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**Assessing the Role of Urban Agriculture in  
Addressing Poverty in South Africa**

*Phillippe Burger, JP Geldenhuys, Jan Cloete,  
Lochner Marais and Alexander Thornton*

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# Assessing the Role of Urban Agriculture in Addressing Poverty in South Africa

Phillippe Burger, JP Geldenhuys<sup>1</sup>, Jan Cloete, Lochner Marais<sup>2</sup>  
and Alexander Thornton<sup>3</sup>

## *Abstract*

The overall aim of this report is to profile UA and to investigate what role urban agriculture plays in addressing poverty in South Africa. Methodologically, the paper is based on the annual South African household survey. Two approaches are followed. First, the profile of urban agriculturalists in 2007 was compared with the profile of urban agriculturalists in 2002. Second, a control group of urban agriculturalists with income of less than R10 000 has also been established in order to compare the results of agriculturalists and non-agriculturalists across a range of criteria. The paper is contextualized against the background of rising food prices in South Africa (also world-wide) and international literature on this topic. Increases in the prices of food products were high in 2002, tapered off between 2003 and 2005, and again began to gain momentum from 2006 onwards. In 2007, the prices of food products increased by more than 10%. The profile of urban agriculturalists assessed in this report suggests that urban agriculture is more prominent in summer rainfall areas with good soils. It is more commonly practiced by females, black households, older heads of households, households with larger families, households with lower levels of education. It also received a lower rating with higher levels of food insecurity compared to the control group. Furthermore, the majority of urban agriculturalists are involved in field crops, but a larger percentage than the control group does not pay for their water. Only 7.5% of the urban practitioners suggested that they receive their main income from agriculture

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<sup>1</sup> Department of Economics, University of the Free State, Bloemfontein 9300. Emails: [burgerp.ekw@ufs.ac.za](mailto:burgerp.ekw@ufs.ac.za) ; [GeldenhuysJ.EKW@ufs.ac.za](mailto:GeldenhuysJ.EKW@ufs.ac.za)

<sup>2</sup> Centre for Development Support, University of the Free State, Bloemfontein 9300. Emails: [Maraisl.ekw@ufs.ac.za](mailto:Maraisl.ekw@ufs.ac.za); [cloetejs.hum@ufs.ac.za](mailto:cloetejs.hum@ufs.ac.za)

<sup>3</sup> Department of Geography, University of New South Wales, Australia

## **1. Introduction**

This research programme is contextualised within the framework of persistent poverty, food shortages, rising food prices and hunger in Africa, and the importance that is attached to addressing issues such as these in the Millennium Development Goals (MDGs) and the Brundtland Report. Two main MDGs for the overall research programme are:

- MDG 1, which refers to the eradication of hunger and poverty. The specific objectives related to this MDG are to reduce the percentage of the population living on one USD (or less) per day by half, and to similarly reduce the proportion of people who suffer from hunger.
- MDG 8, which focuses on ensuring a sustainable environment. This requires the integration of the principles of sustainable development into country-specific policies and programmes, a reduction of the proportion of people without safe drinking water, and an improvement of the quality of life of slum dwellers.

This study focuses particularly on the potential of urban agriculture (UA) to serve as a response mechanism in the context of the MDGs. In southern Africa, persistent poverty is exacerbated by de-industrialisation – and more specifically (in the context of Zambia and South Africa), by the closure of extractive industries, and particularly of mining. In Zambia, both the loss of mining jobs on the Copper Belt and urbanisation to Lusaka have brought significant pressure to bear on urban resources, as well as on local governments that are already hard-pressed. In South Africa, the growing wealth gap has been aggravated by the selective closure of gold-mines, for example in the Welkom area, and by the rapid urbanisation of the unemployed to key cities.

Within the above context of job loss, persistent poverty, food shortages and rising food prices – further exacerbated by rising fuel prices in 2008 and the production of bio-fuel – the poor are increasingly seeking remedies for food insecurity and unemployment through an individual and community-based response known as UA. Up to now, the potential role that could be played by UA in addressing the needs of the poor and in helping to meet the MDG targets for Africa has been poorly understood. Although UA research has increased since the 1990s, very few African countries have implemented policy support, or attempted to formalise UA as a food-supply alternative in the modern African city. One of the problems experienced in developing appropriate responses is the lack of basic information, as well as the lack of adequate institutional responses.

The foregoing also needs to be considered in the context of decentralisation, in that countries such as Zambia and South Africa are now actively pursuing this agenda, which has empowered local authorities to play a greater role in local socio-economic affairs. However, local governments in both countries do not yet formally support UA. Therefore, research is necessary to clarify current approaches and/or to determine whether UA warrants greater attention.

## **2. Aims and objectives**

Against the above background, the overall aim of this report is to profile UA and to find out what role is played by UA in addressing poverty in South Africa. Methodologically, the paper is based on the annual household survey. It should be

noted that another paper comprising part of this report will profile the UA practitioners on the basis of an empirical survey conducted amongst such practitioners. The following relevant objectives have been set for this report:

- To profile UA practitioners and their households.
- To assess the role of UA in poverty reduction and as a coping mechanism.
- To identify key policy issues which could assist urban policy-makers in designing appropriate responses.

This report conceptualises poverty in terms of low household expenditure. The sample only includes households whose expenditure was below R10 000 per month in 2007. At the same time, however, it is acknowledged that poverty can be conceptualised from a range of other frameworks.

### **3. Outline of this report**

The report starts off with a brief review of the available literature on UA. Such a contextualisation of the literature is important, in order to enable the researchers to assess the results of the database to be used in this exercise within the context of other research in this regard. Next, an overview of the economic environment is provided, followed by an overview of the methods used during the compilation of this report. Finally, a profile of UA practitioners is presented, and the role of UA in poverty alleviation and as a coping mechanism is discussed.

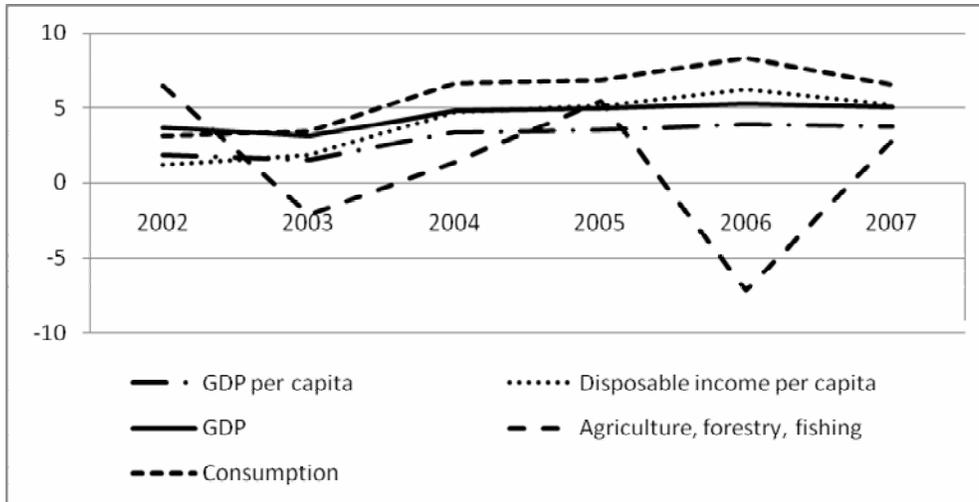
### **4. The economic environment**

This section provides an outline of the overall economic environment in South Africa. Two main aspects will be addressed:

- Real economic growth
- Inflation.

#### **4.1 Real economic growth**

The South African economy is currently in its longest recorded economic upswing, although economic activity has recently petered out (for the third quarter of 2008, GDP growth was a mere 0.2% (SARB, 2008)), in the aftermath of the global credit crunch. High oil and other commodity prices (notably food prices) and rampant consumer spending have fuelled inflation – the South African Reserve Bank’s envisaged rate of inflation, the CPIX (consumer prices excluding mortgage interest costs), has been above its target rate of 3-6% since April of 2007; and in response, the Bank increased its policy rate (the repo rate) on ten consecutive occasions (from 7.00 to 12.00%) between June 2006 and June 2008. Figure 4.1 reflects the growth rates of real GDP, real GDP per capita, real household disposable income per capita, real household consumption per capita, and the real value of output by the agriculture, forestry and fishing sector (which is dominated by the agricultural sector) for the period 2002-2007.



**Figure 4.1: Growth rates of selected variables, 2002-2007** (Source: SARB, 2008)

During this period of economic expansion, the average annual growth rates of real GDP, real GDP per capita, real disposable household income per capita, consumption expenditure and the value of output of the agriculture, forestry and fishing sector were 3.88%, 2.70%, 3.86%, 5.28% and -0.01%, respectively. Growth in the agriculture, forestry and fishing sector is highly volatile (which is unsurprising, given the shocks to which these activities are exposed – from natural disasters to currency crises). During the period 2002-2007, the contribution of this sector to the GDP declined from 3.16% to 2.45%. Despite the impressive economic growth, unemployment and poverty remained high in South Africa – between 2002 and 2007, the unemployment rate fluctuated between 29.4% (in 2002) and 23.0% (in 2007) (StatsSA, 2007).

#### 4.2 Inflation

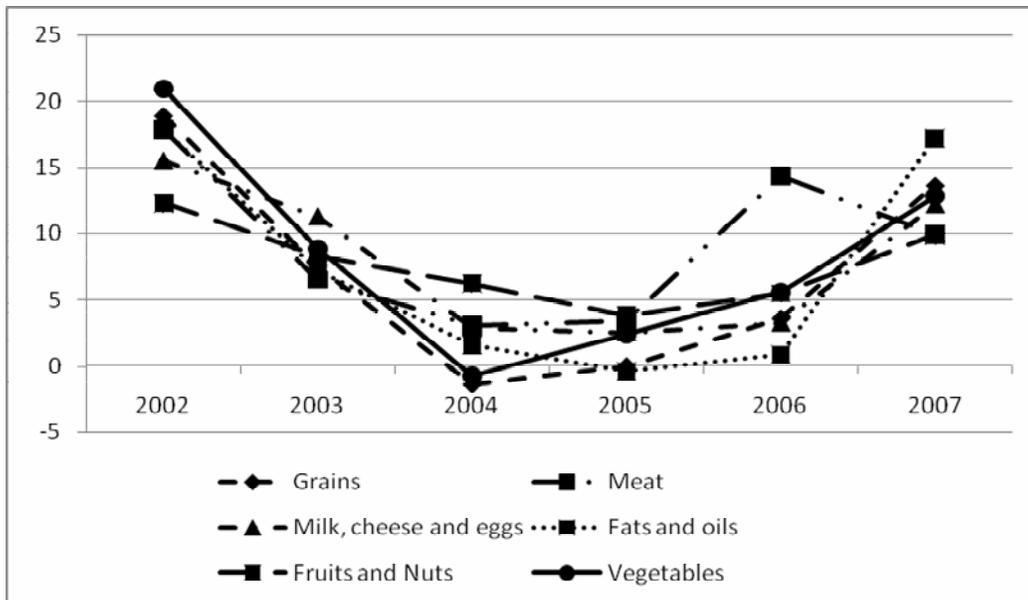
As pointed out above, the current South African rate of inflation exceeds the target set by the South African Reserve Bank (the CPIX inflation rate for October 2008 was 12.4%), which has necessitated several interest-rate hikes by the Bank since June 2006. The main contributors to the high levels of inflation include high commodity prices (food, oil and electricity), as well as high personal consumption expenditure growth (Mboweni, 2008). Figure 4.2 shows the rates of increase in the consumer price index (CPI), the consumer price index excluding mortgage interest costs (CPIX), as well as the increase in the food price index for metropolitan and other urban areas between 2002 and 2007.



**Figure 4.2: Price increases, 2002-2007** (Source: SARB, 2008)

Over the mentioned period, average food price inflation amounted to 7.61%, while the average CPI and CPIX inflation rates were slightly lower at 5.64% and 5.9% respectively (the overall food price index increased by more than 10% during 2007). In total, food prices rose by just over 32% between 2002 and 2007, while (overall) consumer prices rose by 25%. Rising global food prices led to mass protests in many developing countries during 2008, South Africa being no exception. In response to growing calls for action, the South African Finance Minister, Trevor Manuel, urged South Africans (especially the poor, as they spend a greater proportion of their incomes on food) to start planting/producing more food, adding that while those living in urban centres did not always have enough land at their disposal to plant sufficient quantities of crops, many did have vegetable gardens that could be used to supplement household food provisions (National Geographic News, 2008).

Figure 4.3 shows increases in the price of grains, meat, milk, cheese and eggs, fats and oils; fruits and nuts; and also of vegetables, for the period 2002-2007, as measured by the CPI for metropolitan and other urban areas. The price increases for the individual food products closely mirror the movement in the aggregate CPI food price index (refer to Figure 4.2). Also evident from Figure 4.3 is the extent to which the prices of the different food products tend to move in tandem – increases in the prices of all of the food products were high in 2002, tapered off between 2003 and 2005, and again began to gain momentum from 2006 onwards. In 2007, the prices of all six food products increased by more than 10%. Over the entire period under consideration, the average annual increases in the prices of the six food products depicted in Figure 4.3 ranged between 7% and 9%.



