Mid-Term Evaluation of the Siyazondla Homestead Food Gardens Programme

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Table of Contents

INDEX OF TABLES

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EXECUTIVE SUMMARY

A mid-term evaluation of the Siyazondla Homestead Food Gardens Programme in Gauteng was conducted by the Siyakhana Initiative for Ecological Health and Food Security. As part of its goal to improve access to affordable and diverse food, GDARD established the 'Siyazondla' programme for homestead food gardens as one of the key vehicles for assuring the provision of quality food and acceptable levels of food security.

The intervention period 2009-2012 was considered in order to render a comprehensive evaluation of the programme in terms of evaluation of service delivery, economic benefit to beneficiary households, food security impact and sustainability. In addition to evaluation of key documents and interviews with programme administrators, the evaluation team administered a telephonic survey to 380 beneficiaries of the programme. The survey included a range of questions investigating demographic background, programme delivery, economic impact, money saved, money earned, and food security impact.

Many beneficiaries expressed gratitude at the programme, and indicated that it had helped them avoid hunger. Participation in the programme elicited excitement and motivated people who otherwise were idle in their homes. However, some also voiced specific problems, such as lack of access to seeds, inadequate size of land available for cultivation, poor soil quality, or lack of access to municipal water.

GDARD records show that 26,032 garden starter packs have been distributed to date, this evaluation included 380 of these recipients. Of these 380, 90% received gardening training from GDARD and 97% received basic gardening tools. Of those surveyed, 306 (87%) households are still gardening, the majority of people (71%) garden at their home, while 9% and 7% garden on community land and vacant land respectively. 96% of households with gardens eat from the garden, and of these, 93% do so at least once per week. Fewer than 20% of households report selling homegrown produce, or saving significant money due to their garden.

Food Security: Approximately one half of respondents reported experiencing hunger, 21% of households' responses indicated moderate household hunger, and 3% of households' responses indicated severe household hunger. Differences in the household hunger scale and dietary diversity scale scores between beneficiaries from various years of the programme suggest that the intervention may be improving **food security** to a small extent. Nearly half (43%) of respondents from all periods reported poor dietary diversity. This programme appears to improve dietary diversity in the short term, but these improvements are not sustained.

Cost/benefit of the programme: Our analysis suggests that, while the current financial programme benefits do not offset the estimated programme costs, when added to the direct benefits of efficiency and sustainability improvements, the indirect financial benefits which the programme could potentially generate an almost two-fold return on investment, thus in fact exceeding the overall programme costs dramatically. The current-comprehensive cost ratio of costs to benefits is 0.53, this figure projected over 7 years is 0.64. The ratio of benefit/cost if efficiencies are improved is 1.53. A de-central model could achieve a benefit-cost ratio of 3.98.

Sustainability: This research found that most people who participate in the programme continue to garden, but the sustainability of the programme could be improved by providing ongoing support, investing in the development of local capacity and social organisation, and increasing beneficiaries' access to productive resources and sustainable gardening practices and resources. The scale of implementation is inadequate considering the scale and severity of food insecurity in Gauteng province- the programme reached an estimated 124,611 people 2009-2012, which is less than 5% of Gauteng's total population of food insecure people.

Conceptualisation and Strategy: In order to achieve sustainability and realise long-term benefits from the programme, we recommend that the programme concept be revised in order to develop local capacity and engage beneficiaries in a participatory approach to the intervention's planning and roll-out, and thus truly empowering and creates greater resilience and self reliance. We also recommend the adoption of a decentralized and localized extension model, enhanced information management, a more compact and appropriate starter pack, and an increase of budgets.

FOOD SECURITY AND URBAN AGRICULTURE

Food security is a complex concept which is explained in various different ways as a result of diverse views. The following two definitions reflect this diversity. Food security is variousy defined as:

> "...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."[1]

> "...where every person has access to sufficient food to sustain a healthy and productive life, where malnutrition is absent, and where food originates from efficient, effective, and low-cost food systems that are compatible with sustainable use of natural resources."[2]

The four dimensions of food security: availability, access, utilisation, and resilience form a backdrop for most analyses of food security. For food security objectives to be realised, all four dimensions must be fulfilled simultaneously. The Food and Agriculture Organisation of the United Nations (FAO), conceptualised and defines these four dimensions as follows:

Availability: "Food availability addresses the 'supply side' of food security and is determined by the level of food production, stock levels and net trade." (FAO Food Security Programme 2008).

Access: "Food access refers to people's economic ability to access food as well as their ability to overcome barriers that stem from physical remoteness, social marginalisation or discrimination on the basis of their social standing." (FAO High-level Conference on World Food Security 2008).

Utilisation: "Utilization is commonly understood as the way the body makes the most of various nutrients in the food. Sufficient energy and nutrient intake by individuals is the result of good care and feeding practices, food preparation, diversity of the diet and intra-household distribution of food. Combined with good biological utilisation of food consumed, this determines the nutritional status of individuals." (FAO Food Security Programme 2008).

Resilience/Stability: "Even if your food intake is adequate today, you are still considered to be food insecure if you have inadequate access to food on a periodic basis, risking a deterioration of your nutritional status. Adverse weather conditions, political instability, or economic factors (unemployment, rising food prices) may have an impact on your food security status." (FAO Food Security Programme 2008).

At a national level the development of the Integrated Food Security Strategy for South Africa has resulted in the Department of Agriculture being made the custodian of food security. As mechanisms of response, agricultural interventions, such as the distribution starter packs, can play an important role in responding to food insecurity.[3]

Programmes and initiatives launched by different departments that support the distribution of starter packs are numerous in the country and target different beneficiaries, including households, communities, learners in schools, and vulnerable people, i.e. elders or people affected by HIV/AIDS, TB, or disability. A study conducted in a small community in the Eastern Cape on the Siyazondla programme underlined the necessity of targeting this programme for women to revitalize the important

role they play in agriculture.[4]

Various examples of starter-packs distribution are offered at municipal, provincial and national level, three examples are: Msunduzi Municipality in Kwazulu-Natal, in partnership with Children in Distress Network and The Institute of Natural Resources, established a programme called the African Root Project promoting the creation of food gardens across the municipality to address the nutritional needs of the communities affected by HIV/AIDS; in Gauteng, the Department of Education launched the Health Promoting Schools program which included the development of food-gardens in several schools in the province; and during 2008 and 2009 the National Household Food Production Programme distributed 80000 starter packs "which provided basic inputs like seeds, seedlings, fertilizers and pesticides in support to production of food gardens.[5]

Supply of agricultural inputs and training are significant initiatives, both in urban and rural contexts. However, these strategies typically remain mired in centralised, top-down extension models which consist of the installation of infrastructure and some training, leaving projects to flounder after the short funding timeframe is concluded. As a result these kinds of initiatives are rarely sustainable.
These programmes should receive more resources and the responsibility for ensuring their success should be shared by government and civil society in policy agendas with the intention to build self-sufficiency, instead of considering them as emergency-response strategies like grants or food subsidies. They should be capacitated in order to fully realise the potential of successful producers in moving from a self-subsistence production to a larger scale and thereby generating income. To do so sustainably, it would be essential to develop enduring local resource and demonstration hubs staffed by extension and support teams who can provide training, advice, organisational development, access to inputs and appropriate financial products such as microfinance and insurance.

It is important to acknowledge that small-scale agriculture could play a central role in improving food security and creating green livelihood opportunities. It seems like this potential is being recognised in the Gauteng Province.

The Gauteng Green Economic Programme suggests that small-scale agriculture represents a much-neglected economic development opportunity for Gauteng and states that:

> "Small-scale agriculture would create dynamic livelihood opportunities that provide enterprising farmers with entry into small-scale commercial food production. Adequate support in terms of access to land, markets, organisational development and productive resources including biomass, seeds, training, infrastructure, finance, and technical support would be required. In Gauteng, urban agriculture could create livelihood opportunities and jobs for a total of 450,000 people. The dietary requirements of fresh vegetables for 773,350 households could be met, improving nutrition for approximately 2.8 million people."[6]

In largely urban Gauteng, small-scale agriculture will primarily be small-scale urban and peri-urban agriculture. An increase in the amount of food being produced on small plots in Gauteng would have a number of benefits: "Production of food in urban and peri-urban areas, in addition to improving the nutritional quality of the diet, can become a valuable income-generating activity for the unemployed and underemployed and can utilise spare and unused lands available in the cities."[7]

UNDP provides a very useful definition of urban agriculture which we have adopted for this study.

Under this definition, urban agriculture is described as:
“an industry that produces, processes and markets food and fuel, largely in response to the daily demand of consumers within a town, city or metropolis, on land and water dispersed throughout the urban and peri-urban area, applying intensive production methods, using and reusing natural resources and urban wastes, to yield a diversity of crops and livestock.[8] “Smit et al. (1996b) claim that an estimated 800 million people are engaged in urban agriculture worldwide; of these, 200 million are market producers, employing 150 million people full-time.”[9]

Developing small scale urban agriculture is an important step for both social and economic development. This is because small-scale agriculture is implemented at homes or in public/community spaces, targeting the most food insecure and vulnerable households through providing fresh foods for consumption and income generation opportunities. Household level food production could reduce the 50-70% of household income which is typically spent on food20, making money available for other needs. Furthermore, small scale agriculture can provide a dedicated income stream.

In the context of the mid-term evaluation of service delivery based on the eight provincial outcome areas, The Gauteng Department of Agriculture and Rural Development (GDARD) commissioned the evaluation of key programmes with special focus on Outcome 7: Vibrant, equitable, sustainable rural communities contributing towards food security for all.

The Siyakhana Initiative for Ecological Health and Food Security, a division of the Wits Health Consortium, was appointed service provider to GDARD to conduct an impact assessment of the household food gardens as outlined in the Terms of Reference (ToR): Independent Evaluations of Key Programmes – Household Food Gardens.

SIYAZONDLA PROGRAMME OUTLINE

The Siyazondla Programme was piloted in 2003/2004 as the Homestead Food Gardens Project.Programme objectives are outlined in the Homestead Gardens Pilot Programme Document (Appendix A). Of these, some (numbers 3, 4 and 6) refer primarily to the pilot phase, while numbers 1, 2, and 5 still inform the programme.

1. “The overall objective is to provide access to a limited package “starter pack” of resources to allow beneficiaries in dire need who have access to a backyard and water to cultivate in their backyards.
2. To provide minimalist support over a three month period to support beneficiaries to utilize the “starter pack” productively to mitigate dire need
3. To set indicators and targets to measure the results of the intervention e.g. percentage of households productively utilizing the “starter pack” and to measure return on the investment per household
4. To compare the results in the three pilot areas to inform expansion and scaling up of the project
5. To involve local leadership and organizations in the implementation in pilot areas
6. To test and compare different models and delivery mechanisms with involvement of a variety of stakeholders if the project is expanded after the pilot phase”

No other programme concept or planning document was made available - it appears that no formal documentation of the project exists, and also, there is no indication as to what lessons were learnt from the pilot phase and how, if at all, these influenced the programme in its current form. The lack of an updated programme document makes it difficult to assess the programme's performance in terms of clearly-defined goals, objectives, and targets.

According to the programme director and assistant directors, the programme's intention was to encourage people in rural and urban areas to grow their own nutritious food to address some of the issues and inequalities of the past[10], including marginalisation, poverty, unemployment, and resulting food insecurity. An important goal of the programme is to promote agriculture, which is associated with negative perceptions, especially among youth. Furthermore and very importantly, this programme is seen as an entry-point for further development of non-agricultural livelihoods as well as for emerging farmers and as a stepping-stone towards greater food security. The food that is to be grown in the homestead gardens is intended primarily for home consumption.

EVALUATION OBJECTIVES

The objectives of this evaluation, as outlined in the ToR, were to assess:

- the number of food gardens initiated in households in the prioritised 50 wards of the province.This would serve as a baseline against which to measure the effect of the programme on poverty levels in these areas
- the benefits of such an investment at the household level and in relation to individual members of the beneficiary households against the costs to government of establishing these household food gardens
- the potential of such a series of modest initiatives in achieving food security at the household and community level
- the extent to which the government-initiated household food gardens are sustainable and the factors contributing to their sustainability or lack of sustainability.

METHODOLOGY

In order to ensure a comprehensive evaluation, this report is based on methodologies that incorporate both quantitative and qualitative approaches that consider various dimensions of the programme. Qualitative approaches included semi-structured interviews and site visits, while quantitative approaches included analysis of a telephonic survey. The population for this evaluation was all of the beneficiaries served by the programme during the periods 2009-2010, 2010-2011, 2011-2012.

DIMENSIONS OF THE ASSESSMENT

The assessment considered multiple dimensions of the Siyazondla programme in order to render a comprehensive evaluation of the programme.

1. **Conceptual**: How was the underlying project conceptualised and what was the intervention logic?
2. **Administrative**: What were the criteria and processes for targeting and recruiting beneficiaries? How are beneficiaries tracked (for Monitoring and Evaluating (M & E) purposes)?
3. **Process**: What does the typical intervention consist of? What training do the beneficiaries receive?
4. **Impact:** What effect does the intervention have on the intended beneficiaries?

To assess points 1, 2 and 3 above, the following strategy was used:

- Evaluation of the following key documents:
    - IPC Report
    - Portfolio Committee Progress Report 2010-2011
    - Portfolio Information Question (Excel spreadsheet reflecting projects assessed in Portfolio Committee Progress Report)
    - GDARD Programme Document: Homestead Food Gardens (2003)
    - Homestead Food Gardens Service Delivery Record 2005-2011
    - Sample Homestead Food Garden Beneficiary Registration Form
    - Sample Homestead Food Garden Delivery Report
- Interview with programme director Lorato Matthews (see Annexure 1)
- Focus group interview with assistant directors (see Annexure 2) Present:
    - Phakade Goba
    - Lucky Lesufi (Assistant Director)
    - Charles Lungu (Assistant Director)
    - Kholofelo Kekana (Assistant Director)
- Focus group interview with researchers (see Annexure 3)

To assess point 4, telephonic interviews were conducted with programme beneficiaries from 2009-2010, 2010-2011, 2011-2012 with an emphasis on the most recent intervention period (2011-2012). The telephonic interview was conducted using a standardised questionnaire. (see Annexure 4)

QUESTIONNAIRE DEVELOPMENT

The interview questionnaire (Annexure 4) included a range of questions investigating:

- demographic background
- programme delivery
- economic impact: money saved, money earned
- food security impact: household hunger scale[11], dietary diversity score[12]

The survey tool was piloted by the group of field researchers and again with a sub-sample of beneficiaries and edited as necessary to ensure good comprehension and ease of use.

All researchers had previously participated in food security research, and were fluent in a variety of vernacular languages, including isiZulu, SeSotho, SeTswana, SiSwati, Afrikaans, SiNdebele, SiXhosa, Tsonga, TshiVenda, SePedi, and French. This broad language competency ensured that the interview questions could be understood by people of many different languages.

HOUSEHOLD HUNGER SCALE

This is a short questionnaire module intended to be included as part of larger, more comprehensive questionnaires. It has been developed and validated in several cross-cultural settings.[13] The questionnaire responses are coded and a score is created.

> *"When the HHS is administered, a continuous scale score (with a minimum possible score of 0 and a maximum possible score of 6) can be tabulated for each household in the sample by summing a household's responses to questions 1, 2, and 3 (refer to Table 6) where never=0, rarely or sometimes= 1, and often=2."*[14]

The scores are interpreted according to categories "little to no household hunger" (scores 0–1), "moderate household hunger" (scores 2–3), and "severe household hunger" (scores 4–6).

DIETARY DIVERSITY SCORE

FANTA's Household Dietary Diversity Scale (HDDS) was used to measure the degree of dietary diversity in a sample population. The HDDS refers to how many of 12 food groups are consumed within the household over a given period, in this case the previous 24 hours. The household dietary diversity score is a useful food security proxy indicator which permits an insight into the nutritional quality of diets. "To better reflect a quality diet, the number of different food groups consumed is calculated, rather than the number of different foods consumed." Recent research also indicates that the dietary diversity score is also a promising indicator of food security.[15] A set of 12 food groups is assessed: Cereals; Roots and Tubers; Vegetables; Fruits; Meat, Poultry, Offal; Fish and Seafood; Pulses/Legumes/Nuts; Milk and Milk Products; Oil/Fats; Sugar/Honey; Eggs; Miscellaneous (beverages). For the purposes of this study, some of these categories were dis-aggregated to reflect foods with a high Vitamin A content.

