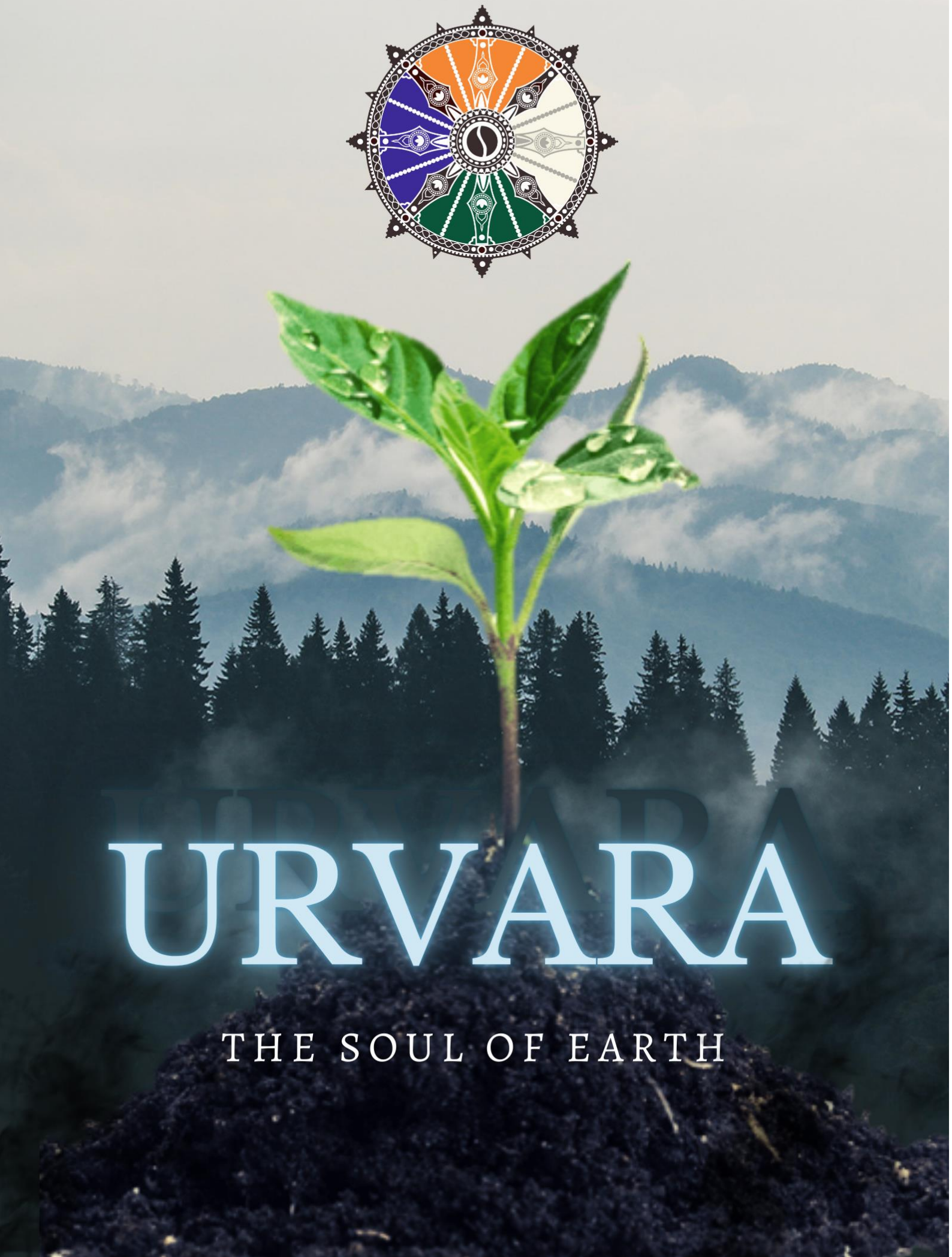
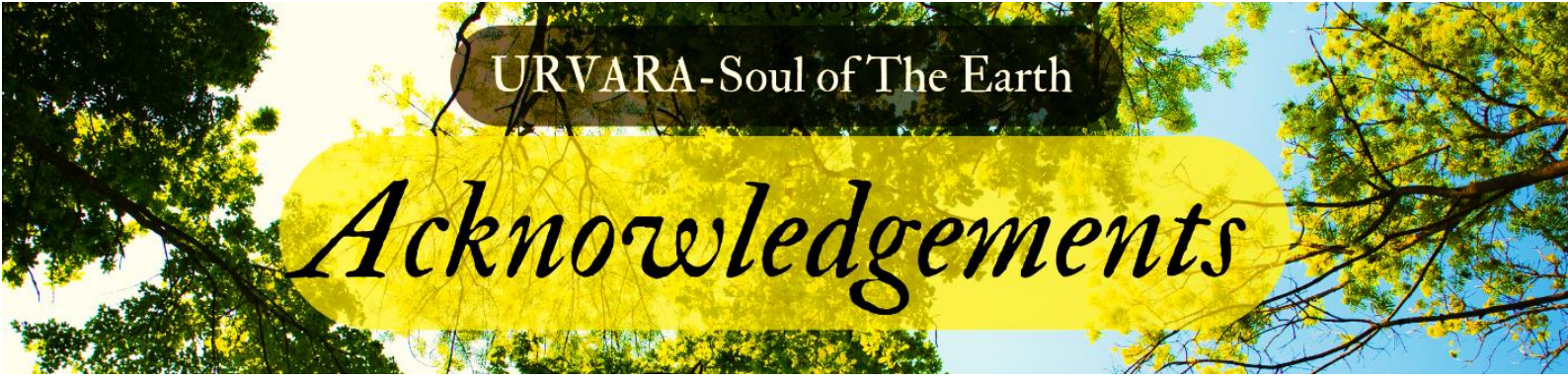
Smt. Sulochanadevi Singhania School



URVARA

THE SOUL OF EARTH



Acknowledgements

The sacred soil beneath our own feet, mother earth which has sacrificed for all and has taken none, now calls out to us from her parched throat. She has borne the weight of all our human expenses and civilization but now she is in pain, she cannot bear it. She calls out to her sons and daughters to save her, and we are ready….

Smt Sulochanadevi Singhania school has taken up the initiative to help conserve soil and spread awareness through this project.

We are most grateful to our Director Education and Principal Dr. Revathi Srinivasan, and our Vice principals Mrs. Kanchanmala Chabukswar and Mrs. Gladys Cabral for their unwavering support and encouragement.

We would like to express our gratitude to our Senior Section Head Mrs. Meenakshi Sunder, our Standard Coordinator, Mrs.Sudipta Banerjee, our Geography teacher.Mrs.Mautuli Ganguly for mentoring us and helping us to generate curiosity regarding soil conservation.

This project is an integrated approach of various subjects.A special thanks to all our subject teachers. We would also like to thank our I.Sc lab assistant Mrs. Prema and the whole I S.c lab faculty who have helped guide students and generate awareness by setting up experiments to analyse soil samples to better understand the impact of our wrongdoings on mother nature.

We would like to give our special thanks to, Mr Rishiraj Kamath,a volunteer for Conscious Planet movement for conducting his interviews with the students which has helped us realize the grave situation our soil is in, inspiring us to contribute to the conservation by any small means.

How can we end this acknowledgement without thanking our very own Sulonians who have authored, edited and designed the content. You the reader being able to see the fruits of their efforts through this beautifully written book.

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The title ‘Urvara’ meaning ‘fertile land - soil that has the altruistic quality to sustain life’ takes its roots in the Hindi language. Ecosystems rely on balance, established by the basal membrane of soil that forms their foundation. Healthy soil in itself is a dynamic living ecosystem which is neither endless nor indestructible and needs to be conserved. It takes thousands of years to create an inch of fertile topsoil. Yet it dawns on us that life itself has led to the destruction of one third of cultivable soil on earth and expunged it from the cycle of life. Educational institutions like ***Smt Sulochanadevi Singhania School*** play a vital role in the inception of a sense of awareness and responsibility for the future of our planet in the students. This book serves as a conglomeration of various efforts made by the school and its students to conserve and protect ***‘Urvara - the soul of the earth’***

Save Soil – is a Global Movement to invoke a conscious approach to soil and planet in all with the objective to show governments across the world that their citizens want policies that revitalize soil and ecology. The moment is established in collaboration with the ***United Nations Convention to Combat Desertification (UNCCD)*** Our institution takes its place among numerous schools in India contributing to this vital movement to solve a consequential crisis and to heed to our mother earth's call for help.

The book takes various forms in its progression. It serves as an anthology of original poems composed by students of Singhania school in various languages, an art gallery showcasing handmade posters, graphic designs and chart work. Meticulous observations during field trips exploring the ecosystems in India from the Mangroves of coastal India to the wildlife ecosystem of

Rajasthan, studying the gradation in soil quality and characteristics and the various proposed and implemented solutions catering to the need of native soil are presented in research and video format. testing of soil samples and determining the fertility of soil in a school lab setup as well as studying flora and its characteristics ties this approach with modernization and incubates scientific approaches among students. Students were introduced to journalism by the method of questionnaires and interviews with volunteers for this conscious planet movement to guide them in their preliminary steps of this project. The routine custom of celebrating Guru Poornima and world soil day were given an environmentalist spin-off culminating in the best of both worlds- celebrating tradition with consciousness.

We sulonians - as authors, poets, artists, scientists and editors, present a Linguistic, Mathematical, Scientific and Artistic approach across a spectrum of subjects to take little steps to contribute to a solution for the crisis of topsoil degradation - inseparably linked with our past, present and future

English

An Ode to the Soil

Since time immemorial on the Earthly bed you slept,
A silent spectator during every calamity and celebration,
You are the sheet of sustenance cushioning our feet,
O soil, you are the cause of our continuation!

Thou created and granted us the breath of life,
In thou our skin and bones will fade away as dust,
Thou nurture food, fodder and foliage for our wildlife,
O soil, you are our mother cradling us in your nest!

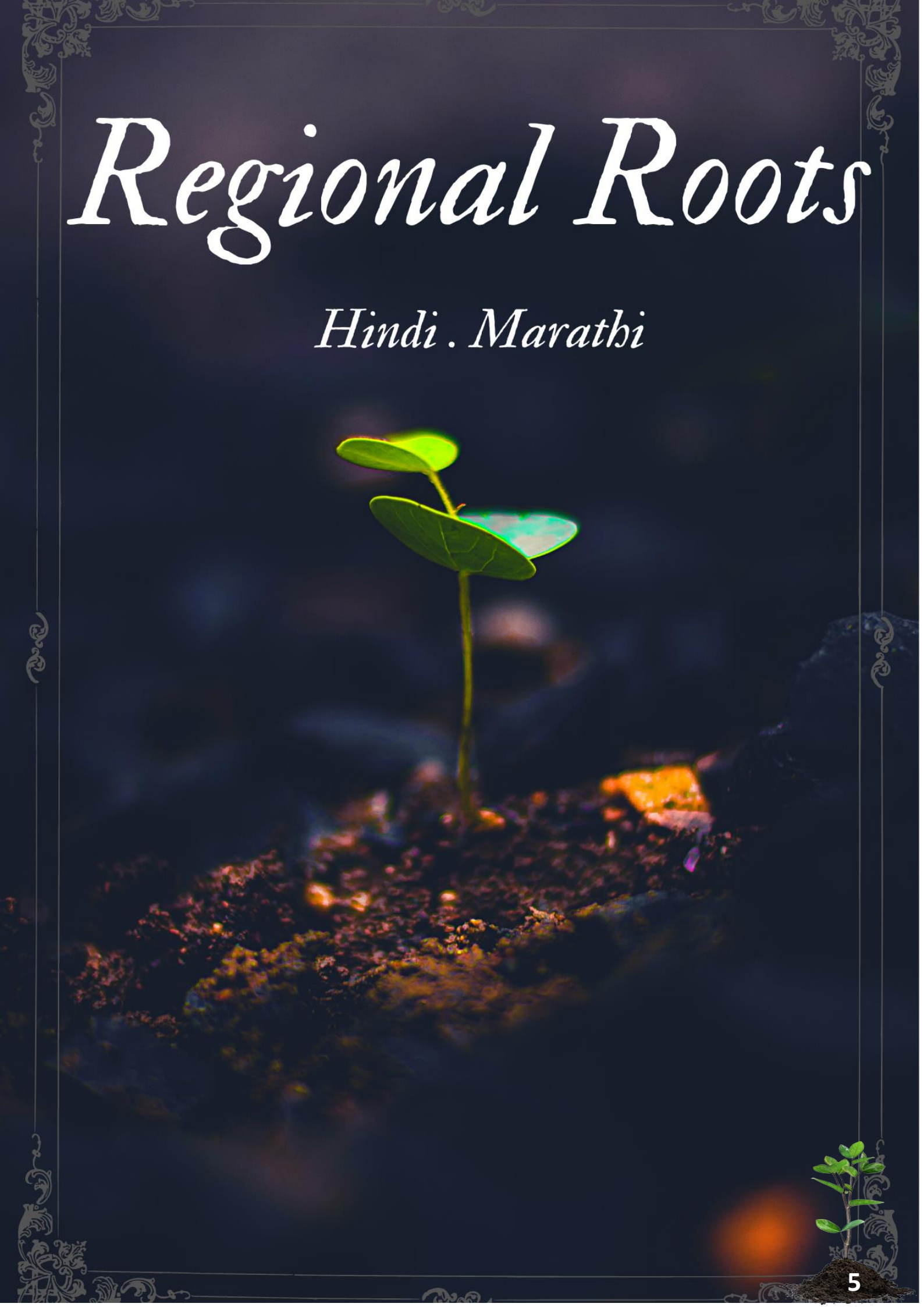
You are the woodland stream in which gurgles sustenance,
Seeds of bread and fibre of berries sprout from your bosom,
Without a shred of selfishness or being presumptuous,
O soil, you nestled millions of flushed spring blossoms!

You are the anchorage of the roots of the evergreens,
Rejuvenating our senses with the air of vitality,
Your selflessness towards your subjects makes you a queen,
O soil, you are the true reason for our longevity!

-Niyati Rani

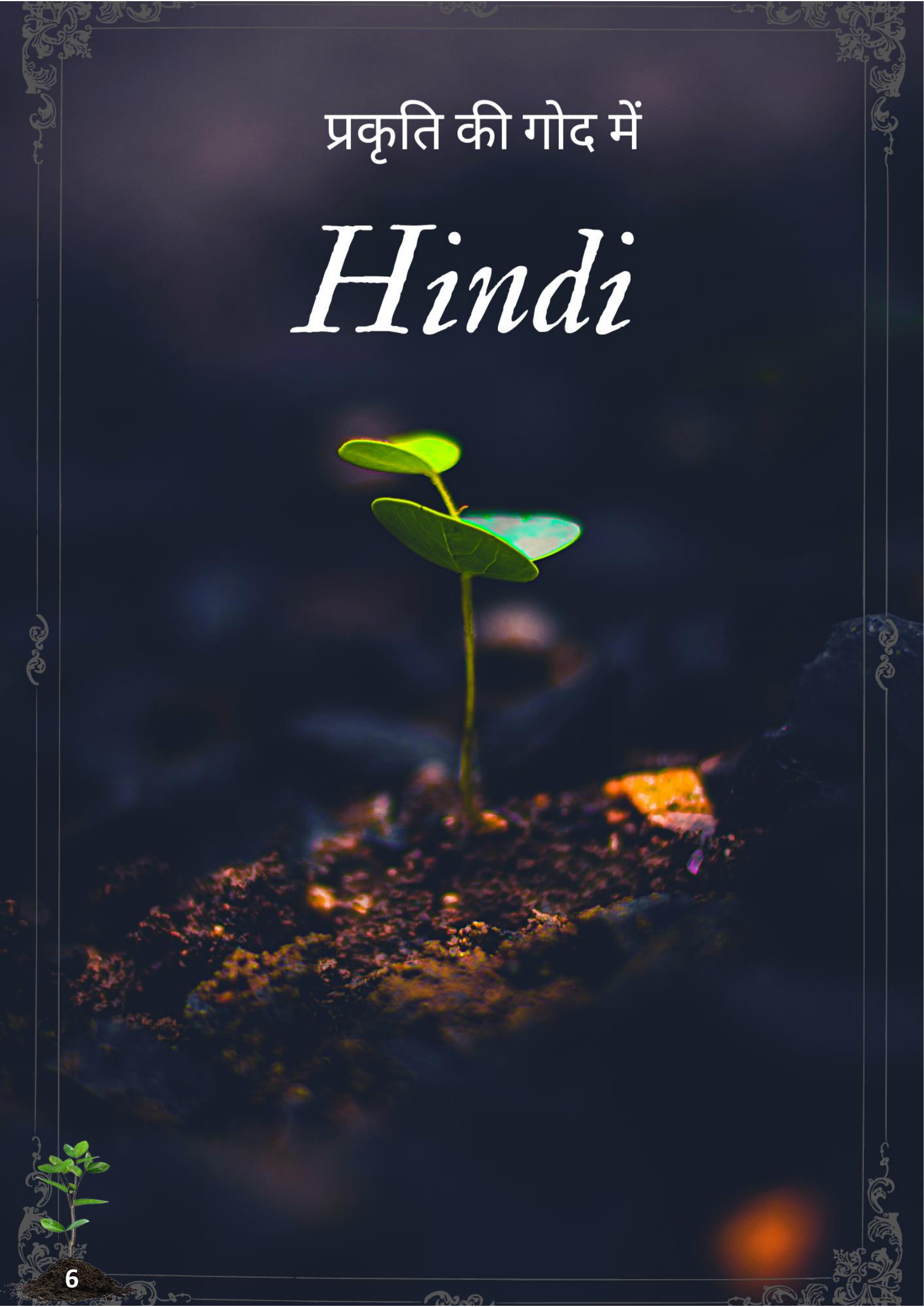
Regional Roots

Hindi . Marathi



प्रकृति की गोद में

Hindi



प्रस्तावना

शहर की चहल-पहल से कई मील दूर, फॉरगैनिक फार्म मुंबई के पास स्थित एक सुरम्य फार्महाउस रिसॉर्ट है। यह जगह शांति, सुंदरता और शीतलता का निचोड़ है। इसे शहर में बसा हुआ एक हरा- भरा ग्राम भी कहा जा सकता है। यहाँ का माहौल तो जैसे स्वर्ग के समान है। पहाड़ों के निकट तथा हर जगह हरियाली और तालाब से ढके होने के कारण यहाँ का वातावरण बेहद शांत और सुखद है।

यहाँ के माहौल का अत्यंत शांतिदायक होने का एक कारण यहाँ पर अत्यधिक हरियाली का मौजूद होना है। लहराते हुए खेतों को देखकर लगता है की वे प्रसन्नता में कोई नृत्य कर रहे है। चलती हवा में लगता है की पेड़ एक दूसरे से बात कर रहे है। ऊंची डालियों पर पक्षियों का गाना मन को बाग- बाग कर देता है। हल्की बूँदा - बाँदी में मयूरों का नृत्य देखकर लगता है की स्वयं स्वर्ग से नर्तक लोगों के मनोरंजन के लिए धरा पर उतरे हो। गौशालाओं में गौ माता के उपस्थित होने से हर वक्त इस स्थान पर देव- देवियों का आशीर्वाद बना रहता है।

