Growth Stage - FI004.0

Last modified by

Pramod Khombare

Current document version

V1.0

Module Name

F-Intel

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1. Document History

VERSION HISTORY							
DATE	**CLIENT NAME**	**VERSION**	**DESCRIPTION OF CHANGE**	**AUTHOR**	**REQUIREMENT ID**	**CCB ID**	**STATUS**
28/08/2024	F-Intel	V 1.0	New Document	Pramod K			Pending

2. Overview -

2.1 Service objectives or Business requirements and the business values added by the service

Use Case: Crop Development Monitoring and Harvest Planning

The Growth Stage card is an essential tool for farmers and agronomists, providing a detailed overview of crop development by integrating scientific data and real-time field conditions that helps in making informed decisions on irrigation, fertilization, and pest management. It displays the standard growth stage based on established crop science alongside the predicted growth stage derived from current field data. This dual view helps users understand the crop's current development stage and estimate the number of days remaining until harvest.

The card also enables users to visualize crop health variability and monitor different vegetation indices in relation to each growth stage. By identifying any anomalies or deviations from expected growth patterns, users can take timely actions to optimize crop management, ensure healthy development, and improve yield outcomes.

3. Pre-requisite Services

#	MODULE NAME	SERVICE NAME	SERVICE CODE
1		Third Party Weather API integration Name: OpenWeather Links: https://openweathermap.org/current	
2		The Data Science team should be granted access to the Weather API, as well as farm registration details (including farm and crop infrastructure) and satellite-based time series data of crop health, NDVI, NDRE, MSAVI and NDMI along with users updated growth stages along with dates.	
3			
4			
5			
6			
7			
8			
9			

4. Add form

4.1

Notes

- Not applicable

Feature:

4.2

Notes

- Not applicable

Field Descriptions

4.4.1. Add form field descriptions

#	FIELD NAME	FIELD DESCRIPTION	ACCEPTANCE DATA/CRITERIA	- ERROR MESSAGE	Sample Example	PREREQUISITE	Mandatory Y/N
			-	-			
			-	-			

