

Compost End-Use Guidelines Development Project



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FINAL REPORT

Prepared for

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1.0 PROJECT DESCRIPTION AND GOALS

This report describes the process by which four compost end-use guidelines were developed, and ultimately makes recommendations for improving this process. The intended audience for this report is policy makers, researchers, and other people interested in understanding how the guidelines were actually developed and how the development process could be potentially improved. The actual compost use guidelines (presented in Appendix A) are intended for professional users of compost products. These guidelines are available as a stand alone document through either the Clean Washington Center or the Composting Council in Alexandria, Virginia.

1.1 PROJECT BACKGROUND AND OBJECTIVES

Compost production continues to grow as communities throughout the country implement new, and expand current composting programs. In the Puget Sound area, diversion of yard debris (1), food wastes (2), animal manures (1) and wastewater treatment solids (3) to composting programs is continuing to increase. This diversion could increase annual compost production by an additional 200,000 to 300,000 cubic yards within the next five years (1).

In order for composting to remain a viable alternative to organic waste disposal, markets for compost products must be increased. Market studies conducted in King County and other locations throughout the country indicate landscapers are the current largest single compost market. In most locations, other markets for compost such as horticulture and turfgrass production are virtually non-existent. In King County, for example, landscapers use approximately 80 percent of the compost sold (1).

Market studies commonly indicate many potential end-users do not use compost because they are unsure how to use the product, what type of product they need for their specific end-use, a specification does not exist, or they are unfamiliar with the product. In addition, compost processors are not cognizant about product needs for some specific end-uses, and as a result do not produce compost that meets the specific requirements of some end-users.

In recognition of these barriers to developing markets for compost products, the Composting Council and Florida Department of Agriculture and Consumer Services (DACCS) sponsored a project in 1994 to develop best practice guidelines for using compost products. The project developed best practice guidelines for the following six end-uses:

- Horticultural substrate (growing media) component
- Soil amendment for silviculture (reforestation)
- Soil amendment for turf establishment
- Soil amendment for vegetable crop production
- Growing media for sod
- Soil mulch for erosion control

Based on the success of this first compost end-use guideline development project, the Clean Washington Center's Recycling Technology Assistance Partnership (ReTAP) provided funds to develop additional end-use guidelines. The primary objectives in conducting this project are summarized as follows.

- Develop four additional, new compost use guidelines using the same format as the six previously developed guidelines.
- Develop and implement a protocol for conducting case studies. The objective of the case studies was to document the use of compost by prominent and experienced professionals to supplement published research aiding in the development of the end-use guidelines.
- Develop and implement a protocol for field or beta testing the guidelines. The purpose of beta testing was to elicit critical comments on the practical application of the guidelines from professionals that would use them.

1.2 COMPOST END-USE GUIDELINE OBJECTIVES

The compost end-use guidelines are intended to meet the following objectives

- Provide the end-user with information regarding appropriate characteristics for the specific end-use.
- Provide instructions on how to use the product.
- Provide processors with information on the type of product required for the specific end-use.
- Provide the basis for compost specification development.
- Provide the basis for future public and professional educational efforts and publications.

It is anticipated that these guidelines will provide a foundation for the expansion of compost product markets by improving product reliability and enhancing successful product end-use. The development of compost end-use guidelines is also an opportunity for the Composting Council to expand its network of responsible public agencies, scientists, producers and users involved in compost market development.

1.3 PROJECT OVERVIEW

The ReTAP project entailed the development of compost end-use guidelines for the following applications:

- Blended topsoil component
- Soil amendment for planting beds
- Soil amendment for marginal soils
- Garden and plant mulch

Published research provided the basis for developing the compost end-use guidelines. In addition, the practical experience of selected end-users was documented (as *case studies*) and subsequently used to supplement the published research. The resulting conceptual guideline was reviewed initially by a Technical Review Committee comprised of academic researchers and scientists.

After incorporating the Technical Review Committee comments, the draft guidelines were submitted to the Clean Washington Center, Composting Council Marketing Committee, and a Regional Review Committee for review. The Regional Review Committee consisted of professional end-users, compost producers and marketers, and public agency planners working in the State of Washington. Meetings were held with the review committees to discuss the resulting comments. A third draft of the guidelines was accepted as a final draft. The guideline development process is described in greater detail in Section 2.

A beta testing task was conducted to assess how useful the guidelines were in a field setting. The beta testing task entailed observing a professional end-user use compost after they had read the guidelines. The beta testing participant was then asked a series of questions to determine how useful the guidelines were, how they might be improved and who might potentially use them. Results are provided in Section 5.2 of this report.

As part of this project, information dissemination plans were developed for individual guidelines. ReTAP will implement information transfer campaigns to reach targeted audiences in Washington over the coming year. The Composting Council has also been very active in disseminating the compost use guidelines. The Composting Council is a national trade organization that represents a broad cross section of professionals involved with compost production and marketing, research, planning and other activities relevant to composting. As a sponsor of the guidelines development project, the Composting Council is conducting the following guideline dissemination activities.

- Press releases and newsletter articles that describe the end-use guidelines project and the availability of the guidelines.
- Presentation of the guidelines at Composting Best Practices Workshops sponsored by ReTAP.
- Presentation of the guidelines at the Council's annual conference.
- Dissemination of a publications list (that includes the end-use guidelines) to all people requesting information from the Council.

2.0 GUIDELINE DEVELOPMENT PROCESS

This section of the report provides a description of how the compost use guidelines were developed. Lessons learned from the project and recommendations for improving the guideline development process are presented in Section 3.

2.1 GUIDELINE DEVELOPMENT STEPS

The following steps were used to develop compost end-use guidelines.

I. Project Initiation

1. Selection of a Regional Review Committee
2. Selection of four compost end-use applications
3. Selection of a Technical Review Committee

II. Guideline Development

1. Conduct literature search
2. Develop and implement case study protocol
3. Develop first draft of four guidelines
4. Review of guidelines by review committees
5. Incorporate review committee comments
6. Prepare final draft of four guidelines

III. Guideline Testing

1. Beta testing protocol development

2. Beta testing participant selection
3. Beta testing implementation
4. Development of recommendations

The guideline development process is described in greater detail as follows.

2.2 PROJECT INITIATION

Prior to actually developing the compost use guidelines, the framework for conducting the project needed to be set in place. This included selecting a Regional Review Committee, a Technical Review Committee, and the four compost end-use guidelines to be developed.

A Regional Review Committee was assembled to provide a link between the national Composting Council and local producers and users, and to ensure the Pacific Northwest region was represented in the guideline development process. This committee was also convened to assure regional variations in compost use (climate, soils, plant species, etc.) were represented in the compost use guidelines. The Regional Review Committee was comprised of people who have a more direct involvement in the day to day production and use of compost than the Technical Review Committee and the Composting Council Marketing Committee.

