Rotary District 9350
Food Gardens Webinar

Gardening Methods

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1 September 21

SERVE TO
CHANGE LIVES

AGENDA

16:58	Video (Training Video)- Edubit
17: 01	Introduction (Doug Batchelor)
17:04	Food Garden Establishment: - Ben Getz (Urban Harvest Edible Gardens)
17:24	Questions
17:29	Food Forest Gardens with a Permaculture:- Barry Smorenburg (Living Arts Permaculture)
17:39	Questions
17:42	Hydroponics/Aquaponics:- Andre Raath (Rotary)
17:48	Shadenets/Portable tunnels:- Bevan Thomas (Cape Bisophere)
17:56	Questions
18:00	Closure Geraldine

EDUBYTE

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URBAN HARVEST

EDIBLE GARDENS

Food Garden Establishment 101:

A presentation for The District Food Garden Committee

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BEN GETZ

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Since 2006 we have designed, installed and managed **over 430 Food gardens around Cape Town**, and beyond.

- Community Projects
  - Schools
  - Old Age Homes
  - Creches
  - Hospices
  - CBOs
- Home Gardens
- Hotels/Restaurants
- Corporate Office Gardens

Projects provide:

- Fresh Food
- Jobs
- Green Calm Spaces
- Education / Skills
- Ecological Beauty
- Positive attention
- Community Inspiration
- etc

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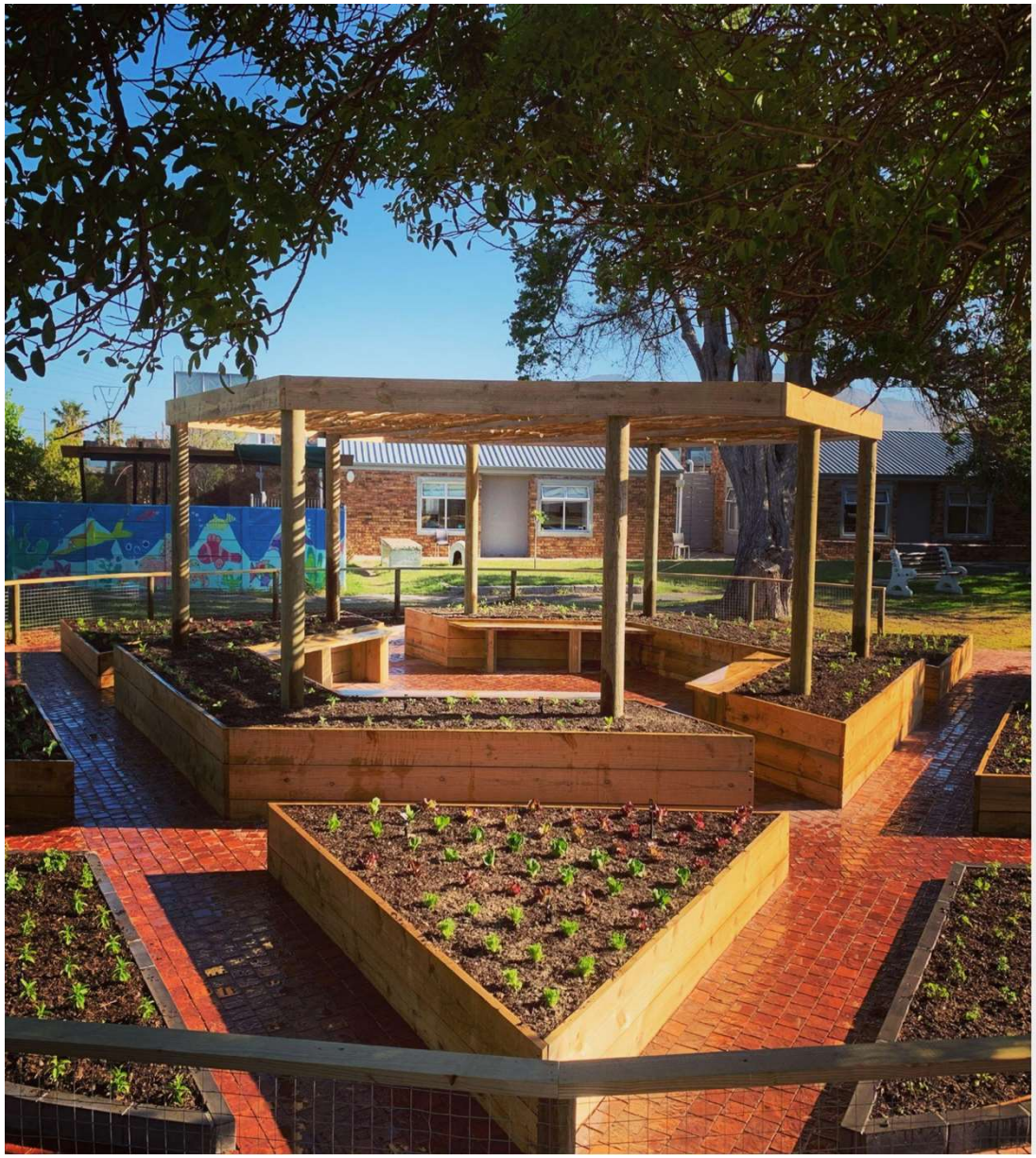

Choosing the right position is NB!

1. SUN SUN SUN
2. Access to water
3. Level Site & Beds
4. Shelter from Wind
5. Easy Accessibility
6. Within eye shot
7. Identify potential Issues
8. Animals / People (potential risks?)
9. Established Trees (roots/leaves/shade)
10. Drainage issues/flooding

Design - Key Principles

Design to scale on paper first!

