



# Field Report

This report consists of satellite results of one of your fields. Automated Satellite Monitoring Service allows you to monitor multiple farming fields using latest satellite imagery.



Report Generation Date:  
2021-11-18 (in yyyy-mm-dd)

Satellite Imagery Capture Date:  
2021-11-13 (in yyyy-mm-dd)

## Field Details



Field Address:  
Rohua, Bihar, India



Field Area:  
610900 square meters  
(approx.)



Field Location:  
Latitude: 25.767, ,  
Longitude: 86.612

## Weather Statistics on the Imagery Capture Date

Weather Station:

# Saharsa



Average Cloud Cover (in %):  
0

Minimum Temperature  
(°C):  
20.74  
Maximum Temperature  
(°C):  
25.61



Average Pressure (hPa):  
1013



Average Humidity (in %):  
51

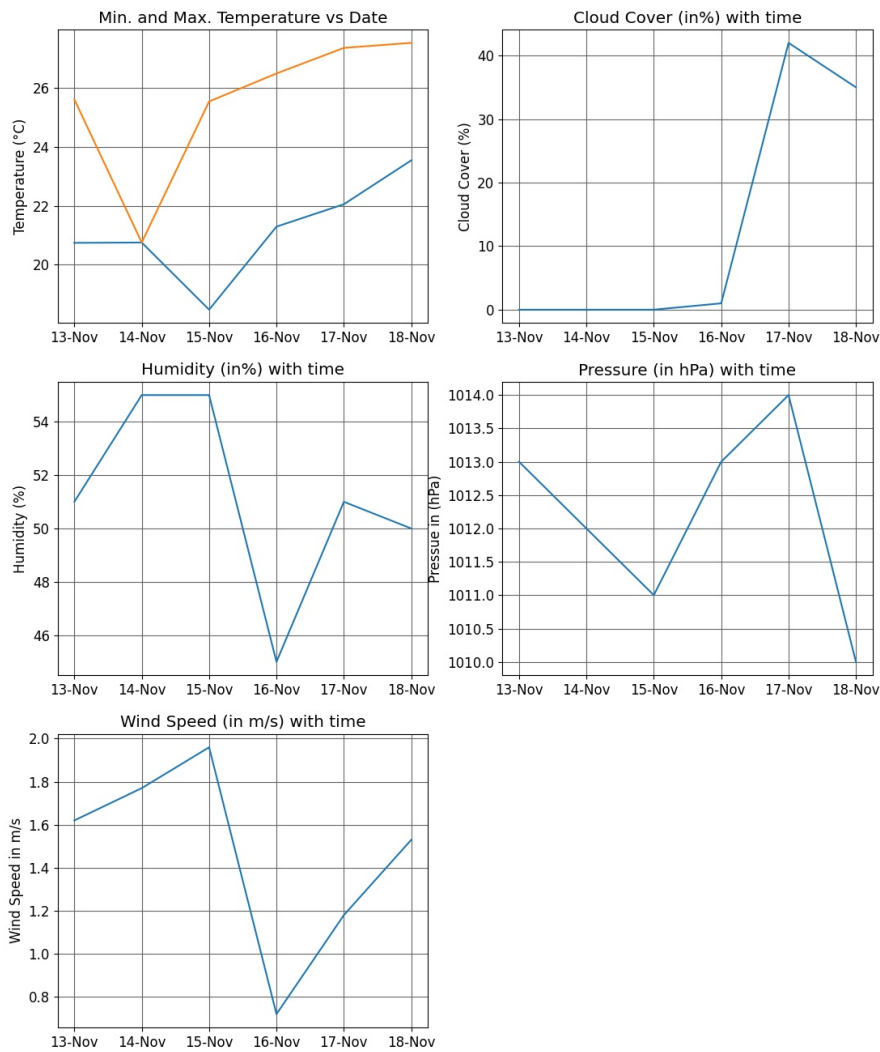


Average Wind Speed (in m/s):  
1.62



Wind Direction (in degrees):  
77

## Weather Graphs (Past 5 Days)'



## Weather Forecast (Next 7 Days)

<p>2021-11-18</p> <p>Clear throughout the day.</p>	<p>Minimum Temperature (°C): 15.55 at 23:19</p>	<p>Maximum Temperature (°C): 28.55 at 08:53</p>	<p>Rain Probability in(%): 0.0</p>	<p>, Max. Precipitation (in mm. per hour): not available</p>	<p>Cloud Cover (in%): 0</p>
<p>2021-11-19</p> <p>Partly cloudy throughout the day.</p>	<p>Min. Temp (°C): 16.1 at 23:53</p>	<p>Maximum Temperature (°C): 28.68 at 08:58</p>	<p>Rain Probability in(%): not available</p>	<p>, Max. Precipitation (in mm. per hour): not available</p>	<p>Cloud Cover (in%): 44</p>
<p>2021-11-20</p> <p>Clear throughout the day.</p>	<p>Min. Temp (°C): 16.39 at 23:49</p>	<p>Maximum Temperature (°C): 28.89 at 09:13</p>	<p>Rain Probability in(%): 0.0</p>	<p>, Max. Precipitation (in mm. per hour): not available</p>	<p>Cloud Cover (in%): 21</p>
<p>2021-11-21</p> <p>Clear throughout the day.</p>	<p>Min. Temp (°C): 13.54 at 23:28</p>	<p>, Max. Temp (°C): 29.16 at 08:59</p>	<p>Rain Probability in(%):</p>	<p>, Max. Precipitation (in mm. per hour):</p>	<p>Cloud Cover (in%): 1</p>

	not available		not available		
2021-11-22 Clear throughout the day.	Min. Temp (°C): 10.6 at 23:16	, Max. Temp (°C): 27.57 at 08:25	Rain Probability in(%): 0.0	, Max. Precipitation (in mm. per hour): not available	Cloud Cover (in%): 0
2021-11-23 Clear throughout the day.	Min. Temp (°C): 11.21 at 23:13	, Max. Temp (°C): 26.4 at 08:28	Rain Probability in(%): not available	, Max. Precipitation (in mm. per hour): not available	Cloud Cover (in%): 0
2021-11-24 Clear throughout the day.	Min. Temp (°C): 11.14 at 23:16	, Max. Temp (°C): 26.13 at 08:23	Rain Probability in(%): 0.0	, Max. Precipitation (in mm. per hour): not available	Cloud Cover (in%): 0

## Crop Health



The crop is in not growing normally, but is still not in danger zone. Please visualize NDVI and NDRE images upon your field and identify the unhealthy areas.

