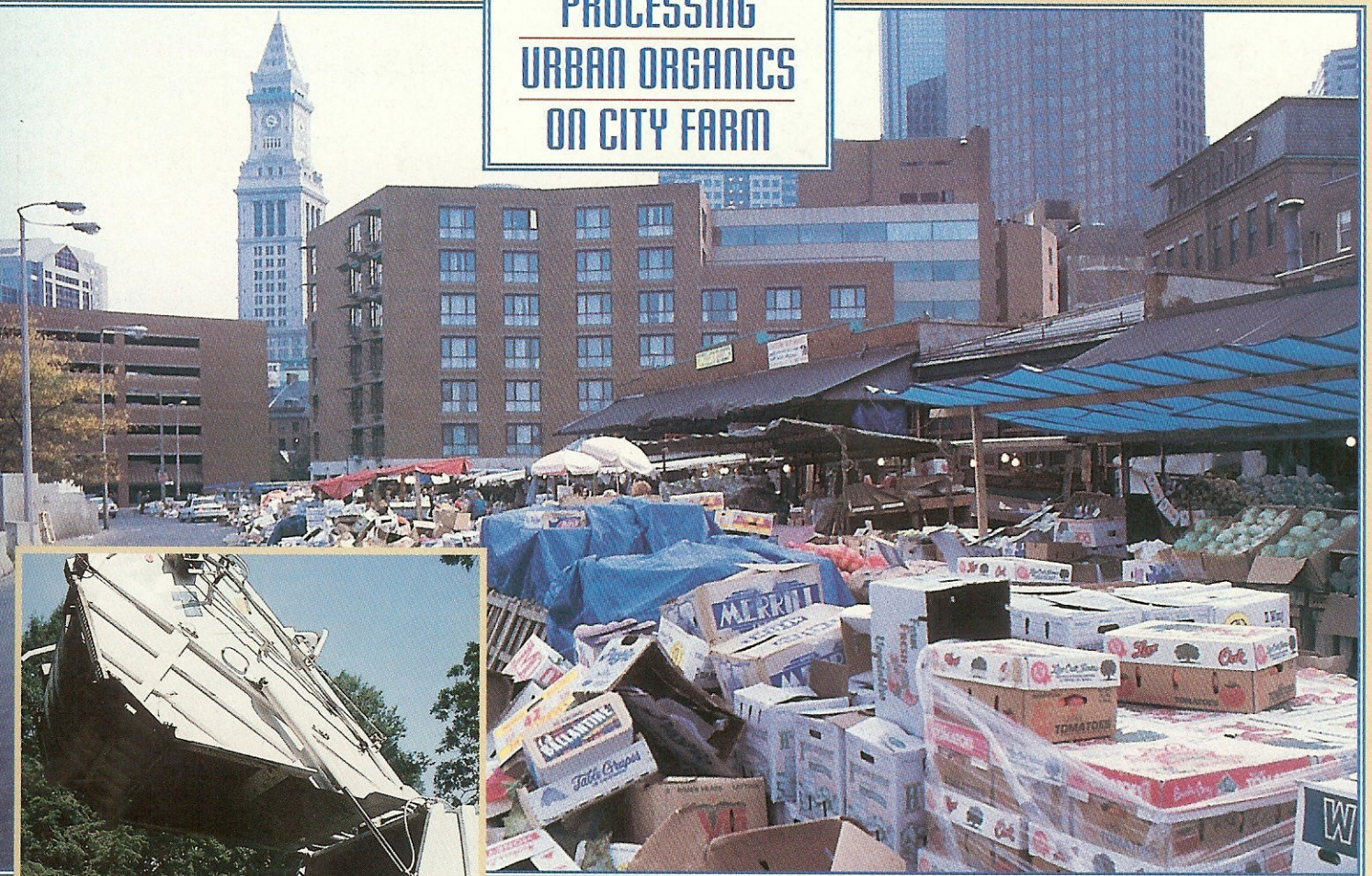


BIOCYCLE

JOURNAL OF COMPOSTING & RECYCLING

DECEMBER 1994

PROCESSING
URBAN ORGANICS
ON CITY FARM



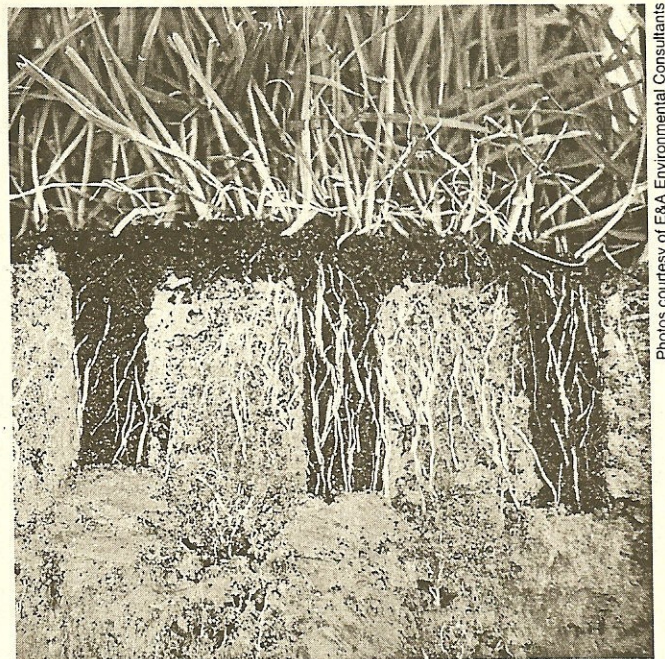
**California
Farm
Composting
Programs**

**Year End
Review Of
Recycling**

**New Systems
For In-Vessel
Composting**

**Major
Expansion
In Commercial
Recycling**

STANDARDS AND GUIDELINES FOR COMPOST USE



Photos courtesy of E&A Environmental Consultants

A partnership between the State of Florida and The Composting Council yields a set of parameters to improve the match between product and end use.

Ronald A. Alexander

WHEN the U.S. Environmental Protection Agency promulgated the Part 503 biosolids rule in February, 1993, it established health, safety and environmental standards that are used for compost made from other feedstocks as well. In some cases, the federal rule is augmented by state specific regulations. The next step in the standards development process is to focus on the use side of the picture, addressing issues affecting customer satisfaction and product utilization.

The process of creating compost standards and application guidelines is difficult because they are, to some extent, dependent upon the specific end use of the compost product and field conditions. To help address this need as well as meet Florida legislative mandates, a partnership was developed between the national Composting Council and the Florida Department of Agriculture and Consumer Services (Florida DACS).

The partnership grew out of an identified need, on both a state and national level, for compost standards and procurement specifications, and to improve compost market development and successful product use. To address these issues, the partnership cosponsored a project which entailed the development of two use related sets of information. The first were key compost parameters which represent basic data necessary for successful compost use. These parameters were identified by a team of green industry researchers representing all green

