

https://dspace.org/

CHANGING LAND USE ON THE PERIPHERY; a case study of urban agriculture and food gardening in Orange Farm

RICHARDS, Robin; TAYLOR, Sue

2012-08

Report Series produced by the South African Research Chair in Development Planning and Modelling, School of Architecture and Planning, University of the Witwatersrand.

http://hdl.handle.net/10539/12376

RICHARDS, Robin and TAYLOR, Sue

Downloaded from a DSpace repository. https://dspace.org/

CHANGING LAND USE ON THE PERIPHERY

A case study of urban agriculture and food gardening in Orange Farm

ROBIN RICHARDS SUE TAYLOR



5

Report Series produced by the South African Research Chair in Development Planning and Modelling, School of Architecture and Planning, University of the Witwatersrand.

UNIVERSITY OF THE WITWATERSRAND JOHANNESBURG

ACKNOWLEDGEMENTS

The researchers would like to thank the following organisations and groups of people for making this study possible:

- The support of the National Research Foundation (NRF).
- The Urban Transformation Research Project (UTRP) of the South African Research Chair in Development Planning and Modelling (Prof. Philip Harrison), School of Architecture and Planning, University of the Witwatersrand.
- Respondents at Orange Farm who shared their food gardening insights with us.
- Provincial and city government officials who gave us their time to answer our many questions, most particularly:
    - Ms Nontle Sobantwana and Mr Charles Lungu, Directorate of Agriculture, Gauteng Department of Agriculture and Rural Development (GDARD), Randfontein Office.
    - Mr Syd Moodley, City of Johannesburg Social Assistance Directorate.
    - Rosina Masoa, City of Johannesburg, Assistant Director, Region G, Human Development.
    - Mr Jak Koseff, City of Johannesburg, Department of Health and Social Development.
- Our field support team: Mandla Vilakazi and Zama Zantsi who made the field work possible.
- A variety of other organisations who assisted us in various ways with reports and data on Orange Farm, including the following:
    - Siyakhana, Wits University Health Research Unit.
    - JAM (Joint Aid Management).
    - The Gauteng City- Region Observatory (GCRO).
    - The Municipal Demarcation Board.
- Photographic credit: S.J. Taylor

No part of these pages, either text or image, may be used or reproduced without full acknowledgement.

CONTENTS

5

CHANGING LAND USE ON THE PERIPHERY:
Case study of urban agriculture and food gardening in Orange Farm

AUGUST 2012

ROBIN RICHARDS SUE TAYLOR

ACRONYMS		2
TABLES		3
SECTION 1	INTRODUCTION	4
	Background and purpose of the study	4
	Methodology	5
	Frame of reference for the study	6
SECTION 2	RESEARCH FINDINGS	22
	Types of vegetable gardens identified	24
	Description of gardeners	28
	Potential for farming/food gardening activities in Orange Farm	31
	Land issues at Orange Farm	33
	Level of support for food gardening projects in Orange Farm	35
	The Orange Farm local economy	38
SECTION 3	DISCUSSION AND CONCLUSIONS	43
	Discussion of key findings and recommendations	43
	1. Co-ordination between spheres of government	44
	2. Linking urban gardeners to markets	44
	3. Spatial issues and planning	45
	4. Getting food gardeners organised	46
	5. Quality and sustainability of the vegetable gardening projects	47
	6. Provision of information to urban farmers	48
	7. Irrigation, hosepipes and boreholes	48
	8. Prior experience in agriculture	49
	9. The need for multi-stakeholder initiatives to support urban agriculture	49
NOTES		50

ACRONYMS

AfriMAP	African Monitoring and Advocacy Project
BRT	Bus Rapid Transit
CBD	Central Business District
CDE	Centre for Development and Enterprise
CoJ	City of Johannesburg
C-Plan	Conservation Plan for Gauteng
CPS	Centre for Policy Studies
DAFF	National Department of Agriculture, Forestry and Fisheries.
EIA	Environmental Impact Assessment
Ext.	Extension
GADS	Gauteng Agricultural Development Strategy
GAPA	Gauteng Agricultural Potential Atlas
GCR	Gauteng City Region
GCRDS	Gauteng Comprehensive Rural Development Strategy
GCRO	Gauteng City Region Observatory
GDACE	Gauteng Department of Agriculture, Conservation and Environment
GDARD	Gauteng Department of Agriculture and Rural Development
GDS	Growth and Development Strategy
GEGDS	Gauteng Employment Growth and Development Strategy
GIFSS	Gauteng Integrated Food Security Strategy
Ha	hectares
IDP	Integrated Development Plan
JAM	Joint Aid Management
LED	Local Economic Development
MDB	Municipal Demarcation Board
NDP	National Development Plan
NIFSS	National Integrated Food Security Strategy
NRF	National Research Foundation
OSFSA	Open Society Foundation for South Africa
OSISA	Open Society Initiative for Southern African
PRASA	Passenger Rail Agency of South Africa
RDP	Reconstruction and Development Programme
SABC	South African Broadcasting Corporation
SAIIA	South African Institute of International Affairs
SARCHi	South African Research Chairs Initiative
Sp.	Species
TPA	Transvaal Provincial Administration

TABLES

TABLE 1:	50 Priority Wards Study for Orange Farm	18
TABLE 2.	The types of food gardens at Orange Farm and number of gardens visited	24
TABLE 3:	List of schools and nursery schools visited in Orange Farm	24
TABLE 4:	List of food gardens visited in Orange Farm by garden type	28
TABLE 5:	Profile of gardeners and reasons for moving to Orange Farm	29
TABLE 6	Economic activities in Orange Farm	39
TABLE 7:	Summary of traders' activities at Stretford Station	41

SECTION 1

INTRODUCTION

BACKGROUND AND PURPOSE OF THE STUDY

This study was undertaken after funding was received under a call for short-term consultancies to investigate a range of topics related to urban spatial transformation. The call was issued by the School of Architecture and Planning of the University of Witwatersrand under the NRF SARCHi initiative. This study investigates peri-urban food gardens and the role that food gardening plays in Orange Farm in addressing poverty and in improving food security. The study specifically looks at the effects of available open space on urban agriculture and food gardening in Orange Farm. It was hypothesised at the outset of the study that, being located on the peri-urban periphery of the city, Orange Farm is not yet densely populated or short of land for food gardening to be excluded as a livelihood option. This abundance of open land could, therefore, become an asset in an agriculturally-based strategy to target poverty in this priority region of the city.[1]

The researchers chose Orange Farm as a geographic focus for their study because of its location on the periphery of the Johannesburg metropolitan area. Orange Farm is located in Region G in the 'deep south' which is characterised by marginality and deprivation and where there is the greatest need for development interventions. The Gauteng City Regional Observatory (GCRO) also identifies Orange Farm as a marginalised area[2] and the City of Johannesburg describes the Region as a 'marginalised dormitory residential area'.[4]3Region G is also demographically important because it has an estimated population of 1 million people living in it and Orange Farm itself is said to have a population of 672 000 residents.[4]

Research questions that guided the study

The study was guided by two key research questions, namely:

1. What interest do Orange Farm residents have in urban agriculture and food gardening; and can this interest be used as a spatial planning element as the settlement undergoes increased formal development?
2. Are there spatial, land ownership, socio-economic and attitudinal constraints that currently affect the implementation of food gardening projects and urban agriculture in Orange Farm and, if so, which of these is the greatest obstacle to current and future urban agriculture and food gardening?

Structure of the report

The report covers three sections. Section one covers the introduction and details the aims and purpose of the study, methodology and provides the contextual backdrop for the research findings. Section two then describes the research findings; and section three provides conclusions and recommendations.

METHODOLOGY

The methodology for the project comprised several phases. The phases included:

- A desktop review of existing documents and maps;
- Focus group meeting;
- Preliminary interviews with key stakeholders;
- In-depth interviews with Orange Farm gardeners;
- A scan of Stretford Station street traders.

A desktop review of existing documents was undertaken. The documents included published and unpublished reports and articles and official policy/planning documents on Orange Farm. These documents were collected from various sources including key-informants, internet searches, as well as using the academic literature search-engine EBSCO-Host. Maps, socio-economic, spatial/environmental data and aerial images of Orange Farm were also acquired from sources such as the Demarcation Board and the Gauteng City-Region Observatory, as well as Google Earth.[5]

As part of the process of preparatory work for the field work phase, the researchers participated in the Growth and Development Strategy of the City of Johannesburg (GDS) Expert Panel Series on Food Safety and Security (25th August). Sue Taylor was a panellist at this discussion and presented a paper on food security in Gauteng. The meeting was, coincidently, convened in Orange Farm. This was a useful event that enabled the researchers to meet stakeholders - including councillors, development practitioners, food gardeners and other researchers who are undertaking work in Orange Farm.

A preliminary set of interviews was undertaken with City of Johannesburg officials, as well as with the Gauteng Department of Agriculture and Rural Development (GDARD) and representatives from Non-Government Organisations working in Orange Farm. These interviews were helpful in the identification of policies relating to food security and food gardening in Johannesburg and Orange Farm. In addition, the identification of food garden projects supported by GDARD, as well as community-based organisations, was also achieved through this process. The interviews were also useful in the development of the research instrument that was used to interview food gardeners in Orange Farm. A total of 18 food gardening projects were identified for the purposes of interviewing.

A focus meeting was held at the beginning of the fieldwork phase of the project to meet key stakeholders in provincial government and the City of Johannesburg who are involved in supporting food gardens in Orange Farm. The focus meeting was convened in Orange Farm and served as a useful forum to introduce the purpose of the project to residents and stakeholders; and to identify challenges and obstacles to food gardening which could then be verified through the in-depth interviews with food gardeners.

Once food gardens had been identified, appointments were set up with representatives of the food gardens. The fieldwork was supported by two fieldwork assistants (one of whom lived in Orange Farm). In-depth interviews with gardeners were carried out in October 2011 over a period of a week. Each interview took roughly 45 minutes to complete. Photographs were also taken of the gardeners and their gardening activities.

To complement the interviews with gardeners, the researchers also undertook unstructured interviews with groups of Stretford Station fresh produce traders. The aim was to ascertain whether traders sourced

their produce from gardeners in Orange Farm and what some of the obstacles were in using Orange Farm gardeners as a source for their fresh produce. A further aim was to find out whether any of the traders were also gardeners in Orange Farm.

It should be noted that, because of the resource-limitations of the study, the number of qualitative interviews was limited. The findings are, therefore, indicative and cannot be generalised to all food gardeners in Orange Farm. The study nevertheless offers useful insights on the potential of food gardening and the obstacles faced by gardeners on the urban fringe in this locality. These findings could, therefore, be useful in guiding further more detailed research in Orange Farm; and for policy and planning purposes.

FRAME OF REFERENCE FOR THE STUDY

This section locates the study in a broader socio-economic and environmental context, nationally and in Orange Farm (Region G, City of Johannesburg Metropolitan Municipality). It also investigates the policy dimensions of urban/peri-urban agriculture in the City of Johannesburg and the historical roots of Orange Farm.

Definition of peri-urban spaces

Peri-urban areas are complex areas in terms of municipal jurisdiction, landscapes, activities, infrastructure and social systems. They can be understood as a "social, economic and environmental space where three systems constantly interact: the agricultural system, the urban system and the natural resource system".[6] Peri-urban areas can be areas of extreme poverty, where urban and rural lifestyles overlap. Peri-urban areas are important in the context of urban agriculture because there may be land for agriculture. Peri-urban areas have unique institutional governance characteristics which are relevant to the development of agriculture on the peri-urban fringe. Peri-urban zones in many metropolitan areas around the world very often fall under different administrative jurisdictions (provincial, municipal and national). These administrative jurisdictions have different mandates, resources and political interests relating to development priorities and responsibilities. The responsibility for the provision and maintenance of infrastructure to support these peri-urban areas may be located in different government departments within different levels of government. There is generally a lack of holistic planning for the implementation of development projects in peri-urban areass. This is very often due to different tiers of government focussing on implementation according to their jurisdiction.[7]

The peri-urban area is characterised by both urban and rural influences and has the advantage of access to markets and labour. Land may be less expensive than in the urban areas, which make them suitable for small-holder farming and variants of urban agriculture.[8]

After the South African municipal elections in December 2000 - and working within the Municipal Structures Act of 1998 - the Municipal Demarcation Board (MDB) fundamentally re-drew the local government map by merging 843 transitional local authorities into 284 new municipalities. They amalgamated former transitional local councils and transitional rural councils into single administrations covering far larger areas. In order to achieve a higher level of intra-municipal cross-subsidisation, government has tried to include affluent and poor areas, as well as rural and urban areas, in each municipality. This system of 'wall-to-wall developmental local government' contrasts sharply with the fragmented municipal planning before 1994. All local municipalities, meaning all of South Africa's towns and cities outside the seven metros, were placed under the overarching control of district municipalities, something which was meant to facilitate the regional co-ordination of services.[9]

To some extent, this municipal system should simplify planning processes with different planning authorities having jurisdiction over urban, peri-urban and rural components and agricultural activities of the landscape.

A scan of urban agriculture as a contextual backdrop to the study

The purpose of this section is to provide a broader contextual backdrop to this study, by highlighting the key demographic characteristics of the Gauteng Province, as well as the City of Johannesburg. The role of urban agriculture in addressing poverty, ensuring food security and in local economic development is also highlighted. In addition, investigation was undertaken of some of the key obstacles to promoting urban agriculture in urban regions, as well as policy options for promoting urban agriculture in cities. The review concludes by analysing whether urban agriculture is seen as an important strategy by policy makers and planners to tackle poverty and economic development in the city.

Demographic trends and food security in developing countries

The world population is expected to increase from 6.8 billion to 9.1 billion between 2009 and 2050 and this population growth is forecast to take place mainly in the urban areas, particularly in low and middle income countries.[10] Although extreme poverty fell to 1.3 billion people in 2002, the urban share rose by 25 percent (to 300 million people).[11] Extreme poverty results in households becoming vulnerable to food insecurity, with a large share of the household budgets being taken up by the purchasing of food. In a recent study, this share ranged between 48 and 74 percent of household budgets among 20 middle and low income countries that were surveyed.[12]

In sub-Saharan Africa, food security in cities will be affected by major demographic movements from rural to urban areas. In the 1990's, two thirds of Africans lived in rural areas but, by 2035, it is projected that half of the population will be living in urban areas[13]. With these demographic changes, food security will likely become more of an urban problem than a rural one in the future. It is for this reason that urban food gardening is receiving increasing attention by policy makers and local government officials around the world.

Johannesburg and Orange Farm demographic trends

The Johannesburg Metropolitan Municipality's population increased by 22% between 1996 and 2001[14] and, in 2007, the city had a population of 3,888,180.[15] The growth rate between 2001 and 2007 was 21%. This was very similar to the growth rate for the period between 1996 and 2001 and is approximately four percent per year on average over these two periods. Johannesburg's population growth rate is similar to the urbanisation rates for Southern African countries for the period 1990-2005 (at 4.1% per annum), but this was expected to drop to 2.7 percent for the period 2005-2010 and to decline further to 1.89 percent between 2020 to 2050.[16] In-migration into the Gauteng City Region[17] is predominantly from other provinces in South Africa and the main reasons for in-migration are perceptions of employment and economic opportunities and access to better services, as well as perceptions of governance stability.[18] The population size of Gauteng was estimated to be 11,191 million in 2010 and the Province comprises the smallest share of the country's total landmass at 1.4 percent, which means that - whilst being the smallest province - it is also the most crowded.[19]

Migration *within* Gauteng is also a phenomenon and occurs from the poorly resourced municipalities to the larger, better resourced metropolitan centres such as the City of Johannesburg (CoJ).[20] This puts additional pressures on the larger metropolitan centres to supply services such as housing for new residents. Inequality within the CoJ, as measured by the Gini coefficient,[21] is very high at 0.63 percent. An estimated two thirds of the population in Orange Farm is below the age of 40 and some 70 percent are between 16-64 years of age.[22] Finding work opportunities for the young population living in this part of the city should, therefore, be a priority. Most residents who have migrated into Orange Farm have moved to the area from within the Gauteng province (65%). 14% of migrants are from KwaZulu Natal and seven and six percent from the Free State and the Eastern Cape respectively.[23] Most of the Orange Farm residents are from within South Africa (95%).[24]

Responses to urban poverty and the role of urban agriculture as a strategy to build resilience

Both rural and urban households adopt a range of coping strategies to deal with poverty. These include: diversification of economic activities; use of social networks for mutual support; borrowing; begging and seeking charity; selling assets such as livestock; saving on expenses by only spending on the essentials for basic living; changing household composition.[25]

In the urban context, households are forced to purchase most of their food for consumption, but their ability to obtain nutritious and healthy food is determined by their access to income and employment. Urban agriculture is one of the strategies used by the poor to diversify their incomes and as a source of food for their families, which is especially important in the context of rising food prices.

Urban agriculture can be defined broadly as *"..the carrying out of farming activities in built-up areas where open space is available, as well as keeping livestock...in built up areas.*[26]

The spatial impact on urban agriculture as pressure on land-use for urban farming increases has also been highlighted by researchers: "...with the increases in urban agriculture, there are new spaces where cultivation is exercised. Most common is cultivation in the backyard and around buildings. However community and public lands have also been invaded within the last decade."[27]

It is estimated that, globally, 200 million urban dwellers produce food for urban markets, accounting for 15-20 percent of global food production.[28] Urban agriculture therefore serves as an important source of income and an employment creation opportunity for many households. Urban and peri-urban agriculture have other advantages. These include reducing food production costs as a result of savings due to selling points being close to production locations and residential areas of purchasers; responsiveness to market demand and the 'green' benefits, including recycling of organic waste and water.[29] Urban agriculture therefore has a role to play in promoting food security in the city and can be used to fight malnutrition resulting from poverty.

