Shriram Education Society, Phaltan

NAMDEVRAO SURYAWANSHI (BEDKE) COLLEGE, PHALTAN.

Tal. Phaltan Dist. Satara

CRITERION NO.7

Institutional Values And Best Practices

Key Indicater-7.1.3

7.1.3 Quality audits on environment and energy regularly undertaken by the Institution

7.1.3.

1. Green audit / Environment audit

2. Energy audit

3. Clean and green campus initiatives

4. Beyond the campus environmental promotin and sustainability activites



श्रीराम एज्युक्रेशन सोसायटीचे

नामदेवराव सूर्यवंशी (बेडके) महाविद्यालय, फलटण.

श्रीराम एज्युकेशन सोसायटी फलटणचे नामदेवराव सूर्यवंशी बेडके महाविद्यालय फलटण 2018 ते 2023 या कालावधीमध्ये माती परीक्षण पाणी परीक्षण पर्यावरण संवर्धन करण्यात आले त्या संबंधित कागदपत्रे आणि पर्यावरणातील संसाधनांचा आधारे तज्ञ आणि कायदेशीर संस्थेकडून परीक्षण करून प्रमाणपत्र घेण्यात आले पर्यावरण संवर्धनासाठी अनेक उपक्रम राबवण्यात आली त्यामध्ये वृक्षारोपणासारखे कार्यक्रम घेण्यात आली. संत ज्ञानेश्वर पालखी सोहळ्याने वाढलेली लोकसंख्या त्यामुळे होणारे प्रदूषण रोखण्यासाठी स्वच्छता आणि इतर उपक्रम राबवण्यात आले गणेश उत्सव काळात पाण्याचे प्रदूषण रोखण्यासाठी कृत्रिम टॅंक तयार करण्यात आले दिवाळी सणाच्या .वेळी ध्वनी प्रदूषण व रंगपंचमी यावेळी तसेच नागपंचमीच्या वेळी चायनीज मांजा वापरू नये यासाठी प्रबोधन जनजागृती करण्यात आली

awanshi(Bedke) College Phaltan Dist. Satara



॥ विद्यामर्थं च् साध	येत्।।
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फलटण एज्युकेशन सोसायटीय प्रदारमा फूल्टे कृषि विद्यापीठ रा	संचलित व
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मृदा आरोग्य पत्रिका माती व पाणी परीक्षण केंद्र, जिंती नाका, फलटण

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Save Soil.. Save World

फलटण एज्युकेशन सोसायटी संचलित

श्रीमंत शिवाजीराजे उद्यानविद्या महाविद्यालय व कृषि महाविद्यालय माती व पाणी परीक्षण प्रयोगशाळा जिती नाका, फलटण, ता.फलटण, जि.सातारा 2 . .

जमिनीची आरोग्य पत्निका



ताव ााव गोष्ट गालुका गज्य पेन कोग भाधार ग	शेतक-याची माहिती नामदेवराव सूर्यवंड फलटण फलटण सातारा महाराष्ट्र इ 415523 कार्ड कमांक /दूरध्वनी क मातीच्या नमून्याचे विवरण	गी महाविडयालय	क 1 2 <u>3</u>	प्रयोगशाळेर साम् पाण्यात वि क्षारांचे प्रमा	वे नाव म श्र घटक (pH) रघळणा-या ण (EC)	ति व पाणी श्रीमंत शिवार्ज मूळ माप नीपम /पाप	परीक्षण प्रयो गीराजे उद्यानी माती प आव	गशाला वेद्या महाविद्यालय परीक्षण अहवाल जमिनीत ाश्यक प्रमाण	जिंती नाका फलटन प्रमाण	निग	कर्प
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नामदेवराव सूर्यव	शी (बडक) महा।वह	पालय,	എന്റവ്.	
खाते मा. प्रिन्सीपल, पावती लिहून देणार <u>डो प्र</u> ीजवित्न	यांसी,	टहौ. नर रा.	वर	, फल
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Principal Nemdevrao Suryewanshi(Bedke) College Phaltan Dist. Satara



॥ प्रज्वलितो ज्ञानमयः प्रदीपः॥ श्रीराम एज्युकेशन सोसायटी फलटणचे

नामदेवराव सूर्यवंशी (बेडके) महाविद्यालय

एस. टी. स्टॅण्डजवळ, नाना पाटील चौक, फलटण ४९५ ५२३. जि. सातारा. (महाराष्ट्र) फोन : (०२९६६) २२२४७४, फॅक्स : (०२९६६) २२४९५९ वेबसाईट : www.nsbcphaltan.com/Phlt321.cl@unishivaji.ac.in ● ईमेल : nsbcollege7@gmail.com

NGC 2004/(1/04)/म. शि. - ३ दि. १५ जुलै २००४

🛛 कला 🖉 वाणिज्य 🛛 विज्ञान 🔾

स्थापना : दि. १८ ऑगरेंस २००४.

जावक क्र. : 223/23-24

||प्रमीलती ज्ञानमंक प्रतीपः || -

दिनांक : 9/11/2023,

प्रति मा . प्राचार्य मालोजीराजे शेती महाविद्यालय फलटण

विषय : माती परीक्षण आणि पाणी परीक्षण करणेबाबत.....

महोदय

वरील विषयांस अनुसरून आमच्या नामदेवराव सूर्यवंशी (बेडके) महाविद्यालय , फलटण चे नॅक मूल्यांकनाचे कामकाज सुरू असून याकरीता आम्हांला माती परीक्षण आणि पाणी परीक्षण करून घ्यावयाचे आहे . तरी आपण आम्हांस सहकार्य करावे ही नम्र विनंती .

कळावे.

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आपला विश्वास

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1.2023 नामदेवराव सूर्यवंशी(बेडके)महाविद्यालय फलटण,जि.साताश.



