



GROWING FOOD IN WINDHOEK

Urban Agriculture Policy and Practice

FOREWORD

GROWING TOGETHER

Windhoek is a growing city. This reflects a global trend. By 2050, the world's urban population is expected to nearly double, which poses massive challenges for all cities in regards to housing, infrastructure, health, education, jobs, natural resources and food.

Food and Nutrition Security for Windhoek

Windhoek's vision is that all our citizens enjoy food and nutrition security. This means that enough and healthy food is available in the city and that all of Windhoek's citizens can afford to feed themselves adequately.

We understand that the city government has a crucial role to play here. Working with the World Future Council and learning about the celebrated food security programme of the Brazilian city of Belo Horizonte is an inspiration for Windhoek. We recognize that we need nothing less than a system of solutions to tackle the challenge of food security successfully.

The City of Windhoek has signed the Milan Urban Food Policy Pact, acknowledging that cities have a strategic role to play in developing sustainable food systems and promoting healthy diets. The agreement points out that urban and peri-urban agriculture offers great opportunities to make food systems stronger, healthier, and more sustainable.



Connecting Food and People

By producing food in and around the city, we can connect – the production with the market, experiments, ideas and solutions, and people of all ages and all walks of life.

At the same time, Windhoek has a very testing climate and there is, of course, the water issue. When we grow food in Windhoek, we need to do it right. With this handbook we want to help make connections and develop ideas further.

We have come a long way already. At the same time, we are still at the beginning. We want to further encourage food production, strengthen local market opportunities, challenge the mind-set of Windhoek's citizens (farming is not only rural, not only about livestock) and increase capacity on urban agriculture and healthy diets.

Let's grow a healthy food system together.

Councillor Fransina Ndateelela Kahungu
Deputy Mayor of Windhoek

GROWING FOOD IN WINDHOEK



Can we do it?

Before starting the “Growing Food in Windhoek” initiative, we invited people to discuss the crucial question: With the little water we have, with rain falling only in some summer months and not at all in winter – can we actually grow food in Windhoek?

The answer is: Yes!

1. It will rain again! Use the waterless time for other things than growing: plan and design the gardens, educate and train.
2. Make the most of the precious rainwater and use methods that produce food with minimal input of water such as Permaculture.
3. Use your own grey water on a daily basis.

Content

Growing Food in the City

Urban agriculture can only be one part of a food and nutrition security system – but it can be a strong one. Find expert advice on how cities can grow urban agriculture from **page 13**.

Permaculture Practice

The Permaculture method is very well suited for dryland conditions. Experiences and recommendations from the Eloolo Permaculture Initiative from **page 20**.

Green and Local

In and around Windhoek people are already growing food. Find out about local projects throughout the handbook, find producers and markets from **page 38**.

Policy, Municipality and Food

Food is an urban issue. Windhoek needs to grow a sustainable food and nutrition security system. Read about the exemplary food security model of the Brazilian city of Belo Horizonte and about Windhoek’s work on food security from **page 7**.

Shower in a Bucket

Yes, you are allowed to re-use your wash water for your garden. Clean wash and rinsing water, best without soap, can be used for urban agriculture. More practical tips on how to make the most of Windhoek’s precious water from **page 25**.



SOLUTIONS WANTED FOR NAMIBIA'S SERIOUS FOOD PROBLEM

Namibia needs to urgently tackle hunger, undernourishment and malnutrition. The latest data stems from the 2016 Global Hunger Index of the International Food Policy Research Institute (IFPRI).

In this report, “hunger” refers to four indicators – undernourishment, child stunting (low height-for-age), child wasting (low weight-for-height), and child mortality.

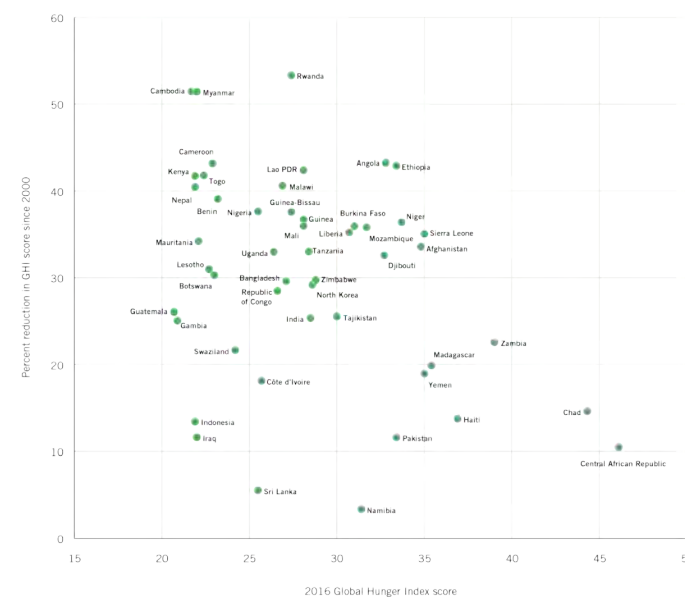
The Central African Republic (46.1), Chad (44.3), and Zambia (39) have the highest levels of hunger. Namibia, with an index of 31.4, still has a higher level than countries such as Burkina Faso (31), Liberia (30.7), Zimbabwe (28.8) or Malawi (26.9).

In Namibia, 42 per cent of the population is undernourished, the report says. Wasting in children under five years is 7.1 per cent, stunting in children under five years is 23.1 per cent.

At the bottom: Namibia has the lowest improvement rate

Since 2000, 22 countries have made remarkable progress. Rwanda, Cambodia, and Myanmar have seen the largest percentage reductions in hunger of all the countries categorized as serious or alarming.

Namibia is at the bottom of the graph with the lowest improvement rate.



Malnutrition, not getting the right amount and type of food, can lead to undernourishment – and also to obesity. Malnutrition contributes to early deaths, impaired development of children, poor health. Malnutrition undermines economic growth and perpetuates poverty.

Healthy, well-nourished people have a higher individual and country productivity, lower healthcare costs, and greater economic output.

We need to act. Income growth alone does not guarantee healthier diets

But how can we get there? Income growth by itself does not guarantee healthier diets. Countries cannot simply ‘grow’ their way out of poor diet quality. In sub-Saharan Africa’s urban areas, the highest income group spends 65 per cent of their food budget on highly processed foods; the poorest households spend 31 per cent. Consequently, the number of people with obesity is growing exponentially. By 2030, sub-Saharan Africa’s rate of overweight and obesity is expected to reach 17.5 per cent. (Foresight Report 2016)

A clear, graspable vision is needed. Internationally, the food movement is developing this vision. It recognizes that food security, food quality, human health, agriculture, ecological sustainability and climate change mitigation and adaption are all connected.

Namibia’s food movement is growing. There is a lot of knowledge around.

The food movement sees food and farming as a vehicle for transformative social change. It believes we now have the opportunity to transform our food and agricultural systems to mitigate climate change, become more climate-resilient, use natural resources sustainably and contribute substantially to poverty reduction and human health.

In Namibia, there is a growing food movement discussing these questions and working on solutions. People from very different walks of life are involved. In and around Windhoek, we find them all - experienced small-holder farmers from the North, creative organic farmers, imaginative backyard gardeners, skilled Permaculture activists, visionary entrepreneurs – to name just a few. There is a lot of knowledge around. Let’s connect.

With this handbook we want to be part of the discussion. How can we improve food quality and nutrition in Namibia? How can we grow food in Windhoek?

Ina Neuberger Wilkie
Senior Project Manager
World Future Council



FOOD: FACTS

We need a balanced diet.

Without good nutrition, we risk disease, infection, fatigue. Children with a poor diet might have growth and developmental problems and poor academic performance. Bad eating habits can persist for the rest of their lives.

Eating mainly starchy staples will lead to malnutrition.

If we add fats or sugars from cool drinks, for example, to a starchy staple diet, we will be obese and malnourished at the same time. The deeply-rooted Namibian love for red meat and foods rich in fructose like sour milk is believed to be a cause for the many cases of gout.

Eat large amounts of vegetables and fruits.