5. Customizations Summary Table

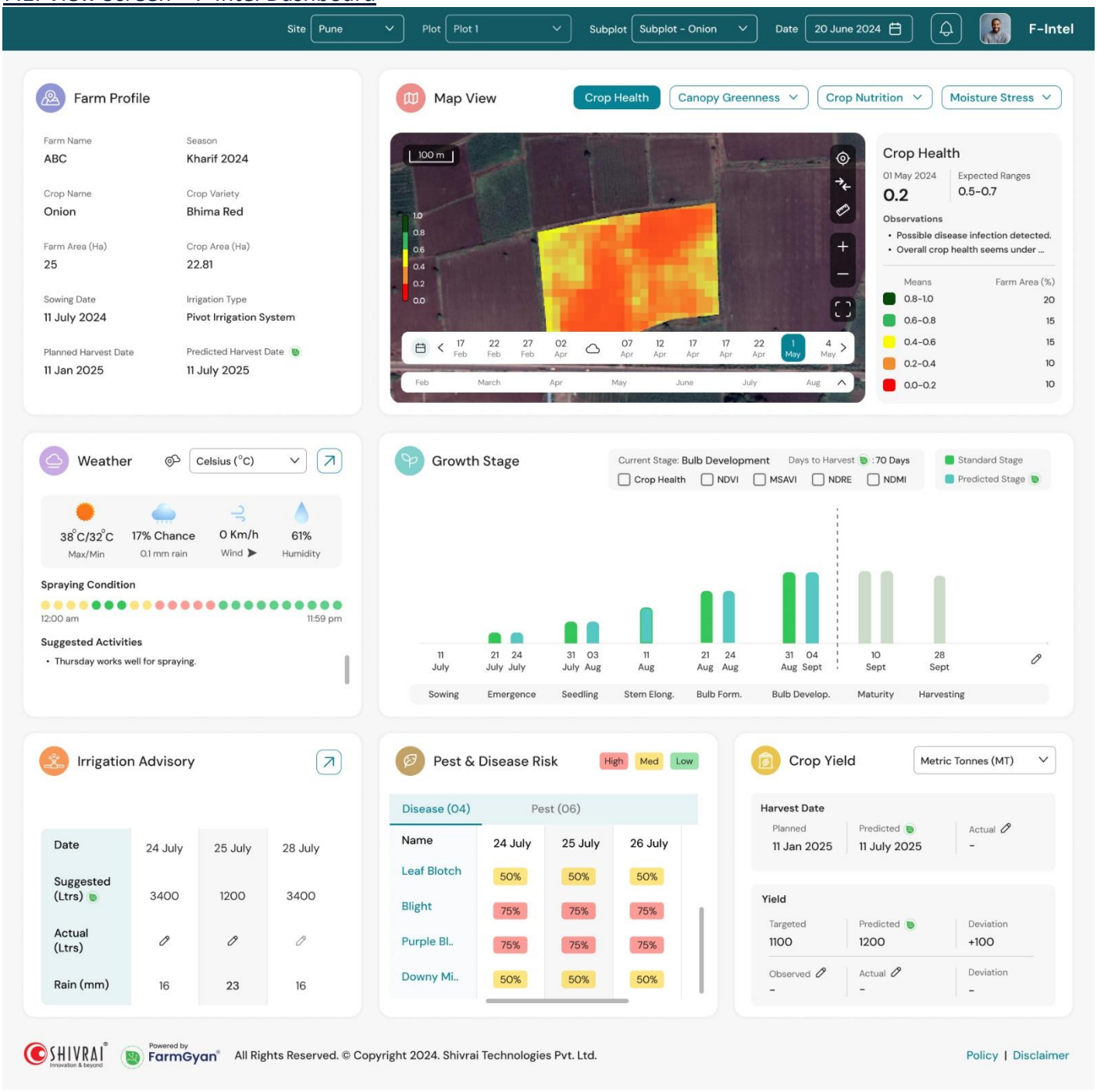
DATE	CLIENT NAME	REQUIREMENT ID	CCB ID	IMPACTED AREA	Change Category	REQUIREMENT STATUS

6. Customization Details/ Use Case

Requirement ID	DevOps ID
Requirement:	

7. View form

7.1. View Screen – F-Intel Dashboard



Notes

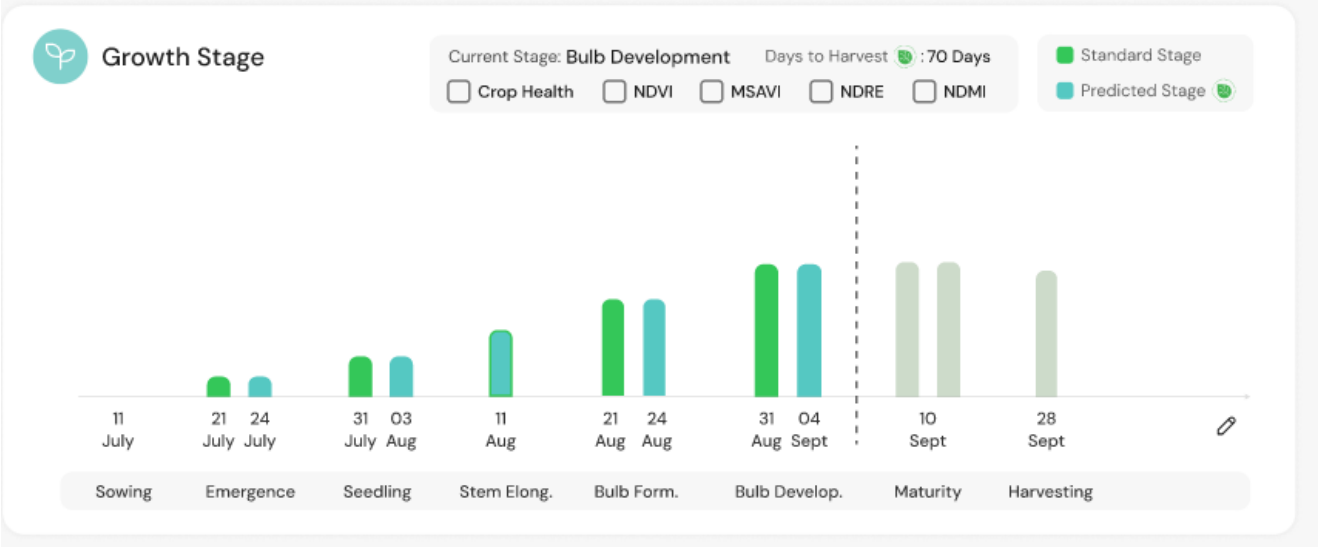
Introducing the F-Intel dashboard, designed to deliver a comprehensive range of insights:

