

SOLVING THE FOOD SECURITY
CRISIS IN SOUTH AFRICA: HOW
FOOD GARDENS CAN ALLEVIATE
HUNGER AMONGST THE POOR.

A MA RESEARCH REPORT BY ALEXANDRA EARL

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Essay Topic: *Solving the Food Security Crisis in South Africa: How Food Gardens can alleviate hunger amongst the Poor.*

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Abbreviations

AIDS	Acquired Immune Deficiency Syndrome
BSE	bovine spongiform encephalopathy
DES	diethylstilbestrol
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
HIV	Human Immunodeficiency Virus
HDI	Human Development Index
IFAD	International Fund for Agricultural Development
IFPRI	International Food Policy Research Institute
IFSS	Integrated Food Security Strategy
MDG	Millennium Development Goal
NCD	Non Communicable Disease
NGO	Non-governmental Organization
SADC	Southern Africa Development Community
SUV	Sport Utility Vehicle
UFS	University of the Free State
UK	United Kingdom
UN	United Nations
UNDP	United Nations Development Programme
UNSG	United Nations Secretary General
US	United States of America
WFP	World Food Programme
WHO	World Health Organization
WTO	World Trade Organization

Chapter One

1. Solving the Food Security Crisis

1.1 Research Problem

Can food gardens help combat hunger and malnutrition amongst the poor in South Africa?

This report will examine the relationship between food gardens, hunger and malnutrition within South Africa. It seeks to determine whether there is a link between the presence and use of food gardens and the alleviation of hunger and malnutrition. This report will thus utilise the framework of food security. Food security is defined as “...when food systems operate such that all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.”¹ A case study from within South Africa will be used and assessments will be made from evidence gathered. Despite South Africa’s status as a medium developing country on the UNDP HDI index, with huge growth potential, hunger and malnutrition amongst vast sections of the population remain a real problem.

South Africa is characterised by a situation of food security at the national level but not at the household level for much of the population.² More than 14 million people in South Africa are estimated to be vulnerable to food insecurity. The development of as many as 1.5 million children under the age of 6 has been stunted by malnutrition.³ South Africa adopted a rights-based approach to food security in 1996.⁴ This approach is entrenched in the constitution. The government recognises the importance of enabling people to feed themselves and when this is not possible, securing safety nets and strategies to help. Currently, the South African Human Rights Commission oversees the provision of social and economic rights which include the right to food. In 2000, the Integrated Food

¹ Gregory, PG, Ingram, JSI, and Brklacich, M, “Climate Change and Food Security” *Philosophical Transactions: Biological Sciences*, Vol. 360, No. 1463, November 2005, p2141

² South African Department of Agriculture “The Integrated Food Security Strategy for South Africa” Pretoria, July 17 2002, p19; Coutsoudis, A, Maunder, E and Ross, F et al “WHO Multi-country Study on Improving Household Food and Nutrition Security for the Vulnerable” in *World Health Organization* 2000, p1

³ Human Sciences Research Council, “Food Security in South Africa: Key Policy Issues for the Medium Term”, *Position Paper*, January 2004, p3

⁴ Koch, J, “The Food Security Policy Context in South Africa”, *Country Study*, No. 21, International Policy Centre for Inclusive Growth, April 2011, <http://www.ipc-undp.org>, p15

Security Strategy (IFSS) was formulated. In addition, the Department of Agriculture established a Special Programme for Food Security which aimed to “*establish short-term food programmes such as food gardens to augment food shortages in rural households and to sustain long-term food security for all.*”⁵ There is an absence of legislation which clearly defines the authority, responsibility, organizational structure and working procedures for the IFSS. The absence of a food security policy and the inability to get a bill tabled and passed prevents the government from providing a clear line of authority and the current IFSS lacks political clout to really make a difference to food security in South Africa.⁶ As a result, food security in South Africa is an issue of critical importance. This report will examine ways in which individuals can take control of the food supply, through the maintenance of food gardens, and will examine whether this improves their food supply and thus decreases their incidence of hunger or not.

Hunger is defined as “...*consumption of a diet inadequate to sustain good health and normal activity, growth, and development...*”⁷ and is related to malnutrition which is “...*the physical effects of restricted diet on the body.*”⁸ Food Gardens are defined as gardens which produce fruits and vegetables which can then be consumed. In some literature they are referred to as ‘kitchen gardens’ or ‘homestead gardens’. Fruits are defined as the fleshy part around the seeds of the plant. They have a sweet taste and are mostly eaten raw as a dessert or snack. Vegetables are the parts of a plant eaten raw or cooked with main meals. They have different colours, are high in nutritional value and are good for health. Vegetables can be taken from the leaf or root of the plant as well as the entire plant.⁹

⁵ Koch, J, *Op. Cit.* p16

⁶ Koch, J, *Op. Cit.* p16

⁷ Millman, SR and DeRose, LF “Measuring Hunger” in DeRose, LF, Messer, E and Millman, S *Who’s Hungry? And How Do We Know? Food Shortage, Poverty and Deprivation* United Nations University Press, New York, 1998, <http://www.unu.edu/unupress/unupbooks/uu22we/uu22we05.htm>

⁸ John Mason “Keynote Paper: Measuring Hunger and Malnutrition” *FAO: Economic and Social Development Department*, 2003, <http://www.fao.org/docrep/005/y4249e/y4249e0d.htm>

⁹ World Health Organization (WHO), “Fruit and Vegetable Promotion Initiative” *Report of the Meeting* Geneva, August 25-27 2003, p6

This research is situated within a framework of food security. There has been much research into food security over the last decade. Researchers, NGOs, and governments have been attempting to find solutions to the problem of food security. There is a widespread assumption amongst policy makers that hunger is a consequence of poverty. As a result, many poverty reduction strategy papers assume that hunger will drop when poverty declines. This approach does not recognise the low elasticity of food consumption in relations to increases in income. It also does not address how reductions in chronic hunger can be used to accelerate economic growth.¹⁰ Another focus of policy makers in food security concerns organic agriculture. Recent models of a hypothetical global food supply grown organically indicate that organic agriculture could produce enough food on a global per capita basis. Such models suggest that organic agriculture has the potential to secure a global food supply with reduced environmental impacts.¹¹ As a result, this report also takes into consideration the possibility that food gardens should be grown organically and will discuss this further in Chapter Three. This research thus concentrates on one of the ways to combat chronic hunger and now discusses why this research is important to the field of International Relations.

Firstly, academic research on how food gardens can alleviate hunger is still small. Food studies, as a discipline, is relatively new and is largely confined to anthropological research and cultural studies. Research on the political and social aspects of food have so far been conducted by researchers in the fields of urban and human geography and not political science. However, the state of food security, agriculture and the food supply is becoming ever more politicized as the ability of countries to provide enough food for their populations becomes threatened – largely through factors created by climate change, the globalisation of food, increasing population sizes which are encroaching on arable land¹², and inefficient government policy with regards to food and land. As the number of

¹⁰ Food and Agriculture Organization of the United Nations, “Eradicating Hunger”, FAO, Rome, September 2004, p15

¹¹ Food and Agriculture Organization of the United Nations, “Organic Agriculture and Food Security” *International Conference on Organic Agriculture and Food Security*, 3-5 May 2007, Italy, p4

¹² Countries are striking deals for other countries land in order to create more space for agriculture. South Korea struck a deal with Madagascar to acquire land on a 99 year lease; Saudi Arabia is purchasing land in Ethiopia and the United Arab Emirates is purchasing land in Sudan. In 2009, Libya purchased 100000 hectares of land in the Ukraine. [Collier, P: *The Plundered Planet*, Penguin, London, 2010, p218]

hungry continues to increase, so governments must look for alternative solutions to the pending food crisis. Furthermore, the problems that conventional agriculture has placed on the environment are a major source of concern amongst policy makers and activists. The role that organic agriculture has to play in solutions to the hunger crisis is becoming more and more important. This report will examine whether organic food gardening is one such solution.

Secondly, a new political focus on food is taking place. There is a conscious awareness amongst consumers and counter-culture activists that all is not well with the food system. People are becoming increasingly aware of the inability of our current industrialized food system to feed the ever growing global population and the contribution the food system is making to climate change and environmental degradation. Coupled with this concern is the growing realisation of the lack of transparency in the system itself as well as the considerable power of multi-nationals who control the industry. *“The essential purpose of food, which is to nourish people, has been subordinated to the economic aims of a handful of multinational corporations that monopolise all aspects of food production, from seeds to major distribution chains, and they have been the prime beneficiaries of the world food crisis.”*¹³

There is enough food in the system to feed everyone and yet a billion people go hungry every day. Furthermore, Médecins Sans Frontières has recently begun a campaign to bring to light the extremely poor nutrient qualities of food aid programmes. Such programmes rely on a fortified cereal blend of corn and soy that alleviates hunger but does not provide nutrition.¹⁴ Barely 1.7% of development food aid and emergency food aid address nutrition concerns.¹⁵ Civil society groups are coming to realise the contradictions that exist within our food system – the growing number of obese people, the rise of diseases related to obesity in the West and the hunger faced by the world’s poor. This has prompted them to seek alternative solutions, outside of government, to

¹³ Miguel d’Escoto Brockmann as quoted in Rodale, M: *Organic Manifesto*, Rodale Inc, New York, 2010, p43

¹⁴ Starved for Attention, *Malnutrition*, <http://www.starvedforattention.org/about-malnutrition.php>

¹⁵ Médecins Sans Frontières, *Malnutrition: How Much Money is Being Spent?*, 10 November 2009, <http://www.msf.org/msf/articles/2009/11/malnutrition-how-much-money-is-being-spent.cfm>

solve the problems faced at the local level. Such solutions inevitably concentrate on the importance of organic farming, not only because of cost efficiency but also due to environmental concerns. Food gardens form part of the local food movement and serve as a starting point to assess how these alternative systems might contribute to combating hunger. Food gardens also form part of the long term solution for food aid – if people can be given the tools to feed themselves in a healthy, nutrition rich way, the need for so much food aid will decrease. They represent a form of the notion “Think Global, Act Local”.

Thirdly, food gardens have been selected for research because of their successful history as providers of food security and alleviators of hunger. Horticulture has played an important role in human history for over 13000 years.¹⁶ Food gardens, known as Victory Gardens, were features of World War Two propaganda campaigns in both the United States and United Kingdom. Slogans such as ‘Dig for Victory’, ‘Dig for Plenty’ and ‘Come and Help with the Victory Harvest’¹⁷ encouraged everyone to turn garden space into growing space. Such gardens, both individual gardens at home and at allotments as well as community gardens, helped alleviate strains caused by rationing and kept deficiencies and hunger at bay. In 1943, food gardens in the US produced 8,000,000 tons of vegetables for consumption.¹⁸

Fourthly, food gardens produce fruit and vegetables for consumption. The World Health Organization (WHO) advocates that in order to maintain a healthy diet with enough essential micronutrients, 5 portions of fruit and vegetables (400g collectively) should be eaten daily. A food garden allows individuals to produce these portions and thus allows easy access to these essential micronutrients.¹⁹ Lastly, food gardens have been chosen because they represent an individual response to issues of hunger. Individuals do not have

¹⁶ Iannotti, L, Cunningham, K and Ruel, M, “Improving Diet Quality and Micronutrient Nutrition” *International Food Policy Research Institute Discussion Paper*, November 2009, p1

¹⁷ Fearnley-Whittingstall, J: *The Ministry of Food*, Hodder and Stoughton, London, 2010, pp20-21

¹⁸ “Victory Gardens Produced 8,000,000 Tons of Food” *The Science News-letter*, Vol. 44, No. 15, October 9 1943, p229

¹⁹ World Health Organization, “Global Strategy on Diet, Physical Activity and Health” *Strategy and Resolution*, 2004, p4

to wait for government handouts of food aid but can rather grow their own and in doing so take responsibility for their own food supply.

1.2 Motivation for Research

“The right to have regular, permanent and free access, either directly or by means of financial purchases, to quantitatively and qualitatively adequate and sufficient food corresponding to the cultural traditions of the people to which the consumer belongs and which ensures a physical and mental, individual and collective, fulfilling and dignified life free of fear.”

- UN Special Rapporteur on the Right to Food²⁰

Our world is plagued by contradictions. Nowhere are these contradictions more visible than in our food systems. There is enough food produced in the world and yet over 1 billion people go hungry because they cannot afford to buy food or they cannot access food supplies.²¹ Food prices are rising and are likely to rise further. As early as 2006, world food prices for staples like rice, wheat, corn and soybeans were increasing significantly.²² Data released by the Food and Agriculture Organization of the United Nations (FAO) in early 2011 indicates that food prices are now at their highest since the 2008 crisis. The global average price of food was 25% higher in December 2010 than in December 2009.²³ The negative effects of climate change - creating water shortages that destroy crops, changing the onset of the seasons making harvesting and planting more difficult and increasing desertification thus reducing the amount of arable land available – are likely to further disrupt food supply. This situation is aggravated by the US’s decision to use corn as ethanol – reducing the amount of corn available for sale by using it as a bio – fuel. The amount of grain required to fill a 25 gallon SUV tank with ethanol would feed

²⁰ Food and Agriculture Organization of the United Nations (FAO), *A New Deal for School Gardens*, FAO, Rome, 2010, p2

²¹ Reuters “US’s Geithner, Bill Gates to Launch Agri-Fund for Poor”, Washington, April 21 2010, <http://www.reuters.com/article/idUSTRE63L06420100422>

²² FoodFirst Information and Action Network “The Scope of the World Food Crisis” in Weber, K (Ed) *Food, Inc*, Public Affairs, New York, 2009, p161

²³ Humanitarian News and Analysis “Prices Highest since 2008”, Johannesburg, January 5 2011, <http://www.irinnews.org/Report.aspx?ReportID=91539>

one person for a full year.²⁴ Prices are also rising due to market speculation.²⁵ A new study by the International Food Policy Research Institute (IFPRI) found that in 40 years, higher global average temperatures will lead to water stress, causing food production and access to fall. This will push an additional 24 million children into hunger.²⁶

Globalisation aggravates these conditions by exacerbating interconnections and causing developments in one market to affect those in others.

The situation of the hungry is likely to get worse. The current food system, characterised by the industrialization and globalisation of agriculture and the increasing marginalization of the third world farmer due to world trade policies, is seemingly unable to address this situation. This same food system which produces such hunger in the developing world is having quite the opposite affect in the developed world. Here it provides so many more calories per day than individuals need that the developed world is facing a crisis of obesity. In an ironic twist, this obesity is not concentrated amongst the rich (where it would normally be) but amongst the poor. One third of American children born in the year 2000 will develop diabetes as a result of poor nutrition and exercise habits.²⁷ The prevalence of cheap, fast food, marketing by food companies and the lack of fresh fruit and vegetable availability in poorer suburbs, coupled with its relative expense, is all contributing to the crisis. Obesity is costing the American government over US\$100 billion a year through medical costs.²⁸ These are some of the contradictions of the global food system. This report will examine whether local, individual solutions can at least alleviate the hunger crisis. Food gardens have been introduced as solutions to obesity in the developed world and as solutions for hunger in the developing world. However, this report will focus on solutions in the developing world and will look specifically at food garden projects within South Africa.

