



TerraByte

User Manual

A project for **EPI·USE[®]** by  GeekGurusUnion

Demo 4

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Introduction

Overview of TerraByte

Welcome to TerraByte, the AI-Driven Crop Prediction System designed to revolutionize modern farming. TerraByte leverages advanced Machine Learning and Artificial Intelligence technologies to analyze weather, soil, and crop data, providing farmers with precise predictions about crop health and yield. By integrating multiple data sources, TerraByte empowers farmers to make informed, data-driven decisions that enhance their farming practices and improve overall productivity.

Key Features

- **AI-Powered Predictions:** Utilize state-of-the-art AI and Machine Learning algorithms to predict crop health and yield accurately.
- **Comprehensive Data Analysis:** Analyze a wide range of data inputs, including weather conditions, soil moisture, pH levels, and more.
- **Interactive Dashboards:** Access user-friendly dashboards that present vital information in an easy-to-understand graphical format.
- **Customizable Fields:** Manage and monitor individual fields through a map-based interface, allowing for tailored data input and analysis.
- **Real-Time Monitoring:** Stay updated with real-time data and notifications about the current status and health of your crops.
- **Data Logging:** Maintain detailed logs of all data entries, which can be exported or printed for further analysis.

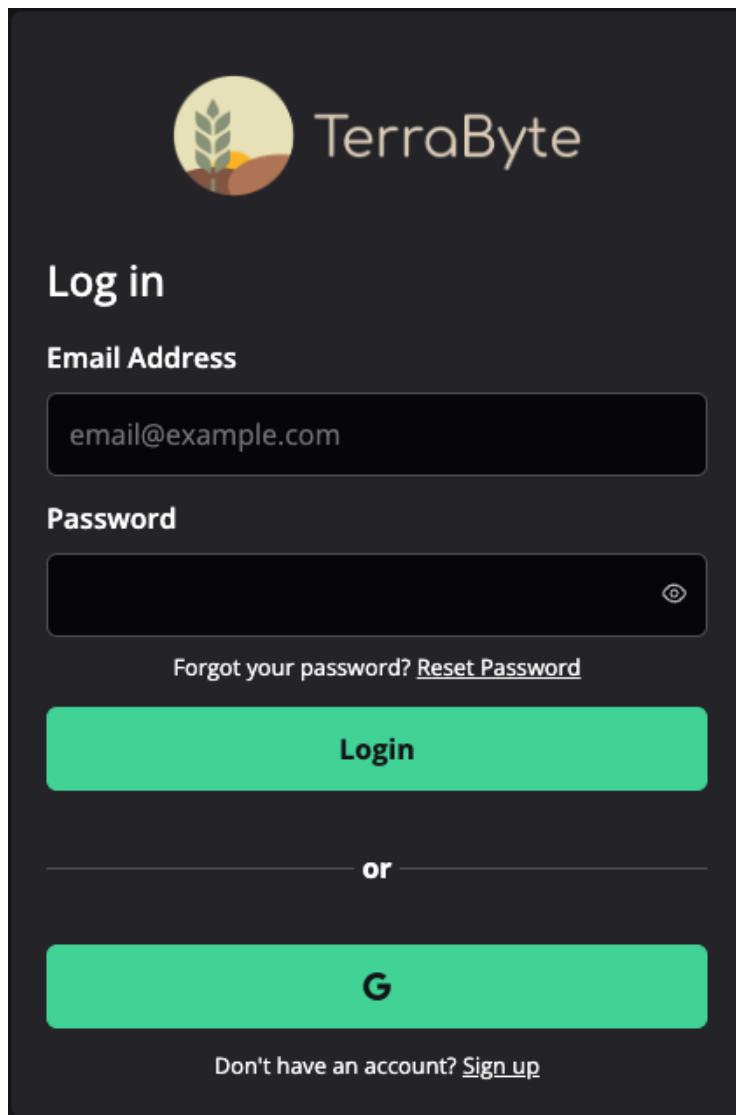
Login Page

This page allows you to log in to your account using your email and password or through Google. Follow the steps below to sign in to your account.

Login Form

The login form consists of two main input fields:

- **Email Address:** Enter the email address associated with your account.
- **Password:** Enter your account password.



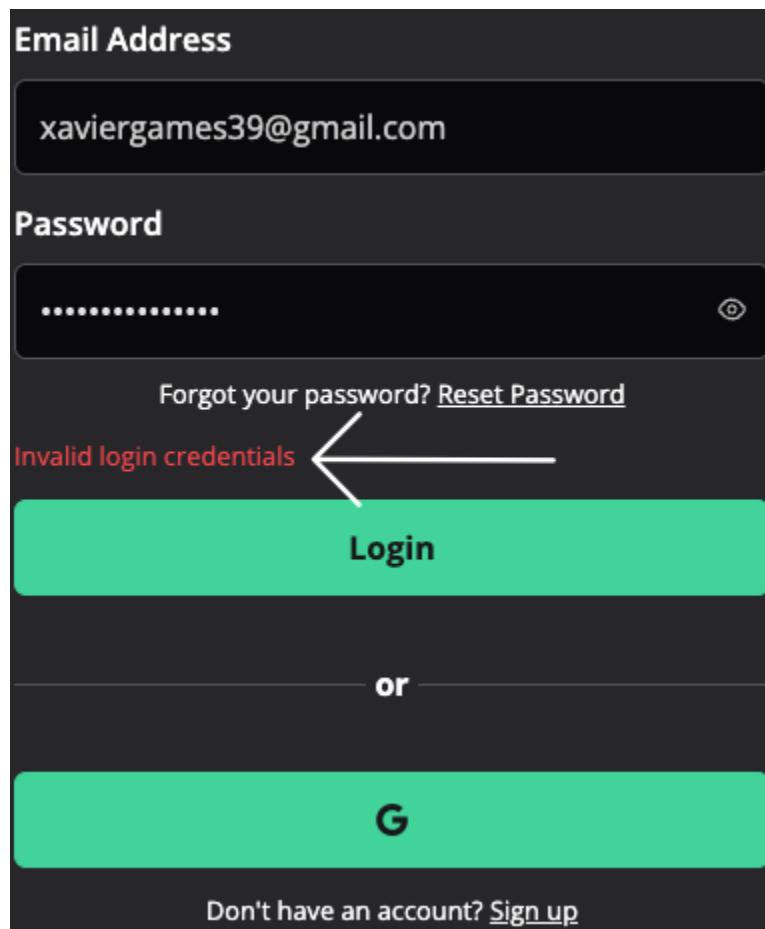
Logging In with Email and Password

To log in with your email and password:

1. Enter your email address in the **Email Address** field.
2. Enter your password in the **Password** field.
3. If you have forgotten your password, click the **Reset Password** link below the password field to reset it.
4. Click the **Login** button to submit your credentials.

Validation

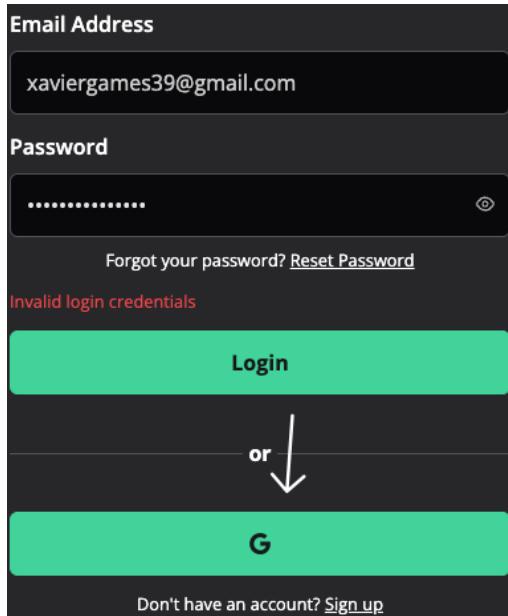
- If the email or password fields are left blank, or if the entered information is incorrect, an error message will appear.
- Ensure that both fields are filled in correctly.



Logging In with Google

You can also log in using your Google account:

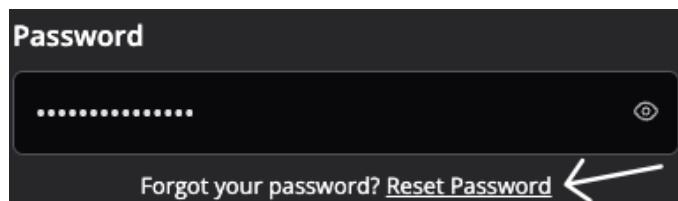
1. Click the **Google Login** button (labeled with a Google icon).
2. You will be redirected to the Google login page. After successful authentication, you will be logged in to your account.



Forgot Your Password?