- **Farm Profile**: Provides detailed information about the farm.
- **Map View**: Offers map-based insights into crop health, nutrition, canopy greenness, and moisture stress.
- **Weather Details**: Displays current weather conditions with hourly and daily updates, including suggestions for spraying conditions and recommended activities.

- **Crop Growth Stage**: Tracks the crop's current stage, age, and days to harvest. It also offers insights into crop performance using satellite-based time series data like NDVI, MSAVI, NDRE, and NDMI.
- **Irrigation Advisory**: Recommends the optimal amount of water for irrigation, factoring in actual irrigation and rainwater contribution.
- **Pest and Disease Risk**: Highlights the percentage risk of pests and diseases, complete with images, details, control measures, and expert recommendations.
- **Crop Yield**: Shows planned and predicted harvest dates, allows for input of actual harvest dates, and compares targeted vs. predicted yields. Users can also log field observations during the growing season and actual yields after harvesting to track deviations.

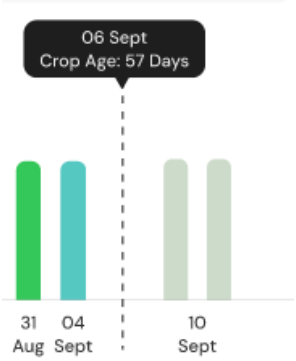
The dashboard presents insights based on the selected site, plot, subplot, and date.

7.2. Feature – Growth Stage - default page



Notes

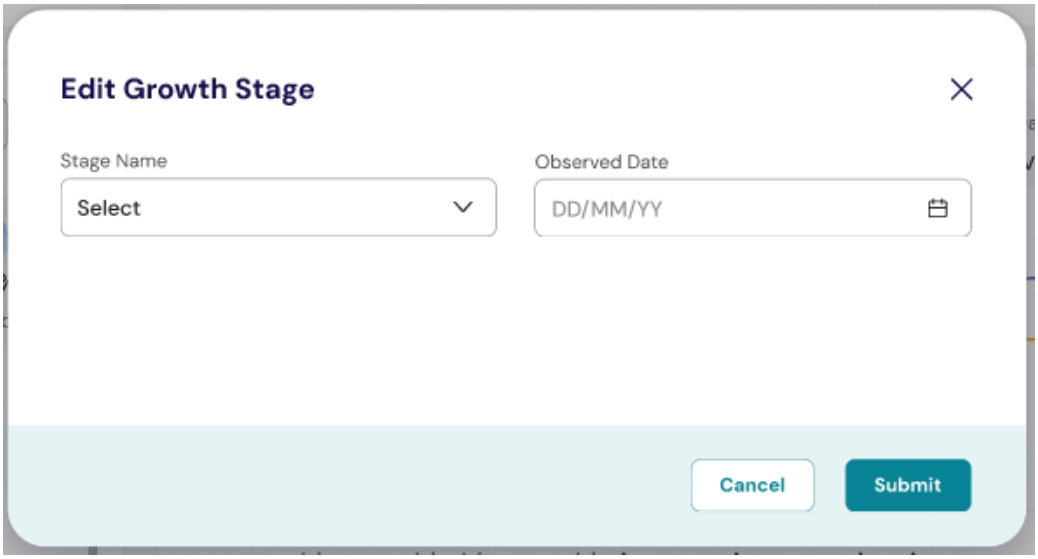
- The Growth Stage Card provides users with a comprehensive view of crop development, covering every stage from sowing to harvest.
- This card informs users of the current crop growth stage and the number of days remaining until harvest.
- The card includes a legend that explains the colors used for the standard stage and the predicted stage.
- The bottom highlighted horizontal area displays the names of the crop growth stages, from sowing to harvesting.
- Vertical bars should be displayed with increasing heights to represent the crop growth stages from sowing to harvest. The standard growth stage is shown in green, while the predicted stage is shown in sky blue.