²⁴ Bryce, R “The Ethanol Scam” in Weber, E (Ed) *Food, Inc*, Public Affairs, New York, 2009, p93

²⁵ Pringle, P “Food, Science and the Challenge of World Hunger – Who will Control the Future?” in Karl Weber (Ed) *Food, Inc*, Public Affairs, New York, 2009, p66

²⁶ Humanitarian News and Analysis “Climate Change: Making a Case for Nutrition”, Johannesburg, November 25 2010, <http://www.irinnews.org/report.aspx?ReportId=91193>

²⁷ Schlosser, E “Reforming Fast Food Nation” in Karl Weber (Ed) *Food, Inc*, Public Affairs, New York, 2009, p15

²⁸ Ibid, p17

“The world has been making progress toward improving food security and nutrition. But many countries and population groups have failed to make significant progress and some of them even suffered setbacks in their already fragile food security and nutrition situation. Humanity is faced with the stark reality of chronic under-nutrition, affecting some 800 million people, 20% of the population of the developing countries, as many as 37% in sub-Saharan Africa and still more in individual countries. The notion that the world would by now be on the path toward eliminating the scourge of hunger and under-nutrition by the end of the century has so far proven overly optimistic.” – Eduard Saouma, former Director General of the FAO²⁹

The Right to Food is now a major focus of United Nations policy and activism. *“The right to food is an inclusive right. It is not simply a right to a minimum ration of calories, proteins and other specific nutrients. It is a right to all nutritional elements that a person needs to live a healthy and active life, and to the means to access them.”³⁰ “...we want to see an increased international focus on food security. It is essential to the world's well-being... It means working on systems for social protection, agriculture and trade so that there is food for all... World poverty and hunger cannot be reduced without improvements in agricultural production and distribution. More than a billion people - and roughly 75 percent of the world's poorest people - live in rural areas and depend on agriculture for their livelihoods.”³¹*

Article 25.1 of the United Nation’s Universal Declaration on Human Rights states that: *“Everyone has the right to a standard of living adequate for the health and wellbeing of himself and of his family, including food, clothing, housing, medical care, the necessary social services and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control.”³²*

The first goal of the Millennium Development Goals (MDG) is to eradicate extreme

²⁹ Haider, R: *Gender and Development*, The American University in Cairo Press, Cairo, 1995, p133

³⁰ Office of the High Commissioner for Human Rights, “The Right to Adequate Food” *Fact Sheet Number 34*, OHCHR, Geneva, p2

³¹ Ki-moon, B, “Food Security: Our Forgotten Crisis”, *International Herald Tribune*, January 25 2009

³² Bonti-Ankomah, S “Addressing Food Insecurity in South Africa” *The National Institute for Economic Policy*, June 4-5 2001, p1

poverty and hunger. It intends to halve the proportion of people who suffer hunger by 2015 and improve food security.³³ We are 4 years away from this deadline and much is still to be done. The 2010 Millennium Development Goals Report acknowledges that overall progress to decrease hunger has not been sufficient to reduce the number of undernourished people in the world.³⁴ Higher food prices and declining employment and incomes have meant that the poor had less access to food in 2009, despite global availability being relatively good.³⁵ The situation has been exacerbated by increasing food prices and market instability. It is clear that people in the developing world do not have access to food at all times to meet their dietary needs – the biggest consequence of which is constant hunger. “*Producing more food does not necessarily lead to better access to food, or to an improved nutritional status of those who need it most.*”³⁶ This report will examine how food gardens are a solution to combating hunger amongst poor populations in South Africa.

In order to establish ways in which food gardens can alleviate hunger the first half of this report will examine the following questions: What is the situation of food security globally and how does this situation affect South Africa? Where and who are the most vulnerable populations within South Africa? Should food gardens be organic? The second half of the report will consider the following questions: In places where food gardens either exist or are being introduced, is the situation of hunger amongst these populations improved? Do communities as a whole benefit from the presence of individually run food gardens? Are there possibilities for school or community garden development for those who do not have access to land at home? If food gardens can help alleviate hunger, what methods can be adopted by the South African government to promote this system?

1.3 Relevance to International Relations

³³ United Nations *The Millennium Development Goals Report 2009*, United Nations, New York, 2009, p11

³⁴ United Nations *The Millennium Development Goals Report 2010*, United Nations, New York, 2010, p11

³⁵ Ibid, p12

³⁶ United Nations Standing Committee on Nutrition Brief, as quoted in Humanitarian News and Analysis *Op. Cit.*

This research is important to the field of international relations for a number of reasons. Firstly, international relations scholars are concerned with finding solutions to food security problems. They are aware that climate change is having an adverse effect on our current food system in its ability to supply the world with enough food. This results in more pressure on governments to provide food. When they fail to do so, the result is food riots and instability. There is growing evidence that hunger is a catalyst in conflict. The current food system is creating these contradictory situations of hunger and obesity and thus must be changed. Last year Chatham House analysts published findings on food futures and argued that food is now a real security issue. Secondly, as our population continues to grow, scholars are becoming aware that practical solutions need to be found soon otherwise the world is facing a food crisis. Thirdly, whilst government support for such schemes is welcomed, food gardens are an illustration of the power and force of consumer movements, civil society groups and non-governmental organizations (NGOs) and thus important in our understanding and knowledge of non-state actors in a global world. Food gardens form part of the local food movement and thus provide information for theories surrounding global civil society and its ability to change state action.

1.4 The Political Economy of Hunger

1.4.1 Entitlement Theory

“Fighting hunger is a moral obligation. The right to adequate food is a fundamental and inalienable human right. Without the biological integrity of the human being, which requires her or his daily bread, there can be no real and lasting progress in the struggle for more justice and equality in the world.”

- Jacques Diouf Director General, Food and Agriculture Organisation of the United Nations³⁷

The variables used in this report – food gardens, hunger and malnutrition – fit into the theory first put forward by Amartya Sen in 1981 concerning entitlements. Known as the

³⁷ Jacques Diouf, World Food Day 2001 as quoted in Leen, M “Hunger in a World of Plenty: An Ethical Challenge in a Globalizing World” *An Irish Quarterly Review*, Vol. 91, No. 361, Spring 2002, p28

‘entitlement approach’, Sen sought to explain famine, starvation and chronic hunger. Sen argued that hunger originated in ‘entitlement failures’. Each person in the economy has an ‘entitlement bundle’ which is premised on the idea of ownership. ‘Entitlement bundles’ can be used to gain things, like food, which people need. The ‘entitlement bundle’ is determined by a person’s original ownership bundle (endowment) and the various alternative bundles that can be acquired, starting with the initial endowment, through trade and production.³⁸ Sen argued that there were four types of entitlement relations in an ownership, market economy. Firstly, there is a trade based entitlement. *“One is entitled to own what one obtains by trading something one owns with a willing party.”*³⁹ Secondly, there is a production based entitlement. *“One is entitled to what one gets by arranging production using one’s owned resources, or resources hired from willing parties meeting the agreed conditions of trade.”*⁴⁰ Thirdly, there is an own-labour entitlement. *“One is entitled to one’s own labour power and thus to the trade based and production based entitlements related to one’s own labour power.”*⁴¹ Lastly, there are inheritance and transfer entitlements. *“One is entitled to own what is willingly given by another who legitimately owns it, possibly to take effect after the latter’s death.”*⁴²

People interacting in a market commodity can exchange what they own for another collection of commodities through trading, producing or a combination of both.⁴³ The set of all alternative bundles a person can acquire through trading and producing is known as the ‘exchange entitlement.’⁴⁴ A person is thus exposed to starvation or chronic hunger if all the exchange entitlements he can get with his ownership bundle do not contain sufficient food for him to consume.⁴⁵ A number of factors influence the person’s exchange entitlement. These include available employment and opportunities for earning; what can be earned by selling non-labour assets; what can be produced with labour power; the value of the products sold and social security benefits to which the person is

³⁸ Dréze, J and Sen, A: *Hunger and Public Action*, Clarendon Press, Oxford, 1989, p23

³⁹ Sen, A: *Poverty and Famines*, Clarendon Press, Oxford, 1984, p2

⁴⁰ Ibid

⁴¹ Ibid

⁴² Ibid

⁴³ Ibid, p3

⁴⁴ Ibid, p3

⁴⁵ Ibid, p3

entitled.⁴⁶ Sen thus believes that hunger and starvation are a function of entitlements and not the food supply or availability-although the food supply and availability play roles in determining entitlements.⁴⁷ A person thus goes hungry because he does not have the ability to command enough food through his exchange entitlements.

Furthermore, a person may experience hunger and starvation if some economic change makes it impossible to acquire enough food. This is known as an ‘entitlement failure’ and can be caused through a fall in a person’s endowment, for example a loss of labour power through illness, or through an unfavourable shift in the person’s exchange entitlement, for example a loss of employment or increasing price of food.⁴⁸ In addition to such failures, the links between food availability and entitlements are important. Sen argues that for some people, the output of food grown by them is also their basic entitlement to food. The price of food, which affects people’s ability to purchase food, is influenced by production and availability within the food economy. Also, Sen argues, food production is a major source of employment and therefore if production declines, so to does employment and consequently wage income which ultimately affects people’s entitlement bundles.⁴⁹

Rehman Sobhan furthers Sen’s initial argument about entitlements to include the political power of households and the role of the state in entitlement creation. Sobhan argues that the ability of households to benefit from the state’s entitlement creation (aid, loans, subsidies), depends on the political power of the household and the group of households to which it belongs.⁵⁰ In addition, the capacity of the state to influence entitlements and the influence it chooses to take is dependent not only on internal political forces but also on external ones. State contributions involve major policy decisions and reflect the

⁴⁶ Ibid, p4

⁴⁷ Ibid, p7

⁴⁸ Dréze, J and Sen, A, *Op. Cit.* p23

⁴⁹ Ibid, p26

⁵⁰ Sobhan, R, “The Politics of Hunger and Entitlement” in Dréze, J and Sen, A (Eds) *The Political Economy of Hunger Volume 1*, Clarendon Press, Oxford, 1990, p79

interplay of forces within the polity. State interventions reflect sensitivity towards its citizens.⁵¹

Sen thus puts forward an effective theory for analysing hunger. People are hungry not due to issues with supply but because their exchange entitlement is not sufficient to include enough food. Solutions to hunger should therefore be focussed on people's exchange entitlements and not on providing more food. Such solutions could include increased employment or, as will be discussed in this report, increased own production which can then be used for consumption or trade.

1.5 Literature Review

Literature on the state of the food system is vast and growing. Michael Pollan, Marion Nestle, Eric Schlosser, Anna Lappé, Francis Moore Lappé and Maria Rodale, all comment on the need for change and a conversion to sustainable agriculture before it is too late. Michael Pollan's *The Omnivore's Dilemma* seeks out 3 different food systems: industrial agriculture, organic agriculture and hunter-gatherer. It assesses each one and concludes that eating local, seasonally and when possible, growing your own, is the only way to combat the adverse effects of the food system. In *In Defense of Food* Pollan examines the ways in which what most people consume is no longer 'food' in any real sense. He embarks on a criticism of nutritionist science, arguing that the best way to eat is: "*Eat Food. Not Much. Mainly Plants.*" His criticism of processed food and his recommendations to eat fruits, vegetables and whole grains as organic and local as possible, fits into ideas promoting food gardens.

Marion Nestlé's *Food Politics* examines ways in which the US food industry is protected by government, is contributing to the obesity epidemic and proposes options for change. In subsequent books *Safe Food* and *What to Eat* she discusses the rise of the alternative food movement and the type of action it is taking to change the way we eat. Paul Roberts discusses the coming crisis in the food system in *The End of Food* and Peter Singer and Jim Mason, in *The Ethics of What We Eat*, examine the way our food system is unethical

⁵¹ Sobhan, R *Op. Cit.* p82

and propose ways in which one can convert to eating ethically and sustainably. The main criticism made by these authors is that the industrial food system is contributing to climate change, the worst of whose effects are felt in the developing world – the very place where hunger is at its most prevalent.

Joel Salatin is one of the main critics of the food system, arguing that it is causing irreparable environmental damage, obesity and hunger and ruining rural livelihoods. His policy for change entails ‘opting out’ of the food system and seeking ways to live locally, grow your own and eat seasonally. Barbara Kingsolver actually embraces the ‘opting out’ method in her book *Animal, Vegetable, Miracle* and discusses a year of living outside of the conventional food system – its trials and successes. Jane Fearnley-Whittingstall examines food gardens and their war history. *The Ministry of Food* provides ways to feed families from garden produce and on a budget – related to the current economic recession. Maria Rodale examines effects of industrial farming in the US in *Organic Manifesto* and examines ways that shifting to organic farming methods is beneficial – not only for the food we eat but also for the planet. Vandana Shiva, in the book *Soil not Oil*, discusses the situation of food security in India. She looks at the failures of the Green Revolution, the devastating effect major companies have had on Indian farmers by creating dependency and debt, and the dependence of industrial farming on chemicals and thus peak oil. She examines how organic and biodynamic farming can help stave dependency on peak oil as well as the success of food gardens in India.

International organizations like the Soil Association, the International Food Policy Research Institute, the Institute for Food and Development Policy, the World Future Society and the Food and Agriculture Organization of the United Nations (FAO) all conduct research on the state of the world food system, its impact on climate change, the problem with oil consumption in industrial agriculture and options for sustainable development. Their concentration is at state and NGO level, looking for solutions on a large scale. Researchers also examine the effects of globalization on agriculture and world trade. They examine the effects on farmers in both the developing and developed

world, the impact of trade policies on farmers' ability to maintain a living and the effects this has had on rural communities.

On the other side of the debate, Paul Collier, in his book *The Plundered Planet*, argues that small holder farming should be abolished and large scale agriculture introduced to Africa in order to produce enough food for the growing population. He believes this should be heavily industrialised, chemical based, commercial farming and not “*the middle-class love affair with peasant agriculture.*”⁵² He argues that there is no point in minimising food miles because the key carbon emissions occur during cultivation and food should therefore be grown in the areas where it is best cultivated. Food miles do not reduce carbon emissions but rather decrease jobs in the bottom billion.

It is clear that there are opportunities for research within the focus of the world food system. Much of the literature focuses on what is wrong with the food system, highlighting problems with monocultures, increasing economies of scale, effects of climate change and world trade policies. Some of the literature focuses on the civil society response to the industrialisation and globalisation of agriculture but there is little focus on what individuals can do to affect change. Food gardens feature only as part of the greater solution for changing the food system. Little literature focuses specifically on food gardens themselves and the ways they can help combat hunger – this is the focus of this report. The purpose of this report is to assess if hunger is alleviated when people are exposed to food gardens and whether food gardens are a solution which the government should be actively promoting. This report will not conduct a cost – benefit analysis of food gardens. It will not examine the implications of actually establishing a food garden (costs, labour, requirements etc) as this would lead the report in a different direction and is beyond its scope.

1.6 Methodology

In order to determine whether food gardens contribute to improved nutrition and a reduction in hunger a number of indicators will be used. These indicators have been

⁵² Collier, P *Op. Cit.* p212

selected from current literature and guidelines for projects assessing hunger and malnutrition. These indicators suggest possible causes for hunger and malnutrition. By identifying the causes of hunger and malnutrition this report will be able to assess whether food gardens are able to alleviate or reduce the causes.

1. The main cause of hunger and malnutrition is an annual lack of access to food and more specifically, to nutrition providing fruits and vegetables. In its “*Global Strategy on Diet, Physical Activity and Health*”, the WHO advocates an intake of 5 portions (400g) of fruit and vegetables daily. This lack of access is due to a lack of local availability or the inability of households to afford such goods. This report will therefore look for indications that food gardens alleviate this supply issue, whether food gardeners consume the recommended “5 a day” and whether extra income is generated through the sale of additional food garden produce above the household consumption level. There is an assumption amongst food garden advocates that food gardens automatically improve people’s nutrition. In the developed world, where people are growing food to move away from highly processed industrial food, this may be the case – nutrition improves because they are growing fruit and vegetables specifically to eat for nutritional purposes. However, in Africa, people have food gardens for economic reasons – to supplement purchased food supplies – and these people often do not know about nutritional benefits of “5 a day”. Therefore it must be assessed whether having a food garden is enough to improve nutrition or whether there are other variables that should be introduced simultaneously with food gardens in order for people to fully reap the nutritional benefits.

2. Another cause of malnutrition and hunger is related to seasonal shortages of fresh fruits and vegetables. This is alleviated by the presence of large quantities of fruit and vegetables during the harvest season that can then be converted into items for storage that will last in the months of shortage. This report will thus investigate whether part of the harvest is being stored to be used in scarcer months.

3. Malnutrition and hunger are also exacerbated by a lack of nutritional diversity. Diets restricted to staple ingredients, which lack proteins, vitamins, minerals and essential

micronutrients can lead to nutritional deficiencies. Food gardens are said to allow people to grow a diversity of products (diversity and intercropping are heavily encouraged by organic farming) which can then be used to diversify the diet and increase overall nutritional consumption. This research will attempt to determine the degree to which this diversity takes place.

4. The increasing prevalence of HIV/AIDS in South Africa has also had effects on malnutrition and hunger. Those suffering from the disease need to maintain a balanced diet in order to benefit from treatment. There is also a growing problem with orphans who are taken care of by their grandparents or extended family members. This adds to the financial burdens of such households and increases the strain of providing enough food for all. Evidence will be gathered from such affected individuals and conclusions will be drawn as to whether these difficulties can be alleviated with food gardens. Thus, the extent to which a food garden ameliorates the above issues related to HIV/AIDS will be examined in the case study and was included in the questionnaire.

