The Secret of Life
www.webpal.org/SOL/
by Jean Beach
(January 1, 2009 version)

Some people ask what we are selling. We aren't selling anything but an IDEA and we are giving that away ABSOLUTELY FREE and only ask that you tell others about it.

I was given the Secret of Life as a gift by a friend who shares our interest in creating Oasis, a project where we allow people who do not have land, to come and absolutely free create their own garden, or to participate with others in a community garden. We are continuously learning new things and changing the way that we do things and so this is a revision of my earlier version.

We have been given some wonderful gifts for this several acre garden area. A nearby town gave us 42 big dump truckloads of compost. Two people have come with their big tractors to help prepare the soil and others have loaned us other equipment. We have also been given seed. Two years ago we planted clover and last year a friend planted winter rye for us to plough-in this Spring as fertilizer. We harvested some of it but as yet have not gotten as far as milling it and making bread. A considerable number of people, including my grandchildren, have worked as volunteers in the gardens. The whole Oasis idea is really that of a group of volunteers who came from Toronto and started it. Not everything in this world is done for money. Much is done for love.

The Secret of Life is actually what is called vermiculture or worm farming. Much of the soil in the world is very poor and this is a way to compensate for that. What we get from the worms is a totally organic fertilizer.

Not just any worms will do. There are only a few special kinds that efficiently produce the results. AND you can't just take them out and dump them in your soil. They will die in the winter. There are a number of places, however, on the Internet where you can order the worms that you need. More about that later.

Worm farms have been around for a long time. The first one that I saw was at a friend's home years ago. Lots of people raise worms for fishing - which is different. What really makes this system work is the design of the worm farm, which is for producing organic fertilizer, and has nothing to do with fishing.

The design and concept that I am telling you about is called "an upward migration worm bin for home use". Clive Roberts BSc invented the very first 'Wormery' in the late 1980s and in 1991 patented his design for The Original Wormery, in the UK, so you can see, that in the history of farming this is a very new idea that most people in the world have not heard about.

A friend gave us our first worm farm. You can buy on the Internet the same worm farm that we have and there are others like it also. More about that later in, "The Costs of Starting a Worm Farm". Bruce has tried to come up with a cheaper homemade way of building one and recently he has heard of a system used in New Zealand. More about that later also.

Managing The Worm Farm

First something about the worm farm itself. Ours is a stack of trays that we keep in our dining room. We live a bit more rustically than some people so others may have a place for it in their kitchen - which would be the most convenient place - or maybe in a laundry room. You don't want it to be where it will freeze - but worms don't like it too warm either. Around sixty degrees would be nice but our living room is hotter than that - and they do very nicely.

We actually have two worm farms in our living room. One that Bruce has tried to build out of free wine buckets that we can get. It hasn't been very convenient although it produces lots of worms. The commercially purchased one that we have - is less than a couple of Feet Square and we have four levels although you might have one more or less.

Each level is a plastic box with tapered sides that fits into the one below. They can be in any order - except for the base which makes a stand to keep them off the floor and which has a catch basin with a spigot to catch the 'worm tea'.

The worm tea is the excess water that drains down through the worm farm. This is great fertilizer in itself and you just drain it off in a small pitcher and pour it on your house plants. It is best to just leave the tap open – but then you need to use the ‘tea’ each day on your plants – otherwise it spoils. If you don't get enough ‘tea’ that way you can take some of the compost from the bottom layers and ball it up into a ball about the size of a golf ball or maybe a little smaller. You want this ball of mud to be solid - so squeeze any extra water out of it. (I use cheap 'throw-away' plastic gloves for doing this sort of thing - but I actually rinse off the gloves and use them over again.) Another neat idea that I have heard, but haven’t done, is to put the balls, or for that matter just the compost, into large tea bags and let them sit in the water over night. Old nylon stockings might also work.

