

# **February 2006 E-zine**

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## **Meet Hillary**

SFI's new phone answering person and lab technician trainee! Many of you who have recently called or visited the Corvallis offices have already met Hillary Hammerstrom at the front desk, or talked to her on the phone. She's also learning some of the lab work, getting ready to help us cope with the traditional springtime flood of testing samples.

## **1. Meetings**

### **a. Northwest Flower and Garden Show, Feb 8 to 11, 2006**

Green Meridian put together a special contractor's area for the Garden show, and Elaine was invited to give two talks during the show with Hendrikus Schraven and Bill Peregrine. The two talks were the best attended talks during the show in the Green Meridian program. Elaine gave a basic overview of the Soil Foodweb and why it is important in a half hour, and Julian Durant from the Hendrikus Group gave examples of specific projects where soil biology was an integral part of their landscaping process. Question and answer sessions followed both sessions.

The Hendrikus group had a booth in the show and Elaine stayed at their booth several hours after each presentation to answer questions. Alaska Magic also had a booth at the show. They "strutted their stuff" with a display of how their humus improves plant growth to a much greater extent than the "top-rated" commercial fertilizer potting soil mixes.

After the second talk, however, Elaine was approached by one of the conference organizers and was told that "someone from WSU extension service" had called the conference organizers and that person said that if Elaine was allowed to speak, that the conference would "go down", that no one would attend the show.

As it turns out, this was absolutely not the case, of course. First, as Elaine said, whether she spoke or not would hardly have a bearing of that magnitude on the NWFGS. Although it is a compliment, in a way, that someone representing the toxic chemical approach to life would believe that Elaine's presence or absence could have that much effect.

We all need to let the organizers of the Northwest Flower and Garden Show know that the Green Meridian Group presentations were appreciated, and that next year, Green Meridian, Hendrikus Schraven, Yelm WormFarms, Horizon Ag, and the other presenters will be an important part of why anyone would choose to come to the show.

#### **b. Australia bound**

Elaine is off to Australia for the next month, but remember she's available by e-mail! E-mail to [info@soilfoodweb.com](mailto:info@soilfoodweb.com) and any question that Kevin or Joe can't answer will get forwarded to Elaine for her to answer! That also keeps the number of questions heading to Elaine down to a dull roar.

For those of you already in Australia, or heading down under anytime soon, here's a quick summary of Elaine's schedule while there, borrowed from the Australia SFI lab's calendar page at <http://www.soilfoodweb.com.au/index.php?pageid=314> (where more information is available).

**February 20-24, 2006** - Soil Foodweb laboratory, available for consultations  
Lismore, New South Wales  
Contact: SFI Laboratory  
Phone: 02 66225150  
Email: [soilfoodwebinst@aol.com](mailto:soilfoodwebinst@aol.com)

**February 27- 28, 2006** - Introduction Workshop  
"True Fertility – combining soil biology, chemistry and structure"  
Ellinbank DPI, Victoria  
Contact: Gerhard Grasser, AgriSolutions Pty Ltd  
Phone: 03 5627 8663  
Mobile: 0402 213 736  
Email: [seagrow@dcsi.net.au](mailto:seagrow@dcsi.net.au)

**March 2, 2006**, DPI Video Conferencing - Bendigo, Victoria  
Best Wool, Best Lamb Group  
Phone: 03 5355 0531  
Email: [annettetaylor@dpi.vic.gov.au](mailto:annettetaylor@dpi.vic.gov.au)

**March 3, 2006**  
Presenting one day practical and advanced "Masterclasses" in Shepparton, Victoria, with Turfgrass Systems  
Contact: Darren Cribbes, Turfgrass Systems - Phone: 825 2749 0824  
Email: [darren@turfgrasssystems.com](mailto:darren@turfgrasssystems.com)

**March 6 - 10, 2006** - Soil Foodweb laboratory, available for consultations  
Lismore, New South Wales  
Contact: SFI Laboratory  
Phone: 02 66225150  
Email: [soilfoodwebinst@aol.com](mailto:soilfoodwebinst@aol.com)

**March 13, 2006**, 1 day Soil Symposium with ASAP (Australian Soil Additives & Products) and footprint directions  
Byron Bay, New South Wales  
Contact: Greg Hallet  
Phone: 02 6688 2324  
Email: [greg@footprintdirections.com](mailto:greg@footprintdirections.com)

**March 14, 2006**, Southern Cross University 2 hour talk with Environmental Sciences Social Group - Lismore, New South Wales

**March 15 - 17, 2006**, Soil Foodweb Advisors Training and Reunion  
Lismore, New South Wales

### **c. Compost Tea in Hydroponics coming up soon**

It's not too late! There's still time to register for the seminar on Compost Tea Usage for Hydroponics. Learn how to convert hydroponic growing from chemical to biological control, moving toward sustainable practices.

