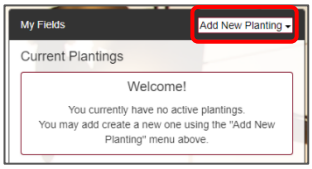
# Statewide Irrigation Management Assistant - Quick Start Guide

The Irrigation Management Assistant (IMA) was originally developed for the Benton SWCD and funded by the Environment and Natural Resources Trust Fund (ENRTF). As part of a 2021 ENRTF grant to the University of Minnesota, the tool has been expanded statewide and research is underway to refine the irrigation scheduling logic and bring Minnesota specific data to directly to the equations that drive irrigation recommendations.

## Getting Started

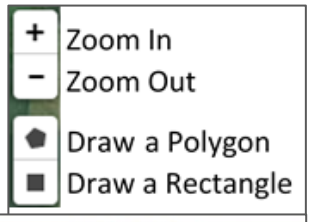
- Go to: http://ima.respec.cloud/
- Click the **Create Account>>** button
- Enter your Name, email address and a password and then click **Register**. You'll see a message that we need to approve your account. When approved, you will be notified that your account is ready for use.
- Once you receive confirmation login to the site.
- This first login needs to be from a desktop so you can set up a field. You will see a Welcome message that simply lets you know to add your first field. Click the **Add New Planting** dropdown in the blue header of this box and select **Draw New Field**.



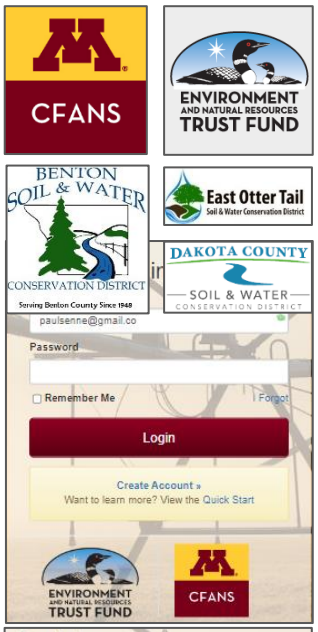

- In the "**Create a New Field**" window that opens, complete the details about the field you are creating. The Field Name, Irrigation Delivery Rate in GPM, Initial Soil Moisture, Crop Type and Planting Date are all required fields

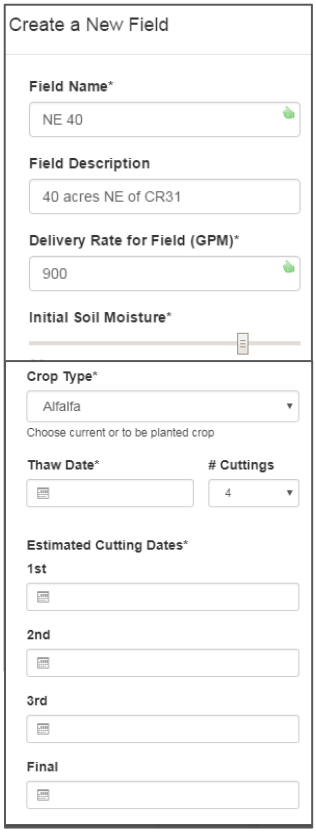
  **Note, when creating the field, the values you enter will carry through the growing season. You can later come back and edit these values; when the field is re-created user override values are captured and re-applied to the planting with new parameters.*

- Next, move your mouse over the web map and use the mouse wheel to zoom in on the area where your field is located. Alternatively, you may use the **Zoom In** and **Zoom Out** buttons on the map toolbar. When your field is in view, press the **Draw a Polygon** tool. With the tool selected, left click along the boundary of your field to outline it. Keep in mind that the boundary you draw will be used in irrigation recommendation calculations. If you make a mistake, use the **Delete last point** tool that is displayed while editing. When you have completed drawing your field, press the first point to close the polygon.