Vegetables rich in protein are marrows, peas, beans, lentils and nuts such as groundnuts and cashew. They are of particular value to children and people suffering from malnutrition.

Dark, leafy greens such as spinach, kale, green beans or broccoli generally contain the most nutrition and can be eaten at every meal.

Fruits such as pineapple, mango, paw paw, and lemon contribute to good health because they contain vitamins.

Cereals such as mahangu, maize, rice, and wheat contain mostly carbohydrates. Tubers such as cassava, sweet potato, potato, and cocoyam are starchy foods. These staples appease hunger but on their own they do not provide a healthy diet.



FOOD: AN URBAN ISSUE

Urban populations are growing rapidly, especially in Africa.

Half of the continent's population is expected to live in cities by 2030 (UN-Habitat). People in cities have, theoretically, better access to food than people in rural areas. However, they are often not able to afford enough and healthy food and they tend to consume more highly processed and unhealthy food.

Africa's urban policy makers need to tackle hunger, malnutrition, a lack of dietary diversity, increased vulnerability to disease, and a growing obesity epidemic - a great challenge.

Cities have an important role to play in food security and there are a number of opportunities how they can.

Cities should

- address all the dimensions of food insecurity with a special focus on quality of food,
- engage all food system actors and facilitate processes whereby knowledge, interventions and innovations can be shared. This can include all levels of government, the private sector (for example big supermarket chains), international donors, NGOs, marketing and distribution networks, traders associations, community groups,
- identify and implement the most appropriate governance structures to govern urban food systems. This can be supported by an urban food charter or urban food system principles that inform policy and practice,
- provide direct support for the production, processing and distribution of food,
- use their regulatory power for food sensitive planning such as land use planning, regulating trade and enforcing health regulations to develop an appropriate food system. It is important to integrate informal systems within formal systems. This may require loosening of regulations or modification of bylaws to support informal sectors,
- support education and awareness raising about food, nutrition and food production.

The City that Beat Hunger

The city of Belo Horizonte in Brazil won the World Future Council's "Future Policy Award" for its excellent food security model. Belo Horizonte has beaten hunger through a rights based approach to food and nutrition and through the implementation of more than 20 interconnected programmes.

The city has significant decreases in child mortality, reduction in childhood and adult malnutrition, increases in local and organic food production and consumption, more stable income for farmers, and greater access and availability of food for all.

The framework of Belo Horizonte can serve as a model for cities where large parts of the population live in poverty and suffer from malnutrition and health problems due to a lack of access to affordable and healthy food.

The policy has strongly influenced Brazil's successful national 'Zero-Hunger' strategy.

Since 2014, the World Future Council has facilitated an exchange of knowledge between Belo Horizonte and African cities, especially Windhoek. Fostering urban agriculture is one of the project's focus areas.



Belo Horizonte's Success Pillars

- Legislation to guarantee access to adequate and healthy food,
- Development of the system with a multi-stakeholder approach, including different government offices, the private sector, civil society, NGOs, etc.,
- Central supervision of all programmes through a specially created department that works cross-sectorally with all relevant city offices: health, education, environment, agriculture, commerce as well as civil society organizations.

A net of programmes

Abastecer

Licensed traders may sell their produce in designated spaces with high customer traffic on the condition that they offer 25 per cent of their products to a fixed, lower price and have a certain amount of fresh fruits and vegetables.

Public Restaurants

Subsidized restaurants provide healthy and nutritious lunches at a low price.

Straight from the Field

Supporting peri-urban family farmers by providing them with highly frequented sales locations within the city, thus eliminating middlemen and allowing for low prices for the poor.

Public Procurement

Promoting family farming through the purchase of fresh produce for schools, hospitals, etc.

School Meals

Providing healthy, fresh and free school meals for all children of the city.

People's Basket

Subsidizing registered, very low income families to access produce at specially reduced prices.

Food Banks

Collection and distribution of perishable foodstuffs for population living in situations of social vulnerability.

Programme against Child Malnutrition

Offering enriched flour to young children and pregnant women suffering from malnutrition.

Food and Nutrition Education

Teaching citizens about ingredients and nutritional values of the most important foodstuffs, through workshops and cooking lessons.

Urban Agriculture

Communal gardens on free space in the city to grow vegetables, fruit and medicinal plants; school gardens which complement the school meals programme; workshops on urban agriculture and plant cultivation.

Working for Food Security

In 2014, Windhoek hosts a workshop on food and nutrition security. It is enabled by the World Future Council, the City of Windhoek, the City of Belo Horizonte and the Food and Agricultural Organization of the United Nations (FAO).

The rationale for the workshop is the increasing urbanization in Namibia, driving issues of food security from rural to urban areas and confronting local authorities with new challenges. Participants signed the Windhoek Declaration, committing to engage on local levels.



Councillor Uilika Nambahu (then Mayor of Walvis Bay), Babagana Ahmadu (FAO), Hon. Minister John Mutorwa, Hon. Marco Hausiku (then Deputy Prime Minister), Councillor Agnes Kafula (then Mayor of Windhoek), Ina Wilkie (World Future Council)



Windhoek's Mayor, Councillor Muesee Kazapua, Councillor Uilika Nambahu (then Mayor of Walvis Bay) and technical teams from both cities inform themselves about Belo Horizonte's food security model during study tours initiated by the World Future Council. The guests from Namibia are especially interested in implementation of urban agriculture and municipal food banks.

In 2015, Windhoek signs Memoranda of Understanding with the city of Belo Horizonte and the World Future Council. The partners agree to work together on several issues, including food security. Windhoek also signs the Milan Urban Food Policy Pact which encourages participatory decision-making with civil society and small-scale food producers.



Windhoek's Mayor, Councillor Muesee Kazapua

THE WINDHOEK DECLARATION

After thorough deliberation at the Workshop on Food and Nutrition Security which was enabled by the City of Windhoek, the City of Belo Horizonte (Brazil), the World Future Council and the Food and Agricultural Organization of the United Nations (FAO)

We, the Mayors of Namibian Cities, policymakers, technicians, experts, and representatives of civil society organizations have compiled this document with the following recommendations which we strongly feel ought to be implemented by all stakeholders in order to ensure the right to food for all people.

We

Recognize the urgent need to act now at local and national levels to address the challenges in food and nutrition security our country is facing today and ensure food and nutrition security for future generations.

Commit to engage in a multi-stakeholder dialogue on food and nutrition security governance and interventions at different levels: from local to national, from public to private, including but not limited to civil society and international organisations, and media.

Acknowledge the fact that we need to develop and implement solutions that are fitting for our specific situations, including reviewing the policy and legal framework on national level, developing solutions for financing efforts on local level, and connecting political with technical will.

Commit to harmonize our efforts to tackling food and nutrition security in Namibia and build networks for multi-level stakeholder dialogue, partnerships, capacity building and implementation of follow-up actions.

Engage to realize the concrete recommendations, action plans and time frames that have been developed at the Workshop, especially in regards to the establishment of Food Banks in Namibia and the promotion of urban and peri-urban agriculture and city-region linkages.

Recommend that ALAN facilitates the establishment of an inter-municipal technical task force whose mandate is to engage further relevant stakeholders with the view to implementing concrete recommendations and action plans that have been developed at the workshop.

Windhoek 23 July 2014

Signed by the Mayors of Windhoek, Arandis, Aranos, Gobabis, Grootfontein, Helao Nafidi, Karasburg, Katima Mulilo, Luderitz, Mariental, Nkurenkuru, Ondangwa, Okahao, Opuwo, Oshakati, Oshikuku, Otjiwarongo, Outapi, Rehoboth, Rundu, Swakopmund and the Chairpersons of the Village Councils of Kalkrand, Stampriet, Berseba, Bethanie, Tses, Kamanjab.

Working for Food Security



Ina Neuberger Wilkie (World Future Council), Dr. B.D. Mouton (Principal Van Rhyn Primary School), Councillor Fransina Kabungu (Deputy Mayor of Windhoek), Ina-Maria Shikongo (Eloolo Permaculture), Monika Sheefeni (City of Windhoek) planting a Moringa tree on World Food Day 2016.