Urban agriculture is important not only as an instrument to improve food security for city dwellers, it has broader social and political implications. As already noted it can reduce food prices especially for the poor. Higher food prices can threaten political stability with violent demonstrations occurring in many countries around the word during 2007-2008, when food prices increased over this period. Most of these protests occurred in cities.[30] South Africa is not immune to such events and commentators speculate that rising food prices, together with increasing costs of electricity, fuel and transport could also trigger food riots.[31]

In addition, urban agriculture offers a platform to stimulate local economic development and provides opportunities to micro-enterprises in the production of agricultural inputs (compost, packaging and processing, sales and other services).[32]

Urban agriculture does not provide a comprehensive answer to tackling poverty in cities, but is one of a number of specific policy interventions that can be located in several broad policy approaches at the municipal level. These broad approaches that tackle poverty include:[33]

- Adapting the regulatory framework so that it is responsive to the needs of the poor by, for example, promoting access to land for the poor by streamlining the regulations for the registration of land and permission to develop land, making it easier and less costly for the poor to access such land. With regard to urban agriculture as a poverty intervention within this broad policy, municipalities can support urban agriculture through the dissemination of information on tenure, land capacity, markets and accessing water services. They could also provide for urban agriculture in urban planning schemes.[34]
- Providing access to municipal services, particularly water and sanitation services, by adopting policy measures to ensure that the poor have access to an adequate supply of water at a cost they can afford (this would include water necessary for food and community gardens). With regard to the

management of sanitation services and particularly solid waste collection, in growing cities this is increasingly an issue of cost. More waste needs to be collected and greater distances are involved to transport waste to sites. Finding sites for the disposal of organic waste becomes more difficult and expensive to obtain. Informal operators in waste recycling should also be integrated into the formal system of waste collection and recycling to support small enterprises at the local level where waste is collected. At the same time, this is an employment and income-generating strategy for the poor. Urban agriculture can play a role in local waste-recycling through the use of organic solid waste material such as compost, etc.

- Employment creation: This would include, among other strategies, supporting informal sector activities (including food gardening, street hawkers, organic waste collection and recycling, etc). Creating a more enabling regulatory environment for these micro and small businesses as well as training and infrastructure support would be some of the measures utilised to strengthen the informal sector businesses and to create employment opportunities.
- Protection from disasters and access to justice: The poor are usually the least protected from natural disasters and are often located on low-lying lands in flood plain areas. Municipal policies and laws dealing with this aspect are very often inadequate and not properly enforced, thus leaving the poor vulnerable to natural disasters. The poor are also often worst-off with regard to receiving administrative justice and timely resolution of their complaints. This can result in informal systems evolving to deal with local problems which people face such as crime and accessing land. A perceived lack of responsiveness from local authorities towards the urban poor regarding administrative justice contributes towards perceptions of inequality and inefficiency in the system.[35]
- Co-ordination and integration: Local Economic Development projects aimed at targeting poverty are often complex, involving the co-ordination and integration of policies and programmes within municipalities and between municipalities and different spheres of government (Provincial and National sphere's in South Africa's case. With regard to the development of urban agriculture, this is especially important because of the complex nature of the activity, requiring different levels of support from different spheres of government and departments. These include basic services, economics and finance, the environment, social development, etc.

Obstacles to food gardening and urban agriculture

Several obstacles to food gardening and agriculture in cities have been identified by researchers. These include negative perceptions by urban planners, who view urban agriculture as constituting a rural lifestyle and not being part of modern urban life or constituting a viable economic activity in the city. This leads to an inflexible policy environment where there is no supportive policy or legalisation for urban farmers and inadequate services to support their livelihoods. Some municipal by-laws, as in the case of Johannesburg, ban certain agricultural practices, such as livestock production. Whilst there is a need for regulation and management in this sphere, banning such practices may be an inflexible policy response especially for the poor living on the urban fringe. Such a [governance] approach to urban agriculture "..leaves cultivators disempowered and the city with less resources and a more fragile environment."[36]

Urban agriculture can have health hazards if unregulated, specifically when recycled liquid and solid organic waste is used on crops, causing illnesses such as dysentery and cholera. In Accra, Ghana, there are specific by-laws which prohibit the use of waste water for urban agriculture.[37] Pressure on land also constrains urban agriculture due to the need for the development of other amenities, such as housing, for the poor. This is particularly the case in cities such as Johannesburg, where there is a high urbanisation rate (already highlighted) and mushrooming informal settlement areas on the peri-urban fringe. For example, Orange Farm is regarded as the largest informal settlement in South Africa and there is likely to be increased pressure on land from different sectors, such as housing and industrial development.

Land tenure and the unsustainable use of land are two interlinked aspects that impede the development of urban agriculture. When urban farmers have insecure tenure, they plant crops that grow quickly and can be harvested in a short space of time and they have little incentive to improve the quality of soil. Recycling of organic waste products to improve the soil quality is, therefore, not a strategy typically adopted by urban gardeners faced with these circumstances. Neglect of the soil results in increasing impoverishment and erosion of the soil.[38]

Inadequate technical support and the need for skills development among food gardeners and urban agriculturalists may be viewed as obstacles. In a study of four urban centres in South Africa, researchers found that urban farmers felt that the level of technical support they received to assist them with their farming activities (including from agricultural extension officers) was very limited and that visits to their plots by these technical advisers were infrequent. The kinds of support farmers requested included: horticultural knowledge and training; general agricultural knowledge and training; soil sciences service training and training in the keeping of livestock.[39]

A variety of other obstacles facing urban gardeners have also been documented including problems with insect pests, water scarcity, theft of garden equipment and products, weeds, a lack of tools, plant diseases, seed scarcity, poor quality seed, lack of fertiliser and problems with stray animals.[40]

Policy interventions to improving urban agriculture

Three different types of urban agriculture can be identified and these can be matched to different policy dimensions that could serve to focus interventions or strategies to improve the sector. These are: [41]

- Subsistence-orientated urban agriculture policy dimension: this refers to agriculture that primarily contributes to livelihood strategies aimed at supplying food to households and achieving household savings by reducing the food-purchasing share of the household budget. Some of the surpluses from subsistence agriculture can also be sold to local vendors, generating a small income. Examples of this type of agriculture include home-gardening, community gardening, institutional gardens such as at schools and hospitals and open-field gardening.
- The market-orientated urban agriculture policy dimension refers to urban agriculture that has a market-orientated focus. This type of agriculture is undertaken mainly as small-scale family ventures, as well as larger scale businesses, run by private businesses or producer associations. Such businesses are not limited to food production and are embedded in a chain of small, and larger, scale enterprises.
- The ecological policy dimension deals with types of urban agriculture that serve a number of different purposes. They play a role in improving household food security and generating an income, but they also contribute to environmental management and provide a range of other services useful to urban residents such as composting, recycling of solid wastes and the use of waste water.

Depending on the policy priorities of the city and the prevalence of the above categories of urban agriculture, or combinations thereof, municipalities can tailor policy interventions to match the needs of the city and also the prevailing circumstances that exist in relation to urban agriculture.[42] Stakeholder inputs, including from urban farmers themselves, should form a strong component of city planning that supports urban agriculture in its various forms.

Specific policy interventions required to stimulate urban agriculture

An important aspect to developing urban agriculture is the setting up of multi-stakeholder planning processes through an institution or forum to support such a process. Such a forum would draw in all relevant stakeholders and serve as a dialogue platform for the planning and implementation of development strategies for this sector[43]. This model for implementation has been applied around the world, including South Africa. For example, in the development of pilot hydroponics projects in the Buffalo City Metropolitan Municipality, Eastern Cape, a Round Table institutional forum to bring in expertise and to facilitate dialogue among key stakeholders was established. This was found to be successful in addressing project obstacles and helping to overcome compartmentalised thinking across different sectors that need to work together in order effectively to implement the project.[44]

Some generic strategies to develop urban agriculture have also been identified and these include: [45]

- Creating an enabling policy environment that supports urban agriculture by accepting it as an urban development strategy that can be used to address poverty and stimulate economic growth;
- Facilitating access to vacant open land and the security of land for agricultural use;
- Improving the productivity and viability of urban agriculture through training, technical and financial support to urban farmers and enhancing access to agricultural inputs in a decentralised way;
- Supporting the establishment and strengthening of urban farmer organisations;
- Implementing health-related interventions associated with urban agriculture. This would include the close working together of health, solid-waste, environment and agriculture departments at the municipal level to assess the health and environmental risks associated with urban agriculture and to implement strategies to deal with these risks.

The formal acceptance of agriculture as an urban development policy means that existing policies, including by-laws that relate to urban agriculture, need to be re-assessed in order to identify and review regulations and legal restrictions. Where appropriate, those parts that have an adverse impact on the sector should be removed. The integration of measures to stimulate and regulate urban agriculture with existing regulations may also be necessary. Secondly, the creation of an institutional home for urban agriculture within local government is necessary because of its historical location as a rural development issue. In South Africa's case, agriculture is the responsibility of national and provincial government rather than municipal government. To ensure that urban agriculture receives sufficient support within the urban policy environment, the establishment of a formal administrative 'home' for this sector at this level is important.[46]

Enhancing access to land is another measure important for the stimulation of the urban agricultural sector. This can be achieved in various ways, including through the following strategies: [47]

- The development of an inventory of available open land.
- Through the creation of a municipal land bank that would facilitate the supply and demand linkages between land owners and urban farmers/gardeners.
- Stimulating the owners of open vacant land to make this land available by offering medium-term leases. This could be stimulated by offering tax incentives to land owners who do this.
- Developing city ordinances that regulate the use of vacant land.
- Providing vacant municipal land to organised groups of farmers.
- Implementing rehabilitation measures on existing vacant land, including removing dumped waste material and improving water supply, to improve the viability of the land for farming.
- Demarcating zones for urban agriculture so that identified land could permanently be used for urban agriculture; and this land should be integrated into city land-use planning.
- Providing assistance to farmers to relocate to unused land that may be better suited for urban agriculture.
- Including space for individual, or community, gardens in new public housing projects.

The broader policy context of the study

Government policies are intended to consolidate government's thinking on certain issues, as well as show its intentions in terms of committing resources to an issue or activity. The aim of this section is to review key economic and urban development policies, as well as agricultural strategies at national, provincial (Gauteng) and municipal (City of Johannesburg) level, to determine whether government places importance on urban agriculture as a human development strategy.

National perspectives on urban agriculture and food security

A review of South Africa's main National Agricultural Strategy (2009/2010) finds that no substantive mention is made of urban agriculture, although urban forestry is mentioned (National Agricultural Strategy, 2009: page 5).[48] The National Strategic Plan for Agriculture (2012/13 – 2017/18)[49] is largely a rural document, but it does acknowledge that there is a need to create an encompassing strategy on urban and peri-urban agriculture. Another document that should include urban agriculture and food gardens is the National Integrated Food Security Strategy (NIFSS 2002),[50] but this strategy does not include references to the spectrum of urban agriculture activities. Urban gardening activities (such as home/school/community food gardens) and commercial urban agriculture should form part of a strategy to ensure food security in the towns and cities of South Africa. Another, more recent, document from Department of Agriculture, Forestry and Fisheries (DAFF) entitled 'Food Security, 2011'[51] also makes no mention of urban agriculture or urban food gardens - although rural agriculture is discussed at length.

In terms of economic development strategies, the national government's New Growth Path (2010)[52] supports the agricultural value chain as a major approach to job creation. It suggests that opportunities for 300,000 households in agricultural small-holder schemes, plus 145,000 jobs in agro-processing, could be targeted by 2020 - while the potential for upgrading the conditions of 660,000 farm workers is also noted.

A key approach to combat food insecurity is through people having paid work. The South African government has set ambitious goals for job creation. The main thrust of the National Development Plan (NDP, 2011)[53] is to create five-million new jobs by 2020 and 11 million jobs by 2030. The NDP (2011) deals only with rural development and sees agriculture as a rural development instrument. Yet South Africa's unemployment crisis remains static, with no significant inroads to improving the situation according to the 2011 African Peer Review Mechanism (APRM) Review Report for South Africa.[54] Urban agriculture and food gardening should be seen as an important policy intervention to grow small businesses, create new jobs and as a livelihood strategy for the poor.

Looking at whether new housing settlements in South Africa will be created with urban agriculture options in mind, a review of South Africa's 'Breaking New Ground' National Housing Strategy (2004)[55] found no mention of urban agriculture. Food security, urban agriculture and food gardening are not mentioned at all. Urban agriculture should be an integral aspect of formal housing developments and also in the upgrading of informal settlements, particularly in poverty hotspots. This omission in a strategy of this significance is a serious omission for the poor. The omission indicates that, whilst the South African government is still building houses, it is not creating liveable settlements where diverse income-earning activities such as urban agriculture can take place.

South Africa's National Framework for Local Economic Development (LED) in South Africa (2006 – 2011)[56] also does not mention formal urban agriculture or food gardening as a potential element of local economic activity (National LED, 2006). Community gardens are mentioned briefly, along with the statement that these gardens usually do not last more than a year, which is indeed a significant issue in this type of development activity. The national LED does state that there is potential for community members to produce cash incomes from community gardens. It would be essential that communities expand their scope and co-ordination through the creation of agricultural (producer) and consumer co-operatives. They would need to be supported by government for several years in order to become sustainable.

It would have been a better strategic move, in terms of growing urban crises in South Africa, if the National Framework for Local Economic Development (LED) in South Africa (2006 – 2011) had made a strong statement in support of urban agriculture as a viable economic activity. In addition, although agriculture is a national and provincial competency, local authorities are, arguably, a more suitable domain for urban agriculture. Yet there is no 'instruction' in documents on national agriculture, food security or economic development indicating that municipalities should take on the role of promoting urban agriculture.

Provincial perspectives on food security and urban agriculture

The role of provincial government in South Africa is to establish a provincial framework of laws, policy and funding mechanisms that deal with the specific realities and needs of the cities and towns within the province, as well as the rural areas. Gauteng's provincial strategies on agriculture are focused on agriculture in the rural context, rather than in the urban context. This is surprising, given the high levels urbanisation in the province. Although there are many policy and strategy documents guiding both the economic development and the development of agriculture within Gauteng, there is no dedicated urban agricultural strategy. Urban agriculture is, however, mentioned in the Gauteng Agricultural Development Strategy (GADS, 2006).[57]

The Gauteng Agricultural Development Strategy (GADS, 2006) is the main agricultural strategy in the province. The GADS generally aims to support urban and small-holder agriculture, realising that urban agriculture has emerged as a key livelihood and coping strategy for urban residents; and as an essential land use. Existing programmes aimed at establishing vegetable gardens in homesteads and schools need to be expanded in a systematic roll-out wherever possible, according to the GADS (2006).[58]

The GADS 2006 also states that, in addition to supporting household food production, backyard gardening and food gardens at clinics and educational institutions, GDACE (renamed GDARD in 2009) must collaborate with other departments and local authorities and draw up a single, consistent programme for urban agriculture.

To deal with food insecurity and poverty, the Gauteng Province also has an integrated Food Security Strategy (GIFSS) (2009),[59] which is linked to the National Food Security Strategy[60] developed in 2000. The aims of the GIFSS (2009) include: to increase household food production and trading, to improve income generation and job creation opportunities and to improve nutrition and food safety. It also aims to provide for social grants and job creation schemes - for example, those in the Expanded Public Works Programme.[61] As well as trying to achieve household food security, Gauteng province aims at creating a food-secure province by stimulating provincial agriculture and agro-processing.[62] The intention is to develop Gauteng's agricultural economy and to maximise the contribution of the agricultural economy to job creation, poverty alleviation and economic growth in Gauteng.

In the Gauteng Employment Growth and Development Strategy (GEGDS, 2009**),**[63] food gardens are identified as a strategic need and provincial interventions are proposed which link to agriculture in general.

The Gauteng province has developed a Comprehensive Rural Development Strategy (GCRDS, 2010)[64] even though the province is highly urbanised, with 96% of the population considered urban (StatsSA, 2006).[65] What appears to be lacking is a comprehensive urban development strategy to give equal weight to urban development in a province that is mostly urbanised.

The development and implementation of Gauteng's provincial agriculture, food security and economic development documents should involve multi-sector collaboration across all spheres of government and involving external agencies including parastatals. However, a common fault of the documents reviewed is that they do not indicate where linkages are needed. For example, the strategies reviewed should also specify that Gauteng's municipalities need to take on the role of promoting urban agriculture, whilst the province should focus on agriculture in rural areas.

Municipal perspectives on food security and urban agriculture

The new municipal system in South Africa requires that municipalities take on the role of agents for local social and economic development, and develop a Local Economic Development (LED) plan. They must play a local co-ordinating role for the implementation of local economic development in close partnership with the private sector and community interests - involving men and women equally.[66] In South Africa, some of the large metropolitan municipalities have already embraced urban agriculture, notably . Cape Town and Durban (eThekwini Metropolitan Municipality). Cape Town is noted as a city in which urban agriculture is well established in the township areas and also as a centre with a long-standing municipal awareness of the role and importance of urban agriculture. Significant in this regard are the well-established policy frameworks that have evolved over a period of time as well as active engagement in applied projects. A range of support programmes also seems to be available. The institutional response in Durban (eThekwini) regarding urban agriculture has also been significant.[67]

The 2040 City of Johannesburg (CoJ) Growth and Development Strategy (GDS, 2011)[68] notes that, within the City of Johannesburg, urban agriculture is seen as a survivalist activity rather than an activity that responds to commercial opportunities. The document also states that 'only' three percent of households in Johannesburg grow their own food. Yet, out of a total of 1.3 million households,[69] this is roughly 39,000 households and is not insignificant, and could be used as the baseline for a growing trend. These households in need are undertaking urban agriculture with, or without, government policies to support it. The CoJ intends to focus on a range of interventions to develop a commercially viable and productive urban agriculture sector in Johannesburg, supporting localised food production.[70]

The COJ GDS (2011), and the City of Johannesburg's current IDP document (2011-2012),[71] however, make almost no reference to urban agriculture - yet makes two statements of support. Firstly, it is stated that there is an aim 'to facilitate the implementation of urban agriculture'[72] and, secondly, there is an aim to 'adopt and implement best practice guidelines for urban agriculture'.[73] In the IDP, discussions about land-use planning refer exclusively to land for housing and other non-agricultural uses. The CoJ IDP document (2011)[74] also discusses the role of the Fresh Produce Market in supporting emerging farmers, but does not mention urban agriculture as a sector of emerging farmers. These contradictions need to be resolved

The CoJ IDP (2011) states its aims to secure approval for a comprehensive food security policy for the City; and to pilot a macro-level agriculture support process (advisory centres) in two food-insecure geographies. There will also be a comprehensive roll-out of macro-level agri-support to all food-insecure areas. In 2013/2015, the 'hub-and-spoke mode' of food production co-operative (combining the produce of several small providers into a single supply chain) will be piloted as an available platform to small-scale farmers citywide.[75] It would, therefore, appear that, although agriculture is not intended to be a municipal competency, the City of Johannesburg is embracing urban agriculture as a valid activity for the municipality.

