
# 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.

**Note:** *This report is auto-generated by Farmonaut systems. If you have any queries/questions regarding this report then contact us on: support@farmonaut.com*

**Report Generation Date:** *2020-07-19 (in yyyy-mm-dd)*

## Field Details

**Field Address:** *Rohua, Bihar, India(As Per Google Maps)*

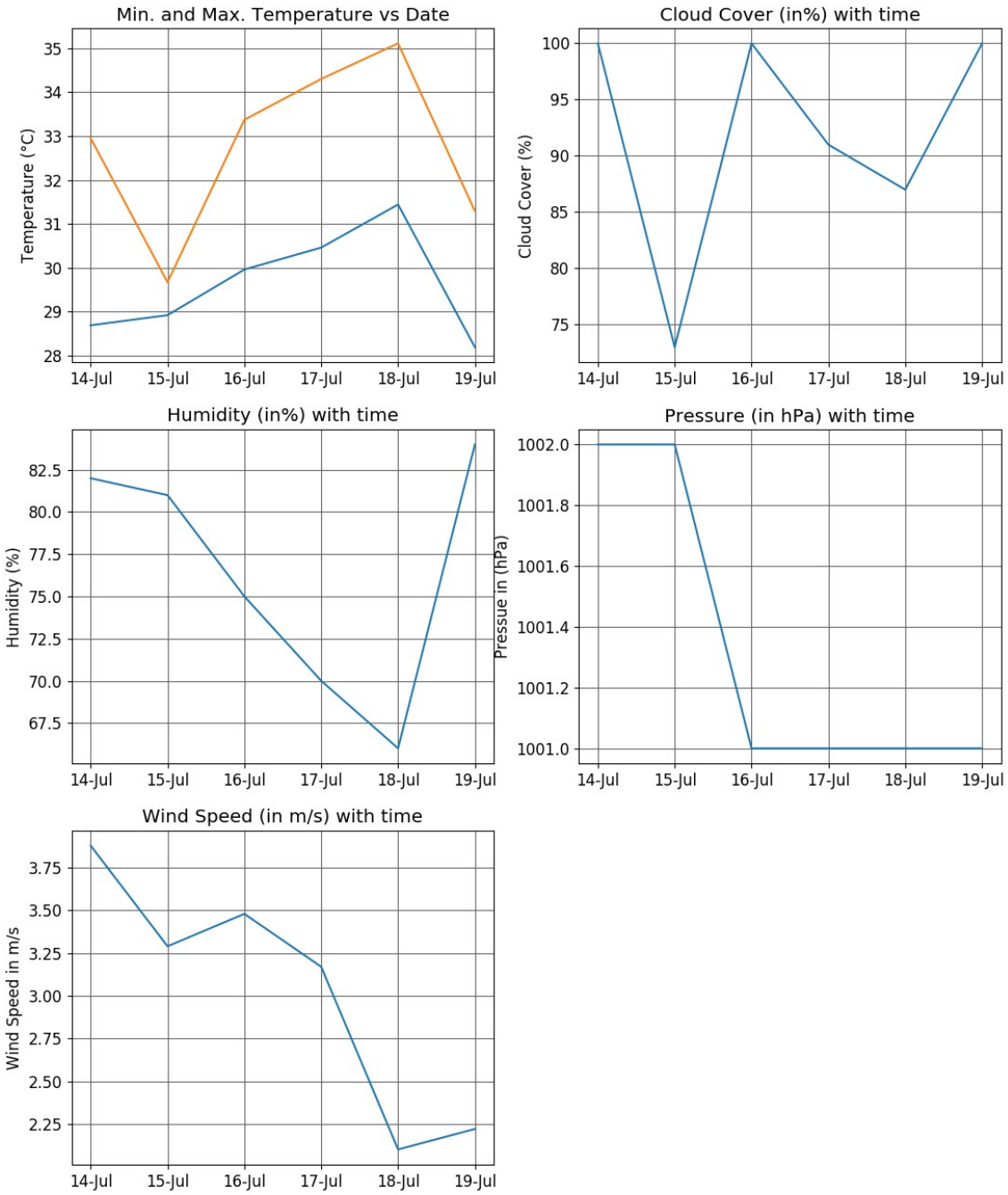
**Field Area:** *610900 square meters (approx.)*

