

WORMS

you can love

When a friend of mine bought his first worm farm, it was delivered to his office. His colleagues' initial intrigue soon led to revulsion and mild apoplexy when the moist, writhing parcel containing the worms themselves was discovered. If you, too, *gril* at the thought of a thousand wrigglers on your back stoep or in your bathroom, fear not: once you've set up your worm farm, you'll enjoy the fruits of their labour without so much as ever having to say hello to the buggers. If this sounds like the perfect marriage, tread on...

Personally I've never had anything against worms – my mom taught me that they're a gardener's best friend and my Uncle James showed me how to thread one onto a fish-hook to make it irresistible to bass – and even though the composting worms used in wormeries are quite different to the earthworms I grew up with, I've still found it fairly easy to bond with them, especially when I think about how useful they are.

If you're thinking of going off the grid but aren't quite ready to live in a mud hut with nothing but three solar panels and a wind turbine for company, starting your own wormery is a step in the right direction. **Nick Dall** dug up the truth about worms.

A successful worm farm will benefit you and the environment. It will reduce drastically the amount of waste you add to the country's dumps, and what's left over when the worms have done their thing will work wonders on your garden. Worm farms are especially great if you have kids: not only are they fascinating but they also give children a sense of environmental responsibility that is surely essential for our planet to have anything near a bright future.

In South Africa, any rubbish you put in your municipal bin will go straight to a landfill. We all know the benefits of recycling, and compost heaps have been around for yonks, but worm farms are only now gaining traction. Unlike traditional compost heaps, which can produce methane and CO₂ if they

aren't maintained properly and reach temperatures as high as 80°C (none of which is very good for global warming), vermicomposting is a cold process and the worms aerate their bedding themselves. What's more, a worm farm is far smaller than a compost heap with the same "diet" – an analogy between a super-athlete and couch potato wouldn't be too far off the mark.

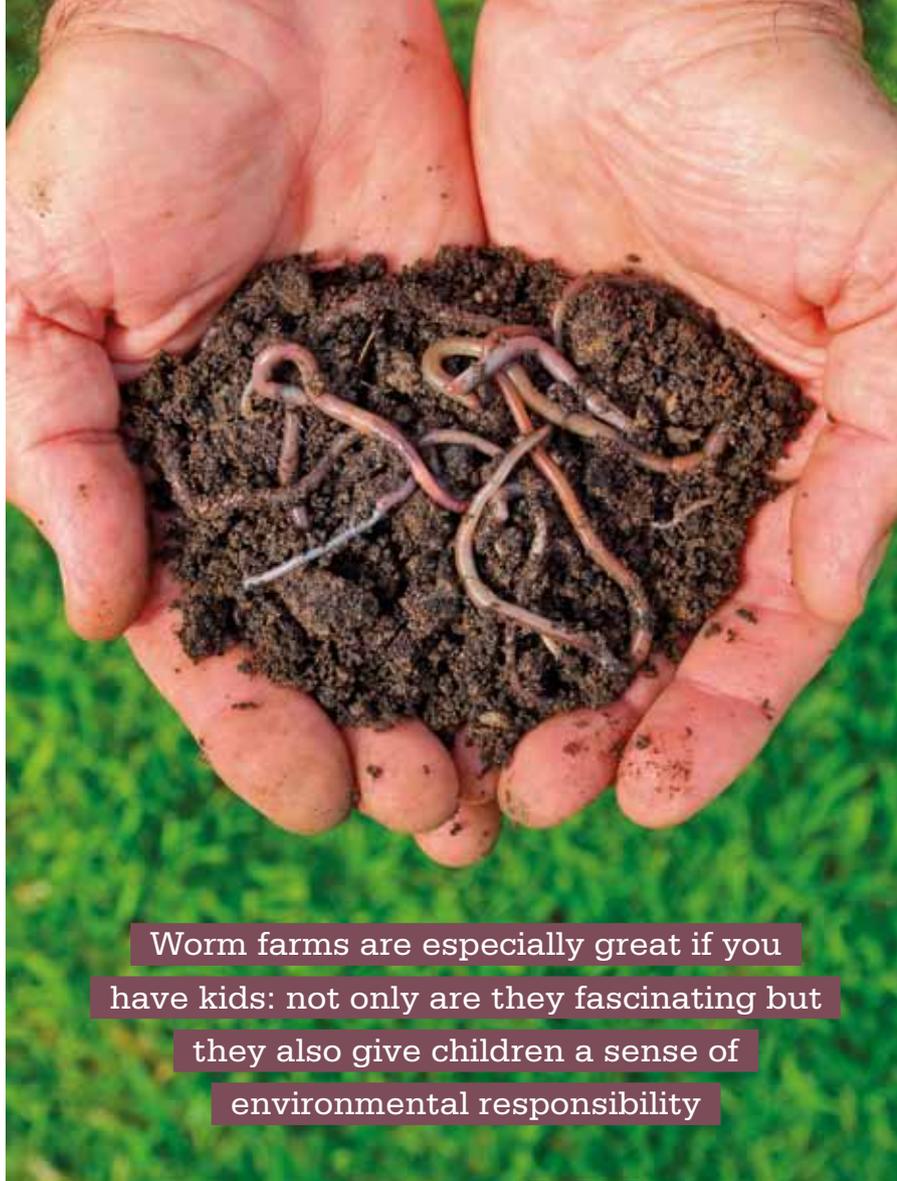
I've been worm-farming for under a year so I'm still quite a beginner, but I've had a lot of success: my worms are flourishing, I put very little compostable waste in my municipal bins, and I fertilise my entire garden using the worms' various solid and liquid byproducts. My plants are thriving, I'm saving money, and my daughter is learning a bit about the rural lifestyle



