

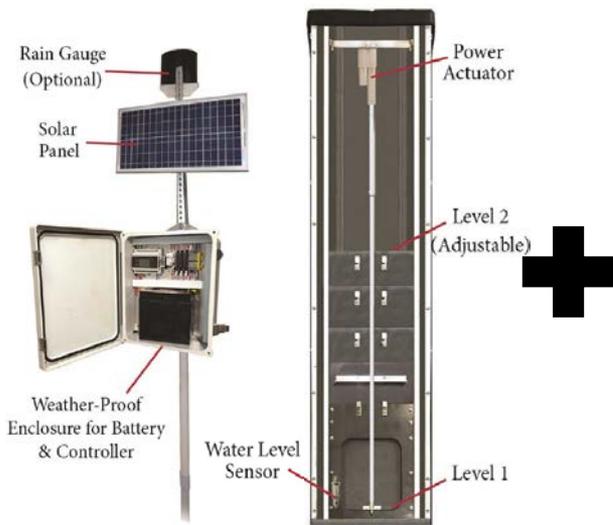
Agri Drain
CORPORATION

Technical service provided by:



Smart Drainage System[®]

With Agri Drain's Smart Drainage System, you control the water level in your field remotely.



Automated Water Level Control Structure

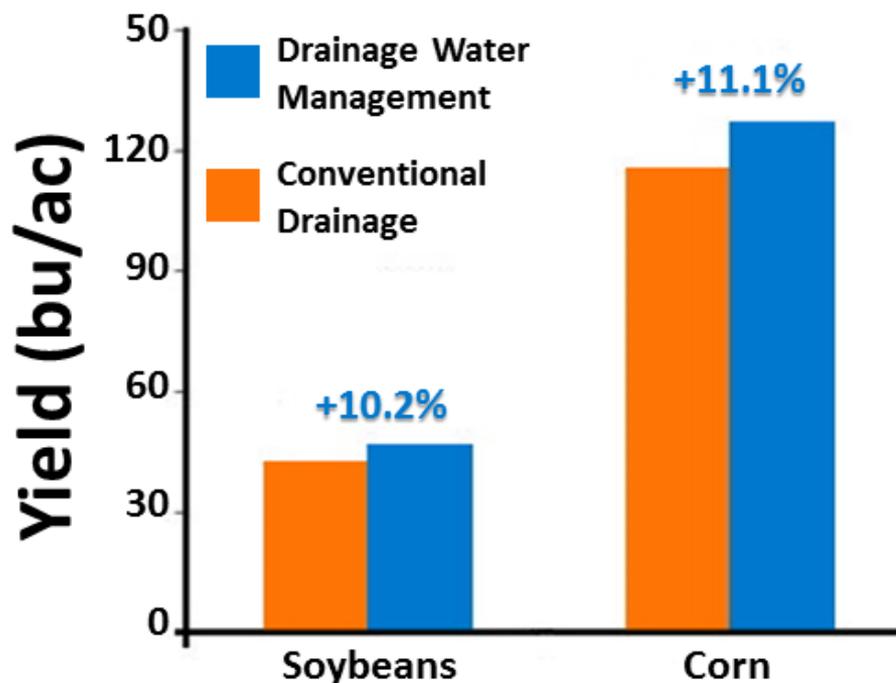


