

## Faecal Filter Systems

In addition to the faecal separators, faecal material can also be filtered out for composting using woodchips, planted gravel vertical-flow reed beds or other physical filter. Since the filter inlet feed may be pump macerated or otherwise quite broken up within the sewer line, this method is not really a source separation system in the same way as an aquatron unit. However, it is closer to source separation than a septic tank because it is essentially a wet compost system which can be used for biomass and nutrient recovery.

Woodchip filters are generally contained within a purpose-built housing or IBC tank to allow separation to occur without additional washing by rainfall and to eliminate potential nuisance issues. Solviva designs in the US are available in Anna Eday's book *Green Light at the End of the Tunnel*. Eday's book recommends one enclosed filter (brownfilter) followed by a number of open planted woodchip basins (greenfilters) before a long planted woodchip filled percolation trench for final effluent distribution within the garden.

Vertical flow reed bed designs from French company Aquatiris include for a pump fed inlet without first using a septic tank. Thus the faecal solids are macerated and pump fed over the surface of the vertical flow reed bed prior to further filtration in a horizontal flow bed before discharge to ground via infiltration.

In both systems, worms play an active part in the humanure composting process while liquid is routed onward for further treatment and disposal.

### ***Pros and Cons compared to faecal separation***

#### Pros:

- Generally faecal separation will offer greater treatment than septic tank effluent because the faecal nutrients are removed more effectively in wet composting systems than fully saturated environments (in which nutrients are readily dissolved into the effluent).
- The organic matter accumulation and carbon sequestration is likely to be greater for wet compost and for septic tank sludge.
- Septic tank maintenance costs are not needed for these systems because all maintenance is possible to do manually when needed.
- Humanure volumes are reported to reduce considerably within the system so maintenance is quite infrequent; the oldest un-emptied Solviva system is reportedly 10 years old without excessive humanure build up.

#### Cons:

- As with the Aquatron, due to the head-loss within the filter system, pumping may be required where natural site topography are not sufficient to allow gravity flows through the system.
- The Aquatron unit has EU certification whereas these filter systems are not included in Irish or EU guidance to date (time of writing, December, 2015).
- As with the Aquatron, maintenance is non-conventional so needs to be carried out either by the homeowner, or by somebody who is willing to work with humanure.
- Due to the low humanure accumulation rate, some biomass is likely washed through the system. Although this will safely be removed in subsequent treatment stages, it means that the humanure compost is not a reliable source of biomass and nutrients for other areas of the garden.