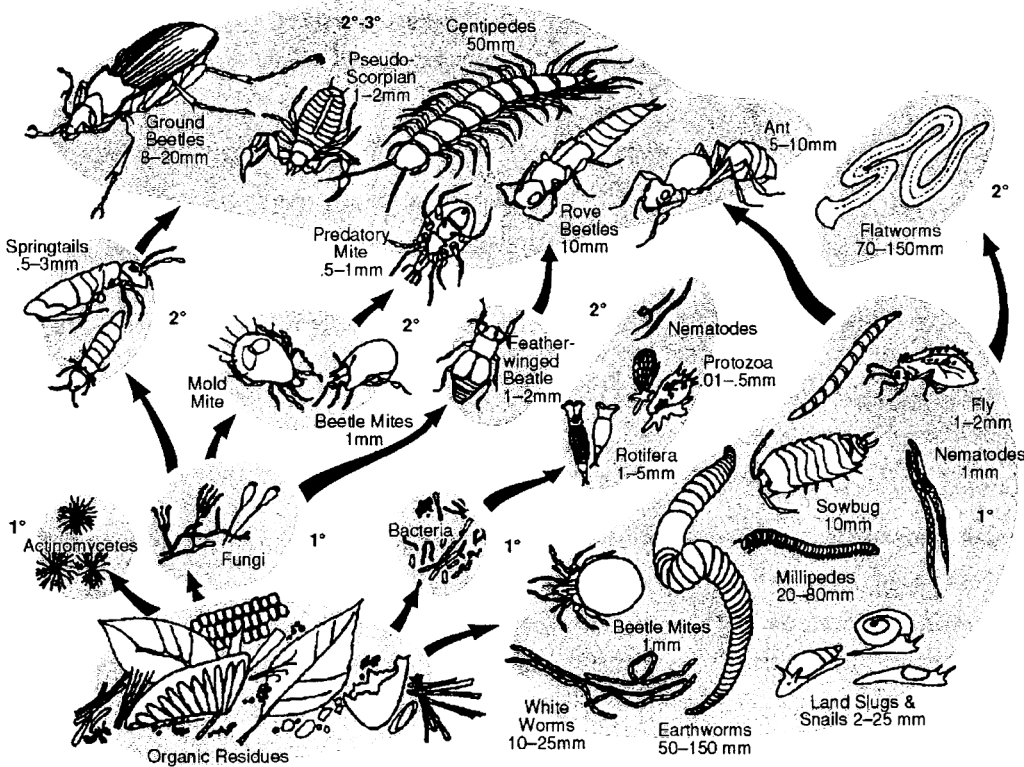


# THE ecological landscaper

The Newsletter of The Ecological Landscaping Association

Vol. 10, No. 3

Fall 2003



▲ Soil organisms and their role in decomposing residues

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Energy flows in direction of arrows.

Lengths of organisms given in millimeters (25mm=1")

1° = First-level consumers  
 2° = Second-level consumers  
 3° = Third-level consumers

Illustration modified from D.L. Dindall, 1978

*The following is excerpted from the first installment of the Ecological Landscaping Association's Guide to Healthy Landscapes, Chapter 4, Developing Healthy Soil.*

## The soil food web

WHAT IS THE SOIL FOOD WEB?

Life in the soil takes a multitude of forms, most of which are undetectable by the unaided eye. These forms range in size and kind from microscopic one-celled bacteria, algae, fungi, and protozoa, to larger nematodes, arthropods, earthworms, insects, plant roots, and small animals. These make up the community called the soil food web. The soil organisms decompose organic matter, recycle nutrients and energy, and aid in the formation of humus.

They convert nutrients into forms plants can use. In fact, all plants—grass, trees, shrubs, and agricultural crops—depend on the soil food web for their nutrition. In turn, plant roots exude sugars and simple proteins that feed bacteria and fungi.

WHY IS THE SOIL FOOD WEB IMPORTANT?

The soil food web performs an amazing number and variety of functions that contribute to soil quality, plant health, and the cycles that allow life of earth to exist. The great majority of soil organisms are beneficial or benign to plant life. The relatively few soil organisms that create problems in the landscape are

**Web** continued on next page

*"Grammar said when you come on something good, first thing to do is share it with whoever you can find; that way the good spread out where no telling it will go. Which is right."*  
—*Little Tree in The Education of Little Tree, by Forrest Carter*



## The Ecological Landscaper

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## EDITOR'S TWO CENTS

Welcome to our soils issue.

Understanding the basics of soils is fundamental to success in most any aspect of landscaping. With the publication of ELA's first volume in our Guide to Healthy Landscapes series, and with this season's soil-focused roundtable series, we thought we'd take this issue of the newsletter to further probe some of the many aspects of soil. What we currently know about soil is still expanding; there are exciting new frontiers, especially in the area of soil biology. While we can only scratch the surface here, we hope you'll find some new and useful information in these pages.—*Nick Novick*

### The soil food web

continued from page 1

less likely to dominate a system that is also home to their predators. Biodiversity in the soil increases its productivity because the interactions between different types of soil organisms greatly multiply the value of their activities as individuals. Some soil organisms produce sticky substances that aid in the formation and stability of soil aggregates, which are essential to good soil structure. The soil food web contributes to the formation of humus, a mixture of complex organic compounds that resists further decomposition and stores carbon in the soil for years. The more abundant, diverse forms of life we can nurture in the soil, the more fruitful, and self-sustaining our landscapes will be.

While much remains to be discovered about the chemical nature and structure of humus, its importance to soil fertility remains undisputed.

A healthy soil food web is essential for the long-term health of plants. It helps reduce or eliminate the need for fertilizers, pesticides, and irrigation. The food web stores and cycles nutrients necessary for plant health, and healthier plants are much less susceptible to insects and disease. The deeper and more developed root systems of well-nourished plants allow the roots to access moisture

deep in the soil, making the plants more resistant to drought. Also, the organic matter produced by soil organisms helps the soil retain moisture during dry periods.

In addition to supporting healthy plants, the soil food web provides broader benefits, such as helping to reduce pollution and purify water as it passes through the soil. Soil organisms decompose organic compounds in manure and pesticides, preventing them from polluting groundwater. Because soil organisms increase soil aggregation and porosity, they improve water infiltration rates, reducing runoff and erosion.

Although each organism in the soil food web plays a particular role, the sum of the whole exceeds the parts. We can maximize the overall health, sustainability, and productivity of the soil by encouraging conditions under which all soil organisms thrive.

By maintaining a thriving population of soil organisms, the other key elements of healthy soil—good tilth and fertility—will develop over time.—*"From the Ground Up: Site and Soil Preparation," Volume 1 of ELA's Guide to Healthy Landscapes, contains much more about soils, site preparation, and pesticides. To purchase a copy, contact ELA at (617) 436-5838.*

*"Man—despite his artistic pretensions, his sophistication, and his many accomplishments—owes his existence to a six-inch layer of topsoil and the fact that it rains."*

—author unknown

# Building soil systems

by Leslie Sauer

[ed. note: Although the techniques below are presented in the context of larger-scale, re-forestation restoration projects, many of the ideas and principles can be usefully applied to smaller scale projects on a variety of sites.]

The objective in restoration is to restore the nutrient cycling and energy flow of the historic soil system. First, work to protect existing soil resources and then explore techniques to increase the overall biomass of the soil and to foster the diversity of native soil flora and fauna.

## RECOMMENDATIONS

- **Identify, protect, and monitor areas of native soil that are relatively undisturbed.**

Most areas contain places where there is less-disturbed soil that can serve as rough models of local soil conditions. Studying the more natural soils at the same time remediation is being documented in a disturbed landscape will provide a standard for measuring the success of different approaches. The natural sites also serve as propagation sources for locally adapted microorganisms.

- **Reduce local sources of soil contamination, including added nitrogen.**

Evaluate local air pollution impacts, especially that of automobile exhaust. Removing roads wherever possible is of paramount importance, especially in more natural areas. What is convenient, even to the restorer, such as easy access, may be lethal to the most jeopardized species. Educate the

community about regional air pollution impacts. Many other management practices, such as pesticide use, also affect the realm of the soil. The most popular herbicide, for example, glyphosate, which is often used to control exotics, enhances conditions for bacteria but makes a poor substrate for the development of forest fungi.

- **Recognize that the user is inseparable from the solution.**

No treatment of soil will make it impervious to compactions, erosion, and other such disturbances. Confine all use in forests and other natural landscape fragments to designed trails to minimize degradation from feet, hooves, and wheels. Prohibition alone never is enough. Users will stay on trails to the extent that trails create the elements of satisfaction that keep them there and provide access to desired destinations. The gradual building of the litter layer and the absence of bare soil off the trail are hallmarks of success.

- **Minimize "working the soil."**

Despite a lot of knowledge about the damage done to living systems by constant perturbation, there is still a tendency to overwork soil. Beyond the familiar structural damage, such as that caused by working a heavy soil while it is wet or the erosion that accompanies any soil disturbance, the soil's level of microorganisms is also severely affected. For example, plowing and any mechanical disturbance to the soil will tend to foster the rapid growth of bacteria, which in turn generate exopolysaccharides, which cause the soil to slump in rain. Other substances make soil hard to wet, or hydrophobic. Cultivating soil is almost always deleterious to natural areas and constantly resets the time clock back to disturbance rather than allowing more complex, stable, and diverse soil systems to develop. We need to try new techniques, such as planting new seedlings in logs or stumps, to avoid soil disturbance while enhancing survival. Another

technique is vertical staking—wooden twigs driven vertically into the soil. Vertical staking serves to aerate and loosen the soil without damaging the roots of existing vegetation, and it avoids the need to completely turn the soil. In addition, it favors the development of fungi instead of bacteria because it incorporates wood into the soil.

- **Reevaluate the usefulness of current methods of stockpiling topsoil.**

Harris, Birch, and Short (1993) describe the progressive impacts of stockpiling, which is a frequently used method to retain a site's topsoil during construction. The first phase is an instantaneous kill of many of the living creatures in the soil that occurs with the initial removal and stockpiling. During the next few months there is a flush of bacterial growth as well as fungi but only in the upper soil on the outside of the pile, the new "topsoil." During the next half year or so the soil stratifies in layers. The primary distinctions reflect the amount of oxygen in the soil because of its depth in the pile or level of saturation with water. The developing layers consist of both near-surface aerobic and deeper anaerobic zones as well as a shifting transition area between them. When the soils are restriped and replaced elsewhere, there is another instantaneous kill of most living organisms, followed by a flush of bacterial growth.