## Irrigation



The water stress in your field is not so good. It means that you need to focus more upon irrigation. A large portion of your field will be affected when less rain or drought condition occurs. Please visualize NDWI image upon your field and identify the regions in bad water stress.

## Basic Analysis (Crop Health + Irrigation)



**If you are growing crops at a location on the field, then:**

- Your crop has good health and good water stress at these locations.
- Visit these locations to check for crop health
- Visit these locations to check for crop health with priority
- Visit these locations for both crop health and water stress
- Visit these locations to check for water stress
- Visit these locations to check for water stress with priority
- No Information Available Due to Cloud cover on these locations

This Single Image Provides information of seven different images

(attached in the report below), combined together in a single image. This image is sufficient to take ground level actions. For more in-depth analysis, you can refer to the advance analysis information below.

## Basic Analysis (Crop Health + Irrigation) | Colorblind Visualization

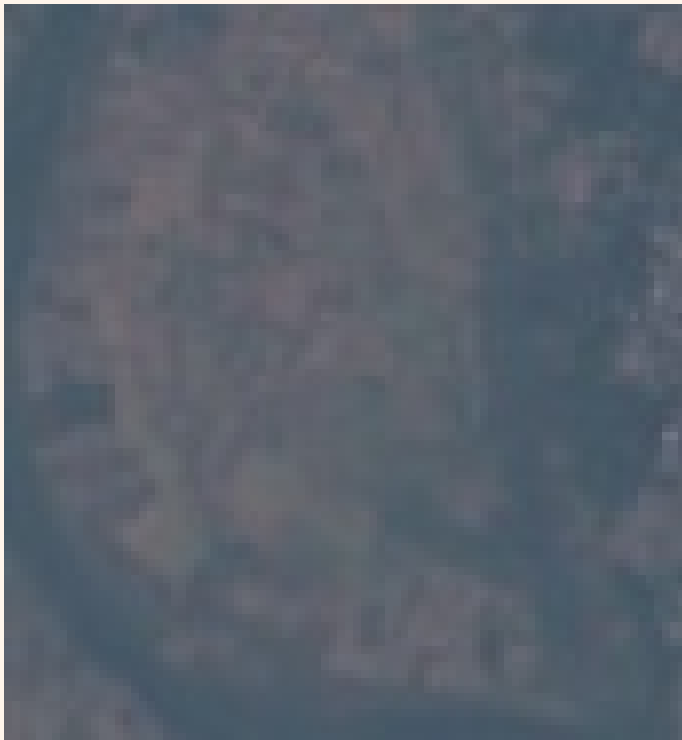


Visit these locations to check for crop health and/or water stress



Visit these locations to check only for water stress

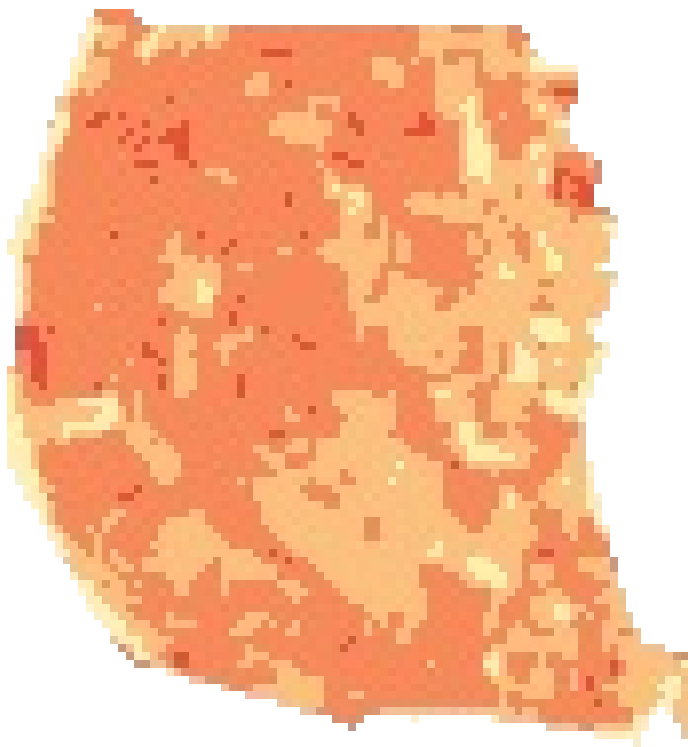
## RGB Satellite Image



True color image is the unaltered raw satellite image retrieved for your area, whereas Enhanced True Color Image is the processed satellite image of your area with enhanced land features. Using these two images you can see any observable land changes around your field which may be crucial for your farming practices.

## Crop Health | Early Growth Stage | NDVI, EVI, SAVI

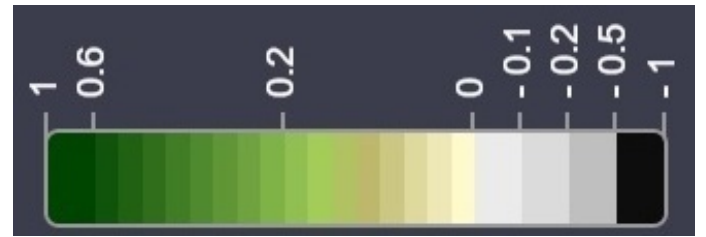
### Normalized Difference Vegetation Index Image (NDVI)



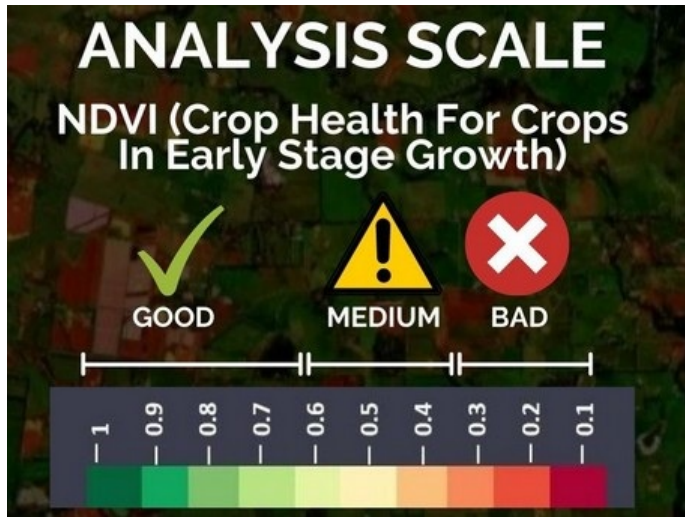
Use This When Vegetation is of Good Height



Use This When Vegetation is Small



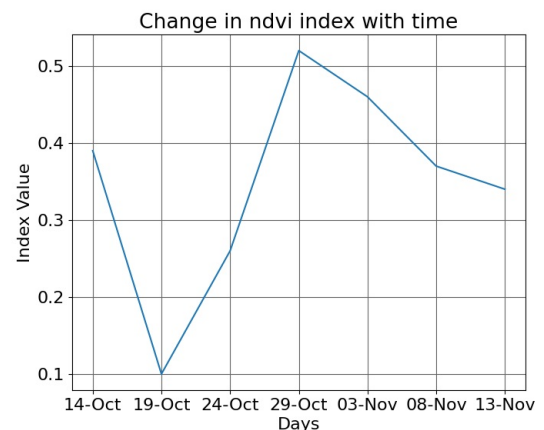
NDVI image provides you a color map of the vegetation of your farming field and nearby areas. The areas shown in red are the regions where the crop growth may not be normal. You should refer to these images when your crop is in the early stage of growth.



