

COMPOST TEA

- sustainable and low-cost

- Improves soil and plant health
- Helps achieve better looking plants
- Users experience less disease
- Aids nutrient recycling
- Improves root growth and penetration
- Users reduce pesticide application
- 100% safe and natural
- Cannot be over-applied

Compost tea is an aerated solution derived from compost containing a high concentration of beneficial micro-organisms that can be sprayed directly onto plants as a liquid feed or onto soil as a drench.

Compost Tea Systems

- the leading compost tea production system

- Optimum compost tea extraction
- Unique fine bubble aeration system generates high levels of dissolved O₂
- Unique catalyst to stimulate microbes
- Easy to use, easy to clean
- Available in 4 convenient sizes
- Ready to use in just 24 hours



Compost Tea made using the Growing Solutions Compost Tea Systems can be applied using ordinary spraying equipment



The System10 (40 litre) Compost Tea System - ideal for gardens and nurseries



Compost tea is used in the agricultural, horticultural, landscaping, viticulture and turf care industries



The System500 (2000 litre) Compost Tea System - for large scale growers and golf courses

Martin Lishman



Fine Bubble Air Diffusion

Growing Solutions patented Compost Tea Systems are engineered to create the highest levels of dissolved oxygen. Tests have shown a consistent level of 13ppm throughout the Compost Tea extraction process. Easy to use, easy to clean and designed for years of safe and consistent operation, the systems feature Fine Bubble Diffusion technology.



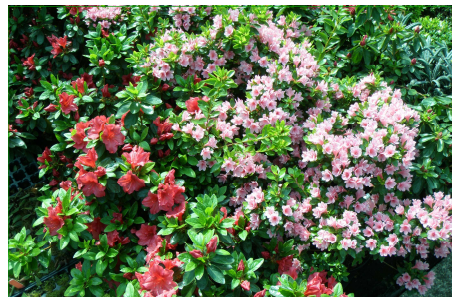
Compost Tea Catalyst

A key feature of Compost Tea Systems is the catalyst added during the brewing process to feed the rapid multiplication of micro-organisms stimulated by the high O₂ levels. The catalyst is a unique blend of ingredients such as seaweed extract, humic acid and minerals formulated to stimulate microbial growth and diversity.

Uses and benefits of Compost Tea

Horticulture

As fungicide and fertilizer costs increase, compost tea offers an economical alternative in quality plant production. Whether used in greenhouse production, container stock or field planting, compost tea can be used as part of existing application programmes to reduce the amount of artificial fertiliser and fungicides required. Applied to leaves, the beneficial micro-organisms colonise plant surfaces, prevent disease-causing organisms from gaining a foothold and leave the plants looking healthy.



Turf Care

The use of compost tea in the turf industry is growing. Greenkeepers and groundsman are exploring alternatives to traditional chemicals as costs rise and environmental regulations change. Compost tea users have reduced fungicide use by up to 100% and experienced less turf disease. The beneficial organisms and micronutrients in compost tea can also assist weed control, improve root penetration without promoting top growth and lower the maintenance costs of worn sports turf.



Compost Tea Analysis from samples produced by Compost Tea Systems

Tests carried out in the UK and USA using a range of composts including worm farm compost and garden composts widely available from most garden centres.

Compost Tea Analysis	Total Fungi (mcg/ml)	Active Fungi (mcg/ml)	Fungal Dia. (mcm)	Yeasts and Moulds (cfu/ml)	Total Bacteria (mcg/ml)	Active Bacteria (mcg/ml)	Nitrogen Fixing Bacteria (cfu/ml)	Aerobic Bacteria (cfu/ml)	Aerobic to Anaerobic Bacteria ratio	Actinomycete Bacteria (cfu/ml)	Pseudomonad Bacteria (cfu/ml)	Nematodes /ml	Protozoa /ml
Ideal level of active component in compost tea	2 to 20+ mcg/ml	2 to 10+ mcg/ml	2.5+ mcm	At least 1000 cfu/ml	150-3000 mcg/ml	10 to 150+ mcg/ml	100,000 cfu/ml	At least 10 million cfu/ml	At least 5 : 1	At least 100 cfu/ml	At least 1 million cfu/ml	2-10/ml	Flagellates 1000/ml Amoeba 10,000/ml Ciliates 20-50/ml
Level in compost tea made by Compost Tea Systems	2-42 mcg/ml	2-23 mcg/ml	3.0 mcm	4000 cfu/ml	397-5888 mcg/ml	11-50 mcg/ml	67,000 cfu/ml	140 million cfu/ml	7 : 1	140,000 cfu/ml	17 million cfu/ml	0.01-10/ml	Flagellates 460-46,000/ml Amoeba 2-55/ml Ciliates 2-46/ml