The dietary diversity score is summed to yield the dietary diversity variable ranging from 0-12. The higher the score, the greater the dietary diversity. Although Steyn et al (2006)[16] set the dietary diversity cut-off score at <4 for low, our experience with the measurement tools leads us to feel that this cutoff may mask poor dietary diversity as most respondents will report the consumption of bread and/or pap, sugars, and beverages (tea, coffee, soft drinks), all of which are generally deficient in micro nutrients,

proteins and dietary fibre. We have therefore set the cut off for low dietary diversity at <6, moderate dietary diversity ranges from 6-9; and good dietary diversity >9.

SAMPLING STRATEGY

As impact on food security was a primary research goal in this evaluation, we selected the household hunger scale as a key indicator to determine a sample size that would ensure that findings provided sufficient confidence. The assumption we selected to test against was that at baseline (ie. before intervention) the sample population could be expected to report similar levels of food insecurity as reported by the South African sample population, (which was evaluated in 2006 to validate the HHS) i.e. 69% of respondents would report a HHS > 0. A sample size of 135 respondents would allow the survey to measure a reduction of this prevalence by 19% with an 80% degree of confidence. For the period of 2011-2012, a slightly larger sample size of 210 was targeted.

In order to evaluate the sustainability of the programme, a sub-sample of 135 households from the 2009-2010 and 2010-2011 intervention periods were selected for telephonic interviews.

Sample respondents were selected based on a combination of convenience (based on the available records of beneficiaries with phone numbers), systematic proportional selection (based on the proportion of the total sample represented by each ward) and subsequent random selection from within this sample.

Table 1: Sample Sizes

Intervention period	Target sample size	Actual sample
2009-2010	135 (28%)	81 (21%)
2010-2011	135 (28%)	47 (12%)
2011-2012	210 (44%)	252 (66%)

Site visits were conducted to a small sub-sample of households contacted telephonically and selected in clusters based on their location and distinguishing between rural, urban, and peri-urban. The locations visited were Ratanda, Sebokeng, and Rethabiseng. Site visit locations were chosen based on geographic diversity, and concentration of gardens within each geographic area.

LIMITATIONS OF THE EVALUATION

Budget

The budget available for the evaluation made it impossible to physically visit and interview a representative sample of beneficiaries. To obtain a more representative sample in the context of such a widely-scattered beneficiary population, telephonic interviews were conducted.

Telephonic Interviews (Limitations And Benefits)

The reliance on primarily telephonic interviews meant that statements could not be evaluated with reference to actual observations, and that non-verbal cues could not be recorded or interpreted. However, according to some researchers, this also created a sense of safety and confidence to address questions that might otherwise have been embarrassing.

Incomplete And Inconsistent Documentation And Records

Apart from a conceptual document from the pilot phase of the project dated 2004, no updated document that clearly outlined the programme's aims, objectives, or methodology was available. It appears that this information exists as part of the organisational/institutional knowledge of GDARD and is transferred orally and through participation to new staff members. Programme targets and guidelines are not clearly articulated in the form of documentation that can be shared, discussed or critiqued. In order to access this information, the programme director and assistant directors were engaged in guided informal interviews.

The records of beneficiary names and contact details kept by GDARD officials were incomplete, not uniform, and in some cases (all of Randfontein region) no contact details were recorded at all. Community development workers in this region were contacted telephonically to obtain beneficiary telephone numbers, but having to gather data in such a piecemeal way severely limited the number of beneficiaries who could be contacted. Table 2 below reflects the number of beneficiary names and contact phone numbers that were available to the research team from GDARD records. This shows that the names of just over one third of beneficiaries reached (according to internal reports) were available for this evaluation.

Table 2: Number of beneficiary names and contact details provided, by region and period

Region	**2009-2010**	**2010-2011**	**2011-2012**	**Total**				
	Names	Contact Details	Names	Contact Details	Names	Contact Details	Names	Contact Details
Pretoria	1537	1104 (72%)	1124	694 (62%)	983	651 (66%)	3644	2449 (67%)
Germiston	917	590 (64%)	1015	688 (68%)	1299	1028 (79%)	3231	2306 (73%)
Randfontein	986	0	1135	92 (8%)	967	0	3088	92 (3%)
Number of recipients according to portfolio committee progress report (PCPR) and internal reports	9795 (35%)	1694 (17%)	8561 (38%)	1474 (17%)	7676 (36%)	1679 (22%)	26,032	4847

However, assuming that the programme was implemented similarly in Randfontein as in other regions, the findings from other regions can be extrapolated to apply equally to Randfontein.
According to portfolio committee progress report (PCPR) and internal reports a total of 26,032 starter packs were distributed.

Lacking baseline data

Due to non-standardised and inadequate monitoring and evaluation processes, no baseline data was available with which to compare findings.

FINDINGS

The findings of this mid-term evaluation emerge from analysis of qualitative and quantitative data, gathered as described above.

A previous GDARD internal progress report (2011)[17] reflected the following challenges:

- "Lack of suitable land and water delays implementation. The availability of land and water plays an important role in establishing the community type food production units.
- Budgetary constraints compromise some projects.
- Projects are provided with tools, seeds, infrastructure, equipment and materials piecemeal and this discourages activities and progress in projects.
- There is also a high turnover of beneficiaries in some projects; this undermines the efforts of the Department.
- Agricultural science is not included in the school curriculum and this makes it difficult for learners to take part in vegetable production in some schools
- Lack of formal integration between different Provincial Departments. Too much duplication, no joint planning and different approaches used to implement the same agricultural food security initiatives. Everyone speaks about working together but this does not happen."

Our findings support many of these statements, and add greater detail.

ADMINISTRATIVE

Conceptual

Senior officials demonstrated a strong understanding of the dimensions of food security. They explained food security as access to safe and nutritious food, including food availability and utilisation. The concept of stability was less clearly understood, and was explained as consistency in availability and access. Broader considerations of systemic resilience were not considered, and the locus of food security was firmly placed at the household level.

However, one of the explanations of food security, "when people have a garden to produce their own fresh vegetables" reveals a fundamental understanding of food security being primarily an agricultural issue, which has also emerged from a previous review of food security strategies and programmes in Gauteng.[18] When considered in this context, it is thus understandable that this programme is primarily an agricultural intervention. In order to reach a large number of beneficiaries, the programme has therefore been conceptualised as a logistical intervention focused on the distribution of productive resources and short training with "minimalist support".

This conceptualisation is problematic as it does little to address spatial, structural and economic causes of food insecurity. These include, but are not limited to, spatial marginalisation of poor communities on the remote urban periphery and far from job opportunities and markets, the predominance of capital-intensive manufacturing and mining activities in the economy which are inefficient at creating new jobs, jobless de-agrarianisation and adverse incorporation of the poor into urban economies[19], the massive income disparities between rich and poor, the possible collusion and price fixing of major food distributors, and the domination of the food retail economy by a handful of large retail chains. The programme conceptualisation lacks any formalised mentorship and support after delivery, fails to build local capacity or develop a local food economy, and has no formalised

strategy to promote the development of livelihoods, jobs and other economic opportunities.[20]

Geographic regions

The programme divides the Gauteng province into three broad administrative regions: Germiston, Pretoria, and Randfontein. Each of these regions, with exception of Pretoria, is further divided into two administrative areas:

- Germiston
    - Ekurhuleni
    - Sedibeng
- Pretoria
- Randfontein
    - Westrand District Municipality
    - Joburg City

Human resources, programme staff structure

The total human resources allocated to the programme is about 57 staff members split between Siyazondla (under the food security umbrella) and a sister programme, “farmer settlement”. The programme is headed by a programme director who co-ordinates management of the senior team and manages budgeting, requisitions, and liaises with other political functionaries. Each of the administrative regions is headed by an assistant director with an administrative assistant (excluding Germiston).

The logistical, training, and extension work in each of the administrative regions is conducted by two teams of two agricultural advisors (AAs) mentored by a senior agricultural advisor (SAA) - a total of 36 extension staff throughout the province. The workforce is further bolstered by ERP contract workers attached to teams.

The level of qualification among agricultural advisors is generally high. Most of these advisors hold a university degree (used to be national diploma) in Agriculture, Bachelor of Technology, Management. Some have had additional training and have attained masters’ degrees. Additional training includes some permaculture (i.e. ecological agriculture) training as well as refresher courses in hydroponic vegetable production, poultry production, irrigation, vegetable production. Staff members are also encouraged to attend courses, workshops, conferences and SA extension society meetings. However, some staff members have had to be forced to participate due to lack of interest. Those with national diplomas have had to do additional training in order to qualify for increased salary level associated with the higher qualification.

There had been a high staff turnover in the past, as some staff, for example, wanted to return to their rural homes and didn’t want to be in the city. However, the current staff has been stable for approximately 2 years.

Agricultural advisors establish links with community beneficiaries through Community Development Workers who are based in the local communities served by the programme. These CDWs are said play an important role in extending the reach of the programme.

Equipment
Two departmental 8-ton and 10-ton trucks are available for transport of materials. Their use is shared with other programmes. Office equipment and communications technology was reported as adequate.

Targets
The achievement of the programme goals is measured primarily in terms of starter packs delivered to households (hh) and the targets are set accordingly. For the periods of 2006/2007 until present, the target was 9,000 starter packs for the entire province. This is divided according to the regions

3000 hh / region
1500 hh / administrative area
375 hh gardens/official

It was not made entirely clear to the research team how systematic the identification of areas and the formulations of targets are. Some areas are chosen due to good cooperation with local authorities and ease of logistics. Others are were chosen for reasons unclear to the research team - an earlier evaluation of the Homestead food garden programme suggested that RDP settlements were prioritised (Ruysenaar, 2008). Sebokeng was disproportionately represented in 2011-2012, which is probably due to a combination of these factors. Targets for the programme have increased consistently over the first years, but do not appear to be related to any statistical estimation of levels of food insecurity or poverty. Similarly, the distribution of numbers of starter packs over the administrative regions and areas bears no relation to population numbers in those regions nor to levels of need (due in part to the fact that data on food insecurity does not exist). Furthermore, there does not seem to be a relationship between the wards targeted by the Siyazondla programme and the 50 Priority Wards in Gauteng. Our research showed that of the 97 wards that benefited from this programme, only 15% were from the 50 Priority Wards.

According to 2001 Census 2001, the Gauteng region had 2,292,156 households in 2001. Recent food security surveys[21] showed that at least 1/3 of households in poorer areas, and quite possibly 2/3 of households in the poorest areas, are likely to experience severe food insecurity. Using the conservative estimate of 30%, this suggests that at least 687,600 households in Gauteng are likely to be experiencing severe food insecurity. In light of this, the current annual targets of this food security alleviation programme are entirely inadequate in addressing the actual level of need. Even with the increase of 12,000 households expected for the coming financial year (2012-2013), this will fall far short of helping to address the level of need or meet the Millennium Development Goal of halving the number of people with hunger between 1990 and 2015. If this level of need is to be addressed, the concept and implementation strategy of this programme will have to be revised, and far larger budgets will need to be allocated.

Budgets
Part of the Siyazondla programme budget is devoted primarily to human resources, the other is allocated to materials delivered as starter packs. Funding sources for the programme vary. Funding is derived primarily from the provincial budget (in 2010-2011 funding was entirely from the provincial budget, whereas in 2011-2012 no funds were allocated from the provincial budget). Additional funding comes from conditional grants, however these funds are ring-fenced and can only be used for specific items.

Three conditional grant types are applicable. Letsema is the primary source of current funding. The Siyazondla programme usually uses about 10% of the Letsema Budget , but as the provincial budget varies, this percentage also fluctuates. For example, in 2011-2012 the Siyazondla Programme received 57% (R11m) of the Letsema budget due to inadequate funding from other sources. The other sources of funding are the Comprehensive Agricultural Support Programme (this grant is usually applied to community gardens, not households, but it could be accessed). Finally, the extension recovery plan (ERP) can be applied to for advancement of agricultural advisors through re-skilling.

The programme director and assistant directors mentioned that, while targets have increased over the years, and another increase is expected for the coming financial year, budgets are not increased accordingly.

Table 3: Materials budget spent by GDARD for Siyazondla Programme, 2009-2012

Category	**Price Year**
Garden Tools – Spade, rake, fork, hoe handle & hoe head (27,000 each)	R 10,151,300.00 (reduced by 5%)
Irrigation Material (10 litre watering cans (27,000) and hose pipe with connectors (27,000)	R13,515,805.00 (reduced by 5%)
5kg Hot Dipped Galvanized Fencing Wire (27,000)	R 2,334,420.00 (reduced by 5%)
Wooden Droppers (162 000)	R 963,900.00 (reduced by 5%) + R185 760
Compost. 30dm³ bags (54 000 bags)	R 1,354,320.00 (reduced by 5%)
SUB-TOTAL	**R26 901 976 (total after 5% reduction)**
Shade Cloth (3855 Rolls , Shade: 40%	R5,879 728.46
Vegetable Seeds (Six types: 27000 each)	R 2,123,820.00
TOTAL	**R36,407,172.90**

The annual human resource budget allocated to this programme is 40% of the total allocated to household food security **R7.8 million)**, and amounts to **R3.1 million.** The human resources costs of the Siyazondla Programme for the three years of evaluation thus amount to approximately R9.3 million. The total programme budget (excluding logistics and administration) is thus approximately R45.7 million.

PROCESS

The time frame of the programme roll-out is annual, and is usually completed by March. The programme typically proceeds with a phase of identification of beneficiaries, followed by training of beneficiaries and the delivery of tools and materials. This ideally happens in the week following training but is often delayed due to bottlenecks in transport availability and the processing of requisition memos. Although the shortest implementation period reported was less than one month, this process usually took about three months to complete.

Beneficiary Identification
In order to begin the process of beneficiary identification, agricultural advisors liaised with local authorities and ward councillors, with CDWs, and with certain NGOs (e.g. People Opposed to Women's Abuse). They also contacted clinics and other local government departments such as Social Development. Where there was collaboration with Social Development, it was initially intended to be linked to the delivery of food parcels, but the officials involved in food parcel delivery programmes were allegedly not very interested in pursuing collaboration.

Councillors call ward committee members to meetings in which the programme is explained. If there is sufficient interest, a public meeting is advertised through committee members' channels of communication and via community radio stations, flyers and loud-hailing. These meetings are held at convenient local venues such as schools halls, clinics or community centres. Attendance at these meetings varied, and could exceed 250 people. However, in some cases, turnout was as few as 10 people.

Potential beneficiaries who attended these meetings were then screened according to the following qualifying criteria:

- SA citizen
- unemployed
- space in yard
- water available

These criteria were assessed by asking potential beneficiaries, and also by arranging meetings at times during which employed people would be at work. Those community members who met all these criteria, were included as beneficiaries. At the public meetings, officials briefed beneficiaries on the programme and their expected contributions.

Beneficiaries who were identified were expected to participate in a one-week voluntary community service programme. This usually involved waste removal, work in soup kitchens, rehabilitation of environment (e.g. to combat erosion) or a park. In some cases, volunteers were asked to establish a garden over 5 days for about 3-4 hours each morning. This work was supervised by an agricultural advisor together with local group leaders and community development workers.

Training
Training usually took place over 2 to 3 days at the garden of one of the beneficiaries. Topics included various subjects relevant to vegetable production, including composting, soil preparation, irrigation and harvesting, how to lay out door-sized beds, how to work in small spaces or poor soils by gardening in containers such as pots, tyres, old metal tubs. There was usually also a discussion about nutrition and food preparation, occasionally using educational materials made available by the Department of Health and Social Development (DOHSD) and emphasising the importance of a varied diet with different colours of food.

