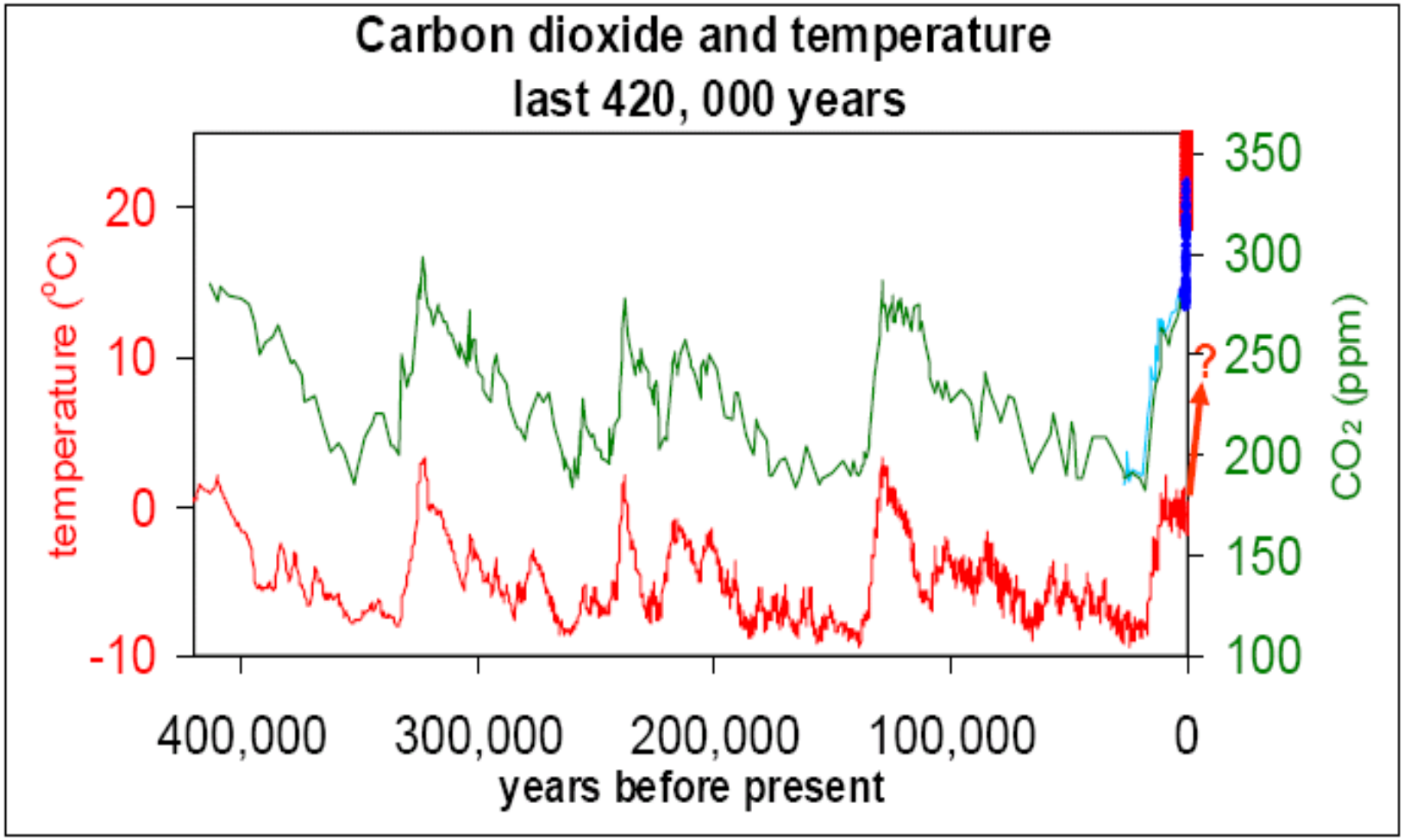
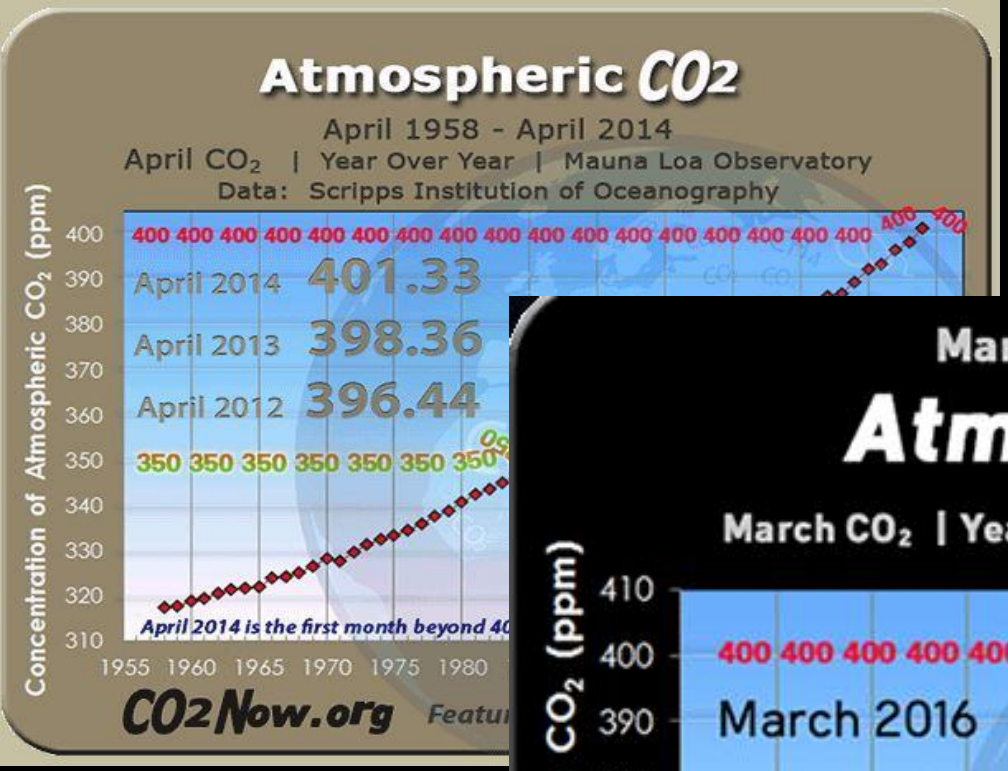
Zones 3, 4 & 5

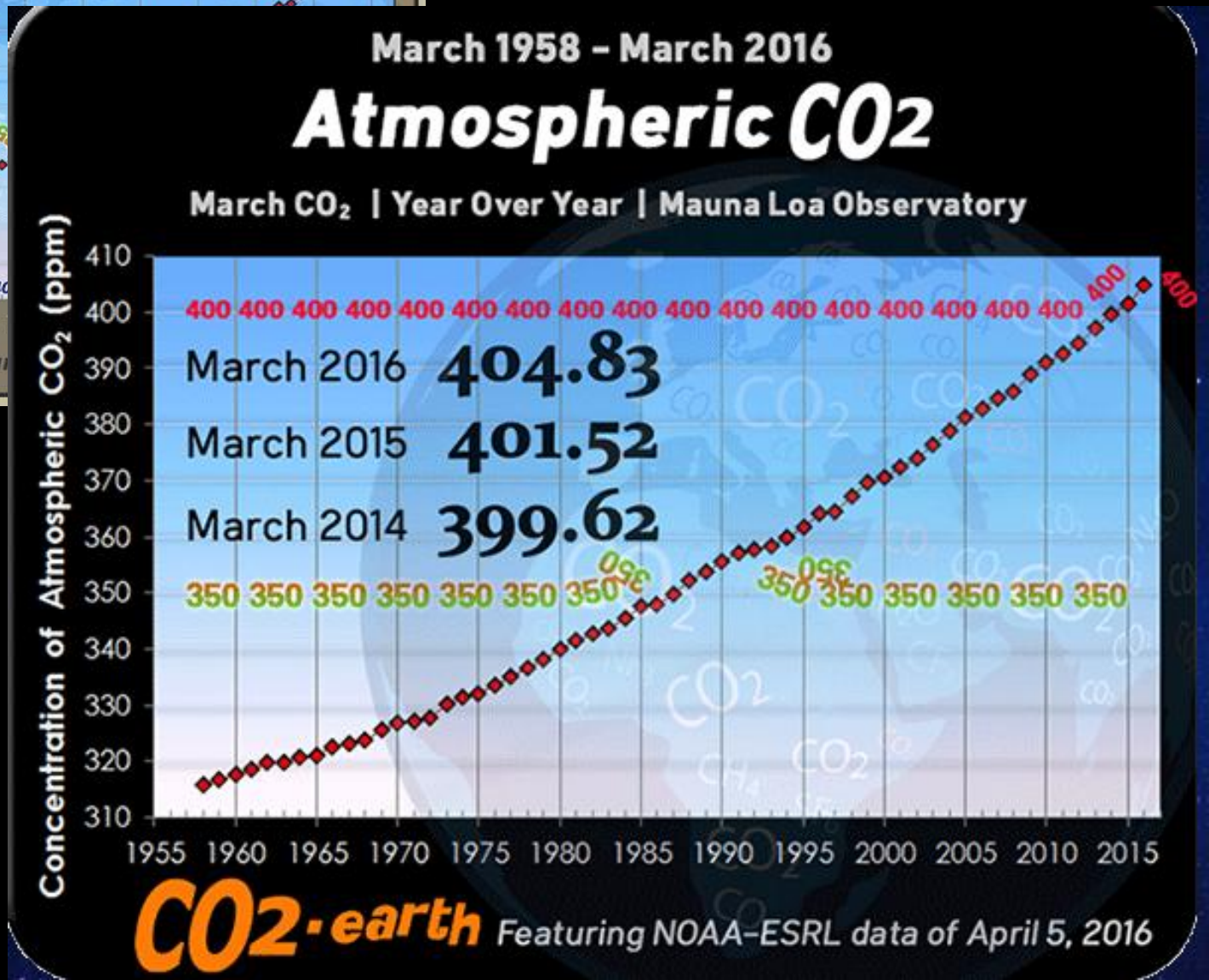


The present CO2 level is unprecedented in at least the past 420,000 years and it is expected to rise to 550-950 ppm by the year 2100

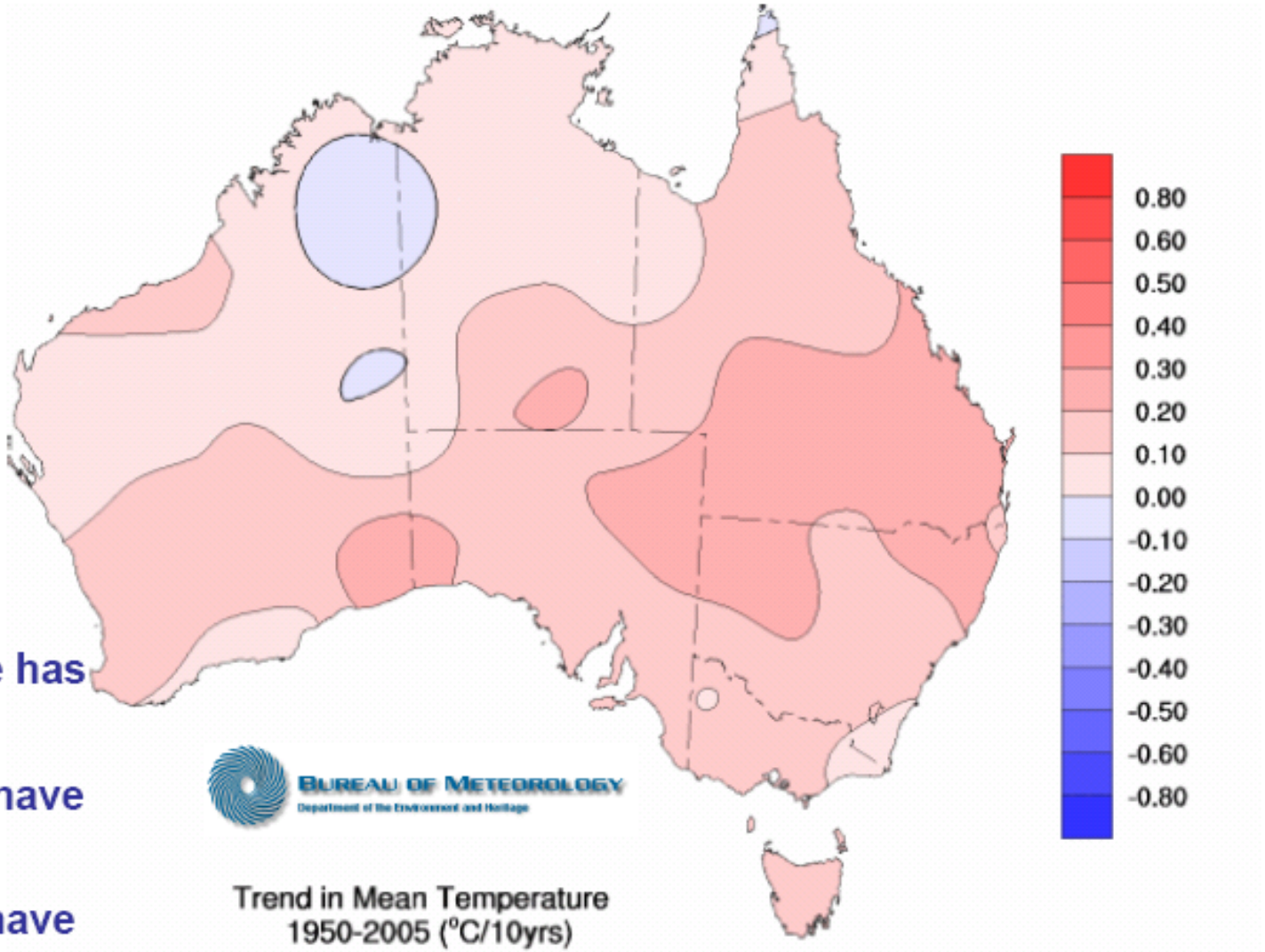
Temperatures may rise by 1.4-5.8°C by 2100

CO2 levels are rising exponentially





Temperature change 1950-2005: most warming in the south and east, least in the northwest



Average temperature has risen 0.9°C

Max temps have risen 0.6°C

Min temps have risen 1.2°C

Issued: 06/03/2006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Climate change in SA

Since 1970 there has been a 25 per cent reduction in average rainfall in April and May

Conservative figures relating to 2070

Rainfall – In cropping areas likely to reduce by >30% in spring and >20% in winter.

Average temp - up by 3 – 6 degrees C. Extreme days should reach 50 degrees C regularly.

Warmer winter will disrupt the pollination and flowering of many tree crops

CO2 levels - almost double

Sea level – up by half a metre

Murray flows – further reduced

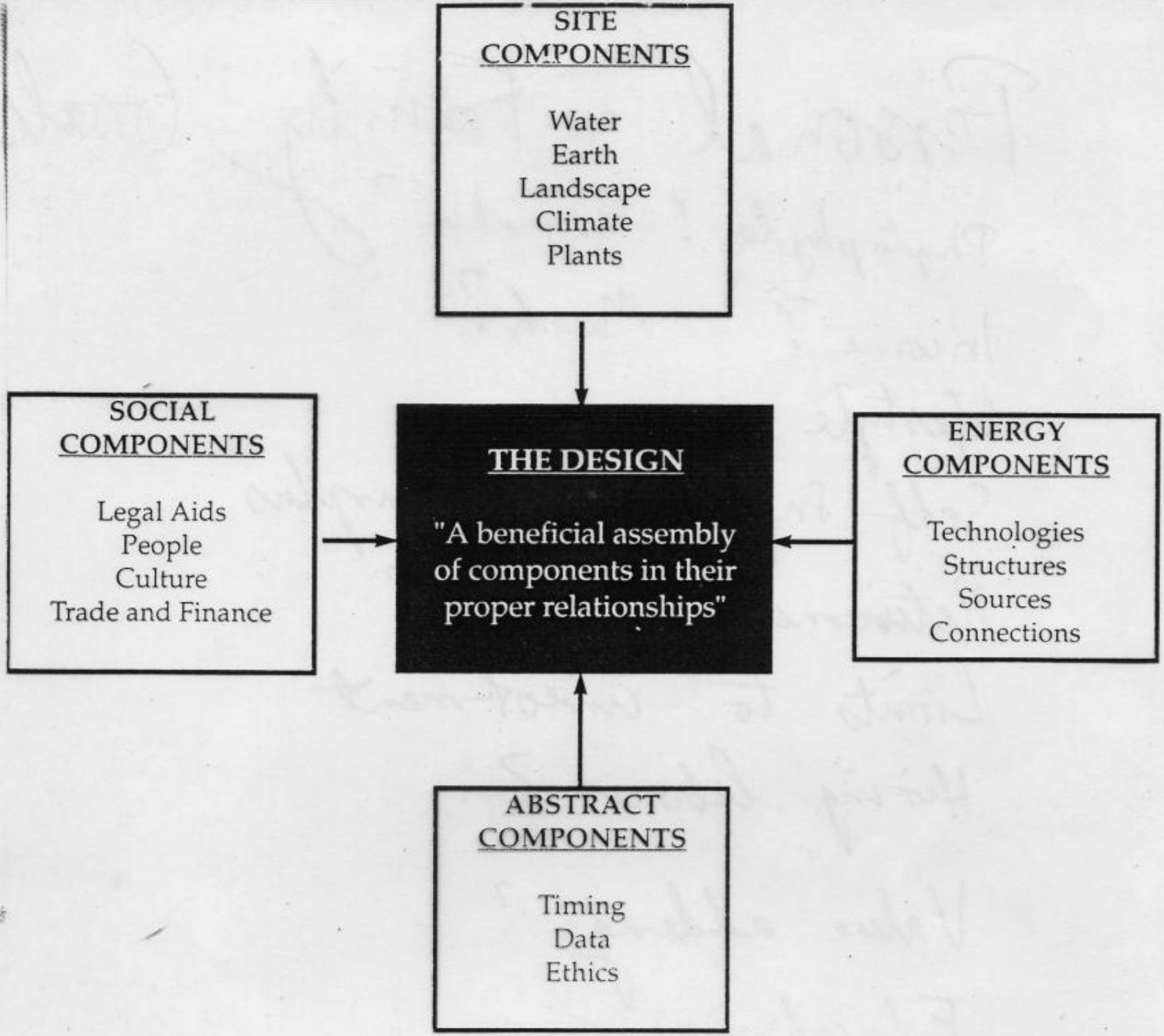
Currently Murray irrigation is on track to be cut to 37% of quota next month

