

COMPOST, GROWING MEDIA & THE HORTICULTURAL INDUSTRY

by Phillip Haney, Georgia Department of Agriculture

Pedosphere – The 'Soil World'
Pedology – The Study of Soils
Pedogenesis – The Formation of Soil

Introduction – Why Write About Compost & Growing Media?

At first glance, it might seem a little...boring?...to read a story about compost & horticultural growing media, and their connection to the horticultural industry. Actually, it's not boring at all, but that's what I hope to show you by the end of this article. You may even be pleasantly surprised to discover how much is really going on in the *Pedosphere* (the 'Soil World'), and how much research and industry experience is involved in composting and in formulating the soil mixes used by the greenhouse and garden centers.

Who's Who? (Organizations)

To start off, let's review the main organizations representing the manufacturers of compost and horticultural growing media products. (Note - *All the locations, websites, email addresses and telephone/fax numbers of the organizations, journals, upcoming events, etc., that are mentioned in this article are summarized in a Resource List beginning on page 24*).

For the composting industry, the main national organization is the US Composting Council (USCC), now located in Amherst, Ohio. The stated mission of the USCC is 'work to achieve maximum conservation and utilization of organic materials in an environmentally and economically sustainable manner.' The USCC is also involved in technology transfer, outreach, and advocacy, and offers a number of training courses throughout the year (see 'Training Courses' in the Resource List for some examples). The USCC has an Executive Committee and a Board with elected members from across the country.

An older, sister organization to the USCC is the Composting Council of Canada (CCC). The CCC is a 'non-profit organization which serves as a forum to advocate and advance the use of composting to government, industry and the public.' An Executive Director and a National Board of Directors govern the CCC, along with four regional committees.

On a more local level, the newly formed Georgia Composting Association (GCA) now represents the composting industry in Georgia. The GCA was incorporated in December of 1998, and held its second annual meeting during the recent GGIA-WinterGreen Trade Show. The GCA was formed not only to represent members of the compost industry on a State level, but also to address a number of regulatory, quality and specification issues that are in need of industry attention (these issues are outlined below in the section on **Problems & Concerns**).

For manufacturers of horticultural mulches, consumer potting soils and commercial growing media, the main national trade association

is the National Bark and Soil Producers Association (NBSPA), with headquarters in Manassas, Virginia. Originally founded in 1972 as the National Bark Producers Association, it became the NBSPA in 1987 to include producers of soils and related products. The NBSPA is the only information forum for the soil media industry on issues like equipment, production, laws and regulations, management, marketing and supplier services. The NBSPA worked closely with the Georgia Department of Agriculture in 1993 to formulate the Horticultural Growing Media Act. The Georgia HGMA regulations are now considered to be the most comprehensive in the country.

Training Courses, Major Events, and Journals, Publications & Newsletters

The websites listed in the 'Training Courses,' 'Major Events' and 'Journals, Publications & Newsletters' sections of the Resource Table have a lot more detailed information than I can summarize in this article. For example, websites for the USCC, the American Society for Horticultural Sciences, the P. B. Legee Company, and the UGA Bioconversion Research & Education Program all provide a wealth of information on **Training & Certification Courses** across the country. An excerpt from the description of one such course offered by the University of Minnesota will give you some idea of what they have to offer -

'This 5-day course is designed to provide comprehensive basic information about principles of composting and facility operations for production managers and operators of municipal-scale composting facilities. This course is suitable also for all professionals in the composting industry including regulators, field inspection and compliance officers, consulting engineers, technology and equipment developers, suppliers to the composting industry, agricultural researchers and educators, agricultural technicians and agents, students, and others. The course is designed to educate students on the basic principles and practices for managing composting technologies of all levels beginning with windrows to more sophisticated and capital intensive technologies.'

One upcoming **Major Event** is the 2nd *International Compost Awareness Week*, held April 30-May 6, 2000 at UGA's Driftmier Engineering Center. A number of *Awareness Week* activities are scheduled, including a Compost Facility Operations Training Course, a Field Day and an Open House. Finally, there are several other important National and Regional annual conferences and meetings that are highlighted in the **Resource Table**.

