush and plough 8.6 hectares of land.

The Second Phase of the project includes the housing facility for the co-operative members. The individual members formed a Social Housing Association to obtain housing subsidies from Government. Subsidies to the value of R 43 000-00 was granted for each member. The total amount was paid into a trust fund for the joint construction of Phase 2. After completion, each unit will be individually owned by the different members of the Association.

Institutional subsidies will be granted to individual organisations for the third and final phase of the project. The housing provided by Phase 3 will not form part of the Urban Agricultural and Social Housing Co-operative. After completion, the units will be institutionally owned and rented out to individual people.

Agricultural planning

The Eerste Fabrieke Urban Agricultural Co-operative will plant carrots, butternuts, cabbage, beetroot, sweetpotato and spinach on 8.6 hectares of land along the northern banks of the Pienaars River. This area is climatically ideal for the production of these crops and water from the Pienaars River will be used for crop irrigation. Hydraulic Ram or Gravity drive pumps will be used to pump water from the river to the storage tanks of the 10 agricultural outbuildings.

The biggest part of this area is covered by 66kva power lines. According to a report by Mr. Ernest Groenewald from Eskom and Mr. Johan Visser from the Town council, this area can not be used for anything else other than farming and present an ideal opportunity for urban agriculture. Tests were done to clarify that there will be no health risk involved for people working underneath the power lines.

The agricultural workers will be divided into groups for planting, irrigation & maintenance, harvesting and market sales. The workers will rotate on a monthly basis, depending on the amount of work to be done for the month.

A Planting and Harvesting Schedule was drawn up in collaboration with Mr. F Sephton, an Agricultural Economist, to work out the volumes of produce for planning purposes. (Sephton 2009).

Planting and harvesting schedule:

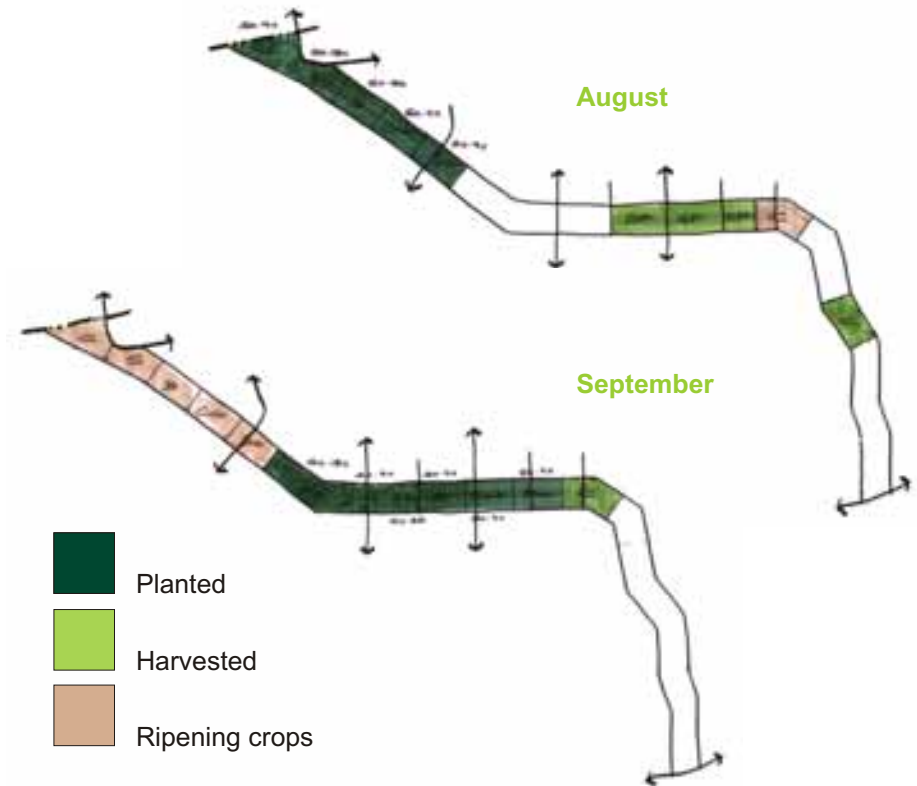
Aug				
Planted	Ha.	Seed (kg)	Fert 2:3:4 (kg)	Top dressing (kg)
Carrot	0.45	1.35kg	225	67.5
Spinach	0.45	3.6kg	225	202.5
Butternut	0.45	2.25kg	180	112.5
Cabbage	0.45	225g	225	270
Beetroot	0.45	4.5kg	180	90
			1035	742.5

