April 2006 SFI E-zine

1. **Meetings**
   a. Planned events in Australia
   b. Sustainable Studies workshops in Corvallis
2. **Notes from Elaine**
   a. Microbes to battle weeds
   b. Compost tea scientific paper
   c. GMO problems in Hawaii

1.a. Meetings – Planned events in Australia

June 29-30, 2006: Compost tea workshop and field day in New South Wales (For more information on this event, contact the Soil Foodweb Institute on 02 6622 5150 or email soilfoodwebinst@aol.com.)

July 3-14, 2006: Soil Foodweb course at Southern Cross University (Australia)

"The Soil Foodweb Institute and the Environmental Analysis Laboratory (EAL) at Southern Cross University are holding a two week course on 'Soil Foodweb Interactions & Benefits to Plant Production' from the 3rd - 14th of July. Soil Foodweb Inc. President and world renowned soil microbiologist, Dr. Elaine Ingham, along with the Director of EAL, Graham Lancaster, will present this course at Southern Cross University in Lismore, New South Wales.

"The course will look at the interactions between soil chemistry and biology, and will examine the functions of major soil organism groups. This course will provide a valuable insight into the role of soil organisms in disease suppression, nutrient retention and cycling, residue decomposition and soil structure which will enable growers to reduce farm inputs whilst maintaining yield and soil fertility.

"There will also be one week's readings before the commencement of the course. A unit outline of the course, a general information brochure, and a registration form are available. The cost of the course (GST inclusive) is $2200 for non-students or $1300 for full time students (proof of enrolment required). For further information contact the Soil Foodweb Institute on 02 6622 5150 or email us at soilfoodwebinst@aol.com"

1.b. Sustainable Studies workshops in Corvallis

August 21-26: Core Workshops and Microscope Class in Corvallis, Oregon

Spaces are still available but the August workshops are filling up fast. To meet the rising demand we have added another set of workshops this year:

November 13-18: Core Workshops and Microscope Class in Corvallis, Oregon

For those too busy with the harvest season to attend the August workshops, we hope these dates in November will work out better. Registration forms for this set of workshops will be made available as soon as possible.

2. Notes from Elaine!

a. Microbes to Battle Weeds

<I've talked about this type of thing for years, nice to see another scientist working on the same area! We need all the help we can get in figuring out how to deal with weeds without the "nuke 'em" approach>

New, integrated approaches to battling annual broadleaf weeds may enlist beneficial soil microbes that "hit" the pesky plants where it hurts--their seed banks.

These banks are reserves of thousands, even millions, of weed seeds that lie dormant beneath the soil awaiting favorable conditions to germinate, according to Joanne Chee-Sanford, a microbiologist with the Agricultural Research Service (ARS) in Urbana, Ill.

Since 2002, Chee-Sanford has been piecing together the conditions under which certain fungi and bacteria will cause decay in dormant weed seeds, killing them or diminishing their fitness. Classical biological control would call for unleashing the microbes onto a targeted weed to fight it, but Chee-Sanford has a slightly different tactic in mind. Rather than apply microbes as biological control agents, she envisions bolstering the activity of microbes that already occur in the soils naturally, possibly using an amendment of some kind.

The problem is, seedbank soils are home to many microbial species with different ecological roles to fill, notes Chee-Sanford, with the ARS Invasive Weed Management Research Unit. Some only eat carbon and other nutrients exuded in the soil by seeds, while others use means such as powerful enzymes to breach the seed, steal its nutrients and cause decay. Sometimes, seed decay is a multimicrobe effort.

In one study, for example, 99 percent of velvetleaf seeds underwent microbial decay after three months, particularly when the seeds were the only carbon available as food. The prime decay agents--Bacteroidetes and Proteobacteria, found in many soils--are known to degrade natural seed polymers. But Chee-Sanford is still trying to ascertain whether they were the initial cause of the seeds' decay, or mere contributors.

Her efforts are part of a broader program within the Urbana unit to furnish midwestern farmers with new weed-management systems that integrate biological, chemical, cultural and mechanical control methods.

Read more about the research in the May 2006 issue of Agricultural Research magazine, available online at:

http://www.ars.usda.gov/is/AR/archive/may06/weeds0506.htm

"In simultaneous field studies, Urbana ecologist Martin M. Williams II and agronomist Rick A. Boydston, in Prosser, Washington, are comparing the ability of sweet corn hybrids to withstand infestations of wild proso millet, a fast-growing annual weed for which few herbicides are registered. Williams says the study, now in its second year, shows a strong correlation between a

crop's canopy thickness and its ability to tolerate and suppress weeds. Spirit, the corn hybrid with the least-dense canopy, lost up to 70 percent of its yield and allowed more weed-seed production than the hybrid with the thickest canopy, GH2547, which suffered minimal yield losses."

I just noticed they mention the correlation between the crops canopy and thickness and its ability to suppress weeds, just like when we mow our lawns high, you get the same shading effect that suppress weed germination. But we already new this part of the info! Great minds think alike!

