

## The Future African Foraging Garden; an Experiment in African Urban Agriculture and Crop Conservation.

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*Keywords:* Food crops, indigenous, orphan crops, community outreach

### Summary

Focused on African Orphan Crops, the Future Africa foraging landscape is part of the ongoing collaborative project that is the raison d'être for the establishment of this research orientated campus. This is a short synopsis of the talk given to the IPPS Southern Africa

2020 Annual conference on the history of the FA campus gardens. Subjects dealt with include the projects trajectory from inception to completion, the philosophy and practical aspects of its design and the future prospects of the concept and collection.

## INTRODUCTION

The Future Africa project is situated on the old Experimental Farm of the University of Pretoria and forms part of the repositioning

of the EF as the "Innovation Africa @ UP initiative".



Figure 1. An early morning photograph taken near the residences. Photo Credit Eyescape Photography.

Initially it was the brainchild of the Forestry and Biotechnology Institute (FABI), while the gardens are a collaborative effort with the Department of Plant and Soil Sciences (DPSS), partially due to their involvement in the Experimental Farm management and utilization but also due to other extremely successful hybrid sustainability/landscaping projects such as the rainwater harvesting garden on Hatfield Campus.

As the senior curator of the Manie van der Schijff Botanical Garden and the living plant collections of UP, I was responsible for managing the Departments interests in this regard and was involved in the project from inception, I was also responsible for its theme as well as composition.

### **Inception and ethos**

Future Africa is envisioned as a hub for African and global research networks to address the challenges that hamper transformation towards a prosperous, equitable and sustainable future in Africa.

Its stated goals include:

- Fostering a new generation of science leaders
- Providing a dynamic living, learning and research environment
- Forming the nucleus of a community of scholars and other societal role players to advance excellence in scholarship, dialogue and impact to address specifically but not exclusively African problems

- Leverage the advantages of trans-disciplinary research to achieve these goals

The entire development consists of conference facilities, accommodation, residences, kitchens and the garden.

### **Design Philosophy**

The Department of Plant and Soil Sciences and the Manie van der Schijff Botanical Garden became involved in the project in early 2015, close enough to the public announcement of the African Orphan Crops Consortium, a huge research network sponsored by the likes of the Mars Corporation and the WWF.

Orphan Crops can be defined as: socio-culturally relevant crop and trees grown in Africa which, historically or currently, may be side-lined by more “mainstream” crops although they may remain locally economically important. Orphan crops are hugely important in diversifying the food supply of humans and animals in Africa, and guarding against famine. These species may be indigenous to the continent or have become important to local peoples through trade and historical introduction.



Figure 2.

A panorama of the entire Future African Campus. Photo credit: Wynand Steyn.

**The idea for the gardens theme was born out of this idea, and grew from the initial list of 101 “orphan African crops” issued by the AOCC:**

It incorporates “orphan crops”, listed or unlisted in the consortium list, as well as South African indigenous wild food plants. Humans evolved, initially in Africa, as hunter gatherers, and there is a huge array of uncultivated, wild food plants available in Southern Africa available to a collection such as this. Foraging eating, or harvesting wild plants for culinary use, or “eating the weeds and other things too” is becoming a huge cultural movement worldwide, even a conservation issue in certain cases and this development features an onsite kitchen with chef. Collaborations with, and research by the Consumer Sciences Department becomes a reality with such a collection on site.

Collections like this enable research into a host of different disciplines, from ennoblement of new food crops to genomic research but I have always envisioned it as focused on the ability of the urban landscape to provide food for fauna and people, and in so doing highlight not only the potentials that South African plants but also African plants can provide.

The Future Africa landscape will provide a living and functional testament that a predominantly indigenous landscape can be used as a food resource, this resource can also be utilised to teach, perform research and function as an aesthetic entity, all in one.

### **Species lists**

A list of approximately 200 species of fruits, nuts, leafy greens, herbs, tubers etc., some

wild foods, other crops was drawn up for inclusion in the project.

Some are exotics because they are AOC or other reasons, but the landscape is 90%+ indigenous / African, their inclusion based on traditional use as well as research potential but always considering their aesthetics. The landscape must be functional but pretty too!

### **INSPIRATIONS, LESSONS, AND INCLUSIONS**

Rainwater Harvesting Garden on Hatfield Campus was a huge inspiration. The Attenuation dam on the FA site is also a rain water harvesting dam and runoff from roofs etc. end up in this water body, which is used for irrigation. The dam is used to grow water chestnuts (*Eleocharis dulcis*), waterblommietjies (*Aponogeton distachyos*), blue lotus (*Nymphaea caerulea*) as well as being stocked with Tilapia. The Green Walls of the Plant Sciences Building: On site we have used many “green facades”, planted with species such as *Lablab purpurea* and *Mondia whitei*, for screening as well as shading.

Vertical gardening: still to be fully incorporated. We are soon to be hosting a PhD project on vertical OC farming.

Rehabilitation of the Hartebeespruit (ongoing): The Biodiversity Garden of Dr. Ida Breed is actively working towards making local biodiversity more acceptable to gardeners and landscapers. This is the only section on the ground which is not composed of edible planting.