A number of good **Journals, Publications & Newsletters** are available, some through subscription, and some online. The JG Press publishes three journals, including *BioCycle*, *Compost Science & Utilization Journal*, and *In Business*, which pertain to different

specialties within the composting and soil media industries. The GCA has a quarterly newsletter, called the Composting Chronicle, and there is even an online version of a book entitled *The Pedosphere and Its Dynamics*, which offers a very detailed review of how healthy soil is formed and what happens during the composting process, etc. Another good resource is *A Watershed Manager's Guide to Organics – The Soil and Water Connection*, published in 1997 by the USCC Research and Education Foundation, in cooperation with the US Department of the Interior and the USDA-ARS. It is a broad-based bulletin with a lot of background information and 'how-to' examples from around the country (at this time, however, a limited number of copies are still available – call the USCC office for more details).

Research & Development

University research facilities include UGA's Department of Biological and Agricultural Engineering, at the Driftmier Engineering Center in Athens, Georgia. K. C. Das and Mark Risse are both actively involved in research, education and training courses in the art and science of composting. In fact, they are both Principal Investigators in a new two-year cooperative research project to identify the number, size, location and type of compost facilities in Georgia, and to identify the existing and potential barriers to the compost infrastructure (see **Problems & Concerns** section). Mr. Wayne King, President of the GCA, is the Industry Consultant for this project.

A few of the other universities with active research and education programs in composting and recycling of organic products include New Mexico State, Ohio State, University of Florida's Indian River Research and Education Center, and the University of Idaho's Forest Products and Plant Science Departments. Results of many of the studies conducted at these facilities and at overseas locations such as the University of Exeter, United Kingdom, are published in the quarterly journal *Compost Science & Utilization*.

On the Web, don't miss the CRIS (Current Research Information System) database, with more than 30,000 descriptions of current research projects at USDA research facilities, agricultural experiment stations, and land-grant Universities (refer to **Resource List** for the URL, etc.).

Finally, ATTRA (Appropriate Technology Transfer for Rural Areas) maintains an excellent website, with plenty of references directly related to the Green Industry. Some examples include two online publications, *Compost Use for Control of Powdery Mildew*, and *Innovative Uses of Compost: Disease Control for Plants and Animals*, plus a California Integrated Waste Management Board publication entitled *Green Material Compost Use on Ornamental Nursery Plants and Field Crops* (No. 422-96-053). Other good Green Industry links found on the ATTRA web page include *Organic Composting for Horticultural Use* (NC Cooperative Extension Service), *Disease Suppressive Potting Mixes*, and *Organic Potting Mixes* (both ATTRA publications).

An example of a large commercial operation that uses up to 1,000 cubic yards of composted biosolids a year is Klyn Nurseries in Perry, Ohio. They have worked closely with researchers at Ohio State, the Ohio Cooperative Extension Service, and the Ohio Nursery and Landscapers Association to develop a model composting program for commercial nurseries. More details can be found in the August *Southeastern Floriculture*, March/April, 2000

1998 edition of *BioCycle*, page 69-71.

In summary, a general review of research in the use of composted material in mulches and as an ingredient in horticultural growing media reveals the following key benefits –

1. Increased soil porosity and water drainage
2. Increased crop yield and quality
3. Increased water holding capacity and improvement in soil aggregates
4. Increased productivity of organic material in the soil
5. Increased root development
6. Increased photosynthetic activity
7. Reduction in soil-borne pathogens such as *Fusarium*, *Pythium* and *Rhizoctonia*, and nematodes
8. Reduction in overall pest management costs

Producers & Equipment Manufacturers

There are at least 70 companies licensed by the Department of Agriculture to sell compost and growing media products in Georgia. Write, call or email the address listed in the Resource Table for a current list. We also have a database of more than 6,500 licensed companies that grow and/or sell plants in Georgia that can be sent on disk or by email (the database is formatted in Excel). You can also call the CGA, or the NBSPA for additional information and contacts with companies associated with this industry. A (short) list of equipment manufactures is also provided in the Resource Table.