Harvested	Ha.	Total (tons)	Amount
Sweet potato	1.35	40.5	R 101 250
Carrots	0.45	15.75	R 39 375
			R 140 625

Sept

Planted	Ha.	Seed (kg)	Fert 2:3:4 (kg)	Top dressing (kg)
Sweet potato	0.9	30240 cut	360	225
Carrot	0.45	1.35kg	225	67.5
Spinach	0.175	1.4kg	87.5	87.5
Butternut	0.45	2.25kg	180	112.5
Cabbage	0.45	225g	225	270
Beetroot	0.45	4.5kg	180	90
			1035	742.5

Harvested	Ha.	Total (tons)	Amount
Carrots	0.45	15.75	R 39 375



Planting and harvesting Schedule

Oct

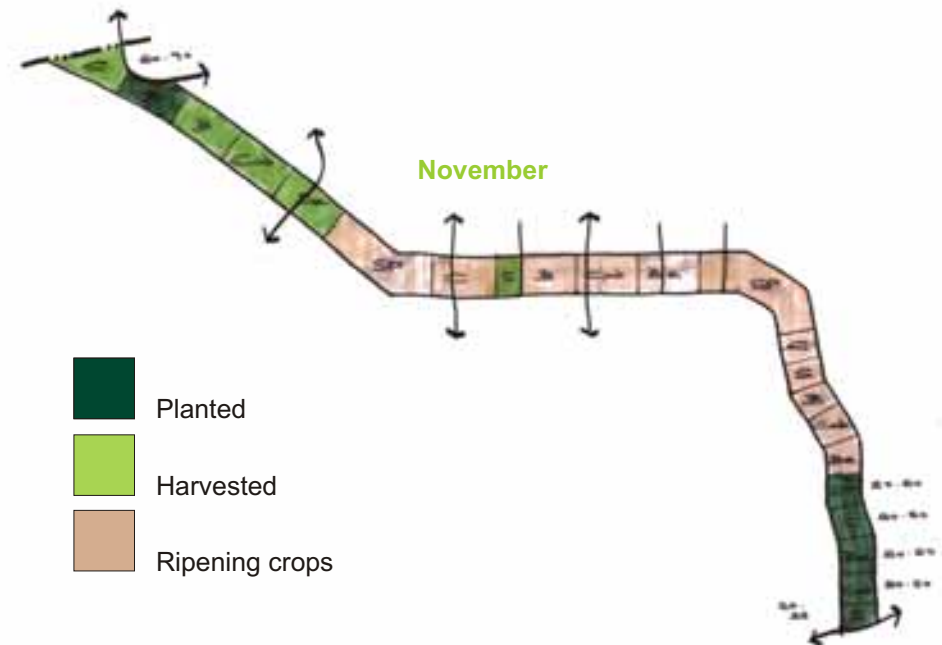
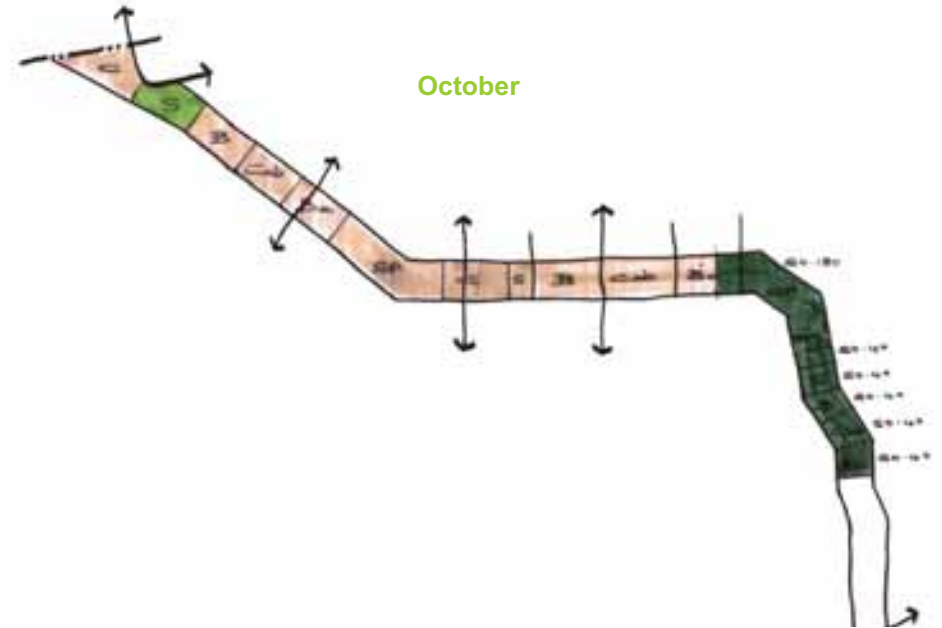
Planted	Ha.	Seed (kg)	Fert 2:3:4 (kg)	Top dressing (kg)
Sweet potato	0.9	30240 cut	360	225
Carrot	0.2	0.6kg	100	30
Spinach	0.2	1.6kg	100	100
Butternut	0.2	1kg	80	50
Cabbage	0.2	100g	100	120
Beetroot	0.2	2kg	80	40
			820	565