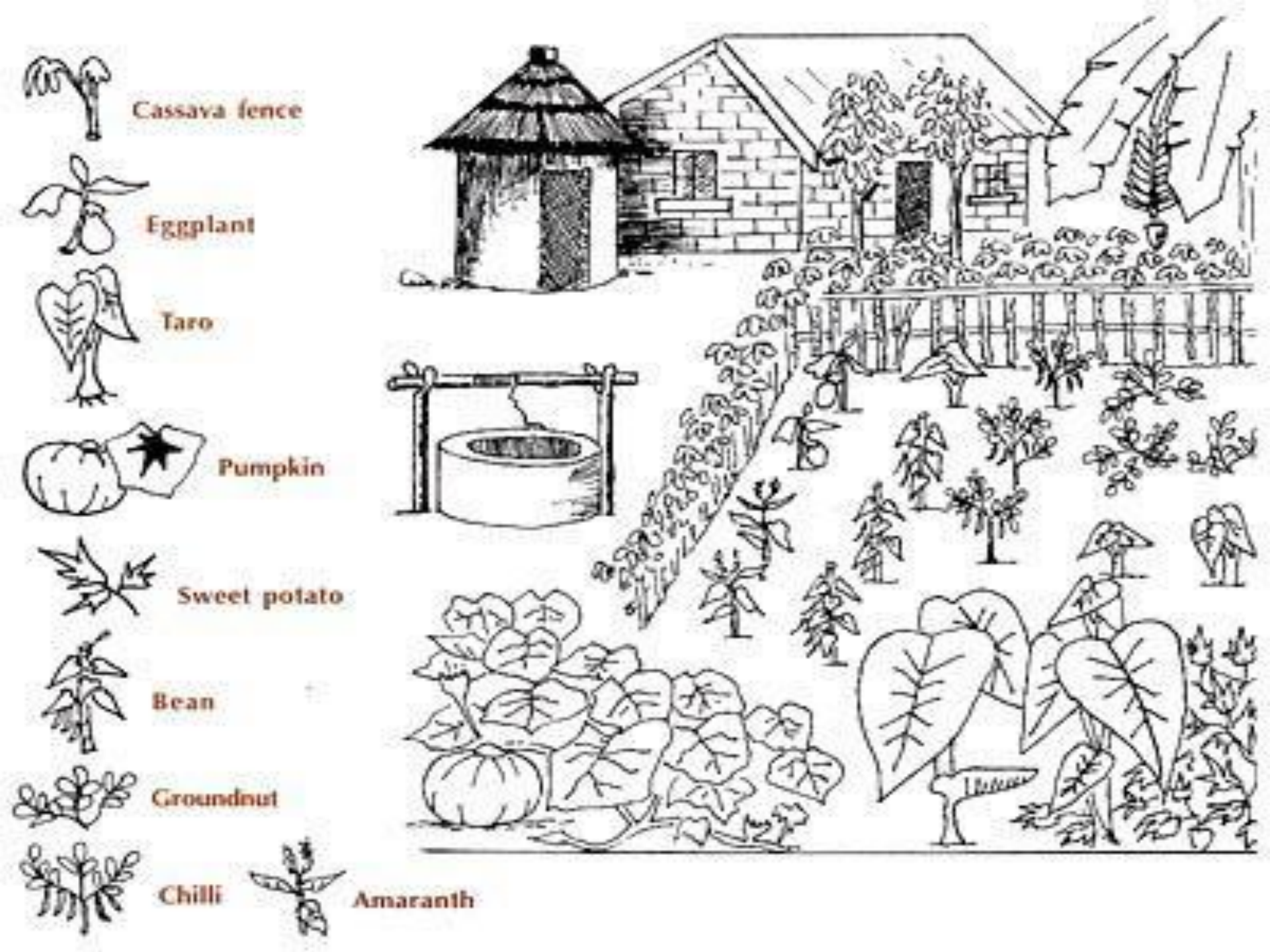
Aquifer recharge in Southern Oz drops 75%

Do we design for today or the future?

(in 30 years Adelaide will be like Norseman is now)

For stats see ‘The Coming Famine’ – Julian Cribb


SITE COMPONENTS
Water
Earth
Landscape
Climate
Plants
SOCIAL COMPONENTS
Legal Aids
People
Culture
Trade and Finance
THE DESIGN
"A beneficial assembly of components in their proper relationships"
ENERGY COMPONENTS
Technologies
Structures
Sources
Connections
ABSTRACT COMPONENTS
Timing
Data
Ethics


Cassava fence
Eggplant
Taro
Pumpkin
Sweet potato
Bean
Groundnut
Chilli
Amaranth

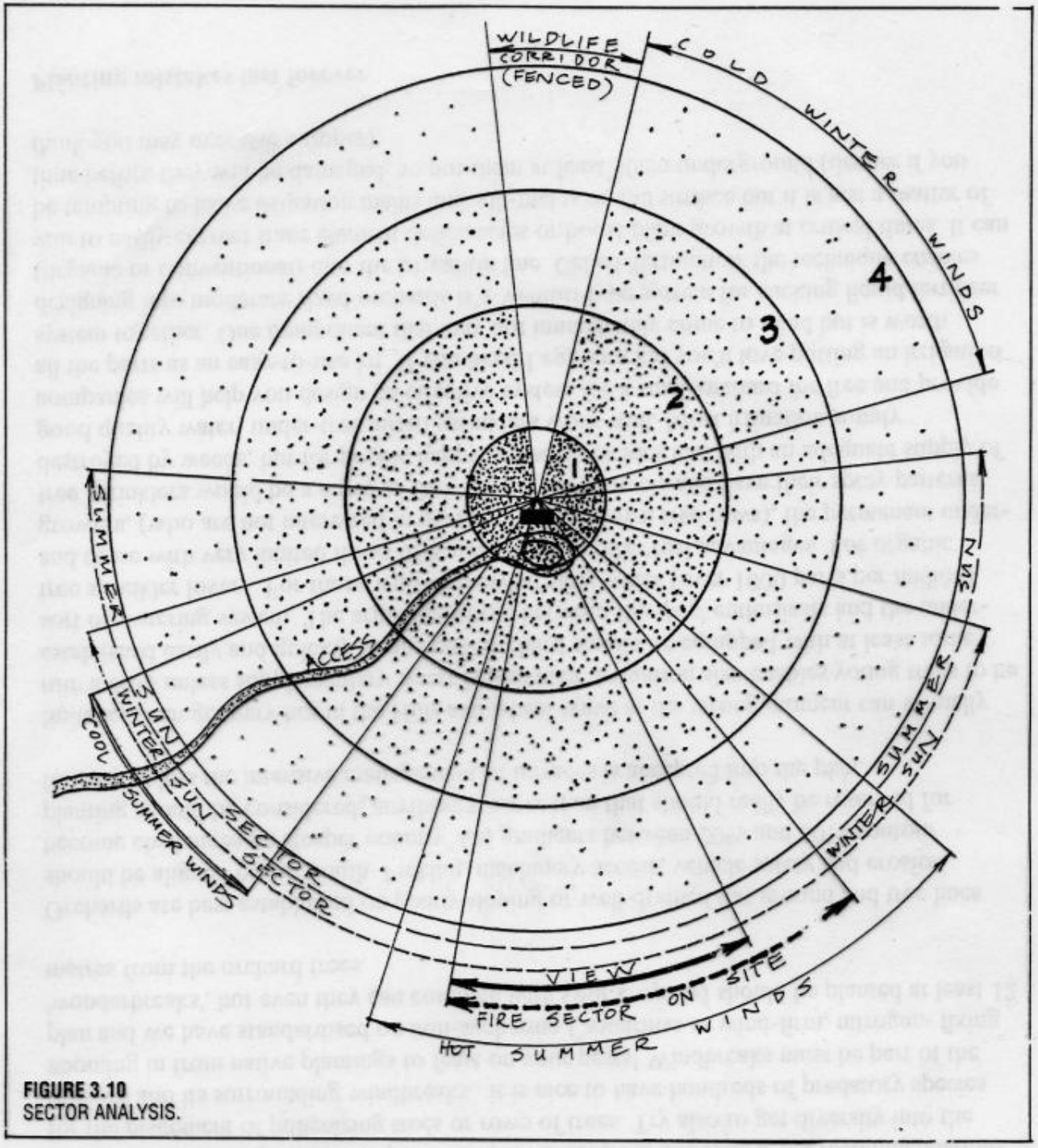
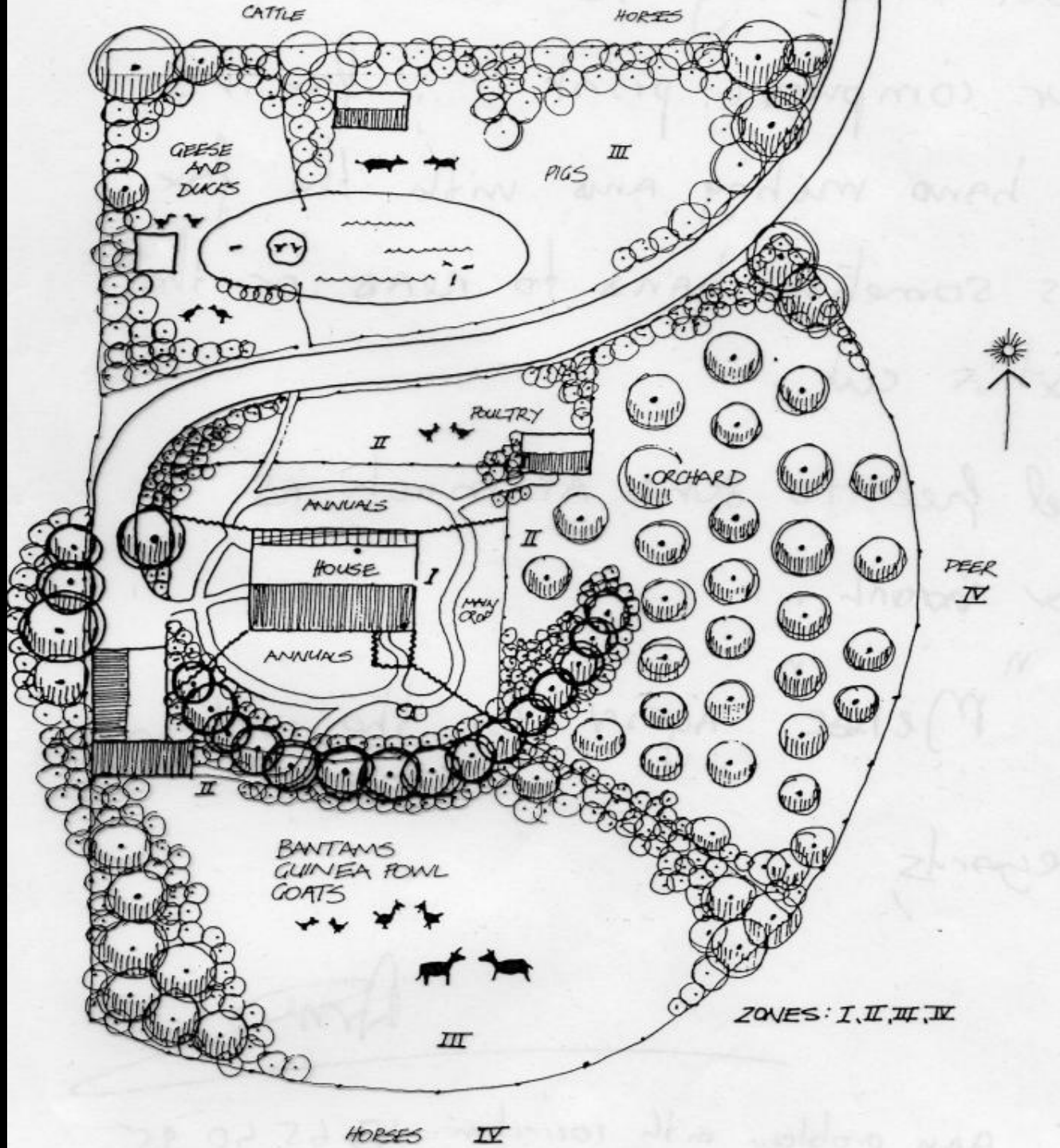
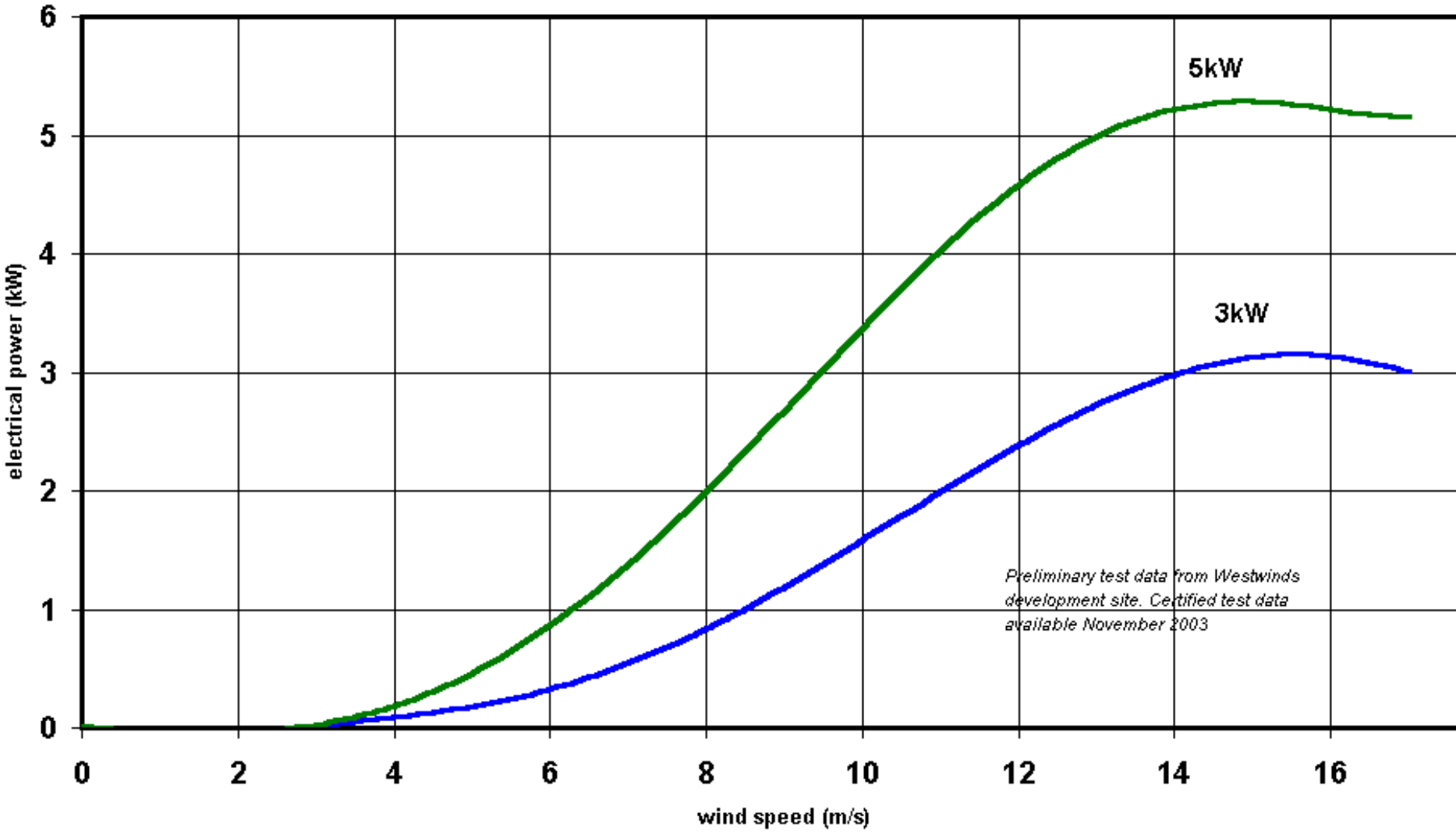


FIGURE 3.10
SECTOR ANALYSIS.


CATTLE
HORSES
GEESE AND DUCKS
III
PIGS
POULTRY
II
ORCHARD
ANNUALS
II
HOUSE
I
MAIN ROAD
ANNUALS
PEER
IV
II
BANTAMS
GUINEA FOWL
GOATS
III
ZONES: I, II, III, IV
HORSES
IV

Wind Power Potential



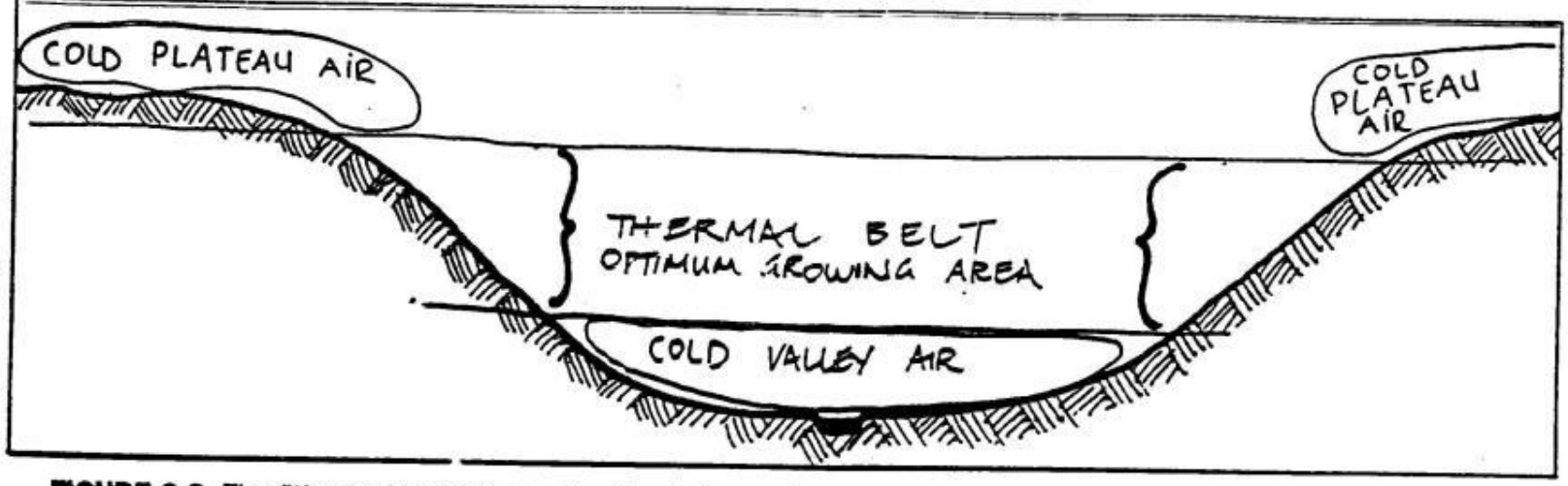


FIGURE 2.3 The "thermal belt" in a valley lies between layers of cold air and is the optimum area for house, orchard, and gardens.

