Bio-Vator – Vessel Mortality Composter

Gilbert Vanden Heuvel
From the Hill Farms Ltd. Goderich, ON

Why did we get it?

As almost everyone did, we used to have dead stock picked by dead stock company. Worked ok but, as that business became less profitable they required us to do more. Such as : have pigs ready to dump into truck, only fresh mortality (strange words to have together), pick up times became a hassle and on top of that, rising pick up fees.

As this was all happening, we conducted a bio-security analysis of our farm. One of the risks we found was the dead stock truck. We decided to compost our own material to eliminate that risk.
We started composting with straw in piles. This worked fine. We buried all our dead stock in straw or sawdust and left it to compost. We let it sit for about a year and spread the dirt on our clay areas. Worked well, no remains of mortalities remained.
This method did have a few drawbacks:

- the piles leaked (environmental issue).
- the piles can be a lot of work in winter and wet periods of spring and fall. The area around the pile became very sloppy and hard to move around in. Too much time spent and too much wear on equipment was happening.
- we didn't have a tractor to use in the busy spring and fall cropping times. Bad news when a sow dies but even worse when you have to stop planting to bring it to the compost pile.
- the final straw was the constant visits from skunks, dogs and many other hungry animals that found this a good feeding area. The compost pile doesn't stink if the mortalities are buried but once you uncover them it's awful.

At this point NMP grants to farms bigger then 300 units was announced. We did the Environmental Farm Plan and applied to purchase the biovator with the grant money. This went through and we offset most of the $32,000 cost with grant $$.

It was easy to set up ourselves. An electrician was hired to bring 110 volts to the machine on a 20 amp breaker.

Basic principles

Micro-organisms feed on the carbon in the straw and consume the dead pig. Sounds easy.

These bugs are Aerobic so the exit end of the machine is left open to let air in.

Another critical issue for these bugs is moisture (need to move in liquid but too much will drown the aerobic bugs).

Carbon nitrogen ratio is very important. Rough rule of thumb is that you put equal amounts of straw or shavings to dead stock. But each carbon source is different so some experimenting will have to be done. We started with too little straw and the temperature never reached proper level.

Mixing is important to aerate the material and to move it along and out of the machine.

If temperature is high enough for long enough then product coming out is pathogen free.

How our works

Shed to hold chopped straw (better absorption when is short and dry). We are unable presently to put in our afterbirth since it is very wet. We end up with leakage which makes a smelly mess.

The machine is 32 feet long and 3 ¾ ' in diameter, insulated with two large fill doors and one smaller inspection door.

It ends up being a good height to unload from pickup truck.

Hoist to help with loading bigger animal, (no back injuries and one man operation).

Drum rotates a set number of times per day. (Simple mechanical timer to set when and how often). 12 rounds per day presently.

Product inside moves along some each time closer to outlet. When it reaches about 2/3 or the way it is mostly broke down already and drying happens after that point. Almost no bones are left, I've never even seen teeth coming out.

Aeration happens during each turn to feed aerobic micro organisms.

Temperature needs to maintain at least 25 degrees C. We've been staying about 30 C. 40 C is possible.

Ours is sized to take everything except sows. They are still composted in a static pile in field.

Would we do it again?

We had a rough start as we balanced our ratio of straw and dead stock but it's working well now.

It is expensive but:

- no tractor needed to move dead stock
- no seepage
- no dead stock trucks on yard
- one man operation with low daily time requirements