Harvested	Ha.	Total (tons)	Amount
Spinach	0.45	9	R 22 500

Nov

Planted	Ha.	Seed (kg)	Fert 2:3:4 (kg)	Top dressing (kg)
Butternut	0.45	2.25	180	112.5
Sweet Potato	0.25	8400 cut	100	62.5
Carrots	0.25	0.75kg	125	37.5
Beetroot	0.25	2.5kg	100	50
Cabbage	0.25	125g	125	150
Spinach	0.125	1kg	80	62.5
			692.5	475 kg

Harvested	Ha.	Total (tons)	Amount
Carrots	0.45	15.75	R 39 375
Butternut	0.45	9	R 15 750
Cabbage	0.45	27	R 67 500
Beetroot	0.45	8.1	R 20 250
Spinach	0.175	3.5	R 8 750
			R 151 625



Planting and harvesting Schedule

Dec

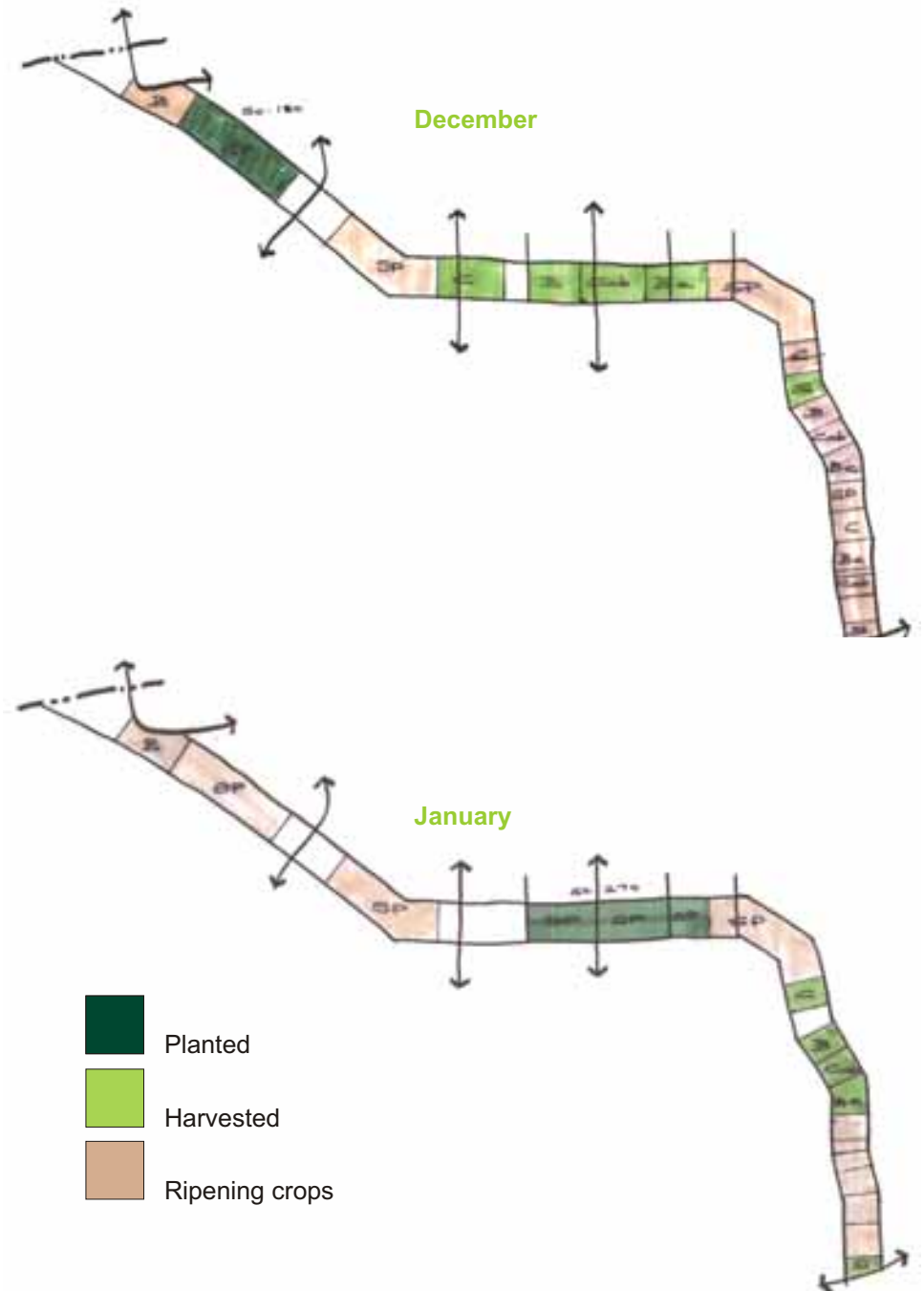
Planted	Ha.	Seed (kg)	Fert 2:3:4 (kg)	Top dressing (kg)
Sweet Potato	0.9	30240 cut	360	225