mcg/ml = micrograms per millilitre; mcm = micrometre; cfu/ml = colony forming units per millilitre sample

Compost Tea Systems

The Compost Tea System Range

Agriculture

Compost tea is being used in conventional and organic agricultural production. Healthy crops grown with compost tea are less susceptible to disease, for example in potatoes and field vegetables. As costs have increased there has been considerable interest in using compost tea to reduce fertiliser and agrochemical use in full scale wheat production. The compost tea is used as a means of low-cost growth stimulation and to build a sustainable soil structure.



Landscaping

Compost tea use in the landscaping industry is the fastest growing area of use. A wide range of benefits are realized with the addition of compost tea to existing contracts as well as new landscape projects. Turf, ornamentals and trees all benefit greatly from compost tea, with users commenting that the plants have a 'compost tea glow'. Users have reduced standard pesticide and fertilizer rates, improving environmental conditions without compromising plant performance and vitality.



Viniculture

The use of compost tea in commercial wine making is gaining momentum in many countries, including the UK, where producers are using it as an alternative to standard chemicals. Compost tea users have experienced reduced incidence of powdery mildew and botrytis and increased vine and soil health, resulting in improved fruit quality.



System10 (40 litres)

Portable and convenient

- ideal for gardens, small nurseries and research centres

- Air delivery by 220v piston air pump
- UV stabilized polyethylene tank
- Polypropylene Banjo valves/fittings
- Stainless steel fasteners
- Weight 12Kg
- Dimensions 51 x 51 x 71 cm

425g of Compost Tea Catalyst with a System10 is enough for up to five 40 litre brews

System25 (100 litres)

- ideal for 1-5 acre gardens, nurseries, small farms, garden centres and research centres

- 220v diaphragm air pump (RoHS compliant)
- UV stabilized polyethylene tank
- Polypropylene Banjo valves/fittings
- Stainless steel fasteners
- Weight 41Kg
- Dimensions 94 x 94 x 117cm

2Kg of Compost Tea Catalyst with a System25 is enough for up to ten 100 litre brews



System100 (400 litres)

For daily compost tea use

- ideal for 10-50 acre gardens, nurseries, mid-size farms, landscape contractors, commercial growing operations and compost facilities

- 220v Siemens regenerative air blower
- UV stabilized polyethylene tank
- Polypropylene Banjo valves/fittings
- Stainless steel fasteners
- Weight 114Kg
- Dimensions 163 x 137 x 140cm

4Kg of Compost Tea Catalyst with a System100 is enough for up to five 400 litre brews

System500 (2000 litres)

For frequent large scale compost tea use in a variety of applications

- ideal for large acreages, large scale growing operations and golf courses

- 220v Siemens regenerative air blower (other voltages available)
- UV stabilized polyethylene tank
- Polypropylene Banjo valves/fittings
- Stainless steel fasteners
- Weight 250Kg
- Dimensions 228 x 202 x 157cm

20Kg of Compost Tea Catalyst with a System500 is enough for up to five 2000 litre brews



Compost Tea - wheat trials 2009

A cost-benefit analysis of the first-time use of Compost Tea in growing a conventional wheat crop; comparing consumable input costs with yield and quality.