- **Experiment with alternative strategies that better preserve native soil food webs when moving soil is necessary.**

Experiment with methods that keep soil horizons intact, such as moving blocks of soil. Practitioners are using and modifying equipment like old sod forks and front-end loaders as well as developing new equipment, such as John Monro's soil mat lifter, for this purpose.

- **Reevaluate the addition of organic matter to enrich disturbed soils.**

The continuous rain of airborne

*"An agricultural adage says the tiny animals that live below the surface of a healthy pasture weigh more than the cows grazing above it. In a catalogue selling composting equipment I read that two handfuls of healthy soil contain more living organisms than there are people on the earth. What these beings are and what they can be doing is difficult to even begin to comprehend, but it helps to realize that even though they are many, they work as one."— Carol Williams, Bringing a Garden to Life, 1998*

nutrients onto soils in the form of acid rain and nitrogen deposition from air pollution raises serious concerns about many traditional management practices with regard to the use of organic matter as a soil additive and our almost automatic addition of nutrients to disturbed soils. Researchers have shown repeatedly that fertilizer benefits weed species. Creating less-hospitable conditions in the conventional sense can actually enhance the performance of native species. Using elemental sulfur on test plots, Jean Marie Hartman at Rutgers University and her co-workers (1992) lowered the pH and reduced nutrient availability in a mixed meadow to foster native species over exotics. Many invasives, both native and exotic, are nitrophiles and do poorly under such conditions.

• **Reevaluate the use of mulch and soil amendments that are harvested from landscape communities other than those native to the site.**

Because to a great extent soil organisms are what they eat, bringing in organic material from other sources will not necessarily foster the growth of the same soil organisms as are in the desired native community. In an artificial soil such as made land or a highly contaminated soil, it's not the addition of organic matter but what kind we use that will impact the nature of plant succession on the

site. The more indigenous the existing landscape, the more important it is to minimize the use of dissimilar materials.

• **Reevaluate the conventional management of brush, dead wood, and leaves.**

Even where no additional fertilizer is added, it is important to modify our management of dead wood and vegetative debris to more closely mimic natural conditions. This sounds obvious, but how often is organic matter collected from a site, taken to another location to be composted, and then used at still another location when it is "well rotted"? Under more natural forest conditions, however, the major contribution of organic matter is not well-rotted compost but rather wood, twigs, and leaves that slowly break down in the place where they fall. Adding wood and raw, rather than composted, leaves more closely mimics the natural scenario.

• **Develop new way of observing and monitoring soil health.**

Unfortunately, standard soil tests are of limited assistance to the restorationist. For example, nitrogen levels are poorly evaluated when they are measured only as concentrations at any one time rather than as total flux over time. Conventional soil tests also ignore the biotic component altogether. A number of

researchers are working on new methods. One, Jim Harris, of the University of East London in England, who has been monitoring soil changes associated with restoration, has developed a set of techniques for measuring the size, composition, and activity of a soil's microbial community. These measurements can be used for comparison with a less-disturbed target community to assess the level of recovery of the soil system. He and other researchers have developed methods that, at least in England, have increased fungal populations with significant beneficial impacts to soil development and nutrient cycling. [ed note: *In the U.S. Soil Foodweb, Inc. provides biotic testing services.*]

• **Build populations of soil fungi.**

As noted earlier, heavy nitrogen enrichment from air pollution and increased compaction, erosion, and sedimentation have tended to favor the growth of bacteria over fungi and invertebrates. Thoughtful management promoting the development of fungi, through appropriate treatment of the soil, soil surface, and litter layer, can help restore indigenous food webs in forest soils.

—*Excerpted from The Once and Future Forest; A Guide to Forest Restoration Strategies, Leslie Hons Sauer, Island Press, 1998.*

*"I am open to the accusation that I see compost as an end in itself. But we do grow some real red damn tomatoes such as you can't get in the stores. And potatoes, beans, lettuce, collards, onions, squash, cauliflower, eggplant, carrots, peppers. Dirt in your own backyard, producing things you eat. Makes you wonder."— Roy Blount, Jr.*

.....

## A few useful books on soils

*The Nature and Properties of Soils*, 13th edition. Nyle C. Brady, Ray R. Weil. Prentice Hall. 2001. Still the standard text. It'll set you back a C-note, but nowhere else will you find this much comprehensive information in one place.

*Edaphos; Dynamics of a Natural Soil System*, 2nd edition. Paul D. Sachs. Edaphic Press. 1999. Engaging discussion of soil systems with an emphasis on what landscapers working with it need to know.

*Start with the Soil*, Grace Gershuny, Rodale Press, 1993. Organic-based approach more from a backyard gardener's perspective, but good, basic information.

*Agronomy Handbook*, A&L Agricultural Laboratories. Undated. From a soil testing lab; examples taken from

agriculture, but still, much useful information. A value at \$5.

*Soil Biology Primer*, Elaine R. Ingham, Andrew R. and Clive A. Edwards. Soil and Water Conservation Society. 2000.

*Soil Fertility and Fertilizers*, John L. Havlin, et. al., 6th edition. Pearson Higher Education.1999.

*Soils in Construction*, W.L. Schroeder, et. al. Prentice Hall. 2004. A reminder that people like engineers look at soils differently.

*Secrets of the Soil*, Peter Tompkins, Christopher Bird. Harper and Row, 1989. The frontier— biodynamics, nature spirits, and planetary forces. [*Hey, there was a time we didn't know the earth was round...*]

# Saving dirt

## Pristine soils losing out to agriculture and development

A new study by researchers at the University of California, Berkeley, may lead some people to rethink the phrase, “common as dirt.” A paper published in the journal *Ecosystems* finds that certain soils—like certain plants and animals—are becoming increasingly rare, with some at risk of becoming extinct.

In agricultural regions, such as in the Midwest, up to 80 percent of soils considered rare have been reduced to less than half of their original extent. That is, more than half of the soil has been converted to agriculture or urban uses.

“Over the past two centuries, we have reconfigured part of a continent to the point where today’s landscape is almost unrecognizable from its natural state,” said Ronald Amundson, professor of ecosystem sciences at UC Berkeley’s College of Natural Resources and lead author of the paper. “The Great Plains used to be characterized by tall grasses and prairies. They have now been replaced by crops and housing tracts.”

Like their plant and animal counterparts, soils have their own taxonomy. In the United States, there are 11 soil orders that are ultimately divided into 13,129 series. A soil series is comparable to a plant or animal species. Soils that comprise less than 25,000 acres are considered rare. What the report calls “rare-unique” soils exist only in one state and comprise less than 25,000 acres. The researchers considered a rare or rare-unique soil endangered if more than half of its area was tilled, excavated or otherwise disturbed.

The researchers found 508 endangered soil series in the United States. Six states have more than half of their rare soil series in an endangered state, with Indiana leading the group at 82 percent, followed closely by Iowa at 81 percent. Most of the soil danger hotspots reside in the

country’s agricultural heartland.

The researchers also found that 31 soils are effectively extinct because they have been nearly completely converted to agricultural or land use.

Why the concern over undisturbed, virgin soil? As the foundation of terrestrial ecosystems, soils form an intimate bond with the plants and animals they support, said Amundson. Rare plants have evolved to inhabit rare soils, such as those that are highly acidic or low in nutrients. An area of very ancient and nutrient-poor soils near the town of Ione, Calif., for example, provides the habitat for four species of endemic plants, including the Amador Rock Rose and the Irish Hill buckwheat. The plants are listed in the “Inventory of Rare and Endangered Vascular Plants of California,” and are not found naturally anywhere else in the country.

In essence, soil diversity is tied to biological diversity, said Amundson.

But tilling the soil changes its biogeochemistry by stimulating microorganisms to quickly metabolize the soil’s organic matter for food. The disturbance of the soil impacts the plants and animals that depend upon it, the researchers said.

“Soil that has been cultivated is like an animal that has been domesticated,” said Amundson. “It retains some resemblance to its wild or native ancestor, but there are enormous and profound changes in its characteristics.”

Research has also shown that the process of digging up soil produces carbon dioxide, which contributes to the greenhouse gases in the atmosphere. “Soil has more carbon in the form of organic matter than all the plants in the world,” said Amundson.

Cultivating the soil breaks up the organic matter, making it available as food for microorganisms such as bacteria and fungi. The process of breaking down the organic matter releases a significant amount of carbon dioxide in the atmosphere. Twenty percent of the carbon dioxide added to the atmosphere by human activity is related to land-use activities such as burning forests and

farming, said Amundson.

To conduct this study, Amundson and the other researchers combined data from digitized maps on soil types compiled by the U.S. National Resource Conservation Service with information from maps of agricultural and urban growth provided by the U.S. Geological Survey and the Environmental Protection Agency.

“Never before has soil in the United States been analyzed in such a way,” said Peng Gong, UC Berkeley professor of ecosystem sciences and co-author of the paper. “Our study is the country’s first quantitative analysis of soil diversity.”

Standing at the forefront of soil activism, the researchers argue for the preservation of rare and unique soils. “Soil might harbor microbial life that has benefits unknown to us today,” said Amundson.

The research of the late soil scientist Selman Waksman may be one of the best examples of the contributions possible from soil research. Observing that soils do not become contaminated when diseased bodies are buried in the ground, Waksman set out to isolate soil microorganisms that produced natural antibiotics. His research led to the discovery of streptomycin, the first antibiotic that was effective in treating tuberculosis, for which he was awarded the Nobel Prize in Physiology or Medicine in 1952.

“We certainly need land to farm and develop. I’m not advocating the discontinuation of agricultural expansion,” said Amundson. “But I think it’d be fair to set aside modest areas of these remaining natural landscapes for study and contemplation.”

“Some of these soils developed over thousands to millions of years,” added Gong. “We can destroy that in a few hours. It’s a preservation issue. We need to save it for future generations.”

—source: *University of California. The study was also co-authored by Yin Yang Guo, a former post-doctoral researcher at UC Berkeley’s Department of Environmental Science, Policy and Management. The Kearney Foundation of Soil Science funded the research.*

# Nitrogen in the soil

by Paul Sachs

For years land managers, from the farmer to the scientist, have disputed the benefits of organic versus inorganic nitrogen. There is no dispute that nitrogen is an essential element to plants. There is also no argument that plants can't tell the difference between organic [organic here meaning carbon-containing] and chemical nitrogen. The controversy is essentially about carbon.

Carbon and nitrogen react to each other a little like siblings. In plants, they function together to form amino acids, enzymes, and proteins. In the soil, they antagonize each other if they get out of balance. Too much carbon can immobilize all of the available nitrogen, and excess nitrogen can deplete soil carbon.