In selecting a Regional Review Committee, a list of people in Washington with experience producing or using compost was created. The list was divided into three basic categories: compost producers and marketers, public agency employees, and professional end-users. In selecting the committee members, the following criteria were considered:

- Approximately equal representation of all three categories
- Representation of eastern Washington (as a note of interest, there is much less composting taking place in rural eastern Washington than urban/suburban western Washington)
- Representation of the Washington Organic Recycling Council's Marketing Committee

A letter was sent to each potential member describing the project and soliciting their involvement as a committee member. A few people declined the invitation and alternate committee members were solicited. The resulting committee consisted of 14 members, three of which represented eastern Washington. The committee consisted of five compost producers, six professional compost users and three public agency employees. During the project, the committee met a total of three times.

An initial Regional Review Committee meeting was conducted to introduce members to the project and begin the process of selecting four new compost applications for which compost use guidelines would be developed. During the meeting, a list of potential compost uses was developed and after a lengthy discussion, the committee “voted” on the end-uses they thought were most appropriate for guideline development. The committee was asked to consider the following criteria in selecting the specific end-uses:

- Currently a large volume market or potential for becoming a large market
- End-use meets public sector needs
- End-use is highly visible
- End-use is environmentally beneficial

The top six end-uses selected by the committee are presented as follows, in order of the number of votes received:

1. Blended topsoil component
2. Soil amendment for marginal soils
3. Soil amendment for planting beds
4. Soil amendment for bioswales
5. Garden and plant mulch
6. Soil amendment for orchards

Previous guidelines developed by the Composting Council were based on published information that documented how the compost was used and how well it performed in a specific application. Guidelines developed in this project were also to be based on published information in order to be consistent with the earlier compost end-use guidelines. Therefore, the next step in the guideline development process was to determine if sufficient published literature existed for four of the six end-uses selected.

The search utilized the following five primary resources, 1.) a computer database assembled by the Composting Council, 2.) Agricola, a computer database focusing on agriculture and the natural sciences, 3.) the Technical Review Committee, 4.) E&A Environmental Consultants' existing library and 5.) bibliographies from technical papers retrieved during the search. The research publications obtained were reviewed to assess whether they were relevant to developing the specific guidelines. A bibliography of pertinent research papers was then assembled.

The literature search identified very little published information regarding the use of compost in orchard fruit production, and no published information regarding the use of compost in bioswales. A bioswale is a grass lined depression used to collect and treat surface water from an area with an impermeable surface such as a parking lot. Several surface water control manuals (produced by the Municipality of Metropolitan Seattle and the King County Surface Water Management Division) have considerable information about the design, construction and maintenance of bioswales, but do not contain any information on the use of compost in the bioswale media. Due to the lack of available published information regarding the use of compost in orchard fruit production and bioswale construction, the development of end-use guidelines for these two compost uses was not pursued further.*

*As a note of interest, a project to define the use of compost in bioswale construction was funded by the Clean Washington Center's ReTAP program in October 1995. The project entails the design and

construction of a bioswale containing compost, followed by the collection of monitoring data to establish if and how compost improves bioswale performance. Information gained from this project will provide the basis for developing a guideline for using compost in bioswale construction.

After selecting the specific compost applications for which end-use guidelines would be developed, a Technical Review Committee was selected. The purpose of the Technical Review Committee was to ensure that the guidelines were technically accurate and represented the most current research regarding the specific end-use. The Technical Review Committee was comprised of academic researchers and scientists having experience at a research level with the specific compost end-use application.

The Composting Council Marketing Committee, the third review committee used in developing the guidelines, provided a direct link to the Composting Council. This committee also provided continuity between different compost use guideline development projects, whereas the Regional and Technical Review Committees are newly constituted for each project.

2.3 CASE STUDY DEVELOPMENT

This task entailed the documentation of how prominent and experienced professionals use compost in the specific applications selected in this project. The case studies for each specific end-use were then used to *supplement* published research in the development of that guideline.

The use of case studies was a new addition to the guideline development process. This task was added due to a lack of published research for many specific compost use applications. Furthermore, published research does not typically address some of the important practical aspects of applying and incorporating compost. In addition, field applications often encounter poorer soil conditions than those used in controlled research projects.

Another important consideration in using case studies as a source of technical information for developing the guidelines was that researchers have a much different perspective on using compost than professional end-users and producers. Research studies typically focus on how the use of *specific* compost products affect the growth of a few *specific* plant species in a *specific*

application. The resulting information is undoubtedly of great benefit to the end-user and compost producer. However, users and producers have much broader information needs that include efficient methods for applying the compost, use of compost in different soils, use of compost for different plant types, and maintenance requirements after plant installation. The narrow focus of research does not allow for the rapid development of a broad base of technical information. In contrast, an experienced end-user can provide much broader, albeit less well documented, information regarding compost use.

However, it was also recognized that anecdotal information based on the qualitative observations of experienced end-users may not always be accurate. Consequently, a protocol was developed to provide a standard procedure for documenting how industry professionals use compost in specific applications. The protocol (presented in Appendix B) includes the following five basic steps.

1. Review and modify survey format
2. Develop case study participant selection criteria
3. Identify potential case study participants
4. Select case study participants
5. Conduct case study interview

Throughout the process, the three project review committees were used as a resource for identifying case study participants and reviewing the survey format. In this project, three case studies were developed for each of the four guidelines. The resulting 12 case study write-ups are presented in Appendix C.

2.4 GUIDELINE DEVELOPMENT AND REVIEW

Using the published research identified in the literature search and the case study write-ups, a first draft of the four guidelines was developed. In a few cases where published research was limited, personal conversations with researchers regarding their yet unpublished research was used. Each

guideline (Appendix A) includes a bibliography of the research publications used in its development. The basic format used in the guidelines is presented as follows.

1. Description of type use
2. Description of compost required
3. Method of use or application
4. Guideline for use of related materials
5. Long term maintenance
6. Health and environmental conditions
7. Research needs
8. Bibliography

The review process was initiated by the Technical Review Committee. After incorporating the Technical Review Committee comments, the draft guidelines were forwarded simultaneously to the Clean Washington Center, the Composting Council Marketing Committee, and the Regional Review Committee for their review. Reviewers were instructed to provide written comments, which were catalogued and forwarded to the Clean Washington Center. The written comments were used as a basis for developing agendas for the review committee meetings.

The review committee meetings focused on discussing the various comments received and how to modify the guidelines to incorporate the relevant comments. The compost use guidelines were then modified and a second draft was prepared. The review process of soliciting written comments and discussing the comments at a meeting was repeated twice. A third draft of the guidelines was accepted as a final draft.

The Composting Council and Clean Washington Center acknowledge the time donated by the members of the review committees. The time spent by each committee in reviewing the guidelines is summarized as follows.

- Regional Review Committee - Six hours of meetings and approximately two to four hours reviewing the guidelines
- Technical Review Committee - Approximately two to four hours reviewing the guidelines, and providing and discussing comments
- Composting Council Marketing Committee - Approximately three hours of meetings and two to four hours reviewing the guidelines.