**Field Location:** *Latitude: 25.767, Longitude: 86.612*

**Satellite Imagery Capture Date:** *2018-08-16 (in yyyy-mm-dd)*

**Weather data will be available from next report**

## Weather Graphs (Past 5 Days)



## Weather Forecast (Next 7 Days)

### 2020-07-19

**Rain and humid throughout the day.** *Cloud Cover (in%): 100*

**Min. Temp (°C):** *23.96 at 23:22*, **Max. Temp (°C):** *28.2 at 10:42*

**Rain Probability in(%):** *100.0*, **Max. Precipitation (in mm. per hour):** *0.1964 at 02:44*

# "Rain is expected!"

### 2020-07-20

**Rain and humid throughout the day.** *Cloud Cover (in%): 100*

**Min. Temp (°C):** *23.79 at 23:57*, **Max. Temp (°C):** *28.75 at 08:05*

**Rain Probability in(%):** *99.0*, **Max. Precipitation (in mm. per hour):** *0.0734 at 18:30*

# "Rain is expected!"

### 2020-07-21

**Rain and humid throughout the day.** *Cloud Cover (in%): 100*

**Min. Temp (°C):** *25.03 at 00:50*, **Max. Temp (°C):** *28.92 at 11:25*

**Rain Probability in(%):** *99.0*, **Max. Precipitation (in mm. per hour):** *0.0931 at 23:44*

# "Rain is expected!"

### 2020-07-22

**Rain and humid throughout the day.** *Cloud Cover (in%): 99*

**Min. Temp (°C):** *23.85 at 23:43*, **Max. Temp (°C):** *29.26 at 06:51*

**Rain Probability in(%):** *100.0*, **Max. Precipitation (in mm. per hour):** *0.1558 at 18:30*

# "Rain is expected!"

### 2020-07-23

**Rain and humid throughout the day.** *Cloud Cover (in%): 91*

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**Min. Temp (°C):** *24.49 at 22:58*, **Max. Temp (°C):** *29.44 at 11:40*

**Rain Probability in(%):** *100.0*, **Max. Precipitation (in mm. per hour):** *0.1562 at 19:10*

# "Rain is expected!"

### 2020-07-24

**Rain overnight and in the morning.** *Cloud Cover (in%): 96*

**Min. Temp (°C):** *25.52 at 23:09*, **Max. Temp (°C):** *32.53 at 09:06*

**Rain Probability in(%):** *81.0*, **Max. Precipitation (in mm. per hour):** *0.0466 at 23:49*

# "Rain is expected!"

### 2020-07-25

**Possible light rain starting in the morning.** *Cloud Cover (in%): 98*

**Min. Temp (°C):** *25.82 at 23:07*, **Max. Temp (°C):** *32.81 at 08:21*

**Rain Probability in(%):** *81.0*, **Max. Precipitation (in mm. per hour):** *0.0307 at 15:01*

# "Rain is expected!"

## Index Data for the Satellite Captured Date

| NDVI | NDWI | NDRE | VARI | EVI |
|---|---|---|---|---|
| 0.46 | 0.47 | 0.39 | 0.44 | 0.75 |

# "Your Crop Needs Attention!"

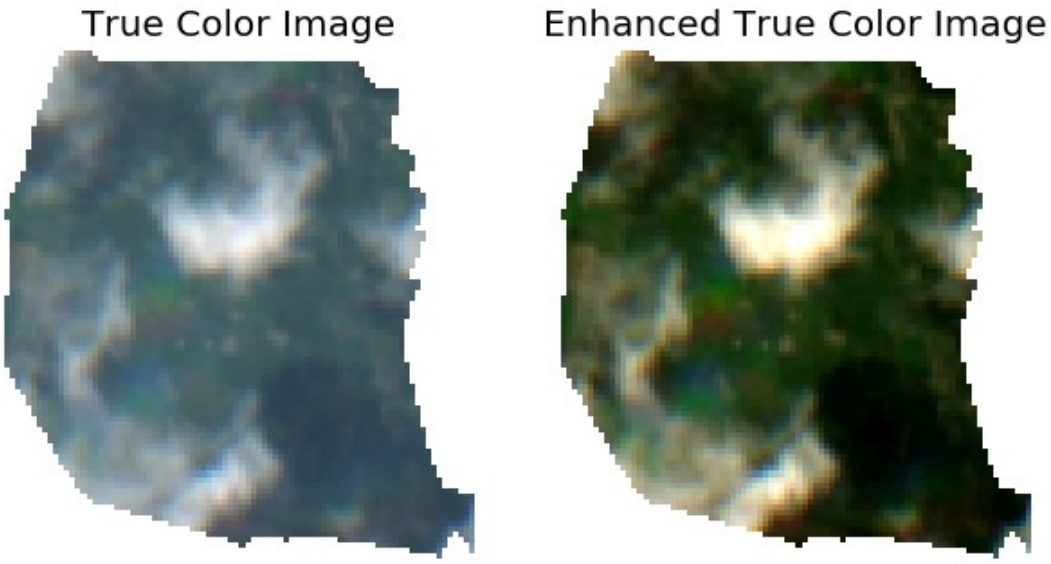
**The crop is in not growing normally, but is still not in danger zone. Please Open the "My Fields" section on the Farmonaut App and visualize NDVI and NDRE images upon your field and identify the unhealthy areas.**

# "Your Crop May Need More 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 Open the "My Fields" section on the Farmonaut App and visualize NDWI image upon your field and identify the regions in bad water stress.Field in Focus**

# Satellite Captured Images

True color image is the unaltered raw satellite image retrieved for your area, whereas Enhanced True Color Image is the Farmonaut 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.