High priority growth management areas include Alexandra, Diepsloot, Ivory Park and Orange Farm and its surrounds, as well as Soweto and those areas located in the public transportation management areas (Gautrain stations, BRT stations, PRASA railway stations). These areas will become the focus for the provision and upgrading of infrastructures in the short- to medium-term; and this should lead to greater economic development of these areas.[76]

The City of Johannesburg Local Economic Development (LED)[77] planning also indicates its intention to fund urban agriculture as a local economic development intervention. The City's LED Financial Plan (2009), for example, states that it will fund urban agriculture. Selected urban agriculture projects to be funded by the CoJ include Urban Agriculture Skills Centre (Orange Farm) which will provide financial, training and technical assistance to emerging farmers. Another project with an urban agriculture component is the Orlando eKhaya Precinct. This precinct is to be developed into a viable investment destination for mixed-use projects.

The City of Johannesburg is in the process of finalising its Urban Agriculture Strategy,[78] which will put the city in line with other cities like Cape Town which have already drafted urban agriculture strategies.[79]

Municipal by-laws[80] regulate the keeping of livestock and game animals within the Johannesburg municipal area, which can also include the peri-urban area and its small-holdings. Also controlled with by-laws are activities such as abattoirs and the rendering of animal products. Just as informal and illegal urban dwellings and land invasions for settlement must be rectified, a situation of informal and illegal occupation of land for agriculture must also be regulated by the municipality. At the same time, existing by-laws may need to be reviewed to determine whether they are impediments to urban agriculture.

In conclusion, it would seem that urban agriculture is promoted in a fragmented way by the South African government at provincial (Gauteng) and national level, and there is no national or provincial Urban Agriculture Strategy. It would seem that, in South Africa, urban farming will ultimately fall on municipalities to drive and support. Thus urban agriculture needs to become part of municipal LED plans, with full policy support, as has happened in Cape Town and eThekwini (Durban) where the institutional response is well established.[82]

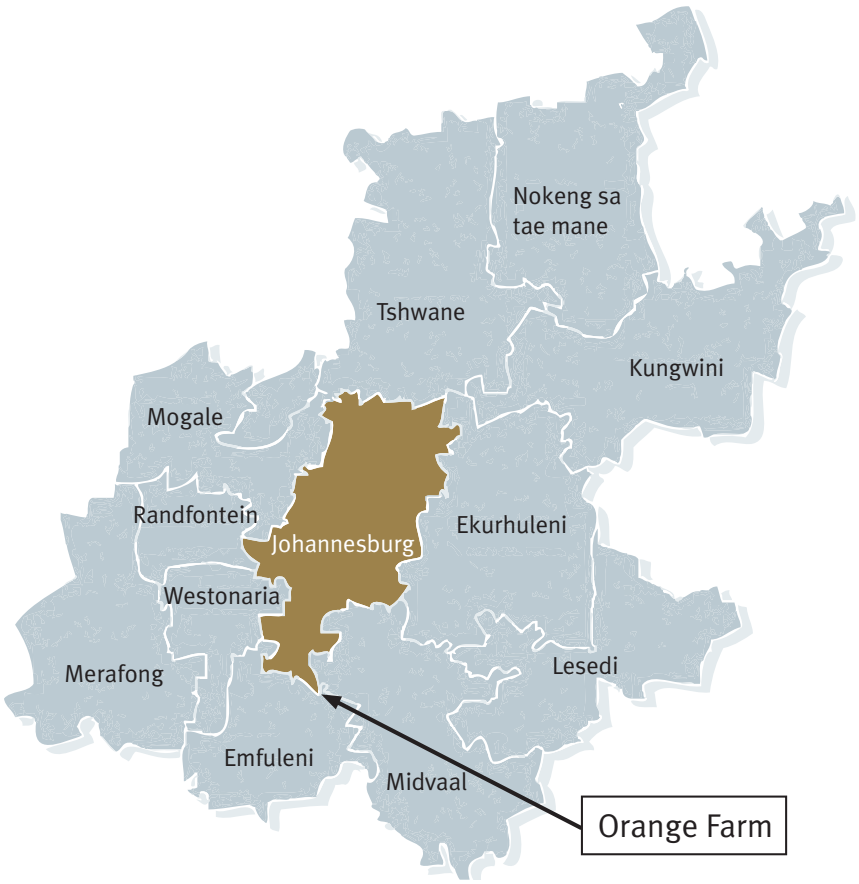
The City of Johannesburg identifies urban agriculture as an important economic, as well as survivalist, activity which it supports both in the IDP and LED. The City of Johannesburg has drafted an Urban Agriculture Strategy (2012) which has not yet been released to the public. An important planning issue to be considered innovatively by the CoJ is that many poor households have no access to land at all and may well be a long way from any suitable land - for example, inner city residents. The real challenge for the City is to create urban farming opportunities for people who do not live in the peri-urban areas, yet may still need to do some form of home gardening, or backyard, or roof-top, farming. How land parcels can be made available, either permanently or temporarily, in these settings is the challenge which the City of Johannesburg needs to address.

The important aspect for Gauteng and the City of Johannesburg's further economic development is that the subsistence farmers of today could, with support, become the small-holder farmers of the future and establish a new prosperous agrarian class in Gauteng. The CoJ municipality should seek funding from national government to support urban agriculture. It should also partner with the private sector, as well as city governments in other countries where urban agriculture is practiced, to develop further knowledge and skills in this area, as well as to share local experiences. This is already happening in some of the metropolitan areas in South Africa, such as Buffalo City Metropolitan Municipality where a partnership, called NETSAFRICA[82] (which is a network to support decentralisation and local development policies in South Africa) has been formed between the South African government, the municipality, the Italian Ministry of Foreign Affairs and the Regional Government of Tuscany. This partnership has established a pilot hydroponics project and a number of existing agricultural co-operatives have been further developed to address poverty in Mdantsane. The City of Johannesburg and the Gauteng province should establish similar agricultural networks and associations to support small-scale, and emerging, farmers. The CoJ could help such associations access lucrative local or regional markets, as has been done in other developing countries and economies in transition.

The locality of the City of Johannesburg within Gauteng Province is shown in the map below (Map 1). Orange Farm is located in the far southern extremty of Region G.

History of Orange Farm

Orange Farm was originally an isolated settlement with an origin rooted in apartheid city planning. Parnell and Pirie[83] note that, in Johannesburg, city planners in the apartheid era attempted to reduce the growth of 'black spots' in the urban centres by establishing 'site and service' camps as depositories for squatters from other parts of the city. Orange Farm became one of these consolidated informal settlement areas in the 1980s. Now it has been included as a settlement within the City of Johannesburg in Gauteng province.



MAP 1. Map to show location of Orange Farm in the City of Johannesburg. Source: City of Johannesburg.

Gauteng province's urban form is a legacy from the mining era (late 19th century to date). Many of the towns and cities in Gauteng, particularly on the East and West Rand, were developed to house mineworkers and to be centres for industries that provided goods and services to the mines. The segregation of urban residential areas along racial lines has been well documented and has resulted in black residents of the province's cities living on the peripheries of the cities and towns. This has resulted in a vast urban sprawl – the opposite of compact cities in Europe.

The majority of migrants into Orange Farm came from Soweto, Meyerton and Everton.[84] The first inhabitants of Orange Farm arrived in 1988 from Wieler's Farm, a maize and cattle farm belonging to the Wieler brothers in the Grasmere area.[85] A group of women rented dis-used chicken runs on Wieler's farm as space for accommodation. During the 1970s, as more people moved into the area, the Wieler brothers rented more of their land to shack dwellers. [86] Because of complaints from neighbouring farmers, the then president of South Africa, P. W. Botha, promised that removals from the farm would take place by October 1988. Alongside the process of removals from this 'black-spot', the TPA (Transvaal Provincial Administration) began developing Orange Farm as an alternative site to accommodate the rapidly urbanising black population (Leong, 2009).[87] The original farm bought for the new settlement was called Orange Farm and this name was used for the township. At this stage, Orange Farm lay outside the physical boundaries of Johannesburg, which ended at Ennerdale and Grasmere.[88]

Most of the new arrivals were farm workers who had been laid off; others had been staying in other townships and needed a piece of land on which to settle. Besides surviving through informal sector activities, including vegetable gardening, some of these former farm workers now work for various non-governmental agencies that offer training in market farming in the area.[89]

By 1989, over 300 families had settled in Orange Farm from Wieler's farm. At this time, some 4,300 sites also became available for settlement and the TPA offered residents a chance to purchase small 210 square metre site and service stands for R500, or rent these for R10 per month – with an additional R29 service levy every month. By 1991, the population of Orange Farm had grown to over 70,000 residents. At this stage, developers had started building low-cost brick and tile homes for sale to the community (R8,500 each), with over 3,000 being built. Electricity reached the community in 1991 and was rolled out on an Eskom pre-paid system. Orange Farm had become a place where 'people could create a strong sense of belonging, ownership and community'.[90] By the 1980s, Orange Farm was developed as a 'properly planned town' with each house as a free standing unit with a small piece of land (55 square metres). As pressure for housing increased in the area, the housing stock was not increased and shack settlements developed. After 1994, the shack settlements were largely removed and residents in Orange Farm were housed in Reconstruction and Development Programme (RDP) houses.[91] RDP housing has not kept pace with the housing demand in Orange Farm, as evidenced by Table 1 below which shows that roughly 40% of houses in the five wards are informal.

Socio-economic context in Orange Farm

In South Africa, as in the rest of the developing world, food security is of growing concern, with the Black Sash reporting that 20 percent of South Africans are insecure about food.[92] Poverty in Johannesburg's Region G is extremely high and the majority of residents have no regular source of income.[93] In Johannesburg, only a small percentage of households grow their own vegetables and this is largely a survivalist activity.[94] In Orange Farm, food insecurity appears to be worse than in other parts of the city. In a study undertaken in three low-income areas in Johannesburg, Orange Farm fared the worst out of the three marginalised areas (viz. Alexandra, Joubert Park and Orange Farm), with 60 percent of Orange Farm respondents sampled reporting they were either severely, moderately or mildly food insecure.[95.] Some 81 percent of households surveyed in Orange Farm in the same study comprised between one and five members. Orange Farm also reportedly had the largest proportion of households (out of the three study areas) which relied on pensions as their main source of income and an average of 41% of household income was spent on foodstuffs.[96] This is well above the national average (23%).[97]

Table 1 shows Orange Farm data extracted from the 50 Priority Wards Study, GCRO. Indicators presented in the table above are for the five wards comprising Orange Farm. Eighteen indicators were used to rank 50 priority wards in Gauteng province. In the 50 Priority Wards Study, data on five hundred and eight wards were collected and each ward was ranked from best to worst off (1 = best and 508 = worst) for each of the indicators. Orange Farm wards therefore score poorly (roughly in the bottom fifth) for many of the indicators reflected in the table).[98]

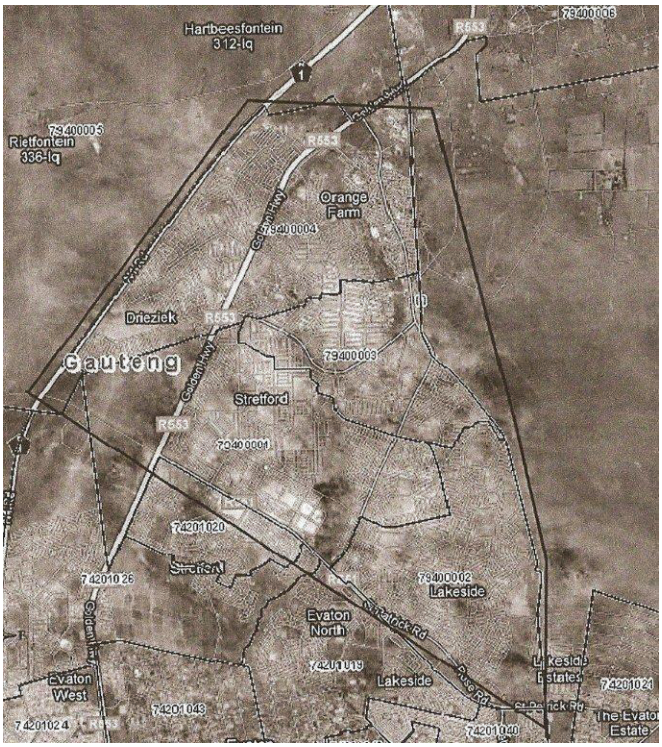
Noteworthy is that Ward Five has the highest percent of households without access to sanitation and electricity (for cooking and lighting). Wards One and Five were also worst off with regard to percent of households without access to drinking water. Average monthly household income ranged between R2600-00 (Ward One) to R1800-00 (Ward Three) and the percent unemployed in each of the wards was high - ranging between 47 and 45 percent. This is significantly higher than the unemployment rate for the rest of the CoJ (21.8%).[99] The percentage of adults receiving social grants in all wards ranged between 17 and 13 percent. Noteworthy, also, was the high number of female-headed households (ranging between 44 and 53 percent). The high number of child-headed households, averaging around three percent, would suggest that there is a need for increased social intervention and more food gardening projects to assist child-headed households with food and a source of income.

TABLE 1

	Ward 1 79800001		Ward 2 79800002		Ward 3 79800003		Ward 4 79800004		Ward 5 79800005	
Table 1: 50 Priority Wards Study for Orange Farm	Percent (where applicable)	Rank	Percent	Rank	Percent	Rank	Percent	Rank	Percent	Rank
Adults receiving social grants[1]	16.32	103	17.88	161	16.92	121	16.57	107	13.39	52
Adults that are economically active[1]	33.32	430	31.50	462	30.00	479	31.64	457	32.16	449
Average household income[1]	2600	458	2100	484	1800	493	2200	477	2400	469
Unemployment rate (percentage unemployed)[2]	47.54	442	47.85	449	46.30	419	45.77	406	45.30	393
Percentage of the Ward that is covered by informal housing[3]	24.16	486	21.16	484	73.38	506	77.76	507	5.75	431
Households without access to housing by RDP standards[2]	55.73	448	10.55	244	38.38	394	38.19	392	62.64	463
Households without access to drinking water by RDP standards[2]	17.51	432	4.07	245	11.72	380	14.66	413	16.65	425
Households that are female-headed[2]	47.54	480	53.69	501	48.42	485	46.11	466	44.93	445
Households that are child-headed2	2.94	487	3.71	499	3.32	492	2.57	480	2.87	485
Population aged 7-14 that is not attending school[2]	4.21	213	4.81	267	4.61	254	3.83	165	5.57	324
Households without access to sanitation by RDP standards[2]	62.99	465	11.85	318	53.60	453	88.44	493	81.36	486
Households without access to electricity for lighting by RDP Stds[2]	5.11	190	7.69	235	10.37	265	12.01	283	34.92	401
Households without access to electricity for cooking by RDP Stds[2]	39.70	371	25.39	302	37.99	360	35.16	348	59.96	443
Household density per kilometre sq[1]	1768.8	361	2038.4	386	1920.3	374	1803.1	365	286.8	118
1=Lightstone 2010; 2= Census, 2001; 3=Eskom 2008 and Department of Housing;										
Source: GCRO, a collaboration between University of Johannesburg, University of Witwatersrand, Johannesburg and the Gauteng Provincial Government										

The locality of Orange Farm

Orange Farm is some 45 km from the Johannesburg Central Business District (CBD) and falls within the most southern aspect of Region G (see Map 1) of the City of Johannesburg's metropolitan area. Main roads serving the area are the Golden Highway (R553) and the M1. There is also a railway line that links Vereeniging and Johannesburg, with a station at Stretford, a suburb of Orange Farm. Taxis (minibus) and private vehicles, as well as the train, are the links within these areas, as well as with the outside world. Stretford Station at Orange Farm is an important asset for residents of the area because it provides relatively cheap transport to the central city area of Johannesburg.



MAP 2. A satellite image of Orange Farm and surrounds. (Source: GCRO, interactive GIS website)

Orange farm, together with Diepsloot and Tembisa, are currently the most densely settled regions in the City of Johannesburg and are special development nodes for the City[100]. However, a visit to Orange Farm shows that it is much more spread out than Diepsloot, having formal stands with RDP homes, with few backyard shacks being observed. Each RDP home has a small fenced yard with gardens and fruit trees. People keep dogs as watchdogs or pets. Some areas of Orange Farm appear to be less well-developed (for example Driezek Ext 5 (Ward 5) and Driezek (Ward 4). Driezek is a newly-incorporated area of Orange Farm, which has untarred roads and no evidence of street lighting. The roads in this area are uneven with many pot holes.

A satellite image and map of Orange Farm and surrounds (*Map 2*) is shown above (Source: GCRO, interactive GIS website).

