

The BEELine

Volume I

Western Cascade Fruit Society

Autumn 2003

LETTERS TO THE EDITOR...



Greetings!

Well our 5th Annual Apple Festival was a great success with over 550 people roaming the island enjoying everything APPLE. We put a lot of work into it, but it was well worth it. We even had a big boat loaded with 65 apple nuts from Port Townsend, WA come over for the day.

So now we are working at a normal pace and enjoying some relaxing time. We actually had our photo on the front of the Driftwood, our local newspaper. So here is the website. Note that the story to the left about the predator doesn't apply to the couple eating the apple.

Here is the photo at <http://www.gulfislands.net/>
We offered 88 varieties for tasting at our farm.

That was a record number for us and many we had never tasted before ourselves.

You could have been there and become a Salt Spring Island Apple Connoisseur for the day.

Enjoy
HB

Harry & Debbie Burton of
Apple Luscious Organic Orchard
110 Heidi Place
Salt Spring Island, BC
THE ORGANIC GROWING CAPITAL OF CANADA
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Hey Connie,

That was the BEST ever. I will keep it forever as a reference. Have only been able to get part way through. Great job!!! Loved the article about the trap for tent caterpillar moths. Will have to try it before they lay eggs. Linda Gately (Thanks, Linda!)

FRUIT OPEN HOUSE & FIELD DAY

Saturday, October 11, 2003

Sponsored by the Western Washington Fruit Research Foundation in cooperation with Washington State University, Mount Vernon Research Unit, 16650 State Route 536 Mount Vernon, WA 98273

- Workshops scheduled during the day include:
Unusual Fruits from Europe & Asia;
- Training & Management of Fruit Plants in the Landscape;
- Using Unusual Fruit Creatively;
- New Concepts for Landscaping with Fruit;
- Q & A on Using Fruit Plants in the Landscape, Orchard & Garden Questions, Pest Control;
- Orchard Tour and Harvest.

Also on-site for the day will be a Fruit Display & Tasting; Master Gardeners; Master Food Preservers; Western Cascade Fruit Society; Skagitonians to Preserve Farmland, commercial booths selling Garden & Orchard Supplies. **For More Information:**

CBMSB@juno.com or (253)584-5216

Editor's Note: Apologies for the unavoidable delays in publication that made us late for the Puyallup Fair, Sept.5-21. Mark next year's calendar now for a "Heads Up" so the WCFS booth next year will be the best ever!

NEXT DEADLINE FOR THE BEE LINE IS

Nov. 30!



The BeeLine is a quarterly publication of the Western Cascade Fruit Society, a non-profit 501(c)3 corporation in State of Washington.

From The Compost Tea Council

WHAT IS COMPOST TEA?

Compost tea is an aerobically brewed liquid extract made from good quality microbial foods. Compost tea properly made has only beneficial organisms and nutrients that are essential for plant and soil health.

WHAT ARE THE BENEFITS?

Benefits include improved soil structure, retention of nutrients, cycling of nutrients into plant available forms, and reduced plant stress. Disease organisms may be displaced by the normal set of soil or foliar organisms in the tea.

Compost tea also breaks down compacted soils with repeated use, letting roots grow into the soil more easily, allowing them to find more nutrients, and letting air into the soil so conditions are not right for diseases to grow, or for toxic metabolites of anaerobic organisms to build up. All plants will gain health and vitality with continued use.

Compost tea puts the microbiology back into the soil that we have removed because of our over-development and chemical application practices. This biology has co-evolved with plants for billions of years and is critical for plants to function within their environment.

When applied to the foliage of plants, com-post tea covers the plant surfaces and prevents harmful material from reaching the plant, including disease organisms. Increased carbon dioxide from the respiration of the bacteria and fungi increases the time that stomates open and let foliar nutrients into the leaves. When tea is applied to the soil, it improves the soil structure, increases nutrient uptake, breaks down pollutants and reduces water use.

HOW DO I USE IT?

Compost tea can be sprayed on foliage, twigs, branches and trunks, drenched into the soil, injected into the soil for established roots, and used as root dip for bare root, juvenile plants and cuttings.

When using tea as a foliar application to leaves, twigs, and branches, tea must cover at least 70% of leaf surfaces. Apply until coverage is thick enough before it drips off the leaf. Finer mists will attain better coverage and a better spray pattern. Wetting and adhesive agents are available to help in leaf coverage. When using as a soil drench, tea needs to be applied so it moves down into the soil to aid roots.

When using as a soil application, high ratios of water can assist in carrying the compost tea further

into the soil. Deep root injections will need specialized injection equipment. As a root dip, use full strength. Application through established irrigation systems requires specialized irrigation injection systems.

WHY ARE REPEATED APPLICATIONS IMPORTANT?

Environmental conditions include numerous negative impacts that kill the microbial populations on an ongoing basis. This includes air pollution, dust, prior pesticide and herbicide use, drift and overspray, synthetic fertilizers, salt, water pollution, chlorine, current building and agricultural practices that ignore soil life, over or under watering, compacted soils, unusual freeze, drought, flood, etc. Repeated applications re-establish the beneficial microbes.

WHEN DO I USE IT?

Compost tea may be applied almost any time of year, except in cold weather conditions when soil is below 40 degrees F.

Compost tea can be applied at any time of the day. Compost tea is full of living entities, and when sprayed in favorable conditions, gives the most favorable environment for the microbes to establish and colonize. Avoid using fine mists if the sun is intense. Repeated compost tea applications are essential and critical to establishing and maintaining beneficial microbial populations.

HOW LONG CAN I STORE IT?

Compost tea should be used immediately after brewing for the maximum microbial population. After aeration ceases, the tea should be used as soon as possible to maintain an adequate population to be successful. The microbial population can drop to a point where it is ineffective if the tea is not maintained aerobically, or it is placed in too hot or freezing cold environments.

HOW LONG DO MICROBES LIVE IN THE SOIL?

Colonies of beneficial microorganisms continue to live in soil as long as they are provided good conditions and organic food sources. Stressful conditions in the soil will make microbes go-to-sleep and become inactive, but not death. These organisms may wake-up again after very long periods of time.

Contaminants such as pesticides, herbicides, and air pollutants impact microbe lifespan. Chemicals from urban garden applications are easily carried airborne many miles from their original site. You are impacted by what your neighbors and neighborhood communities do. Be assured that if your neighbor treats his landscape with chemicals, your landscape is

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receiving residues from these applications. In which case, repeated applications, as mentioned above, are critical.

HOW DO I KNOW WHEN TO APPLY TEA?

This depends on why you are applying the tea - if you are applying tea to aid in relieving plant stress, apply weekly until stress or disease conditions improve -then bi-weekly or monthly thereafter.

If compost tea is used to enrich the health of soil and plants, applications can be monthly, bi-weekly, or seasonally, depending on soil health and stability. Compacted, clay and/or soil conditions with poor nutrient content may require more frequent applications - bi-weekly until soil conditions improve.

If you have rich, nutrient-available soil (amended soils rich in humus, with no chemical applications), benefits can be seen in as little as two applications of compost tea per year, such as spring and fall. This is, of course, if you use certified organic fertilizers and organic practices in conjunction with the compost tea application. Certified organic fertilizers provide organic matter that enriches soils and provides a food source for microorganisms.

CAN I USE TOO MUCH?

No! Microorganisms manage their own populations based on food sources and cultural conditions, so that the needed quantities and diversity of microbes are maintained. Repeated applications of compost tea offer a greater diversity of beneficial bacteria, fungi, nematodes and protozoa, leading to improved plant vigor and improvements in soil health.

WHAT IS THE DIFFERENCE BETWEEN COMPOST AND COMPOST TEA?

Compost, in simple terms, is a mixture consisting of decayed organic matter and microbial colonies, in a well-balanced ratio of carbon and nitrogen. Compost tea, on the other hand, is a liquid extraction of beneficial microorganisms and soluble nutrients from the compost that is reproduced during the brewing process.

Compost adds the organisms that build soil structure necessary to develop percolation, and allow air passageways to be opened up as well as the foods to feed these organisms. Compost can be over-applied which means that water and air cannot penetrate the soil, whereas compost tea cannot be over-applied, unless to the point where the soil is waterlogged.

Many organisms grow in compost tea, resulting in higher numbers of organisms in tea than in compost.

This therefore increases microbial activity in less time than compost. Com-post tea is necessary for coverage of plant surface to block pathogen access to leaves, and to make certain predator-prey interactions occur. Compost tea can be applied to leaves, twigs, bark and soil, whereas compost can only be applied to the soil.

Both are very important tools to use.

IF I USE COMPOST TEA, DO I STILL NEED TO USE COMPOST OR OTHER ORGANIC FERTILIZERS OR AMENDMENTS?

Yes. Organic materials are constantly being consumed as food by the microbial population and need to be replaced. A certain percentage of organic matter is necessary in all soils, the level differing with each environment. However, al-most all soils are in need of higher organic matter. Adding compost or certified organic fertilizers returns this organic matter to the soil.

Furthermore, the addition of compost or certified organic fertilizers to the soil will increase the biological results of an application of compost tea, because the organisms in the tea will now have additional foods to consume once they hit the soil.

WHY ARE MICROBES IMPORTANT?

Bacteria and fungi retain nutrients in the soil. Protozoa and nematodes make nutrients available to plants and turf; both groups also aid in blocking plant surfaces so non-beneficial organisms cannot gain access, and in consuming potential disease-causing organisms. Given the proper foods, and habitats in the soil, beneficial microorganisms out-compete non-beneficial microorganisms. All four groups play critical roles in building soil structure, maintaining aeration in the soil, improving water retention and thus sustain health of plants and soil.

HOW MUCH DO I USE?

Quantities of tea to use can be determined by quality of tea (concentration of beneficial organisms) and existing environmental conditions. In agricultural situations 5 gallons per acre is successful when used frequently for short-life harvested crops (lettuce, strawberries, carrots, etc.). In other areas, higher concentrations are needed and frequency of application will generally be greater.

HOW OFTEN DO I APPLY COMPOST TEA?

Like any living organism, beneficial microbes have life spans that could be unlimited if not impacted by negative forces or outside pollutants. Environmental conditions alter these life spans, as do soil conditions.

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For disease control, compost tea must be applied to foliage at regular intervals to ensure adequate leaf coverage is maintained. Once on the leaf, weather conditions impact coverage of leaf surfaces over time.

Once a system is in a condition of health, a good rule-of-thumb is three yearly applications, spring, summer and fall. When first beginning an organic program using compost tea, we recommend applications more frequently - up to four to five times the first season, or more if conditions dictate. If disease is severe, tea applications may need to be weekly, until the threat of disease attack is subsided.

WHAT IS THE DIFFERENCE BETWEEN A MANURE TEA, A COMPOST LEACHATE, A COMPOST EXTRACT AND BREWED COMPOST TEA?

Many people confuse the first three of these liquids as compost tea; as often they are erroneously called or referred to as being compost tea. The most common mistake is confusing compost tea with a leachate - a steeped solution that basically is compost soaked in a bucket of water and allowed to ferment for a matter of days or weeks. This is not compost tea!

Manure Tea: is basically a water extract of manure with soluble nutrients. This is typically high in nitrates, salts, phosphorus and potassium. Without antibiotics in the animal feed it can contain high amounts of bacteria. Fungal biomass will be extremely low; it often contains root-feeding nematodes, and almost always contains human and/or animal pathogens.