**Figure 4.3: Increases in prices of selected food groups in metropolitan and other urban areas, 2002-2007** (Source: StatsSA, 2008)

## 5. Literature review

### 5.1 Introduction

This section will provide an overview of the theoretical and empirical literature on urban and peri-urban agriculture (UPA/UA) which informed this research, in terms of definitional issues, significance and importance of UPA/UA for food security among urban dwellers and its implications for policy-makers concerned with sustainable urban development planning. A review of the contemporary debates will focus on the relevancy of UPA/UA to the MDGs, as well as claims and criticisms in respect of UPA/UA as a development tool. An aspect of particular interest to this research, namely the largely informal nature of UPA/UA in the developing world, and specifically in sub-Saharan Africa, will be explored in the literature. Thereafter, the impacts of UPA/UA on food security, poverty, age, gender, rural-urban migration and production systems will be analysed.

### 5.2 What is UA or UPA/UA?

There are several useful definitions of urban agriculture (UA) or urban and peri-urban agriculture (UPA/UA) (Mbiba, 1995, 2000; Lee-Smith & Memon, 1994; Binns & Lynch, 1998; Mougeot, 2000; Hovorka, 2005). In the broadest of terms, UPA/UA can be understood as referring to any agriculturally-related activities, which include production, processing and marketing, occurring in built-up “intra-urban” areas and in the “peri-urban” fringes (often “green belts”) of cities and towns (Thornton, 2008). However, UPA/UA is not restricted to food crops, and can also include animal husbandry, aquaculture, agro-forestry and horticulture. The concept of “peri-urban” is generally understood to refer to the physical interface where complex rural-urban interactions take place (Lynch, 2005; McGregor et al., 2006). Typically, a peri-urban area is not spatially zoned; it may be near a city centre; and it may be occupied by poor households and the socially excluded, particularly in the case of developing countries, or the “global South” (Mbiba & Huchzermeyer, 2002; Lynch, 2005). Peri-

urban agriculture is described as the conduction of urban farming activities on the periphery of populated urban zones (Obosu-Mensah, 1999: 11). Adding another dimension to the definition, Foeken and Mwangi (2000) claim that farming by urban dwellers is not synonymous with urban agriculture. They also point out the difficulties involved in making a spatial distinction between “urban” and “peri-urban” areas, and argue that urban dwellers may also practise farming in the rural areas in the region where they grew up.

Identifying the role of UPA/UA in modern cities and urbanised areas as a livelihood and food security strategy has been difficult (Armar-Klemesu & Maxwell, 2000; Frayne, 2005: 34-35). The problems experienced in this regard may possibly be ascribed to a number of factors, such as the diverse nature of practitioners, geographical locations and climatic conditions, as well as varying levels of acceptance by government officials. Tinker (1994) and Nugent (2000) argue that a common working definition of UPA/UA does not exist, and nor do similar methods for measuring productivity. As a result, comparisons of different UPA/UA studies are difficult; and the standardisation of definitions and design can thus be regarded as the next logical stage for urban studies of food production (Tinker, 1994).

Despite the relatively recent interest in urban and peri-urban agriculture (UPA/UA) as a potential development tool, most of the data in the UPA/UA literature since the early 1990s have been more qualitative than quantitative, with a tendency to focus more on crop production systems than on livestock systems (Thornton, 2008). Additionally, the existing case study literature has a large-city bias, with limited attention having been given, thus far, to UPA/UA in the small-town context, where poverty rates are often higher, owing to the fact that employment opportunities are more limited than in the case of large cities (Mlozi et al., 1992; Nel, 1997; Smit, 1998; Foeken et al., 2002; Thornton, 2008).

UPA/UA is commonly described as an activity practised by all income groups worldwide, and is an essential household survival strategy for the urban poor (Drakakis-Smith, 1992; Rogerson, 1992, 1996, 2003; Smit et al., 1996; Mougeot, 1994, 1999; Deelstra & Girardet, 2000; De Zeeuw et al., 2000; Jacobi et al., 2000; Hovorka, 2005). Particularly in the global South, UPA/UA is widely acknowledged as beneficial for households and individuals affected by relative or absolute poverty. In terms of relative poverty, the production obtained from urban food plots supplements incomes through direct savings in terms of the household budget. Income not spent on food is directed into other needs of the household. For unemployed and vulnerable households living in absolute poverty (e.g. elderly persons or single mothers), UPA/UA is viewed as an absolutely crucial source of food and, in some cases, also the only source of income (Rogerson, 2003; Thornton & Nel, 2007; Thornton, 2008).

Some academics refer to many claims regarding UPA/UA, as encountered in the literature, as deterministic “universalisms”, meaning that general, sweeping statements about UPA/UA’s importance and potential to benefit the environment and household food security have been based on “fragmentary research”, as opposed to the actual impact of UPA/UA “on the ground” (Webb, 1998a, 1998b, 2000; Hovorka, 2005; Lynch, 2005). Many academics and researchers argue that UPA/UA research should focus on expanding the localised and in-depth understandings of UPA/UA research “on the ground”, which may refute or substantiate claims regarding the

potential of UPA/UA as a survival or livelihood strategy (Lynch, 1995, 2001; Webb, 1996, 1998a, 1998b; Ellis & Sumberg, 1998; Thornton, 2008). Moreover, many argue that the growing literature on UPA/UA suffers from a lack of scientific inquiry, with the result that the claims made regarding how UPA/UA benefits urban poor households and the urban eco-system cannot be sustained (Iaquinta & Drescher, 2000; Lynch et al., 2001; Rogerson, 2003; Thornton, 2008). Much of the UPA/UA literature reflects a “metro-bias”, meaning that previous research, economic development strategies and policy focus have typically centred on metropolitan urban areas, rather than on small towns (Nel, 1997; Smit, 1998; Webb, 1998b, 2000; Rogerson, 2003; Thornton, 2008).

### **5.3 Historical overview**

#### **5.3.1 Ancient origins**

UPA/UA is not a new phenomenon; it existed in pre-industrial societies, and its roots can be traced back to ancient civilisations worldwide (Lee-Smith & Memon, 1994; Mougeot, 1994; Nugent 2000; Van Veenhuizen et al., 2001). Furthermore, Mougeot (1994) claims that several ancient civilisations had developed complex UPA/UA systems and technologies; for example, the Persians and Romans created advanced hydraulic facilities and agricultural drainage schemes respectively, while the “Islamic empire” used its “postal service” to gather information on food prices and food supplies in order to prevent shortages. However, as technology ushered urban human settlements into the industrial era, urban farming practices were deemed inappropriate and were subsequently assigned to rural regions (ibid.).

Some observers have pointed out that farming near or within the confines of urban areas historically tended to be a point of contention for urban planners, prior to the industrial revolution (Mougeot, 1999). Moreover, Lee-Smith and Memon (1994: 3) claim that negative cultural connotations associated with the notions of the “city” and “countryside” date back to the Greco-Roman period.

#### **5.3.2 Modernity**

For many western countries, the more recent history of urbanism, associated with the industrial revolution, has resulted in the separation of “urban” from “agriculture” – except with regard to recreational gardening, or in times of crisis (Lee-Smith & Memon, 1994). During both world wars in the last century, urban agriculture comprised an important part of food production throughout Europe, where backyard “victory” gardens often meant survival (The Urban Agricultural Network –TUAN, in *City Farmer*, 2001). In general, the status of the agricultural sector has shifted from that of a source of food security, to that of an industrial-style sector based on technological development and commercialisation (Janssen & Braunschweig, 2003).

Mougeot (1999) notes that pioneering surveys on urban food production date back to the work of French geographers in West Africa as early as the late 1950s. Literature focusing on UPA/UA as a coping strategy for the urban poor in developing countries has been accumulating since the 1970s (Rogerson, 1996). Perhaps it is no coincidence that this accumulation occurred in the wake of global oil shocks and economic crises, in respect of which “none have felt the impact more acutely than the billion or more impoverished people across the Third World” (Simon in Nel, 1999: 19). In developing countries, the attitudes of former colonial governments towards

UPA/UA are being repeated in modern times – UPA/UA activities are often viewed as “unsightly”; are often officially banned (Tinker, 1994: 5); and tend to be “undervalued and resisted by generations of public officials” (Binns & Lynch, 1998: 778).

#### **5.4 Contemporary debates on urban sustainability: A role for UPA/UA?**

In many developing countries, the development of UPA/UA as a survival strategy often met with the disapproval of colonial regimes. In Africa, during the colonial era, UPA/UA was deemed illegal – an attitude that has been perpetuated in some countries to the present day (Lee-Smith & Memon, 1994; Mougeot, 1994; Binns & Lynch, 1998). The illegal status of UPA/UA in modernising cities, over an extended period, may have led to a general decline in the abilities of indigenous peoples to feed themselves (Mayer, 1971; Sahn, 1989). Factors that significantly challenge the ability of the urban poor to cope include: rapid urbanisation; the dearth of arable land; and policies that furnish relatively cheap imported food for urban populations, thus providing little incentive for local food production for urban markets (Rogerson, 1992: 229). In this regard, urban food security issues in the developing world have underscored the significance of UPA/UA in the development community as a component of sustainable urban development (Rogerson, 1992: 229).

The World Commission on Environment and Development (1987: 43), or the “Brundtland Report”, defines sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” Furthermore, the “Brundtland Report” has focused the world’s attention on sustainable urban development and the potential role of “urban agriculture”, or UPA/UA:

*Officially sanctioned and promoted urban agriculture could become an important component of urban development and make more food available to the urban poor. The primary purpose of such promotion should be to improve nutritional and health standards of the poor, help their family budgets (50-70% of which is usually spent on food), enable them to earn some additional income, and provide employment. Urban agriculture can also provide fresher and cheaper produce, more green space, the clearing of garbage dumps and the recycling of household waste (World Commission on Environment and Development, 1987: 254).*

As a development tool, the UPA/UA “phenomenon” did not capture the attention of observers until approximately the 1970s (Organization for Economic Co-operation and Development, 1972 in Nugent, 2000; Ponter, 1975; Thaman, 1975; Mougeot, 1999, 2000). Since then, according to Smith and Tevera (1997: 25), “[t]he growing interest in U[P]A in developing countries [has], in many ways, [been] expanding at a rate which rapidly exceeds available information on this important phenomenon”. Consequently, UPA/UA terminology, issues and relationships are too often oversimplified and may even prohibit a realistic understanding of UPA/UA in a cross-cultural context (Ellis & Sumberg, 1998; Iaquina & Drescher, 2000; Lynch et al., 2001; Rogerson, 2003). Moreover, much of what observers claim UPA/UA to be capable of achieving actually requires validation through empirical research (Webb, 1996; de Zeeuw, 2002; Rogerson, 2003; Thornton, 2008).

## **5.5 UPA/UA and the MDGs**

At the 2000 United Nations Millennium Summit, eight development goals were set by world leaders, with a view to ending poverty by 2015. Each Millennium Development Goal (MDG) entails several targets, which include eradicating hunger (MDG 1) and improving the plight of the urban poor (MDG 7). In this research, we argue that, with support at the institutional level, UPA/UA could make a positive impact in terms of the first and seventh MDGs.

Recently, local governments have reconsidered their position regarding UPA/UA, in response to urbanisation and its associated challenges, such as urban poverty, food insecurity, and the growth in informal (squatter) settlements and unemployment. The projected increases in the global urban population are challenging the capacities of cities worldwide, with the “largest and fastest growing cities [being] primarily [situated] in developing countries” (Rakodi, 2000: 17). Therefore, whereas urban poor households spend 50-90% of their income on food, many observers point out the need for these households to become more pro-active in meeting their food needs, as well as to contribute to the overall urban food supply and chains of production (Tinker, 1994; Mougeot, 1994; Lynch, 1995; Rogerson, 1996, 2003; Foeken & Mwangi, 2000; Foeken & et al., 2002).

## **5.6 Claims and criticisms in respect of UPA/UA**

Claims and criticisms regarding the potential of UPA/UA are prevalent themes in the localised case-study and thematic literature. These themes include the following: the global practice of UPA/UA; the importance of UPA/UA for food security and nutrition; and the economic, social and ecological impacts of UPA/UA.

### **5.6.1 UPA/UA as a global practice**

Numerous claims have been made regarding the global reach of UPA/UA and its significance in the developed and developing world. The Technical Centre for Agricultural and Rural Cooperation, CTA (1999: 1-2), points out that UPA/UA is practised worldwide, with global estimates ranging from 700-800 million urban farmers.<sup>1</sup> The reasons for practising UPA/UA are varied, and include social, economic and cultural factors (Mlozi, 1996: 48). UPA/UA in developing countries is often mentioned as an important part of the urban food supply continuum. Mougeot (2002: 1) states: “200 million [of 800 million] urban farmers are considered market producers, employing 150 million people full-time”. He adds: “Urban agriculture is thus an important supply source in developing-country urban food systems, a critical food-security valve for poor urban households.” Many observers note the inclusiveness of UPA/UA, as it appears to cut across socio-economic boundaries, thriving both in developing countries and in western countries (Davis et al., 1999; Dahlberg, 1999; Mlozi, 1996).