Starter Pack Delivery
After training has been concluded, agricultural advisors collect materials from the departmental warehouse and arrange delivery to a central location (e.g. community centre, police station, church, or

school) where they can create an order, lay out tools, and check records for volunteer service. The contents of the starter pack are being reviewed and are likely to change. For example, the hose pipe will probably be phased out, as plots are too small to warrant the use of a hose pipe, and to encourage water conservation. Our site visits showed that hose pipes were often unused. The poles for the nursery are bulky, which makes it difficult to pack and organise for large numbers and takes much time. This difficulty also effects the efficiency of transport. Beneficiaries often ask for wheelbarrows, but these cannot be included due to additional cost and bulk. Similarly, water storage tanks are too bulky to store in large numbers in the departmental warehouse, and some houses are not built to accommodate tanks due to low or lacking guttering.

The starter pack delivered consists of a standard set of items including a spade, fork, rake, handhoe, hose pipe, watering can; 21 m^2 shade net; 6 poles; 2 bags of compost; spray bottles; irrigation fittings including a mist sprayer, tailpiece, tap connector and clamp. According to internal observations, sometimes these tools are sold, and people come back for more. ID numbers are used to check whether people have previously participated and community development workers know people and recognise those who are exploiting this assistance.

The starter pack also typically includes 6 types of seeds: swiss chard, carrots, beetroot, tomato, onion, beans. These were chosen because they can thrive in small and densely-planted areas and because of the high nutritional value of these vegetables.

The bulkiness of some items exacerbates the logistical challenges associated with the distribution of starter packs. This in turn impacts on transport, which already is subject to major constraints. As a result of delays associated with logistics and tool delivery, the programme sometimes loses people who were targeted but abandon the programme.

Monitoring and Evaluation

The record-keeping, monitoring and evaluation of this programme should be improved. Registers of contact details are not kept in a standardised format, with each local municipality following slightly different procedures, and some regions (eg. Randfontein) apparently keeping no record of beneficiary contact details. Contact details of beneficiaries from previous years are not updated, and many phone numbers were found to be outdated and no longer active. There were also cases of contact detail duplication, meaning that the number of beneficiaries reflected appeared higher than they actually were.

This impact evaluation appears to have been the first formalised evaluation of any kind during the intervention period considered. There is very little follow-up with beneficiaries and evaluation of the impact of this intervention, even on an informal level. Evaluation of food security and dietary diversity among the beneficiary population has not been done to date, so there is no baseline with which to compare findings of this survey. Presumably, this lack of monitoring and evaluation is a result of the conceptualisation of the programme as a minimalist intervention (i.e. training and tool distribution only), and also due to lack of adequate budget and human resource capacity to update records and conduct follow-ups with beneficiaries.

SURVEY FINDINGS

To gather data on programme impact and food security, the research team developed a telephonic survey (Annexure 4) which was administered to 380 people in all three regions. Only 24 beneficiaries were contacted for the Randfontein area, as relevant records detailing contact numbers were not available. Community development workers were contacted for the Randfontein area to provide additional contact details. Some of these CDWs were hesitant to respond to the questions; others were no longer active in the areas in which they had originally worked.

Table 4: Numbers of beneficiaries interviewed by year and region

Intervention Period	**2009-2010**	**2010-2011**	**2011-2012**	**TOTALS**
All Regions	81	47	252	380
Randfontein	6	18	0	24
Pretoria	23	13	81	117
Germiston	52	16	171	239

The numbers of beneficiaries contacted from each region and area were not proportionate to the numbers of beneficiaries. Because of the small numbers of respondents from some years and lack of data from the Randfontein region, the data was aggregated for 2009-2010 and 2010-2011 across all regions under the heading “previous years”, and compared with 2011-2012 for questions relating to sustainability and food security.

Demographic Information

Basic demographic information was collected in the interviews in order to better understand the socio-economic context of beneficiaries and to evaluate to what extent the programme’s targeting criteria were applied effectively. The households captured by this survey had a combined total of 1,765 individuals, and an average household size of 4.64 individuals.

Table 5: Age and gender distribution of members of beneficiary households

Age	**Male n**	**%**	**Female n**	**%**
Child <13	248	14%	245	14%
Youth 14-25	188	11%	223	13%
Adult 26-55	286	16%	394	22%
Elderly >55	72	4%	109	6%

To get a better sense of beneficiaries' livelihood status, respondents were asked how many household members have a job, and what kind of employment this was.

Table 6: Livelihood status of individuals in households

Employment	One person	Two people	Two or more people	No one employed in household
full-time/formal	107	11	2	153 (40%)
part-time/formal	55	4	2	
informal (spaza, shebeen, restaurant, roadside stall)	13	2	0	
piece-job	48	8	0	

Beneficiaries were also asked about their monthly household income in order to get an impression of poverty levels.

Table 7: Monthly household income

Monthly HH income	<R500	R500 - R1000	R1000 - R2000	R2000-R5000	> R5000
All (n)	48	49	105	96	12
All (%)	15	16	34	31	4

The average reported monthly household income was R1,768 and median reported monthly income was R1,270, i.e. half of respondents indicated a monthly household income of R1,270 or less.

Programme Delivery

A variety of questions was asked to assess the delivery of services by the Siyazondla programme and to evaluate to what extent the services which beneficiaries received match with officials' statements. However, it should be noted that this report is not an audit, but an evaluation of the programme's impact. Beneficiaries were asked to recall what tools and equipment they received, how much training they received, what topics the training included, whether the training was useful, whether there were any aspects of the training which they were not happy with, and whether they had received any follow-up support.

The table below indicates what tools were received, among those respondents who reported receiving tools (97%).

Table 8: Tools received by period

Tools received	All		2011-2012		Previous years	
	n	%	n	%	n	%
spade	344	93	224	90	120	94
fork	335	91	216	90	119	93
rake	324	88	212	88	112	88
handhoe	265	72	177	73	88	69
hose pipe	328	89	214	89	114	89
watering can	295	80	191	79	104	81
shadenet	291	79	197	82	94	73
poles	259	70	176	73	83	65
compost	257	70	175	73	82	64
seeds	314	85	205	85	109	85
sprayer & fittings	175	47	128	53	47	37
don't know	5	1	3	1	2	2

Overall, 97% of respondents recalled receiving at least some of the components of the toolkit across all years of evaluation. This indicates that delivery of starter packs has been fairly uniform across the regions, areas and periods surveyed.

Table 9: Training Received

Days of training	All		2011-12		Previous years	
	n	%	n	%	n	%
0	20	5.5*	9	4*	11	9*
Yes	342	90	228	92	114	86
1	87	25 #	64	28#	23	19#
2	40	11 #	33	14#	7	10#
3	45	13 #	25	10#	20	21#
more	180	51 #	115	48#	65	50#

* of valid responses

# of respondents who received training

Table 10: Content of Training Received

Content of training	All		2011/2012		Previous years	
	n	%	n	%	n	%
soil preparation & bed design	300	88	199	87	101	89
container gardening	125	37	84	37	41	36
planting	302	88	201	88	101	89
watering	232	68	146	64	86	75
pest control	139	41	90	39	49	43
rainwater harvesting	48	14	37	16	11	10
greywater use	85	25	57	25	28	25
composting	185	54	127	56	58	51
mulching	134	39	90	39	44	39
nutrition	163	48	105	46	58	51
don't know	8	2	5	2	3	3

Training consistently addressed basic aspects of food gardening. However, topics that would improve the resilience and sustainability of food gardens (pest control, rainwater harvesting, greywater use, composting, mulching) were addressed in a far smaller proportion of cases, with rainwater harvesting and greywater use recalled particularly poorly. Similarly, comparatively few respondents recalled being taught about healthy nutrition and food preparation. These findings were fairly uniform across all periods.

95% of respondents reported that the training helped them to grow food.

Of the 4% (n=14) who voiced reservations about the usefulness of training, the following issues were reported:

Table 11: Dissatisfaction reported about training

Reason for Dissatisfaction	**n**	**%**
training was too short	4	1
no materials/manual was provided	10	3
training was too complex	0	0
training was not practical/doesn't work	1	0
training taught nothing new	2	1
problems with language/comprehension	0	0
too many participants	3	1
training was not detailed enough	2	1
training was too theoretical/no practical application	2	1
Other	0	0

Only 14% of beneficiaries reported receiving any follow-up training or other support from GDARD.

Gardening Context

Respondents were also asked a range of questions relating to the garden. To begin with, beneficiaries were asked whether they were still gardening, and if not, to explain the reasons why they had stopped. The questionnaire included negative (ie. failure-related) and positive (ie. livelihood-transition related) reasons for stopping. 81% of all households interviewed have a garden and are still growing food. This figure remains constant across the most recent year and previous years, indicating that the level of sustainability is fairly high in terms of continuity.

Table 12: Households still gardening

Intervention Period	**Households still gardening**	
	n	**% of valid responses**
2009-2011	103	88
2011-2012	203	87
Total for all periods	306	87

Of those who stopped gardening, the following reasons for stopping were given.

Table 13: Reasons for stopping gardening

Reason for stopping	**All**		**2011-2012**		**Previous years**	
	n	**%**	**n**	**%**	**n**	**%**
no time	1	2	1	3	0	0
no interest	0	0	0	0	0	0
no one available to do the work	3	7	2	7	1	7
crop losses	9	20	4	13	5	36
loss of land/moved house	4	9	2	7	2	14
no technical assistance	0	0	0	0	0	0
no supplies/ equipment available	11	25	6	20	5	36
no money for supplies/ equipment	3	7	1	3	2	14
now gardening with community project	4	9	3	10	1	7
got a job	5	11	2	7	3	21
receiving pension / social assistance	0	0	0	0	0	0
doing informal trade / self-employed in other livelihood	0	0	0	0	0	0
other	16	36	10	33	6	43

Among the reasons cited by households who stopped gardening, most common were lack of access to supplies (20%-36%), crop losses (13%-36%), and the category “other” (33%-43%).

Beneficiaries were asked how they felt about gardening, and which household members are involved in gardening in order to better understand the profile of the people most directly involved in the programme-related activities.

An overwhelming 95% of respondents reported that they enjoy/felt good about gardening, 3% felt ambivalent, while less than 1% (n=2) did not enjoy food gardening. Of the 306 households still gardening, the following distribution of participating household members was reported:

Table 14: Age and gender distribution of household members gardening

Household member gardening (n=459)				
Age	**Males n**	**Males %**	**Females n**	**Females %**
Child <13	5	1.1	6	1.3
Youth 14-25	17	3.7	16	3.5
Adult 26-55	106	23	232	50.5
Elderly >55	24	5.2	53	11.5
TOTALS	152	33	307	67

Among both adult and elderly age groups, women were represented about twice as strongly as men. The bulk of gardening work was done by adult women (50.5%), followed by adult men (23%) and elderly women (11.5%).

Respondents were also asked about the location of their garden, to assess to what extent the original qualifying criteria still applied and to what extent people may have extended their gardening activities into other contexts. Garden locations were reported in the following frequency distribution:

Table 15: Garden location

Garden location	**n**	**%**
Own yard	271	71
Neighbour's yard	10	3
Community garden on shared land (school, clinic, church)	35	9
Roadside	0	0
Vacant land (riverside, park, hillside, open veldt)	26	7
Other	6	2

The large majority of beneficiaries (71%) indeed garden primarily on their own yards, but 9% garden on community or shared land, while another 7% report gardening on vacant land. This finding suggests the need to facilitate access to additional land.

Water for irrigation purposes is crucial for the success and sustainability of food gardening. Beneficiaries were asked where they get their water, and how they water their gardens. Some gardens are irrigated from more than one water source.

Table 16: Irrigation water source

Water source	n	%
Rain	46	15
Borehole	9	3
Municipal piped	263	86
Municipal community tap	52	17
Greywater	24	8
Dam/pond	8	3

The large majority (86%) of beneficiaries reported relying on municipal piped water for irrigating their gardens, with a small number reporting rainwater or greywater as sources of water. A significant proportion of people also reported community taps as sources of water (17%). It is particularly for such cases that skills and equipment supporting the harvesting and use of rainwater and greywater would be important.

Table 17: Method of watering

Method of watering	n	%
Rain	42	14
Watering can	223	73
Hose pipe	213	70
Other (eg drip, sprinkler)	23	8

To evaluate the nutritional value households derive from their gardens, respondents were asked whether the household ate any food grown in the garden, and how often they did so.

As food gardening is an activity that depends on seasonal variables such as rainfall, temperature, wind, and sunlight, and the produce harvested in gardens is thus likely to fluctuate throughout the year, respondents were asked to recall which months of the year their gardens were most productive. Abundant harvests were mainly reported across the months of November to February as reflected in the table below:

Table 18: Months of abundant harvest

Months of harvest	n	%
January	245	80
February	110	36
March	41	13
April	19	6
May	16	5
June	27	9
July	22	7
August	17	6
September	69	23
October	83	27
November	168	55
December	221	72

This distribution of productivity coincides closely with the summer-rainfall pattern prevalent in Gauteng, and highlights the importance of climatic variables in the productivity of food gardens. It suggests that the potential benefits of food gardens are limited by these same climatic variables, and that food gardens alone are not enough to reduce the vulnerability of households to food insecurity. It is also important to note that this evaluation was conducted in January, the most productive month reported, which is likely to influence the responses recorded for the frequency of eating food harvested from the garden.

Although the seed types distributed by the programme were known, respondents were asked what crops they cultivated and how good the harvests were in order to get an impression of whether the seeds provided were appropriate (ie whether they performed well and satisfied respondents' preferences) and also whether other crops were cultivated alongside those promoted by the programme. All varieties distributed by GDARD reflect consistently good yields, with spinach (swiss chard) reported as abundantly productive by the most beneficiaries. Many beneficiaries also grew other crops not distributed by GDARD officials, but at far lower prevalence, indicating the value of making seed available to beneficiaries.

Table 19: Crops grown

Crop	**Good Harvest**		**Poor Harvest**		**No Harvest**	
	n	**%**	**n**	**%**	**n**	**%**
Beetroot	214	77	29	10	35	13
Spinach	269	89	17	6	15	5
Tomatoes	206	76	30	11	35	13
Onions	170	72	18	8	49	21
Carrots	199	78	18	7	37	15
Beans	164	75	6	3	48	22
Cabbage, chamolia, broccoli	83	46	10	6	87	48
Pumpkin, squash, butternut	86	48	4	2	88	49
Mealies, mabele	38	24	1	1	120	75
Potatoes, madumbe, sweet potatoes	60	36	6	4	102	61
Fruit (citrus, mango, apple, apricot, peach)	26	19	6	4	107	77
Herbs	11	8	0	0	127	92
Other	31	23	1	1	101	76

Crop losses can compromise the potential benefits of food gardens significantly.
As reflected above, crop losses were a factor contributing to beneficiaries' abandonment of backyard gardening. The following reasons for crop losses were reported by beneficiaries who reported losses:

Table 20: Reasons for crop losses, among those reporting losses

Reasons for crop losses	**All**		**2011-2012**		**Previous**	
	n	**%**	**n**	**%**	**n**	**%**
Theft	44	16	29	17	15	14
Vandalism	13	5	8	5	5	5
Pests (eg rats, insects)	223	80	138	81	85	79
Drought / no water	21	8	12	7	9	8
Heat	62	22	31	18	31	29
Hail	4	1	1	1	3	3
Storm winds	10	4	6	4	4	4
Frost	52	19	25	15	27	25
Livestock/ pets	10	4	7	4	3	3
Flooding/ waterlogging	35	13	26	15	9	8

Pests (in most cases rats) were by far the most frequently reported cause of crop losses (80% across all periods), followed by excessive heat (22%) and theft (16%). Livestock was also reported as an important cause of crop losses (14%). Overall, amongst all participants, 59% of respondents reported crop losses to pests, 16% to heat, 14% to livestock pets, and 12% to theft.

Access to productive resources is crucial for the success, resilience and sustainability of food gardens. To assess to what extent beneficiaries were able to access productive resources, they were prompted to assess the ease of access to a variety of such resources.

Table 21: Access to productive resources

Access to Resources	**Easy**		**Difficult**		**None**	
	n	**%**	**n**	**%**	**n**	**%**
Water	289	87	43	13	1	0
Seeds	238	75	73	23	5	2
Fertiliser/Manure	217	69	69	22	28	9
Tanks	75	29	56	22	128	49
Irrigation/Hosepipe	282	91	12	4	15	5
Pesticides	119	39	105	35	80	26
Tools	290	93	10	3	13	4
Gardening advice	118	45	76	29	69	26

Respondents indicated difficulty in accessing various resources that could make subsistence agriculture more resilient, such as finance (87% no or difficult access), tanks (71% no or difficult access), technical advice (55% no or difficult access).