Smart Drainage Website

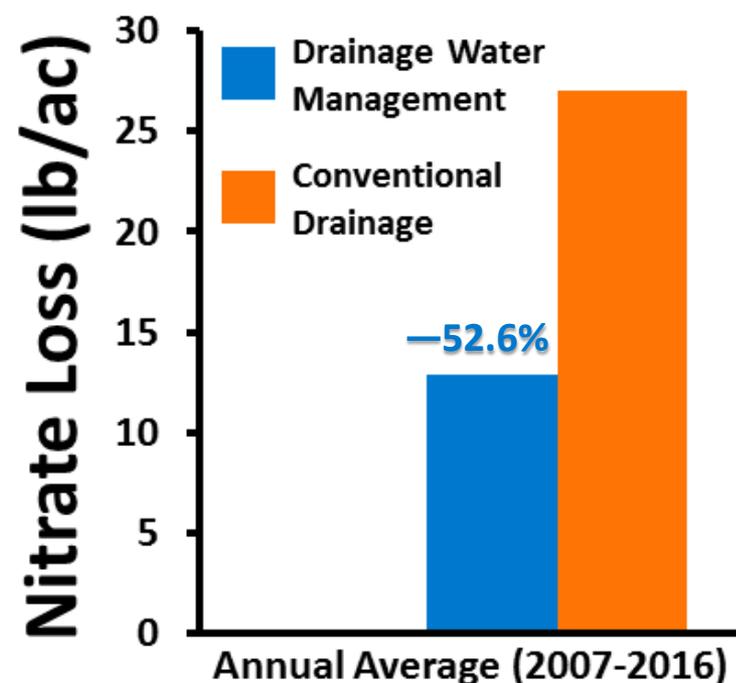


Field Water Level

The Smart Drainage System gives you the ability to maximize yields while reducing nutrient loss.



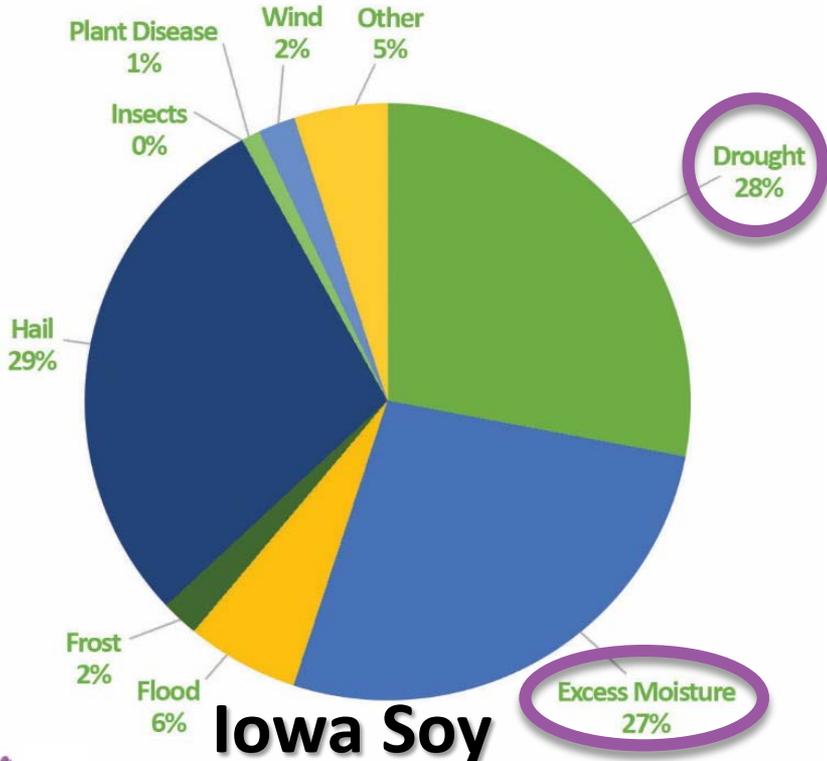
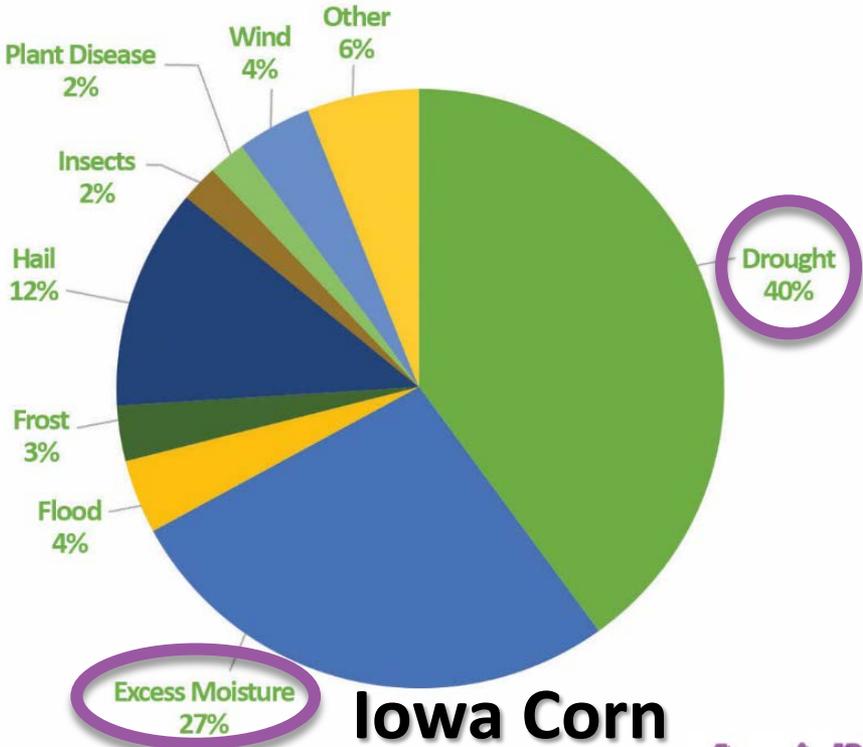
Poole et al., 2013



