

Leachate: A Summary

Why It's Considered "Bad"

And Should Be "Flushed Down The Toilet"



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Two Horticulture Qualifications & Qualified To Teach Horticulture

Hi everyone :)

I've pulled together some info about Leachate to help people decide on the best course of action regarding its generation and use.

I hope that this document helps dispel some of the myths surrounding the subject!

Please read it and do some thinking for yourself.

Don't suffer from "Confirmation Bias" where you rather go on believing something false rather than look at facts presented to you. You can find people that believe the Earth is flat - does that make it right?

Would You Liquefy Horse Poo And Spray It On Your Lettuce?

If not, then consider why leachate may be bad. We just "don;t know" what's in it. Mine could be okay, yours could make people sick etc.

If you don't know who I am . . .

I am a worm farming & composting trainer to Brisbane City Council programs such as Master Composters Program, Libraries Workshops, Kid's Collective Educational Activities & I also teach at my own workshops & Northey Street City Farm.

I have two Horticulture qualifications and am also qualified to TEACH Horticulture & Worm Farming.

I have been keeping worms at home for about 25 years - and I have been selling worms since about 2013.

Currently I am a full time worm farmer - gaining all of my income from this business in some way.

Check me out on my website <http://www.thewormman.com.au>

Regards,

Brian

Contained in this document:

- ◆ A Quick Overview From Brian
- ◆ Terms: What Is Leachate / Worm Wee / Worm Pee / Worm Tea / Leachate
- ◆ **Using Leachate At Home - How It "Can" Be Used**
- ◆ Selling Or Buying Leachate?
- ◆ What Does Adding Too Much Water DO To A Worm Farm?
- ◆ Moisture Control In Your Farm: Adding Water To Worm Farms
- ◆ How To Test For The Right Bedding Moisture
- ◆ Liquid Applications That Are Much Safer Than Leachate
- ◆ Errors That Are Often Made Trying To Cool Worm Farms Down
 - ◆ Adding Water, Frozen Food Or Bare Ice To Cool A Farm
 - ◆ Cooling A Farm With Water
 - ◆ Do Not Add Bare Ice - Use A Frozen Bottle Instead
 - ◆ Do Not Add Frozen Food
- ◆ Quotes From Scientific Text: Vermiculture Technologies ("Flush It Down The Toilet!!")
- ◆ Quotes from Heather Rinaldi & George Mingin (Professional, well respected Worm Farmers.)
- ◆ Quote from Rhonda Sherman of the NCSU Vermiculture Conference (and associate of Dr Edwards.)



A Quick Overview From Brian:

A lot of pros will tell you that Leachate is in a very dark grey area.

It tends not to be the best product and has a lot of people saying that it is poisonous or kills plants. It may contain pathogenic bacteria, which are usually the ones that cause sickness, so we consider them "bad".

The scientific text I quote later in this document tells you to "flush it down the toilet !"

Systems are best run with little to NO Leachate.

In fact some more technical systems like CFT's and tray systems MUST be run with no Leachate - so moisture control is an important skill to the professional worm farmer.

Leachate is something a lot of people are encouraged to generate, even being told to pour water through their farm to do so.

And yes - the INSTRUCTIONS for some worm farms even TELL you to do this (no one knows WHY!) And you will often see the bad information being taught by presenters on popular TV shows.

Some well meaning folks even sell the stuff, perhaps not understanding the implications behind this product.

But I am here to tell you - it is not all it is cracked up to be, especially if generated in excess.

There are NO benefits from running a worm farm too wet and generating leachate. It is ALL bad news.

Terms: What IS Leachate / Worm Wee / Worm Pee / Worm Tea / Leachate

The liquid that drains from worm farms is correctly named **Leachate**.

Worms do NOT urinate, so it is NOT "wee or pee".

The term "tea" confuses people when the accepted industry term "tea" applies to an aerated liquid using finished castings as a base.

Aerated Castings Tea is produced when finished castings is suspended in water and oxygenated with an aquarium air pump & air stones.

Using Leachate At Home:

It is thought that if not generated in excess, used fresh, diluted sufficiently and used as a ground drench, that Leachate is not too much of a problem.