Sachs and Silk (1987: webservice) introduce the issue of the retention of traditional knowledge and related rural-to-urban migration issues into the debate, by arguing that, although many people in western countries have lost their links with the land over the last several generations,

*such is not the case for most of those who are now migrating into cities of the developing nations. While some of these migrants may not like the idea of continuing to work the land, the fact remains that they do have the survival*

*skills necessary to produce their own food if they have access to the resources.*

The findings in this treatise include certain implications regarding “access to resources” and “traditional knowledge”. Moreover, there might be instances where the destitute dependants of urbanised migrants would desire to engage in agricultural activities.

### **5.6.2 UPA/UA ensures food security and nutrition**

The benefits of UPA/UA in terms of nutrition and food security are often cited without empirical research to support these claims (Webb, 1996, 1998a, 1998b; Rogerson, 2003). Observers often point out the potential of UPA/UA to improve food security and nutrition for urban poor households (Drakakis-Smith, 1992; Frankenberger et al., 2000; Garrett, 2000; Webb, 2000; Gogwana, 2001; United Nations Human Settlements, 2001). As Sahn (1989: 310) claims, “home gardening may be an effective intervention for food insecurity and low-income households beyond that of normal field agriculture, in particular during seasonal food shortages.” Many observers argue that UPA/UA improves nutrition and provides an income for low-income households, particularly female-headed households (Webb, 1996, 1998a, 1998b; de Haan, 2000; Stephens, 2000; Rogerson, 2003). The value of UPA/UA to practising households will be thoroughly investigated in this study.

### **5.6.3 Economic, social and ecological impacts**

Observers have called for documentation that is more empirical, in order to corroborate the combination of various economic, social and ecological benefits of UPA/UA, as put forward in the thematic literature (Webb, 1996, 1998a, 1998b; de Zeeuw, 2002; Rogerson, 2003). In any case, UPA/UA as a broader system, which combines agricultural production with the recycling, or re-use, of the by-products of cultivation and urban wastes, is a common theme in the literature (Smit & Nasr, 1992; Thorgren, 1998; Deelstra & Girardet, 2000; Rogerson, 2003). Again, it is the potential of UPA/UA that is most frequently cited by observers. De Haan (2000: webservice) makes the following comprehensive statement regarding the economic, social and ecological benefits of UPA/UA:

*UPA/UA affords a cheap, simple, and flexible tool for productively using open urban spaces, treating and recovering urban solid and liquid wastes, generating employment and income, adding value to products, managing freshwater resources more sparingly, and resolving otherwise incompatible urban land use issues. Urban agriculture is also integral to city life, a vibrant part of urban economic and ecological systems. Urban farmers use urban land, public services, inputs, and even urban wastes in production. They then sell to local markets and often reinvest profits into goods produced or sold at city outlets (de Haan, 2000: webservice).*

Contributing to the thematic literature regarding UPA/UA’s economic benefits, Smit et al. (1996: Foreword) claim: “As an industry, urban agriculture is closely linked to several urban, ecological, social and economic systems. It provides economic benefits for urban farmers and their communities and cities.” Additionally, observers state that UPA/UA produces a significant amount of food for urban markets (World Resources Institute, 2000; City Farmer, 2001). From an economic perspective, further claims include the assertion that UPA/UA allows middle-class and wealthier households to

stretch their income (World Resources Institute, 2000; Maxwell et al., 2000; Mougeot, 2000). UPA/UA stimulates the development of small businesses focusing on the production of inputs, such as the collection and composting of urban wastes and the production of organic pesticides (Rogerson, 2003). An indication of UPA/UA's economic viability is noted by the Georgia Center for Urban Agriculture in the United States (University of Georgia, 2004: webservice), as follows: "Urban agriculture is one of the newer and fastest growing industries in agriculture and is composed of 6,888 small businesses with 78,988 full-time employees. The economic impact of the turf grass and environmental horticulture industry alone in 2003 was \$8.1 billion."

With regard to the social benefits of UPA/UA, some observers (Smit et al., 1996; de Zeeuw, 2002) claim that UPA/UA enhances the living environment, and that it can improve efficiency in urban management, contribute to better public health, and further social participation in the community. Some even claim that the impacts of UPA/UA on social networks for women may outweigh its economic impacts (Slater, 2001: 635; Rogerson, 2003).

### **5.7 Criticisms**

Some observers argue that there is a lack of scientific inquiry to justify the claims made in the thematic literature (Webb, 1996, 1998a; de Zeeuw, 2002; Rogerson, 2003). Amongst these claims is that of Waser (1997: web source), who states that "no matter what the official policy," UPA/UA is practised for a myriad of reasons "across the globe." In addition, Cleveland (1997: webservice) states that "a multitude of gardens" can be seen "in cities all over the world." Some observers point out that there is a lack of evidence to support claims regarding UPA/UA's ability to improve the livelihoods of the urban poor (Rogerson, 1996; Webb, 1998a, 1998b; Obosu-Mensah, 1999; Nunan, 2000). Moreover, there is little evidence linking food gardens with improved nutrition and urban environments (Webb, 1998a, 1998b, 2000; Lynch et al., 2001: 161; Nunan, 2000; Rogerson, 2003). Furthermore, much of the literature does not take account of the unresolved issues related to competition for urban resources, such as land tenure/access and water rights (Rogerson, 1996; Webb, 1998a, 1998b; Binns & Lynch, 1998; Lima et al., 2000; Nunan, 2000).

Overall, the above claims are generally made in relation to a global context. Thus, they dramatically misrepresent UPA/UA in developing countries, with particular reference to localised case studies on the African continent. Again, it is the paucity of empirical research and baseline socio-economic data regarding the impact of UPA/UA on household livelihoods and incomes that this research seeks to address in South Africa and Zambia.

### **5.8 "Informalising" UPA/UA**

Increasing interest in UPA/UA has arisen in conjunction with studies on the informal economy conducted from the 1980s onwards, mainly in terms of UPA/UA as an alternative income source for households unable to secure the means of obtaining a formal income (Rogerson, 2003: 137). In the face of economic hardship, informal sectors in local economies have emerged to offset the negative impacts of urbanisation and economic crises on the livelihood strategies of the urban poor. However, some observers argue that the increasing interest in this regard is elevating UPA/UA to an unrealistic position in the overall economy. The crucial point is that

the “formalisation” of informal activities might produce unintended outcomes, while the commercialisation of subsistence activities and locally-grown produce could create agricultural products that the poor would no longer be able to afford (Gordon, 2002; Webb, 1998b). On the other hand, observers claim that UPA/UA existed in many formal and informal economies before the onset of economic decline in the 1970s (Potts, 1997). The difference today is that more people are involved in UPA/UA; hence, more land is being used and more food is being produced (Potts, 1997; Rogerson, 1996).

The heterogeneity and evolving nature of the informal economy, as in the case of UPA/UA, is problematic for observers who seek to describe and conceptualise it in any “meaningful way” (Chen et al., 2002: 4). This may be ascribed, in part, to the persistent view of modernisation and dependency advocates that informal-sector activities embody the antithesis of “modern” urban development processes, and that such activities are indicative of official failure (Mlozi, 1996; Rogerson, 2003). On the basis of these comments, it appears that broad descriptions of the informal economy may not be conducive to effective policy-making or the regulation of informal economic activities, and also that they may not be appropriate for classification purposes.

UPA/UA appears to work in tandem with the informal sector, as it offers a flexible and accessible “easy-in, easy-out entrepreneurial activity for people [with] different levels of income,” and particularly for the poorest households (Rogerson, 2003: 133). Additionally, UPA/UA also mirrors the dependency theorists’ criticisms of informal-sector growth, as undermining, suppressing and degrading, or “informalising”, the formal sector as an employment entity (Mlozi, 1996: 47-48). The “informalisation” of the urban economy, food production and marketing systems is often linked to economies undergoing structural adjustment (Lourenco-Lindell, 1997: 39). Numerous documents cite the importance of the informal economy to urban poor households, and suggest ways in which to “formalise” its relationship with the formal economy (de Haan, 2000; Mougeot, 2000; Nugent, 2000; Chen et al., 2002; Rogerson, 2003). In the light of these comments, it may be feasible to classify UPA/UA in a manner that equates it, to some degree, with work carried out in the informal economy. According to Chen et al. (2002: 4), the informal economy can be classified according to one of two criteria: either in terms of those who work in it (the workforce), or in terms of the activities that take place in it (economic units). Chen et al. (2002: 4) argue that, as individual countries have discretion over the composition of the informal workforce, the size of unregistered units to be included, and whether or not activities such as agriculture are to be included in the informal sector, comparisons are difficult to make.

Determining the role of UPA/UA in the formal and informal economy in the research zones is one of the key aims of this research. To understand the role of UPA/UA in the developing world, it might be useful to review its role in the developed world, along with the frameworks that facilitate it. Therefore, distinct UPA/UA variations in the developed world and on the African continent will be outlined in the following sections, in terms of UPA/UA’s role, structure and institutional support. With regard to the variations discussed below, it would seem that views regarding UPA/UA in the developed world are more reflective of socially conscious concepts, such as “urban greening” and “eco-city” (Newman, 1997; Roseland, 1997, 2005; Thornton, 2008;

Thorns, 2002). Case studies in respect of the United Kingdom and the United States are outlined below to emphasise this point.

## **5.9 UPA/UA practice in Africa**

With regard to UPA/UA on the African continent, the following paragraphs will summarise the significance and limitations of UPA/UA for practising households, as well as the characteristics of UPA/UA practitioners and production systems, in the following countries in which case studies were carried out by key observers of UPA/UA: Egypt (Gertel & Samir, 2000); Ethiopia (Egziabher, 1994; Sorenson, 2003); Ghana (Obosu-Mensah, 1999; Armar-Klemesu & Maxwell, 2000; Maxwell et al., 2000; International Food Policy Research Institute, 2003); Kenya (Freeman, 1991; Lee-Smith & Memon, 1994; Foeken & Mwangi, 2000; Foeken et al., 2002); Senegal (Mbaye & Moustier, 2000); South Africa (Rogerson, 1996, 2003; Thornton, 2008, 2009); Tanzania (Sawio, 1994; Mlozi, 1996; Mtani, 1997; Jacobi et al., 2000; Mwalukasa, 2000); Uganda (Maxwell, 1994); Zambia (Sanyal, 1987; Drinkwater, 1994; Mbiba, 2001) and Zimbabwe (Drakakis-Smith, 1992, 1994; Mbiba, 1995; Bowyer-Bower, 1997; Smith & Tevera, 1997; Mbiba, 2000; Gogwana, 2001).

### **5.9.1 Food security**

In the African context, it is clear that UPA/UA has emerged as a response to economic crises which, in many cases, resulted from the implementation of the International Monetary Fund's austerity measures (or structural adjustment programmes) (Drakakis-Smith, 1994; Maxwell, 1994; Mlozi, 1996; Bowyer-Bower, 1997; Gertel & Samir, 2000). For the most part, UPA/UA is practised by all income groups and is of crucial importance to the poorest households for the purposes of subsistence (Egziabher, 1994; Lee-Smith & Memon, 1994; Maxwell, 1994; Sawio, 1994; Mlozi, 1996; Mtani, 1997; Mbaye & Moustier, 2000; Foeken & Mwangi, 2000; Foeken et al., 2002; Jacobi et al., 2000; Gogwana, 2001; Sorenson, 2003). This role is recognised, for example, in Dar es Salaam, where UPA/UA has been integrated into urban planning (Mwalukasa, 2000), and where, given the region's harsh urban economic conditions, UPA/UA is seen as an "economic necessity" for the poorest households, while the average middle-income earner views UPA/UA as the "logical thing to do" (Sawio, 1994: webservice).

Food production for household food security is the most common type of UPA/UA in Kampala, Uganda (Maxwell, 1994: webservice). However, "the food produced does not constitute the majority of what a household consumes ... the market is their major source of food" (ibid.). A similar finding was revealed in a study of small urban centres in South Africa, where the majority of urban agriculturalists were found to depend on incomes obtained through social welfare grants for household food security (Thornton, 2006, 2007, 2008). For urban residents in Cairo, Egypt (Gertel & Samir, 2000: 214), rural areas provide urban markets with comparatively low prices throughout the year. Clover – a typical crop cultivated in urban areas – yields high prices as fodder for urban livestock. The preference for livestock raising in urban areas is linked to the high demand for cheap meat.

In a prior study of UPA/UA that he had conducted in Harare, Zimbabwe, Mbiba (2000: 291) had determined that UPA/UA featured as a "tiny component" of a diverse range of informal survival activities practised by the urban poor (Mbiba, 2000: 291). However, in his subsequent study, Mbiba (2001: webservice) noted that, as a result of

“poor planning institutions”, Harare, Zimbabwe had “taken over” from Lusaka, Zambia as “the capital city of urban agriculture in Africa” (a title assigned earlier to Lusaka in a study by Sanyal, 1987). Gogwana (2001: 58) also points out that UPA/UA is an “important socio-economic activity, particularly for the poor.”

