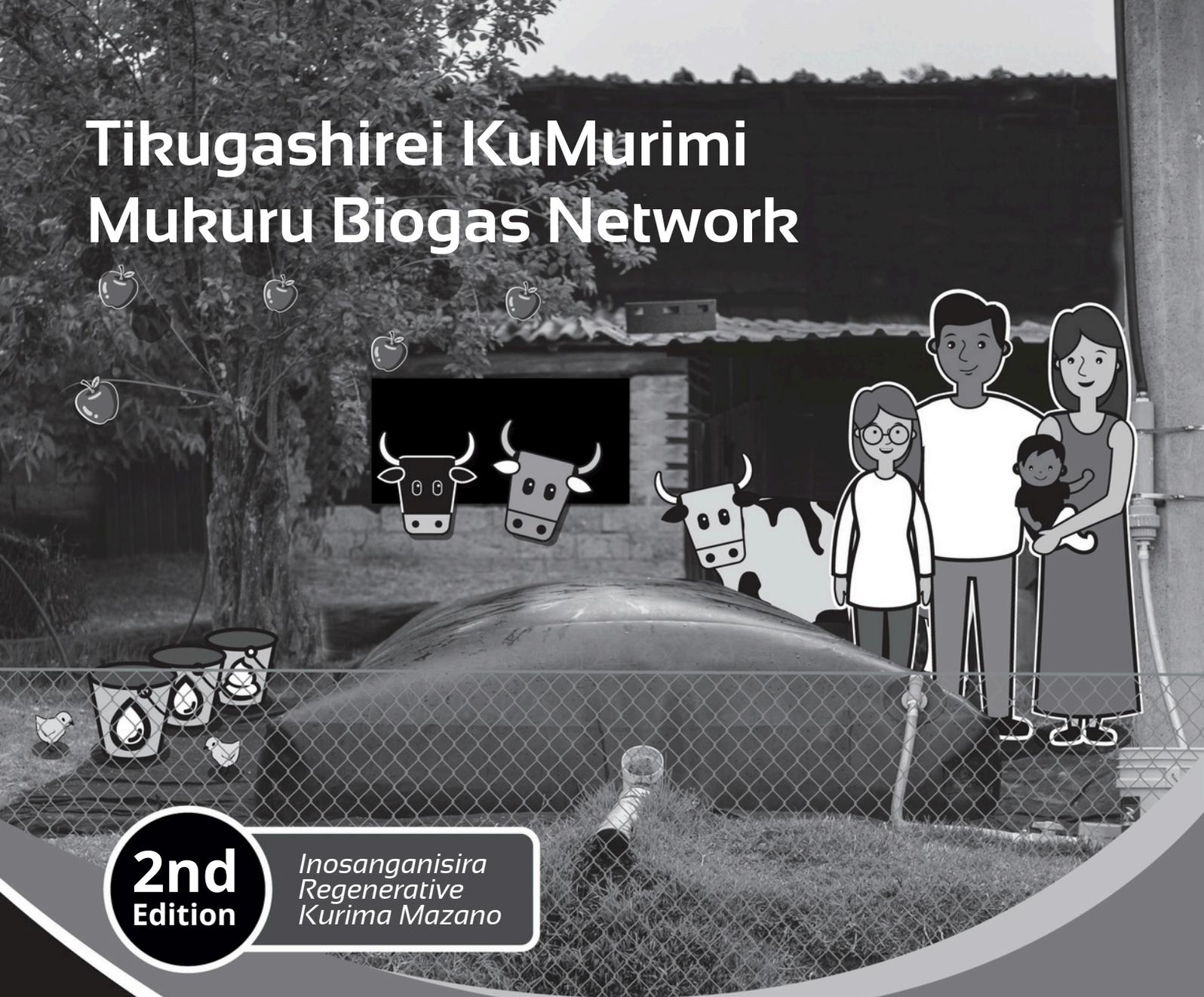


Tikugashirei KuMurimi Mukuru Biogas Network



**2nd
Edition**

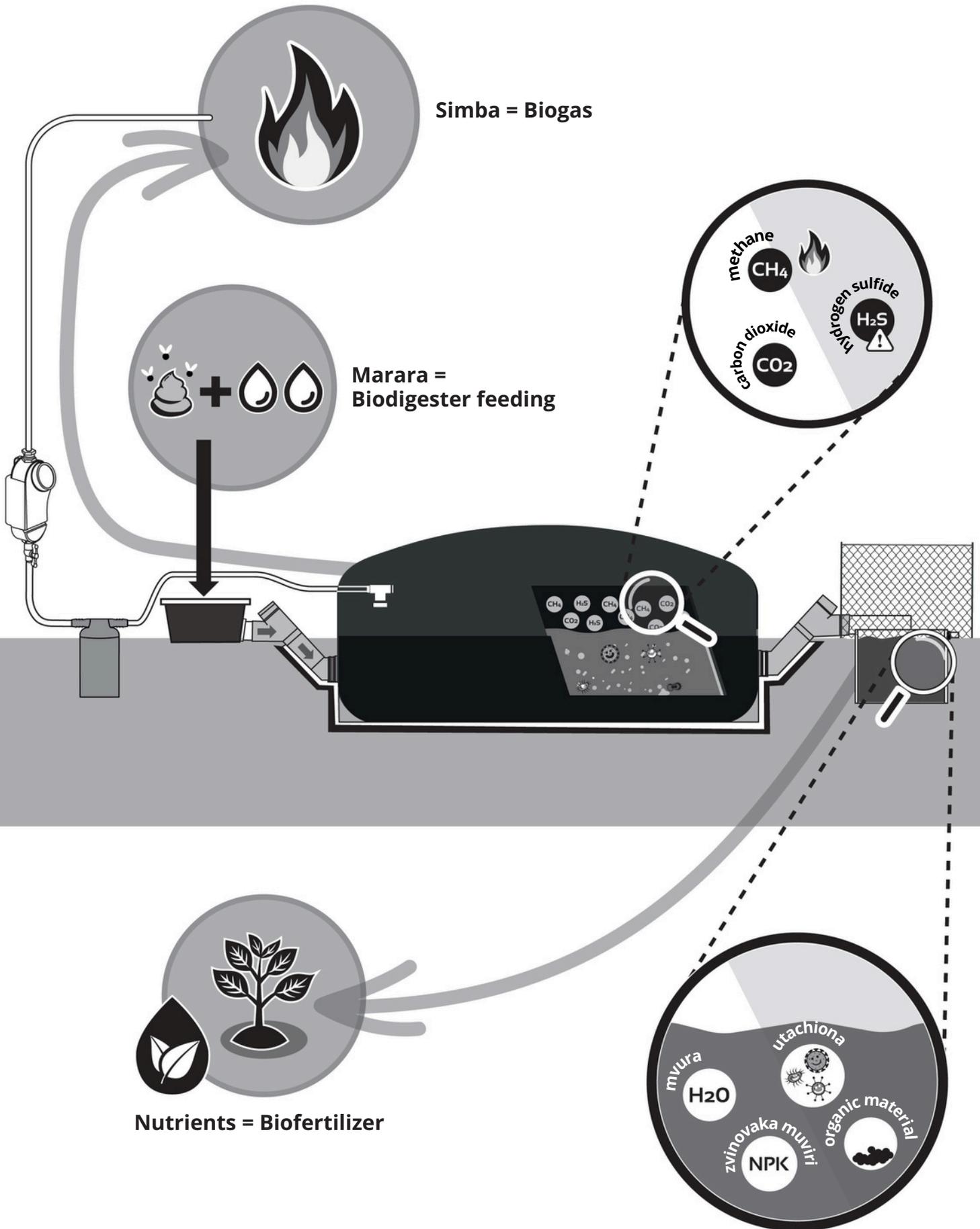
*Inosanganisira
Regenerative
Kurima Mazano*

Wana Zvakanyanya Kubva Pauri
Biodigester!

ZVIMWE ZVEKUSHANDISA

 **SISTEMA.bio**®

Kunzwisisa Biodigester Yako

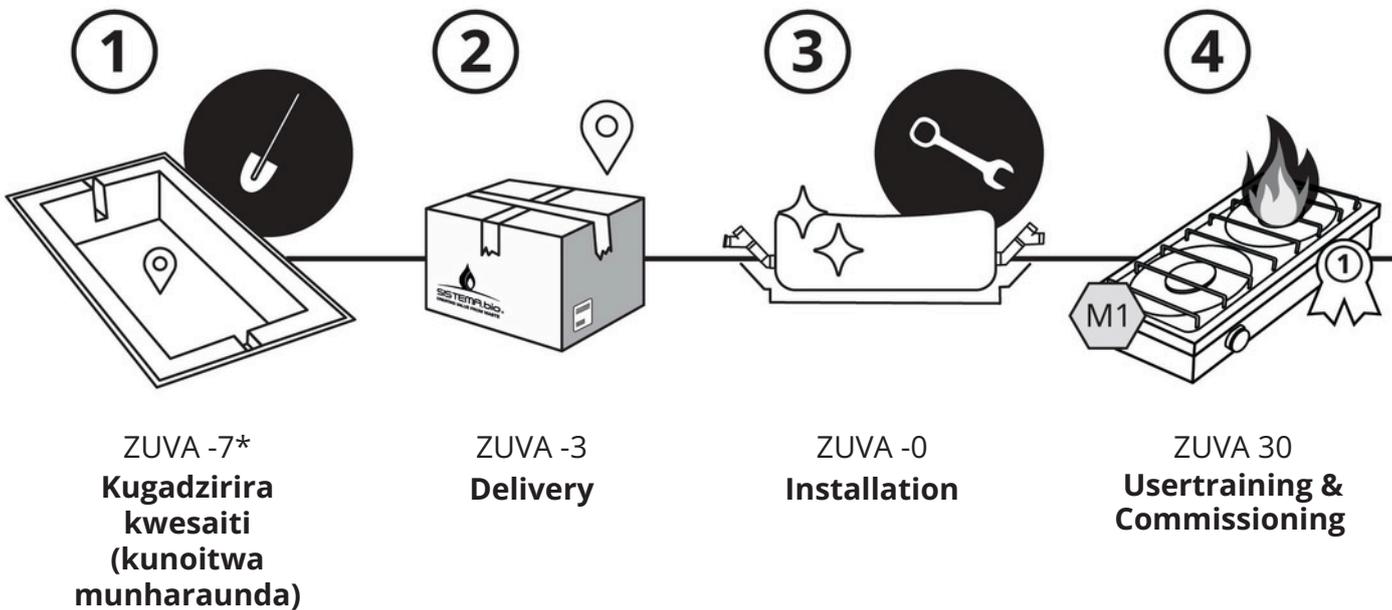
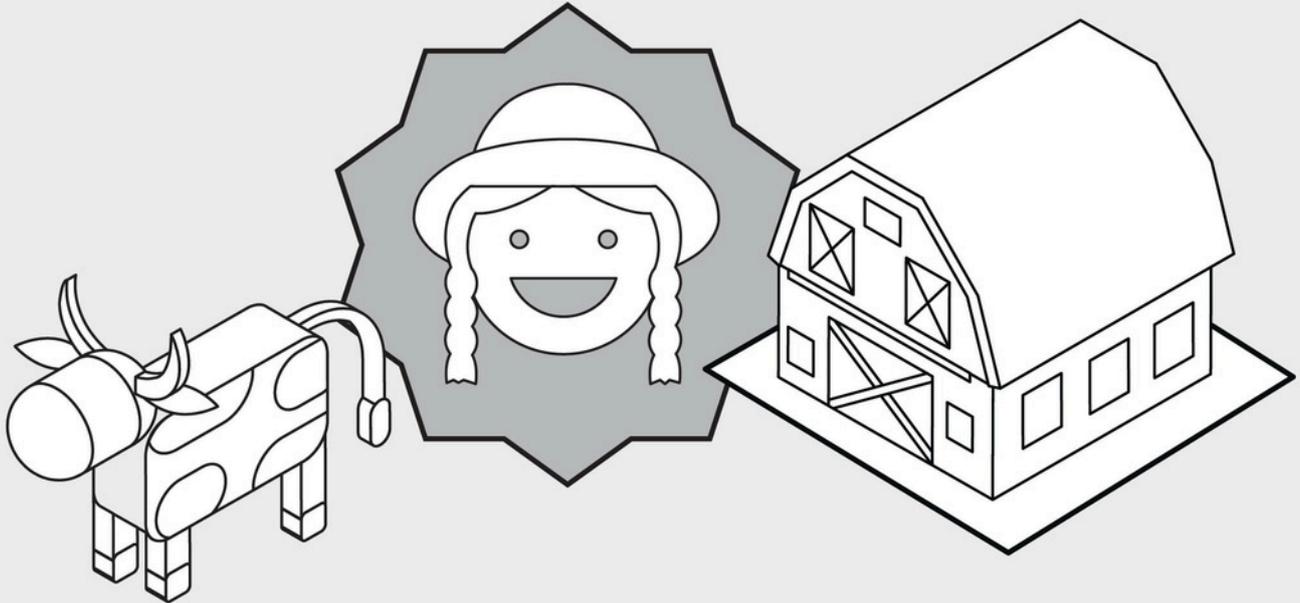


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Rwendo Rwako NeSistema.bio

Iwe urikukwira rwendo rweSistema.bio digester!



Monitoring

MX Monitoring kushanya

* Mazuva ese ane fungidziro uye anodzidzisa. ** Inogona kuunza mubhadharo sekuenderana newaranti policy.

Ndezvipi zvinobatsira zveRwendo rweMutengi wako?



1 gore waranti yemutsara wegesi & midziyo, uye makore gumi kune dema membrane yebiodigester!



Mashoma matatu ekushanya kwemuviri anofukidza kuisirwa, yako mushandisi kudzidziswa uye nekutevera kwekuisirwa.



Mushure mekutengesa sevhisu iripo kuti upindure chero kusahadzika kwaungave uine kana kugadzirisa pakuisa kwako pazvinenge zvichidikanwa!

5



M2

ZUVA 90
Adoption call
& sarudzo
yekushanya

6



M3

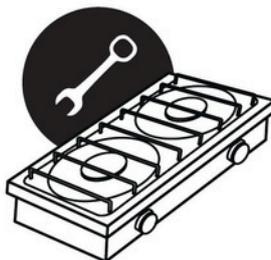
ZUVA 180
Impact kuyerwa &
Kudzidziswa

7



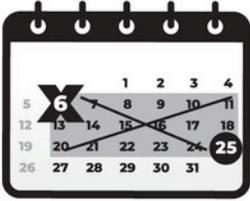
GORE 5

Proactive Installation
kugadzirisa **



ZVICHIPERA
PAZVINODIWA
Kushanya
kwesevhisu**

Glossary Yezviratidzo uye Icons

General Icons	
	USA
	ITA
	Frequency
	Counterweight
	Ivhu
	Mutengi asina kufara
	Favourite/ Zvisizvo mhedzisiro yezvakatipoteredza
	Reuse/recycle

Safety Icons	
	Biogas kuvunza/ku donha
	Ngozi yemoto
	Kuchen jerera
	Inou raya

Zve USER



Kana ukasangana nechero nyaya paunenge uchishandisa system yako, tarisa kune matanho ekugadzirisa matambudziko ari pamapeji 34-39 mubhuku rino Kana dambudziko rikaramba riripo, usazeze kubata rubatsiro rwevatengi kuti uwane rutsigiro.



Youtube vhidhiyo uye nhamba yereferensi kubva pane youtube runyorwa.

Zve TECHNICIAN



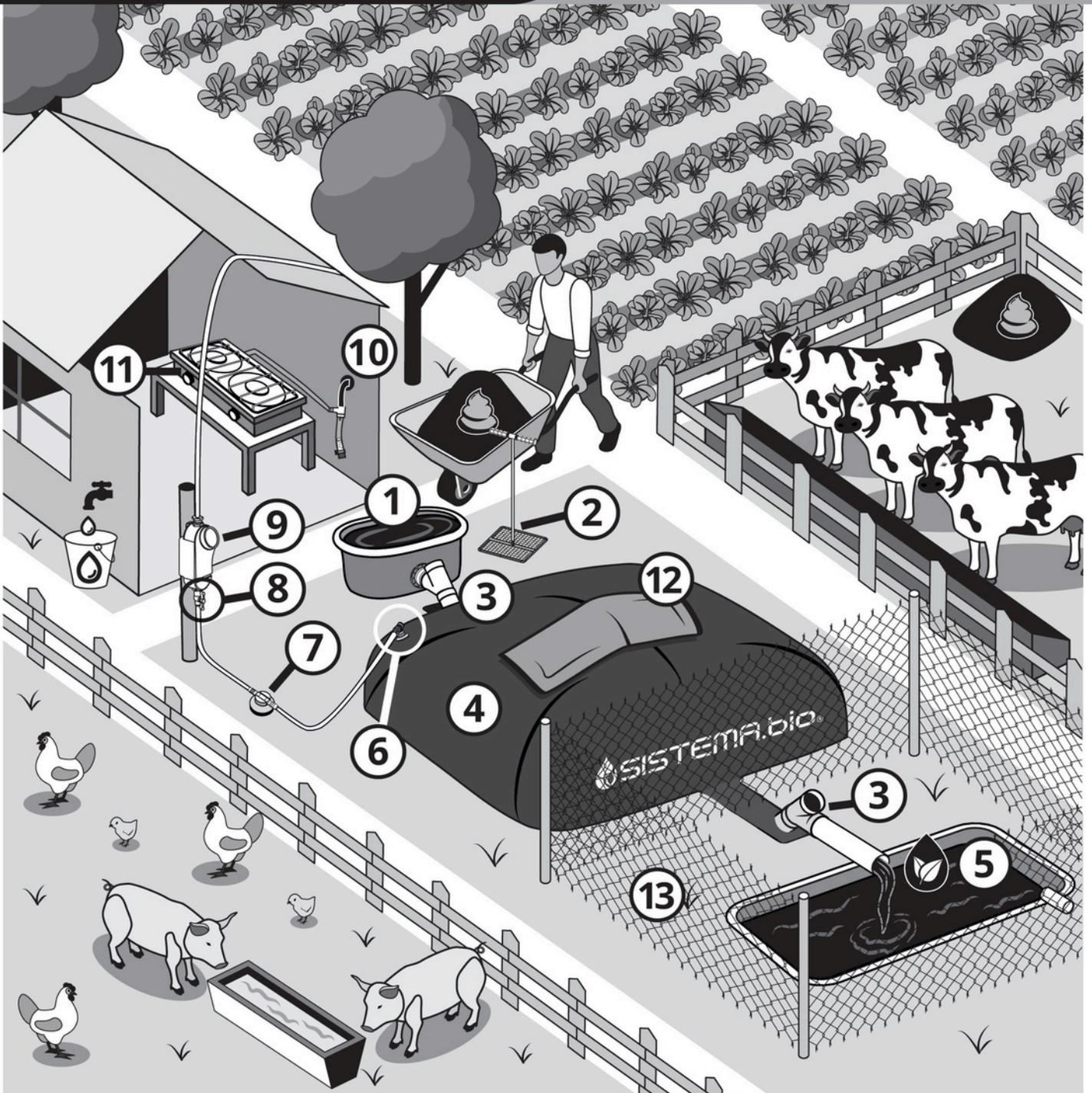
Tevedzera zvinyorwa zvemubatsiri zvakapihwa pazasi pepeji kuti uone mapeji ekuvhara panguva yekushanya chaiko.



