

# GLASGOW SEED LIBRARY



## DIY biostimulants & fertilisers



### ABOUT THIS HANDOUT

This handout contains information on how to make natural plant fertilisers and biological stimulants that you can make at home using cheap, local and easily available ingredients. The recipes are based on Korean Natural Farming methods developed by Master Han Kyu Cho, which are outlined in his son Youngsang Cho's book, JADAM Organic Farming. The book, The Regenerative Growers Guide to Garden Amendments by Nigel Palmer is based on JADAM, but is a little less dense. The recipes in this document were drawn from Palmer's book. The Korean Natural Farming names are written in brackets beside where they differ from the recipe title, in case you want to look them up. Throughout the document rainwater is suggested as the type of water to add. If you can't collect this, use tap water and let it sit for 24-48 hours for chlorine to evaporate. This is important as chlorine kills microbes!

### LEAF MOULD BIOLOGY (JADAM MICROBIAL SOLUTION)

This is a **short lived** biological amendment using organic potato, leaf mould, salt and water. When applied, **benefits** include the addition of thousands of bacteria, fungi and

archaea from the leaf mould which help to improve soil structure by digesting organic material and jump starting the soil food web and its processes. It can be made throughout the growing season when temperatures are above 4 degrees Celsius.

**Uses:** Apply whenever mulch is applied and between plantings. Also add to seed starting mixes, as foliar sprays and as root drenches.

**Materials:** bucket; 2 small rocks; 60cm length of string; 1 paper clip; a cover for the bucket; 2 cotton socks; 1 handful of leaf mould; 1/2 tbsp of sea salt; medium size boiled organic potato.

#### Method

1. Affix wire or string across the top of the bucket and fasten at both ends of the bucket handle.
2. Put a boiled potato and a rock into one sock.
3. Put a handful of leaf mould and a rock in another sock.
4. Fill the bucket with rainwater, add the sea salt and stir until it is dissolved.
5. Suspend and secure the socks over the wire so the sock contents are immersed in water.
6. Knead the socks so the contents are immersed in water.
7. Cover the bucket and leave outside.
8. When the quantity of foam on the surface of the solution peaks, use immediately as a biological amendment. This can take 1-5 days depending on the air temperature.
9. Dilute with rainwater 1-10 (100mls in 1litre) or up to 1-50 (20mls in 1 litre) and apply to soil or mulch to stimulate soil life.



Leaf Mould Biology brewing!

## LACTOBACILLUS (LAB)

This is a biological amendment using water from rinsed rice and raw milk. It contains a broad spectrum of lactobacillus bacteria, beneficial bacteria that **stave off diseases** like pythium and fusarium. They also **increase phosphorus** availability to plants, improve **soil structure** and accelerate **root growth**. This amendment is shelf stable when refrigerated.

**Uses** include, in a seed starting mix, as a foliar spray to combat airborne pathogens like powdery mildew, it can be added to a compost pile or to soil 2 weeks before planting, and as a root soak before transplanting seedlings. Be warned, this amendment is **very acidic** so you **must dilute it!**

**Materials:** 2-3 cups of organic rice (370-550g); sieve; 1l rainwater; 1l jar with lid; 1 large bowl; raw milk; 1 pint sized jar with lid; clean piece of cloth.

### Method

1. Rinse organic rice through a sieve with rainwater. Pour the rice wash water into a jar and label. Cover with a cloth and let it sit for 2 -5 days out of sun in a well ventilated area.
2. When it smells a little sweet, and has a film on top, with some sediment at the bottom, extract the middle layer of liquid. This is your pure stock of lactobacillus.
3. Mix the one part pure stock with 9 parts full fat organic milk.
4. Cover the container with a cloth and leave 5-7 days out of the sun in a well ventilated area.
5. At this point there should be a layer of cottage cheese like stuff at the top, with some cloudy liquid beneath and even cloudier liquid at the bottom. Extract the middle layer of liquid. This is your finished product.
6. Pour it into a separate jar, label and store in the fridge.
7. Dilute by adding 1ml for every 1 litre rainwater or one teaspoon for every 6 litres for use as a root drench, foliar spray or addition to compost pile. To prepare water for starting your seeds, add 1/2 teaspoon for every 4 litres of rainwater.