#### **April 7, Friday (1-5 PM)**

A hands on look at several types of hydroponic equipment  
Cost: \$150 per person

#### **April 8, Saturday (8 AM - 5 PM)**

Full day classroom session on key biological principles  
Cost: \$350 per person

#### **April 9, Sunday (8 AM - 5 PM)**

Light Microscope Methods class  
Cost: \$200 per person

The registration form for all three of these courses is available on our calendar page:  
[http://soilfoodweb.com/04\\_news/calendar.htm](http://soilfoodweb.com/04_news/calendar.htm).

## **2. Notes from Elaine!**

### **a. Pesticide Drift Issues – copied from SANET (re-formatted)**

January 21, 2006

**Pollution by Herbicide Spray Drift** by Prof. Joe Cummins

Most of the genetically modified (GM) crops grown worldwide are designed to be resistant to chemical herbicides. The herbicide glyphosate (Roundup) is the most widely used herbicide used with herbicide resistant crops including soybeans, corn, canola and cotton. Glyphosate is a non-selective herbicide capable of damaging most food crops unless they are modified with a resistance gene. Spray drift may result from both ground and aerial spray applications but aerial application poses by far the greatest risk (!). Spray drift impacts both crop and non-crop plants causing both direct and subtle impacts such as damages to germination or seeds and growth characteristics of the plants (2). Loss of biodiversity has secondary impacts such as elimination of wildlife. Crops which are not genetically modified have frequently been damaged by spray drift. Cotton drift damage was simulated by studying damage at reduced glyphosate concentrations, levels as low as 70 grams per hectare (6.25% of the application rate for weed control) seven days after application of the herbicide (3). Rice and non-GM soybean plants treated with glyphosate, 140 grams per hectare, were found to have reduced yield (4,5). Such experiments show that the reduced level of glyphosate in spray drift causes crop damage and reduced yield at low concentrations of the herbicide.

The United States EPA reports that there are more than 2000 spray drift incidents reported annually to state regulatory agencies and insurance companies. Spray drift contaminates farmers crops and causing illegal residues or crop damage. Mitigation of spray drift damage was done primarily using better pesticide labeling product labeling and better training of applicators (6). EPA did not address the question is “aerial; spraying” really necessary. In the United States spray drift is regulated by States while labeling of the pesticide formulation including appropriate cautions is regulated by US EPA. States regulate pesticide spraying by outright prohibition or by prohibiting off site damage (7).

A recent court case in Ontario, Canada, Lockery versus Hayter before the Superior Court, Justice Gordon Killeen presiding dealt with a spray drift incident in a clear and lucid manner,. The issues were discussed in a highly readable way making the decision available and understandable to the general public.” [1]This action, brought by a consortium of farm corporations against a neighboring farmer, is all about pickling onions. These are the small white onions, under an inch in size, which are used to garnish martini cocktails and luncheon and dinner spreads.

[2] Putting the plaintiffs’ case broadly, they claim that the defendants, in spraying their own soybean field with a powerful herbicide known as Roundup, allowed the herbicide to drift over onto the plaintiffs’ contiguous 75-acre onion field and cause serious damage to the plaintiffs’ crop for the 2000 year.”