Land cover

According to a review of the GCRO map of urban land cover, 2010, Orange Farm is not situated in an important ecological area and has no irreplaceable natural elements that need protection in terms of the provincial C-Plan (Biodiversity Conservation Plan). However, environmental impact assessments (EIAs) would still be required for any change of land use. In Map 3 (below), the red line indicates the N12 motorway, while the star indicates the approximate location of Orange Farm. Orange Farm is classified as 'urban' or 'grassland'.[101]

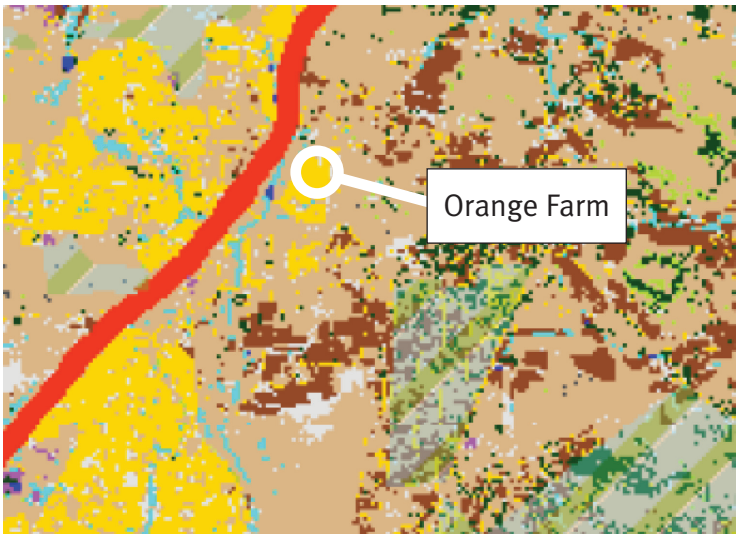
Orange Farm has become a very large, formal residential area in a short space of time (some 30 years). Attention needs to be paid to the biodiversity and measures should be taken to protect the wetland area running through Orange Farm (Driezek Extensions) from unwise development. In October 2011 (when the field research for this study was undertaken), there was a visible amount of water running through the wetland and weir, indicating a perennial water source or even a mountain seep which is a valuable wetland type. Surrounding Orange Farm there are untransformed grassland habitats, which are slowly being degraded through unplanned urban agriculture (field visit observation) and general human traffic.

Agricultural potential

In terms of potential for urban and peri-urban agriculture, on the west side of Orange Farm there are maize lands and commercial, large scale farms and, on the eastern side, small agricultural holdings. The Orange Farm area generally has low agricultural potential, with a region of moderate and high potential agricultural land to the south (see Map 4 below). Despite this, the area is a maize and small-holder farming region. Google Earth images show extensive evidence of agricultural ploughing and small farming plots all around Orange Farm. The map below shows that Orange Farm has mixed agricultural potential, with largely low or very low agricultural potential, with some areas of high and moderate potential.[102]

Land Cover

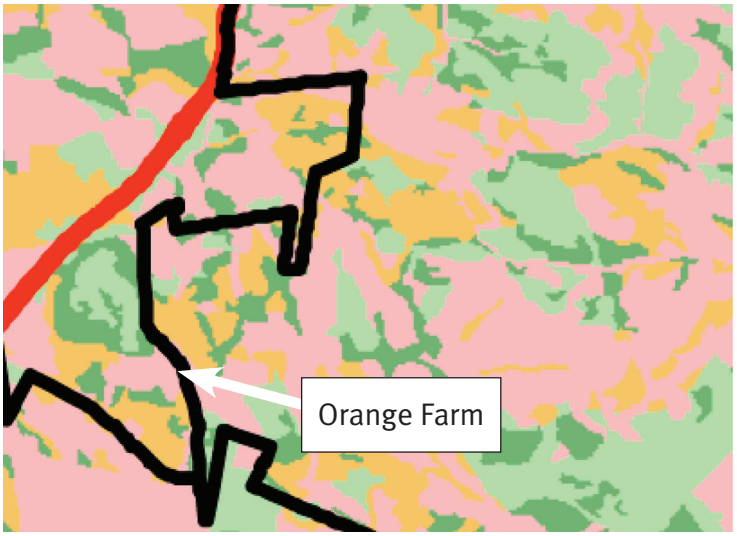
- Cultivated land
- Degraded & non-vegetated land
- Trees & Woodland
- Grassland
- Cattle camps
- Water
- Mines
- Natural bare rock
- Wooded grassland
- Urban
- Wetlands and pans



MAP 3: The land-cover status of Orange Farm and surrounds.

Agricultural Potential (2004)

- High
- Moderate
- Low
- Very low – none



MAP 4: Map of the southern reaches of Region G of the City of Johannesburg, showing the agricultural potential of the area.

Land-use planning

Since the early 1990s, Gauteng has undergone a property boom resulting in the spread of urban development in all directions. This has resulted in the loss of much agricultural land and bio-diversity on the periphery of urban development. The loss of high potential agricultural land due to urban sprawl was one of the identified key environmental issues in the Gauteng Environmental Implementation Plan (cited in GADS, 2006).[103] The loss of high potential agricultural land resulted in the need for a Gauteng Agricultural Potential Atlas (GAPA) to assist in decision-making when changes of land-use are considered.

Although the Gauteng province makes up only 1.4% of the surface area of the Republic of South Africa, it has one sixth of South Africa's best agricultural land.[104] The high summer rainfall of 709 mm per annum makes the province conducive for summer grain farming on dry-land conditions, particularly maize.

In some of the older municipalities in South Africa, particularly those in the arid areas of South Africa,[105] the municipalities historically bought land outside the town for use by poor white farmers. After 1994 and the democratic election, this land was kept and is now available for emerging black farmers, mostly for livestock grazing. These commonages are managed by a committee comprising municipal officials and representatives of the commonage farmers. The municipal commonage system is not taken up substantially in Gauteng. In and around Gauteng, there are a number of commonages (one at Walkerville and one outside Kempton Park[106]), where individuals and groups can get access to land for crop farming. According to the provincial Directorate of Agriculture officials, there is no commonage land near Orange Farm other than the 'commonage' near Walkerville, which is about 20 km from Orange Farm.[107] Commonage lands can act as training grounds for would-be commercial farmers to gain experience before moving onto their own farms. They offer a way for aspirant farmers to learn about good farming practices before they get their own farms.

Water and irrigation issues

Free basic water has changed the lives of urban residents in South African settlements and in areas where this is not yet provided. Access to safe water forms one of the strong threads in urban service delivery protests. The right to sufficient water is included in the South African Constitution and, in 2001, the South African government made a decision to provide a basic amount of water free of charge to all citizens to achieve social equity following the end of apartheid in 1994. By 2007, more than 75 % of the South African population has received access to free basic water, although this meant that still around seven million people were without access.[108] In Orange Farm, water provision has been a critical issue with many protests over the years.[109]

SECTION 2

RESEARCH FINDINGS

Initial enquiries on the size and boundaries of Orange Farm indicated that there was some confusion over what areas constituted Orange Farm. For example, Orange Farm is sometimes depicted as Ennerdale/Orange Farm on official maps. Officials in various government departments mostly seemed to agree on the sub-places and wards that constituted Orange Farm. These are expanded upon below:

City of Johannesburg definition of Orange Farm - The City of Johannesburg and the Gauteng Department of Agriculture and Rural Development (GDARD) describe Orange Farm as comprising five wards. The 5th ward was included as part of the area for the municipal elections in 2011.[110]

Municipal Demarcation Board and the City of Johannesburg list the following sub-places within the five wards as comprising Orange Farm:

Ward 1: Stretford; Stretford Extensions 4 and 6

Ward 2: Stretford Ext 3; Orange Farm Extension 3; Lakeside

Ward 3: Orange Farm, Extensions 1,4,7

Ward 4: Orange Farm Proper; Driezek Extension 4

Ward 5: Driezek, Extensions1, 2 and Poortje

Community definitions of Orange Farm - Whilst some respondents were not sure how many wards there were in Orange Farm, others stated that there were five wards. The confusion among residents as to how many wards there are in Orange Farm may be due to the fact that the additional ward (Ward Five) has only recently been added to the area, following the re-alignment of wards for the 2011 municipal elections. This confusion may contribute to residents not knowing who their ward councillors are.

The boundaries of Orange Farm, the Vereeniging-Johannesburg railway line (east) and the N1 (west). The area straddles the Golden Highway (R553). To the east are agricultural holdings and to the west are bigger agricultural holdings. Much of the land immediately surrounding Orange Farm is State-owned land, mainly owned by the City of Johannesburg.[111]

For our study we used the definition of Orange Farm and wards designated by the Municipal Demarcation Board and the City of Johannesburg.

QUALITY OF LIFE IN ORANGE FARM

When respondents were asked whether life in Orange Farm was better than the former areas they lived in prior to Orange Farm, opinions were mixed. A small number felt that life was better, whilst others indicated that life in Orange Farm was the same as, or only slightly better than, other areas where they had moved from. The ambivalence expressed by respondents is likely to have been due to a combination of good and bad things they experienced about living in this area. More space and the opportunity to obtain one's own house and some land were on the positive side; but, on the negative side, their material living conditions (poverty), and poor access to some services, as well as food-insecurity, depressed their sense of well-being.

Satisfaction with services and access to services

When respondents were asked what services they were most, and least, satisfied with, most people mentioned that the services they were least satisfied with were un-tarred roads and street lighting. Some also mentioned electricity and water cuts. Mention was also made of dissatisfaction with the shortage of health clinics, homes for the aged and the disabled and schools. Other services that respondents were dissatisfied with were waste removal, poor access to municipal land and housing. Services that respondents were most satisfied with included flushing toilets, access to water and electricity, RDP housing, good schools, tarred roads, street lights, government grants and the supply of tools for gardening.

Findings suggest that there has been progress in Orange Farm with the delivery of basic services, but that sometimes these services are not reliable (particularly relating to water and electricity cuts). Access to community services appeared to be difficult for many residents (there were too few clinics, hospitals were far away and homes for the disabled and the aged were virtually non-existent in the area).

Community needs and perceptions of the area

When respondents were asked whether there were any vulnerable groups living in their areas, most indicated they could think of such individuals. Types of vulnerable individuals mentioned by respondents included the unemployed and poor, child-headed households, orphans, the sick (including those suffering from HIV and AIDs), the aged, recipients of Home-Based Care, disabled children, households headed by grandmothers, the youth.

The kinds of interventions that were needed by Orange Farm residents related to the need for more poverty-relief and social development interventions, as well as strategies to overcome obstacles encountered by urban gardeners in the production of their vegetables. When respondents were asked to identify projects and programmes that were necessary to help poor people in their residential areas, a number of interventions were suggested. Work and employment opportunities were mentioned frequently and these included job creation programmes and the need for a skills training centre for young people. Opportunities for residents to create their own micro businesses (including sewing groups), more Food Banks and feeding schemes, were also suggested - as well as more development programmes for unemployed people, orphans and those living with HIV and AIDS. The need for more Home Based Care Workers was also mentioned. A home for senior citizens was identified as another need. It was noted that this would serve two purposes: caring for the elderly, as well as providing residents with an opportunity for work in the field of care-giving. Projects that integrate housing with food gardening projects, such as 'agri-villages', were mentioned as a further need.

Food security in respondent households was explored by asking gardeners whether they were ever faced with having no food in their households due to a shortage of resources. Half of the respondents indicated that this was 'sometimes' the case. Respondents were somewhat reluctant to divulge this information. Perhaps it seemed to imply a failure on their part. When gardeners were asked whether they were aware of other households in their area that experienced food shortages, all of them reported that they did know of other households in need. Some indicated that these households asked them for food from their gardens. Thus, for many respondent households, despite having gardens, food insecurity remained an issue.

TYPES OF VEGETABLE GARDENS IDENTIFIED

An initial list of homestead, school and community gardens was supplied to the researchers by the Gauteng Department of Agriculture and Rural Development (GDARD). However, site visits to Orange Farm indicated that other types of urban gardens exist and these are described below:

- Homestead gardens are small gardens located in a yard of an RDP house or shack.
- Supplementary homestead gardens are gardens that have expanded beyond the boundaries of the household yard into neighbouring vacant plots. In some cases, permission has been granted from the municipality to use this land.
- 'School yard gardens' are gardens located within a school yard, but are not part of the school. In some cases, gardeners have an agreement with the board of the school to use a portion of the land for a food garden
- 'Project gardens' are those that form part of an existing project. They are there to serve the purposes of a project, but are not the main feature of the project. They can be located in community crèches, day-care centres, projects for the disabled or churches.
- 'Community gardens' are food gardens that have been developed by a group of people who have an interest in cultivating land for a food garden for subsistence purposes and to derive an income for members of the garden. The gardens are located on vacant land.

TABLE 2. The types of food gardens visited at Orange Farm

Type of food garden	Number of representative food gardens visited
Homestead garden	4
Supplementary garden	4
School garden	2
Community garden	3
'Project' garden (attached to crèche, disability centre, religious centre)	5
Total	18

TABLE 3: List of schools and nursery schools visited in Orange Farm

Area in Orange Farm where schools located	Type of food garden visited	Name of garden or project
Ward 4	Project Garden	Ufefe Creche
Orange Farm, Ext. 1, Ward 3.	Project Garden	Modimo O Moholo (God is Great).
Ward 4, Driezek	Project Garden	Maranatha Day Care
Ward 4, Ext. 2	School Garden	Intlomipho Primary School.
Lakeside Ext. 2, Ward 2	School Garden	Langalibalele Dube Primary School).

Homestead gardens

Photograph 1 shows a typical suburban homestead vegetable garden in Orange Farm. The water for cultivation is provided from the household tap and the 6000 litre free municipal water allocation.

Supplementary gardens

Photograph 2 shows a typical supplementary garden. Note the hosepipe from the urban gardener's household tap to the garden about 40 m away. As in the homestead gardens, the free 6000 litre allocation of municipal water is used for irrigation. The gardener's house was next door to the garden and open veld surrounds this food garden, which is located on the west side of Orange Farm in Driezek Ext.1, Ward 4.

School yard gardens

In the photograph below right, a typical school yard food garden is shown.

In the photograph below, women urban farmers farm vegetables for a school feeding scheme and the women sell their surplus production.



PHOTOGRAPH 1: Homestead vegetable garden watered with household water. Lakeside, Ext.2, Ward 2.



PHOTOGRAPH 2: Supplementary food garden. October 2011. Driezek Ext.1, Ward 4



PHOTOGRAPH 4: School yard project and the women who farm this large piece of land. October 2011. Langalibalele Dube Primary School, Lakeside Ext. 2, Ward 2.



PHOTOGRAPH 3: Well-established and cared-for school yard garden, October 2011. Langalibalele Dube Primary School, Lakeside Ext. 2, Ward 2.



PHOTOGRAPH 5: This community garden is located in open veld in Driezek Ext. 5. Ward 5, Orange Farm, October 2011



PHOTOGRAPH 6: Another view of the poor soil of the community agriculture project on the periphery of Driezek Ext. 5. Ward 5, Orange Farm, October 2011



PHOTOGRAPH 7: Community farmers with their land in Driezek Ext. 5. Ward 5, on the western edge of Orange Farm, October 2011.

Community gardens

Community gardens can differ substantially, depending on their locality and soil type and the resources of the group of farmers. An under-resourced community garden is shown in Photographs 5 – 7. In this particular community garden on the west side of Orange Farm (Driezek Ext. 5. Ward 5), the soil quality is very poor. There is also no water on site. New virgin land is opened up to increase production as there are few nutrient inputs each year. The farmers rely on hosepipes and free municipal water during winter and rainfall during summer. Water is brought from a household 300 m away using a hosepipe.

Project gardens

An example of a project garden is that of the church group (photographs 8 and 9). The group is well-resourced and have developed a productive garden on one portion of the land (Photograph 8). The land was given to the participants by the municipality. It was also fenced by the municipality. Sections of the plot have been cleared by hand and the soil quality is good. This land was formerly occupied by a squatter camp and after removal of the squatter shacks some sections were ploughed by a government tractor and driver with poor results (Photograph 9). The soil quality has also been negatively influenced by the large amount of litter still embedded in it.

Another example is that of the private school, *Modimo O Moholu* ('God is Great') for disabled children and adults. The garden was established by the principal and has a very well-resourced food garden and orchard run on permaculture principles (see Photographs 10 and 11). After renting the land for some years, the principal bought the land for the school from the City of Johannesburg municipality.



PHOTOGRAPH 8: This sector of the community food garden is thriving, using water from households about 50 m away, Orange Farm Ext. 8, Ward 4. October 2011.



PHOTOGRAPH 9: Poor ploughing of a large piece of the above community garden, Orange Farm Ext. 8, Ward 4. The litter left behind when the shack settlement was cleared can be seen embedded in the soil. October 2011.



PHOTOGRAPH 10: The principal of the private school for disabled children and adults, Modimo O Moholu. Orange Farm Ext. 3, Ward 3.



PHOTOGRAPH 11: Another view of the Modimo O Moholo school yard in Orange Farm with its neat and productive permaculture gardens. Orange Farm Ext. 3, Ward 3. October 2011.

DESCRIPTION OF GARDENERS

For the study on food gardens in Orange Farm, twenty gardeners were interviewed, from 18 vegetable gardens. Some of the gardens had two or more participants, but not all participants were interviewed. Gardens from all five wards in Orange Farm were interviewed (see details below in Table 4).

TABLE 4: List of food gardens visited in Orange Farm by garden type

Area in Orange Farm where interviews were conducted	Type of food garden visited
Driezek Ext 5 (Ward 5)	Community garden
Ward 2, Lakeside Ext 2,	Community garden
Ward 3	Community garden
Ward 4, Driezek, Ext. 5	Homestead garden
Ward 2	Homestead garden
No details collected	Homestead garden
Ward 2	Homestead garden
Ward 4	Project garden
Ward 3, Ext. 1,	Project garden
Ward 4, Driezek	Project garden
Ward 3, Driezek, Ext. 8	Project garden
Ward 4, Ext 4	Project garden
Ward 4, Ext. 2	School garden
Ward 2, Lakeside Ext. 2	School garden
Ward 4, Driezek Ext. I	Supplementary garden
Ward 5, Ext. 8a. Stretford	Supplementary garden
Ward 1, Ext. 1	Supplementary garden
Ward 3, Ext. 1	Supplementary garden

Desire to engage in urban farming

Although the vulnerable and destitute in Orange Farm do receive food parcels and social grants, respondents felt that people need to grow vegetables so they can save money, because they then do not need to buy vegetables. In addition, fresh food produced locally is 'healthier for you' said some respondents. A most hopeful statement was that there is a demand in Orange Farm for fresh produce and, therefore, Orange Farm should produce all of its own fresh produce. This would be a very worthwhile vision for the development planners of the City of Johannesburg to keep in mind when they allocate land for future projects. The Agricultural Directorate of the Gauteng Department of Agriculture and Rural Development could also support the vision through their extension services and allocation of starter packs and training.