Nepeni, denderedzwa/simbisa wozadza zvakadzama pamapeji 20, 40, 41, 42, 43 nemamwe mapeji akakodzera.



Skena iyi QR kodhi kuti uwane iyo master playlist nemavhidhiyo ese akaiswa mubhuku rino. Mukati mebhuku rese, iwe zvakare unowana maitiro-chaiwo playlists akarongeka kwaunoda iwo.



Ziva zvinhu zvekuisa kwako

- | | | |
|---|--------------------------|--------------------------------------|
| 1. Tangi yekudyisa | 6. Biogas kubuda | 11. BioStove |
| 2. Musanganisi wemupfudze | 7. Kudzvinyirira vharafu | 12. Counterweight |
| 3. Piping yekupinza uye yekuburitsa reactor | 8. Isolation valve | 13. Biofertilizer tank kuchengetedza |
| 4. Biodigester | 9. Biogas sefa | |
| 5. Biofertilizer tank | 10. Musungo wemvura | |

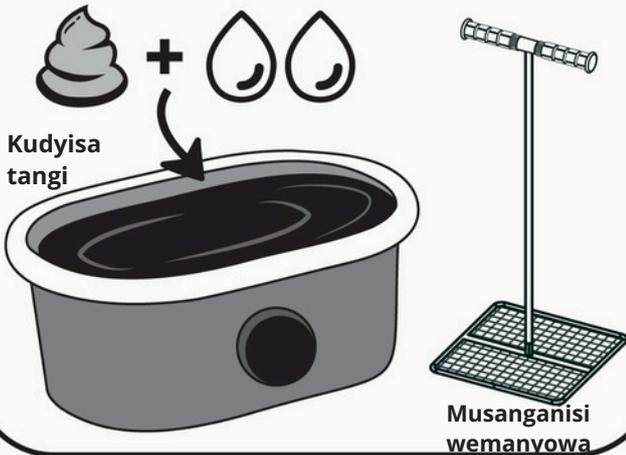
Cherechedza: Zvikamu zvinogona kusiyana zvichienderana nenharaunda uye mamiriro emunharaunda yeprojekti.



Biodigester Inoshanda Zvikamu

1

Tangi yekudyisa: Tangi rinogara kwenguva refu rinokutendera kusanganisa ndove nemvura uchishandisa musanganiswa wemanyowa. Inokubatsirawo kuona uye kubvisa zvisingadiwe zvinhu.



7

Pressure relief valve (PRV): Inodzora kudzvanywa mu biodigester uchishandisa mvura yekupikisa-kumanikidza.



5

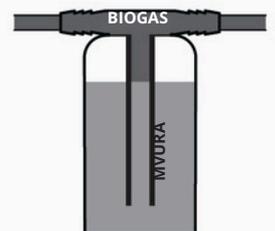
Biofertilizer tank: Inobvumidza iwe kuchengetedza biofertilizer yako usati waishandisa!



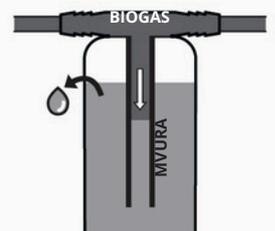
CHERECHEDZA: Zvese izvi zvikamu zvinoda nguva dzose kushanda uye kugadzirisa zviito sezvakatsanangurwa gare gare mubhuku rekushandisa!

Zvikamu zvinogona kusiyana zvichienderana nedunhu uye mamiriro enzvimbo yeprojekiti.

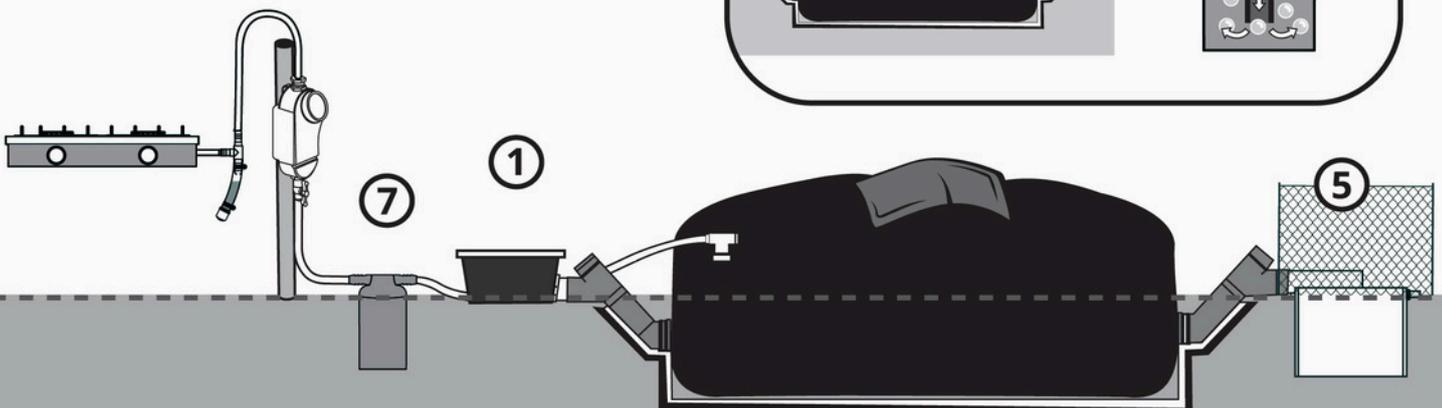
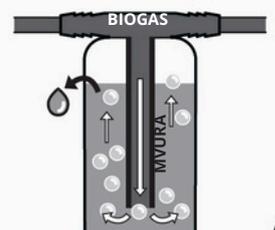
a. KUDIKIRWA KWAKADZIKA



b. KUDIKIRWA KUNOWEDZERA



c. KUDIKIRWA KWAKURU

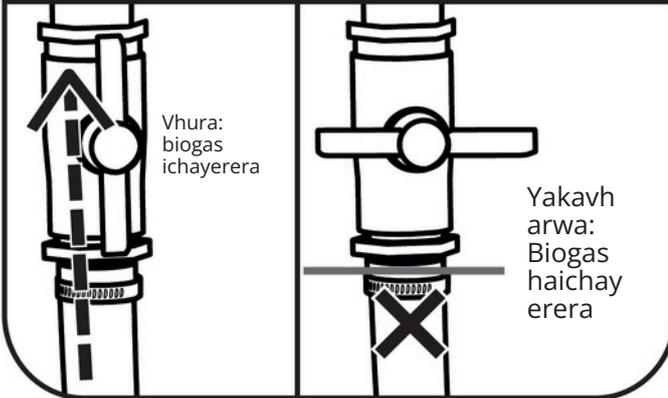




Biodigester Inoshanda Zvikamu

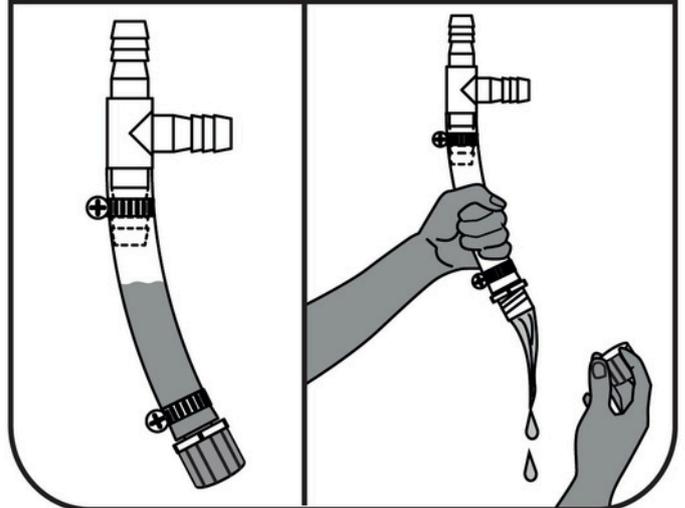
8

Isolation valve: Inokubvumira kuvhara uye kumisa kuyerera kwebiogas.



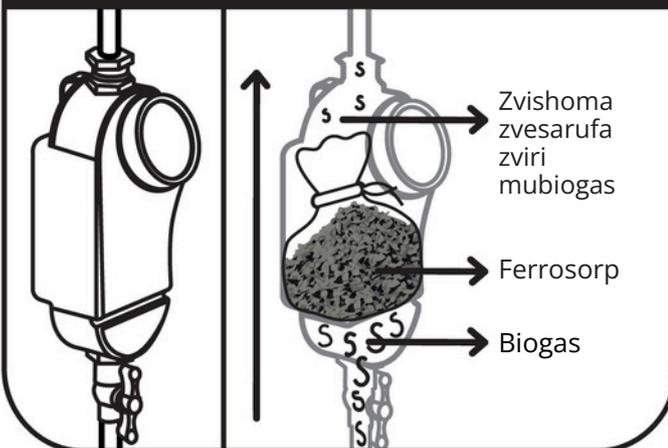
10

Musungo wemvura: Kana tembiricha yadonha, mvura iri mubiogas inodonhedza uye inounganidzwa nemisungo yemvura.



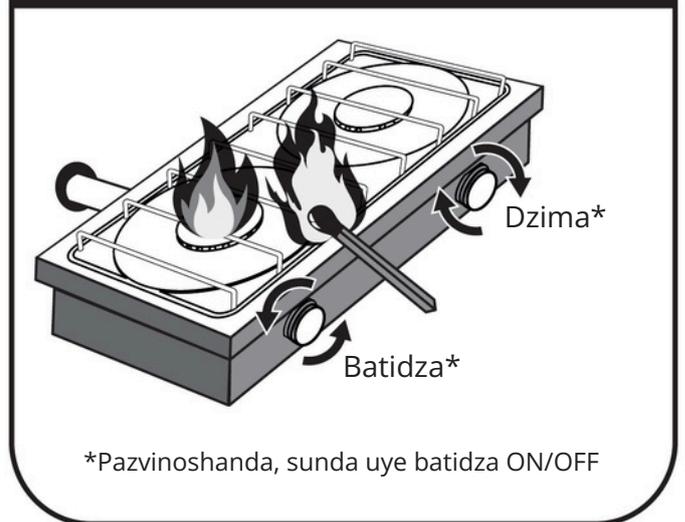
9

Biogas filter: Inobvisa H₂S kubva kubiogas, zvichiita kuti sisitimu ive yakachengeteka uye kuwedzera hupenyu hwemidziyo yesimbi.

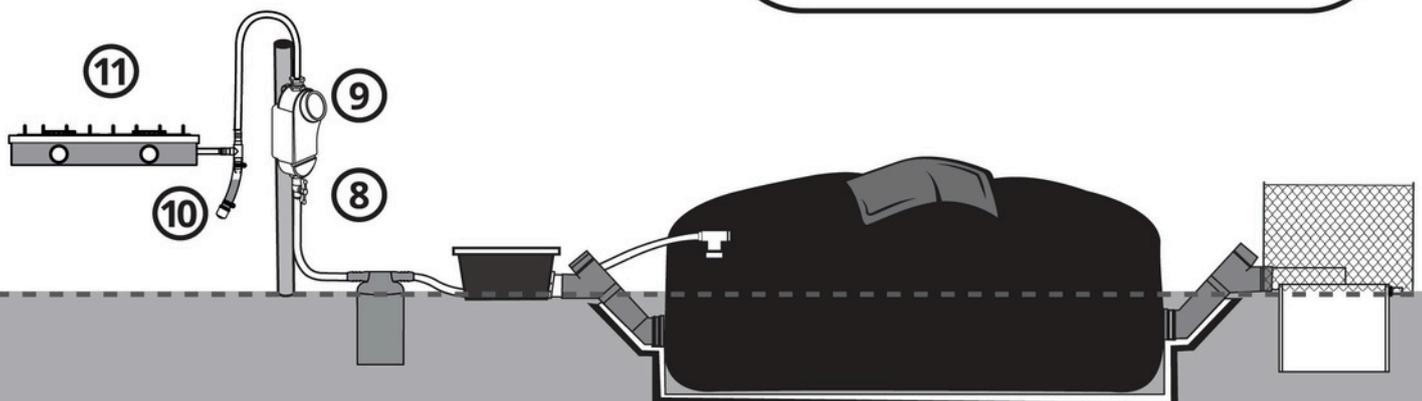


11

BioStove: Chishandiso chinosaursirwa mune yakajairika kit.



CHERECHEDZA: Zvese izvi zvikamu zvinoda nguva dzose kushanda uye kugadzirisa zviito sezvakatsanangurwa gare gare mubhuku rekushandisa!
Zvikamu zvinogona kusiyana zvichienderana nedunhu uye mamiriro enzvimbo yeprojekiti.





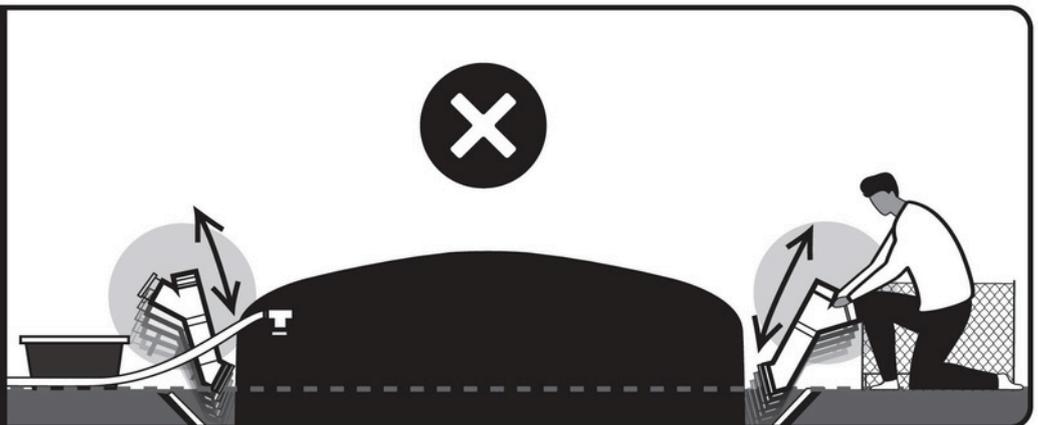
Safety

Biodigester

USA
 bvumira vana
 vasina kutarisirwa
 vakatenderedza
 digester,
 USASvetukira
 pamusoro kana
 kumhanya pane
 digester.



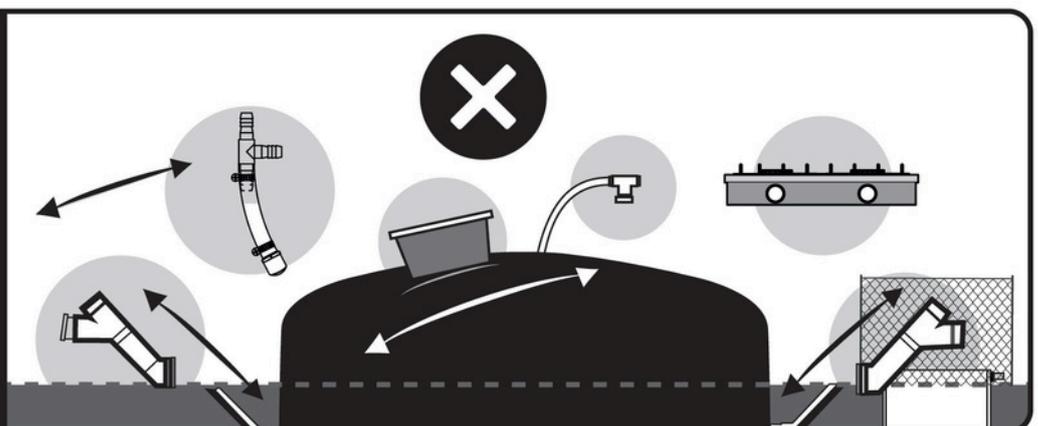
USA
 kudhonza,
 kusimudza kana
 kusimudza mwero
 wepombi
 dzinopinda kana
 kubuda
 the digester.



USA
 utsi, shandisa
 zvinhu zvinopinza
 kana kugadzira
 mirazvo pedyo
 biodigester
 nzvimbo.



USA
 kuchinja the
 nzvimbo
 yebogas
 components.