TRIAL METHOD

A field of wheat was divided into four c.0.3ha strips and treated as follows:

- Strip 1 Only Compost Tea applied during the growing season.
- Strip 2 Compost Tea applied plus half the normal levels of artificial fertiliser and agrochemicals.
- Strip 3 Compost Tea applied plus the full normal levels of artificial fertiliser and agrochemicals.
- Strip 4 Only the full normal levels of artificial fertiliser and agrochemicals applied.

ANALYSIS

The following input costs were calculated:

- Seed
- Fertiliser
- Agrochemical sprays
- Fuel for application of fertiliser, agrochemicals and Compost Tea

The wheat harvested from each strip was accurately weighed. A sample from each strip was laboratory tested for:

- Moisture content (%)
- Hectolitre weight (Kg/hl)
- Hagberg Falling Number
- Protein (%)

RESULTS	Grain moisture (%)	Hectolitre weight (Kg/hl)	Hagberg	Protein (%)	Input Cost (£ per ha)	Yield (ton/ha)	Cost per ton (£)
Strip 1 - Compost Tea only	16.7	68.3	193	10.23	67	3.11	21.50
Strip 2 - Compost Tea plus 1/2 agrochemicals & fertiliser	15.6	72.1	172	10.11	204	5.28	38.50
Strip 3 - Compost Tea plus full agrochemicals & fertiliser	15.4	74.0	178	10.86	325	6.15	53.00
Strip 4 - Full agrochemicals & fertiliser only	15.0	74.7	170	10.24	312	6.20	50.50

CONCLUSIONS

- Cost per ton was reduced by nearly 60% if only Compost Tea is applied, but yield was halved.
- Cost reduction was nearly 25% when Compost Tea was used with half-rate agrochemicals and fertiliser, but yield only reduced by 15%.
- Crop quality was not changed significantly when Compost Tea is used.

Compost Tea - wheat trials 2010

Recent trials conducted during a drought in the UK highlight that not only does Compost Tea increase yield significantly, it also improves root penetration to sustain the crop in times of drought

A cost-benefit analysis of the third year use of Compost Tea in growing a conventional wheat crop; comparing consumable input costs with yield and quality.

Sample of wheat where compost tea has not been applied

Sample of wheat where compost tea has been applied

TRIAL METHOD

A field of wheat was divided into two 1 ha strips and treated as follows:

Strip 1

Compost Tea applied plus half the normal levels of artificial fertiliser and agrochemicals.

Strip 2

Only the full normal levels of artificial fertiliser and agrochemicals applied.

ANALYSIS

The input costs of fertiliser, agrochemical sprays and compost tea compost were calculated.

The yield from each strip was recorded and a sample from each strip laboratory tested for:

Moisture content (%)
Hectolitre weight (Kg/hl)
Hagberg Falling Number
Protein (%)

RESULTS	Grain moisture (%)	Hectolitre weight (Kg/hl)	Hagberg	Protein (%)	Input Cost (£ per ha)	Yield (ton/ha)	Cost per ton (£)	Income per ha (£)*
Strip 1 - Compost Tea plus 1/2 of most agrochemicals & 1/2 fertiliser	13.9	72.35	113	12.40	234	6.52	35.90	978
Strip 2 - Full agrochemicals & fertiliser	14.3	73.55	127	10.83	179	5.19	34.50	778

* based on £150 per ton

CONCLUSIONS

- Yield increased by 25% where Compost Tea was used, but the input costs per ton were almost identical. There was a net gain in income of £145 per ha.
- The farmer opted to apply Compost Tea weekly. Reducing this rate to bi-weekly would reduce input costs to the same level as the conventional strip and provide a net gain of £200 per ha.
- All fungicides, the fertiliser and some herbicides were reduced by 50% where Compost Tea was used.
- Protein levels were 14% higher where Compost Tea was used.
- Wheat sample where Compost Tea was used had longer roots, therefore the crop sample had the ability to access moisture lower down in the soil, despite the land suffering from drought. This improved the overall quality and colour of the crop.