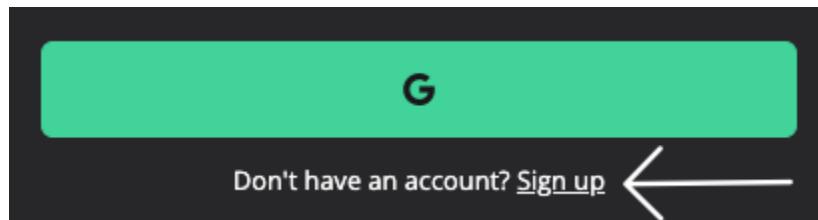
If you cannot remember your password:

1. Click the **Reset Password** link below the password field.
2. You will be redirected to the password reset page, where you can enter your email to receive password reset instructions.



Sign Up for an Account

If you don't have an account, you can create one by clicking the **Sign up** link at the bottom of the login form. You will be taken to the sign-up page, where you can register for a new account.



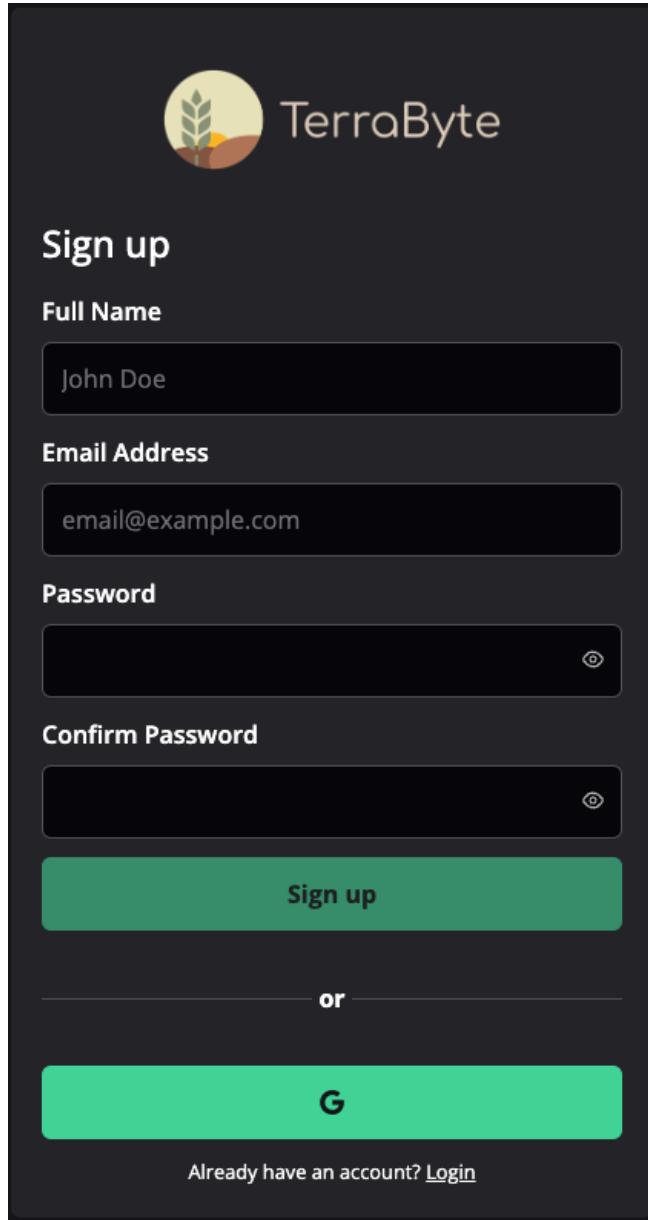
Signup Page

This page allows you to create a new account by entering your details and choosing a secure password. You can sign up using your email and password, or use your Google account.

Signup Form

The signup form consists of the following fields:

- **Full Name:** Enter your full name, which will be used to personalize your account.
- **Email Address:** Enter a valid email address that will be used to log in and receive account notifications.
- **Password:** Choose a secure password following the guidelines provided.
- **Confirm Password:** Re-enter your password to ensure it matches.



Creating Your Account

To create your account:

1. **Full Name:** Enter your full name.
2. **Email Address:** Enter a valid email address.
3. **Password:** Choose a password that meets the following requirements:
 - At least one lowercase letter.

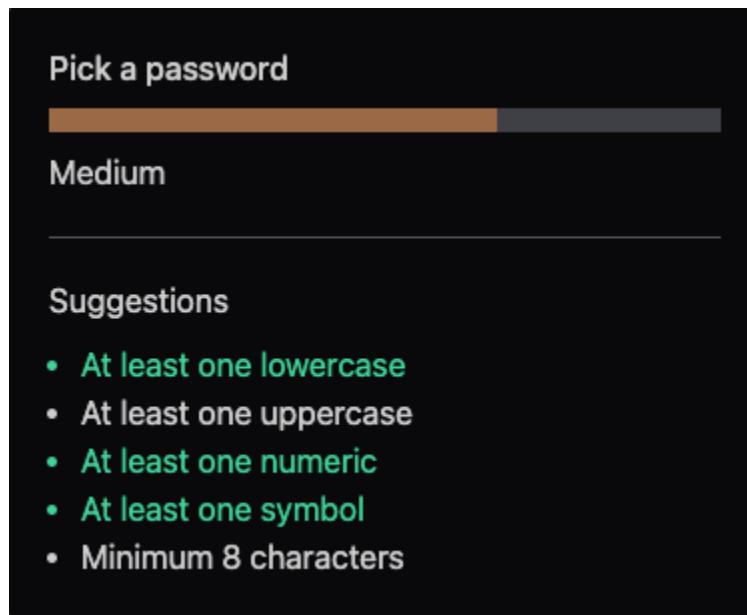
- At least one uppercase letter.
- At least one number.
- At least one symbol.
- Minimum of 8 characters.

4. **Confirm Password:** Enter the same password to confirm.

After filling out the form, click the **Sign Up** button to create your account.

Password Strength Suggestions:

- The form will provide real-time feedback on your password strength and whether it meets the requirements.
- If the passwords do not match, you will see an error message.



Account Confirmation

Once you have successfully signed up, a success message will appear instructing you to check your email for account confirmation. Click the link in the email to activate your account.

Signing Up with Google

You can sign up using your Google account:

1. Click the **Google Sign Up** button (labeled with a Google icon).
2. You will be redirected to Google to authenticate and link your account.

Already Have an Account?

If you already have an account, click the **Login** link at the bottom of the signup form to go to the login page.

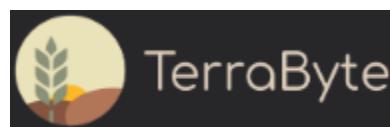
Navigating the App

The navigation bar (navbar) allows you to easily access different parts of the app and manage your account settings. Here's a breakdown of the elements and features included in the navbar.

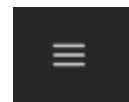
Main Sections of the Navbar

The navbar consists of the following main sections:

- **Logo:** Clicking the logo will take you back to the homepage.



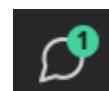
- **Sidebar:** This contains additional navigation links for managing various parts of the app.



- **User Menu:** A user menu icon allows you to access your account settings, manage teams, toggle the theme, view help, and log out.



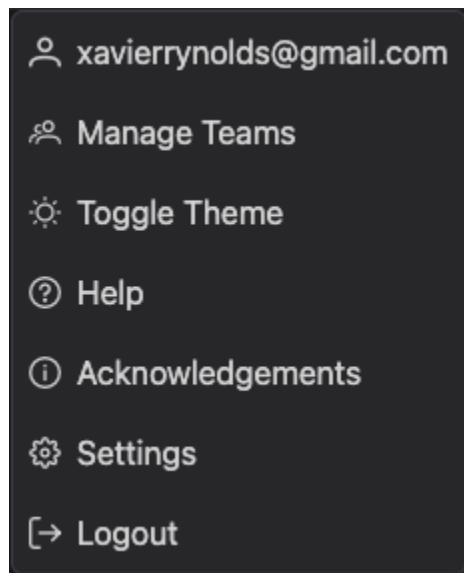
- **Chat Icon:** A chat icon is available to notify you of unread messages and access the team chat.



Accessing Account and Team Management

By clicking the **User Menu** icon (profile icon), you can access the following options:

- **Email:** View your current logged-in email.
- **Manage Teams:** Access the team management page to view and manage your team members.
- **Toggle Theme:** Switch between light and dark mode.
- **Help:** Access help resources for the app.
- **Acknowledgements:** View app acknowledgements.
- **Settings:** Manage account settings.
- **Logout:** Log out of your account.



Settings Page

The **Settings Page** allows you to manage your account information and preferences, including updating your profile details and toggling between light and dark modes.