Following the workshop, the World Future Council starts the “Growing Food in Windhoek” project to bring together stakeholders, discuss ideas and support experiments.

We cooperate with the Eloolo Permaculture initiative, fund training for volunteers of the City of Windhoek, and engage in the city’s Food Security Commission. This is flanked with awareness raising measures such as a facebook site, events on World Food Day, and the production of audio-visual material.

In December 2015, the World Future Council, the City of Windhoek and the RUAF Foundation organise a workshop on urban agriculture. By bringing together stakeholders in urban agriculture, the workshop aims to contribute to the implementation of (peri-) urban agriculture programs. Participants analyse the local context and policy environment, share best practices and proven solutions as well as new technologies, and provide recommendations for the future.

The City of Windhoek formally appoints a food security committee as per resolution 175/07/2015.



Training of City of Windhoek Volunteers with Johan LeRiche from Greenfields, Okahandja

URBAN AGRICULTURE



Urban agriculture is a livelihood strategy.

Studies have found that urban agricultural production such as home gardens increase the consumption of foods rich in protein and micronutrients. When produce is sold, urban agriculture offers opportunities to generate extra income.

Additionally, urban agriculture has proven to have positive effects on people’s mental state, on social inclusion and on safeguarding and preserving traditional knowledge and biodiversity. The main problems for urban farmers are access to resources and inputs, primarily to land and water.

THE POLICY PERSPECTIVE ON URBAN AGRICULTURE

From the presentation by René van Veenhuizen, RUAF, at the Workshop on Urban Agriculture in Windhoek in 2015



Experience has shown that to foster urban agriculture, cities should:

Create an enabling policy environment

- integrate urban agriculture in local town planning schemes, upgrading of informal settlements and social housing programs, water and sanitation, parks design and management,
- pro-actively involve different types of urban producers in urban planning and development processes,
- enhance access to and security of land.

Advance a municipal strategy for development and support

- strengthen existing informal networks, urban farmer groups, city networks, micro-enterprise development,
- buy from urban farmers,

- cherish champions who are experimenting with new technologies,
- facilitate platforms where different actors, entrepreneurs, civil society and government can meet,
- ensure that low-income households can participate by providing inputs, credit, knowledge etc.,
- support direct marketing by producers.

Improve knowledge and technologies

- foster (co)financing of local urban agriculture initiatives by national and international sources,
- improve access of urban producers to local sources of credit,
- enhance training on urban agriculture (university curricula, schools, municipal training programmes, extension programs etc).

The RUAF Foundation promotes urban agriculture and city region food systems for more sustainable and resilient cities. Since 1999, RUAF is supporting local governments, urban producer organisations and other stakeholders with training, research, policy advocacy and design in the field of urban agriculture and urban food strategies.

Where can we grow food in Windhoek?

The Windhoek Town Planning Scheme defines land use zones. Provided gardening is done on small scale and always as a secondary use, it is allowed in residential zones. These cover for example dwelling units, residential buildings, places of public worship, places of instruction, heritage buildings.

Larger scale urban agriculture is possible in business zones as well as in conservation areas set aside for groundwater protection. However, the city council might apply local conditions. Restricted business land could be made available for agricultural use.

For questions regarding possibilities of land use, contact a member of staff at the town planning department of the City of Windhoek.



NUST at KAYEC

KAYEC is a Namibian non-profit organisation that offers education for youth in partnership with government. Since 2014, Dr. Ibo Zimmermann and his agriculture and natural resources students from NUST have been engaged in setting up rainwater harvesting methods and planting trees on parts of the KAYEC site in Wanaheda. To catch water and let it infiltrate, contour swales and other water harvesting methods have been dug into the soil. A range of fruit trees and nitrogen fixing trees have been planted. However, the site is struggling with vandalism; many trees have been wilfully destroyed.

How can we utilise more land?

From the “Urban Producer’s Resource Book. A Practical Guide for Working with Low Income Urban and Peri-Urban Producers Organizations”, FAO 2007

Access to suitable land can be increased in a number of ways without going against the long term plans of city authorities or private sector developers, particularly through the use of temporary licences. Mapping of as yet unused land within cities is often a first step to help city authorities decide where urban agriculture could be permitted at least on a temporary basis. Incentives (such as tax reductions) for land owners to allow temporary use of vacant land for urban agriculture is another approach, as is direct partnership with land owners. In most cases, access to land will, however, only be granted to groups, not to individuals. In the city of Cape Town, South Africa, underutilised land around public facilities, road verges etc., is leased out to groups of urban poor households.



Antje Schidlowski from Namibia Future Farming

Namibia Future Farming

runs 11 Aquaponic farming sites across Windhoek. In Aquaponics, fish produce waste that nourishes the plants you grow. It is a closed system, and does not need soil or regular farmland to grow vegetables. It is said to use 90 per cent less water than conventional agriculture. Crops can be grown in high density. In this system, water runs from the fish tanks into grow beds and is pumped back into the fish tanks. In between, bacteria break the ammonia in the fish waste down into plant food. A basic understanding of aquaponics is essential to run such a system and, for best results, water, fish and plants need to be monitored daily.

At Dagbreek School spinach, lettuce, herbs, cucumbers and tomatoes are grown. The pupils harvest and package the produce which is either sold or used in the school’s hostel. Namibia Future Farming also supervises an Aquaponic site at Windhoek prison which has more than 2,000 plants and is run very effectively by prisoners. The start-up costs of these projects are funded by the Fund for Local Co-operation of the Finnish Embassy in Windhoek.

Policy Gaps and Recommendations for Urban Agriculture in Namibia

From the “Policy Review for Urban and Peri-Urban Agriculture Development in Namibia”, January 2016, facilitated by the World Future Council and RUAF

The overall policy framework in Namibia generally does not preclude, prohibit nor restrict the development of urban and peri-urban agriculture.

This is true for both home consumption and the market. However, specific production activities such as livestock raising are restricted and regulated in urban areas.

At the same time, urban agriculture is not explicitly acknowledged or encouraged.

Regulations are scattered in different Ministries and Departments e.g. Agriculture, Water and Forestry; Health and Social Services; Trade and SME Development; Town Planning, Urbanisation and the Environment; Regional and Local Government and Housing, Economic Development and Community Services; Infrastructure, Water and Waste Management; Property Management; Legal Department and others – making it difficult to coordinate a coherent policy revision.

Addressing policy gaps and policy opportunities will require discussions at all political levels and across different sectors.

Mayor policy gaps exist with regards to storage, packaging, processing and

marketing of produce from urban agriculture. Taking a value chain perspective could have mayor employment and wider food security benefits.

Local authorities can make use of their rights to develop own by-laws.

They can also develop strategy documents on issues that impact on the management of local authority areas.

Cities should also consider a specific Urban Agriculture Act.

This helps to bring together different sector departments and issues. The Urban Agriculture Act of the City of Nairobi is exemplary. It succeeds in bringing together agriculture and other sectors such as public health, town planning and environment.

Local authorities should be drivers and design own projects.

Local authorities can already make a start with the design and development of urban and peri-urban agriculture projects and programmes. For urban and peri-urban agriculture development to succeed, local communities should be consulted and involved. Multi-stakeholder participation and support is essential.

Growing in the Community

Every day, more than 350 children come to the Nathaniel Maxuilili Centre to eat a warm meal. The soup kitchen here is one of the programmes of the Social Welfare Section of the Community Development Department of the City of Windhoek. This section is tasked with the responsibility of addressing the needs of vulnerable groups and assisting in developing the potential of individuals, families and communities.

Programmes for vulnerable groups

The three members of staff are currently running eight different programmes and are responsible for the management of the Katutura Old Age home, Maggie's Sun House Residential Child Care Facility, a home for vulnerable children and orphans,



Thomas Karumendu, Melissa Louw, Monika Shefeeni and Antonio Wohler from the City of Windhoek

and the soup kitchen at Greenwell Matongo. Here they are developing a cooking and baking training centre for unemployed women to generate income and improve their standard of living.