Carbon in the soil is in the form of organic matter and provides energy, either directly or indirectly, to all heterotrophs (living organisms that utilize carbon compounds directly from plants and other organisms). Soil carbon is produced by autotrophic organisms such as plants and algae that can fix carbon from the atmosphere by utilizing energy from the sun. The carbon compounds produced by autotrophs eventually become part of a vast warehouse of energy and protein known as soil organic matter. This warehouse functions beneficially in hundreds of different ways, but one essential purpose is to provide energy to soil life.

When fresh organic matter hits the soil, decay begins almost immediately (during the seasons that microorganisms are active). What determines the speed at which organic matter is decomposed (with adequate air and moisture) is the carbon:nitro-

gen ratio (C:N) of the organic matter. The C:N ratio is always [expressed] as x parts carbon to one part nitrogen. If the C:N ratio is high (i.e. high carbon) such as in straw or wood chips, decomposition occurs slowly. Also, the nitrogen is temporarily commandeered by bacteria from other sources for the formulation of proteins. If the original organic litter has a low C:N ratio, such as in grass clippings or animal wastes, decomposition will occur more rapidly and nitrogen is made available to other organisms. Each time the components of organic matter are digested by heterotrophs some energy is utilized, and carbon is oxidized into carbon dioxide that is released back into the atmosphere.

Carbon dioxide in the atmosphere is absorbed by plants and transformed into carbohydrates, proteins, and other organic compounds. These compounds are essentially storage batteries containing energy that was originally derived from the sun. If the plant is consumed by animals, some of the original energy is utilized and more carbon dioxide is released. Eventually the remaining energy is returned to the soil in the form of animal residues where decay organisms can utilize it. If plant residues are introduced directly to the soil without prior consumption, more energy (i.e. carbon) will be available to soil microbes.

Nitrogen serves the microbe as much as—or more than—it serves the plant. If there is only enough nitrogen in the soil for either the plant or the needs of bacteria, the bacteria will get it.

When inorganic nitrogen is applied to the soil, it stimulates populations of decay bacteria as well as plants. If used judiciously, it can have a synergistic effect with organic matter that increases overall nitrogen efficiency. Large populations of microbes can immobilize a significant portion of

the inorganic nitrogen by converting it to protein and stabilizing it into a non-leachable, non-volatile, organic nitrogen. When those organisms die, they are decomposed by other microbes and the nitrogen is slowly mineralized back into plant food. However, in order for soil microorganisms to accomplish this, they must have energy in the form of organic carbon.

A problem occurs when inorganic nitrogen is applied on a constant, excessive, and indiscriminate basis causing the organic carbon to be depleted beyond a healthy level for soil life. Not only is no organic carbon being added to the soil, but the decomposition of existing organic matter is being accelerated. If heavy applications continue, less nitrogen will be stabilized by the dwindling populations of bacteria and the efficiency of nitrogen use drops rapidly. Consequences of this scenario can also include: 1. Groundwater pollution, 2. Insect problems, 3. Greater potential for disease, 4. Soil compaction, 5. Thatch buildup (in turf), 6. Decreased drought tolerance, and 7. A colossal waste of money from both the nitrogen lost and the synthetic controls required to combat all these new problems.

A solution to this problem is to use natural organic nitrogen whenever possible or small amounts of inorganic nitrogen mixed with sufficient quantities of organic matter such as compost, green manures, or other sources of organic carbon. Natural organic nitrogen contains organic carbon which can replenish the soil's energy reserves. Carbon is an essential component in sustaining the cyclical nature of the soil system and can help to balance the effect inorganic nitrogen has on the soil. —from *Edaphos; Dynamics of a Natural Soil System*, by Paul Sachs; reprinted with permission.

“...for only rarely have we stood back and celebrated our soils as something beautiful, and perhaps mysterious. For what other natural body, worldwide in its distribution, has so many interesting secrets to reveal to the patient observer? The great events of long ago—volcanic eruptions, dust storms, floods and Ice Ages—have left their imprints as have the agricultural practices of earlier times. The soil can also tell us much about our present day environment. It is the home of millions of living things and a recycling factory of so much of the solar and geochemical energy that sustains life. In its form and properties it expresses the combined influences of local climate, shape of the land, and rocks and organisms that are broken down and incorporated into it.”— Les Molloy, *Soils in the New Zealand Landscape: The Living Mantle*, 1988

# Humus

by William Bryant Logan

The textbooks will tell you that humus is “deeply altered, black organic matter” lying in the top layer of the soil. But I only grasped what humus is about when by friend Pamela Morton showed me a picture of it.

Pamela spends parts of her summers in boreal Canada and has long been fascinated with the forest floor, where bits of blackening twigs, needles, bark, and the carcasses of small creatures decay. Humus is the organic part of the soil, the final residue of those matted leaves and cold bodies, intercalated, lapped, melding, oozing their distinction, dry on top but inside turning the shades of brown and black that we associate with rain-wet wood or a man’s study. The deeper you go, the blacker it gets, and the fewer of the bits survive intact. A few inches down, it is pure black acrid matter having a texture like a cross between cotton candy and damp sawdust. This is the stuff from which all life on the land is born.

Pamela wanted to make a picture that would show its power. She began to experiment, making homemade paper out of leaf litter and deriving vegetable dyes from the material of the forest floor. She got not only deep blacks, but a range of browns, oranges, yellows, and reds, with a range of blue from robin’s egg to midnight.

All this was hidden in the substances themselves. She made of it a small collage, no bigger than the cover of this book, showing matrices of shifting color patterns, with a deep black enclosing them all. I have never seen an image that more dramatically showed the huge energy contained in humus. It was a dynamo of pure hues shining out of the blackness.

It set me to wondering about humus.

Humus, human. The dictionaries say there is a connection between the words, but they don’t elaborate. What does the root *hum-* mean?

It must have to do with humble, or with humilis, humiliate. Those words come from roots meaning “of

the ground, lowly.” But humus does not refer to the ground itself. It refers to the end product of decaying litter and dead creatures. It also has to do with being humorous, that is, in the original meaning, “wet.” Both people and humus are wet inside.

Wetness is opportunity. It represents the openness of nature to what falls from heaven. As Meister Eckhart put it, the humble man is “he who is watered with grace.”

The process of growth, decay, feeding, digestion, excretion, attack, and repulsion all need wetness and generate heat. To understand them, you have to study the interconnections, not the essences. You have to put physiology first, not molecular chemistry.

For more than a century, chemists have been trying to answer the question, What is humus? And to this date, no one knows. Probably, no one will ever know. Even Hans Jenny, who knew more about the soil than anyone, remarked with a sigh, “Humus is imperfectly understood.” Every time you attempt to break it down into its basic components you get acids of a slightly different nature. All of them have similar properties, for example, a carbon-to-nitrogen ratio of 10:1, but none of them are chemically alike. In fact, as soil scientist Dr. James Rice puts it, “It is very possible that no two humus molecules are or have ever been alike.” Like snowflakes or people.

This makes it virtually impossible to apply to humus the quantitative experimental methods upon which modern agricultural chemistry is based. In fact, to establish that chemistry, the great nineteenth-century chemist Justus von Liebig had to try to discredit the then-prevailing theory that humus was the chief source of plant nutrients.

Liebig established that to grow a crop successfully, you need only supply the requisite mineral elements plus nitrogen in a sufficient quantity for the plant in question. Whether these substances are drawn from humus or not is immaterial, he argues. And he ridiculed the humus theory for its insistence that all plant carbon is ultimately derived from the carbon dioxide of the air.

Today we still do not know what humus is, but we now a little about what it does. Some of it releases nitrogen and trace elements for the reuse of plants; all of it nourishes the microbes, which decompose it and whose bodes add to its substance. The microbes, furthermore, secrete sticky substances that help bind humus and clay together into stable aggregates. We know, too, that, unique among biological substances, humus resists the processes of microbial decay, so that it can remain in the soil, sometimes for ten thousand years or more. And we know that this is a good thing, because it can hold mineral nutrients for a plant’s use twice as well as the best clays. We are also aware that stable humus helps a porous soil to hold more water, and a heavy soil to hold less water. (A pound of sand absorbs one fourth pound of water; a pound of humus absorbs two pounds.) And finally, we see that in this ensemble of properties, it is the habitat for a diverse microflora and microfauna that tend to suppress or eliminate disease organisms, in order to continue their robust lives.

Radical disorder is the key to the functions of humus. At the molecular level, it may indeed be the most disordered material on Earth. No two molecules of humus may be alike. Though no one has difficulty recognizing a humus molecule, it is quite likely unique, because it works upon fractal principles. Simple geometries define any given part of it, but the modes for the combining of these shapes produce a vast array of different manifestations at different scales. For humus, similarity is rampant, but identity nonexistent.

Neither humus nor humans are humble at all. We are audacious, like nature herself. We are wet, fecund, protean, dangerous. When we start to comprehend this in widening circles of the world, we now something worth knowing. We know that we must become responsible.

—Reprinted from *Dirt: The Ecstatic Skin of the Earth*, William Bryant Logan, Riverhead Books, The Berkeley Publishing Group, 200 Madison Ave, New York, NY

## One step forward, one step back

The entrenched, corporate, traditional segment of the green industry seems to be conflicted over the trend toward more environmentally responsible landscaping practices. On the one hand, there are increasing numbers of articles in various trade publications trumpeting the need to conserve water, extolling the virtues of wildflowers, introducing readers to "organics" (as they like to refer to natural fertilizers), and so forth. While the breadth and depth of the information offered often leaves something to be desired, it's still encouraging that editors are making space available for these topics.

On the other hand, these same publications are mostly still dominated by ads from equipment and pesticide manufacturers who are still the Big Players in the industry. These same companies have launched various public relations and lobbying efforts to protect their economic niche, and these efforts at times run directly counter to environmental values.

One recent initiative is the Evergreen Foundation <[www.evergreenfoundation.com](http://www.evergreenfoundation.com)>. Not really a foundation, this public relations consortium's mission professes to "raise the awareness of the environmental, economic and lifestyle benefits of landscapes and promote the significance of those who preserve and enhance green spaces at home, work and play."

Call me cynical, but this looks like yet another circle-the-wagons campaign to diffuse and deflect some of the energy and pressure being exerted by the environmental movement. From their Web site: "The EF will take a pro-active [sic] approach in dealing with the ever-alarming concerns regarding the future of the Green Industry related to the products and services used to create these well-maintained green spaces. One merely has to look at coordinated activist efforts in such areas as Canada, New York State, Minnesota and western states to curtail or even eliminate pesticides and fertilizers, severely restrict the use of water and lawns and other efforts detrimental to the Green Industry and consumers. Every facet of the business—pesticides, equipment, seed, nutrients, irrigation and more—is at stake here in the U.S. This is a pro-active [sic] effort designed to educate and inform consumers."