- Press **Create Field>>**



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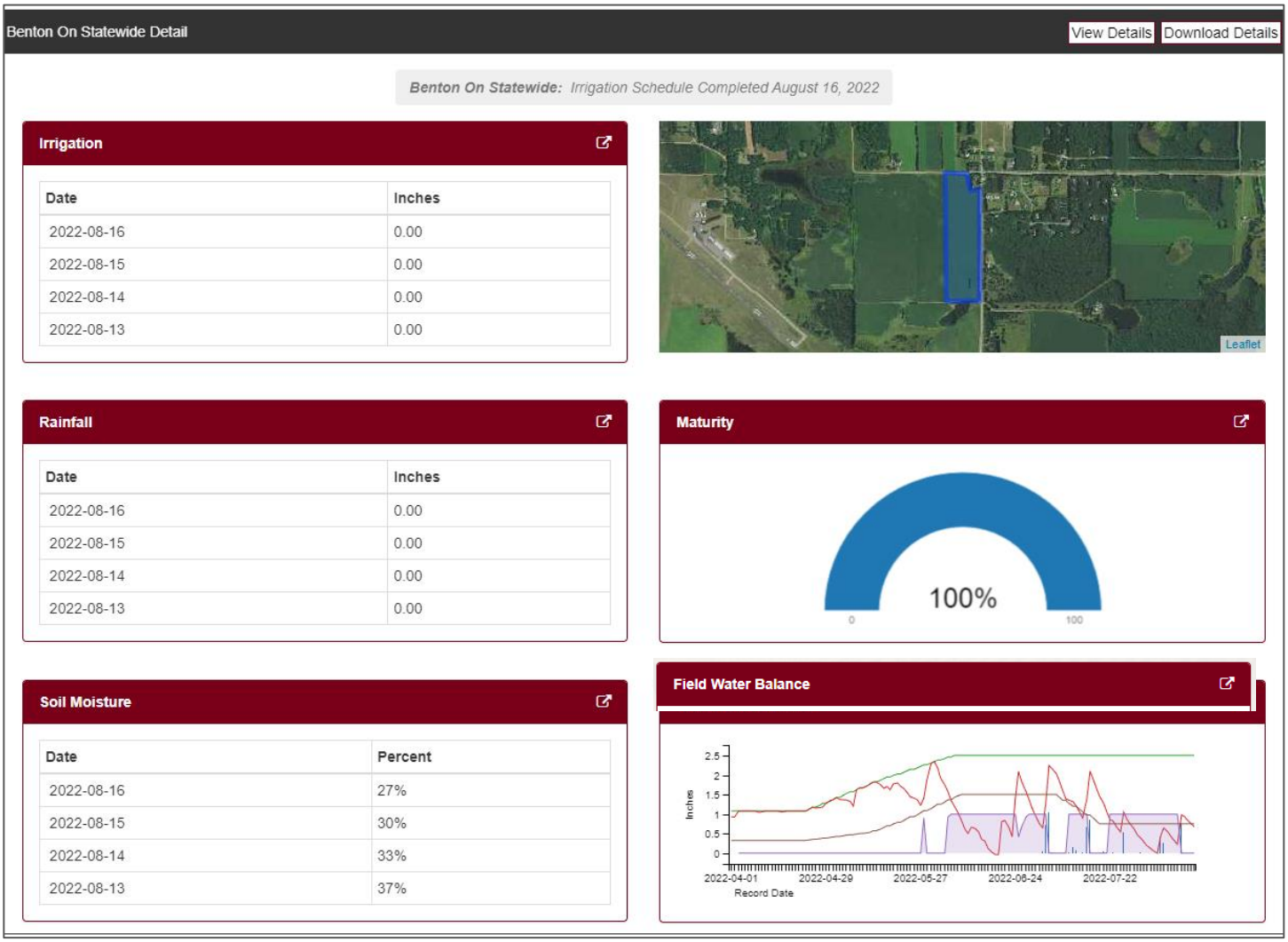
## Viewing your Fields

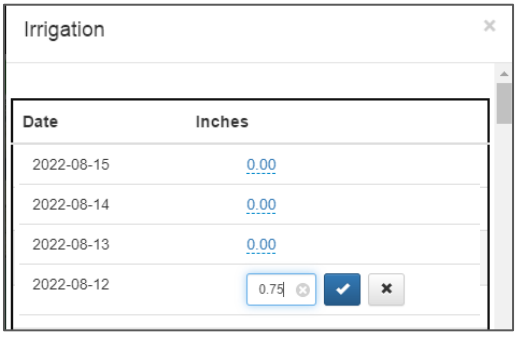
With one or more fields created, you can easily choose the field you would like to view by clicking it in the table of your fields listed on the left-hand side of the page. The selected field will have a caret icon in the left margin pointing at its name. Note, if a field is recommended for irrigation, it will be highlighted in red.

With a field selected, you may review the irrigation schedule for this field in the right-hand pane of the application. The details panel lists the irrigation recommendation (color indicated) at the top and contains the following overview elements.




- **Field Boundary:** In the upper right, you see a map image of the selected field for reference.
- **Irrigation**: This is the last 5 days of recorded irrigation. To view the full irrigation record, click anywhere on the table. You will see a modal open with a table on the left side and a bar chart of any irrigation you have entered on the right.

  From the tabular view, you may click the value for the date you wish to enter, add your irrigation amount, and press the checkmark to save.