Compost Leachate: is the product you get from draining water through compost. It contains soluble nutrients but very few organisms unless it is cycled through the compost many times. If it is cycled enough times adequate numbers of organisms may be leached from the compost to protect leaf and root surfaces. This is not usually the case, however, so most leachates contain only soluble nutrients and few organisms.

Compost Extract: is the product you get when adding water to compost so the compost is in excess water, which then drains from the compost. Typically this means the compost is over-saturated. Typically an extract contains only soluble nutrients and few organisms.

Compost Tea: is a water extract of compost that is brewed so that the beneficial organisms, i.e. the beneficial bacteria, fungi, protozoa and nematodes, are extracted from the compost and given the right

environment to increase in number and activity by providing soluble food sources and the nutrients present in the water. The quality of the compost will determine how large a diversity of these beneficial organisms will be present.

Compost Tea does NOT contain human pathogens, whereas manure tea does. Compost leachate and extract should not contain human pathogens either if the compost used is mature. Compost leachate, extract, manure tea and compost tea all contain soluble nutrients removed from the compost that can benefit plant growth, however, the manure teas' level of nitrates can be too high and can burn plants.

Only compost tea contains a complex set of beneficial organisms that are extracted from the compost in addition to the nutrients extracted from the compost and the food sources that are used in the brewing process to feed the beneficial microbes.

HOW DO I APPLY IT?

Compost tea can be applied by bucket, hand sprayer, pump sprayers, injection, or through irrigation systems; all depending on application requirements. Compost tea cannot be applied through canisters that attach to garden hoses with the use of municipality water due to its chlorine content. Nor should compost tea be applied using apparatus that has been previously used for chemical applications. Be aware that the organisms will not pass through filters or screens of too small mesh sizes, or nozzles of too small diameter. Opening sizes should be in the range of 200 to 600 micrometers to allow the organisms to pass through.

HOW DO I KNOW IF I HAVE APPLIED ENOUGH?

When applying to foliage, a 70% coverage rate is recommended from scientific field data to best block access to the surface of the leaves or bark so pathogens will not be able to obtain plant exudates, and to allow adequate predator-prey interactions so disease-causing organisms will be consumed and thus prevented from causing disease. Remember, you cannot apply too much, so apply to foliage until it is just about ready to drip onto the soil below. For soil applications, drench the root zone of plants and surrounding soil. It is recommended to do the soil drench before the foliar spray in order to ensure adequate foliar coverage. Do not worry about applying too much.

Old musicians never die, they just decompose.

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HOW DOES TEMPERATURE RELATE TO MAKING TEA?

During the brew cycle, keep water temperature at 65 to 70 degrees as it takes the microbes longer to wake up in cooler temperatures and can mean longer brewing times or lower counts. The tea should be at ambient temperatures by the end of the brewing cycle. This lessens the impact to the microorganisms in the transition from the brewer to the out-side environment and increases survival of the microbes. Heater units are now available to maintain temperature recommendations and are very accurate.

Sometimes it may be necessary to inoculate soils or root balls (such as transplanting larger plant material) during cold weather. Keep in mind that if tea is applied during cold weather, some microbes will go into dormancy - but the good news is that when the temperature warms just a bit, these microbes wake up and start their job! Some will also be killed when applying during colder weather, but if you must apply, you'll still get some benefit from the application.

HOW DO MICROBES ATTACH TO LEAVES?

Bacteria in tea have a glue slime layer just like the bacteria on human skin and easily attach themselves to the leaves. Fungi grow around things and bind themselves to the plant surfaces like string on packages. This process of attachment can take a short time - about 20 minutes - if the organisms are active.

CAN COMPOST TEA HURT MY CHILDREN-PETS?

No, it is user-friendly. Children and pets suffer no ill effects from compost tea - remember, this is not a chemical application. However, if a child were to drink compost tea, he would probably feel somewhat uncomfortable afterward and possibly suffer some significant constipation. Can your children play in your yard after applying compost tea? Absolutely! Also compost tea does not pollute our water sources (streams, wells, rivers, wetlands, etc.) or harm fish or wildlife. In fact, addition of the humic acid extracted from the compost, and all the organisms removed from the compost should be beneficial for returning a portion of the nutrients and organisms needed by lakes, rivers or streams.

Contributed by Judi Stewart, NOFC

COMPOST HAPPENS



Compost Tea for the Home Gardener

Compost tea has come a long way since I made my first batch of 'compost tea' many years ago. I collected some fine looking cow patties from the field next door, filling about 1/3 of a 55 gallon barrel with them. I then filled that barrel up with water and with a large drill, with an attached mixer, I stirred the whole thing up. A thick, messy tea was made that I would use to water my vegetables. I didn't know I was not making compost tea. I was making manure tea. I really didn't know what I was making, I just felt like it would help the garden. And it did.

Now, with the help of the scientific crowd, we are making Aerobically Active Compost Tea (AACT). And it is doing amazing things for both the plants and the soil they grow in. Compost tea is just that, tea made from compost. Only it is taken a step further. By introducing air into the water, aerobically activating the water, (very important!), the conditions are created that multiply, in the tea solution, the biotic life contained in the compost used to make the tea. By adding certain other ingredients, like molasses or fish hydrolysate, you can choose whether you nourish the bacterial or the fungal population in the tea. Certain plants like certain populations of microbes, though it is best to make a balanced tea and let the plant or the soil choose it's own balance of bacterial or fungal dominance.

There is both anecdotal and scientific proof that AACT works in many different ways. It is used to improve plant growth, control foliar diseases, inoculate the soil with desired microbes, and even to combat some insects. But AACT is not an -icide. It is not a fungicide or an insecticide. It works by occupying either the area on the leaf surface or around the roots, taking up space and consuming the food that might otherwise be controlled by disease-causing organisms. In other words, the good guys out-compete the bad guys. But it is of paramount importance to always start with good aerobic compost or vermicompost and to use a well-designed tea-brewing machine. Don't let the "well-designed" part scare you: well designed does not mean that you cannot make your own tea brewer. Just do your homework and learn the basics. At its most simple, you just want to be sure that you keep your compost tea aerated for the most beneficial effect and to insure that you do not grow harmful human pathogens, especially if you will be using the AACT on your vegetables.

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As you might imagine, the increased use of tea has spawned a growth in companies making tea brewers. And there are some good and some bad ones out there. The advantage of buying a tried and tested model is that you know all you have to do is add the right ingredients and you can make a good tea. Or you can make your own tea brewer relatively inexpensively. A little homework is necessary to decide what works best for you.

Part of the excitement of CT is that it is very inexpensive to make. One can take a few pounds of compost, add negligible amounts of ingredients, and get many of the benefits of spreading expensive compost. Five gallons of tea will foliar feed (protect) one acre. That comes to about 15 fluid ounces or 1 quart, per 1000 square feet for the home landscape. Fifteen gallons will inoculate one acre of soil. For inoculating 1000 square feet of the home landscape you will need about 44 fluid ounces or about 1 gallon. While CT does not take the place of mineral soil balancing or fertilizing, it greatly enhances and enables other things that you do to create healthy soils and plants.

There are two types of tea makers. One uses a motor-driven pump to re-circulate the tea through the system. The other is an air-infused system the simply pumps air bubbles into the tea reservoir (think aquarium). Generally, the air-infused system is considered better because the pump system tends to massacre the microbes that you're trying to multiply. But then consider that the tea brewer that consistently tests highest is the motor-driven circulating pump model called the Earth Tea Brewer from Bruce Elliot at EPM, Inc. We have the 22-gallon Earth Tea Brewer at the nursery. As with any new technology, there is much to learn.

For the beginner, it is easiest to create an air-infused system. At it's most basic, you need a container for the tea, an air pump, some air stones (think aquarium), and a paint strainer bag to hold the compost. This system is described in more detail, here, on our website. You will want to use the bag instead of free-floating the compost. You want to keep the tea in a bag to limit the solids that go into the tea. Just suspend the tea bag over the air stones in the bottom of the reservoir. It is better to 'bag' the tea in the brewer than to let the compost 'free float'. The microbes will move through a bag such as a paint strainer, keeping the solids of the compost in the bag. Otherwise, as you filter the compost out of the tea, you will be straining out many of the microbes that you want in the tea.

Making compost tea, once you have your tea brewer ready, is a simple process. In a good brewer it takes about 12-24 hours for your tea to 'brew'. I like to brew my tea in the evening and then use it the next morning or evening. Sunlight is harmful the microbes as the spray through the air or after they initially land on the surface of the leaf. After 24-36 hours in the tea brewer the microbes start to decline in population. So it is important to use it at the peak of its microbial population. Some other points of tea making are;

1. Start with quality compost. The compost you make yourself is the best. Worm castings are also very good to use. Just be sure that what you use is well composted and has that rich, earthy smell. The amount of compost to add to tea is not as much as you would think. For a five-gallon brewer, you might add 1-2 pounds of compost. For my 22-gallon brewer I use about five pounds.
2. Don't overfeed the growing microbes. For my 22-gallon brewer I use about 10-12 ounces of liquid ingredients. By over-feeding, the microbes grow too fast, consuming all the oxygen, causing the tea to become anaerobic. Keep it aerobic! Err on the 'too little' side of ingredients.
3. You need to keep your brewer out of the sun to keep the water cooler on our hot summer days. Bacteria can thrive at higher temperatures (greater than 90 degrees) but the fungi need temperatures around 70-75 degrees. It is easy to make a bacterial tea, but harder to get good fungal numbers in your tea.
4. It is also imperative that you use chlorinate-free water. Chlorine is put in or water system to kill microbes and it will do the same in your tea. The chlorine in your water will degas in a few hours if left in an open container like your tea brewer. You also don't want to use a hose-end sprayer to disperse your tea, unless you use a de-chlorinator at the water spigot.
5. You need to check to see if your water supplier uses chloramines instead of chlorine in its water system. Chloramines will not de-gas out of water. The Round Rock Municipal Water System recently switched to chloramines. If you have this problem, you may wish to catch rainwater to make your tea.
6. If after brewing your tea, it smells like the good, rich compost that you put into it, then you've done well. If it stinks, throw it out and start over. Stinky tea means that your tea went anaerobic at some point.

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The making and use of Aerobically Active Compost Tea can be as simple or as scientific as you wish it to be. For the home gardener, it does not have to be difficult to comprehend. But I feel that the organic gardener likes to know, likes to learn the who, how, and whatfors. My journey to understand CT has only increased my understanding of the many facets of growing things naturally. I think it will do the same for you. The natural world constantly amazes and delights those who seek its little secrets. I hope your use and study of CT does for you what it has done for me. And my plants!

Steve Bridges of Kimas Tejas Nursery, Bastrop County, Texas; compost tea list member, via **Judi Stewart, NOFC.**

Judi also notes:

"Some members on the compost tea list are discussing ways of improving brewing methods; planning on having several compost tea users brew a tea batch using standard compost and nutrients in order to test our methods and results. Discussions are taking place on how to set this up since we have differences of temperature, water, and equipment, and far-reaching geographic locations. Some list members in the Philippines and South Africa have no nearby testing facilities. (We're fortunate that NOFC can use the lab in Corvallis, Oregon.) When we have the test parameters established, we'll be sending in our compost tea samples. The size of the compost tea list has quadrupled this past year. More and more farmers, gardeners, educators, and brewer manufacturers from all over the world are making and using compost tea and reporting the improvements it has made to their plants.

Patti from Gardens at Four Corners called this week and said she had brewed and donated a batch of compost tea for the Rhody Garden at Ft. Worden State Park. Together with a 3-3-3 fertilizer, Patti said the results were dramatic."



Editor's Note:

We've had a few comments about the Typeface we're using so in this issue you'll find a non-serif font to compare with and hopefully you'll all tell me the one you'd prefer the whole BeeLine printed in to make it easier for you to read.

12pt Serif OR 12pt Sans Serif
firehawk@olympus.net

'Compost tea' allows gardeners to brew greener pastures

Rather than choosing their poison, UW gardeners will instead be reaching for a spot of tea starting this spring. But it's not the kind of tea one sips from a cup. In an effort to reduce pesticide use on campus, the UW grounds crew is turning to "com-post tea" to protect the landscape's roses, rhododendrons and much more. The organic concoction was used on a limited basis with success last year. Now the gardeners are ready to take the method virtually campus-wide.

"It's basically a way to improve whole-plant health," **Liesl Zappler**, a UW gardener and strong proponent of the compost tea, said. "It improves the soil quality by providing more microorganisms for the soil and the plant."

The tea is brewed with organic material from the UW composting facility near the Ceramic Metal Arts Building. The Grounds Maintenance division purchased and began using a large compost tea brewer last year. The machine yields a safe, chemical free organic tea - a water-based compost extract - that promotes the growth of beneficial microorganisms in the soil and on plants. That leads to grass and flowers, shrubs and trees that are more resistant to disease as well as healthy soil capable of thwarting annoying weeds.

Last year the brew proved useful in preventing powdery mildew in the large rose beds near Drumheller Fountain. While it's too early to call the method a complete success, officials are cautiously optimistic. "The jury is still out over the long-term efficiency of it," **Bonnie Taylor**, Grounds Crew supervisor said. "Last year we cut way back on our fungicide treatments for the roses and we're pretty optimistic about that. We're still not sure about the ornamental fruit trees and the quad cherries. We're not ready to risk our collection. One season doesn't totally make a case for it, but we're very hopeful."

Others are hopeful too. The method has grown in popularity in recent years as an organic alternative to gardening and farming with chemicals. Locally, gardeners at Seattle City Light, Seattle City Parks, Seattle University, Seattle Tilth and Snohomish County are increasingly using the compost tea. But according to Zappler, the UW ought to be a leader both in using and promoting the compost tea. "As a university, we really need to be more cutting edge with our horticultural practices," Zappler said. "Moving away from pesticides and using alternative techniques not only is a better gardening practice, but it also helps us educate the public so they can take these practices home with them."

A large number of homeowners use chemicals that may help in the short term, but over the long haul they kill too many beneficial microorganisms and are bad for the

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environment, according to compost tea believers. Good compost teas, on the other hand, increase the number of beneficial bacteria in soil and plants. The tea also includes protozoa that feed on the bacteria, as well as beneficial fungi and nematodes - the more diverse microbes in the brew, the better.

Benefits of using the brew include disease suppression, an increase of nutrients in soil and plants, improved plant growth and, of course, fewer dangerous chemicals ending up in the air and water. But none of this suggests that all pesticides will be eliminated in the near future.

The UW has decreased its reliance on insecticides and avicides in recent years from almost 3,500 ounces in 1996 to less than 500 ounces in 2000. That doesn't include similar reductions in the use of herbicides and fungicides. Those numbers could continue to decrease if the compost tea continues to work, the short term will continue to involve chemicals. But in the future, Zappler hopes the UW can be a totally organic campus.

"Compost tea isn't a miracle cure," Zappler said. "It's more like taking a vitamin-C supplement." The effort on campus to reduce the use of dangerous pesticides in favor of the compost tea has also been good for the gardening crew, according to Zappler.

"If you just look at this job as 'Weed that bed again, time to prune again' and all these repetitive tasks without connecting it to something intellectual and educational, it would be a really dead-end job. But with all these new techniques, we're definitely going to be better gardeners because we're educating ourselves on plant health and environmental health."

By **Steve Hill**, UW University Week

"The opposite of a profound truth may well be another profound truth" - Niels Bohr, Physicist



SOME COMPOSTING TERMS

Compost Leachate:

Compost windrow leachate — the dark-colored solution that leaches out of the bottom of the compost pile — most likely will be rich in soluble nutrients; but, in the early stage of composting it may also contain pathogens. It would be viewed as a pollution source if allowed to run off-site. Compost leachate needs further bioremediation and is not suitable or recommended as a foliar spray.

Compost Extract:

Compost watery extract — made from compost suspended in a barrel of water for 7 to 14 days, usually soaking in a burlap sack — a centuries-old technique. The primary benefit of the extract will be a supply of soluble nutrients, which can be used as a liquid fertilizer.

Compost Tea:

Compost tea, in modern terminology, is a compost extract brewed with a microbial food source like molasses, kelp, rock dust, humic-fulvic acids. The compost-tea brewing technique, an aerobic process, extracts and grows populations of beneficial microorganisms.

Manure Tea:

Manure-based extracts—a soluble nutrient source made from raw animal manure soaked in water. For all practical purposes, manure tea is prepared in the same way as the compost extracts described in the preceding section. The manure is placed in a burlap sack and suspended in a barrel of water for 7 to 14 days. The primary benefit of the tea will be a supply of soluble nutrients, which can be used as a liquid fertilizer.

Herbal Tea:

Plant-based extracts—stinging nettle, horsetail, comfrey, clover. A common method is to stuff a barrel about three-quarters full of fresh green plant material, then top off the barrel with tepid water. The tea is allowed to ferment at ambient temperatures for 3 to 10 days. The finished product is strained, then diluted in portions of 1:10 or 1:5 and used as a foliar spray or soil drench. Herbal teas provide a supply of soluble nutrients as well as bioactive plant compounds.

Humus:

And organic matter in its many forms – provides both food and shelter for soil organisms. Soils and composts contain a rich diversity of life. The soil foodweb is the community of micro- and macro-organisms that live in these environments.

Liquid Manures:

Mixtures of plant and animal byproducts seeped as an extract—stinging nettle, comfrey, seaweed, fish wastes, fishmeal. Liquid manures are a blend of marine products (local fish wastes, seaweed extract, kelp meal) and locally harvested herbs, soaked and fermented at ambient temperatures for 3 to 10 days. Liquid manures are prepared similarly to herbal tea—the material is fully immersed in the barrel during the fermenting period, then strained and diluted and used as a foliar spray or soil drench. Liquid manures supply soluble nutrients and bioactive compounds.

Summary: Compost teas and herbal teas are tools that can be made on the farm to enhance crop fertility and to inoculate the phyllosphere and rhizosphere with soluble nutrients, beneficial microbes, and the beneficial metabolites of microbes.

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Compost teas are distinguished from compost extracts both in method of production and in the way they are used. Teas are actively brewed with microbial food and catalyst sources added to the solution, and a sump pump bubbles and aerates the solution, supplying plenty of much-needed oxygen. The aim of the brewing process is to extract beneficial microbes from the compost itself, followed by growing these populations of microbes during the 24- to 36-hour brew period. The compost provides the source of microbes, and the microbial food and catalyst amendments promote the growth and multiplication of microbes in the tea. Some examples of microbial food sources: molasses, kelp powder, and fish powder. Some examples of microbial catalysts: humic acid, yucca extract.

Caution: Whereas raw animal manures are used as a compost windrow feedstock, the composting process - thermophillic heating to 135-160° F for 10-15 days - assures pathogen reduction. The raw organic matter initially present in the compost windrow undergoes a complete transformation, with humus as an end product. Any pathogens associated with raw manures will be gone. So caution is extended: Manure teas are NOT the same thing as compost teas or compost extracts. Because of concerns over new pathogenic strains of E. coli, the author advises growers to reconsider manure teas and/or to work with a microbial lab to ensure a safe, worthwhile product.

The Soil Biology Primer is a landmark publication from the USDA on the living components of the soil. It provides a graphics-rich summary of the soil food-web and relates foodweb health to soil health. It features individual chapters on soil bacteria, fungi, protozoa, nematodes, arthropods, and earthworms. Printed copies can be ordered through:

Soil and Water Conservation Service at

1-800-THE-SOIL, or by email at pubs@swcs.org. An

online version can be accessed at:

http://www.statlab.iastate.edu/survey/SQI/SoilBiology/soil_biology_primer.htm

Soil Foodweb: Concepts, Microbial Analysis, Application

Essentially, compost tea production is a brewing process that extracts microorganisms from compost followed by microbial growth and multiplication. This includes beneficial bacteria, fungi, protozoa, and nematodes. When compost teas are sprayed onto the leaf surface, these beneficial organisms occupy spatial niches on the leaf surface and gobble up leaf exudates that pathogenic organisms would otherwise feed on to prosper; other microbes directly interfere with pathogenic organisms through antagonism.

Ideally, compost teas contain both an Abundance (immense total number) and a Diversity (vast mixture) of beneficial microorganisms that perform different functions. Pathogenic organisms that land on the leaf surface simply cannot compete with the beneficial organisms and therefore have a greatly reduced chance to initiate disease in the first place.

Dr. Elaine Ingham, a microbial ecologist in Corvallis, Oregon, has elevated our collective knowledge of the soil foodweb. In her graduate studies, as well as in her work as Associate Professor at Oregon State University, Ingham pioneered research into microbial analysis of soils, composts, and compost teas. Using the "direct look" method, she views and counts microorganisms with high-performance light microscopy enhanced with epifluorescent staining and illumination. In the late 1990s, she established a commercial lab known as Soil Foodweb, Inc. (SFI), thus providing a service that allows farmers and land managers to gain insight into the soil foodweb condition of their soils and composts.

Foliar-applied plant extracts, liquid manures, and compost teas can be further understood in the context of their influence on the rhizosphere and phyllosphere. These terms refer to those biologically active regions surrounding the root surface and leaf surface where microbial communities exist.

In collaboration with the people who have on-the-ground experience with compost teas - namely the organic farmers using compost teas and the manufacturers of compost tea brewing equipment - Dr. Ingham and Soil Foodweb, Inc. have pioneered advancements in aerobic compost tea brewing on the West Coast. The following characteristics of a healthy soil foodweb, good-quality compost, and good-quality compost tea are based on her work.

Characteristics of a Healthy Soil Foodweb:

600 million bacterial individuals;
15,000 to 20,000 bacterial species
150 to 300 meters of fungal biomass;
5,000 to 10,000 fungal species
10,000 protozoa
20-30 beneficial nematodes: bacterial-feeding,
fungal-feeding, predatory
200,000 arthropods per square meter

FYI - The Compost Resource Page

This site is intended to serve as a hub of information for anyone interested in the various aspects of composting. www.oldgrowth.org/compost/

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Key Compost-Related Literature & Websites:

Organic Farming Research Foundation

Information Bulletin No. 9, Winter 2001
<http://www.ofrf.org/publications/news/ib9.pdf>

Investigations into Liquid Compost Extracts ("Teas") for the Control of Plant Pathogenic Fungi

William F. Brinton and Andreas Trankner;
http://www.woodsend.org/compost_tea.pdf

Compost Tea Brewing Manual. +various articles
2000. By Elaine R. Ingham. Soil Foodweb, Inc.,
Corvallis, OR. 60 pages.

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<http://www.soilfoodweb.com/thesfw.html>

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October 1997.