हवादार गलियारे, हरे- भरे पेड़, खेत- खलिहान, रंगीन फल- फूल, छोटे- बड़े जानवर, पक्षियों की चहचहाहट, तालाब की रंगीन मछलियाँ, मनोहर प्राकृतिक दृश्य बहते झरनों का नज़ारा, दिल को आनंद से भर देते है। इस जगह की सकारात्मक तरंगें स्वर्ग की तरंगों से समन्वय है। साथ ही, यहाँ के कर्मचारियों की मीठी वाणी, अच्छा बर्ताव, और मददगार स्वभाव यहाँ घूमना सुगम बनाते हैं।

फॉरगैनिक फार्म में कई सारे ऐसे तत्व थे जो रोजमर्रा की जिंदगी में बहुत कम दिखाए पड़ते है जैसे झरने, गौशालाएं मतस्यपालन, धान की खेती इत्यादि। साथ ही, हमारे अनुभव के लिए हमें वहाँ कई सारे मजेदार कार्य करने के मौके भी मिले जैसे गैया चराना, खेत जोना, कुएं से पानी खींचना, धान की बुवाई करना, और फल- फूल इकट्ठा करना। वर्मी कॉमपोस्टिंग, मतस्यपालन, आदि विषयों से हमें ढेर सारा ज्ञान मिला। चलिए, अब इस निबंध में हम वर्मी कॉमपोस्टिंग, मिट्टी, मतस्यपालन, धान की खेती, गौशालाएं, और झरनों के विषय में बात करेंगे जो की फॉरगैनिक फार्म की प्रमुख विशेषताएं है।

मिट्टी

धरातल की ऊपरी परत, जिससे मानव समाज की अधिकतर आवश्यकता की आपूर्ति होती है, मृदा अथवा मिट्टी कहलाती है । मानव की तीन मूलभूत आवश्यकतायें भोजन, वस्त्र एवं आवास की आपूर्ति के लिये मिट्टी सब से अधिक महत्वपूर्ण संसाधन है । मिट्टी की सहायता से ही कृषि हो सकती है, जो हमारे जीवन संचालन के लिए अत्यंत आवश्यक है। कृषि के बिना मानव भोजन प्राप्त नहीं कर सकता। भोजन प्राप्त करने के लिए कृषि करना अनिवार्य है। अतः मानव की भूख शांत करने में मिट्टी का एक अहम योगदान होता है।

प्राकृतिक रूप से उपलब्ध मृदा पर कई कारकों का प्रभाव होता है, जैस- मूल पदार्थ, धरातलीय दशा, प्राकृतिक वनस्पति, जलवायु, समय आदि। भारत की विशालता और भिन्न प्राकृतिक रचना के कारण यहाँ विभिन्न प्रकार की मिट्टियों का पाया जाना स्वाभाविक है| चलिए हम अब भारत में उपस्थित मिट्टियों के प्रकार जानते है।

- **कांप मृदा या कछार की मिट्टी**

भारत के विशाल मैदान व तटीय मैदान में पाई जाने वाली मिट्टी को कांप मृदा या कछार की मिट्टी कहा जाता है। यह मिट्टी नदियों द्वारा लाकर जमा की गई है | भौगोलिक परिस्थितियों के अनुसार इसे तीन भागों में बांटा जाता है-पुरातन कांप मृदा, नूतन कांप मृदा, नूतनतम कांप मृदा |

- **लावा मृदा या काली मिट्टी**

मिट्टी का दूसरा प्रकार लावा मृदा होता है। इसको कपास की काली मृदा की संज्ञा भी दी जाती है। इस मिट्टी की यह विशेषता है कि इसमे आद्रता बनाये रखने की अपूर्व क्षमता होती है. इसकी उर्वरा शक्ति अधिक होती है और कपास की कृषि के लिए बहुत उपयुक्त है|

- **लाल मिट्टी**

लाल मृदा की यह विशेषता है कि यह छिद्रदार होती है| इसमे आद्रता बनाए रखने की क्षमता नही होती है| इसलिए इसमें सिचाई की आवश्यकता पड़ती है| यह उपजाऊ नही होती है| हालाँकि, खाद के उपयोग से इसकी उत्पादकता बढ़ाई जाती है| इसका रंग भूरा और लाल होता है|

- **लैटेराइट मिट्टी**

लैटेराइट मिट्टी पक्की ईट जैसे लाल रंग की मृदा होती है| जिसमें कंकडो की प्रधानता रहती है| यह पुरानी चट्टानों के विखंडन से बनी होती है| सूखने पर यह मृदा पत्थर की तरह कड़ी हो जाती है| इस पर चाय की खेती खूब होती है|

इनके अलावा राजस्थान के पश्चिमी भाग, सौराष्ट्र व कच्छ की मरुभूमि में मिलने वाली मईटी को बालू या दोमट मृदा| सिंचाई की सुविधा उपलब्ध हो जाने पर यह मृदा काफी उत्पादक सिद्ध होती है|

मृदा अपरदन (Soil Erosion):

मृदा की ऊपरी सतह के अनावरण (कटने) को मृदा अपरदन कहते हैं । जल तथा पवन इत्यादि के द्वारा अपरदन एक निरन्तर प्राकृतिक प्रक्रिया है । कुछ प्रदेशों में मानव द्वारा भूमि के दुरुपयोग के कारण भी अपरदन प्रक्रिया तीव्र हो जाती है । मृदा अपरदन से लगभग 75,000 मिलियन टन उपजाऊ भूमि नष्ट होती है ।इसलिए मिट्टी जैसे अमूल्य संसाधन को सुरक्षित करने के लिये अनिवार्य कदम उठाने की आवश्यकता है ।

वृक्ष न केवल मृदा की ऊपरी उर्वर परत को जल द्वारा बहाये जाने अथवा हवा द्वारा उड़ाये जाने से रोकते हैं, बल्कि वे जल के रिसाव की बेहतर व्यवस्था करके मृदा में नमी और जल-स्तर को भी बनाये रखने में सहायक होते हैं । इसलिए हमे वृक्षारोपण करना चाहिए और वृक्षों की कटाई पर प्रतिबंध लगाना चाहिए। साथ ही, हमे समोच्च जुताई, सीढ़ीनुमा खेत, अवनालिकाओं तथा रेवाइन (Ravine) का उद्धार, लवणीय एवं क्षारीय मृदाओं को फिर से उपयोगी बनाना, वैज्ञानिक फसल चक्र अपनाना, जैविक खाद का कृषि में अधिक उपयोग करना तथा गोबर एवं हरित खाद को लोकप्रिय बनाने पर जोर देना चाहिए ताकि हम मृदा अपरदन को नियंत्रण में ला सके और धरती को बचा सके।

वर्मीकम्पोस्ट या केंचुआ खाद

किसान केंचुओं को महत्व देते हैं, क्योंकि मिट्टी को हवा देने के अलावा, वे कार्बनिक पदार्थों को पचाते हैं और ऐसे कास्टिंग का उत्पादन करते हैं जो ह्यूमस का एक मूल्यवान स्रोत हैं। वर्मीकम्पोस्टिंग या वर्म कम्पोस्टिंग एक सरल तकनीक है जो बायोडिग्रेडेबल कचरे को जैविक खाद में बदलने के लिए केंचुओं (लाल कीड़ा ईसेनिया फोएटिडा) की मदद लेते है। केंचुए को गाय के गोबर, मिट्टी और कृषि

अवशेषों या पहले से सड़ी हुई पत्ती-कूड़े के मिश्रण में पाला जाता है। पूरे द्रव्यमान को कास्ट या वर्मीकम्पोस्ट में बदल दिया जाता है, जिसका उपयोग सभी प्रकार के पौधों पर सब्जी बेड, भूनिर्माण क्षेत्रों या लॉन में उर्वरक के रूप में किया जा सकता है।

वर्मीकम्पोस्टिंग एक सरल कंपोस्टिंग प्रक्रिया है जो केंचुओं द्वारा स्वाभाविक रूप से किए जाने वाले कार्यों का लाभ उठाती है, लेकिन कृमियों को डिब्बे तक सीमित कर देती है जिससे किसानों के लिए उन्हें खिलाना और उनकी पोषक तत्वों से भरपूर खाद की कटाई करना आसान हो जाता

है। कृमि जैविक कचरे को संशोधित करने में इतने प्रभावी होते हैं कि वे हर दिन अपने वजन का लगभग आधा हिस्सा मलबे में पचा सकते हैं। चूंकि सभी कीड़े कार्बनिक पदार्थों को पचाते हैं, सिद्धांत रूप में, किसी भी प्रकार के कीड़ा का उपयोग किया जा सकता है; हालांकि, सभी को डिब्बे में रहने के लिए समान रूप से अनुकूलित नहीं किया जाता है क्योंकि कुछ कीड़े मिट्टी में गहरे रहना पसंद करते हैं जबकि अन्य सतह के करीब रहने के लिए बेहतर रूप से अनुकूलित होते हैं। लाल कीड़ा (आइसेनिया फोएटिडा) वर्मीकम्पोस्टिंग के लिए आदर्श है क्योंकि इसका प्राकृतिक आवास सतह के करीब है और यह कार्बनिक पदार्थों से भरपूर आहार का आदी है, यह इसे रसोई के स्क्रैप को पचाने और डिब्बे में रहने के लिए आदर्श रूप से अनुकूल बनाता है।

चावल या धान की खेती

धान एक प्रमुख फसल है जिससे चावल निकाला जाता है। यह भारत सहित एशिया एवं विश्व के बहुत से देशों का मुख्य भोजन है। चावल भारत की सबसे महत्वपूर्ण खाद्य फसल है जो कुल फसले क्षेत्र का एक चौथाई क्षेत्र है। यह लगभग आधी भारतीय आबादी का भोजन है। बल्कि यह दुनिया की मानवीय आबादी के एक बड़े हिस्से, विशेष रूप से एशिया, में खाया जाता है। गन्ना और मक्का के बाद यह तीसरा सबसे अधिक विश्वव्यापी कृषि खाद्य फसल है। धान सबसे पुरानी ज्ञात फसलों में से एक है। यह करीब 5000 साल पहले चीन में सबसे बड़े रूप में उगाई गई। भारत में धान की 3000 ई.सा. में खोज हुई थी। यह खोज किसी वैज्ञानिक ने नही बल्कि किसानों और मूल लोगों ने की थी।

चावल उगाने के मुख्य रूप से तीन तरीके हैं। पहला तरीका तराई या धान की खेती है जिसमें चावल को ऐसी भूमि पर उगाया जाता है, जो वर्षा या सिंचाई के पानी से लबालब भरी होती है। पानी की गहराई 2 से 20 इंच (5 से 50 सेमी) तक होती है।दूसरा तरीका तैरता हुआ और गहरे पानी का चावल है जिसमे ऐसी भूमि पर चावल की खेती की जाती है जहाँ बहुत ज्यादा पानी भरा होता है। पानी की गहराई 20 इंच (50 सेमी) से अधिक होती है

और 200 इंच (5 मीटर) तक पहुंच सकती है। केवल चावल की कुछ किस्मों को इस तरह उगाया जा सकता है। तीसरा तरीका पहाड़ी चावल की खेती (दुनिया में चावल की कृषि भूमि का बहुत कम प्रतिशत) है।इसमें चावल को बाढ़ रहित भूमि पर उगाया जाता है, और फसल वर्षा के पानी पर बहुत ज्यादा निर्भर होती है। प्राकृतिक वर्षा इन खेतों की

सिंचाई का एकमात्र तरीका है। ऐसे मामले में, हमें इस बात को ध्यान में रखना होगा कि 3 से 4 महीने तक लगातार बारिश होनी चाहिए, जो पौधों के सही विकास के लिए बहुत जरूरी होता है। सामान्य तौर पर, पानी चावल के पौधों को बहुत ज्यादा ठंडी और गर्मी से बचाता है। पानी जंगली घास उगने से भी रोकता है।

धान गर्मतर जलवायु वाले प्रदेशों में सफलतापूर्वक उगाया जाता है। विश्व का अधिकांश धान दक्षिण पूर्वी एशिया मे उत्पन्न होता है। चीन, जापान, भारत, इन्डोचाइना, कोरिया, थाइलैण्ड, पाकिस्तान तथा श्रीलंका धान पैदा करने वाले प्रमुख देश हैं। इटली, मिश्र, तथा स्पेन में भी धान की खेती विस्तृत क्षेत्र में होती है। भारत में धान की खेती लगभग सभी राज्यों में की जाती है किन्तु प्रमुख उत्पादक प्रदेशों में आन्ध्रप्रदेश, असम, बिहार, महाराष्ट्र, छत्तीसगढ़, उड़ीसा, पश्चिमी बंगाल, उत्तरप्रदेश है।

गौशाला

जिस देश में आज भी पहली रोटी गाय के नाम की निकाली जाती हो, गाय को माँ के समान पूजा जाता हो, गौमाता या गैया कहकर पुकारा जाता हो, गौशाला में जाकर चारा खिलाया जाता हो और उनकी सेवा की जाती हो, उस देश में गौ का जो कद होगा वह अकल्पनीय है। भारत वर्ष के आर्थिक व्यवस्था का मुख्य आधार कृषि उत्पादन और पशुपालन है जिसमें गाय का बहुत ही महत्वपूर्ण स्थान है। गाय को प्राणी के रूप में ही नहीं बल्कि माता के रूप में पूजा जाता है जो उसका महत्व अपने आप में ही दर्शाता है। हिंदू धर्म में ऐसी भी मान्यता है कि गाय में 33 करोड़ देवी-देवताओं का वास होता है और गाय से मिलनी वाली हर चीज़ गाय का दूध, गौ मूत्र, गाय का गोबर आदि सभी दैवीय हैं।

" जिनकी सेवा करके नर भाव से तर जाता,
सब देवों का अंश समेटे है गौ माता । "

गायों के इस उच्च स्थान की वजह से उनकी देख-भाल करना हमारा कर्तव्य बन जाता हैं। परंतु वर्तमान समय में शहरी करण के कारण जानवरों के निवास स्थान नहीं बचे तथा उनको चराने के क्षेत्र भी नहीं बचे। पहले गायों हो घर-घर पाया जाता था परन्तु अब उनका शहरों से नामोनिशान ही मिट गया। औद्योगीकरण के पश्चात ट्रैक्टर ने गायों का स्थान ले लिया, जिससे गायों का उपयोग केवल दुग्ध उत्पाद तक सीमित रह गया है। इस कारण उनके पालन - पोषण का खर्च किसान की आय से अधिक हो जाती है और उन्हें सड़कों पर छोड़ दिया जाता हैं। उनकी ऐसी दयनीय दशा देखकर कई समाज सेवक , स्वयंसेवी

दाता व सरकार गौ को बचाने के लिए चंदा इकट्ठा कर गौशालाों का निर्माण कर रहे हैं।

गौ को सार्वजनिक रूप से एक निश्चित स्थान पर रखे जाने वाले स्थान को गौशाला कहा जाता हैं। यहाँ पर माता को भर पेट पौष्टिक पशु आहार व स्वच्छ जल दिया जाता है जिससे हमें शुद्ध दूध और दूध के उत्पाद प्राप्त होता है। गाय को सुरक्षा और आश्रय दिया जाता है जिससे वह कत्ल खाने में जाने से बच जाते है। गायें गौशाला में स्वस्थ रहती हैं क्योंकि उन्हें समय - समय पर पशु चिकित्सा उपचार मिलता रहता हैं। गौमाता को उचित हरा-भरा चारा भी दिया जाता हैं ताकि वे चुस्त तथा तंदुरुस्त रहे।

गायों से इंसान को तीन उत्पादन मिलते है - गोरस अर्थात दूध , गोमूत्र और गाय का गोबर। गोरस हमारी प्रोटीन की आवश्यकता को पूरा करता है। इस पर हम यदि रासायनिक प्रक्रिया करे तो कई और उत्पाद मिलते है जैसे - दही, मक्खन, पनीर, चीज़ आदि। गोमूत्र अपना स्थान आयुर्वेदिक उपचारों में पाती है जो कि पोषक तत्वों से भरपूर है। गाये के गोबर से ग्रामीण भारत में घर बनाए जाते हैं तथा इससे गोबर गैस प्राप्त होती हैं जो की हमारे लिए ऊर्जा की पूर्ति करती हैं।

फॉरगैनिक फार्म में हमे ऐसी ही एक गौशाला देखने को मिली थी जहां हमने गायों को खुश मिजाज़ पाया था।

"जीवन के उच्च आदर्श अपने हृदय में धरो,

गायों की सेवा और रक्षा करो । "

झरने

अगर आपको प्रकृति का सौंदर्य देखना है या उसके बारे में समझना है तो आप बहते हुए झरनों को देख लीजिए यह झरने इतने सुंदर होते हैं इसीलिए अपनी सुंदरता के लिए सबसे ज्यादा प्रसिद्ध है लोग जब बहुत तेज गर्मी होती है तो उनसे बचने के लिए अक्सर पर्वतीय क्षेत्रों में जाकर झरनों की तलाश करते हैं और उन झरनों वाली जगह पर जाते हैं जहां पर पर्यटन स्थल हो अधिक संख्या में लोग आते हो वहां जाकर वह बहुत ही प्रसन्नता सुख का अनुभव करते है सभी झड़ने अक्सर पर्वतीय क्षेत्रों में ही देखने को मिलते हैं।

झरनों का जन्म या उत्पत्ति नदियों के जल के द्वारा होती है। इसके अलावा बर्फ के बड़े-बड़े चट्टानों के जल से पिघलने से भी झरनों का जन्म होता है। झरने पर्वतों के

गुरुत्वाकर्षण बल के कारण बनते हैं। पूरे देश और दुनिया में बहुत प्रकार के झरने पाए जाते हैं। कुछ झरने गर्म पानी के होते हैं तथा कुछ ठंडे पानी के होते है।

हमारे देश में बहुत से ऐसे झरने हैं, जिनमें लोग गर्मियों में अपने मनोरंजन के लिए तथा गर्मी से बचाव के लिए वहां पर घूमने के लिए जाते हैं। पहाड़ी क्षेत्र में कुछ जगह पर बहुत छोटे झरने हैं और पर्यटन के लिए बहुत प्रसिद्ध है। यहां पर लोग अधिक संख्या में जाते हैं। हिमाचल ओर उत्तराखंड में कई बहुत अच्छे झरने है। जहां पर लोग अपनी गर्मियों की छुट्टियों का आनंद लेने के लिए जाते हैं क्योंकि बहते हुए झरने का ठंडा ठंडा पानी उसमें

