

Worm Farming in South Africa



Assessing the potential to supply composting worms for the humanitarian sector in Africa

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1. Introduction

Bear Valley Ventures Ltd was commissioned by the International Federation of Red Cross and Red Crescent Societies (IFRC) to determine if there is sufficient capacity in the worm farms in South Africa to supply the humanitarian sector for processing faecal sludge. Additionally, the feasibility of transporting live worms or cocoons is assessed. If there is sufficient capacity and the worms or cocoons can be transported, this project will progress to an experimental phase, which will tests the worms' ability to process faecal sludge.

There are currently over 12 million people living in humanitarian camps world-wide and 3.2 million of those people are living in camps in Africa¹. The average humanitarian camp houses 11,400 people¹, although they vary considerably in size. The largest refugee camp in the world is situated in Dadaab, Kenyan is estimated to house 500,000 people². Providing sustainable sanitation for these populations' is a huge challenge. Present systems such as pit latrines require frequent emptying, which is either done by tanker or manual labour and the faecal sludge is either transported off site or buried. The volume of faecal sludge generated is huge and if it is not disposed of hygienically can lead to excreta related diseases epidemics in camp settings.

The on-site processing of faecal sludge within camps by composting worms may provide a solution. It would be more cost effective than transporting the waste out of the camp. The composting worms could potentially process the faecal sludge reducing its volume by over 90%³. Additionally worms have the potential to reduce the pathogen load including parasitic worm eggs in the end product to a level where it can be applied safely to land⁴.

¹ http://unhcr.org/globaltrends/june2013/UNHCR%20GLOBAL%20TRENDS%202012_V05.pdf last

² <http://www.aljazeera.com/indepth/features/2011/07/201171182844876473.html> last accessed 31st July 2014

³ Furlong et al., (2014). Processing of human faeces by wet vermifiltration for improved on-site sanitation. The Journal of Water, Sanitation and Hygiene for Development, 4, (2) 231-239.

⁴ Eastman et al., (2001). The effectiveness of vermiculture in human pathogen reduction for USEPA biosolids stabilization. Compost Science & Utilization, 9 (1) 38-49.

2. Methodology

A total of twenty-one worm farming companies were identified in South Africa via the internet (Appendix 1). A questionnaire was developed to ascertain the information required for this assessment (Appendix 2). This was sent to all the companies which had been identified: if there was no reply within two weeks a follow-up email was sent; additionally these companies were also contacted via their online enquiry forms and Facebook pages. After one month companies who had not responded were contacted by phone and a final follow-up email was sent on the 15th July.

3. Results

The response rate to the questionnaire was 67% (14 of 21). Two of these companies (Suburban Earthworms and Global Worming) had gone out of business. An additional five companies confirmed by phone that worm farming was their main business, but did not complete a questionnaire. Therefore it is possible that the results below in terms of capacity underestimate the worm and cocoon supply in South Africa. A breakdown of the replies from questionnaires be found below in Figure 1. The companies which worm farmed were spread across South Africa this can be seen in Figure 2.

The completed questionnaires can be found in Appendix 3. There were no completed questionnaires for three of the companies that do not sell worms, as one company (The worm Factory) replied via Facebook and two others (The Worm Farm and Living Earth) replied via email, but copies of the correspondence from these companies can be found in this Appendix. Worm4Africa an NGO promoting vermicomposting and vermiculture did not submit a questionnaire, but forwarded it to Fertilis a worm farming company (the email can be found in Appendix 3). Eco Worm Farms did not complete a questionnaire, but supplied the relevant information via phone, so a summary of the answers given is included in Appendix 3. A summary of the information gained from worm farming companies can be found in Table 1.

Figure1: Questionnaire responses (n=14)