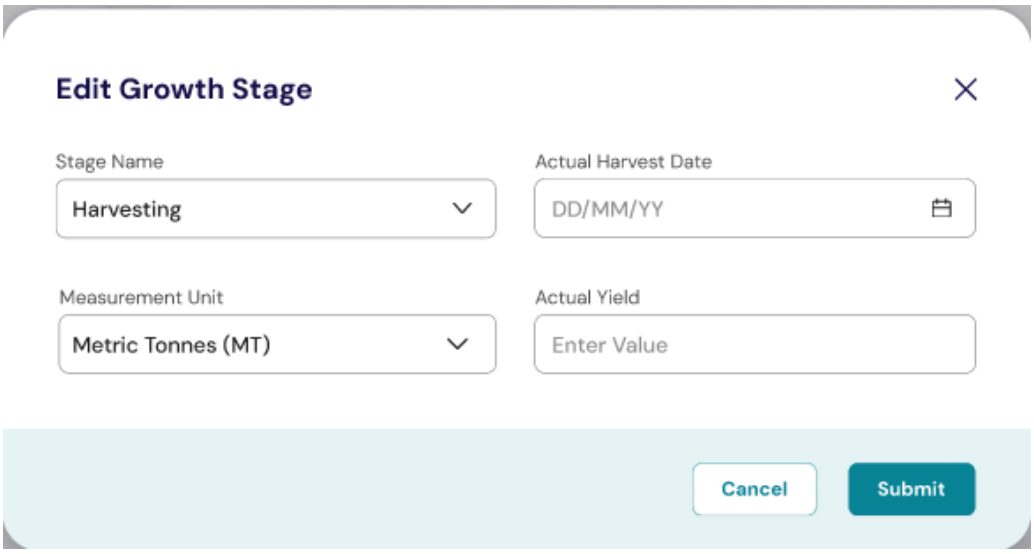


Notes

- A vertical dotted line marks the current date, with a tooltip appearing on hover to display the crop age in days and current date, as illustrated below.

- The pencil symbol offers an edit option, allowing users to update the crop stage dates based on ground observations and submit the changes, as shown below images.