खेलना, कूदना, मस्ती करना सभी लोगों को बहुत पसंद आता है। इसीलिए पर्यटन की दृष्टि से झरने बहुत अधिक प्रसिद्ध है।

हमारे देश में झरनों की बहुत बड़ी संख्या में है। गोवा और कर्नाटक की सीमा पर स्थित दूधसागर झरना, कर्नाटक में स्थित जोग फॉल्स झरना जो भारत का दूसरा सबसे विशाल झरना है, छत्तीसगढ़ में चित्रकूट झरना जिसके पानी से चारों तरफ से वन हरे भरे रहते हैं, मध्य प्रदेश में चचाई झरना और अरुणाचल प्रदेश में नूरानांग झरना इसके कुछ उदाहरण है।

झरनों में लोग मनोरंजन, आकर्षण, और खेलते भी हैं। हमारे देश में कुछ झरने तो हमारी धार्मिक नदियों के उद्गम स्थान भी होते है। कुछ झरने बहुत खतरनाक होते हैं। वो ऐसी पहाड़ियों पर होते हैं, जहां पर किसी का भी जाना संभव नहीं हो पाता। भारत के सभी झरने प्राकृतिक सुंदरता के लिए बहुत प्रसिद्ध है तथा इन सभी झरनों का अपना अलग ही महत्व है। झरने का जल जब सागर में पहुंचता है उससे पहले यह लोगों के बहुत भलाई के काम भी करता है। झरने के पानी से जल स्त्रोतों के माध्यम से अन्य कार्यों में भी झरने के जल का उपयोग होता है। लोग पर्यटन के लिए ऐसे घूमने वाली जगह पर जाते हैं। जहां पर जाकर उनको मानसिक एवं शारीरिक सुख का अनुभव होता है

मछली पालन या मतस्यपालन

मछली पालन घरेलू और व्यावसायिक कारणों से मछली के प्रजनन, विकास और परिवहन की प्रक्रिया है। इसे जलीय कृषि, या समुद्री कृषि के रूप में भी जाना जाता है।

मछली जलीय पर्यावरण पर आश्रित जलिय जीव है तथा जलचर पर्यावरण को संतुलित रखने में इसकी बहुत महत्वपूर्ण भूमिका होती है। यह कथन अपने में पर्याप्त बल

रखता है 'जिस पानी में मछली नहीं हो तो निश्चित ही उस पानी की जल जैविक स्थिति सामान्य नहीं है।' वैज्ञानिकों द्वारा मछली को जीवन सूचक (बायोइंडीकेटर) माना गया है। विभिन्न जलस्रोतों में चाहे तीव्र अथवा मन्द गति से प्रवाहित होने वाली नदियां हो, चाहे प्राकृतिक झीलें, तालाब अथवा मानव-निर्मित बड़े या मध्यम आकार के जलाशय, सभी के पर्यावरण का यदि सूक्ष्म अध्ययन किया जाय तो निष्कर्ष निकलता है कि पानी और

मछली दोनों एक दूसरे से काफी जुड़े हुए हैं। पर्यावरण को संतुलित रखने में मछली की विशेष उपयोगिता है।

मछलियाँ ओमेगा -3 फैटी एसिड और विटामिन जैसे डी और बी 2 से भरी होती है। मछली कैल्शियम और फास्फोरस से भरपूर होती है और आयरन, जिंक, आयोडीन, मैग्नीशियम और पोटेशियम जैसे खनिजों का एक बड़ा स्रोत है। यहाँ तक की अमेरिकन हार्ट

एसोसिएशन स्वस्थ आहार के हिस्से के रूप में प्रति सप्ताह कम से कम दो बार मछली खाने की सलाह देता है।

भारत में मछलियों की कई सारी प्रजातियाँ पाई जाती है जैसे रोहू, रिबन फिश,करोकेर, पोमफ्रेट, जैक, सोल, इत्यादि। इनका निर्यात करने से हमारे देश में धन आता है। जैसे, चीन भारतीय रिबन मछली का मुख्य आयातक है, जो भारत से कुल मछली निर्यात का 20% हिस्सा है ।

मछलियाँ कई व्यावसायिक रूप से मूल्यवान उप-उत्पाद उत्पन्न करती हैं। मछली का तेल, मछली का मांस, उर्वरक, मछली का गोंद आदि ये उप-उत्पाद हैं। पेंटिंग, साबुन, तेल और दवाओं में, इन उप-उत्पादों का व्यापक रूप से उपयोग किया जाता। ईसलिए मछली पालन एक महत्वपूर्ण चीज है।

प्रकृति कितनी उदार होती है। वह सभी जीवों को कितना कुछ देती है। सांस लेने के लिए हवा, पीने के लिए पानी, रहने के लिए धरा, इत्यादि। प्रकृति में रहकर जो आनंद हमे

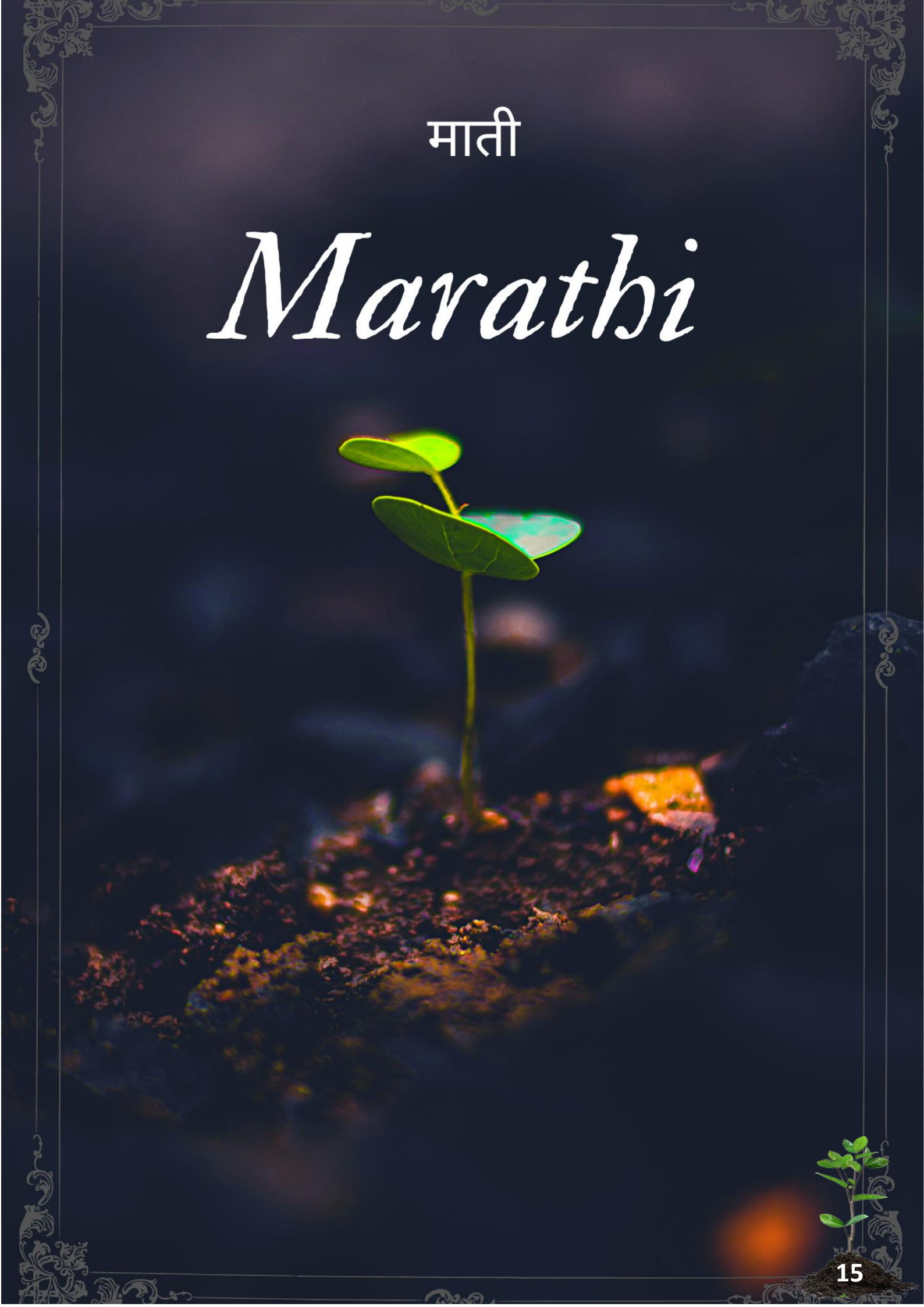
प्राप्त होता है, वह और कहीं नहीं होता। सच में, प्रकृति के बीच, फॉरगैनिक फार्म में बिताए हुए वह कुछ पल बेहद यादगार थे।

"तरुवर फल नहीं खात है, सरवर पीयहीं न पान,
कहे रहीम परकाज हित, संपत्ति संचहीं सुजान।"

धन्यवाद

माती

Marathi



प्रस्तावना

या सुंदर कवितेमध्ये कवी आपल्याला आपल्या मुळांशी ओळख करून द्यायचा प्रयत्न करतो.

जन्मापासून मरेपर्यंत माती कशा प्रकारे आपल्याला जमिनीवर ठेवते व मातीची ओळख करतानाच आपली नाती गोती कशी आपल्याला चिकटतात याचे समर्पक वर्णन कवी या कवितेमधून करतो.

1. माणसाच्या जन्माआधी त्याची माता (आई) त्याचे पालन पोषण करते व पुढे जन्मभर माती त्याचे पालन पोषण करते.

मनुष्याची जन्मानंतर आईशी असलेली नाळ जेव्हा सुटते किंवा जेव्हा त्याचा जन्म होतो, त्याच क्षणाला सर्व नाती त्या मनुष्याला चिकटतात पुढे आयुष्यभर वाढत जातात जसे मुलगा- नवरा- वडील - आजोबा - काका - मामा इत्यादी.

2. जन्मभर माणसाने किती मोती माळेमध्ये ओवायचे, म्हणजेच किती नाती जोडायची? जसे माळेचा सर तुटल्यावर सर्व मोती तुटून पडतात तसेच माणसाच्या मृत्युनंतर सर्व नाती गळून जातात असे कवीला म्हणायचे आहे.

3. कवी असा प्रश्न विचारतो की शेवटी किती नातीगोती जपायची? आणि कुणाकुणासाठी? शेवटी मृत्युनंतर प्रत्येकजण मातीत मिसळणार आहे मग हा अट्टाहास का? असे कवीला विचारायचे आहे.

4. कवीला असे म्हणायचे आहे की ज्याप्रमाणे दिव्याची वात स्वतः जळून प्रकाश देते त्याप्रमाणे प्रत्येक माणसाने आपापल्या परीने या मातीचे व पर्यायाने समाजाचे देणे फेडावे. स्वतःसाठी जगण्याबरोबरच दुसऱ्यासाठी सुद्धा जगावे.

1) माती

जन्माआधी पोसे माता पुढे जन्मभर माती
एक नाळ तुटताच श्वास गुंफतात नाती

उभा जन्म गुंफताना किती ओवायाचे मोती
एक सर तुटताच सारी पांगतात नाती

कुणी किती कुणासाठी जपायाची नातीगोती
हेरकाच्या आयुष्याची शेवटाला होते माती

जन्मा येऊन हो जिणं जिणं जगावं वातीचं
ज्याच्या त्याच्यापरी त्यानं देणं फेडावं मातीचं

उंच उडावे आकाशी ठेवा मातीवर पाय
जन्मणाऱ्या प्रत्येकाची तीच बाप तीच माय

- *Arya Naik*

2) माती...

कणाकणात तुझ्या
दातृत्वाची ओंजळ
आकाशभर मनात
जगण्याची तळमळ

कुशीत तुझ्या एक
बीज विसावे निःशंक
हजारो बियांचे दान
तू देशी ओंजळीत

पाऊसथेंब गोजिरा
विसावे तुझ्या उदरात
अंकुरणारे बीज
देई आश्वासक स्पर्श

तूच जननी तूच दाता
तूच श्वास तूच आस
अवघ्या विश्वास समावणारी
तू आमुची माता

देह माती श्वास माती
तूच घडवीसी जगता
अनंत श्वास देऊनी
शेवटी तुझ्यात विसावा

कसे फेडू ऋण तुझे
अवघे विश्व तारिशी
किती देशी दोन करांनी
दुबळी आमुची कुशी

कसे फेडू ऋण तुझे
अवघे विश्व तारिशी
किती देशी दोन करांनी
दुबळी आमुची कुशी.

- *Shreya Sarvankar*

माती - ही शेतकऱ्याची दुसरी आई आहे, जी शेतीला व शेतकऱ्यासाठी अत्यंत महत्वाची आहे. मातृभूमी, आई जी तिच्या लेकराचं पालन पोषण करते. त्यांना पौष्टिक असे फळ, फूल देते. जी विश्वाची पालनकर्ती आहे. त्याच मातीचे आपण किती हाल करतो आहोत? फुकट मिळते त्याची किंमत आपल्याला नाही, पण निसर्ग नियम आहे, कराल तसे भराल, पेरल तसे उगवेल, अति तेथे माती.

म्हणून माती सांभाळा, वाचवा व तिला निरोगी ठेवा, तिच्यावरील अन्याय थांबवा. कारण शेवटी तुम्हीपण मातीतच जाणार आहात.

3) मातीचा सुगंध

गावच्या मातीचा सुगंध
मज हवाहवासा वाटतो
टीचभर खळगीसाठी
मी दारोदार भटकतो ||१||

काय माझ्या मातीचा
सांगू तुम्हाला हो गुण
नाही येत तिच्या मनात
व्हावं दुसऱ्याच उणं ||२||

माझ्या मातीचा सुगंध
मनात माझ्या दाटतो
उभ्या पिकाच्या रुपानं
मला इटूबा भेटतो ||३||

माझ्या मायेच्या मातीत
रूप नान उगवत
त्यात राबतो कुणबी
त्याच जीवन सुखात ||४||

मातीच्या नादानं येतो
रान पाखरांचा थवा
माझ्या गावच्या मातीचं
गुण गातच राहावा ||५||

- *Vidhi Shedge*

मातीचा सुगंध- गावच्या मातीचा सुगंध जो पहिला पाऊस येऊन गेल्यावर येतो तो वेगळाच असतो. तो सुगंध आपल्याला हवाहवासा वाटतो तो थोडासा अनुभवायला मिळावा म्हणून लेखक दारोदार भटकतोय. माती फक्त माती नसून जादू सुद्धा आहे. त्या मातीचा वेगळाच गुण आहे, तो गुण असा आहे की तिच्या मनात कधीच दुसऱ्याचे वाईट व्हावे असा विचार येत नाही. माझ्या मातीचा सुगंध अतिशय प्रिय आहे, तो माझ्या मनात दाटतो. ती माती ज्या मातीत शेतकरी त्याचं पीक उगवतो आणि त्या मातीत उगलेले पीक म्हणजे प्रत्येक्षात आपला विठोबाच. त्या पिकाच्या रुपात आपल्या विठोबाचे दर्शन होते. आपली माती जी मायेची माती आहे त्या मातीत आपला शेतकरी राबतो, पीक उगवतो आणि त्याचे सुखी जीवन जगतो. आपल्या मातीत उगवलेली जी रंगबिरंगी फुलं त्यांच्यावर मातीच्या नादानं पाखरांचा थवा बसतो. किती सारे गुण आहेत ह्या मातीत, म्हणून ह्या मातीत जादू आहे असे कवी म्हणतात माझ्या गावच्या मातीचे गुणगान गातच रहायला हवे.

4) माती

कुणबी समाज
शेतीत राबती
बैलचे सोबती
सर्वकाळ...

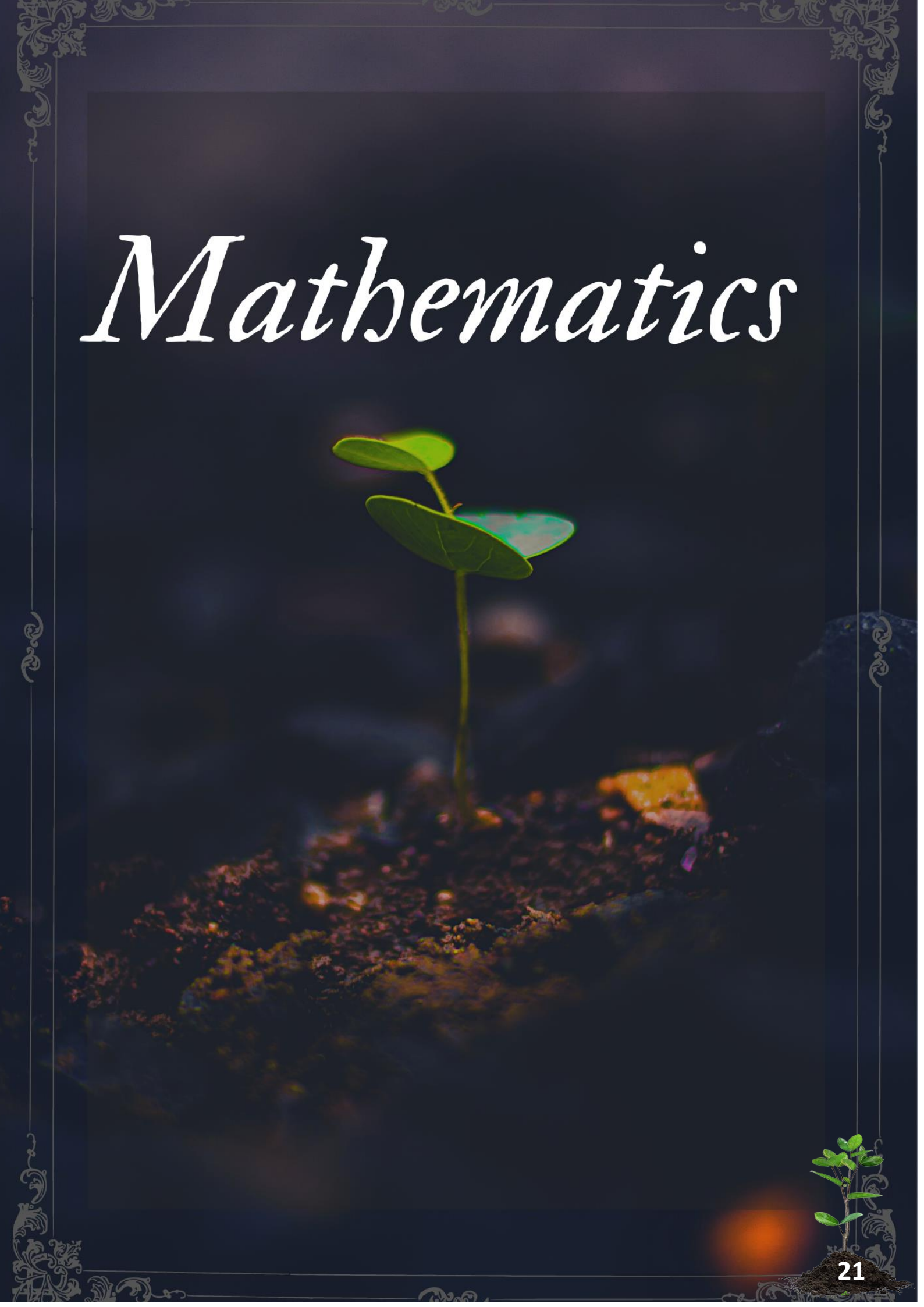
वाखरली शेती
उन्हामध्ये किती
अंगावर माती
चैतन्याची...