- **Raised Beds** should be 1 - 1.2m wide
- **Pathways** should be 0.5 - 0.7m
- indigenous windbreak **hedges** are important

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Garden Installation:

Step By Step

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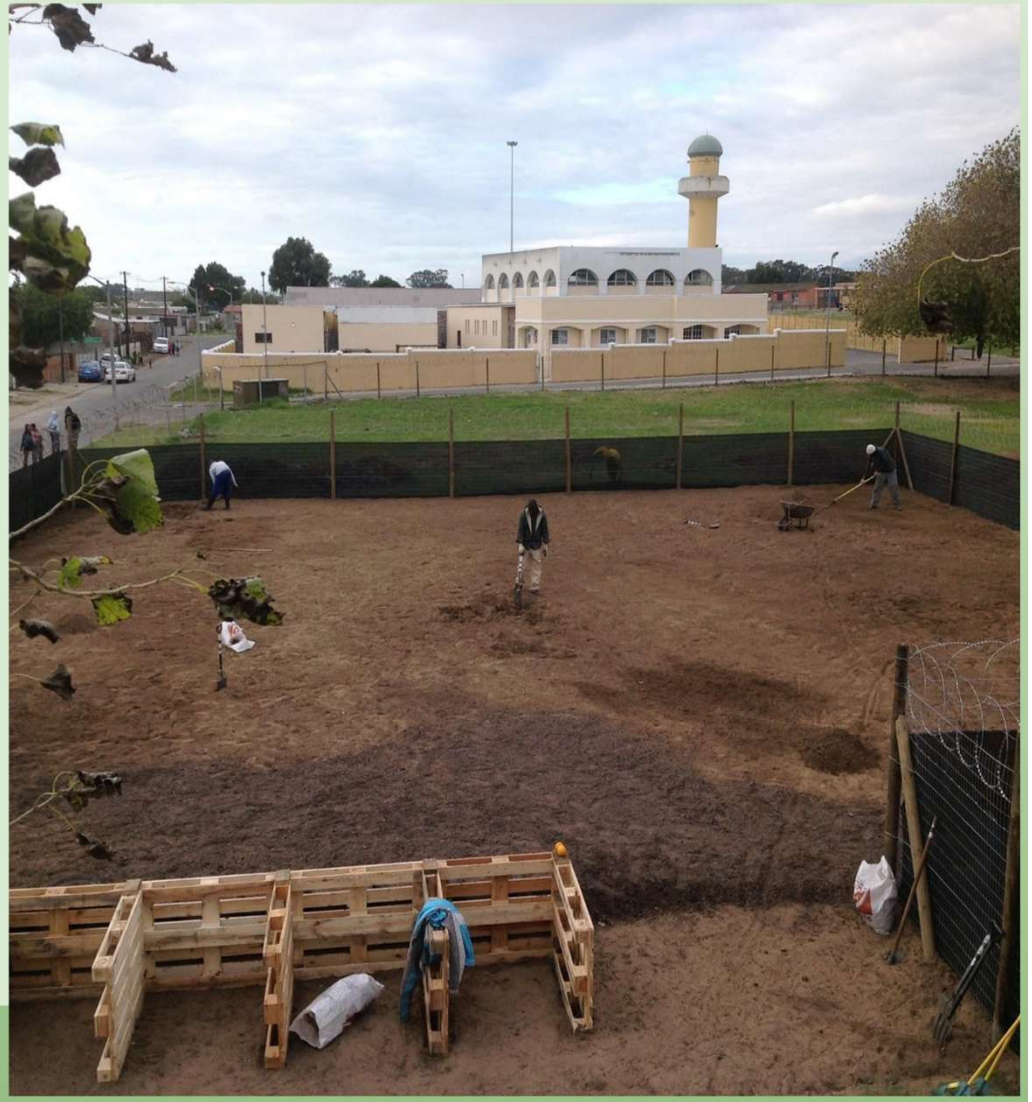
1 - Clear & Level Site



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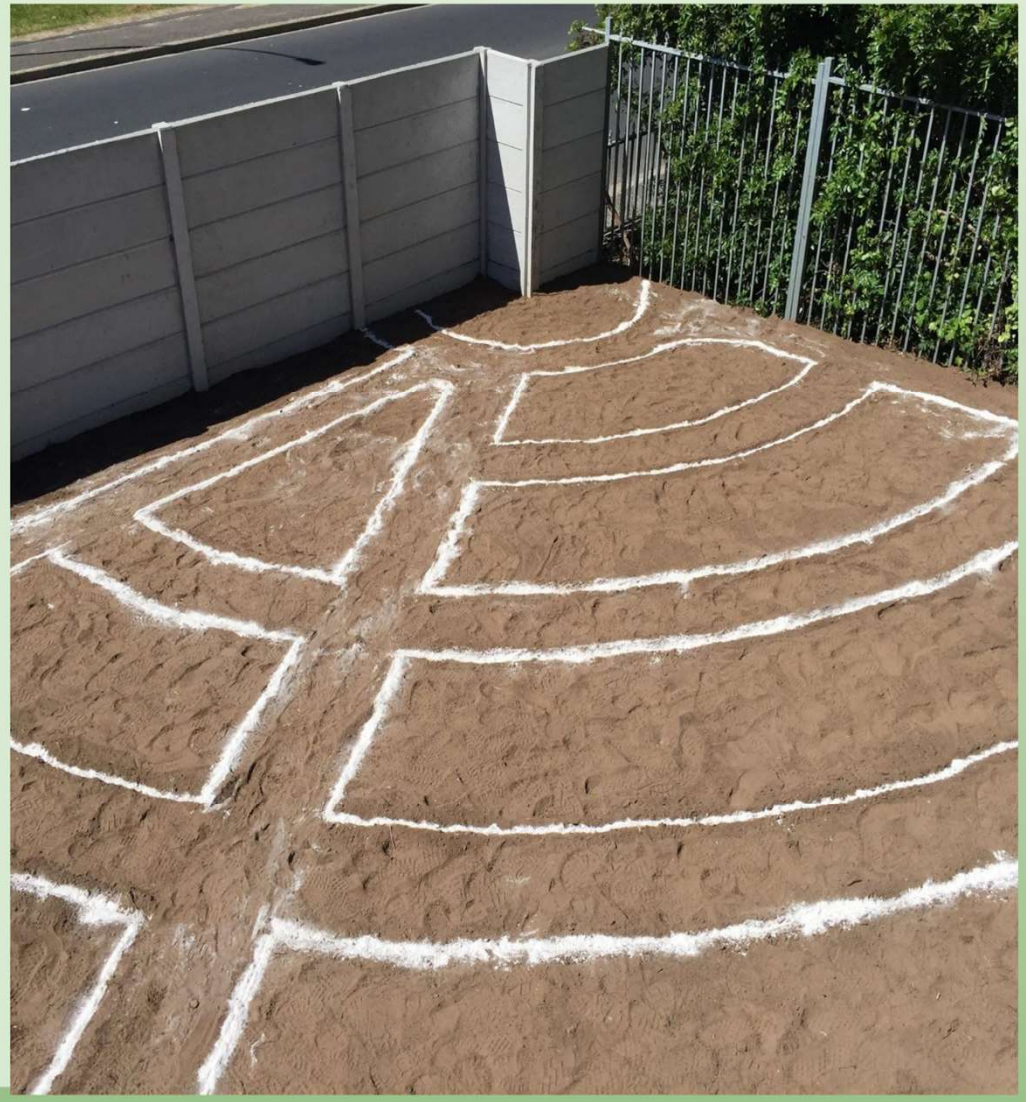
2 - Outline / Mark-Out Design:



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3 - Build, Place & Level Beds

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4 - Install Irrigation:

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5 - Fill Beds:

Potting Soil

+

Compost

+

Soil Conditioners:

- E.g bonemeal
- Chicken manure

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6 - MULCHING

Beds and Pathways

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7 Making Nests & Planting

PLANTING

Requires Careful Planning

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Community Preference - Compile

A List of what you would like to plant

SEASONALITY - Identify what is

Seasonally appropriate - based on your specific location

COMPANION PLANTING

Grow a mix of crops in each bed and throughout the garden:

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HARVEST

Of

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For Best Results - REGULAR Maintenance Required

- GARDEN CHAMPION!!!!
- Watering
- Redefining Mulch Nests
- Feeding - liquid manure
- Weeding
- Pest Management
- Pruning
- Harvesting

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Thank You

&

Happy Gardening

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Questions

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Living Art
PERMACULTURE

Regenerative landscape and habitat by design

Food Forest in the Dry Mediterranean

3-4 Year implementation. Low infrastructure cost. School food and ecology project spread over 4 years

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BARRY SMORENBURG

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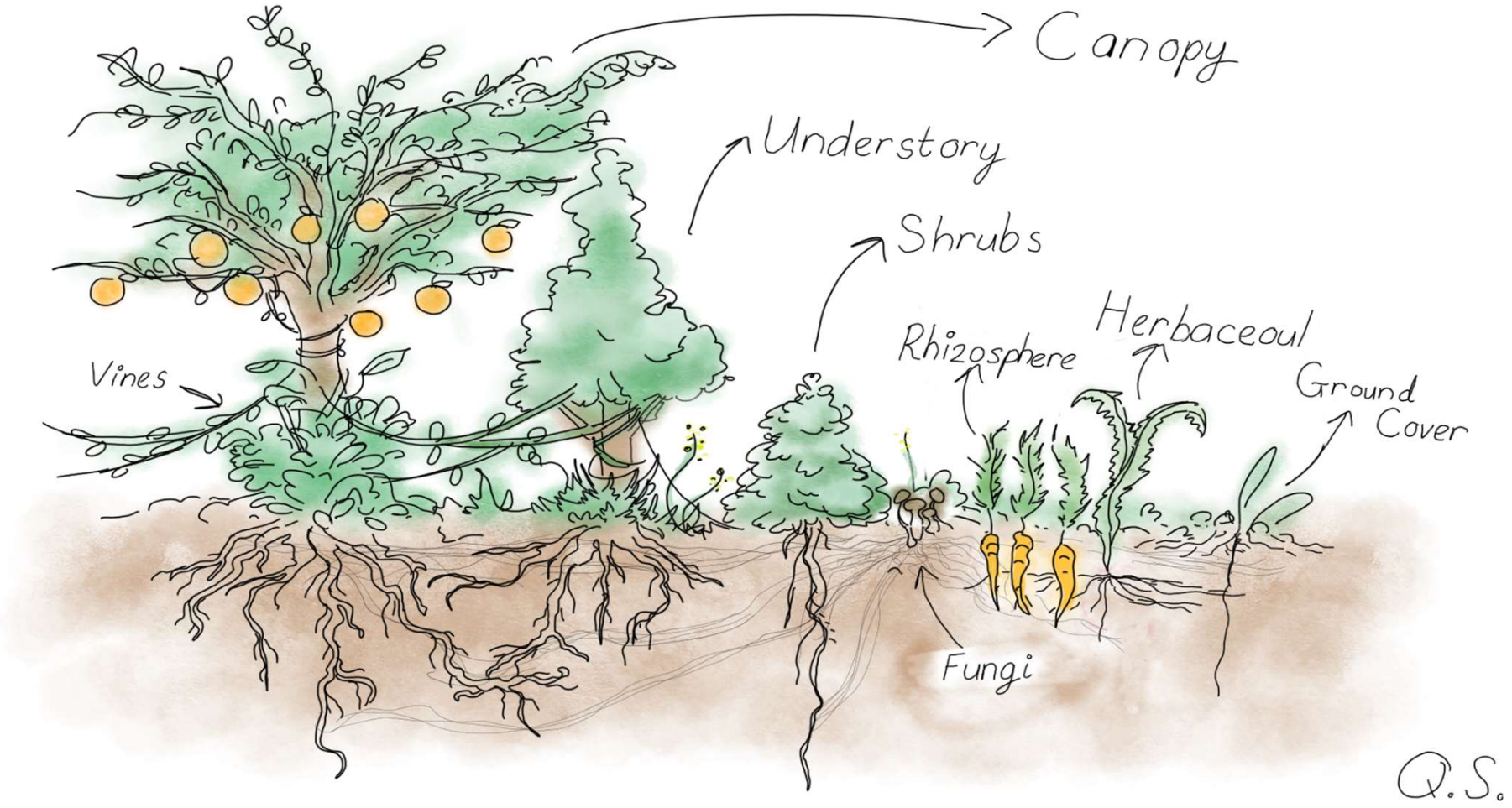
A food forest is a forest of food.

The aim of this gardening and land management system is to mimic a forest ecosystem with companion planting of edible trees, shrubs, perennials and annuals grown in a succession of layers.

Larger fruit, nut and support trees are usually the canopy, while below is the understory of fruit trees, shrubs and edible ground plantings.

Beneficial plants, are included to attract insects for natural pest management and pollination, as soil amenders providing nitrogen and mulch. Working together, the plants form a forest garden ecosystem that functions long-term to increase water retention and infiltration, protect the soils, establish windbreaks, increase soil fertility, expand wildlife habitat, and provide food, building and craft materials, and medicines.

The layers of a forest.