2.5 BETA TESTING PROCESS

This task involved the observation and documentation of experienced landscape professionals applying the compost end-use guidelines on the job. Participants were also interviewed after the applications regarding use of the guidelines.

The beta tests determined if the guidelines were practical and easy to use, and identified the modifications to the guideline's format or content that could increase their usefulness. This task was added to the guidelines development process in recognition that the format and content of the guidelines should be accessible to users lacking technical or academic backgrounds.

It was recognized that the qualitative observations and opinions of end-users may not be technically accurate. A protocol for selecting beta test participants was designed to ensure that participants would be experienced professionals who were aware of and adhere to professional practices based on current research. The protocol (included in Appendix D) includes the following six basic steps.

1. Review and Modify Survey Format
2. Develop Beta Test Participant Selection Criteria
3. Identify Potential Beta Test Participants
4. Select Potential Beta Test Participants
5. Schedule Beta Test
6. Conduct Beta Test

In this project, fifteen beta tests were completed to validate the four end-use guidelines developed. The resulting write-ups of these tests are presented in Appendix E. A summary of feedback and recommendations from beta test participants is included in Section 3.2.

The schedule for completion of this project permitted a relatively short time period for scheduling and conducting the beta tests. This constraint dictated that protocols for identifying and selecting beta test participants were abbreviated to ensure that tests were completed during the autumn of 1995. The limited time available to complete the entire beta testing process required selection of participants that were limited in respect to two criteria in the beta testing protocols:

1. Beta test participants were all selected through referrals from compost producers, from professionals known to the consultants who developed the guidelines, or from trade association leaders. Time did not allow for placement of articles in association newsletters or for presentations at meetings and conferences. This limited the geographic distribution of tests.
2. Scheduling did not allow for beta tests that involved the specification stage by Landscape Architects and other design professionals. The project schedule could not accommodate the lead time generally required to follow a project from design specifications to construction. All the beta tests conducted thus involved only the field application stage.

3.0 LESSONS LEARNED

3.1 GUIDELINE DEVELOPMENT PROCESS ASSESSMENT

Overall, the guideline development process worked well. Throughout the project, a diverse network of professionals having a variety of backgrounds, worked together to develop guidelines for using compost. As a result the guidelines truly represent the broad and varied interests of the composting industry. A number of specific observations were made throughout the project as to what project components worked well and what components could be improved. These observations are presented in this subsection.

3.1.1 Literature Review

The literature review and case study processes both worked well as a means of assembling technical and practical compost utilization information. The various resources (listed in section 2.2) used for identifying published research resulted in a comprehensive list of references. All of the publications identified for the end-use guidelines developed in this project were obtained through university libraries or members of the review committees. However, for some end-uses that might be developed in the future, such as Soil amendment and mulch in orchard fruit production, published European research will be particularly useful. Unfortunately, this information is not readily available in the United States. This is an issue the Composting Council may wish to consider.

3.1.2 Case Studies

Use of professional end-use case studies as a means of providing more practical information in the guidelines was an excellent addition to the guideline development process. In particular, specific information on equipment and methods for applying and incorporating compost was especially valuable. This component of the guideline development process could be improved by having a larger database of potential case study participants to choose from. Many people did not respond to written requests made for case study participant contacts. In the future, telephone contact should be made. In addition, the Composting Council might also play a larger role in obtaining potential case study participant contacts.

Several people involved with the project suggested that case studies could be used as the sole technical basis for developing a specific guideline if there is a lack of published information. For example, no written documentation concerning the use of compost in bioswales was found. However, bioswales have been constructed using compost in the Puget Sound region. Case studies developed from people having experience using compost in bioswale construction could be used as the basis for a guideline. The resulting guideline would encourage the use of compost in this application. In turn, research examining this compost end-use would also be encouraged.

When published research became available, the guideline could be updated to include the research results.

3.1.3 Technical Review

The review process was valuable to ensure the technical adequacy of the guidelines. For example, various members of the Technical Review Committee provided additional technical information from their research experiences that was not published. The Regional Review Committee also provided technical, albeit very practical, information that improved the guidelines. Some technical input provided by the Regional Review Committee is listed as follows:

- Mention the use of blower equipment for installing compost as mulch
- Herbicides should be applied in the fall, if possible, to maximize weed kill
- Add more detail on mulching trees, for example:
 - Place mulch 4 to 6 inches from trunk to prevent crown rot or insect damage
 - Spread compost to dripline
 - Use coarse compost (1/2 to 3/4 inch minus)

Overall, the review process went smoothly. In particular, reviews performed by the Composting Council Marketing Committee and the Technical Review Committee were especially efficient. The Composting Council Marketing Committee was involved with reviewing the guidelines developed earlier. In fact, this committee was instrumental in developing the format and overall content of the guidelines, and as a result, it was very familiar with the guideline development process. Likewise, some of the Technical Review Committee members were involved with the previous guidelines and had an idea what to expect.

The Regional Review Committee was new to the guideline development process. Consequently, a number of questions and issues were raised regarding the format, organization, and overall content of the guidelines. A more comprehensive introduction to the project may have facilitated a smoother review process. More specifically, the Regional Review Committee should be

provided with a better understanding of who the audience is, as well as the overall purpose of the guidelines. Devoting an entire initial meeting to introduce the guideline development process to the Regional Review Committee might be considered in the future.

As a result of the large size of the committee (14 people) and varied interests of the different members, less than half of the agenda for the first two meetings was covered. In order to facilitate a more productive third draft review meeting with the Regional Review Committee, this committee was divided into three groups. The three groups, which represented processors, public agencies and landscape professionals, met separately. Holding separate Regional Review Committee meetings was instrumental in facilitating the acceptance of the guidelines by each group.

Future guideline development projects should consider using a Regional Review Committee. However, in order to make the review process more efficient, a smaller committee of eight people should be considered. Alternatively, conducting meetings with smaller groups, as done later in this project, would also improve the regional review process.

Review of the guidelines by the Regional Review Committee required considerable effort on the part of all those involved. Nonetheless, the end result was definitely worthwhile as this committee identified some areas that clearly needed improvement. In particular, the Regional Review Committee's suggestion to provide more detail in the *Preferred Compost Parameter* table improved the overall quality and utility of the guidelines.

The *Preferred Compost Parameter* table in each guideline presents recommended levels for compost quality parameters such as pH, salinity and nutrient content. Because the guidelines are meant to have a broad application, it is difficult to provide a definitive range for a specific parameter. Consequently, the text 'may vary' was used for many compost quality parameters in the initial set of guidelines developed. The overwhelming opinion of the Regional Review Committee was that more specific information needed to be placed in this table. As a result, the guidelines developed in this project contained more specific information in the *Preferred Compost*

Parameter. In addition, the previous guidelines developed were also modified to provide more specific information in this table.