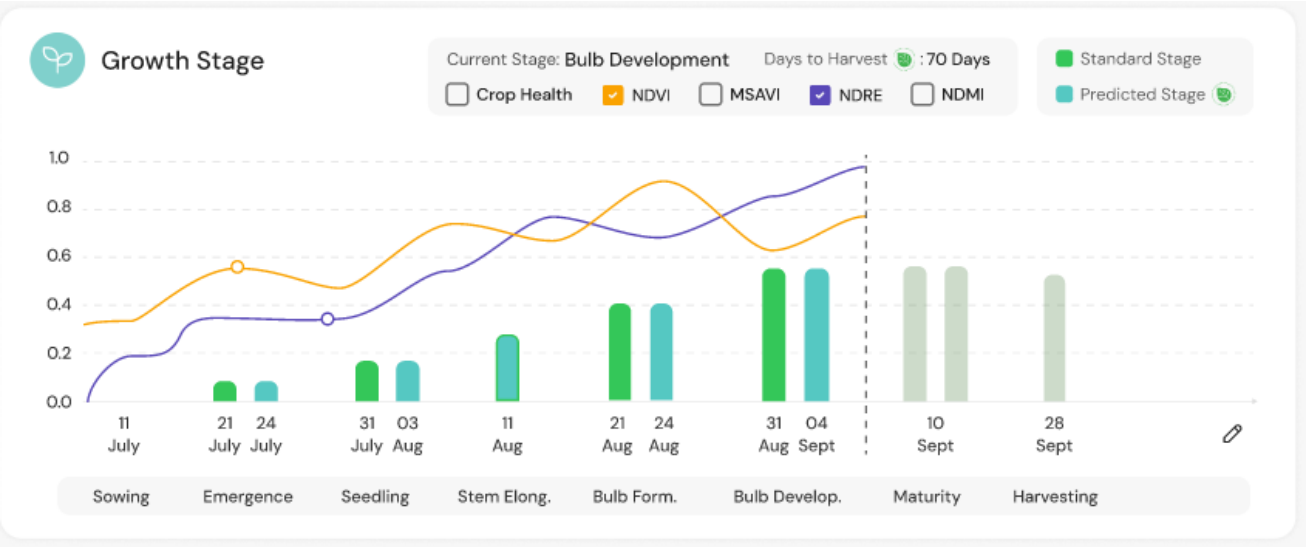


Notes

- Here user can select the stage name for which observed date has to be updated based on ground observations and submit the changes, as shown in the above image.
- When user select the harvesting stage name for which actual harvest date, actual yield and its measurement unit and submit the changes, as shown in the above image.

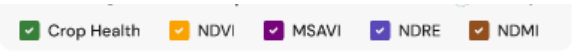
- Checkboxes allows user to select one or multiple indices to view satellite-indices time series data alongside the growth stages, making it easier for user to spot any unusual patterns or issues as shown in below image.

7.2.1. Feature – Growth Stage – time series data overlaid on growth stages

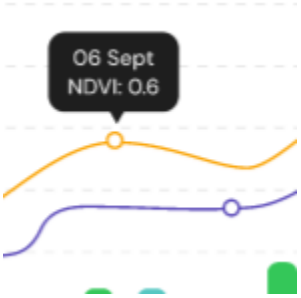


Notes

- It also lets users see how crop health changes over time by showing data in different colors for each index or multiple index.
- After clicking on checkbox, users can view one index or multiple indices these in relation to the growth stages.
- For example, Crop Health is shown in green (color code: 387F39), NDVI in yellow (color code: 914F1E), MSAVI in purple (color code: 77037B), NDRE in blue (color code: 5948B8), and NDMI in brown (color code: FAA200). This helps identify any unusual patterns or issues.



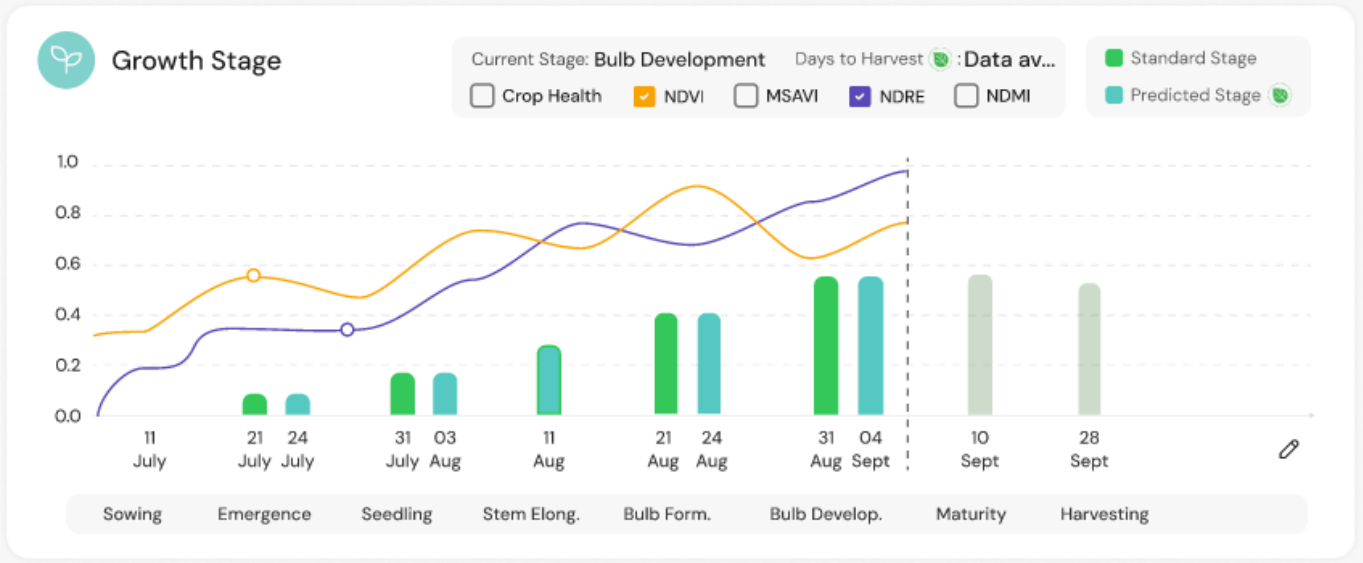
- It displays the index range from 0.0 to 1.0, divided into five equal segments of 0.2 each, with dotted horizontal lines to highlight variability.

