Manual:

Forest Nerseri

blong

Adapt long Climate Change long Vanuatu

VANUATU DEPARTMENT OF FORESTS

&

SPC-GIZ COPING WITH CLIMATE CHANGE

IN THE PACIFIC ISLAND REGION

Contents

Acknolejmen

Mi wantem expressem bigfala thankyu blong mi igo long olgeta we oli bin koperet mo sapotem mi long wan wei o narafala blong mekem se mi save kompletem Fores Neseri Infomesen Manual ia.

Fes wan igo long Vanuatu Component blong SPC-GIZ we i stap lukluk long Climate Change long Pacifik Aelan Region Prokram (CCCPIR) long konfidens we oli givim long mi blong mekem wok ia blong producem infomesen manual ia.

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Attie Willie
Dipatmen blong Agrikalja, Port Vila
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Introdaksen

Tri o wud hemi wan veri impoten risos long yumi. Long ol tri, yumi save mekem fulap samting long hem we yumi usum long laef blong yumi everi dei. Plenti man i depend long ol forest, bus mo ol tri. Bus o fores i givim faea wud, frut, meresin, pos blong fanis mo haos, furniture, wud blong carving, handle blong ol tul, mo planti moa samting. Tri o wud tu hemi help blong reducem carbon dioxide long air we I stap raon long wol. Ol tri oli save holem taet graon tu long taem blong flooding mo narafala kaen climate change. ,

Ol efekt blong climate change long forestri sekta long ol yia we i stap kam i stat blong kam bigwan finis. Jenis long weta paten we i stap go tugeta wetem ol jenis long climate olsem jenis long renfall, tempereja i stap go antap, inkris long exposa long strong win mo hariken, mo level blong solwora i stap kam antap. Taem ol efekt ia i stap hapen yumi no save yet wanem nao bae efekt ia i save kosem long forestri sekta. Hemi impoten blong konsiderem ol impact ia taem yumi mekem planning long sekta ia.

Long Vanuatu, Forestri hemi wan sekta we climate change i save afektem bigwan. Espesili fromwe ol tri mo wud oli tekem longfala taem bifo oli kasem wan stej we oli strong.

Adaptesen long climate change long forestri sekta I mas lukluk bak long ol tradisonal praktis blong bifo. Hemia I nidim plenti risej mo awareness wetem ol forestri fama long ol impact mo ol fasin blong adapt long climate change. National Forest Polisi blong Vanuatu i enkarajem yumi blong statem wok ia.

Plenti long ol tri o wud we yumi usum tedei long Vanuatu blong timba yumi harvestem long wild o bus nomo. Plenti long ol natural fores blong yumi, yumi katem daon blong salem olsem timba, usum long agrikalja o long ol nara use long wan ret we I kwik tumas. Sapos yumi no lukaot gud mo gohed blong katem daon ol tri o wud blong yumi olsem we I stap tedei bambae ol fiuja jeneresen blong yumi bae oli no gat inaf tri blong katem long fiuja.

Olsem ol fama mo wan wan man long rurol komuniti, hemi risponsipiliti blong yumi blong planem bakagen fores o bus blong yumi blong fiuja jeneresen from se yumi everi wan I dipen plenti long fores o bus mo ol tri blong live.

Men tingting blong prodiusum buk ia hemi blong helpem ol rurol fama, wan wan man mo komuniti blong yumi blong provaedem long olgeta basik infomesen long hao blong establisim mo manejem wan simpol forestri neseri blong benefitim yumi naoia mo fiuja jeneresen we I stap kam.

Ol fama mo wan wan man I save makem jenis long neseri plan we I stap long buk ia blong folem kondisen mo situsen long ples blong hem.

Wanemia Climate Change?

Climate blong Vanuatu tedei

According lo Vanuatu Meteorological & Geohazards Dipatmen and the Pacific Climate Change Science Program, Vanuatu averej tempereja long wan yia hemi bitwin 23.5-27.5 degri centegrade. Jenis long tempereja long wan sisen igo kasem nara sisen hemi oltaem folem jenis blong tempereja blong solwota long ocean. Long Vanuatu yumi gat 2 sisens-wom mo wet sisen long Novemba igo kasem Eprel mo kol drae sisen long Mei kasem Oktoba. Difrens long season hemi difren smol long Port Vila from Aneityum

hemi kasem moa ren from extra-tropikol influens olsem cold fonts long drae sisen.

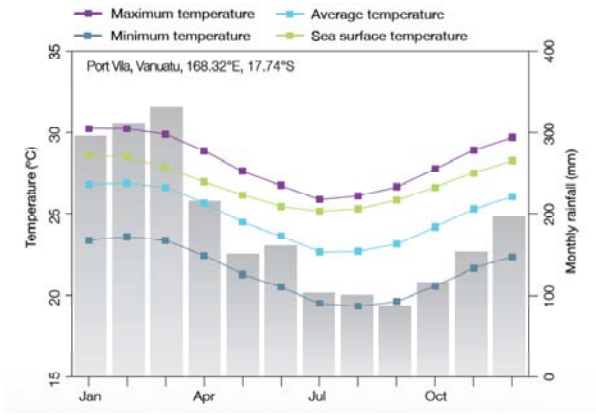
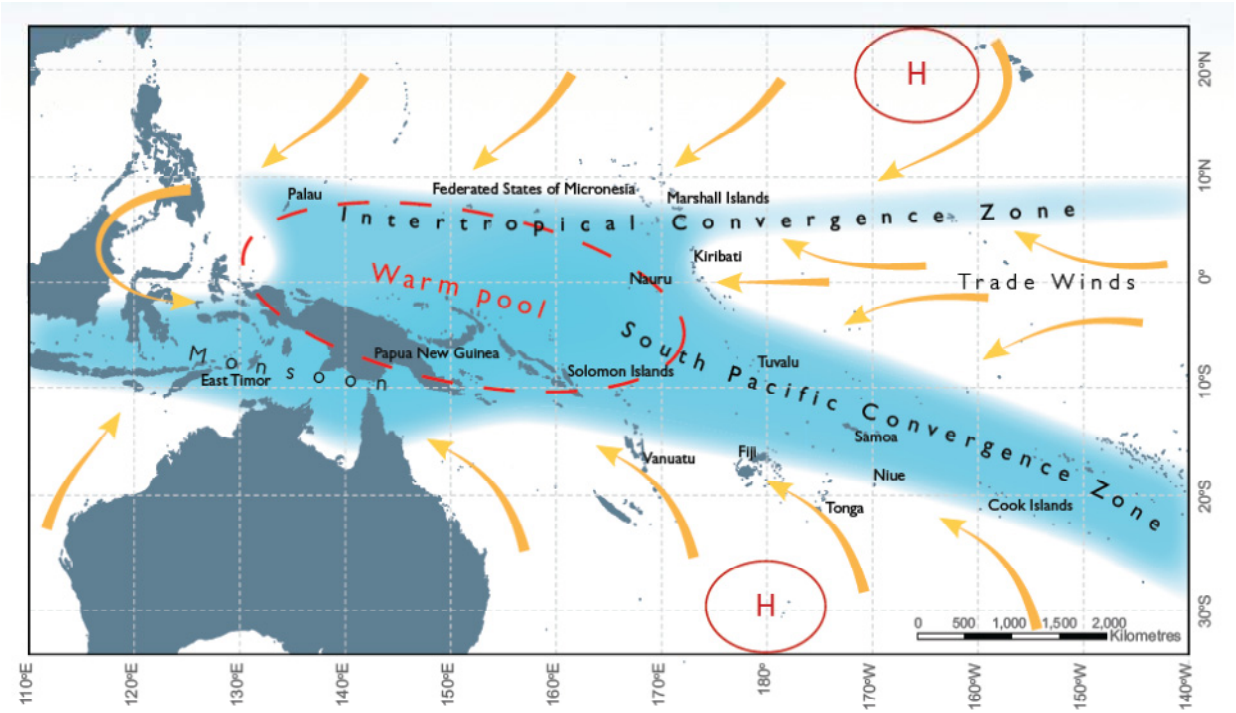