मातीतली नाती
हिरव्यात गोती
उनारले मोती
आषाढीस...

आता पुढे एक
निर्गुण अर्णव
नक्षत्र फुलव
झकपक...

- *Arya Salvi*

Mathematics



NATURE
MAT
Nature in relation with Maths
and
Maths in relation with Nature
co-ordinate geometry
line segment
ray
line
scale
546x
1268
histogram
pie chart
Maths
triangle.
P(2,1)

THE FORGANIC FARM

100% Organic, All for forganic!

Our school believes that students must have a hands-on experience in their life. Adhering to this, on 7th and 8th September standard 10 was taken to the forganic farm & Agro Tourism for the nature trail this year. Besides having fun and adventure, the field trip was intended to give students a practical experience of things they might have never done in this urbanized megalopolis.

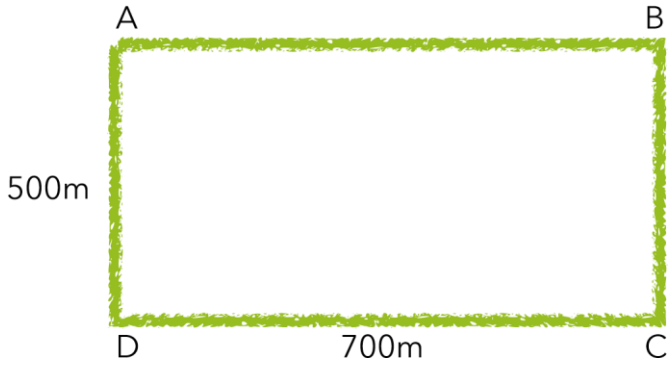
The forganic farm is a farmhouse resort spread over an area of 22 acres plot of land in Khopoli, at a distance of 90 km, 2 hours 10 minutes away from our school. This place has dense fauna with greenery everywhere. One could spot lakes, small streams, hills , refreshing farms and even reptiles. There were activities like Dirt Road Walk, Forest Walk, Stream Trail, Farm walk, Lake walk, River Trail, Jungle Trail, Burma Bridge and cattle feeding. The serenity of the place, the tranquil atmosphere and the joy of being with friends made trip memorable.

QUESTION 1

At Forganic farm, the students were shown vast stretches of land where rice was grown. The length and breadth of the land under cultivation was 500m and 100m respectively.

i) Determine the area of the land in the form

i) Convert the area into ‘are’ (1 are = 100 m²) iii) A decision has been taken to fence the land under cultivation. Determine the cost of fencing the rectangle at a cost of ₹120 per square feet. (1 feet = 0.3 m)



i] Area of land = 700m × 500m

= 350000m²

ii] 1 are = 100m² {Given} x = 350000m²

=> 100x = 350000

x = 35000/100

= 3500 are

iii] Perimeter = 2 (500 + 700)

= 2 × 1200

= 2400 m

1 feet = 0.3m

x = 2400m

=> x = 24000/3

=> x = 8000 feet

∴ Cost of fencing per square feet = 120 × 8000

= ₹960000

QUESTION 2

The inner curved surface of a 10 m deep well is 110 m^2? With the given information, find:

i] Diameter of the well.

ii] Capacity of the well.

iii] The cost for painting the inner surface, at the rate of ₹30 per m?

i] Diameter of well:

$110 = 2 \times 22/_7 \times r \times 10$

$770 = 440r$

$r = 770/440$

$r = 7/4$

$\therefore d = 7 \times 2/4$

$= 3.5m$

ii] Capacity $= \pi r^2 h$

$= 22/7 \times 7/4 \times 7/4 \times 10$

$= 385/4$

$= 96.25\ m^3$

iii] Cost of painting $= 110 \times 30$

$= ₹3300$

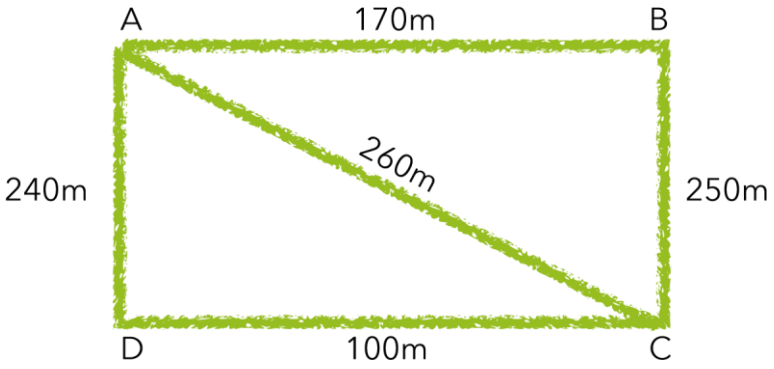
QUESTION 3

The plantation of the farm has a shape of a quadrilateral. The farm has been measured by naming the corners as

A, B, C, D.

AB = 110 m, BC = 250 m, CD = 100 m, A D = 240 m and AC= 260m.

Find the area of the field in hectare. (1 hectare = 10000 m^2)



In △ABC,

Area of △ABC = $1/_2 \times 250 \times 170$

= 21250 m^2

In △ADC,

Area of △ADC = $1/_2 \times 100 \times 240$

= 12000 m^2

Total Area = 21250 + 12000 m^2

= 33250 m^2

1 hectare = 10000 m^2

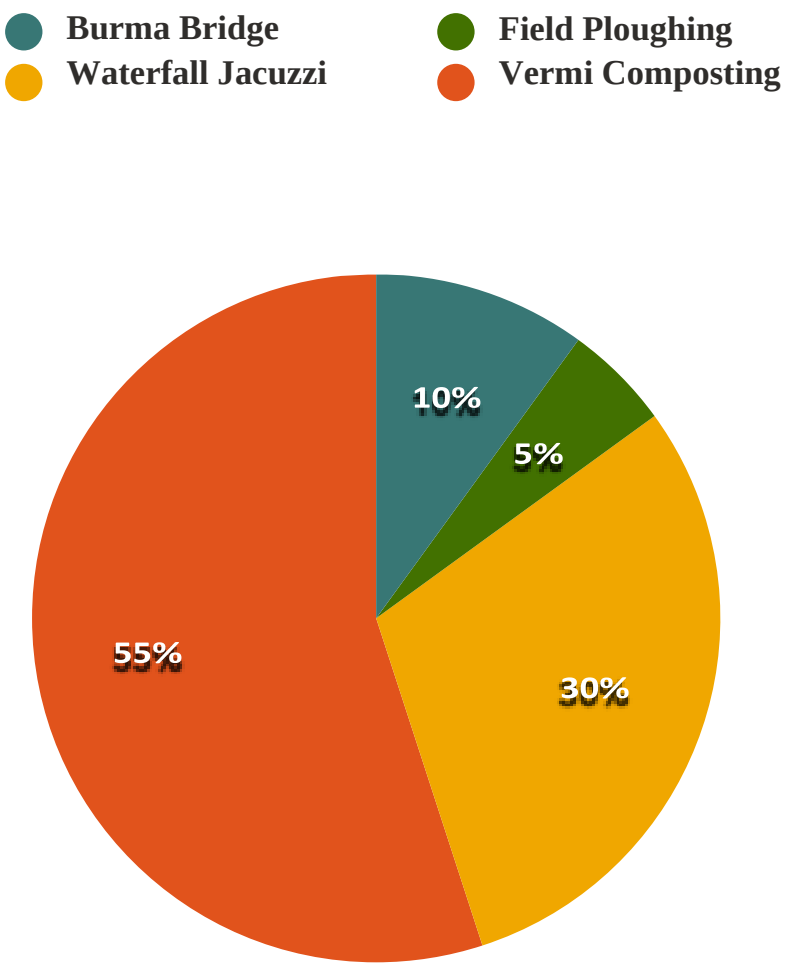
Area in hectares = Area in m^2/10000

= $^{33250}/_{10000}$

= 3.325 hectare

FACT

120 pupils have gone to the forganic Farm at Khopoli. The below pie chart shows the favourite activities of the students at the farm.



THE BURMA BRIDGE

The Burma Bridge has three cables. We walk on one and take the support of the remaining two. The three ropes together make 9 triangular cross-sections. But in the middle course of the bridge, the periphery ropes hang down, thereby creating a semi -circular cross section.

Burma bridge at the forganic farm

A Burma bridge has a semi -circular cross section. But when a human stands on the bridge, the cross section at that point appears as an equilateral triangle.

The length of the bridge is approximately 21 metres. the breadth of the bridge is approximately 1.3 metres.

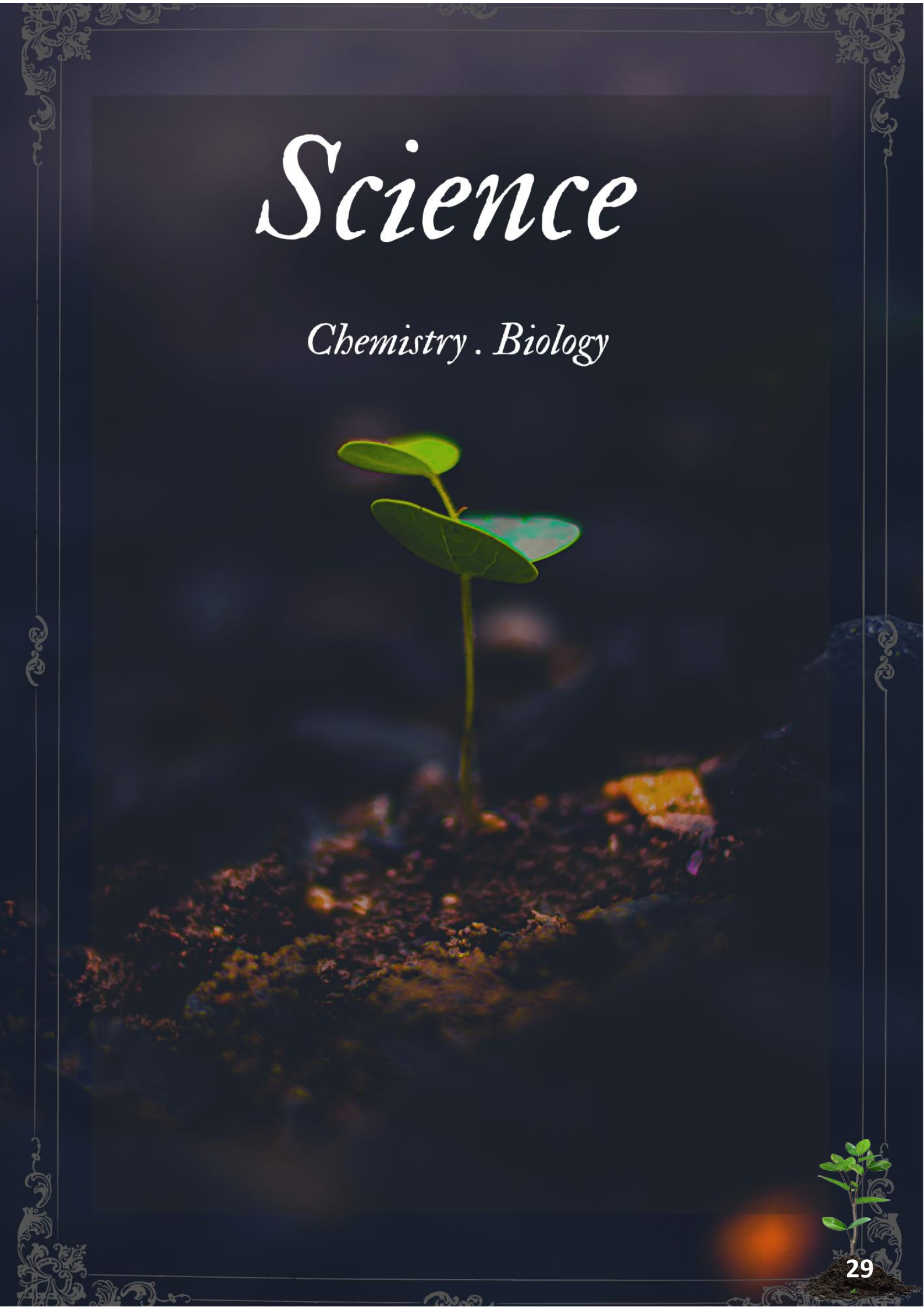
The area occupied by the bridge:

$l \times b = (21 \times 1.3)\ m^2$
$\Rightarrow 35.1\ m^2$

But due to tapering of bridge at the ends and human error, the area calculated varies from that seen on google earth (Area = 38.82 m^2)

Science

Chemistry . Biology



Soil Experiments Analysis - Chemistry

Sample 1-

- A loamy texture
- Collected from **botanical garden**
- Reddish-brown in colour

Sample 2 –

- Coarse Texture
- Collected from **Canteen ground**
- Dull brown in colour

Experiments:

1.0 pH value of the soil

Procedure –

- Take the soil in the beaker.
- Add distilled water to it
- Agitate the solution for no less than 2 minutes.
- Introduce a pH paper in it and check its value.

Analysis-

- Soil Sample 1:
  Between 6.3 and 6.7

- Soil Sample 2:
  Between 6.3 and 6.7

2.0 Humus/Organic Contents

Procedure

- Weigh the Petra dish
- Add some wet soil in it and weigh it again.
- Heat it strongly for 6-7 minutes and weigh after heating
- Using differential method, calculate loss in weight

$W1(Weight\ lost)$
$Weight\ of\ heated\ soil$ x 100 = Organic %

Analysis –

For soil sample 1:
W1 = 98.521
W2 = 113.977
W3 = 111.11

Loss in weight = 2.867
Weight of heated soil = 12.589

$\frac{W2-W3}{W3-W1}$ x 100 = $\frac{2.867}{12.589}$ = 22.77%

Organic content = 22.77%

For Soil Sample 1:
W1 = 98.521
W2 = 115.069
W3 = 113.905

Loss in weight = 1.164
Weight of heated soil = 15.384

$\frac{W2-W3}{W3-W1}$ x 100 = $\frac{1.164}{15.384}$ = 7.57%

Organic content = 7.57%

3.0 Maximum moisture content:

Procedure –

- Take some amount of soil in a beaker. Fill it with water till the soil becomes completely wet.
- Take a petri dish and weigh it
- Drain off the excess water and weigh the wet soil
- Heat the petri dish containing the soil till it becomes completely dry. Weigh the heated soil

Analysis –

For Soil Sample 1:

W_1 = 095.754 gf

W_2 = 108.191 gf

W_3 = 104.770 gf

$W_2 - W_1$ = 12.437 gf

$W_3 - W_1$ = 09.016 gf

Loss of Weight: 3.421 gf

$\frac{W2-W3}{W3-W1}$ x 100 = $\frac{3.421}{9.016}$

∴Water retention of Soil 1: 37.94%

For Soil Sample 2:

W_1 = 105.447 gf

W_2 = 122.583 gf

W_3 = 118.422 gf

$W_2 - W_1$ = 17.136 gf

$W_3 - W_1$ = 12.975 gf

Loss in weight: 4.161 gf

$\frac{W2-W3}{W3-W1}$ x 100 = $\frac{4.161}{12.975}$

∴Water retention of Soil 2: 32.07%

4.0 AIR RETENTION EXPERIMENT

Procedure –

- First fill the beaker with soil till it reaches the 40 ml mark
- Add water in another beaker and measure its reading
- Slowly drop water into the beaker until the water barely touches the tip of soil
- Now measure the volume of water in the beaker used for pouring

The Change in the level of water in the beaker should be equal to the amount of air the soil could hold at that

physical condition Volume of air displaced = Volume of water in the soil

ANALYSIS –

Soil Sample 1-

V_s = 17 ml = 17 cm^3

V_w = 3 ml = 3 cm^3

Volume of air displaced = Volume of water Therefore,

3 cm^3 of air is displaced

Air retention = $\frac{3}{17}$ x 100 = 17.65%

Soil sample 2 – V_s = 18 ml = 18 cm^3

V_w = 8 ml = 8 cm^3

Volume of air displaces = Volume of water Therefore,

8 cm^3 of air is displaced

Air retention = $\frac{8}{18}$ x 100 = 44.44%

FLORA AND FAUNA

OF FORGANIC

A SULONIAN INITIATIVE

TULSI

Scientific name : *Ocimum tenuiflorum*

KINGDOM	Plantae
DIVISION	Spermatophyta
CLASS	Magnoliopsida
ORDER	Lamiales
FAMILY	Lamiaceae
GENUS	*Ocimum*

ECONOMIC IMPORTANCE.

1. Holy basil (Tulsi) has a crucial role in ayurvedic medicines and is used to cure various diseases such as.. Asthma, Diabetes etc.

2. Tulsi is also used as a religious plant in various rituals. Thus named HOLY basil.

BANANA

Scientific name : *Musa sapientum*

KINGDOM	Plantae
DIVISION	Magnoliophyta
CLASS	Liliopsida
ORDER	Zingiberales
FAMILY	Musaceae
GENUS	*Musa*

ECONOMIC IMPORTANCE.

1. Important food crop of the world especially in the tropics.

2. Banana fruit is reserve of energy, contains more of carbohydrate, phosphorus, calcium and iron.

TOUCH ME NOT

Scientific name : *Mimosa pudica.*

KINGDOM	Plantae
DIVISION	Tracheophyta
SUB DIVISION	Spermatophyta
CLASS	Dicotyledonae
ORDER	Fabales
FAMILY	Fabaceae
GENUS	*Mimosa*

ECONOMIC IMPORTANCE.

1. It has very good antiseptic and medicinal properties. The roots of the plant can be crushed and used to treat minor skin ailments like acnes and boils.

2. Touch- me- not plant changes the physio-chemical properties of the soil it invades and a significant level of Nitrogen and Potassium in the soil increases.

RICE

Scientific name : *Oryza sativa.*

KINGDOM	Plantae
DIVISION	Tracheophyta
SUB DIVISION	Spermatophyta
CLASS	Magnoliopsida
ORDER	Poales
FAMILY	Poaceae
GENUS	*Oryza*

ECONOMIC IMPORTANCE.

1. Sake is an important alcoholic beverage in Japan prepared by fermentation of rice.

2. Bran oil:used as edible oil in preparation of Vanaspati.

3. Paddy Husk is used a fuel in brick making.

TURMERIC

Scientific name : *Curcuma longa*

KINGDOM	Plantae
DIVISION	Tracheophyta
SUB DIVISION	Spermatophyta
CLASS	Magnoliopsida
ORDER	Zingiberales
FAMILY	Zingiberaceae
GENUS	*Curcuma*

ECONOMIC IMPORTANCE.