The guidelines are designed to be application specific. For example, compost used as a turf topdressing must be finely screened and lower in moisture content.

industry market segments and were further reviewed by The Composting Council's Marketing Committee, which represents compost producers, marketers, and end users. The mutual objective is to suggest that compost producers and marketers provide qualitative and quantitative data describing these specific parameters to prospective customers.

The second set of information established guidelines that provide detailed instructional data regarding compost use and basic specifications for compost products used in a specific application. The guidelines were completed for six compost applications (end uses) which represent large current or po-

Table 1. Suggested Compost Parameters

Compost Parameters*	Rationale for Inclusion
<i>Quantitative</i>	
pH	System management, effect on pH adjustment
Soluble salt content	System management, potential toxicity, effect on watering regime
Nutrient content	System management, effect on fertilizer requirements
Water holding capacity	System management, effect on watering regime
Bulk density	Product handling and transportation issue, estimation/conversion of application rates
Moisture content	Product handling and transportation issue
Organic matter content	System management, relevant in determining application rates; Some use as measure of value
Particle size	System management, effect on porosity; May determine usability in specific applications.
<i>Qualitative</i>	
Trace elements/heavy metals	System management, effect on fertilizer requirements; Potential toxicity; Necessary to address and reduce public concern.
<i>Unspecified</i>	
Maturity	System management, effect on seed germination/plant growth.
Stability	System management, effect on nutrient availability (nitrogen), odor generation.

