



# Organics in Canterbury

Issue No 24: October, 2003

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This newsletter is published by the Canterbury Commercial Organics Group, in association with Heinz Watties, MAF SFF Central Canterbury Organic Growers Discussion Group, Canterbury Organics and the Biological Husbandry Unit, Lincoln University.

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Articles, letters to the editor and advertisements are welcome.

## Sustainable Animal Production

The Central Canterbury Organic Growers Technology Transfer Project invite you to join us for a seminar on **Sustainable Animal Production**. This will be the final seminar and workshop of our Organic Growers Technology Transfer Project.

We are very pleased to have as our guest speakers, **Trevor Cook** and **Nigel van Dorsser**. Trevor is a veterinarian from the Manawatu who works with individuals and groups of farmers to establish and support sustainable and organic animal production systems. He is involved with the Central Districts Organic Growers Group and Project Green [www.projectgreen.org.nz](http://www.projectgreen.org.nz). Nigel is well known to many of you for his work as an animal nutrition consultant to prevent problems.

Workshop: As well as hearing lots of good principles and techniques, this day will focus on addressing any issues and problems you have on your farm. Write them down and bring them along.

**Don't miss this opportunity to hear and learn more about sustainable animal production. As we all know, it is one of the "great challenges" in organics so do come along.**

**Date: Friday 17 October, 9.30am – 2.00pm**

**9.30am Morning Tea**

**10.00am Nigel van Dorsser** Nutrition for healthy stock  
**Trevor Cook** Achieving sustainable animal production

**12.30pm Lunch** Sponsored by Heinz Wattie's  
**Discussion and Workshop**

**Venue:** Bert Sutcliff (Cricket) Pavilion, South Dr, Lincoln University  
Directions below.

**PLEASE REPLY by Thursday 9 October!** – to help us confirm numbers for catering. **Reply to Sue Cumberworth:** Phone or Fax: 03 322 7388, Mobile: 025 628 6110; 544 Halswell Road, Christchurch.  
Email: [sue@agribusinessgroup.com](mailto:sue@agribusinessgroup.com)





**Directions:** Access is off Ellesmere Junction Road via gate 2 into Calder Drive. Follow the field day signs down Calder Drive, cross the intersection with Farm Road and continue to come to a "T". Turn right into South Drive and continue to the Bert Sutcliff Pavilion.

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## Biopesticide counters grass grub infestation

A novel biopesticide which is bad news for grass grubs and great news for the environment has been launched. Grass grubs cost NZ millions of dollars yearly in lost production. They attack the roots of plants and severely reduce pasture production.

New patented technology has been developed by AgResearch. A biopolymer formulation, which enables microorganisms such as bacteria and fungi to be stored at room temperature for extended periods of time without a loss of viability has been developed and licenced to EnCoate. The leading edge technology has been used in conjunction with grass grub specific bacteria to develop a targeted product which offers an environmentally sound, cost effective and scientifically sophisticated solution for grass grub control. It will be manufactured by Ballance and be available in February.

Extensive field trials have been undertaken during the past two years with excellent results achieved, says the company. The product will be available in granular form. "The technology is environmentally friendly, using naturally occurring products to effectively control the pest which means farmers can avoid chemical pesticides," says Warwick Cato, head of agro-sciences at Ballance.

The biomatrix formulation is made of food-grade ingredients and the technology has equal application to any product that requires delivery of a live organism. Preliminary studies indicate the biopolymer formulation can be applied with similar results to other microorganisms, such as those involved in control of clover root weevil. In addition to maintaining microorganism viability and ease of delivery, the success of a biopesticide depends on release of inoculum and its availability to the pest. The composition of the formulation can be varied to alter the speed at which the granule breaks down after coming into contact with moisture.

*From Straight Furrow, September 24, 2003.*

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## Green light for Massey's organic farm

Massey University's organic dairy farm at Palmerston North has just achieved full certification and will start selling milk this month at a 10% premium to Fonterra. Following a 2-year conversion period, Agriquality has issued full certification for the farm, which is part of comparative systems trial exploring differences between the impact of organic and conventional farming practices on soils, pastures, cows, and financial returns over time.