Growing food for soup kitchens

On top of this welfare work, Melissa Louw, Monika Shefeeni and Antonio Wohler have developed a green thumb. They are growing gardens. A garden at Greenwell Matongo was started mainly to supply soup kitchens with fresh produce. 20 volunteers were trained of which 3 are now regulars and running the garden. Part of the produce goes to Maxuilili soup kitchen, the rest is sold in the local community for very cheap prices.

Spinach works best

"We have tried many different crops", says Antonio Wohler. "But what really works in the community is spinach. It can be a struggle to sell carrots or beetroot but spinach is always sold quickly!"

At the Katutura Old Age home the soil had to be restored before growing food was possible but now a garden is established there as well as a small garden behind the section's office (Community Development Division, COW) in Katutura.

A large open space next to Olaf Palme Primary School, Goreangab, was fenced off and is now being turned into a community garden – step by step. A store room has been



Olof Palme Garden

Next to Olof Palme Primary School in Goreangab, volunteers are establishing a garden with support from the Community Development Department of the City of Windhoek. It was back breaking work to put up a fence and clear the land but a range of vegetables can now be harvested. Fruit trees have also been planted.

built, an Aquaponics system introduced, beds have been dug, trees planted, hardy Namibian weeds are being fought, a group of volunteers received training in December 2016 and the first vegetable crops are growing.

Involving community members

Throughout this process, the section has gained a wealth of experience on how gardens that involve community members can be run successfully in Windhoek.

Firstly, you need a "coordinator" who takes over a driving role, motivates people and organises the garden projects. Antonio Wohler is starring in that role.

Then you need a "head gardener" who is well trained and reaches out to community members. Thomas Karumendu has been elected to take that task. He receives a small monetary incentive monthly. The volunteers working in the gardens also receive small monetary incentives and they sign a yearly contract in which they commit themselves to the garden work.

Training, training, training

Antonio Wohler: "What we always need and basically cannot get enough of is training. For all of us, gardening is a new field. I am a social worker. Now I have learned to plant and grow food and that is immensely interesting and challenging. I really enjoy it."

BEST PRACTICE

PERMACULTURE IN WINDHOEK

When it comes to growing food, Windhoek's climate can be discouraging – and that's quite an understatement. No rain and freezing cold nights in winter, scorching sun and torrential rains in summer.

Anyone who has ever tried it knows: just digging in some seeds in your backyard and hoping for the best is not going to work. Windhoek does not have the supportive climate of Havana, Harare, Belo Horizonte or Cape Town – cities that are renowned for their urban agriculture.

In spite of this, throughout Windhoek people are experimenting with growing food. Especially convincing in the Windhoek environment is Permaculture. It is a system of agricultural and social design principles which recognise that all the things we need are connected to each other in a useful way. Permaculture started in the 1970s in Australia (by Bill Mollison and David Holmgren) and is therefore very well developed for drylands – but the principles can equally be applied for all climate conditions and locations.

Permaculture is a philosophy of working with, rather than against nature.

Permaculture deals with plants, animals, buildings and infrastructure such as water, energy and communications. However, Permaculture is not about these elements themselves but rather about the relationships we can create by the way we place these elements in the system. The aim is to create systems that are ecologically sound and economically viable, which provide for their own needs, do not exploit or pollute and are therefore sustainable in the long term.

The aim of Permaculture is to help us make the best decisions about the sustainability of the homes we build, the sources of our energy, our food, our clothes, etc. Everything we need should be produced as close to where we live as possible, with very little impact on the natural environment.



The part on Permaculture in Windhoek in this handbook was written in co-operation with the Eloo Permaculture Initiative, based on their experiences in building a school garden at Van Rhyn Primary School.

Eloo Permaculture Initiative

The Eloo Permaculture Initiative is a group of young environmentalist and activists engaged in education, research, consultation, implementation of food systems and associated Permaculture projects. We strive to improve human ecosystems to become healthy and abundant, guided by our ethics: Care for the people, care for the earth and fair share.

Our vision is for people to live in a healthy community supported by productive and resilient food systems through appropriate methods using Permaculture design science.

Contact the Eloo Permaculture Initiative through Donovan Wagner: donovan.wagner@mail.com, phone 081 8679297

Growing a Garden at Van Rhyn Primary School

Eloolo started the garden at Van Rhyn Primary School because there is a lack of active Permaculture community projects and demonstration sites in Namibia. In fact there are none!

There is also a need for people to understand that we have to change our ways when it comes to food, water and energy consumption due to climate change and environmental degradation.

We enjoy working with children.

For us, Permaculture is one of the best ways to sustainably co-exist with our environment in a rapidly changing environment and climate and to tackle economic challenges. The chance to work with children in an educational setting gave us an extra incentive.

Children are normally much more open to change and to learning new things than adults who are mostly set in their own ways already. Thus, children can act as change makers in their own communities.

The learners at Van Rhyn are quite open to gardening.

Of course, it is not for everyone but some kids who are parts of the garden club come from families that either have their own farms in the communal areas of Namibia or even resettlement farms. Other learners are from families who are from the North of Namibia where traditional agriculture is practiced.

We also have kids that have never had gardening experience and who are very open to learning about it. Some are happy



just to be busy doing something different than playing in the street day in and day out. There is really a variety of different backgrounds and experiences.

These are the lessons we are learning:

Work together

If you want to walk fast, walk alone. If you want to walk far, walk together (African proverb). If you start a project like this it would be advisable to make sure that you have a good understanding of what you are trying to achieve (plan, skills, resources/funding etc.) and that the school management also fully supports you. Ideally, the school should approach you and be keen to start their own school garden with some teachers and parents already committed.

Make sure you have some sort of agreement, regular meetings and a gardening committee made up of school management, teachers, parents and perhaps even someone from the wider community or neighbourhood.

Manage expectations

You are working with people who have their own lives outside of what you would like to achieve. Common goals are important.

Keep it simple

Start with one thing at a time: one garden area, one group of learners, simple gardening and tasks for the kids – things will come together.

The same is true for the organisation of the project. Plan first and plan thoroughly, before implementing in stages. Keep the initial set up simple till capacity is built to move on.

Have patience

Good things take time. Commitment and not giving up is very important. Nothing happens “just like that”. Any good community project takes years to build. There must be strong foundations. At the same time, we all make mistakes and we learn and evolve.

FEATURES OF PERMACULTURE

1 Design

Permaculture design starts with the observation of all natural and man-made elements in your environment. Map your environment in detail with a pencil and paper. Map the garden and plan where certain elements like compost, water tank or garden beds will be and connect all elements.



Things to think about:

Use time and energy effectively.

For example, where is the best place to put a compost heap?

Consider that every element of the garden has multiple functions.

A tree, for example, can provide shade, give fruit and fix nitrogen in the soil.

Work with nature, not against nature.

Wind: Check the usual wind direction. You want to protect your garden from wind. You can shelter your production with a living fence. This will also protect your produce from theft and possibly sun.

Sun: Observe the path of the sun. Ideally place your production north facing. Plant the smallest plants facing north and plant higher plants towards the south. Note that morning sun is the preferred sun.

2 Water

Nourishing the Water Table

Seasonal plants start growing with the rains and die when the rainy season is over. They take up water from the top soil layer. This top layer dries out in the dry season and the plants die. Seeds will germinate when the rains return.

Perennial plants such as herbs and trees take up water during the dry season from the so called “capillary fringe” of the water table. The height of this fringe depends on soil characteristics and, of course, on the height of the water table.

Admittedly, one tree does not make a forest, but every tree is a gateway for water infiltrating to the water table.