Safety

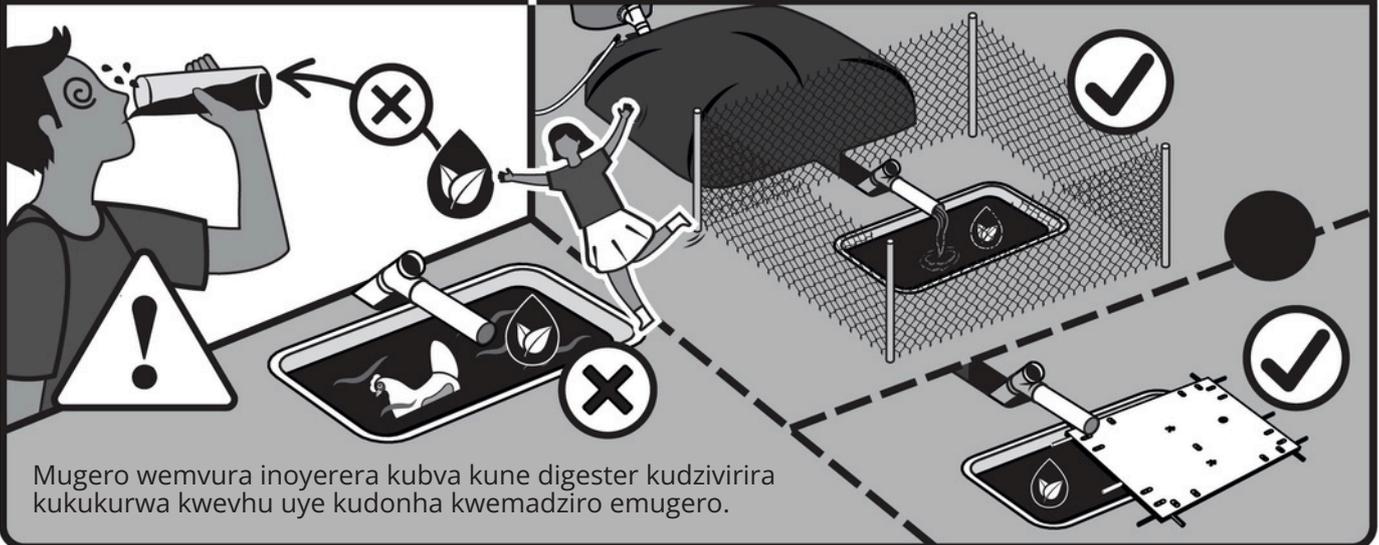


Biofertilizer

SISTEMA.bio

USADA kunwa biofertilizer, dzivirira kusangana nemeso uye ganda.

WEDZERA FENCE KANA KAVHA yakatenderedza tangi rako rebiofertilizer kudzivirira tsaona. Kavha yacho ngaive isingaite mwana, yakasimba zvekukwanisa kumira 30 kg, inogara kwenguva refu, uye iine nzvimbo shoma yekudzivirira mhuka nevana kuwira mukati.



Mugero wemvura inoyerera kubva kune digester kudzivirira kukukurwa kwevhu uye kudonha kwemadziro emugero.



1. Shandisa magirovhosi kubata manyowa uye biofertilizer.

2. Geza maoko ako mushure mekubata.

1. MIRA kuisa biofertilizer kwasara masvondo matatu kukohwa.

2. GEZA michero nemiriwo usati wadya.



1.

CALENDAR

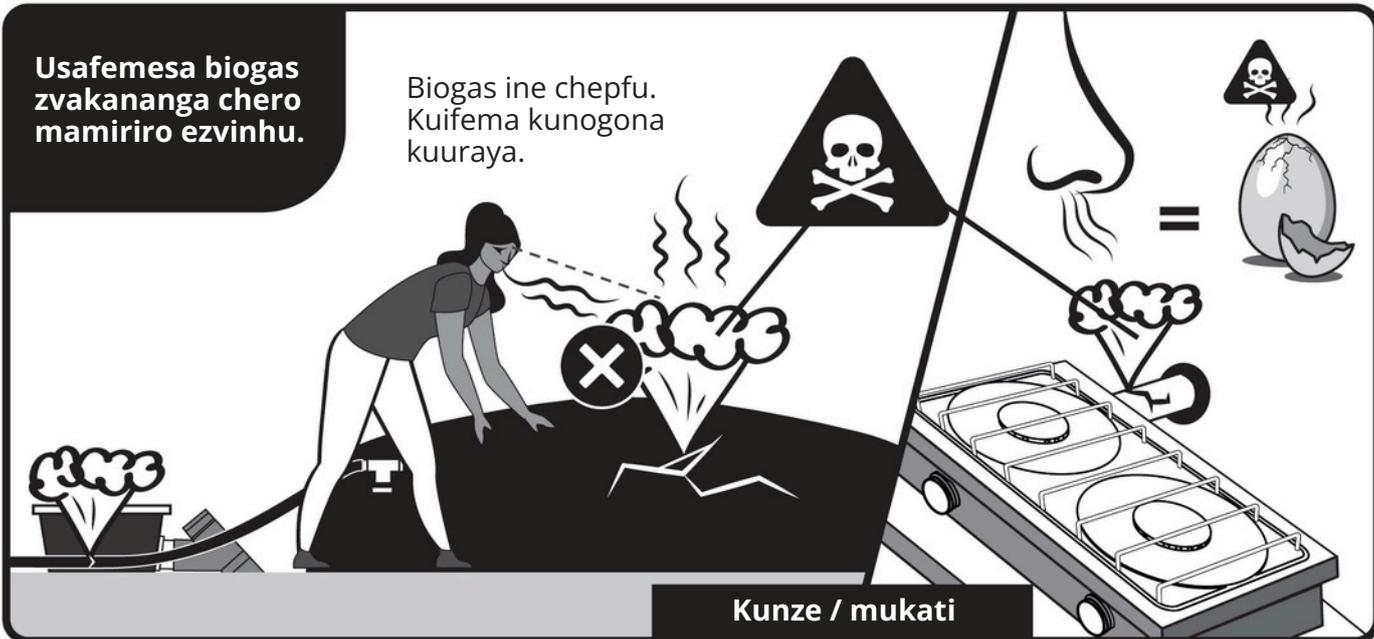
	1	2	3	4
6	7	8	9	10
12	13	14	15	16
19	20	21	22	23
26	27	28	29	30
				31

2.



Usafemesa biogas zvakananga chero mamiriro ezvinhu.

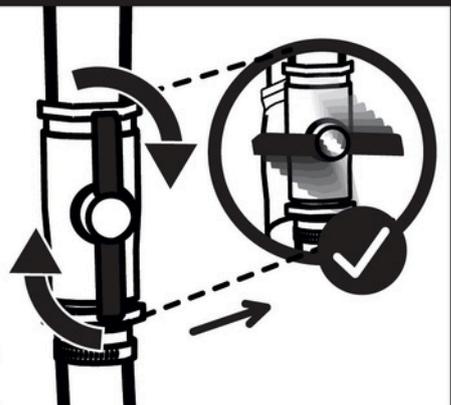
Biogas ine chepfu. Kuifema kunogona kuuraya.



1. Kubuda kwebiogas kunogona kunhuwa kunge MAZAI AKAora.

2. Kana pakange pabuda mvura mumba, ibva paimba sezvo paine njodzi yemoto uye chepfu.

3. VHARA vharafu yekuzviparadzanisa nevamwe kuti UMISE kuyerera kwebiogas.



4. VENTILATE mumba kuti gasi ripere.

5. ONA uye GADZIRA panobuda.

6. FANA basa rako rekuchengetedza vatengi rekugadzirisa kwenguva refu.





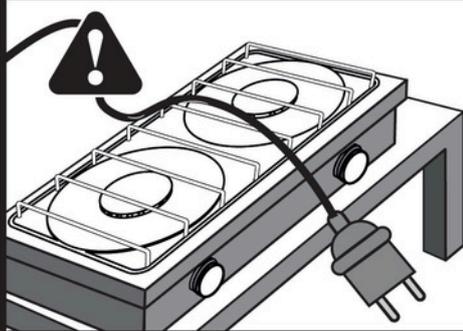
Safety



Biogas

SISTEMA.bio

USArega chero waya kana zvinongedzo zvichienda pamusoro pechitofu. Isa iyo BioStove panzvimbo yakasimba uye yakatsiga.



USAisa maketeni kana chimwe chinhu chinopisa pedyo nerimi remoto.

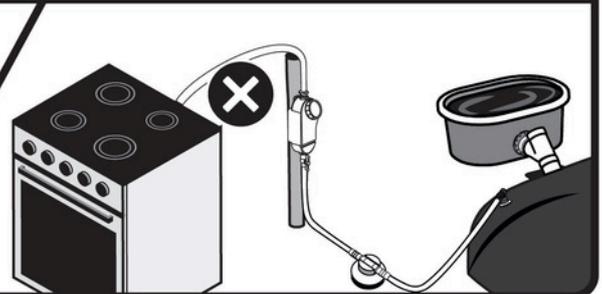
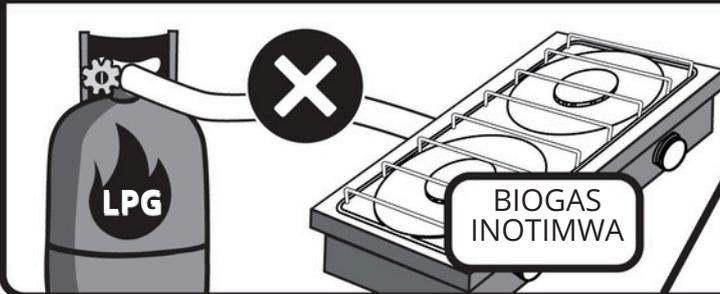


CHENJERA paunenge uchishandisa BioStove sezvo uchigona kuzvipisa.

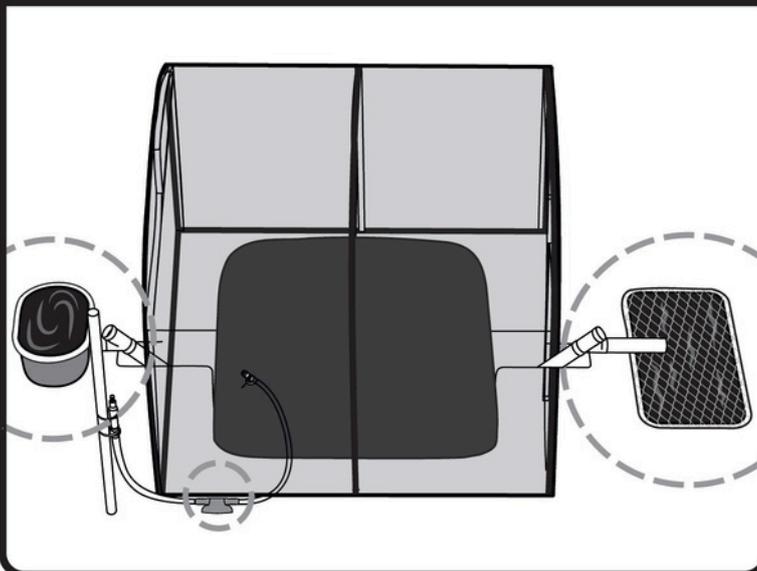


USAbatanidza iyo BioStove kune chero gasi kunobva kunze kweiyu biodigester.

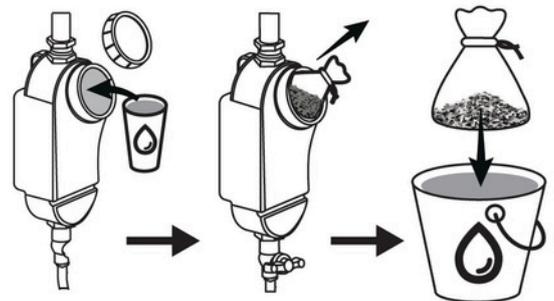
USAbatanidza mutsetse webiogas nechitofu chegasi chaiwo.



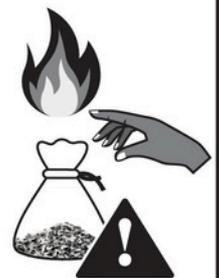
KANA BIODIGESTER IKAIKWA MUGREENHOUSE, vharafu yekuyamura uye tangi yebiofertilizer inofanira kuiswa kunze kwegreenhouse. Iyo greenhouse inofanirwa kufefeterwa zvizere isati yapinda.



Kuchengeteka Panguva Yekuzvarwa patsva



Mushure mekuvhara vharuvhu uye kusunungura chivharo, dururira litre yemvura musefa, zvino mushure mekubvisa bhegi kubva musefa yebiogas panguva yekuzvarwa patsva, inyika mubhakiti remvura kudzivirira kupisa uye kukonzera moto.



*kana filtration media iri mumhepo.



Biodigester Kutanga



Skena kana kudzvanya paQR macode padivi pe document.

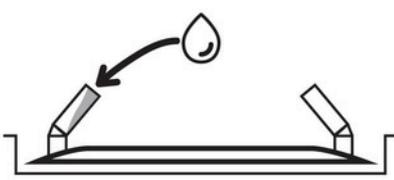
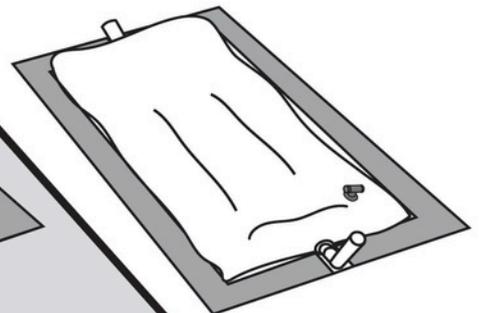
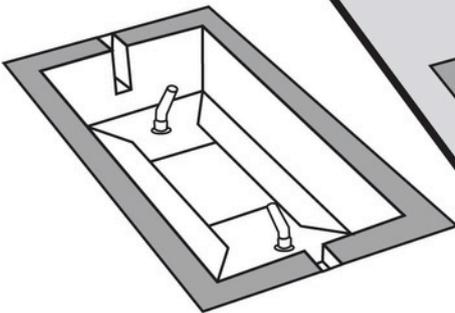


Skena kana kudzvanya pane iyi QR kodhi kuti uwane mavhidhiyo anotsigira chikamu "Biodigester kutanga".

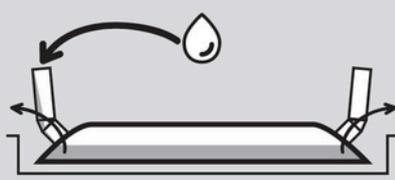
STEP 1 Zadza reactor nemvura kusvika mvura yasvika panopinzwa nepamagokora.



(i5)



Kuzadza = 0%



Kuzadza = IN PROGRESS



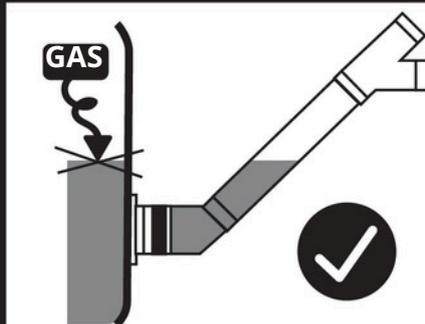
Kuzadza = 100%



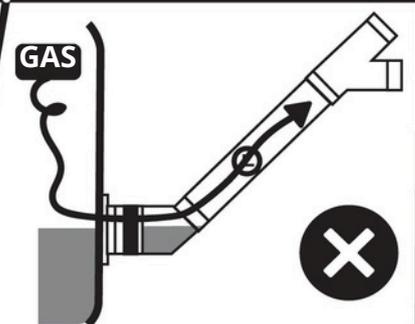
Mvura inodiwa kuzadza biodigester

	m3	marita
Sisitimu 6	3	3,000
Sisitimu 8	4	4,000
Sisitimu 12	6	6,000
Sisitimu 16	8	8,000
Sisitimu 20	10	10,000
Sisitimu 30	15	15,000
Sisitimu 40	20	20,000

Yakanaka hydraulic seal: gasi iri yakavharirwa mukati me reactor.



Hapana hydraulic seal: gasi rinogona kupukunyuka.





QR CODE yemavhidhiyo ari papeji 13

STEP 2
Zadza PRV nemvura kusvikira yafashukira.

STEP 3 Vhara mutsetse wegesei.

(OM3), (OM3bis), (OM4)

STEP 4 Kutanga kudyia.

Tinokurudzira kushandisa manyowa emombe kutanga kudyia.

Kuchengeta mupfudze wakaturikidzwa pasi petepi kwemazuva mashanu kusati kwatanga kudyisa kutanga kwe digester.

Wedzera yakawanda biofertilizer (inonziwo digestate kana bioslurry) sezvinobvira kubva kune inoshanda digester kupfupisa nguva yekutanga.

STEP 4 **ZVINHU ZVOKUTANGA KUDYIA**

	Mupfudze wemombe Kutanga kudyia - L kana Kg			Mupfudze wemombe Kutanga kudyia - 20L mabhakiti		
	Kudziya >23 °C	Temperate 15 kusvika 23 °C	Kutonhora 12 kusvika 15 °C	Kudziya >23 °C	Temperate 15 kusvika 23 °C	Kutonhora 12 kusvika 15 °C
SIS 6	450	350	250	23	18	13
SIS 8	650	500	350	33	25	18
SIS 12	900	650	450	45	33	23
SIS 16	1300	1000	650	65	50	33
SIS 20	1800	1350	900	90	68	45
SIS 30	2600	2000	1350	130	100	68
SIS 40	3500	2650	1800	175	133	90

DILUTE
1 chikamu ndove yemombe ne 2 zvikamu zvemvura

*Cherechedza: Kune chero imwe mhando yemarara, nyanzvi yako ichanyora mirairo papeji 40 yebhuku rino.

Muenzaniso: SYSTEM 6
Mamiriro okunze anodziya

450L kana Kg kana 23 mabhakiti + **900L kana Kg kana 46 mabhakiti**

Bvisa zvinhu zvinotevera kubva mumupfudze usati wadyisa mugayi.

BVISA

- Jecha, matombo - Huswa, fiber, mashizha, huni, huni machipisi - Ivhu - Plastiki, simbi, girazi - Citric michero - Mafuta ekubikisa, sezvo anogona kukonzera nyaya dzekushanda.



QR CODE yemavhidhiyo ari papeji 13

MUSADYA nendove yemhuka dzawapihwa
antiviral kana mishonga inorwisa mabhakitiriya mukati
memazuva mashanu apfuura.



<5 mazuva
asati adya

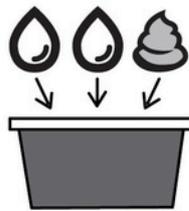
Matanho ekudyisa*



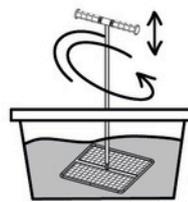
(OM7)



1. Dilute mupfudze.
2. Shandisa musanganisi weManyowa kusanganisa mupfudze nemvura.
3. Rega musanganiswa (slurry) uzorore kwemaminitsi mashanu.
4. Bvisa zvinhu zvinoyangarara.
5. Dyisa reactor.
6. Bvisa zvinhu zvekugadzika sematombo nejecha nguva nenguva.