5. Much of the criticism of the current food system lies with the dependence on chemicals. Critics advocate organic farming as a way to decrease chemical dependency and improve the quality of food. This report will thus also look at evidence from studies on the nutritional benefit of organic farming as well as the reduced dependency of organic farming. It will examine whether food gardens need to be organic to incur the best benefits from fruit and vegetables.

Ultimately, these indicators will provide information on the extent to which food gardens can contribute to alleviating hunger and malnutrition in South Africa. Furthermore, in light of the above outcomes the research will discuss whether food gardens can be applied to situations where there is not enough land available for individual gardens. In such situations community and school based gardens may be able to contribute to the alleviation of hunger and malnutrition and this report will examine whether such a solution is practical. This report will also look at whether those with food gardens are

more likely to also have small livestock (i.e. chicken, rabbits, and goats). Such livestock may aid in reducing hunger by providing additional sources of protein.

In order to assess these indicators in the South African environment, structured interviews with food gardeners were conducted in the Botshabelo Township of the Free State province. These interviews took place in the last week of October 2010 and where necessary, translators were used. Participants were part of an already established food garden project in the region and their gardens were very well developed. 79 interviews were conducted, of which 6 participants were male and 73 were female. This is due to the large predominance of female gardeners, generally because the men are either absent or working. Participants varied in age and no specific age recording was made, however most were between the ages of 20 and 70 years. Participants were asked a series of questions relating to food procurement, consumption and the diversity of produce grown. Participants were also asked about their sources of income, whether they generated income from vegetable sales and whether they were affected by HIV/AIDS. Interview questions were structured to reveal a particular pattern amongst the gardeners which could then be related to the initial indicators. Responses from participants were then collated under different headings so that responses could be grouped according to the relevant indicators. Percentages were then analysed and related back to their relevant indicator, revealing trends within the data which are discussed in Chapter Four.

1.7 Chapters to Follow

2. Food Security

This chapter will examine the situation of food security in South Africa. This chapter will be situated within the larger framework of the First Millennium Development Goal (hunger and poverty reduction) and will examine South Africa's goals and progress relating to hunger reduction. It will look at the gap that exists between rich and poor and how this impacts of food availability and access. It will examine the situation between the rural and urban poor populations and comment on their different access to food. This chapter will highlight issues relating to HIV/AIDS, arguing that this has made access to and availability of food an even greater issue than before. Finally this chapter will situate

the South African situation within a greater global context, commenting on how global food issues are affecting the country.

3. Organic Farming

This chapter will look at why chemicals should be used with caution in food gardens. It will examine the argument for organic methods (and against chemical ones) and relate it to the greater movement towards sustainable development goals. It will explain how sustainable development and organic methods interact and reinforce each other. It will also look for evidence that organic foods are better than foods grown using inorganic methods in terms of nutrition.

4. Food Gardens, Hunger and Malnutrition

This chapter will examine the evidence gathered from interviews with food gardeners. It will assess whether food garden households are succeeding in alleviating hunger and improving nutrition through the produce grown in the garden. It will discuss the findings as they relate to the chosen indicators of hunger and malnutrition. This chapter will also discuss the opportunities for school and community based gardens. It will examine the challenges such gardens face and assess whether these gardens can contribute to alleviating hunger and malnutrition.

5. Policy Recommendations

This concluding chapter will make policy recommendations in light of the findings in the report above. It will look at the historical role of propaganda in promoting food gardens during World War Two and will examine ways that such propaganda might be used again. It will make suggestions of how food gardeners might further benefit from their produce. This chapter will then draw conclusions based on the findings above and may suggest further areas for future research.

Chapter Two

2. Food Security

2.1 Global Food Crisis Developments

Since early 2008 the media has been reporting regularly on the global food crisis. Rising food prices have meant that food has become an overpriced commodity for many. Up until then, the global supply of food was fairly stable with large famines becoming a phenomenon of the past. Famines like that in Bengal in 1943, which killed an estimated 1.5 million people; in Ethiopia between 1888 and 1892 which killed a third of the population and again between 1972 and 1974 which killed approximately 200 000 people; and the famine in the Saharan countries in 1973 which killed 100 000 had all but ceased.⁵³ However, the numbers of people who experience chronic hunger are growing. An estimated 852 million people are undernourished worldwide, with more joining the group as food prices continue their upward spiral. At least 815 million of these people live in developing countries and are amongst the world's most poor.⁵⁴ Poorest households and those with the fewest means to cope are the hardest hit when prices rise, irrespective of country or region.⁵⁵

There are a number of factors contributing to the rise in food prices. Firstly, there is an increase in demand for food grains due to increasing incomes in emerging market economies. Secondly, increasing incomes also lead to increasing demand for meat and dairy products which in turn drive up the grain price as grain is one of the main inputs in meat production.⁵⁶ Thirdly, the price of oil is increasing which has led to increases in the prices of agricultural inputs like fertiliser, transport and water. Due to increasing oil prices, production of bio-fuels⁵⁷ has increased which also contribute to rising grain prices. Fourthly, there has been a decrease in investment in agriculture and in rural areas

⁵³ Sen, A *Op. Cit.* pp 52, 86, 116

⁵⁴ Müller, O and Krawinkel, M, "Malnutrition and Health in Developing Countries" in *Canadian Medical Association Journal*, August 2 2005, p279

⁵⁵ Ruel, MT, Garret, JL, Hawkes, C and Cohen, MJ, "The Food, Fuel, and Financial Crises affect the Urban and Rural Poor Disproportionately: A Review of the Evidence" in *The Journal of Nutrition*, November 2009, p170S

⁵⁶ Islam, R and Buckley, G, "Rising Food Prices and their Implications for Employment, Decent Work and Poverty Reduction" in *International Labour Office: Employment Sector*, Working Paper 30, 2009, p3

⁵⁷ Bio-fuels are made from food grains, mainly maize.

globally which affects supply.⁵⁸ Global food prices have also been affected by inclement weather, low global grain reserves, agricultural trade practices and market speculation. All these factors have combined to drive up food prices and cause emergency situations in various places.

Combined with the financial crisis which began in late 2008, the effects of high food prices have a potentially devastating impact on poverty, food insecurity and malnutrition.⁵⁹ Poor households, who are net food buyers, are forced to spend more on food which results in less diverse diets, lower quality produce and decreased energy intake.⁶⁰ The current high food prices actually have their origins in 2000, when global grain stocks began to decline steeply from over 110 days worth of food to just over 60 days worth in 2004. The per capita availability of food has declined from 177kg per person per year in 1991 to 152kg per person per year today.⁶¹ Extreme weather in 2006 caused cereal production to decline by 21%. Starting in 2006, food prices rose sharply. The Food Price Index rose by 9% in 2006, by 24% in 2007 and by 51% in the 12 months leading to July 2008.⁶² This trend has continued, with the price of wheat increasing by between 60 and 80% by September 2010 as a result of drought and fire in Russia and the Ukraine.⁶³ In April 2008, the United Nations Secretary-General (UNSG) set up a UN High Level Task Force on the Global Food Crisis.⁶⁴

On the basis of the '1 dollar a day' threshold, there are now 1.2 billion poor people in developing countries. 780 million suffer from chronic hunger which means that their daily energy intake of calories is insufficient for them to lead active lives.⁶⁵ The poorest

⁵⁸ Islam, R and Buckley, G, *Op. Cit.* p6

⁵⁹ Ruel, MT et al, *Op. Cit.* p170S

⁶⁰ Altmas, M, Hart, TGB and Jacobs, PT, "Household Food Security Status in South Africa" in *Agrekon*, Vol. 48, No. 4, December 2009, 347; Evans, A, "The Feeding of the Nine Billion" *A Chatham House Report*, Royal Institute of International Affairs, London, 2009, p15

⁶¹ World Health Organization and Food and Agriculture Organization of the United Nations "Fruit and Vegetables for Health" *A Report of a Joint FAO/WHO Workshop*, Japan, September 1-3 2004, p1

⁶² Evans, A *Op. Cit.* p12

⁶³ Humanitarian News and Analysis "Prices Highest since 2008" *Op. Cit.*

⁶⁴ Evans, A *Op. Cit.* p12

⁶⁵ FAO, World Food Programme (WFP) and International Fund for Agricultural Development, "Reducing Poverty and Hunger: The Critical Role of Financing for Food, Agriculture and Rural Development" *Paper for the International Conference on Financing for Development*, Mexico, March 18-22 2002, p8

and most vulnerable people in the developing world are most exposed to fluctuations in prices as many spend more than 60% of their income on food.⁶⁶ The situation of increasing prices has also been exacerbated by the financial recession.

For most of the last decade, food prices have been volatile and largely on the increase. In 2002, the World Food Programme (WFP) was warning of a famine in sub-Saharan Africa and similar warnings have been issued since 2008. South Africa is not immune to rising food prices. It is part of an interconnected global system and participates in global trade. South Africans are thus also feeling the effects of the global food crisis. This report will now examine the state of food security in South Africa, the effects of rising food prices on the poor and the government's attempts to curb the impact of these prices.

2.2 Food Security in South Africa

South Africa is a major player in the Southern African region and its food security is vital to the stability of the region. In sub-Saharan Africa, there were 58 million more poor people in 1999 than in 1990. If MDG one is met, and the number of people living in poverty is halved, there will still be 40% of the total sub-Saharan population living in poverty.⁶⁷ Sub-Saharan Africa is the only region in the world where the number of malnourished is expected to rise in the period to 2020.⁶⁸ In 2002, the World Food Programme and FAO declared that 12.8 million people were on the verge of starvation in sub-Saharan Africa. But that is hardly out of the ordinary – large portions of rural and urban populations in the region suffer from inadequate diets and experience lack of food as a daily challenge.⁶⁹ South Africa has also been a contributor to food security at the regional level. “The 196 000 tons brought in by the World Food Programme in the region in 2007 was a record, and 150 000 tons of that was from South Africa.”⁷⁰ Food insecurity

⁶⁶ World Food Programme, “Weathering the Storm: Coping with High Food Prices and the Financial Crisis”, April 29 2009 <http://home.wfp.org/stellent/groups/public/documents/newsroom/wfp197596.pdf>

⁶⁷ FAO, WFP and IFAD, “Reducing Poverty and Hunger: The Critical Role of Financing for Food, Agriculture and Rural Development” *Op. Cit.* p9

⁶⁸ Leen, M, *Op. Cit.* p29

⁶⁹ Vogel, C and Smith, J, “The Politics of Scarcity: Conceptualising the Current Food Security Crisis in Southern Africa” in *South African Journal of Science*, Vol. 98, July/August 2002, p315

⁷⁰ Richard Lee, World Food Programme Public Information Officer, Southern Africa as quoted in Sherry, S, *Op. Cit.* p64

is multi-dimensional in nature. Access to adequate food at the household level is increasingly dependent on how food markets and distribution systems function rather than the total agro-food output.⁷¹ South Africa thus has a role to play in helping to stabilise the food security in the region as well as domestic food security.

Food security is said to have 2 components. Firstly, the availability of food and the ability to be self sufficient in food production through one's own production and secondly, having accessibility to markets and the ability to purchase food items.⁷² South Africa is food secure at the national level. It produces the main staple food and exports surplus food. It can also import what is required to meet food needs.⁷³ National food security indicators reveal that South Africa has been meeting the food needs of the population from domestic sources for the last 20 years.⁷⁴ Indicators in 2002 suggested that South Africa met the needs for the main staple, maize, by over 100%. It also met the requirements for wheat, the second most important food product, by up to 95%. Imports of livestock and dairy products from the EU and SADC regions filled any production gaps.

Despite the success of South Africa's food security at the national level, there is little household food security in South Africa. The food security of the urban and rural poor is under threat. South Africa's food inflation rate hit a new high in 2008. From July 2007 to July 2008, the year on year increase in the Consumer Price Index for Food was 17.8%.⁷⁵ South African's earning less than US\$200 per month (approximately R2111) spend more than 30% of their income on food. The cost of almost all essential food items (bread, milk and meat) increased by more than 6% in 2008. Despite being a maize producer, South Africa now imports wheat and sunflower oil. "The urban poor are the worst affected as

⁷¹ Nichols, A, Maynard, V, Goodman, B and Richardson, J, "Health, Climate Change and Sustainability: A Systematic Review and Thematic Analysis of the Literature" in *Environmental Health Insights*, Vol. 3, 2009, p346

⁷² Bonti-Ankomah, S, *Op. Cit.* p2

⁷³ South African Department of Agriculture, "The Integrated Food Security Strategy for South Africa" *Op. Cit.* p19

⁷⁴ *Ibid*

⁷⁵ Humanitarian News and Analysis "Food Security under Threat", Johannesburg, September 1 2008, <http://www.irinnews.org/report.aspx?ReportID=80107>

they do not have access to food, unlike the rural poor, who have access to land to grow food to support themselves and their families.”⁷⁶ In May 2005, maize cost less than R600 per ton. By December 2007, the maize price had risen to R1806 per ton. The price of sunflower seed increased from R850 per ton to R4600 per ton.⁷⁷ Such increases make the cost of staples infinitely more expensive for the poor.

The South African Constitution states that every citizen has the right to have access to sufficient food and water.⁷⁸ In 1994, the government identified food security as a top priority and has increased spending on social programmes. Feeding schemes, child support grants, free health services for children up to 6 years and for pregnant and lactating women, pension funds, provincial public works programmes and community food garden initiatives were all introduced as ways to improve household food security.⁷⁹ However, most of these programmes had unsatisfactory results and in 2000, a National Food Security Strategy was formulated. Some of the key challenges to achieving food security in South Africa are highlighted by the Department of Health in the Integrated Food Security Strategy (IFSS). These challenges include: ensuring enough food is available now and in the future; matching income to prices in order to ensure access to sufficient food for all; empowering citizens to make optimal choices for nutritious and safe food and ensuring adequate social safety nets and food emergency systems.⁸⁰ “The vision of the IFSS is to attain universal physical, social and economic access to sufficient, safe and nutritious food by all South Africans, at all times to meet their dietary and food preferences for an active and healthy life.”⁸¹ One of the main dimensions of the IFSS is to eradicate widespread inequalities and grinding poverty amongst the majority of households. Poverty is manifested by inadequate and unstable food supplies, lack of

⁷⁶ André Jooste, National Agricultural Marketing Board as quoted in Humanitarian News and Analysis “Food Security under Threat” *Op. Cit.*

⁷⁷ van Zyl, J, “Fuelling the Cost of Eating” in *FinWeek*, South Africa, October 18 2007, p44

⁷⁸ South African Department of Agriculture “The Integrated Food Security Strategy for South Africa” *Op. Cit.* p5

⁷⁹ *Ibid*

⁸⁰ *Ibid*, 6

⁸¹ *Ibid*, 6

purchasing power, weak institutional support networks, poor nutrition, inadequate safety nets, weak food management systems and unemployment.⁸²

In 2002, 35% of the population, 14.3 million people, were vulnerable to food insecurity. Women, children and the elderly are the most vulnerable to food insecurity. In 1996, one third of all households spent less than R1000 per month on food and only 18% spent over R3500 per month.⁸³ The highly unequal nature of income distribution in South Africa means that there is a large, poor, food insecure population. Poverty is spread throughout the provinces. Gauteng and the Western Cape have less than 12% poor households. The Free State, Eastern Cape and Northern Province have the worst poverty levels, largely related to the incorporation of very poor homelands into these provinces after 1994.⁸⁴ Nearly one third of all South African households are female headed. These households are amongst the poorest of the poor and spend less than R1000 per month on food. In 1996, 73% of households earned less than R2500 per month. 39% of the population did not meet the daily energy requirement of 2000 kcal/day.⁸⁵ In South Africa, the cause of hunger and malnutrition is not due to shortage of food but rather inadequate access to food. Stats SA shows that food insecurity is not an exceptional, short term event but is rather a continuous threat for more than a third of the population.⁸⁶ Factors which influence household food security include “access to land; livestock ownership; food garden availability; safe, accessible water supply; stable climatic conditions; access to food shops; access to alternative food suppliers and income to buy food.”⁸⁷

2.3 Food Security in History

Compared to other middle income countries, South Africa has extremely high levels of absolute poverty.⁸⁸ Contemporary South Africa is defined by the past. At the turn of the

⁸² Ibid, 19

⁸³ Ibid, 22

⁸⁴ Ibid

⁸⁵ Ibid, 23

⁸⁶ South African Department of Agriculture “Fighting Hunger: Linking Information to Action: Food Insecurity in Sekhukhune” *Food Security Information Brief: 1*, July 2006