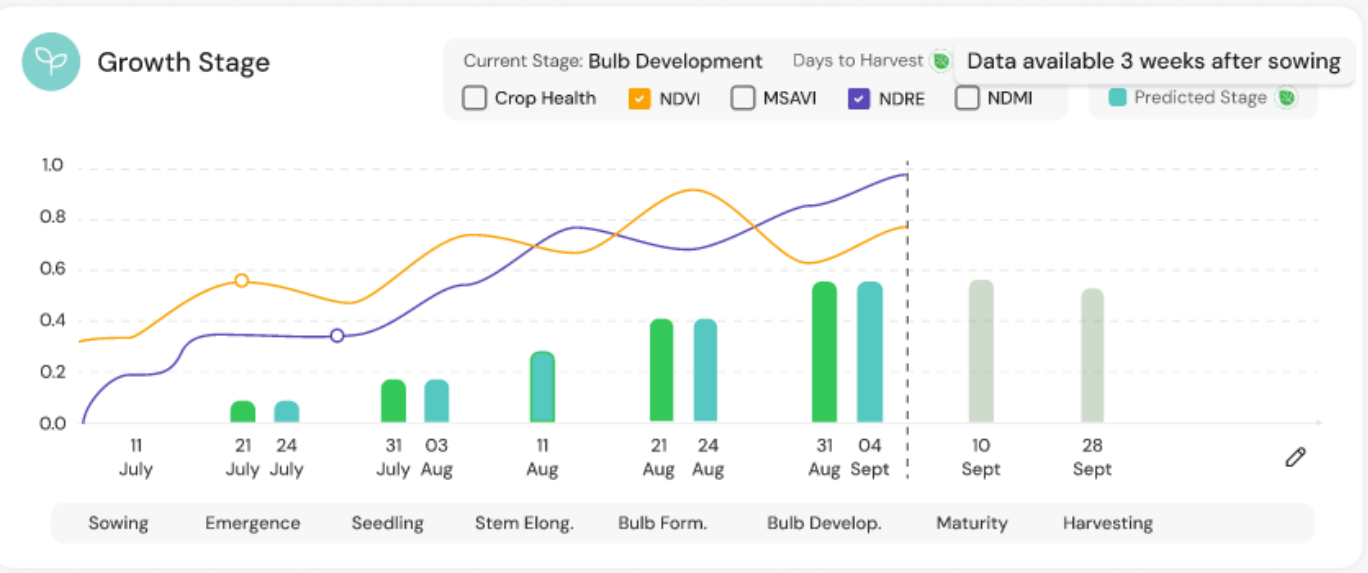


Notes

- Circles on the time series data indicate the dates when a particular index is available, showing the index name and the mean value for the entire crop area, as illustrated in the image below.

7.2.2. Feature – Growth Stage – Days to Harvest data is not available





Notes

- “Data av…” should be displayed and, upon mouse hover, should display the message "Data available 3 weeks after sowing" as shown in the above image above when there is no data to showcase or when processing and displaying the data on the card for "Days to Harvest” takes some time.