Harvested	Ha.	Total (tons)	Amount
Carrots	0.45	15.75	R 39 375
Butternut	0.45	9	R 15 750
Cabbage	0.45	27	R 67 500
Beetroot	0.45	8.1	R 20 250
Spinach	0.2	4	R100 000
			R 242 875

Jan

Planted	Ha.	Seed (kg)	Fert 2:3:4 (kg)	Top dressing (kg)
Sweet Potato	1.35	45360 cut	540	337.5

Harvested	Ha.	Total (tons)	Amount
Carrots	0.2	6	R 15 000
Butternut	0.2	4	R 7 000
Cabbage	0.2	12	R 30 000
Beetroot	0.2	3.6	R 9 000
			R 61 000



Planting and harvesting Schedule

March

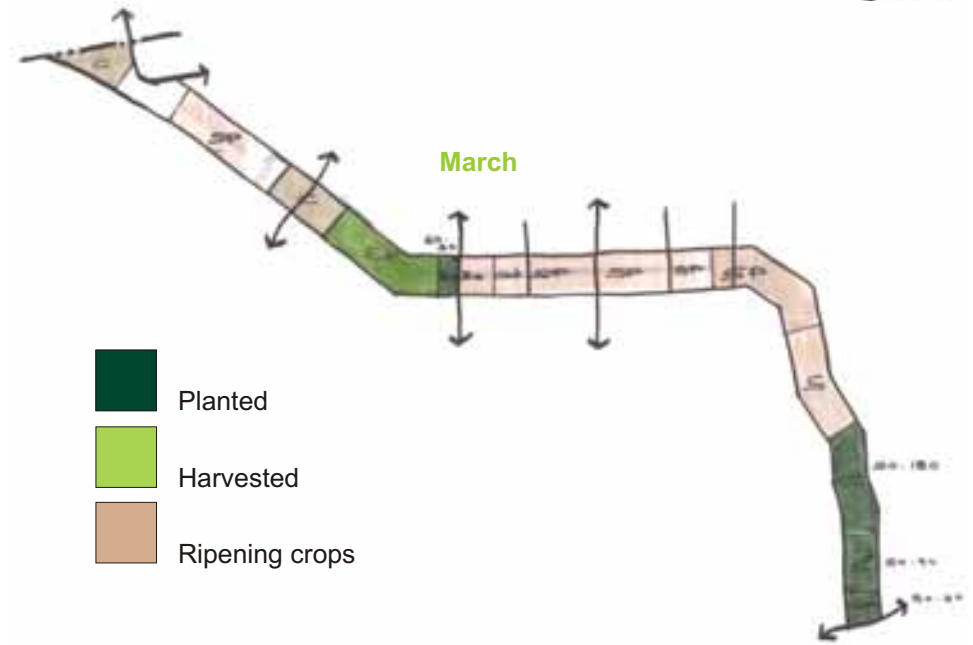
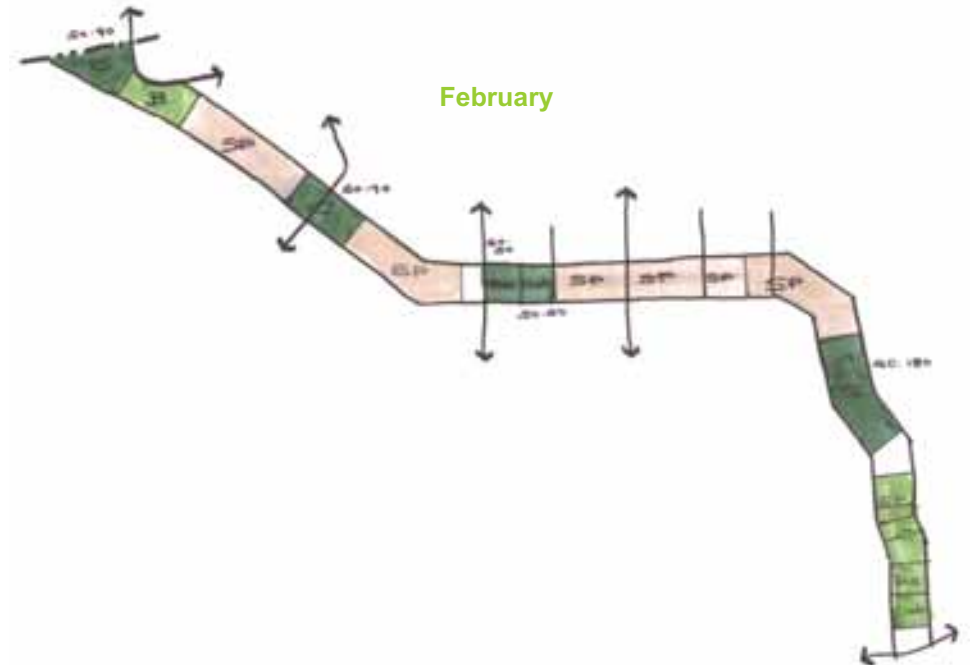
Planted	Ha.	Seed (kg)	Fert 2:3:4 (kg)	Top dressing (kg)
Beetroot	0.15	1.3kg	60	60
Carrots	0.9	2.7kg	450	135
Spinach	0.45	3.6g	225	225
Cabbage	0.2	100g	100	120
			835	540