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Food forest design

Forests grow on fallen forests

Soil is an animal which is all mouth

Fungi are the teeth that eat the wood to feed the soil

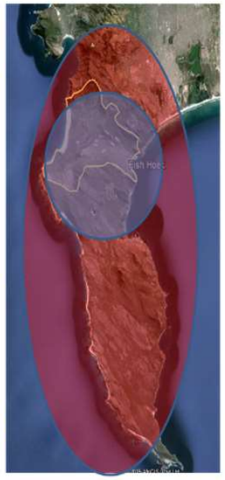
Geoff Lawton

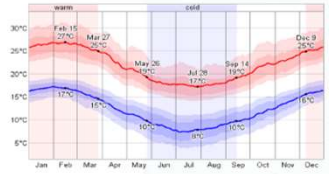
Climate and micro-climate : Where you are informs what you can do.

Living Art Farm, Forest Avenue, Grabouw

Sector Diagram

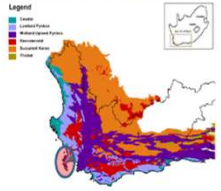
Bio region: Noordhoek Valley

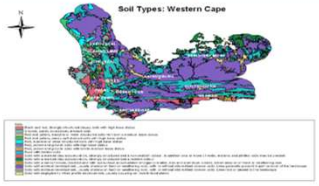


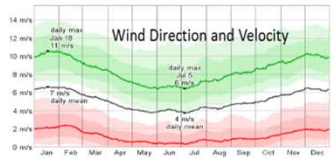


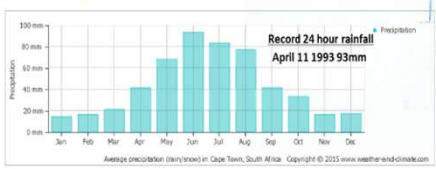
First and Last Frost Date 30 June 30 July

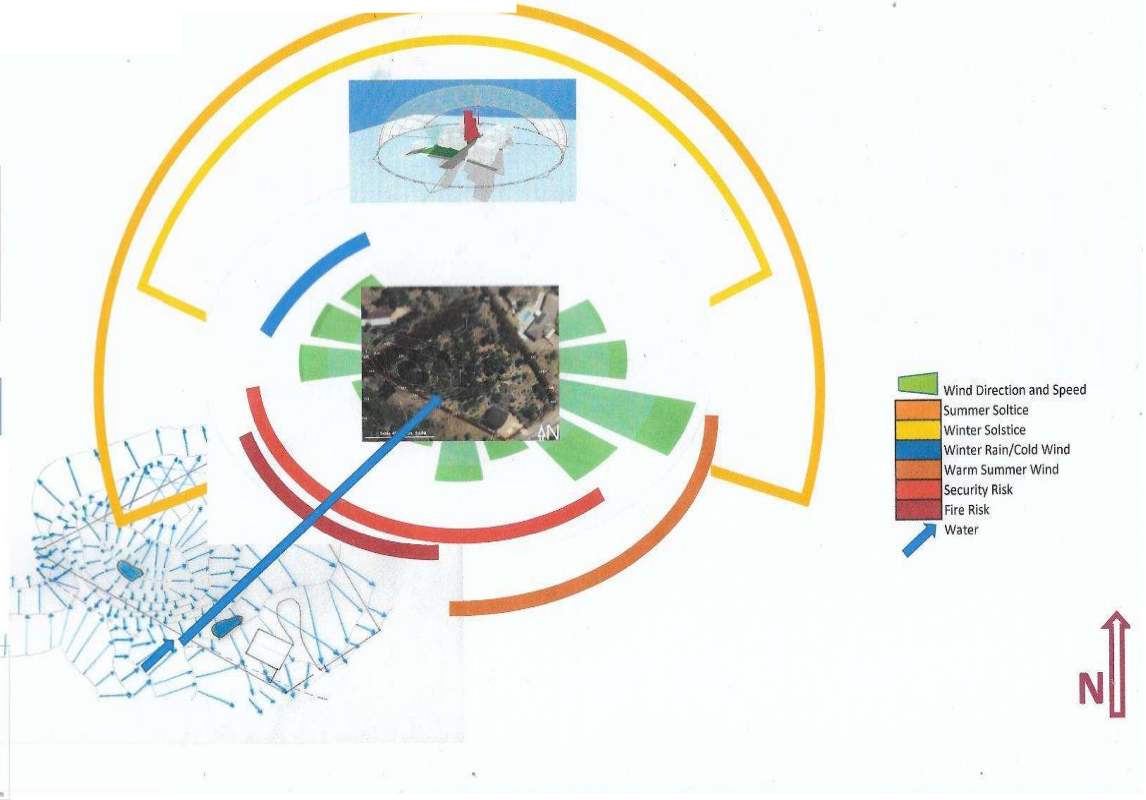
Record High	Record Low
3 March 2015 42.2 Deg C	-2.2 Deg C











