



## **LACTO BACILLUS COMPOST & FERTILISER MIXTURES**

The following recipes are available on the internet as open source material from a range of sites. They are reprinted here simply for easy reference.

See: <http://theunconventionalfarmer.com/recipes/lactobacillus-serum/>

The first step is to produce lactobacillus serum (LAB), which is the first step in the production of an inoculant, which can be used as a starter product to make compost in a covered, controlled process at minimal cost.

The conceptual basis of this process is the work of Maye Bruce (M E Bruce) and that of Sir Albert Howard.

In her book on the 'Quick Return Method of Composting' Bruce states that the compost process relies on the mixed herbage pulling in yeasts and biology from the atmosphere and 'radiating' this through the heap.

While this may sound obscure, it works well and makes very high quality compost.

You can obtain her full book at no cost here:  
[journeytoforever.org/farm\\_library/QR/QRToC.html](http://journeytoforever.org/farm_library/QR/QRToC.html)

The extended liquid inoculant described later in this document is used to make a compost of a quality similar to that produced by the Bruce process. As a liquid it can also be used to control odours in an array of situations and to initiate fermentation processes in a range of situations.

These liquid products, based on lacto bacillus, will give a similar result to other products such as QR and other commercially available compost activators.

It is important to remember that if you use either the liquid or the QR material you should reach the same point in terms of a high-quality compost product.

The liquid is perhaps more versatile because it can be applied to a range of other uses including odour control or the manufacture of hydrolysate liquid

products, which can be applied as foliar fertiliser.

At the council site in Armidale, NSW Australia, the staff has used the basic LAB process described below with great success. Council now has an NSW EPA license to make 50,000 tonnes of compost per year from garden and food waste using this process.

A second site located on Landtasia, a property near Bungendore, has a license to compost 5000 tonnes per year of food and garden waste. That site is thought to be the only site licensed for this purpose in rural NSW within the Sydney Catchment.

In terms of advantages, it is worth noting that a distinct benefit of QR powder is that because it is dry it has an indefinite shelf life. It is relatively simple to make from the recipe in the QR book.

QR powder is made commercially and supplied by Chase Organics In Riverdene in the UK. It can be purchased on the internet. The recommended rate of application is enough to cover a fingernail to every cubic metre of compost product in one pint of rainwater.

While instructions in M. E Bruce's book talk of one pint to a cubic metre and it recommends putting in at a final stage of the composting heap building, there are other instructions on a larger scale in Andrew Davenports book 'Quick Return' which recommends sprinkling the liquid once made up, out of a bottle.

### **The liquid recipes**

Product one listed below is a Lactic Acid (*lacto bacillus*) LAB serum in solution mixed with milk, rainwater and molasses.

This product can be used alone or 'expanded' to make compost accelerant or for use in odour control.

It is worth remembering that the process at all stages is 'drawing' ambient biology from the atmosphere. This is exactly the same function, which is used to make sauerkraut or Kim chi and in numerous other 'open ferment' processes including the making of 'sourdough' bread.

The objective is to make an inoculant product with the broadest possible biological base to enable the most comprehensive processing ability when used with organic waste.

The product is most effective in its expanded form. There is a great deal of potential to utilise the product in other applications.

If you find this process of interest there are many other human cultures around the world, which have developed similar lacto bacillus processes. The 'panchakavya' (five parts of the cow) process in India is similar.

## **THE MIXTURES**

The mixtures to be made are:

1 – LAB a mix of Lactic Acid in cows milk, which is then stabilised with molasses in rainwater for storage.

2 - A mix of LAB, sea-water, molasses and fresh cut grass (phototrophic bacteria and photosynthetic bacteria) which is intended to be used as a foliar fertiliser, compost accelerant and odour control spray. The additional biology in this mix will stimulate the initial compost process and will ultimately result in a product with excellent humus levels.

These liquid mixtures have exceptionally good odour control.

The objective of using these liquids is to vary and broaden the biology as extensively as possible. The very broad biological base in this product has the potential to survive a range of temperatures.

The compost process is covered and it is this control and the secondary fermentative process that delivers such a high-quality finished product. The cover provides stable conditions for the biology in the mix. Another reference for this compost process is Sir Albert Howard's "An Agricultural Testament" published in 1940 - (pages 48 and 49).

All of these mixtures will provide a biologically active compost process, which produces no odour and should go through an initial aerobic (reduction by oxidation) stage before slumping to become an ongoing 'silage' or fermentation process (humus building).

This second stage being fermentative should be disturbed as little as possible.

At the start of the process, the compost pile is litter picked, (contaminants removed) wet down and inoculated at the rate of one litre of inoculant to every ten cubic metres of mixed organic waste which is pushed into a pile and covered, with a slight dent in the top (this drops moisture back into the centre of the pile) and left for six weeks. Uncover to check moisture levels at six weeks, then re-cover and leave another six weeks minimum.

The QR mix, is a combination of herbs readily grown in all countries, it is a very successful process described by students of Rudolf Steiner in the 1920s and further developed initially with the UK Soil Association before and during the Second World War in Britain by M. E. Bruce under the 'Dig for Victory' slogan. You can also find much more on the scientific research into Rudolf Steiner's work by Ehrenfried Pfeiffer on the internet.

The QR mix or a similar mix may be used in solution or as part of a larger quantity of herbal substrate and may be sufficient on its own to fulfill all the requirements of a covered compost process.