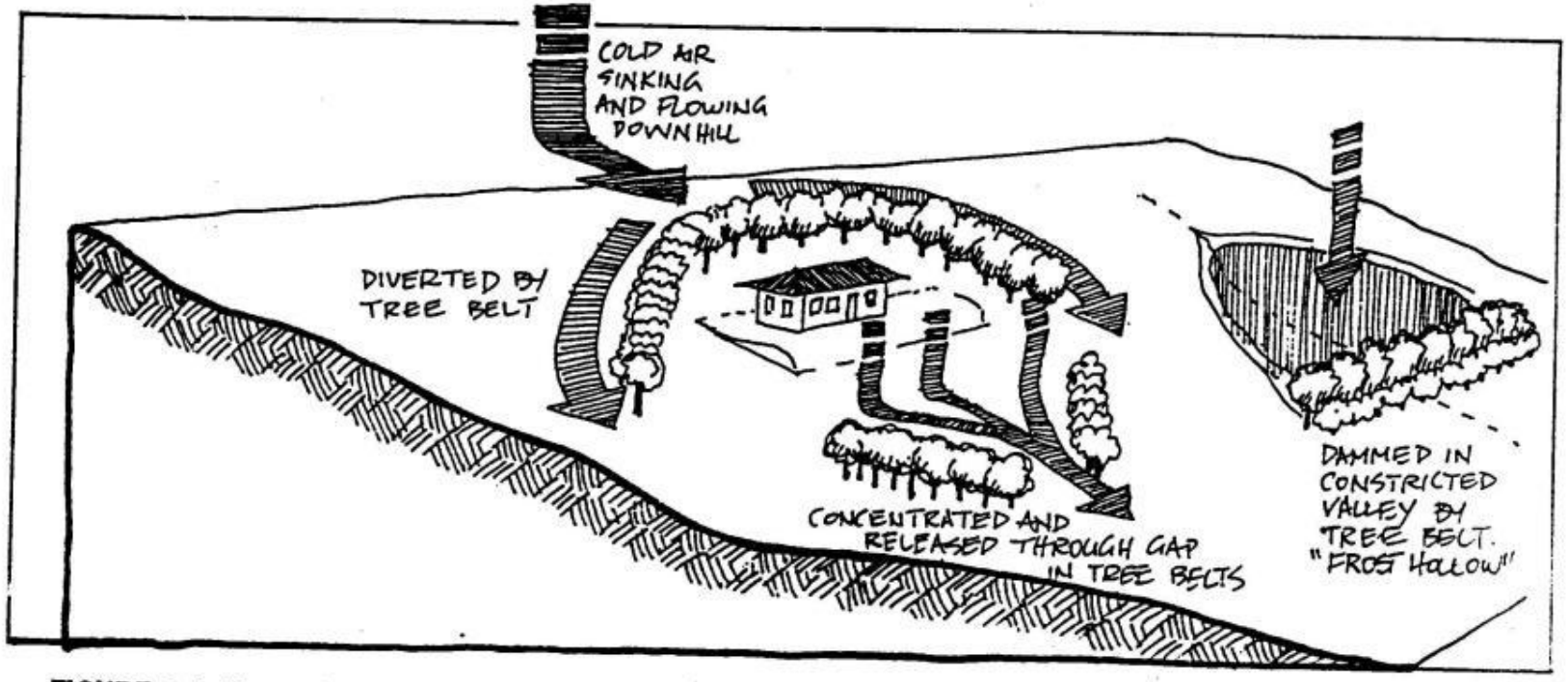


FIGURE 2.4 How cold air flows downslope. Note ways to avoid frost pockets by using vegetation to divert cold air.


Image © 2008 DigitalGlobe
97 m
Google
34°36'48.91" S 138°43'17.36" E
May 27, 2006
Eye alt 325 m

Climate
Outlooks
Reports & summaries
Weather & climate data
Daily rainfall
Recent observations
Monthly statistics
Data services
Maps - recent conditions
Maps - average conditions
Climate change
Extremes of climate
About Australian climate

Climate Data Online

About Climate Data Online | How to get data - FAQs | Technical help

Use the **Text** or **Map** search below to view daily and monthly statistics, historical weather observations, rainfall, temperature and solar tables, graphs and data.

For additional data types, or specifc dates and localities go to: Weather Station Directory

Ad

Se

Select using Text | Select using Map

1: Selected: Daily rainfall

Data about: Rainfall

Type of data:

Observations	Statistics
(•) Daily ( ) Monthly	( ) Daily ( ) Monthly

Daily rainfall data and graphs for a selected year. Data download for one or all years.

2: Select a weather station in the area of interest

Enter a location [Find]

3: Get the data

If you already know the station number you may enter it below instead of using the search above.

Latitude?

Elevation?

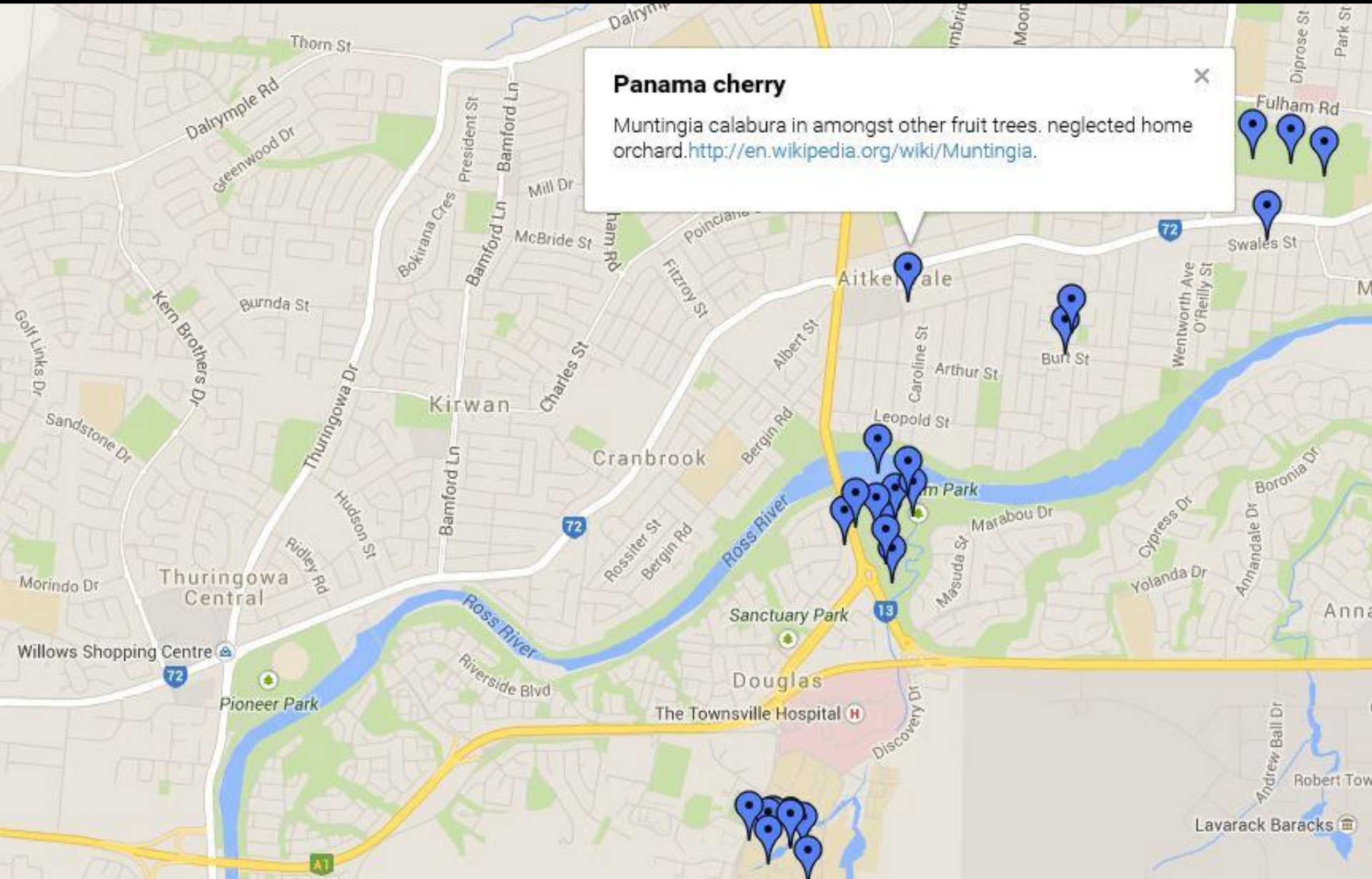
Proximity to sea?


BRAZIL
VENEZUELA
GUYANA
SURINAME
FRENCH GUIANA (FR)
COLOMBIA
PERU
BOLIVIA
PARAGUAY
CHILE
ARGENTINA
URUGUAY
PACIFIC OCEAN
NORTH ATLANTIC OCEAN
SOUTH ATLANTIC OCEAN
Equator
Tropic of Capricorn
60° W
50° W
40° W
30° W
0°
10° S
20° S
30° S
Boa Vista
Pico da Neblina
2,994 m
Guiana Highlands
Macapa
Belem
São Luís
Parnaíba
Fortaleza
Santarém
Manaus
AMAZON BASIN
Japurá
Negro
Amazon
Juruá
Madeira
Imperatriz
Teresina
Natal
João Pessoa
Recife
Juazeiro
Maceió
Aracaju
Feira de Santana
Salvador
Campos Cerrados
Caatinga
Porto Velho
Rio Branco
Abunã
Guaporé
Jurua
Teles Pires
Xingu
Araguaia
Tocantins
Palmas
Chapada dos Guimarães
BRASÍLIA
Cuiaba
Anápolis
Goiânia
São Francisco
Itabuna
Montes Claros
BRAZILIAN HIGHLANDS
Belo Horizonte
Pico da Bandeira
2,892 m
Divinópolis
Victória
Juiz de Fora
Campo Grande
Paraná
Paraguay
Marília
Maringá
Sao Paulo
Carnaval
Jardim Botânico
Rio de Janeiro
Christ the Redeemer
Harbour of Rio de Janeiro
Agulhas Negras
Santos
Itaipu Dam
Iguazu Falls
Iguaçu
Curitiba
Joinville
Florianópolis
Passo Fundo
Santa Maria
Porto Alegre
Bagé
Rio Grande
LEGEND
Country Boundary
Major Road
River
Major City
Sea Port
Country Capital
Airport
Point of Interest
Lake
Mt. Peak
0 375 575 Km
0 200 375 Miles
Copyright © 2013 www.mapsofworld.com
(Updated on 18th January, 2013)


STRALIA
Timor Sea
Bathurst
Wessel
Prince of Wales Cape York
Darwin
Kakadu
Arnhem Land
Gulf of Carpentaria
Cape York Peninsula
Great Barrier Reef
Coral Sea
Collier Bay
Kimberley Plateau
Lake Argyle
Barkly Tableland
Mitchell
Gilbert
Cairns
Lake Woods
Tanami Desert
Lake Gregory
Great Dividing Range
Townsville
Great Sandy Desert
Lake Mackay
NORTHERN TERRITORY
QUEENSLAND
Lake Disappointment
Alice Springs
Macdonnell Ranges
Gibson Desert
WESTERN AUSTRALIA
Lake Carnegie
Barrow Range
Simpson Desert
Diamantina
Fraser Island
Brisbane
Great Victoria Desert
SOUTH AUSTRALIA
Lake Eyre (North)
Grey Range
Lake Barlee
Rason Lake
Nullarbor Plain
Lake Eyre (South)
Lake Blanche
Lake Frome
Darling
Lake Gairdner
NEW SOUTH WALES
Mungo National Park
Great Dividing Range
Sydney
Great Australian Bight
Lachlan
Adelaide
Murray
Sydney Opera House
Mt. Kosciuszko 2229 m
Kangaroo Island
VICTORIA
CANBERRA
Melbourne
Tasman Sea
King
Bass Strait
Furneaux
Mt. Ossa 1617 m
PACIFIC OCEAN
TASMANIA
Hobart
Australian Overseas Territories
Norfolk Island
Christmas Islands
Heard and McDonald Islands
Ashmore and Cartier Islands
Cocos (Keeling) Islands
Coral Sea Islands Territory
Australian Antarctic Territory
Map not to Scale
0 300 600 Km
0 150 300 Miles
Copyright © 2013 www.mapsofworld.com


HYPSOMETRIC TINTS
METRES
BATHYMETRIC TINTS
SEA LEVEL
2000
1500
1000
500
200
SEA LEVEL
100
200
500
1000
3000
INGHAM
ALLINGHAM
PALM ISLANDS
PALM ISLAND
Great Palm Island
- White Rock
* Chilcott Rocks
Orpheus Island
Curacoa Island
Fantome Island
Taylors Beach
Cordelia
Trebonne
Toobanna
Upper Stone
Old Stone River Prison Farm
Bambaroo
Pandora Reef
Fly Island
Havannah Island
Falcon Is
Esk Island
Brisk Is
Eclipse Is
Lodestone Reef
Keeper Reef
Grub Reef
Helix Reef
Spoon Reef
John Brewer Reef
Noname Hill
Mt Lee
Mt Fox
Mt Dora
Mt Lyall
Christmas Creek (abandoned)
Badara Yards
"Ryeburn"
"Kangaroo Hills"
"Blue Range"
"Zig Zag Creek"
Hidden Valley
Paluma
Mutarnee
Lake Paluma
Mt Spec
BALGAL BEACH
Herald Island
Rattlesnake Island
Acheron Island
Cordelia Rocks
Rollingstone
Toomulla
Mt Zero
"Taravale"
Mt Halifax
Magnetic Island
HORSESHOE BAY
ARCADIA BAY
NELLY BAY
PICNIC BAY
Mt Cook
Toolakea
Saunders Beach
Bluewater
Yabulu
PALLARENDA
Cape Cleveland
DEERAGUN
ALICE RIVER
TOWNSVILLE
CLEVELAND BAY
Mt Cleveland
Australian Institute of Marine Science
Cape Ferguson
Cape Bowling Green
Mt Nokomis
Ponto Hut
Mt Catarata
"Star"
"Narraweena"
"Table Top"
South Pinnacle
Rasmussen
Mt Stuart
Kelso
Antill Plains
Round Mtn
ALLIGATOR CREEK
Nome
Cungulla
BOWLING GREEN BAY
Saddle Mtn
Jerona
Saline coastal flats
Alva
Cromarty
Mt Elliot
Giru
Horse Shoe Lagn
BRANDON
AYR
"Jardine"
Rita Island
HOME HILL
Kelly Mtn
Mt Inkerman
"Inkerman"
Clare
Glendale
Reid River
Mt Sugarloaf
Mt Ellenvale
Mt Flagstone
Woodstock
Mt St Michael
"Dotswood"
"Mirambeena"
"Quilps Outstation"
"Farming River"
"Marlow"
Arthur Peak
Mt Keelbottom
Mt Success
"Meadowvale"
Cardington
Mingella
"Bordekin Downs"
"Annavale"
"Percy Springs"
"Virginia Park"
"Forest Home"
Birthday Hills
The Bluff
"Woodhouse"
Louisa Mtn
Dalrymple Mtn
Byrne Valley
Mt Benjonney
"Plumtree"
"Rocky Ponds"
Rangemore
"Glenell North"
LEICHHARDT RANGE
FLINDERS
DEVELOPMENTAL ROAD
RANGE
HWY
A1
46°
147°

Permaculture Townsville fruit map; also on fallingfruit.org



Açaí palm

From Wikipedia, the free encyclopedia
(Redirected from Acai)

The **açaí palm** (Portuguese: [aˌsaˈi] (listen), from Tupi-Guarani *asaí*;[2] ***Euterpe oleracea***) is a species of palm tree in the genus *Euterpe* cultivated for its fruit and hearts of palm. Its name comes from the Brazilian Portuguese adaptation of the Tupian word *ïwaca'ï*, '[fruit that] cries or expels water'. Global demand for the fruit has expanded rapidly in recent years, and açaí is now cultivated for that purpose primarily. *Euterpe edulis* (juçara) is a closely related species which is now the primary source of hearts of palm. [3]

Euterpe oleracea is mostly native to Brazil and Trinidad and northern South America, mainly in swamps and floodplains. Açaí palms are tall, slender palms growing upwards of 25+ meters (82 feet), with pinnate leaves up to 3 meters (9.8 feet) long.[1][4]

Contents [hide]


Açaí palm

Harvesting and uses [edit]

Fruit [edit]

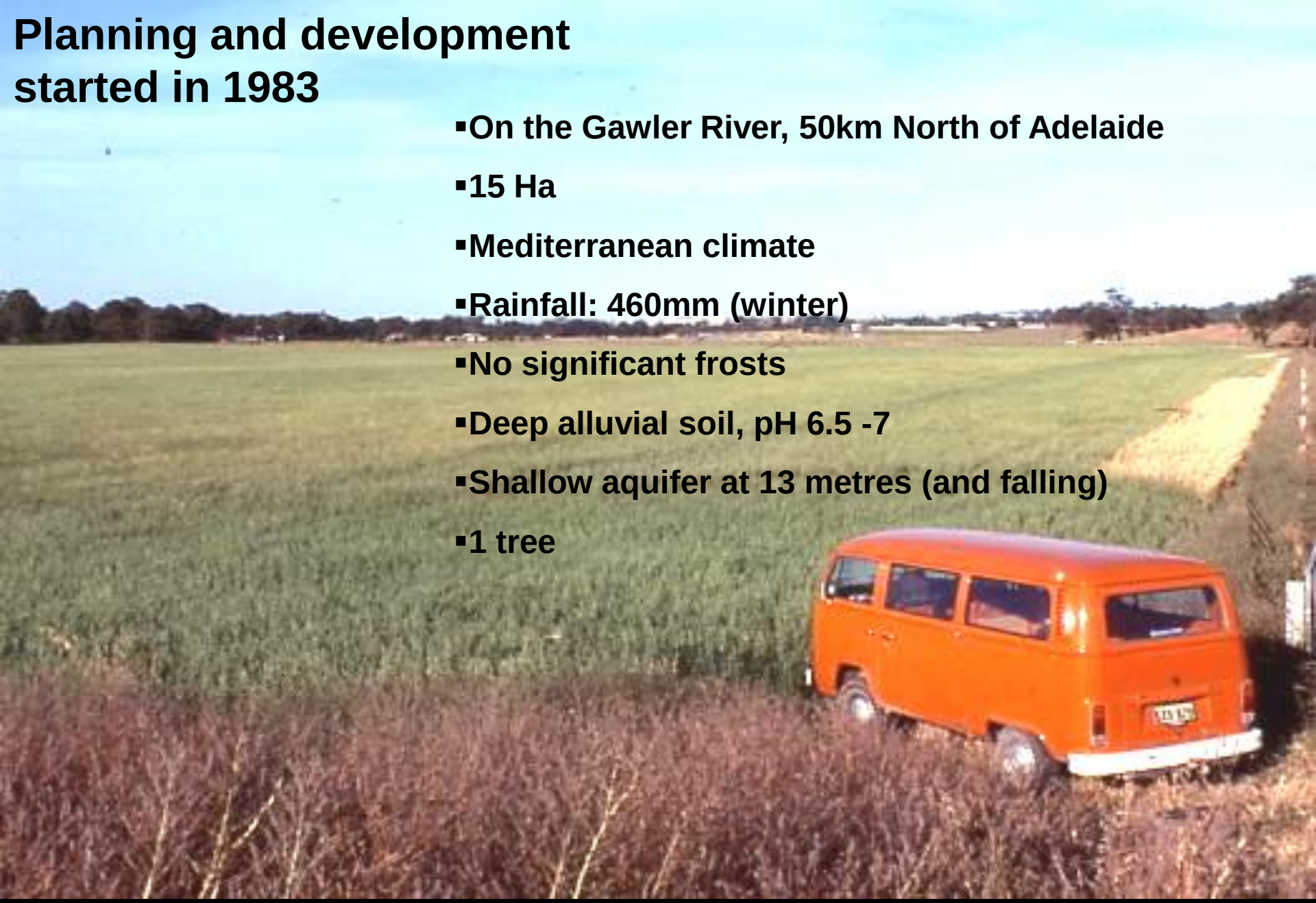
The fruit, commonly known as açaí berry,[5] is a small, round, black-purple drupe about 1 inch (25 mm) in circumference, similar in appearance to a grape, but smaller and with less pulp and produced in branched panicles of 500 to 900 fruits. The exocarp of the ripe fruits is a deep purple color, or green, depending on the kind of açaí and its maturity. The mesocarp is pulpy and thin, with a consistent thickness of 1 mm or less. It surrounds the voluminous and hard endocarp, which contains a single large seed about 0.25–0.40 inches (7–10 mm) in diameter. The seed makes up about 80% of the fruit (Schauss, 2006c). Two crops of fruit are produced each year. The fruits can be harvested and consumed.