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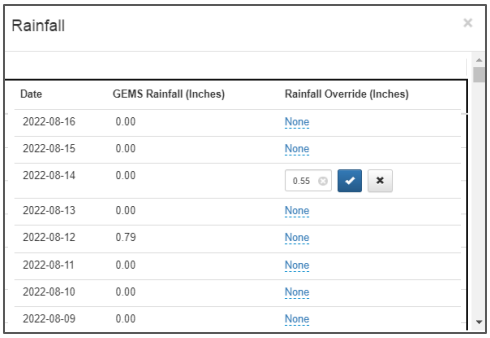
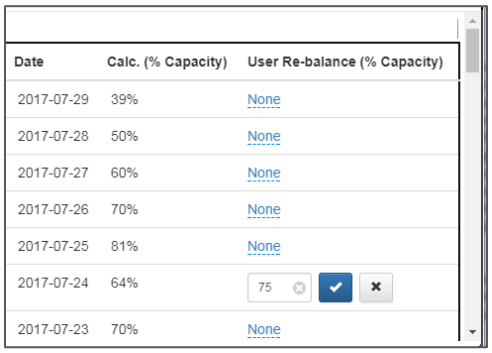
- **Rainfall**: This is the last 5 days of recorded daily rainfall. Rainfall is collected using the University of Minnesota's GEMS Weather which provides pin-point weather history based on the selected field's location. To view the full rainfall record, click anywhere on the table. You again will see a modal open with a table on the left side and a bar chart of rainfall on the right.




  From the tabular view, you may click the "Rainfall Override (Inches)" for the date you wish to override, add your refined rainfall amount, and press the checkmark to save. The system then re-calculates based on your rainfall input. If you remove this value by clearing all text out, it will then revert to the calculated GEMS Weather value for this field.

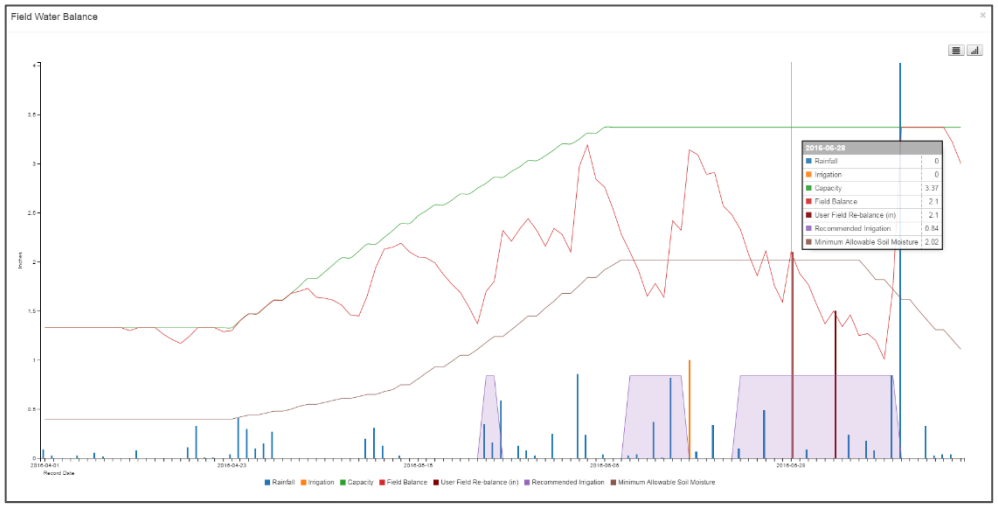
- **Soil Moisture**: This is the last 5 days calculated soil moisture. It is calculated for each of your fields based on the water holding capacity of the soils on which your field was drawn as well as the field specific factors such as planting date, crop adjusted evapotranspiration, rainfall, and irrigation. To view the full soil moisture record, click anywhere on the table. You again will be presented with a modal showing a table, this time for the percent of field soil capacity as well as the graph, this time plotting the percent calculated soil moisture each day since planting. Moving your mouse over the graph will display the recorded values.




  From the table, you may click the "User Re-balance" for the date you wish to override, add your refined soil moisture balance as a <u>percentage</u> and press the checkmark to save. The system then re-calculates based on your input. If you remove this value, it will then revert back to the calculated soil moisture value for this field.

- **Maturity:** This is a simple graph that shows the current crop maturity based on the planting date and the type of crop planted. Clicking anywhere on this graph will open the tabular view of the percent maturity with the user override column. Similar to rainfall, irrigation and soil moisture, you may enter a new value for percent maturity as a percentage. The system then re-calculates from that date to the scheduled end of season, spreading the maturity values from the set value to 100% at end of season.

- **Field Water Balance**: The field water balance window shows a graph that combines irrigation, rainfall, recommended irrigation, crop minimum allowable soil moisture and field capacity based on the field and the planting information. All override data is used in this chart. Clicking this will open the chart for zooming and viewing.