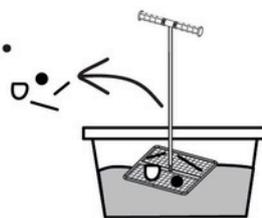
1.



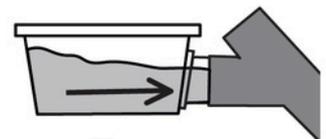
2.



3.



4.



5.



6.

*Inoshanda yekutanga kudya pamwe nekudya kwemazuva ese.



MIRIRA KUTI REACTOR AITE

NGUVA YEKUFIRIRA:*



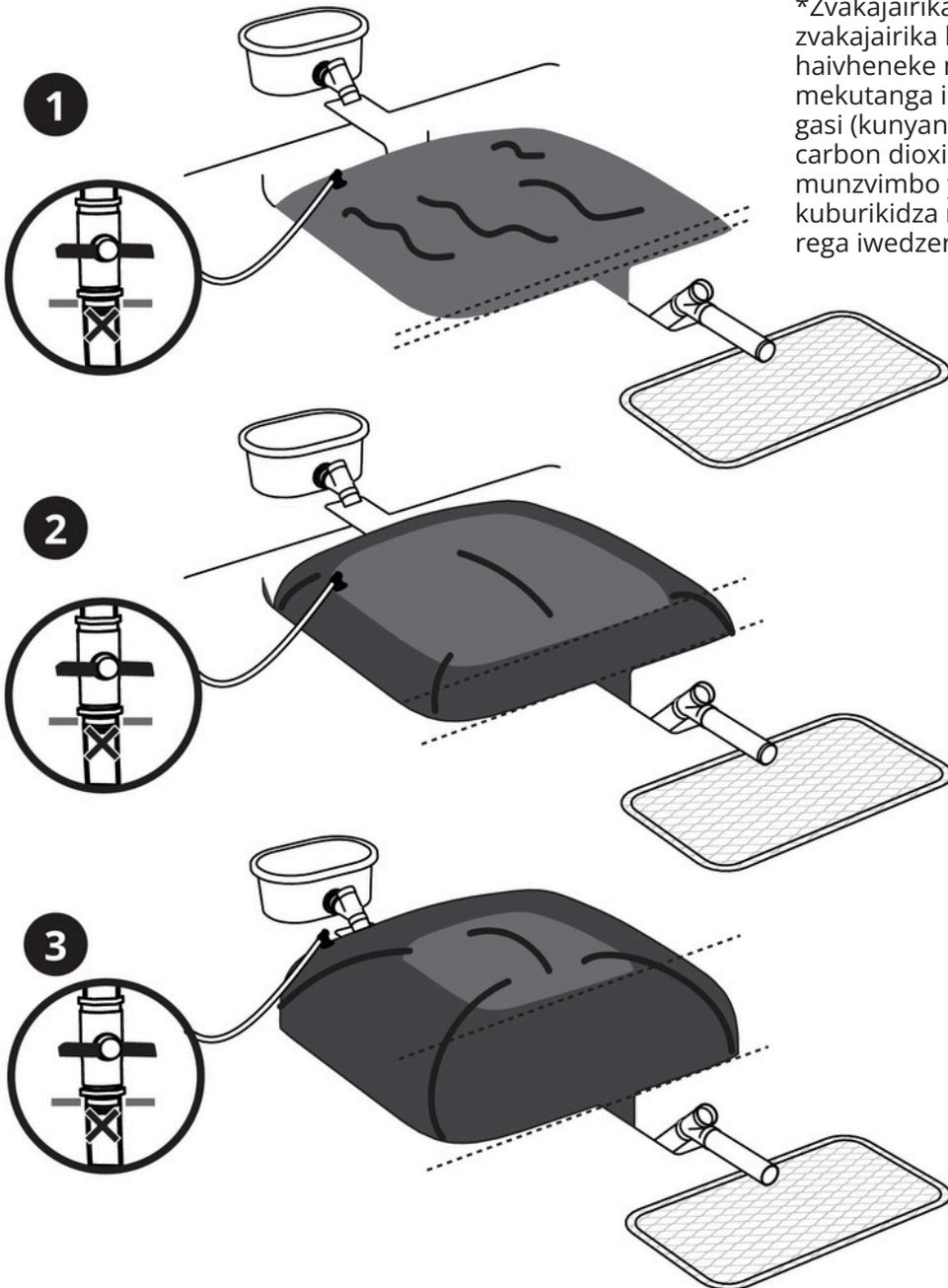
Kusvika mavhiki matatu mukudziya kwemamiriro ekunze / mwaka



Masvondo matatu kusvika kumwedzi 1.5 mumamiriro ekunze anodziya/mwaka



1.5 kusvika 2.5 mwedzi yekutonhora kwemamiriro ekunze / mwaka



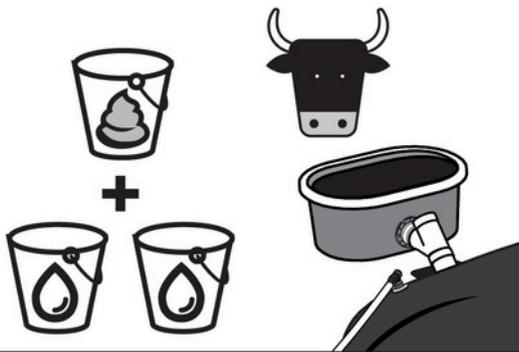
*Zvakajairika uye zvakajairika kuti biogas haivheneke mushure mekutanga inflation: bvisa gasi (kunyanya ine CO₂ - carbon dioxide) kunze munzvimbo yakashama kuburikidza nePRV, uye rega iwedzere zvakare.



Chengetedza Digester Yako

KUDYA. Dyisa digester yako MAZUVA ESE ne vhoriyamu imwe yendove yemombe uye mavhoriyamu maviri emvura.

CHERECHEDZA: kune mamwe marudzi emarara, ndapota bvunza nyanzvi yako.

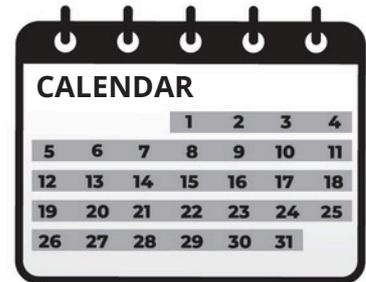


Kudya kwezuva nezuva*

*Ona matanho ekudyisa ari papeji 10



(OM8)



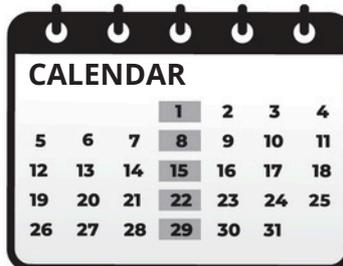
KUNYANYA

Gadzirisa kamwe pasvondo

MUSA kudzungudza



Gadzirisa chete kana digester iripo
DEFLATED



PAINFLATED

1

Bvisa chero chinhu chakapinza kubva shangu kuti usakuvadza reactor

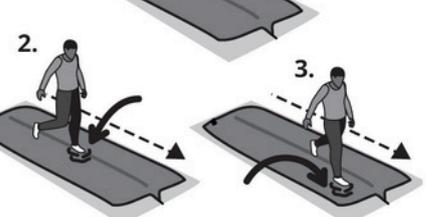
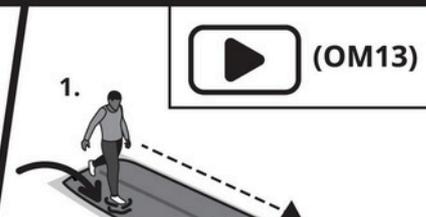


3

Gadzirisa nekufamba zvishoma nezvishoma pamwe nebiodigester yako, uchishandura huremu hwako hwose kubva kune rimwe gumbo kuenda kune rimwe.



System 6 kusvika 12



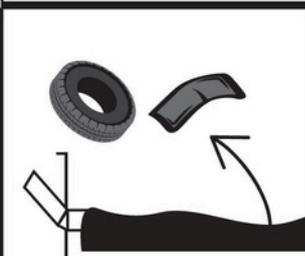
System 16 kusvika 40



(OM13)

2

Bvisa counterweights usati watanga kubvongodza





MEMBRANE DAMAGE REPAIR

1. GEZA nesipo nebhurasho



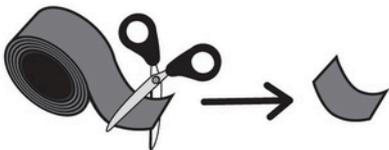
2. SIRIDZA nemvura yakachena



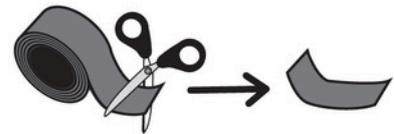
3. DRY the membrane



4. ISA chidimbu chidiki chebutyl tepi



5. ISA imwe hombe inovhara chigamba chekutanga



CHERECHEDZA: iyi inguva yepakati kugadzirisa yekubvumidza iwe kushandisa yako reactor! Ndapota fonera vatengi vako kuti vagadzirise kwenguva refu.

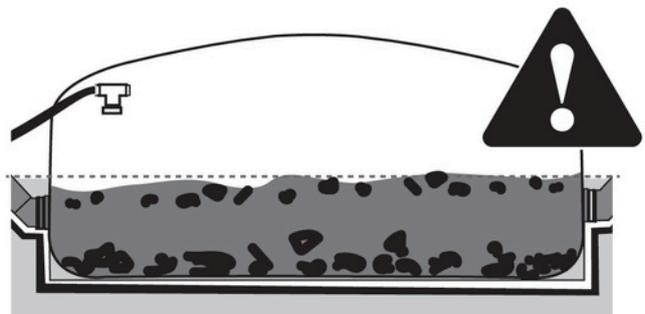
KUTARIRA KWENGUVA YAREFU

Inguvai painodiwa kudzorera digester?

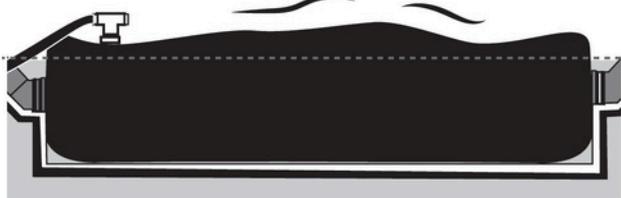
CALENDAR

Ese 5 kusvika 7 YEARS kana chero nguva zvinodiwa.

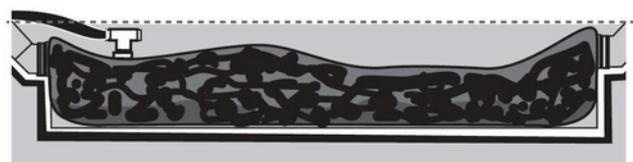
• Kana paine zvinyoro zvakaunganidzwa mukati.



• Kana isina kubvongodzwa kwenguva refu.



• Kana mvura isina kukwana yawedzerwa. Iyo digester ichave yakanyanya kurema mune undiluted slurry / yakaoma kubvongodza.

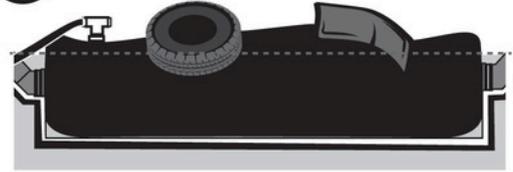




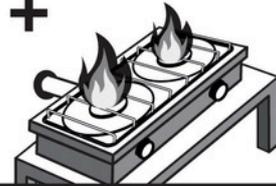
Maitiro: Kuita zvakare digester

1. Deflater digester nekushandisa counterweights, apo uchishandisa zvose zvinopisa zveBioStove kupisa biogas yasara.
2. Sungunusa digester zvine simba.
3. Bvisa digester ne 3" slurry pombi pasi kusvika pahafu yehurefu hwegoronga.
4. Dzvanya nesimba.

1



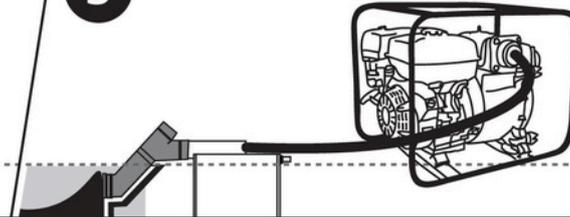
+



2



3

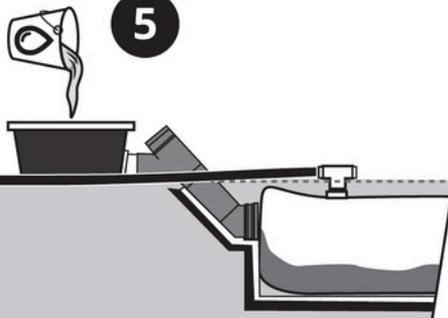


4



5. Zadza nemvura.
6. Dzvanya nesimba.
7. Dhonza digester pasi kusvika hafu yekukwirira kwegoronga.
8. Zadzave nemvura.
9. Ramba nekudya kwekutanga (tevera matanho ari papeji 15).

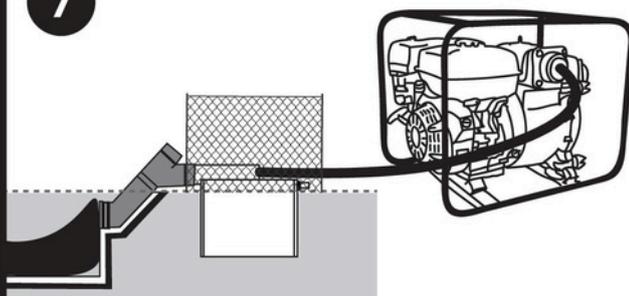
5



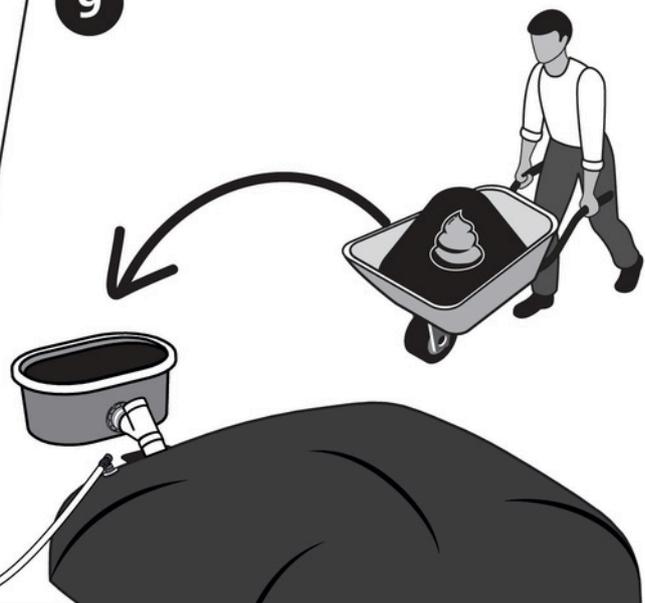
6



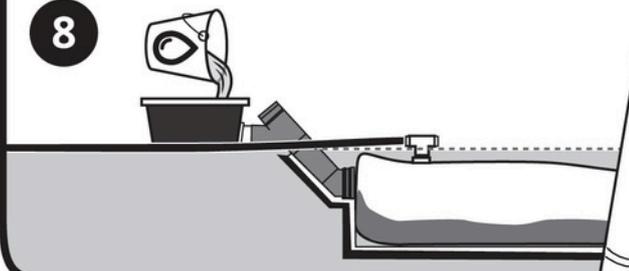
7



9



8





Digester size		SIS 6	SIS 8	SIS 12	SIS 16	SIS 20	SIS 30	SIS 40
<p>Mamiriro ekunze anodziya >23 °C</p>	Kudya kwezuva nezuya: mupfudze wemombe 	50 L kana Kg/zuva	65 L kana Kg/zuva	90 L kana Kg/zuva	130 L kana Kg/zuva	180 L kana Kg/zuva	260 L kana Kg/zuva	350 L kana Kg/zuva
	Kugadzirwa kwemazuva ese biogas 	1.7 m3/zuva	2.4 m3/zuva	3.3 m3/zuva	4.8 m3/zuva	6.7 m3/zuva	9.6 m3/zuva	12.9 m3/zuva
	Nguva yekubika yezuva nezuya pane 1 burner 	3.4 Hr/zuva	4.8 Hr/zuva	6.6 Hr/zuva	9.6 Hr/zuva	13.4 Hr/zuva	19.2 Hr/zuva	25.8 Hr/zuva
	Weekly biofertilizer kugadzirwa 	0.9 m3/vhiki	1.4 m3/vhiki	1.9 m3/vhiki	2.7 m3/vhiki	3.8 m3/vhiki	5.5 m3/vhiki	7.4 m3/vhiki
<p>Temperate Mamiriro ekunze 15 - 23 °C</p>	Kudya kwezuva nezuya: mupfudze wemombe 	35 L kana Kg/zuva	50 L kana Kg/zuva	65 L kana Kg/zuva	100 L kana Kg/zuva	135 L kana Kg/zuva	200 L kana Kg/zuva	265 L kana Kg/zuva
	Kugadzirwa kwemazuva ese biogas 	1.3 m3/zuva	1.8 m3/zuva	2.3 m3/zuva	3.6 m3/zuva	4.9 m3/zuva	7.2 m3/zuva	9.6 m3/zuva
	Nguva yekubika yezuva nezuya pane 1 burner 	2.6 Hr/zuva	3.6 Hr/zuva	4.6 Hr/zuva	7.2 Hr/zuva	9.8 Hr/zuva	14.4 Hr/zuva	19.2 Hr/zuva
	Weekly biofertilizer kugadzirwa 	0.7 m3/vhiki	1.1 m3/vhiki	1.4 m3/vhiki	2.1 m3/vhiki	2.8 m3/vhiki	4.2 m3/vhiki	5.6 m3/vhiki
<p>Kutonhora Kwemamiriro ekunze 12 - 15 °C</p>	Kudya kwezuva nezuya: mupfudze wemombe 	25 L kana Kg/zuva	35 L kana Kg/zuva	45 L kana Kg/zuva	65 L kana Kg/zuva	90 L kana Kg/zuva	135 L kana Kg/zuva	180 L kana Kg/zuva
	Kugadzirwa kwemazuva ese biogas 	0.8 m3/zuva	1.2 m3/zuva	1.5 m3/zuva	2.2 m3/zuva	3 m3/zuva	4.5 m3/zuva	6 m3/zuva
	Nguva yekubika yezuva nezuya pane 1 burner 	1.6 Hr/zuva	2.4 Hr/zuva	3 Hr/zuva	4.4 Hr/zuva	6 Hr/zuva	9 Hr/zuva	12 Hr/zuva
	Weekly biofertilizer kugadzirwa 	0.5 m3/vhiki	0.7 m3/vhiki	0.9 m3/vhiki	1.4 m3/vhiki	1.9 m3/vhiki	2.8 m3/vhiki	3.8 m3/vhiki



QR CODE yemavhidhiyo ari papeji 17

Shandisa simba raunoburitsa uye chengetedza yako biogas mutsara!