*Recommended test methodologies for all proposed parameters may be found in the Composting Council's Draft Recommended Test Methods for the Examination of Compost and Composting.

COMPOST TECHNICAL DATA SHEET

THE following hypothetical quality assurance statement illustrates how a composting company could present compost parameter information, using the suggested use-related standards and guidelines:

ABC Compost Company
1234 Any Street
Anytown, Anystate USA 00000
777-888-9999

Compost Quality Information

ABC Compost is a soil amendment that provides many benefits to soils and plants. ABC Compost is rated Class A per the state of ANY Department of Environmental Protection regulations. This product is approved for unrestricted distribution and can be utilized to improve soils in landscapes, home gardens, lawns and potting mixes.

As a soil amendment, ABC Compost has the following properties:

Quality Parameters	Typical ABC Range	ABC 1993 Average
pH	6.8-7.3	7.1
Soluble Salts	2.5-3.5 mmhos/cm	2.9
Nitrogen	1.0-1.3%	1.1
Phosphorus	0.6-0.9%	0.8
Potassium	0.2-0.5%	0.3
Water Holding Capacity	100-120%	105
Bulk Density	900-1,000 lbs./cu.yd.	945
Moisture Content	45-50 %	47
Organic Matter Content	35-45%	38
Particle Size	passes 3/8"	

In-house growth trials have shown our product to be both stable and mature.

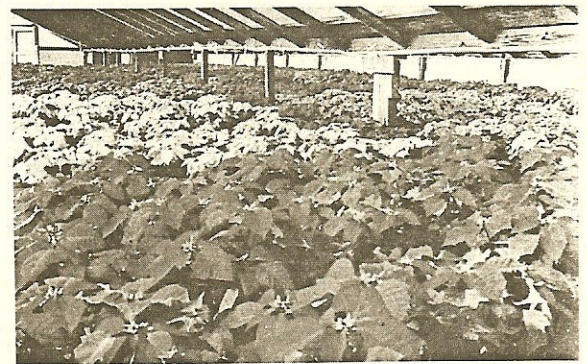
Usage Instructions

ABC Compost has detailed instructions available for a variety of uses. For more information on ABC Compost quality and use instructions, call our customer service department at 777-888-9999.

Additional parameter information that may be necessary and provided by compost parameters depending on specific use:

- Ash content (e.g. golf courses)
- Boron (e.g. greenhouse/nursery)
- Calcium carbonate equivalency (e.g. landscape/turf)
- Particle size distribution (e.g. nursery, golf course)

tential markets for composted products. Additional funding has been obtained to continue efforts towards developing a full set of use guidelines (not presented in this article). Theoretically, the first part of the project would allow end users to better understand the compost product they are purchasing, while the second part would help outline how the product would be used in a particular application, and more thoroughly describe the preferred product which should be utilized in that application.



SUGGESTED COMPOST PARAMETERS

Confidence in the marketplace will increase with successful compost usage, and successful usage can be encouraged by producing consistent product, and by providing accurate and thorough product information. Since growing conditions and plant needs differ, compost users could greatly benefit from being supplied with accurate characterization data pertaining to the compost products they utilize. The data enables users to obtain the appropriate product for the appropriate project or application.

For these reasons, the partnership suggested minimum compost parameters that represent the basic chemical, physical, and biological data. Much of the information is necessary to allow the proper usage of compost within a specific growing system.

Table 1 provides a summary of the compost parameters. It distinguishes between quantified and qualified parameters. It is suggested that quantitative data, with respect to the eight parameters listed below, be provided to compost users by producers/marketers to achieve the goal of successful use. (For instance, the product's pH ranges from 7.0 to 7.5.)

Unless required by regulations, the partnership initially suggests that only qualitative data pertaining to trace elements/heavy metals be provided to customers. This approach has been taken because providing an all inclusive chemical analysis would be overkill in most situations, and impractical. It may also feed the phobia surrounding the use of waste derived products. Instead, a quality assurance statement would be offered. For example, it could say "our product meets the Federal EPA's definition for an exceptional quality product," or "our product is approved for unlimited distribution and therefore can be utilized on..." It would further be suggested that data illustrating the trace element content of the compost be made available upon request and presented in a usable form. A statement may even be made, such as "our product contains trace elements at various levels which are necessary for plant growth; quantitative data is available upon request." This data may be necessary to help specific end users adjust their fertilization programs and avoid phytotoxicity.