3.1.4 Beta Testing

Beta testing proved to be a valuable addition to the guideline development process by providing important information regarding use in the field. Many beta test contacts indicated the guidelines were either too technical or hard to use in the field. This observation was also noted by other people involved with the project. It was concluded that the guidelines provide a very technical foundation for using compost. People having a good technical background, such as researchers, and some end-users, particularly landscape architects, nurseries, public agencies and producers, will find the guidelines to be an excellent resource. Less technical audiences such as employees of landscaping firms will find them cumbersome to use in the field. Therefore, a separate field manual based on the guidelines may be a more appropriate document for some end-users.

3.2 BETA TESTING RESULTS

The results of each beta test were written up in a standard format and are presented in Appendix E. The beta test results are summarized in the following sections.

3.2.1 Guideline 1: Soil Amendment for Planting Beds

General Information

Four beta tests were conducted using this guideline. All took place in Seattle, Washington. Beta test participants for this guideline ranged from a specialty gardener / teacher who uses 125 yards of compost per year and incorporates amendment by hand; to a supervisor for a major landscape construction firm that uses over 50,000 yards of soil amendments each year and incorporates amendments with a Caterpillar tractor. Each person interviewed had at least ten years experience in the field. Two had extensive experience using compost, while two had only used compost as a component of a topsoil mix. Soil types at test sites ranged from well drained sandy soil to poorly drained clay.

Usefulness of Guidelines

All participants followed the application guidelines, with a few minor deviations. All participants agreed that the guidelines were easy to follow and the information was adequate. However, they also concurred that there was too much unnecessary information to read through, which made it hard to find the useful information. All participants also noted that the guidelines provided inadequate information regarding the need to vary the type of amendments on heavy clay and other poorly drained soils. Two participants felt that compost was inappropriate in such situations, preferring to use mixtures containing primarily sand and bark, or a base of pure sand under a topsoil mix. The other two participants suggested a coarser screened compost (one inch or larger), or a mix of compost and bark. Three participants felt that the benefits of using compost were not adequately described in the guidelines.

Recommended Changes

Three participants suggested the use of graphics to make the information clearer and more concise. Two suggested more specific information on how product use should vary with soil particle size, the benefits of compost use, and how it affects system management. System management refers to the use of water, lime, fertilizer and other inputs during plant installation and later, during site maintenance.

Future Use of Guidelines

None of the participants would use the guidelines in the future. Three participants suggested the guidelines would be most appropriate for providing production standards for compost producers. Another suggested they might be useful for Extension Agents, or others who educate professionals.

3.2.2 Guideline 2: Soil Amendment for Marginal Soils

General Information

Four beta tests were conducted using this guideline. Beta test participants for this guideline included a stream and habitat restoration specialist who was experimenting with compost in spot revegetation plantings; two large commercial landscape installers; and a Department of Transportation highway right-of-way vegetation manager. Each participant had at least five years experience in the field. Soil types at test sites included two erosion-prone unstable silt soils, one sandy soil, and one sandy loam. Two sites were being prepared for planting a mix of native shrubs, trees and forbs; one for native wildflowers; and one for turfgrass.

Usefulness of Guidelines

Three participants followed the application guidelines, although one exceeded recommended application rates in some project areas. One participant applied compost on highway right-of-ways at rates significantly lower than guideline recommendations. All three responding participants agreed that the guidelines were easy to follow and that the information provided was adequate. Two test participants were very enthusiastic about the usefulness of the guidelines. One participant particularly liked the Compost Use Guidelines Summary Chart. One thought that the guidelines were somewhat useful.

Recommended Changes

One participant suggested adding information specific to applications for native plantings, and another requested more information on compost stability and stability testing.

Future Use of Guidelines

One respondent indicated that they would use the guidelines in the future. Three participants did not respond. Suggestions for who else might use the guidelines included landscape architects, horticulturists, nurseries, crop producers, departments of Transportation and other state agencies, zoos, arboretums, and Extension Agents who could use them for outreach and training.

3.2.3 Guideline 3: Blended Topsoil Component

General Information

Three beta tests were conducted using this guideline, all at compost producers in western Washington state. Two were yard trimmings composting facilities, one composted alder bark. Each participant had at least three years experience producing and/or marketing topsoils containing compost.

Usefulness of Guidelines

All three participants followed the application guidelines. Participants mixed compost with soil, pumice, bark, peat moss, or other materials. Two participants used compost at 50 percent inclusion rates and one at 20 percent to 50 percent, for different end-uses. Two participants indicated that the guidelines were easy to use, but one noted that the format makes it difficult to locate specific information. All three beta test participants felt that information provided in the guidelines was adequate, and each found them to be somewhat useful. One participant found the guidelines to be impractical for field use because they are too wordy and technical.

Recommended Changes

Two participants recommended making the guideline simpler for non-technical users. Specific recommendations include the addition of summaries or a glossary of terms, shortening the guidelines and putting them in lay terms, and making key words and concepts more identifiable within the text.

Future Use of Guideline

None of the participants indicated that they would use the guidelines in the future. Two participants thought the guidelines would be useful for other compost producers and topsoil manufacturers, particularly those new to the business. Other suggested users included landscape professionals, nurseries and soil testing laboratories.

3.2.4 Guideline 4: Garden and Plant Mulch

General Information

Four beta tests were conducted using this guideline. All took place in Seattle, Washington or surrounding communities. Beta test participants for this guideline included two institutional grounds keepers, one residential landscaper, and a specialist in stream and habitat restoration planting. Two had extensive experience using compost, and were also involved in beta testing guideline 1, Amending Planting Beds. Soil types at test sites included well drained sandy soil, coarse subsoil, and erosion-prone silt. Sites included a mixed planting at a new residential landscape, established woody and herbaceous perennial plantings at a community center, a rose bed, and spot planting of mixed natives in a streamside revegetation project.

Usefulness of Guidelines

All four participants followed the application guidelines and agreed that the guidelines were easy to follow. One participant was enthusiastic about the guidelines usefulness. However, two felt that there was too much unnecessary information to read through, which made it hard to find the useful information. One felt that the information was too basic for professionals. Two participants felt that the benefits of using compost as mulch were not adequately described in the guidelines, and that the guidelines are too vague to apply to specific situations.

Recommended Changes

Two participants suggested the use of graphics to make the information clearer and more concise. The same two suggested more specific information on how product use should vary with planting type, and the benefits of compost use as related to system management. One noted that mulches should always be applied after planting, to avoid exposing weed seeds at the surface where they will germinate. One participant suggested adding specific information about applications for native plantings. One participant suggested providing specific information in the Preferred Compost parameters table.

Future Use of Guideline

Two participants said they would not use the guidelines. The other two did not respond. One participant suggested the guidelines might be most appropriate for providing production standards for compost producers. Other suggestions included Extension Agents, landscape installers, Landscape Architects, nurseries, crop producers, and horticulturists.

3.3 BETA TEST CONCLUSIONS

Comments received from the beta test participants indicate there are two broad areas in which the guidelines could be improved, 1.) technical content and 2.) format and presentation.

Recommended improvements to the guidelines regarding these two broad areas are discussed below.