1. The yellow dye obtained from turmeric is used for dyeing cotton, silk, wool, paper etc.

2. It has medicinal properties and is used for external application against pain and wounds and internally as stimulant.

ALOE VERA

Scientific name : *Aloe vera.*

KINGDOM	Plantae
DIVISION	Tracheophyta
SUB DIVISION	Spermatophyta
CLASS	Monocotyledonae
ORDER	Asparagales
FAMILY	Asphodelaceae
GENUS	*Aloe*

ECONOMIC IMPORTANCE.

1. It has antibacterial and antiseptic properties - used as a medicine.

2. It improves and moisturizes the skin - used as a cosmetic.

3. It accelerates the healing of wounds and reduces the irritation.

COCONUT

Scientific name : *Cocos nucifera.*

KINGDOM	Plantae
DIVISION	Tracheophyta
SUB DIVISION	Spermatophyta
CLASS	Monocotyledonae
ORDER	Arecales
FAMILY	Arecacae
GENUS	*Cocos*

ECONOMIC IMPORTANCE.

1. Coconuts provide raw material to industries (husks,flesh etc.)

2. Used in medicine as an antifungal and antioxidant agent.

SNAKE PLANT

Scientific name : *Dracaena trifasciata*

KINGDOM	Plantae
DIVISION	Tracheophyta
SUB DIVISION	Spermatophyta
CLASS	Monocotyledonae
ORDER	Asparagales
FAMILY	Asparagaceae.
GENUS	*Dracaena*

ECONOMIC IMPORTANCE.

1. The snake plant releases oxygen and removes toxic air pollutants, thus purifying the air.

2. Snake plants can heal skin wounds & burns, reduce inflammation & relieve headaches.

3. Snake plants clean the environment of cancer-causing agents.

NEEM

Scientific name : *Azadirachta indica.*

KINGDOM	Plantae
DIVISION	Tracheophyta
SUB DIVISION	Spermatophyta
CLASS	Magnoliopsida
ORDER	Sapindales
FAMILY	Meliaceae
GENUS	*Azadirachta*

ECONOMIC IMPORTANCE.

1. Neem is commonly used in shampoos for treating dandruff and in soaps or creams for skin conditions such as acne, psoriasis, and athlete's foot.

2. It is also a component in some toothpaste and mouthwashes .

3. Neem leaves have long been used as a traditional treatment for diabetes as well

CENTIPEDE

Scientific name : *Lithobius forficatus .*

KINGDOM	Animalia
PHYLUM	Arthropoda
CLASS	Chilopoda
ORDER	Lithobiomorpha
FAMILY	Lithobiidae
GENUS	*Lithobius*

ECONOMIC IMPORTANCE.

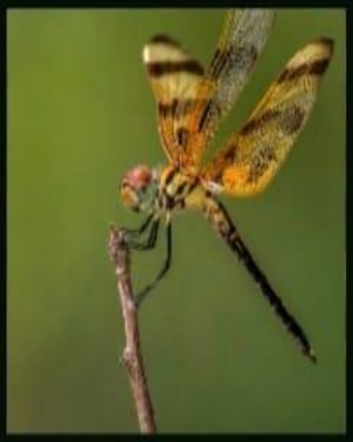
1. It's digging aerates the soil

2. Centipedes destroy harmful pests in the soil. Their waste increases the fertility of the soil

DRAGONFLY

Scientific name : *Anax guttatus*

KINGDOM	Animalia
PHYLUM	Arthropoda
CLASS	Insecta
ORDER	Odonata
FAMILY	Aeshnidae
GENUS	*Anax*



ECONOMIC IMPORTANCE.

1. Dragonfly larvae are used as bait by fishermen.

2. Control insect population, especially pests like agricultural pests.

MONARCH BUTTERFLY

Scientific name : *Danaus plexippus*

KINGDOM	Animalia
PHYLUM	Arthropoda
CLASS	Insecta
ORDER	Lepidoptera
FAMILY	Nymphalidae
GENUS	*Danaus*

ECONOMIC IMPORTANCE.

1. They are valuable pollinators.

2. They are depicted as significant indicator species owing to their sensitivity to the slightest changes in environmental factors

EARTHWORM

Scientific name : *Pheretima posthuma*

KINGDOM	Animalia
PHYLUM	Annelida
CLASS	Clitellata
ORDER	Opisthopora
FAMILY	Megascolia
GENUS	*Pheretima*

ECONOMIC IMPORTANCE.

1. They help loosen up the soil and aerate it as they burrow deep.

2. They are used in vermiculture to produce good manure.

3. They are used as baits for catching fish.

COW

Scientific name : *Bos taurus*

KINGDOM	Animalia
PHYLUM	Chordata
SUB -PHYLUM	Vertebrata
CLASS	Mammalia
ORDER	Artiodactyla
FAMILY	Bovidae
GENUS	*Bos*

ECONOMIC IMPORTANCE.

1. The cow provides food and diary items such as Milk, Cheese etc.

2. Cow Dung is used to make manure which improves soil fertility.

TILAPIA FISH

Scientific name : *Oreochromis niloticus*

KINGDOM	Animalia
PHYLUM	Chordata
SUB -PHYLUM	Vertebrata
CLASS	Actinopterygii
ORDER	Cichliformes
FAMILY	Cichlidae
GENUS	*Oreochromis*

ECONOMIC IMPORTANCE.

1. It is a good predator – cleans pests from water.

2. Tilapia fish farms are highly profitable and are setup around the globe.

History

Save Soil : Historical Perspective

Parth Thakur - 10

The tradition of Indian sculpture extends from the Indus valley. civilization of 2500 to 1800 BCE, during which time small terra-cotta figurines were produced. The great circular stone pillars anu carved lions of the Mauryan period (3rd century BCE) gave way to mature Indian figurative sculpture in the 2nd and 1st centuries BCE, in which Hindu and Buddhist themes were already well-established.

FROM TERRACOTTA WE HAVE EVOLVED TO MAKING STATUES OF METAL AND STONES

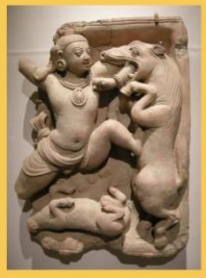
Terracotta, Clay, Sand is widely used to create these sculptures.
a few examples;

Indians have taken safety measures to save soil and prevent water pollution in religious traditions.

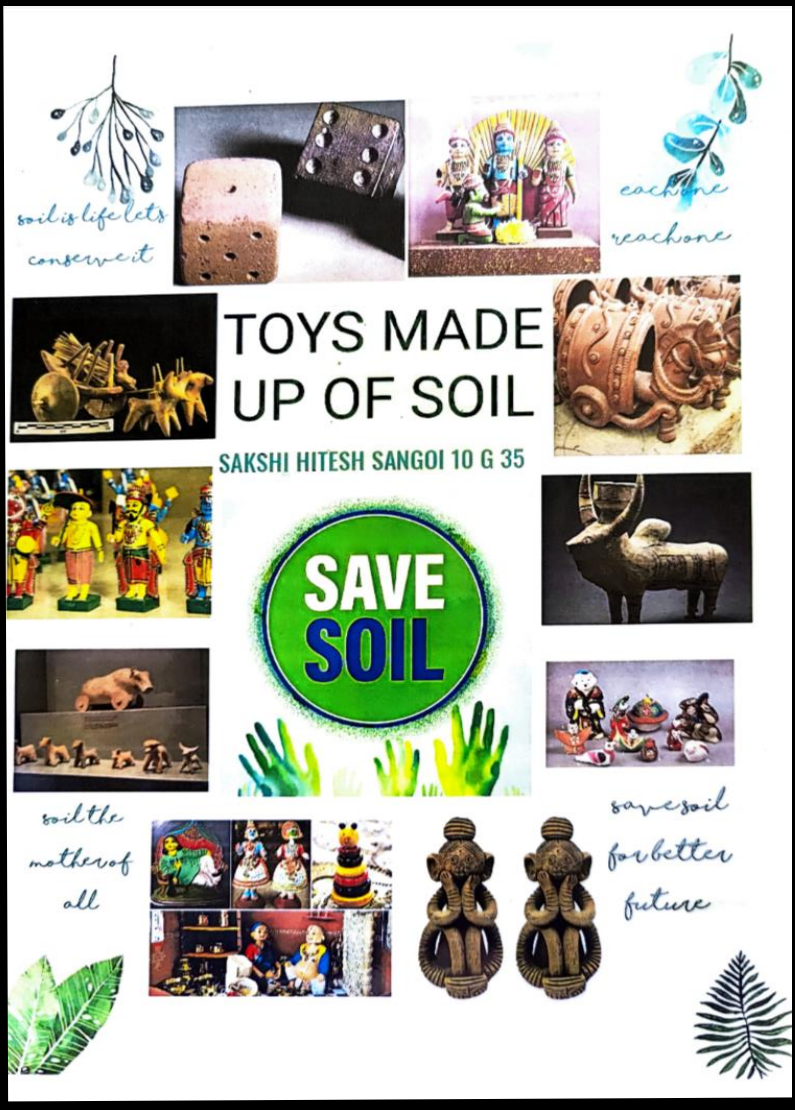
GANESH CHATURTHI:

Eco-friendly Ganesh Murtis are made of organic soil/mud, natural colors. To spare and secure our nature, we should hold hands and do our bit, and go for eco-friendly items.

Sanchi Gateway
(Satavahana dynasty)



Hindu Gupta terracotta relief, 5th Century.
(Gupta Period)



Save Soil

The prevention or reduction of soil erosion and soil depletion by protective measures against water and wind damage

Isha Foundation has taken a step on saving soil.

Their Mission: -

Save Soil – A Global Movement to invoke a conscious approach to soil and planet in all. One of the main objectives of the movement is to show governments across the world that their citizens want policies that revitalize ecology an soil.

Isha Outreach will partner with the Save Soil movement to facilitate its execution in India. Already, thousands of eminent figures, including scientists, celebrities, policy experts, and even heads of states are coming together with this common goal to restore soil health and rekindle our bond with Mother Earth.

-Yash Kudva 11 10G

- VANIA BHATIA 10th M 43

Save Soil

SOIL IS THE SOURCE OF LIFE.
YOUR CONNECTEDNESS WITH IT IS VITAL FOR A STRONG LIFE.

RIGHT NOW, THE MOST IMPORTANT ASPECT OF CONSERVING NATURE IS SOIL. IF WE DO NOT STOP SOIL DEGRADATION, THE PLANET WILL NOT BE CONDUCTIVE FOR HUMAN BEINGS TO LIVE UPON...

Soil needs to be conserved from erosion or prevention of reduced fertility of soil which is caused by over usage of fertilisers, salinisation, etc.

Methods of conserving soil:

- Extension of arid lands.
- Lowering of water table and decreasing soil moisture.
- Silting of river and canal beds.
- Recurrence of land slides.

SOIL CONSERVATION

Bhopal: Soil from 75 places belonging to freedom fighters displayed in city Expo to commemorate Jallianwala Bagh massacre under Azadi Ka Amrit Mahotsav.

Former superintending archaeologist, ASI, Narayan Vyas from Bhopal, has displayed the soil collected from 75 places where freedom fighters were born or were martyred.

It was part of an exhibition 'Bharat ka Swadhinta Sangram Senaniyon Ke Janm aur Balidan Sthalon Ki Charanraj', held at Dattopant Thengadi Research Institute in the city.

Besides, drawings of freedom fighters were displayed and the bricks of the time of British rule, on which the year is engraved, were also displayed.

National Organisational Secretary of Akhil Bharatiya Vidyarthi Ashish Chouhan inaugurated the exhibition in the presence of Vice Chancellor Atal Bihari University Khemsingh Dbehariya. A large number of students, research scholars and students visited the rare exhibition. Vyas explained about the exhibition in detail to the students.

The exhibits included soil of Jallianwala Bagh, the soil of Cuttack, the birth place of Subhash Chandra Bose, the soil of Chandrashekhar Azad, who was martyred in Prayagraj, the soil of the birth place of Babasaheb Ambedkar, Rani Laxmibai of Jhansi, Tatya Tope of Shivpuri, August Kranti Maidan soil of Mumbai, freedom fighters Surya Narayan Vyas of Ujjain, Vishnu Shridhar Wakankar, Anant Lal Vyas, Charanraj's birth and sacrifice sites of martyrs of Rajasthan.

The exhibition was organised to commemorate the Jallianwala Bagh massacre under Azadi Ka Amrit Mahotsav.

Vyas has displayed the exhibition at 12 places across the country so far. "My aim is to make a drawing of 75 freedom fighters and display them in an exhibition at 75 different places

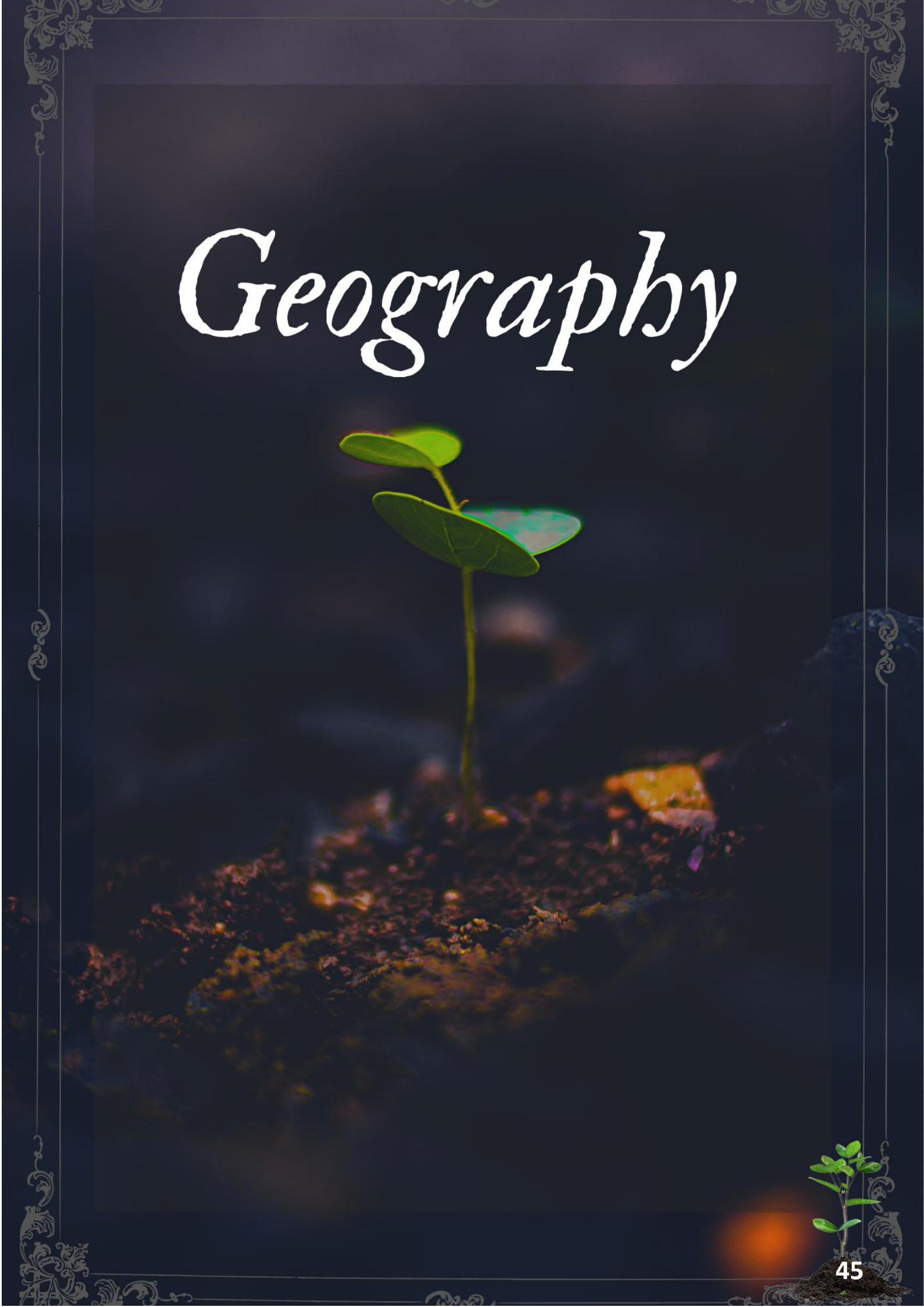
Soil And War

One of the most dramatic and terrible ways in which human beings can pollute the soil that has sustained us for so long is through warfare.

Destruction of Homes, camps, digging of trenches, bombing affects the basic structure of soil and makes the topsoil unproductive. The metal residue left behind by bullets, guns, and shards of all kinds of weapons is terribly toxic. Poisons such as mustard gas, organophosphates, Botulin, Anthrax and radioactive elements destroy the soil's chemical structure.

The First and Second World wars of 1914 and 1939 are perfect examples of this. The soils in countries like France suffered terribly. Major famines struck the countries due to this reason. We must try to save our soil, learning from our history and not repeating the mistakes of our ancestors. After all, the nation that destroys its soil inevitably destroys itself.

Geography



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8	**Credits**	

1. AIMS & OBJECTIVES

This project was taken up by Smt. Sulochanadevi Singhania School **to understand the processes in the farm and how it affects soil conservation**

2. METHODOLOGY

The method adopted for this project is **field visit**. Students were given the opportunity to visit 'Forganic Farm' on 07/09/2022 and 08/09/2022.

The information collected was majorly by the below listed procedures-

- **Interviews**
  Interviews were conducted by standard 10 students. A total of 3 questionnaires conducted by different groups of students, interviewing officials on the farm are elaborated in the document.

- **Analysis of Observational data**
  Observations made by students during tours of the farm, informational presentations, etc.