ECONOMIC IMPACTS

Two of the significant benefits a food garden can entail is the reduction of household expenses for the purchase and transport of food, and the generation of income through the sale of surplus produce. Of respondents still gardening, only 17% reported saving money, with an average reported saving of R151/month. 14% of respondents reported earning money from their gardens, among whom the average reported garden income was R218 month.

FOOD SECURITY IMPACTS

285 households or 96% of valid responses reported that they eat from their garden, and of those that do, the following frequency of occurrence was reported:

Table 22: Frequency of households eating food grown in the garden

Frequency of eating food grown in garden	**All**		**2011-2012**		**Previous**	
	n	**%**	**n**	**%**	**n**	**%**
Daily	47	16%	26	14	21	20
Once a week	73	26%	54	30	19	18
More than once a week but less than every day	144	51%	89	49	55	52
A few times a month but less than once a week	31	11%	26	14	5	5
Once a month or less	14	5%	8	4	6	6

Almost exactly half of respondents reported eating from their gardens more than once a week but less than every day – this was consistent between all years. Between 18%-30% of respondents reporting that they ate from their gardens about once a week. Between 14% and 20% reported eating from their gardens every day.

The programme's impact on food security was assessed using the household hunger scale (compared with an assumed 69% of respondents reporting HHS>0) and the dietary diversity score. These scales are commonly used as proxies for food security status.

Table 23: Household hunger scale distribution by period

Intervention period	**HHS = 0**	**1 (little)**	**2 (moderate)**	**3 (moderate)**	**4 (severe)**	**5 (severe)**	**6 (severe)**
All (n)	182	94	49	24	3	3	5
All (%)	51	26	14	7	1	1	1
2011-2012 (n)	81	55	19	8	2	2	4
2011-2012 (%)	47	32	11	5	1	1	2
Previous (n)	54	14	15	7	1	1	0
Previous (%)	59	15	16	8	1	1	0

Approximately 77% of all respondents' scores indicated that their households experienced little or no hunger (scores 0-1). 21% of households' responses indicated moderate household hunger (scores 2-3). Only about 3% of households' responses indicated severe household hunger (scores 4-6)[22]. 49% of household hunger scores were greater than zero. This compares favourably (a 20% difference) with the assumed baseline of 69% HHS>0. For year 2011-2012, household hunger score average is .093, while 53% of households scored HHS >0. For years 2009-2011, the average household hunger score is 0.8, with 41% of households scoring HHS>1. It seems that beneficiaries from previous years experience slightly less hunger than beneficiaries from the 2011-2012 period (12% difference). This difference is calculated at p= 0.08, which means that this difference is only 8% likely to be by chance (borderline statistical significance). Assuming that no other major factors operating across all regions have improved food security, this may indicate that in the long run, the intervention is improving food security to a small extent.

Table 24: Dietary diversity score distribution by period

DDS	0	1	2	3	4	5	6	7	8	9	10	11	12
All (n)	4	1	11	33	49	67	72	45	37	25	14	10	12
All (%)	1	0	3	9	13	18	19	12	10	7	4	3	3
11-12 (n)	0	0	8	15	29	45	42	30	29	19	12	10	10
11-12 (%)	0	0	3	6	12	18	17	12	12	8	5	4	4
Prev. (n)	1	1	2	16	16	16	19	9	3	5	1	0	2
Prev. (%)	1	1	2	18	18	18	21	10	3	5	1	0	2

43.4% of respondents from all periods reported a dietary diversity that scored below 6, indicating poor dietary diversity, and 12.9% scored below 4. 39% of respondents from the 2011-2012 period reported dietary diversity below 6, only 9% reported dietary diversity below 4. For the 2009-2011 period, 57% scored below 6, 22% below 4. It appears that beneficiaries from previous years experience lower dietary diversity than those from the most recent year. **Mean DDS:** 6.09

Table 25: Food Eaten in previous 24 hours

Foods eaten	n	%
A. pap, mabele, ting, bread, rice noodles, biscuits, cookies, scones or any other foods made from millet, sorghum, maize, rice, or wheat	368	97
B. white potatoes, madumbe or any other foods made from roots or tubers	150	39
C.1: pumpkin, butternuts, carrots, squash, or sweet potatoes that are yellow or orange inside	102	27
C.2: dark, green, leafy vegetables such as bean leaves, kale, spinach, pepper leaves, and marogo/tepe leaves	221	58
C.3: other vegetables	129	34
D.1: ripe mangoes, ripe papayas, peaches or guavas	101	27
D.2: other fruits	86	23
E.: beef, pork, lamb, goat, game, chicken or other birds, liver, kidney, heart, or other organ meats	168	44
F.: eggs	60	16
G.: fresh or dried fish or shellfish	41	11
H.: foods made from beans, peas, or lentils	84	22
I.: cheese, yogurt, milk or other milk products	141	37
J.: foods made with oil, fat, or butter	299	79
K.: sugar or honey	268	71
L.: other foods, such as sweets, coffee, tea, soft drinks	285	75

Consumption of vegetables (categories C1, 2, 3) were reported by 79% of respondents for all periods.

SITE VISITS AND COMMENTS

Site Visits

Site visits were conducted into order to corroborate information gathered via telephonic interviews and to collect photographs and first-hand observation of programme implementation.
Researchers conducted site observation visits to a sub-sample of 17 households from 3 locations, including Ratanda, Sebokeng, and Rethabiseng.

Table 26: Site observation interviewee age and gender

Average interviewee age	Males	Females
47	18%	76%

Site visit observations confirmed the findings that emerged from phone calls interviews. The site visits were undertaken in the areas of Rethabiseng, Ratanda and Sebokeng. The majority of people were females with an average age of 47, living in a peri-urban context. More than a half were living in a house, a third of them in RDP, and almost 20% live in shacks.

The sites visited were 100% peri-urban. The average garden size was $23m^{2,}$ 65% of gardens were fences, and waste management problems were observed in 29% of cases.

The following list reflects the proportion of visited households growing specific produce items: 76% tomatoes, 65% spinach, 59% carrots, 47% beets, onions and green beans, 29% pumpkin and cabbage.Insect damage to plants was observed in 53% of households, 29% had dry or wilted plants, and lush healthy plants were observed in 18% of households.

Soil was observed in 47% of households visited, followed by sandy soil (35%), good loamy soil was observed in 24% of households - primarily in the Sebokeng area. 88% of households were irrigating with municipal water and 6% with a community tap. No households visited had a rain tank. Erosion and waterlogged soil were each observed in 12% of households. The following gardening techniques which contribute to sustainability were observed: seed saving (82%), intercropping (59%), compost heaps (24%), mulching (6%). Animals were not commonly observed- 5 homes visited had dogs and 1 had a goat.

General comments of respondents

A variety of comments were made by beneficiaries which are not reflected in the questionnaires. However, these comments were recorded by the researchers nonetheless, and were voiced in the debriefing focus group discussion. These comments are summarised below, and add valuable detail to the quantitative findings (Annexure 5)

Many beneficiaries expressed gratitude for the programme, and indicated that it had helped them avoid hunger. Participation in the programme elicited excitement and motivated people who otherwise were idle and de-motivated at their homes.

Some were able to generate income, and also shared surplus produce with other needy households, and yet others were able to up-scale production into nearby spaces such as schools and clinics.

Some people from previous years have learned to save seeds to continue production. Some are also able to get help from other community members. Those who have managed to continue gardening from previous years are more likely to be selling and making money from vegetables grown.

However, some also voiced specific problems, such as lack of access to seeds, inadequate size of land available for cultivation, poor soil quality, lack of access to municipal water.

Rats were another frequently-mentioned problem which compromised garden productivity.

Some expressed the view that the training relied on prior agricultural knowledge and that it did not cater for youth who had no prior experience of agriculture. Older people were likely to be happier with training (maybe because they were more likely to have prior gardening knowledge and experience). Younger people expressed that they didn't learn enough specifics.

Some respondents also indicated that the training was very limited, not specific enough or non-existent and that they were just given tools and a manual. In some cases, the quality of manual was criticised. In addition, the levels of literacy (eg 23% in Sedibeng) mean that such manuals may not be useful to all beneficiaries. Some reported that the site at which training took place was too far away and that they had to spend money on public transport to get there.

In a few cases, respondents indicated that they had not received tools and alleged that community members responsible for distributing these had sold them instead. Kokosi is a community in which it was reported that no-one received tools.

Several suggestions were also made. Of particular relevance was the repeated request for follow-up, additional training and support from GDARD officials, and also the requests for access to larger parcels of land that would permit economically viable community-based agricultural initiatives to be started.

Some participants also expressed the desire for certificates of attendance to prove that they had participated in this training in the hopes of increasing their employability.

Beneficiaries suggested that the programme should be linked to food parcel distribution, particularly including staples.

Some respondents indicated that as long as they were able to cook pap, oil and salt, they were able to provide a meal, in which case the responses to the household hunger scale would have been negative. Another coping strategy which may reduce the level of hunger reported is the strong social capital in some communities which allows vulnerable households to borrow food from neighbours.

Some participants expressed suspicion about the evaluation's purpose, fearing that the findings might disqualify them from further aid or that programme representatives might wish to reclaim tools distributed.

"Ever since the tools were delivered and the training was given my family has not gone to bed having not eaten, we may not have the balanced and fancy food but we are content. This project has been a great help and we hope that the government have more of such initiatives".

-Siyazondla Beneficiary

"Government should come back and train other groups of people as many people are suffering and don't have money to buy food,others no skill to grow their own food"
-Siyazondla Beneficiary

Reflection of Interviewers

Language proved a challenge initially, and researchers quickly opted to use only vernacular languages instead of English to avoid the alienation the use of English caused. Similarly, researchers adapted the introductory conversation to remind participants of the tools they received, as this helped establish rapport more rapidly. Many beneficiaries did not know the English names for tools or foods, and researchers in some cases did not know the vernacular terms, but there was a mutual desire to learn these names, which helped to build rapport in some cases.

Some interviewers found it emotionally challenging to conduct the interviews due to the harsh socio-economic conditions people reported. Many respondents expected researchers to do something to alleviate their plight ("Is someone going to come here and help us?"), and researchers did not feel empowered to do so. One researcher indicated that she would not want to do this again due to the emotional strain.

Most researchers felt grateful at the government's work, and also felt more positive about gardening, the value of research in informing policy, and even expressed an interest in becoming involved in policy development. One researcher expressed the view that he didn't agree with the level of gratitude felt by others, but that it was "no big deal", that people were entitled to these services and that the programme and services should actually be upscaled.

Based on non-verbal cues such as hesitant responses, nervous laughs, impatient responses and on direct questions (eg. "why do you want to know what we eat?") it appears that respondents found questions about income, dietary diversity and household hunger embarrassing to answer truthfully. This applied especially to men and younger respondents.

DISCUSSION

It is clear from the responses of beneficiaries that **the programme is making a valuable contribution towards alleviating the conditions of food insecurity and poverty** for many beneficiaries, and also **provides psychosocial benefits** by involving unemployed community members with meaningful pursuits and opportunities to develop and strengthen social relations.

However, several **limitations** emerge from the findings, which are highlighted below in order to identify **opportunities to strengthen** this **beneficial impact**. These include issues related to programme conceptualisation, targeting, budget allocation, record keeping and implementation strategies.

The **centralised, top-down extension model** based on a "minimalist intervention" is **inherently flawed** in that it is **logistically complex** to the point of impossibility in the context of a centralised extension model to train enough beneficiaries and distribute the number of starter packs required to achieve a meaningful improvement, considering the level of need suggested by population data and recent food security research (see calculations above).

A decentralised farmer field school strategy adapted to homestead farming in the urban and peri-urban context appears to offer a more effective approach, and has been shown to increase productivity and income significantly in several other African countries[23]. This is aligned with general recommendations to devolve service delivery in agricultural development to the local government level and to the end users themselves.[24]

The Homestead Food Gardens Programme initiated by Hellen Keller International in Bangladesh demonstrates the potential of a decentralised model to reach millions of households by developing strong ties with local civil society organisations, building on local knowledge and skills, empowering women, linking with other development activities, and maintaining strong monitoring and evaluation systems. These strategies are all rooted in the development of village model farms, which "serve as a center for production inputs and practical training for women groups; and to act as a community demonstration center for different aspects of homestead food production".[25]

Processes for **setting targets** provincially, regionally and by area appear guided by convenience, political expediency, and overly simplistic calculations, rather than by actual need. Similarly, **budget allocations** appear arbitrary and are not aligned with the increasing targets nor with the actual need for such interventions.

It also is impossible within the constraints of this model and allocated budgets to provide the level of **mentorship** and ongoing **support** which is desirable to ensure the continuity and success of homestead food gardening. Beneficiaries are relegated to the role of passive recipients of aid, and have no role in shaping the service delivered or providing feedback on the intervention. **This intervention model is inherently disempowering.**

This model also does not strengthen **local organisation, participatory learning, locally-adapted crop varieties or leverage local knowledge**, which could be valuable resources to deepen the impact and ensure sustainability of these impacts.[26] The Indian grass-roots movement Navdanya has

demonstrated over 30 years the powerful impact that can be achieved by developing local networks of seed saving and exchange linked to organic farming, improving food security and strengthening resilience to climate change.[27]

According to the White paper for Reconstruction and Development " the birth of a transformed nation can only succeed if people themselves are voluntary participants in their development." An integrated people-centered development approach includes public participation as a basic tenet.[28] The development is people-centered when it entails the active and voluntary participation of its intended beneficiaries (Davids, et al 2005).[29] Beneficiaries are relegated to the role of passive recipients of aid, and have no role in shaping the service delivered or providing feedback on the intervention. Participation can ensure that policies and programmes are truly responsive to the needs of vulnerable groups, who will question projects that fail to improve their situation.[30]

The **information management** practices currently employed by the programme appear haphazard, inconsistent and incomplete, including documentation of programme concept and processes as well as records of implementation and beneficiaries.

EVALUATION MATRIX

In addition to these general considerations, the evaluation specifically considered the four core aspects of service delivery, food security, economic impact and sustainability, which are summarised in Table 27 and are discussed in greater detail below. Each evaluation category is scored from 0 to 2 (0=none; 1=partial or unclear; 2=good)**.**

Table 27: Evaluation matrix of service delivery, food security, economic impact, and sustainability

Evaluation Criteria	Indicator	Finding	Evaluation	Score	Recommendation
1. Service Delivery	**6 of 8 (75%)**				
	Reported number of beneficiaries	• 2009-2010: 9795 of 9000; • 2010-2011: 8561 of 9000 • 2011-2012: 7676 of 9000	good approx-imation of targets set	2	Revise targets upwards to meet 10% of need; broaden evaluation targets beyond starter pack delivery
	Receipt of starter packs	97%	-	2	
	Reported usefulness of training	95%	-	2	
	Record-keeping	contact details for less than a third available	poor	0	enhance information management and record-keeping

Evaluation Criteria	Indicator	Finding	Evaluation	Score	Recommendation
2. Food Security	**5 of 8 (63%)**				
	Household Hunger Scale*	49% HHS>0	compares favourably with estimated baseline 69% HHS>0 for very poor households	2	
	DDS	43.4% DDS<6; 12.9% DDS<4; mean DDS=6.9	this population's DDS profile is not notably different from other poor groups surveyed previously by Rudolph et al 2012	1	enhance nutritional education and diversify crops
	Frequency of eating from garden	93% of respondents eat from their gardens more than once a week	Regular and frequent benefit derived from gardens	2	
	Months of yield	Yields concentrated October - February	Stability of food source is poor during winter months	0	include training on planting calendar and mulching; diversify crops to include more winter-yielding varieties; link programme to food parcels

Evaluation Criteria	Indicator	Finding	Evaluation	Score	Recommendation
3. Economic Impact	**2 of 8 (25%)**				
	Proportion of beneficiaries saving money or earning an income.	17% report saving money, 14% report generating income	Small proportion of total	1	Increase size of land available to successful growers; support linkage to local markets; provide ongoing training for long term growing and enterprise development.
	Ratio of benefit to cost of comprehensive programme costs	0.53	53% return on investment, currently	1	Over 7 years this increases to 0.64, and with improved efficiencies this can increase to 1.55
	Market value of crops consumed	R8.8 million or 23.7% of combined materials and HR budget	Significant proportion of total value	0	
	Reduced risk of disease	Variable reduction of DALYs could mean a cost reduction of R56 million or 44% of combined materials and HR budget	Significant proportion of total value	0	target households affected by NCDs, HIV/AIDS and TB

Evaluation Criteria	Indicator	Finding	Evaluation	Score	Recommendation
4. Sustainability	**2 of 10 (20%)**				
	Percentage of Households still gardening	87%		2	reward households continuing and successful with access to greater support and possibly organisational development towards entrepreneurial growing
	Ongoing technical advice and support	none		0	provide organisational development fostering local knowledge networks; develop support capacity in local training centres
	Agricultural resilience technologies	none		0	Incorporate technologies for seed saving, rainwater harvesting, greywater re-use, composting
	Organisational and community development	none		0	develop local household garden networks; support access of successful farmers to land and capital through associations, stokvels, or co-ops
	Incubation, support and development of successful gardeners	rare and informal		0	monitor beneficiaries for success; recruit successful candidates for increased support and as local extension assistants; facilitate access to land, local productive inputs, and markets
Total (unbalanced)				**15 of 34 (44%)**	
Total (averages)				**46%**	

*(baseline value - not a measure of change in this population)

IMPACT ON FOOD SECURITY AND DIETARY DIVERSITY

The finding that 93% of respondents reported eating food from their garden once a week or more often suggests that the intervention is improving peoples' dietary intakes and reducing hunger. Nevertheless, 49% of household hunger scores were greater than zero, indicating that about half of these households experienced hunger. This compares favourably (a 20% difference) with the assumed baseline of 69% hhs>0, although this is a rural baseline score obtained from a different province.

