



# Students aim to assist farmers

▲ Earl Mofokeng and Philasande Cele at the recently planted apricot tree at SiyaZenzela

In 2011 Dr Naude Malan a lecturer at the Department of Anthropology and Development Studies at the University of Johannesburg (UJ), a colleague and two masters' students started looking at farms in Soweto with the aim of making them more efficient. Malan's inspiration for the project came from the US where urban farming is currently the fastest growing sector in agriculture.

Today Malan offers a course in Participation and Institutional Development: Urban agriculture and food systems change where students are practically involved with all stakeholders. For the practical course UJ has collaborated with Region D (Soweto) Farmer's Forum (RDFF) and the Department of Industrial Design.

The farmers are all members of the Region D Farmers' Forum. Farmers who register for the City's 'Extended Social Package' also gain from support from the City's Directorate: Social Development. If successful, land is awarded to be run as a co-operative in one of three structures: where land is either leased, or operated on a system of crop sharing where the farmer takes a portion of the harvest.

The last option for farmers to gain access to land is if they occupy it without permission. The only way to protect access to land in these cases is to build a fence around it, which is not very secure.

The industrial design students are aiming to develop the following artefacts:

- A cooling and storage system for fresh produce
- A system for growing seedlings
- A human-powered borehole pump.

## Farm: SiyaZenzela

**Prototype:** A cooling and storage system for fresh produce

**Designer:** Natalia Tofas

Borrowing from the Nigerian idea of cooling in ceramic bowls Tofas adapted the concept to suit farm conditions in Soweto. She substituted plastic bowls as they consist of a much lighter material and set up four types of cooling apparatus to test evaporative cooling by interleaving three bowls of varying sizes with water-filled spaces between each. Produce was left in these 'storage systems' and monitored.

Variables included the materials



between the water channels – cellulose, sponge, thinsulate (down-like synthetic fabric) soil and felt which were tested for insulation properties and capacity to store water. Size of holes in containers, and amount of shade available were some of the other variables.

This farm is leased from Piri Secondary School by Sakhile Skhosana and Philasande Cele who is a Wits University-qualified biotechnologist. As a result this farm is quite successful, Malan says. All salad vegetables are grown and some fruit. Young peach and apricot trees have been planted and grapes are also farmed. “Part of the farm’s efficiency is its trenches, raised beds and drip irrigation system. Everything is organically grown which means all inputs are also organic.”

Nonetheless the farm has had its challenges: Cele says there have been crop failures and his irrigation system was stolen. A regular supply of labour is also hard to come by as trained labourers often leave to start their own gardens.

Malan says the sourcing of seeds is a challenge. “R10 a packet is expensive especially when the seeds are not reusable. Some of the farmers drive to Rosebank to buy seeds from the most expensive garden shop in the city,” says Malan. “To realise a viable land opportunity heirloom seeds are much better as they are reusable and better strains can be redeveloped for the conditions of Soweto. He has established a good seedling growing system.”

### Farm: Vukani Training Centre for Adults

**Prototype:** A seedling growing system

**Designer:** Jomari Budricks

Water supply is one of the major limitations at this farm. It neighbours open land the size of a rugby field which if developed could supply 2-3% of the agricultural needs of the local community, Malan says.

Seedlings were planted in four different test incarnations where variables such as hydration and oxygen levels as well as access to water, sun, shade and type of soil/substrate could be assessed. Aeration was varied by the size of the holes in the container sides and lids while water access was direct or filtered and was absorbed from the top or drawn from beneath.

From an earlier experiment Budricks ascertained that growing seedlings in cardboard egg boxes would work well for market purposes as the seedlings could be sold as singles, threes, sixes etc.

### Farm: Lakeview Primary School

**Prototype:** An irrigation or water supply system

**Designer:** Werner Jacobz

The students are developing a human operated water pump to suit the conditions of the farm at the school. The team set about gathering information by asking the gardener about his irrigation needs, background, when the garden was started and how much produce is sold to the school. They enquired about ways to substitute food sold at the tuck shop. Malan says, “Ideally this would be incorporated as part of a feeding scheme where fresh produce becomes a part of a learner’s daily diet.”

In developing the pump the students need to consider potential costs, the technical ability of the user, its suitability

and its reparability, Malan says.

The farm grows lettuce, potatoes, spinach and beetroot.

### Intervention

Students prepare micro systems to test principles before they design the product/technology that is intended to improve the efficiency of the farm. The point of the students’ intervention is to assist the farmer to integrate his current farming methods with the design of the prototype. “It’s vital to integrate the existing social conditions into the features of the design. In other words the technology must fit the behaviour – In Colombia pedal bikes failed because the women they were intended for dressed in long skirts for work. The bicycle-type design was judged too immodest. Technology brings power but it also locks in behaviour. You cannot force adoption and if a system or technology is not easy to use it will not work.”

Each of these farms is on school property where transfer of knowledge from the farmer to the schoolchildren



▲ Ndumiso Mbatha plants seedlings at SiyaZenzela





▲ Earl Mofokeng plants seedlings



▲ A farm hand tends to the storage experiment



▲ Jomari Budricks at Vukani Training Centre for Adults

is a desired outcome but this does not always happen. “Ideally farming should be linked to the curriculum,” Malan says.

## Markets

Farmers are left to identify potential sales outlets for themselves unless there is a market. A market changes everything. After a successfully run market at Naledi, there is now an opportunity to move the market to the Soweto Theatre.

Transport is available as a shared resource. One farmer in the area collects produce from about five other farms to take them to the market. As transport is such a high cost it makes no sense to sell at markets outside of Soweto.

Skhosana who is chairman of the RDFF said the market would educate the youth about farming and entrepreneurship. “Our vision is to stimulate the agricultural economy in order to bring an income to the region and boost the economy of Soweto.

Growing the farms is not the point. Making them more efficient and profitable is. Malan’s aim is to expand the principle by testing prototypes on different sites. There is an abundance of fertile land in the area, he says.

“A growing interest in farmers and their success will expand the number of farmers. We need support from Gauteng Department of Agriculture and Rural Development and there is potential for agricultural development farming to be part of policy. Commercial inner city farming is on the fringes of community and it is impossible to determine how much produce is delivered. These urban farms are at the end of the welfare system where the economy starts.”

– Iza Grek **F&B**