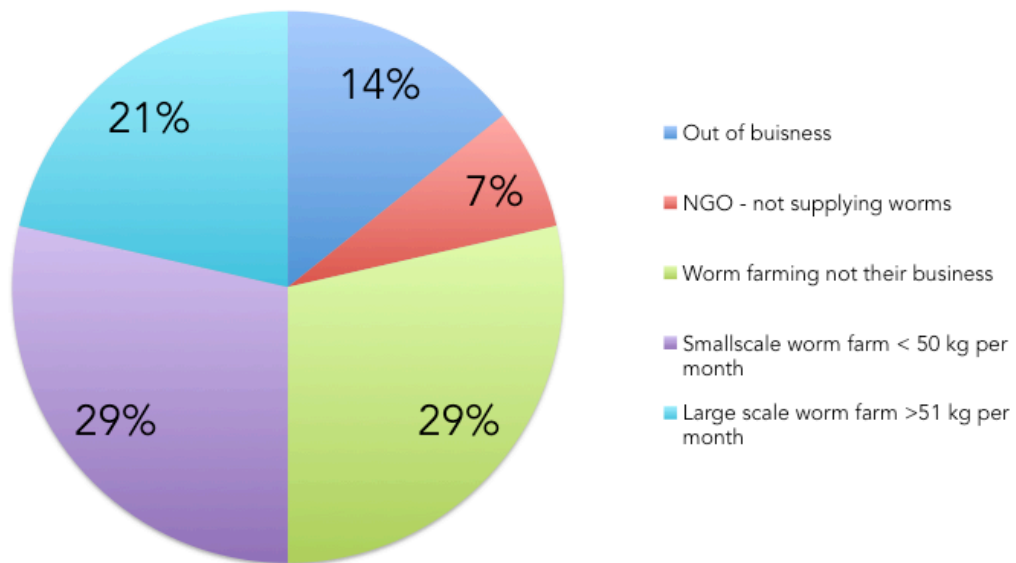


Figure 2: Geographic spread of Worm Farms that responded to the questionnaire (Source: Google Maps)

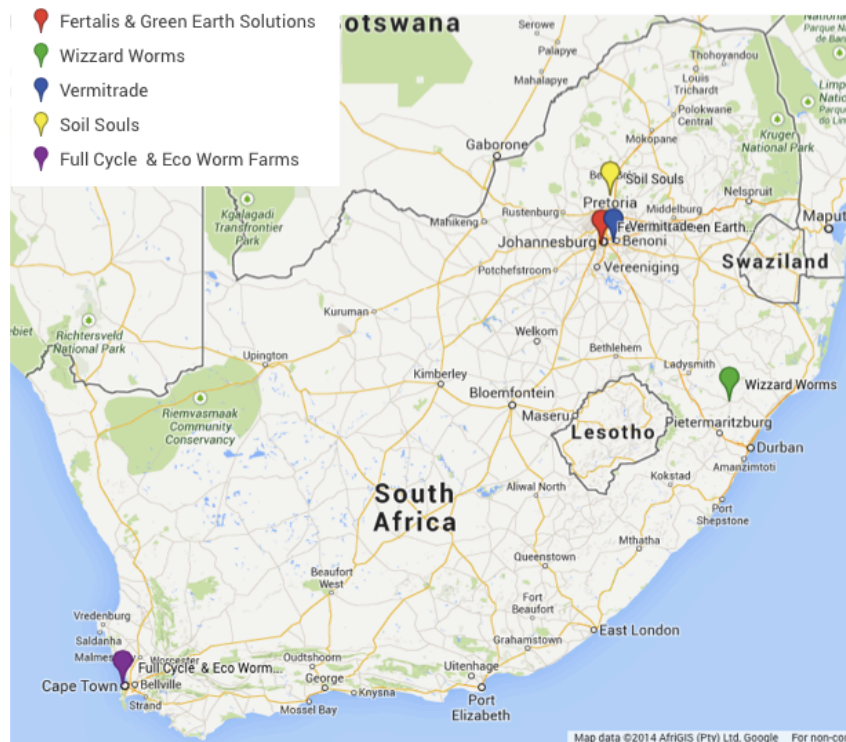


Table 1: Summary of worm farm information

Name of company	Worm species	Present capacity	Cost per kg	Export experience	Permit to export
Wizzard Worms	<i>E.fetida</i>	No data	US\$ 47-66	No data	No data
Fertalis	<i>E. fetida</i>	20 kg/month	US\$ 56	Botswana	No
Soil Souls	<i>E. fetida</i>	50 kg/month	US\$ 90	Namibia, Botswana, Zambia	No
Eco Worm Farms	<i>E. fetida</i>	50 kg/month	US\$ 90	No	No
Full Cycle	<i>E. fetida</i>	200 kg/month	US\$ 56	Tanzania, Botswana, Namibia, Lesotho, Ugandan	Yes
Green Earth Solutions	<i>E. fetida</i> & <i>E. eugeniae</i>	500 kg/month	US\$ 25	No	No
Vermi Trade	<i>E. fetida</i>	2,300	US\$15	Zambia, Nambia, Tanzania	No

Of the companies which worm farmed four were classified as small scale, as they were able to currently supply ≤ 50 kg per month. These companies were Fertalis, Soil Souls, Worm Wizzards and Eco Worm Farms and all had been trading for between five and thirty years. They supply *Eisenia fetida* (Tiger worm) which have been independently verified. The cost of the worms varied from US\$47 to 90 per kg. All were able to supply cocoons, although none of these companies were able to give a price per kg for their cocoons. Two had previously exported worms to neighbouring countries such as Botswana, Namibia and Zimbabwe. One company had exported the worms in vermicompost and another was via people who carried them across borders. Neither of these companies had the permit to export nor the ability provide a phyto-sanitary certificate which is normally required for importation of live organisms. Soil Souls stated that they could increase their production to 250 kg per month, and both Soil Souls and Fertalis stated that they were able to process an order of 20 kg and this would take six weeks (Soil Souls) to three months (Fertalis).

