VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590018

Mini Project Report on

"AUTONOMOUS DISEASE DETECTION AND SPRAYING BOT"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
IN
AGRICULTUR ENGINEERING

Submitted By

DEEPAK R	**4AL21AG011**
TEJAS KUMAR	**4AL21AG035**
TARUN K	**4AL21AG034**

Under the Guidance of
Dr. SHASHIKUMAR
Associate professor
and
Head of the Department of Agriculture Engineering ,AIET ,Mijar

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Mini Project Coordinator

Dr. SURAJIT DEB BARMA

HOD & Mini Project Guide

Dr. SHASHI KUMAR

H.O.D.
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ACKNOWLEDGEMENT

We express our deepest gratitude to our mini project guide and HOD, **Dr. Shashikumar, Associate Professor and Head, Department of Agriculture Engineering,** for the invaluable guidance and support from the inception to the completion of this project and for providing all necessary resources and fostering a supportive academic environment in the department

Our sincere thanks also go to our mini project Co-ordinator, **Dr. Surajit Deb Barma, Sr. Assistant Professor, Department of Agriculture Engineering,** for his continuous assistance and encouragement.

We extend our appreciation to our **Principal, Dr. Peter Fernandes,** for his steadfast support and for making all the facilities available in the college.

We are also grateful to the management of **ALVAS EDUCATION FOUNDATION, Moodbidri,** for providing an environment conducive to the successful completion of our mini project.

Special thanks to all the Lab Instructors for their assistance, and to everyone who, directly or indirectly, contributed to the success of our project.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

JNANA SANGAMA CAMPUS, BELGAVI - 590018

MINI-PROJECT REPORT ON

"DEVELOPMENT OF PORTABLE TYPE SOIL QUALITY MEASURING DEVICE"

Submitted In Partial Fulfilment of The Requirements for The Award Degree Of

BACHELOR OF ENGINEERING

IN

AGRICULTURE ENGINEERING

SUBMITTED BY:

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SHREEHARSHA K S	**4AL21AG030**
CHAITRA MALI PATIL	**4AL21AG006**
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Under The Guidance of

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(Senior assistant professor, Dept of Agriculture Engineering, AIET, Mijar)

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MOODBIDRI – 574225

2023-24

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5-8-2024

Dr. VINUTA M BETAGERI
Project Guide

Dr. SHASHIKUMAR
Head of the Department

HOD
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ABSTRACT:

Agriculture is the backbone of our nation. 75% of the Indian population is depend upon the agriculture. Due to the rapid increasing of the population, it may pass 9.4 billion by the year 2050 the agriculture production has to be increased. In order to ensure the food security for the fast-growing population. Farmers are destroying the soil by applying the huge number of fertilizers in order to get more yield to reach the demand. The soil condition plays a major role in crop growth and development. Soil properties such as nitrogen, phosphorous, potash (NPK), pH level of the soil, moisture content present in the soil and type of the soil are the major factors which affects the crop growth and development. These all should be supplied to the soil in sufficient manner. If the supply is less the production is less, if the supply is more it may lead to soil degradation. So, in order to supply the fertilizer in an efficient manner the farmer has to know the NPK percentage present in the soil and pH level present in the soil. In this study we will conduct a literature review on the use of sensors and some other methods and we will identify some of the research gaps it may helpful for the further development of the technology to find out the soil properties.

This paper gives the review of sensing technology and the other present methodologies which are used to determine the NPK, content in the soil and pH level of the soil.

Key words: Degradation, Fertilizers, NPK, Sufficient, Technology.

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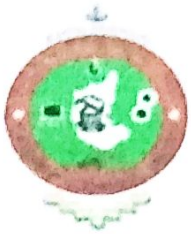

Mini Project Report on

"DESIGN AND DEVELOPMENT OF SOLAR OPERATED CONO WEEDER"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING IN AGRICULTURE ENGINEERING

Submitted By

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has submitted Project synopsis on **«DESIGN AND DEVELOPMENT OF SOLAR OPERATED CONO WEEDER»** for VI Semester B.E. in Agriculture Engineering during the academic year 2023-24. The mini project report has been approved as it satisfies the academic requirements in respect of Project work prescribed for the Bachelor of Engineering Degree.