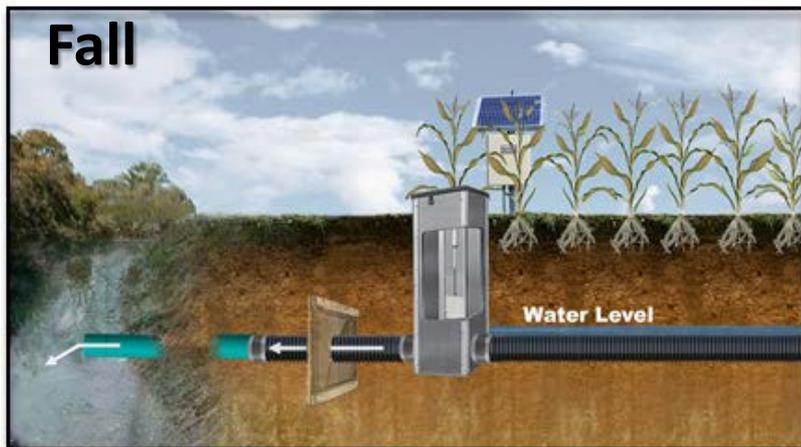
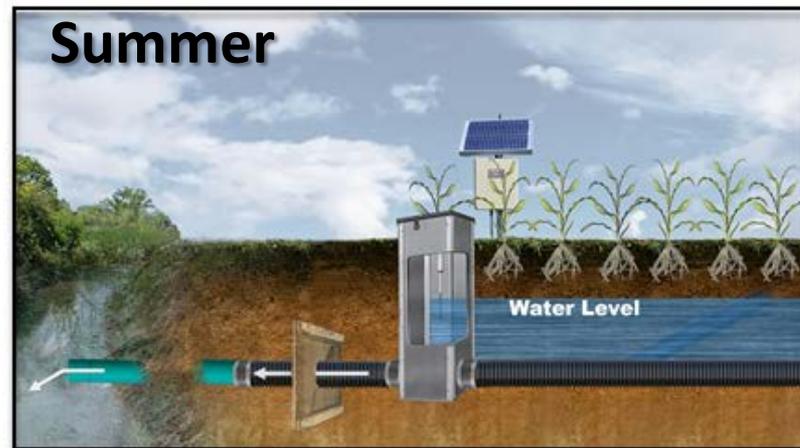
Helmert et al., 2018

The Smart Drainage System helps protect your field from two of the most common causes of crop loss.