Gerry Miller

FYI,

While I'm a firm believer that a healthy soil food web and therefore healthy plants are the best defense against pests, should they somehow gain the upper hand the November/December issue of ***The IPM Practitioner*** (http://www.birc.org/descjrnls.htm#The%20IPM%20Practitioner) contains the 2006 Directory of Least-Toxic Pest Control Products. Pests are arranged alphabetically with sub-headings for Identification & Monitoring, Physical Controls, Biological Controls and, lastly, Least-Toxic Chemical Controls. Each product is accompanied by sources. For example listed under Biological Control for BEETLES are seven types of insect-attacking nematodes and the companies that carry them like Peaceful Valley.

Hugh

b. Compost tea scientific paper

The paper below from scientists with the Pacific Agri-Food Research Centre in British Columbia reflects a well designed and meticulously conducted experiment on aerated and non-aerated compost teas, published in the Winter 2006 issue of Compost Science and Utilization.

My paraphrased notes are listed below, but I suggest the original paper from JG Press or Inter-Library Loan for reading and future reference.

It seems clear from this and other studies that a best management practice for compost tea brewing is to START with lab-verified "no detect" (for E. coli) GOOD QUALITY compost and/or humus substrate to avoid any potential E. coli problems in the finished compost tea.

A fascinating practice verified in this paper is the use of carrot juice supernatent amended to compost tea brews to hinder E. coli.

Best regards,
Steve Diver
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"Effects of Aeration, Molasses, Kelp, Compost Type, and Carrot Juice on the Growth of Escherichia Coli in Compost Teas" by Tissa Kannangara, Tom Forge, and Betty Dang. Compost Science & Utilization, Winter 2006, Vol. 14 Issue 1, p. 40-47.
Author Affiliations: Agriculture and Agri-Food Canada, Agassiz, British Columbia, Canada

Four types of compost were examined: dairy, swine, horse and vermicompost.

There was no detectable *E. coli* in compost samples. Aerated and non-aerated compost teas were amended with molasses and kelp. Aerated and non-aerated compost teas made with dairy manure compost had no detectable *E. coli*. A second batch of compost teas were inoculated with non-pathogenic strains of *E. coli*. Likewise, these were amended with molasses and kelp.

Both aerated and non-aerated compost teas that were inoculated with *E. coli* had detectable levels of *E. coli* in finished compost tea samples. Vermicompost CTs had the least amount of E. coli and swine manure CTs had the highest amount. Oxygen levels were maintained at or above 6 mg/liter in aerated compost teas. Oxygen levels dropped very low in non-aerated compost teas. Molasses and kelp stimulated growth of E. coli with increasing concentration. E. coli growth was greater in non-aerated compost teas than aerated compost teas

Carrot juice was filtered then centrifuged. Additions of carrot juice supernatent was effective in reducing E. coli in compost teas inoculated with E. coli. Carrot juice supernatent did not reduce bacterial densities in non-inoculated compost teas

c. GMO problems in Hawaii

News release
May 30, 2006

Contact:
Sarah Sullivan, Hawaii SEED (808) 331-1211
Melanie Bondera, Hawaii Farmer (808) 328-0296

Hawaii Farmer Testified in Thai Court Today Explaining the Problems of GMO Papaya Contamination and Market Loss
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Bangkok, Thailand/Hilo, Hawaii/– A farmer from Hawaii testified at the Bangkok Criminal Court as Thailand's historic court case on genetically modified organisms (GMOs) draws to a close today. Two Greenpeace activists are facing three criminal counts – and up to six years in jail if convicted – for exposing the role of the Department of Agriculture (DOA) in the illegal sale and distribution of GMO papaya. Melanie Bondera told the court about experiences of uncontrollable GMO papaya contamination, which has impacted farmers with loss of markets and sometimes livelihood.

A new report titled, "The Failure of GE Papaya in Hawaii" is available on the Greenpeace website:

http://www.greenpeace.org/international/press/reports/FailureGEPapayainHawaii

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Using USDA data, it shows the clearly a failing industry starting with the introduction of GMO Papaya. Production, prices, value, and number of farms are all heading down.

The optimism over Japan accepting GMO Papaya is over. The industry should ask the state to clean up the GMO Papaya contamination so they can begin growing for the high end specialty markets again: Japan and organics. The GMO Thai papaya and the GMO Hawaiian papaya were created in the same lab at Cornell University.

"I want the Thai farmers to understand that if they accept this GMO Papaya, they are accepting higher growing costs and lower prices. They will forgo lucrative export and organic markets. GMO contamination will be widespread in a short time frame. They may be liable for unwanted GMO genes on their land." - Melanie Bondera, Hawaii Farmer

“In 1996 when very few of us had the scientific information that verified our concerns, many farmers did embrace GMO Papaya as a solution to the perceived papaya virus problem. If we had been as courageous enough to expose the early GMO contamination like these SE Asia Greenpeace activists have, we would not be in the mess we are in today with papaya GMO proliferation and contamination.” - Jon Biloon, Hawaii Farmer who traveled with Melanie to Thailand to work with farmers to compile solutions in the form of traditional alternative ringspot virus management practices.