Martin Lishman

Compost Tea - wheat trials 2010

Soil Test Results

Organism Biomass Data	Dry Weight	Active Bacterial (µg/g)	Total Bacterial (µg/g)	Active Fungal (µg/g)	Total Fungal (µg/g)	Hyphal Diameter (µm)
Results	0.840	50.6	148	0	3.95	3
Expected Range	Low	0.45	10	100	2	50
	High	0.85	20	200	10	100
	Protozoa (Numbers/g)			Total Nematodes #/g	Mycorrhizal Colonization (%)	
	Flagellates	Amoebae	Ciliates		ENDO	ECTO
Results	331	0	0	0	0%	0%
Expected Range	Low	5000	5000	50	10	40%
	High			100	20	80%
Organism Biomass Ratios	Total Fungal to Tot.Bacterial	Active to Total Fungal	Active to Total Bacterial	Active Fungal to Act.Bacterial		
Results	0.03	0	0.34	0		
Comments	Low	Low	Good	Low		
Expected Range	Low	0.2	0.25	0.25	0.75	
	High	0.5	0.95	0.95	1.5	

Conventional area of the field

Organism Biomass Data	Dry Weight	Active Bacterial (µg/g)	Total Bacterial (µg/g)	Active Fungal (µg/g)	Total Fungal (µg/g)	Hyphal Diameter (µm)
Results	0.830	62.0	177	1.35	5.55	2.5
Expected Range	Low	0.45	10	100	2	50
	High	0.85	20	200	10	100
	Protozoa (Numbers/g)			Total Nematodes #/g	Mycorrhizal Colonization (%)	
	Flagellates	Amoebae	Ciliates		ENDO	ECTO
Results	335	0	55	0.03	0%	0%
Expected Range	Low	5000	5000	50	10	40%
	High			100	20	80%
Organism Biomass Ratios	Total Fungal to Tot.Bacterial	Active to Total Fungal	Active to Total Bacterial	Active Fungal to Act.Bacterial		
Results	0.03	0.24	0.35	0.02		
Comments	Low	Low	Good	Low		
Expected Range	Low	0.2	0.25	0.25	0.75	
	High	0.5	0.95	0.95	1.5	

Compost Tea trial plot in the same field

Compost Tea - 2011 Application on Oil Seed Rape

Preliminary Results During the growing season



Comparison of OSR Leaves

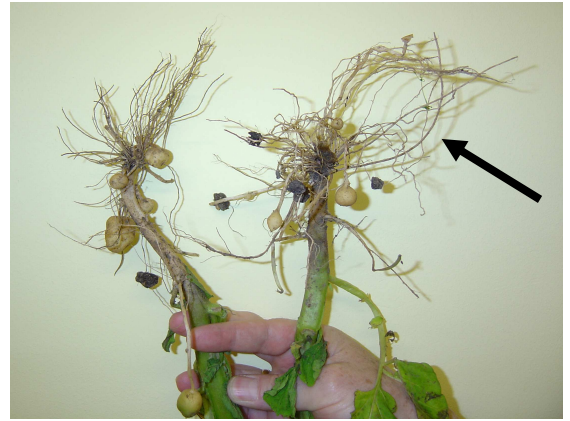
The leaf size difference is very significant (with compost tea on the right) and is typical of what we have seen in our vegetable trials.



OSR Trial Plot

Tea application is to the right of the tramline in this field shot. Seed establishment has been very difficult because we have had next to no rain in Lincolnshire, but the growing plants look very healthy

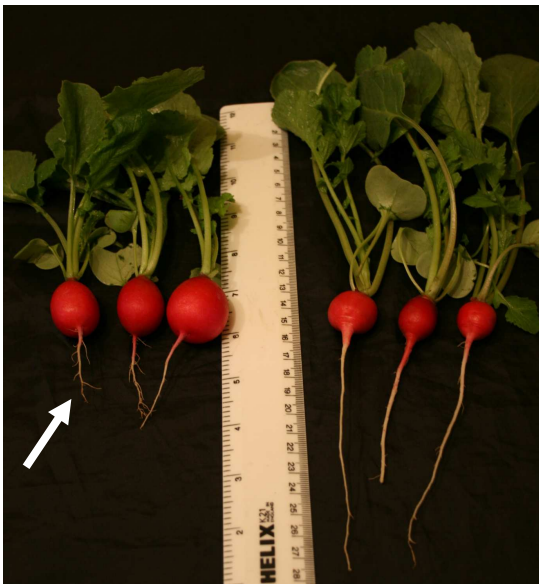
Compost Tea



POTATOES

With compost tea on the right, with just rainwater on the left.