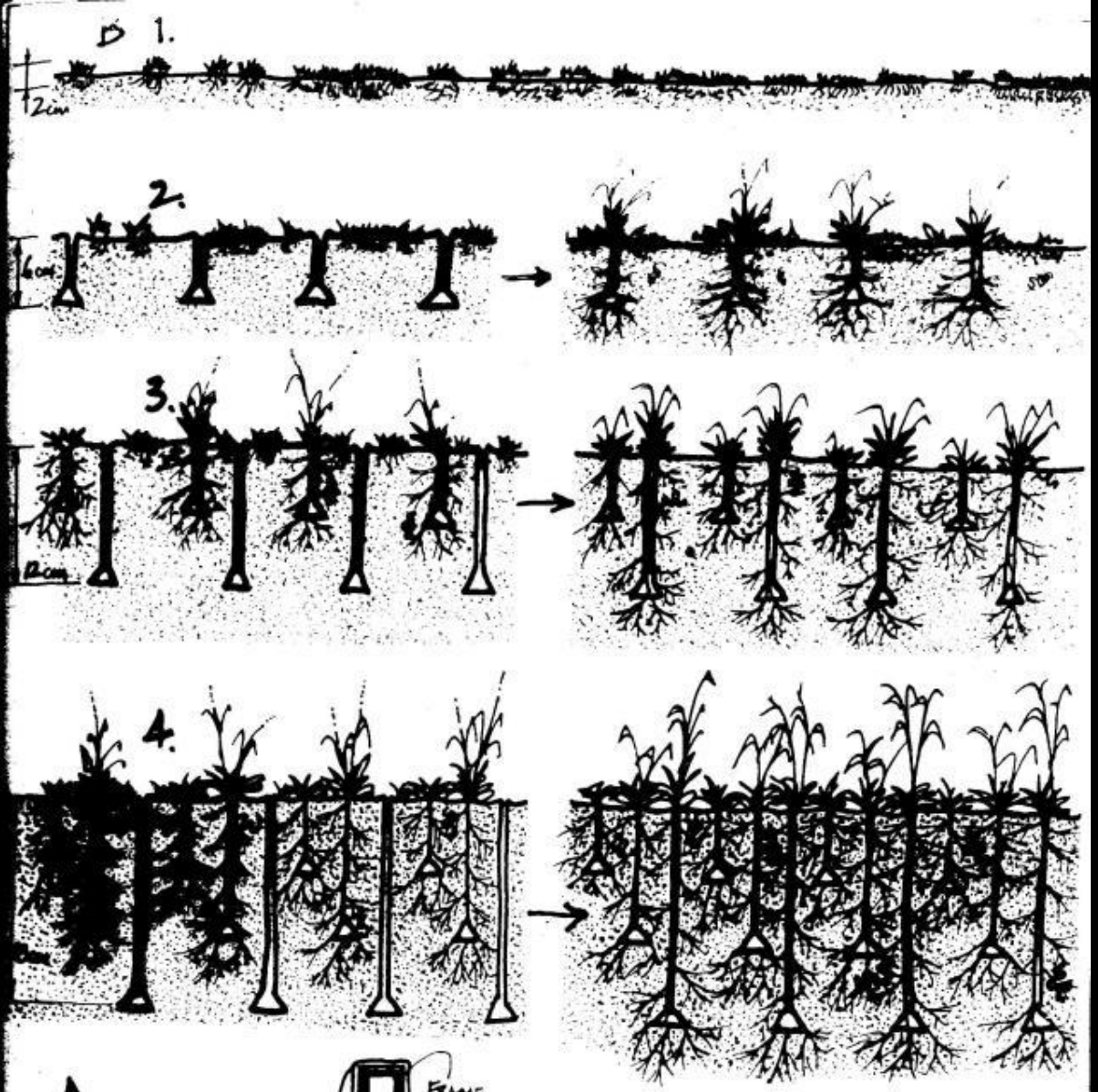
In a study of three traditional Caboclo populations in the Brazilian Amazon, açaí palm was described as the most important plant species because the fruit makes up a major component of their diet, up to 42% of the total food intake by weight.[6]

In 2005, an article published by Greenpeace International stated that "the tasty dark violet wine of acaí is the most important non-wood forest product in terms of money from the river delta of the Amazon."[7] A 2008 Los Angeles

Planning and development started in 1983

- On the Gawler River, 50km North of Adelaide
- 15 Ha
- Mediterranean climate
- Rainfall: 460mm (winter)
- No significant frosts
- Deep alluvial soil, pH 6.5 -7
- Shallow aquifer at 13 metres (and falling)
- 1 tree





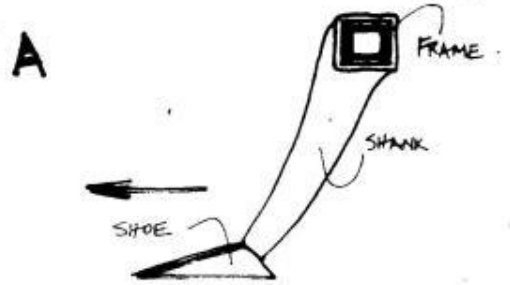


FIGURE 2.18 CHISEL PLOUGHING
(A) Chisel plough shank (from the Wallace Soil Conditioner)
(B) In pasture: 3-4 sequences with increasing depth of tines creates deep (18cm) humus soils over 1-2 growing seasons.

Appendix 3

SWEP PTY. LTD. ANALYTICAL LABORATORIES

A.C.N. 005 031 569
UNIT 47/174 BRIDGE ROAD, KEYSBOROUGH, VIC.3173 AUSTRALIA
POSTAL ADDRESS: P.O.BOX 59D NOBLE PARK VIC.3174
TELEPHONE: (03) 9701 6007 FAX: (03) 9701 5712
email: tmswep@connexus.apana.org.au

18/04/2000

REPORT ON SAMPLE OF :Soil

FILE NO : 000412137

DATE RECEIVED : 13/04/2000

CLIENT : THE FOOD FOREST
ATT:GRAHAM T BROOKMAN
PO BOX 859
GAWLER, SA 5118

CLIENT ID : THE003

PHONE : 08 85226450

REFERENCE :

REF. ID :

SAMPLE ID : SAMPLE #1/SOIL

LAND USE : WALNUTS

ANALYSIS REQUIRED : Full

ITEMS			RESULTS	DESIRABLE LEVEL
COLOUR : DARK GREY BROWN				
TEXTURE : SILTY CLAY LOAM				
PH(1:5 Water)			6.1	6.0-7.0
PH(1:5 0.01M Ca Cl)			5.6	
ELECT. CONDUCTIVITY	EC	µs/cm	524	<315
TOTAL SOLUBLE SALT	TSS	ppm	1729.2	<1040
AVAILABLE CALCIUM	Ca	ppm	2060	2203
AVAILABLE MAGNESIUM	Mg	ppm	156	233
AVAILABLE SODIUM	Na	ppm	121.9	< 186
AVAILABLE HYDROGEN	H	ppm	32	32
AVAILABLE NITROGEN	N	ppm	19.4	50
AVAILABLE PHOSPHORUS	P	ppm	128.9	40
AVAILABLE POTASSIUM	K	ppm	339.3	250
AVAILABLE SULPHUR	S	ppm	5.5	3 - 5
AVAILABLE COPPER	Cu	ppm	04.30	2
AVAILABLE ZINC	Zn	ppm	15.60	3 - 5
AVAILABLE IRON	Fe	ppm	21	> 20
AVAILABLE MANGANESE	Mn	ppm	61	> 20
AVAILABLE COBALT	Co	ppm	02.80	0.5-0.7
AVAILABLE MOLYBDENUM	Mo	ppm	00.50	0.5-0.7
AVAILABLE BORON	B	ppm	00.50	0.4-0.6
TOTAL ORGANIC MATTER	OM	%	2.9	3 - 4
TOTAL PHOSPHORUS	TP	ppm	NR	
EXTRACTABLE ALUMINIUM	Al	ppm	NR	
TOTAL NITROGEN	N	%	NR	
CHLORIDE	Cl	ppm	NR	

NR = Not Required

HORTICULTURAL CROPS AND GARDEN PLANTS

SALINITY (Maximum)	VEGETABLES	TREES	ORNAMENTALS
	Ultra Sensitive		
	(Completely intolerant of salt)		
300 mg/L		Loquat	Violets
	Sensitive		
700 mg/L	French beans Strawberry Peas (not above 575)	Walnut	Bauhinia Gladiolus Fuchsia Camelia Azalea Begonia Dahlia Poinsettia Aster Rose Zinnia
	Moderately Sensitive		
850 mg/L	Beans (broad & field) Celery Lettuce Potato (sweet) Radish Raspberry	Apple Apricot Almonds Lemons Orange Grapefruit Quince Peach Pear Prune, Plum	Coprosma Vinca Bougainvillaea Hibiscus Carnation
	Moderately Resistant		
1300 mg/L	Onions Broccoli Cantaloup Cauliflower Cereals Carrot (after 3-4 fern leaves) Gherkins Cucumber Potatoes (must have good drainage) Sweet corn	Grape vines Fig Olive Pomegranate	Chrysanthemum Stock Oleander
	Resistant		
1700 mg/L	Artichoke Tomato (furrow		

Technical Specifications of Peats ‘cultured compost’

Typical Analysis w/w (dry basis)

Nutrients and trace elements are derived from natural ingredients used

- Organic Carbon 35%
- Total Nitrogen (N) 2.0%
- Total Phosphorus (P) 0.4%
- Total Potassium (K) 1.0%
- Total Sulphur (S) 0.39%
- Total Calcium (Ca) 1.4%
- Total Magnesium (Mg) 0.35%
- Total Iron (Fe) 0.39%
- Total Manganese (Mn) 0.01%
- Total Copper (Cu) 0.01%
- Total Zinc (Zn) 0.01%

NASAA CERTIFIED ORGANIC

FARM DERIVED INPUTS

Ash

Compost

Soil nutrient levels over time at The Food Forest

– expressed as a relationship with recognised 'ideal soil nutrient levels for pistachio nut growing'
(being the right hand [purple] column for each nutrient)

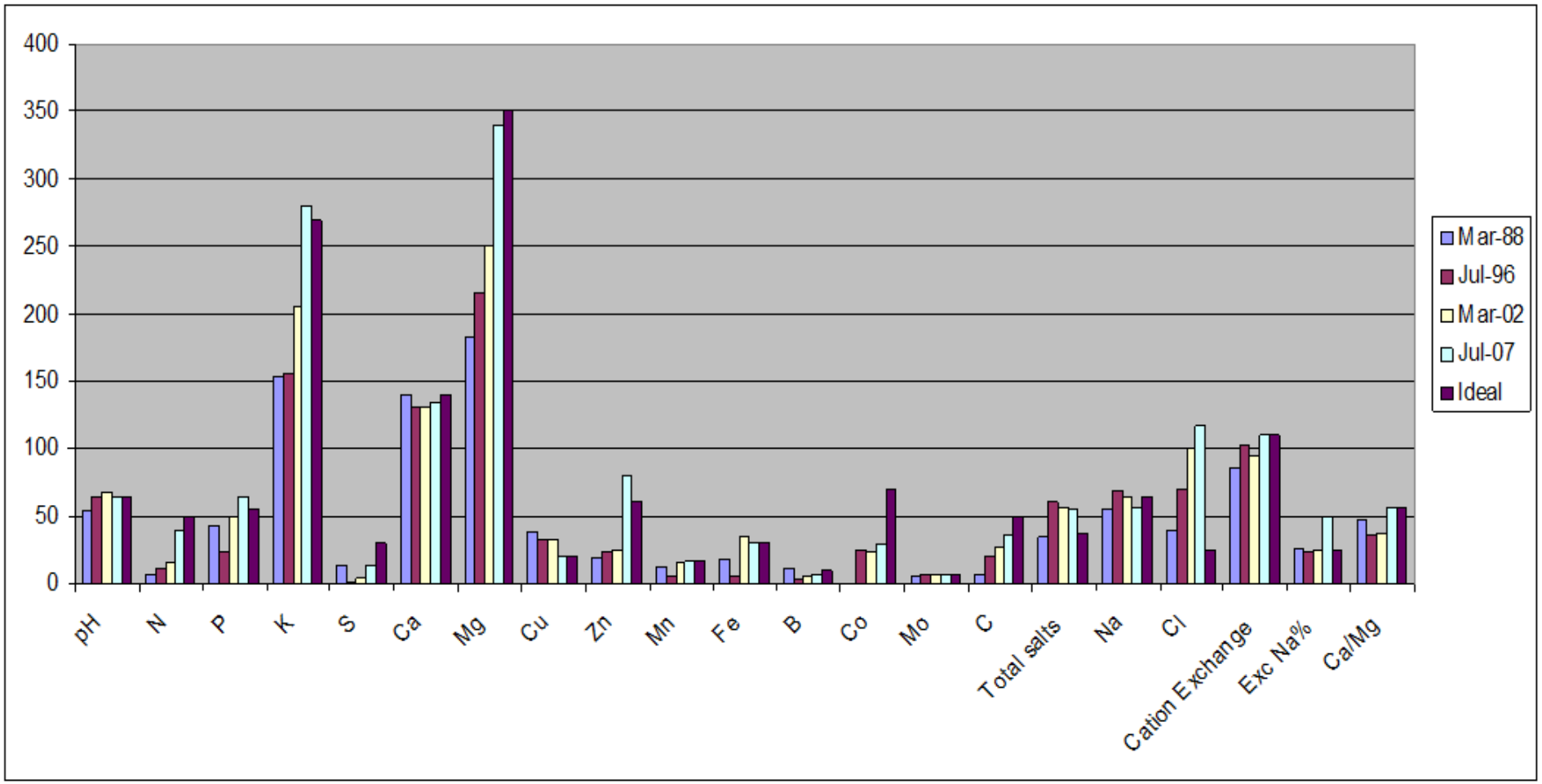



Image © 2008 DigitalGlobe
37 m
©2008 Google
34°36'45.21" S 138°43'12.22" E
May 27, 2006
Eye alt 117 m

