

# **The Cost of Self Sufficient Farming in Mfuleni Township**

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## **Abstract**

The aims of this paper are to evaluate the cost of self-sufficient farming in the Mfuleni Township. The Mfuleni Township located just outside of Cape Town is seeking to grow all their own crops used to feed 450 children, two meals a day, and five days a week. My co-author and I set out to see if their hopes are feasible due to their spatial constraints, spending, and our own research done on self-sufficient farming in townships. The question is whether or not it is cheaper for the Mfuleni community to grow their own crops or purchase them. If it is indeed cheaper for them to grow their own crops what spatial and other constraints need to be addressed? The question is worthy of investigation due to benefits the community would receive both socially and economically.

## **Introduction**

Self-sufficient farming is beneficial to the environment, economy, and community. It is the goal of many environmentalists to move the world to a more sustainable future. Poor and marginalized communities would benefit greatly from self-sufficient farming. Urban farming, specifically in townships is a developing movement. The Mfuleni Community Centre has a garden that they have been using to grow crops to feed children from underprivileged homes in the local area. They hope to become completely self-sufficient in terms of producing the vegetables consumed by members in the community.

Self-sufficient farming is a necessary step in moving South Africa to a more sustainable growth path, which benefits the people as well as the government. If Mfuleni can grow their own crops, there are strong implications that communities with a similar structure can adopt this idea as well. Currently Mfuleni community centre has a small plot of land available to them. Urban farming is on the rise due to population increase. In Brown and Jameton's article, "Public Health Implications of Urban Agriculture" they assert

"the number of people living in cities is expected to triple by 2015, attendees of the Second United Nations Conference on Human Settlements (Habitat II) asked, "Where will the megatonnage of food come from to feed some five billion urban people?" (16). There are good reasons to doubt the long-term viability of the technological adaptations in farming brought by the "Green Revolution." The Green evolution has brought agricultural gains by paying high water and fertilizer costs, which may prove to be unsustainable (Brown, 24.)

The Mfuleni community has been growing crops on this area of land since 2007. Members of the community have been using the crops they grow to feed the children they serve but they currently do not grow enough crops to feed all the children. Due to the deficit, the centre has consequently had to resort to purchasing the amount of crops that they are not able to produce.

My co-author and I set out to evaluate what they are currently producing, what they are currently buying, what they need to serve the children in their community, and determine what they are able to produce optimally given their spatial and financial constraints. Due to a lack of some concrete data but more so for mathematical clarity we will focus on specific crops and specific seasons to create a cost benefit analysis for the Mfuleni community. The questions to be answered are which option is it cheaper for the Mfuleni community, either to grow their own crops, rather than purchasing them, if so how much cheaper is one alternative relative to the other, and lastly is it feasible given their spatial and financial constraints?

## **Methodology**

In conducting the analysis, data was collected after approaching the General Manager of the Afrika Tikkun Community Centre in Mfuleni, along with the head of the kitchen staff. Upon arrival at the community centre, measurements of all the vegetable beds were taken. These measurements included the length and width of each bed.

The remainder of the data collection was through an interview which relied on self-report. Disclosure of any and all information was purely voluntary as was participation in the interviews, as evident in the consent form signed beforehand. Responses were to be kept strictly confidential and used only for the purposes of this paper until further notice. Participants were also given the opportunity to withdraw from the interview at any point if they felt the need to do so. Participants would also be given an update on the paper and would be contacted if further information was required or a request to publish the paper. A questionnaire was issued to both participants. The questions asked were as follows: What kinds of fruits and vegetables do you produce on this area of land? How long have you been growing these crops? Do these crops grow seasonally or all year round? If seasonally, where do you get the crops during off-seasons? How large is the patch of land that is currently used for growing these crops (in m<sup>2</sup>)? What quantities of each crop do you produce on the given patch of land (in tons per month)? What is the community's average monthly consumption of the crops? How much would it cost to produce these crops at full potential rather than purchasing them? What are the costs associated with producing crops? What are the monthly labour costs involved in producing these crops at full capacity taking the space constraint? What resources would you require to produce all the crops you need, rather than outsourcing (e.g. land, finances etc.)? Do you receive any subsidies or assistance from the government?

The head of the kitchen staff provided invoices that she believed reflected general purchasing practices for meals issued at the centre. The average monthly cost of producing vegetables as well as the cost of purchasing additional crops was assessed.

Beetroot was used as a sample vegetable for determining the opportunity cost of purchasing versus growing the crop in the Mfuleni community. The cost of beetroot as an ingredient on a weekly basis was juxtaposed against the cost of buying beetroot from Belleville Market using invoices and self-report as data.

From this data, the constraints faced by the community centre were also established. The goal is to give the Mfuleni community the proper data to assess their limits given these constraints, to try and improve the efficiency of the centre's vegetable garden and data that reflects optimal crop growth as a means to help promote sustainability in the long run.

## **Results/Discussion**

The Mfuleni community centre is open from Monday to Friday and provides 450 children with two meals per day at full capacity, which translates into 900 meals a day. The children from the Mfuleni community rely on these meals. The meals they are given consist of vegetables on a daily basis. Some of the vegetables they consume are grown there while others are purchased. The centre requires 2.5 barrels of each vegetable per day in order to meet the requirements of each of the 900 meals. The beds are able to produce 2 barrels of each vegetable they require and consequently have to purchase the rest from the Belleville Market, their main supplier of vegetables.

The food garden consists of 34 beds in total, varying in size. Each bed produces 2 barrels of the given crop, however, the centre only produces certain crops during peak-season. Crops need to be purchased during off-season because the centre does not possess the means to produce the crops during these periods. This means that, across various seasons throughout the year, the expenditure on different vegetables varies. For instance, during off-seasons, the centre's expenditure on beetroot (from the market) will be higher.