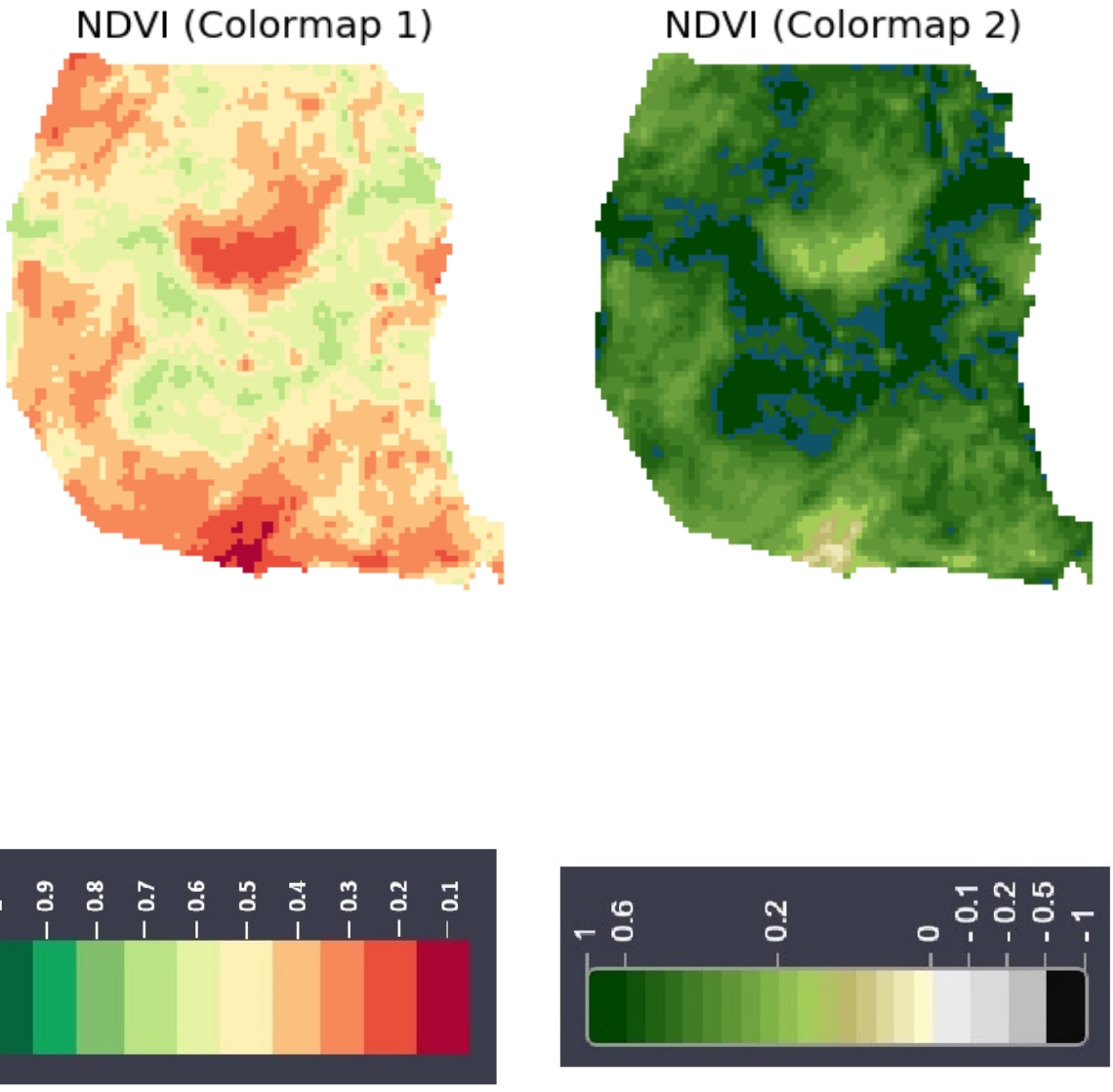



## Normalized Difference Vegetation Index Image (NDVI)

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.

**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.




Please check this article to read more about NDVI:
https://farmonaut.com/blogs/remote-sensing/normalized-difference-vegetation-index-ndvi/

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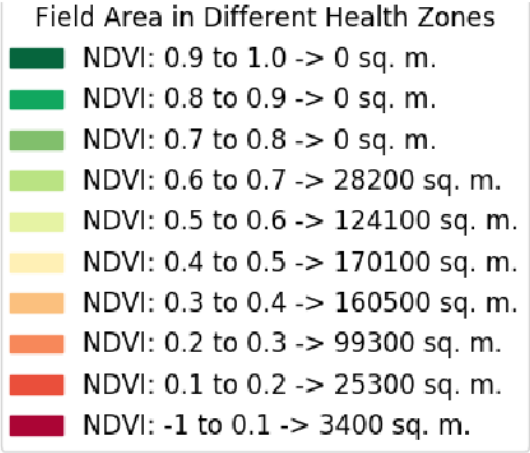
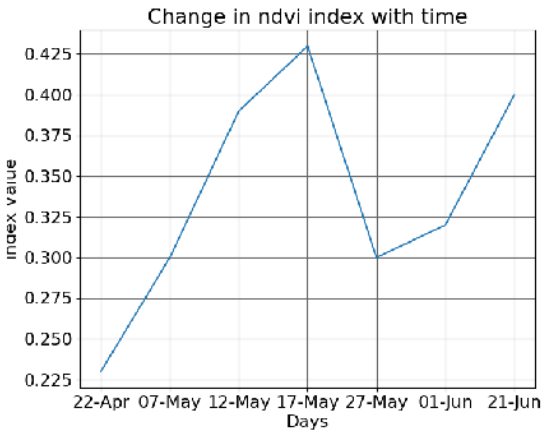
## Table of NDVI value change with time

| Date | 2018-07-27 | 2018-08-16 | 2020-04-22 | 2020-05-07 | 2020-05-12 | 2020-05-17 | 2020-05-27 | 2020-06-01 | 2020-06-21 |
|---|---|---|---|---|---|---|---|---|---|
| NDVI Value | 0.26 | 0.46 | 0.23 | 0.3 | 0.39 | 0.43 | 0.3 | 0.32 | 0.4 |