Strawbale coolroom

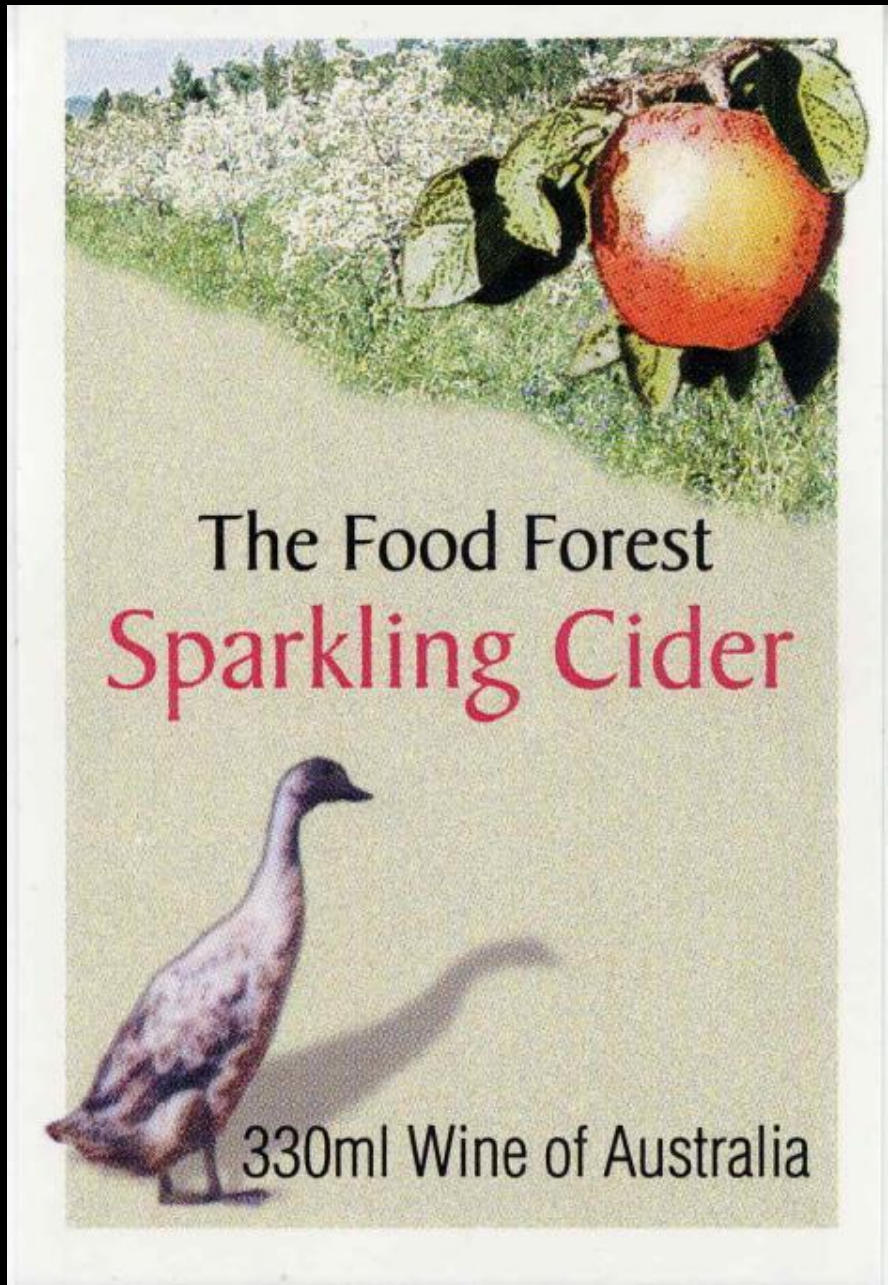
PROCESSING ON SITE

Dehydrator

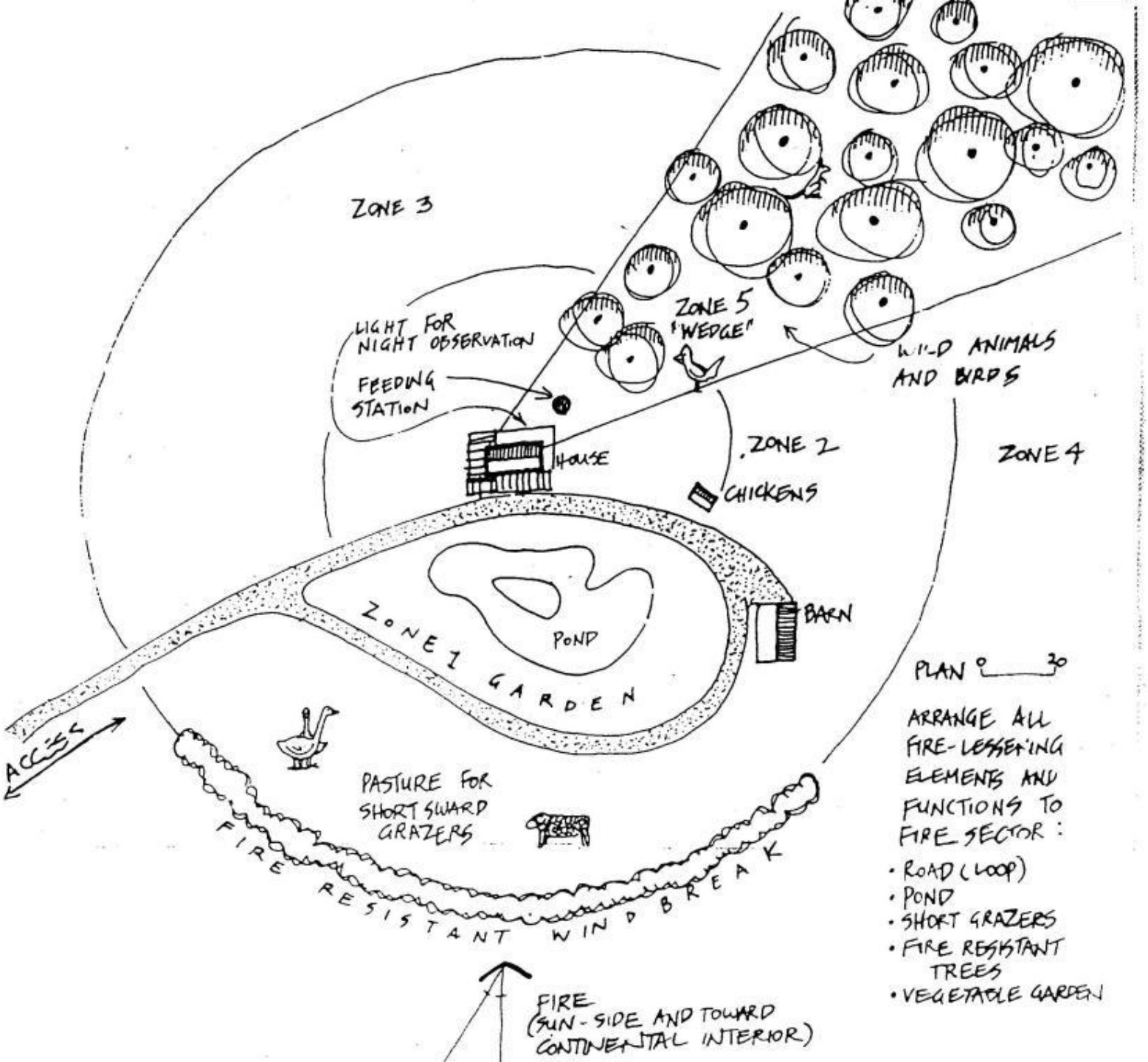
Locally designed & made

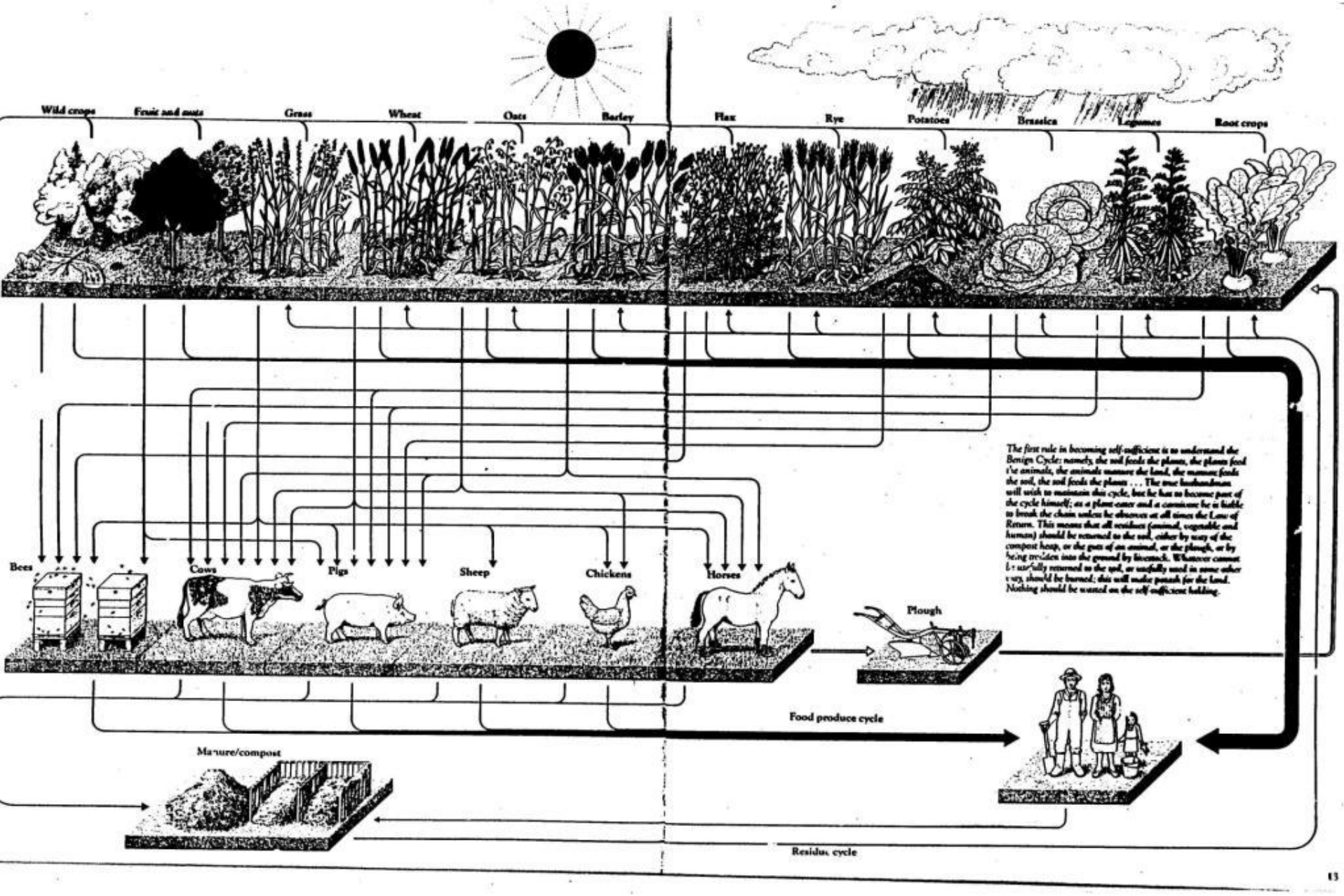
Efficient

Clean heat


The Food Forest
Sparkling Cider
330ml Wine of Australia

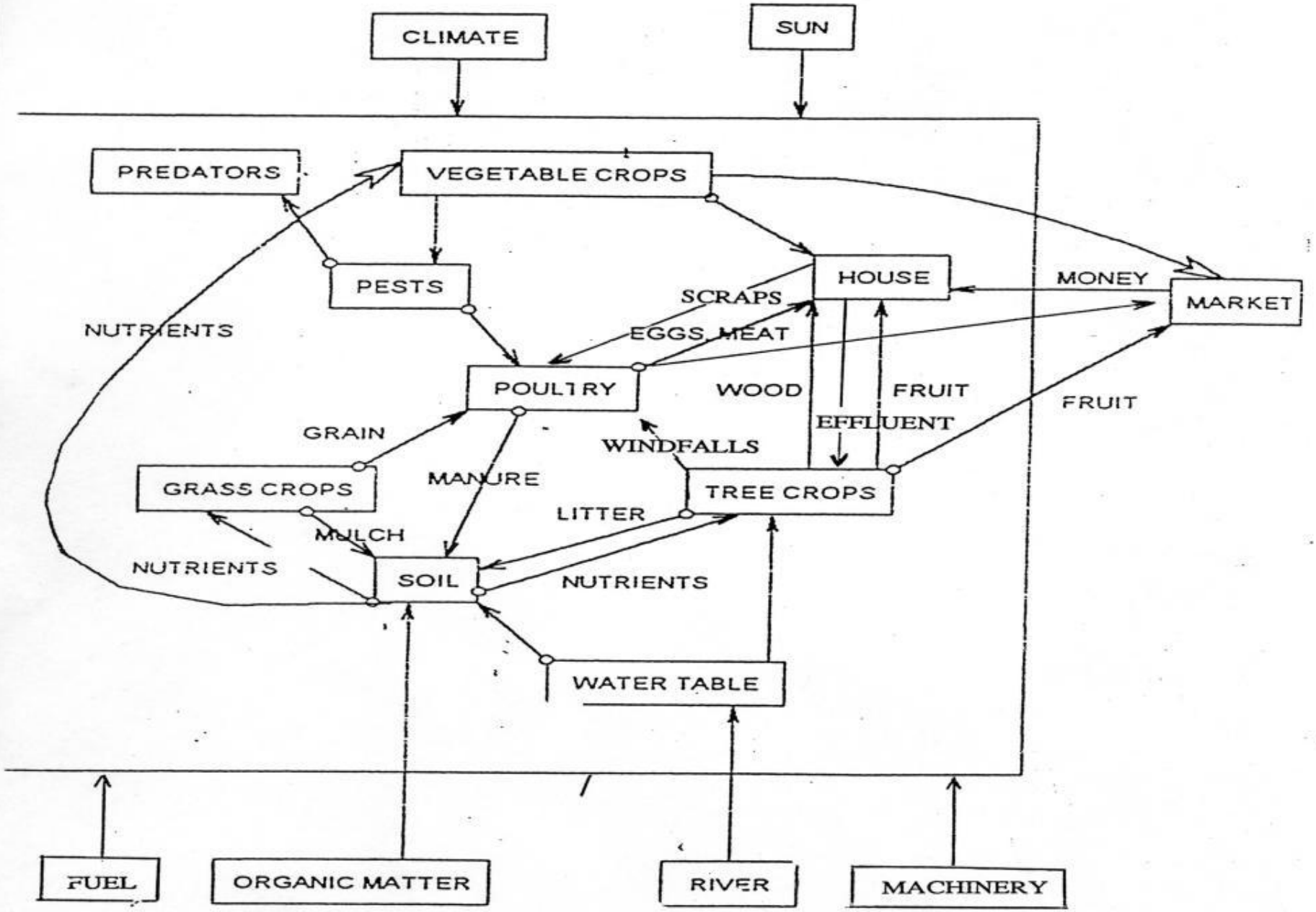

A STRAW STORY


ZONE 3
LIGHT FOR NIGHT OBSERVATION
FEEDING STATION
ZONE 5 "WEDGE"
WILD ANIMALS AND BIRDS
HOUSE
ZONE 2
CHICKENS
ZONE 4
POND
ZONE 1 GARDEN
BARN
ACCESS
PASTURE FOR SHORT SWARD GRAZERS
FIRE RESISTANT WINDBREAK
FIRE (SUN-SIDE AND TOWARD CONTINENTAL INTERIOR)
PLAN 0 30
ARRANGE ALL FIRE-LESSENING ELEMENTS AND FUNCTIONS TO FIRE SECTOR:
• ROAD (LOOP)
• POND
• SHORT GRAZERS
• FIRE RESISTANT TREES
• VEGETABLE GARDEN

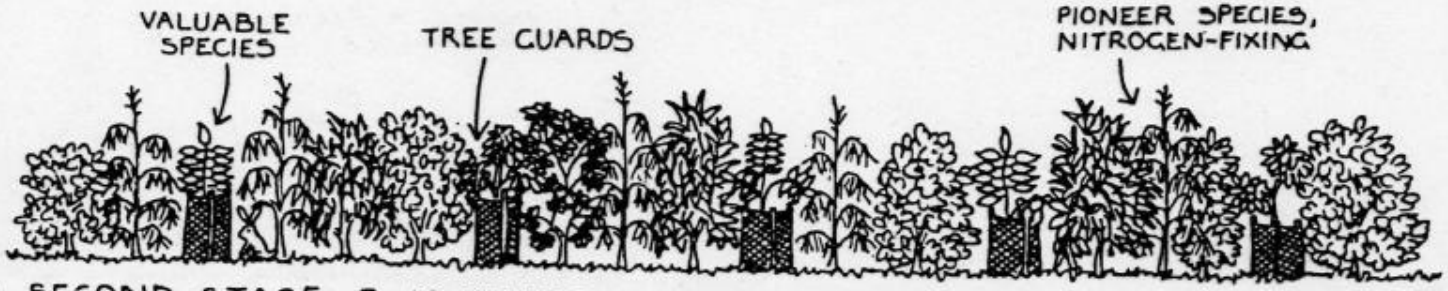


The first rule in becoming self-sufficient is to understand the Benign Cycle: namely, the soil feeds the plants, the plants feed the animals, the animals manure the land, the manure feeds the soil, the soil feeds the plants . . . The true husbandman will wish to maintain this cycle, but he has to become part of the cycle himself; as a plant-eater and a carnivore he is liable to break the chain unless he observes at all times the Law of Return. This means that all residues (animal, vegetable and human) should be returned to the soil, either by way of the compost heap, or the guts of an animal, or the plough, or by being trodden into the ground by livestock. Whatever cannot be usefully returned to the soil, or usefully used in some other way, should be burned; this will make potash for the land. Nothing should be wasted on the self-sufficient holding.

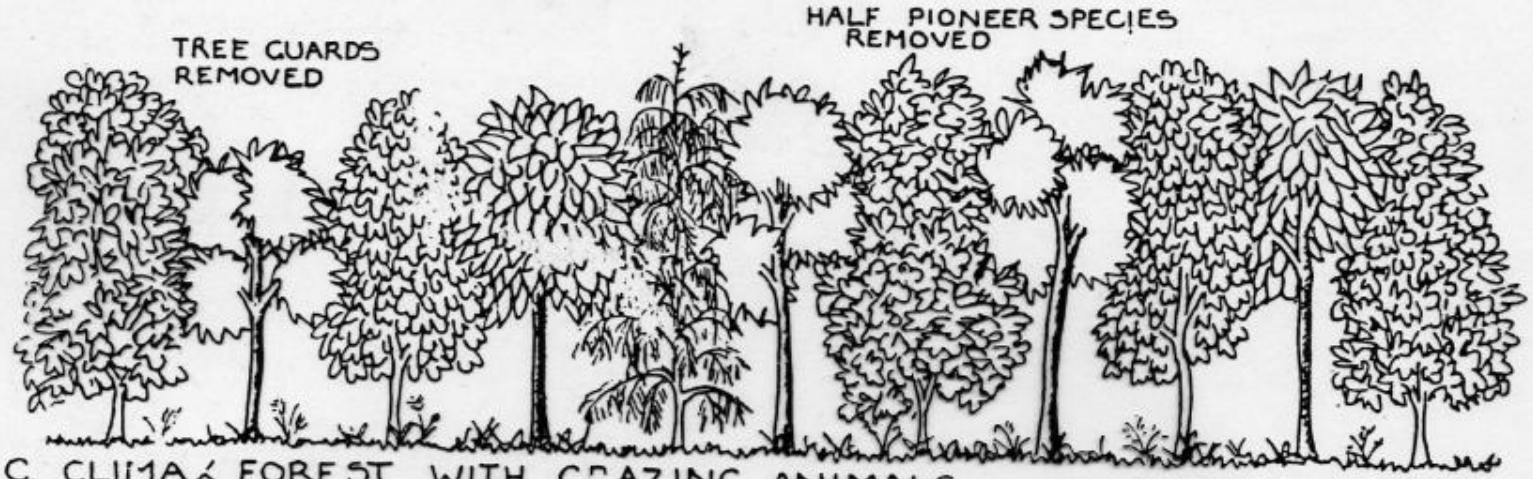
Systems Diagram showing energy flow



A. ESTABLISHMENT OF PIONEER SPECIES, 1-5 YEARS



B. SECOND STAGE, 5-10 YEARS



C. CLIMAX FOREST WITH GRAZING ANIMALS

Zone planning

Placing elements according to how much we use them, how often we need to maintain or harvest them and how much energy and water they use.

- **Zone Zero** is the space in your mind where creative design occurs, it is the arrangement of the family and the way it lives; the way the house is arranged, cooking is done, finances are managed and dreams realised

- **Zone One** is closest to the house. It is most intensively-used area and typically contains annual gardens, herbs, workshop, glasshouse, storage areas, a few small frequently used trees eg a lemon tree. The area uses much water, mulch and manure and is highly productive. No animals remain on a patch of ground permanently

Secrets of Zone 1 - the backyard

- Storing – water, firewood, salvage materials
- Constructing – chicken arks, solar cookers, bike trailers
- Drying – clothes, fruit, firewood
- Cooking - pizzas, BBQs, pit roasts
- Shading – the family, walls of the house, cooling plants
- Relaxing and playing
- Learning
- Habitat – birds, worms, guinea pigs, predators, bees
- Transforming – grapes into wine, weeds into compost
  wastewater into irrigation water

Zone 1 contains the perennial garden supports avocados, bananas, sugar cane, Vietnamese taro and other species requires some 500mm of irrigation annually. This delivered by dripper tapes spaced 500mm apart

- **Zone Two** is also intensively managed with shrubs, fruit trees, berries and herbs in multi-layered food forests. Drip irrigation is used and poultry are integrated into the system. It is an area requiring regular management and uses significant amounts of mulch, manure and water


zone 5
Gawler River
zone 5
revegetation/forestry
zone 3
recycling
olive grove
vegetables
food processing
zone 1
tank
studio
house
zone 2
learning centre
home orchard
drying green
windbreak
walnuts
zone 3
pistachios
Gawler Bypass
cropping
yabbie ponds
zone 3
pomes
canary island pines
experimental
zone4
agroforestry demo
biodiversity block
carobs
zone 5
pecan nuts
pistachios
jojoba
Jack Cooper Drive

Further from the home are species requiring spot irrigation. Using drippers, deficit irrigation and mulch pome and stone fruit are grown with a boost of 2-300mm of water.