Over the next few months the project science team will analyse all the monitoring results from soils, herbage, bloods and milk production characteristics taken over the conversion period.

"A key aim for the organic farm is to try to understand how to develop a soil that is more biologically healthy," says Jacalyn Scott, project manager. "We are then going to look at how this affects the nutrient content of the pasture and the subsequent nutrient status of the animals in relation to their production and health."

Scott says reports from industry suppliers of "biological fertilisers" indicate far more conventional farmers are trying these products than organic farmers, due primarily to still relatively small number of organic farms in NZ. Deputy Director of Massey's agricultural services and chair of Organic Dairy Extension Service (ODES) says that the farmers in the latest ODES farmer discussion group are keen to get results from the trial. "At the moment farmers in our group are trying to make decisions based on anecdotal information from other biological and organic farms. They all want more scientifically defensible results."

The Massey farm is a relatively intensive, high producing farm with targets of around 1000 kg MS/ha (450 kg MS/cow) on a heavy, silt loam soil growing around 12 t DM/ha with conventional management.

*From Rural News, August 18, 2003.*

**Letters to the Editor, news items and notices of events are welcome. Please send any newsletter material or feedback to the editor, Mary Ralston, Back Track, RD 12, Rakaia, email [kem@xtra.co.nz](mailto:kem@xtra.co.nz)**



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## Calendar of events

**11 October, 11 am to 12.30 pm.**  
**BHU Open Day.** See details in article below.

**17 October, 9.30 – 2.00**  
**Seminar: Sustainable Animal Production.**  
See front page for details. RSVP to Sue  
Cumberworth, [sue@agribusinessgroup.com](mailto:sue@agribusinessgroup.com)

**23 & 25 October**  
**BHU SMALL FARMS WORKSHOP:**  
**Latest Non-Chemical Weed Control**  
**Techniques** (see below for details)

**20 & 22 November**  
**BHU SMALL FARMS WORKSHOP:**  
**Biological Fertilisers**

**12 & 14 February 2004**  
**BHU SMALL FARMS WORKSHOP:**  
**Composting and Fermentation - Latest**  
**Developments**

**11 & 13 March 2004**  
**BHU SMALL FARMS WORKSHOP:**  
**Protected Cropping and Portable**  
**Tunnelhouses**

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## Canterbury Organic News

The last month has been a hectic one for Organic Farm NZ certification at Canterbury Organic. The independent auditor, Joy Mcleod, has completed her retrospective review of our early producer members, by and large confirming the recommendations made by the Certification Manager and Subcommittee in CO's first year of operation. Joy has now turned her attention to audits of new members and renewals of existing certifications. Included among these, we have welcomed new producer members in North and West Canterbury and the Leeston area, and Christchurch Polytechnic's Organic section of the Seven Oaks Campus. Several members have completed corrective actions in the last couple of months and will be receiving certificates shortly. Some members have completed their paperwork and peer reviews for renewals and will hopefully be continuing their progress towards full certification;

more renewals are due over the next few months.

A great deal of interest in the Organic Farm New Zealand scheme was expressed at the recent Small Farms Field Day from all over Canterbury; we almost ran out of leaflets and are looking forward to receiving a fair percentage of them back soon. We have had enquiries from as far afield as Nelson and are hopeful of assisting a pod to become established in the Kaikoura area.

Our recent mailing of producer information to retailers in Canterbury has produced some encouraging feedback and we hope that at least some of the contacts made through this kind of promotional material will help our growers to establish and expand their markets.

Progress on OFNZ national administration matters continues slowly, through the hard work of the National Coordinating Committee members, including our own Matt Morris. But the signs of growth are encouraging where it matters most - at grass roots level around the country.

**Contact details:** Hugh Mingard (Administrator), c/o Ngahuru, Ahuriri Road, RD2, Christchurch. Tel: 03 329 6569, Fax: 03 329 6568, Email: [corganic@organics.org.nz](mailto:corganic@organics.org.nz).

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## BHU News - Biological Husbandry Unit, Lincoln University, Model Organic Research Farm and Sustainable Agriculture Research.

The BHU Open Day is this Saturday 11 October, 11 am to 12.30 pm. Due to a big march happening in CHCH in the afternoon, the Open Day is now starting at 11am (staff will still be present at the original advertised time of 1pm).