Wrigglers and crawlers

The worms you'll need to use are called red wrigglers (left). Smaller than the regular earthworms (right) you find in your garden, red wrigglers live in rotting matter and can eat half their weight in waste every day. If you live far from a city, order your red wrigglers online – they'll survive several weeks without any food.





Worm farms are especially great if you have kids: not only are they fascinating but they also give children a sense of environmental responsibility

even though she lives in the so-called “leafy suburbs”. What’s more, earthworms are the easiest pets I’ve ever owned. When I go away on holiday I just pop half a butternut in the middle of my wormery and forget about them. Bliss.

As I’d been warned, the first couple of months were slow. Once I’d assembled my farm, I created a bedding mixture of wet shredded newspaper to which I added about 500 worms and some compost. I’d been told that the worms would take a couple of weeks to settle into their new environment, so I fed them nothing for a while before starting small with a few lettuce leaves and the odd chopped banana peel. I keep my farm in a shady spot against the garden wall, but had I lived inland I probably would have had to move it somewhere sheltered during winter, as these worms can’t deal with temperatures under 5°C. Having said that, I do have to feed my worms less during winter – unlike humans, they eat less when it’s cold, not more!

I’ve heard of people who’ve had all their worms die overnight and of others who have experienced mass exoduses of Old Testament proportions. I’ve had no such calamities but in the interests of avoiding any future hiccups I called in worm-composting >

What worms want

• **A warm and moist environment** If you live somewhere really cold you might need to keep your wormery indoors. Also, soaking a blanket made from carpet underfelt in water and putting it on top of the food scraps is a good idea all year round.

• **Chlorine-free water** When you set up your worm farm you’ll need lots of moist shredded newspaper. You’ll also need to add water occasionally during summer. Borehole or river water is ideal but if you use tap water allow it to stand for 24 hours for the chlorine to dissipate.

• **Peace and quiet** Don’t scratch around in your wormery too much – don’t even remove the lid too often. A worm’s home is his castle, remember.

• **Ventilation and darkness** They hate light but they need air. Use opaque containers, and drill holes into the sides for ventilation.

• **A low-acid fat-free diet** Worms love most fruit, veg and foliage, but you need to take it easy with citrus, onions, garlic and chilli. Meat, dairy and oils are a big no-no.

A word of advice...

Everyone I met and everything I found on Google agreed on one thing: *do not overfeed your worms*. Under optimal conditions worms eat half their body weight in a day, but in a newly-established farm or during winter this figure is far lower. If you feed them more than they can handle you’ll create a rotten mess that is a breeding ground for bacteria.

Keep in mind that worms don’t have teeth, so they can’t eat fresh fruit and veg. What you add *does* need to rot before it can be eaten – you just need to avoid a serious backlog. As long as your wormery smells “earthy” you’re on the right track.



The prince of Cape Town's poor



I pick my way through flourishing calabash vines and old tractor tyres in search of Prince Nyadimbo, the “worm guru” at Cape Town NGO Soil for Life. He’s been practising permaculture for more than 20 years, and when I eventually find him he’s preparing for a “home food garden” workshop he’ll be presenting in Khayelitsha the next day. Soil for Life’s township projects have brought hope, food and income to countless families, and Prince and his worms are the reason for much of their success.

“Worm farming isn’t rocket science,” says Prince, “but it does have to be done right.” He tells the story of a nearby hotel that has been using a worm farm for the past few months. “The owner came in this morning to tell me that all of her herbs died suddenly,

so I asked a few questions and discovered the she’d been making some fundamental errors.” Prince turns a patch of rich-looking soil with a spade. “She’d been feeding her worms on *spanspek* and nothing else. Now worms love *spanspek*, but just like humans they need a balanced diet. And who knows? Maybe there was pesticide on that *spanspek*?”