If generated in small amounts at home, I would advise using it carefully as outlined below:

Leachate should be:

- ◆ used fresh; within a week of producing it. (a mark against storing it up to sell)
- ◆ ***PRO TIP:*** leave the tap ON with a bucket under it and use it immediately
- ◆ not stored in air tight containers - it goes anaerobic quickly, favouring the multiplication of pathogenic (bad) bacteria (a mark against storing it up to sell)
- ◆ diluted with 10 parts water - dilute up to 20 times if you are unsure of the age of it
- ◆ used as a ground drench; not put directly onto plants leaves. The idea is to apply it to the SOIL - not the plant as such.
- ◆ do not get it on the leaves of sensitive plants as it may burn / kill them

It's also a good idea to keep it away from edible plants - even ground drench can contaminate leaves when you water or it rains.

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Selling Or Buying Leachate:

Generating SO much Leachate that you can sell it indicates that you are putting WAY too much water through your system.

At best it is very weak.

At worst it could be rotting food juices being washed into the collection, filled with pathogenic (bad) bacteria.

I would advise AGAINST selling - or buying - Leachate.

If you sell Leachate, I would hope you have good liability insurance in case someone gets sick using your product - especially as the leading scientific text says that it should be "flushed down the toilet".

You should also look into the Australian Standards for the products that you sell.

What Does Adding Too Much Water DO To A Worm Farm?

Excess moisture in a worm farm:

- ◆ Drives out oxygen - possibly making anaerobic conditions which may favour pathogenic (bad) bacteria
- ◆ May help to generate alcohols, ammonia & acidity. Acidic bedding does not off gas ammonia - the ammonia stays in the bedding. Have you heard of protein poisoning/string of pearls disease? This is the result of ammonia poisoning.
- ◆ Ruins the structure of the bedding, reducing air pockets and air porosity.
- ◆ Makes harvesting hard, making the castings muddy and solid.

Moisture Control In Your Farm: Adding Water To Worm Farms:

Usually there is no need to add much water - there's usually enough in the food.

If adding water, it is best to do so slowly so that the moisture soaks into the bedding, not leaches through the farm (making leachate.)

A spray bottle is often used.

Another option is to add new bedding into the farm pre-moistened (when you feed a worm farm you need to add more bedding too, every time!)

How To Test For The Right Bedding Moisture

Quite often check your farm, ensuring that the bedding is moist enough. In summer check once or twice a week. In winter you can go longer. You will learn what's right and how often to check it in your conditions.

The bedding should be as moist as a wrung out sponge.

You should be able to squeeze a handful of bedding and have a few drops of water to a small trickle of water come out of it.

Err on the side of it being slightly too moist, especially if your farm CAN drain excess liquid away.

It won't necessarily hurt the worms to be too moist, but being too dry will harm them as they need moist skin to absorb oxygen.

But still - adding TOO much moisture is bad.

Liquid Applications That Are Much SAFER:

Aerated Castings Tea, Non Aerated Castings Tea, Castings Water Extracts are all considered to be MUCH superior to Leachate, as they are based on the biology of finished Castings/VC.

For some FREE info on Aerated tea and Tea Workshops, see my website

www.TheWormMan.com.au/act



Errors Are Often Made Trying To Cool Worm Farms Down:

Adding Water, Frozen Food Or Bare Ice To Cool A Farm:

This is not a good practice.

(See my other info sheet on Hot Weather Tips & Tricks for more info.)

Cooling a farm with water:

DO NOT add water to a farm to cool it - water conducts heat better than air. It also drives out oxygen and ruins the structure of the bedding.

DO NOT add bare ice - use a frozen BOTTLE instead:

When it melts, ice creates water, see above point. Better to use a milk or soft drink bottle full of water, then freeze it. Two can be rotated in and out of the freezer. Place them in a used plastic bag to keep them clean. The bag stays in the worm farm.

DO NOT add FROZEN food:

This tends to make a bin over wet. The water is released from it very quickly, making food juices leach down into the bedding. It may drive out oxygen and may make a bin anaerobic.