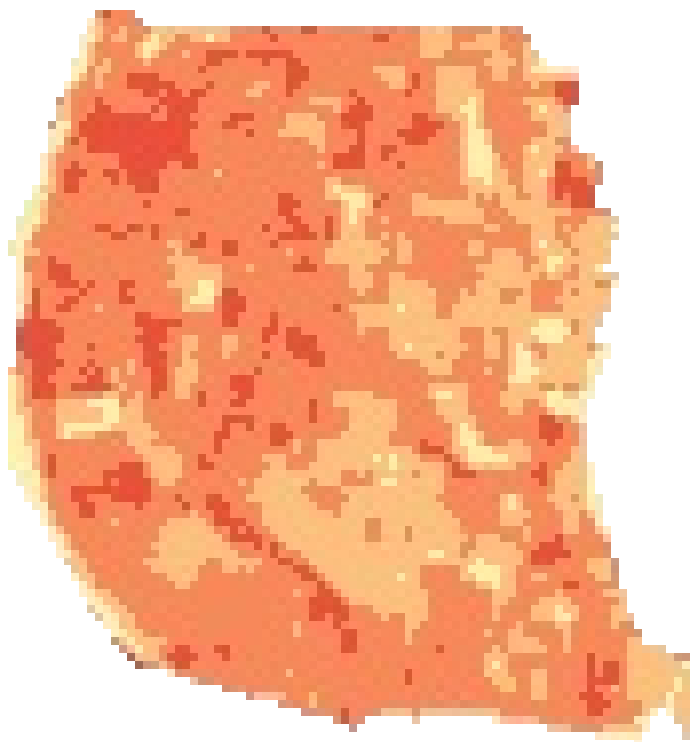
Field Area in Different Health Zones	
Dark Green	NDVI: 0.9 to 1.0 -> 0 sq. m.
Green	NDVI: 0.8 to 0.9 -> 0 sq. m.
Light Green	NDVI: 0.7 to 0.8 -> 0 sq. m.
Yellow-Green	NDVI: 0.6 to 0.7 -> 0 sq. m.
Yellow	NDVI: 0.5 to 0.6 -> 1100 sq. m.
Orange	NDVI: 0.4 to 0.5 -> 34000 sq. m.
Red-Orange	NDVI: 0.3 to 0.4 -> 215200 sq. m.
Red	NDVI: 0.2 to 0.3 -> 347600 sq. m.
Dark Red	NDVI: 0.1 to 0.2 -> 13000 sq. m.
Black	NDVI: -1 to 0.1 -> 0 sq. m.

### Scientific Background

NDVI measures status of plant health based on how plants reflect light at certain frequencies. Though we cannot perceive it with our eyes, everything around us (including plants) reflect wavelengths of light in visible and non-visible spectrum. Taking into account how much amount of a certain wavelength is reflected, we can assess the current status of plants. If a plant is healthy, it will have large amount of chlorophyll on its leaves and will absorb good amount of visible light from 0.4 to 0.7 microns and reflect quite less of it and vice-versa. We take into account this basic principle in identifying crop health status of an agricultural land.



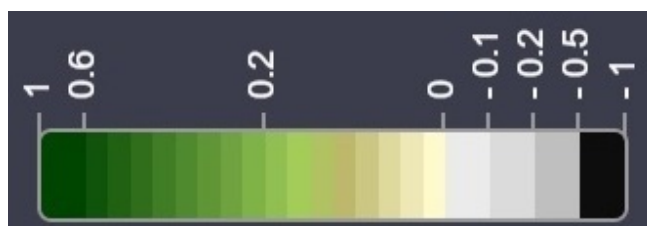
# Enhanced Vegetation Index Image (EVI)



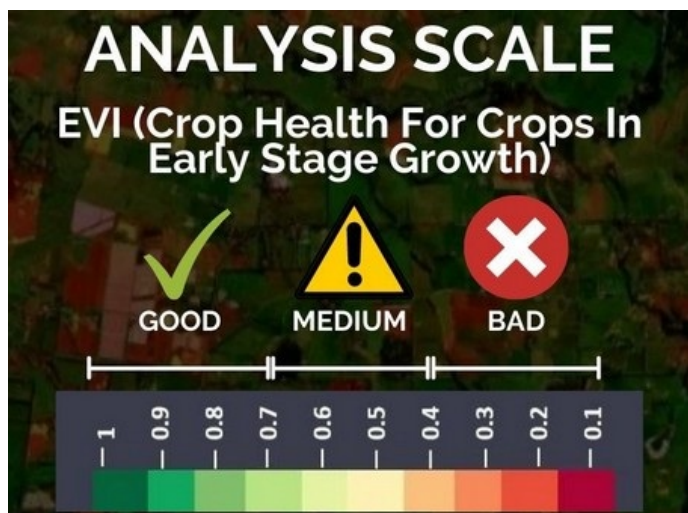
Use This When Vegetation is of Good Height



Use This When Vegetation is Small



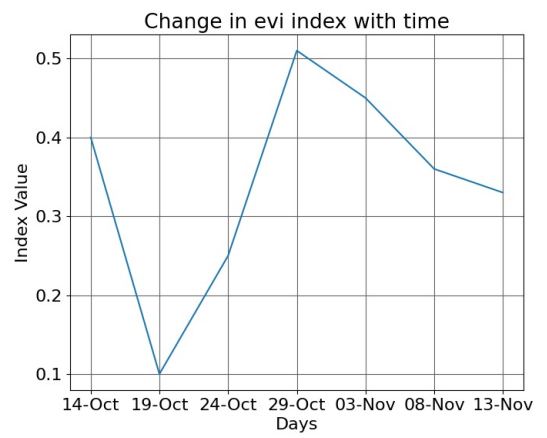
EVI image provides you a color map of the vegetation of your farming field and nearby areas. The areas shown in red are the regions where the crop growth may not be normal. You should refer to these images when your crop is in the later stage of growth and your crop canopy is dense.