The recent economic collapse and the stagnation of rural agricultural production have had a limited impact on the government’s position, namely that UPA/UA is not a viable solution to bring about food security, job-creation or environmental improvement (Bowyer-Bower, 1997; Mbiba, 1995, 2000) – a position which partly accounts for the recent targeting of UPA/UA by the government:

*[The] Zimbabwe police have extended a demolition campaign targeting the homes and livelihoods of the urban poor to the vegetable gardens they rely on for food, saying the crops planted on vacant lots are damaging the environment ... The crackdown on urban farming -- at a time of food shortages in Zimbabwe -- is the latest escalation in the government's month-long Operation Murambatsvina (or Drive Out Trash), which has seen police torch the shacks of poor city dwellers, arrest street vendors and demolish their kiosks (Mail and Guardian Online, 2005).*

Furthermore, the action taken by the present government in Zimbabwe is reminiscent of actions perpetrated by the previous “white government”, which destroyed city plots and “slash[ed] crops on roadsides and railroad embankments” (Mail and Guardian Online, 2005). Since Zimbabwe’s attainment of independence (in 1980), and prior to “Operation Murambatsvina”, many officials had generally tolerated the presence of UPA/UA, but offered no extension services, loans, subsidies or credit services, since UPA/UA is officially deemed to be an *ad hoc* activity shrouded in illegality and uncertainty (Bowyer-Bower, 1997; Mbiba, 1995, 2000).

According to the World Resources Institute (2000: 144), UPA/UA in Accra, Ghana accounts for 90% of the capital city’s fresh vegetables. Some researchers report that UPA/UA is more common amongst the middle-class and wealthier residents, who benefit from the local urban production of vegetables (Obosu-Mensah, 1999; Maxwell et al., 2000; International Food Policy Research Institute, 2003). Most of the local production occurs in the peri-urban areas surrounding Accra (Armar-Klemesu & Maxwell, 2000: 200). In spite of this, available land for peri-urban production is under threat as a result of the urban sprawl, quarries and sand mines that have developed on the urban fringes of Accra (Armar-Klemesu & Maxwell, 2000; International Food Policy Research Institute, 2003). Apparently, governmental authorities have acknowledged these threats to peri-urban farmers and are planning intervention to protect and promote UPA/UA (Armar-Klemesu & Maxwell, 2000: 200-201).

### **5.9.2 Rural-urban migration**

Some observers claim that UPA/UA practitioners are recent migrants from rural areas who depend on their agricultural or traditional skills to survive in the urban areas (Mayer, 1971; Bundy, 1979; Potter & Unwin, 1989; Tacoli, 1998; Gogwana, 2001). Conversely, other observers argue that African urban farmers are rarely recent migrants (Freeman, 1991; Egziabher, 1994; Sawio, 1994; Mbaye & Moustier, 2000; Jacobi et al., 2000). In Dar es Salaam, the majority of urban farmers have been living in town for at least 10 to 15 years (Sawio, 1994; Jacobi et al., 2000). Nevertheless,

many UPA/UA practitioners in Ghana are recent male migrants from the north of Ghana (Armar-Klemesu & Maxwell, 2000: 197), while in Nairobi, Kenya, urban agriculturalists remain close to their rural roots, cultivating both in the urban areas where they live, and in the rural areas (Lee-Smith & Memon, 1994).

### **5.9.3 Age of practitioners**

Several observers claim that the practice of UPA/UA has been increasing among all age groups (although retirees rarely cultivate), in response to decreasing employment opportunities and purchasing power (Egziabher, 1994; Maxwell, 1994; Sawio, 1994; Mlozi, 1996; Mtani, 1997; Gertel & Samir, 2000; Mbaye et al., 2000; Jacobi et al., 2000; Foeken & Mwangi, 2000).

### **5.9.4 The role of women**

Overall, women are more likely to engage in UPA/UA, both at home and in community gardens, to supplement the household food supply and prevent child malnutrition (Sawio, 1994; Mlozi, 1996; Mtani, 1997; Gertel & Samir, 2000; Maxwell et al., 2000; Mbiba, 1995, 2000). In Kampala, Uganda, it was found that there was an even distribution of male and female UPA/UA practitioners (Maxwell, 1994). Ethiopian women, owing to the traditional system of household membership and headship, are largely responsible for the needs of the household (Egziabher, 1994). In a study of households involved in cultivating communal or cooperative gardens, it was found that women (mothers and daughters) tended to the private household garden, while men worked in the communal or cooperative garden. Single mothers were found to have a double burden, working both in the private plot and in the cooperatives (ibid.). In contrast, low-income single women with children in Nairobi, Kenya only practise cultivation as a last resort, when in search of employment. With limited opportunities for employment, 56% of urban agriculturalists in Kenya are women; while in the capital city of Nairobi, the figure is 62% (Lee-Smith & Memon, 1994). This fact can be attributed to the relatively low level of education of women in comparison with men (Foeken & Mwangi, 2000).

### **5.9.5 Production systems**

Inner-city home vegetable production for home consumption is the most common type of production system in Ghana (Armar-Klemesu & Maxwell, 2000: 187), Tanzania (Mlozi, 1996; Mtani, 1997; Jacobi et al., 2000), Ethiopia (Egziabher, 1994), Kenya (Lee-Smith & Memon, 1994; Foeken & Mwangi, 2000) and Uganda (Maxwell, 1994). Land-tenure-security problems are common, but do not represent an insurmountable obstacle to UPA/UA (Bowyer-Bower, 1997; Mbaye & Moustier, 2000; Jacobi et al., 2000). Intra-urban open spaces and peri-urban (former rural farmland) areas are commonly leased to cultivators by landowners, with the produce being geared towards the local market in places such as Dakar, Senegal (Mbaye & Moustier, 2000) and Dar es Salaam, Tanzania (Jacobi et al., 2000). The raising of poultry is “by far the most important” UPA/UA activity in Cairo, and is almost exclusively undertaken by low-income groups and women (Gertel & Samir, 2000: 217-218). Owing to space constraints, most Cairo residents raising poultry prefer to live on the top floors of buildings (70.8%), in order to have access to rooftops (ibid.).

UPA/UA appears to be a small-scale subsistence activity, requiring limited inputs (mainly manure for fertiliser) and labour. Therefore, the role of commodity exchanges is largely confined to “a simple self-sufficient peasant economy” in small towns, and

petty informal exchanges of commodities in larger towns and cities (Maxwell, 1994). In Ethiopian households, traditional extended family systems create a form of household self-insurance for labour and assistance when needs arise (Egziabher, 1994).

Overall, UPA/UA throughout the African continent appears to be significant for a wide socio-economic range of households, using a variety of production systems. The types of production systems used seem to depend on the plot location and size and are oriented towards the needs of the practitioner rather than the market. On the basis of the examples above, UPA/UA appears to offer a response to poverty and to the inability of governments, the economy and society to address widespread urban poverty.

### **5.9.6 Problems experienced in UA**

UA faces several constraints as a result of the nature of its activities. The main issues include land, costs and social problems such as theft.

The major problem for urban farmers has always been that of finding and keeping land (Binns & Lynch, 1998). Generally, land values in cities are significantly higher than in small towns or in rural areas, because of the competition for land within the city. As most urban farmers engage in agriculture as a result of their marginal status, they cannot afford to buy land in the city, and often do not even own the land on which their house is located. This leaves urban farmers dependent on backyard plots or any available open spaces within the city. These open spaces are usually either private property that will at some point be developed by the owner, or the property of the local authorities, who are often not supportive of urban farmers. Urban farmers also have to compete with other urban farmers for the limited space available (Asomani-Boateng, 2002).

In fact, the negative views harboured by urban administrators in respect of urban farming have historically been problematical. Generally, UA is viewed as a remnant of a previous lifestyle, which is practised by migrants to the city who have not yet completely urbanised, and who, in the course of time, will take jobs in the city and abandon their agricultural activities, while the land they have used will be taken over by urban functions. UA was also viewed negatively by the authorities as creating breeding grounds for crop pests and diseases, as well as hiding places for criminals (Gbadegesin, 1991; Maxwell, 1995; Siegmund-Schultze & Rischkowsky, 2001; Tinsley, 2003). However, the notion that UA will cease as the practitioners urbanise has proved to be fallacious: research has shown that many of the urban farmers have been in the city for years, and that, moreover, their long term of residence has assisted them, both to compete successfully for the limited land available in the city, and also to navigate the various obstacles associated with farming within city limits. Indeed, it was the poor, rather than merely the migrants, who were found to be engaging in UA.

Given that most of the water in cities has either been treated for human consumption (and is therefore expensive for agricultural use), or is heavily polluted, urban farmers generally experience problems in finding adequate water supplies for their farming activities, as they cannot afford to pay the price of urban water supplies for agricultural purposes (Asomani-Boateng, 2002). The costs of inputs are also an issue, with few farmers being able to afford chemicals, fertilisers and implements – while

even fewer are willing to invest in the farming land, given that their tenure is likely to be short and insecure (Gbadegesin, 1991; Simatele & Binns, 2008).

Another problem confronting urban farmers is theft (although in this regard, UA is probably not very different from normal agricultural practice). Urban farmers often cultivate in full view of many passing people, and their crops are thus frequently susceptible to theft. Some of the solutions employed include harvesting as soon as the crops can be consumed; choosing less conspicuous crops; and hiding the crops among other plants so as not to attract attention to them (Gbadegesin, 1991; Egal et al., 2001).

### **5.9.7 Opportunities of urban agriculture**

UA provides opportunities in respect of various areas of urban policy, such as LED (production, income, enterprise development); health (food security and nutrition, food safety); urban environmental management (urban greening, climate and biodiversity; waste recycling; reducing the ecological footprint of the city); and social development (poverty alleviation, social inclusion of disadvantaged groups, recreational functions) (Van Veenhuizen & Danso, 2007). Of the above, food security and nutrition, along with poverty alleviation, tend to be most often cited as benefits that UA holds for farmers.

Some research has also suggested that UA can provide benefits even on a small scale, in that the amount of land available to the farmers does not appear to be of major importance. The size of land parcels for farming in Kampala ranged from as little as nine square metres, to as much as several hectares; yet the size of the parcel of land being farmed correlated only very weakly and insignificantly with nutritional status, and not at all with food sufficiency measures. This suggests that even small parcels of land can be used beneficially by those who engage in urban farming (Maxwell, 1995).

### **5.9.8 Urban agriculture in South Africa**

At present, the scale of urban cultivation being conducted in South Africa is considered by researchers to be relatively small in comparison to the scale of UA encountered in other developing countries, especially in Africa (Rogerson, 1993). This can largely be ascribed to the opportunity costs of UA and the presence of other means of social support. The effects of colonial and apartheid policies on agriculture, as well as the effects of urbanisation on the current views of prospective urban farmers, should also not be ignored.

Urban farming competes directly for scarce city space with the pressing demands for shelter for the poor, which comprise part of the apartheid legacy. Eberhard (1989 b, 1989 c) found that in the townships of South Africa's largest cities, building a backyard shack to accommodate lodgers can bring in a larger and more certain income than using the land for agricultural purposes. In addition, the labour expended on farming can be employed in pursuits that bring in a better income in the informal economy (Rogerson, 1992 c). Eberhard (1989) also points out that – assuming that the circumstances for production were favourable – the quantity that could be produced would meet only half of the minimum vegetable requirements of a household of five. This represents less than 1% of the monthly budget of a household living at a minimum subsistence level. It would thus require a dramatic deterioration in the economic circumstances – and hyper-inflation of food prices – for small-scale

production to make any real impact on the household budgets of the poor (Eberhard, 1989 c).

May and Rogerson (1995) suggest that agricultural activities are not the most significant means of survival for urban farmers in either the urban or peri-urban areas, though such activities certainly represent one important survival strategy adopted by the marginalised. In fact, research by Thornton (2008) in Rhini and in Peddie in the Eastern Cape suggests that grants remain one of the major survival strategies of the urban poor. Moreover, his research also corroborates the finding that the savings of a household, as derived from UA, are indeed low. The question (to which we shall give attention later in this report) is whether there is a relationship between access to grant funding and UA.

Among the welfare dependants, a much higher participation rate in respect of agricultural activities is recorded for these predominantly (two-thirds) female-headed households. Not surprisingly, the average age of the head of the household tended to be high, at around 65 years of age. Remittance-dependent households were the second poorest, and constituted a significant proportion of those engaging in UA, with 47% of the remittance-dependent households in peri-urban areas participating in agricultural activities (May & Rogerson, 1995).

An investigation of the views of black urban youths regarding UA, conducted by Thornton (2008), revealed that many youths view agriculture as something that their parents and grandparents were forced to carry out in the homelands, as a consequence of the interrelated effects of apartheid policies and the lack of work. They thus have no desire to engage in UA. This circumstance is further complicated by the continued mistrust of, and lack of support for UA, as reported on by Thornton (2008).

## **5.10 Conclusion**

This section has outlined the past and current views, debates and prior research in respect of UPA/UA as discussed in the literature, as well as the theoretical and conceptual approach adopted in order to conduct this research. UPA/UA has been described as an ancient global phenomenon, which is currently practised by various income groups for subsistence, income and for recreational purposes. An overall lack of empirical UPA/UA research has been identified as a key reason for its lack of conceptual clarity. This is partly owing to its relative infancy as a subject of serious academic interest. In a manner reminiscent of the aftermath of the economic and oil shocks of the 1970s, current global economic and environmental events are leading policy-makers to re-conceptualise the use of urban spaces as something more than industrial growth nodes. Economic uncertainty and fluctuating food and oil prices place enormous pressure on urban dwellers, particularly the poorest, and restrict the ability of planners and policy-makers to satisfy increasing demands for services. The recognition of the contemporary significance and potential of UPA/UA in the literature underscores the relevance of UPA/UA as an effective tool for practitioners and policy-makers in sustainable urban development. Overall, this research seeks to make a general contribution to a better understanding of UPA/UA in the global South. Specifically, in localised case studies in urban centres in South Africa and Zambia, analyses of qualitative and quantitative data will clarify the impact of UPA/UA in helping poor households to achieve self-sufficiency in respect of food, as well as in terms of its contribution to the urban food supply; and will also identify opportunities

to improve institutional support and understandings of how UPA/UA can contribute to poverty alleviation and sustainable urban development.