**Items include:** Don Pearson - Scope of BHU Research; Dr Tim Jenkins - The Importance of Soil Biological Activity; Sir Peter Elworthy - BHU Chairman's Address.

See the new tools and implements of the BHU; hear about research results and new BHU activities. Plant a tree or two, bring spade and suitable gear (including boots if wet).

**Directions to BHU:** Enter Lincoln University through Gate 2, follow road along and turn right up Farm Road, go past cricket grounds and nursery and straight through at the intersection into the Horticultural Research Area - park as directed.



The BHU also holds monthly workshops for Small Farm holders (but relevant from a small backyard through to a large station). They are inexpensive (usually \$10 per family) guides to help achieve organic and sustainable agricultural success and contain a wealth of information and experience. They generally run from 10-4, but you can attend parts if required (usually theory in morning, practical in afternoon). The programme for this summer is in the calendar above. NOTE: The venue is in the Horticulture Teaching Lab (directions below).

Directions: Enter Lincoln University through Gate 2 (Calder Drive) and take first right (Farm Road). Horticulture Teaching Lab (on the right beside the nursery) will be signposted.

Check out our website [www.bhu.co.nz](http://www.bhu.co.nz). Join our emailing list for info on future workshops (enrol through the website or by emailing [thebhu@quicksilver.net.nz](mailto:thebhu@quicksilver.net.nz) with **join** in the subject line).

**BHU Contact details:** Tim Jenkins, BHU Manager, Phone 3253684 (Lincoln Univ extn 7684), [www.bhu.co.nz](http://www.bhu.co.nz). Email [thebhu@quicksilver.net.nz](mailto:thebhu@quicksilver.net.nz)

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## Seminar report: Cherryle and Richard Prew

A seminar was held on 22 August, organised by the Central Canterbury Organic Arable and Process Vegetable Growers Technology Transfer Project (supported by the MAF Sustainable Farming Fund). Speakers were Cherryle and Richard Prew, from Cambridge in the Waikato.

Cherryle is a former Bio-Gro auditor with a 12-year interest in organics and soil health. She is the New Zealand Director of the Soil Foodweb Institute which has just opened a soil-testing laboratory in Cambridge. The lab measures soil biology (bacteria, fungi, protozoa, nematodes and mycorrhiza) and recommends ways to improve the life of the soil through the use of compost and compost teas leading to reduced pest and disease problems and increased crop yields.

Richard manages Heritage Farms - a Bio-Gro certified property producing apples, kiwifruit, plums and asparagus. He is also a director on the executive of the Fruitgrowers Federation and is a member of the Vegfed Council.

**Cherryle** told us that specific ratios of bacteria and fungi are vital to the health of crops. Different plants require different ratios. Nitrate feeders (grasses, vegetables and row crops) need high levels of bacteria, whereas shrubs, kiwifruit, grapes, and deciduous trees such as pipfruit need higher levels of fungi. Protozoa are also required for nutrient cycling and disease suppression, and, of course, larger animals such as earthworms are important for nutrient release from organic matter and maintenance of soil structure.

Armed with this knowledge, we can manipulate the soil ecosystem. By introducing the appropriate fungi or bacteria to the root zone through application of compost tea, the root zone can be colonised by the "right" organisms for that particular plant type. For instance, if you wanted to convert pasture to an apple orchard, you would need to change the bacteria: fungi ratio in favour of the fungi. The soil could be tested to see what levels already exist, then appropriate tea applied to the apple trees so that their roots were colonised by the appropriate fungi.

Making compost tea that has the correct levels of fungi or bacteria is very important, and that is where Cherryle and the Soil Foodweb Institute lab come into the picture. Cherryle can test soil and compost to determine what fungi or bacteria it contains. The compost must be aerobic and the white fungal threads are a good sign.

There is great potential for this use of soil microbiology to benefit agriculture and horticulture, especially in organic systems. An example of this working is the in the control of the disease Armillaria, a major disease of kiwifruit for which there is thought to be no control, either organic or conventional. However, a good quality fungal compost tea has been used to successfully control it. Another example is the control of Californian thistles: they can be controlled by a brew of molasses (which feeds the bacteria) which changes the bacteria: fungi ratios so that the thistles do not have the growing conditions they need. Frost protection can also be achieved with use of compost tea.