And from a trade publication editorial announcing the initiative: "Evergreen Foundation's primary donors are, and will continue to be, from the turf and lawn-chemical sectors of the industry. They have the most to gain. Their products are getting bad reputations and, to fight this, they need nationwide promotion." (Todd Davis in *Nursery Management & Production*, November 2003)

With over \$200,000 in seed money, and \$1-2 million yearly expenditures planned, it'll be no small operation. With a rollout planned for late 2004 or 2005, i'll be curious to see exactly what form this effort to "educate and inform" takes.

Another industry front group is the Orwellian-named RISE (Responsible Industry for a Sound Environment), which is affiliated with the American Crop Protection Association. They are "a resource and advocate on pesticides and fertilizers" and provide "current and accurate information on issues and research affecting the industry." (From their Web site) Their [pestfacts.org](http://pestfacts.org) Web site seems intent on bashing organic agriculture and extolling the many benefits of pesticides.

Among their environmentally responsible activities: According to the Environmental Working group, they opposed the Food Quality Protection act and worked to halt its implementation. They have also petitioned the Maine Board of Pesticides Control to repeal a new regulation which restricts the use of aquatic pesticides in ponds and lakes to individuals having a private or commercial applicator's license, contending that the rule "unreasonably" restricts the use of certain pesticides, like 2,4-D. <[www.mofga.org/news/20031030.html](http://www.mofga.org/news/20031030.html)>

They also apparently rallied their members to support a June 2001 John Stossel segment on ABC TV's "20/20." This was the program wherein Stossel slammed "extreme, anti-technology" environmentalists and claimed that organic foods were no safer than those sprayed with pesticides, citing tests that had never actually been done. He also managed to misuse school kids, using leading questions to imply they were being brainwashed with "environmental" education.

You won't see this on their Web site, but RISE's corporate representation includes such notable environmental leaders as Monsanto (which, among other travesties, polluted Anniston, Alabama, for decades with PCBs and covered up their actions), and the world's largest horticultural company, Scotts (which aggressively markets unnecessary weed-and-feed lawn products, was found to have polluted its hometown environment with pesticides, and has been criticized for irresponsibly mining rare peat bogs). Other corporate members include Dow AgroSciences, Uniroyal Chemical Company, McLaughlin Gormley King Co., and Whitmire Micro-Gen.

So, as with dozens of other industry cover groups which present themselves in one way, and act in quite another, buyer beware.—Nick Novick

## The Ecological Landscaper back issues available

*A sampling of the subject matter is given below for each issue. Cost: 1-4: \$2.50/issue; 5-15: \$2.00/issue; full set (16): \$25. Indicate volume and issue number(s) you would like and mail request to ELA, 60 Thoreau Street #252, Concord, MA 01742-2456, attn. TEL back issues. Make checks payable to "Ecological Landscaping Association." Thanks for your order.*

VOL. 10, NO. 2, LATE SUMMER/EARLY FALL 2003 Seed collection and storage; global warming repercussions; plants killing other plants; 8 pages

VOL. 10, NO. 1, SPRING 2003 Ruby-throated hummingbird; more on snow fences; the forgettable lawn; spring diseases; ELA roundtable and conference notes; green roof basics; 20 pages

VOL. 9, NO. 4, WINTER 2002-2003 Native plants for winter interest; ice melt materials; living snow fences; cell phone safety research; 16 pages

VOL. 9, NO. 3, FALL 2002 Water issue: water in the ecosystem; world water supply concerns; water-conserving landscape practices; book reviews (Handbook of Water Use and Conservation/Vickers, The American Woodland Garden/Darke); rain garden plants; ELA directors' bios, part 2; 20 pages

VOL. 9, NO. 2, SUMMER 2002 Grub control; more sewage sludge concerns; pressure treated wood; ELA directors' bios, part 1; 12 pages

VOL. 9, NO. 1, SPRING 2002 Lady beetles as a biological control; ELA healthy landscapes manual announcement; Winter Conference highlights; sewage sludge concerns; using native plants in landscape design; 16 pages

VOL. 8, NO. 2-3, WINTER 2001-2002 Recycling unneeded computers; seed masting explained; limitations of IPM; invasives news; 12 pages

VOL. 8, NO. 1, WINTER 2001 Changing climate/effects on gardening; remembering conservation icon David

Brower; land use practices to protect native plants; book reviews (Audubon Society Field Guide to New England/Alden, Cassie); Measuring, Marking & Layout: A Builder's Guide/Carroll; Roadside Use of Native Plants/Harper-Lore and Wilson); 16 pages

VOL. 7, NO. 2, SUMMER 2000 Elements of natural design; chlorpyrifos restricted; book reviews (The Landscaping Revolution/Wasowski; Energy-Efficient and Environmental Landscaping.../Moffat, Schiler, et. al.); 12 pages

VOL. 7, NO. 1, SPRING 2000 Soil as a living system; regenerating soils with ramial chipped wood; notes from ELA roundtable: lawn care tips; Winter Conference keynote highlights (Essential elements of ecology for the landscaper/Tom Wessels); the power of words—ecological thinking; 16 pages

VOL. 6, NO. 3, FALL 1999 Sustainable landscapes; mycorrhizal fungi; remembering William Nearing; (Mass.) Children's Protection Act; 16 pages

VOL. 6, NO. 2, SUMMER 1999 Organic nursery production; lawn-less housing development in Florida; weed-laws: outdated, but still in place; 16 pages

VOL. 6, NO. 1, WINTER 1999 Natives/exotics discussion, continued: Issues in biological control; native street trees; minority opinion: myth of exotics; resources on natives and invasives; book review (The Once and Future Forest/Sauer); coconut coir in potting mixes; underappreciated natives; 16 pages

VOL. 5, NO. 4, WINTER 1998-99 Exploring the natives/exotics issue: Raulston's exotic/native philosophy scale; the weeds of Halloween; decision-making/evaluation process for exotics; natural landscapes—a little too wild?; 16 pages

VOL. 5, NO. 2, SPRING 1998 Protecting vernal pools; design on your feet; New England ecological garden at Univ. of N.H.; nitrogen uptake by woody plants; book reviews (Natural Forms; A Practical Sourcebook for Landscape Design/Dubé; Dirt—The Ecstatic Skin of the Earth/Logan); national organic standards; 12 pages

VOL. 5, NO. 1, WINTER 1997-98 ELA roundtable notes: constantly creating your business; native shrubs for the winter garden; tools that work; university extension funding issues; 12 pages

## RATES AND INFORMATION

### Advertising in The Ecological Landscaper

Display ads will be priced according to predetermined sizes as below. Line advertisements will run in an "unclassifieds" listing.

#### RATES

full page . . . . . \$125/issue; \$425/4-issue run  
half page . . . . . \$85/issue; \$290/4-issue run  
quarter page . . . . . \$50/issue; \$170/4-issue run  
eighth page . . . . . \$25/issue; \$85/4-issue run  
[business card (2 x 3 1/2") at 1/2-page rate]  
unclassifieds . . . . . \$5/issue; \$17/4-issue run  
(additional words: \$1/10 words)

#### TERMS

Rates are for camera-ready copy.

*The Ecological Landscaper* is published quarterly, approximately at the change of season—December/January, March/April, June/July, and September/October. For an ad to appear in a specific issue, it must arrive by December 15, March 15, June 15, or September 15, for that respective issue. Ads received after those dates will appear in the next issue.

Payment in full must accompany the ad, or the first ad if more than one run is purchased. We do not bill. If an ad was taken out for a multiple-issue run and cancelled before the end of the run, we will issue a pro-rated refund, less a 15 percent service fee. Such cancellations must occur two weeks before the deadline dates

noted above to take effect for that issue. Any change(s) made to a multiple-run ad after the ad's first run voids the multiple-run discount.

Advertiser is responsible for final content of their ad. ELA is not responsible for typographic mistakes or errors of content. ELA's liability for errors in printed material is strictly and solely limited to rerunning the correct advertisement in the next issue(s) of the newsletter.

ELA reserves the right to refuse any ad if it feels the ad, product, company, or organization involved is not consistent with the spirit or intent of ELA's mission or purpose, or for any other reason.

ELA makes no claims, warranties, or other declarations as to the effectiveness, reliability, or consequences of—or the results from the use of—any products, services, or procedures described in any ad.

There are currently no tie-ins with advertising in any other ELA publication or venue. This may change in the future.

Send ads and payment to: ELA, attn. newsletter advertising, 60 Thoreau Street, #252, Concord, MA 01742. Checks should be payable to Ecological Landscaping Association.

For general questions about ad policy, contact ELA Newsletter Editor, 6 Meadowbrook Lane, Ashland, MA 01721; phone/fax (508) 881-1517; e-mail: <ELbacktalk@aol.com>.

*"Don't worry. If we ruin the soil,  
the next glacier will fix it."  
—bumper sticker*

*"We know more about the movement  
of celestial bodies than about the soil  
underfoot."—Leonardo da Vinci*

*"Good for what?"—Hans Jenny,  
dean of American soil scientists,  
when asked what made a soil good*

## It's here!

The first volume in ELA's Guide to Healthy Landscape series, "From the Ground Up: Site and Soil Preparation," is now available. We've excerpted a bit of the text in this issue of the newsletter, but there's much more vital and useful information in this 81-page booklet. Topics covered range from protecting site features and preventing soil compaction to dealing with invasives and managing soil fertility. Line illustrations and glossaries help explain key concepts and contacts are given for other resources and organizations. In total, this guide provides a good foundation for understanding the basics involved in dealing with soils and related issues, and will help readers find additional information from other sources.

Cost (including tax, postage, handling) for ELA members is \$26.25, \$31.50 for nonmembers; inquire about quantity discounts. Orders can be sent, with payment, to attn. Soil

## Conference/Eco-Marketplace on the horizon

Our 2004 educational program is as diverse and eclectic as ever, covering topics from remineralization and green roofs, to water use, managing insects, and native plants, all presented by expert and recognized speakers. See the workshop descriptions and convention details following on pages 11-16.

After last season's successful debut, the Eco-Marketplace will also be back, with hard-to-find services and products, and opportunities to talk directly with the people who provide these. The exhibit hall will also afford attendees an opportunity for socializing and networking.

Send your registration now, while it's fresh on your mind. Hope to see you there!