Overall, the beta testing results indicate the guidelines contain an adequate amount of technical information. However, the beta test participants did identify the following information that they would like to see included in the guidelines.

1. Mention that mulches should be applied immediately after planting to provide maximum weed control.
2. Provide more specific information on how product use should vary with soil and planting type
3. Provide more specific information in the Preferred Compost Parameters table.
4. Provide information on the benefits of using compost.

Many of the beta test participants indicated that the guidelines were too technical, and were not easy to use in the field. This finding is significant as it demonstrates the need for technical information to be properly presented in order for it to be widely used. Specific comments regarding how the format and presentation of the guidelines could be improved included:

1. Provide illustrations.

2. There is more technical information than required for use of the guidelines in the field.
3. Make the guidelines less technical and use language more suitable for a lay person.
4. Some information is difficult to find.
5. Make key words and concepts (for introducing each specific guideline) more identifiable.
6. Add a glossary of terms.

An observation of note from the beta testing task was that many of the participants indicated they would not use the guidelines in the future. Reasons for not using the guidelines included:

1. The guidelines are too unwieldy to use in the field.
2. The guidelines do not provide specific information for using compost under specific site conditions.
3. The participant has considerable experience using compost for the specific application and does not need instruction.

This response again indicates the need to make the guidelines more usable for field use. The participants response also indicates a need for information specific to geographic regions, soil types, climate etc. However, this type of information is too specific for the compost guidelines which are intended for a national audience. Trade associations, compost producers and extension agents could fill this gap by developing more regional specific information that could be amended to the guidelines. Lastly, the response indicates many of the beta testing participants have considerable experience using compost and as a result do not feel compost use guidelines would be of value to them. This demonstrates a potential need to use less experienced professional users for the beta testing task.

The beta testing task conducted was comprehensive and may not need to be repeated for compost use guidelines developed in the future. However, this process or a similar one should be considered for the field manual currently being developed by the Composting Council.

4.0 ACKNOWLEDGMENTS

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1. E&A Environmental Consultants, Inc., and
2. Howard Stenn

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APPENDIX A
BEST PRACTICE GUIDELINES

SUGGESTED COMPOST PARAMETERS FACT & COMPOST USE GUIDELINES

June, 1995

by the Composting Council, the Florida Department of Agriculture & Consumer Services,
Bureau of Market Development & Information, Division of Marketing, and the Clean
Washington Center.

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**FOR THE FULL REPORT, PLEASE CONTACT:
THE COMPOSTING COUNCIL 114 SOUTH PITT STREET ALEXANDRIA, VA 22314**

APPENDIX B
CASE STUDY PROTOCOL

CASE STUDY PROTOCOL

Case Study Objective

Document how an experienced professional uses compost in a specific application.

Case Study Purpose

Augment published research in the development of a compost end use guideline

Case Study Protocol

1. Review and Modify Survey Format

A survey for obtaining and recording information during the case study interview has been developed and successfully used. However, prior to interviewing the case study participant, the survey form should be reviewed and modified as needed.

2. Develop Case Study Participant Selection Criteria

A potential case study participant should meet the following criteria:

- Has at least three years experience using compost in the given application. In some cases, where the compost end use isn't very developed (i.e. wetland reclamation), a potential participant may have less experience.
- Considered prominent within their industry.
- Active within at least one trade organization.

3. Identify Potential Case Study Participants

A data base of case study candidates is developed by soliciting trade groups and associations. A letter solicitation should be followed by telephone calls. The following groups should be solicited:

- Composting Council Marketing Committee
- State composting trade association (i.e. WORC, CORC)
- Regional Review Committee (if used in developing guidelines)
- Local and national trade associations of relevance to end use
- State and County Cooperative Extension
- Compost producers

4. Select Case Study Participants

Using the selection criteria listed in Item 2, above, select the "four best" case study participants for each end use. Select additional names from the database to be used as alternates. Other criteria besides those listed above that should be considered include:

- Representation of different geographic areas with different climates, as the compost end use guidelines are intended to be for a national audience.

- Representation of different user groups. As much as possible, the case study participants should represent a cross section of professional end users.

5. Conduct Case Study Interview

- a. Contact participant by telephone, determine 1.) interest in participating and 2.) availability for conducting an interview. Specify length of interview.
- b. Conduct the interview at a suitable time for the participant.
- c. If contact is not interested or unavailable for an interview, use contacts from the list of alternates
- d. Use the interview form as a guide and checklist for obtaining all necessary information
- e. Write up the resulting interview using the same format as the example case study attached

6. Required Resources

Information

- Technical background on the compost end use to develop the survey
- Data base of trade associations and other pertinent contacts to develop a list of potential case study participants.

Time Requirements

- Survey modification - 2 to 4 hours
- Selection criteria - 2 hours
- Case study participant identification - 8 hours
- Case study participant selection - 4 hours
- Case study interview and write-ups - 2 to 4 hours per case study, the actual interview takes up to 1 hour

Compost End Use Category:

Name	Title	Company		
Address	City	Zip Code	Phone No.	Fax No.

Description of case study contacts experience (*job responsibility, number of years using compost, other relevant experience*)

1. Business/Agency Characterization

Description of primary activities:

2. Description of Compost Products Used

List the compost products you have used in this application (*feedstock, texture, etc.*):

Which products have worked well in his application and why:

Which products have not worked well in this application and why:

How long do you typical store the product prior to use? _____ Describe how the product is managed during storage (*covered, turned, pile size etc.*)

Were use instructions or brochures made available with the product? If yes ask to forward them, if possible

Estimate the amount of compost _____ and compost amended topsoil _____ used in the last year

Do you use compost because it is specified? _____ If yes what percent of product used was specified _____

Who specifies compost is to be used and what specifications are used?

Product 1 - Best Product Used

Producer:

Feedstock(s) used in product: _____
_____ Composting process used (pre- *-processing, type of process, processing period, screen size etc., if known*):

Description of product texture (*fine or coarse screened, large wood pieces, soil or rocks present etc.*):

Are there analyses of the product available? _____. If yes, ask to forward.

Who had the product analyzed? Yourself _____, Producer _____, Other _____

Provide information on the following compost quality parameters:

Nitrogen _____ Phosphorous _____ Potassium _____
Organic Matter _____ Moisture Content _____% Bulk Density _____ lbs/cy
Salinity _____ mmhos/cm pH _____ Water Holding Capacity _____
Particle Size Analysis: _____ Trace Metals and Nutrients: _____

Other product quality information:

Is the quality (*nutrients, particle size, maturity*) of the product typically consistent? _____. Please be specific

Provide an overall assessment of this specific product (*has it worked well, ever experienced any problems how could the product be improved*):

Product 2 - Second Best Product Used

Producer:

Feedstock 5 used in product:
Composting process used (*preprocessing, type of process, processing period, screen size etc., if known*):

Description of product texture (*fine or coarse screened, large wood pieces, soil or rocks present etc.*):

Are there analyses of the product available? _____. If yes, ask to forward.