**Richard** told us about the farm he manages, Heritage Farm, which is 160 acres of apples, kiwifruit, plums and asparagus, which is organically certified except for the apples. The 3 ha of asparagus has been certified for 4 years and consistently produces better than any other in the Waikato. Phytophthora, a major fungal disease of asparagus is not a problem on Heritage Farm, due to application of compost tea which Richard believes, has successfully kept the bacteria: fungi ratios at a level where the Phytophthora



cannot get established. He uses a Vapour Tech steam weeder which controls the grass along the rows so that the pickers can see the spears easily. Between the rows the grass is mown.

On Heritage Farm Richard uses a compost tea brewer. This ensures he can make sufficient quantities for the whole farm and since he bought the brewer in September 2002 he has applied over 300,000 litres. Good results are achieved with 150 l/ha. The tea must be applied within 6 hours of making because the organisms are extremely active, and should be applied before 10 am or after dark so that leaves are not scorched or the organisms killed by the sun. Rainy conditions are ideal.

Richard summarised the benefits of compost tea:

- No disease, especially Armillaria which is a serious disease in their area;
- Increased crop production;
- Increased shelf life and better taste;
- 80-90% reduction in root knot nematode;
- No plant stress;
- Less soil compaction.

To make your own compost tea brew:

Use about 15 kg fungal compost (one that has white threads in it), 10 kg vermicast, 0.5-1.5 litres humic acid (fungal food), molasses (bacteria food). These ingredients should be placed in a 400 micron cloth compost bag, immersed in a 1000 to 2000 litre container of water at 20 deg, which has air blowing into the water aerating the total brew. Brew for 24 hours at least and apply within 6 hours.

For more information about the Soil Foodweb Institute, see the website [www.soilfoodweb.com](http://www.soilfoodweb.com) or to contact Cherryle or Richard phone 07 823 7520, fax 07 823 7521. See article on compost tea, page 7.

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## Biodiversity Resources Available

Two excellent resources are available to provide practical information and examples on understanding and enhancing biodiversity on our land.

**Biodiversity and Modified Landscapes** is a Secondary School Resource for New Zealand. It is a resource pack containing a book, a video and seeds to be used in hands-on activities. Designed for Year 12 and 13 Biology students, the resource kit is linked to Level 6 and 7 Biology Achievement objectives. The resource pack promotes increased awareness among high school students about biodiversity, its

role in modified landscapes (farmland and cities), how to measure it and how to enhance it.

The book is divided into 3 sections:

1. What is Biodiversity?
2. Case Studies in Biodiversity
3. Practical Activities in Biodiversity

As a result of studying biodiversity it is hoped that students will learn to appreciate its importance in their lives and for the future of planet earth.

This resource pack can be purchased for \$45.45 including GST, postage and packaging from:

Educational Solutions Ltd, PO Box 100, Lincoln

Ph 03 325 2052, Fax 03 325 2278

Email [edsol@xtra.co.nz](mailto:edsol@xtra.co.nz)

**Biodiversity On Farmland: "Good Management Practices"** is a booklet for farmers which contains information and practical "How To" guidelines on enhancing biodiversity on farmland.

This booklet is produced for New Zealand farmers to demonstrate how farm biodiversity can be enhanced to give multi-value benefits to production, conservation, recreation, historical and cultural, aesthetic and Maori needs. It is an outcome of the "Strategies to Enhance Biodiversity on Mixed Cropping Farms" project (1999-2003), funded by the Ministry for the Environment's Sustainable Management Fund. The project was run in conjunction with the Selwyn Sustainable Agriculture Society Inc. and key partners Lincoln University, Heinz Wattie's and Agriculture New Zealand.

The aim of this project has been to create and put into practice farm biodiversity plans at two sites within New Zealand for research, demonstration and technology transfer. The first site is Kowhai Farm, Heinz Wattie's Organic Farm at Lincoln University in Canterbury and the second a commercial farm near Gisborne. The project has demonstrated multi-value biodiversity with a strong emphasis on Functional Agricultural Biodiversity (FAB) by identifying those aspects of biodiversity, which can be enhanced or added to a cropping system to improve "ecosystem services". These services or functions can be wide ranging in type and provide agricultural benefits beneath the soil and above ground in crops, other production areas, fence line margins and recreation areas. The information in this booklet records the activities and outcomes of the project in Gisborne and Canterbury.