Mini Project Guide	Mini Project Coordinator	HOD
Dr. SHASHIKUMAR	**Dr. SURAJIT DEB BARMA**	**Dr. SHASHIKUMAR**

5/8/2024

H.O.D.
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ABSTRACT

Over half of the world's population relies on rice as a staple food, making it an essential component of global food security. On the other hand, weed competition is a major obstacle to rice farming, impacting both yield and quality. This review paper explores A solar operated cono-weeder was developed for weeding in wetland paddy crop. The main parts of it are the cono-weeder, power transmission system, and power source. A DC motor, solar panel, and power storage unit with motor controller and maximum power point tracker made up the power source. Power was supplied to the DC motor by a solar panel/power storage unit via a motor controller, and then it was transferred to the weeding wheel shaft via a dog clutch. Weeding and field weeder movement were accomplished by means of a wheel fitted with plane and jaw blades around the wheel circumference. In order to maintain stability while operating the weeder in soft soil, a float was employed.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

JNANA SANGAMA CAMPUS, BELGAVI - 590018

MINI-PROJECT
REPORT

"MONTHLY MODELING GROUNDWATER DYNAMICS IN COASTAL AQUIFERS OF DAKSHINA KANNADA WITH A PYTHON FRAMEWORK"

SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD DEGREE OF

BACHELOR OF ENGINEERING

IN

AGRICULTURE ENGINEERING

SUBMITTED BY

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REGAN AIDON SALDANHA	**4AL21AGO26**

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(Senior assistant professor, Dept of Agriculture Engineering, AIET, Mijar)

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In partial fulfilment for the award of the Bachelor of Engineering in Agriculture Engineering of **Visvesvaraya Technological University, Belagavi** during the Academic year 2023-24. It is certified that all correction and suggestions indicated for internal assessment have been incorporated in report deposited in the department library. The project report has been approved as it satisfies the academic requirement in respect of project work prescribed for the said degree.

Dr. SURAJIT DEB BARMA
Mini-Project Guide & Co-Ordinator
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ABSTRACT

Groundwater resources are a critical component of the hydrological cycle, especially in coastal regions where they serve as the primary source of fresh water for agricultural, domestic, and industrial purposes. The dynamic nature of coastal aquifers in Dakshina Kannada, a district in Karnataka, India, presents unique challenges due to factors such as seasonal variability, anthropogenic activities, and climate changeimpacts. This project aims to model the monthly groundwater dynamics in the coastal aquifers ofDakshina Kannada using a robust Python-based framework, with a specific emphasis on the application of Pastas (Python package for the Analysis of Spatio-Temporal Aquifer Systems). The primary objective of this study is to develop a comprehensive understanding of the temporal fluctuations in groundwater levels and to identify the key drivers influencing these changes. To achieve this, we utilize an extensive dataset comprising monthly groundwater level measurements, meteorological data (including precipitation and evapotranspiration), and land use patterns spanning several years. The Pastas software is employed to create time series models that simulate the groundwater level dynamics, allowing for the evaluation of various hydrological processes and their interactions. The modeling approach involves the calibration of Pastas models to fit the observed groundwater level data, followed byvalidation to ensure the accuracy and reliability of the predictions. Key technical components include the selection of appropriate model structures, parameter estimation techniques, and the incorporation of stressors such as pumping rates and recharge events. Sensitivity analysis is performed to determine the influence of different parameters on model outputs, providing insights into the most significant factors affecting groundwater levels.

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JNANA SANGAMA CAMPUS, BELGAVI - 590018

MINI-PROJECT
REPORT

"SOALR POWER OPERATED INTERCULTURAL SEED DRILL"

SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD DEGREE OF

BACHELOR OF ENGINEERING

IN

AGRICULTURE ENGINEERING

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K A PREKSHA	**4AL21AG015**
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USAMA MEHABOOBSAB KOPPAL	**4AL21AG036**

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Mini-Project Guide & Co-ordinator

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ABSTRACT

Agriculture is a vital sector, providing food security and employment for a significant portion of the global population. Small-scale farmers, who form the majority, often face challenges such as limited access to affordable tools and machinery, leading to labour-intensive and inefficient practices. This paper presents an innovative solution: a robotic seed drill powered by rechargeable batteries and supplemented by solar energy. The robotic seed drill aims to automate the seeding process, reducing reliance on human labour and improving precision and productivity.

The system includes a sturdy mechanical structure with battery-powered motors for propulsion and seed drilling. An IoT module is integrated into the design, enabling remote monitoring and control, which allows farmers to manage and optimize seeding operations from a centralized platform. This enhances flexibility and real-time decision-making. The energy efficiency of the system is a key advantage, as it uses rechargeable batteries supplemented by solar energy, reducing environmental impact and operational costs.

The robust mechanical design ensures durability, allowing the seed drill to withstand diverse field conditions, essential for long-term viability in agricultural settings. Traditional agricultural practices are often labour-intensive and inefficient, leading to low productivity and economic hardship for farmers. By automating the seeding process, the robotic seed drill reduces labour requirements, allowing farmers to allocate their time and resources more effectively.

