

isiZULU

Agroecology Qalisa!

TRAINING MATERIALS FOR PARTICIPANTS

These how-to materials were developed for participants who attend Biowatch's AE Qalisa! "introduction to agroecology" practical training course for smallholder farmers.



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These how-to materials were developed for participants who attend Biowatch's *AE Qalisa!* "introduction to agroecology" practical training course for smallholder farmers in KwaZulu-Natal, South Africa. They were developed specifically to support the first steps in applying agroecology practices in traditional homestead planning.

Please note: Because agroecology farming practices are context-specific and responsive to the local climate and culture, the practices shared in these materials may not be appropriate for all areas or climates, and should be adapted to suit your own context, climate and cultural preferences.

These materials are available in English and in isiZulu.

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YINI AGROECOLOGY?

I-Agroecology ukufunda emvelweni, bese kuthathwa leyomfundiso kuyisebenzise ekulimeni, kukhiqize ukudla, futhi kugququzele indlela yokukhiqiza ukudla enobulungiswa, esimeme kanye neqinile.

I-Agroecology yindlela yokulima eqala phansi bese ikhula njalo, yindlela egxile olwazini lwezigidi zabalimi abancane nabakhiqizi bokudla basekhaya emhlabeni jikelele abangabadobi, abalima izitshalo, abanemfuyo, abavuna ukudla kwemvelo okungalinyiwe ezindaweni zabo zesizukulwane.

Bathathe isikhathi bacwaninga imvelo, base bekhiqiza ukudla kwabo ngendlela evumelana nemvelo. Ngoba ukubekeka kwendawo, inhlabathi, isimo sezulu, ezenhlalo-mnotho kanye namasiko ezindawo ngezindawo ayingqayizivele futhi ahlukahlukene, indlela yokulima ehambizana nemvelo ayikwazi ukufana yonke indawo – kumele kutholakale indlela engcono yokusebenzisa lezi zimiso lapho bekhona. Lokhu kudala ukuthi kubekhona izindlela, nemikhuba eyahlukahlukene namasiko okudla emhlabeni jikelele.

I-Agroecology iyisayensi (ucwaningo nemiphumela) ehlanganisa bese isebenzise lololwazi lwabakhiqizi bokudla kanye nalolo lwabancwaningi bezimiso ezahlukahlukene ekujulisa ukuqonda kwendlela yokuphila ehambisana nemvelo. Ecology = ukufunda ngobudlelwane phakathi kwezinto eziphilayo nezingaphili (okufaka abantu) kanye nemvelo.

I-Agroecology ikwazi ukuhlanganisa imiphakathi esemazingeni aphansi, izishosho, abacwaningi, ososayensi, abasebenzi kanye nabathengi ukuze baphokophelele ukudla okuphephile nokuphelele.

Sindawonye sisebenzela izinguquko ezidingekayo, kwezenhlalo, ezombusazwe kanye nezomnotho ukuze kushintswe uhlelo lokudla ukuqinisekisa ukulandelwa kwamalungelo abantu, nelungelo labantu lokudla nokukhiqiza ukudla okunempilo nokukhiqizwe ngokwesiko kwase kuvunwa ngokwemvelo nangendlela esimeme.

Loku kusinikeza inselelo yokuthi sishintshe ukungalingani kwamandla emphakathini ukuze kubuyiswe amandla okulawula izimbewu, izinhlobonhlobo zezinto eziphilayo, umhlaba kanye nezindawo, amanzi, ulwazi, usiko, abantu bomdabu kanye nabalimi basekhaya, abalimi abancane abondla abantu abaningi ezweni jikelele.

Ubumbano lomnotho lwazisa ukubambisana, ukwenzelela, kanye nentando yeningi yezenhlalo nezomnotho ukuze kusekelwe inhlalakahle yabantu kanye nobuzungezilanga (neplanethi) ngaphezu kwenzuzo.

Siyaphikisana nohwebo lwebhizinisi oluhamba phambili kanye nombuso wokudla othuthukisiwe kodwa esikhundleni salokho sithuthukisa umnotho oyindilinga nowobumbano ngokusebenzisa izimakethe zendawo nezendawo ezisekelwe ubudlelwane obuvulelekile phakathi kwabakhiqizi nabathengi.

Ukuhlonipha igalelo labesifazane ezinhlelweni zokudla kanye nelungelo labo lokubamba iqhaza ngenkuthalo kuzo zonke izigaba zokuthatha izinqumo kubalulekile.

YINI ESINGAYIBONA MAYELANA NEZIMISO ZEMVELO?

Lapho sibheka ngokucophelela ubudlelwano bempilo Phakathi kwezinto eziphilayo nezingaphili zemvelo, siyabona ukuthi nakuba izinto eziphilayo nendawo ezihlala kuyona kubukeka kuhluka kakhulu, kunezinqubo nokusebenzelana okwenzeka ngendlela efanayo kuzo zonke.

I-Agroecology yenza ncamashi lokhu esikubona emvelweni ngokulandela indlela izinto ezenzeka ngayo nokuhleleka kwazo bese ikufaka emsebenzini wokukhiqizwa kokudla.

Sisekela imvelo ekubeni ibe nokuhluka kakhulu ngokwandisa izinhlobonhlobo ukuze kugqugquzelwe ukusebenzisana okuwusizo kakhulu phakathi kwenhlabathi, izitshalo, nezilwane.

Empeleni azikho izinto ezisetshenziswayo zangaphandle ezidingekayo ngoba uhlelo luzihlinzekela lona izinga lenhlabathi nokuvunda kwalo futhi lugcina izinto eziphilayo zilingana, ngakho azikho eziba zinambuzane; akukho okumoshekayo noma okulahlwayo; kanye nendlela yokukhiqiza phakathi nezinkathi zonyaka kuqinisekisa ukudla okunomsoco nokunempilo okwabantu kanye nezilwane.

Ezolimo zezimboni zizama ukugcina ukulima kwemvelo kulula futhi kuphazamisekile “ukufukula” leso sigaba - ngokulima nokutshala isitshalo esisodwa endaweni enkulu, bese isebenzisa amakhemikhali anobungozi ukulwa nezinambuzane ezihlasela izitshalo ezingondlekile kanye nokhula oluvala inhlabathi evulekile.

IZIMISO ZOKUKHIQIZA NGOKWE- AGROECOLOGY

Kunezimiso ezinhlanu ezixhumene esizifundile ukuthi kunobudlelwane Phakathi kwezinto eziphilayo nezingaphilile esizama ukuzisebenzisa ezinhlelweni zethu zokukhiqiza ukudla ukuze zikwazi ukusimama.

① Yakha inhlabathi ephilayo enempilo ukuze ukhulise izitshalo ezihlukahlukene nezinempilo

Ilanga liwumthombo wamandla alawula yonke imijikelezo yemvelo. Izitshalo ziyakwazi ngokukhethekile ukusebenzisa ukukhanya kwelanga, isikhutha esiphuma emoyeni, namanzi futhi ziguqule lokhu kube umoya-mpilo kanye noshukela oguqulwa kube izakha-mzimba abe ukudla kwakho konke okunye.

Lezi zakha-mzimba zinika amandla futhi akhe izinhlanganisela nezingxenye zesitshalo esikhulayo. Amanye nawo athunyelwa emhlabathini ngezimpande zezitshalo ngendlela yenhlanganisela yekhabhoni. Izitshalo zenza lokhu ukuze zihehe futhi ziphakele amagciwane emhlabathini angaletha imisoco (amaminerali avela emadwaleni inhlabathi eyakheka ngayo noma evela emoyeni) aye endaweni yawo yezimpande. Lezi zinambuzane zidliwa ezinye futhi ngalesisikhathi isitshalo sikwazi ukuthola umsoco esiwudingayo ngendlela esebenzisekayo.

Ku- agroecology sifuna njalo ukwenza isiqiniseko sokuthi umhlabathi unempilo futhi uphila nezinhlobonhlobo zezinto eziphilayo, nokuthi kunezinhlobonhlobo zezitshalo ezikhula kuwo ngaso sonke isikhathi, ukuze kugcinwe lobu budlelwano obuyingqayizivele phakathi komhlabathi, izinto eziphilayo zomhlabathi kanye nezitshalo eziphilayo ukuze kuqhubeke ukondlana kwemvelo.

Singasiza ekwenzeni ikhaya elihle emhlabathini lezilokozana futhi sandise ukusebenza kwazo ngokuqinisekisa ukuthi kunezinto ezibolayo emhlabathini ukuze iziphilise, kunomoya kanye nomswakama owanele emhlabathini, futhi inhlabathi ivikelwe ngesemboza noma izitshalo eziphilayo.

② Sebenzisa kabusha okubolayo okuphilileyo

Emvelweni, okubolayo nokungaboli kuguqulwa njalo ngokusebenzisana kwinhlanganisela yempilo. Akukho ukumoshekayo noma okulahlwayo ngoba noma iziphi izakhamzimba ezingasetshenzisiwe noma izinto ezifile zidliwa ezinye.

Ku-agroecology siyazama ukukhulisa imisoco ekhona futhi siqinisekise ukuthi imisoco iyasetshenziswa iphinde ibuyiselwe enhlabathini uma sitshala ukudla. Lokhu sikwenza ngokuvuselela i-biomass ngokuxuba izinhlelo zezitshalo nezilwane futhi sibuyisele izinto eziphilayo emhlabathini ngokusebenzisa izinhlobonhlobo zezindlela zokwenza umquba kanye nezindlela zokugaya.

③ Vimbela ukulahleka kwezinsiza ngenxa yamandla, amanzi, nokuhamba komoya

Indlela esihlela noma esiklama ngayo uhlelo lwethu lokukhiqiza inomthelela ekutheni amandla, amanzi, nomoya kuzosisiza noma kusiphazamise. Sizama ukulondoloza nokusebenzisa kahle izinsiza ezitholakalayo kuhlenganise amandla, inhlabathi, amanzi, nemisoco ngokuxhumanisa izakhi ukuze kujikelezwe izinsiza zisuka kwesinye ziye kwesinye (izihibe ezivaliwe esikhundleni sokuphuma komugqa); sakha I - micro-climates; kanye nokuvimbela ukulahlekelwa ngokuphatha amanzi nomhlabathi ngokusebenzisa amasu okonga amanzi kanye nokumboza umhlabathi.

④ Ukukhulisa izinto ezinhlobonhlobo

Imvelo izinzile futhi iyakwazi ukumelana nengcindezi ngenxa yokunotha kokuhlukahluka. Ku-agroecology sandisa ukuhlukahluka ngaphakathi kohlelo lwethu lokukhiqiza ngezindlela eziningi. Sihlukanisa esikukhiqizayo futhi sikhulise izinto eziphilayo ezisebenza ndawonye ukuze senze uhlelo lube nempilo futhi lukhiqize kakhudlwana futhi luwusizo kithi. Singakwazi ukwandisa lokhu kuhlukahluka ngokwandisa izinhlobo ezahlukeneyo zezitshalo nezilwane, futhi ngokwandisa ukuhlukahluka kofuzo phakathi kohlelo ngalunye (isibonelo izinhlobo ezahlukeneyo zikabhontshisi). Siphinde sandise ukuhlukahluka emkhathini (phezulu nangaphansi komhlaba futhi ukusuka ensimini kuya endaweni ebanzi) kanye nesikhathi (sishintsha phakathi nezinkathi zonyaka kanye neminyaka njengoba izitshalo ezingapheli zikhula futhi zivuthwa).

⑤ Ukuheha amandla anokusebenzisana

Kubudlelwano bezinto zemvelo eziphilayo nezingaphili kanye namandla nezinsiza kwabelana ngokusebenzisana phakathi kwezinto eziphilayo. Ku-agroecology sizama ukuthi sikhulise lokhu kusebenzelana okuwusizo kwezinto eziphilayo phakathi kwezingxenye ezingaphakathi kwezinhlelo zethu zokukhiqiza, ukuze kunakekeleke izinqubo ezibalulekile zemvelo kanye nezinsizakalo. Ngamanye amazwi, imvelo yenza umsebenzi wokudala i-ecosystem elinganiselayo.

