# Crop On-Location

Course ID CS546, Agricultural Cyber-Physical Systems

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## Literature Survey

### *Crop recommendation system for precision agriculture*

2016 18th International Conference on Advanced Computing (ICoAC)

Uses a labeled dataset and Machine Learning techniques like Random tree, CHAID, K-Nearest Neighbor, and Naive Bayes to recommend the crop that is most suitable for the given soil conditions.

*But the available dataset on Kaggle is not for the Indian soil conditions and crops.*

### *Crop Recommendation System*

International Journal of Computer Applications - Volume 175

Along with the Machine Learning aspects, the paper has attempted to build a physical architecture that senses all the necessary environmental properties of the location and suggests a crop for the sensed values using Machine learning algorithms.

*However, the target audience of this product is a farmer, and such a system is not affordable for a farmer.*

Many popular android applications like

*Plantix: your crop doctor, Crop doctor, and Cropguru - Farmer App*

are more concerned with crop health.

*However, if we suggest farmers go for crops that are best suited for the soil conditions of the specific location, there would be lesser health issues related to the crop.*

**Thus**, we have come up with ***'Crop On-Location'*** that will generate crop recommendations with a click for the given geographical location along with image visualization to help the farmers unfamiliar with English.

## Frequently Asked Questions

### *How is this App any different from the previous work?*

Many environmental factors such as humidity, weather conditions, and temperature are involved when we try to evaluate a farming land.

The geographical location (State) and Month are pretty much enough to summarize all this information.

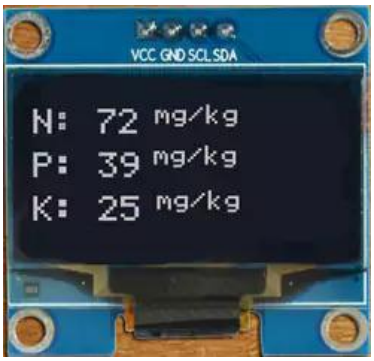
*We had to gather information on which crops are preferably planted for a particular state given the month of the year.*

### *What about the soil conditions?*

Fertilizers are one of the main expenses in farming. Primarily fertilizers are required for nutrients such as Nitrogen, Phosphorus, and Potassium (NPK).

Our crop recommendation system will recommendation will take into account the NPK readings of the field and then recommend crops in an order with minimal fertilizer requirements.

*Information related to optimal (basal) NPK fertilizer needed for all the crops has been gathered manually through research.*




NPK-sensor readings are given in the unit ***mg/kg***.

Fertilizer requirements are given in ***kg/ha***.

Thus sensor readings are first forecasted to a hectare of field. Assumption: There is 3900000 kg of soil per hectare.

Then fertilizers requirements are calculated.

## Project Phases

***Literature Survey***

***Data Gathering***: NPK Fertilizers needed for every crop

***Mapping*** Crops against State for given month

***UI Design***

Implementing Solution in the ***Backend*** - Python

***Integration***

***Testing***

## Thus, our final Application is

*Cost-efficient*

Runs on *minimal data requirements* from the user

Not containing an ML model running in the back-end. Thus, *lesser response time*.

*No heavy database* (like a labeled dataset for supervised ML model) requirements

Providing *easy-to-use UI*

Little to *no hardware requirements*

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