Harvested	Ha.	Total (tons)	Amount
Sweet Potato	0.9	18	R 450 000

April

Planted	Ha.	Seed (kg)	Fert 2:3:4 (kg)	Top dressing (kg)
Carrots	0.45	1.35kg	225	67.5
Spinach	0.3	2.4kg	150	150
Cabbage	0.3	150g	150	180
Beetroot	0.3	3kg	120	60
			645kg	457.5 kg

Harvested	Ha.	Total (tons)	Amount
Sweet Potato	0.9	18	R 450 000
Spinach	0.9	18	R 450 000
			R 900 000



Planting and harvesting Schedule

May

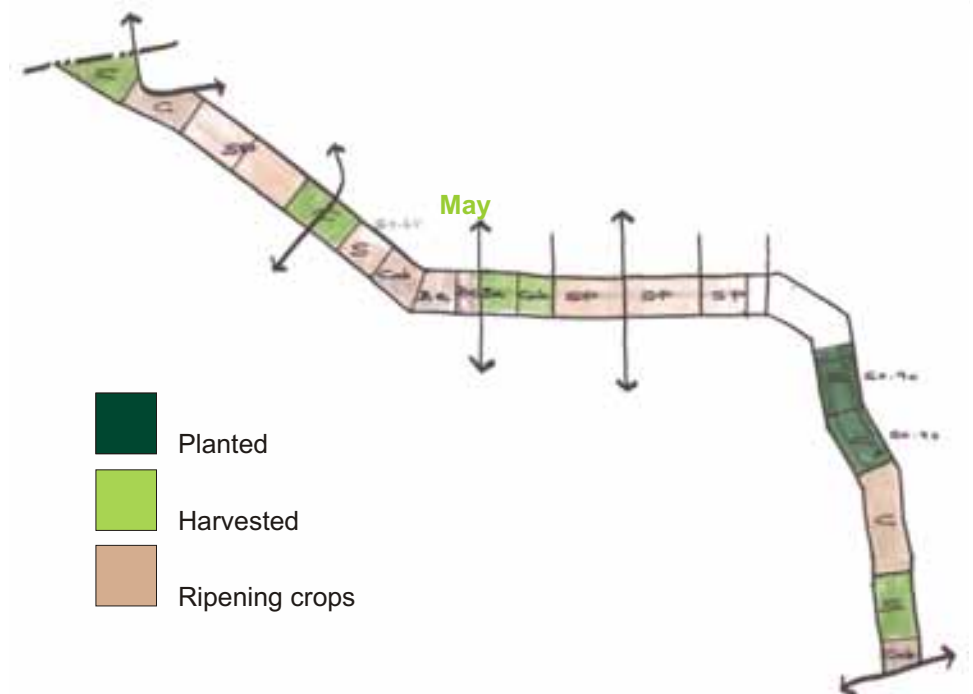
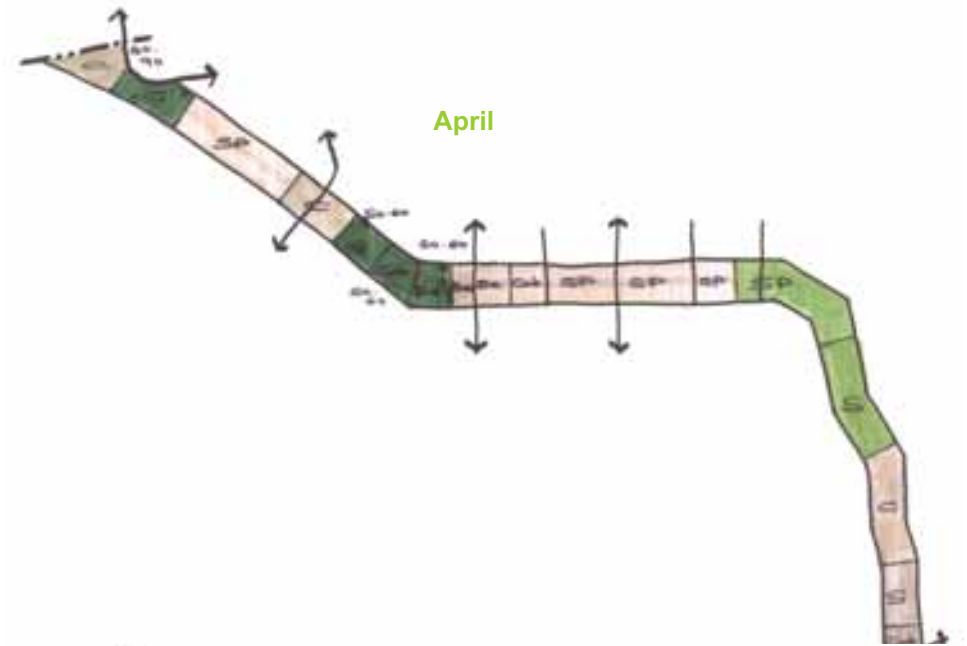
Planted	Ha.	Seed (kg)	Fert 2:3:4 (kg)	Top dressing (kg)
Spinach	0.45	3.6 kg	225	202.5
Carrots	0.45	1.35 kg	225	67.5
			450	270

Harvested	Ha.	Total (tons)	Amount
Carrots	0.9	31.5	R 78 750
Beetroot	0.25	4.5	R 11 200
Cabbage	0.25	15	R 37 500
Spinach	0.45	9	R 22 500
			R149 950

June

Planted	Ha.	Seed (kg)	Fert 2:3:4 (kg)	Top dressing (kg)
Carrots	0.45	1.35 kg	225	67.5

Harvested	Ha.	Total (tons)	Amount
Sweetpotato	0.45	9	R 22 500
Spinach	0.3	6	R 15 000
Beetroot	0.15	2.7	R 6 750
Carrots	0.9	27	R 67 500
Cabbage	0.2	12	R 30 000
			R141 750