The integration of IoT capabilities provides remote monitoring and command, enhancing the overall efficiency of the seeding process. The design prioritizes energy efficiency, durability, and ease of operation, ensuring sustainability and cost-effectiveness. The use of GPS technology further improves precision in seed placement, promoting uniform growth and optimal yields. The robotic seed drill's rugged mechanical design ensures it can withstand harsh environments, making it a reliable tool for farmers.

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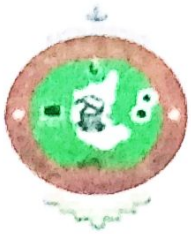

Mini Project Report on

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Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING IN AGRICULTURE ENGINEERING

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2023-2024

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Mini Project Guide	Mini Project Coordinator	HOD
Dr. SHASHIKUMAR	**Dr. SURAJIT DEB BARMA**	**Dr. SHASHIKUMAR**

5/8/2024

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ABSTRACT

Over half of the world's population relies on rice as a staple food, making it an essential component of global food security. On the other hand, weed competition is a major obstacle to rice farming, impacting both yield and quality. This review paper explores A solar operated cono-weeder was developed for weeding in wetland paddy crop. The main parts of it are the cono-weeder, power transmission system, and power source. A DC motor, solar panel, and power storage unit with motor controller and maximum power point tracker made up the power source. Power was supplied to the DC motor by a solar panel/power storage unit via a motor controller, and then it was transferred to the weeding wheel shaft via a dog clutch. Weeding and field weeder movement were accomplished by means of a wheel fitted with plane and jaw blades around the wheel circumference. In order to maintain stability while operating the weeder in soft soil, a float was employed.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590018

Mini Project Report on

"SOIL NUTRIENT MAPPING - HOLENARASIPURA"

Submitted in partial fulfilment of the requirements for the award of degree

BACHELOR OF ENGINEERING

IN

AGRICULTURE ENGINEERING

Submitted By

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has submitted mini-project report on **"Soil Nutrient Mapping - Holenarasipura"** for VI Semester B.E. in Agriculture Engineering during the academic year 2023-24. The mini project report has been approved as it satisfies the academic requirements in respect of Project work prescribed for the Bachelor of Engineering Degree.

Mini Project Guide
Dr. Vinuta M Betageri
&
Dr. Vinay S

Mini Project Co-ordinator
Dr. Surajith Deb Barma

HOD
Dr. Shashikumar
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ABSTRACT

This study investigates soil nutrient distribution in Holenarasipura Taluk, Hassan District, Karnataka, aiming to improve agricultural productivity through informed soil management. Using data from the Soil Health Card Scheme, GIS tools were employed to create nutrient distribution maps, revealing significant spatial variations. Results indicated that 40% of the area had optimal nitrogen levels, while 60% had high nitrogen content. Phosphorus levels were uniformly high, potassium levels were optimal in 75-80% of the area, and soil pH was mostly neutral. Electrical conductivity levels were optimal, and organic carbon levels were high. Sulphur was sufficient in nearly the entire area, but zinc deficiency affected 65-70% of the region. Boron levels were sufficient throughout, iron deficiency was prevalent, and manganese deficiency was observed in 80-85% of the area. Copper levels were sufficient in 95% of the area. The study highlights the importance of targeted nutrient interventions and sustainable practices to enhance soil health and agricultural productivity. These findings provide valuable insights for farmers and agricultural stakeholders, guiding them in optimizing soil health and ensuring sustainable agricultural growth in Holenarasipura Taluk.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590018

Mini Project Report on

"ARDUINO BASED BIRD AND ANIMAL REPELENT SYSTEM"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
IN
AGRICULTUR ENGINEERING

Submitted By

H P Y SACHIN	**4AL21AG012**
MONISHA S	**4AL21AG021**
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DEPARTMENT OF CIVIL ENGINEERING

CERTIFICATE

Certified that the mini project work entitled "**ARDUINO BASED BIRD AND ANIMAL REPELENT SYSTEM**" is the bona-field work carried out by **H P Y SACHIN (4AL21AG012), MONISHA S (4AL21AG021), PRANEETH (4AL21AG025) and SUSHA S SHETTY (4AL21AG032)** in partial fulfilment for the award of Bachelor of engineering in Agriculture engineering of **Visvesvaraya Technological University, Belagavi** during the academic year 2023-2024, it is certified that all corrections and suggestions indicated for internal assessment have been incorporated in the report deposited in the departmental library. The project report has been approved as it satisfies the academic requirement in respect of mini project work prescribed for the said degree.