UKUSETSHENZISWA KWEMIGOMO YE-AGROECOLGY

Izindlela nemikhuba esiyisebenzisayo ukuze sisebenzise lezi zimiso ezinhlanu ezingenhla kufanele zivumelane nesimo esikuso kanye nalokho esifuna ukukudla. Sihlose ukugwema izinto zokufika zangaphandle futhi kunalokho sakhele phezu kwezinsiza zemvelo ezikhona nezitholakayo endaweni.

Ngezansi kukhona isifinyezo sezinye zezinqubo noma imigomo ethile esetshenziswa abalimi abasekelwa u-Biowatch enyakatho neKwaZulu-Natal. Lokhu kungase futhi kukusebenzele. Kodwa-ke, kufanele futhi ubheke indawo okuyo, ukhulume nabadala emphakathini wakini ukuze uthole ulwazi lwendabuko mayelana nendlela ukudla okukhiqizwa ngayo endaweni yangakini, futhi uzame okwakho ukuhlola ukuze usebenzise izimiso futhi ubone ukuthi yini ekusebenzela kangcono.

IZINDLELA/ IMIKHUBA YE-AGROECOLOGY

ASISEBENZISI

- omanyolo abakhiwe ngamakhemikhali
- izibulala nambuzane kanye nezibulala khula ezinobungozi
- izimbewu ezakhiwe zashintshwa ulibo fuzo lwazo noma ezakhiwe kabusha ngobuchwepheshe ukuhlunganisa ufuzo lwezinto ezingahlobene (GM)

YEBO

- ngezindlela nemikhuba ye-agroecology

ISENTSHEN- ZISWA KUPHI			IZINDLELA/ IMIKHUBA YE-AGROECOLOGY	IZINDLELA NOMA IMIKHUBA YE-AGROECOLOGY				
Engadini yemifino	Insimu yesivumelwano	Emasimini okutshala ukudla	<i>I-Agroecology ifunda emvelweni bese isebenzisa lezifundo ukukhiqiza ukudla ngendlela okuyiyona.</i>	1. Inhlabathi ephilileyo kanye nezitshalo	2. Ukusebenzisakabusha bio-mass kanye nezakhamzimba	3. Ukuvimbela ukulahleka kwezinsiza	4. Ukukhulisa ingxubevange	5. Ukuthuthukisa ama-synergies
			Imvundela yesaka					
			Imvundela yomgodi					
			Imvundela ephakeme					
			Itiye lemvundela					
			Imibhede yokunothisa: zintathu izinhlobo zemibhede yokunothisa eyenziwayo					
			• Umgodi ombiwe kanye ojulile wokunothisa inhlabathi					
			• Umgodi ombiwe kabili ojulile wokunothisa inhlabathi					
			• Ingadi yamavila yokunothisa inhlabathi					
			Izikhuthaza zomhlabathi (njenge... Bokashi, Supermagro, native microbes)					
			Izifutho ze-Foliar (ash brew, lime sulphur)					
			Izisele zokutshala					
			Isemboza					
			Isembozo senhlabathi ephilayo enezitshalo zokumboza kanye nomquba oluhlaza					
			Tshala phansi isemboza notshani eduze kwendlu esikhundleni sokushanela igceke					
			Beka ingadi yemifino noma amasimu ngezansi kwezindlu ukuqoqa amanzi agelezayo					
			Gubha noma umsele yokubamba amanzi					
			Yimba imigodi yokubamba amanzi ezindleleni					
			Ukuhlanzwa kwamanzi asebenzile					
			Tshala izitshalo ezinephunga elinamandla ezizungeze ingadi namasimu naphakathi kwezindima					
			Tshala izitshalo eziqhakazayo phakathi kwamaploti kube imincele (yiba nezimbali unyaka wonke)					
			Dala izindawo eziphephile zezibankwa, amaxoxo, nezinyoni					
			Tshala izitshalo ezihambisanayo kanye nokuxubanisa					
			Ukushintshashintha ukutshala izikhathi ngezikhathi zonyaka					
			Ukutshala ngokuxubanisa					
			Ukutshala ngolayini izinto ezingafani					
			Imfuyo ehlukahlukene					
			Ukulima usebenzisa izinkukhu noma izingulube					
			Ukuhuqwa kwembewu					
			Londoloza imbewu					



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IKHASI LOKUSEBENZA

UKUHLELA INDAWO/IKHAYA LAMI

- Sebenzisa lemibuzo ozoyithola ukukusiza ukuthi ucabange ngokuhlela ipulazi/ikhaya lakho.
- Uzodinga iphepha lokudweba nokubhala lokhu okubonayo, nokusiza ukuhlela indawo nombono wakho. Ungasabi ukwenza amaphutha nokushintsha amacebo akho kaningi endleleni.
- Eminye imibuzo izodinga ukuthi nihlalisane phansi niyixoxe niyiphendule njengomndeni.

Qala ngokubheka kahle ukuthi yini ekhona

Ngokucophelela bukisisa ikhaya lakho, igceke lakho, nendawo yakho. Bhala phansi zonke izinto ozibonayo:

Qaphelisisa ilanga nomthunzi

- Liphuma kuphi futhi lishona kuphi ilanga?
- Endaweni yangakini lijikeleza za kanjani ilanga lasebusika uma uqhathanisa nasehlobo?
- Ngabe zikhona yini izingxenye zomhlaba nomuzi wakho ezise thunzini isikhathi esiningi, noma ezihlale zihlatshwa yilanga lize liyoshona ubusika nehlobo na? Cabanga ukuthi lokhu kuthinta kanjani lapho kufanele ubeke khona izakhiwo ezahlukahlukene – ngokwesibonelo, ukugcina imfuyo endaweni epholile ehlobo kodwa efudumele ebusika.

Qaphela isimo somoya kanye nomlilo

- Umoya uvame ukuqhamuka ngakuluphi? Ngabe lokhu kuyashintsha yini ngezikhathi ezahlukahlukene zokutshala zonyaka? Ngabe lokhu kuvame ukudala umonakalo yini? Ngabe uyazidinga yini izivikela moya ngakuleyo ngxenye?
- Unakho yini ukwesabela umlilo wequbula na? Ungaqhamuka ngaphi? Ingabe uyasidinga yini isivikela mlilo noma izitshalo ezibamba umlilo ngakuleyo ngxenye?

Bheka isimo sezihlahla

- Yiziphi izihlahla ezikhona? Akufanele zisuswe ngaphandle uma kuyizihlahla noma izimila noma izitshalo zokufika ezilukhula noma kungezinezimpande ezingadala umonakalo ezakhiweni ezifana nezindlu.
- Ungahlela kanjani futhi uzuze kulezihlahla ezivele zikhona?

Ukwehlela

- Ingabe umhlaba wakho uyisicaba noma usemehlelweni?
- Ingabe ukwehlela okuhlukene kubheke ngakuphi – ingabe kubheke empumalanga noma entshonalanga? Kufulathela ilanga uma selikuphi? Ngabe lokhu kwenza ifudumale noma iphole futhi ngaziphi izikhathi?

Ukubheka ukuhamba kwamanzi

- Yiziphi izindlela ezihamba amanzi uma izulu lina?
- Ageleza aye ngakuphi ngokushesha? ageleza aye ngakuphi kancane? Kungakuphi lapho anyamalala ngakhona ngokushesha? Limangakuphi ichibi lamanzi futhi lihlale isikhathi eside ngemuva kwezimvula?
- Uyakwazi yini ukukhongozela amanzi nokuwagcina? Kungaphi lapho ongawakhongozela, uwagcine khona kalula amanzi? Ngabe ungakwazi yini ukugcina amanzi ageleza ngamandla angene phansi aye ngalapho uwadinga khona?
- Ingabe amanzi ayawudala yini umonakalo ezindaweni ezehlukene, njengokuguguleka kwenhlabathi, imigwaqo noma izisekelo zezakhiwo na? - Cabanga ngokuthi lamanzi angancishiswa kanjani isivinini noma adonswe ngayiphi enye indlela ukuze angene phansi kunokuba adale umonakalo.

Izakhiwo kanye nenqalasizinda

- Qaphela ukuthi zikuphi izakhiwo futhi zisetshenziselwa ini?
- Zikuphi izakhiwo zakho lapho ulungiselela khona ukudla, ugcina khona ukudla, ugcina izimbewu, nokugcina amathuluzi nezinye izinto ezisetshenziswa ekhaya noma epulazini? Ingabe lokhu kufinyelela kalula yini kusuka ezingadini nasemasimini?
- Ngabe bukhona yini ubudlelwane phakathi kwezakhiwo ezahlukahlukene nengaphandle ongabuthuthukisa? (ngokwesibonelo, ingadi yasekhaya ingaba seduze kwekhishi ukuze ukwazi ukukha kalula imifino namakhambi okupheka).
- Yiziphi izakhiwo ozodinga ukuzakha esikhathini esizayo njengoba umndeni wakho ukhula? – Uzokwakha ubheke ngakuphi futhi uzofinyelela kanjani kuzo? Ngabe lokhu kuzozithinta yini ezinye izingxenye zomhlaba kanye nekhaya lakho na?
- Yiziphi ezinye izingqalasizinda ezizungeze umhlaba wakho njengemigwaqo noma izindlela zokuhamba ezifakwe ukhonkolo? Ngabe lokhu kuyakubeka yini emathubeni okukwazi ukuzikhangisa? Ngabe indawo engaphezulu eqinile (imigwaqo, izindawo zokupaka izimoto, inhlabathi engenalutho, indlela ekhonkiwe) kuletha amanzi amaningi kanye nokungcola endaweni yakho okudingeka ukuthi uyinake?

Izakhiwo nezidingo zepulazi

- Yiziphi izakhi onazo njengamanje epulazini lakho, zikuphi futhi zinabuphi ubudlelwano? Lezi zakhiwo kufaka zonke izingxenye ezakha ikhaya noma ipulazi lakho njengengadi yemifino yasekhaya, amasimu aseduze nezindlu, amasimu akude, izingadi zezithelo, insimu yokwandisa imbewu, insimu yokuhlola izitshalo ezahlukahlukene, izibaya kanye nezindlu (isib. Izinkomo, izimbuzi, izinkukhu nokunye nokunye), amadlelo, izindawo zokwakha imvundela, indawo yokufuya izinyosi, indawo yokubamba amanzi engamamadamu, izindawo zokugcina imbewu, indawo okutshala amahlathi ezinkuni, igushede, nokunye nokunye.

- Zibekwaphi lezi, futhi ibuphi ubuhlobo obukhona phakathi kwazo?

Izindawo zemvelo zasendle

- Ngabe zikhona izingxenye zomhlaba wakho ezinezimila nezihlahla zemvelo, noma eziseduze nalezi zindawo? Kukusiza kanjani wena lokhu?
- Ngabe zikhona izingxenye zomhlaba wakho ezinamanzi emvelo noma amaxhaphozi noma eziseduze nalezi? Ingabe kukusiza kanjani wena lokhu?
- Cabanga ngokuthi ungakusekela kanjani ukongiwa kwalezi zindawo futhi kube nokuxhumana nemincele yendawo yakho noma ipulazi lakho – zibalulekile kakhulu ekulondolozeni izinhlobonhlobo zempilo futhi zilekelela ekuphilisaneni kwezinzambuzane eziwusizo njengalezo ezithwala impova kanye nalezo ezidla ezinye, eziwusizo ekuguquleni ukudla kwesitshalo emhlabathini, kusinikeza nezithelo zemvelo, izitshalo zokwelapha, izinto zokwakha nezobuciko, izivikela moya futhi zibamba amanzi ngezikhathi zezikhukhula.