3. GEOGRAPHICAL DATA OF THE REGION

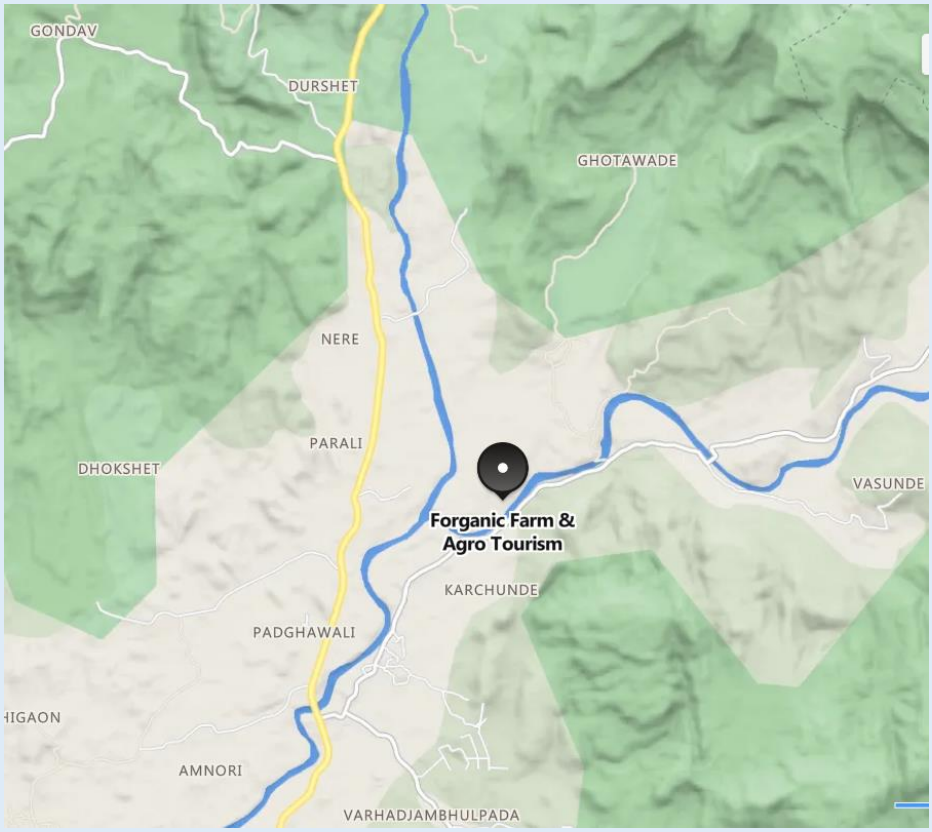

Fig (3.1)-Location of Forganic Farm & Agro tourism

(Source – google maps)

3.1 Location

The area under study 'Forganic Farm & Agro Tourism' is a 22-acre farm located beyond the Karchunde village in Raigad district of Maharashtra. The nearest industrial town is that of Khopoli in Navi Mumbai.

3.2 Climate

Forganic Farm is located at the foot of the Sahyadri range of the Western Ghats on the windward side.

- The region experiences maritime climate with hot , humid **Summers** beginning in February and ending towards the end of May

- The **Monsoon** is seasonal with frequent, heavy showers, mainly from the Arabian Sea Branch of the Southwest Monsoon winds. The onset of monsoon begins in June. The final showers are observed in October.

- **Winters** from October to January remain pleasant, the soil having retained moisture from the rainy season gives good yield.

  Students visited the farm during the rainy season and observed lush greenery throughout the farm and also encountered heavy downpours.
  Students observed multiple instances of moss growth on barks of trees and the surrounding areas indicating a high oxygen content in the air.

3.3 Topography

Fig (3.2) - Overhead Satellite imagery of Forganic Farm & Agro tourism

(Source – google earth)

Land gradient

Referencing the location of the farm the overall area is flat with

an upland slope gradient towards the North Eastern side.

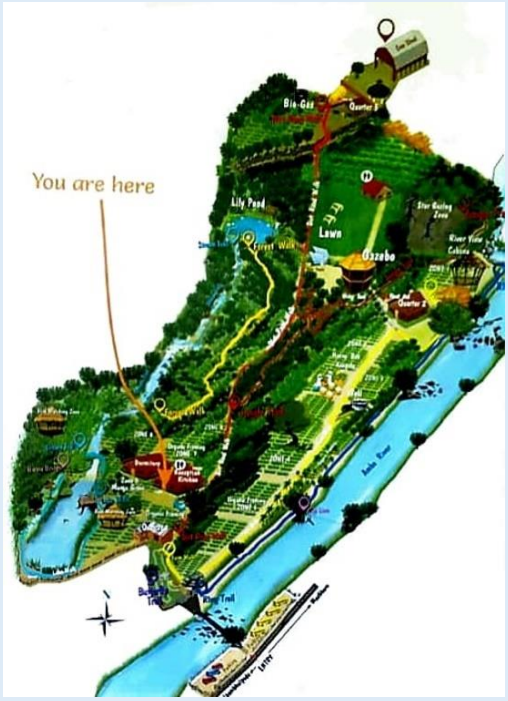

Fig (3.3) – Map of Forganic Farm

Water sources

The non- perennial Amba river flows along the eastern boundary of the farm along with minor non perennial streams throughout the area. Small stone dams over the minor streams were also observed. There are 2 non-perennial natural tanks within the farm.

Accessibility

Navigation through the farm is mainly via non- metalled roads.
There is also a causeway marking the entry to the farm facility.

Distribution of Cultivated land

Most cultivated areas include farm land or plantation land for certain fruit trees along with the areas cleared for buildings. Patches of un- cultivated green lands also exist.

3.4 Soil Profile

Soil native to the region is **Mixed soil** predominantly a mixture of Black Soil and Brick or Red soil.
Soil in most regions is well drained. Soil surrounding stagnant water bodies tends to be marshy promoting the existence of snakes in the region.

Black soil is known for its property to retain moisture. This is of advantage during the winters making the October to January period very productive in terms of crop yield.

3.5 Vegetation

Although the Forganic farm is open to the public and has human activity, there is no compromise in the green cover. On the 22-acre lush green

landscape, which is teeming with diverse flora species, tall hardwood trees prove a predominance.

3.5.1 Natural Vegetation

- **Teakwood** - Commonly used for boat-making and furniture, this hardwood tree was abundantly found throughout the terrain. The leaves of this tree, when crushed between palms, gives out a red hue, used as natural red ink.

- **Palash** - This small-sized, deciduous tree grew on it brightly coloured orange flowers which when immersed in water, can be used to prepare natural orange dye. These brilliant flowers are used to make eco-friendly Holi colours and the leaves of this plant are stitched together to make eating plates.

- **Bamboo** - Bamboo being a hardwood tree is used for various purposes. Bamboo is said to release 30% more oxygen into the atmosphere, as compared to other trees. On the farm, a lot of productive use was made of this tree- bamboo was used to make fishing rods instead of using metal rods.

- **Guava** - Beside the flavoursome fruits that grow on this tree, guava has many other benefits. Not only are boiled guava leaves used as a natural mouthwash, but these leaves can be consumed for stomach and intestinal conditions and diabetes.

- **Basil** - This aromatic herb is widely used as a natural insecticide.

3.5.2 Planted Trees

- **Karvanda, Lemon, Avla and Totapuri Mangoes, Tamalpatra** are planted in the farm, with its fruit used for the purpose of consumption.

- **Belpatri** was a common herb found in the premises along with wood mushrooms that grew on barks of trees.

- **Khus grass** was copiously present in the farm, chiefly acting as a flood control embankment during excessive rain.

4.1 Irrigation

Despite the heavy downpours in the region during monsoons irrigation is the major form of watering for crops and plants .Irrigation intensive seasons include Summer while Monsoon and Winter do not require regular irrigation due to the soil components in the region, black soil being known for its moisture retentive property.

4.1.1 Sources

Main sources of irrigation are lakes, rivers, dams which provide plentiful water to the extensive field. There is also a stream. The highlight of the major water sources is a river called Amba river. The sources being non- perennial depend on rainfall for their replenishment having an indirect dependence on rainfall.

Amba River- The river is non-perennial but has water almost throughout the year. The source of water in the river comes from the Manoli dam which in turn receives its water through seasonal rainfall.

4.1.2 Primitive methods of irrigation

- Water drawn from **major lakes in the area and from the Amba river**

- **Well Irrigation** - Due to the unreliable nature of rainfall in India, conditions of drought as well as flood may be observed. In case of drought the Amba river's water reserves may not be sufficient. There are wells which provide water in such conditions. They resort to groundwater resources to fulfil their requirements. Water is drawn from wells via the moat also known as pulley system. Both surface wells and tube wells are used.

Irrigation Sources and Methods

- **Rainfall** - the various green patches of non- cultivated land in the region are watered by rain.

4.1.3 Modern methods of Irrigation

- **Drip Irrigation** -Drip irrigation is mainly used for smaller shrubs and crops. Drip irrigation pipes are observed throughout the facility even navigating the hilly terrain and providing irrigation for smaller plants lining the pavements.

- **Sprinkler Irrigation** - the vast, verdant lawns and plants categorized as herbs or of shorter height (e.g. - mint plant , cabbage) are irrigated via sprinklers. Sprinklers are used only on flatland areas of sufficient size to prevent runoff of excess soil.

Modern Irrigation Methods

Fig (4.1.3.1) – Sprinklers

Fig (4.1.3.2) – Drip irrigation pipes

4.2 Crops and Cropping Seasons

The 3 cropping seasons and some of the crops grown according to climate are as follows

- Monsoon (June to September)- Rice
- Winter (October to January)- Cabbage and most other vegetables.
- Summer(February to May)- Watermelon, Mangoes

Summer is irrigation intensive. Major focus is on seasonal crops like Mango and Watermelon

Monsoon requires minimum to no irrigation , flood like conditions may arise and replenishment of stagnant water promotes growth of rice.

- **Rice** - among the vast vegetation covered landscape there are present multiple stagnant water reserves for the growth of rice. Seeds are sown and saplings are cultivated elsewhere while transplantation of saplings in the stagnant water is done in the early monsoon.

In **Winter** irrigation is only for larger trees and plants , most crops grow well in the balanced climatic conditions of well-drained soil and sufficient sunlight. This is also the most diverse and productive cropping season.

4.3 Distribution of Produce

The organically grown fruits and vegetables which are of fresh high quality are loaded on trucks on Wednesdays and Sundays and transported to Vashi. There, they are sold separately from wholesale foods. Further they are transported by refrigerated trucks and distributed to the retailers.

4.4 Vermicomposting

Composition –

- The vermicompost consists of 70% of
- cow dung which is obtained from the cow sheds located on farm

- The other 30% is biomass. Biomass includes kitchen waste, leaves and wet soil.

Fig (4.4.1) – Vermi-compost pit

Procedure –

- Following the process of Vermicomposting earthworms are added into the components. Earthworms are obtained from commercial markets.
- Each morning water is sprinkled over the forming compost to maintain moisture levels
- The compost pit has 2 pipes 'In' and 'Out' . The 'In' pipe provides oxygen to the earthworms and 'Out' pipe drains the excess water.

Fig (4.4.2) – Earthworms used in vermicomposting

Uses –

- The **Vermicompost** obtained after 45 days of composting is used as a fertilizer in the farm to grow the plants. The liquid obtained from it is used to spray the trees around the facility.

Vermi Liquid

Leftover dairy products like spoilt curd and milk are also composted using the similar procedure seeking assistance from the earthworms to make Vermi Liquid. It is used to boost growth of small plants in the farm.

5. ANIMAL HUSBANDRY

5.1 Cow shed

The cow shed comprises of cows of native breed and of the 'Gir' breed. The cattle consist of both males and females including calves which reside with the rest in the shed. Bulls are drought animals and females produce milk.

Gir Breed of cattle

The Gir or Gyr breed of cattle is native to the Gir forest in Gujarat

Housing conditions - The cowshed is an open enclosure ,gated by a wooden gate and wooden fencing. There is a well roofed brick enclosure for feeding, hygiene maintenance of cattle as well as to shelter them from the frequent and heavy rain. Cows sleep and carry out most daily routines except feeding in the shed

Fig (5.1) – Cow Shed

Feeding - The cattle is fed primarily via grazing in the fields and green lands nearby.

Healthcare - Cows which have passed the age limit to produce milk are kept in the shed and cared for. Veterinary facilities are available for cattle having contracted illness and are provided treatment accordingly.

The below products are obtained and used as follows:

- **Milk** - each day the cows
- are milked from 8am to 12pm. Milk yield per-cow, per-day is about 5 litres . The cows are milked twice each day. All milk obtained is sold.
- **Cow Dung** - cow dung is primarily used to make compost via vermicomposting
- **Cow urine** - cow urine is collected and used as a liquid fertilizer in fields

6. SOIL CONSERVATION EFFORTS

6.1 The soil of the farm is most subjected to erosion of topsoil by heavy rainfall and running water. The rainfall is a feature of the climatic conditions of the region. Furthermore, the upland slope and windward location provides for swiftly moving water that descends from the slopes onto the fields. The speed of water in the streams is also sufficient to cause erosion and form gullies over time. Overflowing of lakes and marshy lands pose a threat to the topsoil

The below preventive measures have been adopted by the farm in order to curb the loss of valuable topsoil-

- Paddy farms are located at the foot of slopes so that water runoff from the slopes and excess soil can be collected in the stagnant water reserves.
- Small stone embankments were constructed along the minor streams to control the flow of water during heavy rain. Embankments were also observed in the tanks to stop water from escaping out of the tank.
- 'Khus' grass and 'hwaal' grass were planted in marshy regions and stagnant water reserves to retain water in the marshy lands**.**
- Most fields had bunds to slow down the pace of water and allow more time for percolation
- The extensive multitude of trees throughout the farm area help hold the soil firmly with their roots , slow down the flow of water and allow for efficient percolation to recharge groundwater.

6.2 The use of natural manure helps restore humus to the topsoil and also improves soil texture hence helping in restoration of eroded soil or soil which has lost some of its fertility over time.

Forganic supports Agrotourism

The facility is a working agricultural farm , in order to preserve the natural environment -

- Forganic is a no-plastic zone.
- Dustbins have been placed everywhere, to mitigate littering.
- The growth of plants further enhances the clean atmosphere.

This prevents contamination of soil by pollutants.

7. INTERVIEWS

Fig (11) – Mr. Darshan Patil

[Coordinator of Forganic Farm]

7.1 QUESTIONNAIRE A

Date - 07/09/22
Interviewee - Mr. Darshan Patil
Post - Coordinator of the firm

1. **What are the primary irrigation sources in the area with their names?**
   Main sources of irrigation are lakes, rivers, dams which provide plentiful water to the extensive field. There is also a stream. The highlight of the major water sources is a river called Amba river.

2. **Is the river, perennial or non-perennial?**

The river is non-perennial and has water almost throughout the tear. The source of water in the river comes from the dam which in turn receives its water through seasonal rainfall.

3. **In the absence of water in the dams i.e., during drought conditions, what is the major source of water?**
   There are wells which provide water in such conditions. They resort to groundwater resources to fulfil their requirements.

4. **When was the farm established?**
   2008

5. **What type of soil is found?**
   Mixed Soil

11

6. **What are the major crops grown?**
   Monsoon - Rice
   Winter - Cabbage and most other vegetables.
   Summer - Watermelon, mangoes

7. **How is the farm eco-friendly?**
   Forganic is a no-plastic zone.
   Dustbins have been placed everywhere, to mitigate littering.
   The growth of plants further enhances the clean atmosphere.

8. **Are crops cultivated using manure or compost? What type of manure or compost is used?**
   Compost is given the most preference.
   Vermi Compost Pit is used.

9. **Who are the primary workers? Where do they come from?**
   Most of the staff are village folk hailing from nearby villages.

10. **Do the workers understand the sustainable method of farming?**
    Yes, they do.
11. **What are the final products?**
    Fresh high quality and organically grown fruits and vegetables.

12. **How does the farm generate revenue?**
    Revenue is generated mainly from sale of vegetables, Tourist visits and Student camps.

7.2 QUESTIONNAIRE B

Date - 08/09/22
Interviewee - Mr. Darshan Patil
Post - Coordinator of the firm

1. **Good afternoon, sir. Do you use any chemicals to make your fertilizers and manures?**
   No. We don't use any chemicals. The place where you have arrived is 'Forganic' which means 'For Organic'. The vermicompost we make here is used as a fertilizer.

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2. **How do you make your vermicompost and what are the different ingredients used?**
   The vermicompost consists of 70% of cow dung which is obtained from the cow sheds located here. The other 30% is biomass. Biomass includes kitchen waste, leaves and wet soil. After that we add earthworms into it. We buy the earthworms from the market since we can't get them here. Then daily in the morning, we sprinkle some water over it because they should contain moisture. If you go to the compost pit, you will see two pipes there. One is 'In' and the other is 'Out'. The 'In' pipe is used to provide oxygen to the earthworms and the 'Out' pipe is used to drain out the excess water sprinkled on it.

3. **What are the uses of Vermicompost?**
   It has 2 main uses. The Vermicompost which we make in 45 days is used as a fertilizer in the farm to grow the plants. The liquid obtained from it is used to spray the trees here.

4. **That is a great way to sustainably manage a farm! By the way, which type of soil is found in this farm?**
   Brick and Black soil.

5. **What are some of the other products you use to make farming sustainable?**
   We also make Vermi Liquid. Products like curd and milk get spoiled easily. We take a huge tank and fill it halfway with water and let it rest for ten days. Then we put some earthworms in it and add the leftover dairy products in it as food for the earthworms and top it with dry mud. When the mixture is ready, we use it to grow small plants in the farm.

6. **Earthworms play a pivotal role in this, don't they?**
   Yes. Earthworms help a lot in organic farming.

7.3 QUESTIONNAIRE 3

Date - 08/09/22
Interviewee- Mr. Darshan Patil & Mrs. Chetana Patil
Post - Coordinators of the firm

13

1. **If the dam has low water levels, especially during summers, how are the drought like conditions of the fields managed?**
   Ground water from wells is used. Boring water is also a resource.

2. **What are the primary irrigation sources in the area with their names?**
   Main sources of irrigation are lakes, rivers, dams which provide plentiful water to the extensive field. There is also a stream. The highlight of the major water sources is a river called as Amba river. The river is non-perennial and has water almost throughout the tear. The source of water in the river comes from the dam which in turn receives its water through seasonal rainfall.

3. **In the absence of water in the dams i.e., during drought conditions, what is the major source of water?**
   There are wells which provide water in such conditions. They resort to groundwater resources to fulfil their requirements.

4. **While exploring the facility, we noticed quite a few drips irrigation pipes. How are the systems planned throughout the area?**
   Each farm is 22 acres in size, and the drippers are placed at constant intervals to ensure that the entire land is covered.

5. **What source of water is each part of the dam connected to, for drip irrigation to take place?**
   There are three primary sources:
   1. Rivers, used mainly in summers and scarcely in winters.
   2. Well water.
   3. Boring Water.

While the smaller plants do not require constant water supply, the bigger and larger ones do. Hence the above system is used.

6. **Besides Drip Irrigation, what are some other modern methods used?**
   Sprinkler Irrigation**.**

7. **Are there multiple types of sprinklers that carry out different functions?**
   Yes, some sprinklers have the ability to irrigate large areas in minimum numbers.

8. **How are the two irrigation systems used amongst all the plants?**

   Smaller plants, like pudina, cabbage, spinach and methi do not require drippers. These plants are not farmed as such, but are often grown scattered. Therefore, the sprinklers are more convenient to be used to water them as it can cover large areas.
   The above-mentioned small plants occupy minute spaces, whereas their larger counterparts occupy more. Hence, they are irrigated with dripper systems**.**

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9. **What percentage of the irrigation system is dependent on rainfall?**
   Due to the availability of dams and rivers, the vicinity is pretty much self-sufficient and is barely dependent on rainfall.