Plantings are more widely spaced than in the perennial garden

Annual rainfall Hillier 2015 270mm. So far this half year 70mm

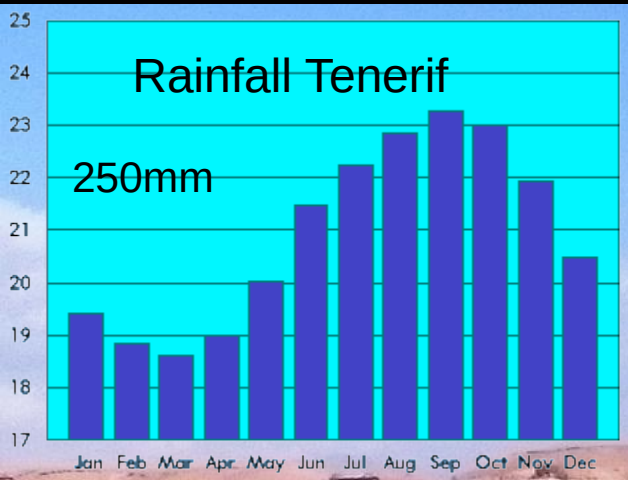
- **Zone Three** has low-maintenance orchards, dryland field crops and pastures, larger animals such as geese, sheep and wallabies for wool, meat, down, milk etc. Minimal irrigation may be used. Windbreaks and hardy tree crop plantings are used to control wind speed. Spot manuring

Canary Island rock basins

Latitude 29 degrees N

Flat roofed, earth buildings & Wadi

Earth buildings & wadi



Date planting and mud wall

Cactus farming

In the outer zones, 3 and 4, about 200mm of irrigation is used to grow carobs, pistachios, jojoba and olives. Tree spacings are even wider to allow a greater soil mass to be exploited for water

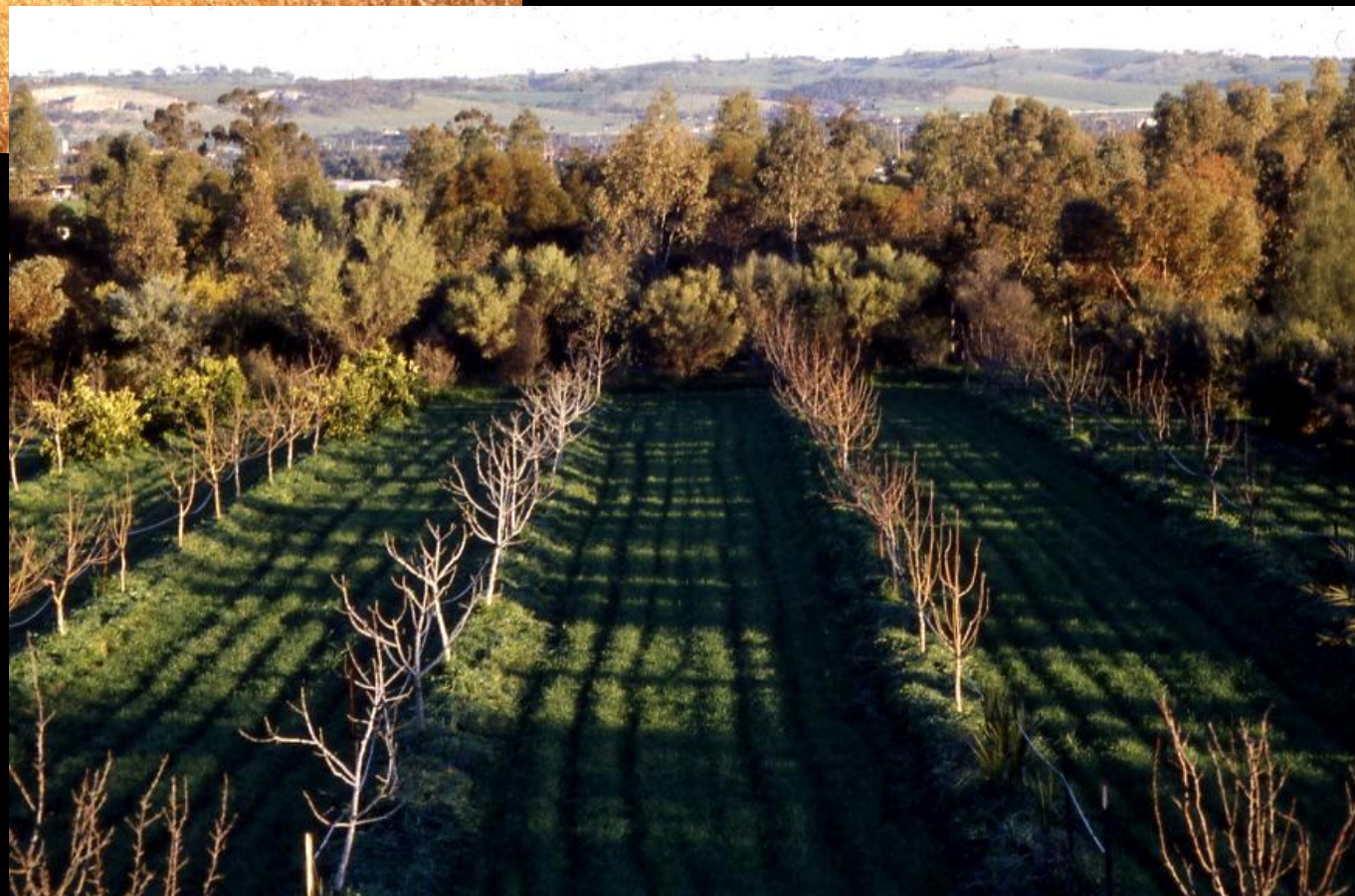
100mm of water over 1 hectare is one Megalitre. Conventional almond growing would expect 8


YMCA

Looking South

View in 1986

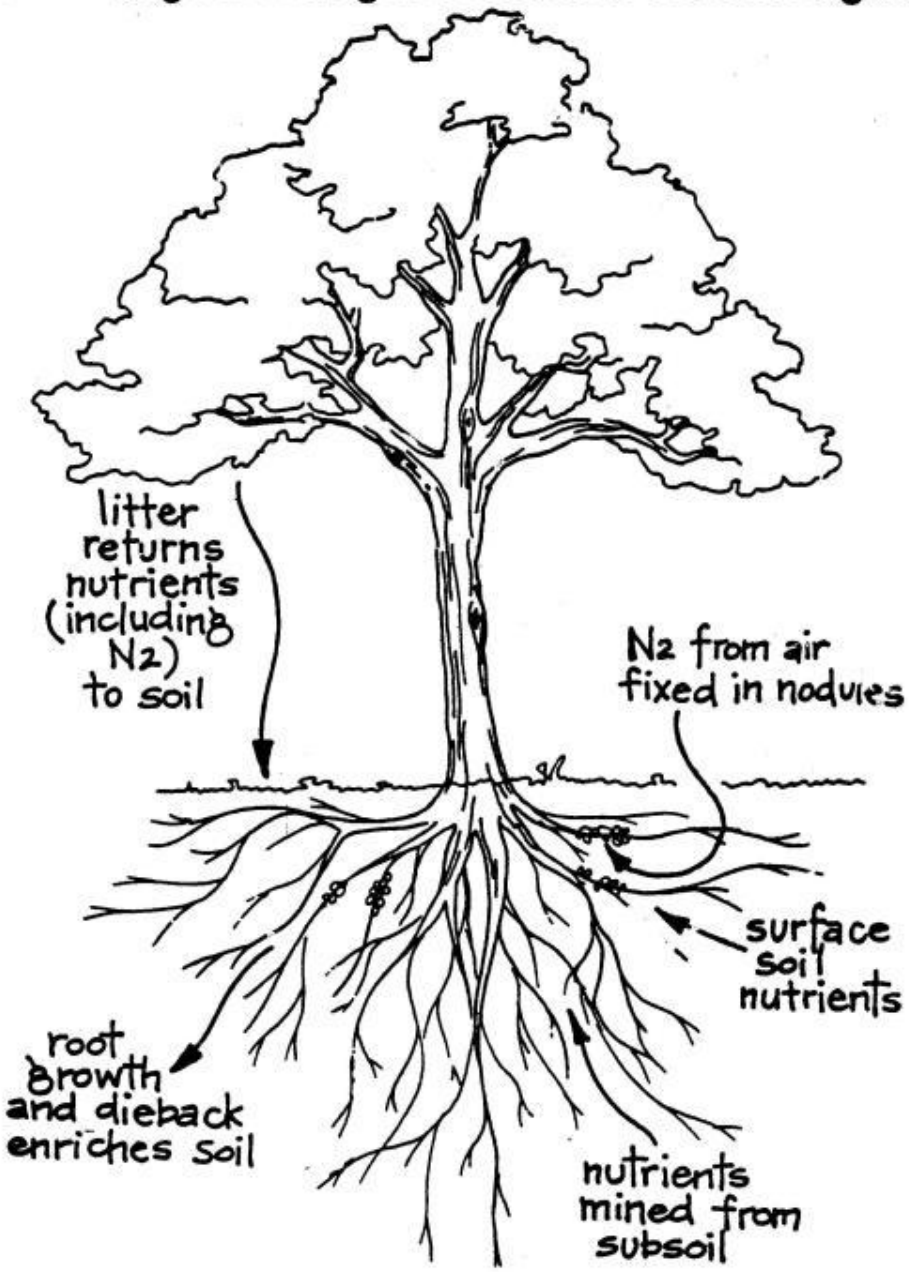
12 years later…



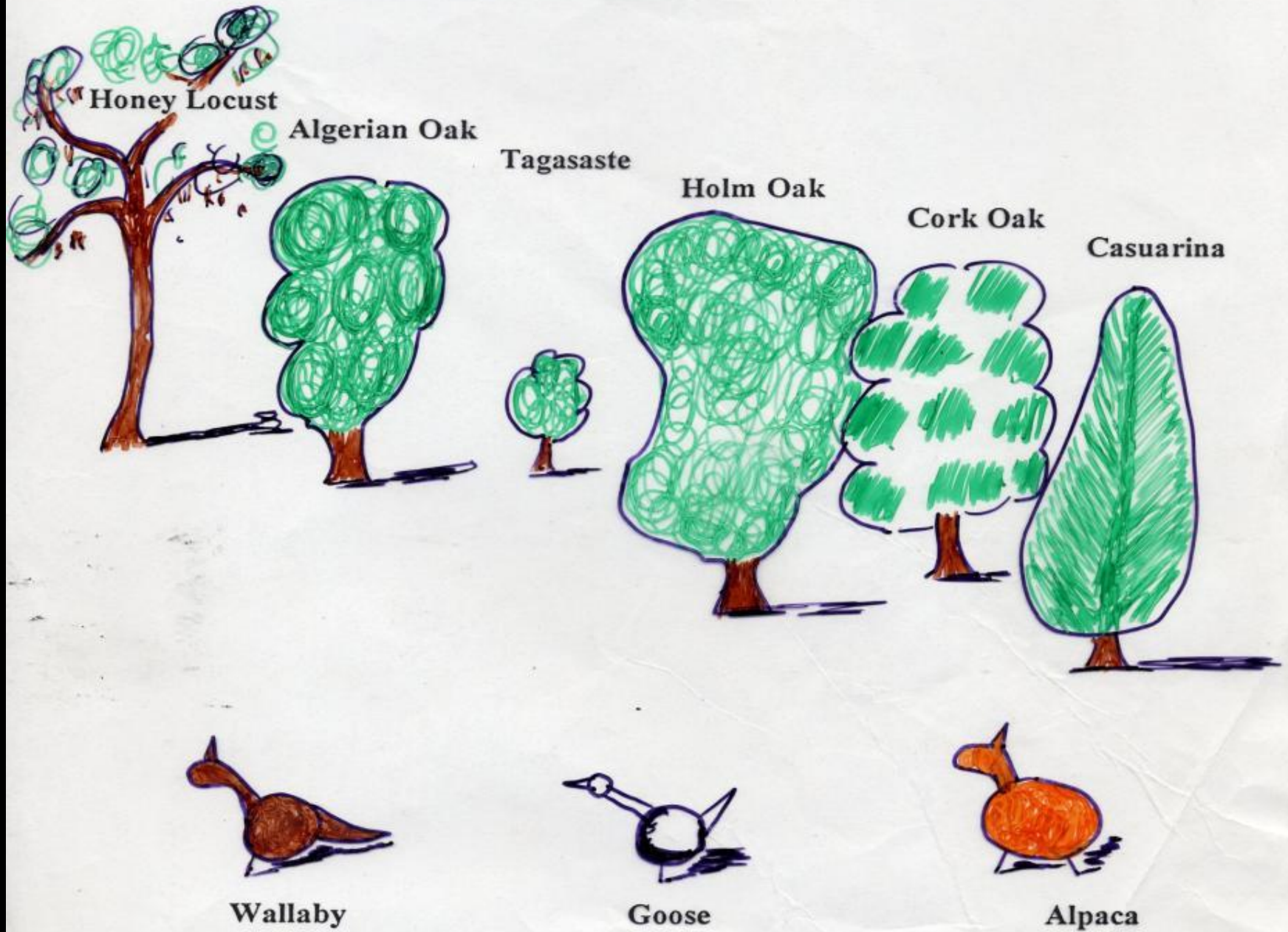
- **Zone Four** is minimally managed, is essentially dryland and only small amounts of trace elements and manure are used, usually to establish plantings. It has forest and agro-forest for timber and firewood and miscellaneous production (eg resins, wattle seed), pastures and hardy animals


Coppicing for firewood production

How Biological Nitrogen Fixation Works in Legumes



Hills Agroforest



Species and features for an Adelaide Hills Permaculture

Agroforest

Honey Locust, Algerian Oak, Tagasaste, Holm Oak, Cork Oak, Casuarina spp, Pinus sp Wallaby, Goose, Alpaca

Orchard

Apple, Pear, Nashi, Plum, Quince, Mandarin Chook, Goose, Wallaby, Alpaca, Potoroo

Woodlot

Euc grandis, maculata, globulus, nitans
Ac melanoxylon, intertexa (interplanted)

Biodiversity Block (includes Bush Tucker spp)

Native Apricot, Melaleuca spp, Kangaroo grass, Native Cherry, Ac retinodes, Euc obliqua, Native Currant etc etc

Organic Garden

Summer Lettuce, Asian Leaf Crops, various Herbs, Veg and Edible Flowers

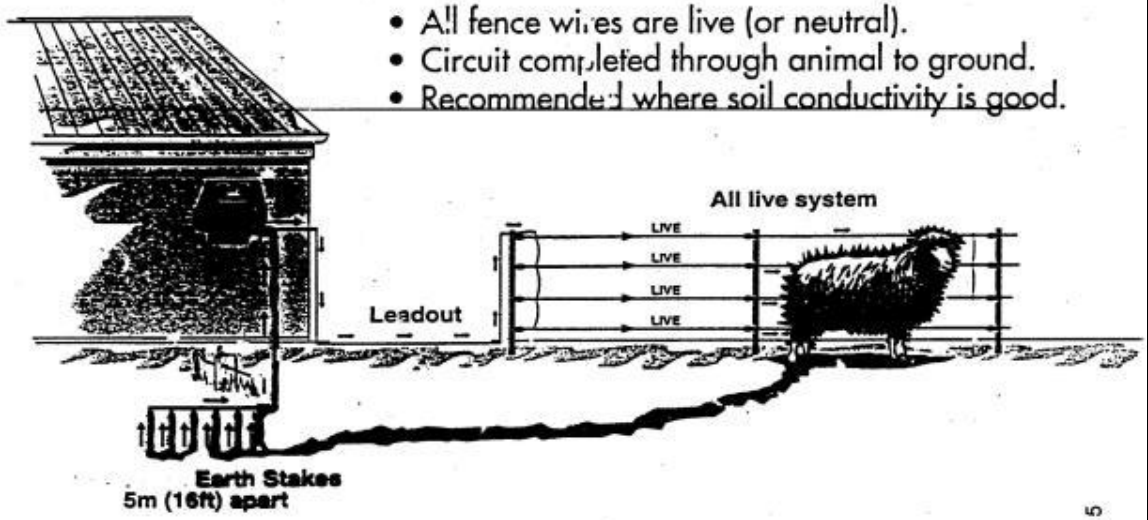

Geese:
Webbed feet
Grassy weed grazers – esp
Couch & Kikuyu
Gourmet food

Fox and rabbit proof fence built in 1993

TYPES OF EARTH SYSTEM

Ground Earth-Return

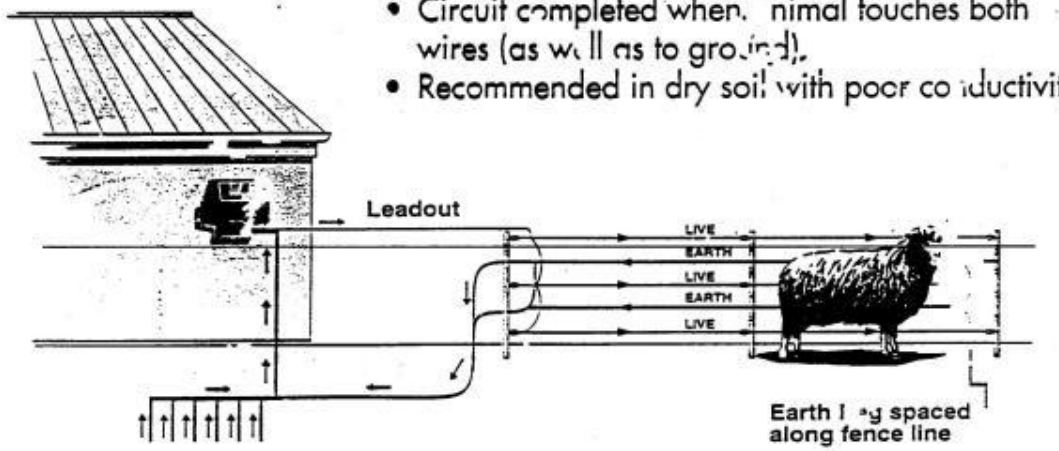
- All fence wires are live (or neutral).
- Circuit completed through animal to ground.
- Recommended where soil conductivity is good.



Sheet2

Fence Earth-Return

- Earth and live wires are alternated.
- Circuit completed when animal touches both wires (as well as to ground).
- Recommended in dry soil with poor conductivity.



Permanent Fence Layout

LAYOUT EXAMPLE

The diagram below illustrates some points about fence layout.

(a) Energiser is located in a farm building.

(b) The leadout feed can take several forms:

- one single wire with high conductive characteristics (i.e. 4mm (8 g) wire or aluminium wire)
- several single strands of 2.5mm (12½ g) fence wire connected in parallel.

(c) A cutout switch where the leadout splits at this point enables half of the fence system to be switched off.

(d) Layout incorporates a central race for ease of stock movement.