Image i kam long VMGD mo PCCSP[1]

Long Vanuatu ren i stap kam from South Pacific Convergence zone. Ol renfall I hapen from ea we I stap kam antap long wom wota long ples we win I stap kam wanples mo mekem se I gat tanda stom. Hemi mekem se hemi kam bigwan mo krosem Saot Pacifik ocean long Solomon Aelan igo kasem Es blong Cook Aelans Long wet sisen Saot Pacifik Convergence zone o ples we win I stap mit tugeta I stap kam bigwan mo I stap muv igo saot, mo I stap mekem se yumi kasem bigfala ren I foldaon long Vanuatu. Lo presa sistem I fom long ples ia mo oltaem hemi kam olsem hariken long taem o sisen blong hariken.

Ol bigfala hill o mountain tu oli mekem se I gat ren I foldaon long sam aelan blong yumi. Long wet sisen ren I foldaon bigwan nao long saot es saed blong ol bigfala hill mo hemi dipen long ol bigfala aelan mo ino tumas long drae sisen espesili long not wes saed blong aelan.

Long Vanuatu climate hemi jenis plenti long wan wan yia from El Nino Southern Oscillation. Hemia hemi wan paten blong climate we I stap acros long tropikol Pacifik Ocean mo I afektem weta raon long wol. I gat 2 stej blong El Nino-Southern Oscillation: El Nino mo La Nina. I gat tu wan stej we hemi stap long nutrel. Long Vanuatu, El Nino events hemi mekem ples I drae mo tu I mekem se wet sisen I kam leit lelbet mo tu kolkol long nomol drae sisen. La nina hemi mekem oposit samting i hapen lo Vanuatu



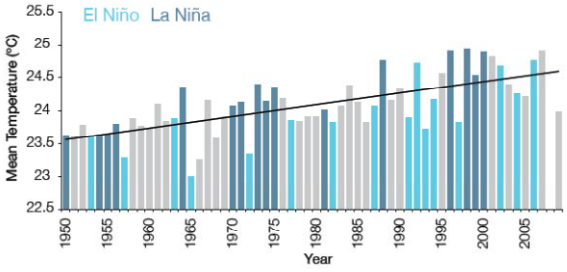
[1] Vanuatu Meteorological and Geohazards Department mo Australian Pacific Climate Change Science Program, Vanuatu Brochure 2011

Tropical Saeklon o Hariken

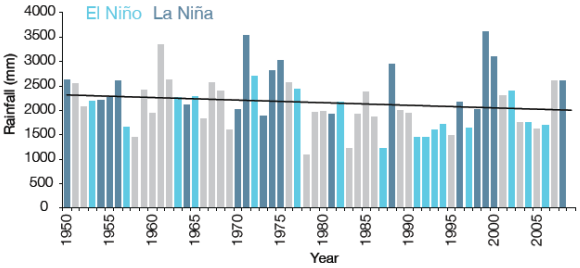
Hariken I stap kilim Vanuatu long manis Novemba kasem Eprel everi yia. Long las 40 yia we i pas, 94 hariken I bin pass klosap long Vanuatu, mo aot long hemia averej blong 2 o 3 hariken I pass long wan sisen. Namba blong hariken long wan yia hemi difren long ol narafala yia we I pass mo long sam yia ino kat be long samfala yia I gat moa bitim 6 saeklon.

Tempereja mo Renfall

Meteo i stap lukim tempereja long Vanuatu I stap go antap since 1950. Long Port Vila, maximum tempereja hemi go antap 0.17 degri centegrade evri ten yias. Tempereja inkris ia hemi stret wetem global paten blong climate change. Long sem period yia I bin gat dekris long averej ren we I foldaon long wan yia.



Vanuatu i stap hot i ko; Image i kam long VMGD mo PCCSP[2]



Vanuatu rain i stap jenj oltaem; Image i kam long VMGD mo PCCSP[3]

[2] Vanuatu Meteorological and Geohazards Department mo Australian Pacific Climate Change Science Program, Vanuatu Brochure 2011

Solwora I kam antap

Taem solwota I stap kam wom long ocean hemi expand mo mekem se level blong solwota I kam antap. Ice we I melt I stap help tu blong mekem level blong solwota I kam antap.

Meteo i faenem se solwora lo Vanuatu I stap kam antap long 6 milimita long evri yia. Hemia I bigwan bitim ol nara ples raon lo wol.

Hao Climate Change I Afektem Forestri long Vanuatu?

Ol Tri mo forests long Vanuatu oli experiensem fulap jenis long climate mo ol nara fakta we i stap spolem olgeta. Exampol:

1. taem we ples I hot o drae o wet wetwet tumas, tri i stap ded
2. taem blong ol tri oli mekem flawa mo karem fru i nomo stret.
3. ol strong hariken i stap brokem ol hud.
4. solwora i stap digim aot mo erodem ol sanbij mo ol tri oli stap foldaon i ko long solwora
5. I kat ol niufala kaen sik i stap afektem ol tri olsem heart rot, but rot, rut rot, ringworm, mo ol nara sik

6. taem tempereja i hot tumas i stap mekem se fulap sidlings oli save ded
7. taem ples i hot tumas, i stap slowem doan kro blong ol tri

8. tumas ren I stap delayem ol aktiviti blong logging mo slowem daon business blong timba.
9. tumas ren hemi mekem se timba ino save drae gud blong salem
10. ol hariken oli stap damagem ol tri mo afektem quality blong timba.
11. longfala ren i stap mekem ol rabis gras o rop I save kaveremap ples kwik taem
12. taem bigfala ren i stap kosem landslide o erosion long ples we ol tri oli stap.
13. Longfala draetaem i stap kilim ol forests
14. Sea level rise i stap mekem se ol coastal fores ecosystem o oli ded from tumas salt

Hao blong Adaptem Forestri long Climate Change?

Yumi mas selektem ol fores o kaen tri we oli strng mo stret long niufala climate change we I stap tedei.

