with

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Productive Ecology

This event forms part of the Lower Blackwood LCDC project 'Regenerative Agriculture in Practice Program (RAPP) 2023, and is delivered in partnership with the Lower South West Growers Group and is supported through the Augusta Margaret River Shire Environmental Management Fund

Lower Blackwood Catchment
Land Conservation District Committee

Lower South West
GROWERS GROUP

SHIRE OF AUGUSTA MARGARET RIVER

Compost & Vermicast Extract

- Well matured compost and/or vermicast contains a diversity of micro-organisms in a relatively stable state and bio-chemical compounds that are known to promote growth, exudation and further colonisation by microbes.

- A concentrated slurry made from compost/vermicast can be used to coat seeds before or at planting to support the establishment of a healthy plant microbiome.

- A more diluted compost/vermicast extract can be used as a seedling dip, applied in the planting furrow and sprayed onto the soil or foliage of plants to promote biological activity.

- As only small amounts of actual compost/vermicast are used in slurrys and extracts, it is a very economical practice.

Compost / Vermicast extract can be added to a spray tank along with water and applied:

- in furrow with seed at planting
- to plant foliage to promote beneficial microbial leaf colonisation
- to the soil to stimulate plant and soil biology

Compost Extract/Slurry Recipes

Compost Slurry for Seed Coating

- Place 1L of sieved Compost/Vermicast in a fine mesh bag.
- Place the sealed bag in a bucket and add a little water.
- Massage the bag in the water to make a compost slurry with the consistency of a runny pancake batter.
- Add microbe foods - 1 tablespoon of molasses (carbohydrate) dissolved in a cup of warm milk (protein) and 25g of seaweed powder (minerals)

Slowly add the slurry to the seed in a bucket or cement mixer, stirring as you go until the outside of the seed is coated with a thin layer of moisture (approx. 250mL compost slurry per 25kg seed).

Humate powder and/or mycorrhizal fungi/rhizobia inoculants can also be added in small amounts at this stage, lightly coating the seed.

Continue mixing until the seed is dry and not sticking together.

Compost Extract

- Place 2kg Compost in fine mesh bag, then seal and submerge in a 20L drum of water.
- Using a combination of movement and pressure, get as much compost extract as you can into the solution.
- Microbe foods such as fish hydrolysate, fermented seaweed and molasses can be mixed with the extract just prior to application.

Small amounts of this extract can be mixed with water and applied in the planting furrow with seed (10L/Ha).

It can also be added to a tank and applied as a drench to the soil or sprayed over foliage (20L/Ha).

Plant Microbial Colonizers

- These microbe groups are only active on living plants but can survive and spread in dormant states between growing seasons
- Reproductive material is found in root fragments, seeds and soil around plant roots
- Commercial inoculants can be used to introduce microbial cultures into new growing environments
- Each plant species hosts specific types of microbes and must be matched with appropriate cultures
- Legumes specifically host rhizobia species i.e. peas, beans, clovers etc…
- Certain annual plant species typically host a wide range of endomycorrhizae fungi species including sorghum, millet, oats, sunflowers etc…
- Some tree families host a wide range of ectomycorrhizal fungi species i.e. Pinaceae, Betulaceae, Fagaceae, Myrtaceae etc…

Biostimulants

Any substance or microorganism applied that stimulates biology as a means to enhance plant nutrition, stress tolerance and crop quality traits, regardless of its nutrient content.

- Humic substances
- Amino acid hydrolysates
- Seaweed extracts
- Beneficial Micro-organisms
- Molasses
- Milk
- Chitosan and other biopolymers
- Wood vinegar
- Etc…

Biological Primer Recipe for 1ha

Recipe For 1 Hectare (scale up or down as required)

- Add 2-4L liquid seaweed or 0.5-1kg soluble seaweed powder, premixed in
- water to a 20L bucket
- Add 4-8L fish hydrolysate.
- Add 2-4L molasses, pre-mixed with warm water.
- Add 2-4L seawater (optional).

Stir the mix.

Fill the spray tank with enough water to cover a hectare.

Add contents from the 20L bucket to the spray tank.

Add compost extract made from 2kg good quality, mature compost to the spray tank.

Spray out within a couple of hours of adding the compost, as the microbes become active and need oxygen.

Preferably apply in mild conditions during the early part of the day before it warms up, or towards dusk when it starts to cool down.