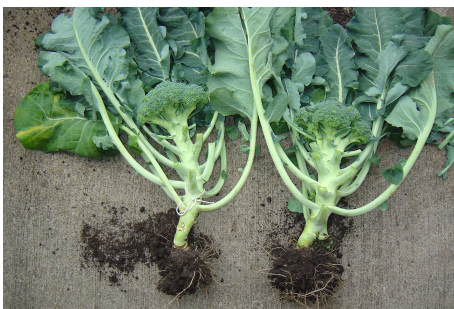
- Compost tea produced 7.6% greater weight of potatoes with more consistent size
- Root growth more developed with compost tea (arrowed)



RADISHES

With compost tea on the left, with just rainwater on the right.

- Compost tea produced foliage 12cms long and overall length of 20cm (average of 8 radishes)
- With just rainwater the bulb was smaller and the root length longer (14cm cf. 8cm). Foliage was 16cm and overall length 30cm.
- Rootlets much more developed with compost tea (arrowed)
- Compost tea radishes were more crunchy, crisp and flavoursome



Broccoli

With compost tea on the left, with just rainwater on the right.

- No difference in size of flower head, except some blotchiness with just rainwater
- With just rainwater the flower stem is thicker
- After cutting the main flower off the stem there was significant re-growth from the base of the stem with compost tea and virtually no re-growth with just rainwater

Vegetable growing trials

All cases below show - with compost tea on the right, with just rainwater on the left



Carrots

With compost tea, the carrots are longer and more consistent in size and the foliage is a little more substantial



Onions

With compost tea, the onions are larger and the foliage is more substantial



Beetroot

With compost tea, the beets are generally larger and more consistent in size and the foliage is a lot more substantial



Red Onions

With compost tea, the onions are larger and the foliage is more substantial



Lettuce

With compost tea, the lettuce plants are a little shorter, but much fuller and less spindly



Calendula

With compost tea, the plants are larger, less spindly, have more foliage and carry more flowers

Compost Tea - Rhododendron grower results



Millais Nurseries report excellent results with Compost Tea applied to their award-winning rhododendrons



David Millais of Millais Nurseries and Michael Alms CEO of Growing Solutions Inc, manufacturers of the Compost Tea Systems distributed by Martin Lishman Ltd



David Millais comments:

- We have been delighted with the results of using Compost Tea.
- So far we have only applied one fungicide to our crops, and we have relied on the tea and a few other organic based products in rotation.
- Compost Tea made with the Growing Solutions system has proven to be economic, quick to use, easy to apply and clean up.
- Our crops are looking better than ever - darker green foliage and typically clean of all diseases, though they have seen a little mildew on some particularly prone varieties (varieties which in fact we had given up growing until recently because they were so bad!)



MycoLife

Compost Tea Compost

Peat-free Compost Tea Compost

A balanced high-quality green-waste based organic compost, rich in bacteria, fungi and protozoa, suitable for making compost tea.

About MycoLife Compost

MycoLife compost was developed after years of rigorous testing by Laverstoke Park's laboratory team to achieve a balanced, high quality compost, rich in bacteria, fungi and protozoa, suitable for making compost tea.

Several parameters, including CO₂, temperature, moisture, chemical analysis and microbiological activity and diversity are monitored to ensure the inherent variability of compost is kept to a minimum.

The MycoLife compost has been developed to the high standard that is needed for extracting the beneficial microbes that feed both the plant and the soil. The microbiology and chemistry of every batch is tested before packing

Carrying out a comprehensive soil test before adding compost tea will help to identify microbial and nutrient imbalance in the soil and highlight the need for organic amendments. This service can be provided by the Laverstoke Park soil testing laboratory.