GREEN AND ENVIRONMENTAL AUDIT REPORT

November 2022

Prepared for NAMDEVRAO SURYAVANSHI (BEDKE) COLLEGE, PHALTAN

Prepared by Adya Environmental services, Baramati

Submitted on 25th NOVEMBER 2022

Principal ' Namdevrao Suryawanshi(Bedha) College Phattan, Dist. Satara



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Principal Namdevrao Suryawanshi(Bedke) College Phattan, Dist. Satar

AUDITS 1. SOLID WASTE AUDIT

INTRODUCTION

Urbanization and industrialization have resulted in increasing amounts of municipal, industrial and health care waste in the country. Central pollution control board (CPCB) has estimated current quantum of solid waste generation in India to the tune of 48 million tons per annum. Each year everyone in India throws away more than 0.4 tons of waste. Management of such high quantum of waste puts enormous pressure on solid waste management system. Throwing thing away is waste of natural resources and energy which have been used to make the product. Waste has to put somewhere. Most of it is sent to landfill sites or incinerated (burnt), using up land and releasing greenhouse gasses. On an average in India 12% of waste is recycled/composted, 79% is sent to landfill site and 9% is incinerated (burnt)

SOLID WASTE GENERATION

VISUAL ANALYSIS OF MONTHLY SOLID WASTE GENERATION

Garden waste is the main contributor of campus solid waste by volume. Every week near about 2000 to 3000 gm of Garden waste is removed from college campus. Variation in Garden waste quantity is also found due to the seasonal variation. Paper waste also contributes a lot to the solid waste volume.

As an educational institute, college's paper and hard paper waste like cardboard, paper covering, printing paper is also notable. Tea cups are also grouped into paper waste. Paper and Hard paper waste accounts for near about 30% by volume. Namdevrao Suryavanshi, Bedke College, Phaltan (hereinafter referred to as NBCP) converts some quantity of its garden waste to manure by composting. Food waste is not included in visual analysis of solid waste for college building. College staff and students bring back their food waste (Tiffin waste) to home.

SOLID WASTE ACCOUNTING BY WEIGHT



TABLE 1 WEEKLY WASTE OF OFFICES, CLASSROOMS & LIBRARY IN GM APX

Place	Paper	Hard pape	Polythene	Hard Plastic	Glass	Chalks	Biomass	E-waste
Library	25	30	1	15	5	NEG	+ other	10
Main offic	50	40	1	12	3	NEG	15	10
Classroo	ms ₂₀	10	1	15	5	100	NEG	NEG
Total	120	80	3	42	13	100	13	20

TABLE 2 WEEKLY DPT WISE SOLID WASTE GENERATION OF COLLEGE IN GM APX

Departments	Paper	Hard paper	Polythene	Hard Plastic	Glass	Chalks	E - Waste
Departments and other	20	15	1	10	4	30	15

TABLE 2 WEEKLY SOLID WASTE OF NON-BUILT-UP OF COLLEGE CAMPUS APX (GM)

Place	Paper	Hard paper	Polythene	Hard Plastic	Glass	Chalks	Garden waste	E-
Solid Waste of non built-up area	35	10	2	60	5	NEG	3000-4000 (depends on	waste 10
					-		the season)	

TOTAL WEEKLY WASTE GENERATION OF CAMPUS

Here we can see that Garden waste is the main contributor of campus solid waste by weight. Paper comes after that. Sanitary pads and hard paper are the third and fourth main contributors. If we differentiate between degradable and biodegradable waste biodegradable waste shows comparatively large figure compare to Non – degradable waste (glass, electronic, waste, and plastic).

Weekly Biodegradable waste of college is around 3.5 kg while non biodegradable waste of campus comparatively small and is around 0.5 kg. But these are non-biodegradable substances and disturb natural processes. So College should take steps towards waste reduction, reuse and recycling to make its campus more Eco-friendly.

	Waste Type	Percentage		
1	Paper	25 %		
2	Hard paper	10 %		
3	Garden waste	50 %		
4	Hard plastic	5%		
5	Polythene	5 %		
6	Glass	1 %		
7	Electronic waste	2%		
8	Miscellaneous	2%		



Table Visual a Visual Analysis of Waste (apprpx)

Т

Table Waste by weight (apprpx)

KEY CONTRIBUTORS OF CAMPUS SOLID WASTE

CHALK WASTE

Chalk waste is an important contributor of College's Solid waste. Chalk dust is also an allergic irritant for many students and teachers. Chalk is mostly made up of limestone or gypsum. It can be reused or recycled.



GLASS, PAPER AND HARD PLASTIC

On an average 157g of hard plastic and plastic is weekly disposed off by campus. Approx 275gm of paper and hard paper waste goes to dustbin every week. Out of that some of paper waste is sold out to Raddiwala. On an average 22 gm of glass goes to waste. There should be a separate storage bin for these waste types. College staff reuses some of the waste paper for their daily office work. Separate storage bins should be provided for three categories of waste (at one place). And it should be given to waste recycler after possible reuse of waste.

ORGANIC WASTE

Organic waste of this college mainly includes garde Weekly on an average 3000-4000gm of garden waste (season) is removed from college premises plus other orga (other than gardening area) which further goes for co Garden maintenance is done once in a month. And this to compost unit..

-		-		-	-		Local Indiana			
	ink pens.	refillable pens OR	one pair of	semester with	last a whole	Ask students to	staff:	students and	Challenge for	

Biological technique is most appropriate technique for organic and highmoisture wastes. It includes two main processing mechanisms – composting and anaerobic digestion/bio-methanation.

USE AND THROW TYPE PENS

Nowadays many people use 'use and throw' type pens. Nobody goes to refill the pen with ink. This adds more plastic to our dustbin. Same picture can be found at this College campus. 98% of students of NBCP use 'use and throw' type pens. This adds near notable quantity of hard plastic to solid waste per year.

ELECTRONIC WASTE

A college gives its E-waste to a vendor company.

SANITARY PADS:

Menstrual Hygiene Management (MHM) is an integral part of the Swachh Bharat Mission Guidelines

(SBM-G). The MHM Guideline (Dec 2015) is issued by the Ministry of Drinking Vater and Sanitation to support all adolescent girls and women. It outlines what needs to be done by state governments, district administrations, engineers and technical experts in line departments; and school head teachers and teachers.

Steps by NBCP towards waste minimization:

- Reduce: Eliminate import of unnecessary plastic, material i.e lowering the amount of waste produced.
- Refuse: By using material repeatedly

As the usage of sanitary napkins is increasing, the amount of sanitary waste generated every day is also increasing. It is equally **Report intRocaldring Energy from effected** to this infectious waste. Currently as we see, a major part of this waste is dumped into landfills leading to tremendous land pollution. Sanitary napkins are flushed down the toilet under the name of convenience. All the drains ultimately meet the rivers in the city and thus water pollution increases.