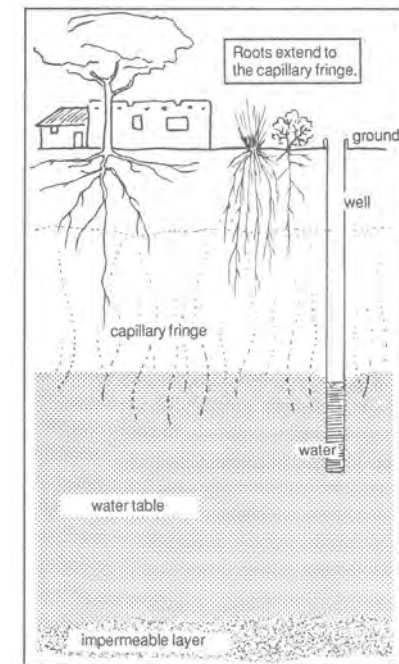


Illustration from Vanishing Land and Water, J.-L. Chleq, H. Dupriez, 1988

The Water Checklist

Catch rain

- Roofs
- Trenches
- Any hard surface

Store rain

- Tanks (at the highest point)
- Contour swales
- Boomerangs
- Gabions
- Ponds

Save water

- Mulching
- Timing of watering: water in the dark
- Sunken beds
- Pipe system for trees

Spread water

- Gravity
- Drip irrigation
- Clay pots
- Watering by hand

Water in Windhoek

Pierre van Rensburg
Department of Infrastructure, Water & Technical Services
City of Windhoek

Windhoek has no perennial but only seasonal rivers and thus no guaranteed inflow into the dams supplying, among other, the city. Annual rain fall is 350 mm per annum; evaporation rate exceeds 3000 mm per annum. It is estimated that only 2 per cent of the rainfall ends up as surface run-off and a mere 1 per cent becomes available to recharge groundwater.

There are 3 main sources of water supply to Windhoek:

- bulk water from NamWater through a three dam system which provides around 75 per cent of the supply in good times,
- treated wastewater from the reclamation plant covers up to 25 per cent,
- boreholes, which usually cover 5 per cent. The capacity has just been increased and supply from the boreholes can now reach approximately 50 per cent of full demand.

Since 2000, water demand in Windhoek has increased by 33 per cent. Currently, water demand is rising at approximately 2.6 per cent per year. The driving factor behind it is population growth as 65 per cent of the water demand comes from households. Per capita consumption of water has decreased towards 160 litres/ capita/ day. In the informal sectors of the city consumption can be as low as 12 litres/ capita/ day.

Water for Urban Agriculture

- Potable water should not be used for agriculture as this resource is very limited.
- Grey water: In Windhoek, the storage and treatment of grey water is principally not allowed. In other parts of central Namibia, grey water can be a sustainable water supply for urban agriculture as long as it is treated to neutralise soap and other harmful contents which could have a negative effect on soil, plants and environment.
- **Rain water harvesting is essential and should be the main source of water for urban agriculture.** In all cases, water collection should not pose inconvenience in terms of smell or mosquito breeding ground. The City of Windhoek has an irrigation water system ("purple pipe") with which water of non-potable standard is distributed. This is a possible source of water for urban agriculture.

Stop it, spread it, sink it!

by Stefan Eins, Eloolo Permaculture Initiative

We need to make the most of Windhoek's precious rain water. We want the water to stay with us, to "walk" around, and to infiltrate into the soil. Here are a few ways how we can support this:

Create a living sponge

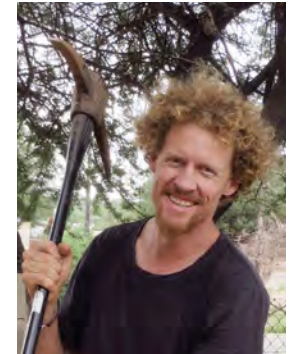
Improve the soil's ability to infiltrate and hold water. Adding organic matter improves the water-holding capacity of the soil. Plant a cover crop or mulch with crop residues to slow runoff and reduce evaporation loss.

Catch and store

You are allowed to catch the rainwater from your roof and store it in a water tank. Make gravity your friend. Water travels downhill, so collect water at your high points for easy gravity-fed distribution.

Walk the water

Whereas the first two points are quite obvious, this one is a bit more complicated. The idea is to stop water running fast off the surface and to collect it on the ground where it can slowly infiltrate.



The Tuscon way

Experimenting with the scarce rainfall in Tuscon, Arizona, the US-American Brad Lancaster has become the "godfather" of rainwater harvesting. He has written books on "Rainwater Harvesting for Drylands and Beyond" and shares insights on his website www.harvestingrainwater.com.

His method promises to "bring your site to life, reduce your cost of living, endow yourself and your community with skills of self-reliance and cooperation, generate renewable on-site power, and create living air conditioners of vegetation that grow beauty, food, flood-control, and wildlife habitat."



Contour swales

Contour swales are hard work but they are a great tool to make the most of rainwater. The basic concept is to catch water and hold it in place until it absorbs into the ground. **A contour swale looks like a ditch with closed ends.** Swales must be installed with care to prevent water overflowing into the garden below.

The swale is dug along the slope but is kept level so that the water does not flow away in it but sinks evenly into the ground. **To plan swales, it is best to use an A-frame.** This is a levelling tool that can be made by anyone, anywhere. All you need are 3 long poles, string, wire, a stone and some tools. Search “how to build an A-frame to map contours” on the internet.

With your A-frame you map out your swales. Place them high up in the landscape. Dig out the ditch. Pile up the soil you remove just below the ditch. That way you

are constructing a berm. Don't compact the soil, only shape it with a rake so that it can absorb water easily. This berm is a great place to plant trees. Their deep roots will keep the berm stable.

You will also need a spillway otherwise the water will break through somewhere, which can be very destructive. The spillway needs to be at least 15 centimetres below the top of the berm and at least 1.5 metres in length

Boomerang swales

This is a smaller solution than a contour swale but also very effective and something we have used quite a lot in the garden at Van Rhyn. When the hole you dig out for your tree is on a slope, you place the earth and stones round the lower end of the hole, thereby creating a boomerang shaped berm. This will hold water and allow it to sink into the soil slowly. Make sure to mulch the soil to minimise evaporation.



Moritz von Hase explaining swales at Van Rhyn Primary School on World Food Day 2016

3 Soil

Improve soil structure

The major characteristic of arid soils is that of alkalinity (pH 8.0 to 10.05) caused by calcium, magnesium, or alkaline salts evaporated from surface soils. Thus, we are most likely to find that trace minerals (zinc, copper, iron) are hardly available. Deficiency symptoms show up in both plants and people. Once we analyse the soil for such deficiencies, however, we can supply them to plants as foliar sprays, and to the earth as compost and mulch. Windhoek soils can also have high amounts of Mica, a sheet silicate. Mica compacts the soil and pushes nitrogen out. Again, soil structure can be improved by adding organic matter.

Build your garden soil

- lower your growing beds (“sunken beds”) to aid water retention and carefully level the bed surface for even spread of water,
- mix compost or humic materials into the soil and also, if needed, clay, sand or nutrients to bring it to balance,
- mulch to reduce water loss, sun effect and erosion.

Sunken Growing Beds

by Moritz von Hase, Eloo Permaculture Initiative

A sunken bed is lower than the surrounding surface. These beds are deep pockets of improved soil and have a long tradition in drylands. They are used when availability of water is an issue.

While raised beds lift the plants up to the sun all day long, sunken beds provide some shelter from heat and wind. Simply put, sunken beds act as if they were a valley instead of a mountain. Valley landscapes tend to have more accumulated water, be richer in organic matter, and boast more biodiversity.

Rain water falling onto the surrounding area flows into sunken beds. The beds hold the water, let it infiltrate into the surrounding soil and ultimately build up water storage.

Build a sunken bed

Choose a favourable spot to collect runoff water. Mark out the area. Take out 30 centimetres of soil and loosen up the soil another 30 centimetres.

Fill the bed with a wheel barrow of organic matter. Add a wheel barrow of the sand that you have dug out. Add a wheel barrow of compost and another one of sand. Continue until the bed is filled up to 15 centimetres below ground level.

Level out the bed and mulch. The more mulch you use, the longer the water will be stored in the top soil. Recommended is a layer of 10 to 20 centimetres. In addition, mulch will stop weeds and create new compost in your sunken bed.

Now you can plant!

