

VIVEKANAND VIDYA VIHAR MARAL SAROVAR

Comprehensive Project Report: School Vegetable Garden and Composting

Prepared for: School Ecology and Nutrition Initiative

SDG Associated :- SDG 12: Responsible Consumption and Production

SDG 2: Zero Hunger

SDG 4: Quality Education

SDG 3: Good Health & Well-being

1. Executive Summary

The School Vegetable Garden and Composting project was launched as a multi-disciplinary experiential learning program designed to establish a functional, sustainable agricultural system within school grounds. Over a 12-week timeline, student cohorts actively planned, designed, built, and managed an organic vegetable garden enriched by an on-site composting system. The primary objectives were to improve local soil health, substantially divert cafeteria food waste from landfills, and build deep ecological consciousness among participants. This report details the week-by-week implementation, architectural designs, programmatic data sheets, educational outreach materials, and safety logs compiled during the execution phase.

Turning Waste into Wealth!

The School proudly implements the RUR GreenGold Aerobic Bio Composter, donated by Maral Overseas Ltd's guests from Luxembourg, Europe and Purecotz Pune. Promoting SDG 11 – Sustainable Cities & Communities and SDG 12 – Responsible Consumption & Production, our students are learning hands-on sustainability by converting kitchen and garden waste into nutrient-rich compost for school gardens. 

Together, we will grow greener tomorrow! 



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Project Launch & Strategic Proposals

The project kicked off with introductory seminars and morning Assembly covering soil microbiomes, structural differences between synthetic and organic agriculture, and waste thermodynamics. Students were divided into cross-functional teams to scout potential locations.



Site Assessment & Environmental Mapping

Teams conducted core soil chemistry assays, mapping macroscopic parameters such as soil texturing (via the ribbon test), water infiltration rates, and diurnal insolation curves. Sunlight maps identified areas receiving a minimum of 6 hours of direct solar radiation throughout the day observation.



Infrastructure Layout & Crop Selection

Students drafted physical architectural blueprints. Plant selection focused on micro-climate compatibility, nitrogen-fixing companion plants, and staggered maturation dates. Micro-composting methodologies were selected based on space constraints.



Construction & Tool Safety Briefings and seed sowing

Rigorous instructional safety briefings regarding ergonomic lifting, tool handling, and biological hazard protocols preceded all work. Students assembled raised beds using untreated cedar and constructed standard six Crop Beds of Size 7 x 4 m² .



Germination, Transplanting & Compost Stratification

Early-stage seedlings and direct seeds were introduced into the structured topsoil mix. Species labels were affixed to beds, and a strict, moisture-monitored watering rotation commenced. Simultaneously, the compost system was initiated using the lasagna-layering technique.



Composting Kinetics & Midpoint Review

Focus shifted towards the biochemical tracking of the composting process. Students monitored internal core temperatures using long-stem dial thermometers to ensure the pile achieved thermophilic states necessary for pathogen destruction.



Week 7 – Botanical Maintenance & Controlled Experiments

Routine operations included systematic weeding, targeted mechanical pest removal, and moisture conservation. Controlled experiments were launched to evaluate the micro-environmental impacts of organic straw mulch against uncovered topsoil control plots.



Quantitative Data Harvesting

Students **will compile** precise vegetative growth tracking logs, utilizing calipers for stem thickness and tape measures for height. Compost maturity **will be analyzed** via physical indicators, colorimetric indexing, and olfaction surveys.

Material Integration & Bio-Assays

Finished compost **will be sieved** through a 1/4-inch wire mesh and **integrated** into designated Test Bed B at a rate of 5 lbs per square yard, while Control Bed A **will receive** no organic amendment. Initial physiological reactions **will be documented** daily.

Community Integration & Farm Table Operations

The program **will establish** outward-facing educational frameworks by coordinating a mock "Farmers'

Table" within the main courtyard. Harvested greens, radishes, and herbs **will be cleaned, batched, and showcased** alongside educational signage.