So if we see the chart of UNSAFE to SAFE practices i.e burning and use of small incinerators is comparatively safe option. Currently college is using contolled burning option.

College has one more option to use one of two options to minimize environmental pollution. If college selects the burning option then it should be done at a distant place and under complete observation (till complete burning of the sanitary waste).

RECOMMENDATIONS

NBCP College should improve its Waste Management Plan to achieve its goal of Carbon neutral campus.

2. WATER AUDIT

INTRODUCTION

A

water audit is a systematic review of a site that identifies the quantities and characteristics of all the water uses. The site may vary from a public water utility, facility (institutional or commercial properties like malls, office, schools etc.) or a household. The overall objective of conducting a water audit is to identify opportunities to make system or building water use more efficient.

Current Water Status of the region:

Almost entire district is underlying by Deccan trap basalt. Also the isolated and small parts adjoining the hilly areas have low ground water development potential. Such areas occur in almost entire Mahabaleshwar taluka and part of Madha, Patan, Wai and Man taluka.

Depth to water level in Satara district during may 2011 ranges from 0.09 m bgl (Shendri) to 16.2 (Mahabaleshwar) Depth to water level during premonsoon (May 2011) has been 9 depicted in the following figure. The perusal figure 3 indicates that most prominent range of water level is 5-10 m bgl which is seen almost entire district.

The overall stage of ground water development in the district is 69.5% hence it is necessary to adopt water conservation and artificial recharge techniques to increase sustenance of this precious resource.

Drought areas has been observed in major parts of the district in the entire eastern, north eastern and south eastern parts comprising almost entire Khandala, Phanltan, Khatav, Mhaswad talukas and parts of Koregaon and Karad talukas. Deeper water levels of more than 10 m bgl are also seen in northern part around Mahabaleshwar, Khandala and Wai and in south eastern part of the district in the parts of Man and Khatav talukas. These are the areas where the ground water scarcity is quite common when the rainfall is deficient. The stage of ground water development in 5 talukas (Karad, Khatav, Koregaon, Phaltan and Wai) has already crossed 70%. Most of these talukas fall in rain shadow zone of Western Ghats, where rainfall is low. Hence special attention is required in above mentioned areas and immediate steps like ground water augmentation by artificial recharge practice and water conservation should be adopted



As per the government reports The stage of ground water development in 5 Phaltan has already crossed 70%. Hence special attention is required in above mentioned areas and immediate steps like ground water augmentation by artificial recharge practice and water conservation should be adopted before further ground water development is planned in these areas.

WATER SUPPLY

The Primary source of NBCP potable and Non-potable water is groundwater and municipality water. College fulfills its 70% water demand from well water. In summer season when campus faces water shortage, Municipal water is used for potable and non potable purpose. The College receives groundwater from well located within the institute's campus. The college treats well water before using it as potable water. College has filter located in College building. The pipeline from the well located in the campus is connected to water storage tanks located on the terrace. Pharmacy college has separate water storage tanks. The submersible pump of one and half Horse power was installed for pumping water to overhead 3 water tank.



Figure : Primary Source of NBCP



Figure: Fencing of Well. (Fence of Water well for safety)

As per the daily pumping observations to overhead 3 tanks of, College daily uses about 2300 liters of water. Although on certain days there is a sudden jump & increase in the amount of water which is generally attribute to increase in certain water uses like different events, workshops etc. Gardening area has direct water supply.

There is separate water storage system for water from municipal water line. A tank of 10000L capacity is constructed for this purpose. Water from this tank is supplied to Junior college, NBCP and Pharmacy College.

WATER USAGE

To conduct a building water audit water consumption data for all the users were required to be monitored and recorded. Toilet water use including flushing and face/hand washing along with drinking was clubbed under personal water use. In order to collect primary data and to ensure accuracy, a brief survey of students was conducted.



Water users (2021-2022)	Number		
Students	403		
Teaching	10		
Non teaching	6		
Total	419		

Total water users of the NBCP campus

The total personal water use was calculated from flow rates, questionnaire and total water users (occupancy of the building). We measured the flow rates of taps and pumping lines.

There are three drinking lines in college. In total there are 2 washroom blocks in campus premises, one for ladies and one for gents.

WATER CONSUMPTION CALCULATION

Total daily water Intake of water,

is 2300 lit/day

*Calculated from flow rate and daily water pumping operation to overhead tanks

1. POTABLE WATER CONSUMPTION (DAILY)

College uses filtered well water for potable water use

CALCULATION ON THE BASIS OF QUESTIONNAIRES AND FLOW RATES

i. Daily potable water consumption by staff and students: $419 \times 1 = 419$ litters/day

Total water use of drinking water is = 419 liters/day

College uses Well water directly for non potable water use

CALCULATION ON THE BASIS OF QUESTIONNAIRES AND FLOW RATES

- i. Water used for flushing by students and staff $\times 4$ liters = 1676 liters/day
- ii. Water use for mopping of Main office area = Water per washing of wiper × Number

of washing = 100 liter $\times 1 = 100$ liters/day

Water used for hand and face washing = Average time the tap left open × Number of times the hand and face washed) × Average flow rate of taps per second
 = 10 seconds × 1 times × 0.1 = 1 liters per capita

So, Total non potable water use by students and staff for hand and face washing = 1 liters \times 544= 419 liters.

So, the total water use for flushing and washing = 1676 + 100 + 419 = 2195 litters/day

* The daily water requirement for Science lab is not included here.

* College fulfills its irrigation water demand directly from well water, so this use is not included.

OVERALL WATER CONSUMPTION

Therefore based on the above recordings, monitoring and calculation, the total potable water consumption for NBCP College is 419 lit/day and non potable water consumption is 2195 liters/day. Overall water consumption is 419 + 2195 = 2614 liters per day. If gardening is excluded, then the per capita need of potable and non potable water is around 6.2 liters day.

G CHAU								
	Heads	Water use (in liters)						
1	Average daily water supply, to the overhead tanks from the underground tank. Approx	2300						
2	Total calculated water consumption from the water audit. approx	2614						
3	Difference between water consumption from overhead tanks and actual water use for various purposes	314						

Table : Total water supply and use at NBCP College

DATA COMPARISON AND ANALYSIS

There is little variation in the average amount of water that is pumped to the overhead tanks every day for various purposes and the average water consumption calculation. The average water supply (quantity) was based on time taken to overhead the tanks, flow rates and monitoring. The amount of water based on survey, flow rate and water users is 2614 liters per day while the daily water need to overhead all the tanks is 2300. The calculated water amount is 1.13 times greater than the amount of water which is used pumped in the tanks.