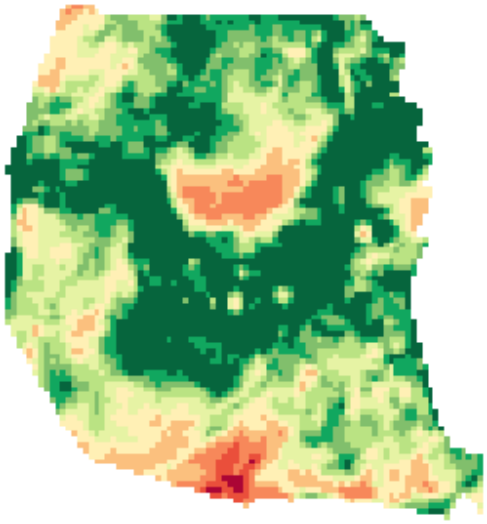



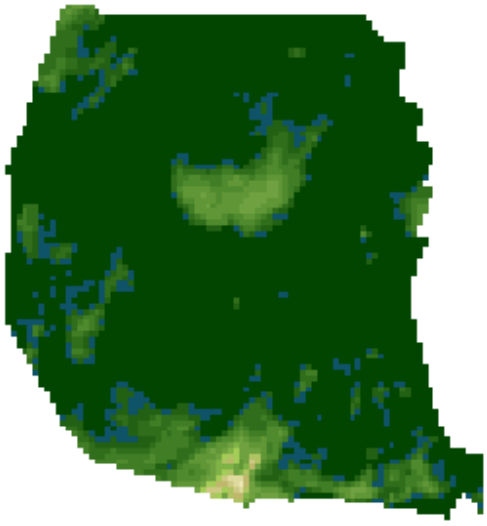

## Enhanced Vegetation Index Image (EVI)

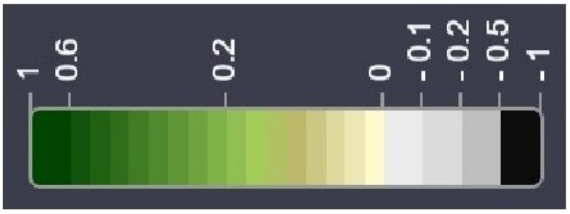
EVI image provides you a color map of the vegetation of your farming field and nearby areas. The areas shown in red are the regions where the crop growth may not be normal. You should refer to these images when your crop is in the later stage of growth and your crop canopy is dense.

**Scientific Background**

The Enhanced Vegetation Index (EVI) uses additional waveelengths 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.

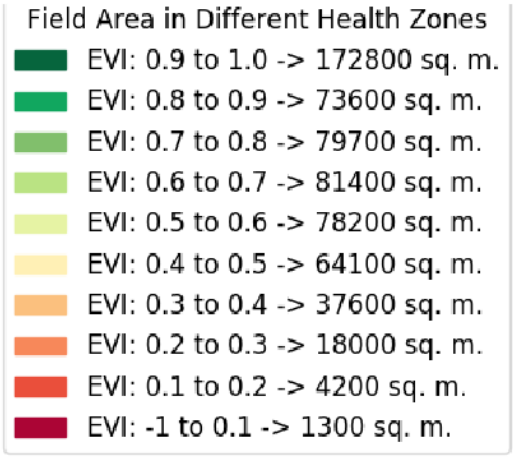


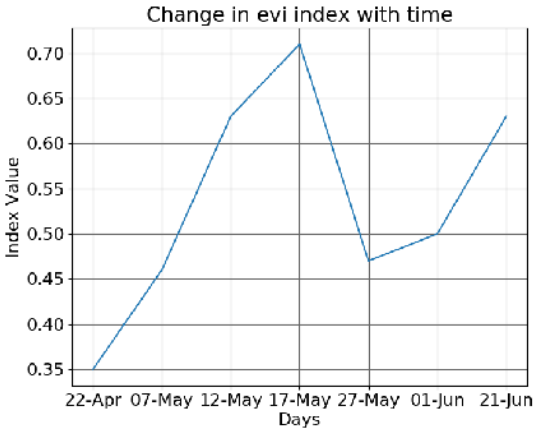



## Table of EVI value change with time

| Date | 2018-07-27 | 2018-08-16 | 2020-04-22 | 2020-05-07 | 2020-05-12 | 2020-05-17 | 2020-05-27 | 2020-06-01 | 2020-06-21 |
|---|---|---|---|---|---|---|---|---|---|
| EVI Value | 0.39 | 0.75 | 0.35 | 0.46 | 0.63 | 0.71 | 0.47 | 0.5 | 0.63 |