Wonderful Worms

by Donovan Wagner, Eloolo Permaculture Initiative

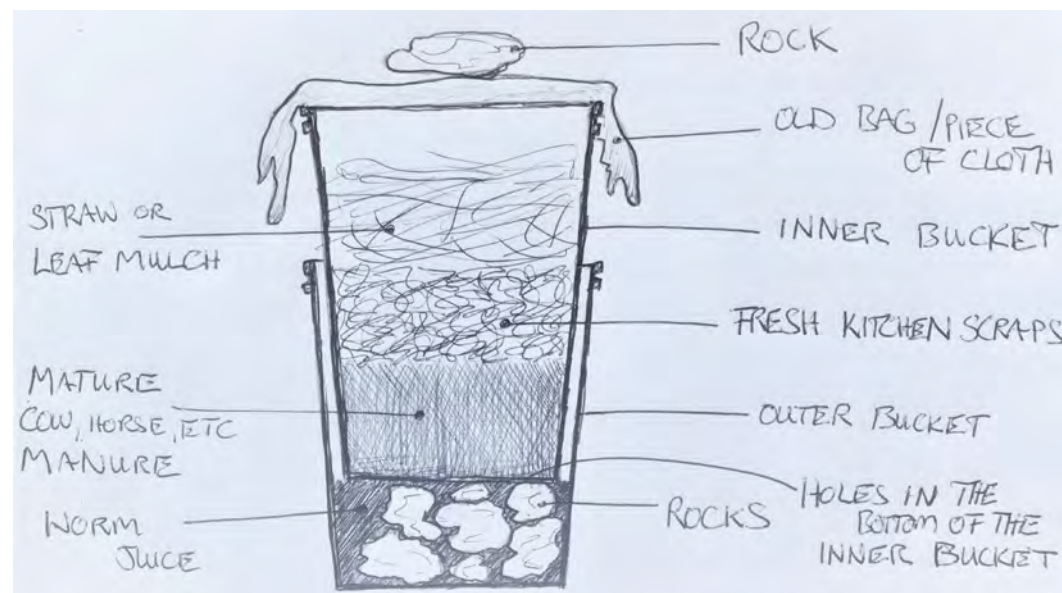
Compost worms are one of the most effective ways to recycle your kitchen scraps and other organic material into high quality compost – which is then called vermi-compost. Another benefit is worm juice which can be diluted and used as a liquid fertilizer.

Start your own vermi-compost at home

You only need two buckets (ideally 20-25 litres). Put some stones the size of your fist into one of them. Make some holes into the second bucket, about the thickness of a pen. Make enough holes to let the worm juice run through. Then put the bucket with the holes into the bucket with the stones.

Now fill the inner bucket to about one third with some mature cow, horse, goat or other animal manure; do not use human, dog or cat faeces. The manure must be dried and broken up for the worms to digest it.

Add water to the manure in the bucket so that it is moist but not too wet. Add your worms into the inner bucket with the moist manure and start feeding them with kitchen scraps. To finish off your vermi-compost bucket system add a layer of dried grass, leaves or newspaper over the kitchen scraps to keep the compost from drying out. Make sure you cover your compost bucket so that no other animals can get in and eat your worms. Don't close the bucket air tight; make small holes into the lid or use a cloth to cover. Worms also need oxygen!



Worms for friends

An ideal place to put your vermi-compost system is somewhere near the kitchen for easy use. Your worms will start to multiply so that you will be able to start another vermi-compost system. Or you give some worms to your friends so that they can start their own.

Take care of your worms

- Make sure you feed them regularly. Compost worms can survive without feeding for some days but they need to be fed regularly.
- Make sure they are in a shady place so that the compost does not dry out – otherwise the worms will die.

Harvest your compost

Once the bucket is almost full, harvest by removing the top layer which contains most of the worms. Now take out the matured vermin-compost from the rest of the bucket and use in the garden as needed. Your bucket system is ready to be used again by placing the top layer/worms back into the bucket with new manure and kitchen scraps as described above.

Give your plants a healthy start

When planting out seedlings use one hand-full of vermi-compost to give your plants a healthy start. You can also put a hand-full of vermi-compost around the stem of sickly plants or just to keep your plants healthy.

Where can you get worms?

The Ministry of Urban and Rural Development has started a training programme with the aim to set up compost worm distribution. Albert Calitz sells earthworms in batches of 200. Send an sms to 081 787 2353. Additionally, the Eloolo Permaculture Initiative can be contacted for worms.

Worm juice

The worm juice will collect in the bottom of the outer bucket with the stones. Dilute your worm juice 1:20 with water (one part juice, 20 parts water) and water your plants round the base/stem. Make sure you regularly harvest your worm juice as it will otherwise lose its potency or drown your worms.

Feed compost worms

- Vegetable scraps and peels including old vegetables
- Fruit scraps including old fruits
- Tea, tea bags
- Weeds from your garden, dried grass and leaves
- Fully matured, dry manure: cow, horse, donkey, sheep, goat, pig, rabbit and poultry
- Crushed egg shells or a bit of sand (organic, untreated) – a handful maximum

What your worms don't like

- Citrus
- Onion
- Spicy peppers, chillies
- Cooked foods e.g. pasta, pap, rice
- Meat, bones, poultry, fish
- Fats, cooking oil etc.
- Dairy e.g. milk, cheese
- Twigs
- Plastics, metals, glass, rubbish, non-organic materials and chemicals
- Dog, cat or human faeces

Living Soil for the Desert

From the presentation by Angela Hofmann, SEKEM, at the Workshop on Urban Agriculture in Windhoek in 2015

Healthy soil is the best solution for water scarcity. The soil's richness in minerals, organic matter and carbon improves the water holding capacity by up to 80 per cent. Through the application of humus to sandy soils the percentage of plant-available waters is up to 5 times higher than without such treatment.

Using animal manure, especially from cows, as it is rich in microorganisms, is advisable. Composting with biochar made of wood and effective microorganisms is also a viable solution for Namibia, as organic material from bushes is available and encroachment poses a problem. Compost with high carbon levels can hold a large amount of water.

SEKEM's mission is the development of the individual, society and environment through a holistic concept integrating economic, societal and cultural life. In 1977, Dr. Ibrahim Abouleish started the SEKEM Initiative on an untouched part of the Egyptian desert. Using biodynamic agricultural methods, desert land was revitalized and a striving agricultural business developed. Dr. Ibrahim Abouleish is a councillor of the World Future Council.

4 Plants and Planting

How to plant

- Prepare the soil and pull out the weeds. It is easiest to pull them out when the soil is wet.
- Loosen up the soil 30 centimetres deep, for maize up to 1 metre deep.
- Add organic matter including compost and work it into the soil.
- Level out the grow bed with a rake and with the excess soil, and create a barrier along the edge.
- Then mulch with organic matter.
- Decide on crops to plant.
- Position plants according to their needs (moisture, sunlight, frost).
- Soak seeds in warm water.
- Water the soil before you put seeds in.
- Plant fine seed crops in trays or in rows. Where there are too many plants coming out, take some out.
- Plant normal seeds (maize, mahangu, pumpkin, watermelon, butternut) individually by pressing them in with your thumb - as deep as the first part of your thumb.

When to plant

Winter Crops

Plant winter crops in March, April, May. There are winter varieties of cabbage, onion, spinach, cauliflower, broccoli, carrots available.

As there is no rain in winter, make sure you do not plant more than you can water with your personal grey water (wash water).

Summer Crops

Plant summer crops in August, September, Plant maize in December.

Maintenance tips for your garden

Water your trees once to twice per month with enough water to penetrate the soil 1 metre deep.

Water your plants at morning or sunset.

Drip irrigation saves water effectively.

Keep all your organic matter and use it as mulch for your beds.

Regularly check your plants for pests and general health as to not contaminate the healthy plants.

Treat your plants with "natural" pesticides. Many recipes can be obtained online.



A Hand-Picked Selection of Plants

by Ina-Maria Shikongo, Eloo Permaculture Initiative

Windhoek has in itself different micro climate zones. What you can plant, depends on where you are. Riverbed areas tend to collect cold air and are therefore not ideal for frost sensitive plants.

One plant, many functions

An important Permaculture principle is “function stacking”. It means that every element in your garden should fulfil many functions. Try and establish different functions for the plants that you introduce into your system.

Let’s have a look at the Mango tree, for example. In Permaculture, Mango is a canopy tree, a pollinator, a great source of mulch. It provides shade and gives you delicious fruits.