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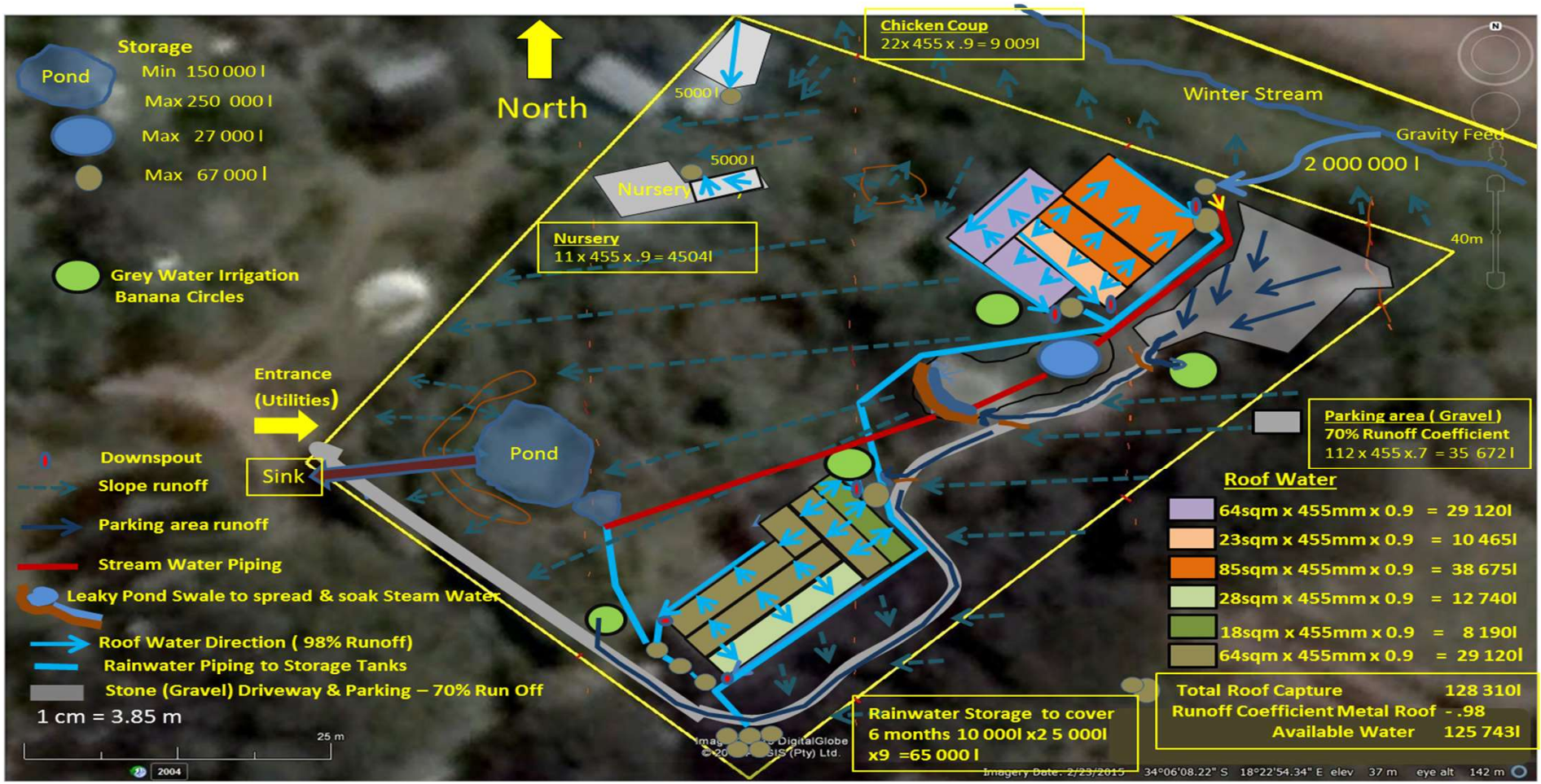
Water, access, structures - The lay of the land.



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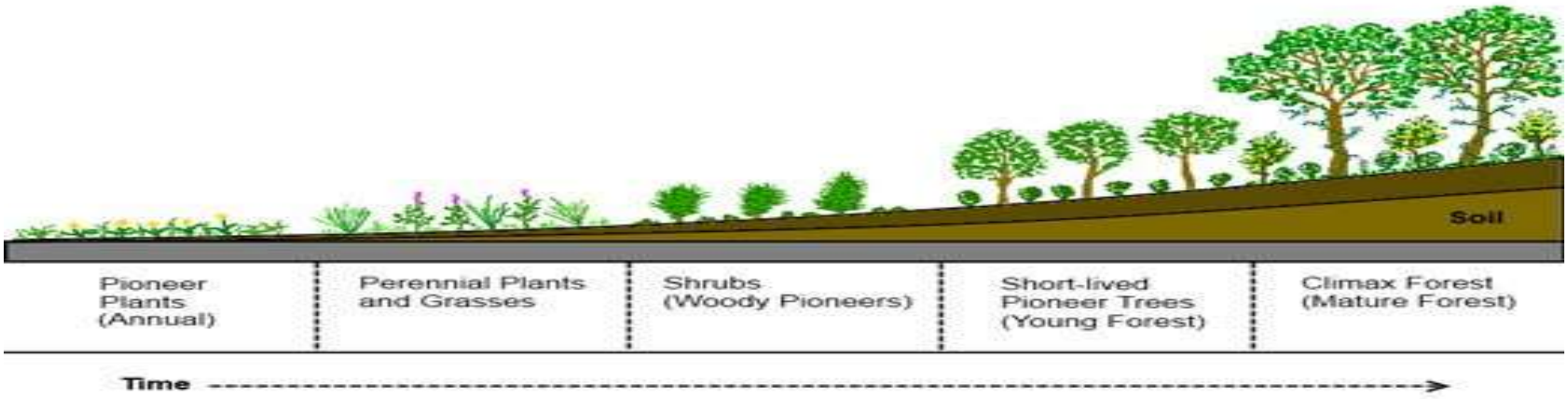
Stages of forest succession



Accelerating forest succession

Stacking event in space and time to speed up succession

Forest Mass at Initiation (0-1 years):
- 90% Support Species
- 10% Productive Species

350

Ideal Number of Support Species per 1000 m2:
- Ground Cover } Broadcast seed and seedlings
- Short Term 1000
- Medium Term
- Long Term 100

Forest Mass at Climax (10+ years):
- 10% Support Species
- 90% Productive Species

350

Final number of Support Species per 1000 m2:
- Ground Cover
- Short Term
- Medium Term (75% productive) 100
- Long Term 10

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Ground preparation and raising levels of organic matter

Compacted soil

Light disturbance would be beneficial. Keyline plowing on contour or broad fork loosening followed by a sowing of deep-rooted cover crop. Daikon radish.

Incorporate any available organic matter to the site

Logs, branches, wood chippings, straw, seaweed, leaf litter, manure.

Rough compost

Berkley method (18 Days)

Worm castings and aerated tea

Beneficial Fungi

Inoculate logs with Mycorrhizae Fungi

Rhizobia Inoculants

Inoculate legume ground cover seeds with appropriate Rhizobia bacteria

Chop and drop

When rainfall exceeds evaporation. Prune, coppice and pollard support nitrogen fixers. These cuttings remain on the ground as mulch.

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Support species

- Grow vigorously
- Withstand the elements
- Grow in degraded soils
- Generate soil fertility
- Stabilize soil erosion
- Coppice/Pollard when pruned
- Accumulate biomass and mulch
- Retain moisture in the soil
- Roots help in de-compact soil
- Regulate sun and wind exposure
- Harvest nutrients from the air (Nitrogen Fixation)
- Mine nutrients from deep under the ground
- Attract and feed beneficial insect pollinators

Ground cover species

Annuals. Inoculated seeds are heavily sown at the start of rainfall to carpet the ground as living mulch.