- Planted
- Harvested
- Ripening crops

Planting and harvesting Schedule

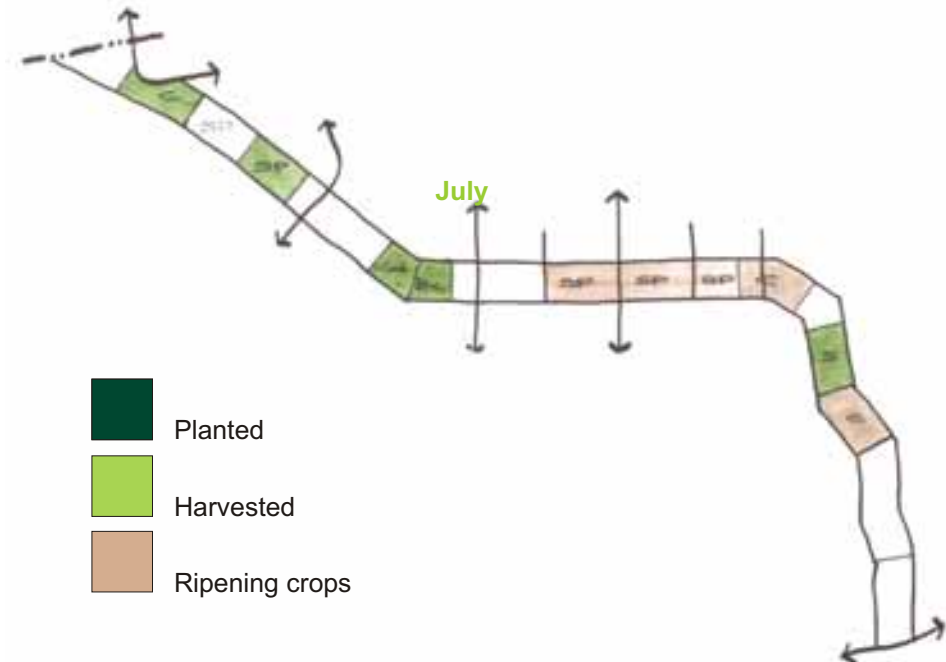
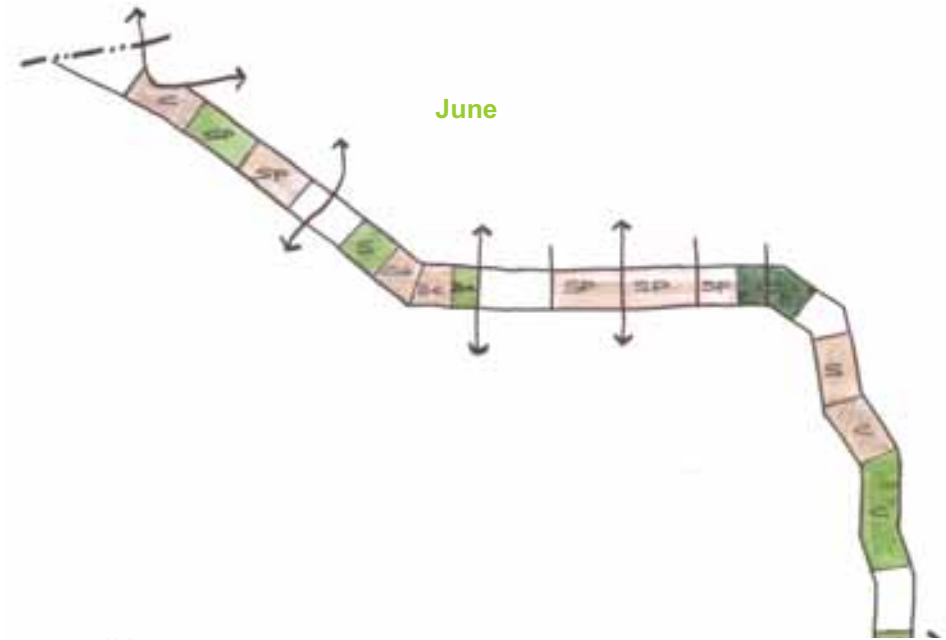
July

Harvested	Ha.	Total (tons)	Amount
Carrots	0.45	13.5	R 33 750
Sweet Potato	0.45	9	R 22 500
Cabbage	0.3	18	R 45 000
Beetroot	0.3	5.4	R 13 500
Spinach	0.45	9	R 22 500
			R137 250

Feb

Planted	Ha.	Seed (kg)	Fert 2:3:4 (kg)	Top dressing (kg)
Carrots	0.9	2.7kg	450	135
Beetroot	0.25	2.5kg	100	50
Cabbage	0.25	125g	125	150
Spinach	0.9	7.2kg	450	405
			1125	740 kg

Harvested	Ha.	Total (tons)	Amount
Sweet Potato	0.25	5	R 12 500
Carrots	0.25	7.5	R 18 750
Beetroot	0.25	4.5	R 11 250
Cabbage	0.45	27	R 37 500
			R 80 000



- Planted
- Harvested
- Ripening crops

Monthly Income and Expenditure

Aug

Income		Expenditure (Salaries excluded)	
Harvest	R 140 625	Fertilizer	R 5 589
		Top dressing	R 2 377
		Seed	R 2 322
			R 10 288

Sept

Income		Expenditure (Salaries excluded)	
Harvest	R 39 375	Fertilizer	R 6 788
		Top dressing	R 2 726
		Seed	R 2 058
			R 11 572

Oct

Income		Expenditure (Salaries excluded)	
Harvest	R 22 500	Fertilizer	R 4 428
		Top dressing	R 1 808
		Seed	R 1 032
			R 7 268

Nov

Income		Expenditure (Salaries excluded)	
Harvest	R 151 625	Fertilizer	R 3 737
		Top dressing	R 1 520
		Seed	R 2 058
			R 6 787

