Case Study: Farmers necessity for real-time and remotely sensing images of crop and soil

Problem Statement

Indian farmers repeatedly facing the various challenges in accessing appropriate and required real-time information of crop and soil during the crop harvesting.

The information that farmers need as-

Plant and Seed Selection, Land Reforms, Sowing Seeds, Irrigation, Crop harvesting etc.

- The effects of any disease from previous planting and the judgement desired to reduce this impact.
- Fertilizers desired for ensuring soil fertility
- The structure of the field in relation to the plants for good irrigation.
- Cost and quantity of seed required per hectare
- Yield rate and crop germination rate , Localtion suitability and climate
- The need and time for water , The right time to sow seeds
- Good weather at sowing time , Depth of seeding
- Number of plants per unit area as farmers need to reduce overcrowding
- Timing, frequency and technique of farming.and method of weed control
- The right time and technique to harvest

We are using R-Language (RStudio Ver: 1.0.153): a free and open source software (FOSSE), with no license constraints, is cross platform and can find many users from the agri-tech sector. This platform enables analysis of crop and soil images. **We have collected and prepared datasets of 30 different fields for 30 farmer's crops with 10 spatial parameters have been considered for this case and presented a case of real time crop monitoring**

Parameters selected

1. Farmer Name
2. Crop Location
3. Year of harvesting
4. Month of harvesting
5. Day of month
6. Min_Temp (day temperature)
7. Max_Temp (day temperature)
8. Soil_Temp
9. Latitude
10. Longitude

This can analyzed with the help of RStudio package "raster" and image captured by drone. Also assign date code to each images captured and assigning value to the variable of raster package of R and raster can be visualize data by using the plot function.

The agriculture farmers hence can easily gather, combine and analyses real-time remote sensing crop images and know the soil temperature so that appropriate quantification of the water consumption pattern crop wise can take place.