Quotes From Scientific Texts & Respected Industry Professionals:

Scientific Text: Vermiculture Technologies ("VT"):

VT is considered by a lot of people in the professional industry to be the fullest most comprehensive scientific text on worm farming.

At 600+ pages it is quite a lot to read.

Dr Edwards is one of the most well known and respected scientists in the field.

Rhonda Sherman now runs the annual Vermiculture Conference in America and is a very famous lady.

Bio: <https://www.chelseagreen.com/writer/rhonda-sherman/>

Dr Arancon operates out of the Hawaii Hilo University and is also very famous, particularly for his work on Aerated Castings Tea and Aquaponics applications.

Bio: <https://www.hilobayrotary.com/Stories/the-power-of-earthworms>

Vermiculture Technologies, Dr Clive Edwards, Norman Arancon, Rhonda Sherman - Page 70:

"This leachate is not "earthworm tea" or "compost tea," as it is mistakenly commonly called. The leachate is liquid that has passed through undigested organic material; thus, it may contain pathogens or excess nutrients that may be harmful to plants. The leachate should be dumped on weeds or flushed down the toilet."

Vermiculture Technologies, Dr Clive Edwards, Norman Arancon, Rhonda Sherman - Page 162:

"Compost leachates may be applied to the soil with a 90/120-day preharvest restriction, but foliar applications are prohibited."

Vermiculture Technologies, Dr Clive Edwards, Norman Arancon, Rhonda Sherman - Page 162:

Using Leachate On Edible Plants:

[Even proper] "Compost tea is not allowed for the production of edible seed sprouts."



Heather Rinaldi - Texas Worm Ranch:

(Heather of www.txwormranch.com is a highly respected professional castings producer in the United States. Heather's work has been complemented by Dr Elaine Ingham of the Soil Food Web movement. Heather uses a microscope to examine her product and teaches others about soil microbiology)

Worm Bins Explained by A 12 Year Professional Vermicomposter and long time Soil Microbiology Student . . .

". . . Let's start with the microbe lesson of aerobic (beneficial microbes vs. anaerobic (potential pathogens) microbes.

To keep your vermicompost beneficial for plants and people, we need plenty of oxygen to the entire system, and **NO LIQUID SHOULD EVER BE DRIPPING OUT OF A WORM BIN.**

Too much liquid in a bin would certainly mean you have anaerobic bacteria.....

WORM FACTORY: I am not a fan of the worm factory. (Brian - similar to the plastic stacking farms sold in hardware stores in Australia)

Almost every one I have seen in use is anaerobic, dripping, and stinky. There simply is not enough oxygen for that system.

I would never use the liquid it produces on plants.

George Mingin, the largest worm producer in Australia says:

"I've got some bad news for the folks out there with multi-tiered worm farms like the Can O Worms, Worm Cafes or Vermihuts.

These worm farms are designed to collect excess liquid in the bottom trays and they call this worm tea.

Often this liquid is not pure worm tea, it's liquid leachate from the excess water in food you feed to the worms.

Often it is just rotten veggie liquid, and it's actually bad for your garden.

A rule of thumb is - if it smells bad it is bad, if it smells ok then it is ok."

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Rhonda Sherman - Associate of Dr Clive Edwards.

Rhonda works in the waste extension of NCSU as the Director Of The Compost Learning Lab. Rhonda also runs the annual NCSU Vermiculture Conference, where worm farmers from AROUND THE WORLD attend to learn from Rhonda, industry specialists and each other.

In her latest book, "The Worm Farmers Handbook", she says:

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Vermicast Tea Versus Leachate

Leachate is *not* the same thing as vermicast tea. Leachate is the dark liquid that leaks out of the bottom of some worm bins. Leachate has passed through undigested, anaerobic areas of the worm bin, so it could contain several undesirable components. These include sulfides, acids, high salts, pathogens, or anaerobic microorganisms that could be harmful to people, animals, or plants. I call it the Stinky Mystery Liquid because it is usually smelly and you do not know what is

Worm Farmers Handbook quote:

**By Rhonda Sherman, a leading world renowned expert in worm farming - holds the NCSU annual worm farming conference for commercial worm farmers
Previous work with Dr Clive Edwards of Vermiculture Technology**

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