The Cycad Collection of the MvdSBG is represented on site as a flagship planting of tropical African cycads around

the baobab trees. These are not considered as edible plants due to a host of toxic principles, not to mention their value, but these plants were used as a food resource by indigenous hunter-gatherer peoples, after a host of preparation techniques, such as month's long fermentation. Definitely not recommended, but gorgeous plants in the landscape, nonetheless. Recycling and sustainability initiatives of the University of Pretoria such as the composting facility on our sports campus, both take the green waste of FA, but supply the composted by-product back.

### **Design Work**

Building design and management of the project was performed by Earthworld Architects. Their vision can be described as “AFRI-TECH – Combining high level design processes with local resources and skills”. “From the outset, the intention was to challenge existing design & construction processes. Each program would be addressed through a solution specific to each set of conditions.”

(<https://www.futureafrica.science/index.php/campus/future-africa-design/future-africa-buildings> and <https://www.ew-arch.co.za/post/3096/futureafrica/>)

Insite Group Landscape Architects handled garden layout and specification: “Our heritage and indigenous natural resources can be used to better lives by capitalising on existing resources.” (<https://www.futureafrica.science/index.php/campus/future-africa-design/future-africa-gardens> and <http://insite-group.co.za/>)

Design Team included Jason Sampson, Neal Dunstan (the then Landscape Architect of the University of Pretoria) and Philip Rousseau (the then junior Curator of the Cycad Collection, now sadly deceased).

### **Advantages of the site**

These were multiple, the site is on the Northern aspect of a kopje, facing the Magaliesburg, microclimates between building, multiple grades allowing for specialised planting sites and good, fertile soil augmented by the composting facility of UP.

There is also a high maintenance budget which allows for a dedicated junior Curator, Ms. Lina Rampora, and the collection is considered a Heritage Collection of the University of Pretoria in its own right.

On site kitchens with dedicated Chef; this cannot be overemphasised. Meals and banquets are prepared out of the gardens regularly, and selected produce used almost every day.



Figure 3.  
Looking West between residence blocks. This alleyway hosts the critically endangered Pondoland Coconut (*Jubeaopsis caffra*) specimens. Photo Credit: Eyescape Photography.



Figure 4. A southern view showing some of the large planting spaces for annual crops. Photo credit: Eyescape photography.

## Selected species

*Sterculia murex*: The lowveld chestnut. Produces oil rich, sweet nuts in late summer. Edible root as well. Almost unknown outside of

its restricted range around Nelspruit/Mbombela and surrounds.



Figure 5.

*Sterculia murex*, the Lowveld Chestnut. Entirely undomesticated, the large, oily seeds can be roasted in much the same way as true chestnuts (*Castanea*). Photos by author.

*Tylosema esculent*: Marama bean. Another completely wild food plant. Shows great ennoblement potential.

The broom cluster figs: *Ficus sur* and *Ficus sycamorus* the latter is actually the fig tree mentioned in the Christian Bible and was a sacred plant to the Ancient Egyptians. Both these plants produce multiple crops a year, the figs can be used green as pickles in the Indian fashion, or as preserves.

*Mondia whitei*: ‘uMondi’ a traditional African medicinal plant, it has edible leaves and bark which contains a compound related to vanillin. This is a rampant forest liana, and will cover a façade in a matter of months.



Figure 6. *Mondia whiteii* flowers, photo by author

*Plectranthus esculentus*: Also known as the Livingstone potato. Has been considered to be potentially locally extinct in South Africa. The large root clusters taste like minty potatoes and are extremely nutritious. Still cultivated as a subsistence crop in Zimbabwe.

*Oxalis pes-caprae*: A traditional food plant and food flavouring plant (herb) in the SW Cape.

*Cucumis metuliferus*: Farmed under the trade name of “Kiwano Melon” in New Zealand. Tastes better green (IMO), a sour cucumber substitute. Ripe melons are attractive but a bit bland.

*Garcinia livingstonei*: African Mangosteen. One of the best tasting wild fruit that the author has had the pleasure of sampling.

*Portulacaria afra*: The ever trendy ‘Spekboom’, the clone we have at Future Africa has a nice, soft textured leaf with a thin epidermis. Not at all bad in salad. The leaf is at its best taste in the morning due to malic acid concentration declining during the day.

m’Shaina: *Brassica* sp. or Venda mustard spinach, an heirloom green vegetable much consumed by the isiVenda people. A winter crop, this is probably the best tasting leafy green the author has ever eaten. I can recommend it highly.

Salvia ‘Bee’s Blue’: a hybrid between *Salvia africana-lutea* and *S. dolomitica*, this indigenous sage has exactly the same flavour as *S. officianalis*, “proper” culinary sage.

*Aponogeton distachyos*: “Waterblommetjies, a South African veld food favourite. Still completely undomesticated, is grown in the attenuation dam.

#### FOR THE FUTURE

- Signage and interpretive routes
- Research
- Increase of collections
- Outreach and community engagement
- A cook book or three



## **Literature**

National Research Council “Lost crops of Africa: volume I through 3”, National Academies Press.

Palgrave, K. C. (2000). Trees of South Africa. Struik Publishers. Cape Town, Johannesburg.

Van Wyk, B., and N. Gericke. (2000). People's plants: A guide to useful plants of Southern Africa. Briza publications.

Van Wyk, B. (2005). Food plants of the world. Timber Press.