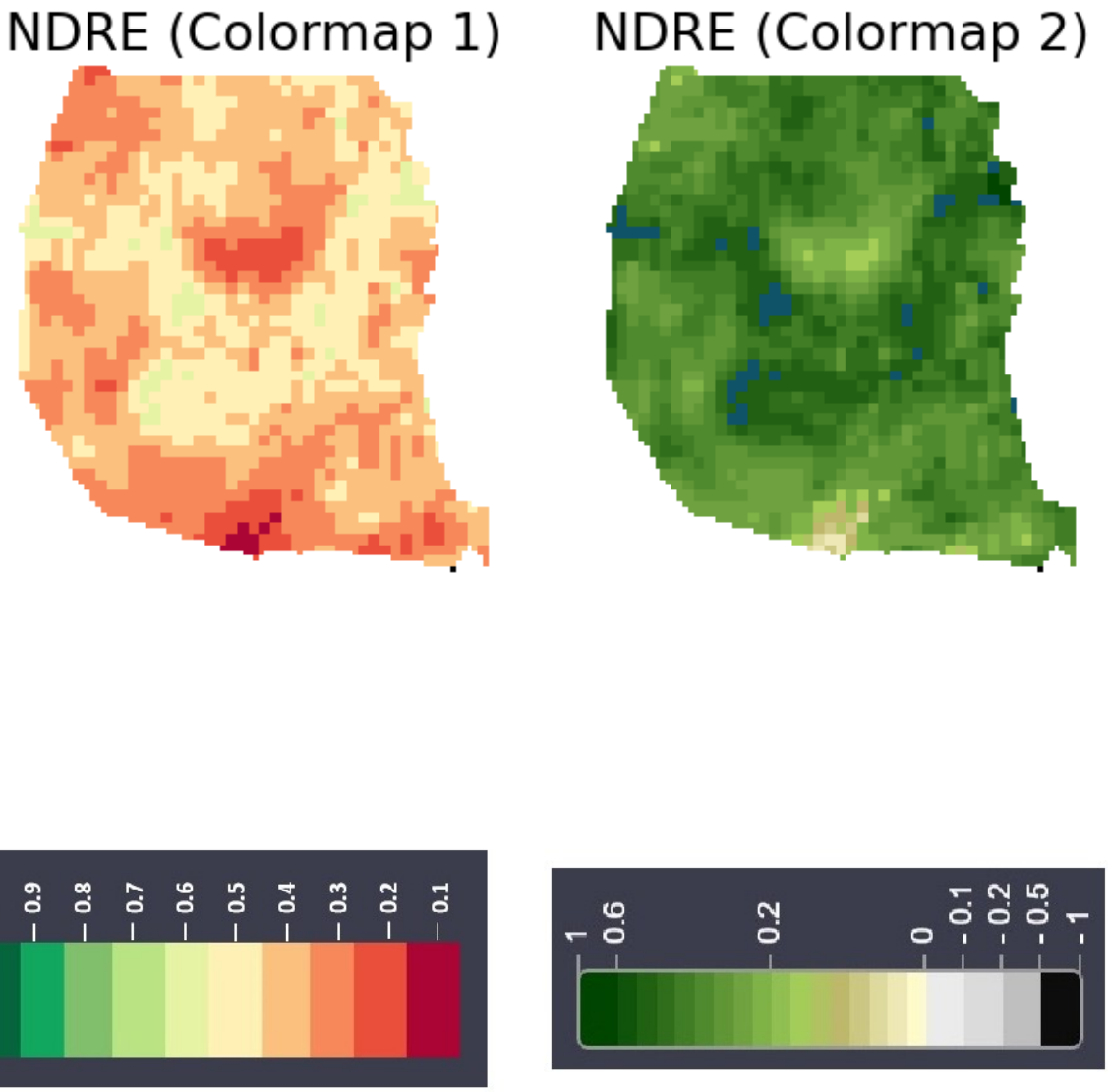




## Normalized Difference Red Edge Image (NDRE)

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.

**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




Please check this article to understand the difference between NDVI and NDRE images and their applications in agriculture: https://farmonaut.com/blogs/remote-sensing/ndvi-vs-ndre-and-their-applications-in-agriculture/

## Table of NDRE values with Time

| Date | 2018-07-27 | 2018-08-16 | 2020-04-22 | 2020-05-07 | 2020-05-12 | 2020-05-17 | 2020-05-27 | 2020-06-01 | 2020-06-21 |
|---|---|---|---|---|---|---|---|---|---|
| NDRE Value | 0.22 | 0.39 | 0.35 | 0.24 | 0.29 | 0.33 | 0.27 | 0.28 | 0.31 |

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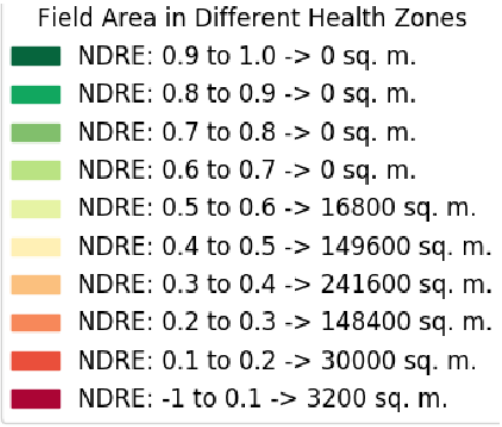
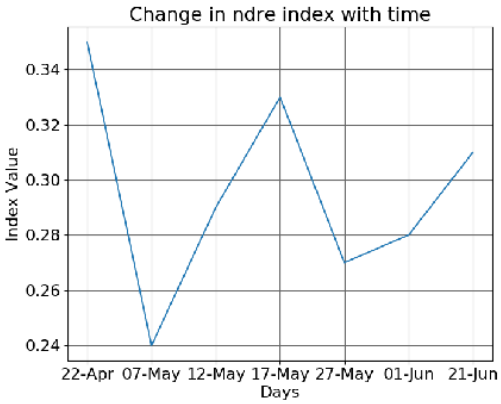