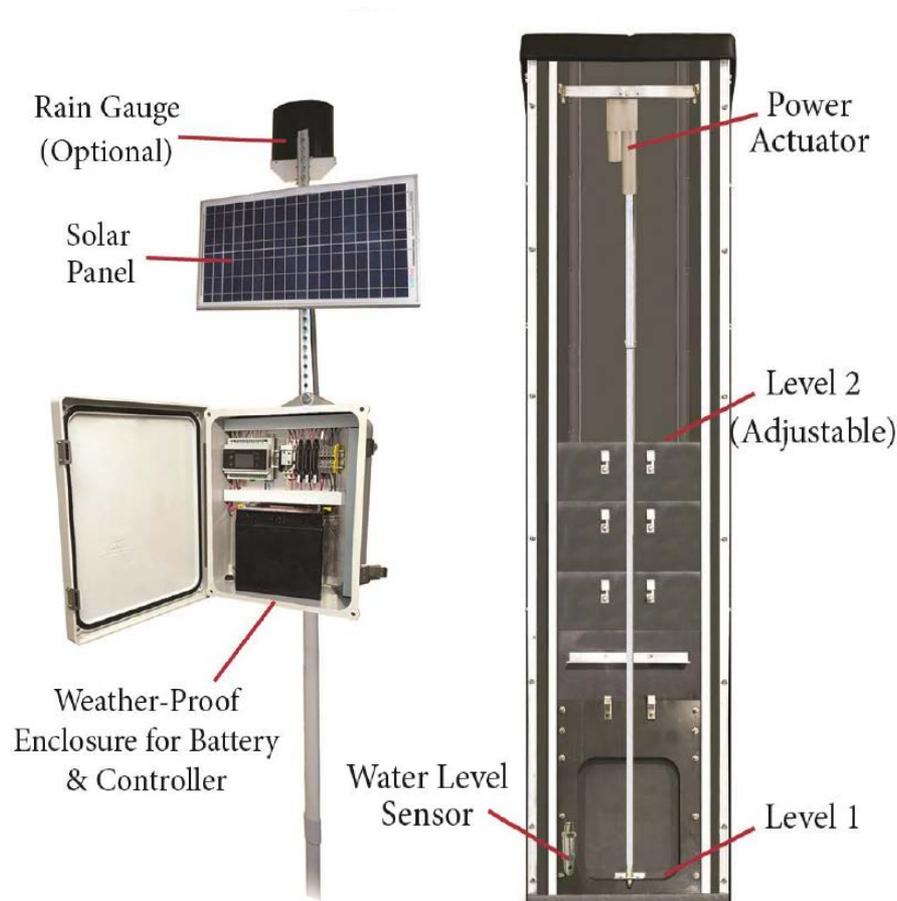
Causes for Loss (1955-2010)



The water level is optimized for each season and soil moisture condition.



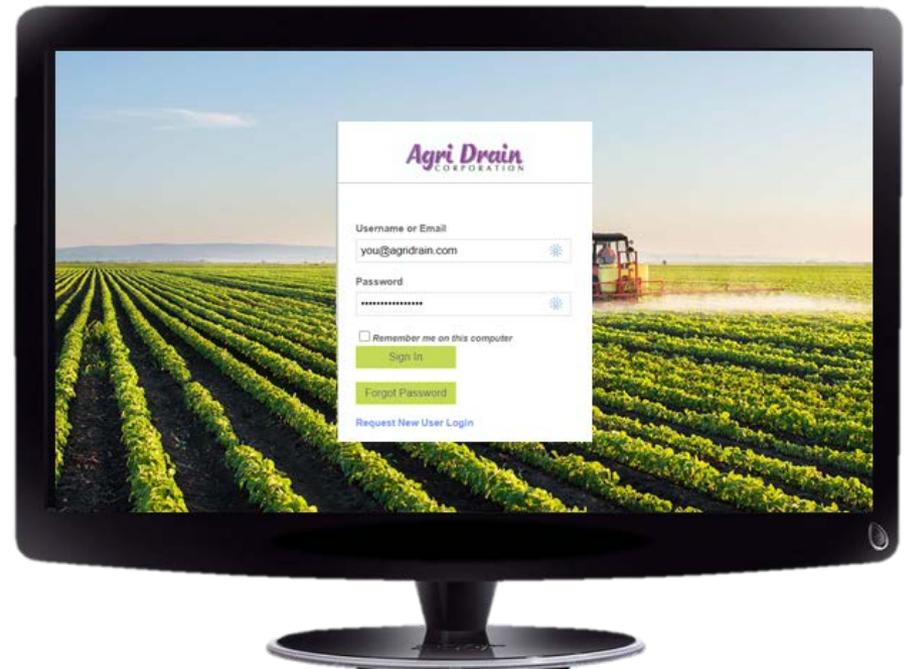
The Automated Water Level Control Structure (AWLCS) does the work for you.