Who had the product analyzed? Yourself _____, Producer _____, Other _____

Provide information on the following compost quality parameters:

Nitrogen_____% Phosphorous Potassium
Organic Matter_____ Moisture Content_____% Bulk Density_____lbs/cy
Salinity_____mmhos/cm pH_____ Water Holding Capacity_____

Particle Size Analysis: Trace Metals and Nutrients:

Other product quality information:

Is the quality (*nutrients,particle size, maturity*) of the product typically consistent?____Please be specific

Provide an overall assessment of the specific product (*has it worked well4 ever experienced any problems, how could the product be improved*):

3. Method of Use or Application

Describe the soil type you most commonly work with (*texture, nutrients, organic matter*):

Compost application rate (*include method for determining and field verifying application rate*):

Compost application method (*description of technique, equipment used*):

Method for incorporating compost into soil (*description of technique, equipment used*):

How is compost transferred from storage to application area?:

Other pertinent information regarding compost application:

4. Guidelines for Use of Other Materials in Conjunction with Compost

List other materials (non-plant) used in conjunction with compost (*lime, fertilizer,etc.*) and describe how these materials are used in conjunction with compost:

List plant species most commonly used and type of propagate (*i.e. seed, tuber, bulb, root, cutting, plant stock*):
Describe method of install plants or planting seed:

Other relevant information:

5. Long Term Maintenance

Describe how long term maintenance activities differ with compost *(irrigation, fertilization (type, application rate and method), compost re-application, planting, seeding, mowing, etc.)*:

Other pertinent information regarding long term maintenance

6. Environmental Considerations

Describe potential or known impact on workers. Also describe means of reducing or eliminating these impacts:

Describe potential or known impacts on surface or groundwater. Also describe means of reducing or eliminating these impacts:

Describe any other potential or known impacts from using compost as well as means of reducing or eliminating impacts.

Describe product needed to be used (or not used) for specific application based on environmental considerations.

7. Benefits of Using Compost

Describe any benefits gained from using compost *(economic, plant growth, soil improvement, etc.)*

APPENDIX C

CASE STUDY WRITE-UPS

**(NOT INCLUDED IN THIS DOCUMENT
BUT AVAILABLE UPON REQUEST)**

APPENDIX D

BETA TESTING PROTOCOL

BETA TESTING PROTOCOL

Beta Test Objective

To observe and document the practical application of compost end use guidelines by experienced professionals, and to gather feedback from users regarding guideline format and content.

Beta Test Purpose

To validate a guidelines' usefulness, clarity, and applicability of technical information.

Beta Test Protocol

1. Review and Modify Survey Format

A survey form for gathering and recording information during beta tests has been developed and used to document tests. Prior to conducting beta tests, the survey form should be reviewed and modified as needed.

2. Develop Beta Test Participant Selection Criteria

Each potential beta testing participant should at a minimum meet the following criteria:

- Has at least three years experience in this application. May or may not have used compost in this application.
- Considered prominent within their industry.
- Active within at least one trade organization, or in the education of other professionals

3. Identify Potential Beta Test Participants

Develop a list of potential participants by soliciting recommendations from prominent professionals involved with projects, trade groups and associations. A letter solicitation should be followed by telephone calls. Potential participants can be solicited by direct referral by an official with one of the solicited organizations, through articles about the guidelines and beta tests placed in association newsletters, or at presentations made to the organizations members at meetings or conferences. The following groups should be solicited:

- Composting Council Marketing Committee.
- State composting trade associations.
- Regional Review Committee (if used in developing guidelines).
- Local and national trade associations relevant to end use.
- Public agencies involved in activities relevant to end use.
- Cooperative Extension Agents.
- Compost producers and wholesale distributors.
- Prominent professionals involved in activities relevant to end use.

4. Select Potential Beta Test Participants

Using the selection criteria listed in item 2, select several potential beta test participants for each end use. Additional criteria that should be considered in selecting test participants include:

- Representation of different geographic areas and climates, since the guidelines are intended for nationwide application.
- Representatives of different user groups (i.e. specifiers, field personnel, large and small volume users) from a cross section of professional end users.

5. Schedule Beta Test

- a. Contact potential participant by telephone. Describe the purpose of the beta test and what is required from the participants (see 5.b.). Determine 1) interest in participating, 2) availability of suitable application to observe, and 3) who will supervise the application in the field.
- b. Participation by the professional would require that they read the guidelines, and then use them as a basis for using compost in a specific application. The actual use of the compost is coordinated so the application can be observed by someone on the guidelines development project team.
- c. Send a copy of the applicable compost end use guideline to the interested potential participant, and request that it be shown to person who will directly supervise the application in the field, if different from the contact.
- d. Call back to confirm that the potential participant is interested after they have reviewed the guidelines. If still interested, request to schedule beta test directly with the person who will directly supervise the compost application.
- e. Contact the person who will directly supervise the application to schedule the beta test. Make sure that they have reviewed the compost end use guideline and understand what is expected from them in the beta test.

6. Conduct Beta Test

Use the beta test survey form as a guide and checklist for obtaining all necessary information. If scheduling does not allow observation of the all stages of application, interview participant to obtain needed information. Gather samples of compost used in application, for future reference. Observe and note compost characteristics (i.e. odor, heat, moisture content, appearance) at time of sampling. Write up observations and interview using the example beta test format attached.

7. Required Resources

Information

- End use guideline
- Data base of trade associations and other pertinent contacts to develop a list of potential beta testing participants.

Time Requirements

- Survey modification - 2 to 4 hours
- Selection criteria - 2 hours
- Beta testing participant identification - 8 hours
- Beta testing participant selection - 4 hours
- Beta testing participant scheduling, site visit and write-ups - 4 to 8 hours per case study, the actual interview takes up to 2 hours

Compost End Use Guidelines Beta Testing Survey

Name Title Company
Address City Zip Code Phone No.

Description of beta test participants experience *job responsibility, number of years using compost*)

Description of businesses primary activities

1. General Beta Test Information

Guideline tested Observation date Test site
Product used *(supplier, feedstock(s), cost, etc.)* Sample obtained
Field stability assessment

Soil type compost amended to *(texture, appearance, source, etc.)*

2. Product Usage

Application rate
Application method
Incorporation method
Plant species used
Describe method of installing plants
Future long term maintenance activities planned for the site
What benefits are gained from using compost at this site *(economic, plant growth~ soil improvement, etc.)*
Were the guidelines followed in this application _____. If no, what aspects were not followed?

3. Post-Compost Application Follow-up Survey

Were the guidelines readily understood and easy to follow? If no what aspects were unclear.

How could the guidelines be changed to make them easier to understand?

Was the guideline format appealing and conducive to use? If no, please describe.

How could the guideline format be improved?

Is the information provided in the guideline adequate? If no, what additional information is needed?

Would you use the guidelines in the future?

Do you think the guidelines would be useful for other members of your industry?

What types of businesses and agencies do you think could use the guidelines?

How might they use the guidelines?

APPENDIX E

BETA TESTING WRITE-UPS

Beta Test Case 2.1: Soil Amendment for Marginal Soils

General Information

Contact: Fauna Gibson
Agency: King County Surface Water Management
Primary Activity: Stream and habitat restoration
Location: Small stream on private property in Issaquah
Contacts Experience: 7 years experience as a landscape architect
Soil Type: Silty sand, very erosive
Planting Type: Wetland grasses, shrubs and trees in containers and burlap

Compost Products Used

Type: Cedar Grove general purpose compost
Feedstocks: Grass, leaves, ground woody wastes
Specifications Required: 100% composted, free of all noxious weeds, chemicals, or toxic metals. Particle size shall be fine with 100% passing through a 7/16" screen

Product Quality Observations: Dark color, strong odor, moderately stable

Method of Application

Guidelines Followed: Yes
Application Rate: 2"
Soil Preparation Method: Dig hole twice as big as container plants root ball, place soil aside for amending with compost
Application Method: Spread compost manually on top of excavated soil
Application Rate Verification: Area dimensions of hole are estimated
Incorporation Objective: Mix compost well manually with excavated soil
Fertilizer: Not used
Other Inputs: None
Plant Installation Method: Backfill around roots, heal in, form 2" soil berm around installed plant to form a water collection basin
Benefits of Using Compost: Improves, tilth, fertility, water retention and plant survival

Guidelines Evaluation

Easy to follow: Yes, "readily understood and easy to follow"
Was guideline useful: Yes, "however, I would use them more if I were working with ornamental plants rather than natives...since they're (native plant species) hardy and more tolerant of our native soils.
Is information adequate: Yes but, "Add some information about native plants in addition to the ornamental plant list in the appendix"
Recommended changes: See above
Who might use guidelines: Landscape architecture firms, horticulturists, nurserys, crop producers, nurserys

Beta Test Case 2.2: Soil Amendment for Marginal Soils

General Information

Contact: Phil Fortunato
Business: Briargreen
Primary Activity: Landscape contractor
Location: Crystal Ridge Development, Puyallup, WA
Contacts Experience:
Soil Type: very light silt, not stable, high erosion potential
Planting Type: turfgrass (40% rye, 40% fescue, 10% bentgrass, 10% clover)

Compost Products Used

Type: Nutrimulch, NW Cascade
PREP, Pierce County Composting Facility
Feedstocks Nutrimulch: biosolids, yard debris, sawdust
: PREP: grass, leaves, ground woody wastes
Specifications Required:
Product Quality Observations: Dark, soil like odor, very stable

Method of Application

Guidelines Followed: yes
Application Rate: 0.75" and 1.5"
Soil Preparation Method: Site leveled with a bulldozer
Application Method: Hand spread with rakes
Application Rate Verification: Field calculations
Incorporation Objective: Rototilled to 6" with a tractor pulled rototiller, then tracked with a bulldozer
Fertilizer: 16-16-16 applied at a rate of 250 pounds per acre
Other Inputs:
Plant Installation Method: Hydroseeding, 60 pounds/acre, double tacifier rate, 1500 pounds of wood fiber per acre
Benefits of Using Compost: reduces soil erosion, enhances grass seed germination and growth

Guidelines Evaluation

Easy to follow: Yes
Was guideline useful: Somewhat
Is information adequate: Yes overall, however would like more information on stability
Recommended changes: Include more information on stability and stability testing
Who might use guidelines: Department of Transportation

Beta Test Case 2.3: Soil Amendment for Marginal Soils

General Information

Contact: Derek Smith
Agency: North Carolina Department of Transportation
Primary Activity: Maintenance, installation and design of state highway landscaping
Location: Raleigh, NC, intersection of Briggs Ave. and I-40
Contacts Experience: All vegetation statewide on DOT rights of way for last five years
Soil Type: Sandy loam
Planting Type: Various native wildflower species

Compost Products Used

Type: Poultry litter compost
Feedstocks: Poultry litter and wood waste
Specifications Required:
Product Quality Observations: Well composted and stable

Method of Application

Guidelines Followed: No, application rate is much lower than that specified in the guidelines
Application Rate: 6.6 tons per acre (15.7 cy/acre) or 0.12" application depth
Soil Preparation Method: None
Application Method: Spread with a New Holland manure spreader
Application Rate Verification: Area calculations
Incorporation Objective: Incorporated to a 6" depth using a tractor mounted Howard rotovator
Fertilizer: 15-38-10 applied at a rate of 1,000 pounds per acre
Other Inputs: Dolomitic lime applied at a rate of 2 tons per acre
Plant Installation Method: Seeded in fall by November 15 and covered with coastal bermuda grass hay
Benefits of Using Compost: Improves soil organic matter content and other attributes, provides a slow release fertilizer

Guidelines Evaluation

Easy to follow: Yes
Was guideline useful: Yes, particularly Compost End Use Guideline Summary Chart on page 49
Is information adequate: Yes
Recommended changes: None
Who might use guidelines: State agencies, zoos, arboretums and county extension agents might use the guidelines for training and answering questions from the public.

Beta Test Case 2.4: Soil Amendment for Marginal Soils

General Information

Contact: Chuck Harding
Business: Ohno Construction
Primary Activity: Construction and landscape installation
Location: Discovery Park, Seattle, WA
Contacts Experience: Over 10 yrs as a site foreman, 5 yrs using compost
Soil Type: Sandy soil
Planting Type: Various native tree, shrub grass and wildflower species

Compost Products Used

Type: GroCo
Feedstocks: Metro biosolids and sawdust
Specifications Required: GroCo product or equivalent
Product Quality Observations: Well decomposed and stable, musty, ammonia odor

Method of Application

Guidelines Followed: Overall yes, however some application areas used a 12 inch application rate, which is greater than that recommended
Application Rate: 2", 6" and 12" depending on application area
Soil Preparation Method: Open up soil with ground ripper mounted on bulldozer, then disk to uproot weeds and allow good compost soil mixing
Application Method: Unload compost in strategically placed piles, level piles with a bulldozer. For 12" application rate areas, place compost in two 6" lifts, with first lift being incorporated.
Application Rate Verification: Area calculations
Incorporation Objective: Incorporate to 6" by disking and passing a bulldozer mounted rake over the application area
Fertilizer: Fertilizer is applied with the plantings and the rate is plant species dependent
Other Inputs: None
Plant Installation Method: Hydroseed grasses and wildflower seeds, install bare root and container plants by hand
Benefits of Using Compost: Reduces soil erosion on slopes, enhances soil's moisture holding capacity, limits the growth of undesirable invasive species

Guidelines Evaluation

Easy to follow: Yes
Was guideline useful: No, because plans and specifications dictated how compost was to be used.
Is information adequate: Yes
Recommended changes: None
Who might use guidelines: Landscape architects, schools, parks departments