10. **If heavy rainfalls create small lakes, or water-logged areas in the farm, how are they hollowed?**
    The farms are primarily built on sloping lands to prevent water logged situations. This is also beneficial from a sanitary point of view as it does not allow accumulated water to become a breeding ground for pests**.**

11. **Are there plantations on the foot of the slopes?**
    Crops that require a lot of water, for example, Rice, are planted at the foot of the slopes so the water flowing down from the slopes can be repurposed to irrigate them.

12. **Is the canal system developed by the farm, or is it government provided?**
    The water from the dams does not travel through canals. It's freshly received from the rivers
13. **How many cropping seasons are comprised in a year?**

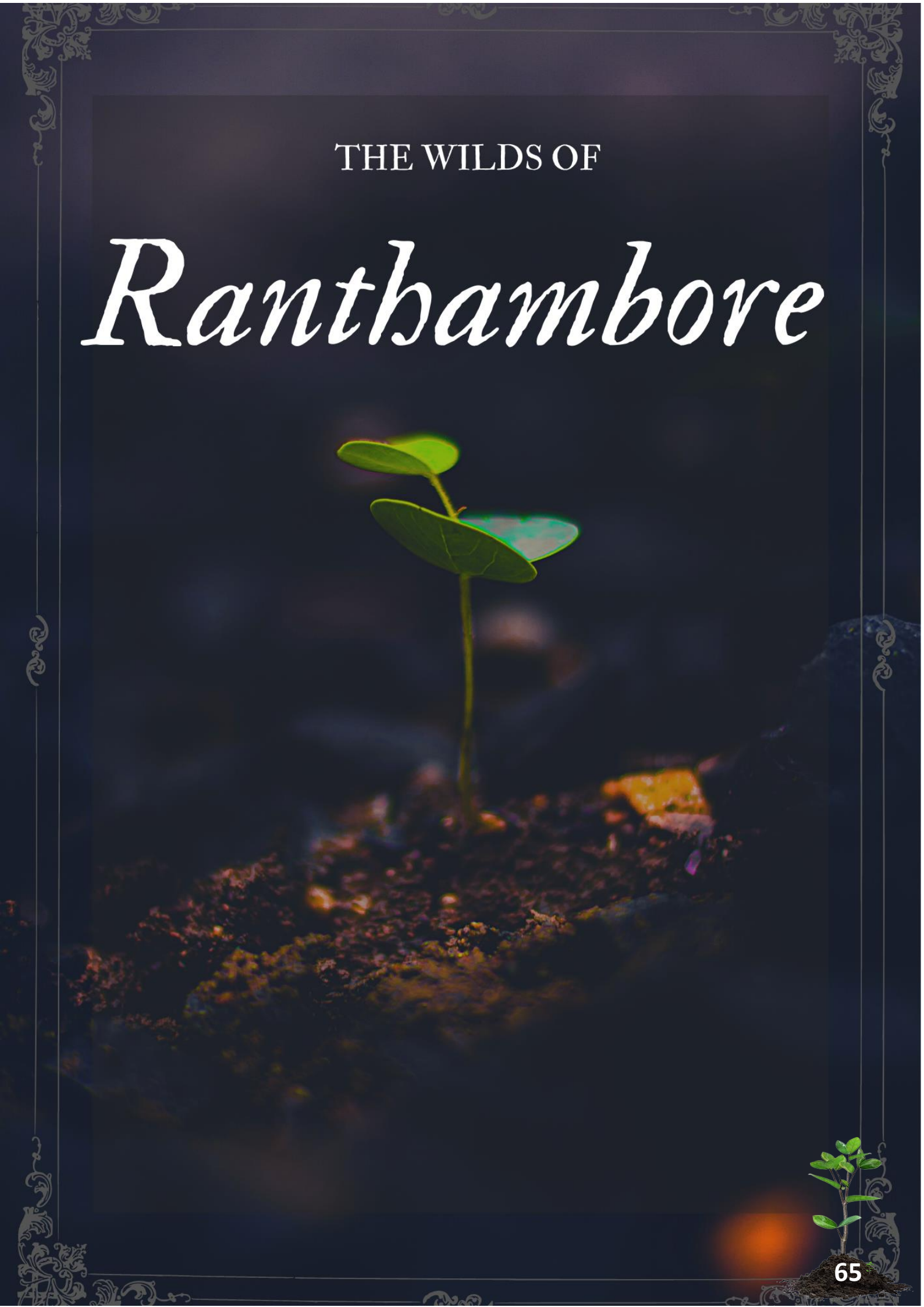
- Winter season - October to January -Vegetables are sown and grown.
- Monsoons- June to September -Rice plantations.
- Summer season- February to May-Watermelon.

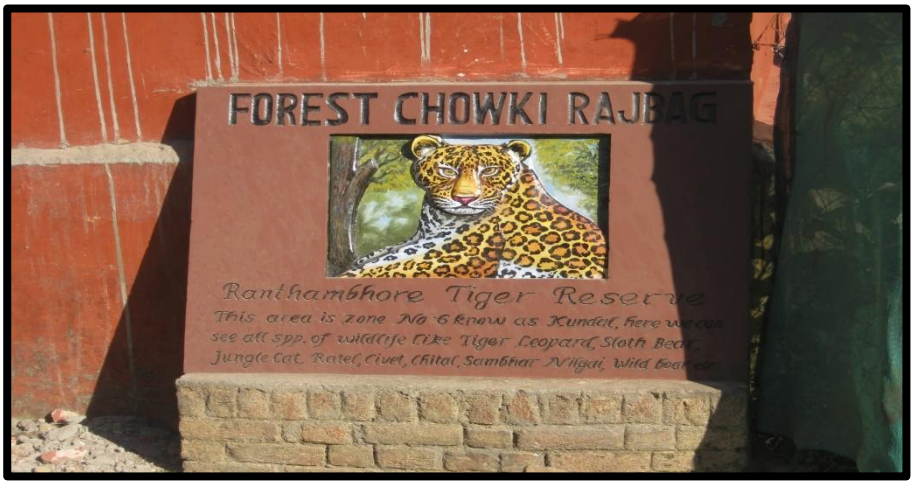
14. **While walking down the trails, we noticed a certain type of grass planted in the marshy lands. What is it known as?**
The grass is known as *hwaal* in Marathi. The main reason for its plantation is to retain water in the marshy lands**.**

15. **How is the harvest transported?**
On Wednesdays and Sundays, the produce is loaded on trucks and transported to Vashi. There, they are sold separately from the wholesale foods.

THE WILDS OF

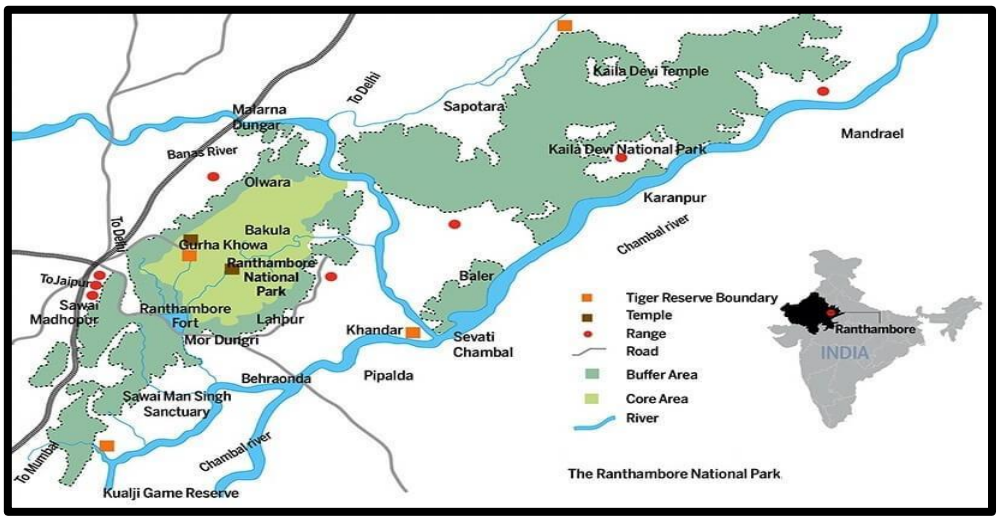
Ranthambore





Ranthambore National Park is a vast wildlife reserve near the town of Sawai Madhopur, Rajasthan . Formerly , it was famous for being a royal hunting ground for leopards, marsh crocodiles and tigers. It's now a National Park with more than 80+ tigers.

Spreading over an area of 1334 sq Kms , this national park is bounded by the Banas river in the north and the Chambal river in the south.



Flora of the Forest

It is estimated that there are nearly 300 species of vegetation found in and around the Ranthambore reserve forest. The area in the proximity of the Thar Desert gets very scanty rainfall so the plant life here consists mainly of dry deciduous type. Few trees found in this area are Babul (Acacia Nilotica) ,Dhok (Anogeissus pendula) ,Banyan (Ficus benghalensis) , Mango (Mangifera indica).

The students went on a safari in the Ranthambore National Park. They spotted many animals indigenous to the area, particularly the magnificent Tiger. Ranthambore is home to an increasing tiger population . Proper protection and conservation has led to its dwindling numbers to increase. Other animals spotted were various types of deer, crocodile, birds. The open mixed deciduous vegetation showed a certain amount of greenery, as the rains had stopped a few days back. The trees on the mountains already had a brownish look, while the valley had a more lush vegetation on account of availability of water.

The students asked various questions to the forest officials and tour guides to have a better understanding of the forest

Name of the guides- Kamlesh and Balram

What is the Total area of the park ? 1334 square kilometers

Names of Animals found in the National Park.

Tiger, Leopard, Sloth bear ,Jungle Cat, Wild boar, Deer, around 280 species of reptiles and various birds.

What is the Rainfall Pattern of the region?

Less to medium rainfall, scanty rainfall

How do the animals behave in different seasons?

They move towards the hills during monsoon and winter seasons and then return to the plain lands during summer season.

Is there an increase in tiger population and how?

Yes, there is a 37% increase in their population. This has happened due to various new measures and safety precautions taken by the government and new schemes introduced to protect them

What are the Conservation schemes running in the Park?

The Civilian population has been shifted totally out of the park area to help in safeguarding the animals better and to facilitate better administration.

What are the problems faced by them?

During summer season there is scarcity of water and food for the animals

Approximately , how many tourists visit this park every day ?

The number of tourists visiting this national park is approximately 4000 a day.

What is the effect of tourism on the wildlife ?

Increased vehicular traffic is creating pollution and making the air harmful for the animals.

Dumping of garbage in the jungle by the tourist

Tourism has left less buffer areas to protect the critical tiger habitat

Students visit to The Rajiv Gandhi Regional Museum of Natural History, Sawai Madhopur :

It is the country's fourth regional museum of Natural History. Located in Sawai Madhopur, it exhibits plants, animals and geology of the Western region of India. It is situated near Ramsinghpura village, 9 km from Sawai Madhopur. There the students saw a short film on the biodiversity of the Ranthambore National park and learnt more about the natural history of that area.

Visit to Paper Factory

The students of std 10 visited a handmade paper factory at Sanganer near Jaipur. There we saw **an example of 'waste recycle'- handmade paper was made from cardboards, used papers, board ,files, pamphlets , cloth.**

First the waste materials are shredded and soaked in chemically treated water to make it into a pulp. The pulp is then spread out and compressed into a sheet with the help of rollers. It was then spread over a special board and dipped in a special solution. The process is repeated many times. The paper is then dried and then passed through a machine which cuts it into desired dimensions . The cut papers are folded to give desired shapes.

The workers in the factory are all from the nearby areas and the papers made here are mostly exported to other countries or used by governments as files or by brands to make carry bags.

Though the handmade paper industry faces many problems, the factory is still running for over 100 years and is the main source of income for the people in that area.

Video Projects

Forest Man Of India

Jadhav Payeng

"He who plants a tree, plants a hope." – Lucy Larcom

Jadav Payeng, an environmental activist and forestry worker strived to work for the betterment of the environment by planting and tending trees to create a forest reserve. By taking the first meaningful step, he carved a path for millions of people all across the world to make the earth greener.

Keeping this in mind, all the enthusiastic students of standard 10 came together and whole-heartedly put in their 100% effort as they presented before us the video of the Life Story of Jadav Payeng, The Forest Man of India.

They showcased their proficient editing skills which subsequently enhanced the whole video as it depicted a humongous blend of video effects, collages, pictures, narration by students, a mesmerizing dance clip and many more.

This India Box activity awoke within them a feeling of environmental consciousness and forced them to think about the plight of the coming generation if they did not take an immediate action.

Whispers Of the Mangroves

**“What are Mangroves ? What significance do they bear in maintaining ecological balance ? Why are they in danger ?
What do they whisper ?**

Keeping this in mind std 10 students Mihika Sawant and Priyanshu Hazra present a study on the miraculous trees that form the coastal ecosystems in India. The problems faced by these ecosystems are addressed using scientific experiments and practical solutions.