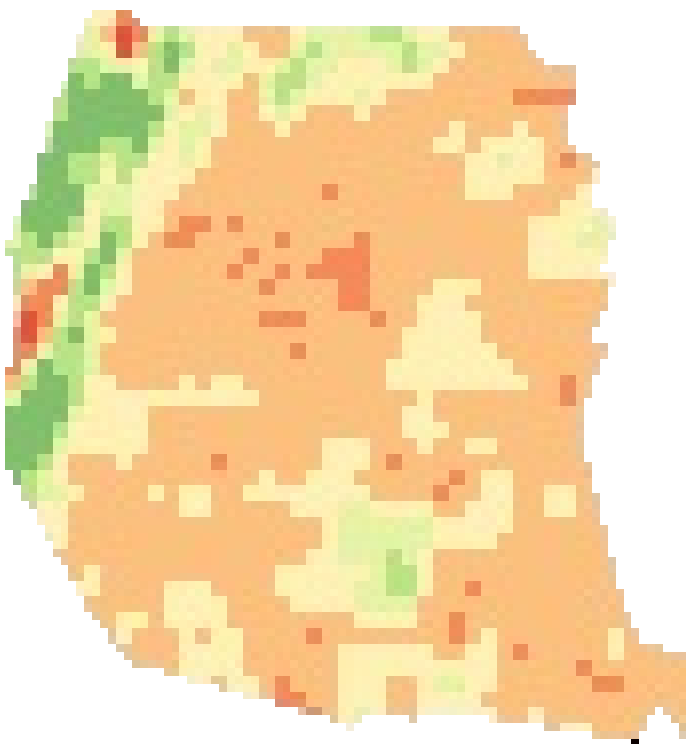
Field Area in Different Health Zones	
Dark Green	EVI: 0.9 to 1.0 -> 0 sq. m.
Green	EVI: 0.8 to 0.9 -> 0 sq. m.
Light Green	EVI: 0.7 to 0.8 -> 0 sq. m.
Yellow-Green	EVI: 0.6 to 0.7 -> 0 sq. m.
Yellow	EVI: 0.5 to 0.6 -> 3100 sq. m.
Orange	EVI: 0.4 to 0.5 -> 26500 sq. m.
Light Orange	EVI: 0.3 to 0.4 -> 167800 sq. m.
Red-Orange	EVI: 0.2 to 0.3 -> 350200 sq. m.
Red	EVI: 0.1 to 0.2 -> 63300 sq. m.
Dark Red	EVI: -1 to 0.1 -> 0 sq. m.

## Scientific Background

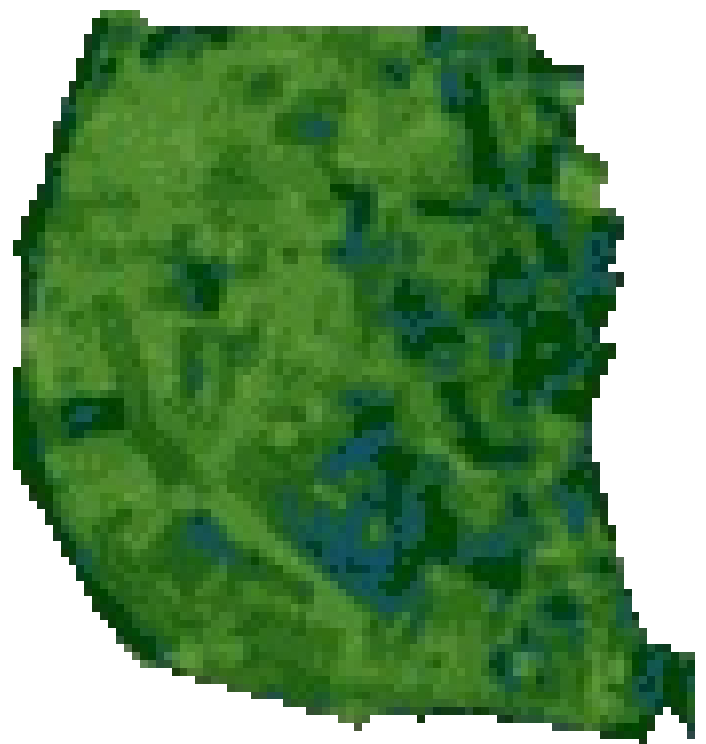
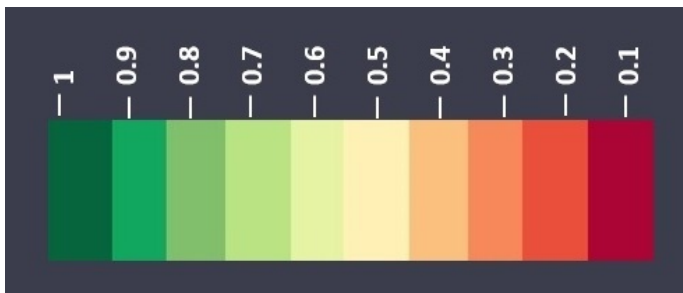
The Enhanced Vegetation Index (EVI) uses additional wavelengths of light to correct for the inaccuracies of NDVI. Variations in solar incidence angle, atmospheric conditions like distortions in the reflected light caused by the particles in the air, and signals from the ground cover below the vegetation are corrected for using EVI.



## Soil Adjusted Vegetation Index (SAVI)



Use This When Vegetation is of Good Height

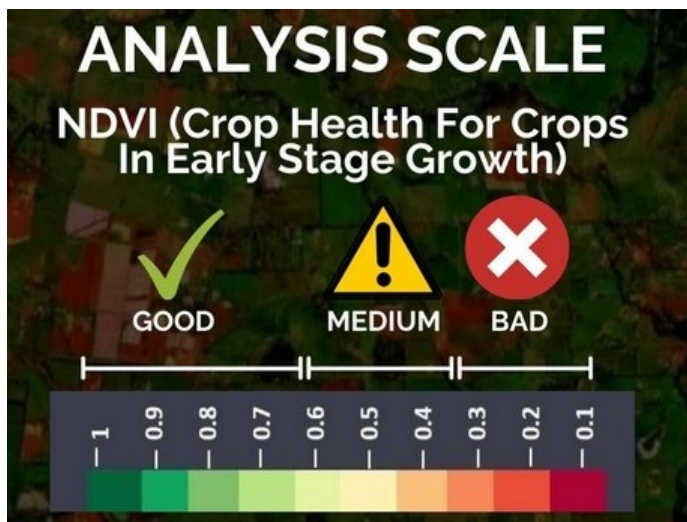


Use This When Vegetation is Small



SAVI image provides you a color map of the vegetation of your farming field and nearby areas. The areas shown in red are the regions where the crop growth may not be normal. You should refer to these images when your crop is in the later stage of growth and your crop canopy is dense.