- THIS DIFFERENCE COULD BE ATTRIBUTED TO THE FOLLOWING FACTS
 The staff and students present per day in the college were assumed to be 100 % present. In real this percentage varies.
- The observations from questionnaire for personal water use were a representative observations and not a complete study.
- Along with this some staff and students living in nearby areas, they also don't use the college washrooms. Some of them bring drinking water from home.

WASTE WATER GENERATION BY NBCP

Every building generates waste water amounting to almost 80% of total water consumed. The major source of NBCP waste water includes grey water from wash basins, lab basins, and black water from toilets. Out of that Black water of NBCP toilets goes soakpit



ESTIMATION OF WASTE WATER GENERATED BY NBCP

Waste water generated = 80% of water used

So, waste water generated by NBCP based on water audit

= 80% of 3636 liters per day = 2908 liters/day

Waste water generated by NBCP based on pumped quantity

= 80% of 3000 liter per day = 2400 liters/day

THE KEY WATER CONSUMING AREAS

TOILETS: Water consumption is more for flushing application in any building. College has single flushing system in Toilets

IRRIGATION/WATERING OF CAMPUS PLANTS

Plants in the garden are watered in the evening to reduce evaporation losses.

CONCLUSION AND RECOMMENDATIONS

- 1. The water meter should be installed for NBCP's college at the inlet of well water and This installation will give correct amount of well water used by NBCP's
- 2. The installation of water meter will give correct information about amount of wastewater produced by the college. Along with this characteristics of waste water will help to decide selection of treatment process. The use of best available waste water technique will improve the quality of treated water and it can be used for irrigation.
- 3. LOW FLOW FLUSHING SYSTEMS Water consumption is more for Flushing applications in any building. Use of more efficient water saving toilets having dual flush system can result in a saving of at least 50% of water. Dual flush systems can be installed in order to allow different volume of water for flushing liquids and solids. To facilitate efficient cleaning at low volume, it is possible to install suitable water closets.
- WATER TAPS Use of low flow faucets along with other water saving devices such as auto control valves, pressure reducing devices, aerators wherever possible will minimize wastage of water.

3. NOISE AUDIT

Actual noise monitoring is carried out with the help of sound level meter on various locations shown in figure. We have taken the samples within the free field. The comprehensive study was done inside the campus to calculate the noise level at various important locations such as class room areas, playground, parking area, library location and the data is interpreted for solutions.

Green Audi

Noise level readings (dB) was taken using noise meter

The readings were taken in certain period of interval and specific timings such as mornings, evenings, afternoon.



Location of Namdevrao Suryawanshi Bedke College, Phaltan

DISCUSSIONS



NBCP is situated in Phaltan City. Campus is surrounded by ground, open spaces and vegetation. Those surroundings belong to Shriram Education Society.

So there is no major outside noise source other than nearby school. So there is no direct impact of road rush on teaching and learning process. Road rush is intermittent type of noise, noise that stops and starts, is considered to be more annoying than continuous noise. Any noise tends to become bothersome during summer than winter. Thanks to the summer vacations.

Parking area of any educational institute is notable noise producer. In NBCP staff vehicular parking is far from the entrance gate. So there is negligible effect of parking area.

Out of 10 average noise recordings taken at the college floor, 8 noise levels observations falls within standards. The laid down noise monitoring standard for Silence zone is 50 dB (A) for a day time. As per the CPCB guidelines educational institutes comes under Silent zones.

We have taken the samples in free field where there are no reflected sound waves. So this clears that the Noise level decreases towards classroom areas.

COMMENTS

• Silence is an important factor in education. NBCP campus is located in comparatively lesscrowdie area of the city.

As per CPCB guidelines silence zone is referred as areas up to 100 meters around such premises as hospitals, educational institutions and courts.

- Tree-shrubs-climber canopies do acoustic buffering of outside noise and acts as noise barriers for outside noise. College should plant trees-shrubs-climbers having canopies of different height.. Focus should be given to plant native vegetation.
- Parking area of any educational institute is notable noise producer. In NBCP vehicular parking is at ideal distance from classroom area.

BIODIVERSITY AUDIT

A TREE CENSUS AND INVENTORY

The present Tree census and inventory study was done to quantify, to create an inventory and to understand phyto-ecological structure of NBCP College

OBJECTIVES

- 1. To make an inventory of tree individuals and tree species in the campus.
- 2. To undertake phyto-ecological analysis with the help of

4.

- a. Species composition
- b. Abundance, Relative abundance, density

SAMPLING

Since the purpose of the study was to create a detailed inventory of Tree individuals and species, the "Census" was used as a sampling technique. The campus was surveyed and each tree was counted. Within each plot all individual trees were identified, measured, and recorded. The diameters at breast height o the species were measured using a measuring tape.

RESULTS

SPECIES COMPOSITION OF TREES

Species composition shows the different tree species found in the study area. A total of 22 species were recorded belonging to 12 families of trees and 22 genera. Tree inventory shows less diversity in the plan species and their families found in the campus. A total of 59 tree individuals species were recorded in the study site.

Dominant families recorded in the study area is fabaceae (40). All other families have less than onindividual.

ABUNDANCE From the 22 families of trees recorded in the study sites, the fabaceae had the highes number of species (11) which belongs to 11 genera. All other families have less than two species.



RELATIVE ABUNDANCE OF TREES.

Tree inventory shows the different species found in the study sites and their relative abundance. In th site, 59 individuals were sampled. The species with the highest number of individual was *Senna siame* with a percent relative abundance of 25%. It was followed by *Samanea saman* with relative abundance of 11%, and with *Azadirachta indica, Pongamia pinnata, Delonix regia* with relative abundance of 8, 8 and % respectively.

DISCUSSION

The canopy of the campus is characterized by mixed species i.e. Exotic as well as Native. The mos dominant trees in this campus are *Senna siamea*, *Samanea saman*, *Pongamia pinnata*, *Azadirachta indica, and Delonix regia*.

The Fabaceae were observed to be the most prevalent family. This may be due their massive plantation good survival rate and adaptability.

