Compost tea to manage broad leaf weedy species in agricultural systems. A case study.

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INTRODUCTION:

Fungal dominated compost tea was found to manage cape weed in pastures and in vineyards by changing the fungal to bacterial ratio in the soil. Compost tea was applied primarily as an active biological and nutrient solution for disease management & productivity in the pasture and vineyard.

RESULTS VINEYARD:

Cannibal Creek Vineyard results compost tea application										
		Ug/g soil	Ug/g soil	Ug/g soil	Ug/g soil	Protozoa numbers per g soil				Ratio
	DW	Active bacteria	Total bacteria	Active Fungi	Total Fungi	Flagellates	Amoeba	Ciliates	Mycorrhizal Fungi %	AF:AB
Treatments										
Compost tea	0.78	3.29	39.3	15.5	363	3560	5474	74	18	4.71
No compost tea	0.87	4.10	30.1	1.25	360	657	623	159	15	0.31
Expected ranges	0.45-0.86	1-5	50-200	10-50	50-1000	>5000	>5000	50-100	20-40	5-10

RESULTS PASTURE GRAZING:

Results on grazing property of compost tea application.									
		Ug/g soil	Ug/g soil	Ug/g soil	Ug/g soil	Protozoa numbers per g soil			
	DW	Active bacteria	Total bacteria	Active Fungi	Total Fungi	Flagellates	Amoeba	Ciliates	Mycorrhizal Fungi %
Treatments									
North paddock compost tea	0.79	8.43	51.70	194.49	161.55	7395	7309	59	26
Fence line no compost tea	0.78	14.28	40.28	19.93	665.77	729	2751	73	16
Expected ranges	0.45-0.86	>45	>300	>45	>300	>5000	>5000	<101	>10

Brix pasture no compost tea = 2-5; Brix pasture compost tea 8-13.

Compost tea applied in vine rows & on vines to run off.

No compost tea applied to the headland soil.

Why this result?

- Change in fungal pools in soils;
- Is it biochemical from fungal exudates affecting seed germination?
- Different mix of rhizosphere biota

No capeweed in pasture. See fence line.

Vineyard: Compost tea application –

- Improved soil structure in midrow;
- Increased active fungi;
- Increased mycorrhizal fungi;
- Increased aerobic protozoa & decreased anaerobic protozoa;
- Winemaker reported increased anthocyanins in the red wine varieties leading to better quality wine.

Pasture: Compost tea application –

- Reduced active bacteria;
- Increased active fungi;
- Increased aerobic protozoa & deceased anaerobic protozoa;
- Increased mycorrhizal fungi;
- Resulted in fungal dominated soil giving better soil structure, fewer weeds, higher brix, higher nutrient value in grass.

AGRICULTURAL SIGNIFICANCE

Compost tea is an alternative to herbicides. Herbicides toxic to soil biota can be removed from agricultural systems. Regenerative agriculture &organic/biological farming systems will benefit from stronger & more diverse soil biota.

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