During the research and technical review process, both maturity and stability also

Compost used in nursery production has to be very consistent in terms of quality, low in soluble salts and be mature and stable.

were identified as suggested minimum compost parameters to include. Unlike the other parameters, standard industry test methodologies for maturity and stability do not currently exist. There is an urgent need to create such methodologies, as well as to develop a full and measurable understanding of the effect of maturity and stability on specific crops. The Composting Council also has identified this issue as vital, and through its Standards Committee has designated an expert panel to address it. As industry standards are established for measuring maturity and stability, they could be included as parameters.

The accompanying sidebar provides an example of how a compost producer may present the suggested compost parameter information. It can be provided as a technical data sheet.

It should be noted that the suggested minimum compost parameters were developed to represent a wide variety of compost end uses, and products from various feedstocks. This makes it difficult to include every parameter of specific importance to all end users, or applicable to composts produced from every feedstock. Additional characterization data may be necessary for certain products, or relevant to specific end users. For example, porosity and weed seed viability may be important to nurseries or farmers, while flowability, odor presence, ash content, or calcium carbonate equivalence may be important to landscapers and turf managers. Delineating inert content (man-made) may be proper for MSW, or possibly yard trimmings compost, but may not be for biosolids or food scraps compost. Similarly,

Table 2. Sample Parameters for Turf Application

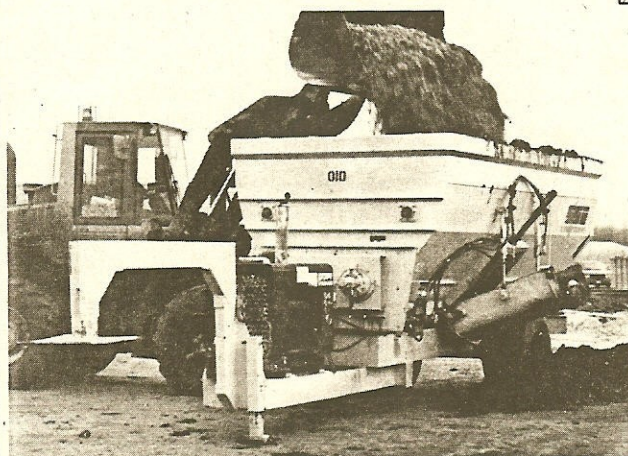
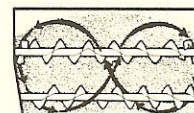
<i>Turf Establishment</i>	<i>Preferred Compost Parameters</i>
pH	5.5-8.0
Soluble salt content	May vary (4.0 dS/m maximum for soil blend)
Nutrient content	May vary
Water holding capacity	May vary
Bulk density	May vary
Moisture content	40%-55%
Organic matter content	May vary
Particle size	Passes through one-inch screen or smaller
Maturity/stability	Highly mature and stable
Trace elements/heavy metals	Must meet exceptional quality concentration limits as described in the US EPA's Part 503 Regulations

pathogen and parasite reduction data may apply to biosolids or MSW compost, but not yard trimmings compost.

Giving product characterization data to compost users creates a more educated clientele. With this data, customers will be more confident in the products they purchase and receive, and will choose the appropriate one for their application. This will lead to customer satisfaction and increased product usage, while reducing project failures. Customer feedback obtained pursuant to their review of this data can provide compost producers with a better understanding of their customers' requirements and may assist them in refining market development strategies.

The guidelines were completed for six applications which represent large current or potential markets for compost products.