⁸⁷ Steyn, NP, Labadarios, D and Huskisson, J, “General Introduction” in Labadarios, D (Ed) *The National Food Consumption Survey*, South Africa, 1999, p30

⁸⁸ Altman, M, Hart, TGB, and Jacobs, PT, *Op. Cit.* p345

20th century, rapid commodity markets sprang up around industrial mining. The population started to urbanize in a dramatic way and commercial agriculture came to the fore.⁸⁹ Initially, “African farmers participated in the growing commodity markets under conditions of relative land abundance, low population size, low production, processing and distribution technologies, weak government intervention and undistorted markets.”⁹⁰ Food insecurity was virtually non-existent among the African population. However, with the arrival of apartheid in 1948, all this changed. African farming declined through a loss of agriculture, rural capital, wealth and skills.⁹¹ In the rural areas, there was little access to education, health and social services and as a result, poverty increased.⁹² This was exacerbated by the creation of Bantu homelands in 1951. Inequalities in access to land, other resources and urbanization policies have led to household food insecurity in South Africa and consequently, hunger and malnutrition, particularly in the rural areas.⁹³

The situation for many has not improved in the 16 years following the end of apartheid and the restoration of democratic rule. The high levels of unemployment have led to increasing poverty at almost proportional rates. Poverty amongst the African population is almost 60% and is most severe in the rural areas.⁹⁴ At least 38% of the total population is jobless and 12 million people receive some form of social grant.⁹⁵ The African population of South Africa is the group most likely to suffer from household food insecurity and consequently hunger and malnutrition. The “WHO Multi-country Study on Improving Household Food and Nutrition Security for the Vulnerable” found that mean energy intake of urban and rural black South Africans is lower than the RDA for all other population groups except rural women. 22% of children under the age of nine are stunted due to chronic malnutrition.⁹⁶ The highest prevalence of stunting was found in the

⁸⁹ South African Department of Agriculture “The Integrated Food Security Strategy for South Africa”, 18

⁹⁰ Ibid

⁹¹ Ibid

⁹² Ibid

⁹³ Vorster, S, Oosthuizen, W, Jerling, J, Veldman, F and Burger, H, “The Nutritional Status of South Africans” in *Health Systems Trust*, November 1996, p21

⁹⁴ Humanitarian News and Analysis “NGO Criticizes US Food Aid for Children”, Johannesburg, November 3 2010, <http://www.irinnews.org/Report.aspx?ReportID=90942>, p28

⁹⁵ Humanitarian News and Analysis “Food Security under Threat” *Op. Cit.*

⁹⁶ Bonti-Ankomah, S, *Op. Cit.* p2

Bloemfontein area.⁹⁷ The National Food Consumption Survey, which was conducted in 1999, shows that the infant mortality rate for African infants was 86 per 1000 and 94 for non-urban infants. The under-five mortality rate for African children was 125 per 1000 births and 139 in non-urban areas.⁹⁸ Amongst 2 – 6 year old children, non-urban African children had the lowest energy intake and micronutrient intake. Such children only achieve 60-80% of the recommended daily allowances.⁹⁹ Dietary intake was inadequate with respect to energy intake and nutrient density. Such poor dietary intake and nutritional status has been known to lead to physical and mental developmental issues.¹⁰⁰

National and household food security does not directly address the fact that overexploitation of natural resources jeopardizes the very future of food security. However, as a developing nation with much agricultural potential, South Africa could embrace the issue of sustainability as part of its food security strategy. In subsistence farming, switching to organic farming increases yields by up to 180%.¹⁰¹ Organic farming breaks the cycle of indebtedness and allows farmers to use labour and environmental services to intensify production sustainably.¹⁰² Successful diversification of small holder farms, which South Africa can encourage as part of its land reform programme, can lead to improved nutrition in poor households due to more secure and diverse food intake. Organic agriculture's external environmental costs are much lower than conventional agricultures and such systems increase food availability and access in exactly those locations where poverty and hunger are most severe.¹⁰³

Thus, household food security in South Africa is non-existent for most of the population. The Action Aid Hunger Free Scorecard indicates that South Africa has increasing levels of hunger. Up to 18% of children live in households where hunger is reported.¹⁰⁴ Food

⁹⁷ Coutsoudis, A et al, *Op. Cit.* p2

⁹⁸ Steyn, NP et al, *Op. Cit.* p29

⁹⁹ Vorster, S et al, *Op. Cit.* p13

¹⁰⁰ Steyn, NP et al, *Op. Cit.* p30

¹⁰¹ FAO, *Op. Cit.* p5

¹⁰² Ibid, p6

¹⁰³ FAO, *Op. Cit.* p16

¹⁰⁴ Action Aid "Who's Really Fighting Hunger?" in *Hunger Free Score Card 2010*, September 14 2010, p59

insecurity is worst in the rural areas which are characterized by high levels of unemployment, increasing poverty, few social services and inadequate social safety nets. One of the key problems with food security is access and for many in the rural areas, this is the key issue. People cannot afford to buy food and they cannot access food because supply points are far away or there is no delivery. South Africa is food secure at the national level and plays an important part in the regions food security. However, many of its own population are suffering from a lack of food security. There clearly needs to be a greater effort to combat poverty, hunger and malnutrition. This report will now examine whether food gardens need to be organic and the evidence currently available supporting the organic argument.

Chapter Three

3. Organic Farming

3.1 Origins of Organic Farming

“The increased use of nitrogen fertilisers...helped bring yields up and food prices down, but it also contributed to a surfeit of calories, runoff, weed-clogged waterways, coastal dead zones, and a decline in commercial fisheries – all of which carry enormous price tags. Yet because these costs aren’t included in the retail price of the food we buy, they tend to be invisible to consumers and policymakers and thus are rarely counted when we evaluate the efficiency of our food system or praise our capacity to generate so much food so cheaply.”¹⁰⁵

Why should food gardens teach organic and biodynamic farming methods? Such a question may seem unrelated to the question at hand – how food gardens enhance nutrition. However, this chapter will discuss why organic methods are important – how they lessen dependency on outside inputs, contribute to sustained soil fertility and therefore long term growth prospects and do not contribute to climate change. Organic farming makes farming more sustainable and less reliant on state agriculture and extension services which can be inconsistent in their delivery service.

“The best can only spring from that kind of biological completeness which has been called wholeness. If it is to be attained, the farm itself must have a biological completeness. It must be a living entity ...a unit which has within itself a balanced organic life. Every branch of work is interlocked with all the others. The cycle of conversion of vegetable products through the animal into manure and back to vegetable is of great complexity and highly sensitive, especially over long periods, to any disturbance of its proper balance. The penalty for failure to maintain this balance is, in the long run, a progressive impoverishment of the soil...”

- Lord Northbourne¹⁰⁶

¹⁰⁵ Roberts, P: *The End of Food*, Bloomsbury, London, 2008, p220

¹⁰⁶ Rodale, M, *Op. Cit.* p138

Lord Northbourne was writing in 1940 at the beginning of the shift to large scale chemical agriculture and even then, he recognised the importance of soil and soil quality in growing food. Following World War One, left over nitrogen and nerve gas was converted into fertiliser and channelled into agriculture. These new technologies dramatically increased agricultural productivity. The increase in the size of farms (made possible through large farm equipment like tractors and harvesters) changed the face of farming from small, family owned farms to large, industrial ones. Greater output per acre has been achieved through substantial increases in the use of agrochemicals, fertilisers and water irrigation.¹⁰⁷ As greater yields were coaxed from the land, costs of extraction increased. Increased irrigation, excessive use of fertilisers and agrochemicals, and polluted water supplies have all sapped soil fertility.¹⁰⁸ This leads to the increased use of chemicals and pesticides to combat decreasing fertility and causes an increasing dependence on chemical companies.

Not only is chemical agriculture creating dependence, it is also contributing to climate change. To make 1 ton of nitrogen fertiliser requires 1 ton of oil and 108 tonnes of water. Such agriculture is “*not fit for a low-carbon, more resource constrained future.*”¹⁰⁹ Current chemical agriculture methods, which prescribe the growing of monocultures, require more and more fossil fuels. Fossil fuel is used to make the fertilisers, ship them to the farms, transport produce to processing factories, and used to transform them into products which are then packaged and transported worldwide.¹¹⁰

Chemical agriculture depends heavily on off farm inputs, generates waste which harms the environment, uses large quantities of fossil fuels, pollutes water supplies through chemical run-off and depletes soil fertility.¹¹¹ Water companies in the UK spend

¹⁰⁷ Ford Runge, C and Piehl Runge, C, “Against the Grain” in *Foreign Affairs*, Vol. 89, No. 1, January/February 2010, p10

¹⁰⁸ Runge, C and Runge, C, *Op. Cit.* p11

¹⁰⁹ Maynard, R, “An Inconvenient Truth about Food – Neither Secure nor Resilient”, *A Soil Association Report*, 2008, p3

¹¹⁰ Fromm, H, “Michael Pollan’s Ecology of Food” in *The Hudson Review* Vol. 59, No. 3, Autumn 2006, p518

¹¹¹ Horrigan, L, Lawrence, RS and Walker, P, “How Sustainable Agriculture can address the Environmental and Human Health Harms of Industrial Agriculture” in *Environmental Health Perspectives*, Vol. 110, No. 5, May 2002, p445

approximately £100 million a year removing pesticides and other chemicals from the water supply as a result of chemical infiltration from large agricultural farms.¹¹² In 1998, the world used 137 million metric tons of chemical fertiliser. This overuse of fertiliser produces excess nitrogen in the soil which decreases plant diversity and impedes plant growth. Pesticide use decreases bird and beneficial insect populations leading to more bad pests which increase pesticide use.¹¹³ Chemical agriculture has triumphed in implementing standardisation and homogenisation with little thought given to biological diversity and adaptability of species.¹¹⁴ Soils farmed using synthetic – chemical or ‘conventional’ methods have little ability to keep or build supplies of carbon. Soil treated in this manner eventually features weakened microbial life, compromised structure and an impaired ability to absorb water and therefore survive floods and droughts.¹¹⁵ Millions of areas are being destroyed worldwide by deforestation, desertification and destructive farming practices.¹¹⁶

“The essential purpose of food , which is to nourish people, has been subordinated to the economic aims of a handful of multinational corporations that monopolise all aspects of food production, from seeds to major distribution chains, and they have been the prime beneficiaries of the world food crisis...”¹¹⁷ – Miguel d’Escoto Brockmann

The “...organic movement... seeks the kind of profit that can last for generations... [It] regards the natural world with profound reverence and humility. It aims to work with nature. At the heart of the organic movement is a belief in the interconnectedness of things.”¹¹⁸ – Eric Schlosser

The legacy of chemical agriculture is not one which will benefit future generations. Soil quality, water quality and plant diversity are being compromised in the name of efficiency. As such, development programmes should not be advocating the use of

¹¹² HRH The Prince of Wales, Juniper, T and Skelly, I, *Harmony*, Blue Door, London, 2010, p21

¹¹³ Horrigan, L et al, *Op. Cit.* p446

¹¹⁴ Petrini, P: *Terra Madre*, Chelsea Green, Vermont, 2009, p65

¹¹⁵ Rodale, M, *Op. Cit.* p10

¹¹⁶ *Ibid*, p15

¹¹⁷ *Ibid*, p43

¹¹⁸ *Ibid*, pxi

fertilisers and chemicals in food gardening practices. Firstly, such agriculture creates dependence on the companies supplying the chemicals and seed. Small holder farmers in India, for example, have been encouraged to borrow money at high interest rates in order to pay for genetically modified seeds (which must be purchased every year), fertilisers and pesticides which, the companies argue, will increase yields. However, farmers have faced failing harvests and mounting debt. In the past decade, 100 000 Punjabi farmers have committed suicide as a result.¹¹⁹ Skills that had existed for centuries, which preserved and maintained rich and vital biodiversity, have been lost to technological change.¹²⁰ Secondly, such agriculture depletes soil quality which in the long run affects the ability of the soil to produce food. If you can only grow food on a few spare pieces of land in your backyard, soil quality becomes of utmost importance. Thirdly, chemicals hamper the ability of the soil to retain water, resulting in run-off and erosion. Lastly, chemically grown foods then contain chemicals. Long term effects of increased chemical consumption (even in small amounts found on foods) are only now becoming known to scientists. Conditions like asthma, early onset puberty and infertility are all being linked to chemical agriculture.

“We are dealing with 10 global issues at the moment: food security, availability of water, climate change, energy demand, waste disposal, extinction of biodiversity, soil degradation and desertification, poverty, political and ethnic stability, and rapid population growth. The solution to all of these lies in soil management.”¹²¹

“Mother Earth never attempts to farm without livestock; she always raises mixed crops; great pains are taken to prevent erosion; the mixed vegetable and animal wastes are converted into humus; there is no waste; the processes of growth and the processes of decay balance one another; the greatest care is taken to store rainfall; both plants and animals are left to protect themselves against disease.”¹²²

¹¹⁹ HRH The Prince of Wales et al, *Op. Cit.* p63

¹²⁰ Ibid, 64

¹²¹ Rattal Lal as quoted in Rodale, M, *Op. Cit.* p1

¹²² Pollan, M: *The Omnivore's Dilemma*, Penguin Books, New York, 2006, p243

3.2 Principles of Organic Farming

*“Organic foods are produced according to specific production standards. The use of synthetic pesticides and artificial fertilisers is prohibited, genetically modified crops aren’t used and if livestock is involved, the animals are reared free range, without the routine use of antibiotics and without the use of growth hormones.”*¹²³

Organic farming, in contrast to chemical agriculture, focuses on soil management and preservation. A *“...fertile soil is ... a soil teeming with healthy life in the shape of abundant micro - flora and micro – fauna, will bear healthy plants, and these, when consumed by animals and man, will confer health on animals and man. But an infertile soil, one lacking in sufficient microbial, fungus and other life, will pass on some form of deficiency to the plant, and such plant, in turn, will pass on some form of deficiency to animals and man.”*¹²⁴ Micro-organisms found in the soil are a source of its fertility. They maintain soil structure, contribute to biodegradation of dead plants and animals and fix nitrogen levels within the soil.¹²⁵ In contrast, fertilisers block soil capillaries. Rain water cannot infiltrate, runoff increases and the soil faces drought.¹²⁶ Excess nitrogen in the root zone denies nutrients to plants.¹²⁷ Chemical soils are low in organic matter – such matter helps conserve soils and soil moisture.¹²⁸

Organic farming means *“...farming in a way that preserves the long-term health of the soil, which comes down to giving back to Nature organic matter to replace what has been taken out. It means maintaining microbes and invertebrates in the soil and good moisture. It means using good water catchment, planting trees that prevent the soil being eroded and maintaining the teeming biodiversity, including the beneficial and essential insects, such as bees.”*¹²⁹

¹²³ Spokesperson for Woolworths, as quoted in Schumacher, I, “Fad that Won’t Fade” in FinWeek, South Africa, February 19 2009, p51

¹²⁴ Sir Albert Howard as quoted in Shiva, V: *Soil Not Oil*, Zed Books, London, 2008, p101

¹²⁵ Ibid

¹²⁶ Rodale, M, *Op. Cit.* p50

¹²⁷ Shiva, V, *Op. Cit.* p103

¹²⁸ Ibid, p109

¹²⁹ HRH The Prince of Wales et al, *Op. Cit.* p57

In addition to not using chemicals which might deplete soil quality and life, organic farming integrates plant and animal production, and maintains higher biotic diversity.¹³⁰ Crops are planted in rotation, with a diversity of species grown together.¹³¹ Such diversity reduces the needs for pesticides because pests are confused by the different plants. Cover crops can be planted in-between planting seasons which prevent wind erosion and help maintain soil health. Organic farming methods preserve the integrity of the soil. Such methods trap and build carbon in the soil.¹³² Such carbon filled soil can better absorb water which means that the soil is better protected during extreme weather like droughts and floods. Organic soils are also a haven for mycorrhizal fungi. Such fungi build soil, and its health as well as taking greenhouse gases out of the air.¹³³ Organic farming is based on recycling organic matter. This matter feeds soil organisms and increases soil fertility.¹³⁴ Such soils increase carbon absorption by 55% and water holding capacity by 10%.¹³⁵ A study by the FAO found that 114 projects in 24 African countries had nearly doubled their yields when organic or near organic practices were used.¹³⁶

“Organic farming approaches for maize and beans in the US not only use an average of 30% less fossil energy but also conserve water in the soil, induce less erosion, maintain soil quality, and conserve more biological resources than conventional farming does.”¹³⁷

Organic farming thus also makes economic sense for food gardening. Not only will such methods improve soil quality, decrease exposure to chemicals and allow for a diversity of product; they will also be cheaper in the long run. Less water is needed, pest control is less, food scraps and peelings can be recycled into compost which can then be added to beds enhancing soil quality. A study in the UK found that organic farming uses 26% less

¹³⁰ Horrigan, L et al, *Op. Cit.* p446

¹³¹ *Ibid*, p450

¹³² Kingsolver, B: *Animal, Vegetable, Miracle*, HarperCollins, New York, 2007, p18

¹³³ Rodale, M, *Op. Cit.* p10

¹³⁴ Shiva, V, *Op. Cit.* p112

¹³⁵ *Ibid*

¹³⁶ Raymond, B, “Sustainable Food: A Conversation with Jamie Harvie – Executive Director, Institute for a Sustainable Future” in *The Permanente Journal*, Vol. 14, No. 1, Spring 2010, p73

¹³⁷ David Pimental as quoted in Shiva, V, *Op. Cit.* p110

irrigation water per tonne of potatoes than commercial farming.¹³⁸ There is also the potential of increased yields. A long term trial in the US found that in drought years, organic maize crops yielded 33% more than non-organic maize and organic soy yielded 78% more than non-organic soy.¹³⁹ Farmers using conventional methods need to constantly apply more and more pesticides in order to continue increasing yields. Even with the increased pesticides, crop losses to pests continue to rise. As the number of cultivated crops shrinks, so the probability of a pesticide resistant pest or weed destroying a significant share of the crop grows substantially.¹⁴⁰ Organic methods can also be tied to traditional, local methods. Local vegetables tend to be more resistant than imported varieties as they are suited for particular climates. Agricultural tradition and knowledge can be maintained – such knowledge has evolved over time through a combination of nature and manual dexterity.¹⁴¹ The intensive nature of organic farming makes it ideal for food gardens. Gardeners generally have small plots of land which make it easy to farm intensely. Extra employment can be generated by gardeners who hire people to do the more difficult manual labour.