Problems & Concerns

Note – The following comments are derived from recent interviews with people actively involved in the compost & horticultural growing media industries. I would like to emphasize that these two companion enterprises are poised for a rapid increase in growth in the next few years, and that a lot of dedicated people have worked hard to make this possible. As with any relatively new endeavor or emerging industry, it takes time to recognize the areas that require additional attention. The benefits of using composted recyclable organic materials to grow plants on a commercial basis have already been well documented by research. The next level of challenge to the composting industry, and to its sister horticultural growing media industry, is to make this beneficial product available to the widest possible market, and to create a stable market built on a reputation of public trust. To fully capture the potential of this market, it will be necessary to find creative solutions to the following problems and concerns:

1. One major issue within the composting/recycling industry is product uniformity and product quality. Actually producing a composted product is one thing, but producing a product that is uniform from batch to batch requires technical skill and training, and testing for quality on a consistent basis. At least four active researchers and/or industry leaders that I interviewed said that in order for (any) industry to grow, standards for both quality and for operating procedures are the key. Who will develop these standards, what will they be, and when will this happen?
2. Another issue is in the area of 'process performance,' that is, the relationship of the composting facility with its surrounding neighbors (or customers). Some facilities have had to close down because of odor, or complaints from neighbors, or (again) poor quality product.

3. Finally, there is an apparent need for more interaction – more sharing of successes and failures - between different parts of the industry. Along with this, it appears that there is a need for more outreach and education, with help from agencies such as the University, the Environmental Protection Agency, and the Department of Agriculture.

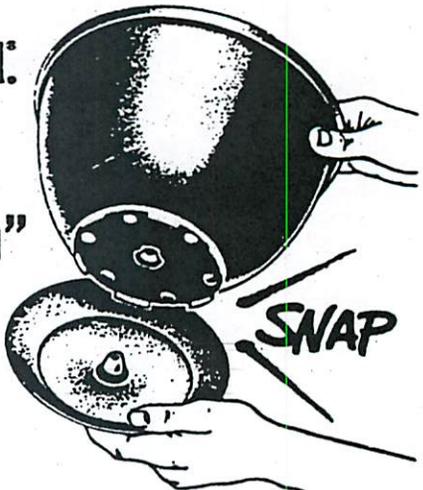
Now What? (The Future)

All the pieces are in place – the techniques – the benefits – the research – the resources – a large market potential. In fact, the importance of composting was even recognized by the Georgia State Legislature in 1993. **Senate Bill 9, Section 3, 50-5-60.4 (a)** reads: *All state agencies, departments, and authorities responsible for the maintenance of public lands shall give preference to the use of compost and mulch in all road building, land maintenance, and land development activities. Preference shall be given to compost and mulch made in the state of Georgia from organics which are source separated from the state's non-hazardous solid waste stream.*

What remains now is for the industry to build on this foundation, continue with research and education, and provide the environmental horticulture industry, the construction trade, and the general public with the highest quality products possible.

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Compost & Horticultural Growing Media Resource List

Journals, Publications & Newsletters

<i>Composting Chronicle</i>	Georgia Composting Association www.gacompost.com 404-679-4998 (Rachel Cochran) 770-486-8310 770-487-3992 (FAX)	P. O. Box 2454	Peachtree City	GA	30269
<i>Composting News</i>	McEntee Media Corporation www.recycle.cc mcenteemedia@compuserve.com 216-362-7979 216-362-6553 (FAX)	13727 Holland Road	Cleveland	OH	44142
<i>CTIC Partners</i>	Conservation Technology Info. Center www.ctic.purdue.edu ctic@ctic.purdue.edu 765-494-9555 765-494-5969 (FAX)	1220 Potter Dr., Room 170	West Lafayette	IN	47906-1383
<i>Biocycle Compost Science In Business</i>	The JG Press, Incorporated www.biocycle.net biocycle@jgpress.com 610-967-4135	419 State Avenue	Emmaus	PA	18049
<i>Online Book</i>	The Pedosphere and Its Dynamics www.pedosphere.com	Author: N. G. Juma			
<i>Technical Bulletin</i>	Watershed Manager's Guide to Organics www.compostingcouncil.org Comcouncil@aol.com 440-989-2748 440-989-1553 (FAX)	4424 Montgomery Ave., Suite 102	Bethesda	MD	20814