Foliar Disease Control Using Compost Tea; No. 8,
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Agriculture, David Granatstein & Harry Hoitink
<http://csanr.wsu.edu/compost/newsletter/comcon5.html>

Compost Practices for Control of Grape Powdery Mildew (*Uncinula necator*) Andreas Trankner and
William F. Brinton; a Biodynamic journal reprint
<http://www.woodsend.org/will2.pdf>

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Digest Quarterly:S. Zorba Frankel, The Worm
Digest:

<http://www.wormdigest.org/articles/index.cgi?read=66>

Compost Teas: Brewing a Sweet Blend, Kelly
Slocum, The Worm Digest

<http://www.wormdigest.org/articles/index.cgi?read=65>

Compost Teas for Plant Disease Control, The
1998 ATTRA publication

<http://attra.ncat.org/attra-pub/comptea.html>



Worm Bin Critter Gallery

The worm bin is an amazing, complex habitat, with hundreds or thousands of decomposer species all working together to turn your kitchen scraps into fertilizer. And you thought you just had a bin of redworms! Not true - redworms are greatly outnumbered by other macro- and microscopic organisms.

All these organisms are decomposers and beneficial to the ecosystem - so don't fear any newcomer you may find in the bin - in all likelihood it's just another one of your redworms' friends.

People new to worm composting sometimes worry that critters will harm houseplants. Remember that these are decomposers that eat dead organic matter, and will not eat living plants. Using your vermicompost in your garden or on houseplants is safe - any critters that come with it will only eat decaying organic matter or simply die off.

Will worms and other critters leave my indoor worm bin and start exploring the house? Almost never. Your worm bin is the cozy, damp environment, with meals included, that decomposers enjoy.

With that we now introduce you to the most common inhabitants of your worm bin:

Bacteria: Bacteria are the most numerous organisms in the vermicompost system, and the primary decomposers of organic matter on earth. They work on organic material by secreting enzymes that break the bonds holding molecules together, thus simplifying and reducing the molecules to their component elements for absorption. As bacteria simplify the organic matter they make it available to earthworms and other organisms in the system, as well. On the same size scale as bacteria are thousands of other species of microorganisms, feeding on

Continued from previous page...

decaying organic matter and each other, forming a complex, microscopic ecosystem called the soil food web.

Molds and fungi: It's not just arthropods and bacteria decomposing the organic material in the worm bin! Molds and fungi are common organisms in a healthy worm system. They feed on decaying organic matter with tiny, hair-like hyphae, secreting enzymes that break down and simplify the organic material. They are also an additional food source to other organisms in the system, including earthworms.

Molds and fungi can also serve as an indicator, telling us if the feeding rate is adequate. Because they grow most prolifically in still, quiet environments, large amounts of mold and fungi indicate there is more food than the system can quickly manage and the feeding rate should be decreased.

Mold and fungi pose no threat to the garden or the animals living in the worm bin, but can cause irritation to humans with mold allergies. If you are allergic to molds, your bin should be kept outdoors or in a garage or basement that is well ventilated to reduce or eliminate irritation.

Mites (Acarina): Mites are among the most numerous inhabitants in the worm bin, with many different species feeding on decaying organic matter, fungi and other organisms. They are generally found on the surface of the bin, though some predatory species will venture deeper if the material is loose and there is a food source. While beneficial to the system for the most part, it is not uncommon for mite populations to become so large that they stress the worms. Infestation level blooms generally occur on the surface of the bedding and cause the worms to remain in the lower areas of the bin and to decrease their activity. Mite populations can be controlled by removing the upper few inches of bedding during an infestation level bloom, or by placing melon wedges, fleshy side down on the bedding. This is a favorite mite food, and they will soon collect on the melon, which can then be removed from the system. Leaving the bin lid open and exposing the bedding surface to drying and UV light will also control mite populations.

The vast majority of mite species in the bin are beneficial organisms that make up a significant part of the bin ecosystem. Mite species that damage living plants are not found in the worm bin. Control of mite populations should only be considered if the worms are demonstrating stress behaviors like refusal to come to the surface, huddling in a ball, low reproduction or mass exodus. What worms consider to be infestation levels of mites is often very different from the human view.

Mites are cousins to spiders and have large bodies, small heads and eight legs. Their colors range from mottled brown, to red, to glossy white. Species of mite found in the worm bin pose no threat to garden plants or people.

Springtails (Collembola): There are hundreds of species of springtail, all primarily decomposers of organic matter. They are generally beneficial in the system and have no interest in living plant tissue. It's estimated that more than 80% of the organic matter on earth passes through the gut of a springtail or sow bug on its journey to becoming topsoil.

Springtails in the worm bin are generally small enough to walk on the head of a pin and range in color from brownish to striking white. Being insects, these animals have three distinct body segments, six legs and a pair of short, stubby antennae. Most species have an organ, called a fercula, which is held against the belly. When the springtail needs to move quickly it releases the fercula, which rapidly and suddenly catapults it into the air, hence the common name "springtail". The species most commonly seen in the bin does not possess a fercula, however, and is commonly seen in large numbers on the surface of the bin when there is a quantity of finished material.

Potworms (Enchytraeidae): Sometimes called white worms, these small, white, threadlike worms are found in worm bins when there is a quantity of finished material. They are beneficial organisms that feed on decaying organic matter and are considered a prized tropical fish food.

Some worm growers culture this species of worm for the pet food market. While usually found when the bedding in the bin is slightly acidic, their presence does NOT indicate a pH problem and pH adjustment is not recommended.

Pot worms are white, segmented worms, frequently mistaken for baby redworms. Their bodies are nearly transparent and their digestive system quite visible when viewed through a hand lens. Potworms do not feed on living plants and pose no threat to the garden or people.

Sow or pill bugs (Isopoda): Also known as woodlice or roly poly bugs, these animals are found in the worm bin, where they shred and consume some of the toughest materials, those high in cellulose and lignins.

They may be found through all areas of the bin, except the bottom where there is primarily finished vermicompost, but are most commonly found in the loose surface layers. Sow and pill bugs are considered omnivores, meaning they will feed on both living and dead organic matter.

They are sometimes considered garden pests, though they are more commonly found in compost and organic debris piles. In the worm bin they are highly beneficial organisms. Sow bugs have a segmented, armored shell similar in appearance to that of an armadillo, are brown to gray in color, have seven pairs of legs and two antennae.

Fruit flies: Fruit flies are small flying insects with large bulbous, often colorful eyes. They pose no health threat to us or to the worms, and do not harm healthy plants. Still, they are among the least favorite and most common

Continued from previous page...

visitors to the worm bin. They seem to enjoy darting out of the bin and toward our faces, startling us as we wonder "Did I just breathe that in?"

Fruit fly eggs are introduced to the worm bin on the peels of bananas and oranges tossed into the bin. The bin environment is an ideal breeding ground, with food and moisture in abundance, and so the flies flourish. Fruit flies are best prevented rather than controlled. Once a fruit fly infestation hits a bin it can take several days to bring under control.

Preventing fruit flies in the bin:

1. Bury food waste under several inches of bedding. Several sheets of damp newspaper or landscape fabric act as a barrier to odors, which will help to prevent attracting fruit flies. It will also reduce their access to the bedding below.

2. Make a fruit fly trap using an attractive liquid, such as: vinegar, wine, soda pop, fruit juice, etc. Put a few ounces of "bait" into a jar or cup and attach a plastic bag on top with a rubber band. Then, cut a few small holes in the plastic bag. The flies go in, but don't come out.

3. Destroy fruit fly eggs or larvae, by freezing, boiling or microwaving fruit and vegetable skins prior to feeding to the worm bin.

Note: Less citrus peels in the worm bin is better. If you've ever squirted yourself in the eye, you know well that their peels contain a substance that can irritate your eye's moist tissues – and your worms' skin. Peels take a couple of weeks for bacteria to decompose them to the point that worms are more interested. For a small worm bin, one orange's peel a day is fine.

Soldier Fly Larvae, or "Maggots": The maggot commonly seen in a worm bin is grey-brown and about 1/2" long. It is, by far, the least-liked of worm bin critters! It matures into the soldier fly, a large slow-moving fly that lives around compost and lays its eggs there. This fly does not carry disease, and is not a housefly. Though you may have a lot of larvae in the bin, few adult flies hatch, because the maggot needs a cooler, dryer place to go to in order to pupate. The worm bin just isn't that place.

What to do about maggots? Worm composters find that these larvae show up in huge numbers, live a short while, and then disappear. So, be patient. Check to see if you have enough bedding in there. You can reduce the likelihood of having maggots in the bin by mixing in plenty of carbon-rich material every time you feed. The flies are attracted by the smells produced when there's excess nitrogen around.

If you absolutely have to get rid of them, you'll have to empty the bin, rinse off the worms (lay them on some kind of screen), and start your bin over with fresh bedding.

Again, soldier fly maggots are good decomposers, producing a good manure that redworms can further process for you. So, if you can stand their appearance, consider them short-term guests in the worm bin.

Centipedes & millipedes: These long, slow moving, wormlike animals are found in small numbers throughout all layers of the worm bin, where they feed on decaying organic matter. Millipedes are long and segmented, with two pairs of legs per body segment and two antennae with which they sense their environment. Colors range from black to red, but those species found in the worm bin are commonly brown or reddish-brown. The millipede has an armored shell for protection and coils into a ball, like a pill bug, when threatened.

Centipedes resemble millipedes, but their bodies are more flattened and less rounded at either end. They possess one set of legs on most of their body segments and a large pair of pincers that originate behind the head. The centipede is generally more reddish than the millipede, is very fast moving and is generally found only on the surface of the worm bin.

It's unusual to have many centipedes in a worm bin and one or two are no problem. However, because these arthropods will eat worms as well as other organisms it's a good idea to keep their numbers low. The only way to control centipedes is to remove them by hand, which should be done carefully. While not poisonous to humans, they can give a nasty bite with their impressive pincers!

Reducing Pest Problems: The food waste you add to a worm bin today, as you know, isn't really touched by worms until at least several days later. How long depends on how quickly a population of microbes can begin to decompose that material, and make it ready for worms to consume.

Now, a great variety of food waste harbors fruit fly eggs, which hatch quickly in the bin! If we could only encourage worms to jump right on that material, before most of the flies are born. Actually, we can do this! Just let food waste develop this microbial population before it goes in the bin. If you collect food waste in a countertop food scrap container, try this: cover the container with a towel (to prevent fruit flies from annoying you) and let it sit indoors for a week. For an even better start, sprinkle finished compost or vermicompost directly onto the food waste as you toss it into the food scrap tub.

Other potential visitors: moles, birds and more. Obviously, there are a number of predators that must be stopped from gaining access to your worm bin. An outdoor bin without a bottom is an invitation for moles to come and have their fill of redworms! To prevent their entry, fasten 1/8" hardware cloth (a strong metal mesh) to the bottom of the bin. Some large-scale worm growers have lost a significant part of their "herd" to birds. While a small worm bin will certainly keep birds out, watch out for raccoons, dogs and housecats!

Ants: Ants occasionally will also visit and even try to set up home in a worm bin. To prevent their access, place each of the bin's feet in a container of water.

by S. Zorba Frankel

Continued from previous page...

"In my estimation, all successful gardening and farming can be narrowed down to one key concept..... Feed Earthworms! "
Mr. Compost~~~~

ASSORTED NOTES RE: COMPOSTS

From a Google Search: Keyword – "compost"

COMPOST HISTORY

Composting is the transformation of organic material (plant matter) through decomposition into a soil-like material called compost. Invertebrates (insects and earthworms), and microorganisms (bacteria and fungi) help in transforming the material into compost. Composting is a natural form of recycling, which continually occurs in nature.