Umhlabathi

- Qaphela izinhlobo ezahlukeni zemhlabathi endaweni yakho – yimiphi umkhqizo ongavela kuluphi uhlobo lomhlabathi?
- Ijule kangakanani inhlabathi?
- Ngabe ikhona inhlabathi eyonakele kakhulu noma engavundile ukuthi ungatshala kuyo? Yini ongayenza ukuthuthukisa le ndawo?

Amadwala

- Ngabe akhona amadwala amakhulu endaweni yakho – ngaphezulu noma ngaphansi komhlaba?
- Ungawaqoqa kanjani amanzi ahamba emadwaleni amakhulu?
- Ingabe amatshe angaphansi komhlaba ayawenza umonakalo ezimpandeni ezijulile zezimila noma amanzi ayakwazi ukwedlula ajule kulawo matshe?

2. Qala ukuhlela

Manje bheka ngokucophelela zonke izakhiwo nezingxenye zekhaya noma zepulazi lakho bese uqala uhlelo lwakho. Lokhu kuzoshintsha kaningi njengoba ukuqonda kwakho kobudlelwano phakathi kwezakhiwo nomhlaba kukhula, ngakho-ke lungela ukucabanga kabusha futhi wenze izinguquko.

Ungahle uthande ukwenza ibonakaliso/ umfanekiso wepulazi lakho usebenzise isihlabathi ukuze uzame ukuhambisa izinto ezimele izakhiwo zakho kanye nezinto zepulazi ezikuzungezile ukuze ucabange ngobudlelwano obuhle kakhulu phakathi kwezakhi.

Qala ukuhlela nokutshala kusuka emnyango wakho!

Hlela ikhaya noma ipulazi lakho ngokwezindawo / noma ukuhlukanisa izigatshana

Isikhathi sakho esiningi nokunaka okuthile kudinga ukuthi kusondele kangakanani endlini yakho.

- Yiziphi izinto ezidinga ukusondelana nekhaya lakho ngoba zidinga ukunakekelwa okwengeziwe?
- Yiziphi izinto ezidinga ukusondelana nekhaya lakho ukuze uzivikele?
- Yiziphi izinto ezidinga ukuvakashelwa njalo njalo, futhi nezingaba kude.

Sebenzisa i-ZONE PLANNING handout ukukusiza

Hlela ukuphathwa kwamanzi kuqala

Kukuphi lapho odinga khona ukuqondisa noma ubambe amanzi, ulinganise futhi wakhe izindlela zokuqala zokonga amanzi kuqala. Lokhu kungabandakanya umsele wokonga amanzi, izindunduma zomhlaba, namadamu amancane.

Ngabe azogcineka ngakuphi amanzi? Zama ukunciphisa izindlela zokusebenzisa izinjini usebenzise kakhulu umehlelo ukuletha amanzi agcinekile endaweni yakho. Qaphela lapho ugcina khona amanzi - uma ithangi noma idamu liphuka, angaya kuphi amanzi ngokuphepha futhi uzokwenza kanjani ukuthi ageleze ngaleyo ndlela ephephile?

Izakhi zekhaya lakho

- Yiziphi izakhi zekhaya noma zepulazi onazo njengamanje futhi ongathanda ukuba nazo esikhathini esizayo?
- Iyiphi indawo engcono kakhulu yalokhu?
- Ngabe kukhona okudinga ukuthi kusiwe endaweni engcono?

Ungakwazi yini ukwenza ukuxhumana phakathi kwalezi zakhi nezakhiwo ezingaba nobudlelwano obuletha inzuzo eyengezekile (isb. Ukubeka indlu yezinkukhu eduze kwensimu yezithelo ukuze izinkukhu zidle izinambuzane ngaphambi kokuba zihlasele izithelo)?

Yimaphi amasimu ahlukahlukene owadingayo? Hlukanisa izindawo ezingaba nomkhiqizo omningi zibe amasimu ahambisana nesimo songoka amanzi nomhlabathi ofanele. Yimuphi lowo mhlaba odinga ukubiywa?

Udinga ukutshala kuphi izihlahla zokubiywa nezokweneka? Lokhu kubalulekile njengokuvikela umoya, indawo yokuhlala izilwane zasendle nezinambuzane, ukudla kwezilwane, izivikela nezixosha zinambuzane, lapho uthola khona isemboza, ukuvikela imfuyo ewuvanzi kanye nokubamba nokugcina impova engafuneki.

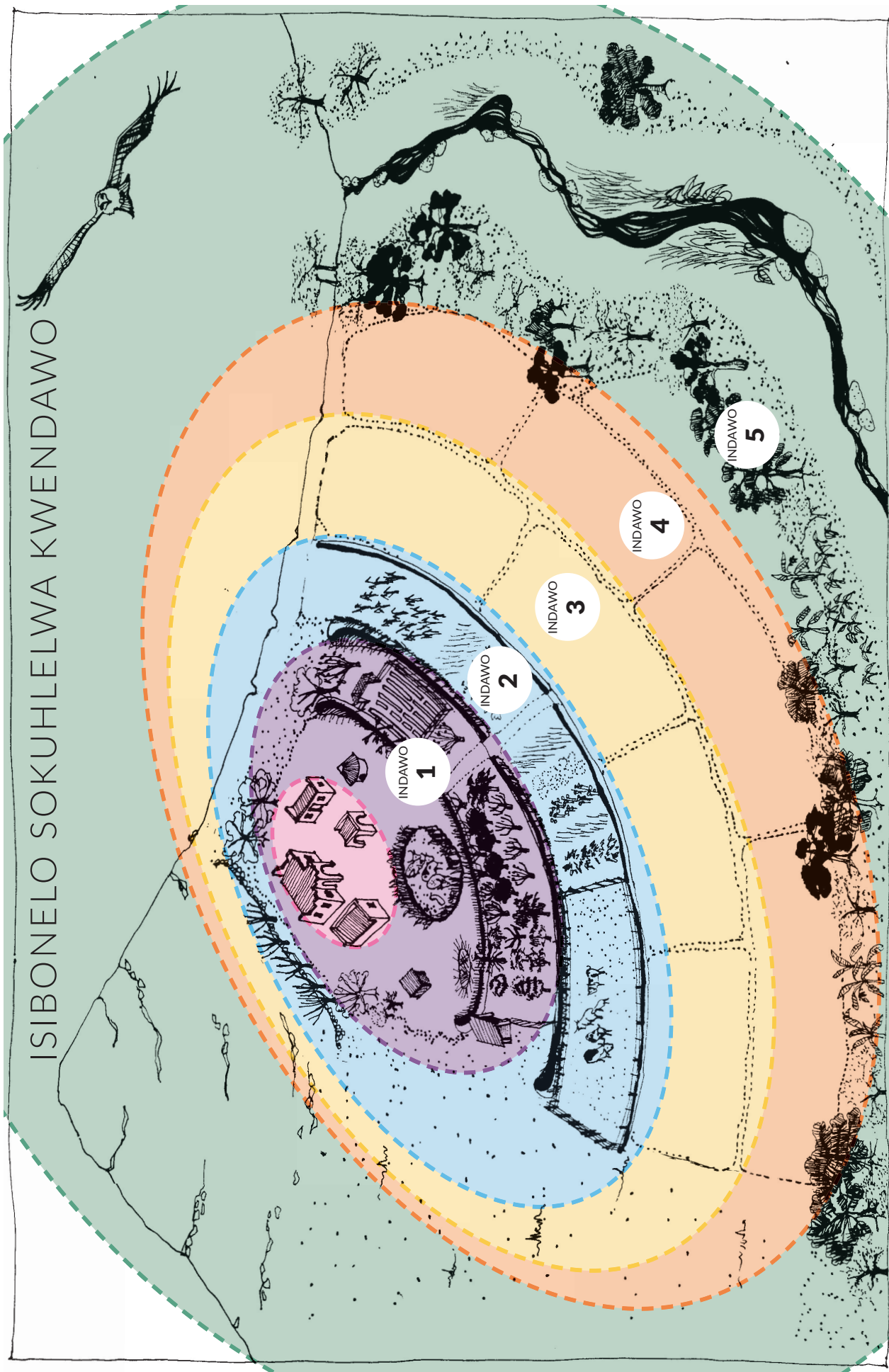
Ukuguquka kwezikhathi

Cabanga ngokuthi into ngayinye izoguquka kanjani ngezikhathi zonyaka zasehlobo, ebusika, enkwindla nasentwasahlobo:

- Isibonelo, ngabe bazodinga ukuvikeleka esimweni sezulu esishisayo noma esibandayo; ngabe bazokwakha indawo yokuhlala ngezinsuku ezishisayo noma ezibandayo; ingabe zikhona izikhathi lapho ongezukulinywa khona amasimu- aphunyuzwe; ingabe izihlahla zizolahlekelwa amaqabunga futhi zingenise ilanga eliningi; ingabe uzodinga imoto noma ugandaganda ukuzovuna noma ukusebenza ngezikhathi ezahlukeni; njalo njalo?
- Cabanga ukuthi ungazenzela kanjani izinzuzo kulezi zinguquko zonyaka.
- Ngabe zikhona izinguquko zonyaka ezizokudalela izinkinga - ngokwesibonelo, ingabe ubeka izitshalo noma izilwane ezisengozini emlilweni wonyaka noma esimweni sezulu esibi?

Cabanga ngokuthi izinto zizoguquka kanjani njengoba isikhathi siqhubeka:

- Ngabe zizoba sendaweni efanele uma kwenzeka lezi zinguquko – ngokwesibonelo, ingabe izihlahla zizokhula zibe zinkulu futhi zenze umthunzi ofunekayo noma zizoba nobudelwano ngokukhula kwezimpande ngaphansi?
- Ngabe uyishiyile yini indawo yokukhula nokunweba esikhathini esizayo?



IKHAYA

INDAWO
1

HLOLA NSUKU ZONKE

Ingadi yasekhaya, izihlahla
 zezithelo ezincane, nemfuyo
 edinga ukunakelwa zonke
 izinsuku

INDAWO
2

HLOLA NJALO-NJALO

Indima yezimbewu,
 izithelonemifno engadingi
 umsebenzi omuningi

INDAWO
3

**HLOLA NGEZINKATHI
 EZAHLUKENE**

Amasimu aseduze, izitshalo
 ezinganiselwa, izinyosi

INDAWO
4

**AWUDINGI UKUHLOLA
 NJALO-NJALO**

Amasimu akude, ihlathi
 lezinkuni, ukudla kwemfuyo
 amadlalo, indawo
 yokulondolza amanzi