The fact that a smaller proportion of beneficiaries from previous years as compared to 2011-2012 scored HHS>0 suggests that the intervention may have a longer-term beneficial impact on hunger. However, it is not possible to claim that this difference is due to the Siyazondla intervention or whether it should be attributed to other factors such as better access to jobs, shops and markets.

In terms of the types of foods reported to have been eaten in the previous 24 hours, the vegetables promoted by the Siyazondla programme can only directly improve intake of leafy vegetables, other vegetables and pulses. Consumption of these was reported by only 58%, 34% and 22% respectively, despite the fact that the evaluation was conducted during the height of the growing season, when yields are likely to be good. Indirectly, the availability of these foods may broaden the intake of other food groups as more income is saved and could be spent on purchasing food from the other groups.

The strong representation of starches (97%), oily foods (79%) and sugars (75%) and non-nutritive condiments and beverages (75%) taken in conjunction with the dietary patterns revealed in the IPC Summary report suggests that a large percentage of beneficiary households are likely to experience the long-term ill-effects of malnutrition.

Z-analysis of the difference between households scoring below 6 (39% for 2011-2012 and 57% for 2009-2011) has been done, revealing that this difference is statistically significant (Z=2.992) and that this difference is very unlikely to be accidental. One possible explanation could be that the programme improves dietary diversity in the short term, but that this improvement is reversed after a year or so due to some of the shortcomings of the programme relating to sustained support, sustainable gardening practices and access to inputs.

However, 43% of respondents from all periods reported a dietary diversity that scored below 6, indicating poor dietary diversity, and 12% scored below 4. Dietary diversity scores recorded for poor households in Orange Farm in 2008 reported 12% below 4 and 30% below 6.[31] Only 16% of households sampled in Orange Farm in that study indicated that they grew some of their own food. Since the dietary diversity scores reported for both of these populations are very similar, and in fact the total Siyazondla sample reported a greater proportion of DDS < 6, this comparison suggests that the Siyazondla programme may be making a statistically significant positive difference to dietary diversity, but that this improvement is short-lived.

In addition, based on the hesitancy to answer food-related questions, and the coping strategies mentioned, it is likely that hunger and poor dietary diversity are under-reported in this survey and that the situation is more dire than it appears from the statistics generated.

COST-BENEFIT ANALYSIS

Individual and household income is one of the main determinants of food access, especially in urban realities[32]. Economical constraints and urban geography induce people to rely on unhealthy less expensive food. Studies have shown that lower calorie, nutrient-dense, less processed foods generally do cost more[33]. In this sense, income generated by vegetables sold and income saved due to consumption of vegetables otherwise purchased may enable beneficiaries to divert this income to the purchase of healthier staples and that beneficiaries would consume healthier vegetables in addition to unhealthy staples. A different, and less direct type of economic impact is associated with the societal costs of disability, illness and death, which is discussed in greater detail below.

A financial model was developed to estimate current and potential financial impacts reflecting the direct and indirect benefits mentioned. The model was based on a number of findings of the survey as well as several reasonable assumptions. These include:

- Only 17% of beneficiaries still gardening report saving income (average R151/month) by growing food, and only 14% are earning an income (R218/month) selling food.
- Current programme costs = R56.4 million over three years
- Number of beneficiary households reached = 26032
- reported attrition rates = 13%
- 6 months of productivity
- estimated meal unit prices of R5
- reported consumption frequencies yield an average consumption of 15.1 meals per month

The model generates five outputs:

1. **Scenario A1: Current – materials costs only** This calculation estimates cost/benefit considering only the cost of materials distributed as compared with the estimated direct benefits during the intervention period only.
2. **Scenario A2: Current – comprehensive costs** This calculation estimates cost/benefit considering the estimated total programme costs (materials, HR, administration, logistics and transport) as compared with the estimated direct benefits, and projects future benefits for 7 years.
3. **Scenario B1: Potential benefits – improved efficiencies** This calculation estimates cost/benefit considering the impact of eliminating redundant starter pack components and improving sustainability through ongoing support, repeated training, and replacement of tools and seeds. Benefits are projected over 7 years.
4. **Scenario B2: Potential benefits – DALY-related savings** This calculation estimates long-term societal savings related to the costs associated with disability and death due to food insecurity.
5. **Scenario C1: De-central model**

More detail on the assumptions and outputs of each scenario is provided in Annexure 7: Revised Cost-Benefit Analysis and Explanatory Notes.

Table 28: Cost-benefit estimates of the Siyazondla Programme

Scenario	Costs (million)	Benefits (million)	Short-term Benefit/ Cost Ratio	Projected Benefit (million)	Surplus/ Deficit (million)	Projected Benefit / Cost Ratio (7yr)
A1 - Current: Material Costs Only	R36.3	R 29.9	0.82	-	R-6.4	-
A2 - Current: Comprehen- sive costs	R56.4	R 29.9	0.53	R36.0	R-26.5	0.64
B1 - Potential Benefits: Improved Efficiencies	R88.3	R40.2	0.46	R109.7	R21.4	1.24
B2 - DALYs averted				R 25.8		0.29
B3 - Potential benefits: Efficiencies and DALYs averted	R88.3	R44.1	0.49	R135.5	R47.2	1.53
C - De-central Model	R137.5	R180.5	1.31	R548.1	R410.5	3.98

Scenario A1: Current – material costs only

The model estimates actual savings at R452/annum/household, and earnings at R1308/annum/household. Thus, the estimated cumulative value of crops sold and earnings saved annually for all households over the three years of the intervention period amounts to a total of R30 million, approximately 82% of the value of materials distributed.

Scenario A2: Current – Comprehensive

Considering the total estimated cost of the intervention, benefits during the intervention period amount to 53% of total project costs. The benefits, projected forward over a total of 7 years, amount to slightly more (R36 million), but the benefit tapers off due to a strong attrition rate (due to lacking support and sustainability), with a deficit of R26.5 million. The total benefit/cost ratio is 0.64.

These findings suggest that the monetary value of food sold added to the savings accrued by eating food grown locally does not completely offset the total programme budget for materials, human resources, administration and logistics are considered, the costs outweigh the direct financial benefits. It should however be noted that the ongoing logistical and transport costs of distributing an equivalent amount of fresh vegetables in the form of a feeding scheme is likely to far outweigh the once-off expense incurred through training and starter pack delivery.

Scenario B1: Potential Benefits – Improved Efficiencies

The potential benefits model also took into account several efficiency enhancements:

- ongoing and additional training of beneficiaries (eg through local food garden resource centres)
- replacement of tools and replenishment of seeds
- elimination of underutilised starter pack components

Based on these enhancements, the programme benefits projected over 7 years (R109.7 million) compared with the costs of such an enhanced programme (R88.3 million) could generate a surplus value of R 21.4 million, with a 1.24 ratio of benefit to cost.

Scenario B2 - DALY-related savings

However, the financial value proposition/business case for a food security intervention of this nature should not be measured solely in terms of these direct benefits, but should also consider the savings accrued for society in general and public institutions, for example in terms of the cost of health care due to increased risk of non-communicable and infectious illnesses, treatment of psychosocial disorders and the costs of violence and crime associated with desperate poverty and need.

Although such calculations are extremely complex, some of these considerations were incorporated into the financial benefits model along with changes in the starter pack composition to improve efficiencies. These calculations should be considered as very tentative estimates that indicate the some potential benefits of an enhanced Siyazondla Programme and more especially highlights the need to explore these impacts with more detailed research.

The assumptions and considerations are discussed below to estimate the potential indirect financial benefits the Siyazondla programme may be able to achieve if the changes and health benefits are projected forward.

Health impacts of food insecurity and malnutrition

A diet with prevalence of refined carbohydrates, fat and sugars with a low intake of fiber and micro-nutrients is known to lead to obesity and associated cardiovascular diseases and diabetes[34], which have an enormous cost to society: Cardiovascular diseases were estimated to cost SA between 8 and 10 billion Rand in 2010[35].

Similarly, diabetes was estimated to be the 7th most common cause of death in SA in 2000, accounting for 4.3% of all deaths in the country. Interventions that would improve peoples' ability to eat healthily and engage in physical activity were recommended as a valuable measure to prevent or delay the onset of diabetes by Bradshaw et al[36].

This cost must be added to that incurred for the treatment of infectious diseases and the HIV/AIDS epidemic. A diet rich in micronutrients is critical to people living with HIV/AIDS to maximize the effect of the anti-retoviral therapy and to avoid of the worsening of the disease[37], as well as fundamental for prevention and treatment of infectious diseases. There appears to be a clear overlap in the distribution of populations with low dietary quantity, quality and diversity on the one hand, and populations with high prevalence of HIV infection on the other The link between HIV/AIDS and food insecurity has been explored by Crush et al.[38] and Kroll et al[39].

The improvement of diets among the beneficiaries of the Siyazondla programme could help prevent the development and progression of such diseases, thereby indirectly saving the state associated treatment and disability grant costs associated with illnesses such as HIV/AIDS, TB, stroke, diabetes, and heart disease. One way to quantify the economic cost of illness, disability and premature death is the DALY[40].

Disability-adjusted life-years (DALYs)

"The burden of disease attributable to risk factors is measured in terms of lost years of healthy life using the metric of the disability-adjusted life year. The DALY combines years of life lost due to premature death with years of healthy life lost due to illness and disability."[41] A DALY is valued in

various different ways. For the purposes of this evaluation, we have assumed that a DALY can be approximated with the GDP per capita[42], which, according to CIA data[43], amounts to USD $10,700 or ZAR 80,700. This cost estimate does not consider other costs such as the cost of treatment, absenteeism, presenteeism, family care costs, treatment costs, etc.

The World Health Organisation has identified 24 leading causes of disease and death globally, among which 6 are directly diet- and activity-related: high blood pressure, high blood glucose, overweight and obesity, physical inactivity, high cholesterol, low fruit and vegetable intake[44]. Globally, all six risk factors contribute 18.1% of deaths in low and middle-income countries, and 6.5% of DALYs. They contribute approximately 38 DALYs per 1000 population over age 30 in Africa.

Below are five risk factors and associated diseases which could be reduced through increased dietary diversity and physical activity associated with homestead food gardening. It is important to note that these risk factors interact with each other. They are thus not simply additive, and the burden of disease that is estimated as attributable to various risk factors is not mutually exclusive.

High blood pressure, contributing to: 51% of stroke; 45% ischaemic heart disease;
High blood glucose, contributing to: 6% of deaths globally; 22% ischaemic heart disease; 16% stroke deaths;
Overweight & obesity, contributing to: 44% diabetes; 23% ischaemic heart disease; 7-41% of certain cancers;
Low fruit & vegetable consumption, contributing to: 14% gastro-intestinal cancer; 11% ischaemic heart disease; 9% stroke deaths;
Physical inactivity, contributing to: 25% breast & colon cancer; 27% diabetes; 30% ischaemic heart disease

In South Africa, these risk factors contribute the following proportion of DALYs: High Blood Pressure: 2.4%; High glucose: 1.6%, High Body Mass Index: 2.9%, Physical Inactivity: 1.1%, High cholesterol: 1.4%, low fruit and vegetable consumption: 1.1%

The burden of disease for South Africa in 2000 has been estimated, and reflects the prevalence of various diseases of lifestyle related to the risk factors identified by the WHO[45]. According to this report, low birth weight (2.6%), stroke (2.2%), ischaemic heart disease (1.8%), protein energy malnutrition (1.3%), diabetes mellitus (1.1%), hypertensive heart disease (0.9%) constituted a total of 9.9% of DALYs in SA. HIV/AIDS and TB make a major contribution towards DALYs (30.9% and 3.7% of DALYs respectively). All of these diseases can be considered to be directly impacted by poverty and food insecurity, as food insecurity often leads to reduced dietary diversity, with a preference for non-nutritive staples and resultant micro-nutrient malnutrition frequently concurrent with macronutrient over-nutrition.

Findings of a survey conducted by the African Food Security Urban Network suggest that food insecure households in Johannesburg experienced 16% more chronic illnesses than their food secure counterparts[46]. AFSUN data also suggests that food insecure households were 10% more likely to report infectious illnesses than their food secure counterparts. 97% of TB patients surveyed in Alexandra in 2010 reported severe food insecurity and more than half reflected multiple micronutrient deficiencies[47].

Based on these findings, the model indicates that food-insecurity related DALYs in Gauteng may cost society as much as R12.8 billion.

To estimate the potential impact of these illnesses on the beneficiary population (estimated at about 124611 individuals based on number of starter packs delivered and average household size 4.6), the assumption was made that similar patterns apply to Gauteng (8765262 people or 19.9% of SA total population in 2000). The proportion of the Gauteng population that benefits from the Siyazondla programme was thus estimated at 0.014%.

Based on these assumptions and estimates, the number of DALYs in the Siyazondla beneficiary population associated with the diseases listed above was calculated at a total of approximately 19870.5, which translates to a societal cost of approximately R1.6 billion based on 2011 GDP per capita (Purchasing Power Parity). A food-security based reduction of the prevalence of non-communicable diseases in the Siyazondla beneficiary population by between a modest 2.5% and 10% (depending on the illness)[48] could therefore result in a reduction of 701.8 DALYs and societal savings amounting to R56.7 million. It should however be noted that, as these are all chronic illnesses which manifest over many years, it would be essential for any improvements in physical activity, food security and dietary diversity to be sustained. The model thus estimates that about R25.8 million health savings could accrue within 7 years.

Scenario B3: Potential Benefits and DALYs averted

This scenario combines the potential benefits due to improved efficiencies and sustatainability with the potential value of DALYs averted. The scenario predicts that a **R135.5m** benefit could be achieved if DALYs, programme sustainability and efficiency enhancements are combined, and that this could result in a **R47.2m** surplus. In this scenario, the Benefit/cost ratio is at **1.53.**

These figures suggest that, while the current financial programme benefits do not offset the estimated programme costs, when added to the direct benefits of efficiency and sustainability improvements, the indirect financial benefits which the programme could potentially generate an almost two-fold return on investment, thus in fact exceeding the overall programme costs dramatically. If a concerted effort were made to groom successful homestead producers into market production, the potential financial benefit could be even greater. This finding emphasises the need to sustain impact through continued support.