Age and gender profiles

Most of the gardeners who were interviewed were in their middle to later years and female, with respondents aged between 40 and 65 years (see photograph 12 below). There were only a few younger gardeners, the youngest being eighteen years of age (male). The high numbers of gardeners in their middle years or older, suggests that urban agriculture and food gardening is not that popular among the younger generation

(see Table 5). Food gardening and agriculture is not a subject in the school curriculum and there is, therefore, little attempt to stimulate interest in this as a livelihood activity for new school leavers.

Two-thirds of gardeners interviewed were women. There is also a very high percentage of female-headed households in Orange Farm - as highlighted in Table 1 (between 44 and 48 percent across the five wards). Female household heads, particularly in the homestead garden category, most likely resort to food gardening as one of a number of livelihood strategies.



PHOTOGRAPH 12: A group of three women urban farmers, October 2011. Orange farm Ext.2, Ward 2.

TABLE 5: Profile of gardeners and reasons for moving to Orange Farm

Age of gardener (range)	Gender of the gardeners (n=20)	Length of stay in Orange Farm (range)	Reasons for moving to Orange Farm
Average Age 45 years Range: 18-60 + yrs.	Women =14 Men =6	Average number of years: 16 years Range: 3-30 + years	More space available in Orange Farm versus overcrowding in previous home Wanted own house and houses were 'available' in Orange Farm Better quality of life Cost of living less in Orange Farm

Origins of urban farmers

Whilst the length of time gardeners had lived in Orange Farm ranged from three to 30 years, the average number of years gardeners had lived in Orange farm was sixteen. This suggested that gardeners interviewed were 'settled' residents with livelihoods and income-earning strategies that enabled them to stay in one residential area for a lengthy period of time. When respondents were asked where they had lived before moving to Orange Farm, a number of places were identified. Soweto was a place mentioned by seven respondents. Other areas included Germiston, Honeydew, Wieler's Farm (in the Grasmere area), the Eastern Cape (Transkei and Queenstown), Gwa Majazana (an area located close to the Free State) and Newcastle.

The most often-cited reason for moving to Orange Farm was because of the perception that there was more space and there were opportunities to obtain one's own stand and a subsidised house. Some respondents reported that their overcrowded living conditions were the pull-factor to Orange Farm; whilst a sense that the cost-of-living was less expensive and that it was a better place to live (better quality of life) were other reasons cited. The opportunity to undertake urban agriculture was not cited by any respondent as a reason for their move to Orange Farm.

Food gardening experience and agricultural skills

It had been assumed that, by interviewing people who were undertaking some form of 'urban agriculture' in a newly urbanised settlement like Orange Farm, there would be a number of people who had recently lived or worked on farms. Or, at the very least, people whose parents had once lived on farms and that this

knowledge would have been utilised by household members to provide fresh produce. However, this study showed that only six out of the 20 respondents had once lived on farms in various parts of South Africa, Swaziland and Lesotho, either as workers or as the children of farm workers or of actual farmers (Swaziland and Lesotho).

Most respondents had little formal knowledge of vegetable gardening or farming and, instead, were motivated by a need to feed their families or do something good for their communities as they were sensitive to the needs of those around them. Many learned by doing. Most of the homestead, or supplementary homestead, gardens did not aim to sell produce to local street vendors or other markets, although some sold their produce 'over the fence' if people came and asked them for vegetables. Those tending homestead gardens, or supplementary gardens, generally had no formal training (3 out of 5), with 2 out of 5 having previous exposure to an agricultural way of life. Two out of four school yard respondents had some exposure to agriculture, while one out of two of the crèche food gardeners had some exposure to agriculture. Those attempting the bigger community projects had some training or exposure to an agricultural way of life in some cases.

Agricultural training received

With regard to training received (either formal or informal) one project participant stated that she was taught by a priest at the Roman Catholic church in Driezek; while another watched an SABC 2 farming programme that was aired early in the morning. Many were thirsty for knowledge about agriculture, yet had no access to printed material or to magazines such as Farmers' Weekly or Agriteng (published by GDARD), or the Internet. Respondents seemed to 'wait' for extension officers from provincial government to come and help them with their agricultural problems, but the provincial extension service is currently under-resourced in this regard (operating at a ratio of one extension officer for 1,000 farmers, compared to best practice of 1:300).[112]

This lack of formal knowledge or farming experience, while not detrimental to vegetable growing at the household and supplementary food production level, may have an impact on the bigger gardening projects (community level projects).

The lack of formal knowledge influences choices of the types of vegetables grown in all types of projects (with a preponderance of spinach and cabbage). This also has an effect on lack of innovation in growing other vegetables which may be more challenging to grow (such as Brussels sprouts and other Brassicas, sweet potatoes, peanuts, pumpkins, lettuce, green peppers, fruit trees and berries). In addition, the ability of gardeners to manage their profitability may be influenced by a lack of sound agricultural knowledge.

None of the projects grew 'indigenous leafy vegetables' (*Chenopodium* sp. or *Amaranthus* sp.) or medicinal plant species, but only 'grew the vegetables that people liked to eat'. Some of the respondents expressed a love for gardening and an interest in growing novel plants, although they were not always able to do this because of lack of resources and knowledge. One respondent wanted to know how to cultivate peanuts, for example.

With regard to the long-term agricultural sustainability of food gardens (measured through respondents' access to water and knowledge about compost-making and use), there were some problems with gardens that were visited. A lack of resources appeared to impact on the agricultural sustainability of the projects. Most of the bigger projects seemed to operate at the edge of non-viability (i.e. plants did not look healthy, many areas were planted but there were gaps where no plants were growing and the soil looked unsuitable for planting - particularly the community garden visited in Driezek). This is in line with the Agricultural Potential Maps for the region (GRCO website) which indicates very low agricultural potential for this area. This need not be a fatal flaw as, with time and organic inputs, soil productivity can be improved.

Livelihood Activities of Vegetable Gardeners

Unemployment is high in Orange Farm and individuals and households undertake a variety of activities in order to provide cash and/or food for themselves and their families. Many of the respondents interviewed relied on social grants (pensions). Having a pension creates a somewhat secure platform for many older people to engage in food gardening, often with philanthropic intentions (a desire to grow food for a school or crèche; giving vegetables to home-based care groups, the aged, or even to child-headed households). Others engage in a variety of activities. These may include such activities as buying and selling of clothes; their spouse may have work in the formal sector (domestic work); they may have their own business (hairdressing salon, tuck shop) or may sell commercial products door to door, do sewing or beadwork, make and sell atchar, run a crèche, earn a small stipend cooking for a school, or work as a labourer on the roads. For some gardeners (four out of the 20 respondents), selling produce from vegetable gardens or community projects is their only source of income.

We did not ask about the prevalence of child-support grants in households, although two households that we visited had young children in the house.

It was encouraging to see that a 17 year old male, who is unemployed and who has only a primary school education, has a homestead garden with a 'supplementary garden', which helps to sustain him while he seeks further education and training.

The income generated by vegetable gardens or community projects was not explored in this study. One community group volunteered that their income was pooled and there was only one pay-out per year. Members therefore need to have other sources of income that support them during the year.

One of the respondents who set up a school for disabled children and adults about 10 years ago, now draws a salary from her school, as well as from a 'state-of-the-art' permaculture vegetable garden which has been supported by both JAM and Food and Trees for Africa.

POTENTIAL FOR FARMING/FOOD GARDENING ACTIVITIES IN ORANGE FARM

This section explores the farming preferences of food gardeners and whether they need more land to farm.

The land hunger and desire to be a farmer in Orange Farm

The land reform policy for South Africa reflects both the necessity that land is distributed, and owned, on a more equitable basis; and that emerging farmers are able to get access to good quality land to realise their agricultural ambitions. However, the failure of the land reform process after land has been distributed or claims settled has largely been because creating a successful black farming class is not as simple as re-distributing land. Farming is difficult and risky and capital-intensive. It can create poverty (debts) rather than alleviate poverty.

To test the land hunger among Orange Farm vegetable gardeners, respondents were asked if they would want more land for their farming activities and whether they would like to become commercial farmers. All – except two - respondents stated that they would like to own, or access, more land for agriculture. The two exceptions were elderly respondents who cited their age as a reason for having to be realistic about bigger farming enterprises, even though they might have liked more land if they were younger. Age did not stop the other post-50 year olds from desiring more land to farm and, in some cases, to progress towards becoming commercial farmers.

The desire of respondents in Orange Farm to have a farm of their own and engage in commercial farming was probed. It was also questioned as to whether those seeking more land had an understanding of the risks that were involved in farming.

Two respondents who answered negatively said that they didn't want more land because they already had other occupations - for example, they were already running a crèche. Another said he/she had enough church land. Two further respondents felt the land (school yard project) was already too big for them and they were 'too tired' to farm; while another with a supplementary garden said he was content with what he had and that it was 'enough'. Other respondents wanted a piece of land double or three times what they already had, whether it was a household garden, a supplementary household garden or a community project - and said that they would prefer this extra land to be close to where they were already located. Others wanted much bigger farms, around 40 ha, for commercial farming, or just 'more', but they couldn't say how much more.

Desire to become commercial farmers

Three of the respondents interviewed wanted to progress to becoming commercial farmers, with livestock and crops, or even venture into agro-processing. When respondents were asked to identify what they would need to become commercial farmers, most had to be prompted. Most respondents gave lists like needing "training skills, seeds, livestock, land, tractors, ploughs and other equipment, water" or boreholes, equipment for farming and marketing support. Another gardener added that he would need a better understanding of farming, especially livestock farming. Gardeners gave no realistic suggestions as to how they would access farming resources.

When a gardener was asked whether he would recognise good quality land, he responded by saying "those who are providing the land must check the quality of the soil," suggesting that he had little practical knowledge of farming. This suggests that gardeners are reliant on a top-down approach to satisfying their needs. They seem to be under-skilled to resolve challenges with regard to local farming. This could also be seen as an indication of their disempowerment and how they 'wait' for government to give them opportunities and land.

Only one respondent who wanted his own farm realistically indicated that he would need "people to work the land" – indicating some realism in understanding what was required for farming. He also indicated that, although he wanted his own farm, farming was not something that one could do single-handedly. One of the young respondents was very ambitious and knowledgeable and we got a sense that he had enough entrepreneurial drive to succeed in owning his own commercial farm one day in the future.

Farming aspirations

Those respondents who wanted to farm were asked whether they would want to farm as individuals or in a group. Five respondents indicated they would prefer to farm on their own. Most of the other respondents (6 out of 20) indicated they would prefer to be in a group farming enterprise where they could learn from each other and share labour, risks and benefits. The rest of the sample was made up of those who would not want to farm commercially or who had no response.

Respondents were also asked whether they would want to farm with livestock or crops. Most who wanted to engage in commercial farming would consider both livestock and crops, while one farmer who had training with chicken production would like to focus on this. Two respondents said they would like to know more about agro-processing. One of these respondents indicated he would like to engage in agro-processing. He appeared to have some knowledge of what was required by stating that he would need a variety of skills including packaging skills, management skills, managing cold rooms, etc.

Respondents were also asked whether they would want to stay in Orange Farm or farm elsewhere to undertake their large-scale farming aspirations. Most wanted to stay in the Orange Farm area, which is the area that they knew, including Walkerville, while some stated they would like to farm elsewhere where perhaps there 'wouldn't be so much crime'. A respondent who was interested in chicken farming (broilers and eggs) felt that theft would be a serious issue in, or around, Orange Farm and she would like to be somewhere else, but did not have a location in mind.

LAND ISSUES AT ORANGE FARM

Land and the need for food gardening in Orange Farm

Respondents stated that Orange Farm "is a big place and that people will always want to buy food, so a ready market for fresh produce exists". Due to poverty in the area, there is a need for more food gardens because people don't always have cash to buy food for themselves and their families. Respondents were also of the opinion that there is a need to create economic opportunities for local residents, such as urban agriculture. There was also a sense that food gardening could be used to help "keep the youth off the streets". When gardeners were asked whether there was a need for food gardens in their area of Orange Farm, one of the respondents said that there was a need because people ask him about his garden and how to get started. He sometimes gives seedlings to people to help them get started. Another respondent stated that there are not enough food gardens and that there are more people who want to grow food gardens than there is land at Orange Farm.

A respondent added, "There is a lot of poverty and hunger in the area. People do get food parcels, but people do need to grow vegetables so they can save money because they then do not need to buy vegetables. Also, fresh food produced locally is healthier for you." Another respondent said that food gardening is not very desirable as an activity. The young people don't want to do this. 'Young people don't want to wait – they want quick results and a fast income'.

Availability of municipal land for urban farming

As the photograph below suggests, there is still an abundance of open land that could be used for farming in, and around, Orange Farm and that this land was previously used for farming. Traces of old farming activities can still be seen (See photograph 13 below). The recent land-use for this area was farming, as per the original name 'Wieler's Farm'.

All twenty respondents indicated that it would be a good idea for the municipality to set aside suitable land for urban agriculture, as more people want to do more farming in Orange Farm. The land should be set aside, either permanently or for temporary use, for food garden projects.



PHOTOGRAPH 13: An example of land within the urban area of Orange Farm which has been previously ploughed and used for farming (Driezek area).

RDP housing and homestead plots

Although people are very poor, and many are unemployed, most people have small parcels of land around their RDP houses and could do some vegetable gardening. Each RDP house and stand is often already fenced, as well as having household taps to supply irrigation water. There is also an abundance of other land in Orange Farm, including school yards and open plots of land and servitudes (like the land on either side

of the railway line). However, not all the land is available for long-term food gardening or agriculture. Some of this land is earmarked for future developments. Nevertheless, this land is already being used in a short-term, flexible manner for food gardens. Through a letter of authorisation from the City of Johannesburg, individuals and community projects are able to use this land for agriculture. In some cases, this land has been fenced by the municipality and ploughed by the province and it would seem that some certainty exists that this land will remain open as the settlement possibly develops and densifies in the future.

There is not only government land for vegetable gardening, but other privately-owned land which can be farmed, as highlighted by a gardener, "There is already lots of space on this property which is church land and we could grow more vegetables."

Gardeners were also asked who would manage municipal farming land in Orange Farm if this was set aside formally. All said that those who farm the land should manage it.

Soil quality and agricultural potential

Respondents were asked whether or not the municipality (City of Johannesburg) should put aside land permanently for urban farming in, or near, Orange Farm, rather than rely on the temporary use of available land awaiting development. All said that this would be a good idea. One respondent stated that there is much land available in, and around, Orange Farm, but noted that the soil is not good for planting. It would be suitable for cattle grazing. However, cattle grazing would not be allowed within the residential area, but vegetable farming is acceptable according to municipal by-laws.

The agricultural potential in, and around, Orange Farm is low (GAPA[113] and GCRO[114]) and the soils visibly appear to be very poor (Driezek for example has grey, hard sandy soil, while, in other areas, there are very large rocks strewn about the landscape). In the Orange Farm area, the general poor quality of soil would mitigate against the setting aside of land for agriculture, yet people are already gardening there and desire additional land close to where they live in Orange Farm.

A concern raised by a respondent about the temporary use of land for agriculture that is underway in Orange Farm is that the poor soil in Orange Farm needs improvement and that this can only be achieved through long-term investment in soil quality. Poor soils can be improved over time with the addition of organic material, but any expenditure of effort to improve the soils over time in Orange Farm would be wasted if the land was then removed for other development.

The spatial dimension of 'nutrient poverty'

Orange Farm appears to be 'nutrient poor' in terms of food gardeners trying to grow good quality produce in vegetable gardens with poor soil. Gardeners interviewed are affected by poor quality soil and the lack of access to compost for their farming endeavours. There is no material to make compost on the sites and even the homestead gardens struggle get enough material to make compost.

By contrast, Johannesburg is very nutrient rich. There would appear to be more compost and organic material than the city can deal with. Pikitup Johannesburg (Pty) Ltd and its composting scheme process garden cuttings and material from the municipal trees to produce bags of compost for sale. In addition, in the affluent areas of Johannesburg, people can afford to buy compost and fertilizers and are probably over-fertilizing their gardens, but - in Orange Farm - no-one has money to buy fertilizers or compost to improve their food gardens. There is a once-off opportunity to salvage organic material when land is cleared of basic vegetation but, in winter, there is little organic matter on the surface.

Food gardeners in Orange Farm rely on start-up allocations of compost provided by GDARD to begin their gardens. However, after that, they don't seem to use compost and their production is likely to decline in a very short time without this basic input. One school vegetable gardening group was growing spinach under shade-cloth tunnels, with river sand in black plastic bags. The spinach looked very good, but river sand is not a good medium in which to grow nutritious vegetables.

One homestead vegetable gardener seemed to be using material from his pit latrine to fertilize his fields, something which could have serious health consequences to people who buy and eat his produce.

While the food gardeners were still growing vegetables during winter, the poor quality of the soil indicates that a good harvest may not be guaranteed every year unless inputs of compost/manure are made each year. This is something which seems unlikely, given the current resource constraints on the vegetable gardeners.

An example of nutrient stress in some of the crops was the cabbages that were observed in a school yard garden that were not forming heads. Cabbages are 'heavy feeders' and need well-composted soil to grow properly and produce heads. The respondent did not know this, nor does she have any agricultural inputs to add to the soil to improve the quality of the yield. Despite this, the cabbages observed were being used in the school feeding scheme.

Also, wilted spinach was cooked to boost the midday meal for children at a crèche, who are aged from about two years to six years of age. The nutritional value of these cabbages would be sub-optimal (see photographs 14 and 15). What can also be seen in this area (Driezek Extensions) is that the area is very flat and the soil quality is very poor. Unless agriculture is carried out in tunnels with nutrient additions, this area is not suitable for cultivating crops.



PHOTOGRAPH 14: Poor quality spinach produced in makeshift tunnels next to a Driezek Ext. 3 crèche.



PHOTOGRAPH 15: Makeshift agricultural tunnels to shelter spinach cultivated for a crèche feeding scheme.