Renfall mo Temperaja

1. Mekem assesmen long ol kaen tri we oli no afekted bigwan tumas,

mo kolektem ol sids mo planem long neseri.
2. Inkrisim storage blong ol sids mo planting materials long sef ples
3. planem ol tri we oli gro gud long drae mo wetwet ples
4. usum fasin agro-forestri from sam kaen crops oli gro gud wetem olt tri klosap long olgeta
5. ripotem eni aotbrek long bebet o sik long ol stret man blong hem.

Soil Erosion (Graon I stap lus)

1. mek sua blong katem plante wud taem ren i ren bigwan
2. folem “Vanuatu Code of Logging Practice”
3. no usum ol hevi masin long taem blong ren.
4. no klinimo bonem tumas ol hill o slope.
5. no karemaot tumas sanbij mo korel fromse bae bigfala wave long solwota I save karemaot ol tri o gras we I stap gro blong holem taet sanbij.

Hariken

1. planem ol lokal tri we oli save stanap long taem blong hariken
2. planem win brek raon long plantesen o velej blong blokem oli tri long taem blong hariken

3. establisim forestry plantesen long ol eria we hariken Ino save spolem tumas.

Level blong solwota I kam antap

1. planem ol impoten tri long ples we I hae mo no klosap long solwota
2. planem ol tri we oli save gro klosap long solwota blong holem taet sanbij
3. planem ol gras , rop mo ol smol smol tri blong solwota blong holem taet sanbij

Wanem ia Fores Neseri?

Fores neseri hemi wan ples o eria we yumi save groem ol tri sidlings mo lukaotem gud bifo yumi go planem long fil.

Risen blong gat wan fores neseri hemi blong resem ol tri sidlings we yumi save planem, espesili sapos yumi redi blong mekem wan climate change adaptesen projek.

I gat ol difren kaen neseri long Vanuatu:

•**On-fam neseri** - praevet neseri blong ol komesel fama we oli gat plantesen.

•**Institutional neseri** - neseri olsem Forestri o Agrikalja dipatmen I manejem wetem gavman mani.

Tufala neseri ia oltaem manejemen blong hem I gud from I gat leba blong lukaotem mo I gat mani blong ranem.

•**Komuniti neseri** – neseri we komuniti I lukaotem o ranem long vilij.

Kaen Neseri ia oltaem ino stap wok gud tumas from taem man I mekem wok, oltaem hemi expektem blong oli mas pem hem. Plenti neseri olsem oli no maintenem gud mo oltaem oli brokdaon long Vanuatu.

•**Fama neseri-** neseri we wan wan man o woman oli lukatem blong hem wan

Plenti neseri blong wan wan fama hemi wok gud tumas from se fama I luk mani we I stap kasem long ol sidlings blong hem mo tu long timba long fiuja. Plante taem ol fama nurseri oli usum blong sapotem ol fiuja jeneresen blong olgeta.

Hao blong Selektem wan Eria

Yu mas jusum wan gudfala eria blong setemap neseri long hem. Bifo yu jusum wan ples, yu sud wokabaot raon long eria blong yu mo lukluk gud. Afta long wokabaot bae yu save stap long wan posisen blong disaed long eria we hemi stret ples blong setemap wan neseri.

Samfala poen we yu sud tingbaot taem yu wantem selektem wan eria blong setemap neseri blong yumi:

Wota sos

Ol sidling long neseri bae oli nidim planti wota long everi stej taem oli stap gro, Wota hemi veri impoten long laef blong ol sidling ia. Yu mas jusum wan eria we hemi kolosap long wan riva, strim, wota tank, wota pipe o wota pump blong yumi save karem wota isi nomo blong wotarem ol sidling. No forgetem se climate change bae i save daonem amaon blong re o wota we hemi stap.

Exposa

Eria we yu jusum blong setemap neseri bae i no mas stap long rod blong bigfala wind o stap klosap tumas long solwota. Be eria ia i mas risivim planti san everi dei nomo.

Lokesen (Wea neseri bae i stap)

I gud blong setemap neseri long wan ples we i stap kolosap long mein rod blong i isi blong transpotem ol sidling igo long market o long ples we yu wantem planem ol sidling ia long hem. I moa gud tu sapos ples ia i flat lelebet blong mekem wok i isi.

Graon

Bae yu nidim planti graon long neseri espesili taem blong mekem potting o fulumap graon igo insaed long ol polybak. Yu mas redi blong karem graon long bus. Top soil hemi pat blong graon we kala blong hem i blak mo ol bebet blong graon oli stap long hem. Yu mas usum top soil nomo taem yu mekem potting from graon ia i rij long ol nutrients (gudfala kakai blong ol plant) mo wota i save flo thru long hem isi nomo.

Sapos yu no gat tumas top soil kolosap mo graon blong yu i clay tumas (clay graon hemi wan graon we i save holem wota i stap), yu save mixim clay graon ia wetem sanbij blong reva be ino sanbij blong solwota from i gat sol long hem we i save kilim ol sidling. Yumi sud mixim 70% graon mo 30% reva sanbij we i minim se bae yumi karem 3 savel blong clay graon mo mixim wetem 1 savel blong reva sanbij.

Saes blong neseri

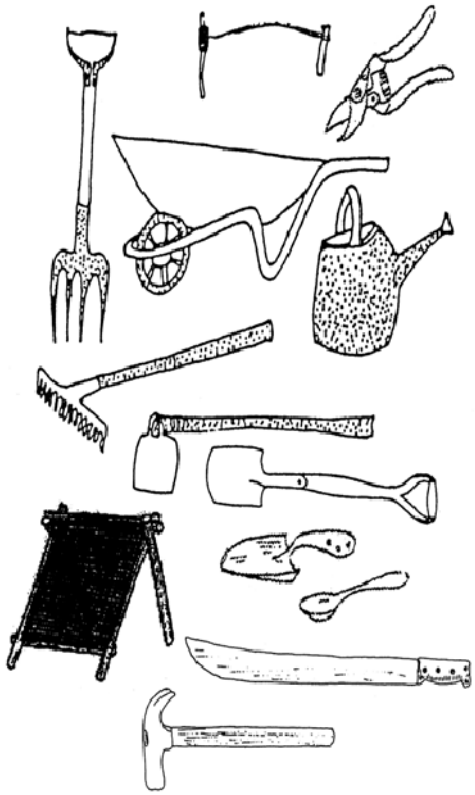
Nerseri i save kam lo fulap saes. Be bae yu save lukluk long ol poen ia blong givim sam idea long wanem saes neseri bae yu setemap

- Namba blong ol sidling we yu stap tingting blong resemap everi yia
- Ol kaen kaen tri (spesis) we yu stap tingting blong resemap
- Hamas manis we ol sidling bae oli spendem long neseri
- Hamas sidling nao wan bed i save holem

Ol poen ia i save helpem yu blong tekem desisen long neseri saes we yu wantem. No forget se nerseri we i moa bigwan bae i takem plante moa wok!