(OM9), (OM11), (OM12), (OM2), (OM3), (OM4)

YEKUTANGA BIOGAS FLAME

1. Vhura vharuvhu

A

1 MINITI**

B

C

Vhura*

CLOSE

*Pazvinoshanda, sunda uye batidza ON/OFF

2. TENDENZA mubato worega biogas ichtitiza (A) paunenge uchiedza kuvheneka
nayo nemachisi. Kana iyo biogas inopfuta yasvika pamoto, iwe uchaona murazvo (B). **Zvinogona kutora kusvika miniti imwe pamurazvo wekutanga. KUVHARA, tenderera newachi (C).

USA

rega murazvo uwedzere KUKURU sezvo uchizorasa chikamu chekupisa kwebiogas!

(OM17)

ITA

gadzirisa murazvo nechikamu chepasi chepani.

SIMBISA MURAVI WAKO UCHISHANDISA COUNTERWEIGHTS

Isa counterweight pamusoro pe reactor. Counterweight haifaniri kudarika 30kgs.

USASHANDISE chero zvinhu zvinopinza zvinogona kukuvadza reactor.

CHETE shandisa imwe yeinotevera sarudzo:

a. BioCounterweight b. Matai c. Mabhegi ejecha

(TS5)

KUCHENESA CHIBIRI

CALENDAR

Vhiki yega yega kusvika mwedzi woga woga zvichienderana nezvinodiwa.

Shandisa

- bhurasho
- mvura ine muto wemonamu
- mvura ine sipo

Chenesa chibatiso chechitofu kuti uvhare maburi.

(TS13)



QR CODE yemavhidhiyo ari papeji 17

PRESSURE RELIEF VALVE (PRV)

CALENDAR

	1	2	3	4		
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Zadza vharafu yekuyamura nemvura **2 TIMES A WEEK**

CHERECHEDZA: Ita shuwa kuti hapana tsvina inoungana mukati mePRV.

(OM2), (OM1)

Yakazadzwa PRV: Gasi rinochengetwa mune reactor

Empty PRV: Gasi rinogona kutiza

MVURA MUSUNGO CHECK

CALENDAR

	1	2	3	4		
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

2 nguva pavhiki

1. Musungo wemvura wakazara
2. Vhara vharafu yebiogas
3. Dhonza musungo wemvura
4. Vhara musungo wemvura
5. Vhurazve vharafu yebiogas

(OM6)

KUWUNGA MVURA MUGAS LINE

CALENDAR

	1	2	3	4		
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Mazuva ese

CHERECHEDZA: Usaturike mitoro yakadai sembatya pamutsetse wegese.

(TS1)

Tarisa pombi yakajeka yemvura yakaunganidzwa uye kuibvisa nguva dzose nekuisimudza. Ita shuwa kuti pombi haina kupetwa kana kupetwa. Mvura yakaunganidzwa inozopedzisira yavhara kuyerera kwebiogas.



QR CODE yemavhidhiyo ari papeji 17

NZIRA YEKUGADZIRA SEFIRI MEDIA

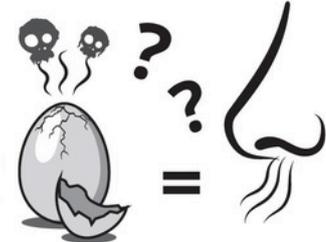
CALENDAR						
		1	2	3	4	
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Tarisa mwedzi wega wega

Zvinoratidza kuti iyo fiter media inoda kuvandudzwa:



• Kunhuwa kusingafadzi mubiogas



- Vhara vharafu yebiogas**
- Vhura chivharo**
- Dururira litre yemvura usati wabvisa bhegi**
- Bvisa bhegi kubva kuH2S sefa**
- Nyura bhegi mumvura**
- Zivisa bhegi kumashure kune H2S sefa**
- Vhara chivharo chesefa nekuchimonerer a kumapoinzi ekusimbisa A uye B**
- Vhura vharafu yebiogas**

Chengetedz a bhegi panzvimbo yakati sandara

Mirira kudzamara vezvenhau vasvika paruvara rwe grey nemavara mashoma ebrown uye aoma

GAS LEAK ONGORORO

CALENDAR

Every 3 months



Shandisa mvura ine sipo pagasi rega rega rinobatanidza (mafirita, mavharuvhu, pombi nemidziyo) ukuwo digester ichikwirirwa kuti itarise mabubbles (kudonha). Dana kutarisira kwevatengi kana ukaona chero mabhuru.

Ita shuwa kuti valve yako yekuzviparadzanisa yakavhurika!



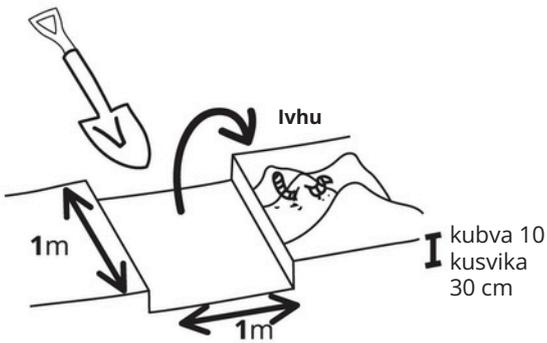


Isa marita maviri kusvika mashanu ebiofertilizer paskweya mita. Tevedzera muyerero uyu pachikamu chechirimwa chega chega uye chega chega chekugadzirira ivhu.

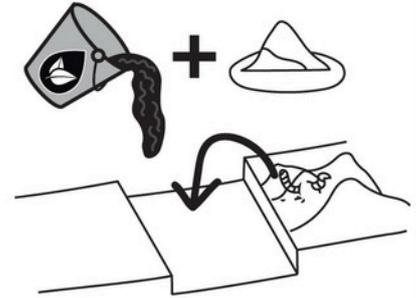
Kugadzirira kwevhu kusati kwadyarwa



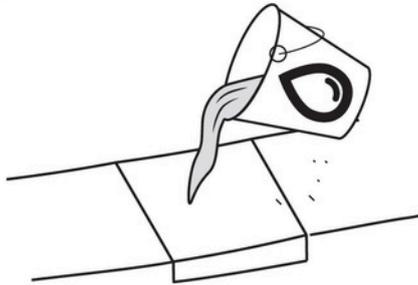
1 Bvisa ivhu



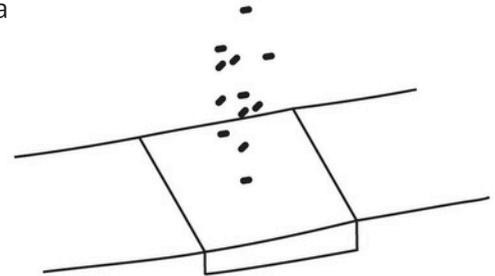
2 Sanganisa uye regai vazorore. Isa marita maviri kusvika mashanu ebiofertilizer paskweya mita.



3 Usati wadyara: wedzera mvura



4 Dyara: wedzera mbeu kana mazinde



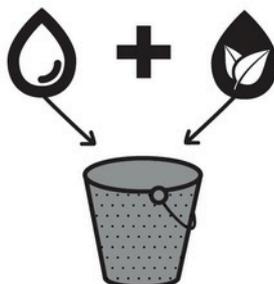
Kuberekesa zvirimwa nemiriwo

Munguva yemwaka yakaoma, dilute chikamu chimwe chebiofertilizer nechikamu chimwe chemvura.

Hapana chikonzero che dilution munguva yekunaya kwemvura.

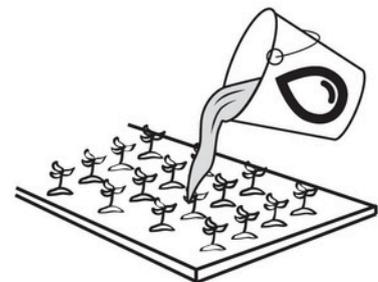
1

Sanganisa 1 mvura ye1 biofertilizer



2

KUDIRIRA: Isa 2 kusvika ku5 malita ebiofertilizer paskweya mita (kana biofertilizer yakaderedzwa: 4 kusvika 10 malita)

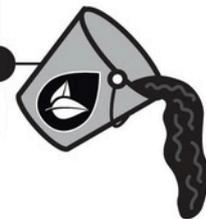
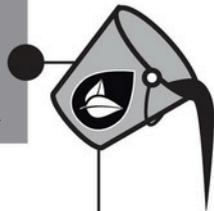


CHERECHEDZA: Rega kuisa biofertilizer kwasara masvondo matatu kukohwa kusati kwasvika. Geza michero yose nemiriwo zvakanaka usati wadya.



BIOFERTILIZER CONSISTENCY

Kudya
kwezuya
nezuya
kunoTANGA



Iyo biofertilizer
ichawedzera
kukora
nenguva

Mumwedzi miviri yekutanga, biofertilizer:

- ine mvura yakawanda uye ine mvura
- inogona kunhuwa
- inogona kukwezva umhutu



Biofertilizer uye Regenerative Agriculture

SISTEMA.bio



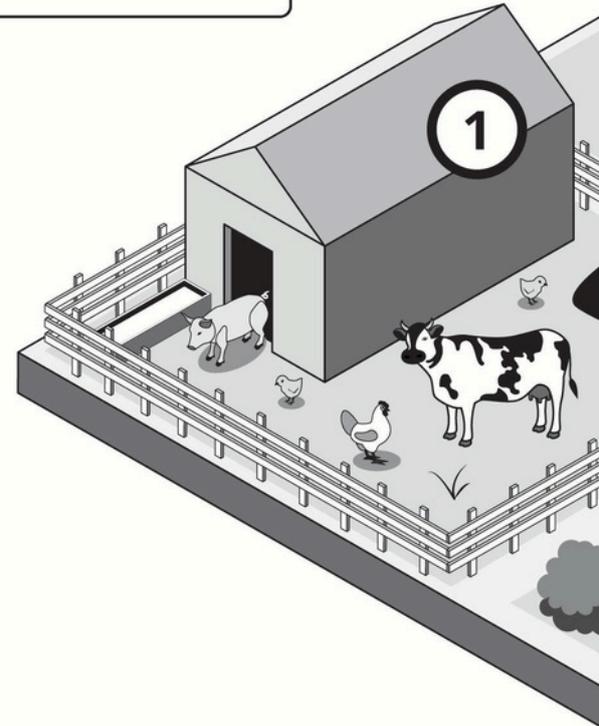
1_Kubatanidzwa kwezvipfuyo

Kufura kunotenderedza kunobvumira varimi kukopa mafambiro emombe dzechisikigo, kuparadzira manyowa zvakaenzana sefotereza uye kudzivira kufudza zvakananyanya. Izvi zvinowedzera hutano hwevhu, zvinokurudzira kukura kwezvinomera, uye zvinobatsira kubata kabhoni muvhu.



2_Biogas

Mushonga wekubika wakachena unoshandisa tsvina yekurima kugadzira simba rinodzokororwa zvakanaka.



3_Bioslurry

Isa biofertilizer kusimudzira goho rekurima. Inonatsiridza chimiro chevhu, kuchengetedza mvura, kudyu kunovaka muviri bhasikoro & biodiversity.



Kuderedza Kushandiswa Kwemakemikari: Zvishoma nezvishoma kuderedza kushandiswa kwemakemikari nemishonga yezvipembenene kuchengetedza biology yevhu uye kuvaka ivhu rinosimba.

Muenzaniso:
Gore 1: 10 kusvika 20% kuderedza Gore 2: 20 kusvika 40% kuderedza Gore 3: 40 kusvika 60% kuderedza mumakemikari fetiraiza



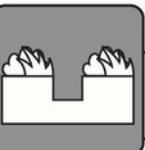
4_Water Management

Shandisa nzira dzekudiridza dzisingashandisi mvura kuchengetedza mvura uye kuderedza kukukurwa kwevhu. semuenzaniso kudiridza, maburi ezai (makomba ekuchengetedza unyoro) uye kukohwa kwemvura inonaya.



5_Kuderedzwa/ Hapana kurima

Kurima kunoputsa chimiro chevhu. Pane kudaro, dyarai mbeu negadziriro duku uye yepasi kuitira kuderedza kukukurwa kwevhu, uye kukanganiswa kwevhu kuchengetedza biology yevhu.



6_Hedges nedivi Trenches

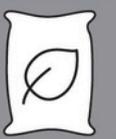
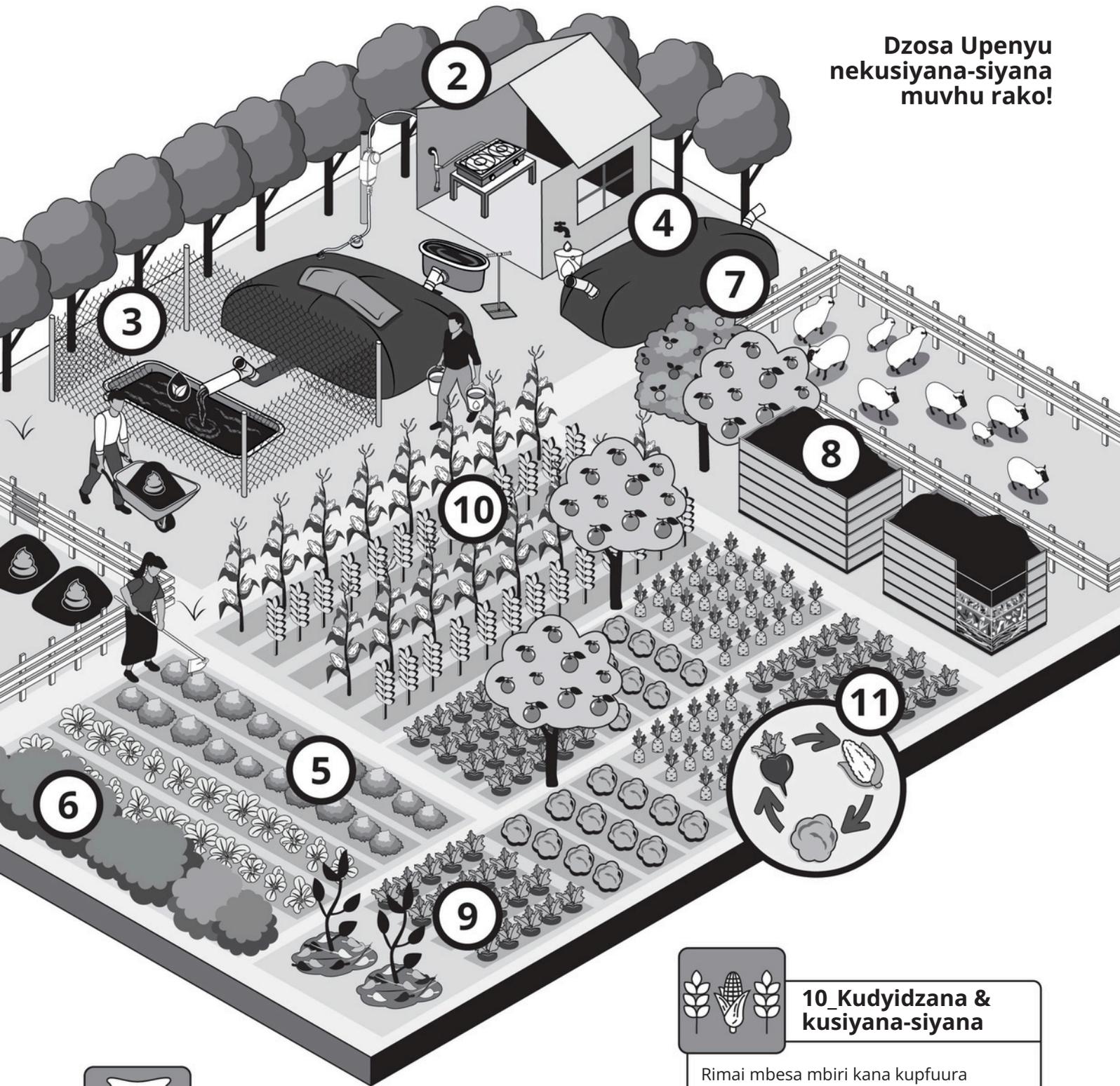
Dyarai maheji uye gadzirai migero yemumativi kuti muvandudze kusiyana-siyana kwezvipenyu & kuchengetedza mvura, uye kudzivira kukukurwa kwevhu.



7_Agroforestry

Batanidza miti yemiti yemichero & nzungu kuti uvandudze mapurazi akasiyana siyana uye kuti uwane mari. Miti inopa matanda nemumvuri, inoputsa mhepo uye inovandudza kuchengetedza ivhu.

Dzosa Upenyu nekusiyana-siyana muvhu rako!



8_Organic Kompositi

Shandisa zvakasara zvekurima uye zvinhu zvakasvibirira zvakasanganiswa nebiofertilizer kugadzira organic compost.



9_Mulching/ Kuchengeta chifukidziro chevhu

Fukidza ivhu rakatenderedza chirimwa chako nemashizha uye zvimwe zvinhu zvakasimukira kuchengetedza mwando wevhu.



10_Kudyidzana & kusiyana-siyana

Rimai mbesa mbiri kana kupfuura panguva imwe chete mumunda mumwechete kuti muwedzere goho nekushandisa zviwanikwa zviri nani uye kudzora tumbuyu.



11_Crop Rotation

Dyarai zvirimwa zvakasiyana munzvimbo imwe panguva dzakasiyana-siyana kuti mudzorere kudya kunovaka muviri uye murime zvokudya zvakawanda.