In Windhoek, depending on your micro climate, you can grow mango but it is not easy. Your mango would need a spot where it has space, no exposure to frost (north facing and sheltered) and gets plenty of water.

My personal top 10

The following plant list is based on personal observation and choice. The species I have selected have either medicinal or culinary properties and most of them are drought resistant. There are so many other plants I would recommend but these are my top ten. Gardening is not only about food security, but part of the healing process that this planet and the inhabitants of this earth are in dire need of.



Marula

Scelerocarya birrea
Anacardiaceae

This tree originates from Africa and is indigenous also to Namibia. It is a large tree that grows up to 15 metres and produces edible fruits and seeds. Did you know that the Marula tree keeps mosquitos away? Marula is drought tolerant but needs protection from frost, especially in the first three years. The fruits are high in vitamin B1, B2, C. The seeds are high in vitamins B1, B2. One can eat the fruits fresh from the tree or make traditional drinks, jellies, jams, preserves, syrups, sweets and vinegar.

Fig

Ficus carica
Moraceae

The fig tree, originally from the Mediterranean and the Near East, is a small (4 to 7 metres) deciduous tree and bears edible fruits. The fruits are highly nutritious in vitamins A, B1, B2, B6, C, and Folic acid. You can make a lot of jam! Figs don’t mind frost but need protection in the first years. The fig is also extremely drought tolerant. A fig tree is great for shade in the summer and a source for mulch. The fig tree is a very productive tree!

Grape vine

Vitis Vinifera
Vitaceae

This is a woody, deciduous, perennial climber originating from the Near East and Central America. Grape vine does not mind frost and needs regular watering in the spring before the rainy season. The fruits can be eaten fresh when ripe or dried. The leaves can be turned into tea as a detox or to combat fever. Grape is rich in vitamins A, E, K, B1, B2, B6, C, Biotene, Folic acid. In Permaculture, the grape vine is ideal for trellises against walls as cover over a shade structure. The leaves are a good source for mulch.



Paw Paw, Papaya

Carica Papaya
Caricaceae

Paw Paw or Papaya is a small tree (up to 4 metres) with hand shaped leaves and fruit that turn orange when they ripen. Papaya originates from Central America and therefore needs water and thrives best in a frost free zone. A simple way to grow papaya is through planting a minimum of 6 trees in a circle with a compost hole of 1 metre across in the centre. You can then easily water your trees via the compost hole once the papaya circle is established. Papaya also do very well in planting boxes and are therefore ideal for small spaces, restaurants or townhouses.



Moringa

Moringa ovalifolia and olifera
Moringaceae

Moringa ovalifolia is indigenous to Namibia and is also known as the phantom tree. Moringa ovalifolia grows in terrestrial, savanna bushveld and is a deciduous small tree. It is used for its fleshy roots which taste like horseradish; it is used as a medicine, nutritional supplement and in soaps.

Moringa oleifera, the most common species, originates from India. It is commonly planted in the tropics but does very well in Windhoek as long as it is placed in a warm spot. The Moringa does not like water so be sure not to drown your tree. The roots, young leaves and seeds are used. Leaves can be preserved by drying them and turning them into powder.

Moringa has astonishing properties: 25 times more iron than spinach, 17 times more calcium than milk and 10 times more vitamin A than carrots.

Karee

Rhus lancea
Anacardiaceae

The Karee is a small ever green tree (7 to 8 metres) indigenous to Namibia. Karee is frost hardy and drought resistant. Beer can be made from the fruits; the roots are used for medicinal purposes. In Permaculture, the Karee is of utmost importance because it is a nitrogen fixer (most legumes are nitrogen fixers). This tree will help your other fruit trees become more productive.

African wormwood, Wilde Als

Arthemisa Afra
Asterceae

This highly aromatic perennial shrub reaches a height of 2 metres. Wilde Als is perennial. After cold winters it regenerates from the base in spring. This magical herb is drought resistant and a great medicinal plant. It is used for the treatment of cough, prevention of malaria, croup, whooping cough, influenza, fever, diabetes, gastro-intestinal disorders and intestinal worms.

Tomato

Lycopersicon esculentum
Solanaceae

Every person is familiar with this juicy fleshy short lived bi-annual. There are hundreds of varieties of tomatoes (large, egg-shaped, plum, cherry etc.) and you should have a tomato plant in your garden. They are easy to propagate from any tomato seeds in your home. The tomato needs water regularly but not too much and grows best on trellises and with sunshine. The tomato is rich in vitamins A, B and C which makes it a super healthy snack for your daily consumption. You can eat them raw when ripe, sun dry them, make tomato sauce, chutney and pickles.

Lemon

Citrus limon
Rutacea

The lemon is a small evergreen tree which originates from Asia. This tree does not need much water and produces tonnes of fruits if conditions are right. The fruit can be eaten raw, makes lovely jams and is great in baking and for food processing purposes. Lemons are rich in citric acid and vitamin C. Don't deprive yourself of the luxury of having a fresh glass of lemon juice from your own garden. Do not water close to stem of the lemon tree because it might cause the tree to rot at the stem. Rather create a berm around the stem and just water around this berm.

References include: Food Plants of the World, Ben-Erik van Wyk, 2005 and Medicinal, Poisonous and Edible Plants in Namibia, Eberhard von Koenen, 2001



Mangold or Spinach

Beta vulgaris var. cicla
Chenopodiaceae

The spinach is an annual or bi-annual herb with large green leaves and well known in Namibia. Propagation is mostly done by planting the seeds in the spring, depending on your climate zone. The leaves can be used in the raw state, cooked and are great for healthy green smoothies and amazing spinach pie. Spinach is rich in vitamins A, B1, B2, and C.

Producers and Markets



Seven Worms a Day

On Albert Calitz's family farm nothing goes to waste. Kitchen scraps, paper and weeds are valuable food for his earthworms. "Eisenia fetida" is a species of worm adapted to decaying organic material. Nicely shaded and regularly fed, Albert's worms thrive.



"They are small but powerful creatures"

Albert says. The worms turn their food into rich soil which has a high water holding capacity and is used for growing vegetables and fruit trees on the farm.

Next to the worm farm Albert has built a baboon-safe chicken house and run. His chicken enjoy a varied diet: patches of lucerne, sorghum and Russian grass, a fly farm made up of grass and pieces of fish in a bucket and as a special treat every chicken gets seven worms a day.

Vegetables and saplings of fruit trees are grown in an aquaponics system which reduces the amount of water needed greatly. It is a closed cycle with fish tanks and growing beds. More earthworms can be found here; they help with the conversion of ammonium from the fish waste into nitrates. Chicken droppings are also used as fertilizer in this system.

Let's eat purslane

Albert grows a range of vegetables but is a fan of a plant that many consider as weed - purslane. The leaves can be used fresh as a salad, stir-fried, or cooked as spinach. The plant thrives in dry climates and is extremely drought tolerant. Purslane is considered a

"superfood" as it is a good source of fibre, antioxidants, essential fatty acids and rich in a multitude of vitamins and minerals.

Blue berries grow well

In regards to fruit trees, Albert grows citrus, guavas, pomegranate, and he even has a pecan nut tree. Figs and peaches also work, but they need more water, he admits. His special recommendations are blue berries which are vigorous and transplant easily.

A model for Windhoek

Albert's little farm just south of Windhoek shows how a great variety of food can be produced in quite a small space by using little water but lots of brain.

Iiyimati

Iiyimati which means "fruits" was started by Johannes M. Negongo in 2014. Today, the company has 10 members that manage food gardens such as orchards and vegetable plots. Some of the gardens are owned by Iiyimati, others they manage on behalf of the owners. Currently Iiyimati is developing a head quarter in Groot Aub.



Iiyimati sells naturally grown vegetables, herbs, fruits and Marula oil at their stall at the Green Market in Klein Windhoek and directly to restaurants and hotels. Furthermore, the company can be booked for garden design, set up, and maintenance.

www.facebook.com/iiyimatitradingcc

Krumhuk

Krumhuk Farm lies 25 kilometers south of Windhoek. Its terrain consists of some 8,000 hectares of upland savannah in the middle of the Khomas region. It is the home of a multi-cultural community of some 80 people and is run on bio-dynamic principles. Vegetables, as well as meat and dairy products can be bought at the weekly Green Market in Klein Windhoek.