An ancient practice, composting is mentioned in the Bible several times and can be traced to Marcus Cato, a farmer and scientist who lived in Rome 2,000 years ago. Cato viewed compost as the fundamental soil enhancer, essential for maintaining fertile and productive agricultural land. He stated that all food and animal wastes should be composted before being added to the soil. By the 19th century in America, most farmers and agricultural writers knew about composting.

Today there are several different reasons why composting remains an invaluable practice. Yard and food wastes make up approximately 30% of the waste stream in the United States. Composting most of these waste streams would reduce the amount of Municipal Solid Waste (MSW) requiring disposal by almost one fourth, while at the same time provide a nutrient-rich soil amendment. Compost added to gardens improves soil structure, texture, aeration, and water retention. When mixed with compost, clay soils are lightened, and sandy soils retain water better. Mixing compost with soil also contributes to erosion control, soil fertility, proper pH balance, and healthy root development in plants.

The standard means of disposal for most yard and food waste include landfilling and incineration. These practices are not as environmentally or economically sound as composting. Yard waste, which is landfilled, breaks down very slowly due to the lack of oxygen. As it decomposes, it produces methane gas and acidic leachate, which are both environmental problems.

Landfilling organic wastes also takes up landfill space needed for other wastes. Incinerating moist

organic waste is inefficient and results in poor combustion, which disrupts the energy generation of the facility and increases the pollutants that need to be removed by the pollution-control devices. Composting these wastes is a more effective and usually less expensive means of managing organic wastes. It can be done successfully on either a large or small scale, but the technique and equipment used differ.

<http://www.oldgrowth.org/compost/>

The Maine Mulch Murder

The Maine Mulch Murder, by A. Carman Clark

I looked forward to reading The Maine Mulch Murder. Any author who included "mulch" in the title of her book had to be a woman after my own heart. I wasn't disappointed. Not only are the gardening details correct, but Amy's attitudes, habits, schedule, and other life details blend with integrity. Having honed her practical reasoning skills through gardening, she now utilizes that logic to solve this murder.

The book is very well written with plausible and interesting characters, as well as crime investigation that reaches an unexpected conclusion. The details of the personalities, storyline, and location were thoroughly credible and surely conceived by one who has built her share of compost piles. I loved the book and highly recommend it.

VERY IMPORTANT: Do NOT read the front inside book flap -- it actually gives away the ending.

<http://www.mastercomposter.com/>

Safe Sex in the Garden

Safe Sex in the Garden, by Thomas Leo Ogren

With a title "Sex in the Garden" it has gotta be interesting. But we are talking about a very serious subject in this book. Is it possible to have an allergy-free world?

Well, probably not, but there are tons of things we can do as gardeners to help those who are suffering in with a respiratory illness.

With millions of people afflicted by the rise in allergies, Mr. Ogren, as a horticulturist, knows the enemy is pollen. He discusses why 38% of our American population is now suffering, compared to 5% forty years ago. Basically the problem has been created by unknowing city planners. Our landscapes are gardens that contain the cause the problem.

Alternative solutions are explained in very

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simple terms - how to eliminate the increase of allergy sufferers.

This book also enlightens us about houseplants and indoor air quality, organic gardening, and native plants. Subjects included are smog trees and super trees, eliminating molds, and even protecting our pets against allergies.

The USDA has recognized Mr. Ogren's OPALSTM system (Ogren Plant Allergy Scale). It is now used by the US Department of Agriculture.

What we learn is that what we plant in the garden does make a difference. You will learn how to determine a plant's sex, and most importantly how to identify the most effective pollen producers.

With great bonus lists of plants that cause skin rashes, and a comprehensive list of poisonous plants, you will be well versed to prevent future problems.

<http://www.emilycompost.com/>

Compost Tea:

SCIENTIFIC RESEARCH OR TRENDY HYPE?

By now I'm sure you've all read, heard about or seen advertisements about the spectacular results that can occur when you use compost tea - especially in its use as a disease control agent. Among my favorite quotes are "Using soil soup is like adding several inches of compost to the soil" and "[by using tea] we can avoid all or nearly all of the foliage disorders our plants experience".¹ These are just two of the many instances where you can find anecdotal evidence for how well compost tea works. The majority of reports and articles - this one included - are not based on any actual, scientific study. Most of the readable reports you or your friends are likely to hear about are the result of freelance writers who are simplifying, or doing a literature review of articles which were also a review of other similar articles, and so on. It's like the game telegraph (pass it on) - the end results are often very different from what was put in.

To tell the truth, the original articles are not the easiest things to read. They are written—by scientist for scientist—and presented in peer-reviewed publications. By their nature, the research information in these journals are open for debate and rebuttal so that weaknesses and problems can be found. Often, the reported trials (experiments) were performed to determine the affects of one type of treatment, for one or two specific diseases on a limited number of crops, in a specific location. Needless to say the actual studies are few and far

between. For these studies to be of any use to us, they must either be similar to our own circumstances or else analyzed for general trends. Normally, a resident expert in the general field who is willing to survey the numerous "hard" studies and make some justifiable conclusion about the subject undertakes this task.

Unfortunately, these articles are often as difficult going as the original studies but their conclusions and arguments are often the pillars on which all other hyperbole is built.

It is at this stage that trade journals, garden gurus and columnists jump on the bandwagon that is being led by persons or institutes with vested financial interests in selling the product and/or the equipment necessary to make your own. Unfortunately, even the synthesis papers written by researchers in the field are all too frequently subject to performance pressures. Filled with reasonable explanations of how well the product works, these papers simultaneously provide numerous situations and factors that only the user can control. In other words, if it doesn't work for you the way it did for them, it must be something that you did, not the limitations of their claim.

An excellent example of this can be found in Dr. Ingham and Dr. Alms "Compost Tea Manual 1.1"⁴¹ In the section titled "Experiments Supporting Use of the Microb-Brewer™" they discuss experiments and methods with sufficient scientific lingo like "UV epifluorescent microscopy" and the use of MPN plates to determine protozoan numbers and diversity. While this sounds reassuring, no actual data or results are provided. In the "Troubleshooting" section, if there is "*no apparent value to the plant*" the possible cause is that your compost is deficient. You need to "inoculate compost with desired microbes" or use better compost. My personal favorite bits of non-logic/ information are found in "Making Compost Tea Appropriate to the Plant" and the "Recipes". One part discusses the importance of greater or equal ratios of fungi to bacteria (more fungi for trees, equal in row crops) and then immediately suggests applying bacterial teas to the foliage. I'm still not sure how bacteria on leaves help soil fungi. They repeatedly discuss the importance of fungi for plant health and the appropriate recipes to make teas for fungal uses. Ironically, the manual previously mentioned that the mixing/brewing process destroys fungal hyphae (threads) resulting in low counts. And of course, results may vary. Just like compost, each batch of compost tea varies dramatically from the next. You

Continued from previous page...

keep experimenting and maybe you'll get a batch that works for what you intended - This time.

As I was preparing to write this I was provided with an article from the August issue of the "B&B" on the myths and facts of compost tea.ⁱⁱⁱ The full article by Dr. Chalker-Scott is available online. It brews down to a few basic facts. While there were over 4000 hits from a Google internet search for compost tea as a disease control agent, a search of the clearinghouses for scientific literature produced relatively few research-based articles for disease control: and these were predominated by studies involving compost and non-aerated compost tea (NCT) - 18 and 12 reports respectively. Compost clearly had a disease suppression capability in these studies. The results for NCT were mixed with some plants showing some reduction in disease problems. There were two reviewed papers on aerated compost tea (ACT). One showed that as teas became aerobic mixtures through aeration, they became less effective until they returned to an anaerobic state. The other showed no ability to prevent scab, and in some cases "appeared to enhance apple scab". A controlled study done at the UW Arboretum, using aerobic tea made compost "analyzed and approved by soil food web" proved no more effective in controlling brown rot in cherries in comparison to trees that had been sprayed with just water.

The following is an excerpt of Dr. Chalker-Scott's closing comments:^{iv}

If a landscape has serious soil or health problems, it is not likely that compost tea is going to solve the problem. Often in urban areas the problems are soil compaction, overuse of fertilizers (especially phosphate), overuse of pesticides (especially fungicides which harm soil health), etc. Poor plant quality, improper plant siting and installation, and lack of proper aftercare also increase plant health problems. Adding compost tea will not solve these problems.

The Bottom Line

- Composted mulch has been documented to suppress disease through a variety of methods
- Non-aerated compost teas may be useful in suppressing some pathogens on some plants
- Aerated compost teas have no scientifically documented effect as pathogen suppressors
- Overuse and runoff of compost teas could conceivably contribute to water pollution

● There is no "silver bullet" for plant health problems caused by poor soil health and improper plant selection and management.

However, the authors from Soil Foodweb do make one very important comment especially in light of the research highlighting the benefits of compost. Fungal species and biomass are much higher in compost than in tea and all the species of bacteria in the tea were present in the compost. So my question is, why not just use good quality compost? Feed the com-post, which will in turn feed the soil. Besides you still have to add biomass or all you'll end up with is tea soaked sand. If you still want to try compost tea in your own garden/orchard, remember the old adage--*Caveat emptor*. Buyer beware.

¹ Both attributed to Ann Lovejoy in a "SoilSoup Compost Tea System" owners manual

¹ Ingham, Elaine R. and Michael Alms. 2000. Compost Tea Manual 1.1. Soil Foodweb, Inc.

¹ Chalker-Scott, Linda. 2003. Of Myth and Men. B&B: The Official Publication of Washington State Nursery and Landscape Association. Vol. 55, No. 7. p 9-11. Available online as an adobe pdf file at: http://www.cfr.washington.edu/research.mulch/myths/compost_tea2.pdf

¹ Ibid. Reprinted with her permission. Any mistakes in the transcription are purely my own.

James "Oggie" Ogden, Peninsula

THE MYTH OF SOIL AMENDMENTS

1. Ideal soils, from a fertility standpoint, are generally defined as containing no more than 5% OM (Organic Matter) by weight or 10% by volume.
2. Before you add organic amendments to your garden, have your soil tested to determine it's OM content and nutrient levels.
3. Be conservative with organic amendments; add only what is necessary to correct deficiencies and maintain OM at ideal levels.
4. Do not incorporate organic amendments into landscapes destined to be permanent installations; top dress with mulch instead.
5. Abnormally high levels of nutrients can have negative effects on plant and soil health.
6. Any nutrients not immediately utilized by microbes or plants contribute to non-point source pollution.

Read the whole PDF and other interesting articles at: <http://www.cfr.washington.edu/research.mulch/> Linda Chalker-Scott, Associate Professor, Environmental Horticulture Program, Center for Urban Horticulture Box 354115, U. of Washington, Seattle, WA 98195-4115

Fall Fruit Tree Care

There are a number of things you should do to your fruit trees before winter to ensure the best possible production next season. Follow a few simple guidelines for a bountiful harvest.

1 Prune any weak, damaged, diseased or broken branches from your trees. Major pruning should be done in the late winter to keep the newly formed buds from freezing on those extra cold winter nights.

2 Stake young trees to keep them standing upright during our wicked winter winds. Now is also a good time to train the branches of young trees by tying them to stakes or other, stronger branches.