If you can’t find the big tea bags then take the mud ball and put it into a jar of water and leave it for few hours or overnight - and you will have more 'worm or compost tea' to give to your plants. We used to think that this was just a coincidental product to what we are actually doing in producing the SOL, but we appear to be changing our mind about that as will also be discussed later.

Back to managing the worm farm. To start up the worm farm you put some well composted compost in the bottom two trays (nothing goes in the drain tray that catches the worm tea). In the top tray you also put in some of your raw garbage from the bin that you save for your compost pile - and there you add your worms. The favourite kind are Red Wigglers.

You can buy a pound or two of these worms and just dump them right in. Next - cover the worms with shredded newspaper. Avoid shredding the colour comics or pages with lots of colour because there are chemicals in the colours that the worms don't like. Also don't use glossy sheets like those in the magazines or some ad inserts.

Our neighbour has loaned us a shredder but we really must get one of our own. They are sometimes on sale at the big chain office supply stores for about $25. These things cut the paper into long strips. I used to dampen the handfuls of paper strips in a bowl full of water - before I put them in and spread them out all over the top but now I have found a convenient hand sprayer that fits on top of a large plastic pop bottle. The worms also eat the paper but the paper is there to keep down any odour. Because we have a wood stove and in cutting the wood generate a lot of saw dust we also use that in addition to the paper.

And then last - you put the lid on top. I prop mine up with a stick to make sure they get a little extra air although the lid comes with holes.

Bruce says the directions are to give the worms their weight in food every other day. I must have ten pounds of worms now - but I don't give them anything near that much.

Most of the discussion about worm farms is what to feed the worms. Well, they like most anything. Some people say give them coffee grounds - and others say don't. Some people say meat is okay - and others say it isn't. You will decide for yourself. If the worms don't like what you are feeding them - they will try to crawl up the walls. Anyway, I will make below a whole subsection on this subject - so that later you can find it easily if you want to.

A worm farm is actually supposed to be a convenience and more care free. Somewhere that you just dump your kitchen compost. I am probably making too big a thing of all this. If the worms aren't trying to escape they are probably surviving and multiplying. In fact - about every three months you will have twice the number of worms.

As your worm tray fills up from the digested compost and papers that you have been giving the worms you set another tray on top. The idea is that the new tray just fits down into the one below by two or three inches. You can have put lots of stuff into the tray before you need to add a new one. Then eventually on to that one - another one.

Eventually you run out of trays. You will probably only want to go four or five trays high. When you need another tray - and don't have one, what you will do is take the tray off the bottom. This is the hard part for me - because the trays are so heavy.

When you lift up the top tray you will find LOTS of worms hanging down from the bottom of it. This is so interesting about the way that the worms move up and down from one level to the other. It is what makes this system work.

What we do is spread lots of newspapers or a plastic sheet out over the dining room floor and then Bruce has two blocks of wood that he sets at the edges of the tray to set the tray on so that the worms won't get squashed and he sets the top tray on that.

Then he takes the next tray down and sets it in the first tray - still lots of worms hanging on the bottom of that tray. Then the next tray and so forth until we reach the bottom tray with the trays now stacked in reverse. And here is the amazing thing. There are no worms (well maybe a stray one) in the bottom tray. What is there is your SOL.

So - you scrape out the SOL from the bottom tray and put the SOL into a bucket and you then put aside that empty tray. Next you put the top tray in your reverse stack back onto the base. This is the one that will next have the SOL although it now has worms in it. Then the next tray onto the stack, and the next, including your full top tray.

Finally you put what was the bottom tray, but which is now empty, on the top. Put in some regular dirt or compost from the garden; add some kitchen compost, and the newspapers. We also sprinkle in a layer of sawdust because we create a lot of sawdust preparing wood for our woodstove. As always – you must make absolutely certain that each tray sits firmly down on the soil of the tray below. Worms can't jump.