### 2004 Ecological Landscaping Association's Winter Conference and Eco-Marketplace—"Balancing the Systems" February 27-28, 2004 • Holiday Inn, Boxborough, Mass.

For general conference information, call ELA at (617) 436-5838;  
for registration information, call Lana Reed at (508) 877-7630 ext. 3303

Guide order, ELA, 60 Thoreau Street #252, Concord, MA 01742.

Credit to ELA's prodigious Publications Working Group for their good work on this project: Ann McGovern, Tara Mitchell, M.L. Altobelli, Cathy Rooney, Kathy Sargent-O'Neill, and Wendall Waters. Thanks also to those who took time to review at least part of the document: Jose Amador, Steve Bodine, David McDonald, Andrew

Schlenker, Sarah Little, William Cullina, Chris Mattrick, Frances Clark, Nick Novick, Don Bishop. More titles in the Guide to Healthy Landscapes series are planned, pending funding.

## Newsletter schedule

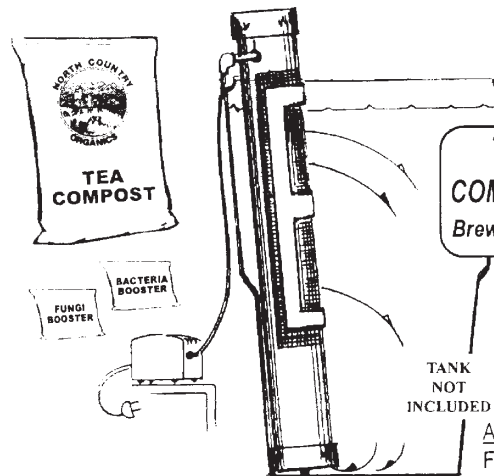
The next issue, winter 2003, is scheduled to mail late in January or early February 2004. The spring issue will appear in April.



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(by Dr. Elaine Ingham)

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# conference

## Friday Seminars

### Remineralizing the Landscape: Research on Stone Dusts

Recent experiments using finely ground rock dusts have yielded surprising results in stabilizing and regenerating soil systems. Remineralizing soil has been shown to enhance the activity of microorganisms, improve soil structure, resist drought and temperature extremes, and neutralize toxicity from acid rain and pesticides. Having spent years at the forefront of remineralization studies, Joanna Campe will share her extensive research and Owen Wormser will describe his observations as a landscaper on adding stone dusts to landscape settings.

### Managing Tree Systems through the First 15 Years

Trees often come with a one to

three year survival guarantee. In truth, it is the first 10-15 years that are critical to the long term health of transplanted trees. Rolf Briggs will provide detailed information about the critical steps needed to keep the new trees alive and healthy.

### The Fundamentals of Green Roof Systems

Green Roofs are an innovative storm water management solution that improves the energy performance of buildings, local air quality, and provides green space and wildlife habitat. Building a green roof is both a science and an art. David Beattie, director of the Pennsylvania State Center for Green Roof Research, will outline the steps necessary to install a viable green roof. He will provide a checklist of critical considerations and supplies needed to achieve success.

### Understanding the Major Diseases of New England Trees

Oak Blight, Maple Tar Spot, Ash Yellows: These are examples of

diseases that are affecting New England trees through the seasons. Dr. Cheryl Smith will detail the process of diagnosing some of the key tree diseases. She will look at both prevention and intervention in the long-term disease management of trees in the landscape.

### Planting the Green Roof: Right Plant, Right Place

Plants are the critical layer of a green roof! In order for the building and the environment to receive the benefits of a green roof, the plants must survive and grow in a hostile environment. As in any landscape situation, one must select the right plants for the growing conditions; in this case, plants that will thrive in a special growing media and tolerate heat, dryness and wind. Robert Herman, president of Uncommon Plants, will explain the demands on the plants, outline the various options for planting, describe an installation, and provide examples of plants for the main types of green roofs.

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## **Managing Insects and Mites in the Landscape**

This talk highlights the strategies of integrated pest management (IPM), cultural practices, least-toxic approaches, and the use of bio-rational products on many of the common and about-to-be-common pests found in landscapes of the Northeast. Bob Childs will examine techniques to identify, understand, encourage, and implement the agents of biocontrol. He also explores the concept of aesthetic injury levels and how they vary depending on client's needs and reality. Pest examples discussed will include: spider mites, lily leaf beetles, certain caterpillars, hemlock woolly adelgid, lacebugs, Japanese beetle, among others.

## **A Permaculture Approach to Harvesting and Using Water in the Eco-Landscape**

From DIY graywater systems, to innovative swaling and berming techniques, see how permaculture helps turn problems into solutions and wastes into resources. Drawing on personal experience, Vermont-based permaculture designer/teacher Claude William Genest helps move people from "something-must-be-done" to something they can do!

## **Using the Tools of Integrated Pest Management on the Job**

IPM is a comprehensive process that includes monitoring, identifying, and assessing plant and pest issues in the landscape. This process can be used to determine the least toxic approach to dealing with pests. Fran Reidy, an IPM specialist, will explain the techniques used in IPM and how to use those techniques as an integral tool for managing pests in an ecologically sound manner.

## **The Plugged-in Meadow**

Meadows are wonderful additions to both commercial and residential sites. They encourage habitat, and lessen and often eliminate the need for additional water, fertilizer, and pesticides. Stephanie Cohen and Dale Hendricks will explain the

preparation, planting, and care of the plugged-in meadow. This how-to session will present three meadows, demonstrating that by using plugs, the meadow will establish rapidly and will include the plants you wish to grow. A detailed plant list will be provided. This technique is "cutting edge" and exciting, and is just beginning to be widely used and appreciated.

## **Planning before Construction: Ecological Land Planning and Development**

In his presentation, Richard Pais offers new ways of thinking about and making choices for how a new building lot is developed. He involves engineers, architects, landscapers, ecologists and developers in planning for the management of the building envelope. Pais will analyze how utilities are installed, which plants are specified, and what equipment is used to ensure future benefits on the site. This process influences both the profitable and ecologically sound development of the site.

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## **Saturday Seminars**

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### **SmartStorm®—The Rainwater Recovery System**

Gallons and gallons of rainwater run off every roof, contributing to stormwater pollution and little or no groundwater recharge. Robert Zimmerman, executive director of the Charles River Watershed Association, will present the SmartStorm® recovery system, designed to capture this runoff. Water stored in the SmartStorm® system can be used to reduce the demand on clean drinking water for purposes such as irrigation and car washing. This system can be installed on new or existing properties.

### **Mineral and Micro-Nutrients in Natural Fertilizers**

What are the mineral ingredients in organic fertilizers, and what do they

do in the ornamental landscape? This presentation examines the role of micronutrient ingredients in feeding the soil for the plant's benefit. David Mattocks provides an in-depth explanation of how mineral amendments improve the plant's cellular structure, reproductive capabilities, and immunity against disease and insect pests.

## **Integrated Water Management for the Landscape**

Water is an essential landscape resource that is often wasted as runoff from the site. Drawing from his decades-long experience, Dave Del Porto will offer recommendations for using stormwater and wastewater on the site and restore the environmental balance between land and rainwater. He will demonstrate that holding the water on the site will re-establish the balance between the land and the water that falls on it.

## **Potentially Invasive Pests in the New England Landscape**

New pests are on the borders of New England. Many, such as emerald ash borer and sudden oak death, could have a severe impact on natural and maintained landscapes if introduced. Julie Callahan's "Most Wanted" list features some of the worst potential pests that threaten our region.

## **Adelgids in the Forest: Experiments with minerals**

Hemlock Woolly Adelgid is no longer a new pest, and it is threatening hemlock forests in southern New England. Richard Pais will share the results of his experiments using a combination of beetle release, micro-injections, and a foliar mineral solution on a forest-wide level.

## **Managing School Athletic Fields Ecologically**

The Massachusetts Act, "An Act Protecting Children and Their Families From Harmful Pesticides" chapter 85 of the Acts of 2000, outlines the need to reduce pesticide use on school grounds and playing fields.

Paul Sachs will demonstrate that it is possible to maintain quality playing fields without using restricted or banned pesticides. He will discuss fertilization, weed, disease and insect control, and cultural practices.

### **Rodent Damage in the Landscape**

Voles, mice, squirrels and chipmunks cause great damage in the managed landscape. Dr. Gwilyn Jones of Northeastern University will detail the identifying characteristics, life cycles, and seasonal patterns of these and other rodents. He will offer suggestions for preventing future damage to garden plants.

### **Managing Landscapes Near Vernal Pools**

Vernal pools are critical habitat to amphibians and turtles, are very sensitive to development and landscape disruption, and are often protected by law. Leo Kenney is an expert on the ecological systems that support the health of vernal pools. He will provide the information necessary to identify and understand these unique systems. This information is important for appropriate land management if a vernal pool is present in the landscape.

### **Natives for Every Season and Every Reason**

Stephanie Cohen will focus on all of the wonderful native plants and their cultivars that make each season spectacular. In meadows and in gardens, natives will attract butterflies, hummingbirds, birds, and all sorts of delightful creatures. Properly selected natives can reduce water, fertilizer, and pesticide use. From spring to fall, the landscape will dazzle you with color, provide fragrance, and turn the property into an ecological haven for nature's creatures.

### **Balancing the Systems**

The health of ecological systems is influenced by activities outside their borders, and efforts to balance human and environmental needs are a daunting task for land managers, legislators, and the concerned public.

Examining the links between the different scales of social and ecological systems, Don Falk relates pieces of the landscape to the larger environmental framework. From fertilization inputs and water management on a property to construction and development decisions, human activities incrementally influence local and global natural systems. Landscapes, local ecosystems, and natural communities in the bioregion interact on many layers, and understanding these dynamics can lead to informed, appropriate land-use decisions.

*"Most consistently excellent speakers in any conference I've attended."*

*"A wonderfully planned and executed conference!!! The speakers outstanding, the content meaty!"*

*"Great conference, thank you—I got lots of ideas and inspiration."*

*"Visit the horticulture bookstore in the Eco-Marketplace. This is a great place to discover popular and hard-to-find publications related to ecological landscaping and other topics for the green industry."*

## **Speakers**

### **David J. Beattie**

David Beattie is associate professor of Ornamental Horticulture and director of the Center for Green Roof Research at Pennsylvania State University. The mission of the Center for Green Roof Research is to demonstrate and promote green roof research, education, and technology transfer in the northeastern U.S.