The large worm farms that replied were:

- Green Earth Solutions who produce 500 kg of worms per month at US\$40 per kg

- Vermi Trade who produce 2,300 kg of worms per month at US\$ 15 per kg
- Full Cycle who produce 200 kg of worms per month at US\$ 57 per kg

Green Earth Solutions supply a mixture of *E. fetida* and *Eudrilus eugeniae* (African nightcrawler), while the other two companies are supplying *E. fetida*, all species having been independently verified. The worms cost between US\$15-57 per kg, it is possible that discounts could be obtained for larger orders, although this was not explored in the questionnaire. Two of the companies (Green Earth Solutions and Vermi Trade) are able to supply cocoons: Green Earth Solutions costed them at US\$ 25 per kg mixed with vermicompost while Vermi Trade costed them at US\$ 10 per 100 g. Two of the companies had exported worms to other countries: Vermi Trade had exported worms to Zambia, Tanzania and Namibia, whereas Full cycle had exported worms to Tanzania, Namibia, Botswana Lesotho and Uganda. Vermi Trade do not yet have a licence to export worms, whereas Full Cycle do and are able to provide a phyto-sanitary certificate. Vermi Trade and Green Earth Solutions projected that they could increase their worm production to 5,000 kg per month, whereas Full Cycle project that they could increase their worm production to 600-800 kg per month.

4. Conclusions

From the questionnaire results it can be stated that the South African worm industry has the capacity to supply over 3,000 kg per month or over 36, 000 kg per year. Allowing for the number of non-responses to the questionnaire it is thought that this figure could be significantly higher and potentially double these figures.

The current monthly supply of worms has the potential to process the faecal sludge from an average sized humanitarian camp (population of 11,400¹). Three thousand kg of worms have the ability to process the faecal waste from 15,000 people daily, around 4 tonnes per day. Through the companies' projections it can be seen that there is the potential to increase production to over 11,000 kg of worms per month or over 132,000 kg per year. This could support processing of around 15 tonnes of faecal waste per day. Furthermore the worms processing the waste would multiply, in ideal condition their mass could double approximately every 60 days, these worms could be harvested and used in other camps. Another option would be to establish an independent worm farm for these systems.

From these results it can be concluded that the South African worm industry currently has the capacity to supply worms for humanitarian settings and this capacity could be quickly increased to meet larger demands.

The production of cocoons is less established, but all companies except one (Full Cycle) stated that they could supply cocoons. Only two companies however (Green Earth Solutions and Vermi Trade) could supply a price. The total current capacity for cocoon production is over 6,000 kg per month. It is assumed that this would be cocoons mixed with vermicompost (as if it was only cocoons the companies current capacity to sell worms would be higher). The ratio of cocoons to vermicompost is not known, but if a one tenth of the weight were cocoons, then 1kg of vermicompost and cocoon mixture could produce 15 kg of worms (see calculation in Appendix 4). The disadvantage of using cocoons is that it takes approximately six weeks for them to hatch and reach maturity. This means that there would be a lag in the processing of the faecal sludge. The advantage of using cocoons is that they would be easier to transport due to their initial weight, although none of the companies that replied have experience in exporting worm cocoons.

The worm farming Industry in South Africa has the current capacity to supply live worms at a level where they could be used to process faecal sludge in a humanitarian setting and they have the ability to more than triple their supply if there was the demand. One company Full Cycle has a history of exporting worms internationally with phyto-sanitary certificates. Although most companies could supply cocoons, this is less developed commercially.

5. Recommended Suppliers and Next Step

Full Cycle is recommended as the worm supplier for the Malawi trials as it has the capacity to supply the worms required, experience in exporting worms across Africa and can provide a phyto-sanitary certificate. Although they do not currently export worms it is hoped that they could be encouraged to do this as it may lead to new business opportunities.

Once the importation permit has been granted, a test order of 1 kg of worms will be placed with Full Cycle. In addition a dialogue should be undertaken with Full Cycle to see if they would be able to transport a test order of 1 kg of cocoons. If Full Cycle is unable to supply cocoons then Vermi Trade should be contacted to see if they are able to export cocoons via Full Cycle.