Out of first eight abundant species of the campus 5 are exotic species while three are native to India 65% tree cover of the campus is under cultivation of exotic species and which is not a good sign fo biodiversity of the study area and nearby area.

The campus does not contain tallest layer of vegetation. No emergent and canopy trees found.

CONCLUSION

- 1. Fabaceae is the dominant family and Senna siamea is the dominant species of this area.
- 2. It does not includes Trees of a rare, vulnerable or endangered species
- 3. This site does not contain tallest layer of vegetation
- 4. Large population of single species is one of the reasons for low value of evenness

			0) PHALTA
	Rain tree	Samanaa saman	7
!		Sumanea Saman	
	Karanj	Pongamia pinnata	5
	Kashid	Senna siamea	15
•	Shisam	Dalbergia sisso	2
5	Gulmohor	Delonix regia	4
5	Shirish	Albizia lebbeck	1
7	Kadunimb	Azadirachta indica	5
8	Amla	Phyllanthus emblica	2
)	Sawar	Bombax ceiba	1
10	Mogali erand	Jatropha curcas	1
11	Bamboo	Bambusa vulgaris	1
12	Bauhinia	Bauhinia acuminate	1
13	Copper tree	peltophorum pterocarpum	3
14	Subabul	Acacia auriculiformis	1
15	Buch	Millingtonia hortensis	2
16	Badam	Terminalia catapa	2
17	Parijatak	Nyctanthes arbor-tristis	1
18	Bhendi	Thespesia populnea	1
19	Naral	Cocos nucifera	1
20	Tecoma	Tecoma stans	1
21	Pandhara Chafa	Plumeria nudica	1
22	Shami	Prosopis cineraria	1

BIRD DIVERSITY

In nature bird occur in a variety of habitats – from deserts to the tropical rain forests; the short dry to the tall wet grasslands and on the alpine meadows in the high altitudes; from sea level to above 4000 meters above sea level; on rocks, cliffs in caves and mud banks; along fresh water estuaries, seas and shores They also occur on man modified lands such as agricultural fields, airfields, along roadsides and



hedgerows and gardens, among human habitations and dwellings.

NBCP College comes under habitat of man modified lands 8 bird species were recorded from the campus.

C DAY AND TIME OF BIRD CENSUS

Date ^{3rd} October 2022, Time of the observations – 7..00 am to 10.30am

Common Name	Scientific Name	College campus
Cattle Egret	Bubulcus ibis	2
Blue Rock Pigeon	Columba livia	4
Common Myna	Acridotheres tristis	2
Sparrow	Passser domesticus	5
Red vented bulbul	Pycnonotus cafer	3
Pond heron	Ardeola grayii	1
Crow	Corvus splendens	3
House sparrow	Passer domesticus	5
Purple rumped sunbird	Leptocoma zeylonica	1
White eye	Zosterops palpebrosus	2

reported at NBCP campus

METHODOLOGY

Direct count method was used to count the birds of campus.. The area was divided to record the number of birds in each part. The divisions were clearly demarcated by landmarks so they can be used subsequently for the same purpose. The observations included the species/common name of the bird, number of individuals observed.

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INSECT DIVERSITY

Sr. No	Name of the organism	Scientific name
1	Termite	Macrotermes sp
2	Caterpillar	Passular sp
3	Cockroach	Perplatena americana
4	Soldier ants	Solenepsis sp
5	Grass hopper	Zonocerus varigatus
6	Butterfly	Papilio polytes species Eurema hecabe Danaus chrysippus Euploea core
7	Honey bee	Apis dorsata sp

Insect species cited in the vicinity of College campus



The mammal commonly seen on campus –House Rat (Rattus rattus)

REPTILES OF THE CAMPUS

Pheretima posthuma, and earthworm of *Lumbricus* genus is found in the campus. Lizard of species *Hemidacty frenatus* is found on the building walls of the campus. Asian snake-eyed skink (*Ablepharus pannonicus*) is fou in the campus.

Recommendations

College should take necessary steps to make campus a protective natural habitat of nearby native flora and fauna.

Environmental quality: . Soil Quality

Introduction

Knowledge of chemical and physical properties of soils has been assessed to understand the capacity of campus soil to support existing green cover. The concept of soil quality includes assessment of soil properties of campus as they relate to ability of soil to function effectively as a component of a Plant health at NBCP campus. In present study soil quality was assessed to know the capacity of a soil to produce biomass. As front campus is physically locked due to fencing of cement wall, so movement from **outside – campus – outside** is significantly restricted.

Status of soil in Maharashtra

The state of Maharashtra represents a mixed landscape with hill ranges, thick forest cover and coastline. The soils of Maharashtra are residual, derived from the underlying basalts. The land in the river basins of Godavari, Bhima, Krishna and Tapi has a deep layer of fertile black basalt soil rich in humus. The rest of the semi-dry plateau has a medium layer black regur soil which is clayey with high moisture retention capacity, rich in iron but poor in nitrogen and organic matter. The peaks of Sahayadri Mountains, the districts of Ratnagiri and the western regions of Kolhapur and Satara are composed of laterite soil. The Konkan coast has sandy loam soil. A variety of red soil and sandy soil is found in the Vidarbha region. Maharashtra's soils are highly deficient in nutrients when compared with the soils of other Indian states. They are lacking in Nitrogen (N), Phosphorous (P) and Potassium (K) and mainly because farmers in rain-fed areas use very little fertilizers. Further, excessive use of water for irrigation also leads to increasing salinity of soils.

Soil characteristics

In order to assess the soil quality NBCP educational campus, a collective soil samples were taken from different sites. Soil samples between 0-20 cm depths were collected. Collected soil samples are analyzed by using water soluble extract of soil samples.

Physical characteristics



The bulk density of soil sample in the campus area found to be 1.1 gm/cm³ which is suitable for plant growth. It is generally desirable to have soil with a low BD (<1.5 g/cm³) (Hunt and Gilkes, 1992) for optimum movement of air and water through the soil. Soil porosity is a measure of air filled pore spaces and gives information about movement of gases, inherent moisture, and development of root system and strength of soil. Variation in soil porosity is presented in table. The porosity of soil sample is 54%, which shows moderate water holding capacity.