Orders can be placed with: Prof. Steve Wratten, PO Box 84, Lincoln University. Ph 03 325 2811, Fax 03 325 3844. Email [wrattens@lincoln.ac.nz](mailto:wrattens@lincoln.ac.nz)



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## Sustainable Cities Trust: For People and Planet

By Rex Verity, Director, *Sustainable Cities Trust*

**Sustainable** means “able to be maintained”. Sustainability demands that people have a concern for our impact on living systems, and act on it; and have a respect for ourselves and our ways of living and working together, and act on that. It’s about getting in touch with what we value as individuals and communities and creating a better quality of life for all people, now and in the future.

This is the focus of the **Sustainable Cities Trust**, a dynamic and innovative independent charitable trust based in Christchurch. The Trust has an agenda for sustainable regional and urban development, and acts by building partnerships and creating and managing projects, events and experiences to improve the way that people interact together and with our environment

### Vision

With a strong sense of integrity in regards to sustainability principles, SCT aims to “change the minds”, “influence the hearts” and “make things happen” in Christchurch, Canterbury and New Zealand, to energise communities as vibrant, fair and sustainable places for all people.

### Key Achievements

- *Recovered Materials Foundation*: concept development & formation for **recycling**.
- *Canterbury Dialogues*: information & debate about **quality of life** issues.
- *Indicate*: “**genuine progress indicators**” of Quality of Life for Canterbury.
- **Green Developments**: city revitalization; housing & community planning (strategic involvement in City Council social housing in Hornby and Beckenham and in redesign for sustainability of Pegasus Bay Town)
- **Community Enterprise**: social entrepreneurship, *korero* communications.
- Infrastructure for the growth of **organics**: SCT played a key role in the formation of the Organic Garden City Trust and its sponsorship of Kids Edible Gardens and the Canterbury Commercial Organic Group. OGCT provides these projects with a legal and financial structure and support. In recent years the OGCT umbrella extended to

shelter the Christchurch Community Gardens Association and Canterbury Organic, the small-grower certification scheme.

### Current Projects

- **Energy Efficiency**: seminars, public meetings and education through schools on energy efficiency and conservation, renewables and distributed generation. Supporting technologies for burning wood ultra-cleanly and efficiently.
- **Sustainable Housing**: coordination of a 30-dwelling sustainable neighborhood, low-cost housing cluster brown fields development in inner city, Christchurch, to demonstrate best practice sustainable design and construction. Market research. Support services for the Otautahi Eco-village group’s site selection and community development.
- **Urban Design**: development of graphic materials and programme of sub-urban community consultation, with design and architectural people. Work with Urban Design Forum and other groups and agencies.
- **Access and Mobility**: studies and recommendations on pedestrian and public transport issues, Living Streets and Travel Demand Management projects.
- **Resource Recovery**: innovation in technologies and approaches to recovery, re-use and recycling of urban “wastes”. Piloting of zero waste public events.
- **Community Engagement**: educational tours, video/speakers sessions, art/music/food/issues café evenings, sustainability-themed story telling/singing/performing festival.
- **Sustainability Information Services**: a soon-to-be-launched web-based service and e-news.

### The People

The current SCT team is Rex Verity (director), Wendy Everingham (transport project manager) and Jashim Khan (information services and market research), supported by volunteers. The Trust is advertising for volunteers and a project manager to assist particularly with the community engagement and resource recovery portfolios.

The current Board is Prof. Arthur Williamson, Christine Toner, Kevin Scally, Mollie Anderson, Sir Kerry Burke and Dr John Peet. The Trust is also looking for additional Board members.

Contact the Trust at:

Phone: 377-8566, PO Box 4490, Christchurch.