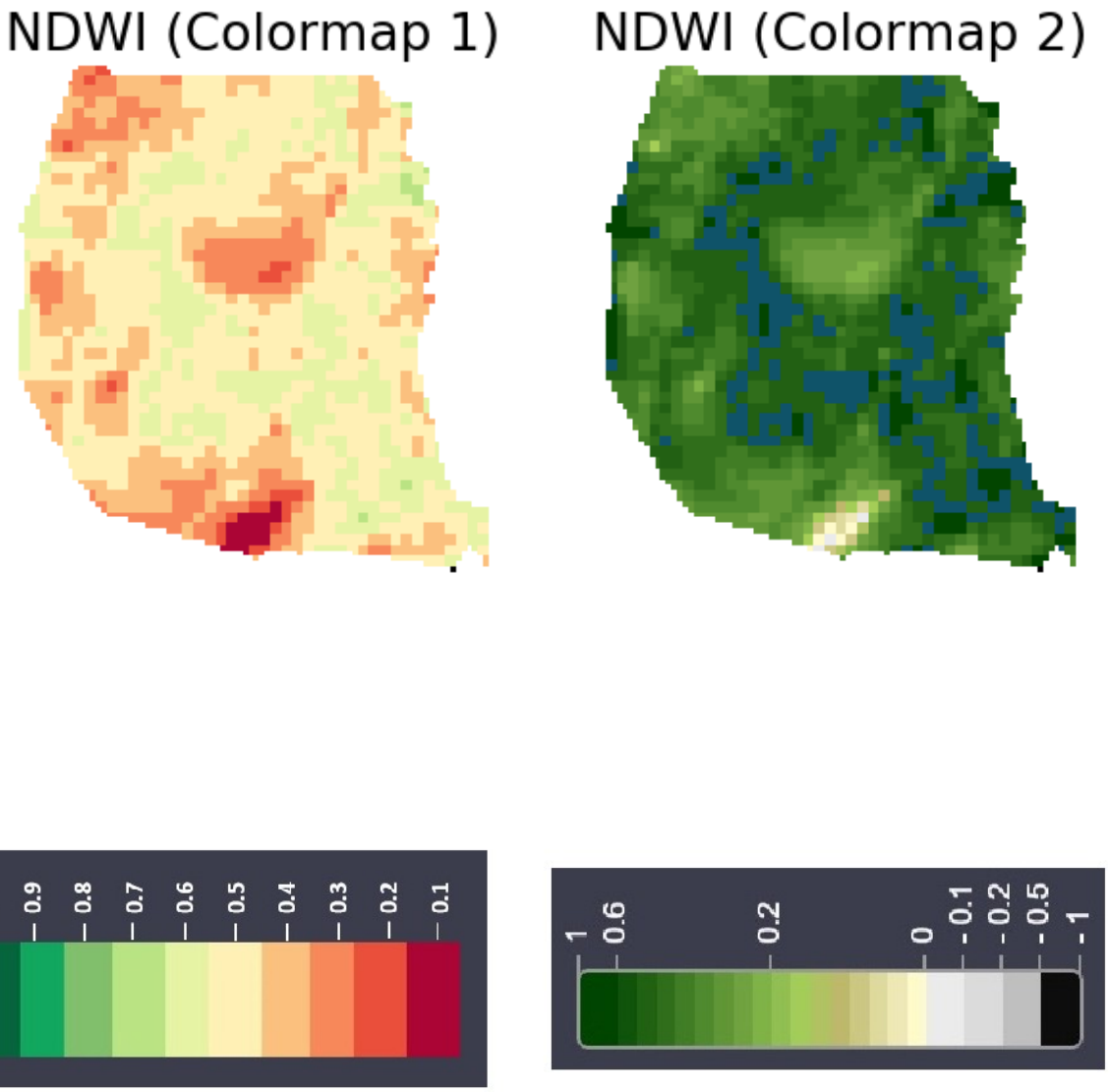




## Normalized Difference Water Index Image (NDWI)

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.

**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.

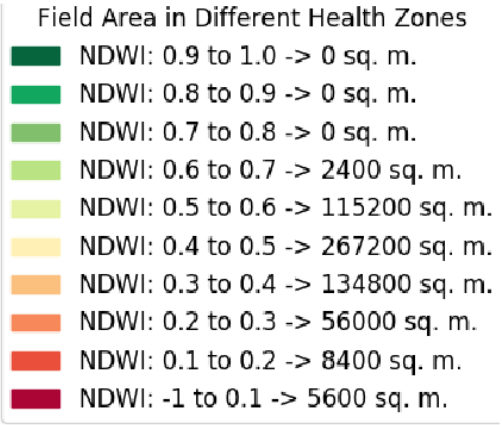


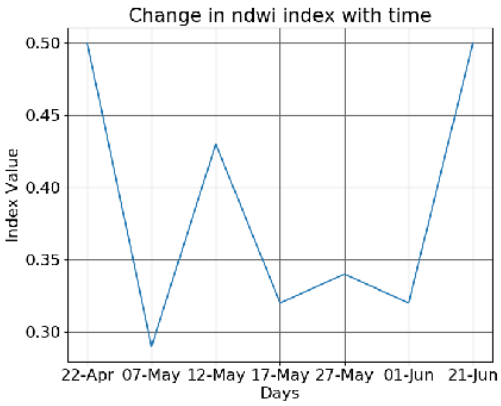

Please check this article to read more about NDWI: https://farmonaut.com/blogs/remote-sensing/normalized-difference-water-index-ndwi/