Appendix 1: Table of companies identified in South Africa

Name	Website	Email address
Goodbugs	www.goodbugs.co.za	info@goodbugs.co.za
Worm-farm	www.worm-farm.co.za	paulM@worm-farm.co.za
Worm wizzards	www.wizzardworms.co.za	don@wizzardworms.co.za
Suburban earth worms	www.suburbaneearthworms.co.za	earthworm@telkomsa.net
Global worming	www.globalworming.co.za	info@globalworming.co.za
Fertilis	www.fertilis.co.za	windywillows@myconnection.co.za
Ecoworm farms	www.ecowormfarms.co.za	esther@ecowormfarms.co.za
Full cycle	www.fullcycle.co.za	mail@fullcycle.co.za
C'est la vie worm farm		earthworms@vodamail.co.za
Earth worm buddies	www.earthwormbuddies.net	pieter@earthwormbuddies.net
Hex red worm farms	www.hexwormfarms.co.za	hex@dbnmail.co.za
Mother earth worms	www.motherearthworms.co.za	rudolf@motherearthworms.co.za
Worm4Africa	www.worms4africa.co.za	info@worms4africa.co.za
Early worms	www.earlyworms.org	earlyworms@live.co.za
Earth worm paradise	www.earthwormparadise.webs.com	earthwormparadise@ananzi.co.za
Living earth	www.livingearth.co.za	carmen@livingearth.co.za
Worms galore	www.wormsgalore.co.za	lesli@wormsgalore.co.za
Soil souls	www.soilsouls.co.za	juta@soilsouls.co.za
The worm factory	www.the-worm-factory.co.za	
Vermi Trade*	www.vermitrade.co.za	elwyn@vermitrade.co.za

* not found via search details given via Worms galore

Appendix 2: Questionnaire



Market Analysis of Vermiculture in South Africa

Introduction

Bear Valley Ventures Ltd (www.bearvalleyventures.com) has developed expertise in incorporating composting worms into sanitation systems. We have been commissioned to investigate the use of composting worms in sanitation in humanitarian settings by the International Federation of Red Cross and Red Crescent Societies. The viability of using composting worms in this setting is dependent on the speedy supply of a large number of worms or cocoons to locations across Africa. As South Africa has well-developed worm farming (vermiculture) businesses, we are undertaking a detailed market analysis of vermiculture in South Africa. The attached two page questionnaire will be used to do this. We would be very grateful if you could complete this questionnaire and return to us as soon as possible.

Instructions

All questions should be answered. If questions are not applicable, please write N/A. Where Yes /No options are available, circle the appropriate answer. Answers should reflect your current status.

Completed questionnaires should be forwarded to:

Dr. Claire Furlong at clairefurlong@bearvalleyventures.com

Questionnaire

Section A – General Information

1. Company Name:
2. Address:
3. City/Region:
4. Phone:
5. Fax:
6. E-mail:
7. Web link:
8. Date:

Section B – Company Particulars and Earthworm Supply Capabilities

9. Are live earthworms/vermiculture the principal products of your company?
 Yes/No If no, please proceed to Question 13.
 If yes, how long has your company been in the earthworm/vermiculture business?
years
10. Do you supply earthworms as a single species, a mixture of species or both?

11. Please fill in the table below to indicate the species of earthworm you supply:

Earthworm species (please indicate if single or mixed species, and if mixed, the proportion of each species i.e. 50%)	Cost (US \$/Kg)	Production capacity (Kg/month)

12. Have the species of your worms been independently verified by an expert? Yes/No
13. Can you supply earthworm cocoons as a separate product? Yes/No
If no, you have now completed the questionnaire

If yes, please provide information below:

Cocoon species (please indicate if single or mixed species, and if mixed, the proportion of each species i.e. 50%)	Cost (US \$/g)	Production capacity (g/month)

1. Have you exported live earthworms/ cocoons to other countries?

Yes/No If no, please go to Question 15.

If yes, please list the countries in the table below:

2. Do you have the capacity to increase your current level of production?

Yes/No If no, please go to Question 16.

If yes, what would be your potential maximum capacity?Kg/month

3. How long does it take you to fulfil (ie grow, harvest and ship) an order (ie grow,
harvest and ship) of 20 kg? days/weeks

Thank you for helping us with this study

Appendix 3: Completed questionnaires

Company: Vermi Trade

Section A – General Information

1. Company Name: ...Vermi Trade
2. Address: 819 Avianto Estate, 126 Carayelle Road, Impala Park
3. City/Region: Boksburg.....
4. Phone: 0848001997/ 011 056 9150.....
5. Fax: 0865188744.....
6. E-mail: elwyn@vermitrade.co.za.....
7. Web link: www.vermitrade.co.za.....
8. Date: 08/07/2014.....

Section B – Company Particulars and Earthworm Supply Capabilities

9. Are live earthworms/vermiculture the principal products of your company?
Yes If no, please proceed to Question 13.
If yes, how long has your company been in the earthworm/vermiculture business? .8 years.....
10. Do you supply earthworms as a single species, a mixture of species or both? ...Single species, specialising in *Eisenia Fetida*
11. Please fill in the table below to indicate the species of earthworm you supply:

Earthworm species (please indicate if single or mixed species, and if mixed, the proportion of each species i.e. 50%)	Cost (US \$/Kg)	Production capacity (Kg/month)
<i>Eisenia Fetida</i>	\$15	2300 kg

12. Have the species of your worms been independently verified by an expert? Yes/No
Yes

13. Can you supply earthworm cocoons as a separate product?
Yes If no, you have now completed the questionnaire.

If yes, please provide information below:

Cocoon species (please indicate if single or mixed species, and if mixed, the proportion of each species i.e. 50%)	Cost (US \$/g)	Production capacity (g/month)
Eisenia Fetida	\$10/100g	5000g/month

14. Have you exported live earthworms/ cocoons to other countries?

Yes/No If no, please go to Question 15.