Although some of the other papers will deal in more detail with the process of UA, a number of crucial policy-related questions need to be asked at this point:

- To what degree have historical urban policies, which emphasised separation and one-household-one-plot solutions, promoted / inhibited UA, in view of the fact that South African cities have some of the lowest densities in the world?
- Conversely, South Africa is one of the most urbanised countries in Africa (+70%), depending on the relevant definition. Have the high levels of urbanisation hampered UA?
- What could be described as an appropriate response towards UA at the city level?
- What role is played by water access and payment for water in respect of UA?
- Will UA phase itself out as the elderly pass away?

Though the discussion and analysis which follow may not address all of the above questions, an attempt will nevertheless be made to attend to these questions, either in this report or in one of the other reports.

## **6. Methodology**

This paper makes use of the General Household Survey conducted and published annually by Statistics South Africa. The GHS was designed to measure the living conditions of South African households, and covers six fields: education, health, labour-market activities, non-remunerated travel by household members, housing, and access to (and satisfaction with) services and facilities (StatsSA, 2007). Despite the wealth of information contained in the GHS, this survey has not, as yet, been utilised to its full potential in the analysis of, *inter alia*, household welfare levels in South Africa (Meth, 2007).

The most recent available survey, conducted in 2007, was used, along with the earliest (2002) survey available online. The general household survey draws a sample of households across South Africa; and the results are weighted per household in order to represent the entire population of South Africa. The paper presents the data in terms of the total number of South African households.

Three main approaches to the data were followed:

- The 2007 profile was used to provide as accurate an overview as possible of the current situation.
- Next, an attempt was made to compare the 2002 and 2007 data-sets.
- A control group of urban non-agriculturalists with the same attributes as the UA practitioners (expenditure below R10 000 per month, urban location, and similarities in respect of basic infrastructure – where applicable) was developed.

In order to compare those who were probably urban farmers with a comparable control group of urban non-farmers, two samples were drawn, the major distinction being that the urban farmers had indicated that they had access to land, and that this

access had been acquired through some means other than tribal authority (in order to exclude rural locations).

The following approach was followed in identifying UA practitioners:

- First, urban residents were identified. For two reasons, this was no easy task: firstly, urban classification was only available for the 2002 data – and even with such urban classification, it was not clear what definition of *urban* and *rural* had been used. Secondly, no such classification was available for the 2007 data. This meant that a range of other characteristics had to be used in order to identify UA practitioners. For the purpose of identifying UA practitioners in the 2007 data, the following criteria were used:
  - The size of the plot had to be smaller than one hectare;
  - no household residing in a traditional housing unit was included;
  - any household with land access acquired through a tribal authority was excluded;
  - in the Northern Cape, Eastern Cape and North West provinces, water access had to be within 200m of the place of residence. This criterion was applied in order to minimise the potential number of rural households.
- Second, only households that had indicated that they had access to land for agricultural activities were selected.
- The monthly expenditure of all selected households had to be less than R10 000 per month. This criterion was used for both years. Inflation obviously played a role in this respect. However, owing to the nature of the data (categories and weighted households), it was not possible to include inflation adjustment in this figure.

As a result of the ambiguity in the definition of urban and rural areas, it was virtually impossible to apply the above principles in respect of three of the nine provinces in South Africa, namely Kwazulu-Natal, Mpumalanga and Limpopo. In most of the analyses, these provinces were thus excluded. These provinces have extensive communal land areas, which makes it difficult to distinguish between urban and rural agriculture. In addition, many people cultivating or using communal land in these areas view this land as belonging to them.

## **7. Basic profiling of urban agricultural practitioners**

### **7.1 Geographic distribution**

As mentioned in Section 6, three provinces were excluded from the detailed analysis. However, it was possible, despite the shortcomings relating to these provinces, to provide some indication of the spatial distribution of UA in South Africa (see Figure 7.1). An assessment of such spatial distribution would nevertheless be incomplete if an assessment of rainfall patterns (see Figure 7.2) and soil quality were not also available (Figure 7.3).

A number of comments should be made in respect of these three maps, and of the spatial distribution of UA, soil quality and rainfall:

- It is significant that the province that has the highest number of UA practitioners also has the third lowest HDI of all the provinces in South Africa.

- There also seems to be a correlation between reliable summer rainfall and the practice of UA. The areas of the Eastern Cape and KZN are therefore the most prominent areas in this regard.
- The availability of good soils in the Eastern Cape and KZN is a further contributing factor.

Moving away from the overall distribution in South Africa to the selected sample, Tables 7.1 and 7.2 below provide an overview of the distribution of urban farmers in comparison to a control group (in socio-economic terms) and South Africans in general.

**Table 7.1: Profile of urban farming per province, 2002**

Province	Urban farmers		Control group		Total	
	n	%	n	%	N	%
Western Cape	723	1.2%	872629	19.6%	873352	19.3%
Eastern Cape	48036	76.6%	516507	11.6%	564543	12.5%
Northern Cape	1559	2.5%	138852	3.1%	140411	3.1%
Free State	8621	13.7%	475821	10.7%	484442	10.7%
North West	602	1.0%	321689	7.2%	322291	7.1%
Gauteng	3180	5.1%	2128671	47.8%	2131851	47.2%
Total	62721	100.0%	4454169	100.0%	4516890	100.0%

**Table 7.2: Profile of urban farming per province, 2007**

Province	Urban farmers		Control group		Total	
	n	%	n	%	N	%
Western Cape	1767	2.2%	1239558	17.0%	1241325	16.8%
Eastern Cape	52344	63.8%	1172722 <sup>4</sup>	16.1%	1225066	16.6%
Northern Cape	1779	2.2%	269399	3.7%	271178	3.7%
Free State	8512	10.4%	806686	11.1%	815198	11.0%
North West	5190	6.3%	806379	11.0%	811569	11.0%
Gauteng	12441	15.2%	3004754 <sup>5</sup>	41.2%	3017195	40.9%
Total	82033	100.0%	7299498	100.0%	7381531	100.0%

The Eastern Cape has by far the largest share of urban farmers, despite the fact that this province only has the third largest share of the population in the control group and in South Africa in general. Gauteng, South Africa's richest and most urbanised province, on the other hand, has significantly fewer urban farmers, in view of the fact that it has between 40% and 47.8% of the control group's population. The Northern Cape and Free State each have a larger share of urban farmers in comparison to their control group counterparts.

There thus seem to be early indications that UA is being used as a coping mechanism, since the poorer provinces have higher percentages of UA practitioners.

<sup>4</sup> The relatively low number of households in the control group for the Eastern Cape can probably be ascribed to the concentration of poverty in the rural areas, which did not comprise the focus of this study.

<sup>5</sup> The over-representation of Gauteng in the control group is owing to the relative size of the urban population of Gauteng, in comparison to the other provinces.



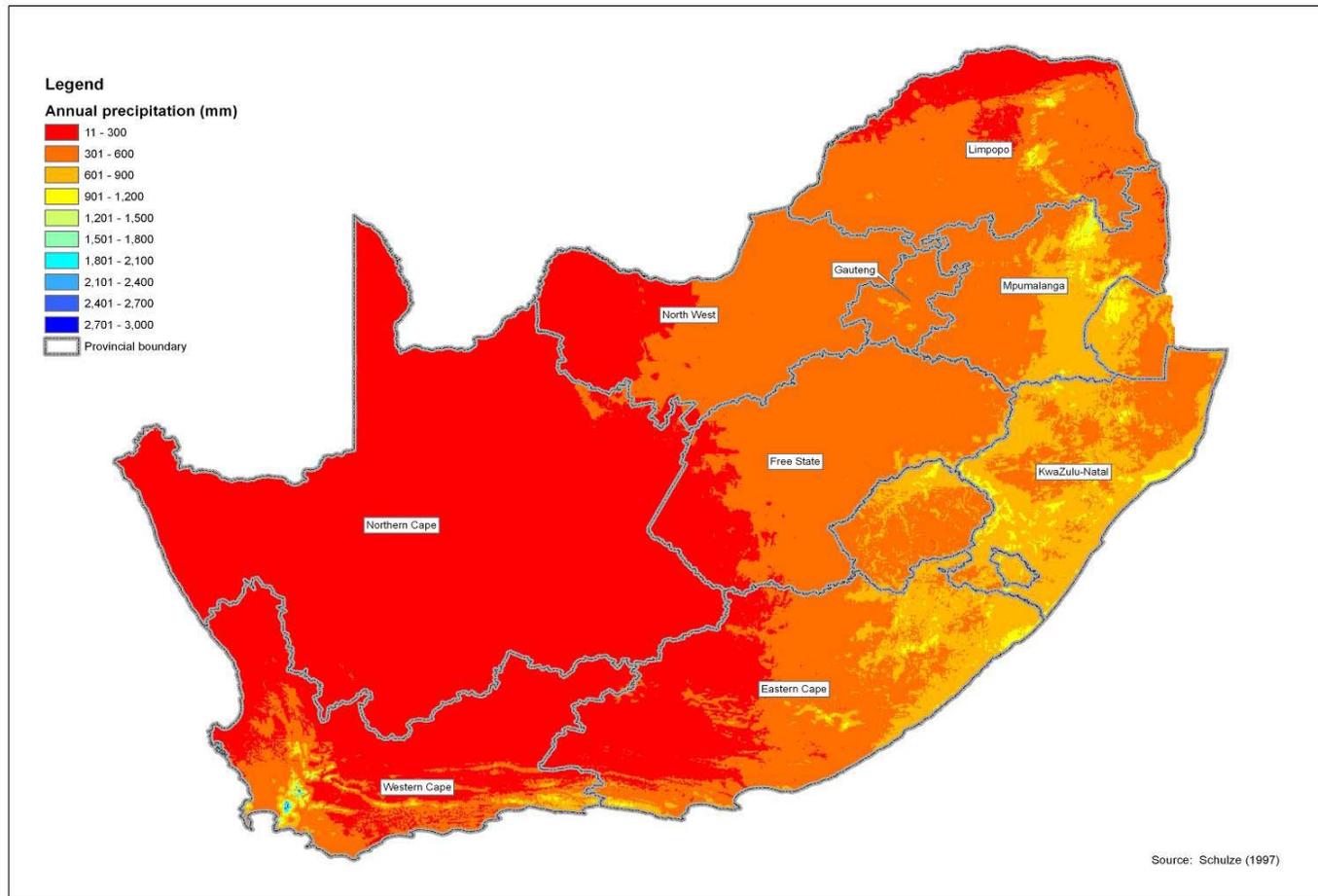
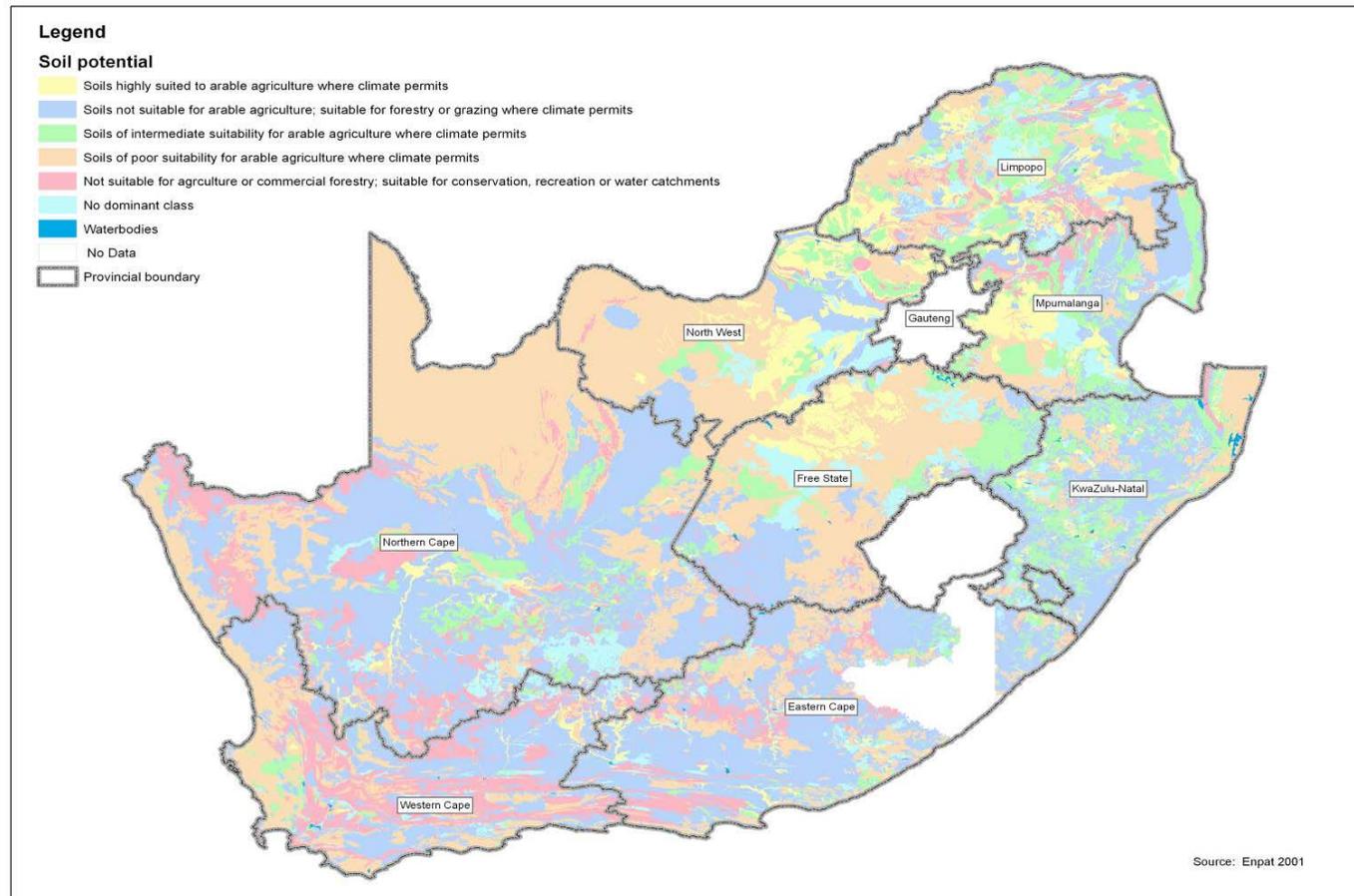


Figure 7.2: Distribution of average rainfall in South Africa (30-year average)



**Figure 7.3: The distribution of soil quality in South Africa**

## 7.2 Gender<sup>6</sup>

The literature review strongly suggested that UA was largely practised by poorer households – and by the females of any household. This is corroborated by the data of the General Household Surveys, as reflected in Tables 7.3 and 7.4 below.

**Table 7.3: Gender distribution of heads of households, 2002**

	Urban farmers		Control group		Total	
	n	%	n	%	n	%
Male	34914	55.7%	3068209	68.9%	3103123	68.7%
Female	27808	44.3%	1381439	31.0%	1409247	31.2%

**Table 7.4: Gender distribution of heads of households, 2007**

	Urban farmers		Control group		Total	
	n	%	n	%	n	%
Male	42848	52.2%	4928726	67.5%	4971574	67.4%
Female	39186	47.8%	2369903	32.5%	2409089	32.6%

From the above, it can be seen that the households who practised UA were more likely to have female heads than were the control groups for both 2002 and 2007. It also seems as if there was a slight increase in the real number and percentages of females heading households involved in UA between 2002 and 2007. Since poorer households are more likely to have female heads, this also gives an indication of the use of UA as a survival strategy by the poor. However, a closer look at this data-set suggests that the Eastern Cape had the highest percentage of female heads of households practising UA in 2007. The percentage of people in the UA group in the Eastern Cape is much higher than that of the other provinces. There are, in fact, provinces where the percentage of male heads of households is high, in proportion to their share of the total population. Examples in this regard are the Western Cape, the Northern Cape, North West and Gauteng.

## 7.3 Population group

Apartheid policies were instrumental in shaping the socio-economic landscape on the basis of race in South Africa. In the process, black South Africans were disadvantaged the most. The population groups of the heads of households are summarised in Tables 7.5 and 7.6 below.

**Table 7.5: Population groups of the heads of households, 2002**

Population group	Urban farmers		Control group		Total	
	n	%	n	%	n	%
Black	56953	90.8%	2887377	64.8%	2944330	65.2%
Coloured	3952	6.3%	643194	14.4%	647146	14.3%
Indian/Asian	0	.0%	63376	1.4%	63376	1.4%
White	1818	2.9%	849726	19.1%	851544	18.9%
Other/Unspecified	0	.0%	10495	.2%	5331	.1%
Total	62723	100.0%	4454168	100.0%	4516891	100.0%

<sup>6</sup> The figures in this section purely reflect the number of heads of households involved in UA, and not the number of persons in the respective households who are involved in UA.

**Table 7.6: Population groups of the heads of households, 2007**

Population group	Urban farmers		Control group		Total	
	n	%	n	%	n	%
Black	73965	90.2%	5327963	73.0%	5401928	73.2%
Coloured	2876	3.5%	900124	12.3%	903000	12.2%
Indian/Asian	0	0.0%	71814	1.0%	71814	1.0%
White	5193	6.3%	989022	13.5%	994215	13.5%
Other/unspecified	0	0.0%	10576	0.1%	10576	0.1%
Total	82034	100.0%	7299499	100.0%	7381533	100.0%

From the above two tables, it is clear that the greatest majority of the heads of households engaging in urban farming are black, and that these heads of households are over-represented in comparison to the control group. Coloured and white heads are generally under-represented among urban farmers, while Indian/Asian heads are notably absent from the group engaging in UA. The gaps between the urban farmers and the control group in respect of the population groups of the heads of households diminished between 2002 and 2007. The black population group has higher percentages of UA practitioners than one would expect on the basis of the control group. The opposite is true for coloured, Indian and white households. These results correlate with the general concentration of poverty among black households, but do not account for the levels of poverty among coloured households.

A few interesting provincial differences are apparent:

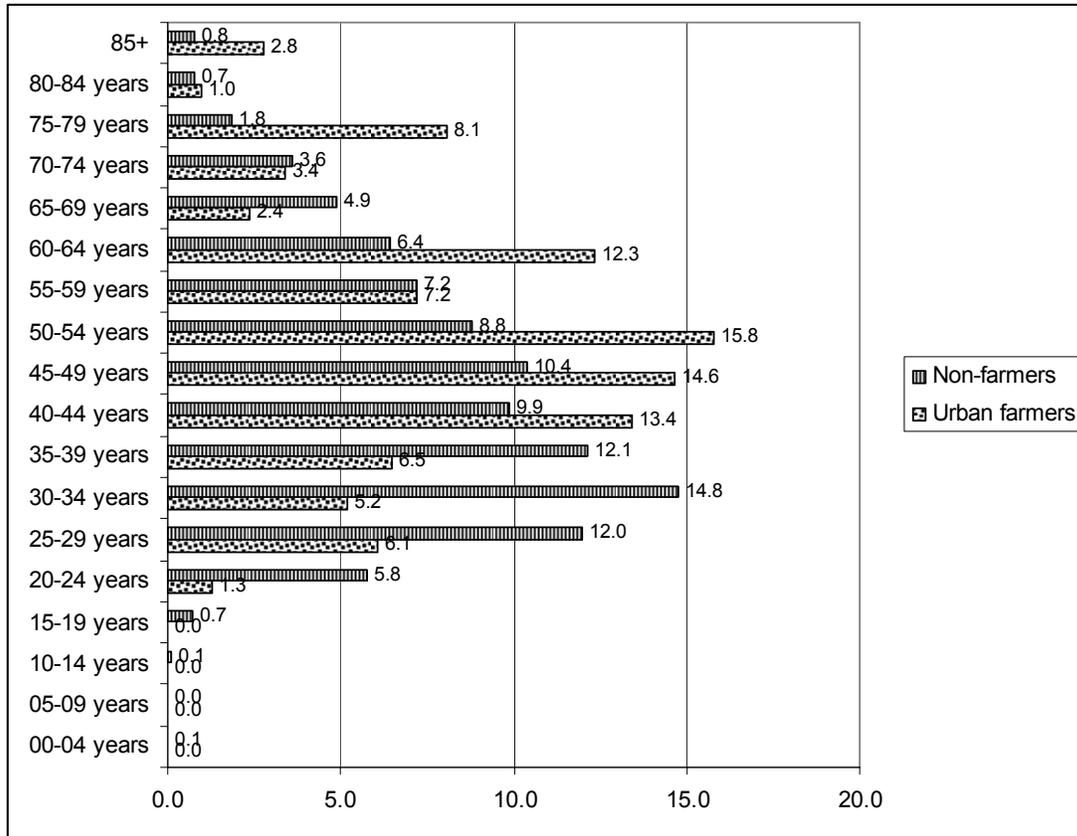
- As one would expect on the basis of the demographic attributes of the Western Cape and the Northern Cape, coloured and white households dominate UA.
- In the other provinces, black households are by far in the majority.
- Interestingly enough, white households in Gauteng account for nearly 20% of the UA practitioners.

#### 7.4 Household size

As could be expected, the households of UA practitioners were larger than those in the control group. The average number of members of UA households amounted to 4.4, as against 3.27 in the case of the control group. The presence of extended families is usually an indication of higher levels of poverty – an aspect that will be examined later in this report.

#### 7.5 Age

The literature review indicated that UA practitioners are likely to be older than other urban residents. The age distribution of the UA practitioners and the control group is reflected in Figure 7.4 below.

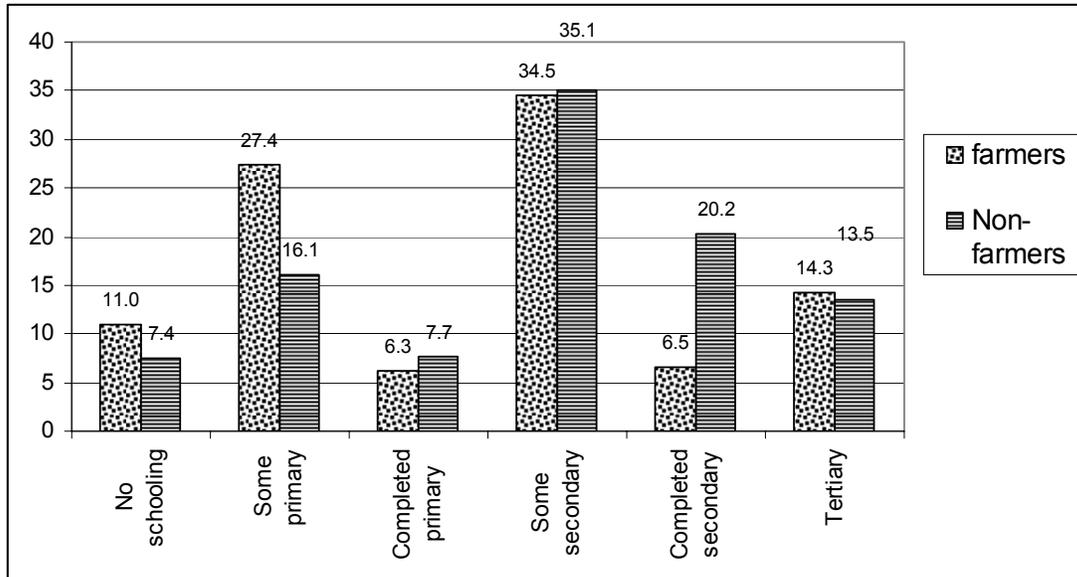


**Figure 7.4: The age distribution of UA practitioners, 2007**

The age distribution clearly indicates that higher percentages of UA practitioners fall within the older age groups. For example, 8.1% of those aged between 74 and 79 years are UA practitioners, compared with 1.8% in the case of the control group. The average age of these UA practitioners was 52 years, while the average age of the control group was 44 years. In the application of the t-test, the age difference was found to be statistically significant.

### **7.6 Level of education**

This section provides a brief outline of the educational profile of both the UA practitioners and the control group (see Figure 7.5).



**Figure 7.5: The educational profile of UA practitioners and non-farmers, 2007**

Urban agriculturalists comprise the less well-educated group of the two – 11% of these persons have no schooling (compared with 7.4% of the control group), while 33.7% have some primary education, as against 23.8% of the control group. What is striking here is that UA seems to be a sector of the economy that is occupied by significant percentages of poorly-skilled people – although at a level that does not necessarily provide them with an adequate livelihood. Interestingly enough, compared with the control group, there was virtually no difference in respect of the assimilation of children into the school system in respect of UA practitioners. What was evident, was that a slightly higher proportion of the UA respondents reported that they did not have money to send their children to school (1.4%), in comparison to the 0, 8% of the control group who reported being faced with this problem.

## **8. A profile of agricultural activity**

Having provided an overview of the geographical distribution of UA practitioners, we now turn to an overview of the nature of agricultural activity. Obviously, the assessment was hampered by the fact that only aspects reflected in the data-set could be used. Specific aspects considered in this section are the size of land parcels, the basis of accessibility, the type of activity and access to water.

### **8.1 Size of land**

In Table 8.1 below, it can be seen that, generally, the land to which the urban farmers have access is quite small in extent. This is to be expected, as these holdings are inevitably located in urban or peri-urban areas where land is at a premium, where competition is high, and where the farmers are probably the only persons working the soil, with limited implements at their disposal.

**Table 8.1: Size of land holdings, 2002 and 2007**

Size	2002		2007	
	n	%	n	%
Less than 5.000 m <sup>2</sup> (5.000 m <sup>2</sup> is equal to approximately one soccer field)	60446	96.4%	69520	84.7%
5.000m <sup>2</sup> - 9.999m <sup>2</sup>	2276	3.6%	12514	15.3%

The above data suggest that the size of plots in 2007 was larger than in 2002. This is surprising, as one would have expected that, with increasing urbanisation, the plots would have diminished in size. One possible reason for the increase in size could be an increased need to access land. In terms of provinces, the largest stands for UA are found in the Northern Cape province, with over 62% of the stands being between 5 000m<sup>2</sup> and 9 999m<sup>2</sup> in size. There is also evidence that, in cases where males are the heads of households, the land for UA purposes is larger in extent.