7.3. Cancel & Close Functionality

Notes

- Not applicable

7.4. Reverse Functionality

Notes

- Not applicable

7.5. Field Descriptions – Growth Stage - default page

#	FIELD NAME	FIELD DESCRIPTION	ACCEPTANCE DATA/CRITERIA	ERROR MESSAGE	PREREQUISITE	Enabled/Disabled
1	Current stage	This will show the name of the current crop growth stage.	- This is label - This will show name of the current crop growth stage - The growth stage name will be provided by the Farmgyan API	NA	API Name: CropGrowthStageBBCH API Code: CLCN001-BBCH	NA
2	Days to harvest	This will show the number of days remaining to harvest the crop	- This is label - This will show the number of days remaining to harvest the crop - This data will be provided by the Farmgyan API	NA	API Name: CropGrowthStageBBCH API Code: CLCN001-BBCH	NA
3	Crop health	This will display the crop health index time series data from sowing to harvest	- This is label with checkbox - This will display the Crop Health time series data, including the dates of availability and the average value for the crop area - This data will appear from the data derived from satellite data	NA	NA	NA
4	NDVI	This will display the NDVI index time series data from sowing to harvest	- This is label with checkbox - This will display the NDVI time series data, including the dates of availability and the average value for the crop area - This data will appear from the data derived from satellite data	NA	NA	NA
5	MSAVI	This will display the MSAVI index time series data from sowing to harvest	- This is label with checkbox - This will display the MSAVI time series data, including the dates of availability and the average value for the crop area	NA	NA	NA

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			- This data will appear from the data derived from satellite data			
6	NDRE	This will display the NDRE index time series data from sowing to harvest	- This is label with checkbox - This will display the NDRE time series data, including the dates of availability and the average value for the crop area - This data will appear from the data derived from satellite data	NA	NA	NA
7	NDMI	This will display the NDMI index time series data from sowing to harvest	- This is label with checkbox - This will display the NDMI time series data, including the dates of availability and the average value for the crop area - This data will appear from the data derived from satellite data	NA	NA	NA
8	Standard stage	This will explain the meaning of the green color on the growth stage graph	- This label serves as a legend - This data will be provided from the development side.	NA	NA	NA
9	Predicted stage	This will explain the meaning of the sky-blue color on the growth stage graph	- This label serves as a legend - This data will be provided from the development side.	NA	NA	NA
10	Crop growth stage (bottom horizontal)	This will display the names of the crop growth stages, starting from sowing to harvest	- This is a dynamic label expand as per the names of crop growth stages - This will display the names of the crop growth stages, starting from sowing to harvest - These growth stage names will be provided by the Farmgyan API		API Name: CropGrowthStageBBCH API Code: CLCN001-BBCH	
11	Date	This will display the dates when the crop reached the specified standard and predicted growth stages	- This is a dynamic label varies as per the data - This will display the dates when the crop reached the specified standard and predicted growth stages - These dates will be provided by the Farmgyan API		API Name: CropGrowthStageBBCH API Code: CLCN001-BBCH	
12	Vertical bars (Green – Standard Stage,	These bars will display the standard stages in Green and Predicted	- These are static bars representing each growth stage, but their	NA	NA	NA

	Sky blue – Predicted stage)	stage in sky-blue as per the crop growth stages	height increases with each subsequent stage, mimicking real crop growth - These are static bars representing each growth stage, with their height increasing progressively to mimic real crop growth - All stage bars should be of equal height for each stage - The bars for standard stages that have not yet been reached (those in the future) should be displayed in a lighter shade. Stages that have occurred before the current date (indicated by a dotted vertical line) should be shown in their respective colours - Only one predicted stage, immediately following the current date (as shown by the dotted vertical line), should be displayed for future dates as it's based on the available weather forecast data.			
13	Dotted vertical line	This shows the current date and crop age on the particular day	- This is dynamic line varies as per the date changes - This shows the date and crop age in a tooltip after mouse hovering - Crop age data is provided by the Farmgyan API	NA	API Name: CropGrowthStageBBCH API Code: CLCN001-BBCH	NA
14	Date	This shows the date of the current day	- This a label in a tooltip that shows date of the current date	NA	NA	NA
15	Crop Age	This shows the crop age on the particular date	- This a label in a tooltip that shows crop age in days - The per crop growth stages progression crop age in days also changes - Crop age data is provided by the Farmgyan API	NA	API Name: CropGrowthStageBBCH API Code: CLCN001-BBCH	NA
16	Edit pencil	This provides a path to edit the growth stage of the crop	- This is an edit icon - This provides a path to edit the growth stage of the crop which appears in a pop up	NA	NA	NA