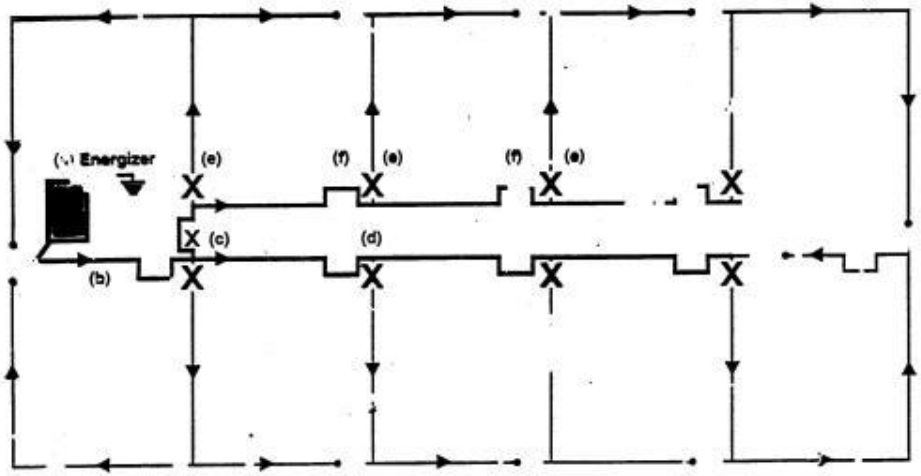
(e) Each fence subdivision is connected to the leadout feed wire(s) through a cutout switch. This enables each section to be isolated for fault finding purposes.

(f) For gates you should note that:

- Insulated cable must be used underground
- Cutout switches are recommended at all gateways for fault finding

Other Points to Note:

- Only one energizer must be connected to a fence line.
- The subdivisions of the fence do not have to complete an electrical circuit. Each subdivision terminates at a strain insulator. The circuit is completed when an animal touches the fence.



KEY

leadout feed wire(s)

fence subdivisions

X cutout switches

KEY

leadout feed under gate

fence feed under gate

energizer earth

- **Zone Five** is virtually unmanaged and contains much of the indigenous flora and fauna. It is a haven for native species and a biodiverse balance-tank for the more intensively managed part of the property with its many exotic species and their pests, a place to get close to nature, to hunt or possibly…to be hunted!

Australian Natives

Value adding

Bio regional ID

Landcapability

Diverse systems

Acacia victoriae

Quandongs

WEED CONTROL

Soft footed animals:

Less soil compaction

Bettongs eat soursob bulbs & revegetate

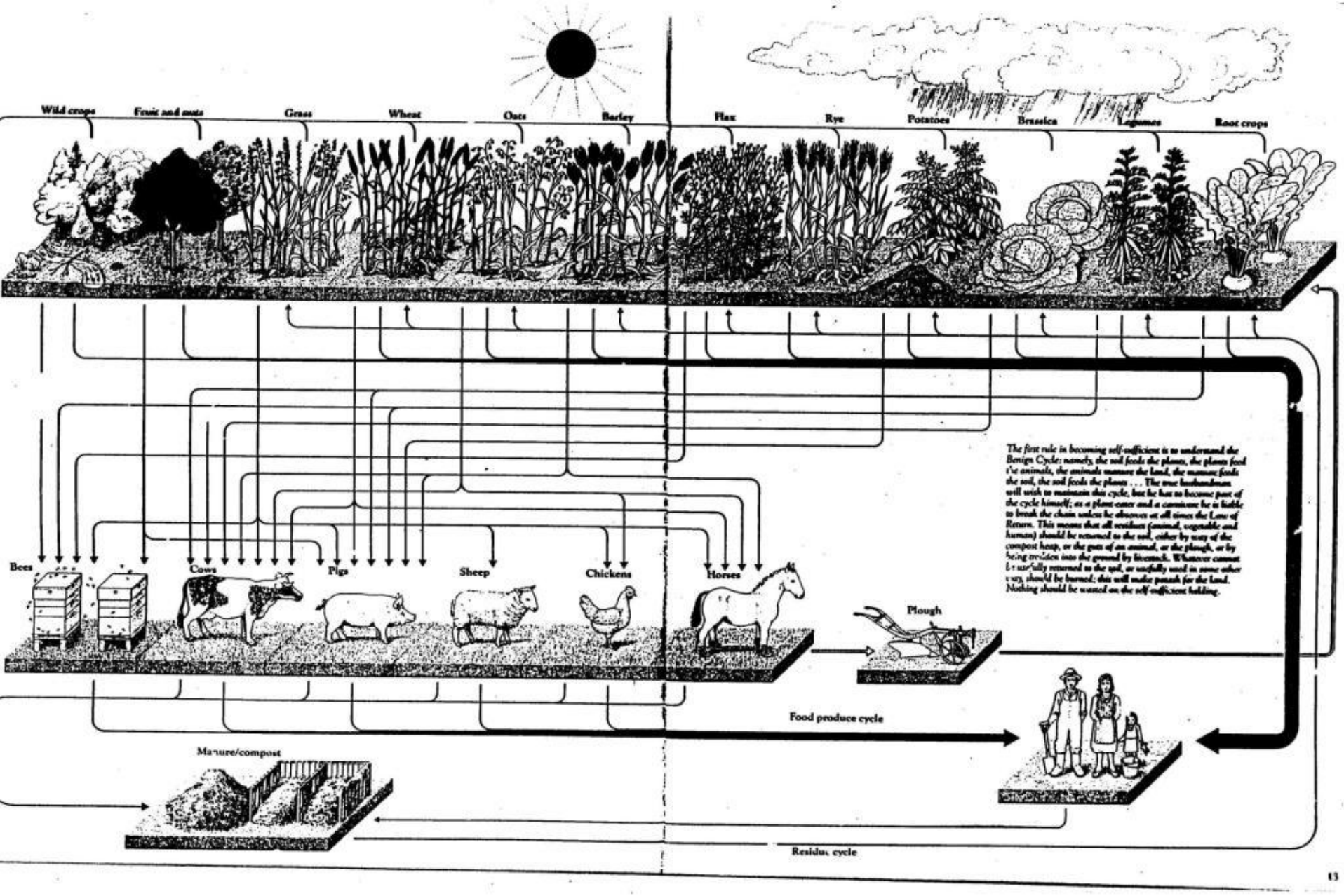
Wallabies are good weed grazers too

THE CAPE BARREN GOOSE

- Specific grazing habits
- Useful in orchard management
- Protected species

Bio- diversity

creates habitat which also helps with pest control



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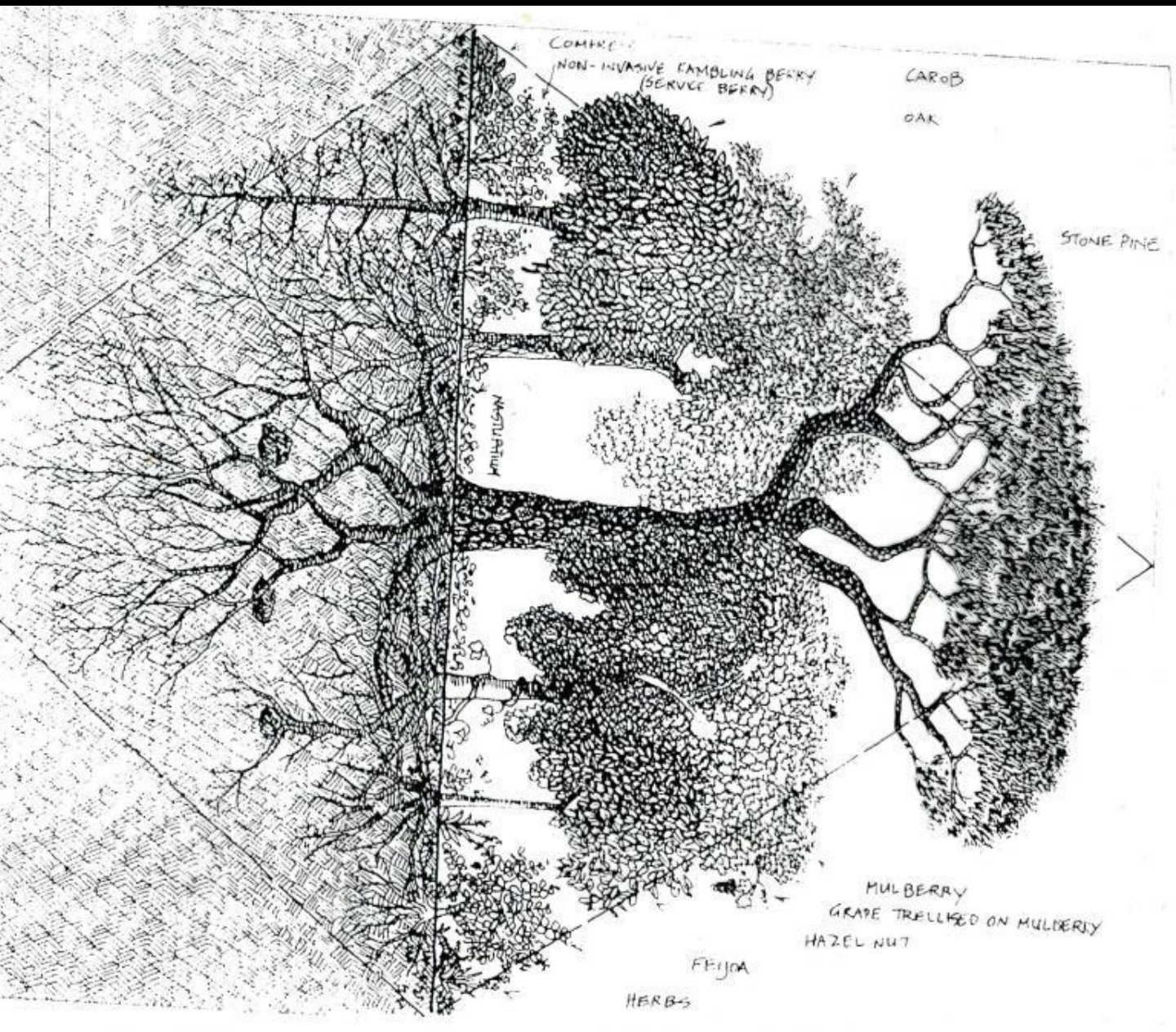
Orchard design and management


COMFREY
NON-INVASIVE RAMBLING BERRY
(SERVICE BERRY)
CAROB
OAK
STONE PINE
MULBERRY
GRAPE TRELLISED ON MULBERRY
HAZEL NUT
FEIJOA
HERBS

Mean Annual Chill Units at present and projected to 2030

	PRESENT			2030		
Station	**Ave Chill Units**	**% years > 800 Chill Units**	**% years > 1200 Chill Units**	**Ave Chill Units**	**%. years >800 Chill Units**	**%.years >1200 Chill Units**
Adelaide	700 approx				0	0
Renmark	1187	100	52	529-983	0-91	0-5
Loxton	1295	100	69	668-1108	6-100	0-31
Lenswood	2747	100	100	1729 -2437	100	94-100

Adelaide's mean temp has gone up by 1 degree C in 50 years. CSIRO predictions allow for a possible further increase of up to 1.5 degrees by 2030

	Uni California Data Approx. Hours required <7.2 degrees C	Equiv. Time in Days/Weeks if Continuously exposed to <7.2 or Below	
Apple[a]	1200-1500	7-9 weeks	400-1800
Apricot[a]	700-1000	4-6 weeks	350-1000
Blueberry (northern)			700-1200
Cherry, sour		7 weeks	700-1300
Cherry, sweet	1100-1300	6-8 weeks	600-1400
Currant			800-1500
Filbert (Hazelnut)	1500	9 weeks	800-1600
Gooseberry			800-1500

Sunscreen for fruit

Trials in Australia show that

coating apples, and other fruits, with Surround WP crop protectant manufactured by the Engelhard Corporation and distributed by Agnova, can reduce sunburn damage by as much as 73 percent. In that study, 73 percent damage reduction translates to a marketable yield increase of 34 percent

http://www.fatcow.com.au/c/AgNova-Technologies

Orchard establishment

- windbreaks
- ripping & amendments
- mulch &compost
- weed control
- pre-pruning,
- root ball, bare-rooted & bagged trees
- roostocks into field for later grafting
- planting plans

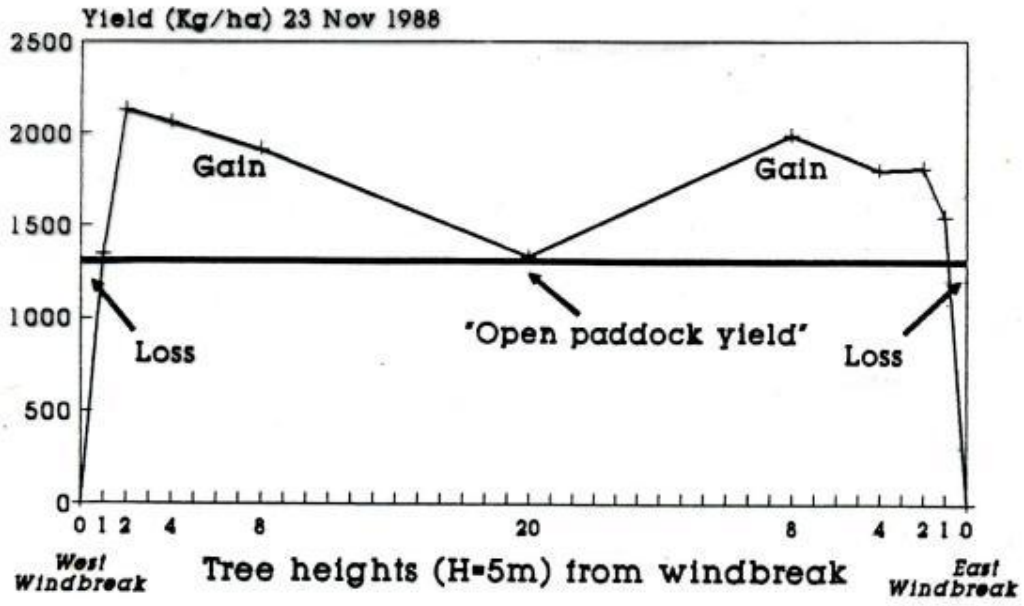
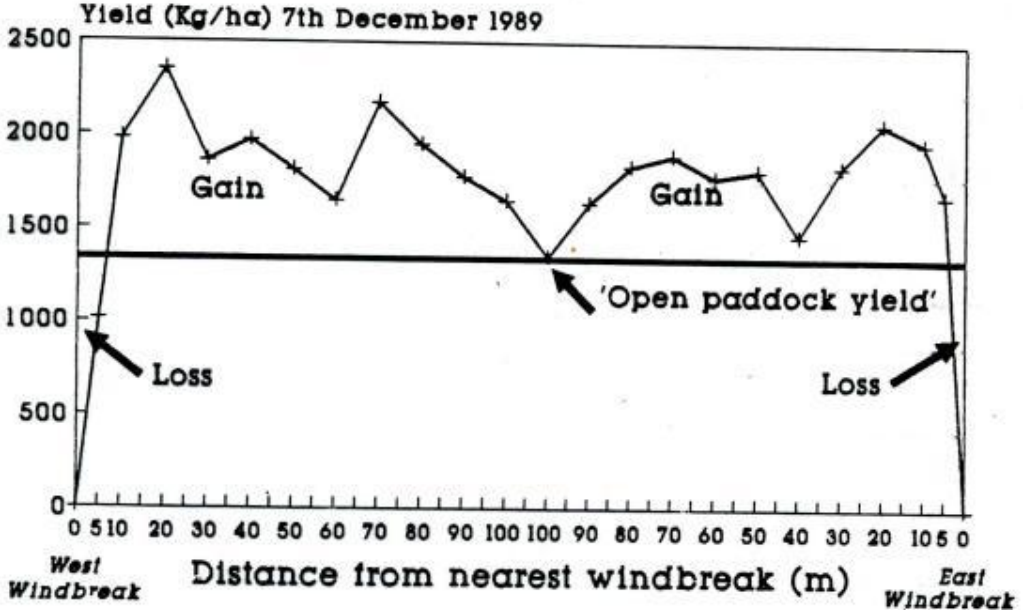
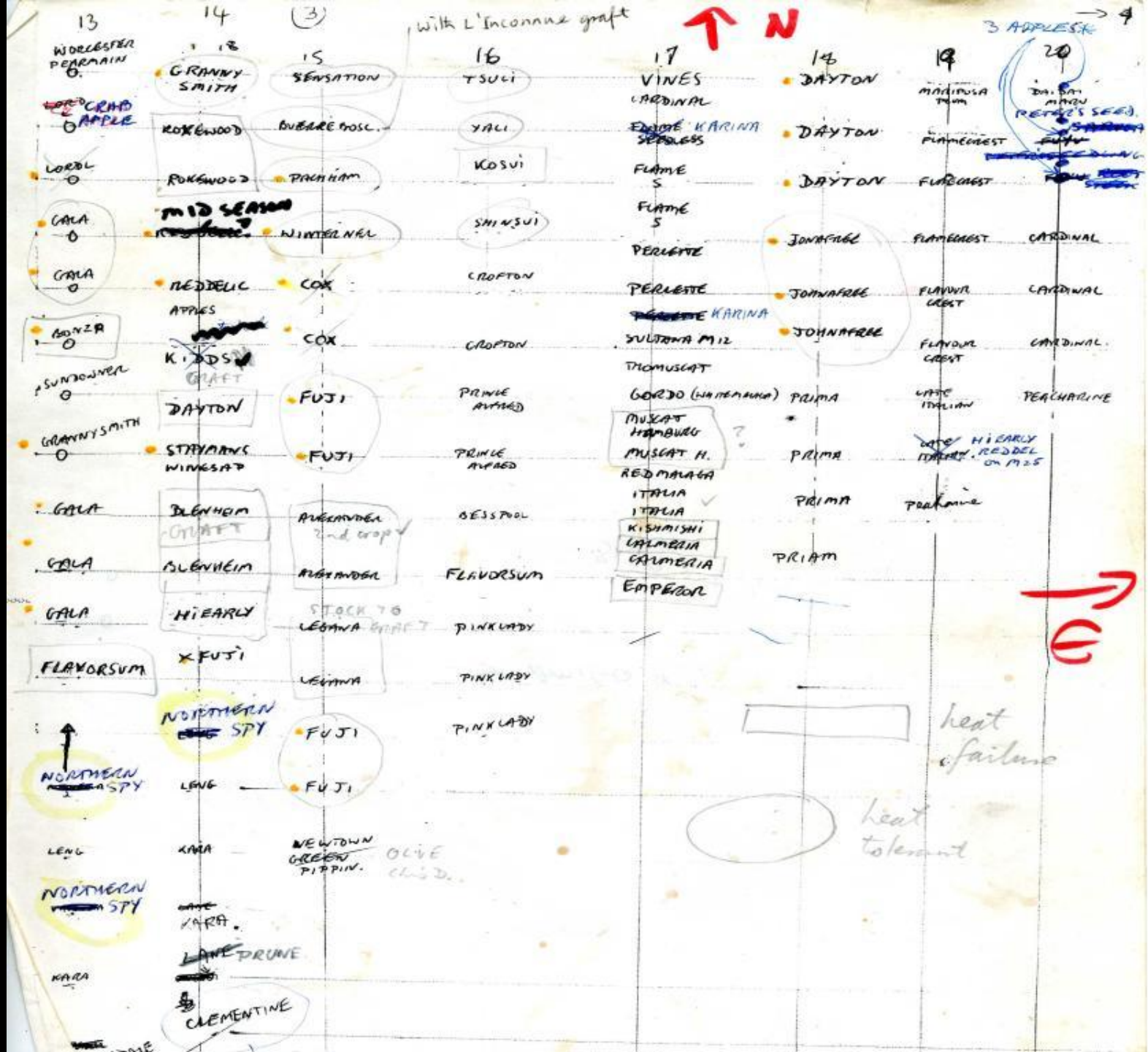