The neighboring field was planted with glyphosate resistant soybeans which was sprayed with the herbicide on a windy June 23 and again on a windy July 21. The spray was visibly spread across field of onions which, unlike the soybeans, were sensitive and poisoned by the herbicide. The label instructions provided for the glyphosate formulation stated:

“\*APPLY THESE SPRAY SOLUTIONS IN PROPERLY \*  
\* MAINTAINED AND CALIBRATED EQUIPMENT CAPABLE OF\*  
\* DELIVERING DESIRED VOLUMES.\*  
\* AVOID DRIFT – EXTREME CARE MUST BE USED WHEN\*  
\* APPLYING THIS PRODUCT TO PREVENT INJURING \*  
DESIRABLE PLANTS AND CROPS . \*

Do not allow spray mist to drift since even minute quantities of spray can cause severe damage or destruction to nearby crop, plants or other areas on which treatment is not intended, or may cause other

unintended consequences. Do not apply when winds are gusty or in excess of 8 km/h or when other conditions, including lesser wind velocities, will allow drift to occur. When spraying, avoid combinations of pressure and nozzle type that will result in fine particles (mist) which are more likely to drift.”

It was clear that the product label had been neglected.

The defendant argued that the damage done to the onions was not caused by the herbicide but by water pooling on the soil and drowning the onions. The defendant was not only a farmer but also a drainage contractor and he claimed that the drainage he had installed in the field was actually faulty. The pooling claim was supported by a photograph taken March, 2002 well before planting could be undertaken. Since pooling appears in most fields during the spring runoff Judge Killeen was not swayed. The plaintiff was awarded \$92,000 to reflect their actual loss.

The use of GM herbicide tolerant crops has given rise to two kinds of pollution. The first kind of pollution is genetic pollution of seed, food and feed. Such pollution results from spread of pollen or seeds by wind, animals or mechanical devices such as farm implements or trucks harvesting or transporting seeds such as maize, soybean, cotton or canola. The other kind of pollution is the drift of chemical herbicides used to control weeds in the tolerant crops.; The former pollution is, as yet , unresolved in terms of who is responsible for the damage . The latter pollution is further along in terms of resolution of the liability for negligent use of the chemicals but hampered by myriads of regulations. The two kinds of pollution should both be amenable to community based regulation but in no case has this been possible.

#### References

- 1, Lee, E, Burdick, C. and Olszyk, D. GIS-Based Risk Assessment of Pesticide Drift Case Study: Fresno County, California Office of Pesticide Programs Office of Prevention, Pesticides, and Toxic Substances U.S. Environmental Protection Agency Washington, DC 20460 MARCH 2005 EPA/600/R-05/029
2. Blackburn LG and Boutin C. Subtle effects of herbicide use in the context of genetically modified crops: a case study with glyphosate (Roundup). *Ecotoxicology*. 2003 Feb-Aug;12(1-4):271-85
3. Thomas, W, Burke, I, Robinson, W, Pline-Srnic, W, Edmistein, K, Wells, R and Wilcut, J. Yield and Physiological Response of Non-transgenic Cotton to Simulated Glyphosate Drift Weed Technology 2005, 19, 35-42
4. Kurtz, M and Street, J. Response of Rice (*Oryza sativa*) to Glyphosate Applied to Simulate Drift Weed Technology 2003, 17, 234-38
5. Braverman, M. P. Simulated glufosinate drift on rice and soybean *Proc. South. Weed Sci. Soc.* 1998, 51:269
6. Ellenberger, J. Case studies on controversial drift problems pp 51-56 *Proc. North American conference on spray drift management D, Buckley editor 1998*
7. Feitshans, T. Drift Laws pp 57-63 *Proc. North American conference on spray drift management D, Buckley editor 1998*
8. Ontario Superior Court of Justice Lockery versus Hayter Killeen, J presiding Court file No. 38006 Dec. 13 to 16, 2005 London, Ontario, Canada

## **b. Pesticides in Drinking Water**

Note the "adding alum or gypsum to reduce contaminant levels in runoff" as part of the fix for glyphosate in city drinking water. No wonder they call it the "CEAP program", for poison seeping into our water.

From: ARS News Service <NewsService@ars.usda.gov>  
Date: Mon, 30 Jan 2006 13:18:44 -0500  
<http://www.ars.usda.gov/is/pr/2006/060130.htm>

## Monitoring Herbicides in Midwest Drinking Water

Don Comis, (301) 504-1625, [comis@ars.usda.gov](mailto:comis@ars.usda.gov) January 30, 2006

Sampling of water running through the St. Joseph River watershed in northeast Indiana is showing glyphosate herbicide contamination to be minimal, according to Agricultural Research Service (ARS) studies. Glyphosate levels exceeded the federal limit for drinking water only once during three years of testing.