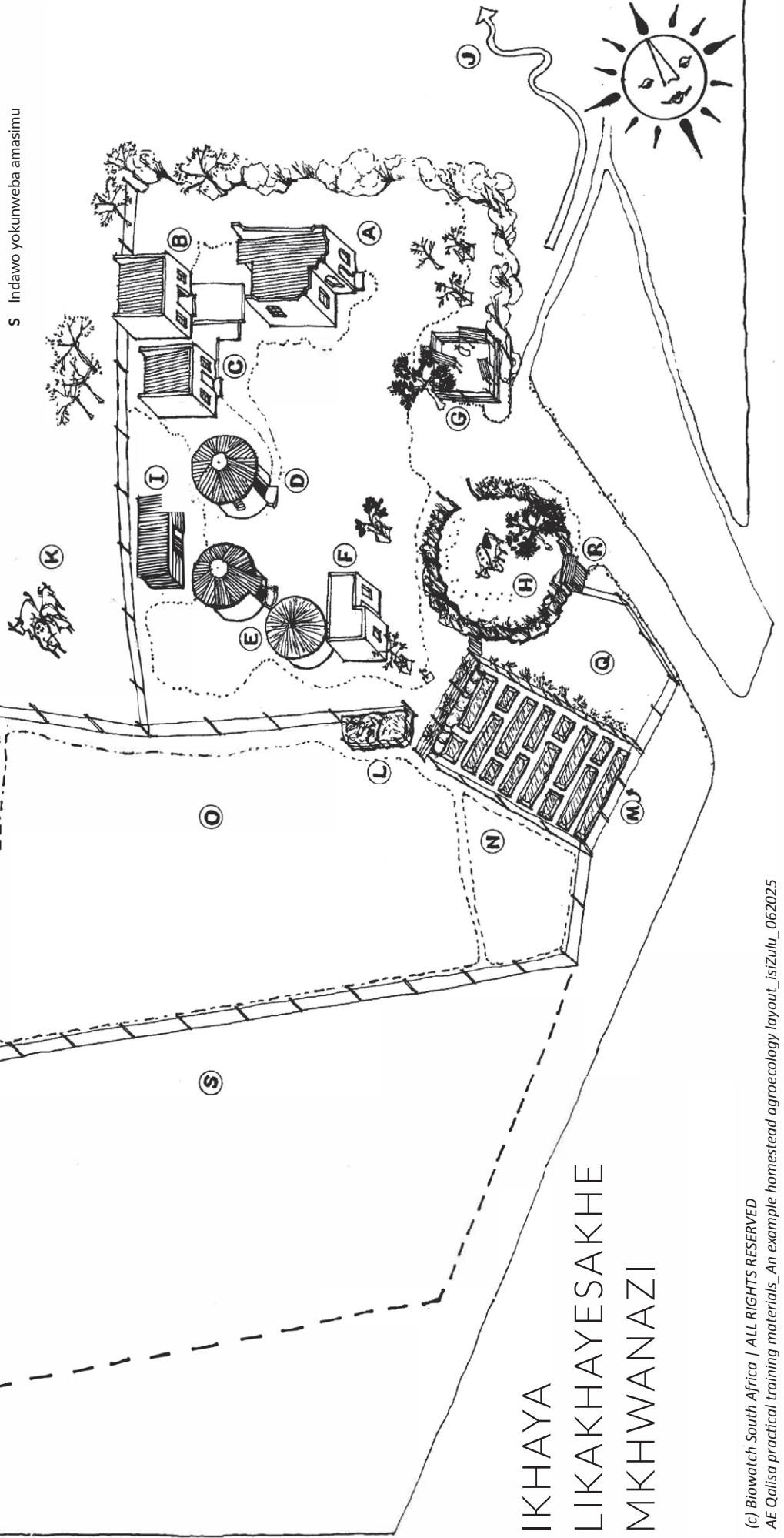
INDAWO
5

**HLOLA, UBHEKISE BESE
 UYAFUNDA**

Indawo yemvelo
 engathintwe/engalinywe,
 yashiyelwa imvelo ukuthi
 iphile

IKHAYA LIKAKHAYESAKHE MKHWANAZI

- A Indlu enkulu
B Ikhishi nendawo yokugcina imbewu
C Amadodakazi
D Endlini yangasenhla (kwaGogo) / kunomsomu
E Amadodana
F Indodana eganiwe
G Izimbuzi
H Isibaya sezinkomo
I Ihoko lezinkukhu
J Amadlelo omphakathi aqhelile kanye naseduze nekhaya, zidla lapha uma zibuya inhlanzane
K Amadlelo antambama
L Imvundela
M Indima yezivande (yemifino) yasekhaya
N Ukudla okutshalelwe imfuyo kanye namasimu okudla
O Amasimu ommbila nokutshalwe kwaxutshwa nawo
P Insimu yokwandisa umkhqizo
Q Insimu yamathanga nezinhlonhlobo zezintanga
R Indlu yangasese
S Indawo yokunweba amasimu



ISIBONELO SENSIMI YASEKHAYA

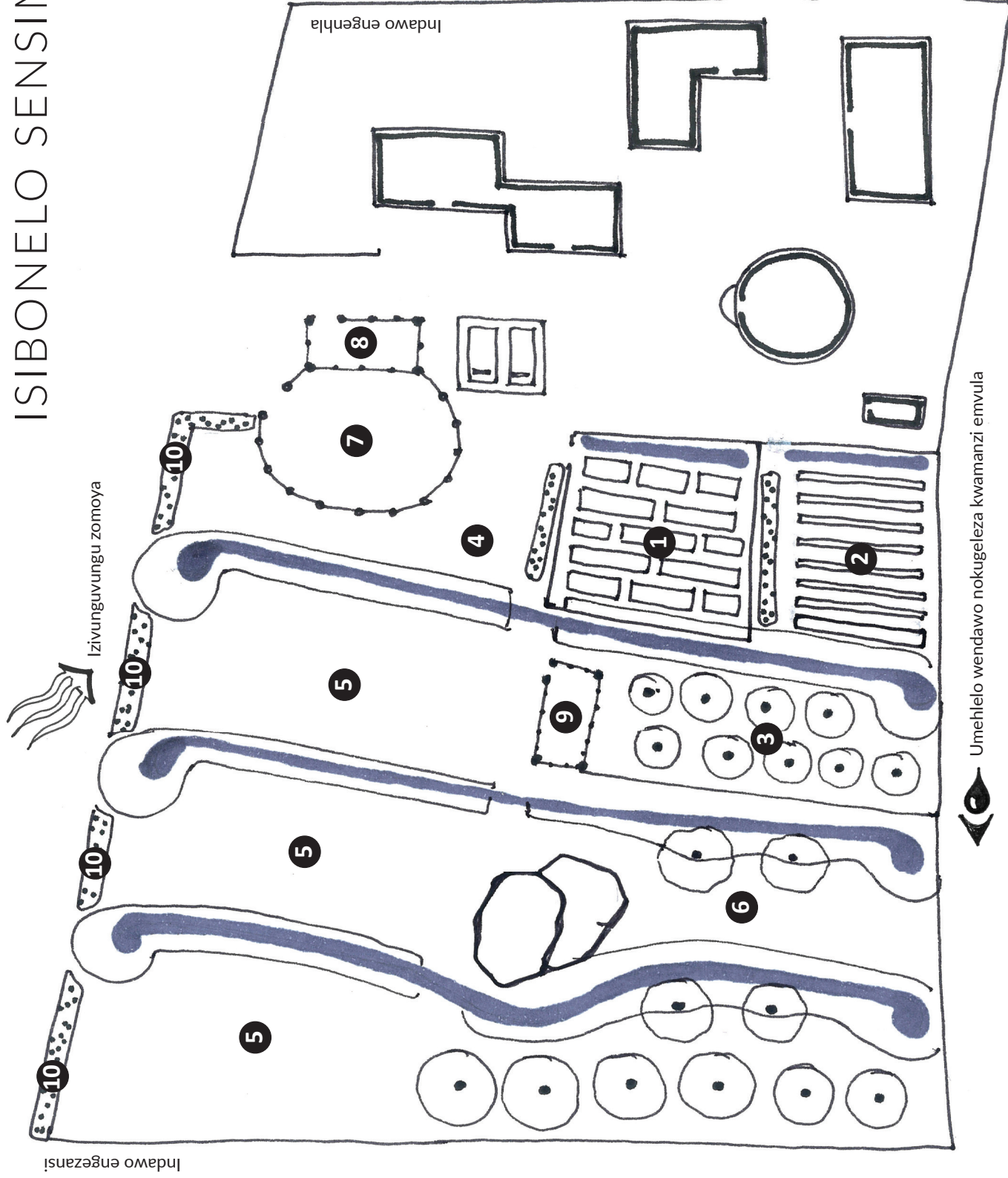
IZINKOMBA:

- ① Indima yezivande (imifino)
- ② Indima yokwandisa imbewu
- ③ Insimi yezithelo nobhatata
- ④ Indima yokutshala okusha nokwehlukile
- ⑤ Izindima zokutshala ngokushintshashintsha
- ⑥ Izihlahla ezisizayo, ukudla kwemfuyo nezitshalo ezimbozayo umhlabathi
- ⑦ Isibaya
- ⑧ Imfuyo encane njengezimbuzi izimvu
- ⑨ Ihhoko lezinkukhu
- ⑩ Izivikelamoya - Ukubiya ngezimila nangezihlahla, isibonelo ifolishi (utshani bemfuyo)



Umehlelo wendawo nokugeleza kwamanzi emvula

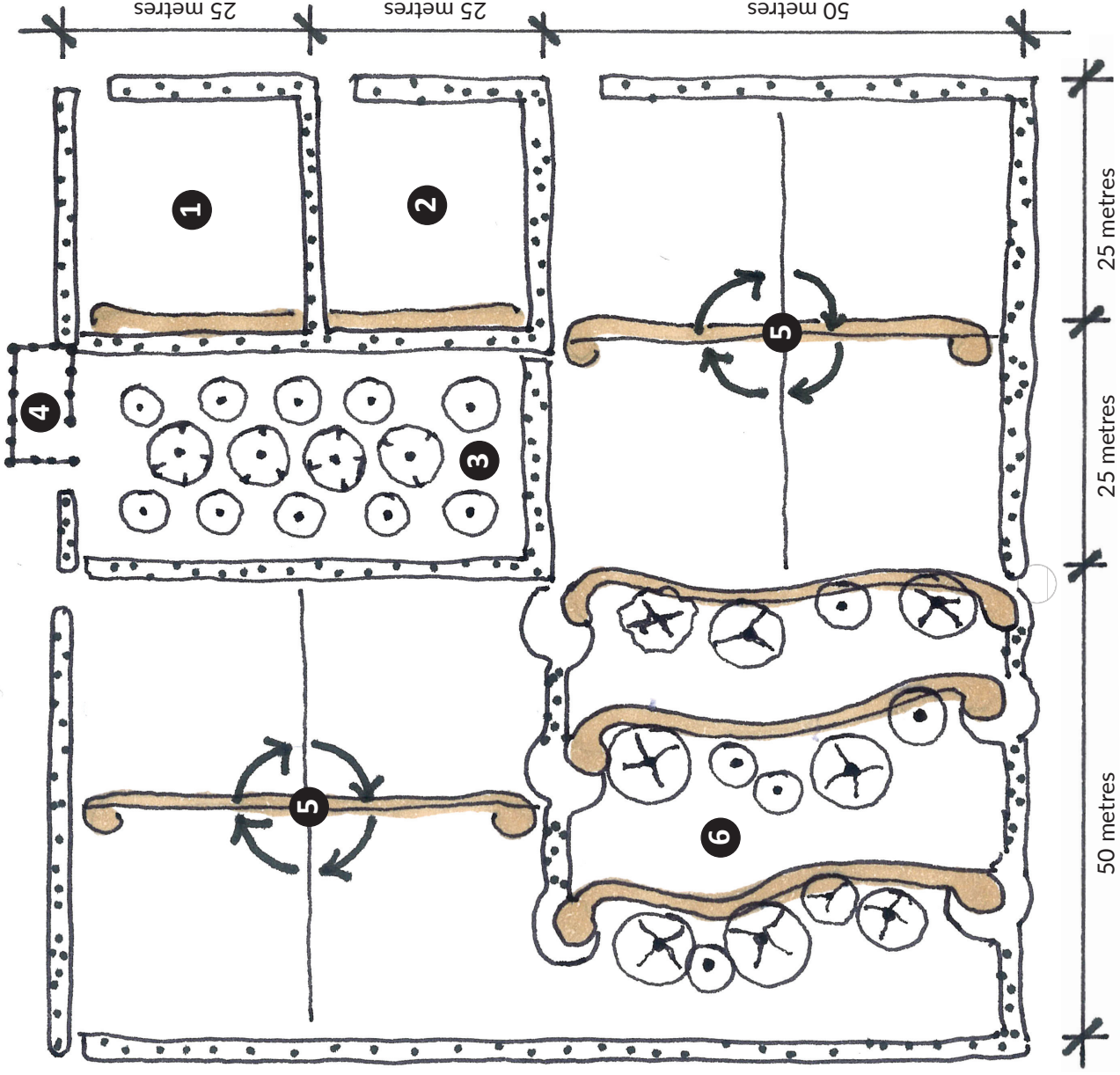
Imisele yokubamba amanzi



UMDWEBO WESIBONELO NOHLELO LOKWANDISA UMKHIQIZO

IZINKOMBA:

- ① Indima yezimbewu
- ② Indima yokutshala okusha nokuhlukene
- ③ Insimi yezithelo nobhatata
- ④ Izinkukhu
- ⑤ Izindima zokutshala ukudla ngokushintshashintsha
- ⑥ Izihlahla ezisizayo, ukudla kwemfuyo, nezitshalo ezimboza umhlabathi



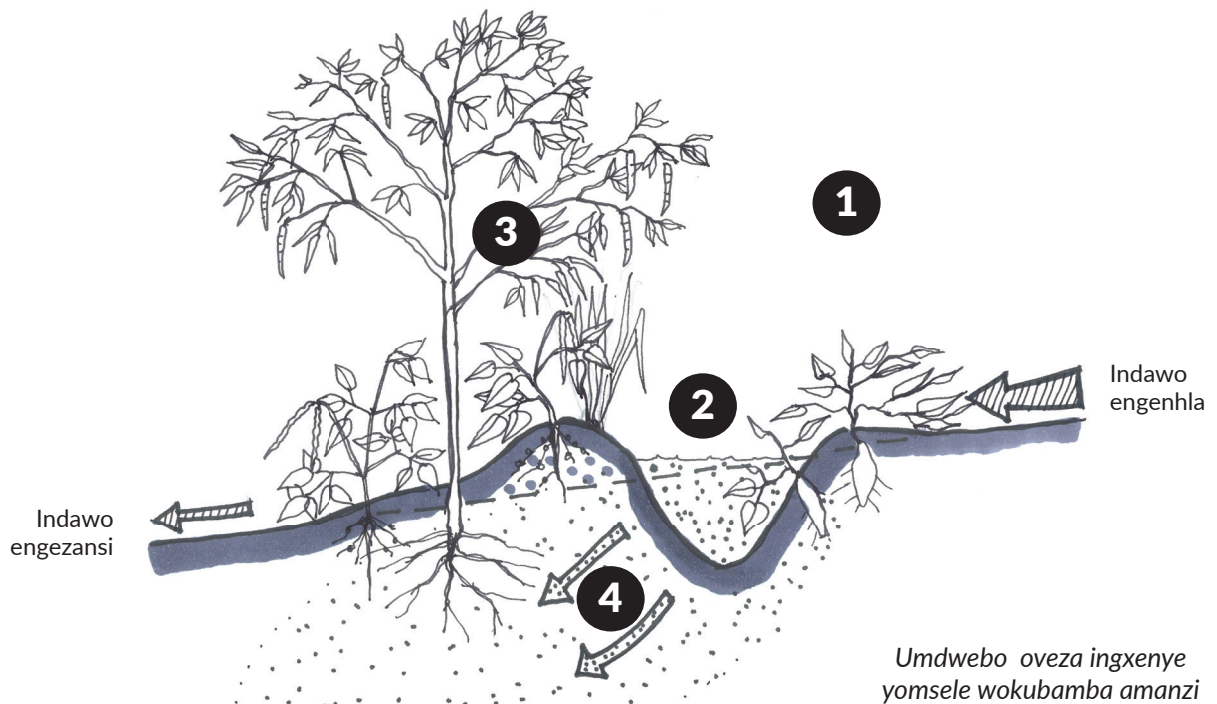
Umehlelo wendawo nokugeleza kwamanzi emvula



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UWENZA KANJANI UMSELE WOKONGA AMANZI



- ① Sebenzisa i-A-frame level (noma i-Dumpy level) ukuhlahla indlela yomsele wokubamba amanzi.
- ② Gubha umsele ulandele lapho obekise khona indlela yokugeleza kwamanzi. Sebenzisa inhlabathi oyimbile ukuze wenze unqenqema (olubizwa ngombundu) ohlangothini olungezansi komsele. Kubalulekile ukuthi uzenze zishelelele izindonga zomsele ukuze izilwanyana ziyokwazi ukucaca ziphume kalula.
- ③ Ungapholisi maseko ufake imvundela bese utshala embundwini kanye nasonqenqemeni olungenhla komsele. Kudingeka izimpande masinyane ezizobamba inhlabathi ingaguguleki. Qinisekisa ukuthi umbundu umbozwe ngezitshalo ezinjengo bhatata kanye namadumbe. Ungatshala futhi amakhambi angapheli njengotshani okuthiwa isiqunga sesilungu embundwini. Lokhu kuzobamba inhlabathi ngezikhathi zonke zonyaka futhi kuqinisekise ukuthi umsele wokonga amanzi uyawagcina uma kuna imvula.
- ④ Uma imvula inetha umsele wokonga amanzi uyawavumela ukuthi angene kancane kancane ashone phansi. Iningi lamanzi lizokwehla liye ngaphansi kudaleke umswakama ojulile enhlabathini endaweni engaphansi nasekwehleleni okubheke ezansi kumbundu. Lena indawo ekahle yokutshala izitshalo ezibalulekile ezingapheli kalula ezithanda amanzi.

SIWUGUBHELANI UMSELE WOKUBAMBA AMANZI

- Ukwehlisa kanye isivinini sokugeleza kwamanzi nokuwasabalalisa.
- Ukugwema ukuguguleka komhlabathi kanye nokwedlula kwamanzi.
- Ukonga amanzi emhlabathini lapho izitshalo ziwadinga khona.

Imisele yokonga amanzi iyakwazi ukunciphisa amanzi eza ngamandla awenza akwazi ukungena phansi emhlabathini. Lokhu kusiza ukonga amanzi awela emhlabeni wethu futhi kuvimbela nokuguguleka kwenhlabathi. Ngokubamba amanzi emhlabathini wethu endaweni eyehlelayo kumsele wokonga amanzi yenza ibe nomswakama omningi ohlala isikhathi eside futhi ukwazi ukusiza izitshalo ukuba zizimelele noma zibambebele ngezikhathi zesomiso.

Imisele yokonga amanzi ibaluleke kakhulu ekuvuneni amanzi ukuze ukwazi ukutshala izihlahla eziwusizo kulo lonke ipulazi, elenza ngcono isimo sezulu esincanyana, kukhandeke izivimba moya futhi elengeze ukwehlukahluka okuzuzisayo ezinhlelweni zakho zokulima.

Nokho, mawusebenzisa umsele wokonga amanzi engadini yemifino nensimu encane engenandawo yezihlahla, ungatshala ezinye ezitshalo ezithanda amanzi amaningi ngaphansi kwegquma lomsele(embundwini).

Kodwa-ke, uma usebenzisa umsele wokonga amanzi ukuze ukwazi ukuvuna amanzi engadini yakho yemifino noma emasimini amancane lapho kungekho sikhala sezihlahla, khona-ke ungatshala ezinye izitshalo ezingapheli ezidinga amanzi ngaphansi komsele wamanzi. Kuncike ekutheni indawo onayo ingakanani ungatshala izitshalo ezinjengodali (ezidonsa ukudla kwesitshalo emoyeni kanye nezivimba moya) nasezikheleni ezincane ungatshala izitshalo ezifana nopelepele; amayeza afana neLavender neRose geranium; noma isiqunga.

KUMELE UBE NGAKANANI UBUKHULU UMSELE WOKONGA AMANZI

Usayizi womsele wokonga amanzi ulawulwa ukuthi unendawo engakanani nokuthi indawo yakho yehlela kangakanani. Usayizi omuhle ucishe ube ngu-30–60cm ukujula kanye nefosholo elilodwa ububanzi (100–120cm). Qaphela ukuthi ungenzi imisele ejulile futhi emincane engadala ubungozi kubantu noma emfuyweni.

Ubukhulu bomsele wokonga amanzi ibona obenza ukuthi kube namanzi amaningi. Qaphela, imisele oemkhulu ingaba yingozi uma kulephuka izndunduma uma kunezikhukhula!

NGINGABA INEMISELE EMINGAKI YOKONGA AMANZI?

Kufanele ube nemsele eminingi endaweni eyehlela kakhulu. Kuncono ukumba imisele eminingi emncane kunokuba nowodwa noma emibili emikhulu, ngoba lokho kudala ubungozi bokuqhuma kwezindonga zemsele.

KUNGANI NGIDINGA UKUFAKA IZINTI EZIQINILE KULAYINI NGISEBENZISE ITHULUZI A-FRAME?

Imisele yokonga amanzi kufanele imbiwe kulayini olandela izindawo ezelehle noma eziphakeme ngokulinganayo ukuze umsele wokonga amanzi ulingane nobude bomehlelo. Uma umsele wokonga amanzi ungekho ezingeni elifanele amanzi ngeke ame ukuze akwazi ukungena emhlabathini. Esikhundleni salokho, azokwehla aye endaweni ephansi kakhulu futhi lokhu kungadala ukuthi amanzi ageleze abange ukuguguleka komhlabathi. Ungathembeli kakhulu emehlweni akho uze unqume ukuthi uzokumba kuphi umsele wakho njengoba izindawo eziphakeme zingalingani ensimini. Futhi, qiniseka ukuthi awuyibeki imilenze ye A-frame ematsheni noma kwizigaxa eziqinile zenhlabathi ezizokunikeza imiphumela engelona iqiniso.

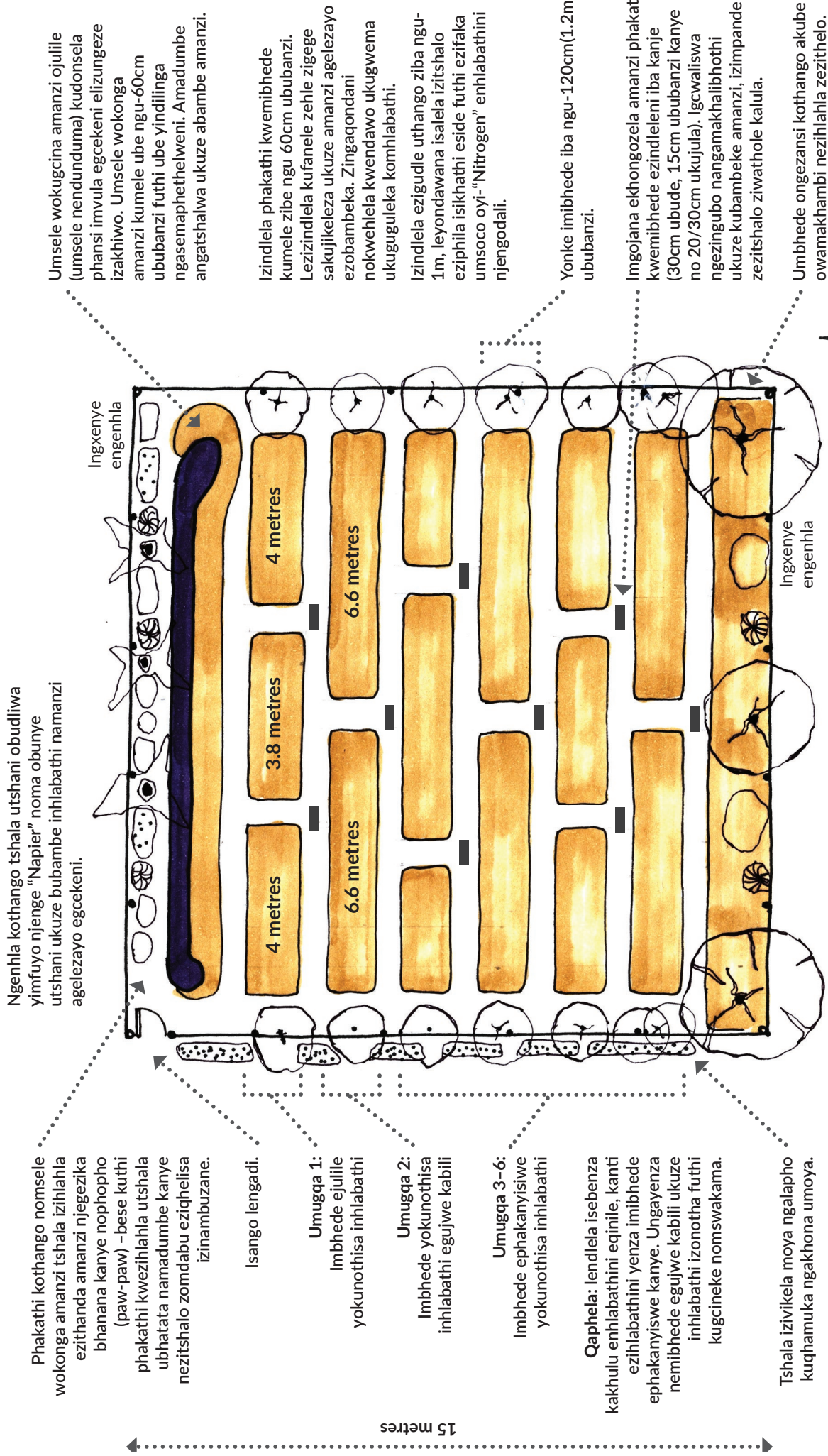
Abanye abantu bamba imisele ngokwezigaba esikhundleni sokuthi babheke ubude bomugqa. bashiya inhlabathi phakathi ezindleleni okunguhhafu ekujuleni komsele ogcwele. Lokhu kwenza amanzi alawuleke engxenyeni ngayinye yomsele ukuze amanzi akwazi ukuchithekelwa kwenye ingxenyane.