### **Rolf Briggs**

Rolf Briggs is president of Tree Specialists in Holliston, Massachusetts, which he founded more than 20 years ago. A well-known speaker and public educator on maintaining and enhancing the beauty and value of plants and mature trees, Rolf is also consulted regularly by landscape architects, landscapers, nurseries, municipalities, and homeowners. Rolf holds aboricultural degrees from the Stockbridge School of Agriculture and the University of Massachusetts. He is certified as an arborist with the International Society of Arboriculture and the Massachusetts Arborist Association, and is a registered consulting arborist with the American Society of Consulting Arborists. He is a participating member of the Ecological Landscaping Association and the Massachusetts Audubon Society.

### **Julie Callahan**

Julie is an educator with the Massachusetts Introduced Pests Outreach Project, a collaborative effort between the Massachusetts Dept. of Agricultural Resources and the UMass Extension Agriculture and Landscape Program.

### **Joanna Campe**

Joanna Campe is the founder and president of Remineralize the Earth, For a Sustainable Agriculture, Forestry and Climate, incorporated to disseminate ideas and practice about regenerating soils, forests, health and stabilizing the climate through remineralization. She has been publisher and editor of *Remineralize the Earth* magazine, and has collected research on remineralization from all over the world for forestry and agriculture. Joanna has been a speaker at conferences and made radio and television appearances internationally. She has been consulted by large aggregate companies, the American Biofuels Association, and many other organizations along with farmers and gardeners and policymakers on local, state, national and international levels.

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### **Bob Childs**

Bob Childs is an instructor of entomology at the University of Massachusetts where he teaches three courses a year. He is also an extension specialist entomologist in the UMass Landscape, Nursery and Urban Forestry program. Bob has served the Green Industry in Massachusetts for more than 15 years and is a frequent invited speaker. His specialty area of entomology is centered on the identification and management of invertebrate pests of shade trees and woody ornamentals in the New England Landscape and Nursery.

### **Stephanie Cohen**

Stephanie Cohen is widely known throughout the horticultural world for her numerous garden presentations and unique lecture style, and has presented to a variety of garden clubs and conferences throughout the country. Stephanie publishes articles regularly in a variety of horticultural publications and is a contributing designer and author to horticultural books, including a new book on perennial designs (available in 2005!). Past work credentials include arboretum director and adjunct professor at Temple University, QVC "Gardening Diva" TV show host, mid-Atlantic director of the Perennial Plant Association, and education director at Waterloo Gardens. She is recognized by many prestigious professional organizations for her award-winning garden designs.

### **David Del Porto**

David Del Porto is the founder and principal designer for Sustainable Strategies, a consulting firm specializing in ecological planning, management and design for residential, commercial and community projects, with a specialty in integrated water conservation, stormwater and wastewater reuse. He is a founding director of The Center for Ecological Pollution Prevention, serves on the Joint Committee on Wastewater Technology of NSF International, with whom he co-authored performance standards for

wastewater treatment technologies. He also serves on the Massachusetts Water Resource Authority's Citizen Advisory Committee. David has been published in numerous conference and hearing proceedings, professional journals, environmental encyclopedias and government publications, and has written a definitive reference book on ecological sanitation and graywater reuse.

### **Donald A. Falk**

Donald Falk is science and policy director of the Society for Ecological Restoration (SER) and a respected voice in the conservation and restoration of biological diversity. From 1984 to 1993 he co-founded and directed the Center for Plant Conservation, the first national organization dedicated to protecting endangered native plant species. Don is presently studying forest ecology in the University of Arizona Department of Ecology and Evolutionary Biology and the Laboratory of Tree-Ring Research. He is frequently an invited speaker at conferences, symposia, and scientific meetings in the U.S. and internationally on strategies for conserving and restoring biological diversity.

### **Claude William Genest**

Claude Genest works for the earth in three ways: He is founder of the Green Mountain Permaculture Institute of Vermont <[www.greenmountainpermaculture.com](http://www.greenmountainpermaculture.com)>; he is Vice-President of the Green Party of Quebec; and he is using his background to develop a television series devoted to eco-solutions entitled "Regeneration: Sustainability and Beyond" <[www.regenerationshow.com](http://www.regenerationshow.com)>.

### **Dale Hendricks**

Dale Hendricks is co-founder of North Creek Nurseries, Inc., in Landenberg, Pennsylvania, which grows a wide range of perennials, wildflowers, grasses and fast-growing shrubs, with particular emphasis on eastern regional native plants and garden varieties of natives. An experienced grower, Dale has taught perennial propagation at Longwood

Gardens and lectures widely on native plants for sustainable landscapes and plant propagation. In 1999, Dale was presented with the American Horticultural Societies Individual Commercial Award for introducing many new varieties into the wholesale trade and refining the plug system for growing perennials. In 2000, Dale received the Perennial Plant Association's Young Professional award. He is currently co-chair of the Sustainable Business network of Greater Philadelphia.

### **Robert Herman**

Robert Herman has over 25 years of experience as a professional horticulturist and is an independent consultant on green roofs. Mr. Herman has taught at Radcliffe College and the University of Massachusetts, and is currently an adjunct professor at Anhalt University of Applied Sciences in Bernburg, Germany. A perennial plant expert, Robert has lectured in Germany, Switzerland and at numerous perennial plant conferences and botanical gardens in the United States.

### **Dr. Gwilyn S. Jones**

Gwilyn Jones is a field biologist teaching at Northeastern University in Boston.

### **Leo Kenney**

Leo Kenney is a researcher at the Vernal Pool Association, an environmental project of Reading Memorial High School, Reading, Massachusetts. He is the author of two books and has written and presented educational material on vernal pools. He teaches individuals and classes how to locate, study, and certify vernal pools in Massachusetts.

### **David E. Mattocks**

David Mattocks is president of the Fertrell Company, which is the oldest existing organic and natural fertilizer manufacturer in the United States. He consults for many horticulturists and turf specialists, as well as commercial crop producers. David has conducted many educational seminars across the U.S. and Canada for both organic and commercial growers.

---

**Richard Pais**

Richard Pais is a certified wildlife biologist, president of Ecoscientific Solutions, LLC, a teacher, and author of over 50 scientific and popular articles on topics ranging from black bear reproduction to ecological designs for senior living centers. His projects include 13 certified wildlife sanctuaries for clients that include Pulte Homes, the Rouse Company, the National Naval Medical Center, and Kendal at Hanover.

**Frances E. Reidy**

Francis Reidy has been in the field since 1985. She worked for landscape and arboricultural firms for four years in all phases of tree care, and then in 1990, she became an IPM technician for those firms. She started Francis Reidy Tree & Shrub Diagnostics in 1994, an IPM/PHC (plant health care) company that provides consultation and diagnosis to a diverse client base: parks, municipalities, schools, homeowners, etc. She enjoys assisting her co-horts with diagnosis, and she brings a great deal of expertise to this conference.

**Paul Sachs**

Paul Sachs is founder and owner of North Country Organics, a Bradford, Vermont-based manufacturer and supplier of natural land-care products. He is founder of Ecological Turf Consultants, a firm that specializes in solutions for clients who want to reduce or eliminate the use of chemicals on golf courses, sports fields, or other expanses of turf. Paul has studied natural soil system dynamics for over 18 years and is considered one of the foremost authorities in the country on organic land care. He has written five books, hundreds of articles for trade journals, and speaks regularly at association conferences for professionals involved in both agriculture and horticulture. He has served as a member of the Technical Advisory Panel for the National Organics Standards Board of the USDA.

**Cheryl Smith**

Cheryl Smith has 21 years experience in the diagnosis of plant health problems. Since 1993, she has been a Plant Health Specialist at the University of New Hampshire Cooperative Extension. She is the director of the UNH Plant Diagnostic Lab, and she co-teaches a course on IPM.

**Owen Wormser**

Owen Wormser is the owner of Treefrog Landscapes, an ecologically focused landscape design/build company. Owen is presently working on a campus design for an international peace center located in western Massachusetts. This multimillion dollar project (presently under construction) exemplifies a number of elements central to the values and skill behind Treefrog's work, elements such as incorporating state-of-the-art wastewater technology, low-maintenance perennial gardens, extensive food production, the integration of architecture and the landscape, ecological restoration, education programs, sacred spaces, and—the glue that binds all these elements together—aesthetic beauty.

**Robert L. Zimmerman, Jr.**

Robert L. Zimmerman, Jr. is executive director of the Charles River Watershed Association. Since joining CRWA in 1991, Zimmerman has raised public and regulatory awareness of issues on the Charles River, developing pilot projects throughout the watershed that address issues such as stormwater pollution, water quality, low flows, wastewater treatment, habitat protection and restoration, community zoning, suburban sprawl and sustainable development. He represents the environmental community on several statewide task forces and organizations including the Massachusetts Department of Environmental Protection's Stormwater and Title 5 Committees and the Massachusetts Water Resources Commission, and on numerous boards, including EarthShare of New England, EarthShare America, and the MIT Seagrant State and Industry Advisory Board.

## CONFERENCE SCHEDULE—

**FRIDAY**

- 8:30 Registration and continental breakfast in exhibit hall  
9:30-12:30 Morning seminars  
12:30 Lunch and networking  
2-5 Afternoon seminars  
3:30 Featured speaker: Richard Pais, EcoScientific Solutions, LLC  
5:30 Reception in exhibit hall

**SATURDAY**

- 8:00 Registration and continental breakfast in exhibit hall  
8:30-12:30 Seminars  
9-11:30 Demonstrations and small lectures in exhibit hall  
1-3 Lunch and featured speaker: Don Falk, UofAZ  
3:30 End

REGISTRATION—Early registration deadline (Feb. 20) prices : Both days: \$185; Friday only: \$125; Saturday only: \$95. ELA member discount prices: Both days: \$170; Friday only: \$110; Saturday only: \$80. Late registration: \$215, \$145, \$110. Saturday Eco-Marketplace only: \$10

CREDITS—Pesticide, MCH, MCLP, ISA and MCA credits have been requested.

DISCOUNT POLICY—Discounts are available to businesses or organizations sending two or more people. The first registrant pays full price; additional registrants from the same organization pay: both days—\$165; Friday only—\$95; Saturday only—\$75. All registrations must be received together. Discounts apply to early registration only. For student discounts, please call (617)436-5838 for more information.

**CANCELLATION POLICY—**

To receive a refund, your request must be received prior to Feb. 20, 2004. A \$50 handling fee will be deducted. No refunds will be made after that date unless the conference is cancelled. For recorded cancellation information, call (617)436-5838.

MEAL INFO—Registration includes a continental breakfast for both days, a Friday buffet lunch in the Atrium, and a Saturday lunch in the Ballroom. We are unable to accommodate special dietary needs.