3 Now is a great time to fertilize your fruit trees with an organic, timed-release food. Root feed them by making 1" holes as deep as possible around the drip edge of the tree and filling them with your fertilizer. The advantage of using a timed-release, organic food is that it is slow releasing, it does not burn and it will not leach into the soil. Fertilizing in the fall will help build strong roots for a stronger tree next spring.

4 Wrap the trunks of your younger trees to protect them against sunscald, wind burn and rodent damage. Either plastic protectors or tree wrap will do just fine. If you use plastic protectors, they need to be removed in the spring.

5 Clean up your orchard now. Make sure the grass is cut around the base of your trees, but don't damage the trunks with the mower or string trimmer. Remove all fallen leaves and debris that may have accumulated on the ground. Removing these will help prevent insects and diseases from spreading.

6 Spray your trees with animal repellent to help eliminate deer and rodent damage. We have several types and sizes to choose from.

It does not take a lot of work or a lot of time, but follow a few simple steps and your orchard will be healthy, happy and ready to produce huge yields next season.

by Dave Taylor, © 2002

<http://www.greenacres4u.com>

Some thoughts on growing grapes in the Puget Sound region.

Starting in 1983, I began to collect grapes to grow in my backyard garden, just a few miles east of Tacoma, WA. Currently, I have over 60 vines in various stages of production on the site, as well as another 40 vines up the road a couple of blocks away. I would like to offer a few ideas for would be grape growers that might allow others to avoid the mistakes so often made.

- Plant your grapes in *full* sun. Grapes will grow in the shade to a point, but if you are after fruit, be sure to keep them in the sunniest spot you have. If you do have a bit of shade, try to plant only the very early ripening hybrid type grapes, since pure vinifera grapes are more prone to mildew in shaded areas.

- Stay a good 20 feet away from tree trunks. Most of our *native* forest trees are surface feeders and can send out roots as far as 30 feet from the main trunk. If you plant a grape near such a tree and care for the vine, the tree roots will eventually find the improved soil and invade.

- Improve your soil *before* planting the vines. This is seldom done, I realize, but if you have any unimproved land available, do not plant on it until you have improved the soil. For grapes, this means a very sandy soil with even a bit of gravel in the mixture. Clay soils and Peat/Organic soils tend to stay too cold and damp, which reduces heat accumulation. For grapes, the warmer the site the better 'in the Puget Sound region, at least.' I recommend at least 36 inches of loose sandy soil minimum. An optimum soil mix would be around 80% sand with some fines and a bit of rotted bark—perhaps 5%.

- Find varieties worth planting. So often people will get any old grape and 'see what it will do'. I don't think it is worthwhile to spend time this way since over 1/2 of the better-known varieties fail to mature in our climate. It is important to select vines that can mature their fruit in a range of 1,400-1,900 heat units. Our frost-free season is generally adequate and winter hardiness is not put too much of a test, but failure to mature the fruit is a common problem, especially considering the fact that few home gardeners have full sun available to their vines.

- Don't crowd the vines---I repeat, **don't crowd the vines**. I don't know how often I've visited a gardeners test plot, only to discover that in a zeal to have 'just a few more varieties, they have crowded the trees or vines. If a grape vine needs 8 feet in the trellis row to produce 30 pounds of ripe fruit, all you will get for planting them at 4 foot spacing is likely to be 20 pounds of unripe fruit -10 from each vine. The vines shade and overgrow one another, making them less efficient. They also compete for water and nutrients in the soil and the crowding will encourage botrytis and powdery mildew. Here is a brief list of some common varieties and the ideal distance between vines.

| Variety | Spacing |
|----------------|---------|
| • Agria | 6 feet |
| • Delaware | 6 feet |
| • Cayuga White | 7 feet |
| • Dornfelder | 7 feet |

Continued from previous page...

- Ortega 7 feet
- Canadice 8 feet
- Czar Nicholas 8 feet
- Niagara 8 feet
- Pearl De Csaba 8 feet
- Alden 9 feet
- ES 5-14 x Orange M. 9 feet
- Muller-Thurgau 9 feet
- Schonfelder 9 feet
- Siegerrebe 9 feet
- Jovan 10 feet
- 5-17 X Flame Seedless 10 feet
- Himrod 12 feet
- Suffolk Red 12 feet
- Boizeau 14 feet
- ES 2-4-7 x Coignetiae 16 feet

This is only a partial list, since there are dozens of varieties.

Where to buy good vines

Needless to say, it is no bargain to pick up a vine from a local chain store. So often the tags are on the missing or even worse, placed on the wrong plant. Varieties are selected by people with no knowledge of grape culture and popular names will appear over and over again, i.e., Concord, Thompson Seedless or Catawba. *None* of these are even of fair quality when grown in most parts of the Puget Sound region. There are a few nurserymen east of the Mountains that will sell grapevines, but be sure to find out if the variety can ripen in *Western* Washington. A good general rule is any variety ripening *after Concord* is too late for the West Side. I do recall that Gordon's Market in Yelm had a fairly good offering of Table grapes and the quality was above average.

My 10 favorites :

This is a list based on performance in Milton, at 80 feet elevation and with an average of 1,850 AHU/50 degrees F., which is a fairly warm site for the Puget Sound area.

Table Grapes

- **Canadice**—an early red seedless variety with a slight strawberry flavor
- **ES 5-17 x Flame**—a late midseason hybrid of flame with the same cherry-like flavor
- **Alden**—a late midseason seeded purple, with large berries on a large cluster also a fine ornamental fall leaf color
- **Jovan**—a midseason dark red table grape with seeds very productive of medium clusters

- **Boizeau**—a late midseason black with large clusters of medium large berries attractive foliage.

Wine Grapes

- **Agria**—a dark red wine type grape full bodied and also quite ornamental
- **Dornfelder**—a late midseason red wine type very good
- **Landot 4511**—best red wine French hybrid for the region
- **Ortega**—Good White wine vinifera type productive and early midseason
- **ES 5-14 x Orange Muscat**—hybrid white for wine midseason and good brix.

A few notes on trellising vines:

It is a notion that training the vines really close to the ground, even as low as 30 inches will improve ripening. I do not know if this is true or not, but I do know that we have several furry pests that would devastate grapes at that level. The opossum is a recent arrival to the scene and yes they *do* love grapes. I suggest a trellis using 8 foot steel "T" posts. When the posts are set in, the height will be 6 feet. Four wires should be plenty, spaced at 12 inch intervals. This would be a wire at 6, 5, 4, and 3 feet. The main canes should be trained along the 4-foot wire, with the tips bent down to the 3-foot wire. In the main season, the shoots will grow upwards to fill the trellis. The fruit will appear along these shoots growing upwards.

By **David Johnson** Milton, WA

FALL CALENDAR

Fall is in full swing and there are entertaining and educational events all over Western Washington. Our fruit club chapters continue to have the same meeting schedules this fall. The complete details for time and locations can be found on our website, www.geocities.com/wcfsfruit

The Seattle Tree Fruit Society meets at 9:30am at the Center for Urban Horticulture the last Saturday of each month, except December. Phone contact is: Marlene Falkenbury (206) 522-2273.

Tahoma meets the first Thursday of each month at 7pm. at the Parkland Christian Church. Phone contact is Valerie Chapin (253) 472-6091. In October the Tahoma group will have a program covering fall pruning. In November they will hear about the care of fruit trees after a drought. December is a Pot Luck. A big thank you to Ed Jones who has been their program chairman for the past 8 years. He will be turning 79 about the time this issue comes out. Happy Birthday, Ed !

Continued from previous page...

The **Clallam Fruit Club** meets at 7pm. the 2nd Tuesday of the month at the Clallam County Commissioner's Chambers. Phone contact is Erik Simpson (360) 683-6684.

North Olympic Fruit Club meets the first Tuesday of each month at the Tri-Area Community Center. Phone contact is Paul Becker (360) 437-9085.

Peninsula (Kitsap) Fruit Club meets at 7pm. the second Thursday of each month at the Thunderbird Room, Kitsap County Fairgrounds. Phone contact is George Boggess (360) 871-1696.

Piper Orchard Chapter meets from 10am. to 3pm. the 3rd Saturday each month except July, August and December at Carkeek Park in Seattle. Phone contact is Paul Donaldson (206) 364-0161.

October 11th is the date for the **Mount Vernon Research Station's Field Day**. Registration will start at 8:30am. Complete details can be found at their website, mtvernon.wsu.edu There will be orchard tours and classes with an emphasis on growing unusual fruit and using fruit plants in the landscape. These open days at the Research Station are great opportunities to get exposed to new ideas in the horticulture world.

Our big **Western Cascade Fruit Show** will be **October 26th** from 10 to 5pm. It will be held at Building #406 at the **Sand Point Magnuson Park**. The address is 7400 Sand Point Way, Seattle. At the show you will be exposed to a fabulous variety of apple displays. Bring your favorite mystery apples for the experts to try to identify.

During this season many of the area nurseries will have **short weekend classes and workshops** that are free or have a nominal cost for to cover supplies. Following are just 3 of the nearly endless opportunities this time of year for a great Saturday or Sunday afternoon trying something new.

Molbaks in Woodinville has seminars every weekend. Of special interest to fruit club members will be the composting and soilsoup classes and the pruning class the 19th of October. Their web site is very easy to use. Call them at (425) 483-5000 or find them on-line at www.molbanks.com

Valley Nursery in Poulbso has terrific workshops for fall care of plants, wreath making and a near famous pumpkin-weighing contest. For the schedule give them a call at (360) 779-3806.

Raintree Nursery in Morton will be making cider every Saturday from 12 to 2:30pm in October. It's a pretty drive and all you have to do is go since they will be providing the apples. You can call them at (360) 496-6400. Their website is www.raintree_nursery.com

Finally there is one other gem I want to share with you. The **Washington State Nursery and Landscape Association** has a **Fall series of seminars** for nursery and landscape professionals that is also open to the public. Included in the fall series of 15 seminars is a Saturday devoted to food-scaping which takes place on November 25th, a pruning seminar on the 11th of November and one on new plants for the Northwest, November 7th. Their classes take place at various locations in Western Washington. To participate you have to pre-register by calling the Operations and Education Director, Vickie Wilson at, (800) 672-7711 or (253) 863-4482. A complete list of the seminars can be found at www.wsnla.com

If you have something you would like included in the winter addition of the Bee Line please email Kathy Ackerman, baysidegardengal@hotmail.com



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Patti Gotz - Seattle 206 524-3738
Dolores Haley – NOFC 360 765-3154
Charles Polance – Tahoma 253-588-8288
James Ogden – Peninsula 360-479-2582

Deadline for inclusion in the Winter 2003 BeeLine is November 15th. Write, email, or phone your article, comment, suggestion, question to me or any one of the staff members listed above. All submissions are welcome; some may be edited for length and spelling or grammar.



The rose is a rose,
And was always a rose.
But the theory now goes
That the apple's a rose,

Continued from previous page...

And the pear is, and so's
The plum, I suppose.
What next will prove a rose.