One mistake that I made the first year was that before winter we needed to bring into the house some pails of dirt from the garden so that we would have dirt to start the new layers. Nevertheless, our worms survived. The next time we put pails of garden dirt into the garage – but they still froze. Had to bring one into the house to thaw it out. Slowly we learn.

Our friend says that the SOL that you have put into your product bucket needs to now sit for about six months but I haven't found anyone else saying that. In a separate section I will say a bit about using your SOL. So - that is all there is to it. Still, I think it may be very important. Presently in the world, or at least in our part of the world, the food comes from a long distance. It takes a lot of oil to transport it. It takes a lot of oil to make the fertilizers that it is grown with.

I belong to an organization called Kairos that is concerned about social justice. Presently they are supporting a program called the hundred mile dinner in which everything that one eats is produced within a hundred miles.

The time may come that we all have to produce our food locally and we may need to use natural organic fertilizers just because nothing else is available. What we are trying to do at Oasis is to develop techniques that we can share with others that will help them to gain food security. With SOL you are participating in one of our first attempts in this regards.

I hope that you enjoy the SOL and will help spread the message about it.

About the Writer

If you have any suggestions - I would like to hear them, especially as regards a new simple designs for worm farms. If this information has been passed on to you by someone else and you don't know who I am - let me tell you a little bit about myself.

I am over eighty years old and live in a little village in Ontario, Canada. The land that we have has been in our family for over a century and was farmed by my grandmother. I am also do volunteer raising of dogs to help autistic children. You can see a picture of one our puppies, and my husband, at the bottom of www.webpal.org/dog/

One of the most exciting things that I got to do in my life was about ten years ago to go on a several month teaching trip to the Mapuche Indians in Chile with my son and daughter and a group on Canadian Natives that we took as a dance and teaching team.

I have also been able to go with my husband to Europe twice to help on his www.worldlanguageprocess.org project. On that web page there is a picture of me with him in Wales. He has been to China and elsewhere and I hope to go with him to the conference in China in 2011.

The thing that motivates me to do these things is the Baha'i Faith which I consider to be the real Secret of Life. Another of my projects is writing a book that explains my understanding of The Book of Revelation from Baha'i Writings. You can see what I am working on at:

http://www.webpal.org/c_renewal/revelation/content.htm

I would love to hear from you about that.

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What To Feed Your Worms

A friend gave us big bags of carrot pressings that came from a health food bar that made carrot juice. We were told we could have a pick-up truckload of them every week. We stored what we got in the wine buckets.

Unfortunately, the carrot fermented before we could use it all. And the worms did NOT like that. The same thing happened the first week I got the worms. I tried to chop up banana peels and give it to them. The worms tried to climb out. It is pretty bad - when the worms try to leave. They really don't like sunlight and if everything is well - when you

take off the lid you have to look real quick because they will all try to disappear by burrowing back underneath.

Later I found out that products sprayed with pesticides should be avoided and that some banana peels are heavily sprayed, and can kill everything if added to a small bin.

Also anything fermented is bad for the worms. The reason is that worms absorb things from the soil right through their skin. Their whole body is part of their digestive system and alcohol is just way too powerful for them. I have never done it but I am told that if you drop a worm into a glass of alcohol it will die - go all dark and burnt up before your eyes.

I try to treat our worms very nice. The friend who gave me the farm was taught by a friend of his, who made a special mixture for her worms consisting of chicken feed and other ingredients. Worms like people are what they eat - and that applies too, to the compost they create. I sometimes make cornmeal mush for my worms and sometimes other special things.

We went to a worm farm demonstration and the people threw in whole rotten tomatoes, sweet peppers and other such things. It didn't seem to me that they were doing very well. I think we have more experience than they had.

Our friend runs his household compost through the blender before giving it to them. That didn't work well for me either, so I think the best way is 'cut-up', not in big chunks. Some things, like eggshells, are said to require special care. You should keep eggshells separate and boil the shells (if they weren't from hard boiled eggs) before crushing them up and giving them to the worms.