Research & Development

<i>K. C. Das</i>	Department of Bio. and Ag. Engineering www.bae.uga.edu/outreach/bioconversion/index.html kdas@bae.uga.edu 706-542-8842 or 542-3047 706-542-8806 (FAX)	Driftmier Engineering Center	UGA, Athens	GA	30602-4435
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<i>Mark Risse</i>	Bioconversion Research & Edu. Program mrisse@bae.uga.edu 706-542-2154 706-542-8806 (FAX)	Driftmier Engineering Center	UGA, Athens	GA	30602-4435
<i>ATTRA</i>	Appropriate Tech. Transfer for Rural Areas www.atra.org/attra-pub/farmcompost.html Webmaster@atra.org 800-346-9140 501-442-9842 (FAX)	<i>P. O. Box 3657</i>	<i>Fayetteville</i>	<i>AR</i>	<i>72702</i>
<i>Warren Davenport</i>	PAT2H, dba Timbercrest Farm pat2h@mindspring.com 770-382-6048 770-382-6145 (FAX)	43 Stephen Way, NE	Rydal	GA	30171
<i>NSDL</i>	National Soil Dynamics Laboratory http://msa.ars.usda.gov/al/auburn/nsdl/ 334-844-4741	411 South Donahue Drive	Auburn	AL	36832
<i>CRIS Database</i>	<i>Current Research Information System</i> http://cristel.nal.usda.gov:8080/				

Training Courses

<i>Misc. Courses Offered; Refer to Website</i>	US Composting Council www.compostingcouncil.org Comcouncil@aol.com 440-989-2748 440-989-1553 (FAX)	<i>4424 Montgomery Ave., Suite 102</i>	<i>Bethesda</i>	<i>MD</i>	<i>20814</i>
<i>Compost Training & Certification</i>	The American Society for Hort. Sciences rodndon@gte.net 440-926-2607 (Rod Taylor)	35481 Grafton Eastern Road	Grafton	OH	44044
<i>Compost Training & Certification</i>	The P. B. Legee Company, Ltd. info@compostingcouncil.org 513-871-4315 (Philip B. Legee)	640 Athens Avenue	Cincinnati	OH	45226
<i>Compost Training & Certification</i> <i>May 3-5, 2000</i>	Bioconversion Res. & Edu. Program/DNR 706-542-3086 (Julia Gaskin) 770-542-1401	Driftmier Engineering Center	UGA, Athens	GA	30602-4435

Organizations

<i>GCA</i>	Georgia Composting Association www.gacompost.org 404-679-4998 (Rachel Cochran, Secretary) 770-486-8310 770-487-3992 (FAX)	P. O. Box 2454	Peachtree City	GA	30269
<i>USCC</i>	US Composting Council www.compostingcouncil.org Comcouncil@aol.com 440-989-2748 440-989-1553 (FAX)	P. O. Box 407	Amherst	OH	44001
<i>CCC</i>	The Composting Council of Canada www.compost.org ccc@compost.org 416-535-0240 416-536-9892 (FAX)	16, rue Northumberland Street	Toronto	ONT	M6H 1P7
<i>NBSPA</i>	National Bark & Soil Producers Association www.nbspa.org execdir@nbspa.org 703-257-0111 703-257-0213 (FAX)	10210 Leatherleaf Court	Manassas	VA	22111

Major Events

<i>May 8-10, 2000</i>	30th Annual Biocycle National Conference www.jgpress.com/Conferences/ Biocycle@jgpress.com 610-967-4135 (Ann Miller) 610-967-1345 (FAX)		Orlando	FL	
<i>April 30 – May 6, 2000</i>	2 nd Int. Composting Awareness Week 706-542-3086 or 542-1401 (Julia Gaskin) 440-989-2748 416-535-0240	Driftmier Engineering Center	UGA, Athens	GA	30602-4435

Oct 9-11, 2000	Y2K Composting in the SE Conf. & Expo www.conted.vt.edu/calendar.htm schroder@vt.edu craig.coker@ncmail.net 919-715-6524 919-715-6794 (FAX)	Hotel Roanoke & Conf. Center 110 Shenandoah Avenue 800-222-TREE	Roanoke	VA	24016
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Nov 12-15, 2000	USCC Annual Conference & Meeting www.compostingcouncil.org Comcouncil@aol.com 440-989-2748 440-989-1553 (FAX)	Renaissance Cleveland Hotel	Cleveland	OH	
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HGM & Compost Contact GDA for a complete list of HGM & Compost Producers