(Robert Frost, 'The Rose Family')



WCFS Officers & Board Members

| | | |
|----------------|-----------------|--------------|
| President | Valerie Chapin | 253-472-6091 |
| Vice President | Roger Eichman | 360 379-9566 |
| Secretary | George Moergeli | 253 833-4656 |
| Treasurer | Patti Gotz | 206 524-3738 |

Board of Directors Term

| Expires | | |
|-----------------|--------------|------|
| George Moergeli | 253 833-4656 | 2004 |
| Sid Hubbard | 360 385-3978 | 2004 |
| Eric Simpson | 360 683-6684 | 2005 |
| Ed Jones | 253 770-3711 | 2005 |
| Steve Whitcher | 253 536-7043 | 2005 |
| John Curry | 425 788-7995 | 2005 |
| Paul Becker | 360 437-9085 | 2006 |
| Renea Carnay | 253 863-7074 | 2006 |
| Gary Garremans | 425 485-6134 | 2006 |

Kitsap County Canning & Freezing Hotline Can Answer Harvest Questions

Hotline: (360) 337-7157 - M + W, 9 to 11:30 a.m. and from 12 to 4 p.m. through October 1.

Editor's note: If you are outside of Kitsap County, check your local WSU Cooperative extension office—normally listed in the phone directory under county government—for hours and local service options. Up-to-date pamphlets can be ordered through Extension for a nominal printing and shipping cost.

Canning Fruits (\$1) gives canning times for apples, applesauce, stone fruits, Asian pears, berries, figs, plums, rhubarb and juices.

Drying Fruits and Vegetables (\$1.50), revised in 2000, includes information on conditioning dried fruits to prevent molding during storage and gives instructions on cooked fruit leathers, including the microwave method.

Freezing Fruits and Vegetables (\$1) has a chart of instructions for freezing fruits.

Let's Preserve Jellies, Jams, Spreads (\$1) includes processing times, instructions for jellies and jams with and without added pectin, and instructions for fruit syrups. Extension recommends either freezing jams or processing jams and jellies in a water-bath canner to prevent problems with mold that may occur when using paraffin.

Preparation of Cider for home use:

Because drinking apple cider that was not pasteurized has caused several outbreaks of illness from E. coli 0157:H7, Washington State University and the University of Idaho offer procedures for making pasteurized apple cider.

According to the universities, the most likely way apples get contaminated with E. coli 0157:H7 is from cow, sheep or deer manure on the ground in orchards. However, other means of contaminating the fruit include dust, humans and irrigation water.

The only way to assure that the bacteria are killed is to pasteurize the cider or juice by heating it. Pasteurization is particularly important when using apples that have dropped from the trees. Young children, elderly and immune compromised people should not drink fresh apple cider unless it has been heated to 160 degrees Fahrenheit.

Here is the procedure for pasteurizing cider or juice:

1. Wash the apples thoroughly with water.
2. Press the apples.
3. Pasteurize the juice by heating to at least 160 degrees Fahrenheit to kill any harmful bacteria that may have been on the apples.
4. Keep the cider refrigerated.

Anne Sigman, Peninsula, WSU Master Food Preserver
http://foodsafety.wsu.edu/food_preservation.asp

HAVE YOU READ THESE?

Dolores Haley, NOFC - Article on why you might not be getting a lot of fruit on your trees...

The Fruit Grower's News

http://www.fruitgrowersnews.com/pages/bg_2003/bg03_nursery_stock.html

A tabloid-size newspaper publication for commercial fruit growers and others related to the fruit industry. Includes On-line buyers' guide to nursery stock providers; articles, events, interesting links.

Books

Espaliers and Vines for the Home Gardener, Harold Oliver Perkins, Hardcover, May 1979

Compost, Organic Gardening Magazine (Editor) Paperback, March 2001

Worms Eat My Garbage: How to Set up and Maintain a Worm Composting System Mary Appelhof, Mary Frances Fenton (Illustrator) Paperback, September 1997

Let It Rot: The Gardener's Guide to Composting Stu Campbell Paperback, March 1998

Trees of North America and Europe: A Photographic Guide to More than 500 Trees Roger Phillips, Sheila Grant

Continued from previous page...

Paperback, June 1978

Backyard Composting

by Harmonious Technologies, John Roulac, 9th edition (July 1997)

The Rodale Book of Composting by Deborah L. Martin (Editor), et al (Paperback)



Websites to See

Espalier

<http://www.appleart.com/>

Trellis Espalier System for Supported Apple Trees

<http://ohioline.osu.edu/hyg-fact/1000/1427.html>

The Victory Garden . Know-How: Starting an Espalier

www.pbs.org/wgbh/victorygarden/knowhow/pp/espalier/

Two-Dimensional Pruning for Trees and Shrubs

<http://www.treesforyou.org/Planting/Health/Pruning/espalier.htm>

Compost Site

<http://www.silverlf.com/barrick/>

Trees

Tree Fruit Insect and Disease Management

Recommendations from The Virginia - West Virginia - Maryland Orchard Spray Bulletin for Commercial Tree Fruit Growers (html version).

<http://www.ento.vt.edu/Fruitfiles/SprayGuide/TreeFruitSprays.html>, and

<http://www.caf.wvu.edu/kearneysville/wvufarm10.html>

University of Illinois Extension

<http://www.urbanext.uiuc.edu/stateline/000928.html>

Dolores Haley, NOFC

Garden and Orchard Calendar

"Oggie" Ogden, Peninsula Fruit Club

Harvest and Inspections—While the harvest part really doesn't need to be in the calendar for you to remember it, harvest time is the perfect opportunity to judge fruit quality. Keep an eye out for insect damage, such as the entrance and exit holes left by the codling moth. The moths have already holed up in a cocoon somewhere, but if you have a high number of damaged fruit you need to get prepared for next year. While I know you can't wait to savor the fruits of your labor, make a note of what you see during harvest. And these notes should also include what happens to the fruit in storage. Many

things bitter pit or water core aren't real noticeable until after the fruit is off the plant.

Pest and diseases—Fall and post harvest is time for one of the most critical things you can do to reduce pests and disease-clean-up. Remove or burn old and diseased wood. Clean-up windfalls. With the exception of fruits that the birds enjoy during the winter, remove fruit that refused to fall, especially the mummies. These are normally loaded with the spores of next year's problems. After the leaves have fallen you can start your search and destroy mission for tent caterpillar egg cases. Theoretically if they fall to the ground the elements and predators should consume them. Personally, they make a satisfying sizzle in the fireplace or if I'm feeling festive I give them a water park ride to the septic tank.

About now you may be asking "Why go to the bother of finding the cases, doesn't horticultural oil kill them as I've so often heard?" Two answers—yes and no. Horticultural oil works by blocking an insect's spiracles (breathing tubes) and preventing it from getting oxygen. As the labels and research says, this works on adult tent caterpillars—but not the eggs. A close look at the pesticide label will normally show that it is registered for effective use on "caterpillars" in spring and summer, not the eggs during the dormant season. That plastic-like coating protects the eggs from predators and sprays. However, the Colorado State University cooperative extension fact sheet 5.569 "Insect Control: Horticultural Oils" specifically mentions using oil as a dormant spray for tent caterpillar egg cases. This is repeated on the IPM of Alaska website. If you know of any other researched based studies or recommendations from the Ag schools please let us all know. For myself, I'm hoping that my winter spray schedule that includes oil—which I've neglected for several years—will kill the egg cases.

Pruning—Now is not the time to prune your trees. Let them go full dormant before you start pruning for shape. Pruning now could cause a growth spurt and the tender shoots may be winter killed. As to the shrubs—some like to prune or remove the spent fruiting canes after the frost have knocked down the plants for the year. It's your call but I like to leave the last small fruits to hang during the winter for the birds. If you haven't trimmed back your strawberries now's the time. Cut back to the main mother plant and trim to just above the crown.

Fertilizing—Except for a low nitrogen fertilizer to your lawn, few plants need fertilizer in the winter. Sow cover crops like buckwheat, red clover and

Continued from previous page...

vetch. If you needed to raise soil pH, spread lime at the recommended rate and work it into the top couple of inches if possible and let the rains do their job. To improve the tilth of your empty beds, add a heavy layer of compost and let the worms and elements do the work. If you mulched your plants this summer, make sure you pull it away from the plants trunk and turn it over several times during the winter to discourage rodents and to increase decomposition.

Chores—Collect up the mason bee houses and put them in a cool, dry, protected place. Some like the refrigerator but you have to be careful since most of them have very low humidity and the larvae become desiccated and die. An unheated shed works wonders for most of us but the bees may hatch out during a warm spell. While your collecting things, take in and clean up your insect traps before they become full of leaves or are ruined by the elements. For me that also means making sure the ladders and all the hand tools are accounted for and put away.

And remember, each of us has our own unique experiences, interests and knowledge. So if you have ANY calendar ideas or suggestions please send them to me at clanog@hurricane.net or pass them on to your local chapter president, secretary, or Bee Line rep.

WCFS BOARD MEETING MINUTES

President Valerie Chapin opened the meeting Aug. 23, 2003 at 10 am in the Library at Belfair, Connie Firehawk served as Secretary pro tem. Reports of missing members were given by the remaining nine members, noting that only eight were needed for a quorum vote.

Following Valerie's Agenda, Minutes of the previous meeting were not available but were accepted as read in the BeeLine's last issue. Treasurer, Patti Gotz shared a Financial Report covering Jan.1, 2003 to August 22, 2003. There was some discussion of the items and it was agreed that finances would be a permanent agenda item until a complete picture is developed and plans can be made. The report was accepted as presented.

Patti asked that Chapter Presidents send her their P&L statements so she can justify our non-profit status and also to indicate which chapters might be heading into trouble and need a boost.

BeeLine Editor's Report – Connie said that there has been good response and many submissions of articles for the BeeLine plus nice compliments. It

was agreed that the newsletter was a major part of WCFS.

Old Business:

1. Details about the Puvallup Fair were discussed (see Page 1 for how you can help out and get in free! – Ed.) WCFS's standing theme of "Welcome to Home Orchard-ing" will be used and the booth's emphasis will be on outreach and education.

2. Fall Fruit Show will be held one day only, October 26 at Magnussen Sandpoint Park from 10 am to 5 pm. Wayne Huffstetter from the Home Orchard Society is coming and Bob Corell is loaning us a cider Press to use. Raintree Nursery's Horticulturist, Theresa has also been asked to participate with a talk/demo. Chapter Presidents will be asked to collect their members' fruit for the show at central drop-off points for inclusion in the Fair. Roger moved and it was passed to charge entry fee of \$3.00/ person or \$5.00/family (applicable towards a membership fee if they joined up that day), members working the Fair would get in free. Vendor/display booths would be \$30.00 or \$15.00 for members, table rental is \$10/table.

Advertising for the Show will fall heavily on the Chapters to distribute flyers and put notices up locally. It was agreed to print 1500 1/3-sheet flyers to that end in Astrobrite Yellow. All volunteers to help should call Jean McGhee or Patti Gotz and Marlene Falkenberry will handle the Cider Press Raffle tickets.

3. NW Flower & Garden Show – Feb. 4 + 5, 2004. Details of this show were tabled but it was agreed that signs for the show should appear at the Fall Fruit Show in October.

4. BeeLine Newsletter: Discussion of buying a software program that would make the transition between Mac, PC, and website more easily was tabled till further research could be done by BeeLiners. \$100 was made available to pay for a consultant should it become needed.

5. WCFS Website: Guidelines for how best to utilize the WCFS website were discussed and the topic was tabled till the next meeting.

6. Chapter Issues: Suggestions for ways to help out chapters with membership and program issues were discussed along with a method of offering and sharing these aids.

Miscellaneous Business:

Chapters were reminded that members of multiple Chapters need only pay the local Chapter's dues after paying the WCFS once.

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Judi asked if BeeLine members were on the NAFEX/Pomona mailing list. Some discussion followed and Patti said that the subscriptions to the Good Fruit Grower should be starting soon – there'd been a mix-up.