3.3. Evidence of Organic Quality

The benefits of organic foods have caused much controversy in recent years. Studies that compare the nutritional benefits of organic and conventional foods have drawn inconclusive results. A 2009 study published in the *American Journal of Clinical Nutrition* found no difference between organic and conventional produce in terms of nutritional benefits.¹⁴² However, the organic supporters argue that nutrition alone is not the issue. Chemically raised fruit and vegetables contain higher traces of pesticides and chemicals and therefore affect food safety.¹⁴³ However, analysing the nutritional benefits of food is difficult and partly explains the differences in results. Any number of variations in diet can account for differences in nutrition levels and evidence of chemical

¹³⁸ Azeez, G, “Soil Carbon and Organic Farming” *Soil Association Report*, 2009, p5

¹³⁹ Azeez, G, *Op. Cit.* p5

¹⁴⁰ Roberts, P, *Op. Cit.* p219

¹⁴¹ Petrini, C, *Op. Cit.* p121

¹⁴² Kluger, J, “What’s so Great about Organic Food?” in *Time Magazine*, September 6 2010, p31

¹⁴³ Rich, D, “Not All Apples are Created Equal” in *Earth Island Journal*, Spring 2008, p26

residue. In fact, much of the debate between conventional and organic farming centres around the treatment of animals and not on the nutritional benefits of fruit and vegetables.

Beef raised in industrial conditions is fed antibiotics and growth inducing hormone, both of which leave residue in meat and milk products.¹⁴⁴ Beef raised organically is not fed hormones and has minimal exposure to antibiotics. Beef that is grass fed has a higher ratio of omega-3 fatty acids to omega-6, a balance believed to decrease risk for some cancers. Beef raised on grain has a ratio of omega-6 to 3 of seven to one, much higher than the grass fed 1.5:1.¹⁴⁵ In addition, animals raised in feedlots have a higher chance of spreading *E.coli* through their meat.¹⁴⁶

The BSE scare and the beef hormones case which both occurred in Europe in the 1990s are just some of the problems that arise from feedlot beef. Evidence that diethylstilbestrol (DES), a hormone fed to beef cattle, had been found in hamburgers, baby food and meatballs led to a European Directive banning hormones in beef in 1981. DES causes increased oestrogen levels leading to enlarged breast growth and early onset puberty in children.¹⁴⁷ Contamination most likely came from slaughtered cattle containing the hormone. In 1996, there was an outbreak of bovine spongiform encephalopathy (BSE) in the UK. BSE is a brain disease spread amongst cattle through the consumption of feed contaminated with bovine offal, bone meal and blood.¹⁴⁸ Scientists then found that BSE is transferable to humans through the consumption of contaminated meat and can lead to Creutzfeldt-Jacob disease, which is usually fatal. The roots of the crisis lay in lax rules regulating animal feed.¹⁴⁹ What these crises demonstrate is what can happen when animals are raised in feedlots and fed grain, hormones, protein made up of blood, brain and other animal products and anti-biotics – all of which are characteristics of the current commercial agricultural process.

¹⁴⁴ Kluger, J, *Op. Cit.* p32

¹⁴⁵ *Ibid*, p33

¹⁴⁶ *Ibid*

¹⁴⁷ Ames, GC, “Bananas, Beef and Biotechnology: Three Contentious US-EU Trade Disputes” in *Review of Agricultural Economics*, Vol. 23, No. 1, Spring/Summer 2001, p217

¹⁴⁸ Pollack, MA and Shaffer, GC: *When Cooperation Fails*, Oxford University Press, New York, 2009, p67

¹⁴⁹ Lambrecht, B: *Dinner at the New Gene Café*, St Martin’s Press, New York, 2001, p220

The benefits of eating organic are not only limited to better treatment of animals. Studies conducted in the US on ordinary breakfast items from conventional farms found that 88% of apples, 92% of milk samples and 67% of wheat samples contained pesticides ranging from herbicides to post-harvest fungicides.¹⁵⁰ Another study by the Consumer's Union research team found that 73% of conventionally grown foods had pesticide residues compared to 23% of organically grown foods.¹⁵¹ In possibly the most widely cited study on organic-conventional comparisons, Chensheng Lu found that organo-phosphorus levels in children's urine dramatically decreased when children started eating an organic diet and increased again when they returned to conventional foods.¹⁵² Such pesticides are commonly used in agriculture. This study has formed much of the argument for the organic camp – organic foods contain less pesticide residue than their conventional counterparts and must therefore be more beneficial. However, even Lu concedes that there might be errors in the study due to increased dietary restriction in the organic phase due to dietary preferences.¹⁵³ A two year study conducted by Washington State University between organic and conventional strawberry farms found that the organic farms produced berries that were higher in antioxidants, had higher concentrations of vitamin C and phenolic compounds.¹⁵⁴ However, it has been argued that the nutritional composition of such crops can differ due to growing conditions and seasonal variation as well as methods of crop protection.¹⁵⁵

Studies drawing comparisons between conventionally raised fruit and vegetables and those grown organically have thus so far been inconclusive regarding nutritional benefits. Organic farming may minimise climate impact in the long term, improve soil quality and yields and treat animals better but it cannot yet conclusively prove that its crops are nutritionally better for you than its conventional, chemically raised rivals. This report

¹⁵⁰ Rich, D, *Op. Cit.* p29

¹⁵¹ Singer, P and Mason, J: *The Ethics of What We Eat*, Rodale Books, USA, 2006, p200

¹⁵² Lu, C, Toepel, K, Irish, R, Fenske, RA, Barr, DB and Bravo, R, "Organic Diets significantly Lower Children's Dietary Exposure to Organophosphorus Pesticides" in *Environmental Health Perspectives*, Vol. 114, No. 2, February 2006, p261

¹⁵³ Lu, C, *Op. Cit.* p262

¹⁵⁴ "Price Perspective on Organic Foods" in *Environmental Nutrition*, November 2010

¹⁵⁵ Dangour, AD, Allen, E, Lock, K and Uauy, R, "Nutritional Composition and Health Benefits of Organic Foods – Using Systematic Reviews to Question the Available Evidence" in *Indian Journal of Medical Research*, Vol. 131, April 2010, p478

thus concludes that until such scientific evidence becomes available, food gardeners should strive to grow as much as possible using organic methods available. Decisions should be made based on soil quality, ability to create compost, the potential for increased yield, long term soil improvements and reducing dependency on inputs rather than on the potential nutritional quality of the food. “Eating an apple is almost always better than not eating an apple, of course, no matter where it comes from.”¹⁵⁶ This report will now examine the evidence gathered from food gardeners in the Free State and discuss the findings.

¹⁵⁶ Kluger, J, *Op. Cit.* p35

Chapter Four

4. Food Gardens, Hunger and Malnutrition

4.1 The South African Poor

Ensuring food security at the household level requires access to food and therefore requires stable income or purchasing power. Food is procured in a number of ways: purchasing, growing and producing or hunter-gathering. In South Africa, most food is purchased with homegrown produce as a supplement.¹⁵⁷ 39% of the population is vulnerable to food insecurity. Food insecurity is highest amongst the African population and rural households.¹⁵⁸ Employment and stable income are one the ways of alleviating food insecurity. The fewer jobs there are, the lower household income is and the more vulnerable families are to food insecurity. Between 1996 and 1999, the expanded unemployment rate increased from 34.4% to 36.2%.¹⁵⁹

As well as high levels of unemployment, incomes in South Africa remain at low levels for most households. Average annual income per household is R33428 (R2786 per month) – where a household is made up of 5 members.¹⁶⁰ Approximately 6.9 million people receive less than R2500 per month. Almost 50% of households receive less than R1000 per month and 84% of rural households earn less than R1000 per month.¹⁶¹ On average, 17% of income is spent on food.¹⁶² In order to achieve the recommended daily allowances, minimum food expenditure for a household of 5 should be R1432.50 a month.¹⁶³ Between 30 – 40% of South African households do not have assured access to

¹⁵⁷ Coutsoudis, A et al, *Op. Cit.* p4

¹⁵⁸ Bonti-Ankomah, S, *Op. Cit.* p2

¹⁵⁹ Ibid, p4

¹⁶⁰ This is usually 2 grandparents, 2 parents and a child but this is changing due to HIV/AIDS. It is often now made up of 2 grandparents, a single parent (or no parents) and 2-3 children.

¹⁶¹ Bonti-Ankomah, S, *Op. Cit.* p4

¹⁶² Ibid, p6

¹⁶³ Ibid, p7

adequate diet, this is largely related to the lack of physical availability of food in the rural areas.¹⁶⁴

Hunger and malnutrition stem from insufficient, unstable food supplies at the household level.¹⁶⁵ To assure household food security, food must be locally available, accessible and affordable.¹⁶⁶ In South Africa, many people are unable to feed their families from a narrow production base. Most poor people are net consumers and rely on cash income to meet their food needs. Any change in seasonal availability or climatic change can cause serious shortages with household food security. Government assistance is a major source of income for many people in the rural areas. Black households, in both urban and rural areas, in South Africa have the lowest living standards and are much more vulnerable to poverty and food insecurity.¹⁶⁷ HIV and AIDS have further undermined already food insecure households, often leading to unemployment. Malnutrition is highest in provinces with large rural populations and many experience bouts of hunger at various points in the year.¹⁶⁸

In South African rural areas, studies have found that most people consume a monotonous diet with little variety. Food is generally purchased by women.¹⁶⁹ Staple foods are bought in bulk, usually once a month. Purchases during the month are contingent on having money and food availability.¹⁷⁰ Women grow food to supplement their income but production is constrained by the seasons. They grow maize, potatoes, spinach, cabbage and pumpkins.¹⁷¹ Food in rural households is usually insufficient at different times of the week, month or year. Month end is a perpetually bad time for households dependent on monthly income – in the form of wages, remittances or grants. Month end can mean 10 or

¹⁶⁴ Coutsoudis, A et al, *Op. Cit.* p1

¹⁶⁵ South African Department of Agriculture, “The Integrated Food Security Strategy for South Africa”, *Op. Cit.* p26

¹⁶⁶ Coutsoudis, A et al, *Op. Cit.* p1

¹⁶⁷ South African Department of Agriculture, “The Integrated Food Security Strategy for South Africa”, *Op. Cit.* p26

¹⁶⁸ *Ibid*, 27

¹⁶⁹ Coutsoudis, A et al, *Op. Cit.* p4

¹⁷⁰ *Ibid*, p6

¹⁷¹ *Ibid*, p7

more consecutive days when the household knows it will be short of food.¹⁷² Winter and early spring are the worst months for hunger as supplies cannot be supplemented with own produce.¹⁷³ Poor households that engage in own production are not necessarily more food secure. They may grow their own because it is an additional livelihood strategy.¹⁷⁴ Households that do grow their own, do so for reasons of necessity. Approximately 4 million people in South Africa are engaged in own production and 300 – 400 000 of these are full time subsistence farmers.¹⁷⁵ Women make up 61% of all those involved in farming.¹⁷⁶

4.2 Botshabelo Case Study

There is little data on the contribution of home-grown agricultural produce to household food consumption in South Africa. Therefore, primary research was undertaken amongst food gardeners in the Free State, in the township of Botshabelo. The location was chosen for a number of reasons. Firstly, it is a township that was part of the Bophuthatswana homeland and as a result is underdeveloped. Whilst public services have improved - electricity and flush sanitation are now available - many people still struggle with very basic housing, some without electricity or running water. The population in the area is characterised by poverty and unemployment. Numbers of people living in the township vary from 250 000 to over one million. Part of the reason for this variation is the number of immigrants from Lesotho who cross the border illegally and settle here as a stopping point between the hub of Bloemfontein and their homes in Lesotho. Secondly, the town is located in a very rural area. It is 51kms east of Bloemfontein. The nearest town, Thaba Nchu is small and has only basic facilities. The township is surrounded by farmland.

Thirdly, there is an already well established food gardens project, run by the Mosamaria Aids Ministry. The project was started as a way for people to cope with food shortages and to help feed orphaned and vulnerable children that were joining already strained households. Because people have established food gardens, questions on their

¹⁷² Ibid, p10

¹⁷³ Ibid, p11

¹⁷⁴ Altman, M et al, *Op. Cit.* p355

¹⁷⁵ Ibid, p356

¹⁷⁶ Ibid, p357

consumption from the garden and ways that they benefit from the garden are possible. Gardens take time to generate produce and therefore researchers have to examine food gardens that have been in existence for a number of years. Fourthly, Botshabelo represents the norm regarding poor people in South Africa. There are not many services, the situation is rural, most people are unemployed or partially employed, most survive on government grants and perform some form of gardening. This is the norm for poor people in South Africa.¹⁷⁷

Research was conducted in the last week of October 2010. 79 participants were interviewed, all of whom were food gardeners, each representing a separate household. Of these, 73 participants (92%) were women. Garden sizes varied from 3 beds to 10 beds and produce varied between households. Households are generally made up of 5 members, of which at least one is a small child. All households interviewed had access to their own land. None of the respondents used communal land for growing. In the section below, this report will use the data collected from the case study to determine the extent to which the presence of food gardens addressed issues of hunger and malnutrition. Four main indicators were identified at the beginning of the report, a lack of which influences hunger and malnutrition and ultimately household food insecurity. These indicators are:

- 1.) Access to Food
- 2.) Seasonal Shortages
- 3.) Nutritional Diversity
- 4.) HIV/AIDS

4.3 Indicator One: Access to Food

The first indicator concerns lack of access. Living in rural areas means that supply is often irregular. Fruit and vegetables are only available at certain times of year and even when they are available, households lack funds to purchase them. Fruit and vegetables are relatively expensive items and are therefore seen as luxuries, only bought when

¹⁷⁷ Humanitarian News and Analysis “Food Security under Threat”, Johannesburg, September 1 2008, <http://www.irinnews.org/report.aspx?ReportID=80107>; Department of Agriculture, *Food Insecurity in Sekhukhune*, Information Brief, July 2008, http://www.fanrpan.org/documents/d00498/FIVIMS_Info_Brief1_Food_insecurity_Sekhukhune.pdf

money is abundant. Extra income generated from sales of garden produce could be used for other necessary items. Responses from representatives of the 5-A-Day for Better Health Trust and the Association for Dietetics in South Africa indicate that having a food garden allows for availability and access to food. Food that is grown in a garden is really fresh and can be income generating. Such food is also lower in cost than that bought at the supermarket.¹⁷⁸

4.3.1 Supply Chain Access

Interviews with food gardeners indicated that their supply chains are split between produce from the garden and that bought in local shops or the Shoprite supermarket, a new addition in the Botshabelo Shopping Complex. The garden supplies basic vegetable requirements whilst the supermarket supplies other necessities like mieliemeal, cooking oil and non food items. Only 15% of respondents are employed and these are in casual or informal jobs, indicating that money in the region is scarce and household spending needs to be well budgeted. These jobs include domestic help in Bloemfontein, washing clothes and blankets and gardening. Sometimes income is generated through own businesses: sewing, selling tripe or peanuts and beans. Interviews with Mosamaria field officers indicated that unemployment is large amongst the local population. Clothing and plastic factories in the area, which used to supply significant employment for people, are closing down – competition from international industries and minimum wage requirements are the main reasons cited for such closures.¹⁷⁹

It is thus not surprising that such a small percentage of respondents are employed. This is in line with other studies conducted in the southern Free State rural areas. A study by the University of the Free State Nutrition Department found that 9% of respondents listed wages from formal employment and 10% listed wages from casual employment as their main source of income.¹⁸⁰ Only 7.5% of respondents obtain remittances from family members who are working. The problem with such remittances is infrequency of

¹⁷⁸ Browne, C, ADSA, interviewed by author, Johannesburg, November 17 2010, and Silber, LA, Trustee for 5-a-day for Better Health Trust, interviewed by author, Johannesburg, November 21 2010

¹⁷⁹ Mosamaria Aids Ministry Field Officers, interviewed by author, Botshabelo, October 25 2010

¹⁸⁰ Walsh, C and van Rooyen, FC, “Household Food Security in Rural and Urban Communities in the Free State” *Paper presented at the Nutrition Congress 2010*, Durban, September 19-22 2010

payment and problems if the person working falls ill. When that happens, such families have no income at all. 27% of respondents live off government pensions and 26% off social grants¹⁸¹. The UFS study found that 66% live off old age pensions and state grants.¹⁸² Such grants pay R1010 a month.¹⁸³ 20% of respondents receive only a child support grant which is R240 per child, per month.