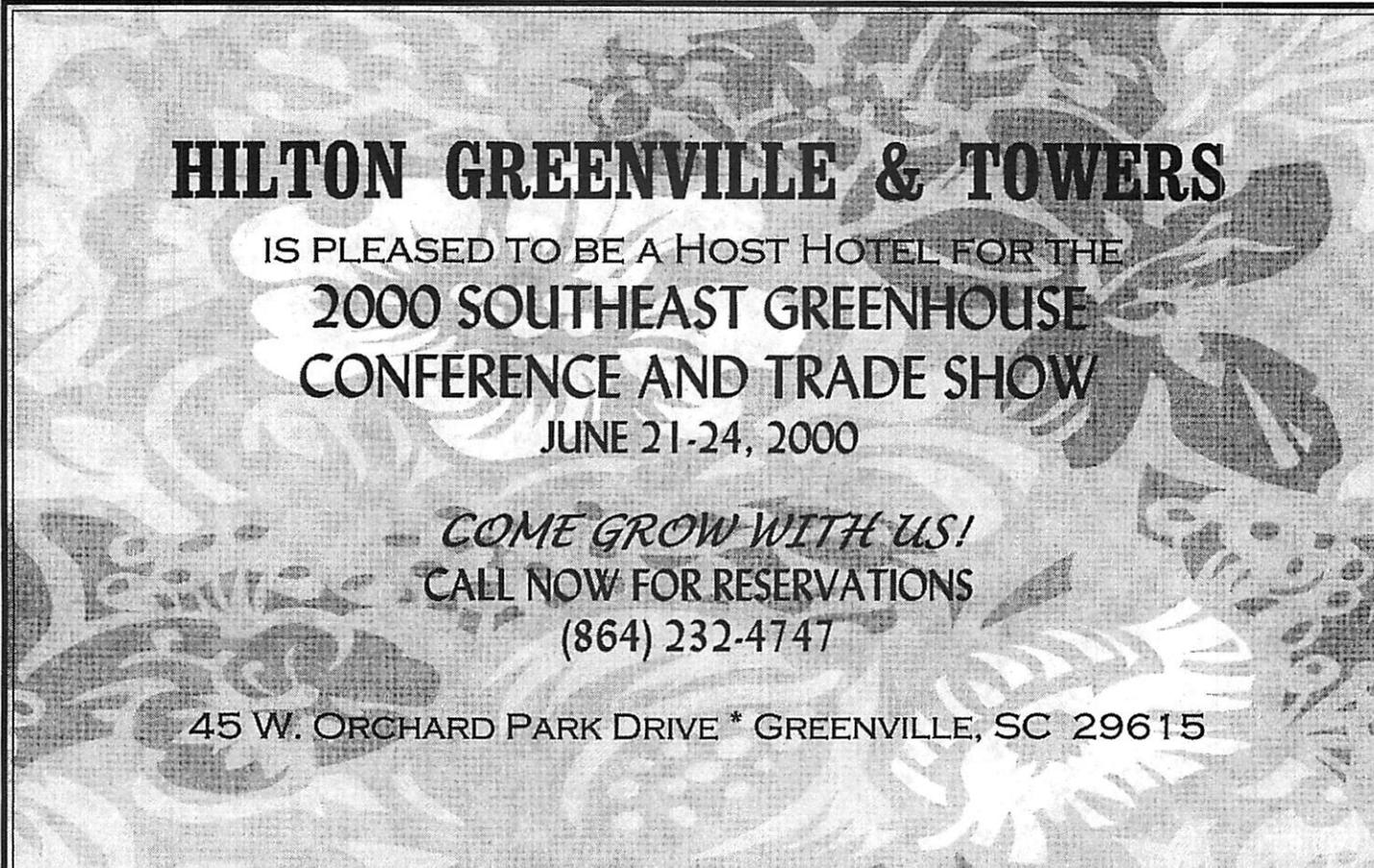
Producers	phaney@agr.state.ga.us mevans@agr.state.ga.us 404-651-9486 404-656-3644 (FAX)	19 MLK, Jr., Drive, Room 243	Atlanta	GA	30334
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Equipment

<i>Grinders & Shredders</i>	Packer Industries www.packer2000.com packerind@aol.com 404-505-0522 404-505-1450 (FAX)	5800 Riverview Road	Mableton	GA	30126
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<i>Grinders & Turners</i>	Pioneer Machinery, Inc. www.pionermachinery.com d.dubey@pionermachinery.com 888-983-9990 (Don Dubey)	3239 Sunset Boulevard	West Columbia	SC	29169
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<i>Compost Screens</i>	Screen USA www.screenusa.net screenusa@mindspring.com 770-433-2440 (Rick Cohen) 770-433-2669 (FAX)	1772 Corn Road	Smyrna	GA	30080
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