LEVEL OF SUPPORT FOR FOOD GARDENING PROJECTS IN ORANGE FARM

It is a government priority to achieve food security, particularly in under-resourced areas (National Integrated Food Security Strategy 2002; Gauteng Integrated Food Security Strategy, 2009) as the unemployment rate and associated food insecurity is of national concern. Food gardening offers an opportunity to make households more self-sufficient in the context of high unemployment, low household income levels and high expenditure of household budgets on food. Food gardening is not entirely straightforward and some training and external support is needed, particularly for the bigger community projects where both the technical skills required and challenges escalate, as does the complexity of managing group dynamics.

Provincial government support for food gardens

Communities in Orange Farm look to government, mostly to the Gauteng Department of Agriculture and Rural Development (GDARD), for agricultural support. They see the City of Johannesburg Municipality as the sphere of government that can give them access to land. Provincial land, in the form of school yards, is made available for school food garden projects.



PHOTOGRAPH 16: Borehole which had been installed at a school yard vegetable growing project. This borehole and its pump have never worked.

The variety of support given by GDARD is considerable and is worth about R40 000-00 in a once-off grant of equipment and not cash to a group project (GDARD Annual Report, 2010). If a borehole (Photograph 16) and fencing is provided, this value can go up to R120 000-00 per group project.[115] Unfortunately, in some cases, the usefulness of the goods and services delivered by GDARD is disappointing, with four boreholes in various school yard projects visited for this study not working. Recipients mentioned that these installations had never worked. A Wendy house given to one community project collapsed in a wind shortly after delivery. In other cases, communities and individuals 'wait' for a long time to receive inputs and assistance from GDARD. Other challenges exist with regard to shipping containers given by the municipality to project participants being 'stolen' or vandalised and equipment being sold at the start of the project, thereby stalling the project.

GDARD also visits projects once a month to check on produce and the record-keeping of gardeners with regard to produce surpluses after subsistence consumption.

Residents volunteer to participate in food gardening projects and government does not 'recruit' people into the projects. For the community food gardens, there are a number of basic requirements that have to be met: there should be an interested/motivated group and the group has to develop a constitution and a list of members.[116]

Municipal support for food gardens

The City of Johannesburg (CoJ) also encourages people to have food gardens. Groups are supported institutionally by way of the City assisting them by drafting a formal constitution for the food garden groups. CoJ then provides vegetable packs from City Deep to support people while their vegetable gardens are growing. The City of Johannesburg works closely with GDARD and also assists people to access municipal land, but sometimes also provincial land, for food garden projects. Through the City of Johannesburg's 'Propcom' (Property Committee), land is set aside for housing, but there is not much focus on setting aside land for agriculture. Urban land is not zoned for agriculture and any formal farming is done "far away".[117] People do, however, approach the City of Johannesburg's Propcom and are granted access to land for farming for a short period until it is built upon.

Other government support includes the Community Work Programme (CWP). This is a government work programme that aims to give people jobs in communities. Community Work Programmes include a wide range of activities in poor areas. Assistance with food gardening and neighbourhood clean-ups may form part of these programmes.[118] In Orange Farm, besides these kinds of activities, the CWP includes food gardening training at school level. Through teaching children at school the basics of food gardening, the parents also learn more about this activity because children pass on their knowledge from school to parents.[119]

The Gauteng Department of Agriculture also arranges 'mini market' days in Poortje (a neighbouring peri-urban settlement) where there are stalls for food gardeners to sell their produce. Orange Farm gardeners are also able to sell their produce at these events that are on pensioner pay-days.

Fencing provided by the municipality

The fencing provided by government was seen as essential. Although the household gardeners all stated that they generally had few problems with their vegetables being stolen, the bigger projects experienced theft. Those projects supported by the municipality were fenced by the municipality. For example, the Orange Farm Churches Against Poverty Employment Farming project in Ward 4 and also a project near the Roman Catholic Church (Driezek Ext 8, Ward 3) were fenced. The large, unfenced community project (Driezek Ext 5, Ward 5) which is not yet supported by the municipality was reported to have had severe problems with theft. This was so bad that they were building their own shed for members to take turns as 'nightwatchmen' and watch the field during the night. In this project, members took their equipment (hoes, gumboots) home with them each night.

Another need identified was the shortage of farming Extension Officers to provide agricultural guidance and support to food gardeners in Orange Farm. The GDARD official responsible for Orange Farm in the Randfontein Office of the Department reported that they had three Extension Officers to service the needs of farmers under their jurisdiction and the current ratio of extension officers to farmers is 1:1,000, whereas the ratio should ideally be between 1: 350 / 1: 500.[120]

Existing support from non-profit and community-based organisations

Most respondents were aware of other poverty-relief projects in Orange Farm. These included Home-based Care groups for HIV/AIDs patients, as well as for the elderly; feeding schemes at schools[121] and various food parcel programmes (often arranged by church groups). A number of NGOs and CBOs providing poverty programmes were listed by respondents, including JAM[122]; the Hope Nutrition Project and Food and Trees for Africa.[123]

JAM provides interventions in Orange Farm that include support for existing food gardens. Before providing support for gardeners, they assess their needs after visiting the gardens. In this way, JAM is able to prioritise solutions and interventions based on key challenges. Backyard gardeners receive a week's training and a starter pack with seeds as a basic intervention. JAM monitors the gardening projects it supports and also has a farmer mentoring and extension service that has proven to be very useful. This service facilitates the sharing of knowledge, as well as providing a gardener support mechanism for gardeners to assist one another where there is a need.[124]

The information needs of urban farmers

Generally, individuals taking care of homestead food gardens need on-going access to good quality seeds and information, such as how to make and use compost. Those participating in bigger community projects need help with clearing and ploughing the land (and loan of tractors), fencing the land, getting water to the land and also with the on-going expense of agricultural inputs (fertilizers or compost). Information requirements for urban farming needs to be addressed by government, as well as by NGOs.

Water needs for food garden projects

Respondents were asked whether they had enough water for gardening and where they accessed the water from. Sixteen of the 18 projects covering the full variety of food gardening projects (household food gardens, supplementary food gardens, schools, crèches and community food gardens) use free household water,

which is the 6,000 litres of water given to households by the municipality. Without this water, it is not certain that these respondents would be able to maintain their vegetable gardening activities at all. In most cases, respondents had bought hosepipes and fittings to water their vegetables, sometimes up to 200 m away from the tap. In one case, the hosepipe ran 300 m through the veld and was inadequate to water a food garden of the size that was laid out. Maize was planted in this particular garden, which is a rain fed crop; but other vegetables are very water-sensitive, particularly in the early stages. In this case, the project members paid households for access to some of their 6,000 litres of free water and one other community project did the same. This purchase of water essentially created a small income source for these neighbours who could convert their 'free' 6,000 litres of water into cash. Other gardeners used watering cans for short distances.

Six respondents indicated they had 'enough' water for their gardens. Seven respondents were of the view that they did not have sufficient water. Of the respondents who indicated that they had enough water, all were homestead gardeners, with smaller manageable plots, using the free 6,000 litre water supply available to their households. Respondents who reported that they did not have enough water were all working on community projects, which tended to be large gardens (estimated at between one and two hectares), requiring long hosepipes either connected to their yard tap or a tap in a neighbouring yard. Four respondents indicated that they sometimes had water problems or were expecting to encounter water problems in the future in relation to their food gardening. Their water supply was irregular (sometimes the municipal water was cut off to their area) and they felt that, if they were to expand their gardens, they would not have sufficient water from existing sources. Three of these respondents were from community garden projects.

Boreholes seem problematic for under-resourced gardeners/urban farmers in the area, mainly because of their maintenance costs and the cost of electricity to run the pumps. The three boreholes (school yard projects) that we visited were installed by GDARD, but had never worked.

The need for a policy on urban agriculture

An issue raised by stakeholders who participated in the research start-up meeting concerned government institutional support. It was claimed that the City of Johannesburg (CoJ) does not have a Food Security Policy that has been agreed to at council level, with the policy still being in the draft stage. This has resulted in no money being allocated for food security interventions from CoJ, thus slowing progress with the development of food gardening in the City. Johannesburg does allow its own land to be used for food gardening, but there does not appear to be any plan relating to the allocation of land specifically for food gardening and gardeners 'invade' land on adjacent plots when they expand their gardens. Land zoned for agriculture is far from residential areas in Orange Farm and therefore is less accessible.[125] With respect to gaining access to provincial land, gardeners are required to sign a lease agreement with the province if they wish to use this land for gardening.[126] Vacant schools, including land designated for schools in Orange Farm, can be used until such time as that land is designated for alternative development.

THE ORANGE FARM LOCAL ECONOMY

While Orange Farm is part of a bigger city and provincial economy, there is a vibrant local economy with many traders and other small enterprises (see table below). While some people source labour and goods (like fresh produce) for sale from within Orange Farm, in general, people within Orange Farm need resources (such as cash) to be able to access and participate in the bigger economy. The current overall contribution of vegetable gardening to the local economy is likely very small and largely survivalist.

Table 6 lists the types of businesses and economic activities that were observed in Orange Farm.

TABLE 6 Survey of economic activities in Orange Farm

Economic Activity	Additional comments
Taxi driving and associated activities (Car and taxi repair workshops, car and taxi washing)	Toyota Ventures service the needs of local residents for local trips, while minibus taxis offer the longer distance runs (e.g. into Johannesburg, Vereeniging or Potchefstroom).
Building material suppliers and associated activities (Brick yards)	Both formal (Cash Build) and informal (a variety of builders' yards with just building sand and bricks for sale, often at the side of the road or on a vacant lot) exist in and around Orange Farm.
Hair salons	There are many of these and they are often in a small shack next to the main RDP house.
Homestead tuck shops	These are attached to people's RDP houses.
Pavement tailor	Observed one outside the local Pick and Pay Supermarket.
Funeral parlours	Two funeral parlours were observed in Orange Farm, run from homesteads. There is a cemetery in Orange Farm.
Informal traders along busy roads and at intersections	Selling fresh produce, live chickens, cell phone apparatus, re-treaded tyres, recycled engine oil), and also at the Stretford station.
Trucks for hire	Mostly very old trucks that probably are not road worthy any longer.
Donkey and horse carts –	Collecting scrap metal for sale.
Pick 'n Pay supermarket, Spar, U-Save/Shoprite	Pick 'n Pay currently buy their fresh produce from City Deep.
Petrol station	Manager, petrol attendants.
Schools and crèches –	Pay teacher salaries, as well as kitchen staff, cleaners, gardeners, security staff and night watchmen. Many crèches are run by volunteers or get a stipend from a church or other agency.
Sale of livestock -	Chickens were observed in cages on the main road and a board advertised the sale of various kinds of livestock (see photograph 21 below).
Internet Service Provider	A sign was observed outside a residential house
Roadside butchery	Sells cows' heads from an abattoir and the meat. Some of the meat is also cooked and sold.

Live fowls are sold on street corners in Orange Farm (see photograph 17). It was found that these are 'old layers' (hens which have reached the end of the egg-producing stage) and are sold cheaply to traders.

Traders and small businesses are everywhere in Orange Farm, indicating an entrepreneurial spirit in the settlement. Although residents of Orange Farm do not have abundant resources, they are able to able to start 'street' businesses. Examples of local businesses include Venture-type taxis which serve Orange Farm residents for local trips and a home-built cell phone stall as shown in photographs 18 and 19 .



PHOTOGRAPH 17: Live chickens for sale at a busy intersection in Orange Farm, October 2011.



PHOTOGRAPH 18: Venture taxis outside Stretford Station, October 2011.



PHOTOGRAPH 19: An informal cell phone kiosk in Orange Farm, October 2011.



PHOTOGRAPH 20: Fresh produce traders outside Stretford Station.

A scan of the Stretford Station traders

The bulk of informal produce traders in Orange Farm are located either on the main road leading into Orange Farm, off the Golden Highway (R553), or at the site of the Stretford Railway Station. The researchers targeted traders positioned outside the Stretford Railway Station, located close to the entrance of Orange Farm on the main road. Eight fresh-produce traders were interviewed superficially, not using an interview guide or semi-structured questionnaire. The findings are, therefore, impressionistic. The purpose of the interviews was to ascertain whether there were any linkages with Orange Farm gardeners in respect of the supply of produce to traders; where traders obtained their produce from; the type of produce sold and income derived from these activities.

A few hundred metres away from the informal trading zone is a derelict trading court that was built by the City of Johannesburg, but never used by the traders as it is not in the direct line of 'people traffic' between the Station and where the taxis wait. The trading stalls outside Stretford Station are very crude, with almost no investment by the traders in shelter and trading infrastructure and traders feel the full brunt of winter wind and dust and summer rain and heat (see photograph 20).

Of concern was that none of the traders interviewed sourced their produce from Orange Farm gardeners. This may have been due to the fact that gardeners in Orange Farm sold their produce to vendors closest to their gardens, not on the outskirts of Orange Farm where the station is located. Transport is always a cost. In addition, a trader pointed out that they did not buy produce from gardeners in the area because of a lack of communication between gardeners and traders. The physical distance of gardeners from farmers may be one of the reasons why station traders do not source produce from gardeners in Orange Farm. Another reason could be the quality of the produce. Produce from the City Deep Market is of a high quality and fresh; and traders are able to pool resources to hire a truck to collect fresh produce from the market every week.

None of the traders were farmers and some felt that it was preferable to buy produce from other sources rather than grow their own. Some commented that the cash received from street trading was not a huge amount, but that it was better to be occupied and making some money than sitting at home. The findings from station trader interviews are summarised in Table 7.

TABLE 7: Summary of traders' activities at Stretford Station

	Size of group	Type of operation	Source of produce	Type of produce	Customers	Challenges
Stall 1	Single trader/ male	Sells on behalf of someone else. Produce is re-packaged into plastic bags	City Deep Market	Tomatoes, onions, potatoes, cabbages	Train commuters and other pedestrians	Unknown
Stall 2	Single trader	Sells re-packaged fresh produce	Unknown but not from Orange Farm gardeners	Tomatoes, onions, potatoes, cabbages	Train commuters and other pedestrians	unknown
Stall 3	Group of young men	Sell re-packaged fresh produce	City Deep Market	Beetroot, carrots, tomatoes, onions, cabbages	Train commuters and other pedestrians	High cost of getting produce back to Orange Farm
Stall 4	Single trader/ male	Sells direct from source, but buys for re-sale	Buys from a farm in Grasmere where he lives	Spinach	Train commuters and other pedestrians	Would prefer to grow and sell his own produce
Stall 5	A group of traders	Sell re-packaged produce	Nulaid Eggs in Potchefstroom	Eggs and other produce	Train commuters and other pedestrians	High cost of getting produce back to Orange Farm
Stall 6	Mixed group of young and middle-aged women	Buys directly from farmers	Brits and Randfontein	Cabbages	Train commuters and pedestrians. Also sell outer leaves of cabbages to horse-cart operators	High cost of getting produce back to Orange Farm. Must hire a truck to transport produce back to Orange Farm
Stall7	Single trader/ male	Sell re-packaged goods	City Deep Market	Cabbages, maize, lettuce, cucumbers and potatoes	Train commuters and pedestrians	Cost of getting produce back to Orange Farm
Stall 8	Single trader/ male	Buys from market	City Deep	Bananas	Train commuters pedestrians	Cost of getting produce back to Orange Farm

Photographs 21 and 22 below show typical scenes at the Stretford Station market.



PHOTOGRAPH 21: Display of fresh vegetables from City Deep Market for sale in Orange Farm.



PHOTOGRAPH 22: Fresh cabbages sourced from outside Orange Farm offered for sale outside Stretford Station.

The spatial elements of the local economy in Orange Farm

Essentially Orange Farm is a far distance from markets and for sources of agri-business inputs like seeds and gardening equipment, as well as from banking and postal services. This has been identified by urban researchers and planners as an obstacle and the Orange Farm upgrade programme underway by the City of Johannesburg aims to make Orange Farm more sustainable as an economy.

SECTION 3

DISCUSSION AND CONCLUSIONS

The purpose of this study was to investigate food gardening in Orange Farm. Orange Farm was selected as the focus of the study because it is a marginalised and under-developed area, located in Region (G) of the City, with a significant population size and large development challenges and an essentially under-researched peri-urban zone. Low levels of development in Orange Farm motivate for the need for various interventions to reduce unemployment and address poverty and improve the quality of life of residents living there. Food gardening may offer a strategy to assist households to become more sustainable within the context of low household incomes, high unemployment and food insecurity. The City of Johannesburg has also selected Orange Farm as a development node.

DISCUSSION OF KEY FINDINGS AND RECOMMENDATIONS

There is a paucity of published studies on Orange Farm and little scholarly information that focuses explicitly on quality of life, food security and sustainability issues in the settlement. Information that was uncovered was gleaned from the City of Johannesburg website, from unpublished reports produced within the City of Johannesburg and other government departments. Most of the published research that was found on Orange Farm dealt with HIV and the AIDS epidemic in the settlement.[127]

Other studies were area comparisons comparing Orange Farm or parts of Orange Farm with other areas (for example: De Wet et al, 2008;[128] Rudolf et al 2008[129], Richards et al, 2004[130]). Studies on food gardening in equally impoverished urban/peri-urban areas such as Khayelitsha have also been undertaken and the findings of such studies were useful sources of information for the present study.[131]

This study found that, relative to the amount of space that is available in Orange Farm, there are not very many food gardens (about 0.821 % of households)[132] and many of those that were established by GDARD are no longer in existence due a high attrition rate, which is not uncommon. None of the gardens is run for profit or as a business and, whereas some of the gardeners do sell their produce, the primary aim of the gardens is to secure food for households and to support other residents or local schools where there is a need with a supply of fresh vegetables.

Key findings and recommendations from the study of food gardening and urban agriculture at Orange Farm in October 2011 now follow.

1. Co-ordination between spheres of government

Key Finding:

Respondents mentioned that one of the challenges in establishing food gardens in Orange Farm is a lack of co-ordination between the different spheres of government - in this case, the provincial government's Directorate of Agriculture and Rural Development (GDARD) and the City of Johannesburg municipality. It would seem that both are under-resourced to play their full role in providing extension services to would-be vegetable gardeners in the area.

Periodically, GDARD's support to food gardeners is of an inconsistent quality. An example of this is the provision of electrical borehole pumps to community and school projects. It would seem that these expensive items have never worked. Mechanical hand pumps would be more suitable for under-resourced food gardeners but, for some reason, GDARD continues to supply electrical pumps.