Sample	рН	EC	Organ	Availa	Avai	Availa	Available	Available	Available	Availa
Ô			ic	ble N	lable P	ble K	Zn	Fe	Mn	Cu
			carbon	Kg/hec	Kg/hec	Kg/hec				
Native	7.6	0.23	0.35%	314.23	41.36	245.25	0.44	3.54	1.52	0.1
soil								45		

Table Physico-chemical analysis of soil samples collected from Campus

Chemical characteristics

pH is an important parameter indicative of the alkaline or acidic nature of the soil. It greatly affects the microbial population as well as the solubility of metal ions and regulates nutrient availability. The pH of original soil of the campus is 7.6 and so is conducive for the growth of plants.

The concentration of ions determines the Electric conductivity of Soil. EC is used as a measure of soil salinity. EC is 0.23 siemens/m2 and is considered as good for the growth of plants. EC higher than value 1 siemens/m2 is not good for growth of plants. Because soil EC affects the microbial process of soil viz respiration, decomposition, nitrification, denitrification.

As per the soil testing report organic carbon is low. And since Organic matter is an indicator of available nitrogen status of the soil, thus the soil of the investigating area is also moderate in respect of its available nitrogen. Available phosphorous is also moderate while potassium is little

higher than desired level. Zinc, Manganese, Copper ferrous are available in insufficient quantity

Recommendations and conclusions

• Soil at different locations of the campus is varying in texture and having mixture of native and exotic soil. So soil sample is selected from original landscape area of the campus.

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- The pH of the soil sample can be categorized as near to neutral and EC shows that campus soil is good for plantation.
- If we see organic carbon and NPK content . So it is suggested- To apply the organic matter, phosphate rich fertilizer, vermicompost manure as an important source of nutrient.
- It is suggested to add micronutrients Zinc, Ferrous, Copper and Manganese in required quantity
- Soil analysis shows that campus terrain soil is good for plantation, cultivation and gardening. Fertility status can be be improved by adding organic manure, fertilizer and micronutrients.

8. Water Quality

Drinking water supply in NBCP College campus

The Primary source of NBCP potable and Non-potable water is well water. The College receives its water from well located in the campus. The college treats this well water before using it as potable water. College has three water filter to filter

Water sampling and analysis

Well water sample were collected from campus premises to assess water quality. Sample was taken from direct well supply. Water before filtration is sampled to check the quality of the water. This water is used for Laboratories, wash basins, toilets, mopping and irrigation of campus plants and drinking after filtration.

Source	Sample No.
Before filtration	D1

Table Water samples of NBCP campus

Collected water samples is immediately given for testing at Soil and water testing laboratory. The results are,

pН	EC	Ca++	Mg++	Na**	HC03		Sulphates	Chlorides	Sodium	Residual
		Meq/I	Meq/l	Meq/l		Pottasium				Sodium
										Carbonate
7.48	0.12	4.30	1.20	00	1.53	00	00	2.10	00	00

Table Physical parameters

Conclusion and Recommendations

The water sample analysis of soil and water analysis centre of Shrimant Shivajiraje Udyanvidya Mahavidyalay, Phaltan indicated that Well water is suitable for drinking. Analysis indicated that the current water source follows all drinking water parameters as per BIS (IS: 10500:2012). College has also installed water filter to purify well water. The regular water quality analysis of well water is needed to check the portability of drinking water. But the well water can be used directly for irrigation.

Carbon accounting : 6. Biomass Carbon Sequestration potential

Introduction

Increasing levels of carbon dioxide in the atmosphere are of growing concern globally and locally, and urban forests have a role to play in the battle against climate change. Urban forests can reduce atmospheric carbon directly and indirectly. As long as trees are growing, they remove CO_2 from the air in a process called carbon sequestration, transforming CO_2 into carbon and making use of it to build living matter - leaves, stems, trunk, roots, etc. The Biomass carbon sequestration potential was measured for NBCP campus.

Total biomass assessment

The assessment of above ground and belowground biomass of NBCP campus was carried out within campus

Biomass carbon = (aboveground biomass carbon + belowground biomass carbon)

Conclusion

Total 1.8 tons of carbon is locked in the study area of NBCP campus by trees.

7.VEHICULAR EMISSIONS

The emissions inventory is the foundation upon which the regulatory strategy can be formulated. There are many emission sources that contribute to the urban air pollution such as point sources, non-point or area sources, motor vehicles, non-road mobile and natural. Magnitude of contribution from each of the sources depends upon the individual emission rates and the activity level.

The on-road motor vehicle emission inventory can be summarized as the product of an emission rate (e.g., gram/km) and an associated vehicle activity (e.g., km/day).

Survey was conducted to count the vehicles used by NBCP 'ians . Survey was done for one week at 9 am.

Around 20 two wheelers are used daily by NBCP students and staff. While 1 four wheeler daily come to the campus. Most of the college students come to college by S.T bus and walking.



Figure: Parked two wheelers under the shade of trees

Pollutants	Emissions Factor	Number of Vehicle/ day	Emissions (gm/km)	Average Travel (km)	Total Emissions part day
СО	1.4	20	28	15	420
HC	0.7	20	14	15	210
NOx	0.3	20	6	15	75
PM	0.05	20	1	15	15
CO2	33.83	20	676.6	15	10149

Total emissions by two wheelers

If we consider CO2 emissions only, we can see that 4736.2 gm/day of CO2 is emitted by two wheelers of NBCP campus. So the CO2 emitted by two wheelers per year is,

= 1.13 tones/year

Pollutants	Emissions Factor	Number of Vehicle day	Emissions (gm/km)	Average Travel (km)	Total Emissions per day
СО	4.3	1	4.3	15	64.5
НС	2.05	1	2.05	15	30.75
NOx	0.11	1	0.11	15	1.65
РМ	0.08	1	0.08	15	1.2
CO2	72.50	1	72.50	15	1087.5

Table Total emissions by Four wheelers

Emission factors by four wheelers are higher than two wheelers. So the emissions per vehicles are also high as compared to two wheelers. If we consider CO2 emissions only, we can see that 1087.5 gm of CO2 is emitted by two wheelers of NBCP campus. So the CO2 emitted by two wheelers per year is,

= 0.261 tones/year

Total Emissions by ACCS vehicles per year = 2W + 4W = 2.43 + 0.261 = 2.69 tones/year

From above figure it can be analyzed that though the number of 4W are less as compared to 2W, they do notable contribution in total CO2 emissions of the campus.