Green Market

Organically grown vegetables, partly certified by the Namibian Organic Association (NOA), as well as a range of dairy and meat products, breads, eggs, herbs are available every Saturday from 8am to 12 at this “Bio-Markt” in Klein Windhoek.

3 Uhland Street
Klein Windhoek

AMTA

The Agro-Marketing & Trade Agency AMTA was established by the government to coordinate and manage marketing and trading of agricultural produce in Namibia. The organisation runs three Fresh Produce Hubs, in Oshakati, Rundu and Windhoek respectively. Buying and selling in the hubs is run by agents. Both traders as well as the public are allowed to buy from them. If you are interested in selling produce, visit one of the hubs and negotiate with one of the agents. You can register and you can sign up to have your farm inspected. As 49 per cent of the fresh produce sold in Namibia needs to be produced in the country, agents are generally interested in sourcing local produce.

AMTA is located in the Lafrenz Industrial Area but is currently constructing a new hub in Wanaheda.

AMTA
Erf 209 Industrial Road
Lafrenz Industrial Area
www.amta.na

The Organic Box

The Organic Box is a market place for farmers to sell their produce directly to the public. Organic, home-made and farm produce can be ordered online and delivered or picked up on Tuesdays.

www.organic-box.com
Tuesdays at Grüner Kranz Complex
Southern Industrial Park

Tukondjeni Open Market

At this market a range of fresh products and traditional foods are available. Traders buy from Namibia and South Africa and are generally interested in new sources that offer good produce at reasonable prices.

Isabel Vikungo has specialized in selling “hard spinach” (rape) which is grown at Osire refugee camp.

Ondoto Street
Okuryangava

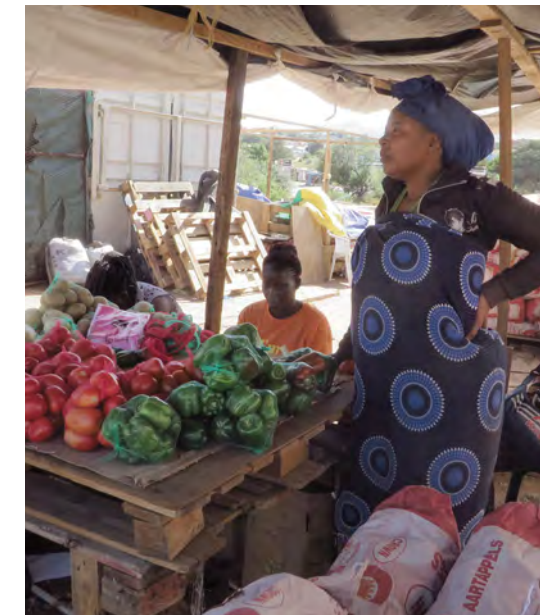


Street Market at Okuryangava Clinic

On the corner of Onganga and Monte Christo Road, around 60 women sell vegetables and fruits, mainly potatoes, tomatoes, onions and grapes. They source their produce either from the Tsumeb region or from South Africa. Dedicated traders travel down to South Africa to buy the produce. They then find trucks that have some empty space and negotiate a price for the freight and themselves.

The women would be interested in buying from local producers as well, says one of the traders, Rachel Kaliki, but it would have to be produce that does not need cooling.

Onganga / Monte Christo Road
Okuryangava



THE WORLD FUTURE COUNCIL

The World Future Council consists of 50 eminent global change-makers from governments, parliaments, civil society, academia, the arts and business. It was launched in 2007 by Jakob von Uexkull, Founder of the 'Alternative Nobel Prize'. We operate as an independent foundation under German law and finance our activities from donations.

We work to pass on a healthy planet and just societies to our children and grandchildren with a focus on identifying and spreading effective, future-just policy solutions.

Our working areas include

- Peace and Disarmament
- Future Justice
- Ending Violence against Women and Girls
- Rights of Children
- Rights of Persons with Disabilities
- Food and Nutrition Security
- Sustainable Ecosystems
- Climate, Energy & Cities
- Future Finance

Find out more about the World Future Council at
www.worldfuturecouncil.org
www.futurepolicy.org

HOW TO DONATE

Donate by bank transfer to:
 World Future Council Foundation
 Reference: Growing Food in Windhoek
 Institution: GLS Bank
 Acc. No.: 200 900 4000
 Sort Code: 430 609 67
 IBAN: DE70 4306 0967 2009 0040 00
 BIC (SWIFT-Code): GENODEM1GLS
 or via www.worldfuturecouncil.org/donate.html

Our Food and Nutrition Security Programme

Our Food Security programme focuses on policy solutions that secure the right to healthy, safe and sufficient food and works to enhance south-south cooperation. We connect and empower policy-makers on pioneering initiatives from different parts of the world that have proven successful in fighting hunger and malnutrition.

Our research found Brazil's Zero Hunger Strategy, which applies a multi-stakeholder approach to fighting poverty and hunger, to be an inspiring and highly adaptable initiative. One of our main focus areas is spreading the food and nutrition framework of the city of Belo Horizonte to urban areas of southern Africa. Our "Growing Food in Windhoek" project aims to foster urban agriculture in Namibia's capital by bringing together stakeholders and communicating solutions on how it can be done.

Connect with us

Like "Growing Food in Windhoek" on facebook
www.facebook.com/GrowingFoodinWindhoek

Ina Neuberger Wilkie
 Senior Project Manager
 Windhoek, Namibia
ina@worldfuturecouncil.org
 Phone +264 81 244 3981

"The time has come to reclaim the stolen harvest
 and celebrate the growing and
 giving of good food as the highest gift and
 the most revolutionary act."

Vandana Shiva
 Councillor, World Future Council



“People think I am slightly crazy
when I tell them to go home and garden ...
but a little thought and reading will convince them
that this is, in fact, the solution to many world problems.”

Bill Mollison
Permaculture

IMPRINT

Author: Ina Neuberger Wilkie
Senior Project Manager, World Future Council
Published: 2017

Commissioned by: World Future Council
Lilienstr. 5 - 9, 20095 Hamburg, Germany
Tel: +49 40 3070914-0
E-mail: info@worldfuturecouncil.org

Photos:
Nathalie Bertrams: cover, back cover, pages 2, 6, 13, 23, 30, 33,
34, 36, 37, 45
Jaco Strauss: pages 1, 12, 28. Simon Wilkie: pages 3, 5, 10, 19
Ina Neuberger Wilkie: 12, 15, 16, 18, 21, 22, 24, 27, 35, 38-41
WFC: 8, 10, 43, RUAF: 14
Illustrations: Donovan Wagner, Stefan Eins

Layout: Ina Neuberger Wilkie
Print: John Meinert Printing (Pty) Ltd., Windhoek, Namibia

This document is in the public domain. The publishers encourage the circulation of this paper as widely as possible. Users are welcome to download, save or distribute this study electronically or in any other format including in foreign language translation without written permission. We do ask that if you distribute this report you credit the author and publishing organisation accordingly.

INA-MARIA'S DREAM OF A MAGIC WINDHOEK



I strongly believe we should all grow food.

Food prices are high – if you are poor, you have difficulty in accessing nutritional food. Also, our mainstream food is poisoned with pesticides and even genetically modified.

I believe that the only way to solve Namibia's socio-economic problems is by reconnecting with the planet and helping it heal. It will provide us with everything we need.

Imagine Windhoek through my eyes. I see a paradise, a paradise where no street child goes hungry and the streets are full of fruit trees, berries, for all. I imagine each house, school, office space, roof, hospital, street of Windhoek full of life and food.

I imagine a world where people truly care for each other.

I know that it is a dream. But in this dream, the city has food security, clean air, a massive underground storage for water and improved livelihoods of the people.

This dream can turn into reality.

Ina-Maria Shikongo
Permaculture Activist in Windhoek

supported by



SCHWEISFURTH
STIFTUNG

