PROJECT PRESENTATION

Farmers Guide

- **Problem Statement Title- GOBARdhan - Low-cost enrichment models for F/L OM (Fermented / Liquid Organic Manure)**
- **Theme- Clean and Green Technology**
- **PS Category- Hardware**

IMPROVING ACCESSIBILITY OF NUTRIENT-ENRICHED ORGANIC MANURE FOR SMALL-SCALE FARMERS

PROBLEM

India has around 70-80% of Farmers use Synthetic Fertilizers.

EFFECTS OF SYNTHETIC FERTILIZER

- **Water Pollution**
- **Soil Erosion**
- **Green House gas Emission,**
- **Greater reliance on chemical inputs**
- **Depletion of ground water quality.**

PROPOSED SOLUTION

Improves Soil Health: Adds organic nutrients to the soil.

Sustainable: Reduces emissions and usage of synthetic fertilizers.

Decreases Waste: Composts organic waste.

Cost-Effective: Reduces farmers' expenses for fertilizer.

Data-Driven: Increases yields and compost utilization.

Disease Prevention : Lowers Human Disease Risk by replacing chemical fertilizers with natural compost.

TECHNICAL APPROACH

Technical Approach

Components for NPK sensor kit:

- NPK Sensor
- OLED Display
- Breadboard
- RS485 Module
- Arduino Nano Board

Technologies used:

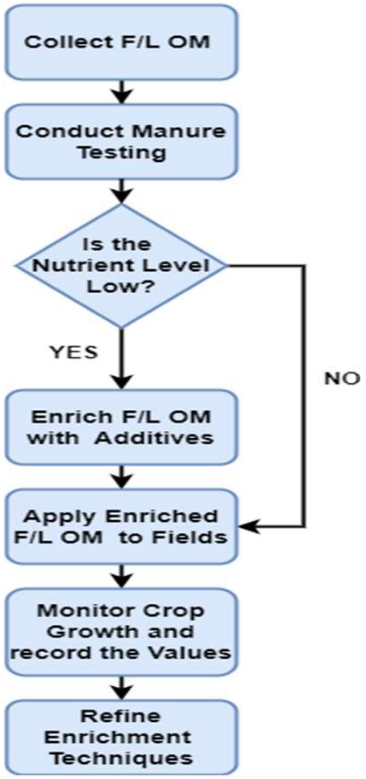
- C++ programming language

Additives Needed:

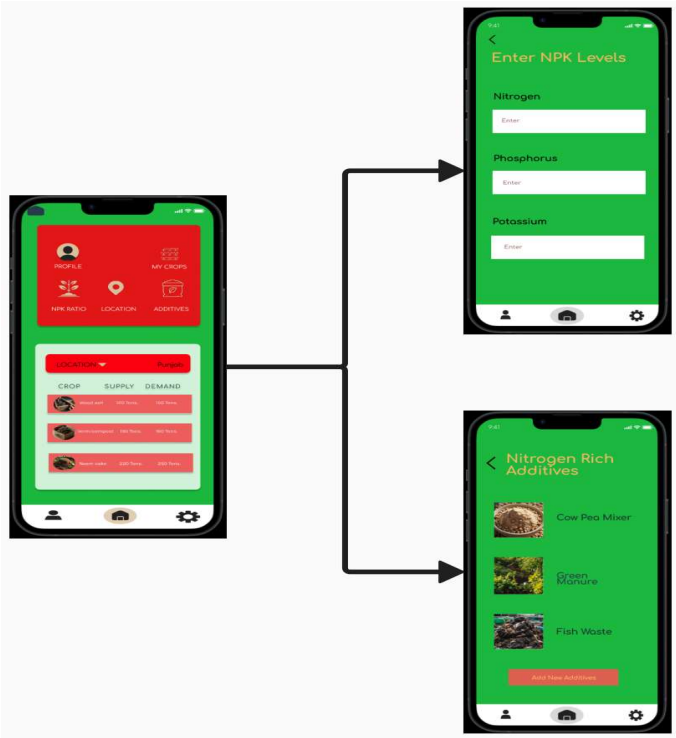
- To enrich Nitrogen Cowpea, Neem Cake.
- To enrich Phosphorus Neem Cake, Fish Waste.
- To enrich Potassium Rock Dust, Poultry Manure.

Tools for Mobile App:

Flow Process Diagram



Mobile App

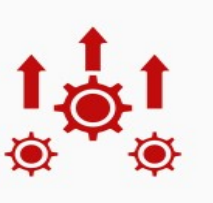


FEASIBILITY AND VIABILITY

Technical Feasibility

Technological Advancements
Modern sensors improve accuracy and ease of use.

Scalability
Can be used in both small and large settings

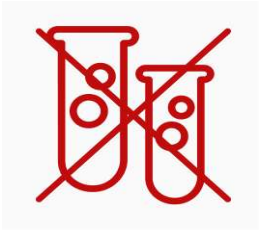


Established Methods
Uses reliable rapid diagnostic tests for accurate results.

Economic

Cost-effectiveness:
Affordable for small vendors and farmers.

Increased Savings
We replace Synthetic Fertilizer with Organic Fertilizer.



Decreased Lab Dependency
Offers a cheaper alternative to lab tests.

Challenges

Market Adoption:
Small-scale users might be hesitant or unaware.

Accuracy and Reliability
Must maintain accuracy in different environments.

Overcoming Challenges

Education Campaigns
Increase awareness to encourage use.

IMPACT AND BENEFITS

IMPACTS ON AUDIENCE

Small and Medium-Sized Farmers: Cost-effective, nutrient-rich ilizers to improve crop yields.

Urban and Peri-Urban Gardeners: Sustainable solutions for enhancing soil fertility in smaller-scale or community gardens.

Waste Management Companies: Efficient methods for converting organic waste into valuable compost, reducing landfill use.

BENEFITS OF SOLUTION

Environmental Benefits

Composting organic waste lowers waste and pollution.

Financial Gains

Reduces costs and increases crop yields using reasonably priced, efficient fertilizer.

Social Benefits

By using sustainable practices, food security and community involvement are improved.

Benefits to Health

Encourages wholesome eating with less chemical residues

RESEARCH AND REFERENCES

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2. Detection of nitrogen, phosphorus, and potassium (NPK) nutrients of soil using optical transducer:DOI:10.1109/ICSIMA.2017.8312001

3.Monitoring of Soil Nutrients Using Soil NPK Sensor and Arduino:DOI:10.53550/EEC.2023.v30i01s.049

4. Estimation of Soil Nutrients and Fertilizer Dosage Using Ion-Selective Electrodes for Efficient Soil Management.
DOI :https://doi.org/10.1080/00103624.2024.2334255

5. Organic Farming vs. Integrated Nutrient Management: A Comparative Review of Agricultural Productivity and Sustainability.
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6.Biotic farming using organic fertilizer for sustainable agriculture.
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