CARBON DIOXIDE EMISSIONS AND ITS ASSIMILATION BY CAMPUS TREES

In green audit college has also assessed carbon sequestration by campus trees. Study shows that every year 1.9 tons/year tones of carbon is sequestered by campus. This capacity gets increased by every year.

3

If we quantify CO2 flux to carbon dioxide,

1.8 tones of Carbon = 1800 kg of carbon

To determine the amount of CO2 that the trees removed from the atmosphere, we have to multiply the carbon value by 3.67. This value is the mass conversion factor for carbon to carbon dioxide.

1800 kg of carbon * 3.67 = 6606 kg of CO2 = 6.60 tones CO2 per year

Conclusion:

So it can be concluded that campus trees has capacity to assimilate 6.6 tonnes of CO2per year.

While the vehicular emissions study showed that total emissions of NBCP vehicles is 2.69 tones/year. Carbon dioxide assimilation capacity of the campus is 2.45 times greater than Vehicular emissions by NBCP. But NBCP shares its building and campus with junior college and school. So, total vehicle survey is needed to compare vehicular emissions with Carbon dioxide assimilation capacity of campus plants.

Energy Audit

ENERGY SCENE

Primary source of energy at NBCP is electricity. Electricity is used for all electrical appliances like lighting, fan, computer

ENERGY: SOURCES & UTILIZATION

Primary energy / natural resources utilized at the service center is electricity. This source is consumed for the generation of motive power and water for drinking, washing & domestic usage. The source of electrical power for the service center is from MSEDCL grid

Objectives

- Collect historical data to analyze background activities
- Collect & analyze monthly billing data year (2022) & energy consumption data for the period of one year.

Monthly Electricity Consumption of College building Electricity bill analysis

Sr. No.	Parameter	Value	Unit
1	Avg. Unit Consumption (Electricity bill)	155	Units/Month
2	Avg. Unit Consumption (Electricity bill)	5.9	Units/day
3	Avg. Unit Consumption (Electricity audit)	132	Units/Month
4	Avg. Unit Consumption (Electricity audit)	5.07	Units/day

Average monthly MSEDCL unit's consumption is 155 units and average monthly consumption by shown by electricity bill is about 1.17 times higher than the Electricity audit.

WATER

For water filling there is pumping system available.. There are two electric motors for water pumping.



LEVEL OF AWARENESS

College should organize different training programs for general awareness. Trainings on energy conservation are not found on records. It should be ensured that everyone knows the operating energy conservation parameters

The electricity bill consists of following parts

- Demand charges
- Unit charges
- Time of Day Charges
- Other charges, which cannot be controlled
- Load factor is an indicator to assess if the billed maximum demand charges can be reduced. The monthly load factor is calculated as follows:

Load Factor =	Actual units consumed										
	Maximum Factor	demand	Х	No	of	hours	per	month	Х	Average	power

Maximum demand should be monitored regularly so as to reduce non-critical loads when set maximum demand is reached. And also need to reduce contract demand in such way that to avoid excess demand charge by considering future load.

Maximum Demand Controller

- High-tension (HT) consumers have to pay a maximum demand charge in addition to the usual charge for the number of units consumed. This charge is usually based on the highest amount of power used during some period (say 30 minutes) during the metering month.
- The maximum demand charge often represents a large proportion of the total bill and may be based on only one isolated 30 minute episode of high power use. Considerable savings can be realized by monitoring power use and turning off or reducing non-essential loads during such periods of high power use.





Power Factor Incentive & Penalty

- Whenever the average power factor over a billing cycle or a month, whichever is lower, of a High Tension consumer is below 90%, Penal charges shall be levied to the consumer at the rate of 2 % (two %) of the amount of monthly energy bill (excluding of Demand Charges, FOCA, Electricity Duty and Regulatory Liability Charge etc.) for first 1 % (one percentage point) fall in the power factor below 90%, beyond which the penal charges shall be levied at the rate of 1 % (one %) for each percentage point fall in the power factor below 89%. Such penalty will however not be applicable to Railways for Power Factor up to 72%.
- Whenever the average power factor is more than 0.95, an incentive will be given to High Tension industrial (HTP-I, HTP-II & HT- SEASONAL), and HTP-III & HTP-IV consumers, irrespective of status of TOD meter installation.
- The said incentive will be at the rate of 1% of the amount of the monthly energy bill (excluding Regulatory Liability Charges, Demand Charges, FOCA, Electricity Duty) for every 1% improvement in the average power factor above 0.95.
- For power factor of 0.99, the effective incentive will amount to 5% reduction in the energy bill and for unity power factor; the effective incentive will amount to 7% reduction in the energy bill.
- Power factor will be computed, by the method of kWh / KVAh & rounded off to two decimal points as per the existing practice.

RECOMMENDATIONS

1. Average daily Unit use as per Electricity bill is 1.17 % higher than use calculated from Energy audit. This difference could be attributed to the following fact.

- i) There may be a chance of Electricity wastage. To minimize this wastage, College should conduct awareness programmes about energy saving.
- 2. College should go for Non conventional sources of Energy.

PHALTAN

Principal Namdevrao Suryawanshi(Bedike) College Phaltan, Dist. Satara.

श्रीराम एज्युकेशन सोसायटीचे 2

नामदेवराव सूर्यवंशी (बेडके) महाविद्यालय, मेलटणे

अहवाल क. 2

पालटण

राष्ट्रीय सेवा योजना विभाग मार्फत ऑनलाईन कार्यक्रमाद्वारे समाज प्रबोधनपर उपक्रम

कोरोना काळामध्ये महाविद्यालयातील विद्यार्थ्याच्या मार्फत सोशल गोडियाच्या माध्यमातून समाज प्रबोधन करण्यात आले. यावेळी विद्याध्यांनी रांगोळी, पोस्टर, चित्र, याद्वारे सोशल मीडियावर सॅनिटायझर वा वापर करा, मास्क वापरा, विनाकारण घराबाहेर पडू नका ये संदेश पाठवून लाखो लोकांपर्यंत समाज प्रबोधन केले

महाविद्यालयातील विद्यार्थ्याच्या माध्यमातून गरजू लोकांना सोनिटायझर चे वाटप करण्यात आले तसेच महाविद्यालयातील ८० विद्यार्थ्यांनी मास्क घरामध्ये तयार करून ते लोकांपर्यंत मास्क चे वाटप केले. विद्यालयातील राष्ट्रीय सेवा योजनेच्या विदयार्थ्यांनी आसनामार्फत राबविण्यात येणाऱ्या कोरोना प्रतिबंधक लसीकरण आमध्ये लोकांचे प्रबोधन करून त्यांना लस घेण्यास प्रवृत्त केले. विदयाध्यांनी पोलीस मित्र म्हणून पोलिसांना सहकार्य केले विनाकारण भर बाहेर फिरणाऱ्या लोकांचे प्रबोधन केले आणि त्यांना घरात राहून सहकार्य करण्यास विनंती केली.असे समाज प्रबोधन करणारे उपक्रम सबविण्यात आले.