## 8.2 Land tenure

Table 8.2 below indicates that in both 2002 and 2007, the majority of urban farmers indicated that they owned the land that they worked. There was, however, a significant increase in the proportion of individuals who indicated that they owned the land. This may reflect a misconception on the part of the respondents (for instance, it has been shown in tribal areas that respondents tend to indicate that they own the land, whereas they only have the right to farm it); or possibly the rise in ownership is associated with an increased use of home gardens, which may be related to increased home-ownership.

**Table 8.2: Basis of accessibility of land, 2002 and 2007**

Basis of land access	2007		2002	
	n	%	n	%
Own the land	74146	90.4%	47696	76.0%
Rent the land	5226	6.4%	6430	10.3%
Sharecropping	1431	1.7%	2511	4.0%
Other	598	0.7%	2538	4.0%
Do not know	304	0.4%	0	0.0%
Unspecified	329	0.4%	3547	5.7%
Total	82034	100.0%	62722	100.0%

Overall, more than 90% of the UA practitioners indicated that they owned the land in 2007. Nearly 6.5% reported that they were renting the land, while sharecropping accounted for 1.7% of the cases. Although there are no significant differences, the data indicate that females are more likely to rent (9.3% were renting the land in 2007). Only 3.7% of the males were renting the land. At the provincial level, the Western Cape province has the highest percentage of UA practitioners renting land (17.4%), followed by the Northern Cape (10.7%).

## 8.3 Type of urban agricultural activity

In Table 8.3 below, the focus falls on the produce of the urban farmers. Respondents were given a list of different types of UA activities, and were asked to indicate those in

which they were engaged. A single household could thus be involved in more than one form of UA activity.

**Table 8.3: Broad categories of UA involvement, 2002 and 2007**

Type of UA involvement	2002		2007	
	n	%	n	%
Field crops	40685	65.4%	59809	74.8%
Horticulture	2898	4.7%	3974	5.1%
Livestock	7141	11.5%	8205	10.4%
Poultry	10241	16.5%	6445	8.2%
Orchards	6188	10.0%	2249	2.9%
Other	1599	2.6%	11347	14.6%

From the above, field crops appear to be the most common form of produce. As these crops probably comprise staple food products, this is to be expected. Field crops also displayed a proportional increase in importance, from 65% in 2002 to 74% in 2007. There appears to have been a reduction in the share of households indicating that they bred poultry, while an increase occurred in respect of those who cultivated orchards. Some households produced multiple crops. For instance, of those who produced field crops in 2007, 4 051 – or 6.9% – also owned livestock, while 3 742 – or 6.3% – also owned poultry.

A few further points should be made in respect of the nature of the activities in which UA practitioners were involved:

- Proportionally, the Northern Cape (a semi-arid area) has the highest number of UA practitioners involved in livestock. Provinces with more rain have more people involved in field crops, proportionally speaking.
- Females are proportionally better represented in respect of field cropping, while males dominate the other types of activities.

#### **8.4 Access to water**

In the literature review, some comments have already been made in respect of the availability or non-availability of water, and the question of whether payment is required for water. The geographical overview suggested that rainfall does, in fact, play a role in the UA activities.

The General Household Survey indicates the water sources used by the households. Although the household water may not always be obtained from the same source as the water used for agricultural activities, the survey does provide some indication as to the general water sources that are available. The sources of the water used by the urban farmers are summarised in Table 8.4 and Table 8.5 below.

**Table 8.4: Source of water for UA, 2002**

Type of water supply	Urban farmers		Control group		Total	
	n	%	n	n	%	n
Piped (tap) water in dwelling	28506	45.4%	2560133	57.5%	2588639	57.3%
Piped (tap) water on site or in yard	20019	31.9%	1497174	33.6%	1517193	33.6%
Public tap	8375	13.4%	303296	6.8%	311671	6.9%
Other	5822	9.3%	93565	2.1%	99387	2.2%
Total	62722	100.0%	4454168	100.0%	4516890	100.0%

**Table 8.5: Source of water for UA, 2007**

Type of water supply	Urban farmers		Control group		Total	
	n	%	n	n	%	n
Piped (tap) water in dwelling	20556	25.1%	3424019	46.9%	3444575	46.7%
Piped (tap) water on site or in yard	28782	35.1%	2649146	36.3%	2677928	36.3%
Public tap	17438	21.3%	737214	10.1%	754652	10.2%
Other	15256	18.6%	489119	6.7%	504375	6.8%
Total	82032	100.0%	7299498	100.0%	7381530	100.0%

The following important comments need to be made:

- For both 2002 and 2007, the percentage of UA practitioners who accessed water through a public tap was approximately double that of the control group.
- UA practitioners are also less likely to have water in their house than non-UA practitioners. This is probably an indication that in many cases, UA practitioners are people who have been neglected in respect of general infrastructure provision – for instance, informal settlement dwellers.

Generally, there was not much difference between the indications given by urban farmers and those given by the control group with regard to the quality of the water (in terms of certain quality indicators, including odour, taste, colour, etc.), although the urban farmers reported a slight decrease in respect of quality.

However, as is apparent from the data in Table 8.6 below, large differences were encountered in respect of the question as to who paid for the water received.

**Table 8.6: A profile of payment for water, 2007**

	Urban farmers		Control group		Total	
	n	%	n	n	%	n
Yes	23657	28.8%	4510231	61.9%	4533888	61.5%
No	39043	47.6%	1893378	26.0%	1932421	26.2%
Not applicable	19334	23.6%	882106	12.1%	901440	12.2%
Total	82034	100.0%	7285715	100.0%	7367749	100.0%

While 61.9% of the control group indicated that they were paying for their water, only 28.8% of the urban farmers were paying for their water. Only a small number indicated that payment was not applicable to the water they used. This indicates that most urban farmers were simply not paying for water. The most frequently cited reasons for non-payment were the absence of a metering system (in 30.3% of cases), and the fact that respondents believed that government should be providing free water (in 30.4% of cases).

All of the above issues raise a fundamental question in respect of policy relating to payment for water and the levels of subsidisation for the poor. Essentially, the question arises as to how many of these UA practitioners would have been involved in UA if they had been obliged to pay for water.

## 8.5 Other attributes

The urban farmers are slightly less likely than the control group to take part in a recycling programme (5.8% versus 8.6%); however, they are significantly more likely to engage in the composting of kitchen waste (15% versus 2.4%) or garden waste (13.5% versus 1.9%). However, these figures are generally low, if the emphasis placed in the literature on these components as being unique to UA is taken into account. While pesticide use in the garden is quite common among urban farmers (23.1% versus 6.1%), herbicide use is less common (12.4% versus 4.2%). This can possibly be related to the high cost of measures involving herbicides.

## 9. Poverty, socio-economic status and expenditure

In the following section, the socioeconomic status of the households engaged in UA will be compared with that of those not engaged in UA (for the years 2002 and 2007). Households will be compared in terms of their main source of household income, level of household expenditure, asset ownership and access to public services, as well as their level of food security.

### 9.1 Main source of income

Unfortunately, the data-set does not provide an overview of income in monetary terms. Therefore, for this exercise, it was necessary to consider and compare the main sources of income (see Table 9.1).

**Table 9.1: Main sources of household income, 2002 and 2007 (% of households)**

Main source of income	Urban non-agriculturalists		Urban agriculturalists	
	2002	2007	2002	2007
Salaries/wages	68.77	68.35	50.19	43.76
Remittances	7.30	6.76	12.30	10.49
Pensions and grants	13.70	17.61	25.58	35.26
Farm product sales	0.38	0.96	1.01	7.53
Other non-farming income	6.42	2.90	8.92	1.52
No income source	3.00	3.09	1.33	1.44

\*All estimates are weighted.

Sources: GHS 2002; GHS 2007 (StatsSA, 2002; 2007).

In both 2002 and 2007 (according to Table 9.1), urban agriculturalist households were more dependent on non-salary/non-wage-related income than were their urban non-

agriculturalist counterparts. The importance of these sources of income increased between 2002 and 2007. The urban agriculturalists, in particular, were dependent on public (pensions and grants) and private (remittances) transfers. The percentage of households citing pensions or grants as their main source of household income increased significantly between 2002 and 2007 (this trend was also evident in the case of the non-agriculturalist households). A probable explanation for this is the sharp increase in the number of grants that were taken up over the period: during 2005, the maximum age at which a child could qualify for a child support grant was increased from seven to fourteen years, with a further increase of the maximum eligibility age to fifteen years in 2006 (National Treasury, 2005; 2006). This meant that many more households qualified to receive grants (and that those households that received these grants would also receive them for a longer period). Another noteworthy aspect is the substantial increase in the percentage of agriculturalist households whose main source of income was the sale of farm products – a sevenfold increase over the sample period. Furthermore, the households not involved in UA were more than twice as likely (in both years) to report no source of income as those households practising agriculture.

As pensions and grants contribute significantly to the income of UA practitioners, a profile of the types of grants is important (see Table 9.2).

**Table 9.2: Types of grants received, 2007**

	Urban farmers		Control group		Total	
	n	%	n	%	n	%
Old age pension	14881	23.7%	619098	13.9%	633979	14.1%
Child support grant	7805	12.4%	313866	7.1%	321671	7.1%
Disability grant	4232	6.7%	198301	4.5%	202533	4.5%
Care dependency grant	209	0.3%	18442	0.4%	18651	0.4%
Foster care grant	998	1.6%	12545	0.3%	13543	0.3%

In Table 9.2 above, it can be seen that pensions, followed by child support grants, were the form of social support most frequently accessed by both the urban farmers and the control group. Some households received multiple grants; for instance, of those who received an old age pension, 2 847 – or 19.1% – also received a child support grant. It is also clear that more of the urban farmers were likely to receive certain types of grants, in comparison to the control group. This gives some indication of the vulnerability of the UA practitioners

## 9.2 Household expenditure

The focus will now shift to an assessment of household expenditure. Once again, the 2002 and 2007 data regarding the UA practitioners and non-practitioners will be compared (see Table 9.3).

**Table 9.3: Monthly household expenditure categories, 2002 and 2007 (% of households)**

Spending category	Urban non-agriculturalists		Urban agriculturalists	
	2002	2007	2002	2007
R0-R399	24.44	13.03	34.59	13.51
R400-R799	23.53	24.05	21.98	29.42

R 800-R1199	13.36	28.55	12.53	17.27
R1200-R1799	9.49	13.52	12.93	10.79
R1800-R2499	8.43	8.26	4.13	7.43
R2500-R4999	11.58	13.68	8.32	5.42
R5000-R9999	9.17	4.89	5.53	10.20

\*All estimates are weighted.

Sources: GHS 2002; GHS, 2007 (StatsSA, 2002; 2007).

Table 9.3 shows that the percentage of households (including both UA practitioners and non-UA practitioners) in the bottom two expenditure categories decreased quite markedly between 2002 and 2007. However, this observation is no cause for optimism: the expenditure categories are given in terms of prevailing (nominal) prices. Thus, those households resorting under the bottom two categories in 2007 were much worse off than those that fell into these two categories in 2002. (In 2007, the upper limits of the spending categories, in terms of 2002 prices (using the CPI as a deflator), were R319, R639, R960, R1 440, R2 000, R4 001 and R8 002.) No inferences will thus be made regarding changes in household welfare levels over time (using monthly household expenditure as a proxy). The following conclusion regarding total monthly household expenditure is valid for both 2002 and 2007: urban agriculturalist households are more likely to fall into the bottom two spending categories, and less likely to fall into the top two spending categories, than are their non-agriculturalist counterparts. A more nuanced approach to measuring household welfare levels has been proposed by Meth and Dias (2004), who used monthly household spending, as indicated by the GHS, to construe maximum adult equivalent household spending. They then estimated poverty headcounts by postulating that all individuals belonging to households with (maximum) adult equivalent spending levels below a “household subsistence level” could be regarded as poor. Admittedly, this would result in an underestimation of the true levels of household poverty prevailing in 2002 and 2007.

### 9.3 Household assets

To obtain direct comparisons between the welfare levels of households involved in UA and those not involved in UA, an asset index was constructed, using factor analysis according to the method followed by Booysen, 2002 and Bhorat et al., 2006. (Booyesen et al., 2008 also construct an asset index, but use multiple correspondence analyses as a primary method for constructing the index, while also using principal components and factor analyses to perform robustness/sensitivity checks.) Suppose that a household’s ownership of a specific asset, or its access to a particular service, is given as (cf. Sahn & Stifel, 2000):

$$a_{ik} = \beta_k c_i + u_{ik} \quad (1)$$

– where  $a_{ik}$  = ownership/access of household  $i$  of asset/to service  $k$ ;  $c_i$  = welfare level of household  $i$ ;  $u_{ik}$  is an error term; and  $\beta_k$  is a parameter linking welfare to ownership/access. A household’s welfare level, and also the coefficient associated with it, are unobserved – however, factor analysis allows for the estimation of the relation given in (1), and also allows for the estimation of appropriate weights for the asset index (Bhorat et al., 2006). Factor loadings from the first common factor are retained, and the

welfare level of household  $i$  is then given by utilising information from the first common-factor loading (Sahn & Stifel, 2000):

$$c_i = f_1 a_{i1} + \dots + f_k a_{ik} \quad (2)$$

– where  $f_k$  denotes the weights (scoring coefficients) projected onto the assets/services that the household owns/accesses (Bhorat et al., 2006). The asset index value of a household (which serves as a measure of the household's welfare level) is then construed as follows for assets/services one to  $k$  (Booyesen, 2002; Bhorat et al., 2006):

$$A_i = f_1 \left( \frac{a_{i1} - m_1}{s_1} \right) + \dots + f_k \left( \frac{a_{ki} - m_k}{s_k} \right) \quad (3)$$

– where  $A_i$  is the asset index value for household  $i$ ,  $m_k$  is the mean asset/service  $k$ , and  $s_k$  is the standard deviation of asset/service  $k$ .