## Table of NDWI values with time

| Date | 2018-07-27 | 2018-08-16 | 2020-04-22 | 2020-05-07 | 2020-05-12 | 2020-05-17 | 2020-05-27 | 2020-06-01 | 2020-06-21 |
|---|---|---|---|---|---|---|---|---|---|
| NDWI | 0.49 | 0.47 | 0.5 | 0.29 | 0.43 | 0.32 | 0.34 | 0.32 | 0.5 |

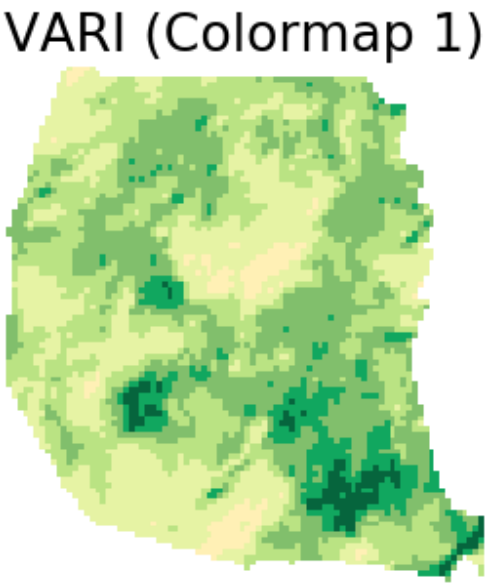
| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Value | | | | | | | | | |

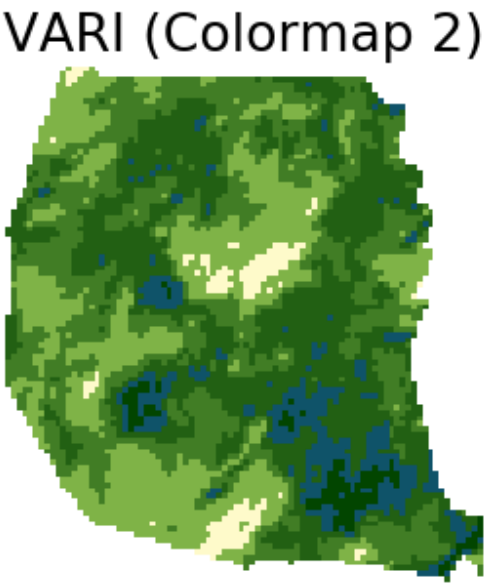


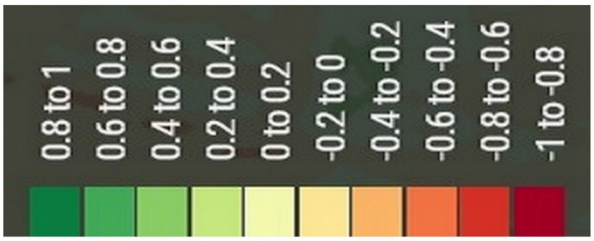




## Vegetation Atmospherically Resistance Index Image (VARI)

VARI image provides you a color map of the crop health of your farming field and nearby areas. VARI is minimally resistant to atmospheric effects, allowing vegetation to be estimated in a wide variety of environment. Hence, it is ideally recommended to be used for farm level decision making if TCI and ETCI images show visible atmospheric distortion such as mild clouds or haze above the field. The areas shown in red are the regions where the crop growth may not be normal.