Figure 4. Lupin yield between parallel pine windbreaks in Esperance, Western Australia, 1989 (Property of G and J English)




13
14
(3)
With L'Inconnue graft
N
15
16
17
18
19
20
WORCESTER PERMAIN
CRAB APPLE
LORD
GALA
GALA
GRANNY SMITH
GALA
GALA
GALA
FLAVORSUM
NORTHERN SPY
LENG
NORTHERN SPY
KARA
CLEMENTINE
GRANNY SMITH
ROKEWOOD
ROKEWOOD
mid season
REDDELIC
APPLES
KIDDS
DAYTON
STAYMANS WINESAP
BLENHEIM
BLENHEIM
HI EARLY
X FUJI
NORTHERN SPY
LENG
KARA
DRUNE
SENSATION
BUBBLE ROSE
PACKHAM
WINTER NEL
COX
COX
FUJI
FUJI
ALEXANDER
ALEXANDER
STOCK 76
LEGANA
LEGANA
FUJI
FUJI
NEWTOWN GREEN PIPPIN.
OLIVE
TSUGI
YALI
KOSUI
SHINSUI
CROFTON
CROFTON
PRINCE ALFRED
PRINCE ALFRED
BESSPOOL
FLAVORSUM
PINK LADY
PINK LADY
PINK LADY
VINES
CARDINAL
FLAME S
FLAME S
PERLESTE
PERLESTE
KARINA
SULTANA M 12
THOMUSCAT
GORDO (WHITE MALAGA)
MUSCAT HAMBURG
MUSCAT H.
RED MALAGA
ITALIA
ITALIA
KISHMISHI
CALMERIA
CALMERIA
EMPEROR
DAYTON
DAYTON
DAYTON
JONAFREE
JOHNAFREE
JOHNAFREE
PRIMA
PRIMA
PRIMA
PRIAM
3 APPLES
MARINDA THOM
FLAMECREST
FLAMECREST
FLAVOR CREST
FLAVOR CREST
LATE ITALIAN
LATE ITALIAN
DAISY MAN
REDDELIC'S SEED
CARDINAL
CARDINAL
CARDINAL
PEACHARINE
EARLY REDDEL
heat failure
heat tolerant

Pest Management

Biodiversity is the main answer. If it fails……

- Observe day, night with and without light. Video cameras, books and museum services for wine and beer traps, linseed oil

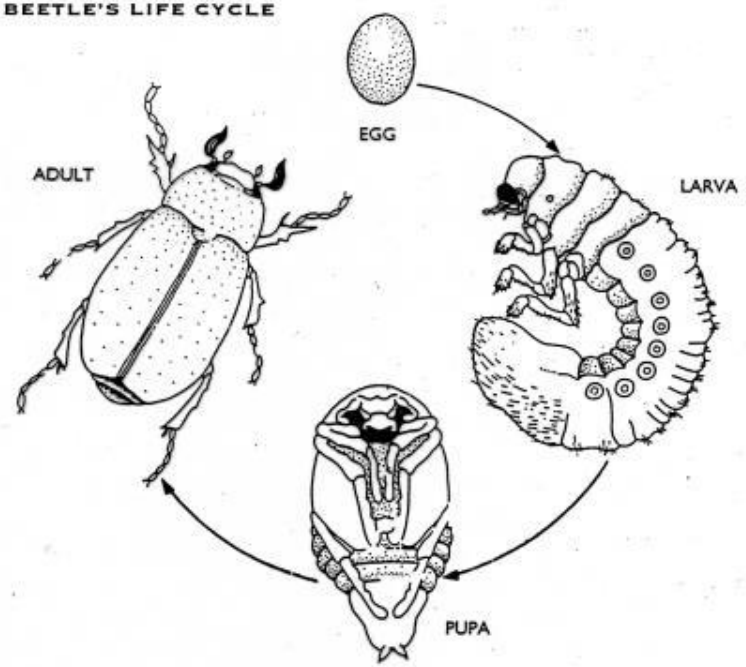
Insects:

Insect exclusion covers eg fruit fly

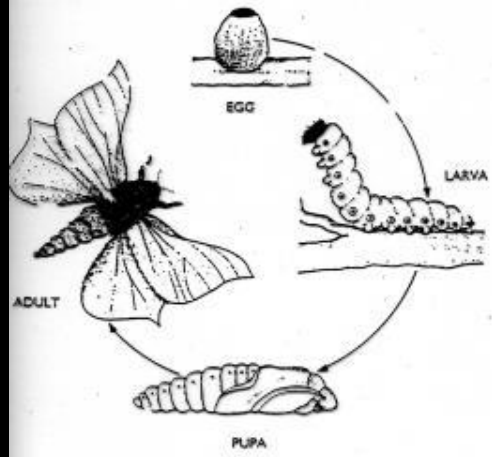
- Trap crops, (mustard favoured over caulis), companions, garlic etc bug juice
- identification are invaluable.
- Pit traps, port

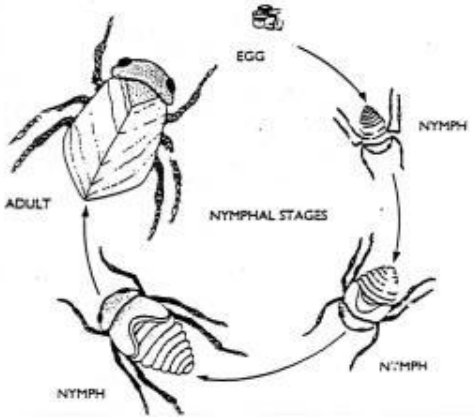

Brown Tree Frog

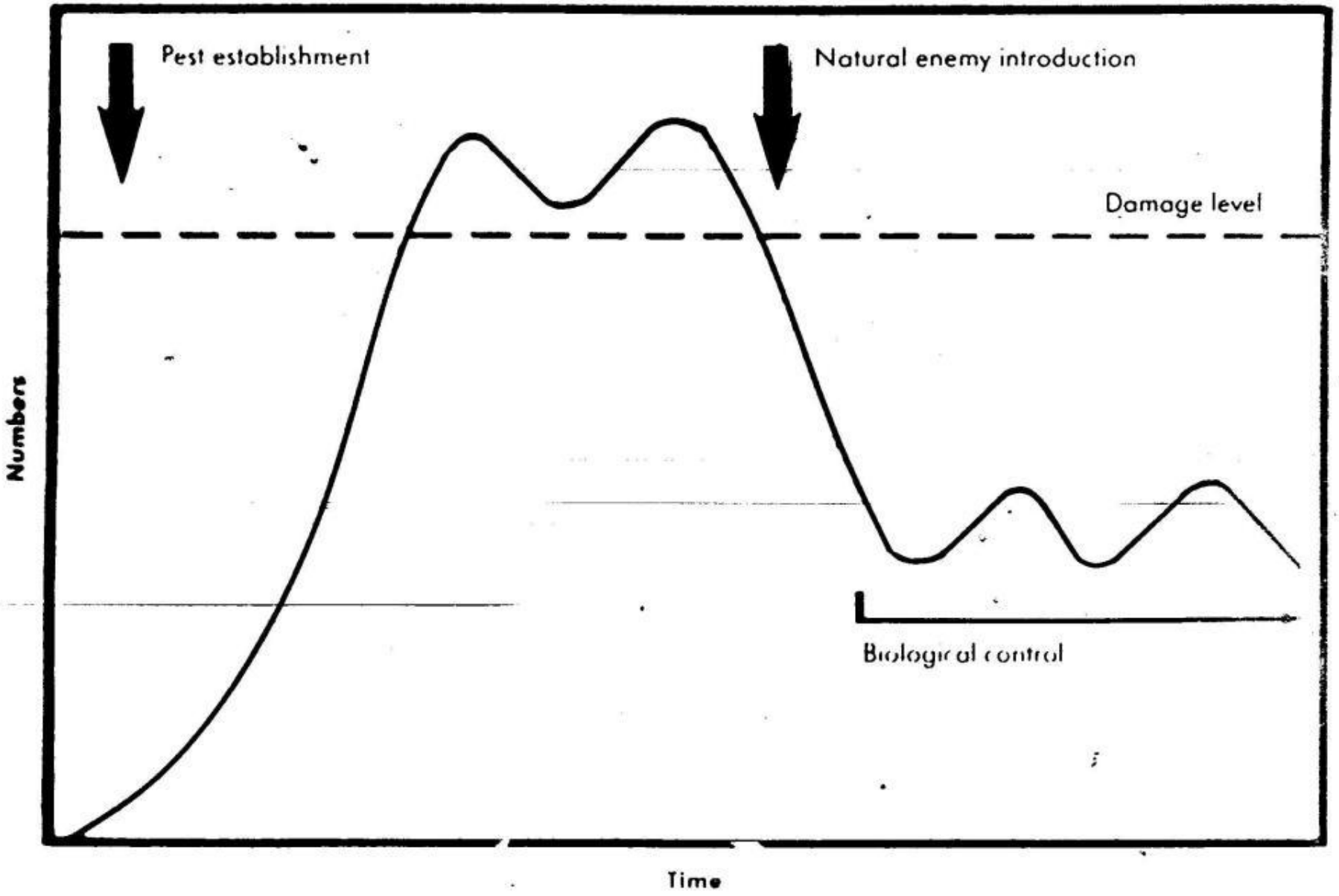
TYPICAL BEETLE'S LIFE CYCLE



LIFE CYCLES OF A TYPIC L M)Th (LEFT) . ND BUG (RIGHT)






Pest establishment
Natural enemy introduction
Damage level
Numbers
Biological control
Time

Individual pests

Use of chooks, good composting and weed control are central. Companion planting may help

• Earwigs	Poultry, traps and sacrificial crops
• Crickets	Chooks
• Caterpillars	Oils, soap, derris, ash, Bacillus thuringensis, hosing, hand picking
• Beetles	Derris, diatomaceous earth, flooding, trap lights
• Mites	Minimise dust, increase soil carbon, use sulphur

Diseases

Adaptation and pruning are the main answers

- Mildew: Whey, milk, sulphur, copper, good training (shaping) of trees
- Blight: Copper, Prep 501
- Shothole: Copper, Bordeaux
- Brown Rot: hygeine, sulphur, copper
- Gumosis: Copper, Pruning
- Compost teas and microbial preps

Application methods

- Sprayers:
- Knapsack
- Tractor-drawn
- Airblast
- Micromist
- ATV-mounted units

What is a food forest?

A ‘food forest’ is a consciously designed perennial ecosystem of diverse mutually beneficial plants and animals intended for human food and fibre production.

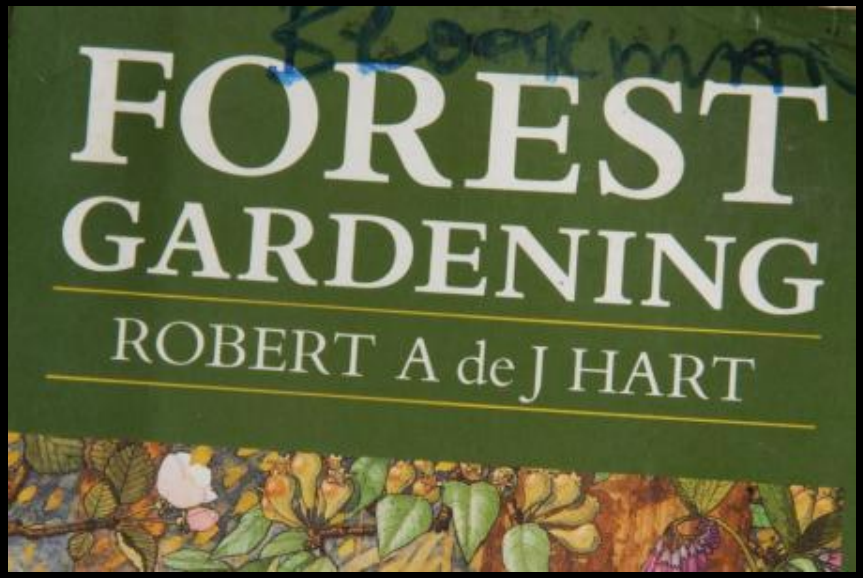
Who invented food forests

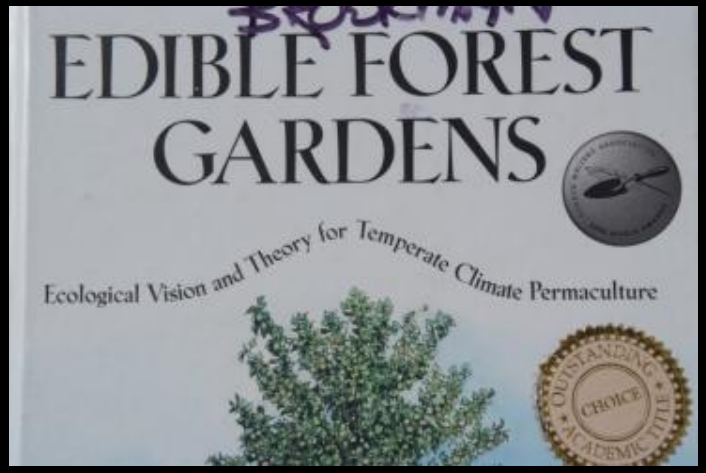
Food forests have been created by many cultures for thousands of years but they have been lost due to broad acre cropping, horticultural monocultures and mechanisation

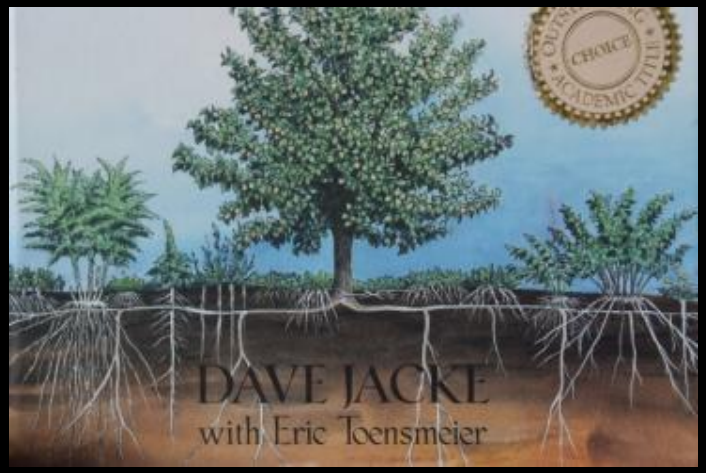
What is so good about food forests?!

- They are more sustainable than conventional gardens and orchards
- High ratio of outputs to inputs (in terms of energy and water)
- Multiple products
- Minimal maintenance (many perennials)
- High biodiversity

A food forest is essentially the same thing as a ‘forest garden’ as expounded by Robert Hart in the book ‘Forest Gardening’ and Dave Jacke in ‘Edible Forest Gardens’







Drip irrigation and mulching are vital for many food crops

A native food themed section would require less supplementary water

Native orange- capparis Mitchellii

Wild oranges are a tasty treat Indigenous Australians treasure them. Green when unripe, it ripens to reveal a soft fragrant yellow or orange flesh

Quandong – santalum acuminatum

The native peach

Each part of a food forest can have its own architecture – density, number of layers and expected production levels

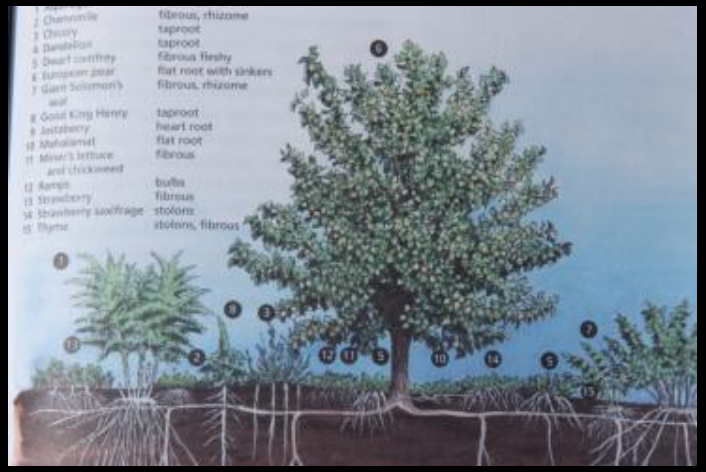
There are notionally seven layers

Robert Hart identifies:

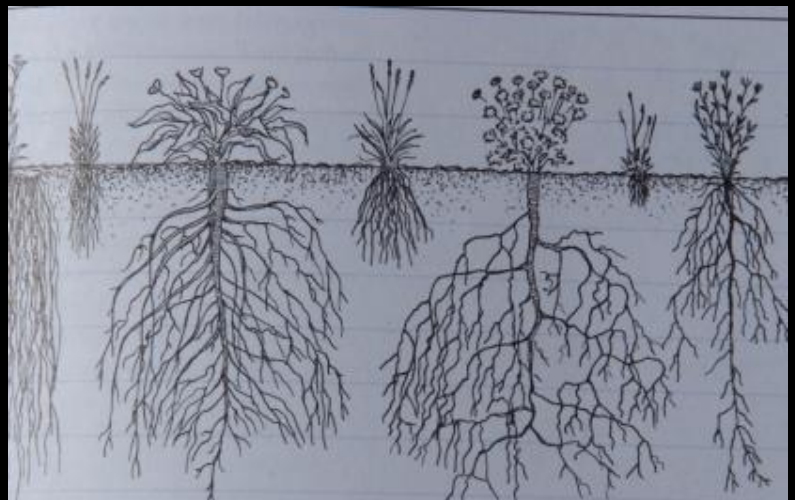
- The canopy
- The low tree layer
- Shrubs
- Herbs
- Climbers
- Groundcovers
- Root crops

The production of food and fibre is at the heart of the design

Plan the food forest with its various layers and with maintenance and animal interaction in mind



Understand the characteristics of the plants you are considering and group them according to water requirements, root system characteristics and other interactions



Sections (themed areas) of a food forest

- Group species that need spraying for disease control together
- Group species requiring bird netting

Think hard….consult your books and the web. Order plants

What will the climbers climb on?

What pollinates what?

Grafting in advance or in the field?

Evergreen/deciduous mix?