Scenario C: De-central Farmer Field-School Model

This fifth scenario was developed based on the recommendations made to adopt a de-central implementation strategy. This scenario builds on scenario B1 and 3, and in addition explores the implications of a de-central or localised service delivery model as proposed in the recommendations. The model uses peer-based learning from skilled community gardeners or CDWs co-opted by the programme, and running farmer field schools at which workshops are conducted and starter packs distributed. This strategy changes the role of agricultural advisors towards training and mentoring community-based trainers, monitoring and evaluating their training activities, facilitating the organisational development of community-based gardeners and helping to negotiate better access to resources through local officials and community-based organisations.

The training takes place in homestead farmer field schools in the beneficiary communities, which will also serve as depots for the storage and distribution of starter packs, maintain community seed banks and consolidate surplus produce to supply community-based feeding schemes or markets. This model was built upon a number of reasonable assumptions:

- 30 agricultural advisors
- 4 homestead farmer field schools (HFFS) served by each AA (i.e. a total of 120 HFFS)
- Infrastructure establishment cost of R50,000 per HFFS (3 containers, paperwork, basic office equipment)
- HFFS staffed by 1 peer trainer at each farmer field school
- peer trainers conduct 2 courses per month
- 15 participants per course
- 1 troubleshooting/refresher course per month
- 10 active months per year
- R3000/month stipend for peer trainers
- 10% attrition rate (reduced from 13% due to greater sustainability)
- Logistics and transport costs have not been factored into this calculation.

The scenario predicts that the number of beneficiaries could be increased to 36000 annually, or 108000 over a three-year period, with a resulting financial benefit of R548 million and averted DALYs valued at R96.8 million. The benefit/cost ratio of this model is 3.9. Results suggest that the programme has enormous potential to expand and sustain impact through the development and continued support of local capacity in homestead farmer field schools. Due to the increased scale (~5% of Gauteng population within 3 years) and sustained impact of such a strategy, it is able to generate benefit of almost four times the cost.

SUSTAINABILITY

The fact that 87% of people from 2011-2012 and 88% of people from 2009-2011 are still gardening suggests that the intervention is having a sustained impact over the short intervention period considered. However, this first observation must be qualified by several observations:

- As discussed above relating to food security impact, the improvement of dietary diversity appears to be short-lived.
- The yield of food from gardens is highly seasonal, exposing households to hunger during the cold, dry winter months.
- The training does not address practices which improve the resilience or maintain the productivity of gardens.
- The equipment provided does not facilitate sustainable resource use as it lacks such items as tanks, bokashi[49] bins, worm farms, seed saving jars etc.

- Lack of access to supplies and crop losses were cited as primary reasons for stopping, indicating that improvements in these areas are needed. Rats in particular were a major issue, as was damage from domestic animals. This indicates that effective waste management, integrated pest management and fences are lacking.
- The intervention does not develop local capacity in the form of organisational development or knowledge management strategies that would enable local groups of gardeners to achieve greater independence.
- There appears to be no formal route for successful homestead gardeners to progress towards market gardening and be integrated into some of GDARD's other programmes.
- The intervention itself lacks sustained support and mentorship.

RECOMMENDATIONS

Based on the research conducted, the following recommendations are put forward to improve the programme so that it is more sustainable, cost effective, and has a greater impact on the overall food security status of Gauteng's needy households.

Decentralised and localised extension model

- Develop local extension centres and storage depots
- Develop local extension and technical support capacity, for example via community development workers (CDW)
- Support local organisational development, e.g. seed-saving clubs, stokvels
- Encourage peer-based learning from successful growers

Information management:

- Record-keeping should be standardised and regularly updated to facilitate future follow-ups, monitoring and evaluation.
- Regular monitoring and evaluation should be incorporated within the programme strategy, including data on food security and dietary diversity, both for purposes of screening beneficiaries and for evaluating impact.

Targets and Budgets:

- Budgets should be increased in alignment with targets and ring-fenced budgetary commitments should be maintained over several years.
- Targets should be set in alignment with most recent population counts for the various areas in conjunction with data on food security, poverty and deprivation.

Appropriate technology

- Incorporate sustainable technology into starter packs eg. worm-bins, bokashi composters, locally-manufactured rain tanks
- Eliminate technology which appears under-utilised, bulky and expensive (hose-pipes, sprayer fittings, poles).

Sustainability and Resilience

- Establish local demonstration and learning sites as resource centres
- Encourage seed saving
- Incorporate pest management into training, (eg. organic pesticide production and use, intercropping) and include rat traps in the starter packs
- Formalise continuity with other programmes, using this programme to identify and recruit beneficiaries for community food gardens and co-operative development
- Encourage beneficiaries to qualify for increasing levels of support by demonstrating success and sustainability
- Establish mentorship and support programme through local capacity (CDWs or others trained and supported by GDARD agricultural advisors)
- Support the establishment of local community seedling nurseries with purchase agreements for new beneficiaries

Financial impact

- Facilitate access to land for entry-level commercial growing through high-level involvement with IDPs, local councillors and community dignitaries.
- Incorporate training for market gardening in advanced training

Logistics

- Improve logistics by either acquiring and maintaining a larger fleet of delivery vehicles, or outsourcing delivery to a commercial logistics company.
- Establish local resource centres and warehouses/depots
- Use a voucher system for beneficiaries to order and claim items appropriate to their context, sourcing from local commercial suppliers.

Institutional linkages

- Closer collaboration with other provincial and local government departments which can improve access to productive inputs and land
- Strengthen linkage with other food security initiatives such as food banks and food parcels to improve food security during non-productive seasons

CONCLUSION

The Siyazondla Programme is an important intervention with great potential to further benefit Gauteng's neediest households. This mid term evaluation has found that the programme is benefitting participants in a number of ways: participants are overwhelmingly receiving training and tools and using these resources to grow food which is augmenting households' nutritional intake and in some cases, their income.

We have assessed the programme using the four key objectives of service delivery, food security, cost/benefit, and sustainability and scored the programme at 46% overall. Service delivery related to the programme is good, and food security impacts exist but could be improved. With increased investment the programme's potential for economic benefit is quite substantial. Furthermore, there is much progress to be made in terms of the sustainability of the gardens that are initiated. We strongly recommend a reconceptualisation of the programme to become one of local capacity building rather than top-down once-off distribution of information and materials. An investment in continued training and follow-up with beneficiaries could significantly expand the long-term sustainability of gardens, and thus the food security, health, and economic benefits of participants.

FOOTNOTES

1. Integrated Food Security Strategy of South Africa – IFSSSA 2002.

2. International Food Policy Research Institute - IFPRI 2010.

3. Ruysenaar S. (2010) Systems analyses and recomendations for the homestead food security and community gardens programmes of the Gauteng Department of Agriculture and Rural Development. Phd Summary report.

4. Blaai-Mdolo (2009).The Green Revolution and Poverty alleviation: challenges faced by women in small-scale agriculture, An investigation into The Siyazondla Homestead Food Garden Programme, Mbashe Local Municipality, Eastern Cape. Master of Social Science in Rural Development. University of Fort Hare.

5. South African Government Information website. 2008. http://www.info.gov.za/issues/govtprog/agric.htm.

6. Mougeot, L. 2001. Urban Agriculture: definition, presence, potentials and risks. In: Bakker, N.; Dubbeling, M.; Guendel, S.; Sabel-Koschella, U.; de Zeeuw, H. 2001. Growing Cties, Growing Food. Urban Agriculture on the Policy Agenda.

7. Hussain, M.A. 1990; Nutrition Policy and the Urban Poor in Developing Countries", Food Policy 15 (1990), pp.186-192

8 United Nations Development Programme. (1996). Urban agriculture: Food, jobs, and sustainable cities. New York: UNDP.

9. Smit, J. Nasr, J., Ratta, A. Urban Agriculture: Food, Jobs and Sustainable Cities. The Urban Agriculture Network, Inc. 1996.

10 ."Impelled by its social and economic imperatives, successive white governments throughout the 20th century transformed agrarian19th century society through a two-pronged strategy that set in motion a process that would simultaneously cripple and debar African farming and enterpreuneral development. The strategy enabled and entitled white farmers and industrialists as leaders and chief beneficiaries of industrial development. The decline of African farming led to a gradual loss of agricultural capital, wealth, farming and enterpreneurial skills and experience.(...) The process of modern industrial development in South Africa thus became a driving force that creatd the contemporary poverty and food insecurity" (IFFSA Department of Agriculture, 2002). During post-apartheid governments the situation remained basically similar. The 1996 Marketing Agricultural Products Act indeed, fast-tracked the reforms of agricultural market inaugurated in the eighties by the White Paper on Agriculture in phasing out state protection and control boards in agriculture but repealing the former separate legislative instruments which governed agricultural marketing in the former homelands (Aliber et al. 2010). The new agricultural marketing policy framework liberalised agriculture and applied a unitary policy framework to all farmers. As a result, it treated small-scale/emerging farmers as equivalent with large, established agribusiness, and neglecting the very particular challenges and vulnerabilities experienced by them. In a highly deregulated market environment, poor farmers could hardly play an active, competitive role. The Plan for South African Agriculture of 2001 reinforced the market-orientated agricultural view although recognizing the need from the state to intervene in support of small farmers through the removal of entry barriers, provision of subsidized inputs and opening of new local and export markets. The de-regulation of agriculture, the implosion of state-supported agricultural extension, the drive towards vertical integration of retail chains and producers, and the entry of powerful multinational seed and agricultural input suppliers have contributed towards a major consolidation of land in the ownership of a steadily decreasing number of agri-buinesses that has consistently marginalized small and medium-sized farming ventures.

11. FANTA 2011 Technical Note No.12. Deitchler, M.; Ballard, T.; Swindale, A.; Coates, J. (2011) Introducing a Simple Measure of Household Hunger for Cross-Cultural Use.

12. Swindale, A.; Bilinsky, P. (2006) “Household Dietary Diversity Score (HDDS) for Measurement of Household Food Access: Indicator Guide (Version 2)” Food and Nutrition Technical Assistance Project (FANTA), Academy for Educational Development, Washington DC, 2006.

13. Ballard, T.; Coates, J.; Swindale, A.; Deitchler, M.(2011) “Introducing a Simple Measure of Household Hunger for Cross-Cultural Use” FANTA-2

14. Ballard, T.; Coates, J.; Swindale, A.; Deitchler, M.(2011) “Introducing a Simple Measure of Household Hunger for Cross-Cultural Use” FANTA-2

15. Faber, M.; Schwabe, C.; Drimie, S. (2008) “Dietary diversity in relation to other household food security indicators” In: International Journal of Food Safety, Nutrition and Public Health, Vol. 1, No. 2, 2008

16. Steyn, NP., Nel, JH., Nantel, G., Kennedy, G. & Labadarios, D. (2006). “Food variety and dietary diversity scores in children: are they good indicators of dietary adequacy?” In: Public Health Nutrition 9(5) 644-650.

17. Gauteng Department of Agriculture and Rural Development. Evaluation, 2011/

18. Gauteng City Region Observatory 2011. A green strategic programme for Gauteng.

19. Du Toit, A. (2011) “WHY GROWTH IN SOUTH AFRICA HAS NOT BEEN (THAT) GOOD FOR THE POOR: De-agrarianization, adverse incorporation and structural inequality in the aftermath of Apartheid” Paper presented at PEGNET Conference: Poor Countries, Poor People and the New Global Players German Institute of Global and Area Studies (GIGA) Hamburg, Germany, 7-9 September 2011

20. See discussion below for more detail on these aspects.

21. Rudolph, M.J.; Kroll, F.J.; Ruysenaar, S.; Dlamini, T. (2012) “The State of Food Insecurity in Johannesburg.” AFSUN Urban Fod Security Series No. 12; De Wet, T.; Patel, L.; Korth, M.; and Forrester, C. “Johannesburg Poverty and Livelihoods Study”. Centre for Social Development in Africa, University of Johannesburg, Johannesburg, 2008

22. See discussion of HHS above for scoring and hunger severity categories.

23. Davis, K.; Nkonya, E.; Kato, E.; Mekonnen, D. A.; Odendo, M.; Miiro, R.; Nkuba, J. (2010) “Impact of Farmer Field Schools on Agricultural Productivity and Poverty in East Africa.” International Food Policy Research Institute Discussion Paper 00992

24. Binswanger, H. 2006. “Empowering Rural People for Their Own Development” Paper presented at the Elmhirst Lecture, International Association of Agricultural Economists Conference, Gold Coast, Australia, August 12-18, 2006

25. Ianotti, L; Cunningham, K.; Ruel, M. (2009) Improving Diet Quality and Micronutrient Nutrition. Homestead Food Production in Bangladesh. International Food Policy Research Institute Discussion Paper 00928

26. Ibid.

27. Kotschi, J. (2007) “Agricultural Biodiversity is Essential for Adapting to Climate Change” In: GAIA ECOLOGICAL PERSPECTIVES FOR SCIENCE AND SOCIETY 2/2007

28. Blaai-Mdolo (2009)The Green Revolution and Poverty alleviation: challenges faced by women in small-scale agriculture, An investigation into The Siyazondla Homestead Food Garden Programme, Mbashe Local Municipality, Eastern Cape. Master of Social Science in Rural Development. University of Fort Hare.

29. Davids et al (2005) . Partecipatory Development in South Africa: a Development Management Perspective. Van Schaik Publisher, Pretoria.

30. De Schutter. (2010) Report submitted by the Special Rapporteur on the right to food. UN Human Right Council.

31. Rudolph et al. 2012

32. Maxwell, D. (1999). The policital economy of urban food security in sub-Saharan Africa. World Development 27(11):1939-1953

33. Shoenfeldt et al. “ The Possible Impact of Inflation on Nutritionally Vulnerable Households in Developing Countries Using South Africa as a Case Study”. Nutrition Bullettin 35 (2010): 245-67

34. Crush, J.; Frayne, B. and McLachlan, M. (2011) “Rapid Urbanization and the Nutrition Transition in Southern Africa.” AFSUN Series No. 7, Cape Town.

35. Maredza, M.; Hofman, K.J.; Tollman, S.M. (2011) “A hidden menace: Cardiovascular disease in South Africa and the costs of an inadequate policy response” In: SA Heart Journal 2011 Vol 8 No1 p48-57

36. Bradshaw, D.; Pieterse, D.; Norman, R.; Levitt, N.S.(2007) ”Estimating the burden of disease attributable to diabetes in South Africa in 2000” In: South African Medical Journal (2007; 97: 700-706).

37. Friis. “Micronutrient Intervention and HIV Infection: a Rewiew of Current Evidence” Tropical Medicine and International Health. 11(1

38 Crush, J.; Frayne, B. (2010). The Invisible Crisis: Urban Food Security in Southern Africa. Urban Food Security Series 1. Cape Town: African Food Security Urban Network (AFSUN).

39. Kroll, F.; Marinda, E.; Rudolph, M.J.; Beery, M.P.; Orr, G.; Douglas, G.; Sobiecki, J.F. (2012) Food insecurity and micronutrient deficiencies among patients co-infected with TB and HIV in Alexandra, Johannesburg. (2)2006:1-9

40. It should be noted that life has an inherent value which cannot (and perhaps should not) be quantified in terms of rands and cents. However, even though the ascription of a monetary value to human life is ethically questionable, such calculations are done for the sake of cost-benefit analyses that evaluate the comparative benefit of different interventions and provide strategic decision-making information.

41. WHO (2009) “GLOBAL HEALTH RISKS. Mortality and burden of disease attributable to selected major risks.”

42. Edwards, C. (2011) “Social cost–benefit analysis – summarizing the available global evidence on drinking-water interventions. In: Cameron, J.; Hunter, P.; Jagals, P.; Pond K.(eds) (2011) “Valuing Water, Valuing Livelihoods.” WHO

43. http://www.indexmundi.com/south_africa/gdp_per_capita_%28ppp%29.html, 5 March 2012.

44. WHO (2009) “GLOBAL HEALTH RISKS. Mortality and burden of disease attributable to selected major risks.” pp.17

45. Norman, R.; Bradshaw, D.; Schneider, M.; Pieterse, D.; Groenewald, P. (2006) “Revised Burden of Disease Estimates for the Comparative Risk Factor Assessment, South Africa 2000” MRC Burden Of Disease Research Unit

46. Rudolph, M.; Kroll, F.; Ruysenaar, S.; Dlamini, T. (2012) “The State of Food Insecurity in Johannesburg.” AFSUN Urban Food Security Series No 12

47. Kroll, F.; Marinda, E.; Rudolph, M.J.; Beery, M.P.; Orr, G.; Douglas, G.; Sobiecki, J.F. (2012) Food insecurity and micronutrient deficiencies among patients co-infected with TB and HIV in Alexandra, Johannesburg.