In order to produce the crops in the food garden, the centre requires seeds, kraal and chicken manure, which is mixed together with garlic, Sunlight bar soap, chilli, and water. The seeds are purchased from Makro, the centre's main retail supplier, at a cost of R726 to cover all 34 beds. The centre purchases 4 tubes of kraal manure and chicken manure (20kgX20kg) acquired from Biocircle at a total cost of R4,337. This lasts the centre three months as it is only used once a month after being included in the mixture. The garlic, Sunlight and chilli which are used in the mix are purchased locally at a cost of R80 each per month, i.e. R240 for the three months that the manure lasts. For the purposes of this research, the cost of water is not taken into account as it is included in the centre's monthly electric bill. The total cost of producing crops for 3 months is R5,783. This translates into a monthly cost of R1927.67. This amount was divided by 30 days to give an amount of R64.26 per day. Dividing this amount by 34 beds gives us R1.89 per bed per day. Dividing this number by two (barrels) gives us a final production cost of R0.94 per barrel per day.

Due to a lack of data the most realistic number and unit that we can provide to assess the cost and benefits of the Mfuleni community is exclusive of labour costs. Working under the assumption that was self-reported by Mfuleni community leaders, labour cost can be looked at as a non-economically taxing issue. The Mfuleni community reported that they can rely completely on volunteers and have done so in the past. Additionally, they reported that they had paid positions and the salary came with no opportunity cost due to the small nominal amount paid to the employee.

The invoices provided by the Head of the kitchen staff at the community centre determine the average costs incurred by the centre to purchase the vegetables during off-season they require for every meal and this allowed us to draw a comparison to the cost of producing the crops. According to the invoice, the average cost of purchasing pre-packed beetroot is R156.00, which is sufficient for all 900 daily meals for 1 week (5 days). That is to say that this amount equates to 12.5 barrels of beetroot that the centre requires per week for their meals. This translates into R624 per month for 50 barrels or R12.48 per barrel per day.

It is therefore visible from the analysis that the cost of producing beetroot (R0.94) is far less than that of purchasing beetroot (R12.48). This may be as a result of the "middle-man" effect of retail purchasing. That is to say that when goods are bought from retail outlets, the prices charged by retailers is not reflective of the actual cost price of the goods, but is inclusive of transportation and other costs, as well as an additional mark-up charged by the retailer on the goods. When crops are produced by the centre itself, this effect is eliminated and the overall cost per barrel is minimised to a great extent. The resulting R11.54 difference per barrel has a significant impact on the centre's overall cost producing meals especially after taking into account the number of barrels the centre produces as well as the requirements to provide for all meals at optimal capacity.

It would be in Mfuleni's best interest to aim to produce all in season crops on site rather than purchasing them. In order to do this Mfuleni would have to enlarge the amount of gardening space available to them. The estimate of how much space they need would have to be assessed through their

reaping rate. Working under the premise they need 2.5 barrels of vegetables per day to which they have 34 beds that produce 2 barrels each they would have to have an unrealistic reaping rate to meet the quota of 900 meals a day. In order to maximize the amount of crops they can grow rather than purchase they must plan their kitchen menu to be in concurrence with seasonal crops.

The Mfuleni community is not able to produce vegetables at an optimal level given their spatial constraints. There are two incentives for the Mfuleni community to obtain a larger plot of land. First, it is significantly cheaper for the Mfuleni to produce their own crop and secondly, given the Mfuleni's financial constraints they are able to purchase materials to produce crops at their optimal level.

### **Conclusion**

Non-Governmental Organisation funded projects such as the Mfuleni food garden rely almost solely on contributions from their founding NGO as their main source of income with donations from other organisations and private donors which are, to a great extent, more erratic. With adequate funding, it is possible for the Mfuleni garden to reach optimum capacity. Such funding can be provided by the government (through subsidies or grants etc.) or from private donors, although private donations are irregular, thus a more reliable source of income would be preferable. The movement towards self-sufficient, farming and urban farming is becoming a global epidemic, Brown writes "A 1996 United Nations report estimates that up to 80% of families in some Asian cities are involved in agriculture. The report notes that similarly high rates of participation are also found in Moscow, and in such African cities as Dar as Salaam, Kinshasa, Kampala, and Maputo (if). Havana, Cuba has also seen a remarkable shift towards Urban agriculture with the collapse of its major food supplier, the Soviet Union, and the tightening of the United States' embargo" (Brown, 20).

There is also the burden imposed by the inadequacy of space. Due to the current size of the plot, it is virtually impossible for the Mfuleni food garden to provide enough vegetables needed for all the meals they require at optimum capacity. There is a need for growth and further development of the agricultural land in order for the feeding scheme to be sustainable. With sufficient land upon which to harvest crops, it is possible for the Mfuleni food garden to reach optimality.

Based on the analyses above, it is evident that there is a possibility for food schemes in underprivileged townships, such as Mfuleni, to be fully self-sufficient in terms of producing the vegetables they need to feed the community. However, this may only be made possible by addressing the various resource constraints that such food schemes face.

The main constraints, as discovered through the analysis, are that of spatial and financial limitations. One of the major obstacles that Mfuleni food garden faced, along with most other feeding schemes in underprivileged rural and township communities is the inadequacy and mismatch of resources. That is to say that there is a disconnect between the allocation of resources and the areas that require assistance the most, unfortunately, the less privileged areas suffer the most as a result of this phenomenon. Therefore "Food gardening has the potential to alleviate poverty and stimulate medicinal and nutritional levels amongst people in underprivileged communities while simultaneously being a "necessary element of a sustainable livelihood" (Conradie, 2). The implications for a stronger economy by way of popularizing food gardens is undeniable.

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