UI GreenMetric Questionnaire

University : West Sumatra Maritime Polytechnic
Country : Indonesia
Web Address : https://poltekpelsumbar.ac.id/

[3] Waste (WS)

[3.7] Total volume organic waste treated this year

Type of waste	amount (ton)					
	Produced		reduced	Treated		
	Last year	This Year		reused	down-cycled	up-cycled
organic	49,5	47,7	1,8		4,2	43,5
- food waste	33,6	32,4	1,2		4,2	28,2
- leaf	15,8	15,3	0,5			15,3

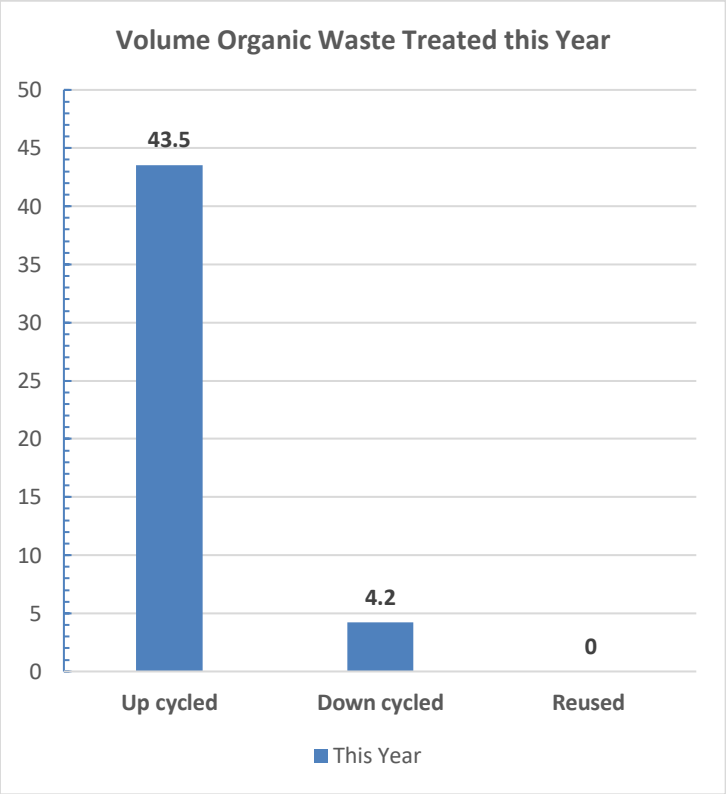
Description:
Organic waste treatment is the process of recycling naturally degradable organic matter, such as food waste and dry leaves, into useful products. This activity aims to reduce the accumulation of waste in landfill sites whilst preventing environmental pollution. Generally, the most commonly used method in this process is composting or natural decomposition with the help of microorganisms. The end result of this treatment can be reused.

At the West Sumatra Maritime Polytechnic, organic waste management begins with building collective awareness among the entire academic community especially the cadets to actively reduce daily waste generation. The campus is committed to creating a clean and sustainable environment through education on waste sorting directly at the source, such as in dormitories, command centers, and dining halls. By instilling this awareness early on, the volume of organic waste generated can be significantly reduced while fostering an environmentally conscious mindset among cadets.

As a concrete step in implementing this program, the institution has adopted technological innovations in the form of an optimized HSSEC Composter and the Black Soldier Fly (BSF) maggot method. The HSSEC Composter is used effectively to accelerate the decomposition of fallen leaves and organic garden waste into high-quality compost. Meanwhile, maggot cultivation has been integrated as a biological solution to break down food scraps from the cadet dining hall in a short period of time, while also producing high-protein feed.

To improve the campus waste management system, the use of incinerator technology has also been optimized to handle residual waste that requires rapid and hygienic disposal. Through this integrated approach—which combines self-awareness, biological processing, and the use of modern thermal technology—the West Sumatra Maritime Polytechnic has successfully realized the concept of a green campus. All of these innovations serve as tangible evidence of the maritime educational institution’s active contribution to preserving the sustainability of the surrounding ecosystem.