6/8/24
Dr. K.Raju Yadav
Project Guide

6/08/2024
Dr. Surajith Deb Barma
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Dr. Shashi Kumar
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ABSTRACT

One of the major problems facing the globe today is crop damage caused by animals. Crops can sustain severe damage from animals like monkeys, birds and other animals. In addition to organizing outside the field and squashing an excessive amount of crops, they can harm the plants by eating on plant parts. As a result, animals can quickly result in large yield losses as well as further financial difficulties. There are numerous strategies to lessen the issues or harm that animals bring to farmers and ultimately ruin their farms. Some methods are governed by state and federal legislation, while others remain untested. These methods include haunting the animals, manually creating the sounds, and employing chemical substances to repel birds and animals. Thus, by applying the concepts of bio acoustics, dangerous animals can be repelled by ultrasonic device actuation. Humans can hear frequencies between 20 Hz and 20 kHz. Like humans, every animal has a unique hearing range. For example, rats can hear between 200 and 90 kHz, whereas snakes can hear between 80 and 1 kHz.

However, even within this range, snakes can only hear in what is referred to be their most sensitive hearing region, which serves to repel other species. An improvement over the existing techniques that makes use of ultrasonic frequencies has been developed toS discourage animals. Depending on the animal species to be repelled at a given time, ultrasonic animal repellent emits varying sound frequencies. Therefore, to keep animals away from farms, high-frequency and high-amplitude sound waves are employed. Rodents and animals, such as monkeys,birds and other animal can be turned off by those ultrasonic noises.

Different electronic circuits will be created to produce sound waves at different frequencies in order to repel different kinds of animals. These frequencies are used to deter animals by radiating into the air after being time-multiplexed using an Arduino UNO. An amplification circuit is to be used to increase the signal strength. The speaker receives these boosted impulses so that it can emit various sounds at various intervals. Nonetheless, people's capacity to hear is unaffected by these frequencies

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

JNANA SANGAMA CAMPUS, BELGAVI - 590018

MINI-PROJECT REPORT ON

"SUB TREND ANALYSIS OF MONTHLY RAINFALL IN DAKSHINA KANNADA, INDIA USING SATELLITE-BASED RAINFALL DATA AND INNOVATIVE TREND ANALYSIS"

Submitted In Partial Fulfilment of The Requirements for The Award Degree Of

BACHELOR OF ENGINEERING

IN

AGRICULTURE ENGINEERING

SUBMITTED BY:

ANANYA K	**4AL21AG005**
KEERTHANA M RAM	**4AL21AG017**
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Under The Guidance of

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(Senior assistant professor, Dept of Agriculture Engineering, AIET, Mijar)

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CERTIFICATE

ALVA'S
Education Foundation®

This is to certify that the Mini-project work entitled "SUB TREND ANALYSIS OF MONTHLY RAINFALL IN DAKSHINA KANNADA, INDIA USING SATELLITE-BASED RAINFALL DATA AND INNOVATIVE TREND ANALYSIS" is the bonafide work carried out by

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ABSTRACT

This study presents a detailed sub-trend analysis of monthly rainfall in Dakshina Kannada, India, utilizing satellite-based rainfall data and advanced trend analysis techniques. The region's coastal location and monsoon influence necessitate a comprehensive understanding of rainfall patterns for effective water resource management and agricultural planning. Traditional ground-based measurements often fall short in spatial resolution and coverage, making satellite data an invaluable resource for this analysis. Monthly rainfall data spanning several decades were sourced from high-resolution satellite observations. Innovative statistical methods, including the Mann-Kendall test and Sen's slope estimator, were employed to detect and quantify trends in the data. These methods are particularly adept at identifying subtle and non-linear changes in rainfall patterns. The analysis revealed distinct sub-trends within the overall rainfall data, indicating both increasing and decreasing trends in different periods and locations. These variations are linked to both climatic events and anthropogenic factors such as land use changes, urbanization, and deforestation. The spatial analysis highlighted significant heterogeneity in rainfall trends across Dakshina Kannada, suggesting localized climatic influences. The findings have critical implications for water resource management, agricultural practices, and disaster preparedness in the region. Understanding the temporal and spatial variability of rainfall can help optimize water usage, align agricultural practices with rainfall patterns, and improve strategies for flood and drought mitigation. Additionally, this study contributes to the broader field of climate science by demonstrating the effectiveness of combining satellite data with innovative trend analysis techniques, providing a model that can be applied to other regions.

In conclusion, the sub-trend analysis of monthly rainfall in Dakshina Kannada using satellite-based data and advanced trend analysis methods offers valuable insights into the region's rainfall dynamics. These insights are essential for informed decision-making in water management, agriculture, and disaster mitigation, and underscore the importance of leveraging advanced data and analytical techniques in climate research.