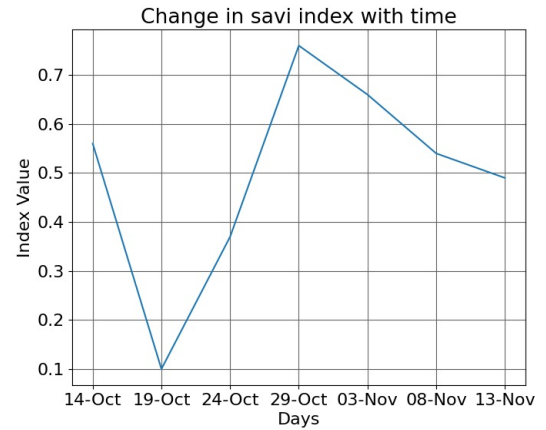


### Field Area in Different Health Zones

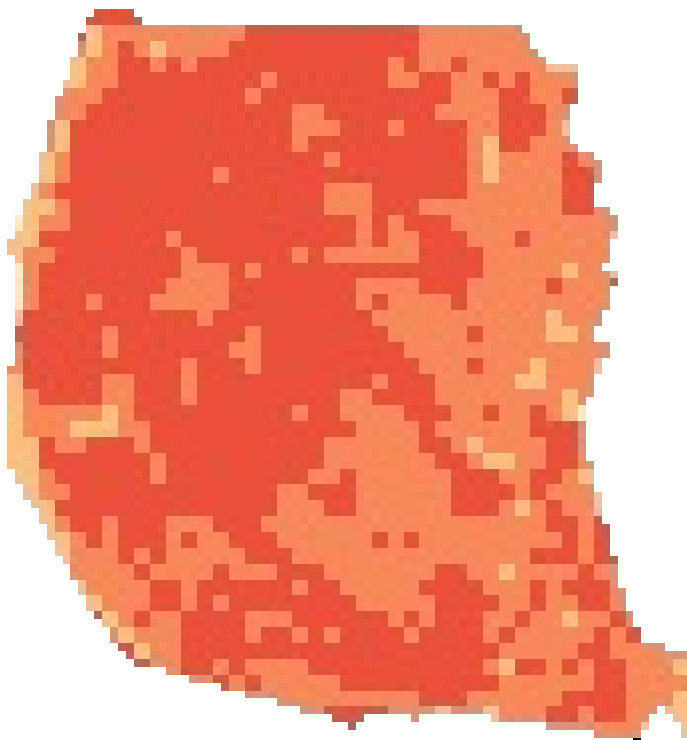
SAVI: 0.9 to 1.0	-> 0 sq. m.
SAVI: 0.8 to 0.9	-> 0 sq. m.
SAVI: 0.7 to 0.8	-> 5500 sq. m.
SAVI: 0.6 to 0.7	-> 29600 sq. m.
SAVI: 0.5 to 0.6	-> 119600 sq. m.
SAVI: 0.4 to 0.5	-> 222800 sq. m.
SAVI: 0.3 to 0.4	-> 220200 sq. m.
SAVI: 0.2 to 0.3	-> 13200 sq. m.
SAVI: 0.1 to 0.2	-> 0 sq. m.
SAVI: -1 to 0.1	-> 0 sq. m.

### Scientific Background

The soil-adjusted vegetation index was developed as a modification of the Normalized Difference Vegetation Index to correct for the influence of soil brightness when vegetative cover is low. The SAVI is structured similar to the NDVI but with the addition of a "soil brightness correction factor."



## Normalized Difference Red Edge Image (NDRE)

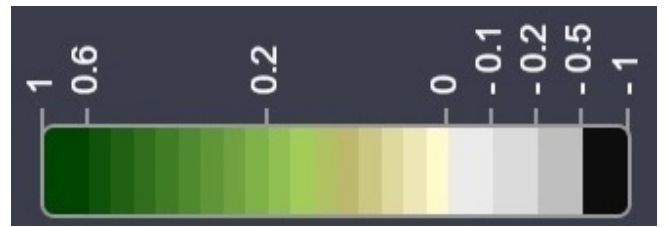


Use This When Vegetation is of Good Height

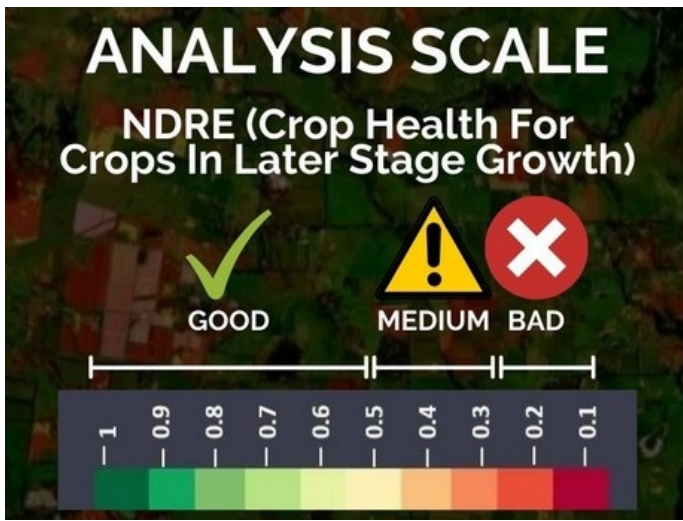


Use This When Vegetation is Small





NDRE image provides you a color map of the vegetation of your farming field and nearby areas. The areas shown in red are the regions where the crop growth may not be normal. You should refer to these images when your crop is in the later stage of growth.