Kurisa Iyo Biodigester's Benefits

KUDYA NGUVA DZOSE

✕

KUDYA KUSANGANISWA:

- Digester iri kufa nenzara
- Murazvo muduku

CALENDAR

		1	2	3	4
5	6	7	8	9	10
11	12	13	14	15	16
17	18	19	20	21	22
23	24	25	26	27	28
29	30	31			

✕

KUDYA AKAWANDA:

- Digester yakanyanyisa kuzara neCO₂ uye haina CH₄
- HAPANA murazvo

USADYA ZVAKAWANDA kupfuura zvinokurudzirwa.

✓

KUDYA KWAZVO

- Happydigester
- Murazvo wakanaka

CALENDAR

		1	2	3	4
5	6	7	8	9	10
11	12	13	14	15	16
17	18	19	20	21	22
23	24	25	26	27	28
29	30	31			

NYOVE YAKAoma

NERIMWE ZUVA TSATI KUDYA

→

ZUVA REKUDYA

→

1. RIMWE zuva musati madyisa: Nyora vhoriyamu ndove yakaoma nemvura inosvika vhoriyamu imwe chete, wozowedzera nemvura kuti iwirirane nendove yemombe nyoro.

+

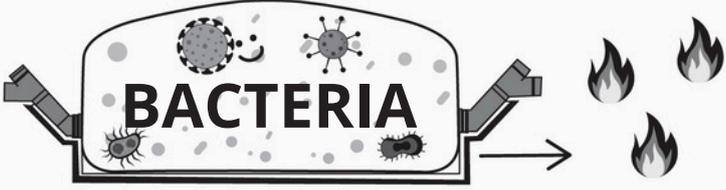
2. Panguva yekudyisa, ita dilution yemvura (1 volume yemombe ine 1 volume yemvura).

28 • Kuongorora 2, 3, Shanyo yeSevhisi



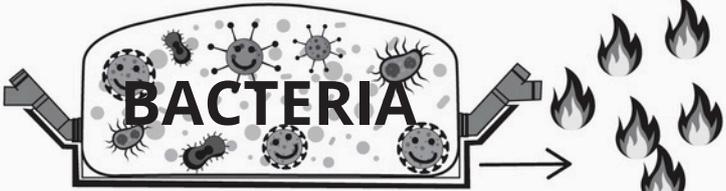
Kurisa Iyo Biodigester's Benefits

TEMPERATURE & BIODIGESTER PRODUCTIVITY	
<p>Kutonhora kwemamiroro ekunze, kugadzirwa kwebiogas kunononoka nekudzikira.</p>	 <p><15°</p>
<p>Kudziya kwemamiroro ekunze, ndiko kukurumidza uye nekukwirira mabhakitiriya anoburitsa biogas yakawanda.</p>	 <p>>20°</p>



BACTERIA

CHINONO uye CHINOGONA kugadzirwa



BACTERIA

FAST uye HIGH kugadzirwa

BIOFERTILIZER RECIRCULATION

Izvi zvinovandudza mashandiro ereactor munzvimbo dzinotonhora / mwaka uye zvinobatsira kuderedza kushandiswa kwemvura.

KUNE MAMIRORO AKANAKA UYE KUDIKIRA KUSHAYA MVURA
Teerera zuva nezuva:



1 vhoriyamu yebiofertilizer (ine yakaderera yakasimba yemukati)

+



1 ivhu remupfudze

+



1 vhoriyamu yemvura

=

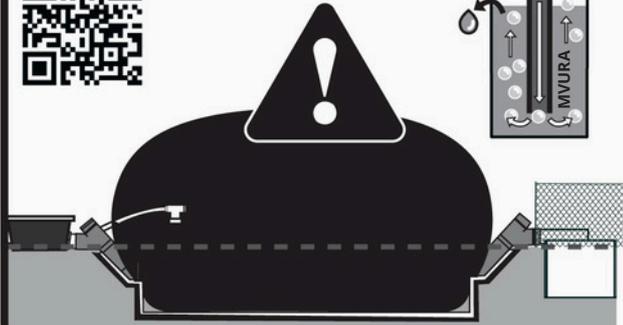


 Kana iwe uchitenderedza biofertilizer nguva nenguva, wedzera mvura munguva yekunaya kwemvura uchisanganisa kuti uwedzere. Shandisa 15% yehuwandu hwebiodigester (semuenzaniso, yeS6 ine 6000L, wedzera 1000L).

USAREGA BIOGAS YAKO IRI KUPIYA

Kana biodigester yako yakafukidzwa zvakananya uye iyo PRV iri kuputika:

 (TS10)

- PISA gasi rako kuitira kuti PRV irege kubhuroka zvakare
- OR
- DERERERA kudyisa






Kurisa Iyo Biodigester's Benefits

SISTEMA.bio

KUDYA KWEMHUKA

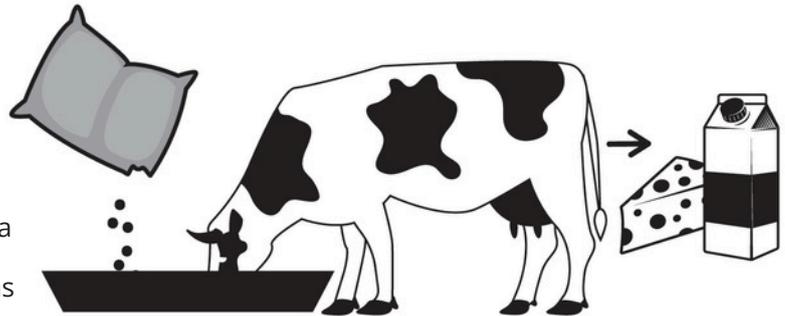
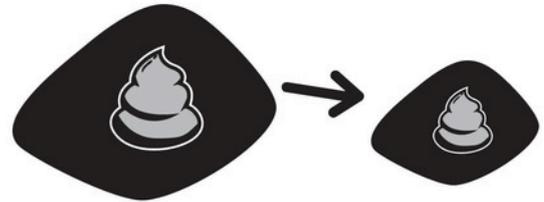
Kana mhou dzako dzikawana chikafu chakapfuma chekuwedzera, ndove ichave yakapfuma, izvo zvinotungamira kune acidity mugayi. Zvishoma kuderredza kudya kana kuwedzera kwakadaro kuri kuitika!

Kana chikafu chako chemombe chikapfuma (chikafu chemukaka semuenzaniso), izvi zvichawedzera huwandu hweH₂S mubiogas rako. Bata isu kuti ugadzirise kurapwa kwako kwebiogas.

LOW

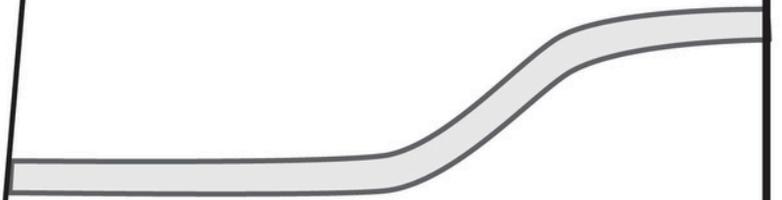


Deredza kudya kwemazuva ose

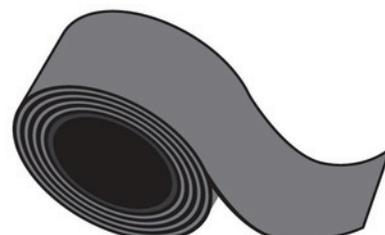


Spare parts

TRANSPARENT FLEXIBLE PIPE kutsiva: ega ega maviri kusvika kumakore matatu approx. Bata Sistema.bio kana iwe uchida kutsiviwa.



BUTYL TAPE yekugadzirisa kwekanguva membrane kana kukuvara kwekunze kuchiitika.





Biodigester Specifications

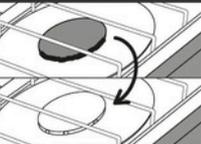
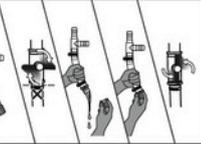
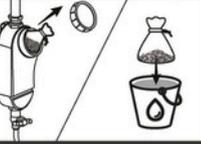
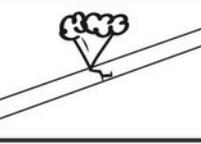
CHIKAMU	MATERIAL	SECIFICATIONS
Kudyisa tangi	HDPE	Tarisa kune inoenderana digester modhi
Musanganisi wemanyowa	Galvanized/Zinc Plated MS pombi	76 masendimita x 26 masendimita x 20.5 masendimita (h x l x w)
Reactor	LLDPE	Tarisa kune inoenderana digester modhi
Biofertilizer tank	HDPE	Tarisa kune inoenderana digester modhi
Kudzvinyirira vharafu	HDPE uye UPVC	6" dhayamita, 20 mbar kumashure kumanikidzwa
Isolation bhora vharafu	UPVC	1" dhayamita
Biogas sefa	HDPE	48 mm x 18.5 mm x 20 mm (h x l x w)
Transparent / flexible gasi mutsetse	UPVC	1" dhayamita
Gas line	HDPE	1" dhayamita
Musungo wemvura	ABS uye UPVC	1" dhayamita
Single burner (kana zvichibvira)	Kanda aluminium	7 x 45 x 10 masendimita (h x l x w)
BioStove	Chimiro: simbi isina tsvina kana simbi yakapfava Burner: Kanda aluminium	BioStove-2: 19 x 58 x 36 masendimita (h x l x w) BioStove-3 SS: 10 x 57.5 x 27 masendimita (h x l x w)

Digester saizi	Inenge yakazara kit uremu	Kudyisa tangi volume	Slurry volume mu digester	Gasi kuchengetedza mu digester	Biofertilizer tank volume (Inogona kusiyana neprojeki)
	kg	L	m ³	m ³	m ³
SIS 6	67	110 L	4	2	1
SIS 8	93	110 L	5.5	3	2
SIS 12	109	110 L	8	4	2
SIS 16	137	110 L	11	6	4
SIS 20	163	110 L	15	8	4
SIS 30	219	110 L	22.5	12	8
SIS 40	257	110 L	30	15	8

Cherechedza: Zvikamu zvinogona kusiyana zvichienderana nenharaunda uye mamiriro emunharaunda yeprojeki.



Maintenance And Care Plan

MUFANANIDZO	ACTIVITY	VHIDHIYO QR	VIDEO NAME
	Kudyisa (uye kubviswa kwezvinhu zvakagadzika uye zvinoyangarara)		OM8
	Shandisa biogas yako! Saka hazviiti putika kuburikidza nePRV!		OM13, OM9, OM11, OM12, OM2, OM3, OM4, OM17, TS5 & TS13
	Shandisa bioslurry yako! (Kana uine zvimwe, funga kuzviendesha kuminda yako kupa kana kutengesa kuvavakidzani)		Biofertilizer Manual (1), Bioslurry Protocols (2) & Sistema.bio fetereza Inoshandisa Series (3)
	Kudzungudza kwe digester yako kusanganisa iyo inoyangarara layer ne slurry mukati the digester		OM13
	Tarisa Kuunganidza Mvura muGasi Line		TS1
	Kuchenesa Burner (pane zvinodiwa)		TS13
	PRV Kuzadza neMvura		OM1
	Mvura Musungo Tarisa		OM6
	H2S Filter Media Regeneration (Tarisa kuti ivandudzwe mwedzi woga woga. Gadzirisa kana nhepfenyuro yakasviba)		OM5
	Media kutsiva (Bata Mutengi Sevhisu kuodha nyowani)		Bata Customer Service kuhodha itsva
	Gas Line Leak Inspection		N/A

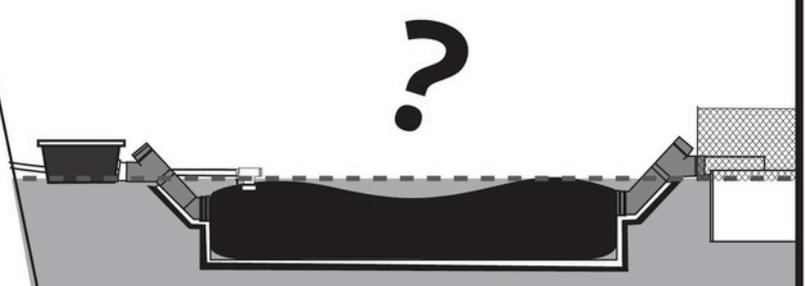
PEJI RIMWE	DAILY	2X VHIKI	VHIKI	ZVESE 2 VHIKI	MWEDZI	PAGORE
14 & 15	✓					
21 & 29	✓					
24		✓				
17			✓			
17		✓				
21			✓			
22		✓				
22		✓				
23	Pane chinodiwa - kana media ikaita dema					
						✓
23						✓

O&M
pfupiso
mutafura



NYAYA:

- Handina biogas yakakwana yekubika
- Ini handina biogas muBioStove yangu, uye digester yangu yakati sandara!



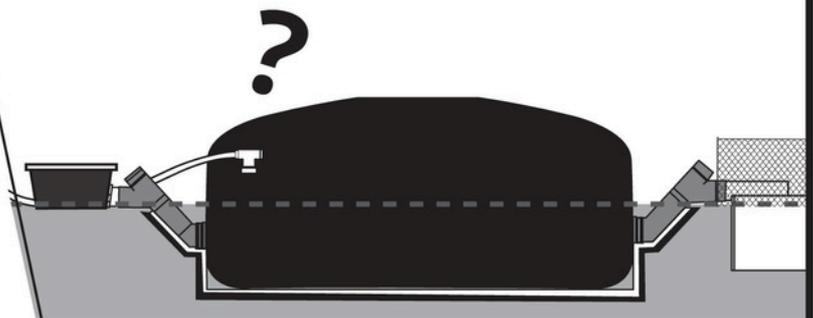
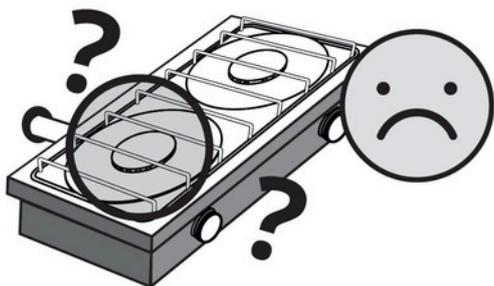
- Pane mvura yakakwana here mukupinda nemumvura? Tarisa chikamu chinoti "Mashandisiro epombi dzinobuda kunze? Iva nechokwadi chokuti dzakazadzwa kuitira kuti biogas isabude." Tarisa chikamu chinoti "Biodigester startup" "Zadza reactor nemvura kusvika mvura yasvika panopindwa napo nepamagokora." papeji 13. Vhidhiyo: I3, I5.
- Wapedza kudya kwako kwekutanga here? Tarisa kuchikamu "Biodigester startup", "First feeding" papeji 14 & 15. Vhidhiyo: OM7.
- Pane nguva yakakwana yaperera here kubva pakudya kwekutanga? Nongedzera kuchikamu chinoti "Biodigester kutanga", "IMIRIRA KUTI REAKTA IRI KUFUDZA" papeji 16.
- Uri kutevera mirairo yekudyisa here? Nongedzera kuchikamu chinoti "Mashandisiro aunaita gadziriro yako", "Chengetedza digester yako" papeji 14 uye "Kurisa mabhenefiti ebiodigester", "KUDYA REGULARITY" papeji 28 & 29. Vhidhiyo: OM7, OM8.
- Ivhavhavha yako yekuyamura yakabuda nehurongwa hwako", "PRESSURE RELIEF VALVE" papeji 22. Vhidhiyo: OM2, OM1.
- Ko mavharuvhu eBioStove, musungo wemvura kana kuti biogas filter yakasiwa yakashama here? Vavhare! Nongedzera kuchikamu chinoti "Mashandisiro aunaita gadziriro yako", "FIRST BIOGAS FLAME" papeji 21, "WATER TRAP CHECK" papeji 22 uye "KUITA ZVAKAITWA ZVINHU ZVOKUFIRIRA MEDIA" papeji 23. Vhidhiyo: OM6, TS12, OM5.
- Pane yadeuka here? Nongedzera kuchikamu chinoti "Mashandisiro aunaita system yako", "GAS LINE LEAK INSPECTION" iri papeji 23.
- Kutonhora, mwaka wemvura? Iwe unogona kutenderedza biofertilizer yako kuti uvandudze kugadzirwa kwebiodigester munguva yekutonhora. Tarisa kuchikamu "Kurisa mabhenefiti ebiodigester", "TEMPERATURE & BIODIGESTER PRODUCTIVITY" papeji 29.
- Iyo yekupisa uye BioStove yakaiswa mumakamuri akasiyana? Tarisa kana paine mumwe munhu ari kushandisa biogas!

**Kana kugadzirwa kwako kwebiogas kuchiri kwakadzikira:
BATA CUSTOMER CARE - ONA PEJI 45.**



NYAYA: • Ini handina biogas muBioStove yangu kana

haina chiedza, uye chigayo changu chiri mu- flated!



- Wakaisa counterweight pane digester yako? Nongedzera kuchikamu "Mashandisiro aunaita gadziriro yako", "KUSHANDISA MURAVI WAKO UCHISHANDISA ZVINHU ZVINOGONESA" papeji 21. Vhidhiyo: TS5.
- Mavharuvhu egasi akasiyiwa akavharwa here? Vavhure! Tarisa kuchikamu "Mashandisiro ehurongwa hwako" "Shandisa simba raunoburitsa uye chengetedza mutsara wako webiogas!" papeji 21. Vhidhiyo: OM3, OM3bis, OM4.
- Unogara uchidonhedza matepi ako emvura here? Tarisa kune chikamu "Mashandisiro ehurongwa hwako", "WATER TRAP CHECK" papeji 22. Vhidhiyo: TS3 & OM6.
- Mutsetse wako webiogas uri kupera here? Mumutsara webiogas wakaderera, mvura inogona kuungana uye ichivharira iyo biogas kuyerera! Simudza mutsetse wegasi kutungamira mvura yakaunganidzwa yakananga kumusungo wemvura kana PRV. Tarisa kune chikamu "Mashandisiro ehurongwa hwako", "KUWANGA MVURA MUGAS LINE" papeji 22. Mavhidhiyo: TS1, TS6.
- Iyo yekusefa musefa yebiogas inovharira kuyerera kwebiogas? Tevedzera chirevo chiri papeji 23 "Maitirwo ekugadzira patsva mafirita, kana kuti kutsiva neimwe itsva. Edza kupisa gasi paBioStove yako! Tarisa kune chikamu "Mashandisiro ehurongwa hwako", "KUTI UITE ZVAKAITIKA SEFU MEDIA" papeji 23. Vhidhiyo: OM5.
- Mutsara wegasi wakapetwa chero nguva here? Ongorora tambo yako yegesi uye ona kuti hapana chinovharira nzvimbo.
- Kana 1 chete ye2 BioStove inopisa isina murazvo, vharafu yekupisa inogona kuvharika. Bata Mutengi Care.
- Uri kudyisa digester yako here? Tarisa kuchikamu chinoti "Kurisa zvakanakira biodigester", "KUDYA KUDYA" papeji 28. Era pH yebiofertilizer kubva papombi yako yekubuda nayo uchishandisa pH mita yakagadziriswa (ndopota tevera pH meter calibration mirairo). Kana pH yebiofertilizer yakadzikira uye ukaramba uchidyisa digester yako, inogona kumisa utachiona kuburitsa biogas. Izvi zvinotungamirira kune yakawandisa carbon dioxide uye kusakwana methane.