Ol Tuls blong Neseri

- Shovel
- Sieve o net waea blong sevem graon blong karemaot pis wud mo stone
- Wheel barrow
- Hamma
- Bus Naef
- Baket
- Watering can
- Nil
- Poly- bak
- Pruning shears o sisis blong katem wud
- Rop



Hao blong Setemap Neseri

Blong setemap wan neseri, i gat samfala samting we yu mas mekem blong nogat fulap problem wetem long fiuja.

1. Mekem wan neseri disaen blong soem hao bae neserii luk taem yu setemap.

Ol difren komuniti oli gat ol disaen blong olgeta folem situesen we oli stap long hem.

2, Klearem ples o eria we neseri bae i stap long hem: Katem aot ol wud mo gras we i stap mo bonem.

3. Mekem sam kaen fanis blong blokem ol animol oli no kam insaed.

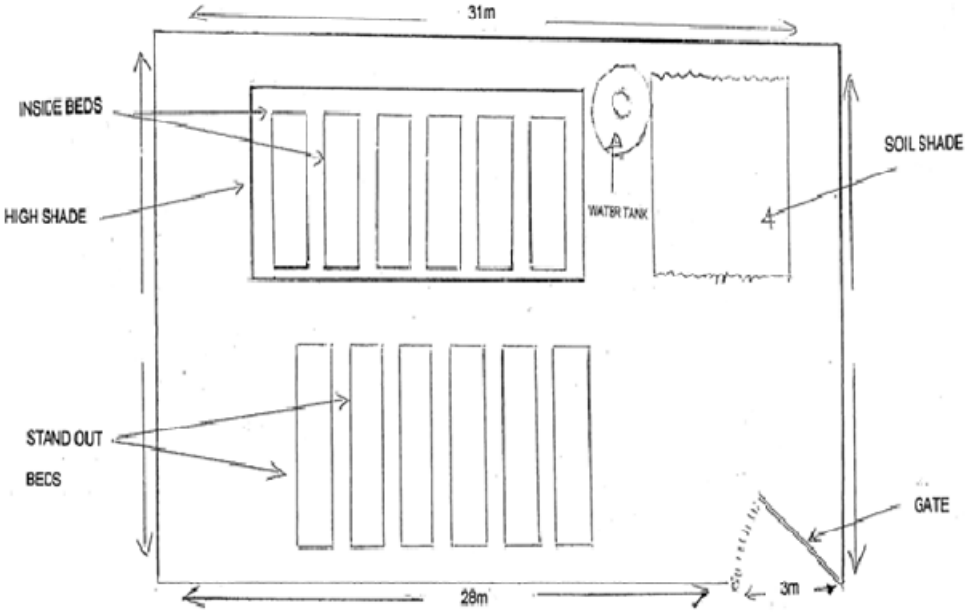
4. Mekem ol poly-bed mo sid-bed. I moa gud blong usum ol lokol materiol nomo olsem kasis, burao, navenue blong mekem ol bed ia. Longfala blong ol poly-bed bae hemi bitwin 8 - 10 mita wetem waed blong 80 sentimita. Bed ino mas bigwan tumas, sapos no bae i had blong wotarem ol sidling long medel blong bed, Frem blong bed bae hemi kam antap smol long 20 sentimita long level blong graon. Yu save mekem 2 o 3 poly-bed dipen long namba blong sidlings we bae yu lukaotem. Spes blong wokabaot bitwin wanwan bed bae hemi 1 mita.

5. Buildim shed blong ol bed. Hemi gud blong usum grin net from hemi save ridiusem sanlaet we I stap kam tru igo long ol plants long 70%, hemi minim se ol plants oli kasem nomo 30% blong sanlaet. Haet blong ol bed insaed long shed hemi sud 1 mita hae. Ol poly-bed ia bae yumi constraktem long East-West dareksen we i minim se ol sidlings bae oli save kasem san-laet long moning igo kasem aftanun.

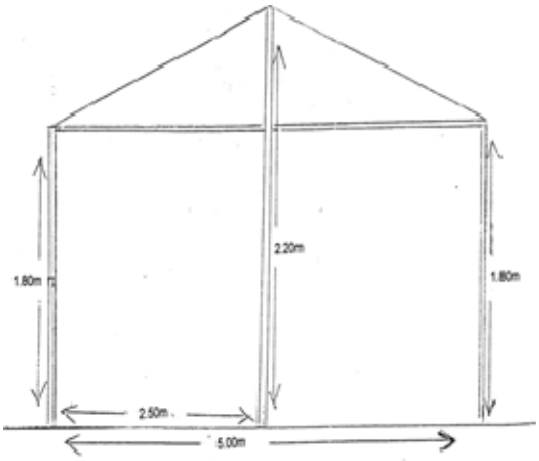
6. Buildim sid-bed. Saes blong sid-bed o jeminesen bed ino semak long poly-bed. Hemi smol lelebet (1-2m longfala, 1m waed)

7. Buildim graon shed. Ground shed hemi wan smol haos kappa o natangura we yumi save stap storem graon insaed long hem mo mekem potting (fulmap graon igo insaed long ol poly-bak).

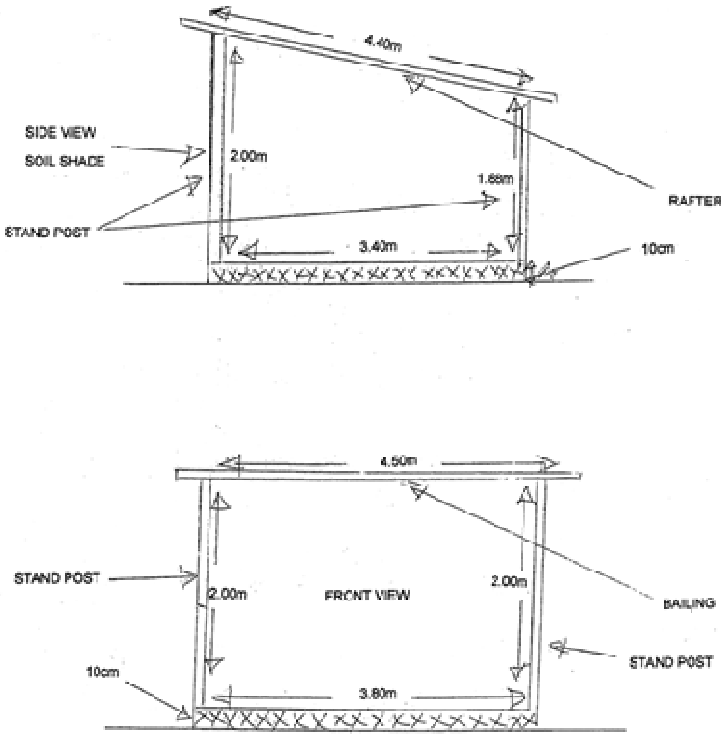
Nursery design 1



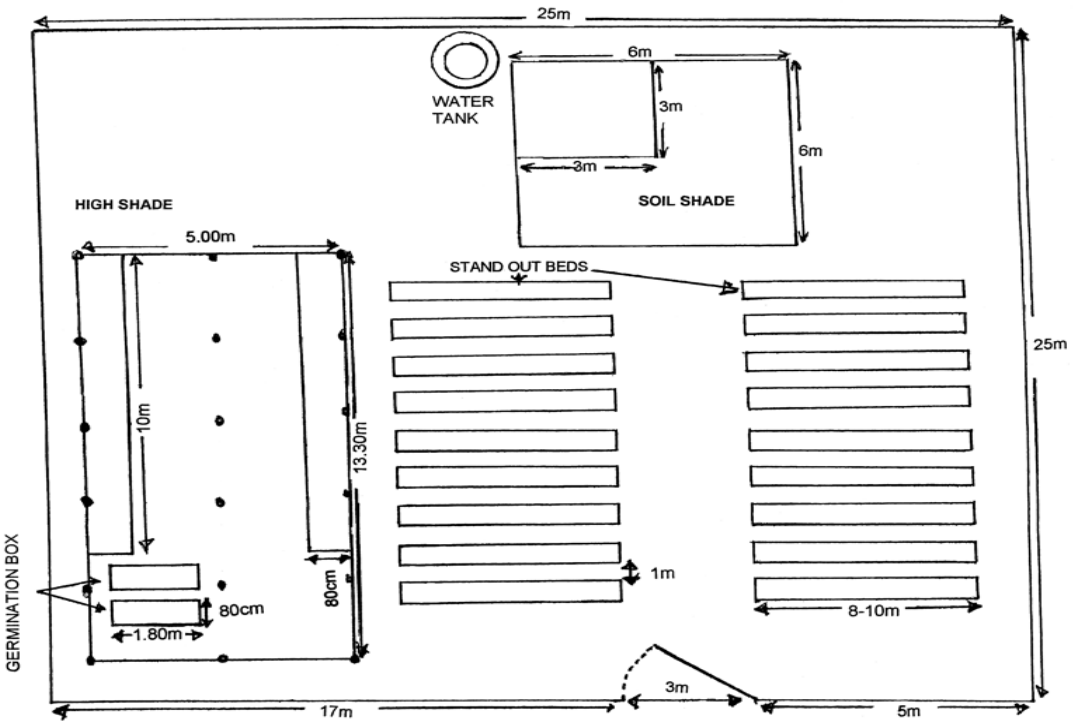
High Shade



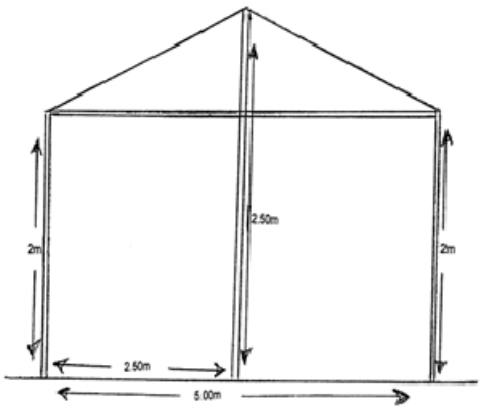
Soil Shade



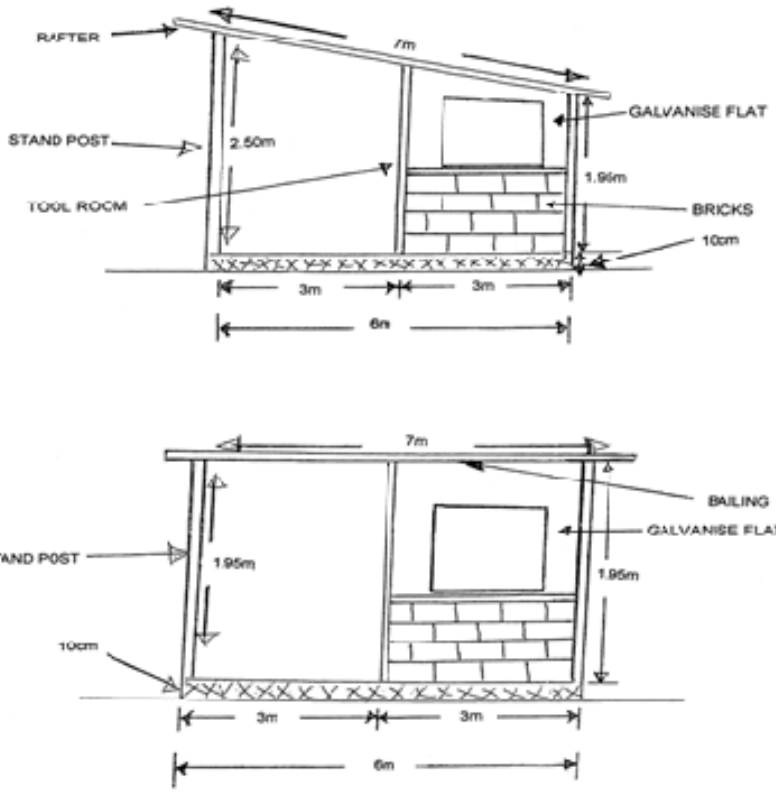
Nursery Design 2 (SPC-GIZ design-Pele Island)



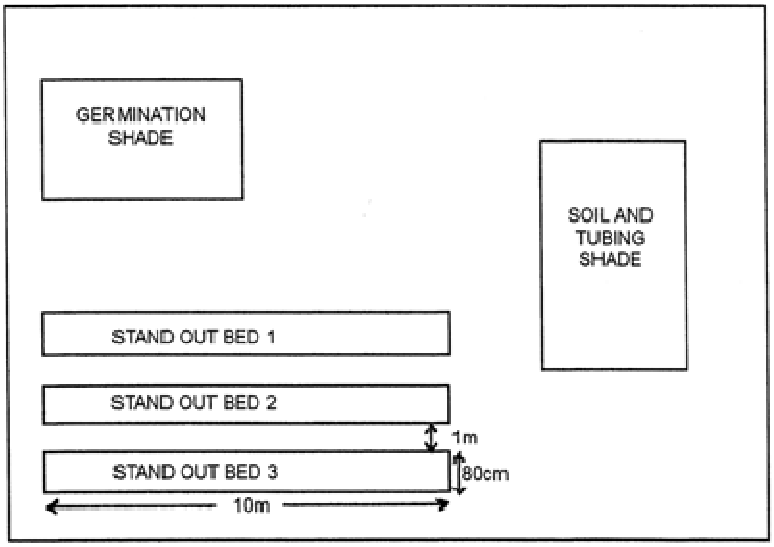
High Shade



Soil Shade



Nursery Design 3



Yu save selektem eni nursery design we yu wantem, base long wanem material yuk at. Yu save mekem evri samting usum ol local material nomo. Sapos yu usum local material, only cost hemi blong pem green net from se hemi katem aot 70% sunlaet blong no spoilem ol smolsmol sidlings. Yu save usum lif kokonas be hemi moa had blong kontrolem gud laet.

Rimemba, sapos yu wantem ka mol tri blong planem smolsmol nomo, yu no nidim wan sas o bigfala nerseri. Be sapos yu wantem kat plante hud mo bae yu stap salem, i moa gud blong kat wan propa nerseri.

Bajet blong ol Material blong Buildim Nerseri

Nursery Design 1 **Cost Break down**

Soil Shade	Size	Qty	Length (M)	Price unit (vatu)	Total amount (vatu)
Posts (hardwood)	10x10	6pcs	3meter	vt1500/post	Vt9,000
Rafter	5x10	3pcs	3.5meter	Vt875/pc	Vt2,625
Bailing of iron roof	5x7	8pcs	4.5meter	Vt787/pc	Vt6,296
Iron roofing		6pcs	4.4m		VT4,355
knockings	5x10	10pcs	4-6m	Waste	
Water Spout			8meters		VT9,875
Mesh wire		1pc	5.80m x2.20m		VT5,000
Roofing Nails		3kg		Vt450/kg	VT1,350
Galvanized Nails		3kg	6 inches	Vt400/kg	VT1,200
		3kg	5 inches	Vt400/kg	VT1,200
		3kg	4 inches	Vt400/kg	VT1,200
		3kg	3 inches	Vt400/kg	VT1,200
Water Tank	6000litres				VT145,000
Bags of cemet	1ton	25 bags		Vt980/bag	VT24,500
High Shade					
Local Post		12pcs	2.5-3m	Waste	
Screen Net (70% Shade)			80m	Vt890/m	Vt71,200
Rafter (h/wood)	5x10	9pcs	3-4m	Vt875/pc	Vt7,875
Bailing/Strap	1x2	22pcs	2.5m	Vt787/pc	Vt17,314
Germination Box (h/wood)	6x1	10pcs	2m	Vt105/pc	Vt1,050
Poly-beds (h/wood)	6x1	30pcs	3.5m	Vt105/pc	Vt3,150
Fencing					
Local posts		40pcs	1.8-2m		
Chicken wire			100m		Vt15,980

Total Cost of Design1 **VT329,370**

Nursery Design 2 **Cost Break down**

Soil Shade	Size	Qty	Length (M)	Price unit (vatu)	Total amount (vatu)
Posts (hardwood)	10x10	9pcs	3meter	vt1500/post	Vt13,500
Rafter	5x10	3pcs	3.5meter	Vt875/pc	Vt2,625
Bailing of iron roof	5x7	8pcs	4.5meter	Vt787/pc	Vt6,296
Galvanize flat			24m	Vt970/m	VT23,280
Wall knockings	5x10	25pcs	4-6m	Waste	
Water Spout			8meters		VT9,875
Mesh wire	5.80m x2.20m	1pc			VT5,000
Bolt	12inches	9		Vt600/1pc	VT5400
Roofing Nails		3kg		Vt450/kg	VT1,350
Galvanized Nails	6 inches	5kg		Vt400/kg	VT2,000
	5 inches	5kg		Vt400/kg	VT2,000
	4 inches	5kg		Vt400/kg	VT2,000
	3 inches	5kg		Vt400/kg	VT2,000

Cement Nail		2kg		Vt500/kg	VT1,000
Water Tank	6000litres				VT145,000
Bags of cement	1ton	25 bags		Vt980/bag	VT24,500
Bricks	No.15	200 bricks		Vt120/pc	VT24,000
High Shade					
Rafter	5x10	8pcs	4m	Waste	
Poly-bed	5x10	31pcs	3.6m	VT900/pc	VT27,900
Bailing	5x7	15pcs	3.6m	VT630/pc	VT9,450
Screen Net (70% Shade)			80m	Vt890/m	VT71,200
Rafter (h/wood)	5x10	9pcs	3-4m	Vt875/pc	VT17,314
Bailing/Strap	1x2	22pcs	2.5m	Vt787/pc	VT1,716
Germination Box	6x1	10pcs	2m	Vt105/pc	VT1,050
Poly-beds	6x1	25pcs	3.5m	Vt105/pc	VT2,625
Fencing					
Local posts		40pcs	1.8-2m		
Chicken wire			100m		Vt15,980

Total Cost for Design 2 **VT423,220**

Manejemen mo Mentenens blong Neseri

Yu mas lukaot gud long neseri blong mekem se i klin oltaem mo ol sidling i save gro gud.

Hemia samfala step we yu save folem blong lukaot gud long neseri:

• Jekem se fanis i stap gud oltaem blong blokem ol animol olsem faol ino kam spoilem ol sidling

• Wotarem ol sidling 2 taem long wan dei (9am mo 3pm)

• Widim neseri oltaem

• Jekem se frem blong ol bed i stap strong oltaem sapos no riplesem ol frem

• Ol poly-bed oli mas fulap gud long ol sidlings oltaem

• Mekem sua se sik mo bebet ino atakem ol sidling

• Saes blong neseri i sud bigwan enaf nomo blong yu save lukaotem

Selektem mo Kolektem ol Sid

Ol fama mas selektem gud ol mama tri we oli save givim ol gudfala sid blong planem. Wan rabis mama tri bae i givim rabis sidlings. Ol mama tri we bae yu jusum bae oli mas:

-Gat ol bigfala frut
-Gat ol bigfala nat
-Ol kakae i mas bigwan mo I tes gud blong kakai
- Oli gro stret igo antap mo gro kwi
-Oli kat gudfala timba

Hao blong Sowem Sids

Yu mas sowem ol sids long wan sid bed. Samfala tingting long sowem sids:

• No mas berem ol sid i dip tumas, 0.5 - 1 centimita i stret blong sowem ol sid.

• Ol difren kaen sid i gat difren jeminesen taem blong ol.

• Mekem potting mo stakem redi ol poly-bak ia insaed long poly-bed. Ol bed ia i mas fulap gud long ol poly-bak.

• Ol sid bae oli gro afta long 2 - 4 wiks

• Transplanem ol sidling igo long ol poly-bak we oli stap finis long poly-bed.

• Wotarem ol sidling ia nomo kasem 3 - 6 manis dipen long wanem kaen tri sidling yumi gat afta yumi save go planem long plantesen

Planting lo Plantesen

Bifo yu karem aot ol sidling long neseri blong planem, yu mas go long plantesen mo makem aot eria blong plant long hem. Evri tri i gat difren plant spesing so yu mas askem help long ol Forestri Ofisa kolosap long yu. Afta we yu katem ol stik mo makem aot eria blong plant finis, yu save transpotem ol sidling.

Yu mas karem aot ol sidling long neseri sloslo nomo blong no damejem ol rus. Samtaem sidling i stap long nerseri long taem tumas mo rus i kro bitim poly-bak. Sapos olsem bae yu mas katem aot ol rus we i kamaot andanit long poly-bak. Hemi importan blong lego sidling ia i stap 2 - 3 dei bifo yu planem. Sapos yu noa sua long eni samting yu sud lukim wan Forestri Ofisa.