48. Reductions of coronary mortality by 80%, primarily due to lifestyle-related changes, have been recorded for Finland by Vartiainen, E.; Laatikainen, T.; Peltonen, M.; Juolevi, A.; Männistö, S.; Sundvall, J.; Jousilahti, P.; Salomaa, V.; Valsta, L.; Puska, P. (2010) “Thirty-five-year trends in cardiovascular risk factors in Finland”. In: International Journal of Epidemiology 2010; 39:504-518

49. A type of compost

ANNEXURE 1: INTERVIEW GUIDELINE PROGRAMME DIRECTOR

GDARD MTR – Food Gardens Interview guideline – Programme Director Date: 15 Dec 2011
• when did siyazondla start in Gauteng? Similar programmes previously?
• what is the goal/intended outcome?
• key indicators and targets;
• what programmes/policies is it based on / relate to (eg GADS/CASP/ARC)?
• are there other household food garden projects outside of Siyazondla? Describe...
• where does the funding derive from and how is it managed?
• a list of the 50 priority wards and the municipalities they fall under
• number of food gardens implemented in the last 3 years according to the three types mentioned above?
• number of food gardens in each of the wards?;
• what is the timeframe of the programme roll-out?
• how are beneficiaries identified and recruited (gender/HIV/TB/age/)?
• does GDARD collaborate with other organisations (civil society/NGO, CBO, FBO, local gov) to roll out these programmes?
• what support is provided? ◦ Training: ◦ Materials:

- is there a database of contact details for beneficiaries which we could access?
- how are beneficiaries tracked?
- are any follow-up visits conducted? if so, how often? what support is provided in follow-up visits?
    - Training?
    - technical support?
    - Equipment?
- do the same beneficiaries receive support in consecutive years?
    - Training?
    - technical support?
    - Equipment?
- what budget is allocated?
- how is the budget split up among the targeted wards?
- what is the cost per household? materials? HR? is this consistent or does it vary?
- what human resources are allocated to the programme?
    - Number
    - roles & responsibilities
    - Qualification
    - Experience;
- what equipment does the implementation team have (vehicles, phones, cameras, computers, etc.)
- what form of assistance is provided? (see above)
    - training:
    - infrastructure:
    - tools & equipment:
- who provides this assistance?
- what records are kept of service delivery?
- are there any internal bottlenecks which make service delivery difficult?
    - HR capacity / number:
    - internal tensions
    - decision-making processes
    - financial & procurement procedures
    - communication with partner organisations?
    - equipment

◦ Budget
◦ M&E
• Note:
• what is working well and could be built on?
• Most important wish:
• what is not working well?
• **Re-design ideas:**
• **To be sent:**

ANNEXURE 2: FOCUS GROUP GUIDELINE – SENIOR GDARD STAKEHOLDERS

GDARD MTR – Homestead Food Gardens Focus group interview guideline – senior stakeholders **Assistant directors;** **Interviewer**: Florian Kroll, M.A. **Present**: **Date**:
• Background on research; draft research schedule
• When did siyazondla start in Gauteng? • Similar programmes previously?
• What is the goal/intended outcome?
• Key indicators and targets?
• What programmes/policies is it based on / relate to (eg GADS/CASP/ARC)?
• How long have you been involved in this programme? • What is your role in this programme? • What does most of your work consist of? • Who do you work with? • How is your work & performance recorded and evaluated?
• What is your understanding of food security?
• How do you know whether the Siyazondla programme is improving food security?
• Give three wards from your administrative region & responsible saa + contact details: ◦ urban ◦ peri-urban ◦ rural
• number of food gardens implemented in your area in the last year according to the three types mentioned above?
• Is there an area that is especially challenging to work with? Why? • Is there an area that is very easy to work with? Why?
• number of food gardens in each of the wards? • municipalities:
• what is the timeframe of the programme roll-out?
• how are beneficiaries identified and recruited (gender/HIV/TB/age/)?
• does GDARD collaborate with other organisations (civil society/NGO, CBO, FBO, local gov) to roll out these programmes? • What is the role of community development workers (CDW)?
• what support is provided? ◦ Training: ◦ Materials: ◦ Technical support:

• how are beneficiaries tracked?
• are any follow-up visits conducted? if so, how often? what support is provided in follow-up visits?
◦ Training?
◦ technical support?
◦ Equipment?
• do the same beneficiaries receive support in consecutive years?
◦ Training?
◦ technical support?
◦ Equipment?
• what human resources are allocated to the programme?
◦ Number
◦ roles & responsibilities
◦ Qualification diplomas/degrees
◦ Experience;
• what equipment does the implementation team have (vehicles, phones, cameras, computers, etc.)
• what records are kept of service delivery?
• are there any internal bottlenecks which make service delivery difficult?
◦ Transport?
◦ HR capacity / number?
◦ internal tensions?
◦ decision-making processes: good, resourceful
◦ financial & procurement procedures:?
◦ communication with partner organisations – external tensions?
◦ Equipment?
◦ Budget?
◦ M&E?
• Organisational & enterprise development: How many such projects? • facilitation land access? Water access?
• what is working well and could be built on?
• Most important wish:
• what is not working well?

• **Re-design ideas:**
• **To be sent:**

ANNEXURE 3: FOCUS GROUP INTERVIEW WITH RESEARCHERS

8 February 2012

Interviewers: Florian Kroll and Moira Beery
How appropriate was the survey language? What was the interviewee's level of understanding?
Did you find interviewees to be uncomfortable with the hunger/food security questions?
How many people said that tools were never delivered?
What questions were hard for interviewees to understand?
What kind of support or follow up did people want?
Overall, were interviewees satisfied with the GDARD programme?
Did Siyakhana's training prepare you well for the work? What could have been improved?
How you do you feel? Are you feeling upset or emotional about any of what you heard from the interviewees?
How has this upskilled you?

ANNEXURE 4: SURVEY QUESTIONNAIRE

Siyazondla Homestead Gardens Programme - Evaluation Interview Questionnaire

Code	
Start time	
Finish time	
Interviewer	
Date	

1. how many people are in your household and what are their gender and age?

adult males(26-55)	
adult females(26-55)	
youth males(14-25)	
youth females(14-25)	
elderly male>55	
elderly female>55	
child male<13	
child female<13	

2. (a) How many household members have a job?

(b)What kind?

Full time/formal	
Part time/ formal	
informal (spaza, shebeen, restaurant, roadside stall)	
Piece jobs	

3. What is your household's monthly income?

4. Did you get tools from GDARD in 2009-2010/ 2010-2011/ 2011-2012? Choose correct year according to records (1=y; 0=n)

What tools did you get?

Spade	
Fork	
Rake	
Handhoe	
Hosepipe	
Watering Can	
Shadenet	
Poles	
Compost	
Seeds	
Sprayer & fittings	

5. Do you still have all your tools? (if no, ask why, and record below)

Stolen	
Broken	
Sold	
Given away	
Other	

6. Did you get training from GDARD officials? (no=0 yes=1if Yes, ask 6b who and 6c how many days)

Yes	No

6b Did you receive training or was it someone else in the household?

Interviewee	Other

6c How many days?

1 day	
2 days	
3 days	
more than 3 days	

7. What did the training include (mark topics mentioned with a 1)

Soil preparation and bed design	
Container gardening	
Planting	

Watering	
Pest control	
Rainwater harvesting	
Greywater use	
Composting	
Mulching	
Nutrition	
Don't know	

8. Did your training help you grow food? (1=y 0=n)

Yes	No

8b **Was there anything you were not happy with?**

Yes	No

Too short	
No materials/manual	
Too complex	
Not practical/doesn't work	
Nothing new	
Langauage comprehension	
Too many participants	
Not detailed enough	
Too theoretical/practical application	
Other	

9. Have you received follow up training/ other support from GDARD (1=y; 0=n)

Yes	No

10. How do you feel about gardening? (don't enjoy it/negative=0, indifferent=1, enjoy=2)

Negative	Indifferent	Enjoy

11. Is your household still growing food?

Yes	No

(If y, then11b; If no, 11c and skip to question 23)

11b Who gardens?

adult males(26-55)	
adult females(26-55)	
youth males(14-25)	
youth females(14-25)	
elderly male>55	

elderly female>55	
child male<13	
child female<13	

11.c Why are you no longer growing food at your home?

No time	
No interest	
No one available to do the work	
Crop losses	
Loss of land/moved house	
No technical assistance	
No supplies/equipment	
Gardening with a community project	
Got a job	
On pension or social assistance	
Doing informal trade/ self employed	
Other (specify)	

12. Where do you garden?

Own yard	
Neighbour's yard	
Community garden on sharedland(school,clinic,church)	
Roadside	
Public open space (riverside.,park,hillside)	
Other (specify)	

13. Does your household eat from garden? (yes=1, no=0)

Yes	No

if y, how often?

Daily	
Once a week	
More than once a week but less than daily	
a few times a	

month but less than once a week	
once a month or less	
Don't know	

14. Which months of the year do you harvest most produce?

January	
February	
March	
April	
May	
June	
July	
August	
September	
October	
November	
December	

15. What have you grown and harvested? (1=yes good harvest; 2 = yes poor harvest; 0=no)

Beetroot	
Spinach	
Tomatoes	
Onions	
Carrots	
Beans	
Cabbage,chamolia, broccolli	
Pumpkin, squash, butternut	

Mealies, mabele	
Potatoes, madumbe, sweet potatoes	
Fruit (citrus, mango, papaya,apple,apricot,peach)	
Herbs	
Other	

16. How is your access to: (0=none; 1=yes, easy access; 2=difficult or inconsistent access)

Water	
Seeds	
Fertiliser/Manure	
Tanks	
Irrigation/Hosepipe	
Pesticides	
Tools	
Gardening advice	
Finance	

17. Where do you get water for your garden?

Rain	
Borehole	
Municipal piped	
Municipal community tap	
Greywater	
Dam/pond	

18. How do you water your garden?

Rain	
Watering can	
Hosepipe	
Other eg drip, sprinkler	

19. Do you own the stand where you garden? (y=1; n=0)

Yes	No

20. Does the garden save you money (because you don't need to buy food?) (mark relevant category with 1)

No	
Don't know	
How much? (Specify amount)	

21. Do you make money by selling food from your garden? (mark relevant category with 1)

None	
Don't know	
Specify amount	

22. Do you lose crops? What causes the loss? (0=no; 1=yes)

Theft	
Vandalism	
Pests (eg rats, insects)	
Drought/no water	
Heat	
Hail	
Storm winds	
Frost	
Livestock/pets	
Flooding/waterlogging	

23. HHS: "In the last four weeks, (Never=0, Rarely or Sometimes=1, Often=2)

was there ever no food to eat of any kind in your household

Did you ever go to sleep at night hungry

Did you ever go a whole day and night without eating

24. DDS (1=y; 0=n): I would like to ask you about the types of foods that you or anyone else in your household ate yesterday during the day and at night."

Any pap, mabele, ting, bread, rice noodles, biscuits, cookies, scones or any other foods made from millet, sorghum, maize, rice, or wheat?

☐

Any pumpkin, butternuts, carrots, squash, or sweet potatoes that are yellow or orange inside?

☐

Any white potatoes, madumbe or any other foods made from roots or tubers?

☐

Any dark, green, leafy vegetables such as bean leaves, kale, spinach, pepper leaves, and marogo/tepe leaves?

☐

Any other vegetables?

☐

Any ripe mangoes, ripe papayas, peaches or guavas?

☐

Any other fruits?

☐

Any beef, pork, lamb, goat, game, chicken or other birds, liver, kidney, heart, or other organ meats?

☐

Any eggs?

☐

Any fresh or dried fish or shellfish?

☐

Any foods made from beans, peas, or lentils?

☐

Any cheese, yogurt, milk or other milk products?

☐

Any foods made with oil, fat, or butter?

☐

Any sugar or honey?

☐

Any other foods, such as sweets, coffee, tea, soft drinks?

☐

ANNEXURE 5: PARTICIPANTS' RESPONSES

GO910EMEK/ 114/ Katlehong	The project is of great help to the participant. It helps her to save money that could be spent on vegetables. She benefits from selling her produce. She owns a backyard garden but she also farms in the open space outside her yard, where she faces the challenge of having her vegetables stolen.
GO910SDEm/ 128/ Sebokeng	The tools have never been delivered by the department (2009).
G0910SDEm/158/Ironside	"The Government should come back and train other groups of people because many people are suffering and don't have money to buy food and don't have any skill to grow it". She wants to know when will GDARD come back to help beneficiaries with farming problems and to train other people. She is very grateful for the training received.
G0910SDMi/53/Isicelo	"Follow up training would do the community a whole lot of good".
R1011WRMe/kokosi/5	The participant did not receive any tool because he had to go to school on the day of delivery as he was writing one of his exams. He says that he asked some of his neighbours to share their seeds with him. That's how he has been able to continue with his garden. However he is asking for another chance to receive the tools.
R1011WRMe/kokosi/9	The participant has not started gardening yet as she has been away to be trained to become a sangoma and she has just returned home recently.
R1101WRMe/kokosi/15	"Never received any training; I have always been promised that we would have been called for the training but we haven't. Even the neighbours were never called"
R1011WRMe/kokosi/19	The participant did not attend training nor receive any tools because the child was ill and had to look after him.
R1011WRMe/kokosi/20	The participant is in need of pesticides & seeds. " We give some of our harvest to the poor"
R1011WRMe/kokosi/21	The participant has also received wire as part of her tools.
R1011WRMe/kokosi/28	The participant did not receive any tools. He has been promised to receive a phone call to inform him about the training.
R1011WRMe/kokosi/31	The participant would like the program to be longer so that he could be able to ask questions.
R1011WEMe/kokosi/33	The participant has also received a wire as part of tools.
G1112SDEm/946/bophelong	"Here there is no longer a garden because extra outside rooms were built on the empty space"
G1112SDEm/991/bophelong	"More training would be appreciated"
G1112SEDm/947/bophelong	"A veld or open space would do good justice as more members of the community would love to get involved and make a living out of this initiative"
G1112SDEm/991/bophelong	The participant says that more training would be appreciated because the community would love to be more involved to provide for their families as many of them are currently unemployed.
G1112SDEm/950/bophelong	The participant utilises the open spaces that are not used in the community to grow food.
G1112SDEm/987/Bophelong	"Why doesn't the government give us a certificate as this was valuable training ? It could be added as a skill in our cv." The participant taught other people about farming.
G1112SDEm/34/evaton	"Can the government give us opportunities for bigger farming land that can lead to commercial farming and selling to companies to make life easier?"
G1112SDEm/47/Evaton	The participant is not farming due to insufficient space on property.
G1112SDEm/50/Evaton	"There is always a good harvest but when I am about to pick up the vegetables pests or weather conditions destroy my harvest. As a result I do not benefit from them at

	all”
G1112SDEm/45/Evaton	The land is not fertile enough to grow crops. The participant also received a wire.
G112SDEm/692/sebokeng	“Not enough training”
G1112SDEm/366/sebokeng	“Project is good and helps community to be self sufficient”
G1112SDEm/364/sebokeng	“It’s a good initiative for the community”
G1112SDEm/236/Sebokeng	“Department promised to deliver tools 2nd week of January”
G1112SDEm/237/Sebokeng	“Department promised to deliver tools 2nd week of January”
G1112SDEm/559/Sebokeng	In need of pesticides & seeds. " We give some of our harvest to the poor"
G1112SDEm/230/Sebokeng	“A veld or open space would do good justice” The participant says that other members of the community would love to get involved and make a living out of this initiative”
G1112SDEm/879/Sebokeng	“Livestock especially pigs are a problem, fencing would be appreciated”
G1112SDEm/152/Sebokeng	The participant would appreciate a bigger plot and securing manuals.
G112SDEm/309/Sebokeng	“I have not received tools as promised by the department. Getting food is a challenge”
G1112SDEm/857/sebokeng	“the project must continue in other places to help more people be self sufficient”
G1112SDEm/128/Sebokeng	The participant also received a wire.
G1112SDEm/131/Sebokeng	The participant also received a wire.
G1112SDEm/208/Sebokeng	“Not enough space to grow crops”
G112SDEm/212/Sebokeng	The participant also got wire. “Not enough space in the yard”
G111SDEm/214/sebokeng	The participant got some wire. “Not enough materials provided”
G1112SDEm/213/sebokeng	“Money made is weekly”
G1112SDEm/288/sebokeng	“I am still waiting for the tools so that I can begin gardening”
G1112SDEm/289/sebokeng	“We haven't received the tools promised”
G1112SDEm/291/sebokeng	“I haven't received the tools promised”
G1112SDEm/292/sebokeng	“We haven't received the tools”
G112SDE/295/sebokeng	“I have decided to go ahead with the gardening whilst waiting for the equipment. I have just recently began so there are no crops.” The participant uses a homemade watering can.
G1112SDEm/296/sebokeng	The participant uses his own money to plant crops “to survive” whilst he is waiting for tools and seeds.
G1112SDEm/369/sebokeng	“Don't know which months there is a harvest but the harvest looks really good”
G111SDEm/370/sebokeng	The participant received a wire too.
G1112SDE/372/sebokeng	“I have just recently started so I can't really comment about the harvest”. The participant received a wire.
G111SDEm/373/sebokeng	“Did not go training because of other commitments but I was able to start gardening anyway”. The participant is currently at home (homelands) so is unusure about her harvest.
G1112SDEm/458/SEBOKENG	“I had to leave for home so I couldn’t plant anything and plan to begin this year”. She cut off the phone call twice.
G111SDEm/467/SEBOKENG	“Land is too hard to farm at times”
G1112SDEm/53SEBOKENG	“Land is too hard to farm”
G1112SDEm/542/SEBOKENG	The participant gardens at work for the orphange she works for.
G1112SDEm/546/sEBOKENG	The paricipant grows food at her sister's home as it has a big garden.
G111SDEm/547/SEBOKENG	The participant also got some wire.