It is thus evident that money is scarce in this township and food gardeners are amongst the poor. Households thus struggle to afford to buy enough food on a daily basis. 77% of respondents indicated that they cannot afford to buy enough food on a daily basis. Choices have to be made between paying electricity and other bills and buying food. Respondents indicate that when they cannot afford to buy enough food they eat from the garden. In addition, respondents indicated that they do not have enough to eat at month end. 56% indicated that the 2 weeks before pay day are the hardest as by then money has generally run out and they are forced to eat what is available in the garden. Only 20% indicated that shortages are only seasonal – they struggle to have enough to eat in the winter. The UFS study found that 72% of respondents ran out of money to buy food during the month.

Despite the presence of the large new shopping complex and the Shoprite, most respondents still purchase items from local shops in the different sections of the township. Botshabelo spans a large area and unless one lives close to the shopping complex, getting to it is an issue. Taking a taxi costs R12 one way and you have to pay extra when you have shopping bags. When your income is only R1010, R24 is a vast amount of money to spend on one shopping trip. Therefore, despite the presence of a large shop, access is still limited. In terms of affordability, a head of cabbage at the supermarket in Botshabelo is sold for approximately R10. In contrast, each section of gardeners has one person who sells seeds to other gardeners. Packets of seeds are bought

¹⁸¹ Social grants include: disability grant, care-dependency grant and foster care grants.

¹⁸² Walsh, C and van Rooyen, FC, *Op. Cit.*

¹⁸³ South African Social Security Agency “Figures as of April 2009”, <http://www.sassa.gov.za/ABOUT-SOCIAL-GRANTS/GRANT-AMOUNT-652.aspx>

by the seller and scoops of 15ml are sold for between R2 and R5.¹⁸⁴ Seeds are thus much more affordable than vegetables sold at the supermarket.

It is thus evident that food gardener households struggle with having enough money for food and non-food items. They cannot afford to buy enough food to feed their families on a daily basis and some struggle in the winter months when gardens produce less. However, gardeners are able to supplement their diet with produce from the garden and 20% indicated that their gardens produce year round, which allows them access to vegetables always.

In terms of generating extra income, the gardens in Botshabelo are quite successful. Bunches of vegetables, mostly spinach, are sold for between R5 and R7. 51% of respondents indicate that they sell between R20 and R100 per month. This is a significant increase in income when you are earning R250 for a child or R1010 as a pensioner. Only 11% indicated that they do not sell any produce as they are consuming everything in their garden. 27% indicated that they sold over R100 per month. Sales are dependent on the seasons and quality of the produce. Produce is sold to other local people and is thus beneficial for the entire community. One respondent told the story of how she had saved over R1000 from sales of garden produce and with the money had purchased a dining room table with chairs. Another said she could make over R500 per month when produce is at its best. There is thus evidence that gardens can become income earning and help provide extra financing for non-food items like electricity. Other studies have found that 1.2 million households in the old 'black rural areas' derive some part of their income from farming. This is a residual activity, conducted when other household activities are finished.¹⁸⁵

4.3.2 Access to Staples

In developing countries, including South Africa, starchy or high carbohydrate foods are the main sources of energy. They provide 40-80% total energy intake. Food rich in

¹⁸⁴ Mosamaria Aids Ministry Field Officers, interviewed by author, Botshabelo, October 25 2010

¹⁸⁵ Human Sciences Research Council, *Op. Cit.* p4

carbohydrates in the form of starch, resistant starch, sugars and non starch polysaccharides (dietary fibre) influence health and prevent chronic diseases.¹⁸⁶ South African dietary guidelines indicate that starchy foods should be the central food in the meal.¹⁸⁷ The National Food Consumption Survey (1999) found that black South African populations had the highest carbohydrate intake but a low fibre intake. This indicates that more unrefined and minimally processed carbohydrates should be encouraged.¹⁸⁸

Traditionally, different black groups ate only 2 meals a day both based around carbohydrates. Breakfast was eaten in the late morning and consisted of sour milk. Later, a thin porridge cooked from cereal (sorghum, millet or maize) was added and served with sour milk. The main meal was served after dusk and consisted of 2 dishes. The first was the main cereal dish, normally a thick porridge or a cereal and vegetable mix. The second was a side dish of meat, gravy or vegetable stew.¹⁸⁹ Interviews with food gardeners indicate that this more traditional way of eating continues. Although there are indications of a western influence in their diet now (white bread, Coca-cola, and a desire for more meat) most households still have their main meal at night. This usually consists of a staple cereal, supplemented with vegetables – mainly spinach. On Sundays and feast days, meat and rice are consumed. Rice is only cooked on Sundays which the field officers said is regarded as a special food day.¹⁹⁰ Meat and milk are eaten after pay day for only the first week of the month as that is the only time it is affordable. For breakfast, people eat bread or porridge made from mieliemeal.¹⁹¹ These findings are supported by findings in the National Food Consumption Survey. The survey found that black rural dwellers ate 2 main meals daily, consisting of mieliemeal with leafy green vegetables,

¹⁸⁶ Vorster, H and Nell, TA, “Make Starchy Foods the Basis of Most Meals” in Gibney, M and Vorster, H (Eds) “South African Food-Based Dietary Guidelines” in *South African Journal of Clinical Nutrition*, Vol. 14, No. 3, September 2001, pS17

¹⁸⁷ Vorster, H and Nell, TA, *Op. Cit.* pS18

¹⁸⁸ *Ibid* S19

¹⁸⁹ Vorster, S et al, *Op. Cit.* p13

¹⁹⁰ Mosamaria Aids Ministry Field Officers, interviewed by author, Botshabelo, October 25 2010

¹⁹¹ *Ibid*

wild spinach or pumpkin.¹⁹² Food culture thus remains rooted in tradition and most cannot afford to change such eating habits.

In Botshabelo, food gardeners indicated that their main staple was meliemeal – 93% of all respondents eat meliemeal everyday, usually at dinner. 81% listed vegetables as their second staple. Traditionally, the meliemeal would be served with ‘morokgo’ (spinach) or a vegetable stew mix – normally made up of 2 or 3 different vegetables. For example, potatoes might be cooked with tomatoes or beetroot and spinach would be served together. Generally people are reluctant to use produce from their gardens too quickly or in too high a volume. They restrict themselves to 2 or 3 types of vegetables a day possibly for fear of a lack before month end. Almost all gardeners grow spinach and the field officers indicate that this is because spinach can be planted once and then picked from for an entire year, providing minimal investment with a maximum return. Spinach is also a traditional staple which explains its prevalence in the gardens.

4.3.3 Access to Fruit and Vegetables

As reported earlier, the WHO’s “Global Strategy on Diet, Physical Activity and Health” indicates that one should eat a minimum of 400g of fruit and vegetables daily. The South African Department of Health has indicated this is 5 pieces of fruit and vegetables daily. This is generally divided into 3 pieces of vegetables and 2 of fruit per day. The majority of South African’s do not achieve the recommended daily intake of 5 portions.¹⁹³ There is accumulating evidence to support the increased consumption of fruit and vegetables.

Non communicable diseases (NCDs) cost government’s world wide hundreds of millions of dollars every year. They account for 59% of the 56.5 million deaths annually and 45.9% of the global disease burden.¹⁹⁴ The most important risk factors for NCDs are high cholesterol, high blood pressure, inadequate intake of fruit and vegetables, overweight or

¹⁹² Wolmarans, P and Oosthuizen, W, “Eat Fats Sparingly – Implications for Health and Disease” in Gibney, M and Vorster, H (Eds) “South African Food-Based Dietary Guidelines” in *South African Journal of Clinical Nutrition*, Vol. 14, No. 3, September 2001, pS49

¹⁹³ Wolmarans, P and Oosthuizen, W, *Op. Cit.* pS24

¹⁹⁴ WHO “Fruit and Vegetable Promotion Initiative”, *Op. Cit.* p3

obesity and tobacco use.¹⁹⁵ Deficiencies in iron, iodine, vitamin A and zinc are common in developing countries. Diets can be deficient in macronutrients (fats, carbohydrates and proteins) or micronutrients (vitamins, minerals, electrolytes).¹⁹⁶ The shift towards more Western oriented diets has led to diets that are high in fat, sugar and salt. Such diets are becoming more common amongst the poor due to convenience and cost but these diets are low in micronutrients and lead to ‘hidden hunger’.¹⁹⁷ Low fruit and vegetable intake is a main contributor to micronutrient deficiency in the developing world. Inadequate intake of fruit and vegetables is increasingly recognised as one of the key risk factors for cardiovascular disease and some cancers.¹⁹⁸ Micronutrient deficiencies are best addressed by food based strategies like food gardens.¹⁹⁹

The WHO and South African Department of Health now advocate fruits and vegetables as important components of a healthy diet. Low fruit and vegetable intake is estimated to cause about 31% of ischemic heart disease and 11% of stroke world wide.²⁰⁰ It is estimated that up to 2.7 million lives could be saved each year if fruit and vegetable consumption is sufficiently increased.²⁰¹ The general recommendation for daily intake of fruit and vegetables is 400g (5 pieces). This is approximately 150kg per person per year. FAO statistics reveal that the total supply of fruit and vegetables is 173kg per person per year.²⁰² When potential loss is taken into account, representing the loss from supply source to table, availability falls to 115kg per person per year.²⁰³

¹⁹⁵ WHO “Global Strategy on Diet, Physical Activity and Health”, *Op. Cit.* p2

¹⁹⁶ Müller, O and Krawinkel, M, *Op. Cit.* p279

¹⁹⁷ Otto, Z, Nutritionist, interviewed by author, Sandton, 18 October 2010; Coutsoudis, A et al, *Op. Cit.* p9; Dixon, J, Omwega, A, Friel, S and Burns, C et al, “The Health Equity Dimensions of Urban Food Systems” in *Journal of Urban Health*, Vol. 84, No. 1, 2007, pi120

¹⁹⁸ Ruel, MT, Minot, N and Smith, L, “Patterns and Determinants of Fruit and Vegetable Consumption in sub-Saharan Africa: a Multi-Country Comparison” in *International Food Policy Research Institute*, World Health Organization, 2005, p3

¹⁹⁹ Müller, O and Krawinkel, M, *Op. Cit.* p279

²⁰⁰ WHO “Fruit and Vegetable Promotion Initiative”, *Op. Cit.* p3

²⁰¹ *Ibid*, p3

²⁰² *Ibid*, p7

²⁰³ *Ibid*

Fruit and vegetables are an important part of the diet as they contain vitamins, essential micronutrients, fibre, vegetable proteins and bio - functional components.²⁰⁴ Fruit and vegetable production, easily undertaken by unskilled people, can play an important part in poverty alleviation and food security initiatives.²⁰⁵ Several short term, carefully conducted clinical trials show that consumption of fruit and vegetables can help achieve or maintain a healthy body weight.²⁰⁶ Low fruit and vegetable intake is a main contributor to micronutrient deficiencies in the developing world, especially in populations with low intakes of other nutrient dense foods like meat and dairy.²⁰⁷ There is increasing scientific evidence that consumption of fruit and vegetables decreases the risk of several chronic diseases.²⁰⁸

At low income levels, demand for fruit and vegetables is small. Fruit and vegetables are an expensive source of energy. A study in Rwanda found that starchy staples like sorghum, cassava, sweet potatoes, and cooking bananas were the cheapest source of energy. Tomatoes were found to be 12 times more costly.²⁰⁹ Where household income is near the subsistence level, large quantities of grains and starchy staples and few fruit and vegetables are consumed.²¹⁰ Higher incomes are not only associated with greater increase in the volume of fruit and vegetables consumed but also in the diversity of fruit and vegetables.²¹¹

Hunger and malnutrition (including micronutrient deficiencies) affect people's ability to move out of poverty as they affect people's energy levels which ultimately affect their productivity. Hunger and malnutrition impair people's ability to develop mentally and physically and cause long term damage to health. Hunger and malnutrition pass through generations as hungry mothers give birth to malnourished, underweight children.²¹² It is

²⁰⁴ Ibid

²⁰⁵ Ibid

²⁰⁶ FAO and WHO "Fruit and Vegetables for Health", *Op. Cit.* p9

²⁰⁷ Ibid, p17

²⁰⁸ Ibid, p3

²⁰⁹ Ruel, MT et al, *Op. Cit.* p7

²¹⁰ Ibid, p8

²¹¹ Ibid, p9

²¹² FAO, IFAD, and WFP, "Reducing Poverty and Hunger: The Critical Role of Financing for Food, Agriculture and Rural Development", *Op. Cit.* p10

thus important that fruit and vegetable consumption be promoted amongst the poor. Increases in fruit and vegetable consumption will help improve micronutrient conditions and general health. One of the main components of whether food gardeners have improved access to fruits and vegetables is thus their consumption of these.

In terms of consumption frequency, gardeners in Botshabelo mostly eat vegetables on a weekly basis. 56% indicated that they ate vegetables between 2 and 4 times a week, at dinner. Usually, on days that have no vegetables, gardeners ate mieliemeal with milk or meat. This usually occurs at the beginning of the month. Milk and meat are seen as luxuries and are preferred to vegetables. 40% of respondents indicated that they ate vegetables daily. This would be served with the staple at dinner. Fruit is seen as a luxury and is eaten only when in season. Most gardeners had at least one fruit tree in their yard, generally peaches, and were somewhat amused by the idea of eating fruit when it was not on the trees. Only 21% of gardeners indicated that they ate fruit weekly. In the winter time this would mean purchasing fruit from the supermarket or local shops. If it is eaten weekly, this is generally on Sunday and is seen as a treat. Far more common are those who eat fruit on a monthly basis (at payday when it is once again affordable), 30% and those that eat fruit only when it is in season, 36%.

It is thus evident that despite the presence of vegetables in gardens, they are not eaten everyday and do not reach the required 3 portions daily. More than half of respondents indicate that they eat vegetables on a weekly basis. It is suspected that most people would eat spinach on a daily basis but this has not been confirmed by this study. Generally gardeners would eat 2-3 portions of vegetables approximately 3 times a week. This appears to be no more than the general population. The reasons for this may be numerous and two explanations are suggested here. The first is cultural norms. Traditionally, vegetables are eaten out of necessity and even then, not necessarily every day. Meat is far preferred to vegetables and it is thought that at pay day, meat will be eaten with mieliemeal instead of vegetables. Secondly, the lack of nutrition education may also explain why gardeners are not eating more vegetables now that they have them available.

