

Imagine Durban Demonstration Project

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Ungayiqala kanjani ingadi yokutshala
ukudla esikoleni sakho usebenzisa ukulima
ngokwemigomo yemvelo



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1

Isingeniso

Le ncwadi yakhelwe othisha, abafundi namalunga omphakathi angathanda ukufunda kabanzi ngokutshala ukudla. Loku kuyingxenywe yephrojekthi i-Imagine Durban Demonstration Project ebizwa nge-Mila Project, eyayisebenza ngokubambisana nabafundi baseCato Crest Primary School iSoul Buddies kanye nabafundi nabasebenzi baseGlenridge Pre-Primary School.

Le ncwadi imayelana nohlelo lokutshala ngethemba lokuthi ezinye izikole zizkwayiunda lukhulu kuyona futhi zigqgquzeleke ukuthi ziqale izingadi zazo ngokusebenzisa uhlelo lokulima ngokwemigomo yemvelo

Nakhu okushiwo abafundi bama-Soul Buddies base-Cato Crest Primary School mayelana nemizwa, isipiliyoni kanye nemibono yabo:

"I Permaculture gardening ingiqguqguzele ekuzenzeli izinto .Ngifunde ukubaluleka kokunakekela kanye noukubonga bonga imvelo, futhi ngeze isiqiniseko sokuthi ayihlukumezeki nanoma ingayiphi indlela".



"Senza izingadi ngoba siyathanda Ngenza izingadi ngoba abangenako ukudla. ukudla okunempilo Senza izingadi sithanda ukusiza izikole."

"Kumihla i-Permaculture gardening ingo okuningi ngoba ngikwazi ukuzenzela ingadi yami bese ngifundisa nomphakathi ukuthi kwenziwa kanjani njengoba sengiqalile."

"akumnandi ukwenza ingadi kodwa uma usujwayele ukusebenza kulula Mhlazane ngiqala ikwenza izingadikwangikhathaza, nelanga lalishisa kodwa ngayithanda ingadi."

Uma ufuna ukufunda kabanzi nge-Mila Project ka 2010 eCato Crest Primary School ungafunda isengezo A: Imvelaphi yeMila Project

2

Ukulima ngokwemigomo yemvelo

Igama elithi-Permaculture liqhamuka emagameni amabili, elithi permanent nelithi agriculture.

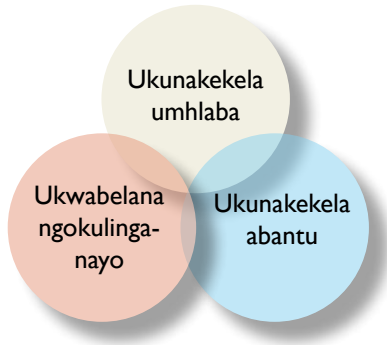
I-Permaculture iyindlela yokutshala nokukhulisa ukudla ngokubuka imvelo KANYE nokusebenzisana nemvelo



Uma wenza ingadi ngokusebenzisa izindlela zemvelo, ngokulalela nokubhekisisa ukuthi imvelo isebenza kanjani, uyobe udlala indima enkulu ekulungiseni umhlaba ubuyele esimweni sawo.

Izindlela Nezinqubo

Izindlela ezintathu ezibalulekile ekulimeni ngokwemigomo yemvelo yilezi :



Imigomo

Icashunwe kwi-SEED (Schools Environmental Education and Development), Growing the Living Laboratory – Permaculture for Environmental Educators in the NCS – Izigaba zamagredi 4-6)

Ukulima ngokwemigomo yemvelo kunemigomo nemithetho. Lena imithetho yohlelo oluhle

| Imigomo | Isibonelo |
|---|--|
| 1. Ukusebenzisana nemvelo kunokuphikisana nayo | Gqugquzela ukuthi umhlabathi ube neminyundu ngoba yenza uhlakazeke bese yakha ukudla kwezitshalo ngendle yayo |
| 2. Inkinga iba yisisombululo. | 'Ukhula' lungaba ukudla kwezinkukhu noma umquba ozodliwa inhlabathi. |
| 3. Yonke into isebenza okungenani ngezindlela ezimbili. | Izinkukhu zingadla izilwanyana zasengadini, zikhiqize amaqanda, inyama namaquba, zingamba futhi zandise nomanyolo enhlabathini. Isakhiwo sokwakhela izimbewu umthunzi zingasetshenziselwa ukutshala izihlahla zikagranadila, namagrebhisi. |
| 4. Ukubuyisela ukukhiqizwa kokudla emadolobheni. | Izithombo nezitshalo zemifino zingatshalwa ngempumelelo eziqakathini kanye nasophahleni lwezindlu ezindaweni zasemadolobheni. |

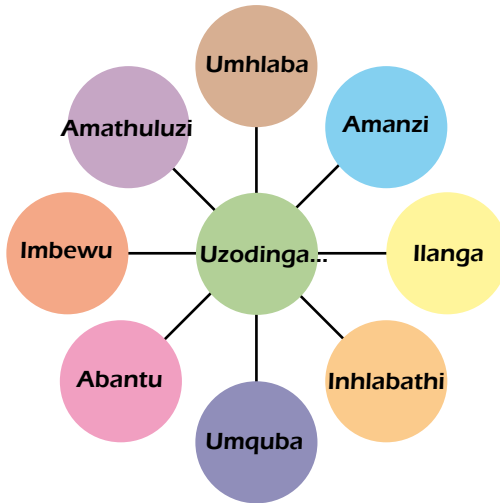
**Permaculture has a number of basic rules or principles.
These are rules for good design.**

| Imigomo | Isibonelo |
|--|---|
| 5. Sebenzisa ezemvelo njalo uma kungenzeka. | Sebenzisa umquba ukuze ugcine inhlabathi ivundile, umboze ngamahlamvu kanye neminyundu kunokuba usebenzise isivundisi. |
| 6. Sebenzisa kabusha impahla lapho kungenzeka. | Sebenzisa izinkukhu ukuba zimbe imigodi futhi zikhiphe ukhula kunokuba usebenzise ugandaganda noma igeja. |
| 7. Phinda usebenzise udoti lapho utshale khona | Sebenzisa udoti wezitshalo njengamakhasi amazambane, ukhula oselukhishiwe kanye notshani obugundiwe ngokukusebenzisa njengomquba wokumboza, noma kudliwe izinkukhu. |
| 8. Onga amandla akho | Tshala ngqo enhlabathini kunokuba uqale umbe noma ulime inhlabathi. Ingadi yakho yokudla ayibe seduze nasekhaya, ukuze ungachithi amandla akho uhamba uthwele uya noma usubuya engadini. |
| 9. Gqugquzela ukwahlukana kokuphilayo. | Khulisa izinhlobo eziningi zezitshalo ezizogqugquzela izilwane eziningi zasendle ezifana nezinyoni, amaxoxo, izinyosi, iminyovu nezimvemvane. |
| 10. Siza umphakathi wakho uzimele. | Ngokutshala izithombo zokudla, ukonga amanzi, ukonga ugesi, ukukhiqiza ukudla noma ukudayisa eminye imikhiqizo. |
| 11. Qala kancane. | Izingadi ezincane kulula ukuzinakekela futhi zonga amandla kanye nezinsiza kusebenza. |
| 12. Sebenzisa amaphethini. | Amaphethini enza ngcono indlela yokusebenza ngokwandisa izindawo zokutshala eziningi. |
| 13. Minyanisa. | Minyanisa ukuze usebenzise kahle isikhathi nendawo. Isib. Tshala ubhekise ezansi ukuze usebenzise kangcono indawo futhi ukhulise isitshalo ezikhula ngamandla ngaphansi kwamahlathi akhula kancane ukuze usebenzise kangcono isikhathi nendawo. |

3

Udingani ukuqala ingadi yokudla?

Nakhu ozokudinga ukuqala ingadi yokudla esikoleni sakho:



Khumbula:

Gcina imithetho eyi-12 yokulima ngokwemigomo yemvelo emqondweni uma uhlela ingadi yakho yokudla!



Umhlaba

Dweba ingadi yakho ephepheni ulandele lamaphuzi alandelayo:

- Qala kancane. Ungayinweba ngokuhamba kwesikhathi.
- Khetha indawo evikelekile emoyeni futhi eqondile. Uma unendawo engamagquma, ungenza imigodi yokuhambisa amanzi futhi unciphise uguguleka kwenhlabathi engaphezulu Bheka isengezo B: Ukwenza imigodi, ngeminye imininingwane ngemigodi.
- Ingadi yakho ayibe ngasekhishini naseduze kwamanzi.