If yes, please list the countries in the table below:

Namibia	For all three countries the client was responsible for getting them out of the country as we do not have an export permit as yet.
Zambia	
Tanzania	

15. Do you have the capacity to increase your current level of production?

Yes If no, please go to Question 16.

If yes, what would be your potential maximum capacity? 5000 Kg/month

16. How long does it take you to fulfil (ie grow, harvest and ship) an order (ie grow, harvest and ship) of 20 kg? 3 days

Company: Soil Souls

Section A – General Information

1. Company Name:soilsouls.....
2. Address: 22b farmers folly, lynnwood,
.....
3. City/Region:pretoria.....
4. Phone:012 3615800.....
5. Fax:086 6336383.....
6. E-mail:juta@soilsouls.co.za.....
7. Web link:
.....www.soilsouls.co.za.....
8. Date:10 jul 2014.....

Section B – Company Particulars and Earthworm Supply Capabilities

9. Are live earthworms/vermiculture the principal products of your company?
Yes/No If no, please proceed to Question 13.
If yes, how long has your company been in the earthworm/vermiculture business?
.....5 years.....
10. Do you supply earthworms as a single species, a mixture of species or both?
.....single species.....
11. Please fill in the table below to indicate the species of earthworm you supply:

Earthworm species (please indicate if single or mixed species, and if mixed, the proportion of each species i.e. 50%)	Cost (US \$/Kg)	Production capacity (Kg/month)
Eisenia foetida	US\$90	+/-50kg

12. Have the species of your worms been independently verified by an expert? Yes/No

13. Can you supply earthworm cocoons as a separate product?

Have not received demand for this yet. In small scale though

Yes/No If no, you have now completed the questionnaire.

If yes, please provide information below:

Cocoon species (please indicate if single or mixed species, and if mixed, the proportion of each species i.e. 50%)	Cost (US \$/g)	Production capacity (g/month)
100% <i>Eisenia foetida</i>		

14. Have you exported live earthworms/ cocoons to other countries?

Yes/No If no, please go to Question 15.

If yes, please list the countries in the table below:

Namibia, Botswana, <i>Zimbabwe</i>	

15. Do you have the capacity to increase your current level of production?

Yes/No If no, please go to Question 16.

If yes, what would be your potential maximum capacity?250.....Kg/month

16. How long does it take you to fulfil (i.e. grow, harvest and ship) an order (i.e. grow, harvest and ship) of 20 kg?6 weeks..... days/weeks

Thank you for helping us with this study

Company: C'est La Vie Worm Farm

Section A – General Information

1. Company Name: ...C'est La Vie Worm Farm.....
2. Address: ...Plot 19 of Farm 260, Dwarsweg, George, South Africa.....
3. City/Region: ...Western Cape.....
4. Phone: ...082 404 9539.....
5. Fax:
6. E-mail: ...earthworms@vodamail.co.za.....
7. Web link: www.cestlavie.yolasite.com
8. Date:

Section B – Company Particulars and Earthworm Supply Capabilities

9. Are live earthworms/vermiculture the principal products of your company?

No If no, please proceed to Question 13.

If yes, how long has your company been in the earthworm/vermiculture business?

.....

10. Do you supply earthworms as a single species, a mixture of species or both?

.....

11. Please fill in the table below to indicate the species of earthworm you supply:

Earthworm species (please indicate if single or mixed species, and if mixed, the proportion of each species i.e. 50%)	Cost (US \$/Kg)	Production capacity (Kg/month)

12. Have the species of your worms been independently verified by an expert? Yes/No

13. Can you supply earthworm cocoons as a separate product?

No If no, you have now completed the questionnaire.

If yes, please provide information below:

Cocoon species (please indicate if single or mixed species, and if mixed, the proportion of each species i.e. 50%)	Cost (US \$/g)	Production capacity (g/month)

14. Have you exported live earthworms/ cocoons to other countries?

Yes/No If no, please go to Question 15.

If yes, please list the countries in the table below:

15. Do you have the capacity to increase your current level of production?

Yes/No If no, please go to Question 16.