That's good news to about 200,000 residents of Fort Wayne, Ind., and to some two dozen other small, rural communities that rely on this watershed for their drinking water.

However, three years of testing data from the ARS National Soil Erosion Laboratory (NSERL) at West Lafayette, Ind., show that atrazine herbicide is often found above the U.S. Environmental Protection Agency limit for drinking water. Drinking water treatment plants in the Fort Wayne metropolitan area use activated charcoal to remove atrazine that has most likely run off from cornfields. Atrazine is widely used to control weeds on Midwestern cornfields.

Since many farmers in the St. Joseph River watershed region must rely on drainage pipes and ditches to get their fields dry enough to plant, ARS supports a project focused on measuring--and curbing--runoff pollution from these drainage systems.

Runoff from farms carries nutrients and soil, as well as pesticides, to the St. Joseph River. Scientists involved with this watershed project are looking at a variety of drainage improvements, such as maintaining an even water table, adding alum or gypsum to reduce contaminant levels in runoff, and filtering standing water.

The ARS leader of this project, Chi-Hua Huang, also heads NSERL. That facility was recently converted into the agency's newest water-quality lab. It's the only lab involved in the U.S. Department of Agriculture's new Conservation Effects Assessment Project (CEAP) that is sampling water for glyphosate (Roundup), the herbicide that's increasingly being substituted for the older atrazine.

The NSERL has two automated systems with special extraction equipment that can simultaneously detect five different pesticides in tiny amounts of water.

The CEAP program is designed to make sure that taxpayers are getting their money's worth from publicly funded USDA conservation measures administered through the Farm Security and Rural Investment Act--the "Farm Bill."

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\* NewsService@ars.usda.gov | [www.ars.usda.gov/news](http://www.ars.usda.gov/news)

\* Phone (301) 504-1638 | fax (301) 504-1486

## **c. Some Ciliates Shelter Salmonella**

Here's a quick news item forwarded to us by Janice Dysinger of LifeRoses.com, one of our certified Soil Foodweb Advisors.

Hello Elaine and Advisors,  
The following news release is from the ARS (Agricultural Research Service).

<http://www.ars.usda.gov/is/pr/2006/060216.htm>

This is a report by ARS telling of research on a water-loving protozoan, 'Tetrahymena'. This Microbe can't digest the Salmonella: *S. enterica*, bacteria. After gulping down these bacteria then expel them in encased food vacuoles. This apparently improves the Salmonella's ability to survive more so than non-encased bacteria. These encased Salmonella bacteria are better able to survive sanitation procedures of calcium hypochlorite.

So I looked this protozoa up and it turns out, I am sure you already knew Elaine, that this protozoa is a ciliate, a facultative anaerobe. Your model of aerobic tea out competing the anaerobic microbes to promote a healthier food web is proven out again in this news release. This is another good reason to keep our tea at high O2 levels and a warning of what can happen when we don't keep them at adequate levels.

## **d. and now, something hopeful..... Microbes Mediate Antibiotic Pollution**

### **Microbes in Manure Can Minimize Potential Pharmaceutical Pollution**

ARS News Service Agricultural Research Service, USDA  
Erin Peabody, (301) 504-1624, [ekpeabody@ars.usda.gov](mailto:ekpeabody@ars.usda.gov) January 27, 2006

Bacteria are usually viewed as "the enemy" and targeted with potent antibiotics to curb their ability to cause infection. But according to Agricultural Research Service (ARS) scientists, microbes--including several types of bacteria--can be a farmer's ally when it comes to reducing the risk that antibiotic-containing manure may pose to the environment.

Livestock and poultry producers rely on antibiotics to treat a host of diseases and infections. In fact, more than 21 million pounds of antibiotics were administered to U.S. farm animals and pets in 2004. Such treatments help promote animals' health and well-being, in addition to ensuring a safe food supply for consumers.

The trouble is, when animals excrete in their waste antibiotics and other pharmaceuticals that their bodies don't use, the compounds may linger in the environment. This so-called pharmaceutical pollution can encourage bacteria to mutate and form strains that are resistant to current antibiotics.

Scott Yates, a soil scientist with ARS' George E. Brown, Jr. Salinity Laboratory in Riverside, Calif., wanted to find out what happens to antibiotic-laced manure once it's mixed with soil, as typically happens when livestock manure is spread onto farm fields as a fertilizer.