HOTEL INFORMATION—Rooms at the Boxborough Holiday Inn are available to participants for \$99 (single/double). Reservations will be taken no later than February 13, 2004. Call (978) 263-8701 for information or to reserve. Mention the ELA conference.

CONFERENCE PROCEEDINGS—Participants will receive a copy of the Proceedings booklet with speaker handouts. Additional copies of the booklet are available for \$25 (includes postage and handling) and will be mailed after the conference.

For booklet orders alone, send check payable to the Ecological Landscaping Association, 60 Thoreau St., #252, Concord, MA 01742-2456.

ELA'S GUIDE TO HEALTHY LANDSCAPES, Chapter One: Volume I, "From the Ground Up: Site and Soil Preparation" is now available. This chapter is an intensive

look at on-site soil management for long-term health of the landscape. Written by landscapers and other professionals. 82 pages of practical and in-depth information. Available for purchase: \$31.50 non-members, \$26.25 ELA members (includes tax, postage and handling).

MANUAL CHAPTER ORDER—\$31.50 non-members, \$26.25 ELA members

EXTRA PROCEEDINGS BOOKLET ORDER—\$25 per copy

CONFERENCE CO-SPONSORS—

**Ecological Landscaping Association**

*ELA is a facilitating organization. Views expressed or products offered by participating companies or individuals are not necessarily endorsed by ELA or its co-sponsors.*

**New England Wild Flower Society**

*Promoting conservation of North American native plants through education, research, horticulture, habitat preservation, and advocacy.*

**New England Ecological Garden of the University of New Hampshire**

*In 1997, the UNH campus landscape*

*became a member of the American Association of Botanical Gardens and Arboreta under the title of the New England Ecological Garden of the University of New Hampshire. Within the framework of the land-grant mission of education, research, and outreach, the Garden's overarching goals are to enhance ecological health, foster human well-being and strengthen sense of place, and to accomplish this within tight budgetary constraints. Rather than a collection of plant species, the vision for the Garden is of a collection of sustainable, systems-based, bioregional plant communities.*

Use of proprietary product or manufacturer names is for informational purposes and is not intended to constitute or imply any endorsement or warranty by ELA. We strive to present accurate and reliable information, however, ELA assumes no responsibility for any claims made or for results obtained from any procedures described in the articles we print. Unless described as such, opinions expressed in the newsletter do not necessarily represent those of ELA's directors, staff, or members.

**Mired in thought...**

*"The nation that destroys its soil destroys itself."*

— Franklin D. Roosevelt, February 26, 1937, in letter to state governors, urging uniform soil conservation laws

*"It is easy for me to link salvation and compost. Compost has an almost mystical quality. It is made up of anything that is or was alive and is biodegradable—straw, spoiled hay, grass clippings, animal remains, manure, garbage, flesh, table scraps, etc. A compost heap represents immortality. Nothing dies as such. All living things complete their cycle and return to the pool of life. There is neither beginning nor end, only the inexorable turning of the great wheel: growth, decay, death, and rebirth."—William Longgood*

*"The love of dirt is among the earliest of passions, as it is the latest. Mud-pies gratify one of our first and best instincts. So long as we are dirty, we are pure. Fondness for the ground comes back to a man after he has run the round of pleasure and business, eaten dirt, and sown wild oats, drifted about the world, and taken the wind of all its moods. The love of digging in the ground (or of looking on while he pays another to dig) is as sure to come back to him, as he is sure, at last, to go under the ground, and stay there."—Charles Dudley Warner, My Summer in a Garden, 1970*

*"All clays are pretty well unworkable with ordinary implements. For the melted toffee consistency of winter, you might prefer a large soup-ladle; for light working over summer, a hammer and cold chisel. Is the soil always too wet or too dry? No, there's a period—usually a day or two in May—when you can actually use a fork."—John Lucas, Back to the Garden Wall*

*"The old people came literally to love the soil and they sat or reclined on the ground with a feeling of being close to a mothering power. It was good for the skin to touch the earth and the old people liked to remove their moccasins and walk with bare feet on the sacred earth. Their tipis were built upon the earth and their altars were made of earth. The birds that flew into the air came to rest upon the earth and it was the final abiding place of all things that live and grew. The soil was soothing, strengthening, cleansing, and healing."—Chief Luther Standing Bear*

# gleanings

## Chemlawn wins a spot on Dirty Dozen list

By Barbara Taormina

A local [Andover, Mass.] company this week received some public recognition that no business ever wants.

Trugreen Chemlawn on Flagship Drive, was named to the state's Dirty Dozen list, an annual inventory of the Commonwealth's top 12 polluters.

Dirty Dozen "award" recipients are chosen by an alliance of local and state green organizations to help spotlight businesses they believe pose significant environmental and health risks. The group includes the Environmental League of Massachusetts, MASSPIRG, the Boston University School of Public Health and the Massachusetts Breast Cancer Coalition.

Trugreen Chemlawn, a national lawn and landscape care company, was chosen for its use of toxic chemicals on lawns and public sports fields. Health activists say those chemicals expose children to a variety of poisons.

"Trugreen Chemlawn is turning our yards and playing fields into toxic dump sites," said Kathleen Klett of Healthlink, a Marblehead-based public health group. "These pesticides are dangerous for our kids and our pets ... that's why when you go to dispose of pesticides it's considered hazardous waste."

Trugreen Chemlawn in North Andover would not comment on the award and directed all questions to their corporate headquarters in Memphis, Tenn.

A call to a company spokeswoman in Memphis was not returned.

Health groups point to studies linking lawn pesticides to an increased risk of non-Hodgkin's lymphoma, brain cancer and leukemia in children. They oppose Trugreen Chemlawn's widespread marketing of pesticides to homeowners, schools and cities and towns.

This year's Dirty Dozen award emphasizes Trugreen Chemlawn's marketing through their partnership with the U.S. Youth Soccer organization. In exchange for cash donations, some of which are earmarked for field care, U.S. Youth Soccer has provided the company with its mailing list of more than 3 million members.

Trugreen Chemlawn promotes its products and services through a direct-mail campaign to those members, a strategy Healthlink's Martha Dansdill calls unscrupulous.

"That's all the families of all the kids in all the towns that play soccer," said Dansdill who said it is simply wrong for Chemlawn to target households with children.

Although Trugreen Chemlawn says its pesticide treatments are safe 24 hours after they are applied to a lawn, Dansdill says the harmful chemicals are present for weeks, months and even years.

And Dansdill points out that none of those pesticides remain put on lawns.

They are tracked inside homes and buildings where they can have a ongoing harmful effect on people, particularly children.

Other environmental groups agreed that Trugreen Chemlawn's association with a youth sports organization was a trigger for their award.

"It's time for Trugreen Chemlawn to come clean and educate consumers about the dangers of pesticide use on lawns and playing fields," said John Rasku, field director of Boston's Toxics Action Center.

"Instead, Chemlawn is soliciting children in the U.S. Soccer programs to pressure their parents to use toxic pesticides in return for donations to their soccer team. This marketing strategy is disgusting and wrong since toxic pesticides have the biggest impact on the developing bodies of children."

While it is up to the individual homeowner to decide whether to use pesticides on a residential lawn, local school and town officials say chemicals are not part of their maintenance programs.

Public Works Director Bill Hmurciak said nothing like Trugreen Chemlawn products are used on town fields or parks.

"We don't use any fertilizer to speak of and definitely no pesticides," he said. "It's not in the budget." Hmurciak said the town's fields and parks are green and healthy on their own.

Paul Szymanski, operations manager for North Andover's schools, said no pesticides are used on school playing fields. According to Szymanski, there are state regulations on chemicals treatments for school athletic fields, and North Andover is in full compliance with those regs.

Health groups say Trugreen Chemlawn's Dirty Dozen award is part of an overall educational campaign to make consumers aware of the risks of lawn pesticides. The groups offer information about alternative methods of lawn care which focus on soil management and different species of grass rather than chemical pesticides.

—from the North Andover (Mass.) Citizen, Thursday, December 4, 2003, reprinted with permission; thanks to Sarah Little, Pesticide Awareness Coordinator, Town of Wellesley for bringing this to our attention.

## Economic benefits of natural landscaping

A San José State (Calif.) study compared the costs and benefits of landscaping with native and non-native plants at the San José Mercury News site in San José, Calif. Middlebrook Gardens designed a native landscape to replace the current non-native landscape. Annual expenses from water, chemical applications, plant, labor, energy and irrigation were examined for both landscapes over a projected 20-year period for both landscapes. From this projection, the net present value of all costs were determined. Demolition costs of the current nonnative landscape and implementation of the native are incorporated into the cost-benefit analysis. Benefits to wildlife and the

environment from native landscapes are also addressed. The implementation and maintenance of the native landscape in the first three years was more costly than the next three years of maintaining the current nonnative landscape. However, by the fourth year, costs associated with the native landscape had been significantly reduced as the landscape became more self-sustaining. Regardless of the significantly higher costs in the first three years, including implementation and demolition, the *San José Mercury News* would save a tremendous amount of money over the net 29 years by implementing a native landscape.

—from *San José State Department of Environmental Studies Web site*

### **Innovative program supports water-saving landscapes**

In a program which could act as a model for restoration in other parts of the country, The Metropolitan Water District (MWD) of Southern California has awarded a total of \$500,000 to 11 cities in an effort “to make Southern California look like Southern California again.”

As part of a \$2.4 million effort to promote regional water conservation, the MWD’s City Makeover program gave five cities \$75,000 and six cities and water districts \$20,000 for landscaping programs which focus on re-establishing native and drought-tolerant plants in publicly visible sites. Chosen properties include Francisco Estudillo Heritage Part, San Gabriel River and Angels National Forest Gateway Interpretive Center, and Briercrest Park.

—from *MWD Web site* <[www.mwd.dst.ca.us/mwdh2o/pages/city/city01.html](http://www.mwd.dst.ca.us/mwdh2o/pages/city/city01.html)>

### **Green industry growth**

Despite a halting overall economy, green industry businesses are maintaining at least modest rates of economic growth. Mirroring trends in most of the U.S., a New England study conducted by The New England Nursery Association and with funding from New England Grows, the Horticultural Research Institute, and regional state associations shows a thriving industry. Using information gathered late in 2002, there was good news from both service providers and manufacturers.

As a whole, green industry income rose about 10 percent over the past three years; gross income is at around \$4 billion. \$2.24 billion is paid in wages to about 131,000 employees. And another 36,000 positions—part time, full time, and seasonal—could be filled.

—from *New England Green Industry Survey Web site* <[www.pss.uvm.edu/ppp/nesurvey/index.htm](http://www.pss.uvm.edu/ppp/nesurvey/index.htm)>

### **Just feed me to the viburnums**

In Sweden, biologist Susanne Wiigh-masak has developed a “green” method of burial that quickly turns the human body into soil-enriching organic matter within weeks, compared to the 50-60 years when buried in a coffin. In the new green method, the body is immersed in a bath of liquid nitrogen, producing up to 65 pounds of pure organic matter, which is put into a thin and easily degradable coffin which is buried near the surface of the ground. This method, the biologist says, will enrich the soil the same way as autumn leaves.”

—from *Funeral Monitor*, June 2001, quoted in *Organica News*, Winter 2003; brought to our attention by *Greenleaf Composting*

## **resources**

### **Lower-impact, broadleaf herbicide**

Relatively new to the landscaping and horticulture market, QuickSilver is a selective, broadleaf, post-emergent herbicide which has a history of use in agriculture. It has an apparently less troublesome environmental profile than a number of herbicides traditionally used for broadleaf weed control in the landscape.

The active ingredient is carfentrazone-ethyl which disrupts a photosynthetic enzyme, ultimately leading to cell wall damage and plant death. The amount of product needed is very small, diluted for application at around one milliliter/gallon of water. An eye-dropper is provided with the product to measure out the viscous, white liquid (think heavy cream). It is rainfast within one to two hours after application.

It is listed for a number of weeds, including dandelion, ground ivy, henbit, pigweed, spurge, purslane, thistle, and bedstraw.

The manufacturer claims the following product characteristics: Low toxicity by acute oral, dermal, and inhalation; minimally irritating to eyes; non-irritating to skin; not mutagenic; not carcinogenic; and not a developmental or reproductive toxin. It is not hazardous to birds or earthworms, and is unlikely to harm honeybees, predators, and parasites; but is moderately toxic to fish. It does not persist in air, water, or soil, and does not bioaccumulate. A soil half life of less than .1 day is claimed. It is classified by the EPA as a reduced-risk herbicide.

The New York State Department of Environmental Conservation <[www.dec.state.ny.us](http://www.dec.state.ny.us)>, in its review of a manufacturer’s application for a label change to allow landscape use of carfentrazone, confirms most of the manufacturer’s claims. They do note that some of the product’s degradation products are considerably more persistent than the active ingredient, but did approve the application.

*“You will die but the carbon will not; its career does not end with you... it will return to the soil, and there a plant may take it up again in time, sending it once more on a cycle of plant and animal life.”*

— Jacob Bronowski, “Biography of an Atom—And the Universe,” *New York Times*, October 13, 1968

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## **Glyphosate-tolerant fescue**

[I list this hesitantly in this section, recognizing the potential for misuse. But, it would appear that this grass seed could provide a useful option for ecologically minded landscapers in certain situations.]

Aurora Gold hard fescue was developed through a natural breeding and selection process conducted by Pure Seed Testing, an affiliate of Turf-Seed, Inc., which is the company now producing the seed.

Rutgers University studies showed Aurora Gold tolerated up to 16 ounces/acre of glyphosate with less than 8% damage, even with repeated applications. Most weeds can be controlled with considerably less herbicide, on the order of 4 ounces/acre.

On soils with a significant weed seed bank, glyphosate spraying could

keep competing weeds in check until a turf could be established.

Conceivably, this would require less herbicide than would attempts to control all weeds before seeding, since the grass itself would provide weed control as it grew to mowing height. Once established, and especially at higher mowing heights, weed growth should be minimal.

The grass reportedly performs well in drought and shade situations; is resistant to dollar spot, leaf spot, and red thread; and also grows slowly enough that mowing may only be necessary a few times a year, depending on the needs and uses of the site. Fertility requirements are also low, getting by on as little as 1-2 pounds of nitrogen/1,000 square feet in low-maintenance situations.

*Information: Turf-Seed, Inc. P.O. Box 250 Hubbard, Or 97032; (800)247-6910;*

*<www.turf-seed.com>. Manufacturer's Web site: <www.fmc-apgspec.com/qstech.htm>. EPA fact sheet: <www.216.239.39.104/search?q=cache:o1Drh00Om-MJ:www.epa.gov/oppr001/factsheets/carfentrazone.pdf+carfentrazone+herbicide&hl=en&ie=UTF-8>*

## **Green Landscaping in the upper Midwest**

The Great Lakes area EPA has a Web site which posts a considerable amount of information about the benefits of natural landscaping utilizing native plants and sustainable methods. The site discusses wildlife enhancement, water conservation, and other issues, and offers downloadable slide shows, fact sheets, brochures, notes from symposia, and more. Check it out at [www.epa.gov/greenacres/#Benefits](http://www.epa.gov/greenacres/#Benefits)

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## events

January 6, 2004

### **Japanese Stiltgrass Workshop,**

a part of the Northeastern Weed Society annual meeting, Cambridge Center Marriott, Cambridge, Mass. Workshop will include information on the biology, ecology and control of *Microstegium vimineum*, an aggressive species widely distributed in the mid-Atlantic states, and heading for New England. Registration \$35 before 12/9/03, \$55 after. Program and registration available at [www.personal.psu.edu/aeg2/shared/MCGVM\\_workshop.pdf](http://www.personal.psu.edu/aeg2/shared/MCGVM_workshop.pdf).

January 23, 2004

### **Reading and Understanding Soil Tests,**

ELA roundtable series, 1:30-4 p.m., Connecticut Agricultural Experiment Station, 151 Cook Hill Road, Windsor, Conn. Tom Rathier, soil scientist with the Conn. Ag. Expt. Station, will explore the science of soil fertility, discuss how soil tests are done and how to interpret test reports and how amendments affect soil biology and chemistry. \$25 for ELA members, \$35 for non-members. Space is limited; pre-register by phone (leave message indicating

intent to attend with name, address, phone, number of guests) at (617) 436-5838; payment due at door, or pre-mail check to ELA, 60 Thoreau St #252, Concord, MA 01742.

February 11, 2004

### **Midwest Ecological Landscaping Association mini-conference,**

Titon College, River Grove, Ill. Check [www.melaweb.org](http://www.melaweb.org) for details.

January 21, 2004

### **Current Trends in Insect, Disease, and Weed Management in Woody Ornamentals,**

Amherst, Mass. 9:00 a.m.-3 p.m. Taught by UMass Extension educators, this session, part of a series on the realities of organic lawn and landscape care, will explore some of the common and problematic insects, diseases, and weeds encountered in the landscape, along with cultural practices, biological control, and an assortment of applied materials used to manage these problems. Registration \$90. UMass Extension, (413)545-0895; [www.umassgreen.info.org](http://www.umassgreen.info.org).

February 4, 2004

(continuing on Feb. 11, 25, March 3)

### **Improving Your Soil Quality,**

Arnold Arboretum, Jamaica Plain, Mass., co-sponsored by N.E. Wild Flower Soc. and Arnold Arb. Tom Akin will discuss many aspects of basic soil science as it relates to gardening. \$90 NEWFS, Arnold members, \$108 nonmembers. Registration, more info on many other NEWFS classes: (508)877-7630; [www.newfs.org](http://www.newfs.org).

February 4, 2004

(continues on Feb. 11, 18, 25, March 3, 17) **Introduction to Ecology,** Institute of Ecosystems Studies, Millbrook, N.Y., taught by Alan R. Berkowitz and others. Modern ecological theory and practice, especially as it relates to gardening and landscape design. \$252 IES members, \$280 nonmembers. Registration, more info on other IES classes: (845)677-9643; [www.ecostudies.org/education/continuing.html](http://www.ecostudies.org/education/continuing.html).

February 23-26, 2004

**Fifth Annual National Invasive Weeds Awareness Week,** Washington, D.C., sponsored by the Invasive Weeds Awareness Coalition and others. The week's events focus on the role the federal government must

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play to help address the invasive plant problem, and will include opportunities to visit with officials from the executive and legislative branches to discuss issues. Early registration deadline 1/31/04. Info: <[www.ficmnew.fws.gov/iwac/niwaw\\_v/index.html](http://www.ficmnew.fws.gov/iwac/niwaw_v/index.html)> and <[http://ficmnew.fws.gov/iwac/niwaw\\_v/index.html](http://ficmnew.fws.gov/iwac/niwaw_v/index.html)>

February 27-28, 2004

**ELA's Winter Conference and Eco-Marketplace**, Holiday Inn, Boxborough, Mass. For program,

cost, other details, see expanded information elsewhere in this newsletter.

March 3, 2004

**Midwest Ecological Landscaping Association mini-conference**, Titon College, River Grove, Ill. Check <[www.melaweb.org](http://www.melaweb.org)> for details.

March 6, 2004

**Mass. Association of Conservation Commissions Annual Environmental Conference**, Worcester, Mass.

Workshop, conservation commission training sessions, exhibits. \$85 MACC members; government, non-profits \$95; nonmembers \$110. \$10 discount before 2/6. (617) 489-3930; <[www.maccweb.org](http://www.maccweb.org)>.

March 10, 2004

**Current Trends in Turf Insect and Disease Management**, Amherst, Mass. 9 a.m.-3 p.m. Fifth in a series on organic and low-impact lawn and landscape care. For contact details, see January 21 listing, above.

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## unclassifieds

ELA can always use your help! No matter how much time you can afford, we welcome all offers to help develop the organization and our programs. Openings are available on a number of committees, from development to publications. Help advance the cause of preserving the environment, and help move a vital organization forward. Call the ELA line today! (617) 436-5838.

SOIL AND PLANT MONITORING  
For a number of years, instruments such as refractometers, conductivity meters, and penetrometers have been used to test the state of plant tissues and soils, mostly in agricultural settings. They are now increasingly used in landscaping applications. Are you interested learning about how to use these instruments and what to do with the information they provide? Contact the newsletter, and if we have enough interest, we'll put

together a workshop! phone/fax: (508) 881-1517; [ELbacktalk@aol.com](mailto:ELbacktalk@aol.com)

Reach hundreds of ecologically minded land-care professionals, homeowners, and others! Put your ad in this space for as little as \$5 for up to 50 words (additional words, \$1/10 words). Send you ads to: attn. newsletter unclassifieds, ELA, 60 Thoreau Street #252, Concord, MA 01742. Next issue due late Jan./early Feb. 2004.



The Ecological Landscaper  
6 Meadowbrook Lane  
Ashland, MA 01721

*"This planet is not terra firma. It is a delicate flower and it must be cared for. It's lonely. It's small. It's isolated, and there is no resupply. And we are mistreating it."*

—Scott Carpenter, astronaut