

January 2004 SFI E-Zine

As always, if you have comments, additions, or suggestions, please e-mail back to us at SFI! If you want to be removed from the list, please just e-mail back with "remove" in the subject line.

Please check the SFI website – we are finally getting the new info up on the site.

- Elaine

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1. OZ Conference

Dear Sustainable Agriculture/Landscape Professionals,
Please find attached the details of an upcoming 3-day symposium that Soil FoodWeb Institute, Byron Bay Organic Farm and Footprint Directions are presenting in Byron Bay, Northern New South Wales in February 2004.

We enthusiastically invite you to attend this important three day event, which is scheduled to be Dr Elaine Ingham's only workshop event in New South Wales during 2004. This symposium will also showcase emerging innovative Sustainable Agricultural/landscape management practices.

On the third day at Byron Bay Organic Farm, there will be an opportunity to examine Compost tea brewers and learn of their wide range of application with North American Brewer specialist, Mr Steven Robideaux (SFI) (Soil Food Web Institute; www.soilfoodweb.com) and also learn from one of Australia's most knowledgeable compost producers Mr Robert Green of Earthmakers (www.earthmakers.com).

Please feel free to contact us if you wish to have more information about the event or speakers or any other queries you may have. Participation as an industry representative starts at \$85, with full fees at \$295 per day. We believe that this

event will be of enormous benefit to all working in the fields of "sustainable development".

Please feel free to forward this information to any relevant colleagues that may be interested. We look forward to seeing you there.

Kind regards,
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2. Byron Bay Soil Systems Symposium

Please find attached an Invitation for your organisation to attend and display its products, resources and services to the attendees of the inaugural **Byron Bay Soil Systems Symposium** in February 2004. This event is presented by Soil Foodweb Institute, Byron Bay Organic Farm and Footprint Directions. This is an opportunity to reach up to 50 relevant industry bodies with your organisations resources. We are expecting attendance from all levels of Government, Primary production and Environmental Management.

Please forward onto any relevant contacts at your discretion. Please also feel free to contact us with any queries.

Kind regards
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3. Q&A — Brian Pearson, at SFI Corvallis, has started taking over the question and answer function at SFI Corvallis. Here are some of the picks from the questions Brian has answered.

Question #1:

1. Why do some soils retain more water than others?
2. What is the best soil composition for water retention?
3. What is the worst soil composition for water retention?
4. What causes a land slide and how might a homeowner prevent one on a slope in their yard?

Thanks so much and hopefully you can answer these.
Lexi Sigesmund

Dear Ms. Sigesmund:

Water retention is a function of soil "structure" which has to do with porosity, or the spaces between the grains, and is a function of the biology in the soil. An ideal soil will retain enough moisture to benefit the plants growing in it, but will have enough drainage, and admit enough air, to not become saturated and anaerobic. At the smallest level, you have bacteria gluing soil particles (mineral soil and bits of organic matter) together into micro-aggregates. Then the fungal hyphae, which are like strings, tie these together into larger aggregates. Protozoa, nematodes, and tiny arthropods crawl between these looking for fungi, bacteria, and other small creatures to feed upon, opening spaces as they do so. Larger animals like earthworms, millipedes, beetles, etc. burrow through the soil seeking their food, and in the process form larger open passages from the surface down to many feet in depth. Worms especially are great for taking organic matter from the surface and pulling it far down into their burrows. Plant roots both penetrate and bind soil, further contributing to its structure, and when they die they supply organic matter for other organisms to feed upon.

Two "bad" situations would be a soil with excessive drainage--such as coarse sand containing little organic matter--and soils which saturate--such as sand or peat moss on top of clay hardpan. A lot of clays simply won't absorb water past a certain point and won't let any more through, which is why they are often used for pond liners. If the hardpan is fairly close to the surface, it may require deep-rooting plants to help break it up.

Another problem is when a significant change in soil structure occurs, because water will not move through a discontinuity rapidly. When soil becomes compacted at a certain depth in soil, but soil above that point is not compacted, or less compacted, then water "hangs up" at the surface of the discontinuity. This layer becomes water-logged, and if any microbial growth is occurring, those microbes may use up oxygen faster than it can diffuse into that area from the soil surface, and the layer becomes anaerobic. Plant roots will not grow into that layer, as the alcohol produced by yeasts and bacteria in low or reduced oxygen conditions will kill plant roots.