US magazine Biocycle in 2014 carried a story of an organic farm, which was using the herbs in a fresh state. The herbs were used to stimulate the 'energy' flows as described by M. E. Bruce. Bruce claims in her book that it should be possible to replicate these herbal processes with indigenous plants in any country around the world.

It is claimed in various sources that the QR process in large scale will produce no odour. This has been validated by our use of the process on many occasions.

## **MIXTURE ONE – LIQUID BASE SERUM**

### ***MAKING LACTIC ACID***

- Rice
- Water

1. Rinse one cup of rice in a half-litre of water (you can leave the rice in the water – we have sometimes had similar results if we remove the rice after four hours) – you can also experiment with using wheat, oats or barley as the initial grain – they all draw in different and various species of *lacto bacillus*
2. Let the water sit for 4 to 5 days indoors, or in a secluded area, with a loose-fitting lid. (The loose lid is intended to exclude small insects but allow air and lactobacillus in)
3. Open the container – it will smell slightly sour. The liquid now contains Lactic Acid (*lacto bacillus*) drawn in from the atmosphere.

### ***MAKING THE BASE SERUM***

To build and feed an expanded biology in the mix and store the serum:

1. Mix the half-litre of prepared lactic acid rice water in two litres of milk.
2. Leave for a few days with a loose fitting lid (this can be up to five days in a cold climate or only one or two days if the temperature is over 30 deg Celsius) until a 'cheese' forms on top and separates from the liquid. The 'cheese' once formed can be removed from the top. (Depending on climatic conditions and the type of milk used, dried or tinned, the cheese may, on occasion, form at the bottom of the mix – although this is seems rare). The cheese is a good feed for stock or chickens or can be put into compost. When fed to animals it should increase their feed efficiency, meaning, given the right circumstance, you may be able to reduce their feed inputs. You can find references to fermented chicken feed on the internet.
3. This leaves creamy-yellow to milky water - this is the base serum.
4. To store, add equal parts of rainwater (or town tap water left to sit for at least one hour to blow off the chlorine) with one cup of molasses and keep in the fridge or a cool location. It can last for up to three years.

You can see this process described in more detail on video at:

<http://www.youtube.com/watch?v=IG4M71vMbTs>

## MIXTURE TWO

The following, function equally well as compost accelerants or as foliar spray to control odours and stimulate growth in plants.

If using the following in compost as an accelerant, use 1 litre per ten cubic metres of compostable material.

This product has a broader range of microorganisms. It is very cheap to produce in larger quantities. Keep in mind that it will only store for about four or five months before it starts to turn or oxidize as it is exposed to air. You can make it last longer if you put it under a fermentation lock but it is cheap and easy to make and appears to be more effective when fresh.

If you are relying on it as your principal compost accelerant it will be best to make the quantity you need every month or so to ensure it is fresh.

You can make this mixture in a 200 litre bin or similar and can extract the finished fermented product from the top of the bin via bucket. Increase the quantities to suit any scale.

Use a large hemp coffee bag (chaff bag – potato sack) to put any herbal or grainy additions into. This acts as a giant 'tea bag' – it allows access to the material in the bag by the biology in the fluid, without the herbal materials or grasses breaking up in the fluid and later blocking pipes and filters when you try to use it. Place the meat meal (blood and bone) and rice bran (we have used millet in China with success when we had no access to green plants – the millet appeared to fulfill the role of both the grass and the bran) in the same bag or for filtration purposes in a separate stocking.

The ingredients are:

- 15- 20 litre volume of fresh cut green grass (phototrophic/photosynthetic bacteria) other examples we have used successfully are seaweed, comfrey, warrigal greens, clover or any other healthy green plant.
- 5 - 7 litres of seawater
- 3 litres each of bone meal and rice bran
- 3 litres of molasses
- A batch of the serum from Mixture One above
- Rain water to maximum volume

*Method - (Be sure to tick off ingredients as they are mixed in)*

While filling the bin with water, place any of the non-fluid materials into the large hemp bag. You can also include a handful of rock dust, basalt or dacite if available.

Add seawater, molasses and serum. Fill container to top with rainwater. Close lid on tank. It may produce gas for a few days. Jiggle the hemp 'tea bag' at least once a day.

After 5 days remove the hemp bag. You can place the contents of the hemp bag into your compost. The liquid is now ready for use.

Dilute the product at least 100 to 150 to 1 if used as a foliar or soil stimulant. Use in the same way to control animal bedding odours in chicken, pig or cattle production. If used regularly the biology will eventually become 'ambient' in the site where you are using it.

Use in a diluted form as a compost accelerant in the ratio of 1 litre to every 10 cubic metres.

**Observations:** This liquid can develop a thick crust with a grey mix on top – completely covering it after about 5 weeks. This is not a concern.

The product seems very stable and keeps for around 4 months without degrading. This may depend on the temperature where you live. It will then go dark and odorous once it oxidizes and will eventually smell very badly. We have used it in China in this smelly form with good results, however the odour is very difficult to remove from clothes and footwear.

So if you use a lot of it make the quantity you need regularly. The alternative is to place an air lock or beer fermentation lock on the container, which seems to make it last a little longer.

Winters cooler conditions in a southern climate will also help it store longer.

If you are in a hotter climate (e.g. anywhere north of Sydney in Australia) make batches to suit your needs – perhaps in one to four month lots.