

Easy Composting in Parks

Authors: Ling Seow Kang, Subhadip Ghosh, and Katayon Saed

Introduction

For cities to be sustainable, prudent and innovative use of available resources is key. The *circular economy* – and the idea of closed-loop material flows – is essential, as opposed to the *linear economy* of the past. Although the extensive parks and green spaces in our City in a Garden is not a major source of waste materials for recycling or resource recovery, they do generate a substantial amount of horticultural waste (“hort waste”) such as dropped leaves, plant prunings, grass clippings and dead branches. In Newman’s concept of a *photosynthetic city*, all this plant biomass provides a renewable source of energy to power the city.¹ (In fact, on-site power generation from biomass is already a reality in Gardens by the Bay.) Given Singapore’s investments in waste-to-energy plants and pioneering integrated waste management,² we can be assured that even hort waste disposed off-site is not ‘wasted’. Nevertheless, there is still an opportunity to do better by reducing the amount of hort waste transported from parks for disposal and the consequent greenhouse gas emissions, through composting or other ways of cycling the nutrients in hort waste within the parks themselves. We will show in this Research Technical Note (RTN) that on-site composting of hort waste is an easy, natural and effective way to become ‘greener’ in the maintenance of our parks and gardens. Although there are various methods for composting hort waste, we shall be introducing the **static pile method**, which has been successfully implemented in Clementi Woods Park, Fort Canning Park and Bishan-Ang Mo Kio Park.

Benefits of Composting in Parks

Is it worth it? This is the question managers may ask before introducing on-site composting in their parks. The cost-benefit analysis of ecological initiatives often cannot be done in purely monetary terms. For small-scale, often ground-up efforts, the social benefits can be significant. Composting in parks for one can improve the environmental attitudes and awareness of the community through associated educational initiatives. Composting activities can also be coupled with communal gardening to enhance participants’ well-being. The compost produced on-site would result in cost savings from buying less from suppliers, while the productivity of the park maintenance workers can also be raised if there is no significant increase in manpower cost. Obviously, if the scale of composting is large enough, and possibly coupled with on-site mulching or leaf litter management practices, the amount of hort waste that needs to be disposed off-site from parks can be substantially reduced – a positive step for environmental sustainability. Parks, after all, should be helping to solve the environmental problems of the city, not contribute to them.

¹ Newman, P., Beatley, T., and Boyer, H. (2009). *Resilient Cities: Responding to Peak Oil and Climate Change*. Island Press.

² Feng, Z. (2014, Jun 4). Mega waste treatment plant to open in 2024. *The Straits Times*. Retrieved from <http://news.asiaone.com/news/singapore/mega-waste-treatment-plant-open-2024>.

Simple Method for Composting in Parks

Various methods can be used for composting hort waste in parks. One of the simplest, least cost and low maintenance methods is the static pile method. This method is also easily scalable, and able to handle a significant quantity of the biomass generated in parks with a small footprint. Figure 1 presents the basic steps of the composting process using the static pile method implemented with a wire mesh bin – from setup to harvesting; the specific guidance for each step are found in the associated text boxes in the figure.

The '1 grass to 2 leaves' volumetric mixing ratio for the feedstock was found during the on-site composting trial in Clementi Woods Park to provide close to the 30:1 C:N ratio that is optimal for composting. When matured and ready for harvesting, samples of the compost can be sent to AVA Plant Health Laboratory Department for comprehensive physical and chemical analyses. This may be necessary sometimes, to ascertain how well the compost meets the CUGE specifications (CUGE, 2013), although composts produced from hort waste using the method described here should be generally safe for horticultural applications.

In practice, you could have multiple piles in a park at different stages in the composting process, and achieve a steady supply of matured compost throughout the year with enough piles, to meet the park's horticulture needs and more. An advantage of the static pile composting process is that it is resilient to disruptions, and if you are not in a rush, nature and its agents will help you achieve better compost quality with more time.



Bins with plywood top cover



Bin with cover directly on the materials



Harvesting of matured compost

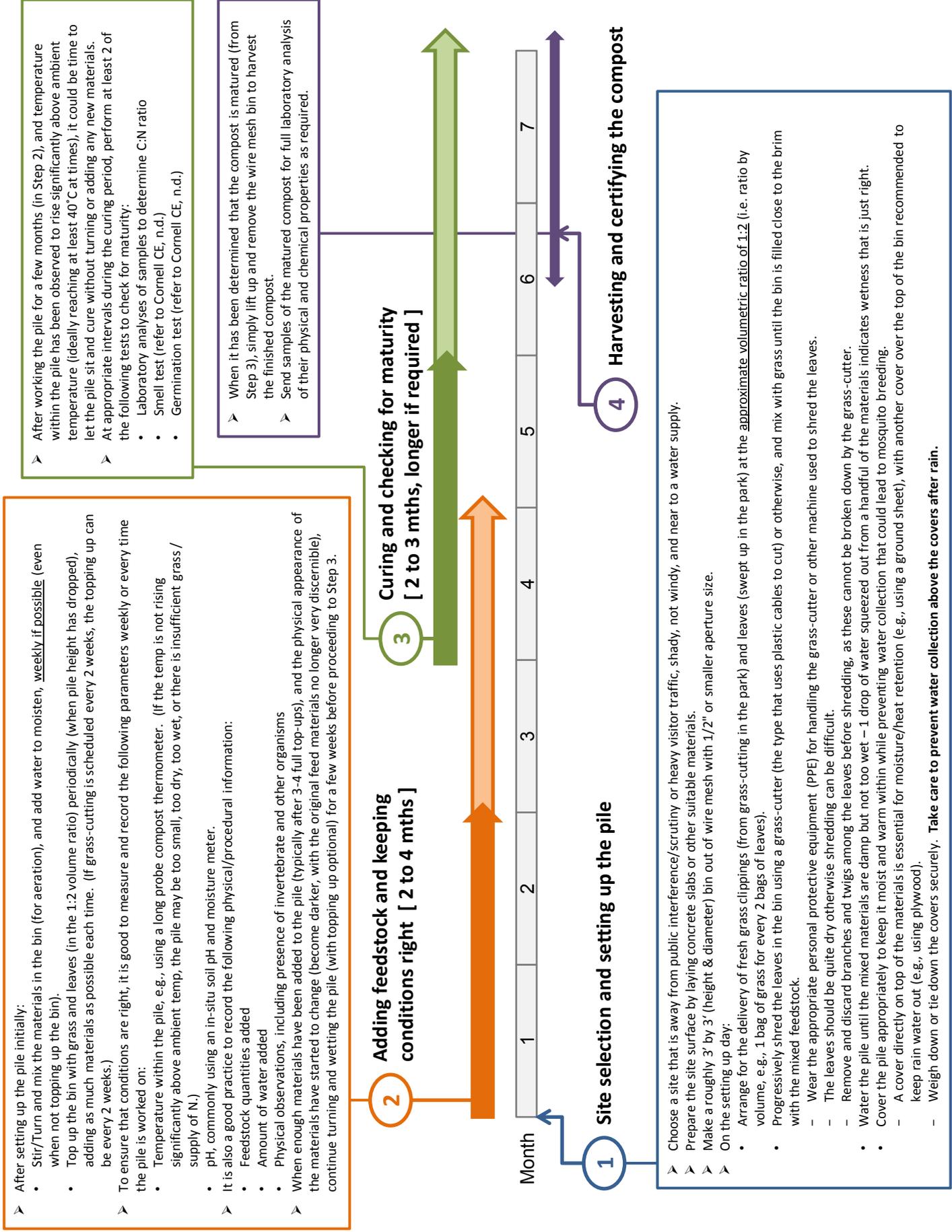


Fig. 1

Maintenance Challenges & Watch Areas

The following are some key challenges and watch areas in maintaining a successful composting operation in a park:

Ensure manpower resources are allocated for maintenance of the piles

Although the static pile method is relatively easy to set up and maintain, it still requires regular tending by personnel who have been properly briefed, usually the landscape maintenance workers in the park. The composting tasks can ideally be assimilated into the weekly landscape maintenance work schedules for the workers without compromising other areas or significantly increasing cost. Alternatively, community volunteers can be enlisted to assume responsibility over the piles who are convinced of the purpose and benefits (see the next point below).

Engage the community

For composting in parks to be sustained, it is necessary to engage the surrounding communities so that there is better appreciation of the ecological rationales. This would help to mitigate negative perceptions of certain stakeholders, such as concerns with pests and appearance of the green space. You can start with installation of informative signages on-site, and even progress to educational programmes that empower people to start their own composting.

Manage environmental risk factors

Indeed, some of the public fears with pests can come true if the environmental risk factors are not well managed, for example, the potential for mosquito breeding. Since the compost bins are usually placed in the open, they are subject to naturally occurring vectors that may show up – but only if we provide the right conditions and invite them over. Although hort waste (unlike food waste) is not susceptible to the usual domestic pests such as flies and rats, good management oversight and regular housekeeping would still go a long way towards preventing potential problems.

Conclusion

Our parklands have great potential to contribute more towards the environmental sustainability of our City in a Garden. Implementing on-site hort waste composting is a good addition to the myriad of functions and values that parks already hold. This can be done while raising productivity and without increasing operating costs.

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