Landslides can occur when you have this condition develop. When a shallow layer of topsoil becomes waterlogged over hardpan or bedrock, and the slope is significant, the slope can easily fail, leading to a landslide. The best way to keep such soils from sliding is to build the biology. Plant trees and shrubs which produce extensive root systems which feed organisms which bind the soil together into aggregates on the large scale. Grasses or other suitable ground covers secure the upper layer with their roots. Use plenty of good compost or compost tea to inoculate the bacteria, protozoa, nematodes and fungi, and introduce earthworms if they're not already naturally present. The plants will feed the organisms in the root zones, so they hold the soil together, at the same time as improving aeration and drainage.

Hope this helps. If you have any more questions, I'll be glad to take a shot at them.

Yours truly,
Brian Pearson

Question #2

Hi Elaine - I am sure you get huge numbers of emails, so perhaps you didn't get my last one, but I am interested and hoping for advice in controlling black spot in roses. I suppose I have about 100 and this is just a hobby. We

are on 5 acres but fence off the gardens to keep rabbits and wallabies away they are both in pest proportions. Reading today's magazine I see I must spray the soil as well, yes I have done that a bit maybe not enough. We have had so much rain here in Tasmania this spring does rain wash the good organisms off or do they manage to stick fast ?? I make compost tea according to recipes and materials from Scott Alexander in Queensland Any ideas about frequency and dilution and any trace elements that may be needed would be welcomed. Cheers Penny

Dear Penny:

When the disease pressure is on, from black spot or other fungal infections, it may be necessary to step up the foliar tea applications to as often as twice a week. For this purpose it is probably better to use straight tea. As long as your plants get about 100 L/HA of tea, you can add as much water as you like to dilute the tea for a soil drench. Make tea addition a part of regular watering. The earlier in the season you start applying tea, the better disease protection you will have through the growing season.

Heavy rain can be a problem--you can increase the adhesion of organisms to the leaves by adding an emulsifier like yucca or Aloe vera to the tea. Use of molasses (just a little!) will get the "sticky" bacteria to grow. Just be careful not to add too much molasses so the tea goes anaerobic!

Sanitation is also important--the fallen leaves under the bushes need to be dealt with properly. But, instead of raking up frequently and either burning or thermally composting the leaf material, so the pathogens growing on the leaf material don't keep re-infecting the bushes, try using compost or compost tea to apply the beneficial organisms that compete with the pathogens, and stop them from growing in the soil or litter material under the bushes. This is less expensive than raking up, and less damaging to the environment than burning. Basically, you are composting in place. The reason you need to apply the GOOD compost or compost tea made properly is to inoculate the full set of organisms to the litter so the pathogens have no place to grow.

If compost tea fails to control the infection, powdered sulfur and copper sulfate have proven effective and are accepted by most Organic Standards boards. The only problem with these is they are non-specific fungicides and will harm beneficial fungi as well as pathogens. Therefore, if you use these organically accepted pesticides, you need to re-inoculate with compost or compost tea to supply a set of beneficial organisms to get normal decomposition and nutrient cycling going again.

Yours truly,
Brian Pearson

Question #3

Dear Dr. Ingham - I am an organic citrus farmer in Greece Crete. I was wondering if there is any way to test my soil's and my compost teas' microbial populations as I cannot send a sample to your labs within 4 hours.

Is it possible to activate the non active microbe populations which are existing in a commercial compost through a compost tea production procedure ?

I do have a problem in an area with malsecco (*Deuterophoma tracheiphila*) do you have any suggestions? do not use foliar applications of compost teas. I bring the to the field through irrigation system.

Best regards

E. Koutoupis

Dear Mr. Koutoupis:

You should be able to get your samples to our Netherlands lab within 48 hours, which is good enough. Pack them with some insulating material and enclose a cooling pack to keep them cool.

You can very definitely revive the dormant organisms in a commercial compost by making tea. You need to add the proper foods to the tea: humic acids, kelp, fish hydrolysate for the fungi, and simple sugars for the bacteria.

You can also pre-activate the compost by adding foods to it a few days before brewing the tea. In this case, more complex sugars (like barley malt) for the bacteria, and finely powdered organic oatmeal for the fungi.

Regular foliar applications of tea would probably be the best control for malsecco. If this is not possible, organic-approved fungicides like sulfur or copper sulfate may be applied.

You should contact Mr. Karel Eigenraam at our European lab for additional guidance.

Yours truly,
Brian Pearson

Question #4

What do you think about adding bone and/or blood meals to ACT? Thank you.

Dear Mr. Dakesian:

This should be OK as long as other bacterial foods are reduced or aeration is increased. Blood meal is a food for both aerobic and anaerobic bacteria, so care must be taken not to let the tea go anaerobic.

Bone meal might be more effective if incorporated into the starting materials of the compost, so the microbes have plenty of time to metabolize the Calcium and Phosphorus.

As far as we know, prions do not survive the composting process, so when using animal products about which you cannot be assured of their quality, composting is better rather than addition to the compost tea, because the time involved in making tea may not be long enough to deal with a prion problem. This is especially important when considering BSE.

Yours truly,
Brian Pearson,
Elaine Ingham

Question #5

Do I apply ACT on subject crop after it is up an inch or two in the fall and again before stouling? Can I add CaNO₃ in the tea w/o killing microbes? If so how much per acre?

Thanks. Dennis Kemnitz

Dear Mr. Kemnitz.

It is best to apply a good soil drench of tea (at least 20 gallons/ acre) before or during germination, to inoculate the beneficial microbes into the soil. A fall application is a good idea, to allow the organisms to work on organic matter decomposition, and thus removal of foods to feed pathogens through the entire winter.

It would be better to incorporate the calcium nitrate into the starting materials of the compost, so the microbes have time to assimilate the calcium into their biomass. Added directly to the tea, it could act as a salt and damage the organisms through osmotic shock. If adding into tea, no more than 100 g in 1 L, or a 10% addition, of commercially available calcium nitrate.

Good tea, made from a good compost, already contains sufficient dissolved nitrates, along with other soluble nutrients, to give the plants a good boost--no additional inorganic N fertilizers should be necessary.

Yours truly,
Brian Pearson, Elaine Ingham

3. Good news from Teaxs Pasture Systems – Betsy Ross

Hi, everyone. Happy 2004. I am already starting the year behind - as I am sure a bunch of you are, too.

If you have other suggestions about what could be done from these problems, let me know, please.

Problem: June/May beetles/white grub worms wiped out 60+ acres of 3" high winter oats this fall. I had had no previous experience with grubs so didn't know what I was looking at, but what ever it was started slow and then, in a steady progression just moved forward daily - visibly. I had been looking for army worms or grasshoppers, but too late, I began to dig in the fields. I found 6-10 white grubs a foot in all 11 fields.

Action:

I called the chemical people, the county agents, the bug guys, Malcolm Beck and Elaine.

Didn't want the chemicals, of course. Elaine suggested Mycotrol, which I had put out for grasshoppers in the spring, but not in these fields. I didn't have any on hand and knew it would take 7-10 days to get some. She also suggested Wormgold's compost for tea, nematodes, and other good stuff.

And I needed to do something fast - couldn't make enough tea fast enough so did a variety of things:

1. Nematodes: Made tea and put out nematodes on 10 acres at cost of \$35/a for nematodes. If rained a few drops right after that.

2. Beck's recommendation: Compost Leachate with 5 gal/a of molasses. Put this out on 40 acres. - 12 to 24 hour leachate in 50 gallon drums - had them

lined up. (didn't put my molasses up high enough so had to bucket them 3 gallons at a time. We were exhausted, of course. Now have plans to build rack that will hold 275 gallons of molasses that I can pull my sprayer under and load up with the turn of the banjo handle and also for Jeff Young's fish hydrolysate)

3. Shaklee's Basic H: rate of 1 pt/acre on another 10 acres.

4. Left one paddock as was. It had had 1 5gal/acre compost tea in spring only.

Results viewed this week by digging at least 3 1-foot places in each pasture area sprayed.

1. Nematodes: found none but am sure some are there. That pasture is regrowing the oats very slowly (we have had only 1.5 inches of rain in 3 months - pretty bad)

2. Beck's Leachate/molasses: 2nd best solution - found only 1-2 in each of those fields. Oats not re-growing as well as nematode treated one, but didn't lose all the oats.

3. Shaklee's Basic H: 8-9 grubs per foot dug. Disgusting - no growth of oats at all.

4. Control field - didn't replant, didn't treat - have spotted oat growth: 8-9 grubs per foot dug.

Note:

Since I now know what the ground looks that is being worked by grubs, I realize that this problem has been on-going, but heavy tillage and chemicals kept it in check. Guess when we stopped all that crazy stuff they just went wild.