Account Information

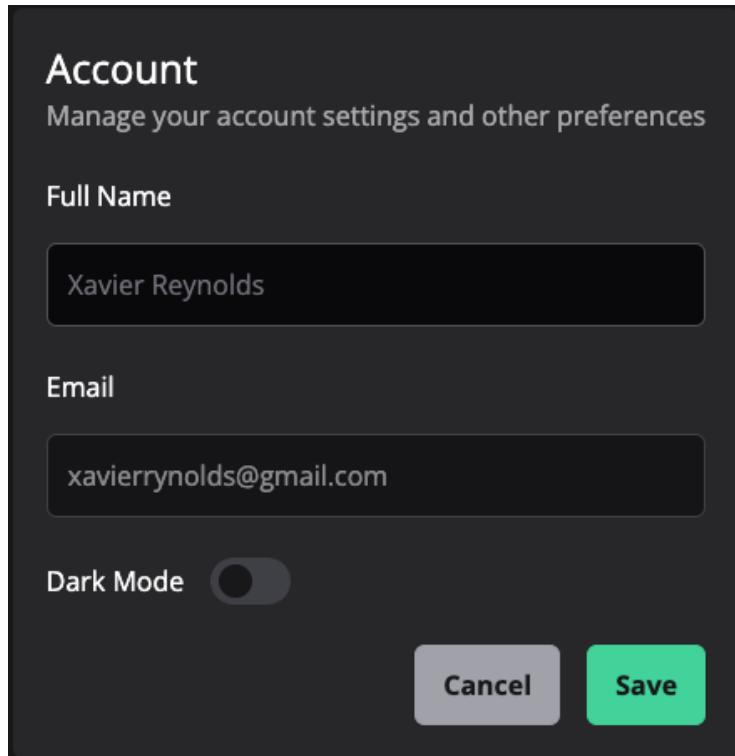
On this page, you can view and update your account details such as your full name and email address.

Full Name:

- To change your full name, edit the **Full Name** field.
- Your current name will be pre-filled, but you can enter a new name if needed.

Email:

- Your email address is displayed, but it is not editable.



Dark Mode

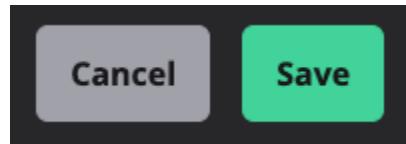
You can switch between **Light Mode** and **Dark Mode** for your app interface.

- To toggle **Dark Mode**, use the **Dark Mode** switch.
- When enabled, the app will use dark colors for the background.

Saving or Cancelling Changes

Once you've made the desired changes to your profile:

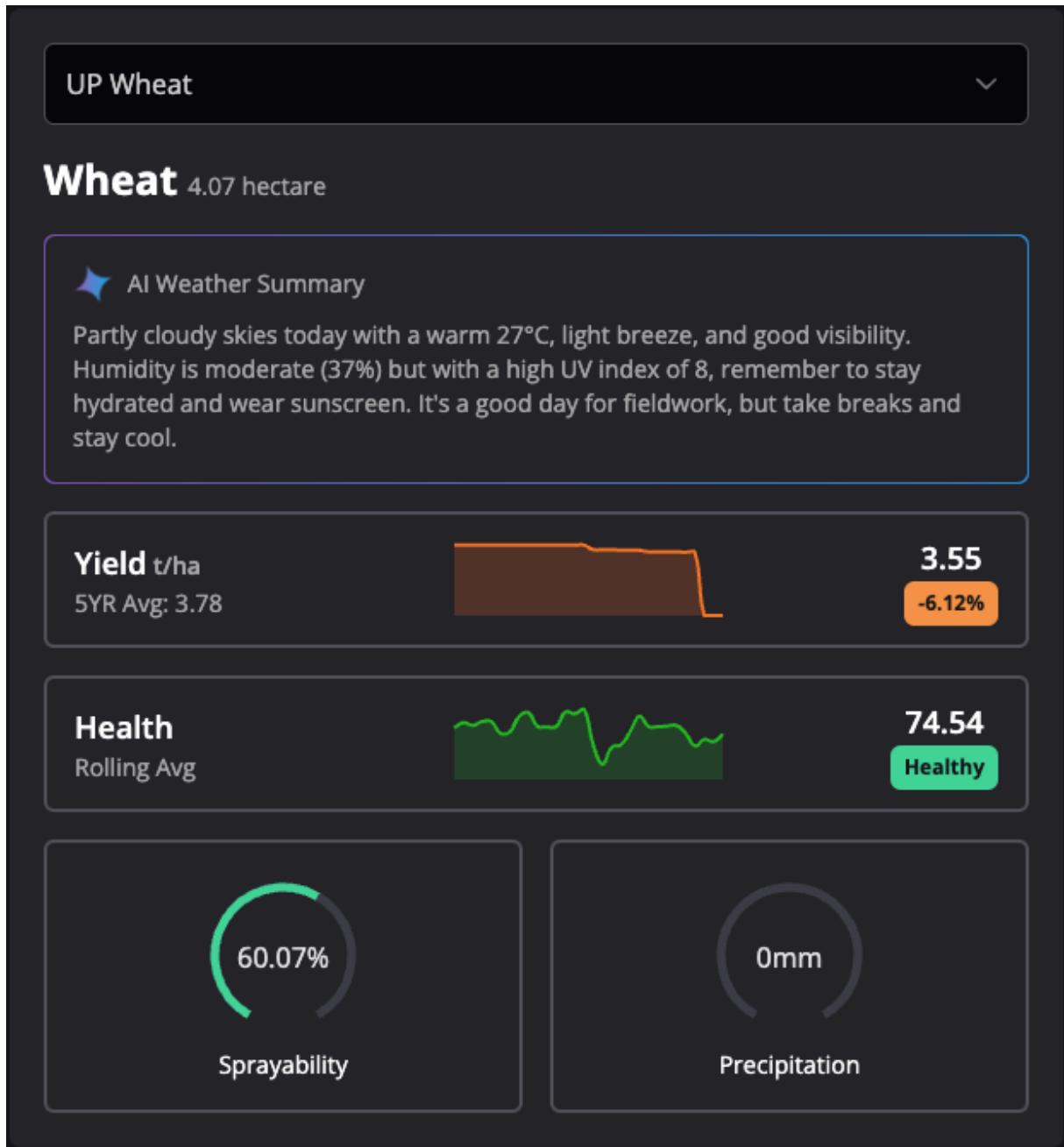
- **Save:** Click the **Save** button to apply the changes. You will see a success message confirming that your profile has been updated.
- **Cancel:** Click the **Cancel** button to discard any changes made.



Field Dashboard (Home Page)

The Field Dashboard allows you to monitor and analyze your fields using interactive maps and charts. Follow this guide to make the most of the dashboard's features.

Field Card



Selecting a Field

At the top of the Field Card, you'll find a dropdown labeled 'Select a Field'. Use this to select the field you want to analyze. Once selected, the dashboard automatically updates with data for that specific field.



Field Information

After selecting a field, the **FieldCard** provides key information about the field:

- **Crop Type:** Displays the type of crop planted.
- **Hectare:** Indicates the size of the field in hectares.
- **AI Weather Summary:** Shows weather conditions using AI-generated insights.
- **Yield:** Predicts the tons per hectare (t/ha) and compares it to past averages.
- **Health:** Visualizes the health status of the field using trend charts.
- **Sprayability:** Determines if the field is suitable for spraying agrochemicals.
- **Precipitation:** Displays the current day's precipitation forecast.

Maps Interface

The **GoogleMapsField** component shows the fields on an interactive map. Fields are color-coded for better visualization:

- **Selected Field:** Highlighted in green.
- **Unselected Fields:** Highlighted in purple.

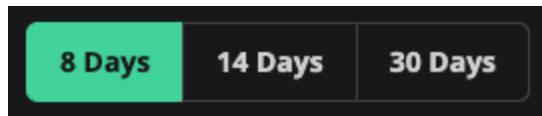
You can select a different field by clicking on it directly on the map.



Advanced Statistics

To access detailed statistics, click the **More Field Stats** button at the bottom of the page. This will open the **Advanced Statistics** panel, providing additional information about the field.

You can filter the data based on the number of days by selecting an option from the filter dropdown at the top. If data for a particular time frame is not available, the option will be disabled.