If yes, what would be your potential maximum capacity?Kg/month

16. How long does it take you to fulfil (ie grow, harvest and ship) an order (ie grow, harvest and ship) of 20 kg? days/weeks

Thank you for helping us with this study

Company: Green Earth Solutions

Questionnaire

Section A – General Information

1. Company Name:Green Earth Solutions.....
2. Address:101 Klipriver Road, Johannesburg 2091 PO Box 3449
Glenvista
2092.....
3. City/Region: Johannesburg South Africa
4. Phone: 01127848687953
5. Fax:n/a
6. E-mail: Greenearthsa@yahoo.co.za
7. Web link: : www.facebook.com/pages/Green-Earth-Landscaping/106199026135969
8. Date:6 June, 2014

Section B – Company Particulars and Earthworm Supply Capabilities

9. Are live earthworms/vermiculture the principal products of your company?
Yes
If yes, how long has your company been in the earthworm/vermiculture business?
...13 Years
10. Do you supply earthworms as a single species, a mixture of species or both?A mixture
11. Please fill in the table below to indicate the species of earthworm you supply:

Earthworm species (please indicate if single or mixed species, and if mixed, the proportion of each species i.e. 50%)	Cost (US \$/Kg)	Production capacity (Kg/month)
Red Wiggler/Night Crawler	\$40.00	500

12. Have the species of your worms been independently verified by an expert? Yes

13. Can you supply earthworm cocoons as a separate product?

Yes/No If no, you have now completed the questionnaire.

If yes, please provide information below:

Cocoon species (please indicate if single or mixed species, and if mixed, the proportion of each species i.e. 50%)	Cost (US \$/g)	Production capacity (g/month)
Mixed species 70% red wriggler, 30 % night crawler	\$25 /kg	1000 kg per month with mixed vermicasting

14. Have you exported live earthworms/ cocoons to other countries?

No

If yes, please list the countries in the table below:

15. Do you have the capacity to increase your current level of production?

Yes If no, please go to Question 16.

If yes, what would be your potential maximum capacity?5000 Kg/month

16. How long does it take you to fulfil (ie grow, harvest and ship) an order (ie grow, harvest and ship) of 20 kg?4.....weeks

Company: Wizards Worms

Questionnaire

Section A – General Information

1. Company Name: Wizzard Worms cc.....
2. Address: 236 York Street. Greytown. South Africa
3250.....
3. City/Region:.....
4. Phone: ...033 413 1837.....
5. Fax:
6. E-mail: thewiz@wizzardworms.co.za.....
7. Web link:
8. Date: ...6June2114.....

Section B – Company Particulars and Earthworm Supply Capabilities

9. Are live earthworms/vermiculture the principal products of your company?
Yes/No If no, please proceed to Question 13.
If yes, how long has your company been in the earthworm/vermiculture business?
12years.....
10. Do you supply earthworms as a single species, a mixture of species or both?
.....Single.....
11. Please fill in the table below to indicate the species of earthworm you supply:

Earthworm species (please indicate if single or mixed species, and if mixed, the proportion of each species i.e. 50%)	Cost (US \$/Kg)	Production capacity (Kg/month)
<u>Eisenia fetida</u>		

12. Have the species of your worms been independently verified by an expert? Yes/No

13. Can you supply earthworm cocoons as a separate product? Not in quantity currently

Yes/No If no, you have now completed the questionnaire.

If yes, please provide information below:

Cocoon species (please indicate if single or mixed species, and if mixed, the proportion of each species i.e. 50%)	Cost (US \$/g)	Production capacity (g/month)

14. Have you exported live earthworms/cocoons to other countries?

Yes/No If no, please go to Question 15.

If yes, please list the countries in the table below:

15. Do you have the capacity to increase your current level of production?

Yes/No If no, please go to Question 16.

If yes, what would be your potential maximum capacity?.....Kg/month

16. How long does it take you to fulfill (ie grow,harvest and ship) an order (ie
grow,harvest and ship) of 20 kg? ...Usually have stocks of this quantity. Also am
involved possibly with the establishment of large operation very
shortly.....days/weeks

Further information on the costing of the worms was gained via email see below:



International Federation
of Red Cross and Red Crescent Societies

☆ Don Blacklaw

To: Claire Furlong Cc: catherine@wizzardworms.co.za
RE: Worm Farming Questionnaire

24 July 2014 10:41



Hi Claire,

Currently prices for worms are in the region of R500 to R700 per kilo

My current capacity is sometimes taken up with orders but two new developments with which I am associated should come on stream next year but unsure as to quantity.

As to cocoons I would have to be guided by current market prices as although have sold a few ma unsure of the true costs when on a larger scale.

If the Red Cross or some other party could support the venture to supply these worms we really could go ahead.

As to exporting the problem is more with the importing country that demands a phytosanitary certificate that our Dept of Agriculture are loathe to provide.

Hope this helps

Kind Regards

Don Blacklaw
Wizzardworms.co.za
076 875 0266 033 413 1837

Company: Fertilis

Questionnaire

Section A – General Information

1. Company Name: PLANNER BEE PLANT CARE CC
2. Address: Also: EARTH WORM WASTE MANAGEMENT (Non-Profit Company)
120 LOURENS DRIVE
BEAULIEU KYALAMI
3. City/Region: JOHANNESBURG, GAUTENG, SOUTH AFRICA
4. Phone: —
5. Fax: 086 623 8872
6. E-mail: carmen@fertilis.co.za
7. Web link: www.fertilis.co.za www.facebook.com/fertilis
8. Date: 6 June 2014

Section B – Company Particulars and Earthworm Supply Capabilities

9. Are live earthworms/vermiculture the principal products of your company?

Yes/No If no, please proceed to Question 13.