Note:

Due to the nature of different extraction processes, there may be compatibility issues with certain products. Perform a jar test of the tank mix beforehand.

Liquid Trace Nutrient Mix – 200L Litres

1) Mix 5kg Fulvic Acid with some water in a 200L barrel.
2) If you wish to store the mix, add 3kg of Citric Acid Powder.
3) Fill the barrel with water and mix well.
4) Decant 1/10 of this mixture into a separate 20L drum.
5) Add desired Sulphate Nutrients (Mn, Zn, Fe, Cu, Co), at the rates in the table below, to the 200L barrel and mix until dissolved.
6) Add desired salt nutrients (Solubor and Sodium Molybdate), at the rates in the table below, to the 20L drum and mix until dissolved.
7) Close and store out of direct sunlight.

These two mixes can be combined in the spray tank prior to application

Amount	Product	% Nutrient in Product	Final Mix Percentage
5kg	Manganese Sulphate	31.5%	0.8%
5kg	Zinc Sulphate Hepta	23%	0.6%
5kg	Iron Sulphate Hepta	20%	0.5%
3kg	Solubor	20%	0.3%
2kg	Copper Sulphate	25%	0.25%
1kg	Cobalt Sulphate	21%	0.1%
0.5kg	Sodium Molybdate	39%	0.1%
-	Total Sulphur (from Sulphates)	-	1%

Foliar application

- Rate - 20L/Ha of 200L barrel mix and 2L/Ha of 20L/Ha drum mix.
- Nutrients required in larger volumes can be added to the spray tank separately i.e. 5kg/Ha Potassium Sulphate, 5kg/Ha Magnesium Sulphate…
- Apply 10-14 days apart as needed.

Soil application

- For a one-off application prior to planting, quadruple the foliar application rate.
- For regular applications apply a total of 40L/Ha per fortnight.

Foliar Nutrient Application

1. Mix recommended rates of chelated foliar nutrient solution with 4L/Ha of fish hydrolysate (or 20L biological primer)
2. Fill the spray tank with water and if using bore or dam water (rainwater can be used as it is) adjust the pH to below 6 with citric acid. *This really important measure is used to neutralise reactive carbonates and bicarbonates in groundwater. The effect is temporary so the mix must be sprayed out within a few hours of pH adjustment.*
3. Add nutrient and fish hydrolysate solution to the spray tank.
4. Check the tank pH again to make sure it is between 4-6, preferably between 5-5.5.
5. Add the recommended amount of a suitable surfactant/spreader/sticker agent.
6. Spray out in dry conditions during the early part of the day before it warms up, or towards dusk when it starts to cool down.

Inputs & Nutrient Composition

Product	Elements																
	Ca	Mg	K	Na	N	S	P	Zn	Cu	Fe	Mn	Co	B	Mo	Se	Si	C
Lime	40																
Dolomite	25	11															
Gypsum	23					18.6											
Sulphate of Potash			41			18											
Rock Phosphate (Ecogrowth)	21.5	0.76	1			1.6	11.2	80	50	1900	180	10	4.5	1.5	1.2	21	
Guano Gold	32.9	0.21		0.17			13.6	152	50.3	1540	429	11.9	85.3	1.1		23.8	8.6
Blood and Bone (Biosafe)	12.5		0.4		7.7	0.4	6									2	
Seamungus (Neutrog)	5	0.8	0.4		4	1	1	30	7.5	500	45		40				33
Bounce Back (Neutrog)	7	0.65	1.7	0.33	3	2	2	350		2000	500						
Eco Prime Natural (Ecogrowth	19.5	0.8	0.2		0.2	2.3	5.4	20	20	1600	80	2	3			7.5	13.5
Phospot (Ecogrowth)	18.8	0.7	6.1			3.7	9.8	573	350	1600	160	8			11	16	0.2
Diatomaceous Earth (G.E.Co.)	1	0.6	0.2					42		4000	5	5				70	
Fish Hydrolysis (No Frills)	0.2	0.05	0.34	0.25	3.1	0.34	0.34	43.9	2.6	184	2		37.5		<4.9		
Seaweed Liquid (No Frills)	0.16	0.12	2.8	0.25	0.2	0.2	0.16	20	6	0.21	6		3	1	<1		

percentage

parts per million