He bends down to point out a nightcrawler that has emerged from the upturned soil. “Also, she hadn’t been using the ‘juice’ [leachate] immediately, and she hadn’t been diluting it either, both of which could allow bacteria to flourish.”

“If you make this kind of mistake,” Prince concludes, “some plants, especially seedlings, will turn yellow instantly. But if you do it right your plants will flourish. Vermicompost is 10 times stronger than normal compost, which is why it costs 10 times more!”

Prince also advises occasionally adding a little bit of wood ash or ground eggshells to correct the pH of your worm farm, and he says that worms prefer chopped or liquidised food... but – like all experts – he admits to not doing so himself. He does have eight bathtubs full of worms, after all, so it would amount to a lot chopping!



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Stephan Kloppert

expert Stephan Kloppert to give my farm a health check. Stephan got straight to business – he rolled up his sleeves and plunged his bare hands into the slightly slimy black mass that lies beneath the still-decomposing waste. “There’s no smell,” he said, “which is a very good sign – and the beetles, springtails and mites in here are all part of the composting process.”

“What about slugs and geckos?” I asked.

“Geckos are good... They kill things like *muggies* and fruit flies. But I feed any slugs I find to my koi fish,” said Stephan. “Ants are probably the biggest visible pest, and a sure sign that your worm farm is a bit too dry. But keeping ants out is easy: just put your entire worm farm in a big trough of water and the ants will never make it in again.” Kind of like a medieval moat, without the crocodiles.

“But,” he continued, “the biggest threats are invisible. You don’t want your farm to become too acidic and you don’t want it to become waterlogged or too dry... although it’s safer to err on the moist side. My best advice would be never to cover the entire surface area of your farm with one foodstuff. That way, if they don’t like something they can move to the other side and eat whatever’s there. Also, avoid watering too much, as this might cause any acid that may be present to seep down into the bedding, where the worms live.”

Stephan was one of the pioneers of worm farming in South Africa, and

Useful websites

- 👉 globalworming.co.za
- 👉 wizzardworms.co.za
- 👉 worm-farm.co.za
- 👉 soilforlife.co.za
- 👉 fullcycle.co.za
- 👉 worm-composting-help.com
- 👉 ecowormfarms.co.za
- 👉 earthprobiotic.co.za
- 👉 wormcity.co.uk

he has more than 150 worm farms at his home in Cape Town. Once the formal consultation was over, we chatted about worms that lived exclusively on dog poo for nine years (see the Pet Poop Processor below right), and another farm where the worms ate only lemon peels for an entire year and showed no ill effects.

Stephan says he feeds his worms “absolutely anything that has ever been alive and is now dead”, and has even done some tests with a worm-based septic tank that would eliminate the need for a municipal sewage system and greatly reduce our contamination of valuable fresh-water resources. >

Stuff for worms



Kitchen Craft compost bin

A stylish place to keep your scraps before you feed them to the worms. Carbon filters keep it pong-free. R400
yuppiechef.com



Wizzard Worms Small Green Worm Farm A customised smaller unit ideal for those with limited waste. Includes worms. R1 095
wizzardworms.co.za



Global Worming Midi Tower
 A classic three-tier farm, worms included. R895
globalworming.co.za

Global Worming Pet Poop Processor

Recycle dog poo using worms (included) or Bokashi. R390
globalworming.co.za



DID YOU KNOW?

• **Worms are hermaphroditic: there's no male-female distinction. Still, you need two worms to reproduce – they rub their clitella (the smooth, lighter band around their middle) together and both worms produce cocoons that contain a few eggs each.**

• **Earthworms are generally blind and deaf, but their skin is covered in cells that allow them to taste the soil and detect light. They absorb oxygen through their skin.**



BIONIC BOKASHI

Bokashi is a Japanese wheat bran that promotes fermentation and composting, and can handle all the stuff your worms don't like (meat, dairy, oil and so on). Using it is simple: add a layer of food scraps to your Bokashi bin and sprinkle a handful of Bokashi on top. Then squash the food scraps down and close the lid firmly (Bokashi composting is an anaerobic process so you need to get rid of as much air as possible) until you add your next layer of scraps and Bokashi the next day. When the bin is full, wait 10 to 14 days before burying the contents in a flower bed or your compost heap. To make your own Bokashi bin, simply put a tap on a bucket with a lid.



win

Earth Probiotic Recycling Solutions is giving away 5 Bokashi composting kits valued at R505 each. Each kit consists of two 25ℓ recycling bins, 2kg Bokashi wheat bran inoculated with a mix of probiotic bacteria, yeast and fungi, and one Compost, Soil and Plant Health Booster liquid probiotic. Developed in the 1980s in Japan, Bokashi breaks down food waste and is safe, natural and 100% biodegradable. Visit earthprobiotic.co.za for more information.