Izingadi zingenziwa ngaphandle “komhlaba” . Ngokulima ngokwemigomo yemvelo, izingadi zokudla zingatshalwa eziqukathini, ophahleni lwezindlu, ezindaweni ezigandaywe ngamatshe noma zimiswe zibheke phezulu.

- Khetha indawo ephephile yokubeka impahla yakho yokulima namathuluzi eseduze kwengadi.

Amanzi

Amanzi abalulekile engadini yokudla.

Ukubeka amanzi emvula

Ukusebenzisa amanzi emvula, udinga ukuqoqa amanzi anele ukuze uchelele amaveji akho ngezinsuku okungani ngazo, ikakhulukazi ngezinyanga zasebusika ezomile eThekwini.

- Kumele ube namathangi amathathu angamalitha angu-5000 axhunywe kugadasi ukuze uqoqe wonke amanzi emvula aqhamuka ophahleni lwebhilidi lesikole.

- Amanzi emvula angahlala emathangini izinyanga; kodwa khumbula, amanzi angahlanzekile, ngakho kuyingozi ukuwaphuza.

- Ukufaka amathangi okukhongozela amanzi emvula (okubalwa amathangi, amapayipi kanye nompompi, kanye nokwenziwa komsebenzi) kuyabiza. Ezinye izikole zifuna uxhaso lwezimali ngalokhu.

Sebenzisa amanzi emvula kanye/noma AMANZI ASEKE ASEBENZA engadini yakho yokudla . Kumahhala kanti amanzi ompompi ayabiza.



Amanzi asebenzile noma angcole kancane

Amanzi asebenzile noma amanzi angabulewe amagciwane uhlobo lwamanzi osuke wawasebenzisa ngaphambilini, isib. amanzi okugeza namanzi okugeza izitsha.

- Amanzi angabulewe amagciwane kufanele asetshenziswe ngaphambi kwamahora angama-24, ukuvikela ukwanda kwamagciwane.
- Ukusebenzisa amanzi angabulewe amagciwane kusiza ngoba lawa amanzi ahlale ekhona (nangezikhathi zesomiso ebusika)– ngakho udinga amathangi ambalwa okugcina amanzi uma uqhathanisa nokudingeka uma uzoqoqa amanzi emvula.

Noma ngabe kusetsenziswa amanzi emvula noma lawo angcole kancane, amathangi okuwagcina kufanele abekwe phezulu kunengadi. Lokhu kukuvumela ukuba usebenzise amandla ukuhambisa amanzi engadini yakho. Ngale kwalokho amaphampu ayadingeka, nawo okubizayo ukuwafaka, ukuwasebenzisa nokuwagcina esimweni esihle.



ILanga

Amaveji adinga ilanga ukuze akhule. Udinga ukukhetha indawo yengadi yakho ezothola amahora okungenani ayisithupha elanga nsukuzonke.

- Izithombo kodwa ziyahluleka ukukhula elangeni. Yenza indawo enethunzi eduze nengadi yakho ongayisebenzisa njengendawo ukukhulisa izithombo zakho.
- Indwangu yokwenza umthunzi nayo ingasiza ukumboza ingadi yakho nokuvimba izinkawu ukuthi zidle amaveji akho.

Khumbula NJALO ukugqoka isigqoko uma usebenza engadini yakho ukuvikela isikhumba sakho emisebeni ehlabayo yelanga.



Inhlabathi

Isikole ngasinye sizothola ukuthi sinezinhlazo zenhlabathi ezahlukenene – umhlabathi omnyama, ubumba noma inhlabathi eyisihlabathi.



- Ngokwejwayelekile inhlabathi enhle ukuyisebenzisela ukwenza ingadi yokudla umhlabathi omnyama - oyingxube yemvelo, ubumba nesihlabathi. Lolu hlobo lwenhlabathi lumnyama, luhlakazekile futhi lunika umsoco ezitshalweni zakho.

- Ubumba lwenziwe yizinhlayiya ezincane okwenza ungangeni umoya, uma woma uba mubi futhi uvame ukuba banzi kakhulu.



- Inhlabathi eyisihlabathi ayiwabambi kahle amanzi futhi inemvelo encane, edingwa izitshalo ukuze zikhule kahle.

- Ungahlola ukuze ubona ukuthi hlobo luni lomhlabathi onawo:

Uma uphakamisa lenhlabathi uma imanzi.....

...Ubumba luyahlangana lube ibhola.

... Inhlabathi eyisihlabathi iyahhadlazela (isib. Imahhadla futhi iyizinhlamvana).

...Inhlabathi emnyama ihlukana phakathi ibe izingcucu.

Uma inhlabathi yakho iyisihlabathi kakhulu noma iwubumba kakhulu, ukufaka umanyolo indlela enhle yokuwenza ngcono.

Bheka Isengezo D: Ezinye izindlela zokwenza ngcono umhlabathi wakho, ngeminye iminingwano.



Abantu

Udinga abafundi abayishumi abanomdlandla, othisha ababili abazinikele kanye nabazali ababili kanye/noma amalunga omphakathi ukuze kube nethimba eliqinile lengadi yesikole. Kuyicebo elihle ukusheshe nithole ukwesekwa uthishanhloko wesikole senu.

- Ithimba lengadi kumele lihlele ukuyobona indawo nomhlangano wokubonisana ngokudingekayo uma nifuna ukuqala ingadi: umhlaba, amanzi, ilanga, inhlabathi, abantu, imbewu kanye namathuluzi.
- Qamba ithimba lakho lengadi kanye nengadi yakho igama elimnandi.
- Ithimba lakho lengadi lingaqala lihlangane kanye ngesonto, kodwa uma seniqafile ukutshala, ingadi izodinga ukunakekelwa nsukuzonke.
- Uma ingadi yakho isitshalwe kahle, ithimba lakho lengadi kufanele liqhubeke nokuhlangana okungenani kanye ngenyanga ukukhuluma ngezindaba ezahlukeni zengadi ezingaqhamuka.
- Kuyisu elihle ukuba nekomodi lengadi kanye nemihlahandlela okumele ithimba lengadi liyilande.

Vakashela ingadi yakho nsukuzonke ukusiphula ukhula, ukuchelela kanye nokuyimboza ngamahlamvu



Seeds

- Qoqa imbewu emndenini, kubangani, kubasebenzi basekhishini noma kumalunga omphakathi – kungaba eziphuma ezingadini zabo zamaveji noma eziphuma emevagini athengelwe ukupheka. Isibonelo sezimbewu ezingaqoqwa: uphepha, ibhathanathi kanye nembewu katamatisi. Ungatshala isikhumba sezambane (uma amehlo eseqala ukuvela) isitshalo sezambane sizokhula!



- Ungathatha iziqu ezisikiwe zamaveji uzitshale ukuze utshale amanye.
- Uma udinga ukuthenga izithombo ezintsha, thenga imbewu evulekile futhi eziqholiwe.

Khumbula ukuthi lokho abanye abantu abakulahlayo, ungakusebenzisa ukuqala ingadi yakho yamaveji esikoleni!
Amakhasi amaveji ungasetshenziswa ukuvundisa; bese imbewu isetshenziselwe ukuqala ingadi!

Amathuluzi

Ithimba lakho lengadi lizodinga amathuluzi ambalwa:

- Amafosholo (x 3)
- Izimfologo zokugubha (x 3)
- Izimfologo zesandla (x 5)
- Amahalava (x 5)
- Amakani okuchelela (x 5)



- La mathuluzi angasetsenziswa yithimba ngezikhathi ezehlukene.
- Ngaphambi kokuthenga la mathuluzi, thola ukuthi ikhona yini imindeni, abangani noma amalunga omphakathi anamathuluzi angasawasebenzisi futhi engajabula ukuxhasa ngawo isikole.
- Ungaqala uhlelo oluthokozisayo lokusebenzisa kabusha impahla, lapho abafundi besikole sakho benikezwa inselelo yokwakha amathuluzi engadi besebenzisa udoti!