प्र.प्रचिय नामदेवराव सूर्यवंशी(वेडके)महाविद्यालय फलटण,जि.सालास.

नामदेवराव सूर्यवंशी (बेडके) महाविद्यालय फलटण अहवाल क्र. 3 • वृक्षारोपण : स्तुत्य उपक्रम •

श्रीराम एज्युकेशन सोसायटी फलेड

() PHALTAN T

श्रीराम एज्युकेशन सोसायटीचेनामदेवराव सूर्यवंशी(बेडके) महाविद्यालयांमध्ये 15 ऑगस्ट चे औचित्य साधून वृक्षारोपणाचा रुतुत्य उपक्रम हाती घेण्यात आला 15 ऑगस्ट स्वातंत्र्य दिनाचे प्रमुख पाहुणे म्हणून फलटणचे प्रसिद्ध अस्थिरोग तज्ञ मा. डॉ.श्री प्रसाद जोशी यांना आमंत्रित करण्यात आले होते.ध्वजारोहणानंतर प्रमुख पाहुणे मान्यवर संस्थेचे पदाधिकारी यांच्या उपस्थितीत मध्ये महाविद्यालयांच्या राष्ट्रीय सेवा योजना विद्यार्थ्यांच्या समवेत मान्यवरांनी महाविद्यालयाच्या परिसरात वृक्षारोपण केले.

यावेळी महाविद्यालयाच्या परिसरामध्ये 50 वृक्ष लावण्यात आले.व त्यांच्या संगोपनाची जनानदारी महाविद्यालयातील विद्यार्थ्यांवर सोपवण्यात आली यावेळी प्रमुख पाहुण्यांनी पर्यावरणाचे महत्त्व वृक्षारोपण आणि वृक्ष संवर्धन यान्नावत विद्यार्थ्यांना मोलाचे मार्गदर्शन केले. पर्यावरण हा आपल्या वसंधरेचा कणा आहे हे त्यांनी स्पष्ट केले तसेच अशा प्रकारच्या चांगल्या उद्दिष्टांच्या कार्यक्रम/उपक्रमस त्यांनी शुभेच्छा दिल्या व या स्तुत्य कार्यक्रमांचे कौतुक करून विद्यार्थ्यांच्या पाठीवर शानासकीची थाप दिली. या कार्यक्रमाप्रसंगी संस्थेचे मानद सचिव.मा. डॉ.श्री.सचिन सुभाषराव सूर्यवंशी (बेडके) यांनी विद्यार्थ्यांना मौलिक मार्गदर्शन केले. व स्वातंत्र्य दिनानिमित्त अशा स्तुत्य उपक्रमांचे घेतला त्यानदत विद्यार्थ्यांचे कौतुक केले. त्या वेळी महाविद्यालययाचे प्रा.श्री.गायकवाड .ए.आर यांनी महाविद्यालयातील चांगल्या उद्दिष्ट च्या उपक्रमांचा आढावा सांगितला तरप्रप्राचार्य.डॉ.दीपक राऊत सरयांनी विद्यार्थ्यांना अशा उपक्रमांनद्दल प्रेरणा देण्याचे कार्य केले.



या कार्यक्रमाचे आभार भूगोल. विषयाचे प्राध्यापक श्री. प्रबंध वा एस यांनी मानले या उपक्रमात प्रसंगी संस्थेचे उपाध्यक्ष मा.श्री.बापूसाहेब मोदी नियामक मंडळाचे सदस्य श्री.सी.एल.पवार श्री.पटवर्धन सर श्री.शिवाजीराव सूर्यवंशी (बेडके) चारही शाखांचे प्राचार्य उपप्राचार्य पर्यवेक्षक तसेच राष्ट्रीय सेवा योजनेचे मोजके प्रतिनिधी विद्यार्थी उपस्थित होते या उपक्रमांचे आयोजन राष्ट्रीय सेवा योजना व प्राध्यापक वृंद यांच्या वतीने करण्यात आहो होते अशाप्रकारे वृक्षारोपण हा उपक्रम उत्साहात संपन्न झाला.



• प्रमुख पाहुणे डॉ.श्री.प्रसाद जोशी वृक्षारोपण करताना. +







<u>शीराम एज्युकेशन सोसायटी, फलटणचे</u> श्रीराम एज्युकेशन सोसायटी, फलटणचे नामदेवराव सूर्यवंशी(बेडके)महाविद्यालय, फलटण ता. फलटण जि. सातारा

Year	2019-20				
Name of. Department	NSS department				
Name of co ordinator	Prof.Dr. Satej Danane				
Name of Activity	वृक्षारोपन				
Date	5/07/2019				
Objective	मुलाना वृक्षलागवडीचे महत्व समजावे.				
Institute	Namdevrao Suryawanshi(Bedke) College phaltan				
Total no of participants	14				
Venue of event	Namdevrao Suryawanshi(Bedke) College, Play ground				







E





<u>र्शाम्बास्त सल्प मेर</u> श्रीराम एज्युकेशन सोसायटी, फलटणचे नामदेवराव सूर्यवंशी(बेडके)महाविद्यालय, फलटण ता. फलटण जि. सातारा

Year	2019-20			
Name of. Department	NSS department			
Name of co ordinator	Prof.Dr. Satej Danane			
Name of Activity	फलटण शहर स्वच्छता अभियान			
Date	23/08/2019			
Objective	मुलानमध्ये स्वच्छतेबदल जागृकता निर्माण व्हावी.			
Institute	Namdevrao Suryawanshi(Bedke) College phaltan			
Total no of participants	22			
Venue of event	Phaltan city			

