The provision of expensive equipment such as hydroponic tunnels by the City of Johannesburg at Orange Farm without on-going support, as well as an on-going training programme for project beneficiaries, results in project failures.

Recommendation:

Provincial government and the City of Johannesburg should make greater efforts to co-ordinate their planning and development of food gardening, if they have not already done so. All government projects using tax payers' money should produce an approved business plan that considers all risks to the project and explains how these will be mitigated. In addition, dedicated funding needs to be ensured for the duration of projects and an exit strategy for government should be included. Adequate monitoring and evaluation of the project is required to ensure that the project meets its targets in agreed time frames.

2. Linking urban gardeners to markets

Key finding:

Currently, most urban gardeners in Orange Farm are not producing fresh produce to sell commercially, but are producing either for their own use or for sale to neighbours or school feeding schemes. Some gardeners do attend the Poortje farmers' market to sell their produce. The traders around Stretford Station did not buy their produce locally, but from either City Deep Market or commercial farmers some distance away.

Recommendation:

Formal agricultural associations, such as hawkers' or producers' associations, are needed in Orange Farm to co-ordinate and organise agriculture production and sales in the area. The absence of farmers' associations may be one of the reasons why gardeners do not produce more vegetables - as they cannot find markets for increased production. The municipality should investigate ways to create linkages between hawkers' associations and food gardeners in Orange Farm. By doing this, the municipality would stimulate the local economy in Orange Farm.

3. Spatial issues and planning

Key finding 1:

There is an abundance of open land in and around Orange Farm, but it is owned by various entities (municipal, provincial, private) and some of the land is awaiting development. Portions of this land could be made available for short-term farming use although, in the longer term, to create sustainable urban agriculture businesses that contribute to the city's food supply, land has to be permanently set aside for urban and peri-urban farming. In the meantime, people are already farming the land and expanding their gardens onto State-owned land. In many cases, they obtain permission to use the land from the municipality (CoJ).

The Gauteng Agricultural Potential Atlas (GAPA) already exists to inform about changes in land-use decisions. It also protects high quality agricultural land. Yet, in Orange Farm where the land is not of high quality, urban farmers still need land (whatever its quality) for urban agriculture as an income generating activity. As well as the GAPA, additional information such as the economic and other benefits of urban agriculture is required to ensure that some land is kept aside for urban agriculture.

Recommendation:

The ownership and planned future use of open land in, and around, Orange Farm needs to be clarified to ensure that land for urban agriculture remains open, with particular reference to the better quality land.

An audit of the land with better agricultural potential in, and around, Orange Farm should be undertaken. As it is known that the land in this area is of low agricultural potential, areas of reasonable quality land should be identified for urban agriculture. Where possible, this land should be set aside for present, and future, urban vegetable gardening and a mechanism to allocate and manage this land should be put in place. The City of Johannesburg needs to have a coherent policy on the informal use of vacant land and either needs to set aside land permanently for urban agriculture, or there needs to be a policy to deal with short-term land use which makes provision for lease agreements.

There is a need for an economic investigation for the best use of the land in, and around, Orange Farm. In addition, ways that urban agriculture could be made more profitable so it compares favourably with other land uses (such as urban development on the land) also need to be investigated.

A formal 'land banking' system and database is required to make vacant land in, and around, Orange Farm available for agricultural use. This land bank system would link gardeners/farmers with the owners of the land and they could negotiate to use the land. This could either be municipal land that will be developed at some future stage, but could also be private land. Share-cropping could be considered. This system would enable the proactive accessing of available land by would-be urban farmers until such time as it is needed for other land uses. This system should be transparent and equitable in how it is operated.

A municipal commonage system should also be investigated for the development of urban agriculture in Orange Farm. Commonage systems can be an end in themselves (i.e. giving farmers access to land and water for their farming) or a means to an end in respect of grooming emerging urban farmers.

Key Finding 2:

There is a very low uptake of food gardening in Orange Farm. The estimated 0.821% of households engaged in food gardening in Orange Farm seems inadequate to address food security. This is despite the efforts of GDARD to support urban gardens.

Recommendation:

More research needs to be done to understand why there is not a greater uptake of urban farming and gardening in a settlement like Orange Farm. Our research suggests that the provision of starter packs by GDARD is not sufficient to create sustainable urban agriculture. Province needs to build relationships with, and support, urban gardeners for longer periods of time. They also need to work with young people to build their knowledge and skills. Province and the City of Johannesburg need to set targets for the uptake of food gardens and then recruit potential farmers and interested residents into urban farming. This implies that there is a need for long-term planning to create a vibrant urban agricultural farming class that is prosperous and sustainable.

4. Getting food gardeners organised

Key finding 1:

In Orange Farm there are informal groups of vegetable gardeners who meet on a regular basis to discuss their gardening activities (informal forums). As well as the need for formal agricultural co-operatives, there could be a need for agricultural 'clubs' in Orange Farm for unemployed young people to join. In these 'clubs', young people could socialise, share information on their farming activities and also perhaps collectively lobby government for more support for their farming activities. While GDARD has an Agricultural Study Group system, it appears that there is no Study Group in Orange Farm, as food gardeners never mentioned this when asked how GDARD supports their activities.

There also appear to be opportunities for vegetable gardeners to form formally constituted co-operatives to explore commercial opportunities.

In the City of Johannesburg, a full-scale strategy on food security promotion is forthcoming. The CoJ strategy is expected to contain a range of interventions from skills resource centres to hub-and-spoke sites offering a common infrastructure for small producers to food empowerment zones, rationalising all elements of the food supply chain.[133]

Recommendations:

Some of the existing, and bigger, urban vegetable gardening projects should be evaluated for their potential to form formal agricultural co-operatives.

If government intends to groom a cadre of emerging farmers from those already engaged in agricultural activities, they should keep and share a database of food gardeners in Orange Farm who have previous training, experience and success in all the various forms of urban agriculture. This information may yet be captured in the CoJ's Expanded Social Package database system.

Key Finding 2:

There are not enough agricultural extension officers to support urban agriculture in Gauteng.

Recommendation:

GDARD should consider setting up a provincial Help Desk that could provide basic agricultural information to overcome the apparent lack of extension support within Gauteng, but should also recruit many more extension officers, some with expertise in urban agriculture, to reflect the priority that is placed on both rural and urban agriculture.

Key Finding 3:

There appears to be poor communication between local traders and food gardeners in Orange Farm. Traders source their produce from outside Orange Farm and not from local growers. Formal retail outlets like Pick n Pay also do not source any of their produce from small businesses in Orange Farm.

Recommendation:

To stimulate the local economy in Orange Farm, the City of Johannesburg should consider creating opportunities where vegetable growers in Orange Farm can interact with fresh produce traders to create markets for their produce - as it does not seem to be happening spontaneously.

5. Quality and sustainability of the vegetable gardening projects

Key finding:

Although there is not a shortage of land in Orange Farm, the study found that much of the land that is available to start up food gardens and urban agriculture is not being used or is not used optimally. Also, many of the gardens are not producing as much produce as they could, while others are not producing vegetables of quality, and this would affect the marketability of these items. Nutritional security is as important as food security in communities, and for both of these, fresh produce needs to be of a good quality. This means that a key element threatening the usefulness and sustainability of urban agriculture and food gardening in Orange Farm is the lack of agricultural inputs, specifically compost or fertilizers. Currently, the gardeners receive many of their inputs, such as land and water, for free. It is a concern that, if the gardeners had to pay for inputs in the future, these projects would, in all likelihood, not be able to continue. A farming or gardening subsidy may be needed to stimulate this sector. Subsidised water is currently essential to the survival of these projects. However, the use of chlorinated municipal water is expected to have a detrimental impact on the soil over time.

None of the gardens intend to make a profit except for the one large community project (photographs 5 and 6) which stated they are growing produce for sale. If food gardens are to be scaled up to a form of commercial urban agriculture, then the financial viability would need to be considered.

Recommendation:

At some stage, the financial sustainability of these urban food gardening projects needs to be considered.

Key finding 2:

Much of the land in and around Orange Farm is also of poor quality and would need to be improved through nutrient additions like compost. Most of the food gardens in Orange Farm suffered from a lack of agricultural inputs, particularly compost. Yet most households did not appear to generate enough organic waste material to produce compost for their gardening needs.

Recommendations:

The ongoing agricultural sustainability in terms of soil quality and nutrients and irrigation of the food gardening projects at Orange Farm should be reviewed. Provincial government's Agricultural Directorate needs to be more pro-active in advising vegetable gardeners on permaculture principles to maximise the quality and quantity of their produce. Soil assessments, coupled with advice on what grows best on different soils, would be useful.

A study is needed to find out if there is enough organic waste produced locally to warrant a recycling/composting scheme in Orange Farm that would supply compost to urban farmers. Alternatively, surplus organic garden waste generated in the more affluent suburbs of Johannesburg and collected by Pikitup Johannesburg (Pty) Ltd and then composted as part of its waste recycling scheme could be transported to Orange Farm as a form of food garden subsidy.

6. Provision of information to urban farmers

Key finding:

Urban food gardeners in Orange Farm struggle to get the information they needed about accessing land, the types of crops to plant and where to get good quality seed. They also do not know how to keep seeds from one year to the next or share seeds. Gardeners had to liaise with ward councillors in an informal way to access land, and 'waited' for GDARD to visit them to provide information about farming or provide them with seed. They are not able to access the cultivation information they need or seeds independently of government. Market information is not provided formally either.

Recommendations:

Urban farmers and food gardeners in the City of Johannesburg need to have a better system to access information on all aspects of agriculture, marketing, obtaining land, appropriate technology, and obtaining finances and credit. This system could be an on-line or cell-phone based system.

The 'Hub and Spoke' shared agricultural system proposed by the City of Johannesburg may be a suitable mechanism for government and farmers to interface, but there will undoubtedly be many farmers who will not be accommodated by this system who will nevertheless need to access agricultural and marketing information. Models in use in other developing countries should be investigated in order to set up an information dissemination system in Gauteng and the City of Johannesburg.

7. Irrigation, hosepipes and boreholes

Key finding:

Many of the bigger projects are in need of a sustainable and affordable water supply and irrigation system, as they either use hosepipes and free municipal water, or wait for rain. Boreholes that were provided free by GDARD in most cases do not work for a variety of reasons.

Recommendation:

Manual pumps, rather than electrical pumps, should be installed to provide water to food gardening projects, with associated storage capacity and hosepipes. Electrical borehole pumps present difficulties to recipients, notwithstanding the cost of the electricity and special fittings and hosepipes. Rainwater harvesting should be considered as an option, as well as the installation of subsidised rainwater tanks for each household or school. Drip irrigation should be considered for bigger projects and the cost of drip irrigation pipes subsidised by government. Projects should be fenced to prevent the theft of irrigation equipment.

8. Prior experience in agriculture

Key finding:

It was expected that urban gardeners in Orange Farm would have had previous exposure to a farming way of life or formal training in agriculture, and that this prior knowledge would have influenced their decision to begin food gardening. However, amongst the urban gardeners who were interviewed, prior farming knowledge did not play an important role in respondents' decisions to become vegetable gardeners. Instead, it appeared that the proximity of suitable land, the need to belong to a social group, the need to fill retirement time with useful activity and the need to supplement households with food and/or cash, influenced food gardeners to begin their activities after they settled in Orange Farm.

It was noticed that in Orange Farm some of the urban gardeners had in fact received previous formal training (chicken farming; hydroponics) but could not put this knowledge to good use in their urban setting. Others had obtained experience by living/working on farms but, similarly, could not put this experience to good use in an urban setting, having experience with livestock farming, specifically goat and pig farming. This indicates that, as a consequence of the urbanising process, many find their rural farming skills no longer useful in the urban context.

Recommendations:

Willing people who already have useful agricultural expertise or training should be identified and harnessed through the proposed City of Johannesburg's 'hub and spoke' agricultural system and also given access to agricultural programmes proposed by Gauteng Province.

9. The need for multi-stakeholder initiatives to support urban agriculture

Key finding.

Findings indicated that spheres of government still work in 'silos', with little collaboration between municipal and provincial authorities. This is seen specifically in the collapse of the City of Johannesburg hydroponics project at Orange Farm. If collaboration between the CoJ and the Agriculture Directorate of provincial government had occurred, this project may have been more successful. The skills and training centre built by CoJ at Orange Farm is also under-utilised. It would seem that the provision of infrastructure is the 'easy' part and the continued maintenance of facilities and ongoing provision of training and other support to projects is much more difficult for government to sustain.

Recommendations:

The type and extent of support needed for CoJ and provincial agricultural projects must be worked out in the initial project planning. A technically sound feasibility study must be performed by experts before any government-funded agricultural project is initiated. A project support mechanism comprising experts (including international expertise), government agricultural officers and other stakeholders (including the would-be farmers) must be established to share knowledge and to work out what is needed for a successful urban farming project or enterprise. Also, proper monitoring and evaluation and adaptive management of such projects must be built in from the beginning to provide sound information upon which to base future project adjustments and planning.

Government needs to engage with the private sector or universities to collaborate on the provision of agricultural and business training for Orange Farm.

NOTES

1 2040 City of Johannesburg. Growth and Development Strategy. Draft for Consultation. 2 August 2011
2 The GCRO classifies residential areas as being marginalised according to an index measured by levels of dissatisfaction; alienation and poverty. GCRO 2011
3 City of Johannesburg. Region G. www.joburg.org.za
4 Visser, E. (2007). Putting region G firmly on the map. City of Johannesburg. http://www.joburg.org.za/index.php?option=com_content&task=view&id=1873&Itemid=198
5 https://maps.google.com/maps?f=q&source=embed&hl=en&geocode=&q=Orange+Farm&ie=UTF8&t=h&ll=.-26.4833,27.8667&z=9 [sourced 5 June 2012]
6 Allen, A. (2003). Environmental Planning and Management of the peri-urban interface. Environment and Urbanization Vol. 15, No. 1, pages 135-147. Cited in Narain, V. and Nischal, S..*The peri-urban interface in Sharpur Khurd and Karnera, India.* p.262 Vol 9 2007. Sage Publishing.
7 Simon, D., McGregor D and Nsiah-Gyabaah K. (2004). *The changing urban-rural interface of African cities: definitional issues and application to Kumasi, Ghana.* Environment and Urbanisation, Vol 16(2). p. 235 – 247.
8 Ibid.
9 CDE Round Table (2002). Local government in South Africa: priorities for action. A Round Table discussion with the Minister of Provincial and Local Government. Published by The Centre for Development and Enterprise, Parktown, Johannesburg, South Africa. ISBN 0-9584697-1-7 www.cde.org.za
10 Cohen, M.J.,Garret, J.,I. *The food price crisis and urban food (in)security*. Environment and Urbanization, 2010 22: 467
11 Ibid.
12 Ibid.
13 Africa Human Development Report. *Towards a Food Secure Future*. United Nations Development Programme (2012)
14 Joburg. *Reflecting On A Solid Foundation*. City of Johannesburg, 2005
15 Statistics South Africa Community Survey, 2007
16 The State of African Cities Report. A framework for addressing urban challenges in Africa. UN HABITAT, 2008
17 The Gauteng City-Region comprises three metropolitan municipalities (Johannesburg, Tshwane and Ekurhuleni as well as ten commercial, mining and industrial centre's that together make up the economic heartland of South Africa. http://www.gcro.ac.za/about-gcr/overview
18 Gauteng City-Region Observatory (GCRO). The City-region Review 2011
19 South Africa –Fast Facts. http://www.southafrica.info/about/facts.htm#provinces
20 Op.cit. GCRO., p. 40.
21 0=perfect equality and 1=total inequality on the Gini Coefficient
22 National Credit Regulator. The *City of Johannesburg Poverty and Livelihoods Study*. 2008
23 Ibid.
24 Ibid.
25 Rakodi, C. Poverty and Wellbeing in the peri-urban Interface of Developing Country Cities: A Review. DFID NRSP Programme Development Report PD070: Review of the poverty relevance of the peri-urban interface production system. Hemel Hempstead, UK: NRSP. 1999.
26 Mwalukasa, M. *Institutional aspects of urban agriculture in the city of Dar Es Salaam*. 2000. Cited in Bryld, E. *Potentials, problems and policy implications for urban agriculture in developing countries*. Agriculture and Human Values 20: 79-86, 2003. Kluwer Academic Publishers, The Netherlands.
27 Bryld, E. *Potentials, problems and policy implications for urban agriculture in developing countries*. Agriculture and Human Values 20: 79-86, 2003. Kluwer Academic Publishers, the Netherlands.
28 Van Veenhuizen, R (Editor). *Cities Farming for the Future: Urban Agriculture for Green and Productive Cities.* RUAF Foundation, IDRC and International Institute for Rural Reconstruction, Leusden, the Netherlands. 2006. http://www.ruaf.org/node/966 [Sourced May 2012].
29 Op. cit. J, Cohen and Garret, J.L., p. 473.
30 Op. cit. J, Cohen and Garret, J.L., p. 475
31 *Food Inflation Simmering in South Africa –riots to come ?. April 27, 2011* http://thecomingcrisis.blogspot.com/2011/04/food-inflation-simmering-in-south.html
32 Van Veenhuizen, R. *Cities Farming for the Future*. Resource Centres on Urban Agriculture and Food Security (RUAF Foundation). *Cities Farming for the Future. 2006*
33 Wegelin, E.,A., Borgman, K.A. *Options for municipal interventions in urban poverty alleviation. Environment and Urbanisation*. 1995. 7:131. Sage.
34 Ibid.
35 Ibid.
36 Op. cit. Bryld, E., p. 84
37 Keraita, B., Drechsel, P., Amoah, P. *Influence of urban wastewater on stream water quality and agriculture in and around Kumasi, Ghana*. Environment and Urbanisation (2003). 15: 171. Sage.
38 Op. cit. Bryld, E. , p. 83
39 Cloete, J., Lenka, M., Marais, L., Venter, A. *The role of urban agriculture in addressing household poverty and food security.* Centre for Development Support, University of the Free State2009
40 Moskow, A. *Havana's self-provision gardens*. Environment and Urbanization. 1999. 11:127. Sage
41 Dubbeling, M.(unpublished). *MDGs and Urban Agriculture*. 2005, cited in Van Veenhuizen, R. *Cities Farming for the Future*. Resource Centres on Urban Agriculture and Food Security (RUAF Foundation). *Cities Farming for the Future. 2006*
42 Op. cit. van Veenhuizen, R. ,p.11
43 Ibid.