G1112SDEm/786/SEBOKENG	The participant says she did not attend any training as nobody offered it to to her. She says that "someone just called her to pick up her tools".
G111SDEm/864/SEBOKENG	"Started in november so there is no harvest yet"
G1112SDEm/778/SEBOKENG	"Did not receive any training of any sort"
P1112TMTs/615/ekangala	The project was a real success"
P1112TMTs/619/ekangala	"Project helps those who are unemployed and provides for the needy
P1112TMTs/317/Ekangala	"I didn't receive training but received the manuals which were complex"
Researcher comments	Participants expressed gratitude for the project as it has bettered their lives. Some of them mentioned that they would appreciate to receive from the government larger fields where to plant communally. They believed that it would become more sustainable and they would have a better opportunity of selling their vegetables and possibly establish a big market that could supply big franchises, i.e. pick n pay. They want to do extensive farming. This was also motivated by the fact that some government departments have indicated taking over the open space that some of them were using as farm land.
	All the participants stressed how impoverished they are and some of them even suggested that the government provide them with food parcels like mealie-meal, beans, soup, soap cooking oil etc. At times they have the vegetables but they cannot afford to buy mealie-meal. Beneficiaris also pleaded the government to extend the initiative to other community members because it has done wonders for them.
	All the participants are very passionate about gardening and are superbly happy about the project. They wish to have regular communication with the authorities of the project. Those that haven't received their tools are very disappointed.
	One participant said "ever since the tools were delivered and the training was given my family has not gone to bed having not eaten, we may not have the balanced and fancy food but we are content. This project has been a great help and we hope that the government have more of such initiatives".

ANNEXURE 6: SITE OBSERVATION GUIDE

Observation Guide
Interviewer:

Beneficiary code:

Interviewee age: **Interviewee gender:**

Context:
rural urban peri-urban

Waste management:
Is there a lot of waste in the area? Y/N

Kind of dwelling
house shack caravan

Variety of plants (List the plants that are currently growing)

Estimate **size of yard** where the garden is (use paces @ average individual pace length)

Is the yard fenced? Y/N

How is the beneficiaries' water access?
Community tap Municipal water None Rain Tank

Condition of the plants
Dry/wilted Insect damage Lush Other (define)

Domestic animals (circle observed)?
cows, goats, dogs, rats

Quality/Condition of the soil
Sandy Rocky Clay Loam (mix of sand and clay)
Erosion: Y/N Waterlogging: Y/N

Compost heaps: Y/N

Mulching (grass clippings, leaves or woodchip on beds?): Y/N

Intercropping (mixing different vegetables in a bed?): Y/N

Photographs:
The street
The yard
The garden beds
The tools

*return by monday at latest

ANNEXURE 7: REVISED COST-BENEFIT ANALYSIS AND EXPLANATORY NOTES

The analysis of costs and benefits of the Siyazondla programme was a key aspect of the report. A spreadsheet was developed to model current and potential benefits and comparing them with costs. Detailed explanations were provided in the final report.

This annexure explains the models in simplified terms, reflects outputs of key revisions, highlighting key assumptions and outputs, and explores in greater detail one scenario applying a de-central implementation strategy rooted in local household farmer field schools (HFFS).

The HFFS scenario shows that this strategy could enable the programme to expand its reach, sustain its beneficial impact, and achieve an almost fourfold benefit-cost ratio.

Introducing 5 Scenarios
The model generates five scenarios based on different additional assumptions:

1. Scenario A1: Current – materials costs only
2. Scenario A2: Current – comprehensive costs
3. Scenario B1: Potential benefits – improved efficiencies
4. Scenario B2: Potential benefits – DALY-related savings
5. Scenario C1: De-central model

The output of the scenarios is summarised in Table 1. The different scenarios explore **two types of economic benefit:**

- **Direct short- and long-term benefit** accrued through sale of produce or savings on income not spent
- **Indirect benefit** through mitigation of societal costs of disability, illness and death

As the model is dynamic, the output depends on the assumptions. The following key changes have been implemented, resulting in slightly different outputs:

- more stringent assumptions have been applied to improved efficiencies and resulting savings
- DALYs have been allocated over an extended period

Scenario assumptions need to be interrogated and tested through a more intensive workshopping and research process involving key stakeholders such as GDARD personnel and beneficiaries.

Table 28: Revised Cost-benefit estimates of the Siyazondla Programme

Scenario	Costs (million)	Benefits (million)	Short-term Benefit/ Cost Ratio	Projected Benefit (million)	Surplus/ Deficit (million)	Projected Benefit / Cost Ratio (7yr)
A1 - Current: Material Costs Only	**R36.3**	**R 29.9**	**0.82**	**-**	**R-6.4**	**-**
A2 - Current: Comprehen-sive costs	**R56.4**	**R 29.9**	**0.53**	**R36.0**	**R-26.5**	**0.64**
B1 - Potential Benefits: Improved Efficiencies	**R88.3**	**R40.2**	**0.46**	**R109.7**	**R21.4**	**1.24**
B2 - DALYs averted				**R 25.8**		**0.29**
B3 - Potential benefits: Efficiencies and DALYs averted	**R88.3**	**R44.1**	**0.49**	**R135.5**	**R47.2**	**1.53**
De-central Model	**R137.5**	**R180.5**	**1.31**	**R548.1**	**R410.5**	**3.98**

Core assumptions:
The model was based on core assumptions emerging from the survey findings (marked *) as well as several other reasonable assumptions (marked #):

- Current programme costs = R56.4 million over three years *#
- Current number of beneficiary households reached = 26032 *
- Total number of beneficiaries: ~120788
- Annual attrition rate = 13% *
- 6 months of garden productivity *
- Estimated meal unit prices of R5 #
- Average monthly consumption of 15.1 meals including home-grown food * are valued at R75 per month or R452 per annum
- 14% are earning an income (R218/month) selling food.*

Scenario A1: Current – material costs only
*This calculation estimates cost/benefit considering only the **cost of materials** distributed as **compared with** the estimated **direct benefits** during the intervention period only.*

Scenario A1 Assumptions:

- Core assumptions were applied
- Staff, infrastructure and administrative costs were not considered

Scenario A1 Output:

- **~R30 million crops sold and earnings saved** over three years
- Cost-benefit ratio: ~82% of the value of materials distributed.

Scenario A2: Current – Comprehensive
*This calculation estimates cost/benefit considering the **estimated total programme costs** (materials, HR, administration, logistics and transport) as **compared with** the **estimated direct benefits**, and projects **future benefits** for 7 years.*

Scenario A2 Assumptions:

- HR costs over three years ~ **R9,3m** (although staff also works on other programmes)
- **R1.4m** oncosts of staff (additional 15% of direct staff costs)
- Administrative costs estimated as an additional 100% of salary costs, i.e. **R9,3m** (again, logistics and admin also serves other departmental programmes)
- Starter packs remain in use for about 5 years before tools are damaged or lost
- Programme benefit rapidly tapers off due to a strong attrition rate because of poor sustainability

Scenario A2 Output:

- A current direct benefit of **R30m** accrues to programme beneficiaries
- **R36m** Total benefit projected over 7 years
- **R26.5m** deficit
- Benefit-Cost Ratio: **0.64**

Scenario B1: Potential Benefits – Improved Efficiencies
This calculation estimates cost/benefit considering the ***impact of eliminating redundant starter pack components*** *and* ***improving sustainability*** *through ongoing support, repeated training, and replacement of tools and seeds. Benefits are projected over 7 years.*

Assumptions

- The impact of the programme can be sustained by follow-up training and provision of implements resulting in a reduced attrition rate
- The potential benefits model took into account several efficiency enhancements:
  - **~R25m** additional staff cost of ongoing and additional training of beneficiaries
  - **~R7.8m** additional cost ofreplacement of tools and replenishment of seeds
  - elimination of underutilised starter pack components
- **R1183** potential additional annual savings for 30% of households from consumption of home-grown produce

Scenario B1 Outputs:

- **R28.1m** long-term benefits
- **~R21.5m** saving through elimination of redundant equipment
- 1.24 benefit/cost ratio

The potential programme benefits projected over 7 years (R200 million) compared with the costs of such an enhanced programme (R130 million) could generate a surplus value of R 71 million, with a 155% ratio of benefit to cost.

Scenario B2: Health-related savings and Disability-Adjusted Life-Years
The business case for a food security intervention should consider the savings accrued for society in general and public institutions. This scenario estimates long-term societal savings related to the costs associated with disability and death due to food insecurity. These are measured in disability-adjusted life years (DALYs) averted.

Scenario B2 Assumptions:

- Food insecure households in Gauteng experience 16% more chronic illnesses and approximately 10% more infectious illnesses than their food secure counterparts
- Similar Burden of Disease patterns apply to Gauteng as to South Africa
- The beneficiary population (~124611 individuals) makes up ~0.014% of the total Gauteng population
- DALYs are valued in line with the GDP per capita (USD $10,700 or ZAR 80,700 in 2010-2011)
- In the Siyazondla population programme-related nutritional improvements could avert 2.5% to 10% of DALYs related to the following illnesses:
  - low birth weight (2.6% SA DALYs),
  - stroke (2.2%),
  - ischaemic heart disease (1.8%),
  - protein energy malnutrition (1.3%),
  - diabetes mellitus (1.1%),
  - hypertensive heart disease (0.9%)
  - HIV/AIDS (30.9%)
  - TB (3.7%)
- less than half of the total DALY averted would accrue in the 7-year period considered

Scenario B2 Outputs:

- The model indicates that food-insecurity related DALYs in Gauteng may cost society as much as R12.8 billion.
- The model calculates the number of DALYs associated with the diseases listed above in the Siyazondla beneficiary population at a total of 19870.5.
- This translates to a societal cost of approximately R1.6 billion.
- Programme-related health improvements could avert 701.8 DALYs and save a total of R56.7 million.
- R25.8 million health savings estimated within 7 years
- Benefit-cost ratio: 0.29

Scenario B3: Potential Benefits and DALYs averted
Direct and indirect benefits accrued by scenario B.
Scenario B3 Assumptions:

- As above for Scenarios 3 A and B combined
- About half of the R56.7 million of DALY-related savings is added to the potential benefits due to improved efficiencies.

Scenario B3 Output:

- **R135.5m** benefit could be achieved if DALYs, programme sustainability and efficiency enhancements.
- **R47.2m** surplus
- **1.53** Benefit/cost ratio

Scenario C: Farmer Field-School Model
A fifth model was developed based on the recommendations made to adopt a de-central implementation strategy. This scenario builds on scenario B1 and 3, and in addition explores the implications of a de-central or localised service delivery model as proposed in the recommendations.

The model uses peer-based learning from skilled community gardeners or CDWs co-opted by the programme, and running farmer field schools at which workshops are conducted and starter packs distributed.

This strategy changes the role of agricultural advisors towards training and mentoring community-based trainers, monitoring and evaluating their training activities, facilitating the organisational development of community-based gardeners and helping to negotiate better access to resources through local officials and community-based organisations.

The training takes place in homestead farmer field schools in the beneficiary communities, which will also serve as depots for the storage and distribution of starter packs, maintain community seed banks and consolidate surplus produce to supply community-based feeding schemes or markets. This model was built upon a number of reasonable assumptions.

Scenario C Assumptions:

- 30 agricultural advisors
- 4 homestead farmer field schools (HFFS) served by each AA (i.e. a total of 120 HFFS)
- Infrastructure establishment cost of R50,000 per HFFS (3 containers, paperwork, basic office equipment)
- HFFS staffed by 1 peer trainer at each farmer field school
- peer trainers conduct 2 courses per month
- 15 participants per course

- 1 troubleshooting/refresher course per month
- 10 active months per year
- R3000/month stipend for peer trainers
- 10% attrition rate (reduced from 13% due to greater sustainability)
- Logistics and transport costs have not been factored into this calculation.

Scenario 3 Output:

- Increased Programme Reach: an annual number of 36000 households or approximately 167400 beneficiaries.
- 108000 starter packs could be distributed in 3 years of intervention, reaching ~5% of Gauteng population.
- **R65m** budget for starter packs (over 3 years).
- **R180.5m** short-term benefit
- 1.3 short-term benefit/cost ratio
- **R548m** long-term benefit
- **R96.8m** DALYs averted
- **3.9** benefit/cost ratio

Discussion:
Outputs of Scenarios A1 and A2 suggest that the monetary value of food sold added to the savings accrued by eating food grown locally does not completely offset the total programme budget for materials, human resources, administration and logistics. The costs outweigh the direct financial benefits.

Scenario B1 and B2 indicate that the direct and indirect benefits of efficiency and sustainability improvements could potentially generate an almost 1.5-fold return on investment.

Scenario C emphasises that the programme has enormous potential to expand and sustain impact through the development and continued support of local capacity in homestead farmer field schools. Due to the increased scale (~5% of Gauteng population within 3 years) and sustained impact of such a strategy, it is able to generate benefit of almost four times the cost.

ANNEXURE 8: PHOTOGRAPHIC RECORD OF SITE VISITS

Rethabiseng

Image 1: Well-tended bed of onions under shadecloth

Image 2: Poorly-tended beds in backyard

Image 3: Alternative use of shadecloth as a fence

Image 4: Informal housing of some beneficiaries

Image 5: Recently-delivered starter-pack tools show little signs of use

Image 6: Some beds are poorly maintained and overgrown with weeds

Sebokeng

Image 7: Beds in a larger space are cultivated together with traditional maize

Image 8: Swiss chard (spinach) recently watered. No use of mulch.

Image 9: Traditional cropping practices: maize, pumpkin and beans.

Image 10: Well-tended bed of swiss chard and tomato in a small space

Image 11: Proud beneficiaries with their crop of swiss chard

Image 12: Beneficiary shows starter pack components. Note the shade cloth and hosepipe are still wrapped.

Ratanda

Image 13: A larger gardening project. Note the dilapidated shadecloth.

Image 14: Neat, door-sized beds. Poor crop diversity and no mulching.

Image 15: Some backyards are overgrown and cluttered

Image 16: Innovative use of waste building materials to make container beds.

Image 17: Mixed cropping incorporating traditional crops and introduced crops.

Image 18: Waste management problems encourage rats which spoil crops.