In order to understand the true nutritional value of vegetables, people need to be educated about their benefits.

Fruit is clearly still regarded as a luxury item and is eaten only when it is ripe. This indicates that during harvest season in late spring and summer, fruit is eaten in great quantities. However, for the remainder of the year, little or no fruit is eaten, except perhaps on Sundays. This finding is in line with other studies conducted in rural areas which find that fruit is only eaten when available, mainly by women and children.²¹³ Fruit remains an expensive item, out of most peoples reach economically. At the beginning of the month, if fruit is available in supermarkets and seen as affordable, people may spend money on some pieces. However, fruit is often traded off for more important items – electricity, cooking oil, mieliemeal – and is definitely not seen as an essential part of the diet. Again, nutrition education could perhaps help in encouraging people to eat more fruit. As it is, gardeners are eating far below the recommended 2 pieces a day.

The evidence for increased consumption, improved access and extra income is thus mixed. Gardeners certainly have improved access to fruits and vegetables. All respondents agree that their access to fruits and vegetables has improved dramatically since they started gardening. The biggest plus of this access is that the food is fresh and available when necessary. Almost all gardeners earn extra income from their gardens which allows them to pay for other essential items. However, they are still not consuming the recommended amount of fruit and vegetables which means that more needs to be done in order for the gardeners to really reap the benefits of a food garden.

4.4 Indicator Two: Seasonal Shortages

The second indicator for assessing food gardens ability to alleviate hunger and malnutrition is concerned with seasonal shortages. One of the main problems with hunger and malnutrition is the shortages brought on by seasonal differences in supply. One way to alleviate this problem is firstly, to have a place to store produce. This can be a fridge or

²¹³ Wolmarans, P and Oosthuizen, W, *Op. Cit.* pS29

freezer or dark, cold store room where produce can be kept until needed. Another way to alleviate the seasonal shortage is to preserve fruit and vegetables when they are in harvest and ripe and to then eat them over the rest of the year. In the UFS study, 73% of respondents indicated that they do not produce enough food to last until the next season.²¹⁴ In Botshabelo, 83% of food gardeners indicated that they had a fridge in which to store produce. Such storage allows gardeners to keep produce longer than would otherwise be possible. In addition, 92% of gardeners indicated that they preserve items for later use. Such items include peaches, apricots, beans and tomatoes. It is thus possible for them to continue to eat these fruits and vegetables during winter or times of shortage. 20% indicated that their gardens produce all year round. The other 80% are able to have access to fruit and vegetables by preserving them. However, it is noted that such preserved foods are used only when really necessary and are not eaten just because fruit or vegetables are unavailable. Gardeners keep preserved foods for special days and holidays and do not supplement their diet with preserved fruits all the time. The presence of storage facilities and the ability of gardeners to preserve fruits and vegetables in abundance at harvest time allow them to alleviate hunger and malnutrition. Whilst gardeners experience seasonal shortages in the same way as non gardeners, these shortages are alleviated by the presence of preserved fruits and vegetables.

4.5 Indicator Three: Nutritional Diversity

The third indicator of hunger and malnutrition is a lack of nutritional diversity. Dietary diversity is one of four main strategies advocated internationally for the improvement of micronutrient status in undernourished individuals.²¹⁵ The poor and poverty stricken have highly restricted diets which can lack vitamins, minerals and essential micronutrients. Diets high in fruits and vegetables provide these essential micronutrients as well as adding to vitamin and mineral consumption. Funds to purchase fruits and vegetables are generally scarce which restricts purchases to traditional staples like spinach. This indicates that diets can be lacking in diversity and as a result people are more susceptible to disease and illness. Results of the National Food Consumption Survey show that the

²¹⁴ Walsh, C and van Rooyen, FC, *Op. Cit.*

²¹⁵ Wolmarans, P and Oosthuizen, W, *Op. Cit.* pS8

average number of foods consumed in low income households nationally is 8 and varied from 4 in the Free State to 13 in the Western Cape.²¹⁶ Foods found most frequently in low income households, that is households earning less than R12000 per year, were maize, white sugar, tea, fat/oils, white rice and white bread.²¹⁷ It has also found that households with low levels of dietary diversity are likely to have low levels of consumption per person and low caloric availability.²¹⁸ It is therefore important for gardeners to grow a high diversity of produce in order for the garden to contribute to nutritional diversity. Such choices cannot be dictated and again, nutritional education might help in encouraging people to grow a diversity of produce. Findings in Botshabelo were very positive regarding produce diversity.

All gardens grow at least 3 different types of vegetables, of which spinach is always one. Starches are grown in the form of potatoes and maize. Variations of lettuce and cabbage are grown, Chinese cabbage, perm, butter and mustard lettuce feature. Green beans and broad beans provide extra protein in the diet. Pumpkin, butternut, green pepper, tomatoes, beetroot, onion, garlic, carrots, eggplant, sunflower and rape were all observed in the gardens in late October. Nutritionist Zahn Otto argues that growing a colour spectrum of vegetables will allow gardeners to obtain almost all necessary vitamins, minerals and micronutrients. Yellow, orange, purple, light green, dark green, red, and white should all be grown in order to cover nutrition requirements.²¹⁹ Vegetables grown in the Botshabelo gardens clearly feature all these colours and are thus providing nutritional diversity to their gardeners. Different fruits are also grown, although as discussed above, they are not eaten in required amounts. Fruit trees found in the gardens in October included peaches, apples, apricots, grapes, figs, pomegranates, plums, and pears. Some gardeners also had strawberry plants. The fruit was not yet in season but gardeners still had preserved peaches from last season to use.

²¹⁶ Wolmarans, P and Oosthuizen, W, *Op. Cit.* pS8

²¹⁷ Ibid

²¹⁸ Hoddinott, J and Yohannes, Y, "Dietary Diversity as a Household Food Security Indicator" in *Food and Nutrition Technical Assistance Project*, Washington, May 2002, p30

²¹⁹ Otto, Z, Nutritionist, interviewed by author, Sandton, 18 October 2010

Diversity can also be improved by raising livestock and using the resultant produce in one's diet. 78% of gardeners did not have livestock of any kind. The other 22% kept chickens (for meat and eggs), cows, goats, pigs and sheep. Larger livestock is kept communally on various grazing land in the area. Interviews with Mosamaria field officers indicate that keeping chickens is an expensive investment due to hutches, fencing and security that is needed to protect them. The eggs the chickens provide would be an excellent source of protein but at the moment most gardeners can still not afford the investment.

There is thus much evidence of diversity in the gardens of Botshabelo. Gardeners are growing an adequate variety of vegetables and fruit to reap nutritional benefits. Other produce which could be grown include avocado and nut trees which could provide fat intake, sweet potato and sorghum which can provide further starch and more legumes for protein.²²⁰ Given the climate in Botshabelo (hot summers, rain storms that often feature hail, very cold winters), some foods can only be grown on a seasonal basis. However, these items, like tomatoes, can be preserved to last through the winter period. Gardeners say that some items, usually winter vegetables like pumpkin, actually do well all year round and are thus available. The amount of diversity in the Botshabelo gardens is thus varied enough to provide nutritional benefit to the gardeners and their families.

4.6 Indicator Four: HIV/AIDS

“All dimensions of food security – availability, stability, access and use of food – are affected when the prevalence of HIV/AIDS is high.”²²¹

The last indicator which allows us to evaluate the success of food gardens concerns the problem of HIV/AIDS. AIDS is the leading cause of death worldwide for people aged 15 to 49. South Africa has more than 14 million people living with HIV.²²² AIDS accounts for almost three fifths of deaths in the southern Africa region in the 20-49 year age group.

²²⁰ Ibid

²²¹ HSRC as quoted in Hunter, LM, Twine, W, and Patterson, L, “‘Locusts are now our beef’: Adult Mortality and Household Dietary use of Local Environment Resources in Rural South Africa” in *Scand J Public Health Supplement*, Vol. 69, August 2007, p2

²²² Hunter, LM et al, *Op. Cit.* p3

Communities with high rates of HIV lose a disproportionate number of parents and experienced workers which often affects household incomes and thus nutrition.²²³ Those who suffer from HIV need to maintain a healthy diet in order to consume anti-retrovirals. This is difficult when income is scarce and money needs to be used for other things. Those living with HIV also face impaired productivity and thus declining income.²²⁴ In addition, the burden of extended family members takes its toll on households with limited resources.

However, the stigma of HIV in Botshabelo has led to indications by respondents that they are not affected by HIV. 79% of respondents said that they were not affected by HIV/AIDS and most preferred not to talk about the subject. Some did not know their status. The subject is taboo and respondents were wary when asked questions about HIV. It is thus difficult to assess the impact of HIV/AIDS on the gardener's lives. There is evidence, given by the field officers, that HIV/AIDS rates are high in Botshabelo. The original gardening project was begun to help people burdened with orphans and vulnerable children. These children are orphaned and vulnerable due to HIV/AIDS. However, the overwhelming response was that people would not talk about HIV. The few that admitted to being HIV positive themselves or had family members who were HIV positive were in the minority. Of these, the family members who had HIV were not living with respondents and thus the gardens could not help them. Very few respondents did provide information that would be of use for food garden analysis. Those living with HIV were aware that they had to follow healthy diets and eat fruit and vegetables. As a result, these respondents ate fruit every day and vegetables at least 3 times a week. But they still struggled with seasonal fluctuations and argued that they never had enough food and were often hungry.

The primary research conducted on food gardens has thus produced varied results. Access to fruits and vegetables is improved by growing them. Income generated through fruit and vegetable sales improves the overall income level of households and allows for

²²³ Ashford, LS, "How HIV and AIDS affect Populations" in *Population Reference Bureau*, 2006, p2

²²⁴ Ivers, LC, Cullen, KA, Freedberg, KA and Block, S et al, "HIV/AIDS, Undernutrition and Food Insecurity" in *Clinical Infectious Diseases*, Vol. 49, No. 7, October 2009, p1

the purchase of non-food items. Households that cannot afford to buy food on a daily basis now have access to fruit and vegetables. However, gardeners are not eating the recommended '5-a-day' and thus are not fully reaping the benefits of the garden. Seasonal shortages are still a problem, even for gardens that grow year round. Despite access to fridges and preserving mechanisms, families still struggle in the winter. However, preserving fruit in abundance does allow families to access fruit stores at least once a week. Diversity is very definitely improved for those with gardens. The amount of different produce available, covering a range of beneficial mineral, vitamins and essential micronutrients, is impressive. In the summer, the number of fruit trees producing fruits will certainly benefit the gardeners and their families. Stigmas surrounding HIV/AIDS have made it very difficult to assess the situation of gardens and those suffering from HIV. However, those who admitted to being HIV positive were generally very well informed of the importance of eating well and the benefits from eating fresh produce.

4.7 School and Community Gardens

"...since everything that enters into human understanding comes through the senses, the first reason of man is a reason of the senses. Our first masters of knowledge are our feet, our hands, and our eyes."

- Jean-Jacques Rousseau²²⁵

*"Where schools are equipped with gardens...opportunities exist for reproducing situations of life, and for acquiring and applying information and ideas in carrying forward of progressive experiences. Gardening need not be taught either for the sake of preparing future gardeners, or as an agreeable way of passing time. It affords an avenue of approach to knowledge of the place farming and horticulture have in the history of the human race and which they occupy in present social organization."*²²⁶

There are thus certain benefits from having access to a food garden. However, such gardens are only available to people who have access to their own land. This report has focussed its case study on the rural poor, most of whom have access to their own land.

²²⁵ Jean-Jacques Rousseau as quoted in Desmond, D, Grieshop, J and Subramaniam, A, "Revisiting Garden-Based Learning in Basic Education" in *International Institute for Educational Planning*, 2004, p26

²²⁶ John Dewey as quoted in Desmond, D et al, *Op. Cit.* p27

However, even those who have access to their own land may not necessarily want to garden. For various reasons - personal, financial, or time constraints - people in rural areas may choose not to have food gardens. In such cases people living in a household which does not garden are similar to the urban poor who do not have access to land to garden. Such people therefore need other options in order to reap the benefits of food gardens and these come in the form of school and community gardens. If people choose not to garden, other members of the household can benefit from access to school and community gardens by participating on their own, away from the household. Given the potential that school gardens have to play in providing food security and improving hunger and malnutrition, this report will now consider the kind of role they can play in this regard.

School gardens have a long history of success in both improving nutrition and being a useful education tool. In 1811 Prussia developed the first compulsory school system that included gardening and in 1869, school gardens became law.²²⁷ The first school garden began in the US in 1891. By 1905, there were over 100 000 school gardens in Europe.²²⁸ By 1918 every state in the US and every province in Canada had at least one school garden.²²⁹ Over 1 million students contributed to the production of food for the war effort in 1916.²³⁰ The educational value of school gardens diminished after the Second World War until a new resurgence in the mid-1990's brought gardens back into the main stream.

School gardens are seen as settings that “...*create a sense of community, instil concern for the environment, foster a connection with nature, and help students to develop self-confidence, discipline, skills in cooperation, and multi-cultural understanding.*”²³¹ With the current climate of food crisis and financial recession, school gardens are being used to address issues of food security, environmental protection, secure livelihoods and better nutrition.²³² School gardens can play a variety of roles and are not limited to

²²⁷ Ibid, p34

²²⁸ Ibid, p29

²²⁹ Ibid, p35

²³⁰ Ibid

²³¹ Ibid, p30

²³² FAO: *A New Deal for School Gardens*, FAO, Rome, 2010, p3

environmental education. Gardens show children how to grow a variety of foods, expose them to new types of fruit and vegetables thus improving their preferences and can increase their nutrition knowledge.²³³ School gardens can play a role in enhancing school meals which can ultimately improve children's nutrition.²³⁴ They can teach livelihood skills like preserving, food processing and marketing, meal planning, nutrient saving food preparation, food hygiene and energy saving cooking.²³⁵ Many skills are being lost due to the highly processed, instant nature of mass produced food. People living in urban areas lose food preparation skills because cheap, fast food is available and thus renders such skills unnecessary.²³⁶

Gardens can also become platforms for teaching science, art, mathematics, social sciences and languages.²³⁷ Gardens provide children with learning opportunities outside of the classroom. A study by the Bethel Learning Institute found that learning by doing produced 75% retention rate and a 90% retention rate when students taught their peers. This was compared to an 11% retention rate for lectures.²³⁸ Healthy, active, well nourished children are more likely to attend school and be prepared and ready to learn. Children who participate in school gardens, who plant and harvest their own foods, are more likely to eat them.²³⁹ Participation in gardening has been found to be progressive – children do better year after year and their interest in gardening grows.²⁴⁰ The FAO and WFP suggest that it is unrealistic to expect a school garden to meet all the staple food needs of a school feeding programme but it can be an excellent source of foods rich in proteins, vitamins and minerals. This adds variety and nutritional quality to school meals. Probably the most important function of the school garden however, is educational. It can serve as a 'laboratory' for teaching not just agriculture, but also improving children's

²³³ Ibid; Graham, H, Lane Beall, D, Lussier, M, McLaughlin, P and Zidenberg-Cherr, S, "Use of School Gardens in Academic Instruction" in *Society for Nutrition Education*, 2005, p147

²³⁴ FAO: *A New Deal for School Gardens*, *Op. Cit.* p8

²³⁵ Ibid

²³⁶ Roberts, P, *Op. Cit.* p31

²³⁷ Desmond, D et al, *Op. Cit.* p39

²³⁸ Ibid, p38

²³⁹ California Department of Education, "School Garden Program Overview"

<http://www.cde.ca.gov/Ls/nu/he/gardenoverview.asp>

²⁴⁰ Klein Miller, L, "School Gardens" in *The Elementary School Teacher*, Vol. 8, No. 10, June 1908, p579

understanding of the environment, nutrition, ecology, biology and even mathematics and accounting.²⁴¹

Alice Waters, who started one of the most successful school garden projects “*The Edible Schoolyard*”, argues that there are a number of benefits from school gardens. The school garden can supply the fruit and vegetables for school meals and become an integrated part of the academic mission of the school. The garden provides lunch for every child, reinforcing their relationship with health and the environment. The school can support local farms for produce not produced by the garden, linking the school with local food communities. Children learn by doing, and gain hands-on experience working in the garden.²⁴²