17	Stage Name	This offers a dropdown menu with a selection of growth stage names	- This is a label with dropdown menu - The dropdown menu shows list of growth stage names - Growth stage names is provided by the Farmgyan API	NA	API Name: CropGrowthStageBBCH API Code: CLCN001-BBCH	NA
18	Observed Date	This offers a dropdown menu with a selection of date	- This is a label with dropdown menu - The dropdown menu shows calendar in horizontal scrolling	NA	NA	NA
19	Measurement Unit	This will provide the crop yield measurement units in a dropdown	- This is dropdown field - This will provide the crop yield measurement units in a dropdown	NA	NA	NA
20	Actual Yield	This will display the actual yield added by the user upon harvesting	- This is a label - This will display the actual yield added by the user after harvesting the crop	NA	NA	NA

Notes

7.6. Field Descriptions – Growth Stage - time series data overlaid on growth stages

#	FIELD NAME	FIELD DESCRIPTION	ACCEPTANCE DATA/CRITERIA	ERROR MESSAGE	PREREQUISITE	Enabled/Disabled
1	Time series graph(s)	This will show the time series data for each vegetation index and crop health	- These are checkboxes - This displays time series data showing the average or mean value of the entire crop area for each vegetation index and crop health, in their respective colors, from the sowing date to the crop harvesting date	NA	NA	NA
2	Circles on indices	These circles show the date and the average or mean value of the crop area for each vegetation index	- This is a data pointer - These circles indicate the dates of index data availability and display the average or mean value of the crop area for each vegetation index upon mouse hover	NA	NA	NA
3	Index ranges	This will show the index range from 0.0 to 1.0, divided into five equal segments of 0.2 each	- This is label - It displays the index range from 0.0 to 1.0, divided into five equal segments of 0.2 each, with dotted horizontal lines to highlight variability	NA	NA	NA

4	Dotted horizontal lines	This displays lines corresponding to each segment of the index range	- These lines are static - This displays lines corresponding to each segment of the index range	NA	NA	NA

7.7. Scenarios

#	SCENERIO NAME	SCENERIO DESCRIPTION & IMPACT
1	Default page	If the user has not chosen or clicked on vegetation indices check boxes to visualize the time series data overlaid on growth stages then the following information should not be shown: - Time series graph(s) - Circles on indices - Index ranges - Dotted horizontal lines
2	Time series data overlaid on growth stages	If the user has chosen or clicked on vegetation indices check boxes to visualize the time series data overlaid on growth stages then the following information should be shown: - Time series graph(s) - Circles on indices - Index ranges - Dotted horizontal lines
3	Date selection in edit growth stage card	If the user clicks on the dropdown menu to choose a date to select with respect to the selected growth stage then the height of the edit growth stage popup should expand. After date selection
4	Days to harvest data is not available	“Data av…” should be displayed and, upon mouse hover, should display the message "Data available 3 weeks after sowing" as shown in the above image above when there is no data to showcase or when processing and displaying the data on the card for "Days to Harvest” takes some time.

Notes

8. Common Validations

Add Form

#	FIELD NAME	FIELD DESCRIPTION	Applicable Y/N

View Form

#	FIELD NAME	FIELD DESCRIPTION	Applicable Y/N
1			
2			

9. Edit Functionality

Notes

- Not applicable

10. Account Postings

Ledger details	Explanation	Ledger Name	Dr	Cr	Dr	Cr

Notes

- Not applicable

11. Detailed View

Notes

- Not applicable

12. Print View

Notes

- Not applicable

13. Configuration Settings

#	CONFIG SETTING ID	CONFIG SETTING NAME	CONFIG SETTING IMPACT DETAILS

14. Post-Impacted Services & Reports

#	MODULE NAME	SERVICE NAME	SERVICE CODE	DESCRIPTION / IMPACT

Notes

- Not applicable

15. Email Alerts

Notes

- Not applicable