In the grass (not open oat fields) where I had sprayed the Mycotrol (Beuaveria bassiana) in spring I still found some grubs, but only 1-2 under the cow paddies.

Haven't gotten any of Wormgold's magic yet, and couldn't find any white fuzzies in the ground for an inoculant, but I have plucked those white suckers up and put them in a container with lots of fungal compost and am feeding. Maybe I can grow my inoculant!

Hope this may help someone jump all over this problem if you ever encounter.

Betsy Ross betsy@rossfarm.com

4. SFI can now do Electrical Conductivity and % Salts

People ask for chemical analysis from us a fair amount of the time, and so we're planning on adding some of the basic chemical analyses.

We can now run electrical conductivity and percent salts on solutions. To do EC and % salts on a solid, we take 100 grams of your sample, add 100 ml of deionized water, stir for 1 minute and let the solids settle for 1 minute. We measure EC and % salts on the liquid after the solids settle.

We do dry weights of material all the time.

To determine bulk density, you need to weigh a known volume of your soil. For example, a soil core. The volume is π times the radius of the core (half the diameter of the core), multiplied by the height of the core.

So, a 5 cm (2 in) diameter core, 5 cm (2 in) in height would have a volume of π times 2.5 times 5. π is 3.14, 2.5 cm is the radius (half of 5), 5 cm is the height. So, the volume is about 38 cubic cm. Weigh the sample. This is wet weight bulk density.

When you send a sample to SFI, we will report the dry weight of material per 1 gram of wet weight.

So let's say that the dry weight was 0.75 g dry soil per 1 gram fresh soil. Let's say the soil weighed 49 grams total (weight of the soil plus core, minus the core). The dry weight of that volume of soil is 200 g wet weight of soil, times 0.75 g dry per g wet, to give 37 grams of dry soil per 38 cm³. do the division, and you have 0.97 grams per cm³ of soil.

Probably has good organic matter. The assumption typically used by microbiologists is that soil has a bulk density of 1.00 g per cm³. Not always true, but usually close enough. If you have decent organic matter in the soil, then you are reasonably safe using the assumption, but if you lack OM, then the assumption probably does not hold.

If SFI started doing nitrates, how many people would send in samples? Let me know if you would like us to be able to have us do that for you.

Elaine Ingham

5. Kucinich position on organic farming

Hello everyone-

I just wanted to share presidential candidate Dennis Kucinich's newly posted position on organic farming:

http://www.kucinich.us/issues/organic_farming.php

There are also some other positions on environmental issues and on "Farm Policy" in general.

If you like what you see, please spread the word about Kucinich and his campaign! He's the only candidate who doesn't take *any* corporate donations, and he's the only candidate talking about breaking up monopolies in agriculture, energy, communications, and media--so corporate media isn't doing much to tell people about him. It's up to the grassroots to elect our best chance for substantive shifts in our food production policies.

Thanks so much for your time!
Norris Thomlinson

6. EPA Proposes to Revise the Definition of Compost

Date: Tue, 30 Dec 2003 13:06:28 -0800

From: Wendy Fisher <Wendy_Fisher@co.washington.or.us>

COMPOSTING, NONHAZARDOUS WASTES, MUNICIPAL SOLID WASTE AND AGRICULTURAL RESEARCH

*EPA Proposes to Revise the Definition of Compost - EPA Proposes " ... an amendment to the May 1, 1995, Comprehensive Procurement Guideline (CPG) under the Resource Conservation and Recovery Act (RCRA) and the Executive Order 'Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition.' Specifically, EPA is proposing to revise the current compost designation to include compost made from manure or biosolids, and designate fertilizers made from recovered organic materials. EPA is also proposing to consolidate all compost designations under one item called 'compost made from recovered organic materials.' EPA is required to designate items that are or can be made with recovered materials and to recommend practices that procuring agencies can use to procure designated items. Once EPA designates an item, any procuring agency that uses appropriated federal funds to procure that item must purchase the item containing the highest percentage of recovered materials practicable. Today's proposed action will use government purchasing power to stimulate the use of these materials in the manufacture of new products, thereby fostering markets for materials recovered from solid waste ..." - Comments due to EPA by February 9, 2004 - For general information contact the EPARCRA Call Center at 800 424 9346; in the Washington, DC, metropolitan area, call 703 412 9810 - The EPA Project Officer for the proposed rule is Sue Nogas at 703 308-0199; e-mail:

<mailto:Nogas.Sue@epa.gov> - EPA December 10 Federal register:

<http://a257.g.akamaitech.net/7/257/2422/14mar20010800/edocket.access.gpo.gov/2003/03-30266.htm>

7. USDA's proposed rule for the "biobased products" purchasing preference

The USDA's proposed rule for the "biobased products" purchasing preference has been published (implementing Section 9002 of the 2002 Farm Bill). This is the summary of the policy being implemented:

"Federal agencies are required to purchase biobased products, as defined in regulations to implement the statute, for all items costing over \$10,000 or when the quantities of functionally equivalent items purchased over the preceding fiscal year equaled \$10,000 or more. Procurements by a Federal agency subject to section 6002 of the Solid Waste Disposal Act (42 U.S.C. 6962) [the recycled products preference policy] are not subject to the requirements under section 9002 to the extent that the requirements of the two programs are inconsistent. Federal agencies must procure biobased products unless the items are not reasonably available, fail to meet

applicable performance standards, or are available only at an unreasonable price."

Compost is a bio-based product. The potential preference apparently would only apply where a compost product competes with a non-biobased product such as synthetic fertilizer or silt fence.

You can view the Fed Reg notice at

<http://a257.g.akamaitech.net/7/257/2422/14mar20010800/edocket.access.gpo.gov/2003/03-31347.htm>

8. SFI moving in October, not March

SFI will be moving to Salem, OR next October, since the new building won't be ready until mid-summer. Phew! So don't worry about address changes until next fall! Elaine

9. Monsanto Vs Oakhurst Dairy Lawsuit Settled

Oakhurst Dairy in Portland, ME and Monsanto have signed an agreement to settle the lawsuit filed against Oakhurst for its labeling of its milk regarding rBGH (rBST).

Oakhurst will keep its label with only a slight revision. It will now read "Our Farmers' Pledge: No Artificial Growth Hormone Used." The previous version didn't have the word "used."

Oakhurst will now add a statement that says the FDA hasn't found any significant difference in milk from cows treated with growth hormones.

As with other agreements Monsanto has signed with dairies it has sued, the terms and conditions are confidential.

I'm mostly sorry to see the settlement, since I hate to see Oakhurst give an inch in its democratic right to inform the public. However, I have a great deal of respect for the people there and I'm sure it's a relief, financial and emotional, for everyone to have this over with.

There most certainly ARE significant differences with milk from cows treated with rBGH, including molecular structure of the growth hormone, increased risk of disease to cows, and compelling evidence of increased risk to humans of higher cancer rates and antibiotic resistance. I'm afraid that Monsanto will further intimidate other dairies that may consider a statement saying there is no significant difference false and repugnant.

On the positive side, most people that consciously choose non-rBGH dairy products KNOW the FDA statement is false, or at least have a significant degree of doubt.

Moreover, citizens in Maine have already voted with their dollars to buy rBGH-free milk. As I mentioned before, thanks to consumer demand, virtually all milk produced or sold in the state is rBGH-free.

The effect on Oregon's dairies remains to be seen. The dairies that are fully or partially rBGH-free, including Sunshine, Trader Joe's and Springfield Creamery, already have the FDA-recommended statement. Umpqua is just starting to go rBGH-free and hasn't started labeling yet. Lochmead doesn't use rBGH, but hasn't stated this information on its labels yet. Organic brands, such as Horizon, typically don't include any FDA-recommended statement regarding hormones on the label. I don't know if this will have any effect on them.

This is, unfortunately, a typical example of Monsanto's (and others in the biotech industry) intimidation of others - dairies, the media, scientists - that dare to speak out against them. Oregon Physicians For Social Responsibility's

Campaign For Safe Food is as much a question of democracy as anything else and is all the more reason for our messages on the health risks of rBGH and contamination risks of biopharm crops to reach the public.

- Rick North hrnorth@hevanet.com

10. New Info on SFI website – Great Results

We are posting information on products, compost and compost tea where people have gotten great results. We will soon have the data up on people doing QA programs as well! Stay tuned – but this begins to tell you where to go to find great products with the right biology!

Elaine