Isibonelo salukhu sibandakanya lokhu:

- Yenza indwangu yakho yokwakha ithunzi ngokusika opulastiki ubenze izimbobo (lolu hlobo lwamaveji luyadayiswa) bese ubathungela ndawonye.
- Amakani okuchelela angenziwa ngezitsha zobisi ezindala ezingamalitha amabili (ungabhoboza izimbobo ezincane ngaphansi ukuze kucheleleke kahle.
- Ibhala elingenamasondo, elakhiwe ngedilamu elisikwe uhhafu ukubheka ezansi bese lishayelelwa ngezikipikili izingodo ezimbili.
- Izimfologo ezindala zasekhisini nezipuni zingasetshenziselwa ukukhipha izithombe ziyotshalwa enhlabathini.
- Amabhodlela aqinile kaplastiki asetshenziselwa ukuchelela, noma asikwe afakwe umanyolo.
- Ifosholo lakho, eliyimitha elilodwa ubude, lingasetshenziswa njengenduku yokukala ubukhulu.

Ithathwe: <http://biophile.co.za/gardening/your-own-food-garden>

4

Qala ingadi yakho yokudla.

Nazi ezinye izinyathelo ezilula ukuzilandela uma uqala ingadi yakho yokudla:

Khumbula ukuthi ungatshala usebenzise iziqukathi, uphahla lwendlu noma izindawo ezigandayiwe!

Hlela ingadi yakho

- Thatha isikhathi ubuke umhlaba namabhilidi bese udweba iphethini yengadi yakho ubheke izinto ezifana namanzi, ilanga, umoya, kanye nokwehlela kwendawo, ungakhohlwa ukubheka ukuthi iseduze kangakanani nesikole sakho, amathuluzi nalapho nizothola khona amanzi.
- Qala ukuhlela ingadi yakho encane ekhonekayo ongayinweba ngokuhamba kwesikhathi.
- Dweba imibhede yezinhlobo ezahlukene nosayizi abehlukene – njengesicathulo sehashi, indilinga noma imise okuka-8.



Qaphela:

- Imibhede yakho kumele ibe mincane ngokwanele ukuze umtshali wakho omncane ezokwazi ukufika phakathi nendawo yombhede eqhamuka nhlangothi zonke – ingabi ngaphezu kuka -120cm.
- Ukugwema ukuhamba emibhedeni yengadi yakho nokugqisha inhlabathi, kufanele wakhe izindlela zezinyawo okungenani eziyingxenye yemitha ubukhulu.



Lungisa umbhede wakho wenze ngcono nenhlabathi ngokumboza ngamashidi

Ungalungisa umbhede wakho futhi wenze ngcono nenhlabathi kanye kanye, ngokumboza ngashidi:

Ukumboza ngamashidi....



Isinyathelo 1:
Siphula lonke ukhula notshani.
Ukuyeke enhlabathini ngoba kuzo bola kube umquba ngokuhamba kwesikhathi.



Isinyathelo 2:
Maka ukuma kwengadi yakho.
Ndlala amaphepha amanzi kanye namakhathoni. Bhanqa kahle amaphepha.
Ishidi lokumboza livikela ukhula notshani elangeni. Kuyafa emva kwezinyanga ezi-3 kuya kweziyi-6 emva kwalokho akube kusaba inkinga engadini (SEED, 2006)



Isinyathelo 3:
Beka amakhathoni namahlamvu omile ansundu.
Uma ungeke utshale izimbewu yakho ngokushesha, ungafaka nezibi zengadi eziluhlaza kanye nezibi zasekhishini eziyizitshalo. Emva kwezinyanga ezimbalwa lokhu kuzohlukana kube umquba.



Isinyathelo 4:
Faka inhlabathi.



Isinyathelo 5:
Faka umquba.



Isinyathelo 6:
Faka umanyolo.



Isinyathelo 7:
Faka utshani obomile obungenambewu noma ilala, okulinganiselwa ku 15 cm ubude ngaphezulu. Iya nasemakhoneni. Uchelele kahle. Lokhu kuzoguquka kube umquba. Kufanele kungabi nambewu, ngale kwalokho, imbewu ingakhula idale inkinga yokhula (SEED, 2006)



Isinyathelo 8:
Yenza imbobo ngaphezu kotshani obomile bese utshala imbewu yakho enhlabathini.

Isinyathelo 9:
Tshala imbewu yakho yehlukane ngo – 20 kuya ku – 50cm.



Isinyathelo 10:
Chelela imbewu yakho nsuku zonke.

Tshala imbewu yakho

Tshala izithombo zakho ziqhelelane okungenani ngo -15cm okungenani ukusuka komunye umdebhe uya komunye, ukuze unwebe indawo yakho. Uma utshale amaveji akhula ngokushesha abemakhulu, njengama klabishi, shiya isikhala esingama-30 kuya ku-50cm.



Ukukala amasentimitha ayi-15 kuya kwangama20 ngokulinganisa ngesandla somuntu omdala...
...nweba isithupha sakho nocikicane kuphela.
Ungasebenzisa lokhu ukukala isikhala phakathi kwezimbewu zakho.

Uma sewutshale zonke izithombo zakho, chelela njalo ngekani lokuchelela, ikakhulukazi ekuseni ukuze ilanga elishisayo lasemini lingamunci wonke amanzi .



Ezinye izindlela zemvelo zokwenza ngcono inhlabathi yakho

Indunduma yomquba

Yenza indunduma yomquba wakho eduze nengadi yakho endaweni enet-hunzi nelanga. Kunezindlela ezilula zokwenza umquba:



Isinyathelo 1:
Izinduku namagatsha. Beka lokhu zibheke ezindaweni ezahlukene phezu kwenye ukuze zikhuphuke. Lokhu kuzoqinisekisa ukuthi indunduma yakho yomquba ithola umoya.



Isinyathelo 2:
Amahlamvu omile ansundu.



Isinyathelo 3:
Amahlamvu amahle aluhlaza, njenge comfrey enikeza inhlabathi umsoco.



Isinyathelo 4:
Amahlamvu omile (lokhu kungafaka
nokhula oselubunile).



Isinyathelo 5:
Umanyolo wezinkukhu kanye/noma
udoti wasekhishini, njengamakhasi
amaveji.



Isinyathelo 6:
Amahlamvu amahle aluhlaza ,
njenge comfrey futhi.



Isinyathelo 7
Inhlabathi yangaphezulu.



Isinyathelo 8
Amanzi.



Isinyathelo 9:
Utshani obusikiwe obomile

Qaphela: Udoti wasekhishini kufanele umbozwe ngokushesha ukuze kunciphe izilwanyana nephunga.

- Uma sewunqume ukuqala ingadi yokudla, cela abasebenzi basekhishini esikoleni sakho ukuthi bakuqoqele udoti wasekhishini ukuze wenze indunduma yomquba wakho.
- Ungacela kubasebenzi abanakekela isikole udoti wasengadini abawuqoqe esikole sonke ukuze wenze indunduma yakho yomquba.

Ukumboza ngezibi

Njengoba kubonakele kuchazwa ukumboza ngamashini, ukumboza ngezibi ilapho undlala khona utshani obusikiwe, amahlamvu, amagxolo esihlahla, noma amatshe ukumboza inhlabathi phakathi kwezitshalo:

- Lokhu kuvimbela ukukhula kokhula;
- Kugcina amanzi;
- Kunciphisa iziguguleka kwenhlabathi;
- Uma kumbozwe ngezibi zasekhishini, njengoba ziphuza ukuba umquba, zinika inhlabathi umsoco.



Izinkukhu namahhoko ezinkukhu ahambayo

Izinkukhu, ezisehhoko lezinkukhu elihambayo, zingakusiza uma ulungisa imibhede yengadi yakho ngokudla ukhula nezilwanyana; ukuvundisa inhlabathi ngomanyolo wazo ukumba inhlabathi bese uhlangana nomanyolo wazo.

- Ungakha ihhoko lezinkukhu ngowaya nezingodo –Isib. Libbheke phezulu noma libe unxantathu.
- Qinisekisa ukuthi liyakhuphuka ukusuka phansi, bese ufaka nophahla, ukuze izinkukhu zikwazi ukufukamela amaqanda azo.
- Beka ihhoko kwenye indawo njalo emva kwamasono amabili.
- Kuyo yonke indawo ozobe ulibeke



kuyo, izinkukhu ziyobe zisuse
ukhula futhi zayivundisa leyo ndawo.
Ungawadla namaqanda eziwazalelayo!



Ziningi ezinye izindlela zokwenza ngcono inhlabathi yakho. Buka Isengezo
D: Ezinye izindlela zokwenza ngcono inhlabathi yakho – Ukufuya
iminyundu, umanyolo oluhlaza kanye nowuketshezi.

Ukutshala imbewu

Uma unendawo enethunzi ngaphandle ungayisebenzisa ukutshala
izimbewu zakho ezitsheni zize zilungele ukutshalwa emibhedeni yengadi
yakho.