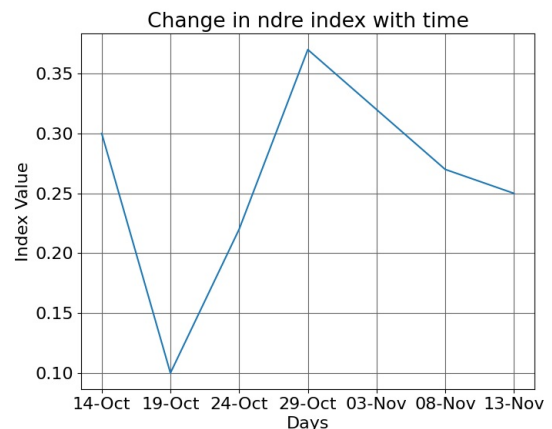


**Field Area in Different Health Zones**

Dark Green	NDRE: 0.9 to 1.0 -> 0 sq. m.
Green	NDRE: 0.8 to 0.9 -> 0 sq. m.
Light Green	NDRE: 0.7 to 0.8 -> 0 sq. m.
Yellow-Green	NDRE: 0.6 to 0.7 -> 0 sq. m.
Yellow	NDRE: 0.5 to 0.6 -> 0 sq. m.
Light Orange	NDRE: 0.4 to 0.5 -> 400 sq. m.
Orange	NDRE: 0.3 to 0.4 -> 22800 sq. m.
Dark Orange	NDRE: 0.2 to 0.3 -> 252800 sq. m.
Red	NDRE: 0.1 to 0.2 -> 332000 sq. m.
Dark Red	NDRE: -1 to 0.1 -> 0 sq. m.

### Scientific Background

NDRE uses a combination of near-infrared light and a frequency band that is in the transition region between visual red and NIR light. The red edge band of NDRE provides a measurement that is not as strongly absorbed by just the topmost layers of leaves. By using NDRE, one can get better insight into crops in their later stage because it is able to observe further down into the canopy a well. NDRE is also less prone to saturation in the presence of dense vegetation. This will help us get much accurate results in pasture biomass estimation measurements. Thus, in situations like these, NDRE can provide a much accurate and better measurement of variability in an area in which the NDVI measurement would come simply as 1.0

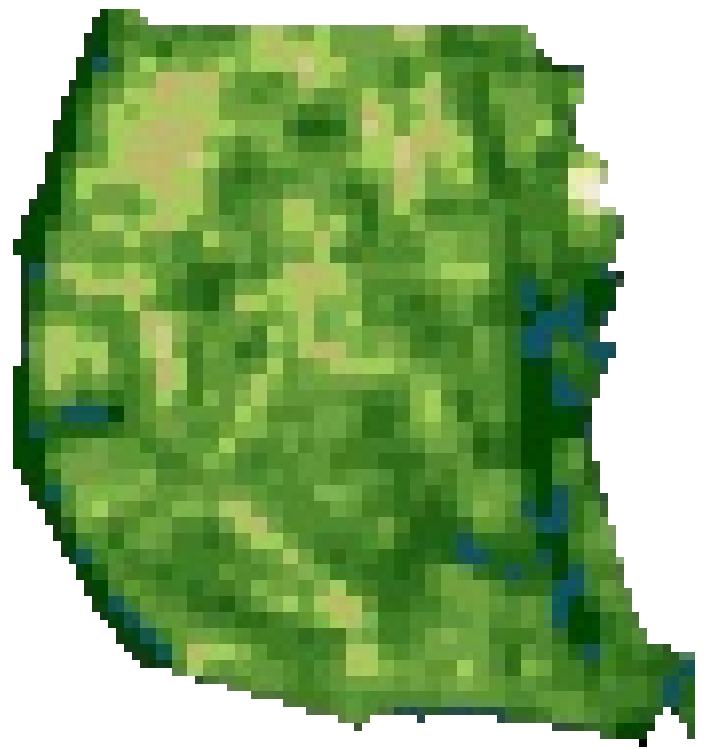


## Irrigation | NDWI, NDMI, Evapotranspiration

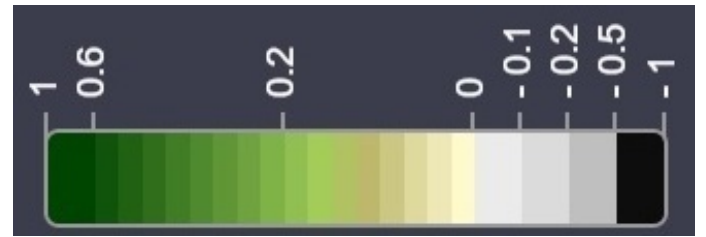
### Normalized Difference Water Index Image (NDWI)



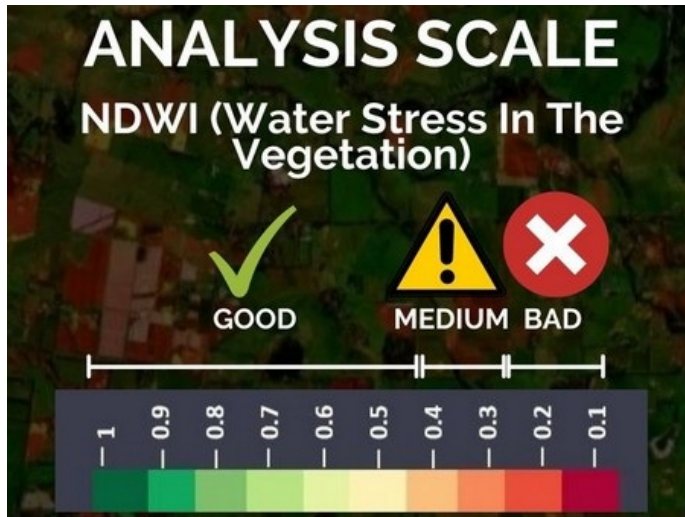
Use This When Vegetation is of Good Height



Use This When Vegetation is Small



NDWI image provides you a color map of the water level of your farming field and nearby areas. The areas shown in red are the regions where the water level may not be normal. In case of drought or less rainfall, these areas will be the most affected.

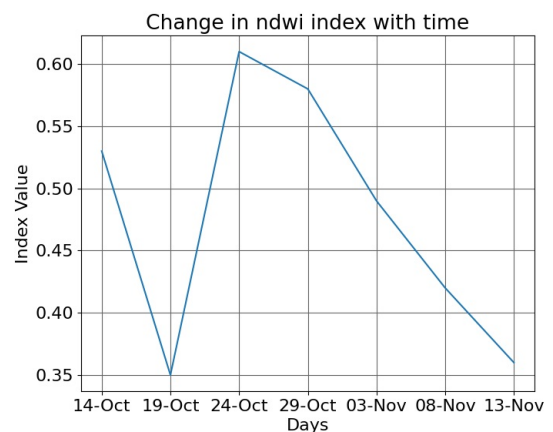


### Field Area in Different Health Zones

Dark Green	NDWI: 0.9 to 1.0 -> 0 sq. m.
Green	NDWI: 0.8 to 0.9 -> 0 sq. m.
Light Green	NDWI: 0.7 to 0.8 -> 800 sq. m.
Yellow-Green	NDWI: 0.6 to 0.7 -> 9200 sq. m.
Yellow	NDWI: 0.5 to 0.6 -> 39600 sq. m.
Orange	NDWI: 0.4 to 0.5 -> 84400 sq. m.
Red-Orange	NDWI: 0.3 to 0.4 -> 173600 sq. m.
Red	NDWI: 0.2 to 0.3 -> 176400 sq. m.
Dark Red	NDWI: 0.1 to 0.2 -> 119200 sq. m.
Black	NDWI: -1 to 0.1 -> 4800 sq. m.