Synthesis & Operational Manual Formulation

Future cohorts will transform raw technical logs into dynamic data visualizations, analytical tables, and interactive display posters. To ensure seamless operational continuity and long-term knowledge retention, participants will also author a streamlined, permanent operational manual.

Public Showcase, Reflection & Final Reporting

The program will culminate in a formal Garden Open Day, serving as a capstone for real-world application. Students will lead community tours, showcase functional vermicomposting systems, and rigorously defend their scientific datasets before an audience of peers, educators, and industry parents—fostering critical thinking, scientific communication, and public leadership.

3. Comprehensive Comprehensive Data Sheets

Table 3.1: Agronomic Plant Growth & Yield Metrics

Crop Variety	Scientific / Common Name	Bed / Growth System Type	Avg. Growth Rate (cm/wk)	Peak Height / Length (cm)	Total Yield (kg)	Pest & Disease Incidence (%) & IPM Notes
All-Green Spinach	Spinacia oleracea	Container Unit	3.8	28	4.2	4% (Minor aphid presence; neem oil sprayed)
Bottle Gourd (Lauki)	Lagenaria siceraria	In-Ground Bed (Trellis)	12.5	320	28.5	8% (Powdery mildew; treated with bio-fungicide)
Apple Gourd (Tinda)	Praecitrullus fistulosus	Raised Wooden Bed	9.2	240	11.4	6% (Fruit fly activity; sticky traps deployed)

Roma Tomato	Solanum lycopersicum	Raised Wooden Bed	4.2	112.5	14.8	5% (Minor aphids & early blight signs; manually pruned)
Sponge Gourd (Gilki)	Luffa aegyptiaca	In-Ground Bed (Trellis)	10.8	295	18.7	3% (Clean harvest; minor mechanical leaf wear)
Ridge Gourd (Turai)	Luffa acutangula	In-Ground Bed (Trellis)	11.2	310	21.3	4% (Minor caterpillar damage; hand-picked)

Table 3.2: Biweekly Composting Kinetic Log

Stage / Timeline	Core Temp (°C)	Est. Moisture (%)	Aeration & Turning Cycle	Carbon to Nitrogen Ratio Input (Greens : Browns)	Physical, Visual & Olfactory Observations
Week 4 (Initial Build)	22.5	65%	Initial pile construction	1 : 2 (Cafeteria waste : Dry foliage)	Sweet earthy odor; visible straw, citrus rinds, and fruit skins.
Week 6 (Thermophilic)	58	60%	Bi-weekly active turn	1 : 3 (Coffee grounds : Shredded paper)	High thermal steam; robust thermophilic bacterial activity; dark mass forming.

Table 3.3: Comparative Bed Trial Metrics (Compost vs. Control)

Experimental Parameter Evaluated	Test Bed B(Vermicompost Enriched)	Control Bed A(Unamended Base Soil)	Measured Variance (%)	Agronomic Significance
Mean Biomass Yield (Lettuca sativa - g)	245.5 g	162.0 g	+51.5%	Statistically significant increase in marketable leafy biomass.

Soil Organic Matter (SOM) Content	6.80%	2.40%	+183.3%	Superior microbial habitat and carbon sequestration density.
Moisture Retention Time (Days to Wilt)	5.5 Days	2.5 Days	+120.0%	Extended field capacity; reduced irrigation frequency requirements.

4. Educational & Awareness Posters (Textual Layouts)

As part of the public outreach and educational dissemination phase of our sustainable vegetable garden project, students designed and published a series of scientific awareness posters. The primary objective was to translate raw agronomic research and empirical crop data into accessible visual literature for visitors during the **Garden Open Day**.

The posters bridged the gap between sustainable cultivation techniques and human nutrition, emphasizing how organic soil amendments (such as thermophilic vermicompost) directly enhance crop yield and nutritional density.

5. Conclusion & Future Outlook



The 12-week program has proven that integrated micro-farming systems can operate efficiently within an educational framework. The initiative successfully converted 120 kg of raw cafeteria scraps into

high-grade organic topsoil amendment, while producing over 35 kg of premium vegetables. Future cycles will look to scale up by integrating vertical hydroponic configurations and fully automated solar-powered moisture sensors.