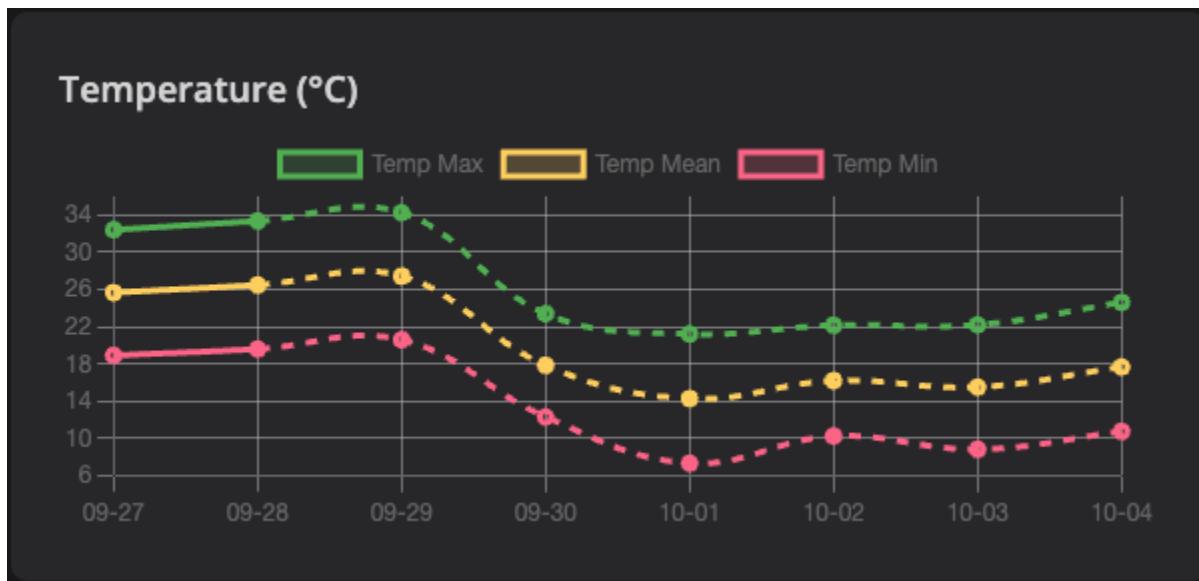


Viewing Statistics

The **Advanced Statistics** panel includes charts that show data on the following:

- Soil Moisture
- Soil Temperature
- Sprayability
- Precipitation
- Temperature
- Dew Point
- Humidity
- Pressure
- UV Index

These charts are interactive, and hovering over data points provides more details.

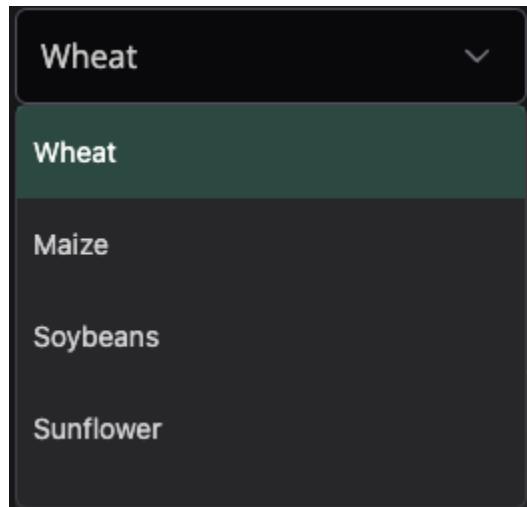


Revenue Dashboard (Market Page)

The Revenue Dashboard allows you to view and analyze market data for various crops. Follow the guide below to understand how to navigate and use the dashboard efficiently.

Selecting a Crop

At the top of the dashboard, you'll find a dropdown. Use this to select the crop you wish to analyze. Once you select a crop, the dashboard will automatically update to display related data.



Viewing Hectare and Yield Data

After selecting a crop, two cards will display important information:

- **Selected Crop Hectare:** Shows the total area (in hectares) of your team's fields for the selected crop.
- **Selected Crop t/ha:** Displays the combined predicted yield (tons per hectare, t/ha) for the selected crop in your team's fields.

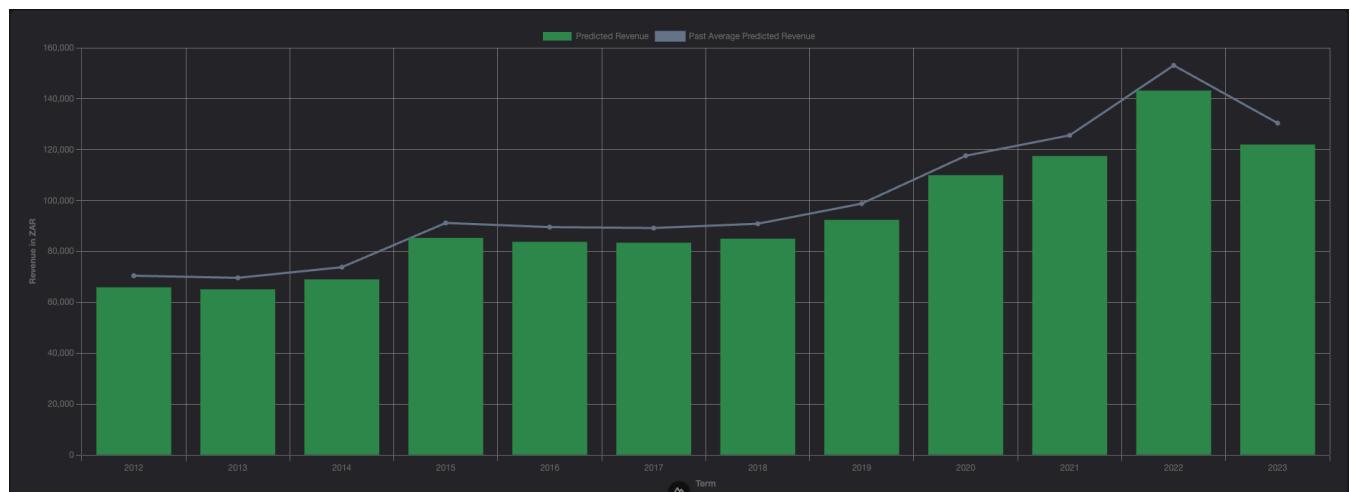


Revenue Chart

If data is available, the dashboard will show a revenue chart. This chart displays:

- **Predicted Revenue:** Revenue prediction for the selected crop over the last 12 terms. This is based on the predicted yield of the combined fields for a crop type.
- **Past Average Predicted Revenue:** Historical revenue data for the selected crop over the same period. This is based on the past average yield for a crop type.

This helps you compare current predictions with past trends.



Interacting with the Chart

You can interact with the revenue chart in the following ways:

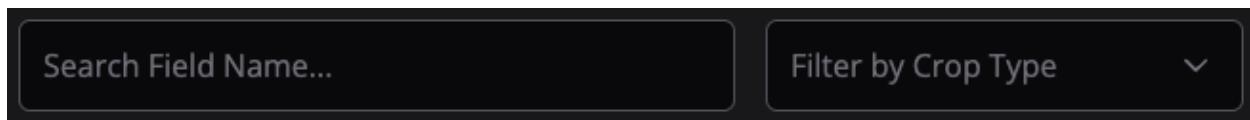
- **Toggle datasets:** Use the legend below the chart to show or hide specific datasets.
- **Hover for details:** Hover over data points on the chart to view detailed revenue data for each term.

Manage Fields Page

This page allows you to view, edit, train, and delete your team's fields. Follow the steps below to manage your fields effectively.

Searching and Filtering Fields

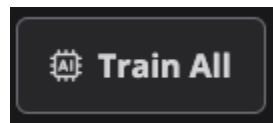
Use the search bar to find fields by name. You can also filter fields by crop type using the dropdown menu.



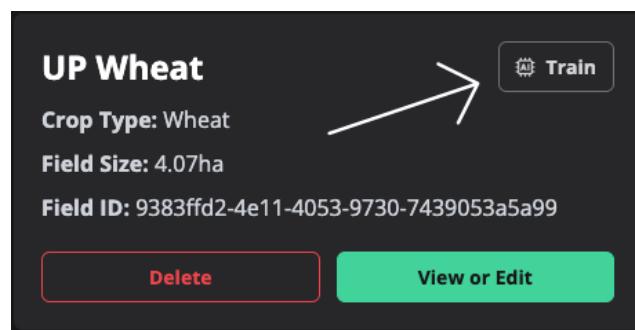
Training Fields

You have two options to train your fields:

- **Train All:** Click the **Train All** button (labeled "Train All" with an AI icon) to schedule training for all fields.



- **Train Individual Field:** Click the **Train** button on a field card to schedule training for that specific field.