**It presents an effort made to
listen to the mangroves and heed to their whispers**

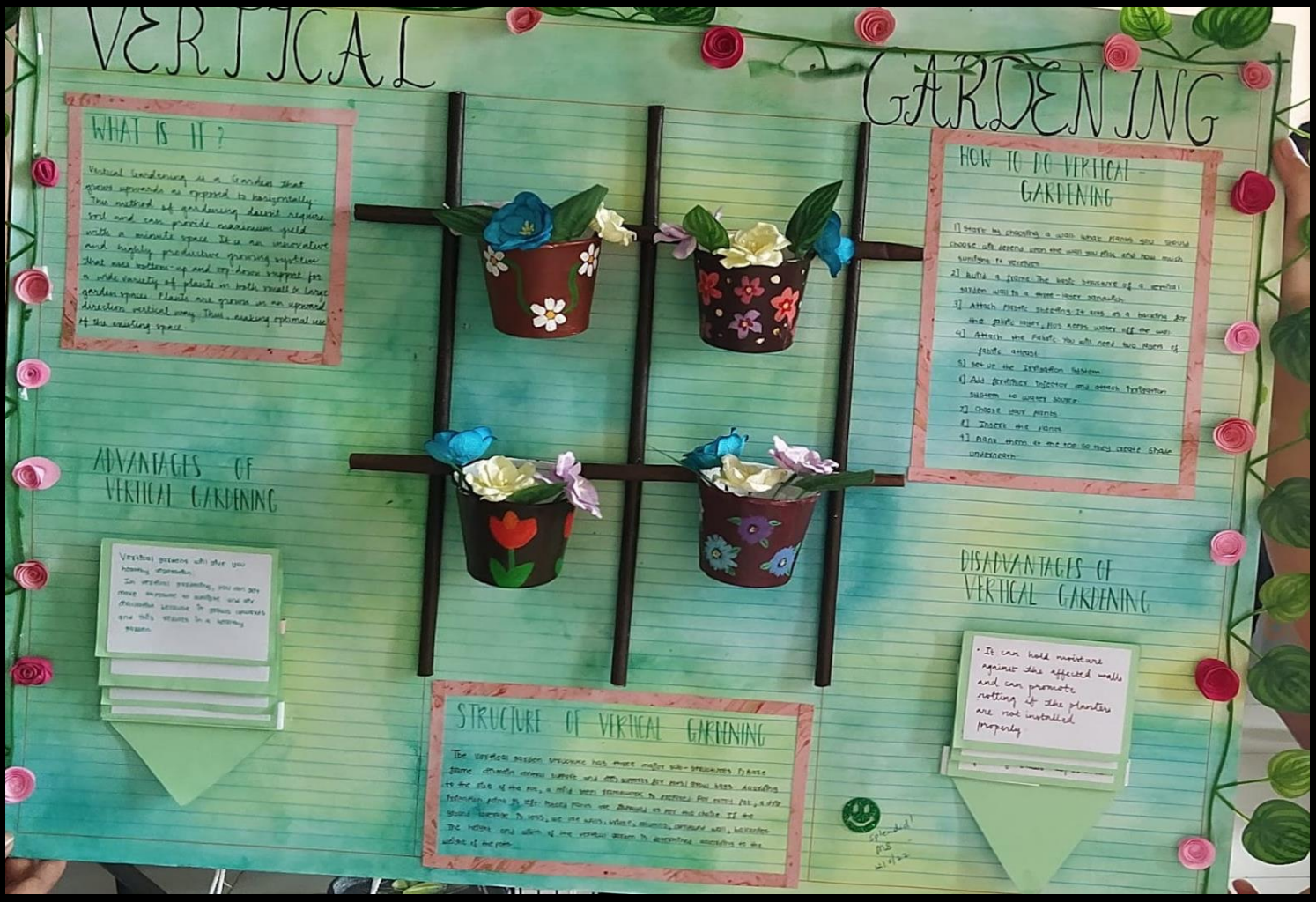
singhania school celebrates

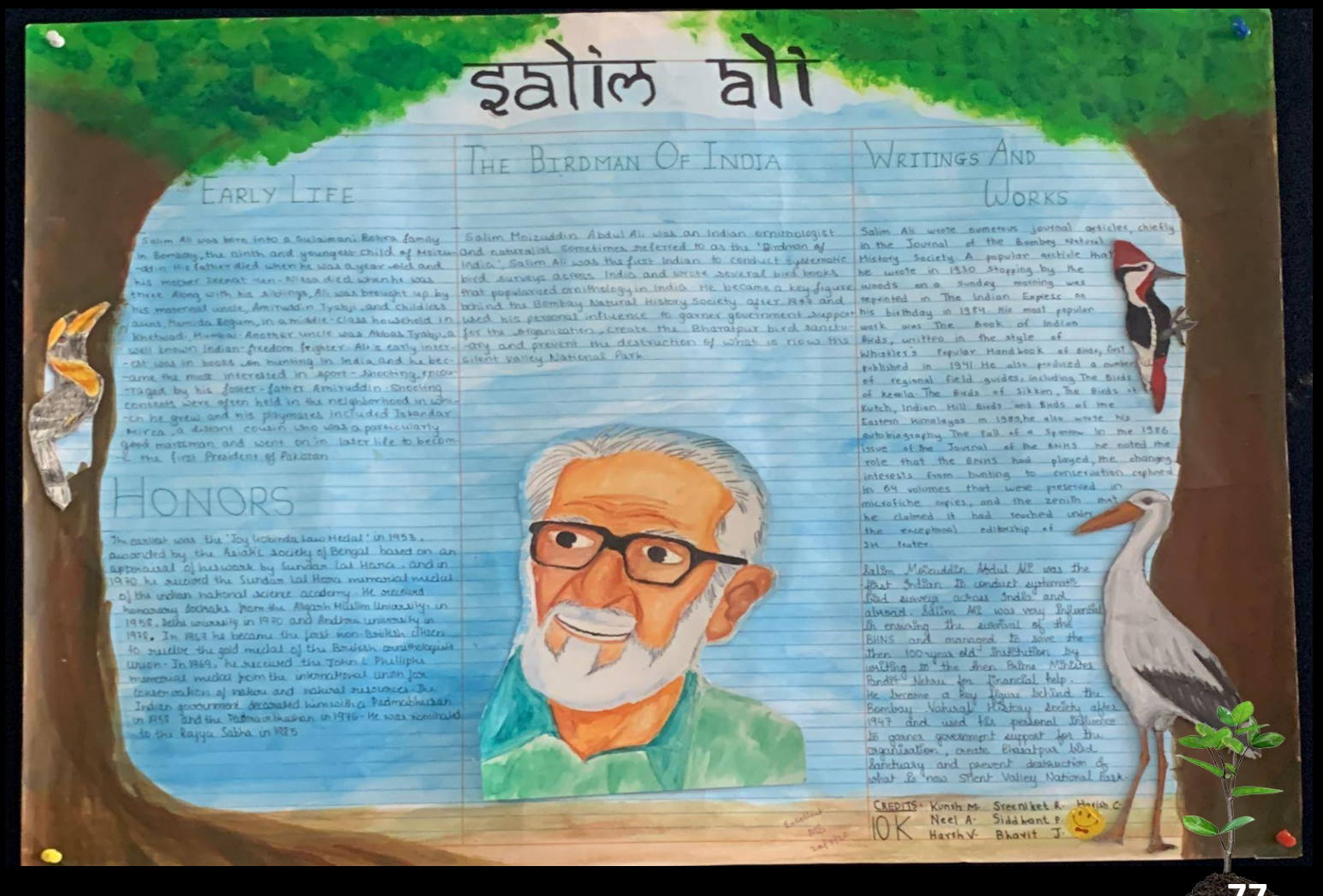
World soil day

Celebrating

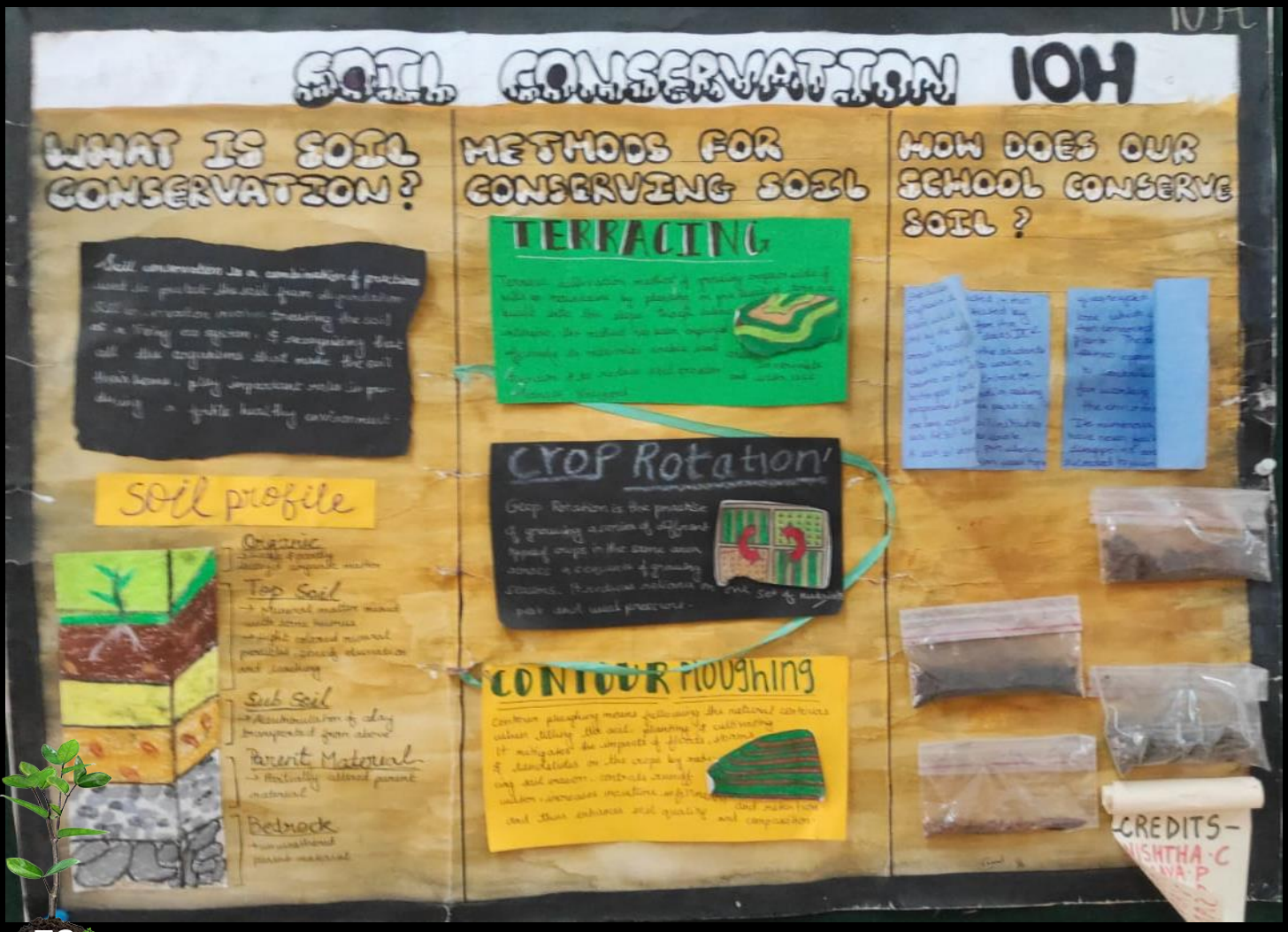
World Soil Day

At Smt. Sulochanadevi Singhania School


VERTICAL GARDENING
WHAT IS IT?
Vertical Gardening is a Garden that grows upwards as opposed to horizontally. This method of gardening doesn't require soil and can provide maximum yield with a minimal space. It is an innovative and highly productive growing system that uses bottom-up and top-down support for a wide variety of plants in both small & large garden spaces. Plants are grown in an upward direction vertical way. Thus, making optimal use of the existing space.
HOW TO DO VERTICAL GARDENING
1] Start by choosing a wall where plants you should choose will depend upon the wall you pick and how much sunlight it receives
2] Build a frame. The basic structure of a vertical system will be a three-layer approach.
3] Attach plastic sheeting. It acts as a backing for the plant layers, this keeps water off the wall.
4] Attach the Felt. You will need two layers of felt almost
5] Set up the Irrigation system.
6] Add fertilizer injector and attach irrigation system to water source
7] Choose your plants
8] Insert the plants
9] Plant them at the top so they create shade underneath
ADVANTAGES OF VERTICAL GARDENING
Vertical gardens will offer you
In vertical gardening, you can see more awareness to another one are enthusiastic because in various countries and this results in a winning passion.
DISADVANTAGES OF VERTICAL GARDENING
• It can hold moisture against the affected walls and can promote rotting if the planters are not installed properly
STRUCTURE OF VERTICAL GARDENING


Salim Ali
EARLY LIFE
Salim Ali was born into a Sulaimani Bohra family in Bombay, the ninth and youngest child of Moizuddin. His father died when he was a year old and his mother Zeenat-un-Nissa died when he was three. Along with his siblings, Ali was brought up by his maternal uncle, Amiruddin Tyabji, and childless aunt, Hamida Begum, in a middle-class household in Khetwadi, Mumbai. Another uncle was Abbas Tyabji, a well known Indian freedom fighter. Ali's early interest was in books on hunting in India and he became the most interested in sport - shooting, encouraged by his foster-father Amiruddin. Shooting contests were often held in the neighborhood in which he grew and his playmates included Isfandiar Mirza, a distant cousin who was a particularly good marksman and went on in later life to become the first President of Pakistan.
HONORS
The earliest was the 'Joy Krishna Law Medal' in 1953, awarded by the Asiatic Society of Bengal based on an appraisal of his work by Sundar Lal Hora. And in 1940 he received the Sundar Lal Hora memorial medal of the Indian National Science Academy. He received honorary doctorates from the Aligarh Muslim University in 1958, Delhi University in 1970 and Andhra University in 1976. In 1967 he became the first non-British citizen to receive the gold medal of the British ornithologists Union. In 1969, he received the John C. Phillips memorial medal from the International Union for Conservation of Nature and Natural Resources. The Indian government decorated him with a Padmabhushan in 1958 and the Padmavibhushan in 1976. He was nominated to the Rajya Sabha in 1985.
THE BIRDMAN OF INDIA
Salim Moizuddin Abdul Ali was an Indian ornithologist and naturalist. Sometimes referred to as the 'Birdman of India', Salim Ali was the first Indian to conduct systematic bird surveys across India and wrote several bird books that popularized ornithology in India. He became a key figure behind the Bombay Natural History Society after 1947 and used his personal influence to garner government support for the organization, create the Bharatpur bird sanctuary and prevent the destruction of what is now the Silent Valley National Park.
WRITINGS AND WORKS
Salim Ali wrote numerous journal articles, chiefly in the Journal of the Bombay Natural History Society. A popular article that he wrote in 1930 'Stopping by the woods on a Sunday morning' was reprinted in The Indian Express on his birthday in 1984. His most popular work was The Book of Indian Birds, written in the style of Whistler's Popular Handbook of Birds, first published in 1941. He also produced a number of regional field guides, including The Birds of Kerala, The Birds of Sikkim, The Birds of Kutch, Indian Hill Birds and Birds of the Eastern Himalayas in 1985. He also wrote his autobiography, The Fall of a Sparrow in the 1986 issue of the Journal of the BNHS he noted the role that the BNHS had played, the changing interests from hunting to conservation, captured in 64 volumes that were preserved in microfiche copies, and the zenith that he claimed it had reached under the exceptional editorship of SH Prater.
Salim Moizuddin Abdul Ali was the first Indian to conduct systematic bird surveys across India and abroad. Salim Ali was very influential in ensuring the survival of the BNHS and managed to save the then 100-year old institution by writing to the then Prime Minister Pandit Nehru for financial help. He became a key figure behind the Bombay Natural History Society after 1947 and used his personal influence to garner government support for the organisation, create Bharatpur Bird Sanctuary and prevent destruction of what is now Silent Valley National Park.
CREDITS: Kunth M. Sreenikeet A. Harish C.
10K Neel A. Siddhant P.
Harth V. Bhavit J.

LIFE BELOW THE SOIL
BACTERIA
FUNGI
CREDITS


SOIL CONSERVATION 10H
WHAT IS SOIL CONSERVATION?
Soil profile
Organic
Top Soil
Sub Soil
Parent Material
Bedrock
METHODS FOR CONSERVING SOIL
TERRACING
Crop Rotation
CONTOUR PLOUGHING
HOW DOES OUR SCHOOL CONSERVE SOIL ?
CREDITS-

Guru Poornima

Celebrations

Celebrating

Guru Poornima

at Smt.Sulochanadevi Singhania School

Gurus are our second mother, who heralds us to the world of knowledge. They nurture us, make us grow similarly like soil which sustains all of us

On Guru Purnima day we honoured our gurus for being our urvara for development

google forms to spread

Awareness

among students

Soil Conservation Quiz

* Required

1. Email *

2. Which of the following is not a method of soil conservation? * *Mark only one oval.* 1 point

- Mulching
- Weathering
- Covering crops

3. Which of the following causes soil pollution? * *Mark only one oval.* 1 point

- Cow dung
- Plastic
- Old paper

4. Soil salinity affects crop metabolism negatively. * 1 point

Mark only one oval.

- True
- False

5. Identify the kind of soil erosion. * 1 point

Mark only one oval.

- Sheet erosion
- Gully erosion
- Rill erosion

6. Which of the following soil conservation methods is implemented * 1 point in the coastal and dry regions?

Mark only one oval.

- ◯ Terrace farming
- ◯ Mulching
- ◯ Shelter belts

7. Which of the following is not a technique for soil conservation in * 1 point farming?

Mark only one oval.

- ◯ Crop rotation
- ◯ Tilling along the slope
- ◯ Contour ploughing

8. From the following, choose the correct methods of soil * 2 points conservation.

Check all that apply.

- ☐ Overuse of chemical fertilizers
- ☐ Contour ploughing
- ☐ Shelter belts

9. Following are the alternatives to pesticides except _____. * 1 point

Mark only one oval.

- ◯ Biological pesticides
- ◯ Biological control engineering
- ◯ Active mineralization of soil

10. Soil conservation is crucial for the following:* 2 points

Check all that apply.

- [ ] Agriculture
- [ ] Water filtration
- [ ] Prevention of genetic disorders

11. Which of the following is true regarding soil erosion and * 3 points conservation?

Check all that apply.

- [ ] Destruction of the soil cover is known as soil erosion.
- [ ] Sheet erosion: On flat lands, due to heavy rainfall removes finer and more fertile topsoil.
- [ ] Soil Conservation: It is a methodology to maintain soil fertility, prevent soil erosion, and improve the degraded condition of the soil.
- [ ] The extension of gullies is checked by Terracing.

12. How does this positively affect the soil? * 1 point

Mark only one oval.

- Promotes self-aeration
- Promotes growth of plants
- Increase in water-retention

13. Why is soil important? * 1 point

Mark only one oval.

- It provides us with the resources needed for sustenance.
- It helps in combating droughts and floods.
- It forms the home of worms and other creatures.
- All of the above

14. Which soil is best for plant growth? * 1 point

Mark only one oval.

- Sandy soil
- Loamy soil
- Leached soil

15. What is the heaviest part of soil? * 1 point

Mark only one oval.

- Silt
- Sand
- Clay

16. Approximately how many microorganisms can be found in a teaspoonful of soil? * 1 point

Mark only one oval.

- 1000
- 4 billion
- 50 million

17. What is soil horizon? * 1 point

Mark only one oval.

- A factor influencing how soil is formed
- A technique used in soil maps
- A layer of soil

ANALYSIS OF THE QUIZ ON SOIL CONSERVATION

[E,F,G,H]

Total responses: 157

Lowest score: 6/20

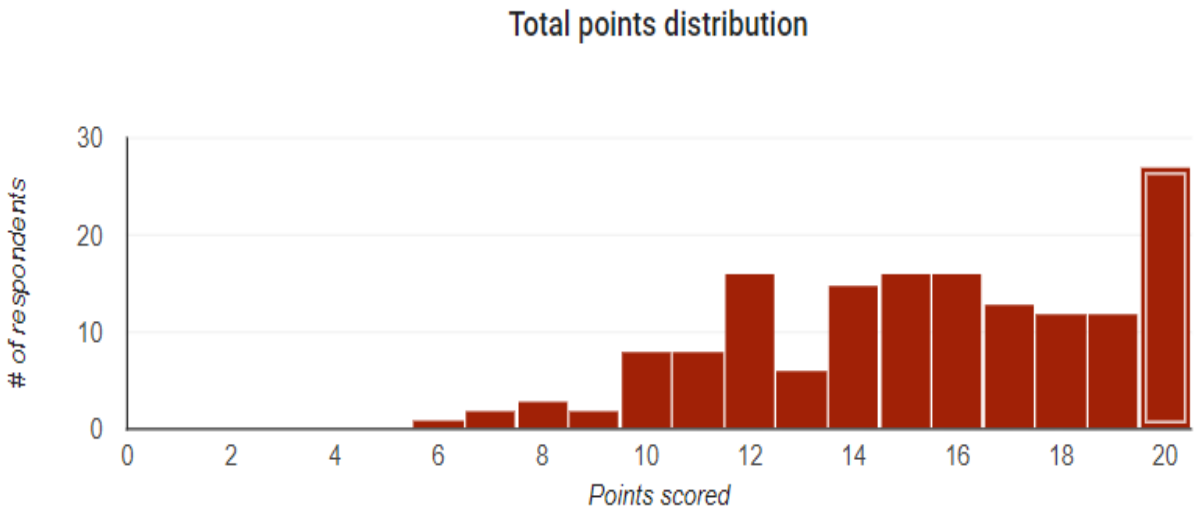
Highest score: 20/20

Average score: 15.36/20

Number of students who scored 20/20: 27

Number of students who scored more than 70%: 111

Percentage of students who scored more than 70%: 70.7%



Interviews- Rishiraj Kamath

Rishiraj Kamath is a Media & Advertising Professional based in Thane, and a proud alumnus of Smt. Sulochanadevi Singhania School. He has over 250 writing credits across Television and OTT platforms. Rishiraj is passionate about ESG issues and volunteers for the Conscious Planet movement. In future, he wants to work with students to help them realize their immense potential to change their lives and the world.

2. ***What is your inspiration to participate in this program of Save soil?***

Ans) As soil is the thing from which we all originate, and the problem that soil fertility and organic matter has reached to such a low extent today which after 30 years would even lead to starvation deaths led him to join this revolutionary movement and contribute to it.

3. ***Do you think that awareness among students will help to reduce this problem? If Yes, what are the ways students can impact the program?***

Ans) Awareness among students will surely bring a remarkable change. For example,

- 17 year old Sahil Jha from Kolkata has begun a cycling journey across India for 1.5 years to unite people to save soil.
- Students can visit consciousplanet.org, they can learn about soil, share about soil and also become an Earth buddy by sharing Save Soil tweets regularly and making the people around them aware of this threat.
- Soil has nutritive as well as nourishing power. He also suggested walking barefoot on soil for 20 minutes. This will make us feel better and help us understand its nourishing power.

4. ***In today's world food security is important, however excessive use of fertilizers and pesticides is spoiling our soil. Do you think green manures are an answer to it and will also provide food security?***

Ans) Today soil requires organic matter more than anything else. Soil currently has 0.5% of organic matter which is very less than the recommended amount. Green manures will help to fill up this gap. Food security cannot be guaranteed but can be expected.

5. ***Can you please brief us about certain projects on Save Soil that your organization is running in Thane and Maharashtra?***

Ans) The main awareness projects are:-

- Walk for Soil
- Ride for soil
- Score for soil
- Organising seminars

- 20 Lakh letters were written to the Prime Minister by the students and were showcased

6. Which age group do you mostly target to conduct the save soil project?

Ans) There is no particular age group that is targeted, but youngsters have shown greater interest and enthusiasm about the project. Moreover, the work of the youth of the country spreads awareness to a much larger extent and hence the involvement of children is significant.

7. Can you mention certain hurdles faced by your organization in running this project on save soil.

Ans) Scepticism was the main hurdle. People work only if they see their effort bearing fruit immediately which is an obstacle. There were some other minor challenges too but most of them were individual than institutional.

8. How far are common people associated with this program?

Ans) All kinds of people are associated with this program like farmers, actors, politicians etc.

Common people like Sahil Jha have contributed immensely to this project.

9. How much do you think farmers are aware of this problem?

Ans) Farmers are all aware of the problem and affected by it and they are the main people spreading awareness about this problem. Unfortunately, they had been caught up in this vicious cycle of using soil fertilizers to increase yields but they have started realising the need of stopping their use and going organic.

10. Where do you see this project Save Soil, five years down the line?

Ans) After five years, he believes that people will become more aware and some good change would be waiting down the line.

The project is not of five to ten years but until all land in the world has 3-6 or more percentage of organic matter. After this also, people will have to be educated about soil conservation so that they do not revert to their previous bad habits of handling soil.

"ONE EARTH, ONE FAMILY, ONE FUTURE. "

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