Worms are said to dislike highly spiced foods such as onions, garlic, and salt. It is okay to give them citrus fruit but don't give them citrus peels. The latter contains a natural chemical that is harmful to them.

If you want to get really technical, beyond anything that I do, I have read, "The pH should be slightly alkaline. Alkalinity can be increased by occasionally adding a handful of calcium carbonate, sold as "garden lime." Do not confuse calcium carbonate with regular lime (Calcium oxide), which is far too alkaline and will kill worms."

There are articles on the Internet about having worm farms to process dog poo – but I haven't looked into that, because we keep our worms in our dining room. Some people keep worm farms out in their gardens during the summer time. Besides the worm seller's sites - a good place to find out about worm farms is at:

http://en.wikipedia.org/wiki/Vermicompost

How To Use Your SOL

I have read that vermicompost benefits soil by:

* improving its physical structure;

* enriching soil in micro-organisms, adding plant hormones such as auxins and

* gibberellic acid, and adding enzymes such as phosphatase and cellulase;

* attracting deep-burrowing earthworms already present in the soil;

* improving water holding capacity;
* enhancing germination, plant growth, and crop yield; and

* improving root growth and structure.

Another source says, “Vermicompost, also known as worm castings and vermicast, is richer in many nutrients than compost produced by other composting methods. It also rich in microbial life, which help break down nutrients already present in the soil into plant-available forms. Unlike other compost, worm castings also contain worm mucus, which keeps nutrients from washing away with the first watering and holds moisture better than plain soil. For this reason, some fruit and seed pits are reported to germinate in vermicompost easily. Vermicompost made from ordinary kitchen scraps will contain small seeds, especially those of tomatoes, peppers, and eggplants, that may sprout weeks later.”

About the ‘worm tea’ that I told you about earlier, another source says: “ the pH and nutrient contents of these liquids (as well as vermicompost) varies, depending on the food fed to the worms and whether or not lime has been added to the system. pH and nitrogen, phosphorus, and potassium (NPK) measurements should be taken periodically to determine the fertilizer composition before use. Home kits for testing are sold in hardware stores and nurseries.

You can use the castings quite simply as we do by mixing about three quarters other soil or regular outside mature compost and one quarter SOL. On the other hand, others get very involved in this as almost a separate science. They mix the castings with a variety of different other materials to make up their organic fertilizer. Exactly what else you would want to use, and in what amounts, would depend on your soil. But that is all beyond me and what I understand of the process. There is always more to know but I think that you will get marvellous results with what I have told you.

Drip Irrigation

At the moment we are experimenting with a process called drip irrigation and this may be the greatest advance of all in using worm tea. The drip irrigation system that we used last year was unsuccessful. We tried to bury plastic pop bottles with their tops cut off – near the plants. Into these we would pour water and sometimes worm tea. Unfortunately, we

have not yet figured out what tiny-tiny pinhole size to put towards the bottom of the bottle.
Drip irrigation is considered the greatest advance in irrigating that has been discovered in decades. It uses less water and gets the nutrients directly to the plants. I wish I could tell you exactly how to do it. Maybe in another year or two. Bruce thinks that using the worm castings to make the worm tea will probably be far more efficient than using the castings directly and mixing them into the soil. And the drip irrigation system should be much more effective than just spraying the tea around the plants with a sprayer. It may all be more labour intensive but this is a more sustainable life-style that the world may be coming to.

A New Low Cost Worm Farm Design

Bruce learned about this one from New Zealand. We haven't done it personally as yet and it would only work for us in the summer time or I think somewhere in a warm year round climate. Anyway, all one does is take a sheet of corrugated metal (like you see on roofs) and lay it on the ground. It probably needs to be four or five feet long. Prop up one end so that it is sloped and dig a little trench at the other end to catch the worm tea. (I suspect it will also catch rainwater.) Line the trench with something like plastic and at one end of the trench dig down to put in a bucket or container to catch the worm tea.