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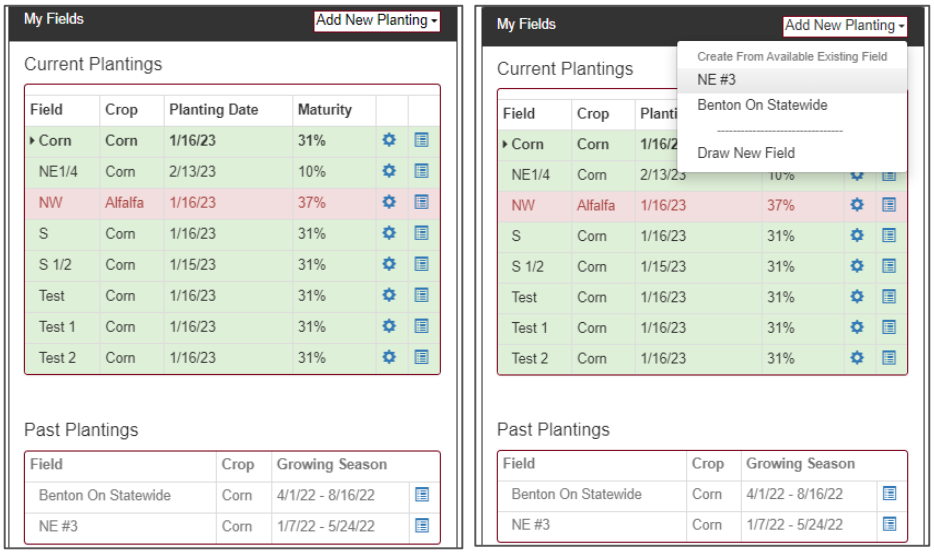
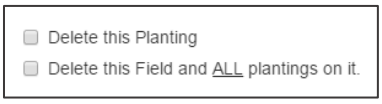
## Managing your Fields

The Irrigation Management Assistant allows for editing a planting and re-using a field after a planting has completed (and is shown in the *Past Plantings* grouping of fields). Pressing the blue cog next to a *Current Planting* brings up the edit window, allowing you to make changes. You may rename the field, edit the irrigation delivery rate and initial soil moisture. Additionally, you may change the crop type, planting date or maturity date. You will also notice in the edit window that you can delete the current planting or even the entire field. To the right of this is the report icon. Clicking this opens a new window, generating a printable report of the field as of the current date or harvest date, whichever is least.




When a field has reached maturity, it automatically moves to the *Past Plantings* section. At this point, you will see it is available in the **Add New Planting** menu. Selecting it will allow you to enter all of the planting detail while reusing the same field boundary, thus avoiding the need to re-draw your fields each year. As before, you can always draw a new field if the need arises.

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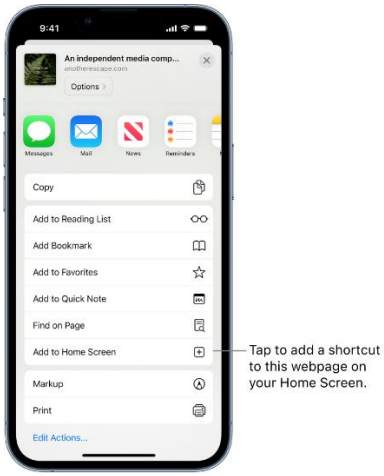
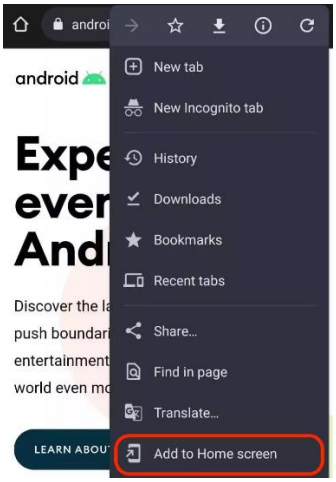
## Mobile Access

The irrigation management application was designed to be responsive, meaning whether viewing from a desktop computer, smart phone or tablet, it adjusts to the screen of the device you use to make it quick and easy to check in on fields you have already added to the system and update the irrigation record from anywhere. Using the application on a mobile device is as simple as going to the website and logging in. To make it even easier to use this application on your tablet or phone, add it to your device's home screen.

**Apple iPhone:** You can add a website icon to your iPhone Home Screen for quick access. While viewing the website, tap in the menu bar, scroll down the list of options, then tap Add to Home Screen.




**Android Phone**: To add a website to an Android home screen, open Google Chrome and go to the website. Then drop down the menu by tapping the screen's three-dot icon at the top right-hand corner. Select Add to Home screen.

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