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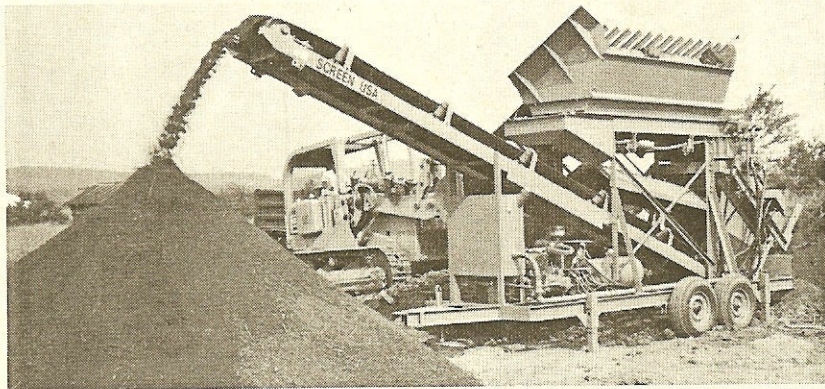
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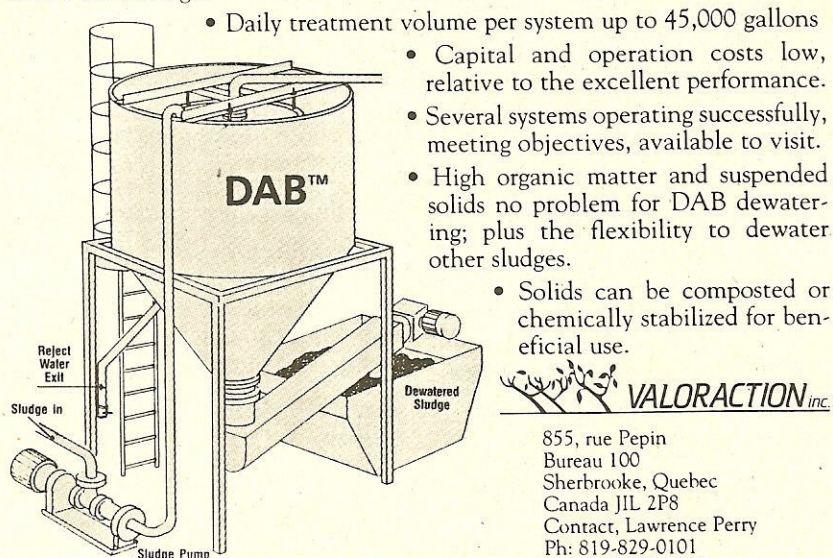
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RELATING TO LEGISLATIVE MANDATES

The main incentive for the Florida DACS in joining this partnership was to obtain the data necessary to "coordinate the development of uniform product specifications for procurement and use by all state agencies," which it was directed to complete in Florida Statute 403.714. Other requirements of the mandate include the creation of a mechanism to track compost use by local governments and state agencies on an annual basis, and to "stimulate the development of sustainable state markets for compost through demonstration projects and other approaches..."

To complete the first goal, the Florida DACS will utilize the list of suggested compost parameters and the data generated in the compost use guidelines to establish compost procurement specifications. These specifications will describe the characteristics a specific product must possess in order for it to be used on a certain project. To further involve the state compost industry in the process, the compost use guidelines were peer reviewed after completion. Next, they went through a public review and comment period which solicited input from Florida compost producers. Only then was the data used for the market specifications. Within each compost use guideline, descriptive compost data (compost specifications) were outlined where appropriate and verifiable by research, as were quantitative figures or ranges for each specific parameter (e.g. Table 2). This approach is unique in that the compost procurement specifications will vary depending upon the compost application.

Once completed, these procurement specifications will be distributed to municipal and state purchasing agents for usage. The descriptive data found in each of the compost use guidelines, which outlines how the compost product should be utilized within specific applications, may be used by the appropriate state and municipal departments for educational purposes. They also could be integrated into landscape related specifications which provide instruction on how specific project functions shall be completed. Perhaps they will even be provided for guidance to state and municipal contractors hired to complete related projects, or to landscape architects hired to design projects for government entities, or be integrated into contract specifications. By putting this data into the hands of purchasing agents, state and municipal entities can become better educated consumers of compost products and obtain more consistent results in the field. This is key, as state agencies and municipal entities in Florida are required to utilize compost and other recycled products where they are economically competitive. ■

Ron Alexander is a product marketing specialist with E&A Environmental Consultants, Inc. in Cary, North Carolina. He was manager for the project sponsored by The Composting Council and the Florida Department of Agriculture and Consumer Services.