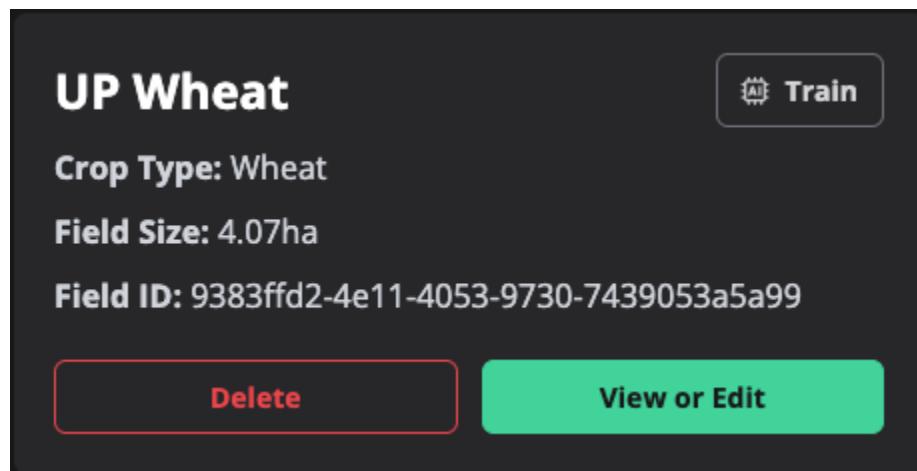
Training fields trains field models and gives new predictions on your expected yield.

Viewing Field Details

Each field is displayed as a card containing key information:

- **Field Name:** The name of the field.
- **Crop Type:** The type of crop planted in the field.
- **Field Size:** The size of the field in hectares.
- **Field ID:** A unique identifier for the field.

At the bottom of each card, you can click the **View or Edit** button to update the field or the **Delete** button to remove it.

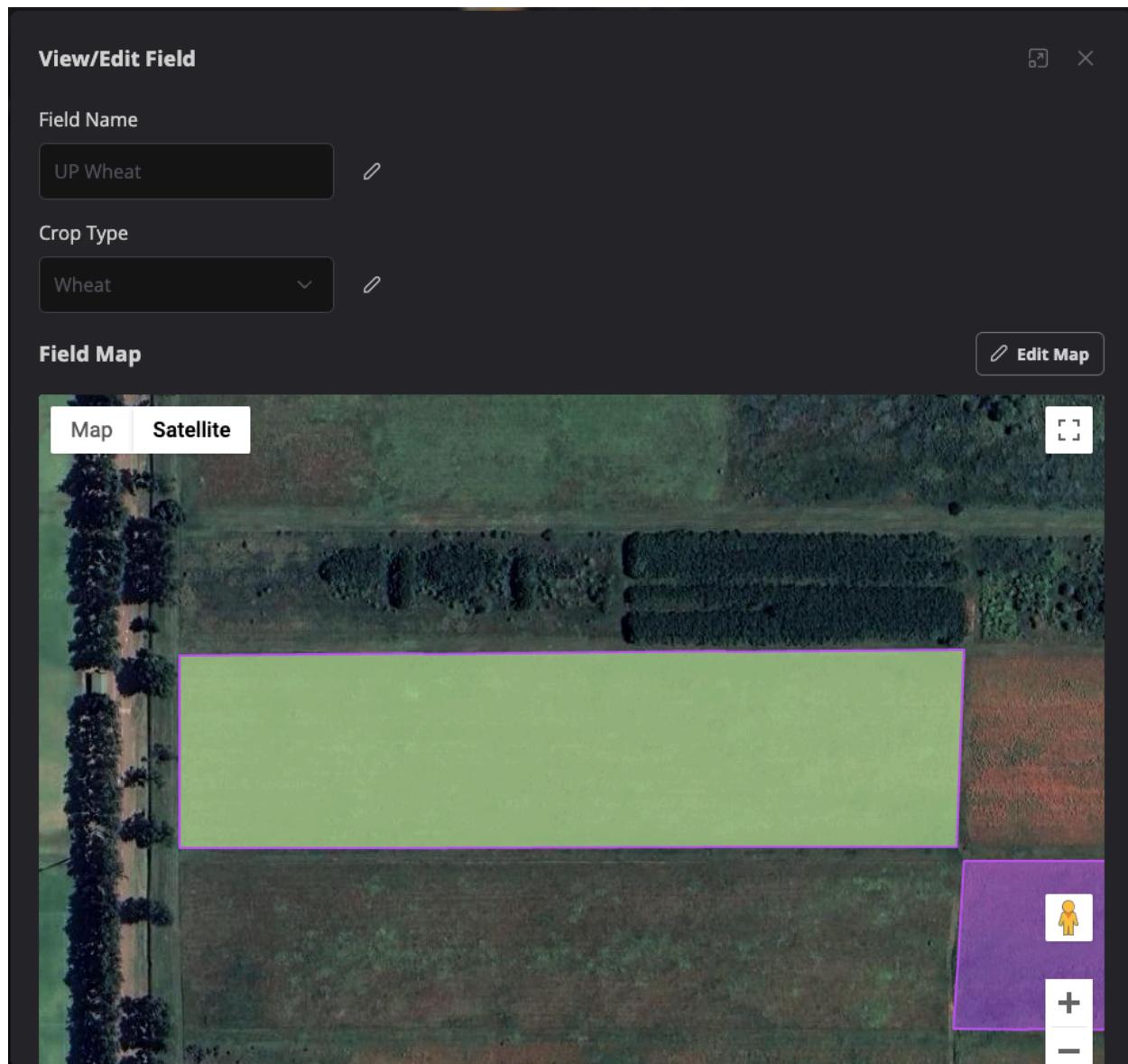


Editing a Field

To edit a field, click the **View or Edit** button on the field card. This opens a dialog where you can:

- **Edit Field Name:** Click the pencil icon next to the field name, update the name, and click the check icon to save.
- **Edit Crop Type:** Click the pencil icon next to the crop type, select a new crop from the dropdown, and click the check icon to save.

- **Edit Field Map:** Click the **Edit Map** button to adjust the field polygon on the map. Drag the corners or move the polygon as needed. Click **Save Changes** to confirm your edits.



Add Field Page

This page guides you through the process of adding a new field to your account. The process consists of three main steps: providing field information, drawing the field boundaries, and confirming your input.

Field Info

In the first step, you need to enter the basic details about your field:

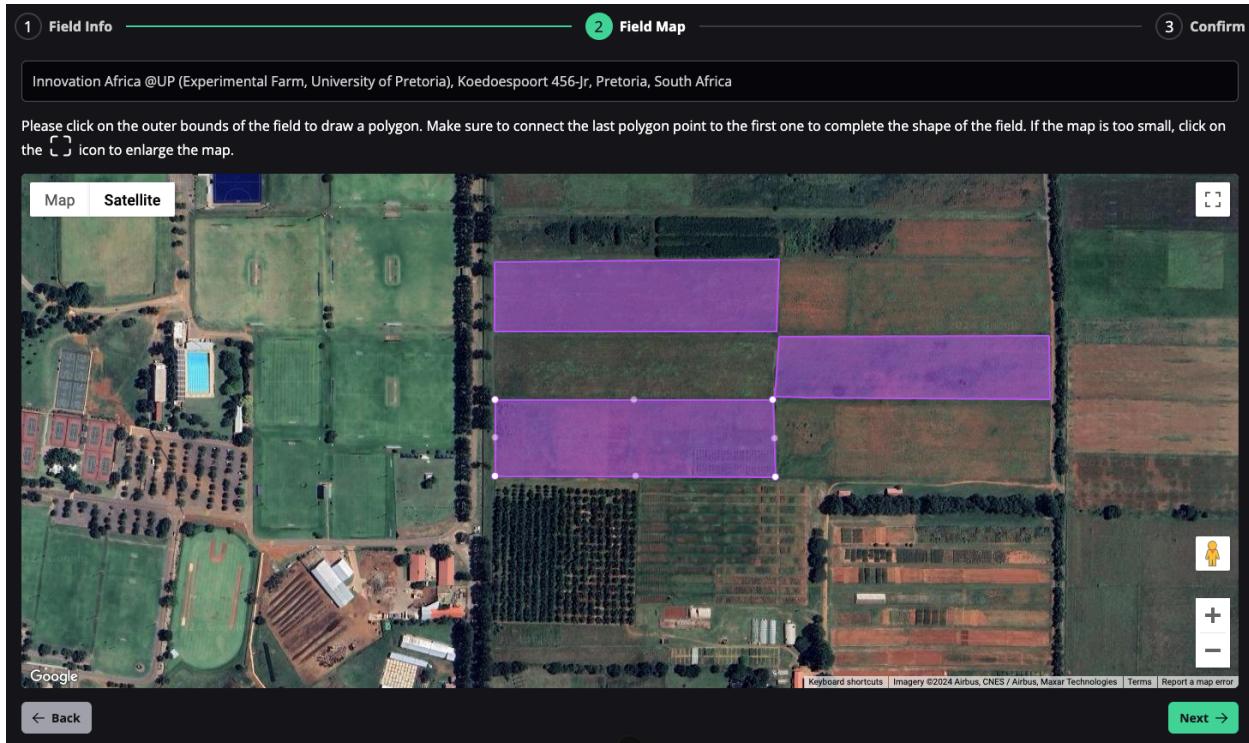
- **Field Name:** Enter a unique name for your field.
- **Crop Type:** Select the type of crop you are planting from the dropdown menu.