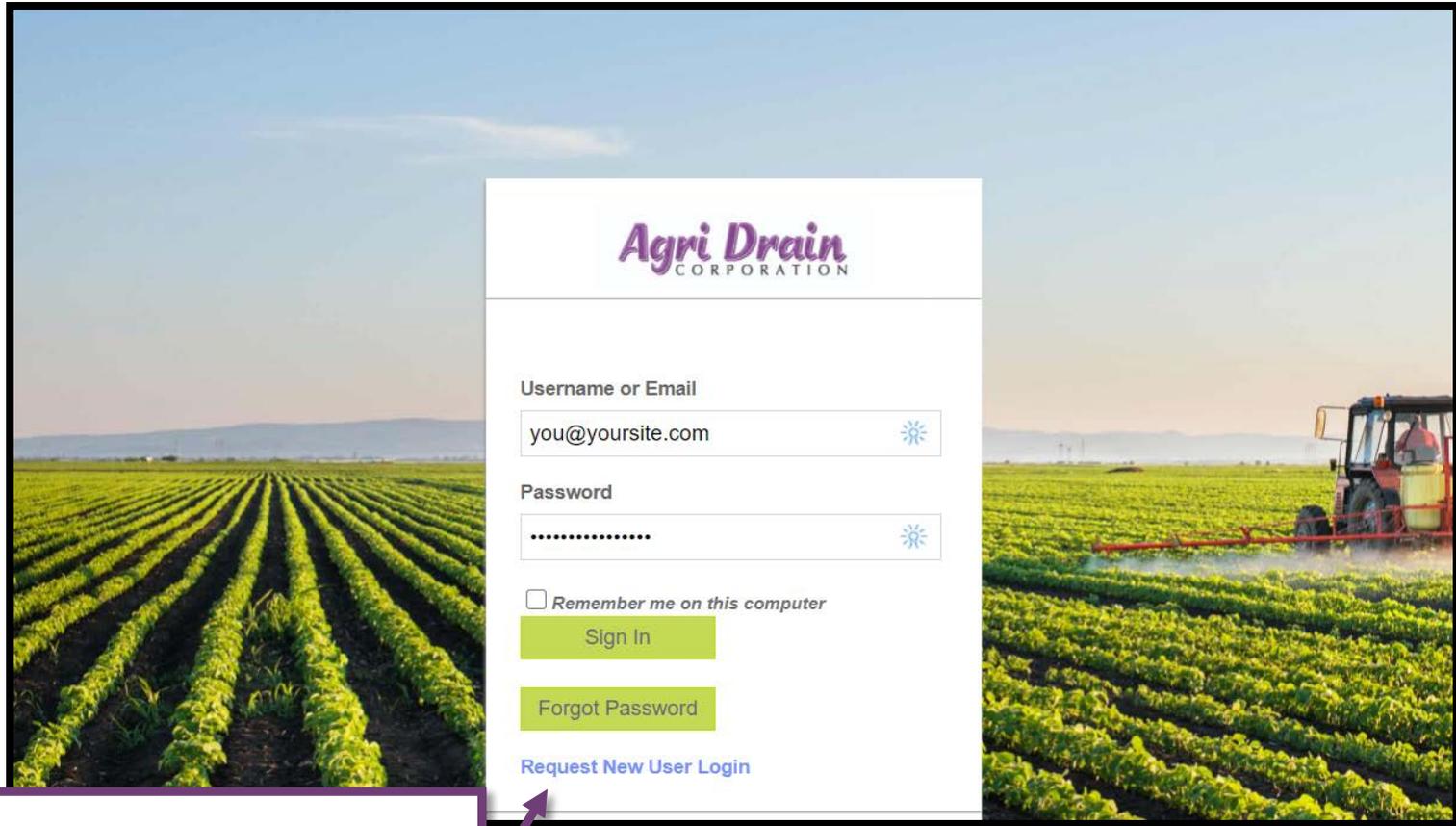
- Open and close on-demand or automatically based on desired set points.
- Operates in drainage water management or irrigation mode.
- Components slide into tracks of an inline structure.
- 365 water level set points.
- 4 water level timers.
- 4 drain duration timers.
- Available for pipe sizes up to 15" diameter.

You control everything through the Smart Drainage website.

- Program, monitor, and record site conditions from your cell phone, laptop, or tablet.
- Send commands to open or close the valve within your structure.
- Manage structure settings and set points.
- View valve status, water level, flow rates, and battery level.



You'll get started by logging in.

The image shows a login page for Agri Drain Corporation overlaid on a background photograph of a green agricultural field with a tractor. The login form is white and contains the following elements: the Agri Drain Corporation logo at the top; a text input field for 'Username or Email' with the placeholder 'you@yoursite.com' and a blue eye icon; a text input field for 'Password' with a blue eye icon; a checkbox labeled 'Remember me on this computer'; a green 'Sign In' button; a green 'Forgot Password' button; and a blue 'Request New User Login' link. An arrow points from the 'Request New User Login' link to a callout box.