The ownership of/access to a particular asset/service is denoted by a binary variable that takes the value of one if a household owns the asset or has access to the relevant service, and otherwise, a value of zero; a higher value obtained for the asset index implies a higher level of household welfare. The assets/services included in this analysis are restricted to those assets/services in respect of which questions relating to ownership/access appear in both surveys, and which have commonly been used in studies analysing (non-income) determinants of welfare in South Africa (and other developing countries) (cf. Klasen, 2000; Booyesen, 2002; Bhorat et al., 2006; Booyesen et al., 2008). They are: ownership of a television set, radio, car/motor vehicle, cellular telephone and/or landline telephone; type of toilet facility to which the household has access; energy source that the household utilises for cooking, lighting and heating; and the source of drinking water. Table 9.4 offers a comparison between urban agriculturalists and urban non-agriculturalists, in respect of household ownership of private assets and access to public/municipal services over the sample period.

**Table 9.4: Household ownership of / access to assets and access to public services, 2002 and 2007**

Asset /service		Urban non-agriculturalists		Urban agriculturalists	
		2002	2007	2002	2007
Private assets	Television	70.95	70.43	67.08	65.23
	Landline telephone	34.33	18.62	27.28	14.57
	Cellular telephone	42.97	74.32	39.85	77.19
	Radio	82.93	79.43	85.13	82.73
	Car	32.60	25.35	21.13	22.57
Toilet facility	Flush toilet	85.24	75.25	65.48	42.22
	Chemical toilet	0.44	0.41	0.00	0.02
	Pit latrine	7.49	17.06	11.21	51.21
	Bucket	4.90	3.41	15.66	2.75
	None	1.91	3.29	7.65	3.81
Water source	Piped water	91.09	83.20	77.37	60.14
	Public tap / tanker	8.34	13.20	16.29	30.90
	Borehole	0.32	1.49	2.93	5.42
	Surface	0.13	1.49	3.41	2.34
Energy for lighting	Electricity / gas	87.54	85.20	75.14	78.63
	Paraffin	4.94	3.56	17.49	15.41
	Candles	7.42	11.04	7.37	5.96
Energy for cooking	Electricity / gas	77.40	76.98	51.98	57.10
	Paraffin	18.06	17.04	41.67	31.51
	Wood / coal	4.09	5.43	6.34	11.10
	Dung	0.01	0.11	0.00	0.30
Energy for heating	Electricity / gas	67.45	56.47	30.32	27.32
	Paraffin	14.57	18.55	48.33	33.08
	Wood / coal	10.65	13.04	11.28	29.79
	Dung	0.02	0.15	0.00	1.43

\*All estimates are weighted.

Source: GHS, 2002; GHS, 2007 (StatsSA, 2002; 2007). Note that the totals for the type of toilet facility, source of water, and source of energy do not necessarily add up to 100, as unspecified categories were excluded.

From Table 9.4, it would seem that those households not involved in UA are better off than those involved in UA. Regarding the ownership of private (consumer durable) assets, it seems that, in both years, ownership of a television, landline telephone and motor-vehicle was more widespread among those households that were not involved in UA, in both years, while the ownership of a radio was more widespread among the households engaged in UA. Differences between the two cohorts regarding cellular telephone ownership were slightly less pronounced, with non-agriculturalists being more likely to own a cellular phone in 2002, and agriculturalists more likely to own one in 2007. Regarding access to public/municipal services, those households that were not involved in UA were much more likely than their counterparts to have access to piped

water (in the dwelling or on the site of the dwelling) and a flush toilet. They were also more likely to use electricity or gas as an energy source for lighting, cooking and heating.

The analysis of the trends in asset ownership over the sample period yielded somewhat surprising results: the ownership of radios and televisions remained relatively even over the period, while there was a substantial increase in the number of households who reported owning a cellular telephone. Vehicle ownership by households not involved in UA declined quite sharply. It was expected that private-asset ownership would have increased over a period of relatively rapid economic expansion; but these results correspond with findings by Borhat et al. (2006) – namely, relatively flat growth between 1999 and 2004 in the ownership of radios and televisions, rapid growth in the ownership of cellular telephones and landline telephones, and a decline in the ownership of motor vehicles.

The trends in household access to services over the sample period were even more surprising (or puzzling) than the trends described above regarding asset ownership, especially given the increases in service delivery/access to public/municipal services recorded for the period 1993-2004 (Bhorat et al., 2006). Substantial declines were recorded (for both cohorts) in access to piped water in the dwelling or on the site of the dwelling, as well as access to a flush toilet. Pit latrines as the type of toilet facility utilised by the household increased sharply (especially in the case of households engaged in UA), while the use of the bucket system decreased markedly (again, especially in the case of households engaged in UA). While the use of electricity or gas for lighting and cooking by households not involved in UA remained more or less the same (a slight decrease was recorded), the households involved in UA were found to have made increased use of electricity for such purposes. Both cohorts displayed a decline in the use of electricity or gas for heating purposes (while the proportion of households in both cohorts that used wood or coal as a fuel source for both heating and cooking increased accordingly).

Although the above findings are surprising, Borhat et al. (2006) noted that, despite improved service delivery between 1993 and 2004, substantial non-linearities were present in the growth rates of service delivery, with the most substantial gains in service delivery being made in the period 1993-1999. A possible explanation for the observed trend in service-delivery growth between 2002 and 2007 (also put forward by Borhat et al. (2006)) may be related to efficiency and capacity problems at the local (municipal) government level, which is the sphere of government responsible for the delivery of water, electricity and sanitation. This may also explain the (often violent) protests during this period by communities dissatisfied with the pace of service delivery by (local) government.

Table 9.5 presents the scoring coefficients (which will serve as weights in the construction of the asset index) from the first (principal) factor for each period separately, as well as for both periods together (following Borhat et al., 2006; Booysen et al., 2008) (based on equation (2) above). Three sets of weights (one for each year, and one set for the pooled data-set) were used, to allow for the possibility that the weights on the

assets/services, which explain most of the variation among households in 2002, might differ from the weights on the assets/services, which explain most of the variation among households in 2007. Performing factor analysis on the pooled data-set allows the weights to reflect the variation across both years (Bhorat et al., 2006).

**Table 9.5: Scoring coefficients (asset weights) for assets/services included in the asset index**

Asset/Service	Weight (2002)	Weight (2007)	Weight (Pooled)
Television	0.03616	0.03446	0.03495
Landline telephone	0.03243	0.03526	0.03482
Cellular telephone	0.03240	0.02175	0.02205
Radio	0.02543	0.02854	0.02748
Car	0.05725	0.04620	0.04986
Flush toilet	0.41909	0.30589	0.34269
Chemical toilet	0.03787	0.01880	0.02495
Pit latrine	0.15010	0.05555	0.09081
Bucket	0.12639	0.04306	0.06304
None	0.05468	0.01529	0.02907
Piped water	0.26281	0.21916	0.22503
Public tap/tanker	0.03330	-0.02323	-0.01459
Borehole	0.01838	0.01720	0.01759
Surface water	0.01017	0.00302	0.00641
Energy: Lighting			
Electricity/gas	0.21161	0.19969	0.20024
Paraffin	-0.03775	-0.03973	-0.04228
Candles	-0.04404	-0.07219	-0.06566
Energy: Cooking			
Electricity/gas	0.20159	0.24707	0.23389
Paraffin	-0.10208	-0.05523	-0.06948
Wood/coal	-0.03433	-0.03290	-0.03337
Dung	0.00014	-0.00221	-0.00214
Energy: Heating			
Electricity/gas	0.11771	0.10039	0.10723
Paraffin	-0.02109	-0.02214	-0.02302
Wood/coal	-0.01125	-0.02259	-0.01939
Dung	0.00188	0.00021	0.00076

\*All estimates are weighted.

Sources: GHS 2002; GHS 2007 (StatsSA, 2002; 2007).

Ideally, categories that imply higher living standards should have positive weights, while categories that imply lower living standards should have negative weights (Booyesen et al., 2008). However, for the water source and type of toilet facility, all categories (except “public tap”, “tanker” or “tank” in 2007 and for the pooled sample) have positive weights. The weights on the sources of water other than piped water in the dwelling or on the site of the dwelling, and the type of toilet facility other than a flush toilet, are much lower than the weights on the piped water and flush toilet categories, respectively. This would still entail higher asset index scores for households with piped water and/or a flush toilet (and thus, with higher welfare levels), than for those without such services (as would be expected on *a priori* grounds) (see Table 9.6).

**Table 9.6: Mean asset index values for urban agriculturalists and urban non-agriculturalists, 2002 and 2007 (using a pooled sample with common asset weights)**

Type of household	2002	2007	Pooled (2002 and 2007)
Urban non-agriculturalists	0.124	-0.064	0.013
Urban agriculturalists	-0.369	-0.536	-0.453

\*All estimates are weighted.

Sources: GHS 2002; GHS 2007 (StatsSA, 2002; 2007).

Table 9.6 shows that households practising UA had lower welfare levels in 2002 and 2007 (as well as in the pooled sample) than their counterparts who did not practise UA (differences were statistically significant at 1%). Both cohorts experienced a decline in their welfare levels (as evidenced by the decreases in the values of the asset index, which were statistically significant at 1% for both groups). This result – although it confirms the result reflected in Table 9.4 relating to ownership of / access to specific assets/services – is difficult to reconcile with the relatively high rates of economic growth experienced over the sample period, as well as with the results obtained by Borat et al. (2006), which indicated that asset-index scores for (all) households increased over the period 1993-2004.

## 10. Food security

The crucial question in this regard is: What role does UA actually play in respect of food security? Table 10.1 reflects some of the related aspects in this regard.

**Table 10.1: Insufficient food for household members**

Food insufficiency		Urban non-agriculturalists		Urban agriculturalists	
		2002	2007	2002	2007
Insufficient food for children	Always	1.71	0.69	2.64	0.50
	Sometimes	24.51	14.38	48.74	22.33
	Never	73.77	84.92	48.63	77.16
Insufficient food for adults	Always	1.75	0.73	3.71	2.85
	Sometimes	24.08	12.85	47.08	21.91
	Never	73.90	84.62	49.20	74.42

\*All estimates are weighted.

Sources: GHS 2002; GHS 2007 (StatsSA, 2002; 2007).

Table 10.1 reveals that, between 2002 and 2007, food insufficiency decreased markedly, both for the urban agriculturalist households, and for the urban non-agriculturalist households. Whether this trend will continue – given the rapid increases recorded in food prices (discussed above), as well as the downturn in the global economy – remains to be seen. Furthermore, those households identified as being involved in UA were more likely, in both years, to report that there was insufficient food in the household for adults and/or children. Such households are thus more susceptible to food insecurity. Unfortunately, the GHS does not allow for an investigation into the extent to which the relative food insecurity of urban agriculturalist households translates into malnutrition (as no anthropometric information is contained in the GHS).

## 11. Conclusion

In this report, an attempt has been made to profile UA practitioners and to determine their socio-economic status in South Africa. The following main findings should once more be highlighted:

- UA is more prominent in the higher summer rainfall areas with good soils. In this regard, the Eastern Cape and KZN seem to have the highest percentages of UA practitioners.
- Proportionally more female-headed households than male-headed households are involved in UA.
- More black households are involved in UA (in proportion to their share of the SA population).
- The average household size of UA households is bigger, and the household heads have lower levels of education, than in the case of the control group.
- The heads of households who practise UA are, on average, eight years older than their counterparts in the control group, and they also have lower levels of education.
- The majority of UA practitioners are involved in the cultivation of field crops.
- In comparison with the control group, a large percentage of UA practitioners do not pay for water.
- Despite being involved in UA, only about 7.5% of UA practitioners indicated UA as their main source of income.
- It seems that there is a direct correlation between access to some kind of grant, and UA.
- A comparison of household assets suggests that households not involved in UA are better off than those involved in UA.
- The food security of urban agriculturalists is lower than that of non-agriculturalists.

Whether UA has the potential, as suggested by the MDG, to lift people out of poverty is probably doubtful. But two questions should still be asked: Why, despite its limitations as a development vehicle, do people engage in UA? Or, put differently: Do they engage in UA because it is a means of coping, or because it is linked to culture? Secondly, considering these main findings, one of the most important remaining questions is: What appropriate responses can be made by means of urban policies and practice, in order to help people to cope in desperate circumstances?

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