Using MycoLife Compost

It is recommended to use 2-3 litres of MycoLife compost per 100 litres of water in a compost tea brewer. The brewer must be thoroughly cleaned before use to avoid contamination from anaerobic bacteria.

An ideal level of 2-2.5 bar spray tank pressure should be used to ensure microbes (especially fungi) are not damaged during application. The compost tea may need to be passed through a filter to prevent equipment blockages.

As MycoLife compost contains living micro-organisms, it is not advisable to mix it with fungicides or other pesticides. If these chemicals do need to be used as part of the crop husbandry, apply them to the crop before compost tea is used. In that way the compost tea that follows will help to restore the beneficial micro-life that may be destroyed by the chemical.

MycoLife is not a soil replacement or potting compost and should only be used for making compost tea.



Typical test results from a batch of MycoLife compost

Microbiology		Expected range for compost	Chemistry	
Active Bacteria (µg/g)	168		15-25	Nitrogen (N) (% w/w)
Total Bacteria (µg/g)	815	100-3000	Phosphorus (P) (% w/w)	0.271
Active Fungi (µg/g)	19.9	15-25	Potassium (K) (% w/w)	1.17
Total Fungi (µg/g)	406	100-300	Calcium (Ca) (% w/w)	4.95
Protozoa (per gram)	84760	20000	Magnesium (Mg) (% w/w)	0.517
Nematodes (per gram)	26	20-30	Total Carbon: Nitrogen (C:N)	17:1

MycoLife Compost Tea Compost is manufactured by Laverstoke Park Produce and produced in compliance with BSI PAS100:2005 & the Compost Quality Protocol

Martin Lishman

Making and Applying Compost Tea

What type of compost should be used?

The highest quality compost should always be used to make compost tea. The compost should be properly finished, sourced from predominantly green waste and contain a high diversity of beneficial micro-organisms. Specially produced Compost Tea Compost, produced at Laverstoke Park, which ensures consistent high quality compost tea in every brew, is available from Martin Lishman Ltd.

How much compost is required?

A very small amount in relation to the volume of the Compost Tea System being used. The System10 needs 1-1.5Kg, the System25 uses 2-2.5Kg, the System100 8-10Kg and the System500 requires just 30-35Kg.

How important is the water source?

Untreated rainwater at 15-24°C is ideal. If chlorinated water is used, the water should be aerated in the Compost Tea System tank for at least 30 minutes to drive off the chlorine before adding the compost.

When to apply compost tea

Throughout the growing season every 14-30 days, but up to once a week in times of disease pressure or other crop stress. Application should be early or late in the day and preferably not during wet weather.

How to apply compost tea

Using any conventional type of application equipment (well cleaned) such as trailed, tractor mounted, wheelbarrow, air-assisted or skid unit sprayers, overhead glasshouse applicators, backpack sprayers and even watering cans. Some changes to filtration and nozzle type may be required.

Application rates

Can be used undiluted in situations of extreme disease pressure or diluted to provide adequate coverage. A typical application rate is 100-200l/ha. It cannot be over-applied because it is completely natural and organic.

Production time and shelf life

A complete production cycle with a Compost Tea System is just 24 hours. The tea should then be used as quickly as possible to avoid deterioration of the living organisms, preferably within 18-24 hours.

How important is the Compost Tea Catalyst?

Compost Tea Catalyst is a food resource, added during the compost tea production cycle, that provides additional ingredients to feed the microbial population that grows rapidly during the brewing cycle and sustain microbial activity during compost tea application.

Easy steps to Compost Tea

Fill the tank with water to the fill line and start aeration



Add Compost Tea Catalyst to the water



Loosely add high quality compost to the compost basket to c.2/3 full



Place compost basket into basket tray



Insert diffuser into compost basket (not used in System10)



Replace tank lid and aerate for 24 hours



FURTHER INFORMATION

For further details about compost tea or Compost Tea Systems, please contact us as below and we will do our best to answer your questions.

We reserve the right to alter product specifications at any time without notice.
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Your Compost Tea System Supplier: