

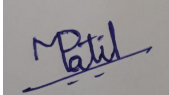



Report on sustainable and
decentralized waste management
project at
Raghunath Vihar, Kharghar

Compost Harvest report – CC01

05/04/2022



Report Prepared by	Report Endorsed by
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Report on Bio Composting Project at Raghunath Vihar

Raghunath Vihar has been associated with RUR GreenLife as part of their decentralized and sustainable waste management, under Wise with Waste project associated with H T Parekh and Ekonnnect. Society has adopted a 3 bin approach of waste segregation at source viz. Wet biodegradable, Dry recyclable, and Trash.

Raghunath Vihar comprises 534 flats generating around 350 kgs of wet biodegradable waste per day. The first cycle commenced on **8th Dec 2021**. This wet waste is segregated at the source, collected, and further sorted by the housekeeping staff at the premises. The sorted waste is then transferred into the efficient, hygienic, patented and GreenPro Certified RUR Greengold Bio Composters (RGGC). They have 37 units of RGGC (Large size) bio composters with each composter daily load capacity of 10-12 kg biowaste. The biodegradable wet kitchen waste was balanced with dry leaves and composted through RUR's GreenGold Aerobic Biocomposter (RGGC) installed at their premises.

The project aims at composting wet biowaste in-situ reducing the impact on the environment by transportation and dumping, as well as aims at changing the mindset and creating eco-conscious citizens who make their waste worthwhile.

Raghunath Vihar has managed to compost their wet waste successfully, which has helped to produce nutritionally balanced organic compost. This nutrient-rich compost was used for the landscaped gardens.

The composting process started on 8th Dec 2021 and since then, daily wet waste has been composted. A waste Audit was done before installing machines in order to understand the mindset and current segregation process. A sustainability and Waste management workshop and webinar were conducted in order to optimize the segregation of waste and create awareness of waste management. Separate workshop was conducted for housekeeping staff in order to educate them about the process and waste segregation. The first cycle in each drum was completed in roughly 50-55 days, and the analysis is as follows:

Composting Cycle 1:

Inception of the Project: 8th Dec 2021

Total Amount of Bio-Waste composted: 150 Kg

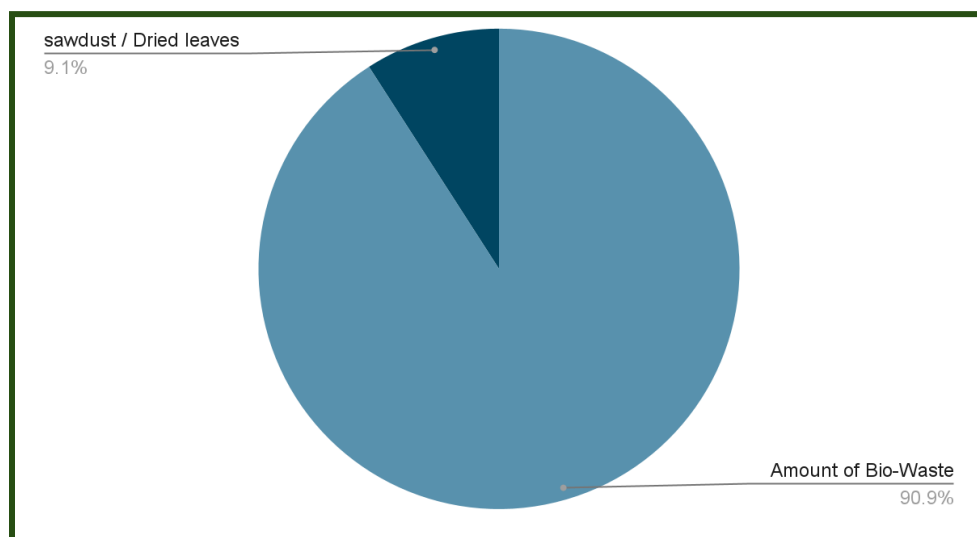
Estimated sawdust / Dried leaves utilization (Approx): 15 Kg

Total Compost Obtained (Approx): 25 Kg

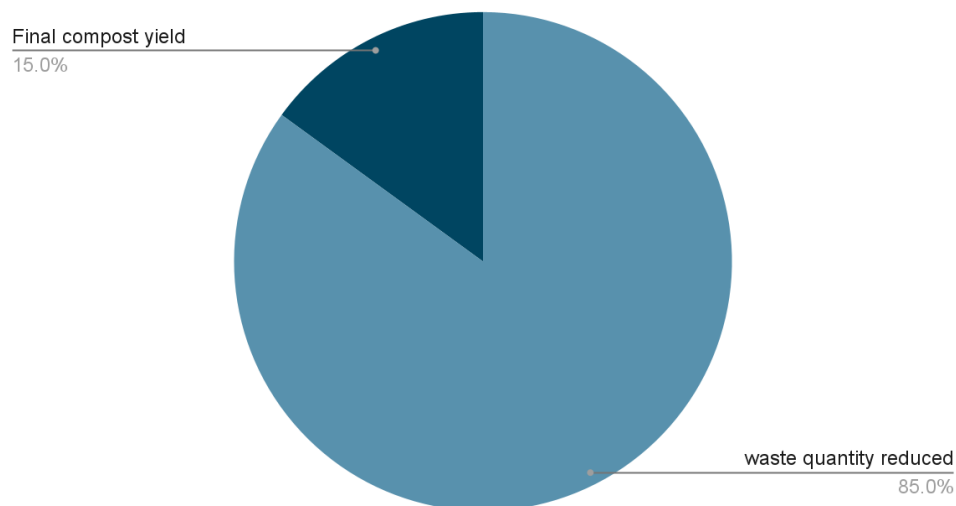
Waste quantity was reduced by: 85 %

Final compost yield: 15 %

Cycle time (Approx): 60 days



Input for the first cycle



Output for the first cycle



Wet waste



Dry leaves



Installation



Waste audit



Installation



Awareness workshop



Site monitoring visits



Ready compost



Dry waste segregation



Raghunath Vihar has a super enthusiastic team of Green champs, which includes residents - Dr. Reddy, Ms. Mrunalini Nigde, Mr. Chandramohan and responsible housekeeping - Mr. Prabhakar and team. The team has taken a good amount of efforts in order to implement waste segregation more effectively at Raghunath Vihar. They have also been able to tackle resistance from some of the residents who were initially not supportive of the project. They have circulated flyers and spread awareness during community celebrations like Womens' Day. This site has become a role model society in Kharghar. Many visitors including delegates from Swacch Bharat Mission department have visited the facility to understand decentralized waste management at community level. Raghunath Vihar has also received Swacch society award. Along with the decentralized waste management, this society is having few more green initiatives - rain water harvesting, butterfly garden, recycled tyre articles to decorate their gardens, vermi compost and pit compost practices with their in house designs.



Testimonials

Ms. Mrinalini Nigde

Ms. Mrinalini has been using our home composter unit for the last 2 years. She has done the proof of concept and recommended it to Raghunath Vihar managing committee for community level. She is one of the green champs of



Raghunath Vihar. She says this is a really good initiative and should be implemented in all societies. She is so proud that Raghunath Vihar is the first society in Kharghar implementing such a project and now their society has become an example for others. When asked about the awareness in society, she says “When the psychology changes, garbage also reduces. And this initiative is not a destination, it's a process. So we all together at Raghunath Vihar will make it successful”.

Housekeeping Staff

Staff says they took 4 to 5 days to understand and learn the process. The RUR team and Green champs helped and guided them as and when required. Now the team is confident and working on the process efficiently.

Annexure 1

Carbon Footprint Mitigation during transportation - Cycle 1

To calculate carbon emission from the transportation of garbage truck; the conversion factor for CO₂ emission is as follows

$\text{Kg CO}_2/\text{km [x]} = 0.3070 * \text{No. of trips undertaken by the vehicle}$

$\text{Kg CO}_2 \text{ mitigation per trip per truck} = 0.307 * \text{Distance of waste management site from the landfill (km)} * 2$

2= Assumption factor. One truck will start from the landfill, cover the distance and reach the site, and return to the landfill after picking up the waste.

The capacity of 1 BMC truck = 1203.65 Kg of waste per trip (values obtained from BMC Site)

Therefore, no of trips required to transport organic waste =

Waste Generated / Capacity of BMC truck i.e 1203.65 kg



CO₂ mitigation during transport of Organic waste = $0.307 * \text{distance of waste management site from landfills} * 2 * \text{waste generated at site} / 1203.65$

Example;

Raghunath Vihar saved a total of 150 kg of wet waste and 15 kg of sawdust from being transported to the landfills during its first cycle of composting.

Distance of landfill from Raghunath Vihar = 10 km

Recall, the capacity of each truck = 1203.65 kg

Thus, total CO₂ mitigated during cycle 1 = $(0.307 * 10 * 2) * 165 / 1203.65$
= 0.84 kg CO₂ per composter

a: 1:1 of wet waste:dry leaves by volume is equivalent to 10:1 wet waste: dry leaves by weight. i.e when 1 kg of wet waste is mixed with an equal volume of dry leaves, the weight of the dry leaves is roughly 0.1kg or 100grams. However, during the hold period, extra sawdust is added to balance the moisture which accounts for the extra 3 kg quantity considered.

During the first cycle of composting, Raghunath Vihar has managed to salvage a total 165 kg of wet biowaste per composter from being transported to landfills and saved a carbon footprint of 0.84 kg of carbon dioxide equivalent.

Recommendations:

- Segregation of Waste needs to be improved as mixed waste deteriorates the recyclability of the Dry waste
- Waste can be segregated in 3 bins at the household level so as to maximize the recyclability of dry waste like paper, cardboard, plastic, metal, glass, Tetra Pak cartons, e-waste, etc.
- Raghunath Vihar can take up the 7 bin approach in order to collect dry recyclable waste into different bins, which can motivate people to start segregating their waste at an individual level.
- Raghunath Vihar Team can plan for a kitchen/Terrace garden and utilize the compost to grow fresh vegetables and fruits of their own.



Waste Audit Report

Date: 22nd November 2021

Raghunath Vihar is located in Kharghar. It has 13 wings and 534 flats where 450 of them are occupied. The society has a garden on the ground floor and 2 pits for composting which manage partial wet waste.

Current Waste Scenario of Raghunath Vihar

Raghunath Vihar has a huge place on the ground floor where the society has a garden and 2 pits (dimensions 12ft*4ft*3ft) which manages their partial wet waste. Dry waste is collected separately and it is disposed of by giving it to the BMC.

As society is having a garden, there is horticultural waste too. Also, this society has its shredder.

A detailed table of the waste generated within Raghunath Vihar is as below:

Observation	Dry Waste + Trash (Kg)	Wet Waste (Kg)
Daily	380	128.2
Weekly	2660	897.4
Monthly	11780	3974.2
Annually	138700	46793

Mind-Set: The admin team is enthusiastic about the process. The housekeeping staff is welcoming the idea to manage waste. Dr. Reddy, one of the residents, personally takes care of the pit system and showed interest in

the composters site too. Mr. Chandramohan, and Ms. Mrinalini also takes care of the process.



Recommendations

1. 4 color-coded bins can be given for further segregation of dry waste
2. Biomedical waste should be kept separate
3. Green activities and training can be done for more education and awareness.
4. We can set up Greengold Bio Composter (RGGC L - 25 machines) for converting biodegradable waste into manure.



Compost Test Report

Date: 21st February 2022

Accurate Analytical Laboratory
Apartment"
Prof. Mrs. S.M.Nadkarni M.Sc. (Lond)
Tel.: 25652744 / Fax 25652744
E-mail :- shalini_nadkarni2006@yahoo.co.in
E-mail :- accurate.analyticalab@gmail.com

" Divya Tej
CTS, 967/10, Flat no. 103, 1st Floor
Behind Lokmanya Multipurpose Co-op
Society Ltd. Near Ratna Hospital,
Off Senapati Bapat Road Pune 411016

TEST REPORT

REPORT No : ATM / S - 379

21.02.2022

To,
RUR Greenlife Pvt Ltd,
307, Nav - Vivek Industrial Premises
Mogul Lane Mahim (W), Mumbai 400016 (Maharashtra)

Kind Attn : Pradnya S

Your Ref No: Your Letter (Mail) Dated: 11.02.2022 Received On : 11.02.2022.

Sample :- One Compost sample.

Test to be conducted :- To determine Total Nitrogen (N), Total Organic Carbon, (TOC), EC.,
(1 % Soln.) Total Phosphorus (P), Total Potassium (K), Total Moisture
(by oven drying @105°C), pH (1 % soln.), Bulk density (after 100 taps).

TEST FINDINGS :

<u>Sr.No</u>	<u>TESTS</u>	<u>Unit</u>	Compost - Sample Result on as such basis
1)	Total Kjeldhal Nitrogen (N)	%	1 . 3486
2)	Total Organic Carbon (C)	%	15 . 7052
3)	Electrical Conductivity (1 % Soln.)	µmhos/cm	549 . 00
4)	Total Phosphorus (P)	%	7 . 5201
5)	Total Potassium (K)	%	1 . 2706
6)	Total Moisture (by oven drying @105°C)	%	28 . 8153
7)	pH (1 % Solution)	----	9 . 11
8)	Bulk density (after 100 taps)	gm / cc	0 . 3547

For Accurate Analytical Laboratory

M.P.G../S.S

Mrs. S.M. Nadkarni.

Disclaimer:

- Sample submitted by the Customer in their own container.
- Above analysis result is valid only for the specific sample as stated above, submitted for testing, without any bias to its source.
- We claim no responsibility for changes made in the report after dispatch e.g use of whitener or eraser.
- Above Test Report cannot be produced as legal evidence without our prior written permission.
- Sample stored for one month and Test Report for one year from the date received.
- Duplicate copies of Report or Invoice will be charged extra.