Yates and colleague Qiquan Wang studied one commonly administered veterinary antibiotic, sulfadimethoxine, which is used to combat a number of diseases in livestock and pets.

They developed a mathematical model which revealed that thriving manure microbes play an important role in determining how quickly sulfadimethoxine degrades. Some microbes in manure can digest and inactivate the excreted antibiotic.

According to Yates and Wang, farmers should try to create a hospitable environment for these tiny helpers. They should store waste from treated animals in a warm, moist place for as long as possible before spreading it onto fields. This gives the beneficial soil microbes an opportunity to act on an antibiotic, before it has the chance to leach into soils and waterways.

### **3. Latest news from Oregon**

#### **a. Product testing results from Sustainable Studies Institute**

Full Circle Plant Food: Got Protozoa?

The labs here in Corvallis recently tested the Full Circle Plant Food in a growth trial monitoring the biology throughout a full month. The results were astounding. This product greatly enhanced protozoa populations in the soil as well as encouraged healthy fungal growth.

The control tested had far fewer protozoa and less fungal growth over the one month time frame for the experiment. In the experimental containers, aerobic protozoa were at very elevated numbers in the range of 827,000 flagellates per gram of soil! High numbers of amoebae were also detected in the range of 80,000 per gram of soil. Fungal numbers and diameters were also increased in the experimental containers. These tests were done in a clay soil with a plant in the system under controlled conditions.

The Sustainable Studies Institute endorses this remarkable product for improvement of nutrient cycling as a soil amendment. Trials are soon to be underway for testing this product in production of compost tea. We will keep you posted on the results of the experiments. For more information on this product please contact Steve Wortinger or Rodger Barnhard, Full Circle Plant Food at 360-419-4525, toll free 1-877-311-4737. You can also visit them on the web at [www.fullcircleplantfood.com](http://www.fullcircleplantfood.com).

#### **b. Spring Forward Special on Total Foodweb packages**

The labs in New York and in Oregon have teamed up once again to bring you special reduced prices on all our Total Foodweb testing packages, valid **now through March 31, 2006**. Get the jump on your growing season with our Spring Forward Special:

Tea Package: \$170.00 (regular price: \$188.00)

If payment is included: \$153.00 (after our usual Paperwork Reduction 10% discount)

Compost Package: \$180.00 (regular price: \$195.00)

With payment included: \$162.00.

Soil Package: \$220.00 (regular price: \$240.00)

With payment included: \$198.00.

The submission forms have been updated to reflect these prices, but don't fret! Even people with outdated forms will get the special prices, just as the warm spring rains fall alike upon those who properly complete their paperwork, and those who don't.

(Unless your paperwork is so incomplete we can't figure out who your samples came from. If that happens, you probably won't get the discount. Nor any test results at all, come to think of it.)

**c. New book available soon**

**ADDING BIOLOGY In Soil and Hydroponic Systems**

by Dr. Elaine Ingham and Carole Ann Rollins

Simple explanations about how to add biology to any plant growing system make this book easy-to-read for the general public. Guidelines for conventional, sustainable or organic applications -- whether you are growing indoors in controlled environments and soilless media or outdoors in open fields of soil -- to help you design your growing system. Basic biology and chemistry of nutrient cycling and plant growing environments are given so the mystery is taken out of plant growing.

Chapters include:

Synthetic or Inorganic Systems  
Biological/Organic Systems  
Plant Growing Systems Out of Balance  
Roots Interface Biology and Plants  
Types of Microorganisms  
Types of Beneficial Aerobic Microorganisms  
Environmental Conditions for Maintaining Microorganism Communities  
Microorganisms Form a Symbiotic Relationship with Plants  
Integrating Biology into Field and Controlled Environment Plant Growing Systems  
Sources of Microorganisms  
Testing for Biologicals  
Research on Microorganisms and Interactions.

Cost: Regular \$19.95 (plus \$3.95 shipping and handling in the United States).

Pre-orders for \$14.95 are being taken now (plus \$3.95 shipping) until March 31, 2006.

For pre-orders in the U.S., send check or money order for \$18.90 to  
Nature Technologies International  
PO Box 1603  
Sonoma CA 95476-1603

Credit card ordering is also available, as is shipping to international destinations. Call or email to find out shipping costs for orders outside the United States.

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