The screenshot shows the 'Field Info' step of the 'Add Field Page'. The progress bar at the top indicates three steps: 1. Field Info (highlighted in green), 2. Field Map, and 3. Confirm. Below the progress bar, there are two input fields: 'Field Name' (placeholder: 'Name') and 'Select a Crop Type' (dropdown menu). A note below the name field says 'Enter your new field name above.'. At the bottom right, there is a 'Next →' button.

Mapping Fields

In this step, you will define the boundaries of your field on an interactive map:

- Locate the field area on the map.
- Use the drawing tools to outline the boundaries of the field.
- You can adjust the shape by dragging the corners or edges of the polygon.

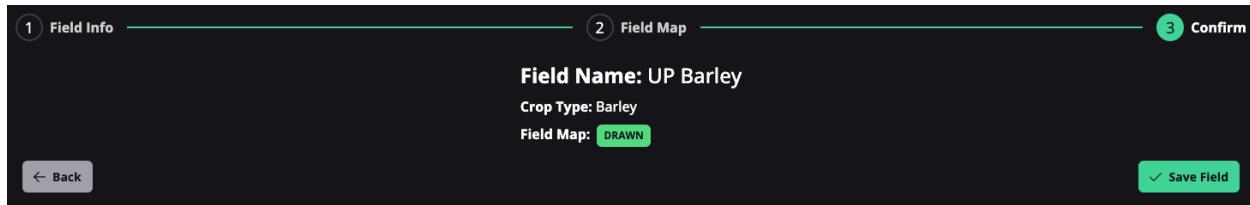


Confirm Field

Before finalizing, review the information you have entered:

- **Field Name:** Ensure that the field name is correct.
- **Crop Type:** Double-check that you've selected the right crop type.
- **Field Map:** Verify that the field area is accurately drawn.

If everything looks good, click the **Save Field** button to save your new field.



View/Manage Logs Page

This page allows you to view and manage your field data entries. You can edit certain fields directly in the table and perform actions such as exporting data or printing charts.

Data Table

The table displays data entries for your field. Some fields are editable directly in the table, while others are read-only.

- **Editable Fields:** You can modify the following fields: `tempmax`, `tempmin`, `tempmean`, `pressure`, `humidity`, `dew_point`, `rain`, `uvi`, `soil_moisture`, and `soil_temperature`.
- **Non-Editable Fields:** These fields cannot be modified: `health`, `yield`, and `sprayability`.

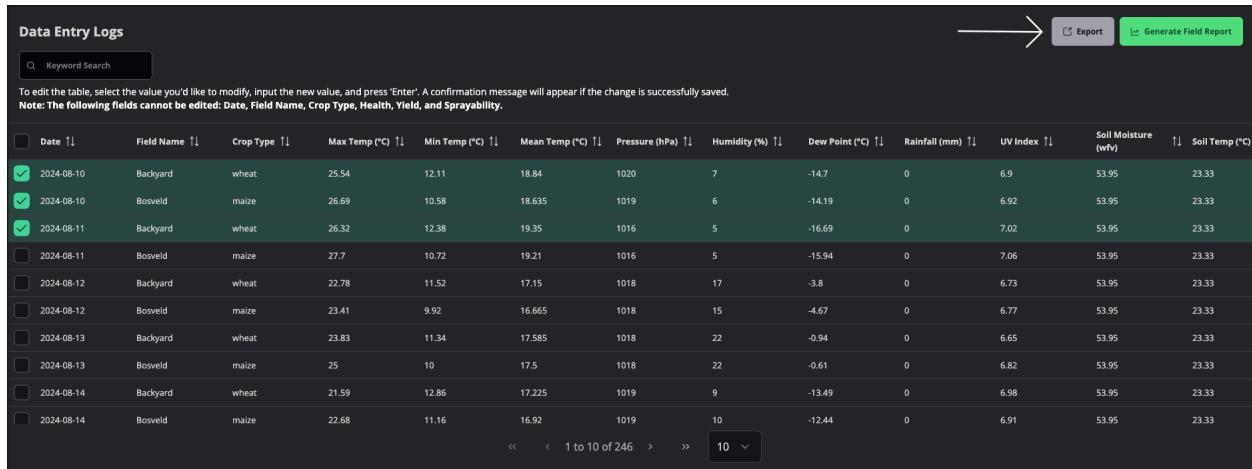
To edit a field, click on the cell, make your changes, and press Enter on your keyboard to save, or press Esc on your keyboard to cancel the changes.

Data Entry Logs													<input type="button" value="Export"/>	<input type="button" value="Generate Field Report"/>
<input type="checkbox"/>	Date ↑↓	Field Name ↑↓	Crop Type ↑↓	Max Temp (°C) ↑↓	Min Temp (°C) ↑↓	Mean Temp (°C) ↑↓	Pressure (hPa) ↑↓	Humidity (%) ↑↓	Dew Point (°C) ↑↓	Rainfall (mm) ↑↓	UV Index ↑↓	Soil Moisture (w/v) ↑↓	Soil Temp (°C) ↑↓	
To edit the table, select the value you'd like to modify, input the new value, and press 'Enter'. A confirmation message will appear if the change is successfully saved. Note: The following fields cannot be edited: Date, Field Name, Crop Type, Health, Yield, and Sprayability.														
<input type="checkbox"/>	2024-08-10	Backyard	wheat	25.54	12.11	18.84	1020	7	-14.7	0	6.9	53.95	23.33	
<input checked="" type="checkbox"/>	2024-08-10	Bosveld	maize	26.69	10.58	18.635	1019	6	-14.19	0	6.92	53.95	23.33	
<input checked="" type="checkbox"/>	2024-08-11	Backyard	wheat	26.32	12.38	19.35	1016	5	-16.69	0	7.02	53.95	23.33	
<input checked="" type="checkbox"/>	2024-08-11	Bosveld	maize	27.7	10.72	19.21	1016	5	-15.94	0	7.06	53.95	23.33	
<input checked="" type="checkbox"/>	2024-08-12	Backyard	wheat	22.78	11.52	17.15	1018	17	-3.8	0	6.73	53.95	23.33	
<input checked="" type="checkbox"/>	2024-08-12	Bosveld	maize	23.41	9.92	16.665	1018	15	-4.67	0	6.77	53.95	23.33	
<input checked="" type="checkbox"/>	2024-08-13	Backyard	wheat	23.83	11.34	17.585	1018	22	-0.94	0	6.65	53.95	23.33	
<input checked="" type="checkbox"/>	2024-08-13	Bosveld	maize	25	10	17.5	1018	22	-0.61	0	6.82	53.95	23.33	
<input checked="" type="checkbox"/>	2024-08-14	Backyard	wheat	21.59	12.86	17.225	1019	9	-13.49	0	6.98	53.95	23.33	
<input type="button" value="<<"/> <input type="button" value="<"/> <input type="button" value="1 to 10 of 246"/> <input type="button" value=">"/> <input type="button" value=">>"/>													<input type="button" value="10"/>	<input type="button" value="▼"/>

Actions

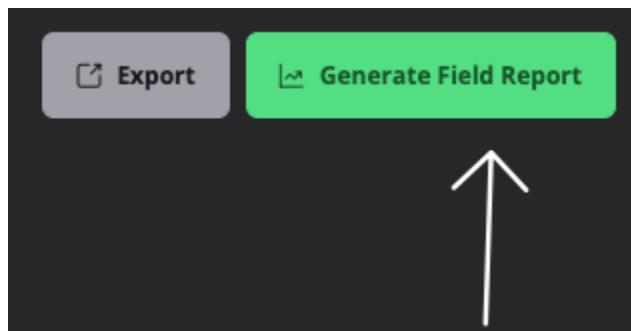
You can perform the following actions on the selected data entries:

- **Export Selected to CSV:** Export the selected rows to a CSV file.