Khumbula : Amaveji ayizimpande
(njengezaqathi, ubhithiludi, amadumbe
namazambane) kufanele atshalwe ngqo
emibhedeni, ngoba awakheki kalula uma
esityizithombo ukuze afakwe emibhedeni.

- Izithombo zidinga ukuchelwa nsuku zonke. Zikhula kangcono uma zingabhekene nesimo sezulu esibi njengemvula enkulu, ilanga elihlabayo nomoya omkhulu.
- Tshala ngokushintshanisa uma utshala imbewu: tshala njalo emva kwamasono amathathu ukuze isivuno sakho sizothela futhi ukwazi ukutshala uvune unyaka wonke.

Uma izithombo zakho sezinamahlamvu esibili, ziyobe sezikulungele ukutshalwa emibhedeni yengadi yakho elungisiwe.

Bheka isingezo E: Ukutshala imbewu ngeminye imininingwane.

Utshala futhi uvuna nini izitshalo zakho

Udinga ukwazi izikhathi ezinhle zonyaka zokutshala amaveji ohlobo oluthile nokuthi azothatha isikhathi esingakanani ukukhula. Bheka isingezo F: Utshala nini futhi uvuna nini mayelana nolwazi olujwayelekile ngamaveji asengadini.



Yiba nabafundi abagcina ibhuku lengadi.

- Abafundi bangagcina ibhuku lengadi ngokuloba usuku nendawo yesitshalo ngasinye esitshaliwe.
- Uzobe sewazi ukuthi sinini isikhathi sokuvuna, (ikakhulukazi ngezitshalo ezinezimpande, ongeke ukwazi ukuzibona!)
- Ungasebenzisa leli bhuku ukukusiza ukuhlela ukushintshaniswa kwembewu yakho engadini enyakeni olandelayo.



Ukubhala uhlelo lokukhiqiza kungenza indlela enhle yokudidiyela umsebenzi wezingadi ohlelweni lwezemfunfo.

Ukushintsanisa izitshalo

Tshala ngokushintshanisa kusho ukutshala izitshalo ezehlukene endaweni eyodwa unyaka nonyaka.

- Izitshalo ezahlukene zisebenzisa umsoco owehlukene noma ukudla kwezitshalo okutholakala emhlabathini.
- Ngokusebenzisa indlela yokushintshanisa izitshalo, awusebenzisi ngokweqile okunye ukudla kwezitshalo, ube ungakusebenzisi okunye.
- Lokhu kusiza ekugcineni umhlabathi uvundile minyaka yonke.

Bheka isengezo G: Uma udinga olunye ulwazi olungakusiza ngokushintshaniswa kwezitshalo.



Ukutshala izitshalo ezizwanayo

Ukutshala izitshalo ezizwanayo kusho ukutshala izitshalo ezithize ndawonye ukuze:

- Zisizane ukuthi zikhule;
- Zithuthukise ukunambitheka kwezitshalo; noma
- Ziheha iziqholi noma zixoshe izilwanyana.



Bheka isengezo H: Ngokutshala izitshalo ezizwanayo uma ufuna ezinye izibonelo.

Lawula izilwanyana nezifo ngemvelo

Izilwanyana ezifana nezinambuzane ezithize neminenke zingalimaza izitshalo zakho. Ngenhlanhla, zikhona izindlela zokulawula izilwanyana NGAPHANDLE kokusebenzisa ubuthi obungaba ingozi kubantu nakwimvelo. Hlala njalo usebenzisa izindlela zemvelo zokulawula izilwanyana nezifo!

Bheka isengezo I: Ukulawulwa kwezilwanyana okudidiyelwe nezibonelo ezineminingwane.

Xosha izinambuzane ngokutshala ama-marigold namakhambi phakathi kwamaveji, ukutshala i-lavenda eduze kukaletisi; Nobhezili eduze kuka tamatisi.

5

Amaxhama ezokuxhumana ngokwezingadi zokudla

i-Durban Botanic Gardens (DBG), ihlangene nethimba le-Mila Project ne-Imagine Durban bagqoquzela amaxhama ezokuxhumano ngokwezingadi zokudla edolobheni:

Izingadi nabatshali abakwazi ukusebenza bebedwana. Iphupho lethu ukuxhuma nokufinyelela ezikhungweni zezingadi zokudla edolobheni lilonke. Awucabange usukwazi ukuhamba uye engadini yokudla eseduzane nalapho uhlala khona, uhlangane nomtshali, uvune amaveji akho niphinde nicobelelane ngolwazi lwezokutshala. Leli iphupho le DBG lokwenza idolobha elinekusasa lezingadi futhi sinentshisekelo yokwenza leli phupho libe ngeliphumelelayo.

Kunamaphrojekthi amaningi edolobheni okulima izingadi zokudla ngokwemigomo yemvelo aseqalile. Ukuze aphumelele umtshali kufanele eseke abanye bacobelelane ngemibono nezinsizakusebenza. Inselelo ekhona ukwakha amaxhama okuxhumana nokuhlanganisa izingadi nabatshali. I-DBG Permaculture Centre inikezela ngethuba lokuthuthukisa imiphakathi eseduze eyeseka ukutshalwa kokudla. Siyakumema ukuthi uthintane nathi ukuze uthole ulwazi lokuthi ungaba kanjani ingxenye yalo msebenzi omnandi ngokusungula amaxhama okuxhumana ngokwezingadi zokudla endaweni yangakini.

Durban Botanic Gardens Permaculture Centre

6

Isiphetho

Thokozela amaveji anempilo owavune engadini yakhol!



Ulwazi ohlinzekwe ngalo kuleli bhukwana, kanye nomfutho wakho, ukuzinikela kanye nesipiliyoni sakho, kanye nokuxhumana nabanye abatshali, kuzokusiza ukwazi ukuqala ingadi yokudla uphinde uyigcine isesimweni esihle, ngokulima ngokwemigomo yemvelo.



7

Ukuchazwa kwamatemu

| i-Temu | Incazelo/Izibonelo |
|------------------------|---|
| Ukunqwabelana | Ukunqwabelana kwezinto. |
| Ngenisa umoya (Aerate) | -nomoya, -nezimbobo -kwazi ukuphefumula. |
| Agricultural lime | Inhlabathi thizeni eyenziwe ngomcako ophuquzelayo noma ngoshoki. Ixube kakhulu ne-calcium carbonate. |
| Umanyolo (weminyundu) | Okungagayekile, inhlabathi, namagciwane akhishwa iminyundu. Umanyolo weminyundu. |
| Minyene | Minyene, qinile, pakishiwe noma hlanganisa, gqisha, pitshiza. |
| Umquba | vundisayo, nika umsoco, umanyolo. |
| Ukuvaleleka | -Nemingcele, -kuncane, -minyene. |
| Amakontolo | -Gobile, layini, ukuma ndlela umhlaba ome ngayo. |
| Ukubola | Ukuhlakazeka kube izingxenyana ezincane; noma ukubola. Ukubola kuyinto edingekayo eyenzeka ngokwemvelo ukuze kuqhubeke impilo ngoba kwakha imisoco ebalulekile edingwa izitshalo nezilwane ukuze zikusebenzise. |
| Ukuxuba | -Ukwenza kube uketshezi kakhulu, ngokufaka amanye amanzi, ukuze kungashubi. |
| Ukuguguleka | Ukuguguleka komhlabathi. |

| | |
|--|--|
| Inkolelo | Izinkolelo, izimfundiso. |
| Indle | Okukhishwa ngezansi izilwane nabantu, okwaziwa ngendle. |
| Ukuvuna | Okukhishwa ngezansi izilwane nabantu, okwaziwa ngendle. |
| Ukuvuna | Ukuqoqa, ukuhlanganisa. |
| Umquba | Lokhu kubandakanya noma yini ephume kumaveji abolile. Kunikeza isitshalo umsoco futhi kuphinde kusize umhlabathi ekumumatheni amanzi. |
| Uhlelo lokuchelela | An erect or climbing bean or pea plant of the family Leguminosae. |
| Uketshezi lukadoti (Leachate) | Amanzi aphuma kudoti ongaba nobuthi. Kwezinye izikhathi iconsi lingonakalisa indawo noma amanzi. |
| Legume (Uhlobo thize luka bhontshisi) | Ubhontshini okhula uqonde noma isitshalo sikaphizi esiphuma emndenini yobhontshisi bohlobo lwama- leguminosae. |
| Ukumboza ngezibi | Ukumboza umhlabathi ophakathi kwezitshalo ngempahla, efana notshani, amahlamvu noma amagxolo esihlahla.. |
| Open pollinated plants or seeds (izitshalo noma imbewu enempova) | Izitshalo zempova eziyingxubevange ezikhiqizwa imbewu. Lokhu kusho ukuthi ziyakwazi ukukhiqiza imbewu, kulezo zitshalo zangaleso sikhathi, ezizokhiqiza izithombo ezifana naleso sitshalo eziphume kuso. |
| Okuyimvelo (organic) | Okungabulewe amagciwane ngamakhemikhali, okungagayiwe, okuhlanzekile, kwendalo. |