44 NETSAFRICA (2012) Learning from practice: Experience of the NETSAFRICA Programme to Enhance Local Development in SA. www.netsafrica.org
45 op. cit. van Veenhuizen, R., p.12
46 Ibid.
47 Ibid.
48 National Agricultural Strategy (2009) National Agricultural Strategy 2009/2010. National Department of Agriculture, Forestry and Fisheries. http://www.nda.agric.za/doaDev/topMenu/StratPlan09/DoAStratPlan_2009-10.pdf [sourced 23 May 2012]
49 National Strategy for Agriculture 2012/13 – 2016/17 (2012). http://www.daff.gov.za/doaDev/topMenu/StratPlan201213-201617.pdf [sourced 21 May 2012]
50 NIFSS (2000). National Integrated Food Security Strategy, National Department of Agriculture, Forestry and Fisheries (DAFF). http://www.nda.agric.za/docs/Policy/FoodSecurityStrat.pdf [sourced 21 May 2012]
51 Food Security NDA (2011). 'Food Security, 2011' prepared by the Directorate Economic Services. Production Economics unit, National Department of Agriculture, has no mention of urban agriculture or food gardens (Food Security NDA 2011). http://www.nda.agric.za/docs/GenReports/FoodSecurity.pdf [sourced 23 May 2012].
52 New Growth Path (2010). South African national government. http://www.info.gov.za/view/DownloadFileAction?id=135748 [sourced 31st May 2012]
53 NDP (2011) National Development Plan. National Planning Commission. Government of South Africa. http://www.npconline.co.za/medialib/downloads/home/NPC%20National%20Development%20Plan%20Vision%202030%20-lo-res.pdf [sourced 23 May 2012]
54 SAIIA, CPS, AfriMAP, OSISA and OSF. Implementing the APRM: Views from civil society, South Africa Report, June 2011. [sourced 31 May 2012].
55 National Department of Housing (2004). *Breaking New Ground. A comprehensive plan for the development of sustainable human settlements.* http://abahlali.org/files/Breaking%20new%20ground%20New_Housing_Plan_Cabinet_approved_version.pdf. [sourced 18 May 2012].
56 National LED (2006). *National Framework for LED in South Africa 2006 – 2011.* Department of Provincial and Local Government.
57 GADS (2006). Gauteng Agricultural Development Strategy (2006). Gauteng Department of Agriculture and Rural Development (GDARD) http://www.gdard.gpg.gov.za/documents/GADS.pdf [sourced 18 May 2012].
58 Ibid.
59 GIFSS (2009). Gauteng Integrated Food Security Strategy (GIFSS), final draft. Gauteng Department of Agriculture and Rural Development (GDARD). Not available on the GDARD website. Obtain personally from Mr Mike Mosifane, Tel: 011 355 1447. Email: michael.mosifane@gauteng.gov.za [21 May 2012]
60 NIFSS (2000). National Integrated Food Security Strategy, National Department of Agriculture, Forestry and Fisheries (DAFF). http://www.nda.agric.za/docs/Policy/FoodSecurityStrat.pdf [sourced 21 May 2012]
61 Gauteng Food Security Summit Concept 2001. Gauteng Province Agriculture and Rural Development
62 Gauteng Agricultural Development Strategy (GADS). 2006. GDARD drives this strategy.
63 Gauteng Economic Growth and Development Strategy, GEGDS (2009). http://www.gautengonline.gov.za/Business/Documents/GEGDS.pdf [sourced 17 Mar 2012].
64 Gauteng Comprehensive Rural Development Strategy (2010). http://www.gautengonline.gov.za/Publications/Final%20Gauteng%20Rural%20Development%20Strategy.docx [sourced 23 May 2012]
65 StatsSA (2006). Migration and urbanization in South Africa. Statistics South Africa, Report no. 03-04-02 (2006). http://www.statssa.gov.za/publications/Report-03-04-02/Report-03-04-02.pdf [sourced 31 May 2012].
66 Urban Development Strategy (1997). South Africa's Urban Development Strategy. http://www.info.gov.za/view/DownloadFileAction?id=70505 [sourced 23 May 2012]
67 Centre for Development Support (CDS) (2009). The role of urban agriculture in addressing household poverty and food security: The case of South Africa. *CDS Research Report, LED and SMME Development, 2009*(2). Bloemfontein: University of the Free State (UFS). www.ufs.ac.za/cds
68 COJ GDS 2040, (2011). City of Johannesburg Vision 2040, Draft for consideration, August 2011. http://www.joburg.org.za/gds2040/pdfs/2040_gds.pdf [sourced 17 May 2012].
69 COJ GDS 2040, (2011). City of Johannesburg Vision 2040, Draft for consideration, Page 18. August 2011. http://www.joburg.org.za/gds2040/pdfs/2040_gds.pdf [sourced 17 May 2012].
70 COJ GDS 2040, (2011). City of Johannesburg Vision 2040, Draft for consideration, August 2011. Chapter 4. http://www.joburg.org.za/gds2040/pdfs/2040_gds.pdf [sourced 17 May 2012].
71 CoJ IDP 2011-2014: http://www.joburg-archieve.co.za/2011/pddfs/idp201112pdf [Sourced 5 June 2012]
72 CoJ IDP 2011-2014: p145. http://www.joburg-archieve.co.za/2011/pddfs/idp201112pdf [Sourced 5 June 2012]
73 Ibid. p147
74 Ibid.
75 Ibid.
76 Ibid.
77 CoJ LED (2009). City of Johannesburg Department of Economic Development. LED Funding Database and Baseline LED Project Funding Strategy, March 2009 http://www.joburg-archive.co.za/2010/econ_dev/econdev_led_funding.pdf [sourced 23 May 2012]
78 Jak Koseff, City of Johannesburg, personal communication, 20th May 2012
79 Centre for Development Support (CDS) (2009). The role of urban agriculture in addressing household poverty and food security: The case of South Africa. *CDS Research Report, LED and SMME Development, 2009*(2). Bloemfontein: University of the Free State (UFS).
80 City of Johannesburg by-laws (2004). City of Johannesburg Metropolitan Municipality public health by-laws (published under notice No. 830 in Gauteng Provincial Gazette Extraordinary no. 1790 Dated 21 May 2004). (As amended by Notice 5319 dated 5 December 2007 in Provincial Gazette No 347 and Notice 1454 dated 20 June 2008 in Provincial Gazette No 162)
81 Centre for Development Support (CDS) (2009). The role of urban agriculture in addressing household poverty and food security: The case of South Africa. *CDS Research Report, LED and SMME Development, 2009*(2). Bloemfontein: University of the Free State (UFS).
82 http://www.netsafrica.org/en/priority-initiative/82-iniziative-prioritarie/92-le-iniziative-prioriatarie-2010-2011.html [sourced 31 May 2012].
83 Parnell, S.M and Pirie, G.H. *Johannesburg*. In, *Homes Apart: South Africa's Segregated Cities*. Ed Lemon, A. 1991. David Philip Publishers.

84 Ford-Shubrook, A. *Disability and inequality in Orange Farm: barriers to education for children with disabilities in a township in Johannesburg South Africa*. Royal Holloway University of London, 2007.
85 Thale, T. *Orange Farm: beauty in the land of the poor*. City of Johannesburg. 2002 http://www.joburg.org.za/index.php?option=com_content&task=view&id=932&Itemid=52#ixzz1XHNJZbHd
86 Leong, T. (2009). Site exploration – Orange Farm, Chapter 7.1. wiredspace.wits.ac.za/.../7302/Chapter 7.2%20Orange%20farm.pdf? [Sourced January 2012]
87 Leong, T. (2009). Site exploration – Orange Farm, Chapter 7.1. wiredspace.wits.ac.za/.../7302/Chapter 7.2%20Orange%20farm.pdf? [Sourced January 2012]
88 Personal communication with Nico Korsten, 2012)
89 Thale, T. *Orange Farm: beauty in the land of the poor*. City of Johannesburg. 2002 http://www.joburg.org.za/index.php?option=com_content&task=view&id=932&Itemid=52#ixzz1XHNJZbHd
90 Leong, T. (2009). Site exploration – Orange Farm, Chapter 7.1. wiredspace.wits.ac.za/.../7302/Chapter 7.2%20Orange%20farm.pdf? [Sourced January 2012]
91 Personal communication with Nico Korsten, 2012.
92 Andile Mngxitama. *Land central to food security*. Mail and Guardian, May 27- June 2, 2011
93 City of Johannesburg Region G Profile (2011).
94 Draft Growth and Development Strategy 2040. City of Johannesburg, August 2011
95 Rudolf, M., Kroll, F., Ruysenaar, S., Dlamini, T. Food Security, Poverty and Health in Three Study Areas of Johannesburg. Siyakhana Initiative for Ecological Health and Food Security. Wits Health Consortium. December 2008
96 Ibid., p10
97 Ibib., p24
98 The ranking/scoring of the indicators are relative (based on an agreed formula and using weightings), these are not absolute numbers
99 CoJ IDP 2011-2014: p145. http://www.joburg-archieve.co.za/2011/pddfs/idp201112pdf [Sourced 5 June 2012]
100 GCRO map gcro_gti_growth_indicator_data931_v3_joburg_demog_pd_v2 (2010).
101 Urban land cover (2010). Source: GCRO2010.GTI2009 Urban land cover_protected areas_wetlands_irreplaceable sites. Pdf.
102 Agricultural potential (2010). The GCRO 2010 Agricultural potential2004_31Sug 2010.pdg. Source: Gauteng City Region Observatory. www.gcro.ac.za
103 GADS (2006). Gauteng Agricultural Development Strategy (2006). Gauteng Department of Agriculture and Rural Development (GDARD) http://www.gdard.gpg.gov.za/documents/GADS.pdf [sourced 18 May 2012].
104 Ibid.
105 Atkinson, D (2005). People-centred environmental management and municipal commonage in the Nama Karoo. CAS/PLAAS Occasional Paper series, 11. www.cassplaas.org
106 GDARD official, 2010.
107 We have no details on how this commonage functions and who may access land on the commonage.
108 Muller, M (2008). Free basic water – a sustainable instrument for a sustainable future in South Africa. Environment and Urbanization. Vol 20(1): 67 – 87. DOI:10.1177/0956247808089149 www.sagepublicaitons.com
109 www.apf.org.za website contains details of service delivery protests since the early 2000s.
110 Telephonic interview with Assistant Director Region G Human Development, City of Johannesburg. 27 October 2011
111 Discussions with Prof Phil Harrison, School of Architecture and Planning, September 2011.
112 JAM official, personal communication, September 2011)
113 Gauteng Agricultural Potential Atlas;
114 Agricultural potential (2010). The GCRO 2010 Agricultural potential2004_31Sug 2010.pdg. Source: Gauteng City Region Observatory. www.gcro.ac.za
115 20th September 2011 meeting, GDARD official,
116 Group meeting 20th September 2011. Gauteng Department of Agriculture and Rural Development official.
117 View of a respondent.
118 Kwanela Sosibo. *Putting the people of Alex to Work*. Mail and Guardian, September 30-October 6, 2011
119 Group Meeting, 20 September. Input from official in the CWP.
120 Group Meeting. September 20. Inputs from GDARD and JAM respondents
121 According to one respondent, there are 14-15 school feeding schemes in operation in Orange Farm
122 Joint Aids Management (JAM) is a South African non-profit organisation that provides humanitarian assistance.
123 Trees For Africa offers support to food gardens in Orange Farm. Support is provided via People's Housing Centre's linked to the Department of Housing.
124 Group meeting. September 20th,. Input from JAM
125 Group Meeting. September 20. City of Johannesburg, Human Development Official, Region G
126 Ibid.
127 Pascale Lissouba· P., Taljaard, D.. Rech D., Doyle, S., Shabangu D., Nhlapo· C, Otchere-Darko· J., Mashigo T., Matson C.,Lewis D., Billy· S.,and ,Auvert· B. A Model for the Roll-Out of Comprehensive Adult Male Circumcision Services in African Low-Income Settings of High HIV Incidence: The ANRS 12126 Bophelo Pele Project. July 2010 Issue of *PLoS Medicine* .
128 De Wet, T., Patel, L.,Korth, M., Forrester, C. Johannesburg Poverty and Livelihoods Study. Centre for Social Development in Africa, 2008
129 Rudolf, M., Kroll, F., Ruysenaar, S., Dlamini, T. Food Security, Poverty and Health in Three Study Areas of Johannesburg. Siyakhana Initiative for Ecological Health and Food Security. Wits Health Consortium. December 2008
130 Richards, R., Narsoo, S., O'Leary, B., Isserow, M.,Sia, M. and Mogodi, E. Voices of the Poor: Case Studies of Urban Poverty in the City of Johannesburg, Community Agency for Social Enquiry, 2004
131 Reuther S. And Dewar N. (2005). *Competition for the use of public open space in low-income urban areas: the economic potential of urban gardening in Khayelitsha*, Cape Town, Cape Town. Development Southern Africa. Vol 23(1), pp 98-122.
132 This is calculated on an estimate of the number of household being 60 887 (Region G Profile: City of Johannesburg, 2011). GDARD information was that there were about 500 food garden projects (all types) in Orange Farm. This means that only 0.821 % of all households have some form of vegetable gardening activity.
133 Personal communication with Koseff, J. City of Johannesburg, 2011

URBAN TRANSFORMATION RESEARCH PROJECT (UTRP)

The South African Research Chair in Development Planning and Modelling
School of Architecture and Planning
University of the Witwatersrand
Private Bag 3, Wits, 2050, Johannesburg, South Africa

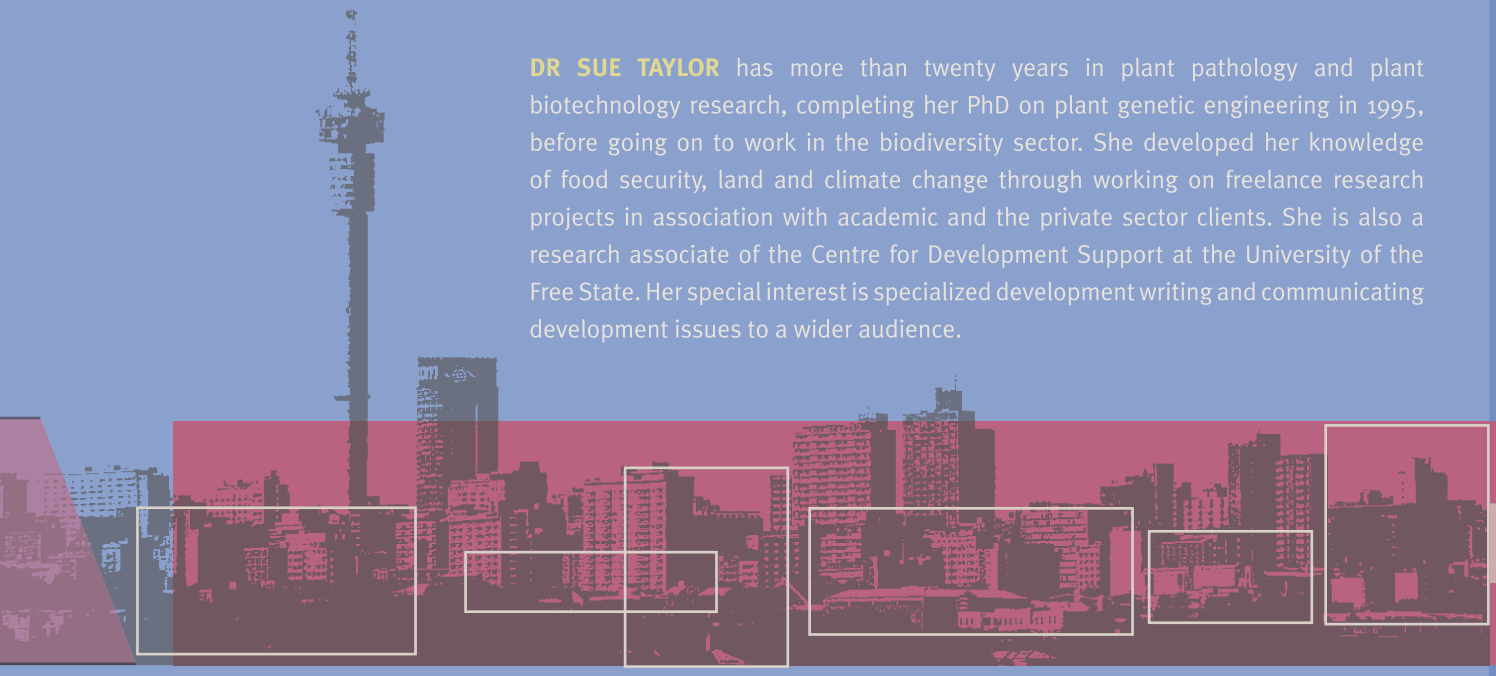
http://www.wits.ac.za/academic/ebe/archplan/14488/sarchi.html

T +27 11 717 7642 • F +27 11 717 7624

Research Chair under the NRF South African Research Chairs Initiative (SARChI)

ROBIN RICHARDS is an independent research consultant and policy analyst, specialising in applied social research. He has a Masters Degree cum laude in Geographical and Environmental Sciences from the University of KwaZulu Natal. His research interests cover a wide range of human development issues. He is a member of the International Society for Quality of Life Studies and is a current Editorial Board Member of the Encyclopaedia of Quality of Life Research

DR SUE TAYLOR has more than twenty years in plant pathology and plant biotechnology research, completing her PhD on plant genetic engineering in 1995, before going on to work in the biodiversity sector. She developed her knowledge of food security, land and climate change through working on freelance research projects in association with academic and the private sector clients. She is also a research associate of the Centre for Development Support at the University of the Free State. Her special interest is specialized development writing and communicating development issues to a wider audience.



9 780992 177591

NRF Funded