Date	Field Name	Crop Type	Max Temp (°C)	Min Temp (°C)	Mean Temp (°C)	Pressure (hPa)	Humidity (%)	Dew Point (°C)	Rainfall (mm)	UV Index	Soil Moisture (wfv)	Soil Temp (°C)
2024-08-10	Backyard	wheat	25.54	12.11	18.84	1020	7	-14.7	0	6.9	53.95	23.33
2024-08-10	Bosveld	maize	26.69	10.58	18.635	1019	6	-14.19	0	6.92	53.95	23.33
2024-08-11	Backyard	wheat	26.32	12.38	19.35	1016	5	-16.69	0	7.02	53.95	23.33
2024-08-11	Bosveld	maize	27.7	10.72	19.21	1016	5	-15.94	0	7.06	53.95	23.33
2024-08-12	Backyard	wheat	22.78	11.52	17.15	1018	17	-3.8	0	6.73	53.95	23.33
2024-08-12	Bosveld	maize	23.41	9.92	16.665	1018	15	-4.67	0	6.77	53.95	23.33
2024-08-13	Backyard	wheat	23.83	11.34	17.585	1018	22	-0.94	0	6.65	53.95	23.33
2024-08-13	Bosveld	maize	25	10	17.5	1018	22	-0.61	0	6.82	53.95	23.33
2024-08-14	Backyard	wheat	21.59	12.86	17.225	1019	9	-13.49	0	6.98	53.95	23.33
2024-08-14	Bosveld	maize	22.68	11.16	16.92	1019	10	-12.44	0	6.91	53.95	23.33

- **Print Charts:** Generate charts based on the selected data and open the print dialog. Charts will only be displayed when exporting.



Manage Teams Page

This page allows you to manage your team members, including viewing member details, editing roles, inviting new members, and removing members from your team.

Viewing Team Members

The table below lists all the members of your team, displaying their name, email address, and role within the team.

- **Name:** Full name of the team member.
- **Email Address:** The email address associated with the team member.
- **Role:** The role the member plays in the team.

My Team			
Name	Email Address	Role	Actions
Iwan de Jong	idj.dejong@gmail.com	Farm Manager	
Tiaan 3	tiaangames02@gmail.com	Data Analyst	
Tiaan	tiaansteph@gmail.com	Data Analyst	
Piet Pretorius	reynoldscoenraad@gmail.com	Data Analyst	
Xavier Test Reynolds	xavierrynolds@gmail.com	Farm Manager	

Editing Member Roles

To change a team member's role:

1. Click the **Pencil** icon next to the member's name.
2. A dropdown will appear, allowing you to select a new role from the list.
3. After selecting the role, click the **Check** button to save the changes.

Roles Available:

- **Farm Manager:** Has full access to manage the team and fields.
- **Farmer:** Can view and update field data.

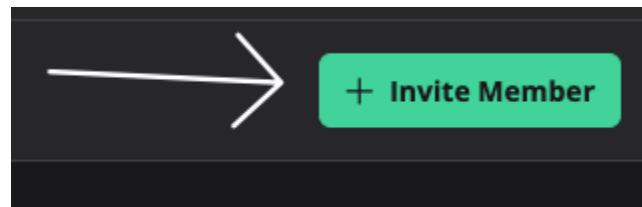
- **Data Analyst:** Can analyze field data but cannot make changes.

Name	Email Address	Role	Actions
Xavier Reynolds	xavierrynolds@gmail.com	Farm Manager	
Tiaan	tiaansteph@gmail.com	Data Analyst	
Piet Pretorius	reynoldscoenraad@gmail.com	Farm Manager	
Iwan de Jong	idj.dejong@gmail.com	Data Analyst	

Inviting New Members

To invite someone to your team:

1. Click the **Invite Member** button at the bottom of the team table.



2. A dialog box will appear where you can enter the new member's email and select their role.

Add Member ×

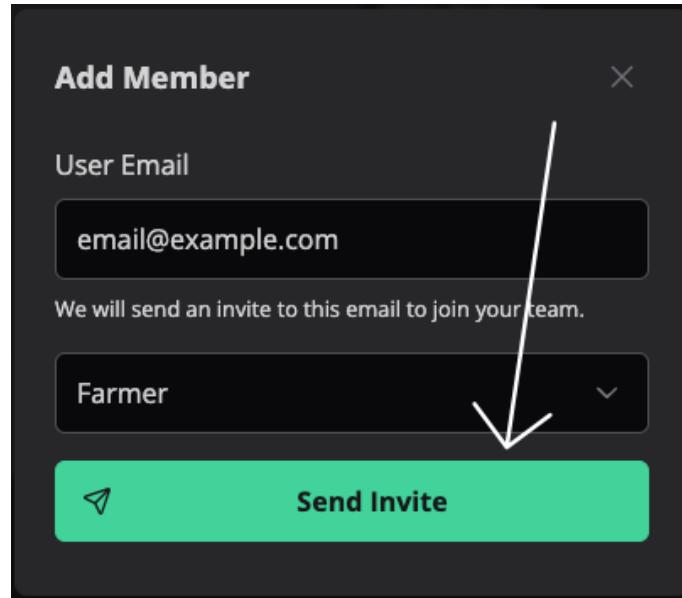
User Email

We will send an invite to this email to join your team.

Role

↗
Send Invite

3. Click the **Send Invite** button to send the invitation.



Joining a Team Without an Account

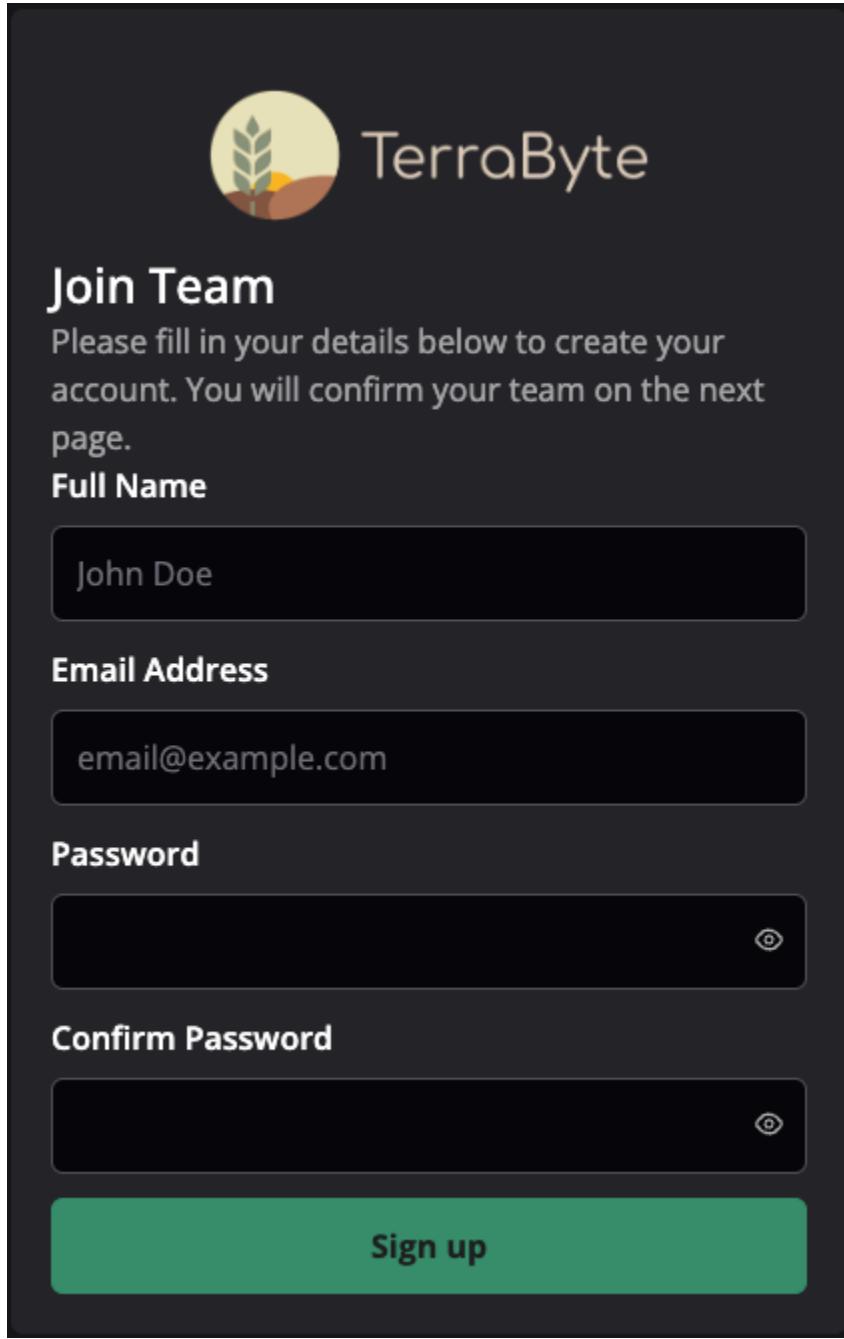
If you don't have an account, follow these steps to join a team:

1. **Click the First Link** in the invitation email. This will take you to the **Accept Team Invitation** page.
2. Fill in your details to **create an account** and confirm your invitation to the team.

Step-by-Step Instructions:

1. **Create Account:**
 - **Full Name:** Enter your full name.
 - **Email Address:** Enter your email address (this should be the same one you received the invite on).
 - **Password:** Choose a secure password that meets the following criteria:
 - At least one lowercase letter
 - At least one uppercase letter
 - At least one number
 - At least one symbol

- Minimum 8 characters
- **Confirm Password:** Re-enter your password to ensure it matches.