Dec

Income		Expenditure (Salaries excluded)	
Harvest	R 242 500	Fertilizer	R 1 944
		Top dressing	R 720
		Seed	R 1 032
			R 3 334

Jan

Income		Expenditure (Salaries excluded)	
Harvest	R 331 000	Fertilizer	R 2 916
		Top dressing	R 1 078
		Seed	R 820
			R 4 814

Feb

Income		Expenditure (Salaries excluded)	
Harvest	R 80 000	Fertilizer	R 6 075
		Top dressing	R 2 368
		Seed	R 2 205
			R 10 648

March

Income		Expenditure (Salaries excluded)	
Harvest	R 450 000	Fertilizer	R 4 509
		Top dressing	R 1 728
		Seed	R 1 626
			R 7 883

Monthly Income and Expenditure

Illustration of drip irrigation system

April

	Income	Expenditure (Salaries excluded)	
Harvest	R 900 000	Fertilizer	R 3 483
		Top dressing	R 1 462
		Seed	R 1 179
			R 6 124

May

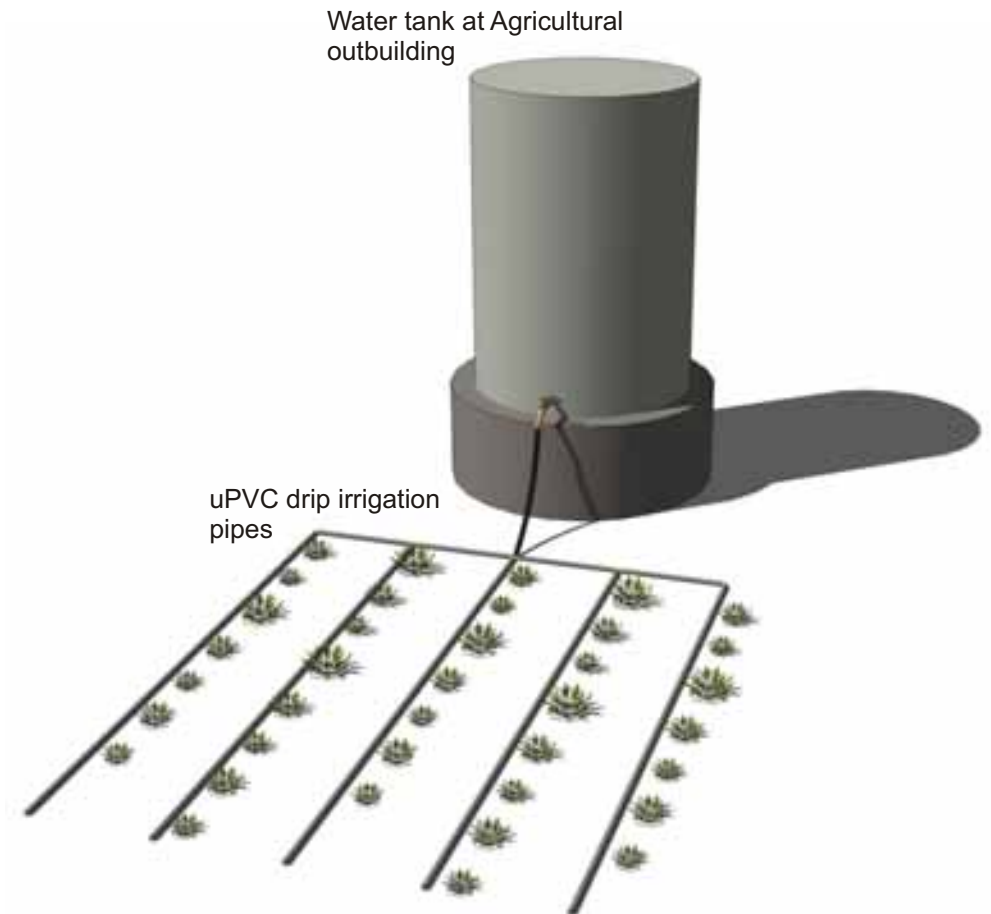
	Income	Expenditure (Salaries excluded)	
Harvest	R 149 950	Fertilizer	R 2 430
		Top dressing	R 864
		Seed	R 945
			R 4 239

June

	Income	Expenditure (Salaries excluded)	
Harvest	R 141 750	Fertilizer	R 1 215
		Top dressing	R 2 176
		Seed	R 513
			R 3 904

July

	Income	Expenditure (Salaries excluded)	
Harvest	R 137 250		



Agricultural Layout