Beans, Peas, Cowpeas, Sorghum, Vetch, Clover, Comfrey, Lupin, Fenugreek

Short and medium term species

Trees you organized into short and medium-term groups are mostly sacrificial, intended to serve their purpose and then become mulch for the surrounding trees.

Acacia, Crotalaria, Sutherlandia, Keurboom, Honey Bush, Rooibos, Sand Olive

Long term species

Long term species are support trees that are planted with the intention of living indefinitely with the forest due to their beneficial functions, products and yields.

Monkey Thorn, African Black Wattle, Boer Bean, Sea Buckthorn, Carob

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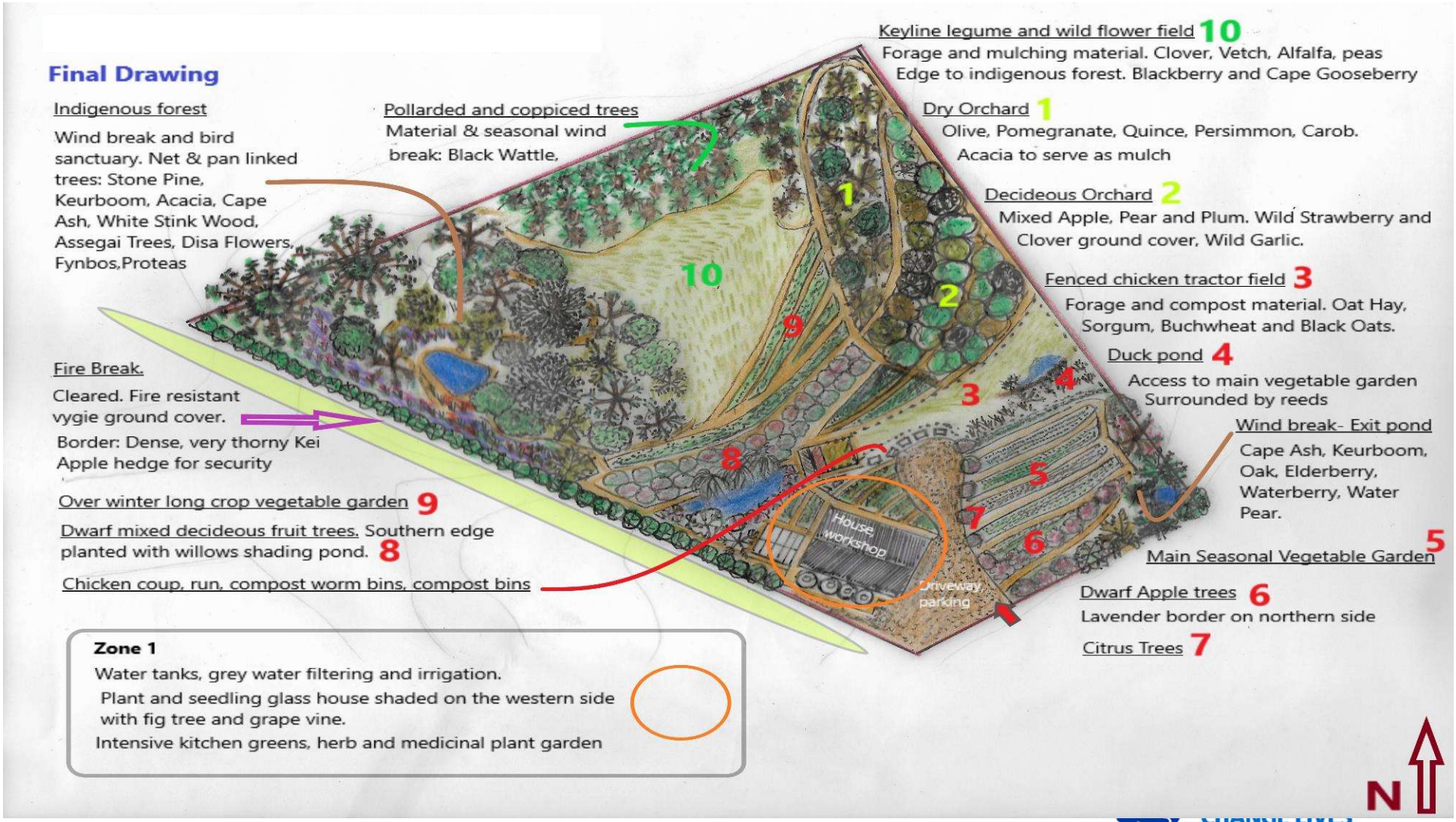
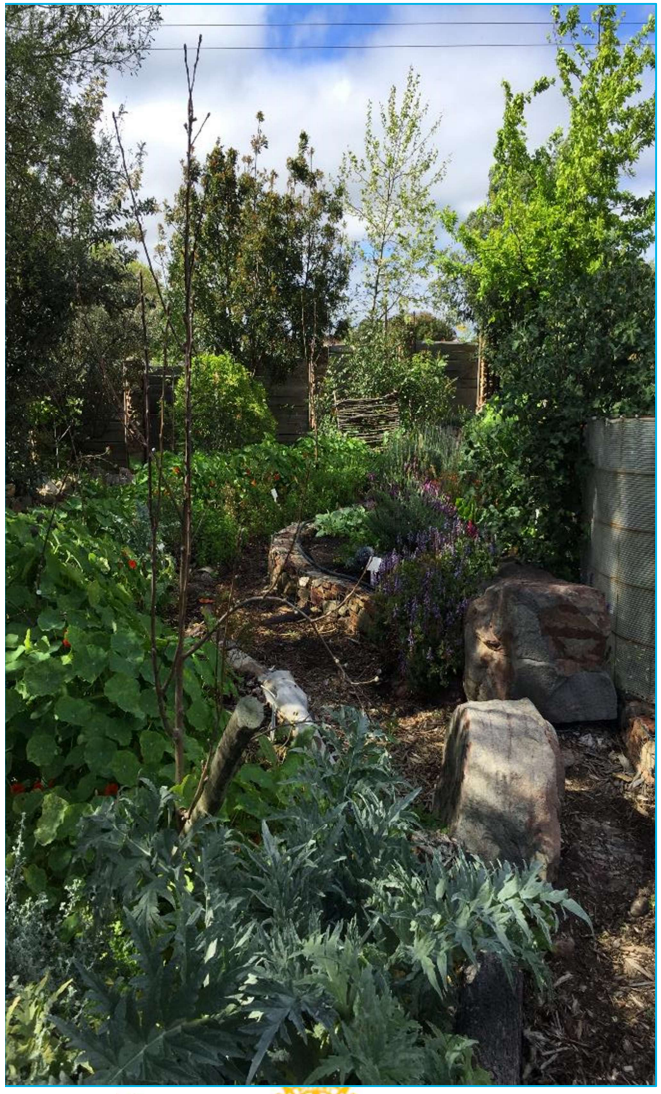
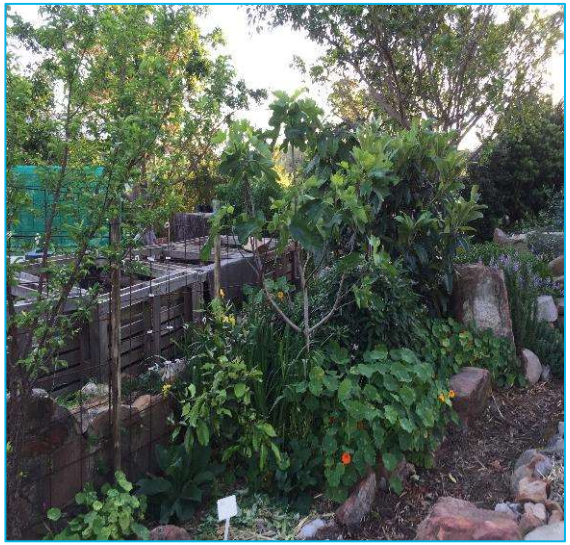
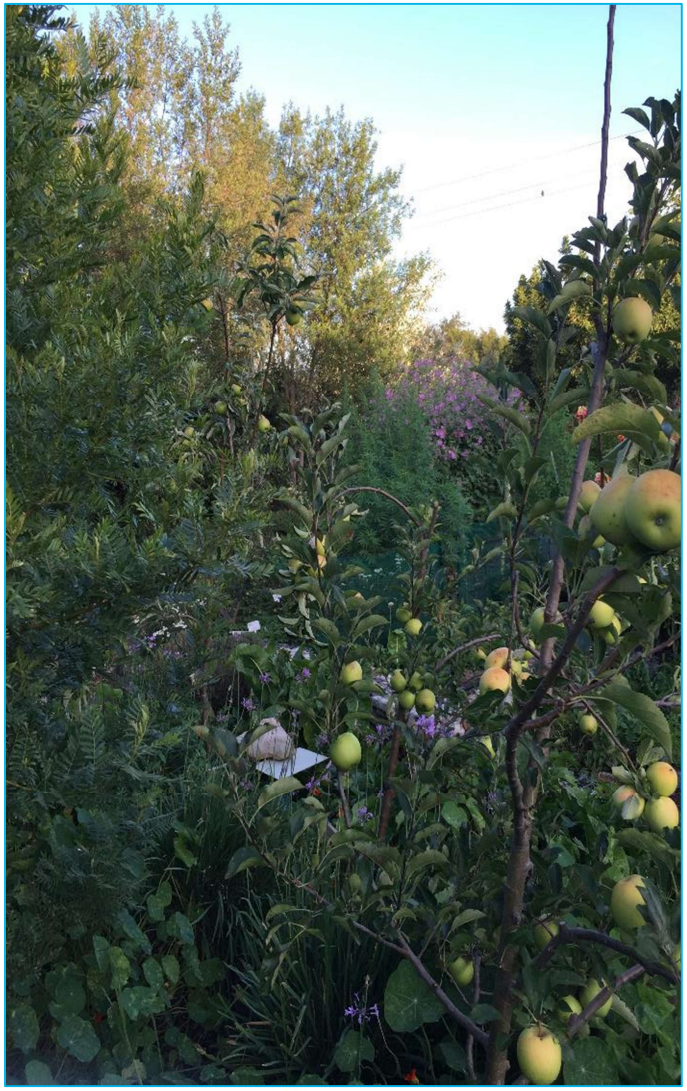
Production Species : Food forest covers 70% of the total area (1500 trees)