2. **Sign Up:**

- After filling in your details, click the **Sign Up** button to create your account.

3. Join Team Modal:

- After clicking **Sign Up**, the **Join Team** modal will appear. The team code should be automatically populated based on the invitation. If the code is not present, use the team code provided in your email to fill in the input field manually.
- Verify that the code matches the one from your email.
- Click the **Join Team** button to finalize your team membership.

4. Image Prompt: Insert a screenshot of the Join Team modal with the team code input field and the Join Team button.

5. Email Confirmation:

- After joining the team, you will need to **check your email** to confirm your account. Go to your inbox and click the confirmation link to activate your account.
- If you haven't received the email, check your spam or junk folder.

Joining a Team with an Existing Account

If you already have an account, follow these steps to join the team:

1. Click the Second Link in the invitation email. This will take you to the **Team Confirmation** page.

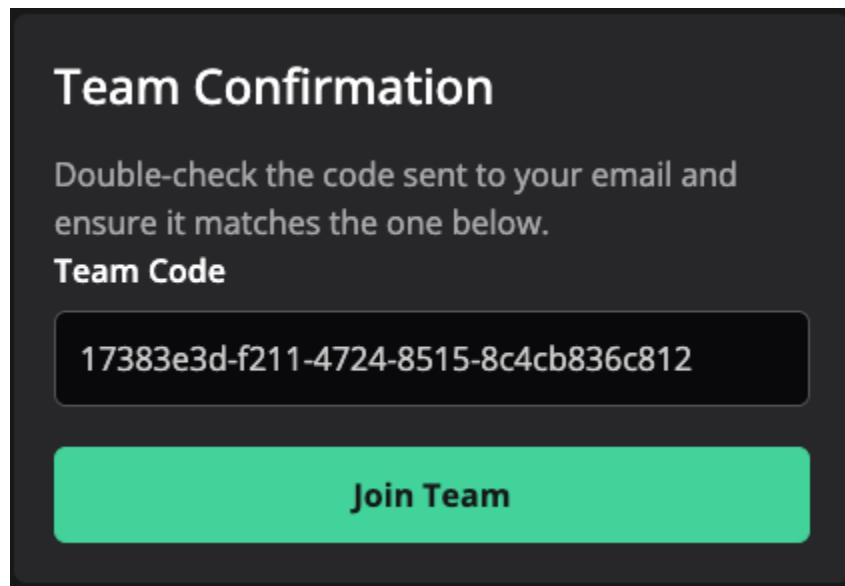
2. Team Confirmation:

- The team code will be automatically populated. Verify that it matches the code from your email.
- Click the **Join Team** button to join the team.

Step-by-Step Instructions:

1. Confirm Team Membership:

- The system will display the team code. Verify that the code matches the one in your email.
- Click **Join Team** to officially join the team.



2. Success Message:

- Once you successfully join the team, you will see a success message indicating that you've joined the team and your team data has been updated.

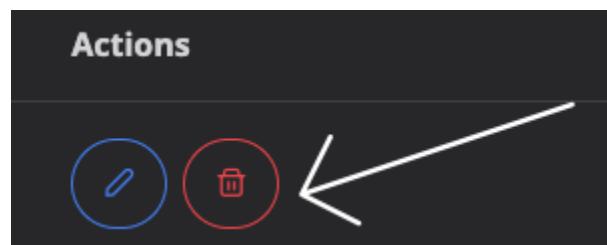
3. Error Handling:

- If there are any issues while joining the team (e.g., network errors or incorrect team code), an error message will appear. Please retry or contact support if the issue persists.

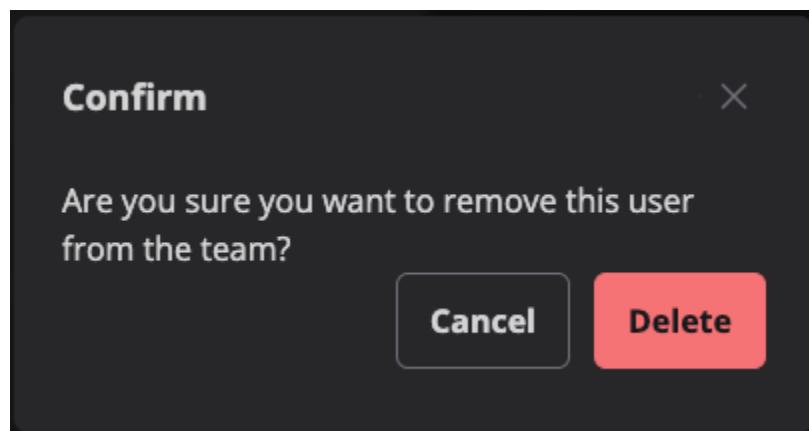
Removing Members

To remove a member from your team:

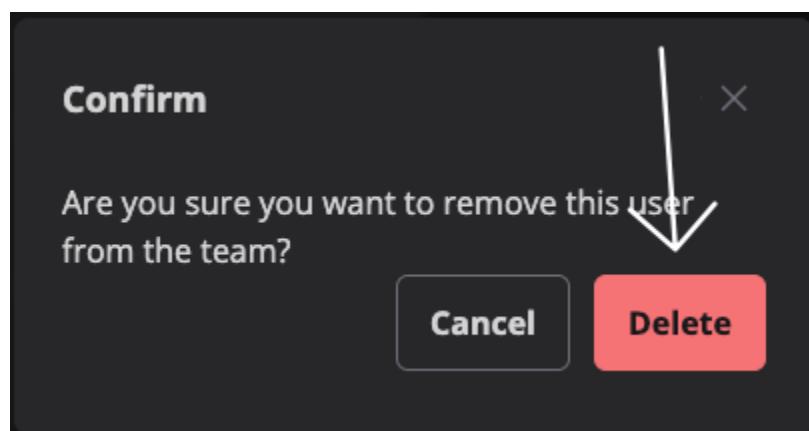
- Click the **Trash** icon in the user's row.



2. A confirmation dialog will appear, asking if you're sure you want to remove the member.



3. Click the **Delete** button to confirm the removal.



Team Chat Page

This page allows you to communicate with your team members in real-time. You can send messages, view messages from other members, and stay connected with your team.

Chat Layout

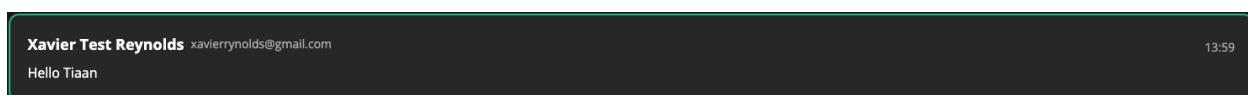
The chat page is divided into three main sections:

- **Header:** Contains the navigation bar for easy access to other parts of the app.
- **Messages Area:** Displays all messages from your team members.
- **Message Input:** Allows you to compose and send new messages.

Viewing Messages

The messages area displays all chat messages from your team members. Messages are grouped by date and appear with the following information:

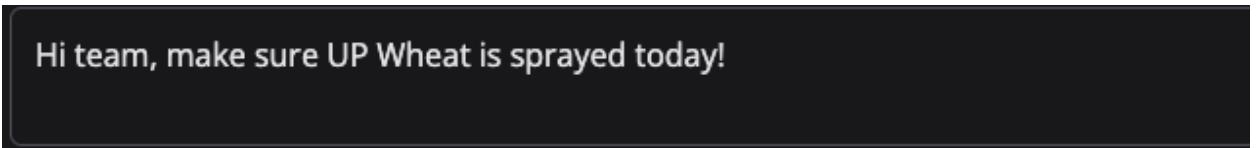
- **Sender's Name:** Name of the team member who sent the message.
- **Email Address:** Email address of the sender.
- **Time Sent:** Time the message was sent.
- **Message Content:** The text of the message.



Sending Messages

To send a message to your team:

1. Type your message in the input area at the bottom of the chat.



Hi team, make sure UP Wheat is sprayed today!

2. Press the Enter key or click the **Send** button (labeled with a send icon) to send your message.



Message Features

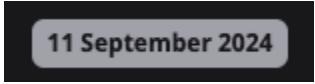
Each message displays the following details:

- **Sender's Name:** The name of the person who sent the message.
- **Email Address:** The email address of the sender.
- **Time Sent:** When the message was sent.
- **Message Content:** The actual content of the message.

Your messages are styled differently for easy identification.

Date Tags

Date tags separate messages from different days to help organize the chat. These tags automatically appear at the start of each new day's messages.



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Real-Time Updates

The chat updates in real-time, meaning you will automatically see new messages from team members without refreshing the page. If there is an error while sending a message, an error notification will appear. Please check your internet connection or try again later.