If yes, how long has your company been in the earthworm/vermiculture business?

We also mainly produce earthworm castings (FERTILIS)

10. Do you supply earthworms as a single species, a mixture of species or both?

Single

11. Please fill in the table below to indicate the species of earthworm you supply:

Earthworm species (please indicate if single or mixed species, and if mixed, the proportion of each species i.e. 50%)	Cost (US \$/Kg)	Production capacity (Kg/month)
<u>Eisenia fetida</u>	<u>Zar 600/kg</u>	<u>currently: 20kg</u>
	<u>we can easily upscale if</u>	<u>needed.</u>

12. Have the species of your worms been independently verified by an expert? Yes/No

yes fetida + andrei mixed together.

13. Can you supply earthworm cocoons as a separate product?

Yes/No

If no, you have now completed the questionnaire.

But we have not had sales/requests at present.

If yes, please provide information below:

Cocoon species (please indicate if single or mixed species, and if mixed, the proportion of each species i.e. 50%)	Cost (US \$/g)	Production capacity (g/month)

14. Have you exported live earthworms/~~cocoons~~ to other countries?

Yes/No

If no, please go to Question 15.

(but they were in compost (not separate))

If yes, please list the countries in the table below:

Botswana	

15. Do you have the capacity to increase your current level of production?

Yes/No

If no, please go to Question 16.

If yes, what would be your potential maximum capacity?

we can up scale to what you would confirm as an

16. How long does it take you to fulfil (ie grow, harvest and ship) an order (ie grow, order

harvest and ship) of 20 kg? days/weeks

within 3 months.

Thank you for helping us with this study

Thank you Chham.

Company: Full Cycle

Questionnaire

Section A – General Information

1. Company Name: FullCycle cc
2. Address: Box 385, Noordhoek, Cape Town
3. City/Region: Cape Town, Western Cape
4. Phone: 27 21 789 2922
5. Fax:
6. E-mail: mail@fullcycle.co.za/mary@fullcycle.co.za
7. Web link: www.fullcycle.co.za
8. Date: 16 July 2014

Section B – Company Particulars and Earthworm Supply Capabilities

9. Are live earthworms/vermiculture the principal products of your company?
Yes/No YES If no, please proceed to Question 13.
If yes, how long has your company been in the earthworm/vermiculture business?

Nine.....years

10. Do you supply earthworms as a single species, a mixture of species or both? ...We work predominantly with Eisenia

fetida.....

11. Please fill in the table below to indicate the species of earthworm you supply:

Earthworm species (please indicate if single or mixed species, and if mixed, the proportion of each species i.e. 50%)	Cost (US \$/Kg)	Production capacity (Kg/month)
<u>Eisenia fetida</u>	We charge per 250 gms @ R200 Bulk Supply R600 per Kg Both exclude delivery	Dependent on supply needs. We have standard breeding base of 200kgs per month

12. Have the species of your worms been independently verified by an expert? Yes/No
 YES – South African department of Agriculture by Dr Gary Boerman. We also supply
 via Ireland and are certified by the Irish Department of Agriculture

13. Can you supply earthworm cocoons as a separate product? Yes/No No – can
 send mix of earthworms and cocoons.

If no, you have now completed the questionnaire

If yes, please provide information below:

Cocoon species (please indicate if single or mixed species, and if mixed, the proportion of each species i.e. 50%)	Cost (US \$/g)	Production capacity (g/month)

14. Have you exported live earthworms/ cocoons to other countries?

Yes/No If no, please go to Question 15.

If yes, please list the countries in the table below:

Tanzania	
Namibia	
Botswana	
Lesotho	
Uganda	

15. Do you have the capacity to increase your current level of production? Yes

Yes/No If no, please go to Question 16.

If yes, what would be your potential maximum capacity? ...600-800

kg.Kg/month

16. How long does it take you to fulfil (ie grow, harvest and ship) an order (ie grow, harvest and ship) of 20 kg? ...Shipment ready 5 days max.....
days/weeks

Thank you for helping us with this study

Company: Eco Worm Farms

Company Name	Eco worm farms
Company Address	
Region	
Phone	
Fax	
Email	www.ecowormfarms.co.za
Weblines	esther@ecowormfarms.co.za
Date	over phone 4/7/14
Vermiculture	Yes 30 years
Single Species or Mixed	Single
Species	E. fetida
Cost	US\$90
Capacity	50 kg per month
Independently verified	
Cocoon supply	Yes
Species	E. fetida
Cost	
Capacity	6,0000 per month
Export experience	No
Details	
Increase production	Not interested
Details	
Processing of order of 20 kg	Not interested
Details	
Other information	

Company: The Worm Farm

Eric Teunen

To: clairefurlong@bearvalleyventures.com
RE: WormFarm Website Enquiry

20 June 2014 07:14

[Inbox - Bear Valley Ventures](#)

Hi Claire

I only do vermiculture on a small scale, more like a hobby. I do not deal with large numbers of worms, only worm farms for domestic use..