Left rice wash water, right lactobacillus solution ready to be strained. Images courtesy of N. Palmer from The Regenerative Growers Guide to Garden Amendments

## WATER SOLUBLE CALCIUM EXTRACT

This is a shelf stable mineral amendment made from shells or bones dissolved in vinegar. It contains broad spectrum minerals, and a large amount of calcium.

The **benefits** of calcium include enhancing germination and improved root growth of the seedling. Foliar sprays of calcium extract also help to prevent blossom end rot in tomatoes, which is caused by calcium deficiencies. Calcium strengthens cell walls. When used as a foliar spray, this subsequent increase in cell wall strength helps to blunt the mandibles (pincers) of aphids and other sap sucking insects.

**Uses:** Apply as a foliar spray or root drench or in a seed starting mix.

**Materials:** eggshells/ bones/ shells; oven; glass jar; vinegar; piece of cloth; strainer

### Method

1. Remove water and organic residue by heating between 150 and 175 degrees C.
2. Mix in a glass jar add 10-15% crushed egg shells, 85-90% vinegar. It will start bubbling as the vinegar dissolves the shells.
3. Decant after a week or two and repeat the process until no more reaction occurs.
4. the remains can go on the compost pile
5. Store the jar out of direct sunlight in a well ventilated area
6. Dilute by using one teaspoon to every 3 litres of rainwater for root drenches and foliar sprays, Add one teaspoon to 4 litres for watering your seed starting mix.

## FERMENTED PLANT JUICE (FPJ)

This is a shelf stable source of nutrients and plant growth hormones. It is made from organic sugar and plant material and contains a broad spectrum of minerals and plant growth hormones. It may also contain beneficial microbes from the surface and interior of the plant. **Benefits** include aiding germination, providing minerals in plant available forms, and plant growth stimulating compounds.

**Uses:** Use as a foliar spray to give plants a boost. Add to seed starting mix or soak seeds prior to sowing.

**Materials:** 2 litre jar; 225g of young leafy plant material; 225g of organic brown sugar; 1l glass jar; rock; scales, sieve or jelly bag; funnel; clean dishcloth

### Method

1. Pick plant materials before sunrise if possible as the most beneficial microbes will be covering the leaves then. Pick fresh leafy shoots as they contain the most plant growth hormones. Dock, nettle and dandelion are very mineral rich plants. Don't pick poisonous plants!
2. Mix plant material with an equal weight of organic brown sugar. Massage both together.
3. Fill the glass jar with the mixture. Then cover the top with a cap of sugar. This helps seal it off from oxygen to prevent mould.
4. Add a weight or rock on top to submerge the plant material beneath any liquid. Then remove the weight.
5. Store out of sunlight at room temp for a week
6. Strain the liquid using the force of gravity using a sieve/ jelly bag and funnel
7. Store at room temperature well in a well area ventilated out of sunlight. If there is lots of froth at the top, add more sugar.
8. Dilute 1 teaspoon to 3 litres rainwater for a foliar spray. For seed soaking or adding to a seed starting mix, use about 1/2 teaspoon to 4 litres to water.



Left: Fermented plant juice. Image courtesy of N. Palmer from The Regenerative Growers Guide to Garden Amendments

## OTHER USEFUL RESOURCES!

**JADAM Organic Farming: the way to ultra low cost agriculture** by Youngsang Cho is an expansive guide to Korean Natural Farming. **The regenerative Growers Guide to Garden Amendments: Nigel Palmer** is based on the JADAM book but less extensive and an easier read for home gardeners.

**Chris Trump's youtube channel** is a very accessible introduction to Korean Natural Farming by a total pro!

**No Till Flowers podcast -Jennie Love** contains lots of great content on working with nature including natural Korean Natural Farming methods.

**Bare Mountain Farm Youtube Channel** has lots of videos demonstrating Korean Natural Farming Techniques.

**New Leaf Urban Farmer's Instagram** page documents a small farm in Ireland using Korean Natural Farming techniques.

## HAPPY GROWING!



A lovely sunflower at our plot at Lambhill Stables