[trust@sustcities.org.nz](mailto:trust@sustcities.org.nz)

[www.sustcities.org.nz](http://www.sustcities.org.nz)



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## Compost Tea: Promises and Practicalities

by Dr. Elaine R. Ingham

*This article comes from the Soil Food Web Institute website, [www.soilfoodweb.com](http://www.soilfoodweb.com).*

There's an ever-increasing mythology about compost tea. If you've heard something that just seems too amazing to be believable, you've probably heard some of the developing mythology. There's an ever-increasing amount of fact about compost tea as well. There is quite a bit of usefulness to compost tea. But let's separate fact and fiction.

First of all, let's define what compost tea actually is, it's a brewed extract of compost. During the brewing cycle all the soluble nutrients, both inorganic and organic, and a large percentage of the organisms in the compost, are extracted into the tea. Those organisms then grow and increase in number over the course of the brewing cycle, depending on what soluble nutrients were extracted from the compost, and what foods were added to the tea.

Application of tea to soil, foliar surfaces or compost means the organisms and soluble foods remaining in the tea are placed on those surfaces and/or materials. A good diversity of active, growing aerobic organisms typically results in disease suppression, retention of nutrients, improved availability of nutrients to the roots and foliage of the plants, detoxification of many residues, and improvements in soil structure. This is true whether we're talking about compost, or compost tea.

There are many examples of where tea has worked extremely well to suppress diseases (ending the use of pesticides), to build soil structure (letting plant roots grow deeper into soil), and to improve nutrient cycling, thus reducing the use of inorganic fertilizers. The examples where tea has worked these "wonders" are extremely diverse, from potato fields in Idaho, to banana and papaya plantations in Hawaii to raspberries, strawberries and blueberries to fruit orchards and vineyards in many countries.

There are other examples where people think they made compost tea, but did not actually achieve anything close to a good tea. In these cases, the supposed "tea" did not protect plants, did not improve soil, and in rare cases resulted in increased disease. If appropriate testing is not performed, there is no guarantee that the tea made will give the benefit desired. When first learning to make tea, chances of failure are significant. And just as you wouldn't trust a

source of water that isn't periodically tested to make sure human disease organisms are not present, you should not trust a tea or compost that isn't periodically tested for the biology that should be present. Snake oil is still snake oil, whether someone calls it compost tea or putrefying organic matter. How can you tell the difference? Testing must be performed. Don't buy something that isn't tested.

Tea has to be made correctly, and has to be applied correctly. Please be aware of the following considerations:

1. Compost tea CAN replace most pesticides. But the operative word is CAN. You have to make the tea and apply it correctly, and then it CAN work quite well to replace pesticides.

2. Compost tea is NOT a pesticide. Pesticides KILL things, compost tea is probiotic, it PREVENTS the disease organisms from having space, food or infection sites. Tea is not an "-icide", which means, to kill. Tea occupies the plant surface with organisms that are beneficial to the plant. Death is not the point: life and diversity are!

3. Compost teas CAN supply nutrients to plants, but at rates that the plant controls. Tea supports the soil and foliar foodwebs, both in terms of inoculum and soluble food resources. Once reestablished in your garden, a healthy foodweb results in foods that contain a healthy mix of vitamins and minerals for you to consume.

4. Does this mean tea always works? There are conditions where the organisms in the tea will be killed or not survive. There are times when the soluble nutrients will be lost from the system instead of ending up in the plant. This is BIOLOGY that we're talking about. If you understand biological systems, it's easy. If you are a linear, non-holistic thinker, you may have some trouble figuring this out.

### Why does Compost Tea "Work"?

Two main reasons:

1. Tea contains a set of aerobic organisms which:
  - consume the foods that plants put out around their bodies. Plant exudates, both from roots and leaves, enhance the disease-suppressive bacteria and fungi that occur in aerobic tea, leaving no food for disease-causing organisms to grow. If pesticides and inorganic fertilizers have killed the beneficial bacteria and fungi plants "expect" to be present around their roots, those exudates will be used,



eventually, by disease-causing organisms. Disease is then rampant and hard to control.

- occupy the infection sites so even if the disease-causing organisms do start to grow, they can't penetrate into the tissues of the plant,
- occupy the space around the plant so there is no room for the disease organisms to exist,
- consume disease-causing organisms,
- produce compounds that inhibit disease causing organisms from being able to grow.