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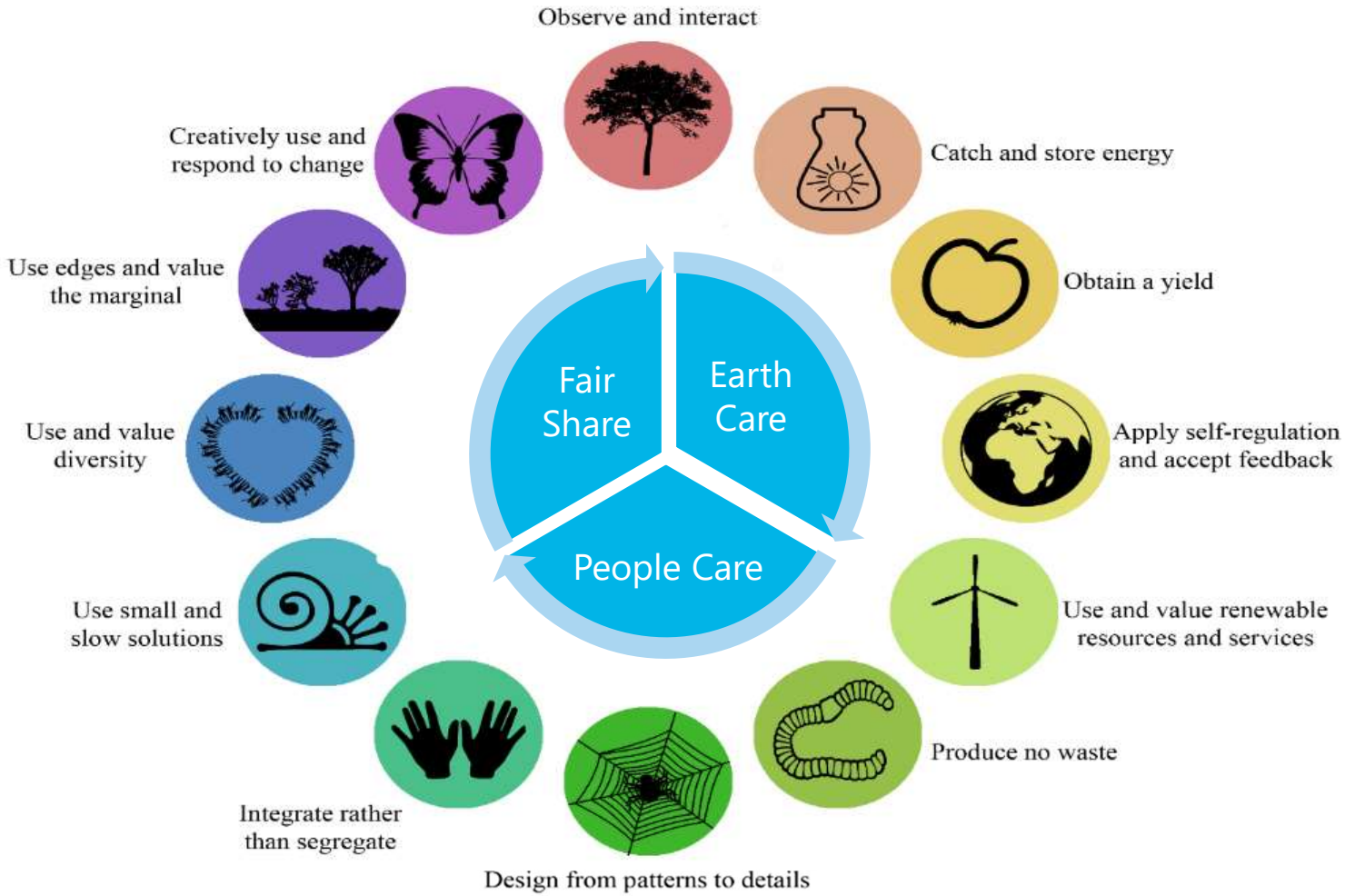

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Questions

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Hydroponics vs. Aquaponics: The Pros And Cons of Two Soil less Farming Methods

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ANDRE RAATH

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Hydroponics

The plants are grown directly in a water-based solution containing all the essential nutrients required by them.

Labor and the use of use of herbicides, reduced.

Controlled environment that protects from most of the air-borne pests.

Uses only 20 percent of the water required for traditional cultivation.

Can use artificial lighting indoors

Not suitable for root vegetables like potatoes, onions etc.

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Aquaponics

Aquaponics evolved as an effective solution for the recycling of the waste generated in aquaculture.

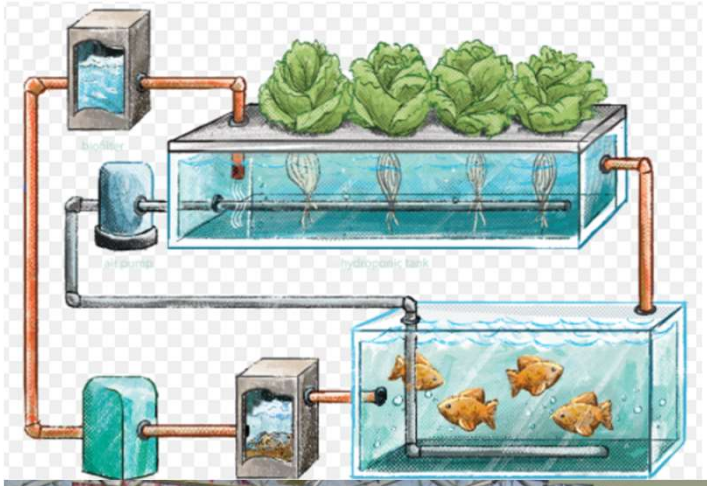
Based on the wetland ecosystem in which plants and animals support each other

Waste produced in the aquaculture of fish, prawns or clams is used as fertilizer for plants grown hydroponically.

The resulting clean water is then recirculated into the aquaculture tank.

Main input is fish food and electricity

The water requirement of aquaponics to about 2 percent of that of traditional cultivation.



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Hydroponics vs Aquaponics

- Advantages and disadvantages:
  - Both methods maximize space and reduce water consumption.
  - Risk of loss in case of mechanical/electrical failure of pumps
  - Not suitable for root vegetables

  - Hydroponics:
    - Hydroponic solutions causes large amounts of waste water. Promotes algal growth in streams.
    - No solid growing media needed for hydroponics.
    - Hydroponic units can be set up quickly and start running without any gestation period.
    - An outbreak of pests or infections in hydroponically grown crops can be quickly controlled by spraying the crops with appropriate pesticides or fungicides.
    - Any nutritional deficiencies spotted in a crop can be rectified by adding the required fertilizer into the growing media.

  - Aquaponics:
    - Aquaponic systems require a maturation period to become functional. The establishment of bacterial colonies for the effective breakdown of the fish waste is an indispensable part of aquaponics. It can take 3-6 months.
    - Aquaponic systems are more fragile. Many interdependent systems make pest control more complicated
    - Aquaponics is a closed system. Solid waste is recycled with worm farms and compost heaps.

Shadecloth, Moveable frames, what is it and why use it?

In combination with a Plastic Greenhouse Tunnel what can be Achieved

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BEVAN THOMAS

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Nylon Netting

Was mainly used in the nursery industry. Creating conditions for more uniformed production and hardening off plants before going out to the retail market.

Today, our landscapes are being netted to supply perfect produce to the export market.

For it protects against loss from

- Sunburn
- Wind
- Frost
- Hail
- Birds

What is out there

Different types, 20 %,30, 40, 60, 80. Which indicates how much shade it will create.

Available in different lengths depending on needs.

Commonly available in 50m rolls.

Various colours, mostly no difference in function. Specialized shade cloth is available for specific plants.

In the Western Cape conditions are near perfect for all round for vegetable production, however just that little extra shelter improves crop yield.

Improves immediate micro climate & environmental conditions.

- Reducing temperatures
- Sunlight intensity on plants.
- Reducing water evaporation.
- Allows airflow.
- Can improve pest and weed control.
- Windbreaks
- Reducing stress on plants

All sorts of structures can be built

- Easy to manipulate
- Does not damage easily when handling
- Easy to repair
- Caution taken in design where heavy snow and hail. Can collapse structure.

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Questions

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Closure

Geraldine Nicol

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