Uma imvula iqhamuka endaweni eyodwa ngenhla komsele wokonga amanzi kungcono ukuthi uqhubeke nokwenza umsele ukuze amanzi akwazi ukusabalala ngokulinganayo kuwo wonke umsele futhi anisele izitshalo ngezansi ngokulinganayo.

UKUNAKELELA UMSELE WOKONGA AMANZI

Kubalulekile ukutshala embundwini nangenhla komsele izitshalo eziyisemboza ezingeke ziphazanyiswe ukuze zibambe ukwakheka komsele wamanzi nokuwuvimba ukuthi ungaguguleki lapho imvula ina. Umsele wokonga amanzi okutshalwe kahlekuwo uyakwazi ukuthi ubambe inhlabathi ingaguguleki. Lokhu kuyindlela elula yokugcina inhlabathi, amanzi kanye nomsoco. Kuyadingeka ukuthi uphinde uwugumbe kabusha umsele wakho ukuze ukujula nokubamba amanzi kuhlale kusezingeni elikahle.

UKUMA KWENDIMA YEZIVANDE (IMIFINO) ZASEKHAY





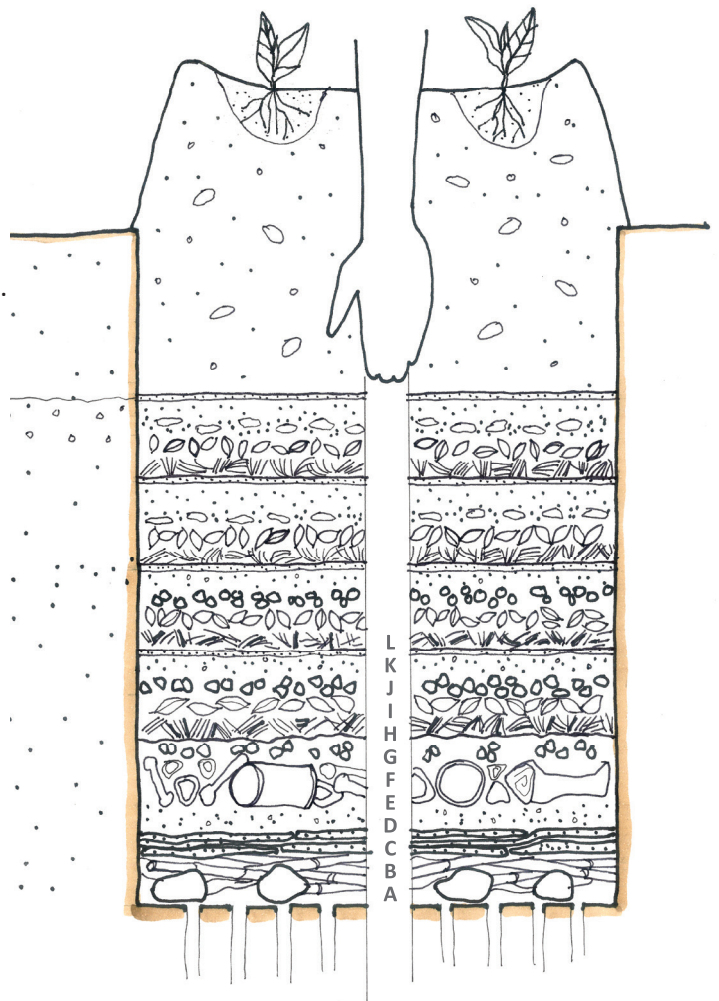
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UKWENZA UMGODI WENGADI OJULILE

Uma ufuna ukwenza umbhede wengadi yomgodi ejulile, landela izinyathelo 1-14:

- ① Gubha umsele onobubanzi nobude bombhede wengadi yakho. Ububanzi nobude kungadluli u1.2 mitha kodwa ungaba nobude obanele indawo onayo.
- ② Gubha umsele ujule ngo60cm, kuqonde phansi (phezu kwedolo kancane uma ume phakathi emgodini) kube yisicaba phansi.
- ③ Beka lenhlabathi ephezulu evundile eceleni, uzobuye uyisebenzise.
- ④ Sabalalisa umhlabathi (lona olula) okade uwugubha kulezizindawo ezingaphakathi kombhede. Inhlabathi elula osuyigubhile isabalalise ezindleleni ezehlukanise imibhede.
- ⑤ Thambisa umhlabathi ongaphansi ngemfoloko yakho yengadi.
- ⑥ Vukuza umhlabathi ongaphansi emgodini ngemfoloko vakho wengadi:
 - A Qala ngokwendlala amatshe ukuze umhlaba uzokwazi ukuphefumula. Uma ungenawo amatshe sebenzisa izinqamu zezingodo.
 - B Amahlanga ombila noma izinqamu zezigodo.
 - C Uhlaza.
 - D Amakhathoni nezingubo zokumbatha ezindala.
 - E Imbijana yenhlabathi yangaphansi.
 - F Amathambo namathini amadala alusile.
 - G Umquba omusha wemfuyo.
- ⑦ Bese uyaphinda izithako. Yendlala lezizithako ngokulandelana, uphindaphinde kuze kufike phakathi nendawo:
 - H Izicubu zezitshalo esezomile.
 - I Uhlaza (amaqabunga, ukhula nokunye).
 - J Umquba omdala osuvuthiwe (iowezinkukhu, izimbuzi, izinkomo).
 - K Umhlabathi wesibili.
 - L Amanzi kanye nengxube yomlotha.



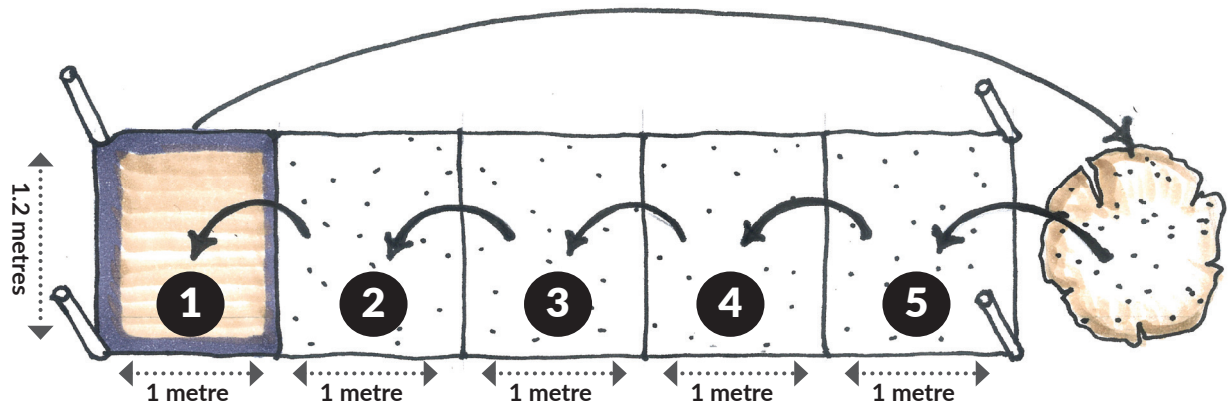
- ⑧ Phinda lezizithako esigabeni sesibili (30cm) kodwa ushintshanise umquba wemfuyo omusha ulandelisa ngomquba omdala bese ugqiba ngenhlabathi ebingaphezulu.
- ⑨ Ukhawule ukufaka izithako umasekusele ukujula komgodi okungangesandla.
- ⑩ Hlanganisa lenhlabathi ebingaphezulu obuyibeke eceleni nomlotha, umquba, imvundela kanye nenye inhlabathi. Uzobe usugqiba ngayo kugcwale umgodi kuze kube yindunduma ewu 15cm ukuphakama.
- ⑪ Hhala ngesandla uhlele inhlabathi ukuze umbhede ume ngendlela ozokwazi ngayo ukukhongozela amanzi. Uwemboze ngotshani nangamaqabunga (okomile).
- ⑫ Uma uzotshala uqale ngokwembula isembozo uvule izikhala ezincane, ugubhe ngesandla bese wendlalela ngemvundela enganela inkomishi eyodwa.
- ⑬ Chela uzungeze izitshalo ngengxube yamanzi, ubulongwe nomlotha wezinkuni noma uvuvuzele izingebhezi zamaqanda ezifohloziwe. Lokhu kuyasiza ukuxosha imiswenya ngephunga nangokuziphazamisa lapho zihamba khona.
- ⑭ Yenza itiye ngokhula oluluhlaza, ulucwilise izinsuku ezintathu luzeluvuthwe. ISebenzisa lelitiye ukuchelela izithombo, chelela kanye ezinsukwini ezintathu zokuqala.



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UWENZA KANJANI UMBHEDE OMBIWE KABILI WOKUNOTHISA



- Bekisa ngokudweba ubungako bombhede wakho - kufanele ubenobubanzi obungamamitha awu-1.2, ubude buzoya ngokuthi indawo yakho ingakanani. Hlukanisa ubude bombhede ubenze izingxenye zemitha elilodwa. Ungakhohlwa ukushiya izindlela zokuhamba.
- Isigaba sokuqala - Gubha ukujula ufike edolweni (30-50cm), inhlabathi uyikhiphele endleleni engaphambi kombhede.
- Vukuza inhlabathi engaphansi emgodini osuwumbile.
- Gcwalisa umgodi ngenxubevane yohlaza kanye nemfucuza yemvelo njengokhula, amaqabunga, umquba owomile, nomlotha wezinkunini. Cwilisa emanzini konke lokhu ngaphambi kokukwendlala emgodini.
- Isigaba esilandelayo – Thatha lenhlabathi egqunqile ebingaphezulu ugqibe ngayo impucuza osuyendlele emgodini wokuqala ukuze umbhede wakho uzophakama. Hhala kahle lenhlabathi phezulu uyihlele imise okogqoko ukuze uzokhongozela amanzi. Ezindleleni ezehlukanisa imibhede ungendlala noma iyiphi inhlabathi kulena ebingaphansi emgodini. Uma ilula kakhulu noma iyisihlabathi inhlabathi engaphezulu, kufanele uvele ugqibe ngayo yonke umgodi.
- Qaphela: Qaphela uma ulima endaweni eyisihlabathi kakhulu akuzukubalula ukwenza umbhede ophakeme njengoba isihlabathi singakwazi ukubambeka nokungadala ukuthi ushone phansi umbhede wakho. Ungakhathazeki ngoba imfucuza yemvelo oyifakile izosiza ngokunotha nangokubamba amanzi.
- Ungaqhubeka nokugcwalisa kanye nokumba izigaba ezilandelayo uma uthola ithuba nemfucuza yemvelo edingekayo.
- Usungatshala kulendawo ngemuva kosuku olulodwa, kodwa kungcono ukulinda amasonto amabili kuya kwamathathu ukuze konke kuzinze kahle, kuqale nokuvunda.

- Ukhumbule ukufaka kahle isembozo somhlabathi phezu kwemibhede uma uqeda ukuyenza. Uma ungajahile ukusebenzisa umbhede, ungalinda ngisho amasonto aze abemathathu ngaphambi kokuthi utshale. Kungakuhle nokuxuba inhlabathi yakho nesikhuthazi iBokashi bese ugqiba ngakho ngaphezu kwemfucuza.
- Uma utshala embhedeni ungatshala izitshalo ezihambisanayo noma utshale imifino ehlukile endaweni ngayinye eyimitha.
- Phenya isembozo kancane uma usutshala, uvule inhlabathi bese ufaka imvundela elingene inkomishi eyodwa endaweni yesithombo ngasinye.
- Chela uzungeze ngengxube yamanzi, ubulongwe, nomlotha wezinkuni eduze kwezitshalo zakho (iphunga lalokhu lixosha imswenya). Ungavuvuzela nezingebhezi ezifohloziwe zamaqanda.
- Yenza itiye ngokhula oluluhlaza ulucwilise luze luvuthwe izinsuku ezintathu. Sebenzisa lelitiye ukuchelela izithombo kanye ezinsukwini ezintathu zokuqala.
- Lapho usugcwalise umgodi wokugcina ngemfucuza yemvelo, usebenzise inhlabathi oyikhiphe emgodini wokuqala ukuqedela umbhede.



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UKWENZA UMBHEDE OPHAKEME OGUJWE KANYE

- Bekisa ngokudweba ubungako bombhede wakho - lokhu kufanele kube ububanzi obungamamitha ayi-1.2 inqobo nje uma indawo onayo engadini yakho yasekhaya ikuvumela ukuthi ubenezindlela zokuhamba.
- Qoqa uphinde uhlanganise umlotha wezinkuni kanye nomquba omdala wezinkomo bese lokhu ukufaza emhlabathini ongalinyiwe. Udinga ibhala elilodwa eligcwele lale nhlanganisela kuyo yonke indawo eyimitha elilodwa lombhede.
- Uma ususabalalise umquba nomlotha ngokulinganayo, vukuza inhlabathi ngepiki nangemfologo. Lokhu kufanele kufake umoya emhlabathini wenze uphakame kunasekuqaleni.

Qhubeka nokuhlanganisa umquba kanye nomlotha emhlabathini. Uyakwazi ukuxovela iBokashi emhlabathini ngoba lokhu kuzokwengeza izilokazane ezisemqoka emhlabathini.

- Njengoba unkomfa siphula lonke ukhula olusembhedeni uluphonse ezindleleni zokuhamba.
- Ungavukuzi umhlabathi phakathi kwemibhede. Gunda utshani nokhula ukwendlale phansi, ngaphandle uma unokhula oluyinkinga ukulucindezela, lukhiphele ngaphandle.
- Sebenzisa ihhala lakho ukuhlela inhlabathi ukuze ime njengogqoko ukuze izokwazi ukukhongozela amanzi.
- Faka isemboza bese uchelelela ngamanzi embhedeni.
Yize ungakwazi ukutshala embhedeni uma uqeda ukuwenza, kungcono ukuwuyeka umbhede uzinzeamasonto amathathu kuya kwamane. Uma wengeze iBokashi emhlabathini, khona-ke kufanele ulinde amasonto amathathu kuya kwamane ngoba izithako zizoshisa izitshalo zakho.
Vula izikhadlana ezincane kusembozo sakho bese uyatshala emhlabathini ongaphansi nezelela ngenkomishi eyodwa yemvundela esitshalweni ngasinye.
- Thela ingxube emanzi yobulongwe, umlotha wezinkuni namanzi eduze kwesitshalo sakho bese uyamboza umbhede.
- Yenza itiye lokhula oluluhlaza ulishiye lizelivuthwe izinsuku ezintathu. Sebenzisa lelitiye ukuchelela izithombo, chelela kanye ezinsukwini ezintathu zokuqala.



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INHLABATHI ENOTHILE

Inhlabathi enothile = izitshalo ezinomsoco = abantu abaphilile

Inhlabathi enothile:

- ① **Amadwala akhumuzekile kanye nezakhi ama-“minerali” (cishe.45%)**
- ② **Umoya kanye nezinhlobonhlobo zokusamoya okutholakala emkhathini (25%)**
- ③ **Amanzi (25%)**
- ④ **Imfucuza yemvelo (okungenani mayibe wu 3-6 %)**
- ⑤ **Izilokazane eziphilayo ezihlala emhlabathini**

IZINKOMBA ZENHLABATHI ENHLE, ENOTHILE NENEMPILO

- Akusentshenziswa amakhemikhali nemfakela enobuthi obungalimaza impilo yomhlabathi noma izitshalo.
- Ljiye ngokwanele ngesihlabathi nezinhlayiya zodaka ezinobumba oluncane, kanye nemfucuza yemvelo nezinto ezibolayo.
- Inhlabathi enempilo iqukethe umsoco omningi ovela ekuvundeni kwemfucuza yemvelo ebolayo kanye nezakhi ezivela emadwaleni (minerals). Lokhu kubanjwa wubumba kanye nenkumfukumfu eyemboze umhlabathi (humus).
- Umhlabathi omuhle “tilth”(umhlabathi omuhle onomsoco) - Uyinhlanganisela elungile yomswakama ngisho uyibuka, ethambile futhi elula eyenza kubelula ukuthi izitshalo zimunce amanzi. Inhlabathi enhle iyavuthuluka futhi inuka kamnandi.
- Ukujula okwanele (cishe ngo-60cm).
- Iqukethe umswakama kodwa inendlela enhle yokukhipha amanzi ngaphandle kokumunca umsoco.
- Inomsoco owanele, kufaka phakathi izakhi ezivela edwaleni (minerals) kanye nasemfucuzeni yemvelo ebolayo.
- Uqukethe umoya omningi - inhlabathi ayigqishekile (icindezelwe imishini noma izinyawo) futhi isakhiwo senhlabathi sivumela ukuhamba komoya. Ukuhamba komoya kubalulekile empilweni esemhlabathini nasekusabalaleni komsocoongena emhlabathini uvela emoyeni.
- Ukhula lubaluncane, ikakhulukazi lolu olubawuphawu lokwentuleka kwemisoco ethile enhlabathini.

- Izilokazana zenhlabathi ezincane ezibonakalayo nezingabonakali ngamehlo enyama, ezibamba iqhaza elibalulekile ekuvundiseni, ukwakheka, ukugeleza kwamanzi, kanye nokufaka umoya enhlabathini. Zibuye zidilize izicubu zezitshalo nezilwane ziziguqule zibe wumsoco ongasetshenziswa yizitshalo. Lezi zilokazane zifaka amagciwane (njengebhaktheriya, “i-archaea”, “i-actinomycetes”, “i-protozoa”, “i-algae” nesikhunta) nezinhlobo ezinkulu ezibandakanya ama-“nematode”, ama-“flatworms”, izikelemu zomhlaba, kanye nezinambuzane, ama-“arachnids” (izilwembu , njll) nezilwane ezincane.

UKUKHULISA IMPILO NEMVUNDO YOMHLABATHI:

- 1 Ukugwema ukusetshenziswa kukamanyolo wamakhemikhali kanye nezibulala-zinambuzane. Lokhu kubulala impilo yenhlabathi okuholela ekuvundeni okuncane, kuphazamise ukwakheka kwenhlabathi nokubanjwa kwamanzi.**
- 2 Ukugwema ukulima nokusebenzisa izinsiza ezigqisha inhlabathi, kubulala impilo yenhlabathi futhi kukhiphe isikhutha esiba nomthelela ekuguqukeni kwesimo sezulu.**
- 3 Ukwakha ukuvunda kwenhlabathi ngokwengeza imfucuza yemvelo nokwakha ikhaya elinothile lokuphila enhlabathini.**

Kubalimi abancane lokhu kungafaka okulandelayo:

- Imbhede yokutshala evundisayo.
- Imgodi yokutshala ukuze kwengezeka imvundo kanye nokubamba amanzi.
- Ukutshala ngokuxubanisa.
- Izitshalo ezenabayo zimboze inhlabathi kanye nezitshalo ezifaka umsoco enhlabathini njengobhontshisi.
- Imvundela kanye netiye lemvundela.
- Ukufakwa kwezikhuthazi zemvelo zokuzakhela ezi njenge-bokashi, ehlanganisa imfucuza yemvelo kanye namagciwane aphilayo.
- Ukuhlanganisa imfuyo ukulima ngqo kanye nokuvundisa imibhede nensimu (njengehhokwe lezinkukhu elithuthekayo).



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UYENZA KANJANI IMVUNDELA ESAKENI

① Qoqa izinto ezilandelayo ngaphambi kokuthi uqale

- Isaka noma isikhwama esingango 50 noma 80 wamalitha.
 - Amabhakede amabili (elilodwa lamanzi nelilodwa lokuxubela izinto).
 - Izithako:
 - Okuluhlaza (Izitshalo eziluhlaza eziqotshiwe zahlaliswa emanzini).
 - Umquba omusha wase sibayeni.
 - “Isobho”
 - ubulongwe bemfuyo
 - umlotha (sebenzisa umlotha wezinkuni kodwa hhayi umlotha wamalahle ashile- asezimayini), ushekhasi noma amakhemikhali)
- Hlanganisa ubulongwe bemfuyo ndawonye namanzi ebhakedeni elilodwa ukwenza isobho.
- Izitshalo ezomile (utshani, namahlamvu ahlaliswe emanzini).

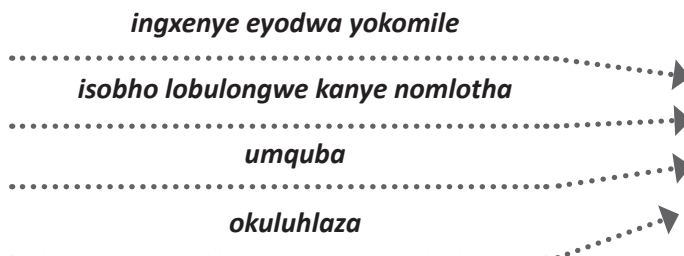
② Gcwalisa isikhwama sakho semvundela kusuka phansi kuyaphezulu ngokulandelana kwezithako

Faka ingxenye yokuqala lwezinto ezomile phezulu, kepha shiya isikhala esanele ukuze wenzele ukusonga isikhwama noma isaka, uqinisekise ukuthi imvula ayingeni.

Gcina isaka livaliwe ngetshe.

Qhubeka nokufaka ngokulandelana ngokufanayo... (okuluhlaza, umquba, isobho, okomile), faka okulingene ibhakede ngesikhathi sinye kuze kube lici she ligcwalile isaka.

Uzengeza kanjani izendlalelo esikhwameni somquba ukusuka phansi kuye phezulu:



③ Beka lesosikhwama/saka ngaphansi kwesihlahla noma umthunzi. Uqinisekise ukuthi imvula ayingeni.

④ Bheka isaka njalo ngesonto. Faka amanzi asebenzile phezulu uligcine isaka einemvundela linomswakama.

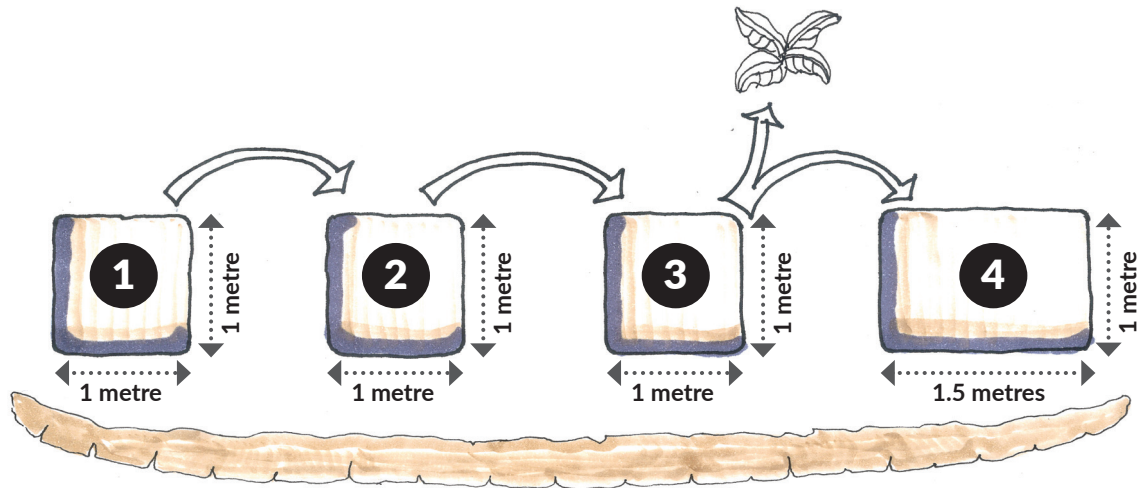
Imvundela kufanele ibe isivuthiwe, ilungele ukusebenza emva kwezinsuku ezingu 21–28.



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UKWENZA IMVUNDELA YOMGODINI



uBiowatch usecobebele abantu iminyaka eminingi ngale ndlela yokwenza lemvundela ngoba:

- isebenzisa imfucuzo yemvelo onayo njengalokhu uqhubeka uyithola;
- ayinawo umsebenzi omningi;
- ihlanzekile futhi ingavikeleka emfuyweni nasemagundaneni;
- iyasebenza ezindaweni ezishisayo nakulezi ezinesimo sokwentuleka kwamanzi ngoba awadingeki amanzi okwengeza. Umhlabathi uyayivikela imvundela uphinde uyigcine iswakeme.

UKWENZA NOKUPHATHA IMVUNDELA YOMGODI

- 1 Yimba noma gubha imigodi emithathu eyisikwele esingu-1 imitha. Bese umba umgodi wesine omkhulu ekugcineni – wona ube ngu - 1 imitha ububanzi x 1.5 (noma 2) amamitha ubude. Ciske yonke imigodi kufanele ibe ngu-60cm ukujula (kufike edolweni) futhi ihlukaniswe ngemitha elilodwa. Uma kungenzeka, lemgodi kufanele igujwe endaweni ethi ayicishe ilingane uma kusendaweni eyehlelayo.
- 2 Sabalalisa inhlabathi oyimbe emigodini ukuze wenze umbundu omude ngezansi kwemigodi eyehlelayo. Umbundu uzovimba noma imaphi amanzi ehla ngomehlelo ukuze azogcina imvundela emigodini iswakeme. Singasiza Sifaka noma imfucuzo yemvelo kanye nezithako zemvelo (ezibolayo noma eziphilayo) kwimvundela yethu, kepha hhayi noma yiziphi izinto zokwenziwa ezenziwe ngabantu ezifana noshekhasi.
- 3 Gcwalisa umgodi wokuqala ngokwengeza noma iyiphi imfucuzo yemvelo etholakalayo. Lokhu kungafaka utshani obusikiwe, imvuthuluka yasekhishini, imiquba, amaqabunga amadala kanye nakho konke okunqunywe okuvela engadini noma emasimini. Faka nomlotha omncane wezinkuni. Uma umgodi usugcwele umboze ngesemboza esiluyinqisi. Abanye abantu basebenzisa ukhaphethi omdala noma amashidi kathayela ukuze imfuyo ingangeni noma iqhwande emgodini.
- 4 Ngemuva kwezinsuku ezingu-21, phendula lokhu okusuka emgodini wokuqala uye emgodini wesibili. Manje usungaqala ukugcwalisa umgodi wokuqala ngezinto ezintsha. Linda kuphele ezinye izinsuku ezingama-21, bese uphendulela izinto ezisuka emgodini wesibili ziye emgodini wesithathu; nokusuka emgodini wokuqala kuye emgodini wesibili.
- 5 Ezinsukwini ezingu-21 (emva kwezinsuku ezingama-63 ngemuva kokugcwalisa umgodi wokuqala) imvundela yokuqala kufanele ibe isilungele ukusebenza. Ungayisa engadini ukuze uyisebenzise, noma uyifake emgodini omkhulu wesine lapho kugcinwa khona imvundela elindele ukusentshenziswa. Futhi ungaphendula lena esemgodini wokuqala ukuya kumgodi wesibili olandelayo bese uqala ukugcwalisa eyokuqala futhi ukuqinisekisa ukuthi uhlale unayo njalo imvundela.



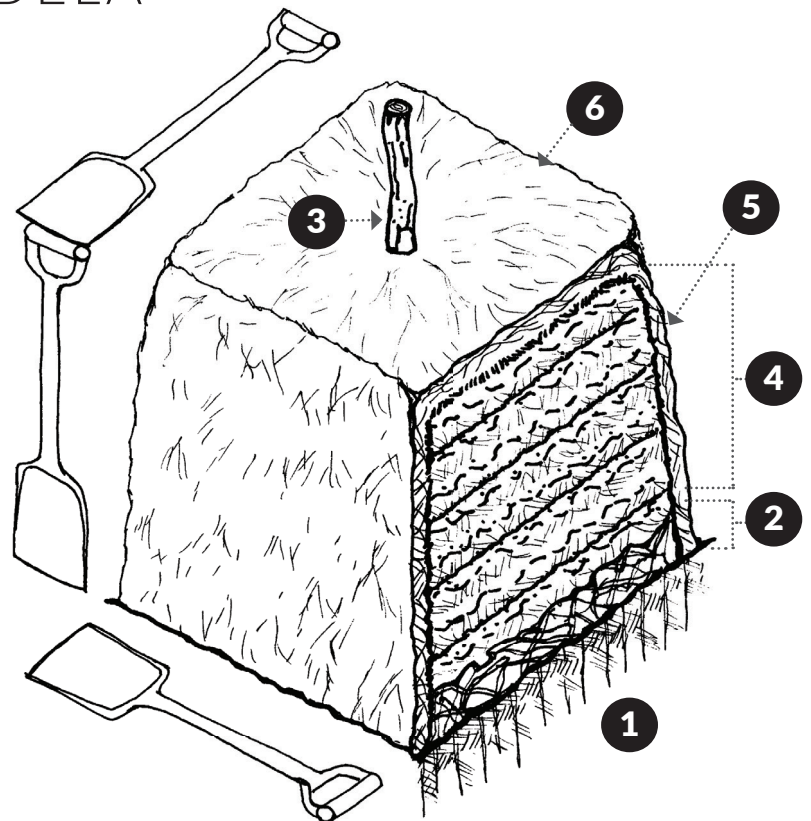
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UKWENZA IMVUNDELA EPHAKEME

Imvundela efika eqolo efanelekile ishisa ngokwanele ukubulala imbewu yokhula kanye nezinto ezibanga izifo, kodwa ayishisi ngezanga elingabulala zonke izinto ezilusizo nezibalulekile ekwenzeni imvundela.

Inqwaba ephakeme eyodwa kumele ilingane nefosholo elilodwa, ububanzi nabo bilingane nalo kanjalo nobude bayo bulingane nefosholo elilodwa. Ungazenzela inqwaba enkulu uma ikuvuma indawo. Kuhle ukuqongelela zonke izinto ezidingekayo ukuze uyenze umkanye imvundela kunokulokhu wengeza okusha kancane kancane. Lokho kungadala ukuthi lingashisi ngokwanele futhi kuthathe isikhathi eside ukuba livuthwe.



ZAKHELE IMVUNDELA YAKHO EPHAKEME

- ① Qala ngokuvukuza inhlabathi lapho uzokwakha khona inqwaba yakho. Sebenzisa imfoloko yengadi.
- ② Enhlabathini, yedlala inqwaba engu-20cm ngemfucuza yemvelo eyomile ezoletsa umoya phansi enqwabeni.
- ③ Beka inqwaba ezobamba isigxobo esiphakathi nendawo - Sikhishwa ekugcineni, siyazisa ukula isikhala somoya lapho uhlola khona ukushisa kwenqwaba.
- ④ Yakha yonke inqwaba ngokushintshanisa izithako ezinomsoco /izakhi ezahlukeneyo. Yendlala uhlaza lube u-5cm ngezithako (isibonelo izitshalo eziluhlaza Kanye nomquba) nezingu 5-10cm zemfucuza eyomile (isibonelo izitshalo ezomile nezinsundu; utshani; amaqabunga; izinti; izinhlanga zezitshalo), uze wakhe inqwaba ephakeme kakhulu elingana nefosholo noma ifike enyongeni yakho.
Ungahlanganisa nangalendlela, lokhu okomile (okuqukethe ikhabhoni) kuthi xaxa ngokuphindiwe nalokhu okuluhlaza (okuqukethe inithilajini) kube yimbijana (2:1). Ungakhohlwa ukuthi konke ozokusebenzisa kufanele kudlule emanzini ngaphambi kokwengezwa enqwabeni.
- ⑤ Emva kwezendlalelo ezimbalwa, vuthuza inhlabathi yangaphezulu ecebile noma imvundela evuthiwe ukuze kube namagciwane amahle kwimvundela yakho. Ungafafaza nokunye okuncane kakhulu okwengeza amaminerali njengomlotha wezinkuni, ubumba, “i-gypsum” kanye nomcako wamathambo ngokuya kwesidingo senhlabathi yakho. Ungalokothi ufake umcako kwimvundela ngoba uzobambezela ukubola enqwabeni.
- ⑥ Yemboza inqwaba ngotshani obomile noma ngezinhlanga. Lokhu kugwema imvundela ukuthi ingabi manzi kakhulu ngenkathi yezimvula futhi yome lapho kushisa - ungabeka ukhaphethi omdala ngaphezulu noma unameke ngaphandle ngoqinsi lobulongwe.

HLOLA BESE UPHENDULA IMVUNDELA

Ezinsukwini ezintathu zokuqala, hlola izinga lokushisa lemvundela yakho nsuku zonke. Ungafaka isandla sakho emgodini womoya lapho ukhiphe khona isigxobo noma ohlangothini lwemvundela. Kufanele kushise kepha kungashisi kakhulu uze ungakwazi nokubeka isandla sakho phakathi - cishe u-60 °C ulunge kakhulu.

Kuthatha amahora angu 24-36 (izinsuku ezimbili kuya kwezintathu) ukuthi kuqale ukushisa kodwa kuya ngesimo sezulu. Hlola ukuthi izinga lokushisa lemvundela liphakeme yini ngezinsuku ezintathu zokuqala ngemuva kokuyenza. Uma imvundela ishisa kakhulu, ifafaze ngamanzi kodwa hhayi amaningi ukwedlula u-10L, uyolawulwa yisimo sezulu.

Uma imvundela yakho ingashisi, lokho kusho ukuthi kunokuluhlaza okuncane kakhulu kunxubevange yakho. Kufanele uphinde uhlanganise imvundela nokuluhlaza okuningi - kuhle ukusebenzisa ubulongwe bezinkomo obusebusha.

Guqula imvundela emva kwezinsuku eziyisikhombisa zokuqala, bese emva kwalokho kuba kanye ngesonto kuze kube kathathu. Uzobe usuyiyeka nje kodwa uqinisekise ukuthi ayomi - kufanele ngaso sonke isikhathi kube nomswakama omncane, ngakho-ke fafaza amanzi kuyo uma kushisa.

Imvundela kufanele ibe isilungele ukusebenza ngemumva kwamasonto ayisishiyagalombili (8) noma ngaphezulu uma kumakhaza.