Foloap ol Yang Tri lo Plantesen

Afta we yu planem ol sidling finis long plantesen, yu mas stap ko blong jekem ap olsem wanem oli gro. Sapos yu faenem samfala oli ded, yumi mas stap redi blong riplesem wetem ol narawan long nerseri.

Yu mas go widim plantesen 2 taem long wan manis kasem taem we ol tri oli kasem 1 - 2 yia.

Wok insaed long neseri i mas gohed even sapos neseri i luk emti lelebet. Yu mas karem graon bakegen mo fulumap long ol poly-bak. Yumi mas traem blong karem ol sid long ol tri mo planem ol long sid-bed bakegen.

Naturel Rijeneresen (Ol sidling we oli grow wael long bus)

Yumi save luk se insaed long ol bus mo garen blong yumi i gat plenti sidling we oli gro olgeta nomo, hemia yumi kolem naturel rijeneresen. Naturel rijeneresen i hapen long fulap long ol lokol tri blong yumi olsem Waetwud, Bluwota, Natapoa, Nangai mo samfala moa. Wanem blong mekem se yumi save karem sped o stik mo stikim aot ol naturel rijeneresen ia mo go planem long ples we yumi laekem.

Tingting blong transplanem ol naturel rijeneresen ia i blong katem aot kompetesen sapos fulap long ol wael sidling ia oli stap gro tugeta mo givim janis long ol blong oli gro blong benefitim komuniti long fiuja.

Ol Bebet mo Sik long Neseri

Taem we sidling is tap long nerseri i kat plante sik i save spoilem olgeta. Bae yum as wajem gud mo sapos yu luk eni sik ia, yum as karem aot ol sidling kwik taem blong no letem se sek i kasem ol narawan.

Long nerseri yu save faenem:

- **Die Back**

Stampa mo rus blong ol sidling i sopsop mo afta bae lif i save slak. Blong solvem, no wotarem sidling tumas mo seperetem ol wan wan sidling blong givim spes blong sanlaet mo ea I flo thru blong draemap.

- **Black Spot**

Bae yu save lukim ol smol smol black spot long ol lif blong sidling. Sik ia hemi kos by wan fungus we i atakem tri. Yu mas karem aot ol sidling we oli kasem sik ia.

- **Bebet we oli Kaikai Lif**

Sapos yu luk plante, yu save sprei wetem meresin sapos yu gat. Sapos no, seperetem ol gudfala sidling we bebet ino kakae lif blong ol. Traem resem o groem ol sidling blong ol narafala tri we bebet ia ino kakae lif blong ol.

- **Ol Animol mo Man**

No forgetem se ol nara animol tui save spoilem sidling blong yu. Ol animol olsem dog, faol, pig mo buluk i save kosem bigfala damej insaed long nerseri.

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VANUATU FOREST SPECIES
CLIMATE CHANGE ADAPTATION MATRIX

	Drought Tolerant	Moisture Tolerant	Cyclone/Wind Tolerant	Heat Tolerant	Fire Tolerant	Salt Tolerant	Insect Tolerant	Disease Tolerant	Shade providing	High Value Timber	High Value Non-timber	Agroforestry Appropriate	Soil Stabilizing	Food Security Potential	Leguminous	Parasitic	Invasive Potential	TOTAL CC ADAPTATION SCORE
Natora																		
Nangai	3	3	3	3	1	1	1	3	3	3	3	3	3	3	0	0	0	2.1
Casuarina	3	2	3	3	1.5	3	3	3	3	2	3	3	3	0	3	0	3	2.1
Calophylum (Tamanu)	3	2.5	3	3	2	3	3	3	3	3	3	1	3	1	0	0	2	2.0
Namambe	3	3	2	3	1	3	1	1	3	1	3	3	3	3	3	0	2	2.0
Namariu spirobis	3	1	2	3	1	2	3	3	2	3	3	2	3	0	3	0	2	1.9
Nakavika	2.5	1	3	2	1	2	1	2	3	3	3	3	3	3	0	0	1	1.9
Pandanus	3	2	3	3	2	3	2	3	3	0	2	1.5	3	2	0	0	2	1.8
Navele	3	3	3	1	0	3	0	2	2	2	3	3	3	3	0	0	1	1.8
Natapoa	0	2	1	3	1	3	1	?	3	3	3	3	3	3	0	0	0	1.7
Kauri	3	3	3	3	0	1	2.5	3	3	3	0.5	2	3	0	0	0	1	1.7
Nakatambol	3	3	1	2	0	2	1	1	3	3	3	2	3	3	0	0	1	1.7
Cordia subcodata	3	2	3	2.5	2	3	?	?	3	3	3	0	3	1	0	0	0	1.7
Nantao	2	1.5	2	2	0	2	1	3	3	3	3	2	2	3	0	0	1	1.7
Tamarind	3	1	3	3	1	2	?	?	2	1	3	3	3	3	3	0	3	1.6
Natangura	2	3	3	2	1	2	2	3	3	1	3	2	3	1	0	0	3	1.6
Pinus Caribbea	3	2	2	3	1.5	1	3	3	2	3	2	2	3	0	0	0	3	1.6
Bamboo	3	3	1	3	1	2	2	3	3	0	3	1	3	2	0	0	3	1.6
White Wood	1	2	2.5	2	0	1	0	3	3	3	3	3	3	0	0	0	0	1.6
Wild Nakavika	2.5	2	3	3	1	2	3	?	3	3	1	?	3	0	0	0	1	1.5
Natongtong	0	3	3	0	0	2.5	2	2	3	3	3	0	3	1.5	0	1.5	0	1.4
Citrus	2	1	2	2	0	1	1	1	2.5	0.5	3	3	3	3	0	0	2	1.4
Mahogany	1.5	2	1	2	1	1	2	1	3	3	3	2	3	0	0	0	3	1.3
Namameo	0	1.5	1	1	1	1	3	3	2	2	2	3	3	0	0	0	3	1.2
Sandalwood	2	0	1.5	2	0	1.5	0.5	1	0.5	3	3	3	3	0	0	3	0	1.1

EXCELLENT	3
GOOD	2
FAIR	1
POOR	0
CAUTION	3

Fruting Sisen blong sam Impoten Tri long Vanuatu

Waetwud *(Endospermum)* Maj - Eprel

Nangai *(Canarium)* Julae - Novemba

Navele (*Barringtonia)* Novemba - Eprel

Natapoa *(Terminalia)* Mei - Julae

Sandalwud Novemba - Decemba

Natora Mei - Jun

Bluwota Januari - Maj

Tamanu *(Callophyllum)* Decemba - Februari

Mahogany *(Swietenia)* Novemba - Februari

Nakatambol *(Dracontomelon)* Eprel - Okis

Namamau *(Fluegga)* Eprel - Julae

Kauri *(Agathis)* Februari - Jun

Nandao *(Pometia)* Eprel - Julae

Orange *(Citrus)* Mei – Octoba

Mekem Fores Neseri olsem wan Bisnis

Blong establishim, operatem mo manejem wan fores neseri olsem wan bisnis, hemi veri impoten blong tingabaot ol samting ia:

Saes blong neseri

Saes blong neseri bae hemi dipen tumas long namba blong ol sidling we yu stap tingting blong resemap everi yia. Hemi veri impoten blong estimatem namba blong ol difren kaen tri we bae yu resemap long neseri.

Tri Spesis

Ol kaen tri we yu selektem oli mas be olgeta we value o praes blong olgeta I hae mo I gat deman long lokol maket. Exampol, naoia I gat faev (5) lokol tri spesis we deman I hae mo forestri dipatmen I stap promotem; Sandalwud, Waetwud *Endospernum*, Mahogany *Swietenia*, Natapoa *Terminalia* mo Nangai *Canarium*.

Taem yu inkrisim namba blong sidling we oli gat hae deman long neseri bae I inkrisim value blong bisnes, mo bae yu save kontinu blong produsim ol sidling.

Plenti long ol fores tri spesis o kaen tri oli difren long ol gru blong olgeta, plenti long ol spesis ia oli save stap long neseri long 6 manis bifo yu save planem olgeta long fil. Long fes 3 manis afta we yu transplantem olgeta igo long poly-bak, oli stap anda long wan shed, afta long 3 manis long shed yu karemaot olgeta igo long direk sanlaet blong hardenem olgeta blong nara 3 manis bifo yu transpalntem olgeta long fil. Olsem i save takem longfala taem bifo yu stat blong lukim eni mani.

Kos o Mani blong Establisim Neseri

Yu mas tingbaot ol kos o hamas mani yumi nidim blong establisim neseri. I kat plante blong ol materiol olsem, timba, nil, hama mo ol nara samting we bae yu nidim blong setemap neseri ia. Bae yumi no mas forgetem tu kos blong transport blong ol materiol igo long ples we neseri I stap long hem mo kos blong leba o man we bae I wok long neseri.

Wokemaot Profit

Karemaot totol mani blong expenses long totol mani blong inkam o mani we yu winim long sale blong ol sidling blong yu afta wanem we I stap hemi profit blong sale blong yu.

Glossary (mining blong samfala wod insaed long buk ia)

Climate I jenis: jenis we I stap hapen long weta, we hemi includem jenses long tempereja, win paten mo renfal, espesili inkris long tempereja long ea we I stap raon long wol we ol kas I kosem, espesili kas we oli kolem carbon dioxide.

Clay graon: wan kaen graon we I save holem wota.

Exposa: eria o ples we hemi open long sanlaet mo win.

Fores Risos: ol timba tri we oli stap long bus blong yumi.

Fruting Sisen: taem we ol frut blong ol tri oli redi.

Graon Shed: wan shed we yumi save storem graon long hem blong fulmap long poly-bak.

Hardening Off: hemi taem ol sidling oli stap long taem tumas long neseri rus blong olgeta I gro tru long ol plastik bak, yumi mas katem aot mo livim ol I stap long neseri bakagen blong smol taem blong oli gro strong bifo yumi karem olgeta igo planem long fil.

Institutional Neseri: neseri we gavman I givim mani blong ranem olsem forestri mo agrikalja dipatmen neseri.

Komuniti neseri: neseri we komuniti nomo I setemap mo ranem.

Naturel Rijeneresen: ol sidling we oli gro olgeta nomo long bus.

Neseri: ples we yumi groem ol sidling blong ol tri mo lukaotem gud long olgeta bifo yumi save planem aot long fil..

On-Fam Neseri: neseri we wan fama I setemap long fam blong hem blong resemap ol tri nomo we hemi laekem blong planem.

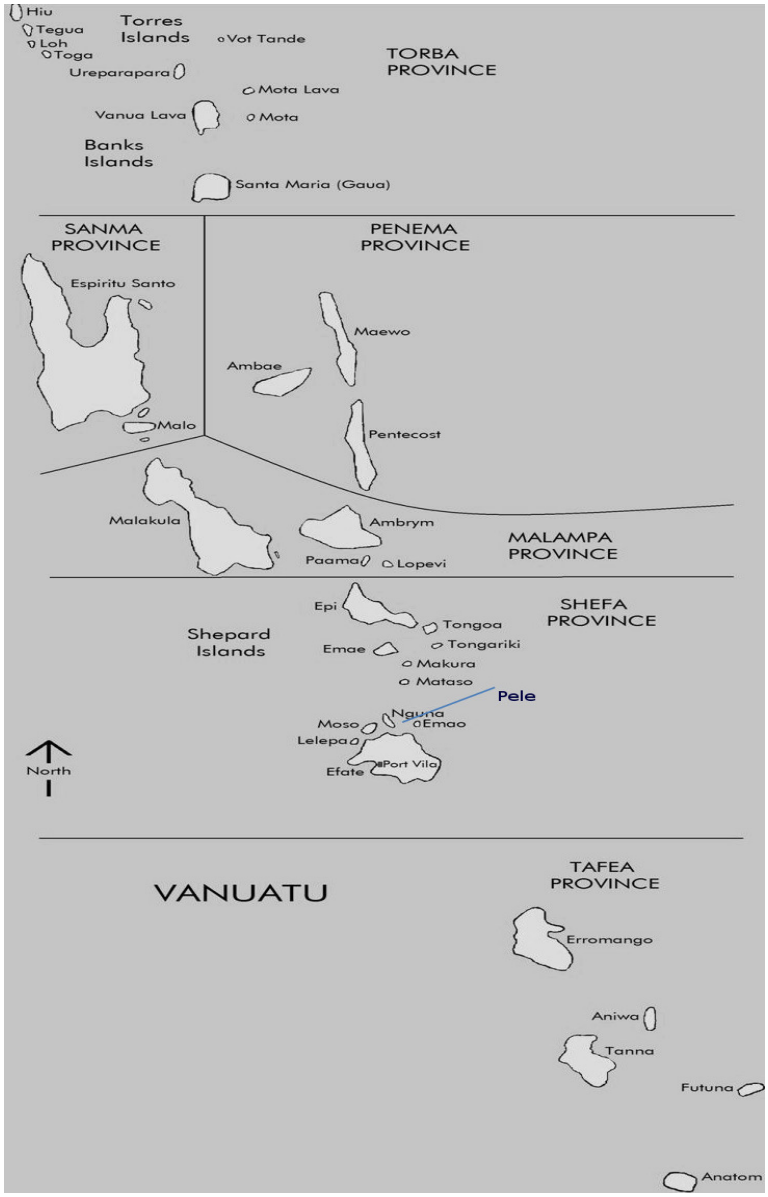
Poly bak: plastic bak we yumi stap usum blong planem ol sidling insaed.

Poly-bed: longfala bed we yumi storem ol sidling insaed.

Potting: fasin blong fulmap graon igo insaed long ol polybak.

Sid-bed: bed we yumi groem ol sid long hem.

Transplanting: fasin blong karemaot ol smolsmol gru long sid bed mo planem ol igo long ol polybak we graon I stap insaed finis.



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