



TITLE: CROP AND FERTILIZER RECOMMENDATION USING ML

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# PROBLEM/PAIN POINT/OPPORTUNITY IDENTIFIED

Explain the Problem/pain point (or) Opportunity Identified with quantification of problem and some research data

In the field of agriculture, huge proportions of crops are lost due to the imprecise selection of the crop to be cultivated in a particular portion of land. Another problem that a farmer, in most occasions stumbles upon is the pest and diseases that can affect the crops that are being grown, which they are generally blinded to at a very early stage of the process.

Planting new crops is a risky undertaking for growers. A very misguided decision on the part of the farmer could place a significant strain on his family's financial condition. Perhaps this could be one of the many reasons contributing to the countless suicide cases of farmers that we hear from media on a daily basis. So Choosing the right crop & fertilizer for the right soil is the key for good harvest but farmers use the conventional practices

A system that could provide predictive insights to the farmers, thereby helping them make an informed decision about which crop to grow and which fertilizer to use.

## BRIEFLY DESCRIBE THE SOLUTION/ INNOVATION TO ADDRESS THE PROBLEM/OPPORTUNITY IDENTIFIED

A machine learning-based web application built using React and Flask/Django is used for recommending Crop and Fertilizers based on the soil features. The application will employ machine learning models that will make accurate predictions. Users are asked about their farm soil type and soil contents, Temperature, Humidity, and amount of Rainfall to recommend suitable crop and fertilizers.

# HIGHLIGHT THE UNIQUENESS/INNOVATIVE COMPONENT OF THE PROPOSED INNOVATION/SOLUTION

Our System will be able to provide instant recommendations of crop and fertilizers based on input from farmers. More varieties of crops and fertilizers are incorporated in the dataset so that the farmer gets more options to try with multiple crops and fertilizers based on the environmental parameters given on the website. We aim to build a machine learning model with good accuracy than the other existing platforms in the market.

# DESCRIBE THE TECHNOLOGY INVOLVES AND TECHNICAL FEASIBILITY FOR THE PROPOSED INNOVATION/SOLUTION

## For ML model

Numpy

Pandas

Scikit-learn

## For application building

Flask/Django, python

## For UI

ReactJS

## Database management

Firebase

## For deployment

Heroku



Since machine learning algorithms is based on pure math there is very less requirement for any professional software. And also most of the tools are open source. The best part is that we can run this software in any system without any software requirements which makes them highly portable. Also most of the documentation and tutorials make easy to learn the technology. Open source Datasets are available and there will be no need of taking survey and response from people.



## HIGHLIGHT IF ANY INTELLECTUAL PROPERTY (IP) COMPONENT ASSOCIATED WITH THE PROPOSED INNOVATION/SOLUTION.

There will not be any intellectual property component associated with this proposed solution

# DESCRIBE THE BUSINESS POTENTIAL OF THE PROPOSED INNOVATION/SOLUTION INTO VENTURE/START-UP

Since the proposed model is in its beginning stage, it could only recommend crops and fertilizers based on the input provided by the user. Seeing how much farming and agriculture impacts our lives and currently due to a huge population, we are facing a feeding problem, recommending crops suitable for the soil and other conditions would really help out the farmers to produce a surplus yield.

If farmers could be taught how to operate these gadgets, they can get these recommendations at the palm of their hands. And a big add-on is that in a country like India, where farming has been a profession for many, this business solution that works aided by Machine Learning could turn out to be a huge boom.

Also the proposed idea could be further developed into a solution that takes real-time data as input, analyses using current ML algorithms and provide more solutions to crop problem and monitoring.

# HIGHLIGHT THE MARKET POTENTIAL FOR INNOVATION/SOLUTION

As previously mentioned, the importance of farming and the widespread market in a agricultural country like India, this business idea could turn out to be one having massive potential.



# EXPLAIN THE CONSTRAINTS/RISKS ASSOCIATED WITH THE INNOVATION/SOLUTION AND STRATEGY TO TACKLE THESE

Since, the model is ML based and it can produce error in prediction or provide incorrect recommendations, such incorrectness may sometimes be of a risk to the farmers crop production.

Also, since it is application based, there is a possibility of people rejecting to their old traditional knowledge and adopt to a machine's recommendations.

# IMPLEMENTATION PLAN WITH TIMELINE TO CONVERT THE INNOVATION/SOLUTION TO A VENTURE/STARTUP

## Idea: Month 1

The idea was to create something that would help the farmers who are the feeders of our country. And what else other than aid them in sowing the suitable crops and fertilizers for their farming

## Prototype: Month 3

The prototype includes building a web application, that could recommend crops and fertilizers when the soil conditions and other inputs are entered on the web application.

## Funding: Month 5

Since the motto and the vision of this idea is to help the farmers, we expect to receive funding from the SIIC and local NGOs.

## Test: Month 7

Within the time span of two or three months of the prototype and funding we expect to perform the testing of the product and analyse the results so that we can work on the efficiency of the product.

## Release: Month 9

After the testing by the end of two months, we expect to release the end product to the customers.

# TEAM COMPOSITION AND COMPETENCY AND SKILL SET TO TURN THE INNOVATION/SOLUTION INTO START-UP

- Designer & UX person  
Kaustubh, Akash Koottungal
- Programmer  
Thejaswin S, Akash, Priyanka Srinivas
- Business / sales / marketing person  
Tanmay, Kaustubh, Priyanka Srinivas



THANK YOU