To stand a chance to win, SMS* the word "Bokashi", followed by your name and address, to 34910. The closing date is 1 December 2014.

* SMSs cost R1,50 each. For *Plattelands* standard terms and conditions, visit go-southernafrica.com/article/terms-conditions.

I'm not sure I'd be prepared to take it that far but I genuinely do believe that every household in the world should have a worm farm. Then richer households could sleep easy knowing that they're part of the solution, not the problem, and poorer families could really better their living conditions. Give it a bash and soon you'll agree with me – the little critters will worm their way into your heart.

Time for tea...

Earthworms turn household waste into three useful products:

- **Leachate** This is the liquid that collects at the bottom of your farm. It's commonly believed to be worm pee but is actually mainly water that has passed through both the decomposing matter and the castings (see the next point). As a result, it might contain harmful bacteria and should always be diluted (5:1) before you use it in your garden.

- **Worm castings** Otherwise known as vermicompost, this worm "poo" is like Kobe beef to plants. It looks like ordinary topsoil but is 10 times more fertile than normal compost. Vermicompost can be consumed by plants immediately – normal compost still has to be broken down more before plants can utilise it.

- **Worm tea** Not to be confused with leachate, this is tea in the true sense of the word. Mix 1kg castings, some molasses and 10ℓ to 15ℓ of water in a bucket, then aerate the mixture with an aquarium pump for 24 hours. Worm tea can be used as a foliar spray and around the roots of plants, but it's a much stronger fertiliser than leachate and also a natural pesticide. It becomes less effective within a day, so don't dream of stockpiling it.

Make your own WORM FARM

We made this farm for only R162 – if you have a few old buckets lying around, it may cost you even less!



Get everything ready

SHOPPING LIST

- 3 identical opaque plastic containers (we went with 20ℓ buckets because they're cheap, but if you want a more professional-looking farm use "meat trays" – from R105 each)
- lid
- tap (we used a 22mm tap)
- a few bricks

TOOLS

- "spade" drill bit the same size as your tap (in our case, 22mm)
- 6mm drill bit
- drill
- knife

Difficulty (out of 5)     

R Cost of materials **R162**

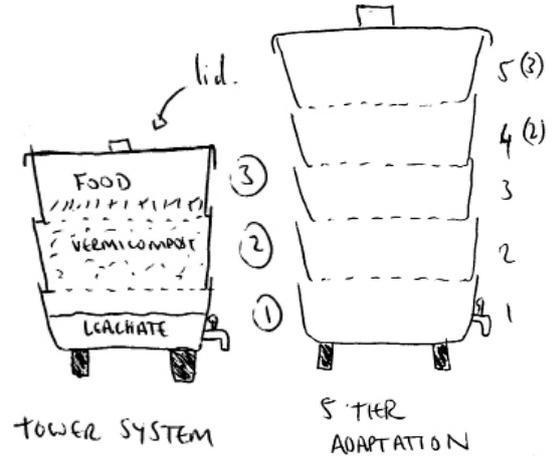
Time needed **Less than an hour**



Nick says:

Tower worm farms work on the premise that worms will move upwards in search of food while excess moisture will drip downwards. Their simple design means you'll never have to separate worms and castings manually when the time comes to harvest your vermicompost.

- Container 1 has no holes and is used to collect leachate. You should empty this container every couple of weeks and use the leachate in your garden.
- When you start your worm farm your worms will live and eat in Container 2. After about six months or so, this container will probably be full.
- At this point you can start adding food to Container 3. After a few weeks all the worms should have moved into Container 3. You can now remove the vermicompost from Container 2 and use it in your garden. Containers 2 and 3 now swap positions.
- If you're producing more waste than your worms can handle, a five-tier system works well. Containers 4 and 5 would perform exactly



the same functions as Containers 2 and 3 – you're just doubling your capacity.

This is how



B Take the other two buckets and drill about 25 6mm holes in the base of each bucket. **4** Drill a few holes into the sides too. **5**



A Use the "spade" bit to drill a hole near the bottom of one bucket. **1** It's very important

that this hole is the correct diameter (ours was 22mm) and that you smooth the edges with a knife. **2** Too loose and your tap will leak; too tight and you may damage the thread on the tap. **3**

Tip If you want to save money (a tap costs as much as a bucket) and hassle, don't bother with a tap: you'll just have to pour the leachate out of the bucket every couple of weeks or so.



C Put the bucket with the tap on a pile of bricks in the spot you've chosen for your worm farm. Pop a brick (on its side) into the bottom bucket **6** and put one of the other buckets on top of the brick. **7**



Add torn moist newspaper **8**, worms **9** and bedding (newspaper mixed with compost). **10**



D Place the last bucket on top so that it sits gently on the bedding mixture. **11** Secure the lid firmly. Only start feeding your worms after about a week. **12**