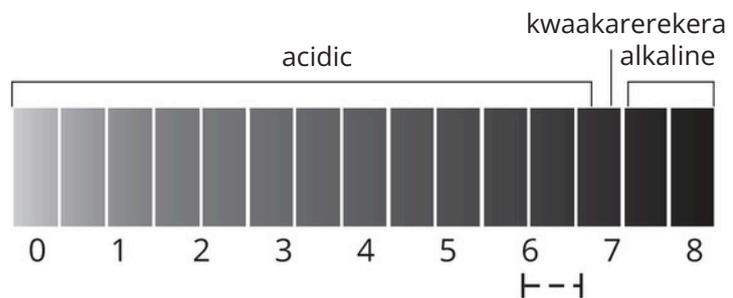
Kana kugadzirwa kwako kwebiogas kuchiri kwakadzikira: BATA CUSTOMER CARE - ONA PEJI 45.



Basic Troubleshooting

NYAYA:

- Acidification zvisvoma: **pH 6 kusvika 6.5 & biogas haitsva**



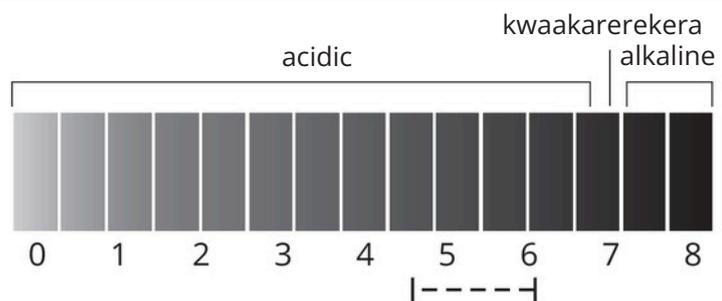
1. Rega kudyisa reactor & dururira mugasi webiogas kuburikidza nesefa yebiogas uye gara kure. 2. Gadzirisa digester zvakanwana. Vhidhiyo: OM13.

3. Rega imbozorora kwemazuva matatu kana kusvika yatundira. 4. Edza kubatidza chitofu chebiogas. 5. Kana gasi rikasapisa, dzokorora kubva padanho rekutanga.

Kana biogas yako isati yavheneka: BATA CUSTOMER CARE - ONA PEJI 45.

NYAYA:

- Acidification zvisvoma: **pH 4.5 kusvika 6 & biogas haitsva**



1. Rega kudyisa reactor & bvisa biogas yese nemusefa yebiogas uye ugare kure.

2. Gadzirisa digester zvakanwana.

Vhidhiyo: OM13.

3. Bvisa kanenge hafu ye digester.

4. Zadzazve digester ne:

A) mvura yakasanganiswa nebiofertilizer yakawanda sezvinobvira B) mvura yakasanganiswa ne5-10kg ye limestone powder yeSistema 6 (inowedzera

zvakaenzana nekukura kwe digester).

5. Rega igare kwemavhiki 1-3 kana kusvika inoputika.

6. Edza kuvhenekera BioStove.

7. Kana gasi rikasapisa, durura mugasi webiogas kuburikidza nesefa yebiogas uye usaende kure. Wozorega ichizorora kwemavhiki 1-3 kana kusvika yatundira uye yaburitsa gasi rinobvira moto.

Kana biogas yako isati yatsva: BATA CUSTOMER CARE - ONA PEJI 45.



Basic Troubleshooting

NYAYA:

- Murazvo weBioStove yangu unombomira/kutamba



Panogona kunge paine mvura yakaunganidzwa pane imwe nzvimbo mumutsetse wegasi.

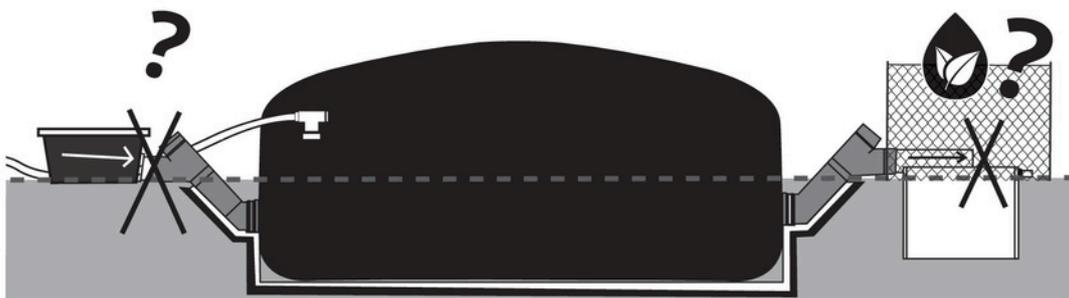
- Mutsara wako webiogas uri kupera here? Mumutsara webiogas wakaderera, mvura inogona kuungana uye ichivharira iyo biogas kuyerera! Simudza mutsetse wegasi kutungamira mvura yakaunganidzwa yakananga kumusungo wemvura kana kuPRV. Tarisa kune chikamu "Mashandisiro ehurongwa hwako", "KUWANGA MVURA MUGAS LINE" papeji 22. Mavhidhiyo: TS1, TS6.

- Unogara uchichera marapirwo ako emvura here? Tarisa kune chikamu "Mashandisiro ehurongwa hwako", "WATER TRAP CHECK" papeji 22. Vhidhiyo: TS3, OM6.

Kana biogas yako isati yavheneka: BATA CUSTOMER CARE - ONA PEJI 45.

NYAYA:

- Iyo slurry haisi kupinda mugayi
- Iyo biofertilizer haibude mugayi



- Kana biofertilizer yako ichingobuda chete kana digester yaputirwa, hapana dambudziko!
- Vhura pombi dzako dzekupinza kana dzekubuditsa kubva kune dzakaoma kana dzakaoma izvo zvingave zvichivharira kuyerera. Shandisa kamuti katete, kanopfakanyika (semushenjere) kuvhura pombi pairi

- Y zvakakodzera. Vhidhiyo: TS11. • Iyo pombi inopinza yakaderera pane

pombi yokubuda nayo? Simudza tangi yekudyisa

zvishoma nekuisa matombo kana ivhu pasi payo.

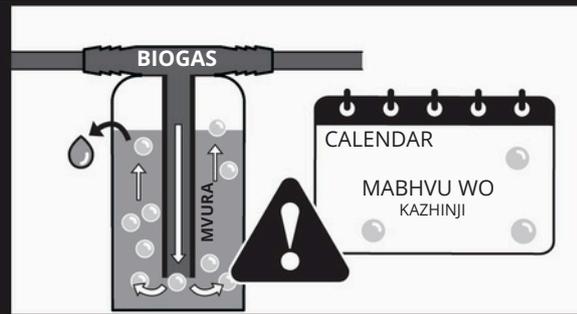
Kana slurry yako ichiri kuyerera: BATA CUSTOMER CARE - ONA PEJI 45.



Basic Troubleshooting

NYAYA:

- Mafuro evharuvhu ekuyambutsa moyo wangu anoputika kakawanda!

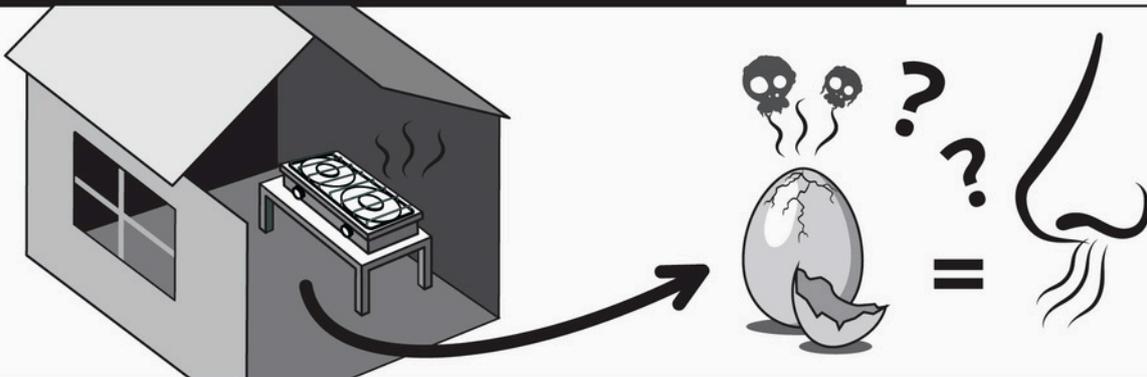


- Uri kuwisira vharafu yevharuvhu nguva nenguva here? Tarisa kune chikamu "Mashandisiro ehurongwa hwako", "PRESSURE RELIEF VALVE" papeji 22. Vhidhiyo: OM2, OM1.
- Unogona kunge uri kugadzira biogas yakawandisa! Ndokumbira upise gasi rako rakawandisa kana kuishandisa kudziya mvura mupani! Kana ichiri kutumbuka nguva dzose,

- zvishoma nezvishoma kuderedza kudya. Tarisa kuchikamu "Kurisa mabhenefiti ebiodigester", "USAREGA BIOGAS YAKO IPUNZE" papeji 29. Vhidhiyo: TS10. Kana digester yako ichiri kugadzira biogas yakawandisa: BATA CUSTOMER CARE - ONA PEJI 45.

NYAYA:

- Mukicheni mune gasi/mazai akaora



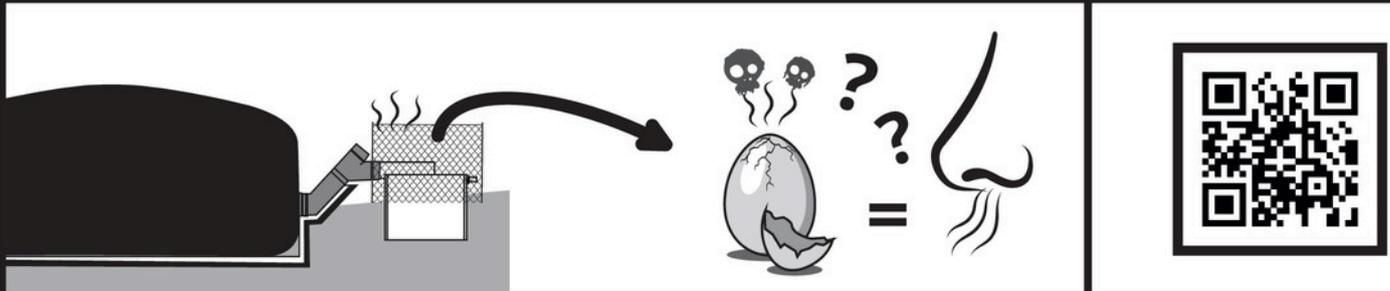
- Inonhuwirira here paunenge uchibatidza BioStove yako? Usamirire nguva refu usati wasvitsa mutambo kune chinopisa kuti udzikise kuburitswa kweiyu isina kupiswa biogas. Nongedzera kuchikamu chinoti "Mashandisiro aunoita gadziriro yako", "KUSHANDISA MURAVI WAKO UCHISHANDISA ZVINHU ZVINOOGONESA" papeji 21. Mavhidhiyo: OM11, OM12.
- Unogara uchigadziravze midhiya musefa yako? Tarisa kune chikamu "Mashandisiro aunoita system yako", "KUTI UCHITE ZVINOITA SEFIRIRA MEDIA" papeji 23. Vhidhiyo: OM5.

- Mavharuvhu eBioStove, chinoteya mvura kana sefa yebiogas zvakasiwa zvakashama here kana kuti zvisina kunyatsovharwa? Vavhare! Nongedzera kuchikamu chinoti "Mashandisiro aunoita system yako", "FIRST BIOGAS FLAME" papeji 21, "WATER TRAP CHECK" papeji 22 uye "SEI ZVINOITA KUTSVA ZVINHU ZVINOSENGA MEDIA" papeji 23 Vhidhiyo: OM6, TS12, OM5.
- Pane padeuka here? Nongedzera kuzvikamu zvinoti "Mashandisiro aunoita system yako", "GAS LINE LEAK INSPECTION" papeji 23 uye "Safety", "Biogas" papeji 11.

Kana uchiri kuona kunhuwa kwebiogas mukicheni mako: BATA CUSTOMER CARE - ONA PEJI 45.



NYAYA: • Pane gasi/mazai akaora ari kunhuwa pedyo nemugayi

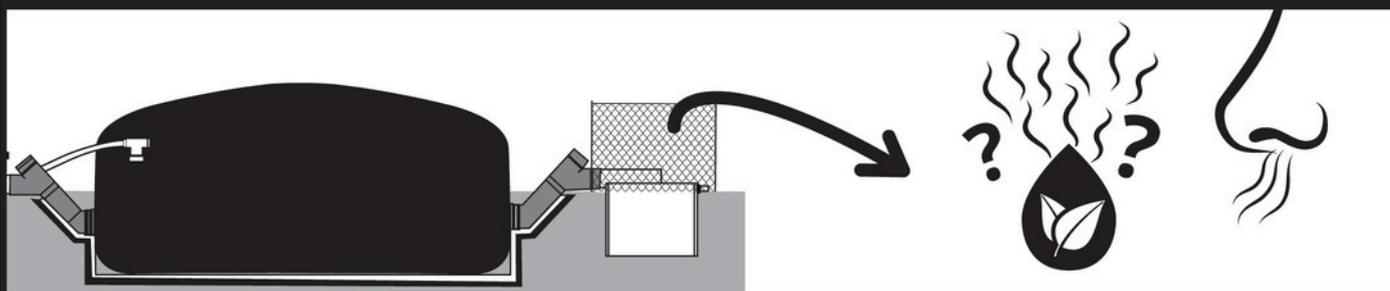


- Unogona here kuona mvura mupombi nemupoteri. Unogona here kuona mvura mupombi dzekupinza nepapombi? Iva nechokwadi chokuti dzakazadzwa kuitira kuti biogas irege kupukunyuka. Tarisa kuchikamu "Kutanga kweBiodigester" "Zadza reactor nemvura kusvika mvura yasvika pakupinza nekubuda mumagokora." iri papeji 13. Vhidhiyo: i3.
- Ko vharafu yako yekudzivirira izere nemvura here? Tarisa kune chikamu "Mashandisiro ehurongwa hwako", "PRESSURE RELIEF VALVE" papeji 22. Vhidhiyo: OM1, OM2.
- Pane padeuka here? Nongedzera kuchikamu "Sei

kushandisa sisitimu yako", "GAS LINE LEAK INSPECTION" papeji 23. Sefa yako yebiogas yakasimbiswa zvakanaka uye nesefa gasket here? Tarisa kune chikamu "Mashandisiro aunaita system yako", "KUTI UCHITE ZVINOITA SEFIRIRA MEDIA" papeji 23. Vhidhiyo: OM5.

Iyo pombi inonekera pakati pemugayi nesefa yakatsemuka here? BATA KUCHENGETERA MUTENGI - ONA PEJI 45.

NYAYA: • Biofertilizer yangu inonhuwa!



- Uri kudyisa digester yako zvakananyisa here? Tarisa kuchikamu chinoti "Wanza zvakanakira biodigester", "KUDYA KUDYA" papeji 28, uye tevera mirairo peji 40 nepeji 20. Eresa pH yebiofertilizer kubva papombi yako yekubuda nayo uchishandisa yakagadziriswa pH mita (ndopota tevera pH meter calibration mirairo). Kana iyo pH level yebiofertilizer yakadzikira uye ukaramba uchidyisa digester yako, zvinogona kuita kuti mabhakitiriya asaburitse.

biogas: carbon dioxide yakawandisa uye haina methane yakakwana.

Uri kudyisa digester yako nemarara ane organic kunze kwendove yemhuka? Mamwe marara akapfuma kwazvo kuti agayiwe zvakanaka uye anoda kudzora huwandu hwekudya! BATA KUCHENGETERA MUTENGI - ONA PEJI 45.



- Kurongedzerwa kwekiti yako yebiodigester inogona kushandiswazve. Isu tinokukurudzira kuti uende nayo kunzvimbo iri pedyo yekudzokorodza kana yakaenzana nayo*.

- Ferrosorp yakashandiswa kubva musefa media inogona kuraswa mubhini kana kuwedzerwa kune manyowa kuti ipfume nesimbi nesarufa - shred kutanga!

- Kana makore makumi maviri ehupenyu hwechigayo chako chapera uye chisisashandiswe, tora zvikamu zvaro uende nazvo kunzvimbo yemunharaunda yekudzokorodza.

- Kana uchida ruzivo pamusoro penzvimbo dzekudhindisa, sununguka kutifonera.



* Iyo yakavharwa sefa midhiya inofanirwa kubatwa nekuchenjerera sezvo inogona kutora mahara. Yakachengetwa kure nezvinhu zvinopisa uye nekukurumidza kuiswa kune ivhu kuderedza njodzi yemoto. Tevedzera mirairo peji 23.