This year, the campus organic waste management program successfully processed a total of 47.7 metric tons of waste over the course of a year, producing two categories of end products. Some of the waste was successfully transformed into high-value upcycled products, such as premium fertilizer and protein-rich maggot feed. Meanwhile, the remaining material was downcycled into mulch due to its reduced quality. This difference in outcomes demonstrates that the entire volume of incoming organic waste was successfully reused to its full potential.



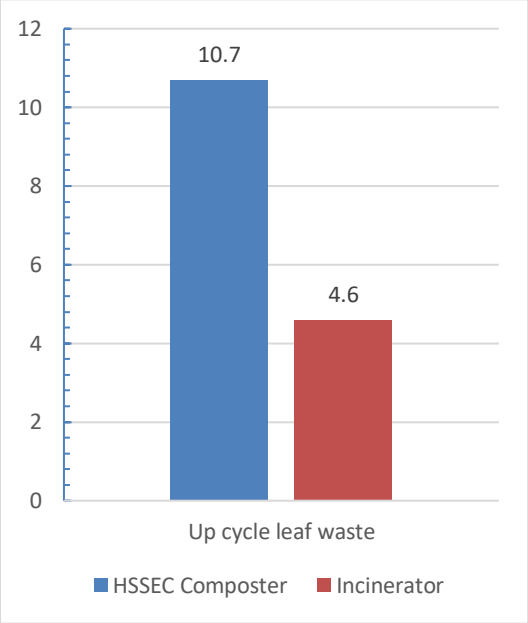
This year, the West Sumatra Maritime Polytechnic successfully achieved an extraordinary milestone in environmental management, with a total volume of organic waste processed reaching 47.7 metric tons. Of that total, the West Sumatra Maritime Polytechnic successfully transformed 43.5 metric tons of organic waste into new, far more useful products or “upcycled” items such as high-quality compost and alternative animal feed. Meanwhile, the remaining 4.2 metric tons of waste was downcycled; these materials were still processed and managed very effectively so they could decompose safely without polluting the campus ecosystem.

To break it down further, the largest contribution to the 43.5 metric tons of useful upcycled products came from the management of 28.2 metric tons of food waste that was successfully upcycled. Meanwhile, the remaining 15.3 metric tons came from dry leaves and grass clippings collected on campus, which were also successfully upcycled to their full potential.

Looking at the details of these achievements, food waste management accounted for the largest share 28.2 metric tons which was successfully upcycled into high-value products through maggot farming. This processing method is an environmentally friendly innovation developed directly by the university in collaboration with the active participation of cadets from the West Sumatra Maritime Polytechnic. The cadets’ involvement in independently managing the maggot farming operation has not only successfully reduced waste volume but also serves as tangible evidence of the application of appropriate technology within the dormitory environment.

Meanwhile, the remaining 4.2 metric tons of waste classified as “downcycled” continues to be managed and processed very effectively by the university. Although the quality of the material has deteriorated, making it impossible to fully process it into new, high-value products, this waste has been safely stabilized so that it can decompose naturally. This approach ensures that none of the remaining organic residue pollutes the campus ecosystem in any way.

On the other hand, the remaining 15.3 metric tons of waste consisting of dry leaves and grass was successfully upcycled using two primary processing methods. The campus optimizes the use of HSSEC Composter technology to accelerate decomposition into organic fertilizer, and utilizes a modern incinerator to quickly and hygienically reduce dry materials. These two devices represent important innovations in the campus’s waste management system, ensuring that all waste from open areas can be converted into new products that are far more beneficial for environmental sustainability.



The campus successfully processed all 15.3 metric tons of dry leaves and grass waste this past year into useful products with no waste left over. This success was achieved through optimal resource allocation: 10.7 metric tons were processed using the HSSEC Composter to produce high-quality compost, while the remaining 4.6 metric tons were processed through an incinerator to produce ash as a raw material for making charcoal briquettes. This environmentally friendly approach demonstrates a genuine commitment to achieving self-sufficient and value-added environmental management.

It is hoped that these management innovations can continue consistently and develop further so that organic waste management on campus remains optimally organized. The successes achieved in the previous year should serve as a strong foundation and motivation to create a far better, more effective, and more innovative system in the future. Through ongoing commitment, this program is expected to have an increasingly widespread positive impact on environmental sustainability and campus self-sufficiency.