School gardens have been very successful in the US and Europe where they provide ‘garden-based learning’. Such gardens are used for science, environmental studies, art and language and are particularly important in urban settings where the youth have minimal exposure to the natural environment. It has been argued that children raised in ecologically barren settings are deprived of sensory stimuli and the kind of imaginative experience that comes from biological richness.²⁴³ They play an important role in areas where access to nutritious food outlets is limited due to financial constraints, lack of community resources and inconvenient transport systems.²⁴⁴ In developing countries, food gardens have mainly been used for agricultural vocational training, and for food production for consumption or cash.²⁴⁵

“...there should be a garden attached where they may feast their eyes on trees, flowers, and plants... where they always hope to hear and see something new. Since the senses

²⁴¹ FAO, *Op. Cit.* p25

²⁴² Waters, A: *The Edible Schoolyard*, Chronicle Books, San Francisco, 2008, p43

²⁴³ Desmond, D et al, *Op. Cit.* p36

²⁴⁴ Twiss, J, Dickinson, J, Duma, S, Kleinman, T, Paulsen, H, and Rilveria, L, “Community Gardens: Lessons Learned from California Healthy Cities and Communities” in *American Journal of Public Health*, Vol. 93, No. 9, September 2003, p1435

²⁴⁵ FAO: *A New Deal for School Gardens*, *Op. Cit.* p5

*are the most trusty servants of the memory, this method of sensuous perception will lead to the permanent retention of knowledge.”*²⁴⁶

The motivations between developed country food gardens and developing country food gardens are different. In South Africa, the Primary School Nutrition Programme was introduced in 1994. It aimed to enhance the educational experience of children by promoting punctual school attendance, alleviating short term hunger, improving concentration and contributing to general health development.²⁴⁷ However, suppliers deliver poor services, do not provide good quality produce and are inconsistent with deliveries.²⁴⁸ This makes such feeding schemes difficult to run. Schools in the Pretoria area have started food gardens to help supplement feeding schemes and teach children about the environment. “There are children who have lost one or both parents to AIDS. Some do not get enough to eat. We give those who have nothing at all a meal from the school kitchen or a cabbage to take home.”²⁴⁹ Those schools with gardens have found declining absenteeism and improved participation.²⁵⁰

Such schools use gardens as part of community development programmes and serve essentially as community gardens. Parents and local stakeholders become involved, and local businesses donate extra food items for children. Excess produce is sold in the local community and the funds are ploughed back into the garden so that it continues to produce extra food. Growing food for students and their families has up until now been an end in itself and a practical way of making the school a valued asset in the community. Now, such gardens are seen not only as an additional classroom for children to learn life skills including leadership and environmental awareness but also as an important tool on the road to sustainable development.²⁵¹

²⁴⁶ Comenius as quoted in Desmond, D et al, *Op. Cit.* p26

²⁴⁷ UNICEF and The Department of Education, “Provincial Report: Free State” *Evaluation of the School Nutrition Programme*, May 2008, p2

²⁴⁸ *Ibid*, p11

²⁴⁹ Paulina Sethole as quoted in Lund University “Banareng Primary School – A Place Where Hope Grows” <http://www.lu.se/o.o.i.s/8527>

²⁵⁰ Principal, Primary School in Pretoria area, interview with author, Pretoria, July 27 2010

²⁵¹ Desmond, D et al, *Op. Cit.* p58

Community gardens²⁵² can provide opportunities for people who might not necessarily have space to benefit from food gardens. Such gardens have been particularly successful in Toronto, Canada where they form part of the local community food system. Often, such gardens are a way for immigrant communities to express their individual cultures.²⁵³ Such gardeners grow culturally appropriate food, save money on food expenses, and connect with their neighbours. Gardens can be on rooftops, in allotments, in local parks or unused urban space. Such community gardens are increasingly being recognised by health professionals, urban planners, environmental activists, community organisers and policy makers as an important contributor to economic development, food security and environmental management.²⁵⁴ But such gardens require the commitment of leadership and staffing as well as the involvement of volunteers and community partners. Members of the community must participate in order for the garden to be successful.²⁵⁵

School gardens and community gardens can, in theory, bring the same benefits as individual, homestead gardens. They can provide fresh, nutritious, diverse fruit and vegetables to those without access to their own land. Such food is usually cheaper than store bought relatives. They can generate extra income through sales. Gardens can increase the stability of household food consumption against seasonal shortages.²⁵⁶ Those who participate in such gardens usually have a greater diversity of diet than those who do not.²⁵⁷ School gardens can teach children about nutrition as well as exposing them to environmental awareness and life skills. However, such gardens require leadership and involvement. They require active participation and ownership by the school or community. Plans need to be made regarding holidays and work rotations. The FAO currently promotes urban horticulture and school gardens in collaboration with the World Food Programme.²⁵⁸ Support from such organizations may help the establishment of

²⁵² Community gardens may also be referred to as urban agriculture

²⁵³ Baker, LE, "Tending Cultural Landscapes and Food Citizenship in Toronto's Community Gardens" in *Geographical Review*, Vol. 94, No. 3, July 2004, p306

²⁵⁴ Ibid, p308

²⁵⁵ Twiss, J et al, *Op. Cit.* p1436

²⁵⁶ Zezza, A and Tasciotti, L, "Does Urban Agriculture Enhance Dietary Diversity? Empirical Evidence from a Sample of Developing Countries", FAO, Rome, March 2008, p4

²⁵⁷ Ibid, p 8

²⁵⁸ WHO, *Op. Cit.* p7

more gardens in Africa. Ultimately, it is up to the local community and school leadership to make such gardens successful.

Chapter Five

5. Policy Recommendations

This report has examined the links between food gardens, hunger and malnutrition within South Africa. It has discussed how local, individual solutions to the food crisis need to be made and suggested that food gardens might be part of these solutions. The food crisis has seen food prices rise and pushed nearly one billion people to chronic hunger.²⁵⁹ It has been exacerbated by the financial recession and the rising price of oil.²⁶⁰ This report has also discussed the situation of food security in South Africa and has shown clearly that household food security does not exist for the majority of the population and that there is not clear policy on food security in South Africa. The costs of household food insecurity are high. It leads to high health and medical costs due to insufficient calories and micronutrients that prevent disease, high funeral expenses due to early death from hunger and low labour productivity due to lack of energy from insufficient food.²⁶¹ Malnutrition and hunger lead to slow educational development and stunting amongst children and early deaths amongst adults. Poverty is perpetuated by malnutrition and hunger; malnourished women give birth to underweight babies. It is therefore impossible for us to reach the MDG of halving poverty without simultaneously combating hunger and malnutrition.

This report has also made an argument for organic gardening, situating the report in the field of local, sustainable solutions to the food crisis. This report conducted primary research, through interviews, in order to fully examine the impact of food gardens in rural South Africa. It is evident from the research results that there are a number of policy interventions that need to take place in order to fully reap the benefit of food gardens. Some of these interventions could be implemented by NGOs and others by government

²⁵⁹ The World Bank food price index rose by 17% between August and November 2010. [World Bank, "Food Price Watch December 2010" <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTPOVERTY/0,,contentMDK:22791191~pagePK:148956~piPK:216618~theSitePK:336992,00.html>

²⁶⁰ Oil prices are predicted to rise to above \$90 per barrel in 2011 which will increase agricultural inputs and ultimately affect food prices. [Smith, G and Shenk, M, "Oil's Top Forecasters see Third Year of Gains as China Leads 2011 Recovery" in *Bloomberg*, January 3 2011, <http://www.bloomberg.com/news/2011-01-03/oil-s-top-forecasters-see-third-year-of-gains-as-china-leads-2011-recovery.html>

²⁶¹ South African Department of Agriculture, "The Integrated Food Security Strategy for South Africa", *Op. Cit.* p16

and some probably require a partnership between civil society and government. In order for food gardeners to fully gain all the benefits of a food garden, these policy recommendations must take place.

5.1 Nutrition Education

In conducting primary research, a number of trends became visible amongst the food gardeners. The first of these is the role that nutrition education has to play in getting better results from food gardens.²⁶² It was found that food gardeners still do not eat the recommended 5 fruits and vegetables a day, despite having increased access to these foods. Rather, food gardeners eat vegetables approximately 3 times a week and fruit only when it is in season. This finding is in line with other studies conducted in Bangladesh. There, Helen Keller International found that without nutrition education, the impact of food gardens was lessened. They found that nutrition education was necessary to translate food production into improved dietary intakes.²⁶³ With nutrition education, food gardens had an impact in the areas of improved production and increased consumption of micronutrient foods, diversified diets, improved status of women, increased income from garden and livestock production and capacity building at the community and household levels.²⁶⁴

Others argue that dietary diversification and livestock rearing can also be improved with nutrition education. Whilst most of the participants in this study illustrated a significant diversity of produce – growing at least 3 different types of vegetables and multiple varieties of fruit trees -, through nutrition education those that were growing fewer varieties could be encouraged, and learn the benefits, of growing more. It is thus recommended that food gardens be introduced simultaneously with nutrition education in order to gain the most benefit from them. The gardeners’ desire to substitute vegetables for milk and meat when they can is in line with global trends. However, the importance of fruit and vegetable consumption can be taught through nutrition education. Without nutrition education, gardeners get some benefits – increased income (51% of the

²⁶² Müller, O and Krawinel, M, *Op. Cit.* p279

²⁶³ Iannotti, L et al, *Op. Cit.* p5

²⁶⁴ *Ibid*, p2

respondents earn income from their food gardens), diversity (they grow at least 3 different varieties of vegetables), improved status of women (they are the main gardeners) – but still do not reap the total benefit of increased fruit and vegetable consumption. It is thought that part of the reason for this is cultural preferences and thus it is necessary to provide nutrition education so that gardeners can improve their nutrition status.

Such education would need to take into account the economic position of participants and the social makeup of the immediate environment. Because women are the primary food providers in the Botshabelo food garden projects, it would be necessary and important to target them in nutrition education programmes. In this way women could provide food for their families in line with nutrition guidelines.

One of the ways to begin providing nutrition education, outside of specific programme interventions, is through school gardens. School gardens can be used as part of a teaching curriculum that includes biology, science, art, mathematics and languages. It can be extended to be used in teaching cooking skills, preserving skills and nutrition. Children who have a garden at school are more likely to eat fruit and vegetables at home and may even start a garden at home. Furthermore, children can teach parents about healthy eating. School gardens in California are possibly the most successful gardens in terms of improving nutrition and using gardens for educational purposes. They could provide a blueprint for school gardens in South Africa. School gardens can and should incorporate community members which will further provide opportunities for learning – not only about gardening but about nutrition too.

In order to provide nutrition education to women in food garden projects and school garden education to children, a partnership would need to be sought between local level NGO bodies, like the Mosamaria Aids Ministry, and provincial governments. The Free State province already has feeding schemes in place in a variety of schools and could perhaps use the feeding schemes in conjunction with school garden development. This would use the food grown in the garden to feed the children – a less costly endeavour

than contracting to outside parties. The provincial government could also play a crucial role in providing funds for the development of food gardens in other areas and the development of small livestock provision to improve nutrition possibilities in already existing projects. This would need to be done in conjunction with organizations already on the ground in specific project areas.

5.2 Female Empowerment

A second finding of the research is that 92% of the gardeners interviewed were women. This is not unusual – in many African countries women are the main food providers and are therefore more likely to be gardeners. Esther Boserup found that in Africa women are subsistence farmers whilst men farm cash crops. Much of their work is thus invisible and women are often ignored by development programmes that only see the male farmers and thus provide them with funding, fertiliser and seeds.²⁶⁵ Previous studies have shown that when women are put in control of the household budget, money is spent on children's education and food. Women traditionally make decisions regarding food and nutrition.²⁶⁶ Good quality food for mothers and children in the first 1000 days of life significantly improves life expectancy as well as increasing literacy rates and economic growth rates.²⁶⁷

Food for women and children is therefore vitally important and more likely to be available when women have budget control. Women involved in gardening can generate extra income for themselves by selling extra produce. It is thus recommended that food garden projects attempt to target women. Not only are they more likely to be gardening already but they are also generally the ones left at the house whilst men are at work. In addition, land ownership is an important issue. Empowering such women with food gardening skills will not only help achieve the first Millennium Development Goal but

²⁶⁵ Moser, C: *Gender Planning and Development: Theory, Practice and Training*, Routledge, London, 1993, p30

²⁶⁶ WHO, "Global Strategy on Diet, Physical Activity and Health", *Op. Cit.* p5

²⁶⁷ Evans, A, *Op. Cit.* p11

will also help achieve others such as education, gender equality and child and mother mortality.²⁶⁸

Given the changing nature of the African household, empowering women is still extremely important. Due to the prevalence of HIV/AIDS, many households are missing the crucial working generation due to mortality or illness. This in turn leads to diminished income which makes food for the household harder to come by. If women are given the tools to grow their own food, it is more likely that children will suffer less hunger and the entire household will benefit. It was also found that amongst participants women are either maintaining the garden alone, without help or hire help to do the very heavy manual labour. Of the male participants, all had help in the garden – either from their wives or from their children. This indicates that even when men are the main gardeners, women are still involved. In addition, households in Africa are increasingly female headed – often because men are away working or have left – and many countries do not allow women to own land. This results in income generated by the land not flowing back into the household but being seized by the landowner. Women need to be given the opportunity to own the land on which they live and work so that they can fully reap the benefits.²⁶⁹ Programmes promoting food gardens should therefore target women. State assistance should focus on the women farmer and not ignore them as has been the case in previous development programmes and state extension programmes. This will help decrease hunger amongst children, improve their education opportunities and help fight the war against poverty.

5.3 Government Intervention

Most food garden programmes that have been implemented are started by NGOs and civil society groups. Often, there are problems with funding sources and this can hamper the long term success of projects. There needs to be a supply of seed, tools and skills which cannot be provided without funds. It is thus recommended that government draft a

²⁶⁸ Ibid

²⁶⁹ Palmer, I: *Gender, Population in the Adjustment of African Economies: Planning for Change*, International Labour Office, Geneva, 1991, p20

food security bill which will give government clear authority regarding food security, will allow for funding for food security programmes to become available and will hold local and provincial government responsible for food security failures. “*Government need to create an environment that empowers and encourages behaviour change by individuals, families and communities to make positive, life enhancing decisions on healthy diets and patterns of physical activity.*”²⁷⁰ The government needs to set an example of the benefits of growing your own – possibly like the food garden established on the front lawn of the White House – and should then set aside funding for such projects. Project implementation can be done in collaboration with NGOs and civil society groups already involved in such projects.

The government could also start a promotional campaign, similar to that begun in the Second World War to encourage gardens. Slogans like “Dig for Victory” could be used again, only this time victory would be over hunger, malnutrition and the effects of HIV. Having government behind such garden campaigns might encourage the wealthier population to grow things that could then be donated to shelters or could be used to combat the growing problem of obesity within South Africa. With government funding and intervention more schools could become involved in projects which would help more communities. It is in the government’s interests to encourage ways of gaining healthy produce. NCDs place a significant burden on health systems and cost government millions of rand every year.²⁷¹ In addition, health is a determinant of development and an important factor in economic growth.²⁷² Government needs to act now to encourage gardening. Climate change is likely to have an effect on agricultural productivity which will impact on crop yields and food prices. Changes in rainfall, evaporation and river flow will all impact on agriculture.²⁷³ Such developments will have negative effects on nutrition, child growth and development.²⁷⁴ Government should therefore act now to bring about solutions which will improve malnutrition, combat hunger, increase household food security and ultimately help fight poverty.

²⁷⁰ WHO, *Op. Cit.* p3

²⁷¹ Ibid

²⁷² Ibid

²⁷³ Sachs, J: *Common Wealth*, Penguin, London, 2008, p89

²⁷⁴ Nichols, A et al, *Op. Cit.* p78

This report has discussed ways to combat the food crisis brought about by increasing food prices. It has shown that food gardens are a real and valuable solution to this crisis.

5.4 Further Research

This report has demonstrated that food gardens have a role to play in the fight against hunger and malnutrition and ultimately, in improving household food security. The field of food studies and studies within the politics of food are relatively young areas of research. There are therefore opportunities for further research in this area. Studies which determine conclusively whether organic farming has better health benefits than commercial farming should be undertaken on a large scale. Further research should be carried out on the nutritional benefits of food gardens, preferably over the long term. Such studies could also examine the benefits of nutrition education. Finally, long term studies examining the links between school gardens and healthy adults should also be conducted.

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