Details Kuchengeta Mupfungwa

Technician zita:

Kuiswa zuva:

Mhando yemarara:

Kudya kwezuva nezuva:

Dilution:

Siriyero nhamba:

CLIENT SIGNATURE

**inobvuma
kugamuchira
kudzidziswa:**



Kuongorora Uye Sevhisu Yekushanya Chirongwa

KUTARIRA KUSHANYA	
MONTORING 1 (M1)	
Zuva Rekushanya	
Technician Name	
Mirayiridzo Inopiwa Kumutengi	
Client Signature	
MONTORING 2 (M2) ZVICHAITIKA KUREMO/ PAFONI	
Zuva reKufona	
Mutengi Mumiririri Zita	
Mirayiridzo Inopiwa Kumutengi	
Client Signature	
MONTORING 3 (M3)	
Zuva Rekushanya	
Technician Name	
Mirayiridzo Inopiwa Kumutengi	
Client Signature	

KUSHANYWA KWEBASA	
SERVICE VISIT 1 (SV)	
Zuva Rekushanya	
Technician Name	
Mirayiridzo Inopiwa Kumutengi	
Client Signature	
SERVICE VISIT 2 (SV)	
Zuva Rekushanya	
Technician Name	
Mirayiridzo Inopiwa Kumutengi	
Client Signature	
SERVICE VISIT 3 (SV)	
Zuva Rekushanya	
Technician Name	
Mirayiridzo Inopiwa Kumutengi	
Client Signature	



Nezve chikamu ichi.

Ichi chikamu chinopa pfupiso yewaranti. Detailed zvirevo uye mamiriro anotsanangurwa mushandisi uye mubatsiri zvibvumirano, izvo zvinotora pamberi.

WARRANTY PERIOD

Mutengesesi anopa waranti yegore rimwe chete (1) kutanga pazuva rekuiswa, rinoshanda kana paine kukuvadzwa kwezvinhu uye kugadzira kweSistema.bio zvikamu. Kupfuurirazve, Mutengesesi anopa waranti yemakore gumi (10) chete ye geomembrane ye digester kutanga zvakare pazuva rekuiswa.



Kune dema membrane yebiodigester!

CHII CHINOFUDZWA NEWARRANTY?

Zvakakosha kuziva kuti mawaranti haafukidze chero kukanganisa kunokonzerwa nechero kuregeredza kweMutengi, tsaona, kuparadza, kuchinjwa kweSistema.bio zvikamu neMutengi kana kusachengetedzwa zvisina kujairika uye kana kusateedzera, kune chikamu cheMutengi, nenjodzi nekudzivirira mirairo uye nebhuku rekushandisa.

Mawaranti ari pamusoro apa anongogumira pakugadzirisa, kutsiviwa kana shanduko yechigadzirwa uye/kana mbishi zvinhu zvakazara, mari yevashandi neyekufambisa. Chikwereti cheMutengesesi kune Mutengi hachipfuure mutengo weSistema.bio. Mutengesesi haazovi nemhosva yekurasikirwa kwemhedzisiro mune chero fomu.

ZVINHU ZVINHU ZVAKAITWA KUSATI KUISA

Mukati menguva iri pakati pekutumira nekuisa (Pre-Installation), murimi kana mubatsiri wekushandisa achave ane mutoro wekuchengetwa kwakachengeteka kweyuniti uye zvese zvikamu zvayo.

Chero kukuvadzwa kunoitika panguva ino kunosanganisira asi kusingagumiri pakurumwa nemakonzo, kuputsika kwemuviri, kuratidzwa kwezvakatipoteredza, kana njodzi dzinongoitika dzoga hazvifukidzwe pasi pewartanti. Kana chinhu chipi zvacho chikaonekwa chakuvara kana kushaikwa, kusabatwa zvakanaka, kurasika, kubiwa, kana kukanganiswa chisati chaiswa, mari yekuchigadzirisa kana kuchitsiva ichabhadharwa nemurimi kana mubatsiri.

Sistema.bio inochengetedza kodzero yekuongorora uye kuona chikumbiro usati wabvumidza chero kutsiva kana kugadzirisa. Sarudzo yeSistema.bio ichave yekupedzisira uye inosunga mune zvese zvine chekuita newaranti.



PaSistema.bio, kuchengetedzeka kwako uye kugara zvakanaka ndizvo zvatinyanya kukoshesa Kuchengetedza Kwako uye Feedback Matter. Kana iwe ukambosangana kana kuona dambudziko rekuchengetedza, njodzi

kune hutano hwako, kubatwa zvisina kunaka, kana chero imwe nyaya ine chekuita neiyo biodigester system kana mashandisiro anoita timu yedu newe, ndapota tizivise. Ndokumbira utaure zvirikunetsa*.

Chakakosha Chengetedzo Chiziviso

Kuchengetedzeka kwako kwakakosha zvikuru kwatiri. Isu tinokurudzira zvakasimba kuti iwe uverenge uye uteedzere mirairo yese yekuchengetedza mune ino bhuku revashandisi uye shandisa iyo biodigester system sekutsanangurwa kwazvino. Kana ukasarudza kusatevedzera mirairo iyi, kambani haigone kubvuma mutoro kana mutoro kune chero tsaona, kukuvara, kukanganisa kwemidziyo, kana kumwe kukuvadza kungaitika.



Matauriro Anoita Zvirikunetsa*



Isu tiri pano kuti titeerere, tiite, uye tive nechokwadi chekuti munhu wese anogara akachengeteka. Usazeza kunyorera!

1. TIRIDZAI PA:

• Kubudirira kweMutengi wepasi rose

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• Kuchengeta Mutengi, Africa (Kenya neUganda)

Email: customercare.africa@sistema.bio

Runhare: +254 711 082888

• Mutengi Care, LATAM

Email: atencionalcliente@sistema.bio

Runhare rweMexico: +52 1 55 9199

2411 Runhare rweColombia:

+57 310 3482 564

• Fomu Rokukumbira Webhusaiti Unogonawo kutumira chikumbiro zvakananga pawebhusaiti yedu.



2. ANONYMOUS REPORTING

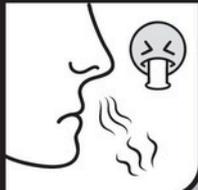
Iwe unogona zvakare kutumira mushumo usingazivikanwe kuburikidza nefomu redu repamhepo.





Emergency Response Plan Kune Varimi

KUCHENGETEKA MUKICHENI



NGOZI YEKUTOXUKANA NERUFU NOKUDA KWEHydrogen Sulphide (H₂S) Kana ikafemeswa mukati menguva refu, inogona kutungamirira pakufema.

Kuomerwa, zvirwere nerufu.

KUDZIVIRIRA

- Gara uchigadzira patsva kana kutsiva sefa musefa yebiogas sezvakarairwa muBhuku reMushandisi.
- USAbvisa gasi rakawandisa risati ratsva kuti riyerere kwenguva refu usati wabatidza moto.
- Isa chinobatidza moto pachitofu wobatidza knob kuti gasi rifambe
- Kuongorora tambo dzebiogas kakawanda.
- Kudonha kwebiogas kunopa kunhuwa kusingafadzi sekunge chinhu chiri kuora kana mazai akaora.
- Kana paonekwa kuti pabuda mukati memba, lbva mumba sezvo paine njodzi yekuva nehuturu wovhara vharuvhu kuti UMISE kuyerera kwebiogas.



KANA Ukaona HWEMA HWEMA (MAZAI AKAora)

- Vhura mahwindo nemagonhi uye ubude mumba.
- Kana kusvotwa kweziso, kukosora, kutadza kufema zvakanaka, kuda kurutsa, nemusoro zvakanyanya, fonera ve emergency.

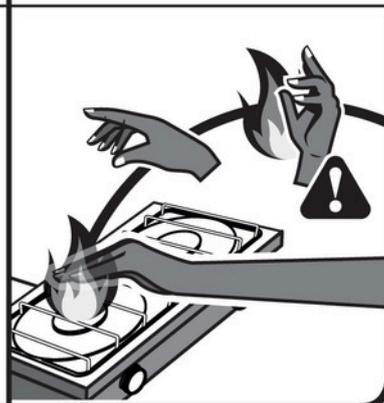
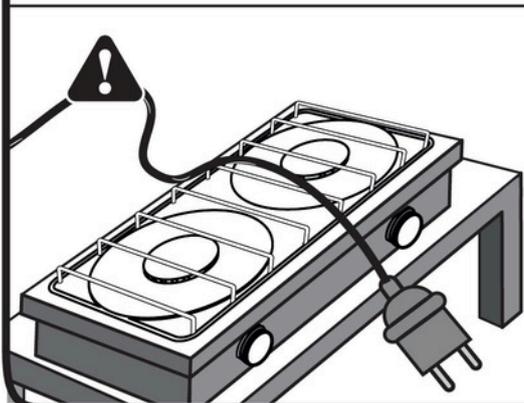


NGOZI YEMOTO NEKUTSVA

USArega chero waya kana zvinongedzo zvichienda pamusoro pechitofu. Isa iyo BioStove panzvimbo yakasimba uye yakatsiga.

USAisa maketeni kana chimwe chinhu chisingabatike pedyo nemoto.

CHENJERA paunenge uchishandisa BioStove sezvo uchigona kuzvipisa.

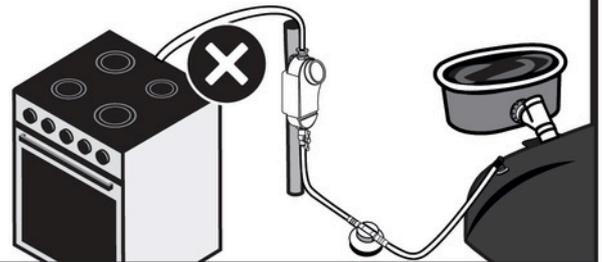
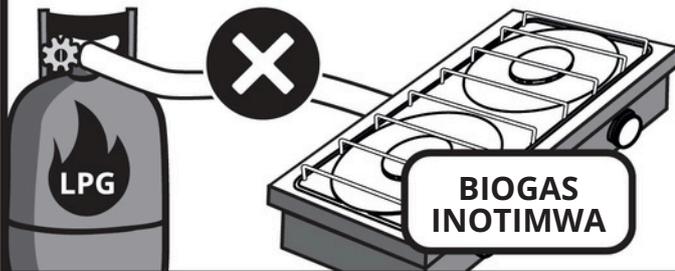




Emergency Response Plan Kune Varimi

USabatanidza iyo BioStove kune chero gasi kunobva kunze kweiyu biodigester.

USabatanidza mutsetse webiogas nechitofu chegasi chaiwo.



PANE MOTO

- VHARA vharuvhu yekuzviparadzanisa nevamwe kuti UMISE kuyerera kwebiogas.
- Bvisa nzvimbo yacho.
- Kana zvisina njodzi, bvisa moto mudiki uchishandisa mvura kana chokudzimisa moto kana chiripo.

KANA KUSVIRA

Isai mvura inotonhora panzvimbo yatsva.

Dana Rubatsiro: Fonera emergency masevhisi kana zviratidzo zvakananyanya.



KUCHENGETEKA PABIODIGESTER



NGOZI YEKUNHURA

KUDZIVIRIRA



Fence kana kuvhara tangi yebiofertilizer nguva dzese.



MUSASIYA vana isina kutarisirwa yakatenderedza biogas system uye biofertiliser tank.



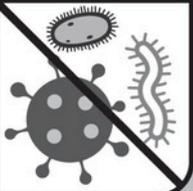


Emergency Response Plan Kune Varimi

SISTEMA.bio

MUKAITA NJODZI

Kana ikawira mutangi rebiofertilizer, batsira kubvisa mhuka/munhu kubva mugomba uye kupa rubatsiro rwekutanga, wobva watsvaga rubatsiro rwekuchipatara nekukasika.



NGOZI YEKUTAPURWA NEKUNYAPURWA KWEBACTERIA MUBIOFERTILIZER NEMUMARU.

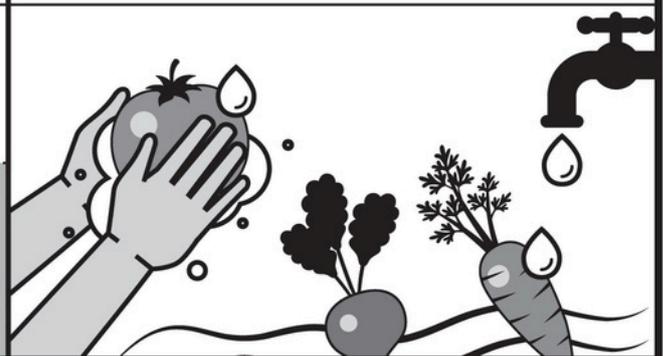
Shandisa magirovhosi paunenge uchibata manyowa uye biofertilizer

Geza maoko ako nesipo nemvura



USADA kunwa biofertilizer

Geza muriwo wako



MUNYAYA YEKURATIRWA NEBIOFERTILIZER

General Safety Tips

- **Pfeka Dziviro Dziviro:** Nguva dzose shandisa magirovhosi pakubata manyowa uye biofertilizer.
- **Emergency Contacts:** Chengeta runyoro rwezvako nhamba dzenharaunda dzechimbichimbi munzvimbo inosvikika semuenzaniso. chipatara, kiriniki, madhipatimendi uye injini dzemoto pazvinenge zvakakodzera.
- **Zvekubata GANDA:** Geza nzvimbo nesipo uye mvura kweinege 3 min.

- **Kuona MAZISO:** Shandisa mvura yakachena wogeza kwemaminitsi mashanu.
- **Kana ukamwiwa kana kufemerwa:** Tsvaga rubatsiro rwekuchipatara nekukasika.

Muchiitiko chezviitiko zvakadaro, ndapota taura neSistema.bio uchishandisa nhamba yekuchengeta mutengi yakapihwa muPeji 45.





Mutengi Care

SISTEMA.bio

ZVINOKOSHA!

Ndapota yeuka kutifonera kana:

- Paunochinja nhamba yefoni, kuti tigone kugadzirisa nhamba yako yerunhare uye tirambe tichikurukurirana newe padhuze!
- Kana chimiro chemugayi wako chachinja, semuenzaniso: kana digester yako isingachashande uye ichida kushandirwa, kana iwe usingachashandisi yako!



NDINOTENDA NEKUCHENGETA
KUTAURA PEDYO NESU!

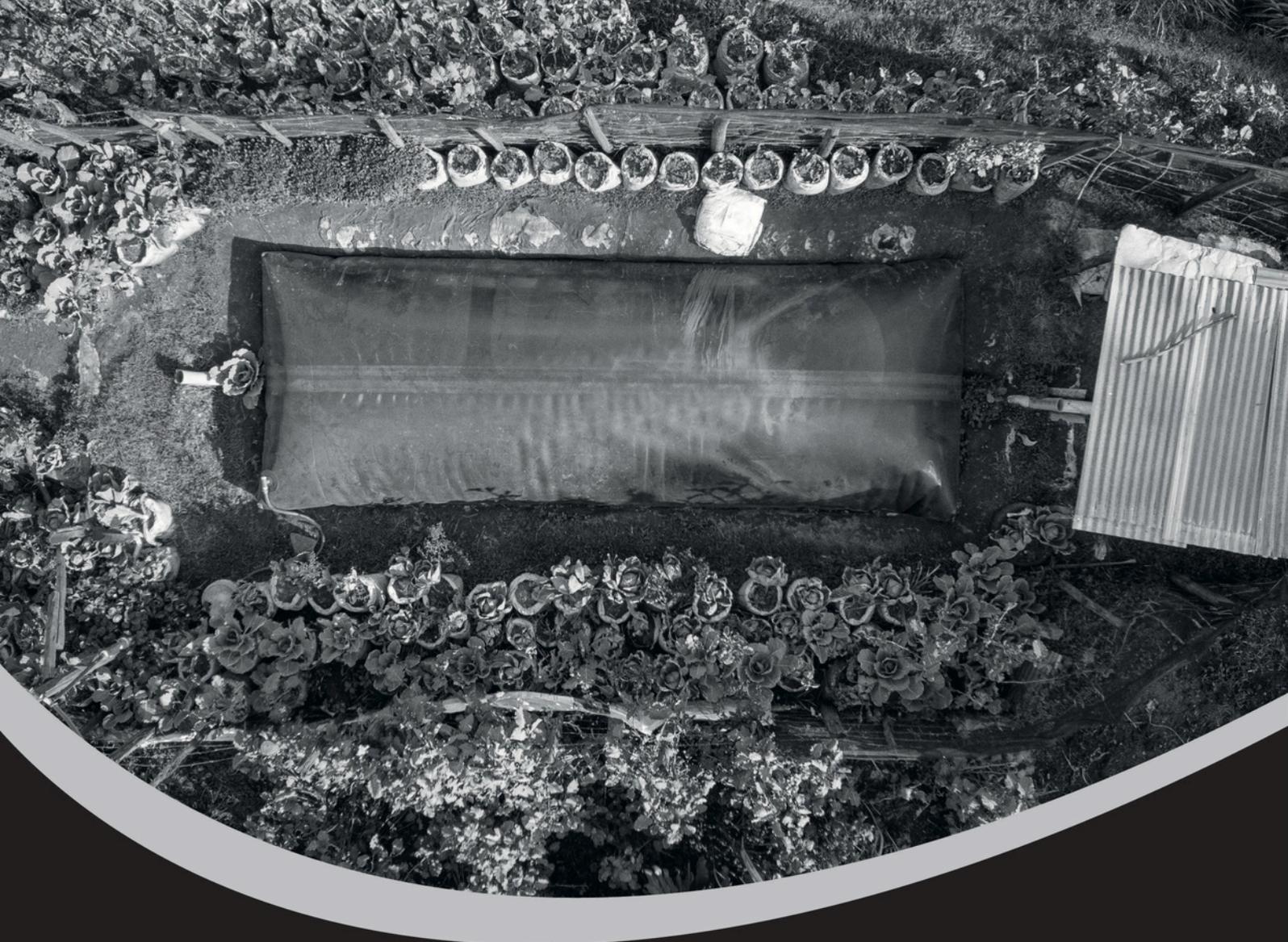


Local Sitema.bio Mutengi Kuchengeta

Ndokumbira utarise kupeji 45 kuti uwane nhamba dzenhare dzenharaunda nedzepasi rose dzevatengi uye kero dzeemail.



Kana uine chero nyaya, ndapota taura neSistema.bio Mutengi Kuchengeta. Skena iyo QR kodhi kuti uone iyo-yezvino runyorwa rwenhamba dzenhare dzedunhu uye maemail pawebhusaiti yedu.



KUTI MUMWE RUZVO, SHANYA
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