

## CLOUD-BASED CROP MONITORING MOBILE TOOL FOR INDIAN FARMERS.

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**Abstract:** India is a country where agriculture is of prime importance. In recent times, the scope of information technology and the Geographical Information System (GIS) is being applied in every aspect of society. This applied research deals with developing a mobile-based GIS application which can inform the farmers about their crop condition using remote sensing data. The crop conditions are inferred using the Normalized Difference Vegetation Index (NDVI), a widely used criterion in remote sensing. The level of information given to the farmers will not be the NDVI values but NDVI in an interpretation form based on crop type, date of sowing, precipitation. So, an NDVI Interpretation System (NIS) was also created as part of the application to interpret the NDVI values. Sentinel-2 Data from the European Space Agency (ESA) is used for computation of NDVI and the processing was done through Google Earth Engine (GEE). A custom GEE application was made using Google App Engine (GAE) to automate the whole process of geospatial analysis. The algorithm for calculating NDVI was developed in such a way that it will eliminate the data with cloud percentage of more than 10% and thus asking the user to input different date if the excess of the cloud cover is found in the geospatial data. The application has been tested for usability in the agricultural field with the wheat crop. The application gave the desired results for the different dates selected in the application from the time of sowing. While testing the application different dates were selected for the result and it's found that the application performs well on the non-monsoon season because of the presence of cloud in the spatial data. Thus, the application provides a good solution for crops cultivated during the non-monsoon season.

**Keywords:** Sentinel-2, Google Earth Engine, PHP, Google App Engine, Cloud Computing, NDVI