Kind regards

Eric Teunen

From: clairefurlong@bearvalleyventures.com
Sent: 2014/06/19 06:06:22 PM
To: thewormfarm@mweb.co.za
Cc:
Subject: RE: WormFarm Website Enquiry

Name: Claire

Surname: Furlong

Email Address: clairefurlong@bearvalleyventures.com

Contact Number: 07739080667

Message: I work for a company called Bear Valley Ventures Ltd and we have developed expertise in incorporating composting worms into sanitation systems. We have been commissioned to investigate the use of composting worms in sanitation in humanitarian settings by the International Federation of Red Cross and Red Crescent Societies. The viability of using composting worms in this setting is dependent on the speedy supply of a large number worms or cocoons to locations across Africa. As South Africa has well-developed worm farming (vermiculture) businesses, we are undertaking a detailed market analysis of vermiculture in South Africa. If you are able to fill in a questionnaire for me please reply to this message and I will try to forward it to you. Any help you can give us is most appreciated. Many thanks Claire

Company: Worm4Africa
Forwarded email to Fertilis

On Tuesday, 3 June 2014, 20:11, "greenearthsa@yahoo.co.za" <greenearthsa@yahoo.co.za> wrote:

Sent via my BlackBerry from Vodacom - let your email find you!

From: Lynne Erasmus <worms4africa@gmail.com>
Date: Sun, 1 Jun 2014 11:08:52 +0200
To: Gina Shoemaker <greenearthsa@yahoo.co.za>
Subject: Fwd: Worm Farming in South Africa

Hi Gin

I hope your meeting with the Minister of Agriculture went well,

Please confirm what is happening about the Karkloof Market. If you cannot come down please let Kim know.

I am forwarding this to you because I think you can do more with this than I can.

Regards

Lynne

----- Forwarded message -----

From: **Claire Furlong** <clairefurlong@bearvalleyventures.com>
Date: Sat, May 31, 2014 at 6:38 AM
Subject: Re: Worm Farming in South Africa
To: Lynne Erasmus <worms4africa@gmail.com>

Further information about Worms4Africa was gained over the phone.

Company: Living Earth

Louise Fletcher
To: Claire Furlong, LivingEarth
RE: Worm Farming in South Africa Study

Hi Claire

We don't deal with worms at all but I am happy for you to send me information

Many thanks,
Louise Fletcher
0836553019

-----Original Message-----

From: LivingEarth [mailto:Louise@livingearth.co.za]
Sent: 18 June 2014 17:33
To: Louise@livingearth.co.za
Subject: Worm Farming in South Africa Study

You received a message from claire.furlong@gmail.com

I work for a company called Bear Valley Ventures Ltd and we developed expertise in incorporating composting worms into sanitation systems. We have been commissioned to investigate the use of composting worms in sanitation in humanitarian settings by the International Federation of Red Cross and Red Crescent Societies. The viability of using composting worms in this setting is dependent on the speedy supply of a large number of worms or cocoons to locations across Africa. As South Africa has well-developed worm farming (vermiculture) businesses, we are undertaking a detailed market analysis of vermiculture in South Africa. Earlier this month I tried to send you a questionnaire, but it bounced back. If you are able to fill in a questionnaire for me please reply to this email and I will try to forward it to you.
Any help you can give us is most appreciated.
Many thanks
Claire

Company: The Worm Factory

Claire

Questionnaire South Africa.docx

[open](#) · [download](#)

15 July



Claire Furlong

15/07/2014 16:11

Hello there, I was wondering if you receive my message about the study I am doing? I am trying to contact worm farmers in South Africa to gather information about worm farming and the capacity to supply worms to other countries in Africa. I have attached a questionnaire which will help me gather this data. It is very short only three pages and once complete could you please email it to me at clairefurlong@bearvalleyventures.com that would be great.

Thanks for your time

Claire

Questionnaire South Africa Blank.docx

[open](#) · [download](#)



The Worm Factory.

15/07/2014 16:12

Hi there - we don't do worm farming - but supply worm factories to buyers? Regards, Astrid



Claire Furlong

15/07/2014 17:17

Thank you for replying Astrid 😊

Appendix 4: Cocoon calculation

1 kg = 100g of cocoons

A cocoon weighs approximately 0.02 g

100g cocoons = 5,000 cocoons

Each cocoon produces 2 worms = 10,000 worms

An average worm weighs 1.5 g = 15 kg of worms