### Scientific Background

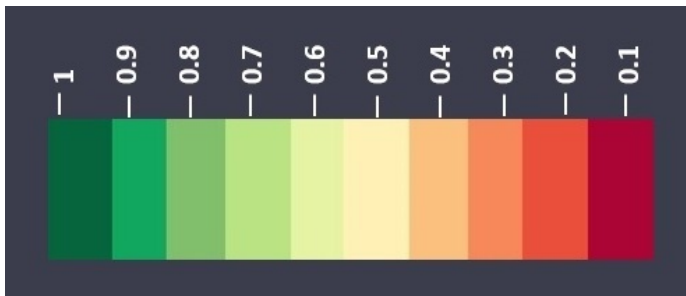
Vegetation cover on the earth surface undergoes severe stress during a drought. If affected areas are not identified in time, entire crops may be damaged. Hence, the early detection of water stress can prevent many of the negative impacts on crops. NDWI can help us control irrigation and significantly improve agriculture, especially in areas where meeting the need for water is difficult.



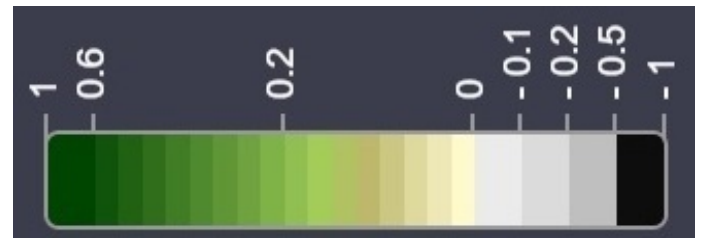
# Normalized Difference Moisture Index (NDMI)



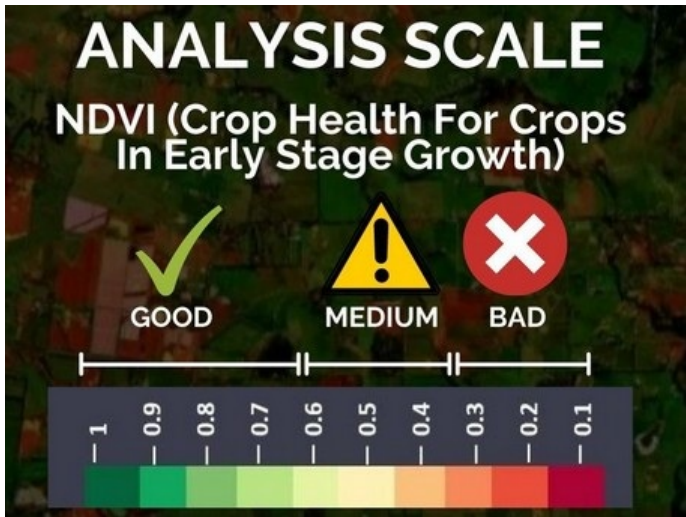
Use This When Vegetation is of Good Height



Use This When Vegetation is Small

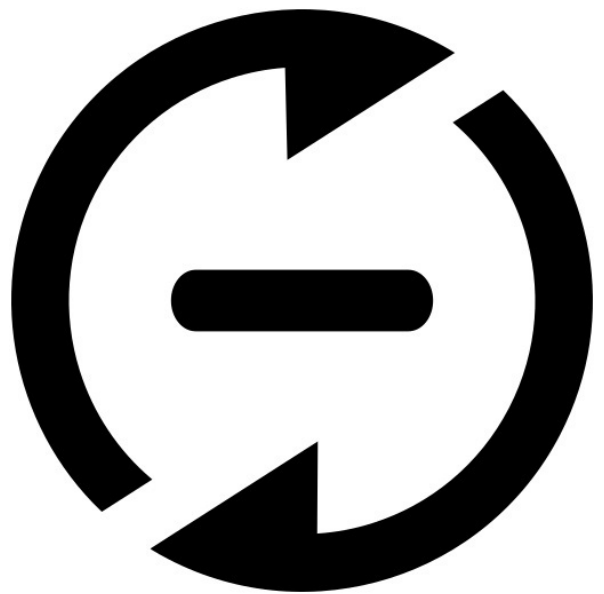


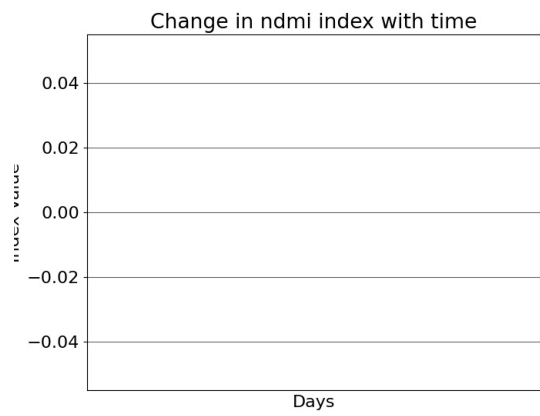
Vegetation cover on the earth surface undergoes severe stress during a drought. If affected areas are not identified in time, entire crops may be damaged. Hence, the early detection of moisture can prevent many of the negative impacts on crops. NDMI can help us control irrigation and significantly improve agriculture, especially in areas where meeting the need for water is difficult.



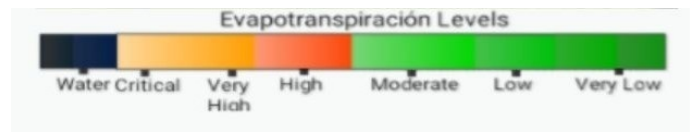
## Scientific Background

The NDMI is a normalized difference moisture index, that uses NIR and SWIR bands to display moisture. The SWIR band reflects changes in both the vegetation water content and the spongy mesophyll structure in vegetation canopies, while the NIR reflectance is affected by leaf internal structure and leaf dry matter content but not by water content. The combination of the NIR with the SWIR removes variations induced by leaf internal structure and leaf dry matter content, improving the accuracy in retrieving the vegetation water content.