Members agreed that Outreach was one of the WCFS's most important functions in its community and that each of us bears the responsibility of encouraging new members, not only to join, but also to participate. In that same vein, cross-memberships (like Master Gardeners) and web-link exchanges should be encouraged as well.

The next WCFS Board Meeting will be on a Sat. in November, somewhere in Seattle. Valerie will email Board Members the details when schedules and locations can be worked out.

Connie Firehawk, Secy. Pro tem

Little-Known Slug Facts:

Slugs have tongues with 27,000 teeth and rasp their food. ~ Slugs go about .007 miles an hour ~
~ Slugs sometimes are both female and male, and if no one else is around will mate with themselves
~ Slug slime can take away the sting from nettles.
~ Slugs can stretch out 11 times their normal length. ~ Slugs mark their own scent so they can find their way home after dark.

"Super-Tasters" Tongue test

A simple tongue test can tell people if they are a "super-taster" or not. Super-tasters perceive all tastes as more intense than do tasters or non-tasters.

By Professor Linda Bartoshuk, Yale University;
Story from BBC NEWS: Published: 2003/03/24

Around 35% of women are super-tasters, compared with just 15% of men, US research has shown. The study found some people are born with more taste buds than others, meaning they are better able to distinguish between tastes. While those with too few taste buds may not be able to tell the difference between cheap plonk and fine wines, those with more taste buds are more likely to become professional chefs or wine tasters. Now there is a taste bud test people can do at home, based on the Yale University research.

Pink dots

To test your taste buds, you need some blue food coloring, a piece of paper with a 7mm-wide hole punched through it, and a magnifying glass. Swab some of the food coloring onto the tip of your tongue. The tongue will take up the dye, but the

papillae, tiny structures that house the taste buds, will stay pink.

Put the piece of paper on the front part of the tongue and, using the magnifying glass, count how many pink dots are inside the hole. Fewer than 15 papillae mean you are an insensitive "non-taster", between 15 and 35 indicates an average "taster" and over 35 papillae then you are a "super-taster". The US research, led by Professor Linda Bartoshuk, suggested around a quarter of the population are non-tasters, 50% tasters, and the rest super-tasters.

Laboratory tests used a solution of 6-propylthiouracil, a thyroid medication known as PROP. Some people noticed nothing, others found the taste bitter, and others found it extremely unpleasant. But PROP is a prescription-only drug, so the researchers suggest using food coloring for an at-home test.

Education

Professor Bartoshuk said: "Super-tasters perceive all tastes as more intense than do tasters and non-tasters." Catherine Lowe, managing editor of Wine magazine, which published details of the research, told BBC News Online: "People are recognized as being able to taste differently. "Some people are very, very good and others are just average, so we wanted to look at the science behind it."

But she said it was still possible for would-be wine tasters to educate their palate. "You can learn. But for some people, it is easier than for others."

Commentary on a few popular blackberries, as grown in Milton, WA.

Although grapes are, by far, my first love, I do have a number of blackberry plants, as well as some hybrid raspberries, which I grew from seed. I would like to give an evaluation of what they are doing here in Milton, as well as my opinion of their merits. Some have hardly any merit!

Most of these plants are at my Uncle's place just up the road from my home. The site is a slightly western slope on fairly typical 'upland' Puget Sound soil, which varies from clay pan to gravelly sand. Here are the blackberry varieties we are growing and my opinion of them.

- **Cascade** - an older variety related to the wild trailing blackberry, which is commonly found in log clearings. The flavor is great, like the wild berry, but they tend to mush and go soft quite

Continued from previous page...

- rapidly. For home use in small quantities it is ok, but not for commercial use
- **Sylvan** - a new hybrid of Blackberry and Raspberry. The flavor is a milder version of Marion and the texture is very good. Not an improvement over Marion Berry, but a decent and good tasting blackberry.
 - **Kotata** - another fine hybrid of Blackberry and Raspberry with flavor more towards the wild trailing blackberry *Excellent* for commercial picking and very firm. Wicked thorns! Still I rate it highly for quality firm fruit and flavor. Ripens after Sylvan. The berry trusses sit well above the thorns so it is not too hard to pick
 - **Loch Ness** - I got this one from a Nursery in Morton. The vine is thornless and vigorous, with fairly large berries that look much like the common Himalaya. Flavor-----awful. The fruit is of fair to poor quality and taste worse than the Himalaya, being quite tart and lacking any character. I do *not* recommend this variety.
 - **Tayberry** - these plants were started out from a bargain close out at one of the local chains. A miracle that they even lived considering they were planted in *late* June of 2001. The vines of the tayberry grow much like our wild, trailing blackberry, but the flavor tends more to the raspberry parent. The flavor is excellent, but the fruit is *very* soft and sunburns easily. I think partial shade would be an asset when trying to grow Tayberries, especially from the Afternoon sun. The vines are very productive and should be given plenty of room. Not very firm, but fine for jams and processing.
 - **Boysen Berry** - an older commonly known hybrid of Raspberry and Blackberry. The fruit is very large, but there isn't much of it. Tayberry is easily twice as productive *and* sweeter. The fruit is firm and attractive, so it would stand some handling for the open market. I have one, but its shy production makes it hard to recommend.

While I mentioned the issue of shade when speaking of Tayberries, I will note that even my Uncle's Sylvan berries did better in filtered shade. There are two plants growing just north of a McIntosh apple, which actually do better than the Sylvans in full sun. For the Tayberries it is even more essential to protect the fruit from hot dry exposure. My guess is that the Tayberry would do much better close to the Ocean, in places like Aberdeen.

On the subject of Raspberries, I will mention only 4 varieties that we have tried out in Milton.

- **Sumner** - an older hybrid that has very rich flavor. Said to tolerate heavier soils. The fruit is smaller than Willamette, but I like its flavor better. June bearer
- **Autumn Bliss** - a very productive fall bearing raspberry, earlier than Heritage and much better for this region. Fruit is large and flavor is pretty good, though not as good as Sumner
- **Amity** - another fall bearing raspberry, *excellent* flavor, but smaller fruit and less productive than Autumn Bliss.
- **Korean Wineberry** - a novelty raspberry. Not too amazing except for the deep crimson red fruit. Flavor is sweet but not very aromatic. I have used it in some raspberry breeding and have about 9 hybrid plants growing up at my Uncles. Growth habit like our native Black cap berry.

There are a lot of other seedling raspberries I'm playing with that grew from crosses with the Autumn Bliss. I can see that about ½ of them are going to be fall bearing types.

By **David Johnson** Milton, W

HISTORY MYSTERY – GEYSER ROSE

From Joyce comes a tale of old orchards and grafted trees bearing an old cider apple worth cultivating. Up to 5" across with a good growing season, usually somewhat smaller, flattish, green with deep purplish-red stripes with a very heavy bloom. Flesh is white with a hint of pale green that browns quickly. Very sweet, it's a great eating apple but not so great for baking.

Believed to have come from an orchard planted by early settlers near the Elwha River in the late 1800's, this apple was grafted onto trees in at least three orchards in the area. The original farm, known as Michael's Ranch, was incorporated into the Olympic National Park.

Geyser Rose is a prolific provider, is scab and disease resistant and seems to do well on a variety of rootstocks. Because of its size, it does not need to be thinned on young trees and the branches propped

If any of you have heard of this apple also, I'd like to hear from you and am also willing to provide some scion wood for the price of postage if you'd like to try it yourself.

Ken Loghry, loghry5@tenforward.com

Via Erik Simpson, Clallam



WESTERN CASCADE FRUIT SOCIETY MEMBERSHIP APPLICATION



NAME _____ NEW ADDRESS?
 STREET ADDRESS _____ NEW MEMBER?
 CITY _____ STATE _____ ZIP _____ RENEWAL
 E-MAIL _____ PHONE (____) _____

(Check or circle which Chapter you're joining...)

CHAPTERS: MEMBER-AT-LARGE \$15.00 Annual Dues
 North Olympic Peninsula-Kitsap Piper Orchard Tahoma Clallam \$15.00 Annual Dues
 Seattle Tree Fruit (includes monthly Newsletter) \$23.00 Annual Dues
 Donation for Western Washington Fruit Research Foundation/ Mt. Vernon Amount \$ _____ Gift
WHAT ARE YOU - OR WOULD YOU LIKE TO BE - GROWING? \$ _____ TOTAL

Circle which ones:

Apples Pears Peaches Plums Cherries Kiwis Nuts Berries Other

How long have you been gardening/growing? _____
 Special interests: _____

Make checks payable to WESTERN CASCADE FRUIT SOCIETY and mail to:
 WCFS Treasurer, 1007 NE 71st Street, Seattle WA 98115



Western Cascade Fruit Society
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 Seattle WA 98115-5636

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 2559 NE 96th
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Check your label. If the renewal date is highlighted in yellow, this is your last newsletter.

2003 FALL FRUIT SHOW

SUNDAY, OCTOBER 26

10:00 AM to 5:00 PM

at

Sand Point/Magnuson Park, Building 406, South Pod

Sand Point Naval Station

7400 Sand Point Way

Seattle, Washington

LOTS OF FREE PARKING

Admission: Adults \$3.00

Families: \$5.00

***APPLE TASTING-FRUIT IDENTIFIED-SPEAKERS-CIDER PRESS RAFFLE
FRUIT DISPLAYS-EXHIBITS***

YOU ARE NEEDED AT THE FALL FRUIT SHOW

(ALL VOLUNTEERS HAVE FREE ADMISSION)

Can you help at the Fall Fruit Show? You can make a difference--and have fun!

Setup and Take down, Tasting Table, Education Table:

Membership Table, Raffle Tickets, Selling Door Tickets:

Contact Marlene Falkenbury 206-522-2273

The success of this event, which is the major fundraiser for our research donations, is directly related to the volunteers who contribute and make it run smoothly.

INSTRUCTIONS FOR MYSTERY APPLE IDENTIFICATION

Our expert apple identifiers will again be at the Fall Fruit Show to identify your mystery apple. To assist them, please bring four to six specimens (if you don't have that many, bring what you have) of the fruit you want identified, with stems, and free from blemishes. The fruit should be typical in color, size and shape for the tree. **DO NOT WASH OR POLISH.** Refrigerate the fruit in a plastic bag if it has to be stored for more than one week. It would be helpful if you know the answers to these questions you may be asked:

When was the fruit picked?

Is it from an old orchard or a new planting?

Is the tree upright, spreading or willowy?

Is it damaged by scab or mildew?

Is it from a single tree or from a row of trees?

When is the fruit ripe and how well does it store?

Does it bear on the shoot tips?

Is it good fresh? Is it good cooked?

SUBMITTING FRUIT FOR DISPLAY

The major feature of our fall fruit show is the displaying of the many varieties of fruit ***grown by our members.*** The following are instructions for submitting fruit for display:

Bring 5-7 specimens (less if that is all you have) of the best-looking fruit of each variety you wish to display (even if you have only one, bring it - it may be the only one of its kind there!)

For each sample prepare a 3" x 5" card listing the variety name and any other information you wish to share: harvest date, for instance, or any other pertinent information.

Prepare a larger sign 8 1/2" x 11" (or so) with your name and the geographical growing area.

Plates, which hold three to five specimens, will be provided. If you have fruit to spare, it would be nice to have some for the tasting table.

COFFEE, TEA, MUFFINS, AVAILABLE AT SNACK BAR