Now what you do is find four old car tires. I think the smaller the better or you won't be able to handle them. First put one tire on the slanting corrugated metal and fill the tire with dirt and garbage for the worms to compost. Lay a piece of plywood (or something) on top of the tire so that rain, animals, flies, insects, etc. won't be a problem. You may need a couple of bricks to hold it down. Keep adding garbage and garden cuttings. Oops- I forgot to mention that you also have to have put in the red wigglers and treat it just about like you would the indoor worm farm.

As a tire fills up you simply add another tire on top of the first tire and when you eventually have four tires in the stack and fill up the fourth tire and need another one you pull out the bottom tire. That seems to me to be the tricky part and I don't know exactly how that works since we have never done it.

I have talked with a lady near us who does lots of worm farms. She says that she does it even simpler. She simply gets a big heavy durable plastic bin. One of those with handles that you can pick up. She then puts the worms and composting material into it. She says that every now and then she shoves all the stuff in the bin over to one side and puts food and soil for the worms to eat on the other. The worms then migrate over to the fresh food and soil and she scoops out from the old side what the vermicastings that they have processed. Like, I say, I haven't tried it. But it does make vermiculture sound simple and I hope that will encourage you.

The Costs of Starting a Worm Farm

How To Buy A Worm Farm

What you are looking for is:

"an upward migration worm bin for home use"

There are many manufacturers and models. The best that we have found is the GUSANITO BRAND® Worm Factory.

Step 1: Google together the words GUSANITO and worm.

We recommend the 4-tray farm and that you don't want to pay over $70. There are many dealers - and there are knock-offs, which don't have the GUSANITO lid. We prefer the Gusanito lid because even with it we think we may still have a problem of insufficient aeration - something that we are toying with ideas for improving upon.

Step 2. Once you understand the GUSANITO design look at other designs such as the barrel. You may find a better design or a better price. The industry keeps changing. Since we started pricing them we think the prices have dropped in about half over what we originally saw a couple of years ago.

There are many designs but the problem with round ones, like Bruce has been trying to make out of free wine pails, is that one gets stuck inside the other. To solve this problem we tried, and some designers use, stoppers to keep the upper container from going all the way down into the next lower one. This defeats the purpose. Worms cannot then climb from one level to the next. The containers have to sit directly down on the one below.

By our recommendation we are not promoting any one brand or company. We are simply giving you a standard to judge by.

How To Buy Worms

What you want is what we call Red Wigglers.

Don't be fooled by those offering the wrong worms by the right name. Be sure to get Eisenia fetida (Common names: Redworms, Red Wigglers, Composting Red Worms, etc.). Worms by any other name are not the same and may cause problems with your system. Many growers call Perionyx excavatus "redworms" because they are red worms but they are not the correct worms for vermicomposting in small worm bins.

You don't have to try to find a place to buy worms locally. They ship well over long distances. A couple of pounds is a really good start. Look for someone you feel is a good supplier with a good price and reasonable shipping costs.

Once again - go on the Internet and Google: "Eisenia fetida" (to be safe) or the more general "Red Wigglers" to get more hits. Presently Red Wigglers seem to be selling for about $15 to $20 per pound and there are approximately 1000 worms in a pound. Of course, if you come by and visit us we will give you some.

Same for the castings:

Dakota worms http://www.dakotaworms.com/page8.html will send you out a free sample of worm castings if you send them the postage. Or once again, if you come visit us we will give you some out of the buckets that we store in the garage.

Anyway - bottom line is that with farm and worms and shipping and handling it is going cost about $150 to get into worm farming if you go with one of the commercially produced units like we have. This cost is way beyond what most people in the world can afford and for many that would represent their family's total annual income. That is why we are trying to study different ways of doing it and different methods for people to spread and share the worms and knowledge. Still - in this part of the world - you may be able to afford $150. If you are close enough to us - we will be glad to share.