Tea contains soluble nutrients which feed the organisms in the tea so they grow faster, are healthier and can perform their disease suppressive functions faster; feed the plant so the plant is healthier and can make more food to feed the "good guys" that suppress disease-causing organisms.

The organisms in tea also perform other beneficial things for plants besides just suppressing disease. These additional benefits are:

- Retain nutrients in the soil around the plants, so additional fertilizer will not be needed.
- Make nutrients available to plants at rates plants require. Reduced fertilizer applications almost always occur if you have a healthy soil with the right sets of organisms for your plants.
- Detoxify the soil and water making it easier for plants to grow. If anaerobic conditions do exist in the soil, the aerobic organisms have to use those anaerobic materials BEFORE they get to your plant!
- Build soil structure, so air and water can easily reach your plant's roots, keeping the soil well-aerated, but also holding water in "swimming pools" in the soil. You get healthier plants, with roots that go deeper, and that don't require constant watering.

## The Ingredients for a Compost Tea

1. COMPOST - Not putrefying organic matter. Please, get this one straight. It's critical. Compost is aerobic. Consider what that means. It means that compost does not stink. No "odours". Only if it hasn't been properly aerated will it smell bad. If it smells like sewage, that means it is sewage, not compost. If it smells like manure, it is manure. Trust your nose, not someone who is trying to sell you something.

Real compost (aerobic!) contains a huge diversity of bacteria, fungi, protozoa, nematodes and perhaps

even microarthropods. Beneficial species are almost always strictly aerobic. Which means those conditions where stink starts to occur are killing the "good guys" and helping out the "bad guys" which also attack your plant roots, foliage and seeds.

2. WATER - Consider your water source carefully. Why do we put chlorine in water? To kill human pathogens, right? Will the chlorine kill the compost tea organisms? Yes. So, you must de-gas the chlorine by aerating the water, or adding citric acid (yes, the breakfast drink, Tang, has a high enough concentration of citric acid to work). Check pH and hardness if you take your water from a well. Too high or low pH can cause problems.

3. FOOD to grow beneficial bacteria and fungi in the tea during the tea making cycle - we have more to learn about here, but in general you want to maximize fungal biomass to the greatest extent. The bacteria will be in the tea as long as you use good compost, a bit of molasses or other complex sugar. If you need fungi and most agricultural soils desperately need fungi, and most foliar applications lack adequate fungi as well, then you need to add kelp, rock dust, and fish hydrolysates or humic acids. You probably want to try a combination of the fungal foods to see what works best. Be aware that many of the compost tea maker companies are working on this question of how to improve the fungi.

This past summer we were testing a variety of teas, and we're seeing that about 85% of the suppressiveness of a tea comes from bacterial coverage. If about 65 to 70% of your leaf surface is covered with bacteria, which translates into at least 300 ug of bacteria per mL in the tea, applied at about 5 gallons of tea to the acre, then you will have little to no disease 85% of the time, under most conditions.

However, when disease conditions are perfect for the growth of disease causing organisms, then you better have that last 15% of the leaf covered with fungi. Aerobic fungal species are the ones that take on the worst fungal bad guys and win.

In a "no-disease" year, no worries, almost any tea will be ok. But in a tough situation, it is extremely important to have the fungal component in the tea. That translates into about 2 to 20 mg of fungal biomass in a tea, so that the leaves will be adequately covered when applying at 5 gallons (c 22 litres) of tea per acre.

What about soil? Again, bacteria and fungi are needed, but protozoa and nematodes are also needed. Most any machine gives you good bacteria,



given good compost and molasses or other sugar, but at least some active fungal biomass has to be present to get fungi into the soil to compete with the bad guys and help open up soil structure. No fungi, no macroaggregates, no passageways for air or water to move into the soil. No swimming pools...

4. PLANT FOOD - As long as the plant is being sprayed, do some foliar feeding. But, getting the leaf surface completely covered is important here too, because bacteria and fungi respire carbon dioxide, which elevates CO<sub>2</sub> in the atmosphere just about the leaf surface, causing the stomates to open more rapidly, for a longer time, and thus, the plant takes in more of the foliar nutrients applied in the tea.