| | |
|---|--|
| Ukutshala ngokwemigomo yemvelo (Permaculture) | Indlela yokuziphilisa ekhuthazwa yimvelo. |
| Imigomo | Izinkolelo, amagugu, imibono. |
| Okuxoshayo (Repellent) | Okuxoshayo / okususayo. |
| Uhlelo lokunikeza izikole ukudla okunempilo | Uhlelo lukaHulumeni olweseka izikole ukuze zikwazi ukunikeza izingane zesikole eziphuma emiphakathini entulayo ukudla okunempilo. |
| Isithombo | Isihlahla esingakahlumi kakhulu. |
| Ukugenca | Ukusika, ukuhesha noma ukugenca. |
| Inhlabathi engaphansi kwengaphezulu (Subsoil) | Ingxenye yomhlabathi engaphansi kwenhlabathi engaphezulu, okungaba izinto ezifana nobumba kanye/noma isihlabathi esihlakazwe umoya, ilanga, amanzi, umoya njl., ukuze ikhiqize inhlabathi. |
| Imisele | Indawo ephansi (evame ukuba kumakontolo) ukuze igcine amanzi emvula futhi inciphise nokuguguleka komhlabathi. |
| Umhlabathi ongaphezulu | Inhlabathi engaphezulu, ejwayele ukuba ngu -5 – 20cm. Inemisoco yemvelo eminingi kunayo yonke enye inhlabathi kanye nempilo futhi il pho kujwayele ukwenzeka khona izinto zempilo yenhlabathi khona. |
| Amanzi (Angabulewe amagciwane) | Amanzi aseke asetshenziswa phambilini noma asetshenziswa kabusha, kodwa angabulewe amagciwane futhi angakulungele ukuphuzwa nokupheka. |
| Amanzi (aphuzwayo) | Amanzi asempompini abulewe amagciwane noma amanzi aphuzwayo. |

8

Isengezo

Isengezo A: Umlando nge-Mila Project

Ngo Januwari ka 2010, i-Cato Crest Primary School yaba ingxenye yohlelo olwaziwa nge-Imagine Durban Demonstration Project, olwaluxhaswe i-Canadian International Development Agency (CIDA). Ithimba elikhona labafundi bamazinga ka-grade 5, 6 no 7 base Cato Crest Primary School, elizibiza

Mila kusho ukuthi “grow” ngeSingisi



ngama-Soul Buddies, libambisene nothisha kanye nabamele umphakathi, laqala iphrojekthi yengadi yesikole ebizwa nge-Mila Project.

-Mila Project yayenganyelwe u-Bev Ainslie beno-Brenda Mhlungu. I-Khanyisa Projects yafaka amathangi amanzi okuqoqa amanzi emvula kanti i-Durban Botanic Gardens yahlinzeka ngoqeqesho olumayelana nezingadi zokudla ezilinywa ngokwemigomo yemvelo.



Abamele ithimba le-Soul Buddies babe ngabakhuthazi futhi badlulisela ulwazi namakhono abo okulima ngokwemigomo yemvelo ezinganeni zase-Glenridge Pre-Primary School.



Isengezo B: Ukwenziwa kwemisele yokugcina amanzi

SEED, encwadini ebizwa nge-Growing the Living Laboratory ichaza imisele nokuthi enziwa kanjani:

Imisele egcina amanzi imigojana egunjwayo eduzane kolayini bamakhontolo, ukuze agcine amanzi. Amakhontolo imigqa elinganayo ubude ehamba yehle ngendawo. Imisele isabalalisa iphinde acwilise amanzi emvula abengahamba engadidni. Imisele kungaba imigojana emincane engadini noma umsele omkhulu ensimini.

Isinyathelo 1: Sebenzisa i-A-frame ukuze umake amakhontolo (bheka Isengezo C: Ungayenza kanjani i-A-frame).

Isinyathelo 2: Imba imigodi kumakhontolo. Faka umhlabathi wangaphezulu obuusususe ngesikhathi umba emaceleni ukuze wakhe usebe.

Isinyathelo 3: Sebenzisa amatshe ukuvala ekugcineni kwemisele, uma ungakwenzi lokhu amanzi uzogobhozela ngaphandle kwemisele bese egugula umhlabathi.

Isinyathelo 4: Tshala izihlahla nezinye izitshalo ezingaba usizo osebeni ukuze zisebenzise amanzi asemseleni futhi zigcine umhlabathi osebeni.

Kuthathwe: kwi-Growing the Living Laboratory – Permaculture for Environmental Education in the NCS – Intermediate Grades 4-6, Published by SEED (Schools Environmental Education and Development), 2006,



Isegezo C: Ukwakha i-A-frame

u-SEED, encwadini ebizwa nge-Growing the Living Laboratory bachaza ukwakhiwa kwe-A-Frame:

Ithuluzi lekhontolo – i- A-frame

Ukwakha i-A-FRAME (UHLAKA OLUMISE OKUKA-A)

1. Sebenzisa izigxobo nohlaka olumise kuka-A.
2. Bophela uhlangothi olulodwa lwentambo kulolu hlaka olumise kuka-A.
3. Bophela olunye uhlangothi lwentambo etsheni ukuze lilenge ngaphansi kwengxenye yepali lika-A.

Ukulinganisa ubukhulu be-a-frame

4. Misa lolu hlaka olungu-A endaweni eqondile. Maka indawo lapho imilenze ehlala khona.
5. Misa lolu hlaka olungu –A lunganyakazi, bese usebenzisa ipensela ukumaka lapho intambo enqamula khona epalini elingu-A.
6. Phendula lolu hlaka olungu-A ukuze umlenze owodwa ume lapho ebekukade kume khona omunye.
7. Phinde umake lapho intambo enqamula khona.
8. Labo maka ababili abasepalini kufanele basondelane. Yenza umaka phakathi kwalaba omaka ababili khona lokhu kuzotshengisa lapho intambo izonqamula khona uma indawo iqonde kahle. Lo maka wenze nge-koki noma uwusike ngommese.



Ukumaka ikhontolo

9. Qala ukhethe indawo eyehlelayo. Misa lolu hlaka olungu-A bese umaka lupho okuma khona umlenze owodwa ngesikhonkwane noma ngetshe.
10. Lusamile lolu hlaka, ngaphandle kokunyakazisa umlenze owodwa, jikisa umlenze wesibili ubheke phezulu noma wehle endaweni eyehlelayo ize intambo idlule lapho ekumakwe khona ngokugqamile ngomaka we-koki.
11. Maka lapho okuma khona umlenze wesibili.



12. Usamile kuleyo ndawo umlenze wesibili, phakamisa umlenze wokuqala bese uyawuzungezisa. Uwushonise phansi noma phezulu ukuze intambo idlule epalini lapho ekumakwe khona nge-koki.
13. Maka lapho umlenze wokuqala osukhona manje ngesikhonkwane esinye noma itshe.
14. Qhubeka ngale ndlela uze uqede insimu.

15. Ulayini wezikhonkwane/amatshe iwona ozoba ikhontolo: Bazoba sebangeni elilinganayo endaweni eyehlelayo. Izikhonkwane azijwayele ukuba kulayini oqondile. Uma kudingekile wagobise kancane ngokuwashonisa phansi naphezulu.



16. Ukumaka omunye ulayini wekhontolo, ehla wenyuke ibangana elithile endaweni eyehlelayo (kujwayele ukuba ama-20m endaweni engehleli kakhulu, noma ama-1,5m ezindaweni ezehlela kakhulu). Uphinde wenze ngale ndlela kusukela kwisinyathelo -9 kuya-le.

17. Usungayigumba imisele, wenze imithala noma utshale izihlahla eduze kwamakhontolo usebenzisa izikhonkwane/amatshe ukuze akusize utshale ngendlela efanele.

Ithathwe: Growing the Living Laboratory - Permaculture for Environmental Education in the NCS - Intermediate Phase Grades 4-6, Published by SEED (Schools Environmental Education and Development), 2006,

Isengezo D: Ezinye izindlela zokwenza ngcono inhlabathi yakho

Ukufuya iminyundu

Isitsha seminyundu yisitsha lapho ugcina khona iminyundu. Masontonke ufaka ukudla okudala, ikakhulukazi izinsalela zezithelo nemifino, esitsheni seminyundu ukuze idle. Iminyundu ikhiqiza okuthize okungumanyolo onothile one-nitrogen ephindwe kahlanu kunaleyo etholakala emhlabathini kanye ne-Potassium eningi, kanjalo ne-Phosphate.

Ukunika iminyundu imfucuza yasengadini neyasekhishini yindlela elula nengabizi yokulahla udoti nokuvundisa izingadi zokudla.

Izitsha zeminyundu zisebenzisa iminyundu ephila ezindaweni ezimnyama, ezifudumele, eziswakeme nezinothe ngokudla. Uminyundu ongcono ukuwusebenzisa ilowo obomvu (red wiggler). Uma unakekelwe kahle uzalana uphindaphindeke kabili njalo ezinyangeni ezimbili kuya kwezintathu.

Uzodinga

- Isitsha seminyundu. Ziningi izinhlobo zezitsha ezifanele ukugcina iminyundu, phakathi kwazo kungabalwa ezohlobo lwew-pholisterine noma amabhokisi okhuni atholakala ezitolo, idilamu lensimbi elidala, ubhavu omdala noma amathayi amadala. Kufanele kube nezimbobo esinqeni sesitsha ukuze kuvuze kahle amanzi.
- Izitini ezimbili noma ngaphezulu zokuphakamisa isitsha siqhele emhlabathini ukuze amanzi avuze kalula.
- Iminyundu yokuvundisa okungeni eyi 2000. Le minyundu iyozalana yande ize ifinyelele kweyi 8000 ezinyangeni eziyi-6.
- Impahla yokuvundisa okungaba umquba osuqala ukuvunda, utshani obusikiwe, amaphepha adlavazekile, izinsalela zezithelo nezokusamifino noma amahlamvu amadala. Lokhu kumele kugcwale ingxenye yesitsha.
- Into yokumboza ekhululekile njengesaka. Uma ungenalo isaka, ungasebenzisa ukhalibhothi noma iphephandaba.
- Ingxube yomhlabathi nesihlabathi idingwa yiminyundu ukuze kugayeke ukudla esiswini.

Ukwakha isitsha seminyundu

1. Khetha indawo enethunzi engaphandle ubeke khona isitsha sakho seminyundu, ukhethe indawo okuhamba kuyo kahle amanzi.
2. Beka isitsha phezu kwezitini.
3. Faka inhlanganise yakho ebolisayo ezoqalisa ukuvunda ibe yingxenywe esitsheni.
4. Vuvusela ingxube yomhlabathi nesihlabathi.
5. Chelela kuze kuswakame kodwa kungabi manzi.
6. Thela iminyundu yokwenza umquba.
7. Mboza isitsha.

Ukunakekela isitsha seminyundu

Faka izingcezu zezithelo nemifino masontonke. Indima engezansi ichaza ukuthi idlani iminyundu. Qala ufake ukudla kube kuncane ngesonto bese uyakwandisa ezinyangeni eziyi-6. Kungcono kakhulu ukuyiphakela njalo ngesonto iminyundu yakho. Uma ukudla kusala kungadliwe, yazi ukuthi uyiphakele ngokweqile iminyundu. Kuqobe ukudla ngaphambi kokukufaka futhi uzame ukufaka ukudla okuxubile. Ngemuva kokuphakela iminyundu njalo ngesonto, izinsalela zokudla zimboze ngomquba noma ngomhlabathi ukuvimbela izimpukane.

Faka amanzi njalo ngemuva kwezinsukwana noma lapho kunesidingo ukuze isitsha seminyundu singomi. Kungase kudingeke ukuba wengeze amanye amanzi uma kushisa kakhulu noma kunomoya. Kubalulekile ukuba isitsha sihlale siswakeme ngoba iminyundu ingase ife uma sesomile. Kodwa phela akufanele isitsha sigcwele amanzi. Ukhumbule ukuthi izinsalela zokudla zinomswakama.

Ngemuva kwezinyanga eziyi-6, fuya eminye iminyundu kwesinye isitsha:

- Ngokulandela zonke lezi zinyathelo kwesinye isitsha kanye nokuqoqa iminyundu engaphezulu esitsheni esidala.

- Beka isitsha sesibili esinezimbobo ngaphansi, usibeke ngaphezu kwesokuqala bese ufaka izinsalela zokudla ebhokisini elingaphezulu kuphela. Iminyundu izozihambela ngokwayo ngezimbobo yenyukele ebhokisini elingaphezulu iyodla.
- Okusele lapho kufafaze engadini ngendlela efanayo naleyo osuke ufaka ngayo umquba.

Ukudla ongakupha iminyundu

Imisundu idla cishe noma nhlobo luni lokusamifino nezinsalela zokudla, ikhofi, amaphepha, ngisho namakhalibhothi aswakeme imbala. Faka amagobolondo amaqanda ngoba iminyundu idinga umsoco (i-calcium) esemagobolondweni. Ungawufaki u-anyanisi noma ugalikhi noma ukudla okune-esidi eningi kakhulu njengokusawolinathi noma uphayinaphu. Gwema ukudla okunobuthi njengemvuthu yamapulangwe asikiwe.

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Umanyolo oluhlaza

Umanyolo oluhlaza wenziwa ngezitshalo ezitshalelwe ukwenza ngcono ukuvunda komhlabathi nokugwema ukuguguleka kwenhlabathi. Umanyolo oluhlaza omningi uyizitshalo ezisheshe zikhule.

- Umanyolo oluhlaza unganqunywa bese umbelwa enhlabathini ngesikhathi sokutshala noma emva kwaso.
- Izibonelo zikamanyolo oluhlaza izitshalo ezitshalelwa ukuba zimboze inhlabathi (ezaziwa njengezimbozo eziphilayo) ama-cowpeas, vetch, red clover kanye nama-lupins.
- Esinye isibonelo sikamanyolo oluhlaza isitshalo esibizwa ngokuthi i-Comfrey.

Imiphumela emihle yokutshala i-comfrey:

- Ilungisa i-potassium enhlabathini bese inikeza inhlabathi umsoco.
- Igwema ukukhula kokhula ngenxa yokuthi amahlamvu ayo enza ithunzi; nangenxa kamanyolo okhiqizeka enhlabathini ngenxa yezimpande zayo.
- Izimpande zisiza inhlabathi ukuba ibambe amanzi.
- Yenza ngcono isimo senhlabathi futhi yenza imigudu esizayo ekuhambiseni amanzi.

Umanyolo wamanzi

Umanyolo wamanzi ungasiza ekukhuliseni isitshalo sakho ngokusinika umsoco futhi usisize ukuba silwe nezifo.

- Umanyolo wamanzi ubuye ubizwe ngokuthi amatiye futhi uvame ukwenziwa ngengxenywe eyodwa yesitshalo kanye nezingxenywe ezine zamanzi (1:4), esitsheni esinesivalo.
- Itiye le-Comfrey lingenziwa ngokuthi ucwilise amahlamvu emanzini izinsuku ezimbili. Kufanele kuxutshwe ngale ndlela 1:2 (ingxenywe eyodwa yamanzi e-comfrey kanye nezingxenywe ezimbili zamanzi) uma uyisebenzisa esitshalweni sakho. Uma uyisebenzisa ezithonjeni, uxuba 1:4.
- Amatiye kamanyolo angenziwa ngomanyolo wezinkomo noma wezinkukhu bese usetshenziswa emva kwamasono amathathu bese uxutshwa ngo 1:5.



Isengezo E: Ukutshala imbewu

Ukuze utshale imbewu ezitsheni uzondinga...

Izitsha zembewu

- Ungasebenzisa noma isiphi isitsha ukuze wakhe isitsha sembewu – njengezitsha zobisi ezisikwe phakathi, noma izitsha zeyogathi enkulu.
- Khumbula nje ukwenza izimbobo ezintathu noma ezine ngaphansi kwesitsha ukuze kuphume amanzi.

Inhlabathi

- Hlanganisa ndawonye umquba (noma inhlabathi engaphezulu, esefiwe uma ungenawo umquba) ngesihlabathi sasemfuleni. Ngale kwaloko ungathenga ingxube yokutshala imbewu.

Imbewu

- Ungabhobosi imbobo yembewu ngayinye, vele uthathe izimbewu ezimbili noma ezintathu ngesikhathi bese uzivuvuzela ngaphezu kwenhlabathi.
- Bese uvuvuzela inhlabathi encane ngaphezulu.
- Gqisha inhlabathi kancane ngentende yesandla sakho noma ngeplangwe eliqondile.

Amanzi

- Vuvuzela amanzi kancane ngokusebenzisa ithini lokuchelela, ukuze ungalahlekelwa imbenwu yakho ngesikhathi uchela!
- Gcina imbewu yakho endaweni enethunzi, uyichelele nsukuzonke (kukhuthazwa ukuba loku ukwenze ntambamba ukuze ilanga lingahwamuli amanzi!).

Bhala amagama ezitsheni zakho zembewu

- Kubalulekile ukwazi ukuthi utshaleni, nini, esitsheni sakho, ukuze wazi ukuthi uzoyikhipha nini imbewu yakho uyifake embhedeni.
- Enza imibhalo yakho ngesitsha seplastiki esisikwe saba onxantathu noma izikwele bese ubhala igama nosuku owatshala ngaso imbewu, usebenzise ipeni lokwenza omaka elimnyama.

Isengezo F: Utshala nini futhi uvuna nini

| Izitshalo | Isikhathi sokutshala | Isikhathi sokukhula |
|------------------------|----------------------|--|
| UBhrinjolo (eggplant) | Jan – Sept | 2 – 3 izinyanga |
| UTamatisi | Jan - Julayi | 3 izinyanga (Ungavunwa izinyanga e zi- 2 kuya kwezi-3) |
| U-Anyanisi | Jan – Ephreli | 6 – 8 izinyanga (180 – 230 izinsuku) |
| IKlabishi | Feb – Agasti | 3 - izinyanga -ngaphezulu kancane kwezi -4 (90 – 130 izinsuku) |
| Amazambane | Feb - Sept | 3 ½ - 5 izinyanga (105 – 150 izinsuku) |
| U-Green bean | Feb -Sept | -1 ½ - 2 izinyanga ukuze (inhlobo yehlathi) ukhiwe okokuqala (50 kuya 60 izinsuku) Ukhiwa izinsuku eziyi-10 kuya 15 |
| Izaqathi | Feb – Sept | 3 - 4 izinyanga (90 – 120 izinsuku) |
| Isipinashi | Feb – Okt | 2 izinyanga. (Singavunywa izinyanga ezi -2 kuya kwezi -3) |
| ULethisi | Mashi - Julayi | 2 – 3 izinyanga (Izinsuku ezingama -55 kuya kwezingama -90 emva kokuba isithombo sitshalwe embhedeni) |
| U-Beetroot | Ephreli - Sept | 2 – 3 izinyanga |
| UPhizi oluhlaza | Meyi - Juni | 3- 4 izinyanga (100 -120 izinsuku) |
| Upelepele | Julayi – Mashi | 2 – 3 izinyanga |
| Ama-Gems | Julayi – Mashi | ± 3 izinyanga (85 - 95 izinsuku) |
| Ibathanathi | Julayi – Mashi | 3 izinyanga noma ngaphezulu kancane (90 -100 izinsuku) |
| Amathanga | Julayi – Mashi | 4 izinyanga noma ngaphezulu kancane (120 – 130 izinsuku) |
| U-Sweet u-Sweet Pepper | Julayi - Mashi | 2 – 3 izinyanga (70 – 80 izinsuku) Uvunwa izinyanga ezi-2 kuya kwezi -4 |
| Amadumbe | Julayi– Okt | 7 – 9 izinyanga (200 – 270 izinsuku) |
| Ubhatata | Agasti - Mashi | 4 – 5 izinyanga |

Ithathwe: <http://www.nda.agric.za/docs/VegProductionInAnutshell.pdf>

Annexure G:Tshala ngokushintshanisa

Tshala ngokushintshanisa

Enza ngcono isimo nomsoco wenhlabathi yakho, uphinde wehlise nethuba lezilwanyana kanye nezifo, ngokutshala ngokushintshanisa izitshalo nje kuphela ...uzoba nezitshalo ezinkulu ezinempoilo namaveji unyaka wonke.

Kuyini ukutshala ngokushintshanisa

Uhlelo lokushintshanisa izitshalo luwuhlelo lweminyaka emithathu, utshala izitshalo ezahlukile emhlabathini njalo ngonyaka ukuze ugweme ukwakhela kwezifo.



Uluqala kanjani lolu hlelo

Yenza uhla lwazo zonke izitshalo kwayiisa ukuzitshala engadini yakho ngalowo nyaka. Hlukanisa uhla lwakho ngezitshalo zasehlobo nezasebusika. Hlukanisa izitshalo zakho ngezihlobo zamaveji:

1 - Eziyizimpande

2 – Eziyizithelo nezinhlamvu

3 – Ezinamahlamvu neziqu

Dweba umfanekiso wengadi yakho yokudla, uyihlukanise ngezindawo ezintathu.

Indawo ngayinye eyamaveji ohlobo oluthile ngonyaka. Gcina irekhodi lalokho okutshalile nokuthi ukutshale kuphi, ukuze ukhumbule esikhathini esilandelayo sonyaka.

Imigomo Yokutshala Ngokushintshanisa

Endaweni ngayinye khetha uhlobo oluthile lwamaveji ozowatshala kunyaka 1, bese ushintshela enhlotsheni elandelayo yamaveji onyakeni 2 kanye nangonyaka 3, bese ubuyela kunyaka 1 uma usutshala onyakeni 4 kanjalo, kanjalo.

Uhlobo lweveji 1: Anezimpande– izaqathi, parsnipi, amazambane, u-beetroot, kohlrabi, radishes, u-anyanisi, ama-leeks kanye nogalikhi.

Uhlobo lweveji 2: Isithelo nezinhlamvu – uphizi, ubhontshisi, utamatisi, capsicum, umbila onoshukela, ubhrinjolo, uphepha, ukhukhumba, endive kanye ne courgette.

Uhlobo lweveji 3: Anamahlamvu nesiqu, iklabishi, ukholiflawa, broccoli, celery, ulethisi, silver beet, isipinashi kanye nebrussels sprouts. Izitshalo ezithatha isikhathi eside ezifana ne-asparagus ne rhubarb azitshalwa ngokohlelo lokutshala ngokushintshanisa.

Uhlelo lweminyaka emithathu yokutshala

Impande Isithelo lqabunga Nempandesigaxa nembewu nesiqu.

3 Year Crop Rotation

Root & Bulb



Fruit & Seed



leaf & Stem



Source: adapted from <http://www.kings.co.nz/Growing+Guides/Vegetable+Crop+Rotation.html>

Isengezo H: Ukutshala izitshalo ezihambisanayo

(Izitshalo ezingezwani yilezo zitshalo ezingakhuli kahle uma zitshalwe nezinye.)

| Izitshalo | Ezizwanayo | Ezingezwani (Ungatshali eduze kwalesi sitshalo) |
|---|--|--|
| Ubhontshisi | Amazambane, izaqathi, ukhukhamba, ukholiflawe, iklabishi | U-anyanisi, ugalikhi, gladiolus |
| u-Beetroot | U-anyanisi, kohlrabi | ubhontshisi |
| Awumndeni weklabishi (iklabishi, ukholiflawe, kale, kohlrabi, brokholi) | Izitshalo ezinuka kamnandi, amazambane, celery, dill, camomile, sage, peppermint, rose | Strawberries, amazambane, ubhontshisi |
| Izaqathi | uphizi, ulethisi, u-anyanisi, leeks, rosemary, sage, utamatisi | Dill |
| Ukolweni | Amazambane, uphizi, ubhontshisi, ukhukhamba, ithanga, isikwashi | |
| Eggplant | Ubhontshisi | |
| Ulethisi | Izaqathi, radishes, strawberries, ukhukhamba | |
| U-anyanisi nogalikhi | Beets, strawberries, utamatisi, ulethisi, camomile | uphizi, ubhontshisi |
| Amazambane | Ubhontshisi, ukolweni, iklabishi, marigold, ubhrinjolo | ithanga, isikwashi, ukhukhamba, sunflowers, utamatisi, raspberries |
| Amathanga | Ukolweni | Amazambane |
| Isipinashi | Strawberries | |
| Sunflower | Ukhukhamba | Amazambane |
| Utamatisi | Chives, u-anyanisi, parsley, asparagus, marigolds, nasturtiums, izaqathi | Kohlrabi, amazambane, fennel, iklabishi |

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Isengezo I: Ukulawulwa kwezilwanyana okudidiyele

SEED ikhuluma ngokulawulwa kwezilwanyana encwadini yabo i-Growing the Living Laboratory. Izingxenye ezitholakala esigabeni sokwenganyelwa kwezilwanyana okudidiyele zikhonjisiwe kuleli tafula elingezansi:

Ukulawulwa kwezilwanyana okudidiyele

Lezi zindlela zisiza ukugwema izinkinga zezilwanyana kanye nokuqeda izilwanyana esezikhona engadini.

Gcina izitshalo zakho zinempilo

Izitshalo ezinempilo zihlaselwa izilwanyana kanye nezifo ezimbalwa kunezitshalo ezishoda ngomsoco kanye namanzi. Nikeza izitshalo zakho ukudla okuyimvelo futhi uzimboze ngodoti ukuze inhlabathi ihlale imanzi.

Hlola izitshalo zakho ukuthi azidliwa yizilwanyana

Hlala njalo ubheka izilwanyana ezitshalweni zakho. Lawula noma iziphi izilwanyana uma uzibona.

Ukulawulwa kwezilwanyana okudidiyele

Susa izilwanyana ezinkulu ezitshalweni zakho

Susa izilwanyana ezinkulu ezifana nalezo eziphila otshanini, iminenke kanye namabhungane ezitshalweni zakho. Uma zimbalwa, zinyathele. Uma ziningi izilwanyana zibhunyeye ngebhakede eligcwele amanzi. Ziphe izinkukhu noma ezinye izinyoni ukuze zizidle.

Susa izilwanyana ezitshalweni zakho ngamanzi

Izilwanyana ezifana ne-aphid nama-mealybugs, zingasuswa emahlamvini ngokufuthwa ngepayipi lamanzi. Lezi zilwanyana azivamile ukuba wuhlupho uma uzifutha ngamanzi isifutho siyazisusa emahlamvini.

Tshala ngokushintshanisa

Ukutshala ngokushintshashintsha izitshalo kusho ukuthi ushintsha kuphela izitshalo ozitshalayo emhlabeni owodwa. Uma utshala izitshalo ezizodwa minyaka yonke endaweni eyodwa, izilwanyana ezidla lezo zitshalo zizokwanda. Uma utshala izitshalo ezahlukene njalo ngezikhathi zonyaka, izilwanyana ezihlasela izitshalo ebezitshalwe ngesikhathi sonyaka esedlule zizoswela ukudla ezizokudla bese, bese ziyafa.

Gqiba izithelo eziwile

Izithelo okuzalelwe amaqanda noma ezidliwa izilwanyana zivame ukuba ziwe esihlahleni. Gqiba lesi sithelo noma uvumele izingulube noma izinkukhu ukuba zizidle, ukuze kungaqhubeki ukuzalana kwezilwanyana.

Sebenzisa izibulalazinambuzane zokuzakhela

Ungazakhela izifutho zokubulala izinambuzane ezithile. Lezi zifutho azidali izinkinga ezidalwa izifutho zamakhemikhali. Nazo lezi zifutho zinabo ubuthi, ngakho kumele zisetshenziswe ngokucophelela. Ungasenzi isifuthi sibe nomuthi omningi ngokweqile, futhi ungazifaki kakhulu ezitshalweni zakho, ngoba lokho kungabulala izitshalo zakho. Ziningi izinhlobo ezahlukene zezifutho zokuzakhela zokubulala izinambuzane. Ezinye zazo nazi ngezansi.

Isifutho sikagalikhi: Qoba u-85g wezigaxa zikagalikhi bese ufaka izipuni ezimbili zikapharafini kugalikhi. Kucwilise ndawonye amahora angu-48, bese ufaka u-800ml wamanzi, bese ugreyithe u-7g wensipho i-Sunlight eqinile, uyifake kule ngxube. Vova ingxube yakho ngegozi, ebese uyifaka esitsheni sengilazi noma sikapulasitiki. Uma ufuna ukuyisebenzisa, yixube izikhathi eziyi -100. Uma udinga amalitha amahlanu esifutho, hlanganisa 50ml wengxube namalitha amahlanu amanzi. Lesi isifutho esibulala ama-aphids, uvemvane olumhlophe lweklabishi, inhlava, omiyane, iminenke, iminyundu. Uphinde ubalale ngisho nezinye izinambuzane, ngakho yisebenzise ngokucophelela! Iphinde isize ngokudambisa amabala amahlamvu kukhukhumba, nokugqwala kukabhontshisi.

Isifutho esejwayelekile: qoba u-anyanisi owodwa, upelepele owodwa kanye nesigaxa sikagalikhi esisodwa. Kucwilise emanzini amaningi

ubusuku bonke kungaveli. Kuxube izikhathi ezinhlanu ngaphambi kokuthi ukusebenzise. Lesi sifutho sixosha izinambuzane eziningi siphinde sibulale ne-fungus. Sisebenzise uma ubulala izinambuzane eziningi.

Amanzi anensipho: Xuba u-30g wensipho i-Sunlight egreythiwe nelitha elilodwa lamanzi. Goqoza ize incibilike insipho. Kusefe bese ukusebenza ukuxosha ama-aphids, maggots, leafcutters, mealybugs, izicabucabu ezibomvu nezimpukane ezimhlope. Uma unenkinga enkulu ngezinambuzane, faka ithispuni elilodwa likapharafini kule ngxube. Ungayisebenzisa insipho nakwezinye izifutho ukuze uqinisekise ukuthi ziyanamathela emaqabungeni.

QAPHELA UKUTHI EZINYE IZIBULALA ZINAMBUZANE ZEMVELO ZINOBUTHI NGAKHO, ZISEBENZISE NGOKUCOPHELELA.

Ukutshala izitshalo ezinhlobonhlobo

Lokhu kusho ukutshala izitshalo ezimbili noma ngaphezulu ezahlukune ndawonye. Uma kunohlobo olulodwa lwesitshalo endaweni enkulu, izinambuzane ezithanda lesi sitshalo ziba nokudla okuningi, ngaleyo ndlela zizalane zande. Izinambuzane zanda kalula ezitshalweni. Uma uzihlukanisa izitshalo zohlobo olulodwa ngokutshala ezinye izitshalo, utshale ezahlukene, izinambuzane kufanele zifune ezinye izitshalo ezizozidla. Izinambuzane azandi kalula ezitshalweni ezinempilo.

Ukugququzela izitha zemvelo zezinambuzane

Ziningi izilwane ezidla izinambuzane ezidla izitshalo. Lezi zilwane ezidla izinambuzane zibizwa ngezilwane ezidla ezinye noma izitha zemvelo, ziyasiza ekwehliseni isibalo sezinambuzane. Ukufutha ngezibulalizinambuzane ezingamakhemikhali kungazibulala lezi zilwane ezidla ezinye noma izitha zemvelo. Izibonelo zalezi zitha zemvelo izibankwa, unwabu, izinyoni ezidla izinambuzane okungabalwa kuzo izinkukhu, amadada, ibhungane nezibungu, uqogo, izicabucabu, amabhungezi nezinye izilwanyana ezindizayo ezidla izinambuzane.

Singagququzela ukuhlala kwalezi zitha zemvelo ngokuyeka izindawo ezingamahlathi ukuze kuhlale izilwane ezithanda lolu hlobo lwendawo. Izitha zemvelo ziza ezingadini zisuka emahlathini bese zisiza ukulawula

izinambuzane ezihlasela izingadi. Ngokwenza indawo yokuhlala izitha zemvelo, nokugququzela ukuhlukahlukana kwezemvelo, singenza ngcobo kakhulu ukulawula izinambuzane.

Izibankwa zidla izinambuzane kakhulu kanti yizona ezihlasela kakhulu izitshalo. Ngokwakha indawo ehlala izibankwa, sikhuphula isibalo sezibankwa ezingadini zethu bese silawula kangcono izinambuzane.

Ukwakha izindawo ezihlala izibankwa

Uzodinga:

- amatshe, izimbokodo, amathuluzi okugubha, izitshalo, izingodo, umquba Izibankwa zithanda amatshe nezimbokodo ukuze zithamele ilanga. Zithanda nezingodo ezizocasha ngaphansi kwazo kanye nemigodi engaphansi eyomile ebusika ukuze zicashale izilwane ezifuna ukuzidla. Ingadi yezibankwa kufanele isondelane nengadi yokudla, ukuze izilwane zethu ezidla ezinye izilwane zizokwazi ukuba seduze ukudla izinambuzane.

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Imithombo Yolwazi

Izincwadi:

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