## Evapotranspiration



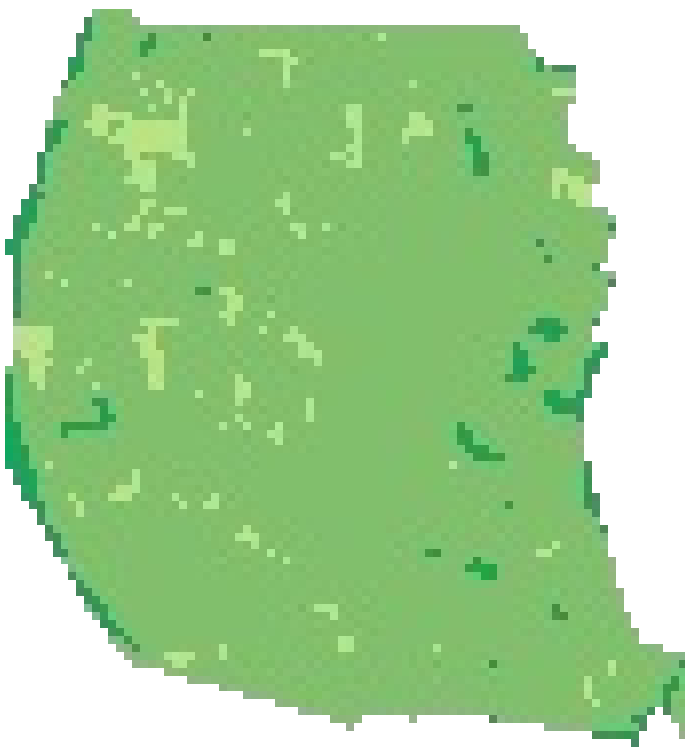
**Identifies Locations  
Where Water is Getting  
Into The Atmosphere at  
a High Rate**

Satellite remote sensing of evapotranspiration is an essential part of the global observation system and provides inputs for agriculture, water resources management, weather forecasts, climate studies and many other applications.

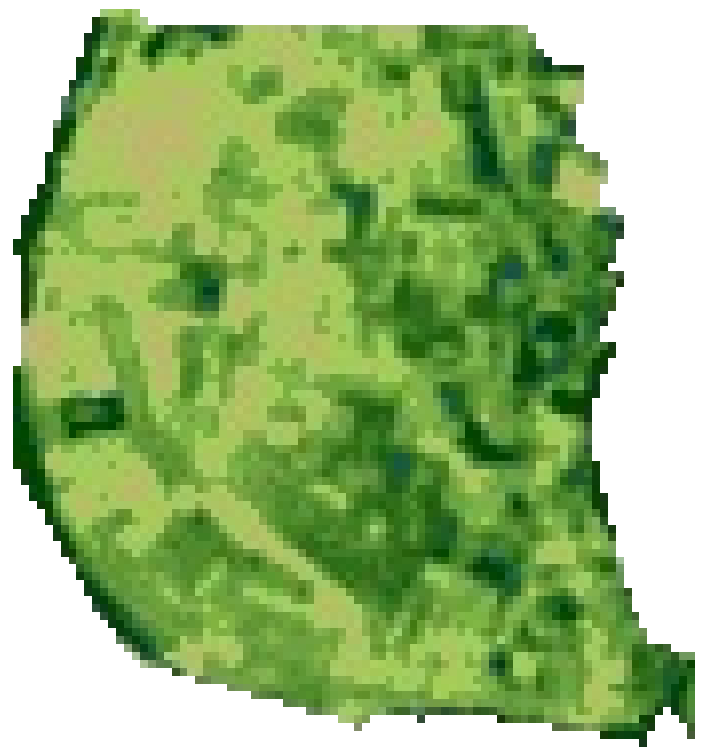
## Soil Health | SOC

Soil Organic Carbon Image (SOC)

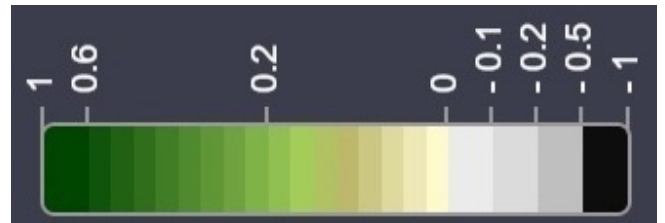




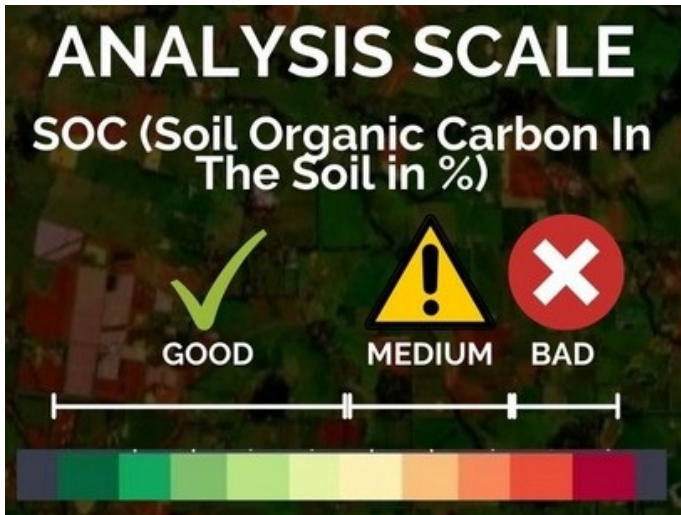
Use This When Vegetation is of Good Height



Use This When Vegetation is Small



SOC image provides you a color map of percentage of organic matter present at your selected field. Organic matter contributes to nutrient retention and turnover, soil structure, moisture retention and availability, degradation of pollutants, carbon sequestration and soil resilience. The areas shown in red are the regions where the soil organic carbon is less than 1%.



**Field Area with Different SOC%**

Dark Green	SOC: more than 0.25% -> 0 sq. m.
Green	SOC: 0.2% to 0.25% -> 24600 sq. m.
Light Green	SOC: 0.15% to 0.2% -> 556000 sq. m.
Yellow-Green	SOC: 0.137% to 0.15% -> 30300 sq. r.
Yellow	SOC: 0.125% to 0.137% -> 0 sq. m.
Light Orange	SOC: 0.112% to 0.125% -> 0 sq. m.
Orange	SOC: 0.1% to 0.112% -> 0 sq. m.
Dark Orange	SOC: 0.075% to 0.1% -> 0 sq. m.
Red	SOC: 0.05% to 0.075% -> 0 sq. m.
Dark Red	SOC: less than 0.05% -> 0 sq. m.