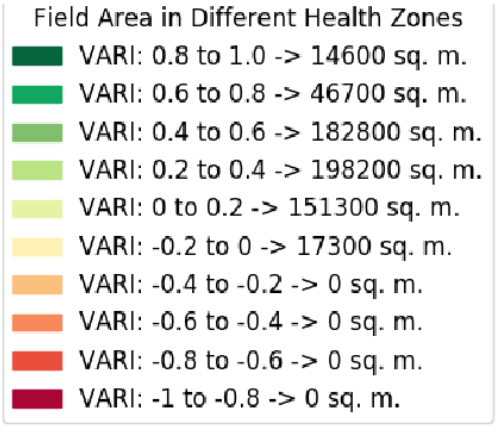



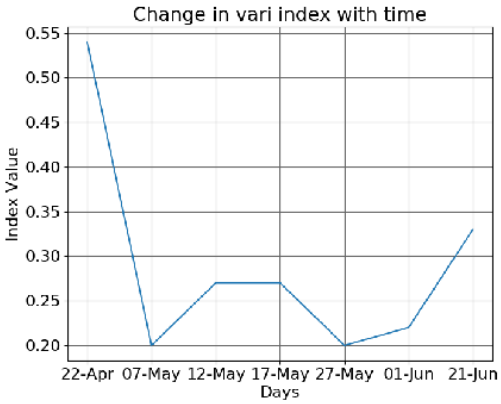





## Table of VARI values with Time

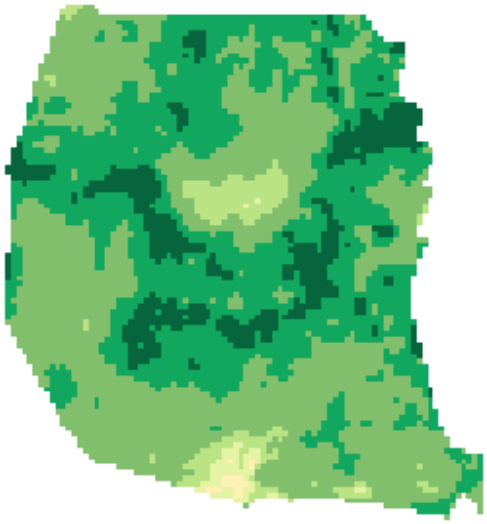
| Date | 2018-07-27 | 2018-08-16 | 2020-04-22 | 2020-05-07 | 2020-05-12 | 2020-05-17 | 2020-05-27 | 2020-06-01 | 2020-06-21 |
|---|---|---|---|---|---|---|---|---|---|
| VARI Value | 0.25 | 0.44 | 0.54 | 0.2 | 0.27 | 0.27 | 0.2 | 0.22 | 0.33 |

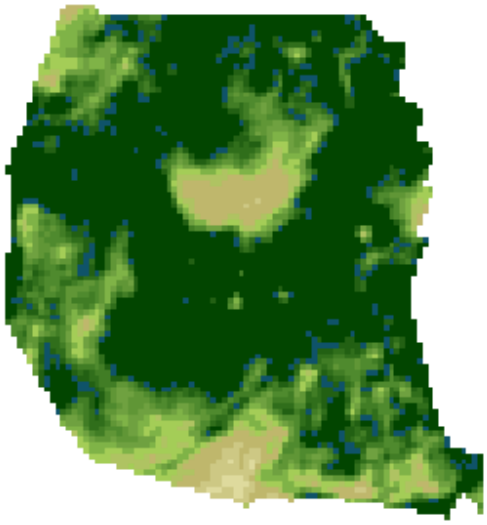



## Soil Organic Carbon Image (SOC)

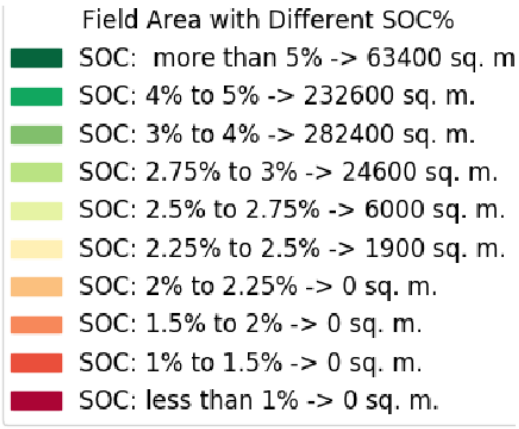
SOC image provides you a color map of percentage of organic matter present at your selected field. Organic matter contributes to nutrient retention and turnover, soil structure, moisture retention and availability, degradation of pollutants, carbon sequestration and soil resilience. The areas shown in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

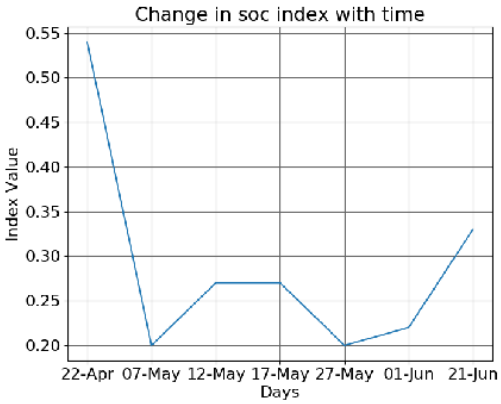




## Table of SOC values with Time

| Date | 2018-07-27 | 2018-08-16 | 2020-04-22 | 2020-05-07 | 2020-05-12 | 2020-05-17 | 2020-05-27 | 2020-06-01 | 2020-06-21 |
|---|---|---|---|---|---|---|---|---|---|
| SOC Value | 3.0 | 5.0 | 2.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |


Field Area with Different SOC%
SOC: more than 5% -> 63400 sq. m
SOC: 4% to 5% -> 232600 sq. m.
SOC: 3% to 4% -> 282400 sq. m.
SOC: 2.75% to 3% -> 24600 sq. m.
SOC: 2.5% to 2.75% -> 6000 sq. m.
SOC: 2.25% to 2.5% -> 1900 sq. m.
SOC: 2% to 2.25% -> 0 sq. m.
SOC: 1.5% to 2% -> 0 sq. m.
SOC: 1% to 1.5% -> 0 sq. m.
SOC: less than 1% -> 0 sq. m.


Change in soc index with time
Index Value
0.55
0.50
0.45
0.40
0.35
0.30
0.25
0.20
22-Apr
07-May
12-May
17-May
27-May
01-Jun
21-Jun
Days