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## Tree Crops field day

**Sunday 12th October - Unusual Crops**

**Contact person:** Diane Leighton, 347-9472  
**Start time:** 2pm

This will be a classic Tree Crops Association field day to see some crops you may never have seen growing! We will see umeboshi (Japanese plums grown for pickling), ginkgo, persimmons and other exotic fruit trees. There are also chestnuts, walnuts and a new vineyard.

Directions: The field day is at the property of Rodney Fisher on Halkett Road (rapid number 321 0443). This property is 2.5 km west of Weedons Ross Road. It shares a driveway with "Tuscany Downs" (which has a large signboard). Enter this driveway, then go through the gate on the right before the pine trees.

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## Organic farming 'a realistic choice'

By Alex, Kirby, BBC News Online environment correspondent

After a 21-year study, Swiss scientists have given a ringing endorsement to organic farming methods.

They found organic yields were on average 20% smaller than those from conventional agriculture. But the ecological benefits more than made up for this, and the organic crops proved more efficient users of energy and other resources. The scientists conclude that organic production is a viable alternative to conventional ways of farming.

They are from the Research Institute of Organic Agriculture and the Swiss Federal Research Station for Agroecology and Agriculture. They report their findings in Science magazine. The team, led by Paul Mader, compared plots of cropland grown according to both organic and conventional methods and planted with potatoes, barley, winter wheat, beet, and grass clover. Crop rotation, varieties and tillage were identical in all the plots.

Over the study period, which began in 1978, they compared normal organic production, another organic approach called biodynamic farming, based on the work of Rudolph Steiner, and two conventional farming methods.

One of these used mineral fertilisers and farmyard manure; the other did not use the manure.

Although organic yields averaged 20% less than those from the conventional plots, the input of fertiliser and energy was reduced by between 34% and 53%, and pesticide use by 97%. Overall, the team found, the organic systems used resources more efficiently, producing more for each unit of energy and other inputs they consumed. The scientists also found that the organic soils housed a larger and more diverse community of organisms. These included soil microbes, which govern the nutrient cycling reactions in soils, and mycorrhizae, root-colonising fungi which help plants to absorb nutrients.

The researchers said the fungi were at least partly responsible for the more stable physical structure of the organic soils. Insects were almost twice as abundant and more diverse on the organic plots. Species included pest-eating spiders and beetles. Earthworms were also more common, and the weed flora was more diverse, with some specialised and endangered species among those found.

Mader said: "These results should be encouraging for farmers, because they can see that yields are stable over time, and that soil fertility has increased. "Our results suggest that, by enhancing soil fertility, organic farmers can help increase biodiversity."

The researchers also found that the organic soils decomposed more efficiently, releasing nutrients and carbon to be absorbed by plants and microbes. They say: "The organic systems show efficient resource utilisation and enhanced floral and faunal diversity, features typical of mature systems. We conclude that organically manured, legume-based crop rotations utilising organic fertilisers from the farm itself are a realistic alternative to conventional farming systems."



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## Organic Websites

**CCOG's home page** –

[www.organics.org.nz/ccog/ccog.html](http://www.organics.org.nz/ccog/ccog.html)

**Organic Garden City Trust** – [www.organics.org.nz/](http://www.organics.org.nz/)

**Organic Certifiers** – [www.biodynamic.org.nz](http://www.biodynamic.org.nz)

[www.agriquality.co.nz](http://www.agriquality.co.nz)

[www.bio-gro.co.nz](http://www.bio-gro.co.nz)

**Crop & Food Research's draft guides to organic**

**crops** – [www.guidetoorganics.com](http://www.guidetoorganics.com)

**Lincoln University's BHU**– [www.bhu.co.nz](http://www.bhu.co.nz)

**Organic Products Exporters of New Zealand Inc** –

[www.organicsnewzealand.org.nz/](http://www.organicsnewzealand.org.nz/)

**Soil and Health Assn** – [www.organicnz.pl.net/](http://www.organicnz.pl.net/)

**Kiwitaiki – organics for tomorrow website** –

[www.kiwiorganics.co.nz](http://www.kiwiorganics.co.nz)

**New Zealand Nature Farming Soc** –

[www.emnz.com](http://www.emnz.com)

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### Canterbury Commercial Organics Group - Newsletter

C/- Mary Ralston

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If any of your details are incorrect please contact Mary at the return address.

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