**Project title:Ferilizers Recommendation System For Disease Prediction**

Define CS, fit into CC

### 1. CUSTOMER SEGMENT(S) — CS

Farmers, cultivators, plant pathologists are the customers for this application. They can easly use this application and get suggestions for the fertilizers to be correctly.

### 6. CUSTOMER CONSTRAINTS — CC

The cultivators may not be aware of the infections or diseases that affected their plants. Even if they did, the nutrients required to cure may not be known. Identification of the right fertilizer and the quantity to be used may be difficult.

### 5. AVAILABLE SOLUTIONS — AS

Image acquisition is followed by preprocessing and segmentation.
Leaves are classified using the Support Vector Machine (SVM) algorithm.
Fertilizer for affected leaves is recommended based on severity level.

Explore AS, differentiate

Focus on J&P, tap into BE, understand RC

### 2. JOBS-TO-BE-DONE / PROBLEMS — J&P

Lack of expertise or knowledge lead to inability of the cultivators and gardeners to identify the infections or diseases that affect their plants.
Exact nutrients that are required to cure the problem may not be known.
To handle nutrient deficiency, the farmers may use incorrect fertilizers.
Excessive use of fertilizers damages the plants and it will reduce the soil fertility.
Some amount of the fertilizer may penetrate into water bodies causing eutrophication

### 9. PROBLEM ROOT CAUSE — RC

Abnormality in plants leads to their death. Large scale disease/infection spread will reduce crop yield. Improper diagnosis may guide cultivators toward the supply of incorrect fertilizers which will not rectify the problem. Even excessive use of the required fertilizer may lead to the leaching and eutrophication.

### 7. BEHAVIOUR — BE

The user uploads the images as input.
The affected leaves' images are separated from the unaffected leaves.
Based on deep learning, the disease is predicted.
Necessary nutrients are recognised and fertilizers rich in those nutrients are recommended.

Focus on J&P, tap into BE, understand RC

Identify strong TR & EM

### 3. TRIGGERS — TR

Seeing their crops are being infected by disease and facing huge loss in quantity and quality.

### 4. EMOTIONS: BEFORE / AFTER — EM

Soil may not have adequate quantities of all nutrients. Rate of replenishment of soil nutrients is much slower than the rate of consumption.Hence fertilizers are required to balance these rates by providing enough nutrients to the soil and plants directly thereby allowing the soil to replenish at its own rate.

### 10. YOUR SOLUTION — SL

An automated system that takes the images of leaves as input and identifies the different symptoms to decide on the disease that affects the plant.
This will be done using the Deep learning techniques.
Based on which the fertilizers rich in the required nutrients are suggested.

### 8. CHANNELS of BEHAVIOUR — CH

**8.1 ONLINE**

Online portal is for accepting the input images and displaying the recommended fertilizers.

**8.2 OFFLINE**

While offline, the image preprocessing, segmentation, disease prediction,etc. are done.

Identify strong TR & EM