Beta Test Case 3.1: Blended Topsoil Component

General Information

Contact: Jan Allen and Terry Johnson
Business: Cedar Grove Composting, Inc.
Primary Activity: Compost producer
Location: Maple Valley, WA
Contacts Experience: 5 years as general manger and site manger, respectively
Soil Type: Medium to coarse sand

Compost Products Used

Type: Cedar Grove
Feedstocks: Grass, leaves, ground woody wastes
Specifications Required: Not applicable
Product Quality Observations: Dark color, slight pungent odor, moderately stable

Method of Application

Guidelines Followed: Yes
Application Rate: 20 and 50 percent by volume, also manufacture to spec.
Application Method: Different materials are stacked in a windrow and mixed well using a Scarab windrow turning machine
Application Rate Verification: Volumetric measurement of each component
Incorporation Objective: Homogenous final mix
Fertilizer: Blood meal and other organic fertilizers are added to the bagged product mix
Other Inputs: Pumice, peat moss and bark are added to the growers and bagged product mixes
Benefits of Using Compost: Improves soil structure and fertility

Guidelines Evaluation

Easy to follow: Yes, but could use more of a laymen introduction. Format is attractive, but difficult to find what is needed.
Was guideline useful: Somewhat
Is information adequate: Yes, but need to discuss benefits of using compost and seasonal considerations to using product
Recommended changes: Make key words more identifiable. For example, call amendment to horticultural substrate potting mix ingredient or component
Who might use guidelines: Could be a resource for the consumer (landscapers and other professionals) or a tool for the compost producer

Beta Test Case 3.2: Blended Topsoil Component

General Information

Contact: Cam Erickson
Business: Phoenix Composting
Primary Activity: Compost producer
Location: Arlington, WA
Contacts Experience: Site supervisor for three years
Soil Type: Sandy soil

Compost Products Used

Type: Phoenix compost
Feedstocks: Grass, leaves, ground woody wastes
Specifications Required: Not applicable
Product Quality Observations: Dark, well decomposed, stable compost

Method of Application

Guidelines Followed: Yes
Application Rate: 50 percent by volume
Application Method: Lay out compost and soil in layers with a front end loader and make a rough mix. Then pass mixture through trommel screen to produce a homogenous mix and remove large, oversized material from the product.
Application Rate Verification: Volumetric measurement of each component
Incorporation Objective: Produce a homogenous mix
Fertilizer: Not used

Guidelines Evaluation

Easy to follow: No, the guidelines are too wordy and technical and they are also not practical for field use
Was guideline useful: Not really, could be useful for better understanding technical issues. Outreach is more valuable than written material (for respondent).
Is information adequate: Yes, it was more than adequate
Recommended changes: Make it simpler, just a few pages for the entire set of guidelines. Put the text in laymen terms. Produce a summary of the guidelines. Include typical values for compost products
Who might use guidelines: Maybe topsoil manufacturers and landscapers, particularly new businesses. Use will be dependent on the person's technical experience.

Beta Test Case 3.3: Blended Topsoil Component

General Information

Contact: Rick Behrends
Business: Northwest Organics
Primary Activity: Topsoil manufacturer and dealer
Location: Monroe, WA
Contacts Experience: More than five years experience as a topsoil dealer

Compost Products Used

Type: Alder bark compost
Feedstocks: Alder bark, log yard fines
Specifications Required: Not applicable
Product Quality Observations: Dark color, soil like odor, very stable

Method of Application

Guidelines Followed: Yes
Application Rate: 50 percent by volume
Application Method: Build a conical pile alternating materials, mix well with a front end loader
Application Rate Verification: Volumetric measurement of each component
Incorporation Objective: Homogeneous, well mixed product
Fertilizer: 1.5 lb calcium nitrate per cubic yard and 0.4 lb treble superphosphate per cubic yard
Other Inputs: Pumice (16%), fine sawdust (8%), bark fines (24%)
Benefits of Using Compost:

Guidelines Evaluation

Easy to follow: Yes, respondent thought they were clear
Was guideline useful: Somewhat
Is information adequate: Yes, not apparently lacking
Recommended changes: Make them simpler for people with a limited technical background, glossary of terms might also be useful
Who might use guidelines: Nurserys, soil testing laboratories

Beta Test Case 4.3: Garden and Plant Mulch

General Information

Contact: Fauna Gibson
Agency: King County Surface Water Management
Primary Activity: Stream and habitat restoration
Location: Small stream on private property in Issaquah
Contacts Experience: 7 years experience as a landscape architect
Soil Type: Silty sand, very erosive
Planting Type: Wetland grasses, shrubs and trees in containers and burlap

Compost Products Used

Type: Cedar Grove general purpose compost
Feedstocks: Grass, leaves, ground woody wastes
Specifications Required: 100% composted, free of all noxious weeds, chemicals, or toxic metals. Particle size shall be fine with 100% passing through a 7/16" screen
Product Quality Observations: Dark color, strong odor, moderately stable

Method of Application

Guidelines Followed: Yes
Application Rate: 2"
Soil Preparation Method: Compost was amended to excavated soil at a rate of 2" inches and then used to backfill.
Application Method: Manually spread a two inch layer of compost around the base of the plant covering an area equal to the size of the planting hole
Application Rate Verification: Visual
Fertilizer: Not used
Other Inputs: None
Benefits of Using Compost: Reduces weed growth, water retention, improves soil tilth

Guidelines Evaluation

Easy to follow: Yes, "readily understood and easy to follow"
Was guideline useful: Yes, "however, I would use them more if I were working with ornamental plants rather than natives...since they're (native plant species) hardy and more tolerant of our native soils.
Is information adequate: Yes but, "Add some information about native plants in addition to the ornamental plant list in the appendix"
Recommended changes: See above
Who might use guidelines: Landscape architecture firms, horticulturists, nurserys, crop producers, nurserys

Beta Test Case 4.4: Garden and Plant Mulch

General Information

Contact: Dave Folker
Agency: Echo Glen Childrens Center
Primary Activity: Facility gardener
Location: Snoqualmie, WA
Contacts Experience: 10 years experience as landscape professional
Soil Type: Coarse subsoil
Planting Type: Rose bushes

Compost Products Used

Type: Food waste compost produced on-site
Feedstocks: Pre- and post consumer food waste, wood shavings
Specifications Required: None
Product Quality Observations: Slight odor, moderately decomposed

Method of Application

Guidelines Followed: Yes
Application Rate: 3"
Soil Preparation Method: None
Application Method: Applied from back of pickup truck manually with shovels
Application Rate Verification: Area calculations
Fertilizer: Not used
Plant Installation Method: Not applicable
Benefits of Using Compost: Less expensive than bark, provide nutrients for plant growth

Guidelines Evaluation

Easy to follow: Yes
Was guideline useful: Yes, but no new information was provided
Is information adequate: Yes, for the basic homeowner
Recommended changes: Provide information on preferred compost parameters table instead of "must be reported"
Who might use guidelines: No response