1) If needed, follow this link to create a new user

www.SmartDrainageSystem.com

On the dashboard, you can view your AWLCS device (*asset*) in a grid,

The screenshot shows the Agri Drain dashboard interface. At the top left is the Agri Drain CORPORATION logo. In the top right corner, there is a button labeled "Save as Home Page". Below the logo is a navigation bar with "Dashboard", "Notifications", and "Settings" tabs, and a "Sign Out" link on the far right. A hand cursor is pointing at the "Dashboard" tab. Below the navigation bar, there is a "Dashboard:" section with a "Grid" dropdown menu, a "Column Visibility" button, and a "View Asset" button. A callout box with an arrow points to the "View Asset" button, containing the text "2) Select to view asset details". Below this is a table with columns: "Asset Name", "Asset Type", "Temperature", "Status", "Weather", and a row of day abbreviations (F, D, S, M, F). The first row of data is highlighted in orange and contains: a checked checkbox, "Sample Field", "Agri Drain", "91 °F", "Manual", and "Clear". A callout box with an arrow points to the checked checkbox, containing the text "1) Check to select asset".

1) Check to select asset

2) Select to view asset details

or see your AWLCS device (*asset*) on the map.

The screenshot shows the Agri Drain Corporation dashboard. At the top left is the logo. A navigation bar contains 'Dashboard', 'Notifications', and 'Settings'. A 'Sign Out' link is on the right. A 'Save as Home Page' button is in the top right corner. Below the navigation bar, a 'Dashboard:' dropdown menu is set to 'Map'. A status message indicates the page will refresh in 2 minutes 54 seconds. The main area is a map with a location pin at 'Guthrie Center'. A tooltip for this pin displays the following data:

System Mode:	Manual
Drainage Mode:	Drainage Water Mngmnt
Drainage Valve:	CLOSED
Irrigation Valve:	CLOSED
Irrigation Pump:	CLOSED
Set Point:	13.9" ↓
Water Level:	-64.12"
Sample Field	Manual

Two callout boxes provide instructions: '1) Hover to view asset card' points to the tooltip, and '2) Click on pin to view asset detail' points to the location pin.

On the status tab you can view and manage your AWLCS settings.

Status History Data Export Properties Configuration Scheduler Usage Notifications

Reading: Monday, June 21, 2021 4:49:31 PM CDT

Click to change the System Mode.

Manual
System

Drainage Water Management
Mode

CLOSED
Irrigation Valve

CLOSED
Drainage Valve

CLOSED
Manual Drainage Valve

OFF
Irrigation Pump

Disabled
Manual Irrigation Mode

Current Water Level

Field Elevation

-11.59
-23.18
-34.78
-46.37
-57.96

-57.96"

Total Flow Year To Date: 12686 gallons

Water Level Data - Past 24 Hours

Set Point Level 1 Field Elevation Bottom Structure Elevation Total Flow

Gallons/Minute
Inches

4:46 PM

Site Information

Name ADC Demo, RSG1548

Stop Log 1 Distance -11.96"

Field Elevation 950.00' Above Sea Level

Bottom of Structure Elevation 945.17' Above Sea Level

Set Point 57.0" ↓

Drainage Water Management (Above Set Point Level Table):

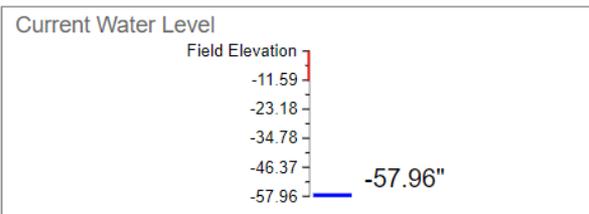
Lvl Number	Lvl Height	Wait Timer	Duration	Timer Status
1	1.0"	72.00 hrs	2.00 hrs	
2	2.0"	48.00 hrs	6.00 hrs	
3	4.0"	24.00 hrs	24.00 hrs	
4	6.0"	0.25 hrs	72.00 hrs	

1) Hover over information to view tooltips

2) Click where tooltips say to modify commands

The water level chart shows details about each data point.

Manual System		Drainage Water Management Mode		CLOSED Irrigation Valve		12.8 V Battery Power	
CLOSED Drainage Valve		CLOSED Manual Drainage Valve		OFF Irrigation Pump		Disabled Manual Irrigation Mode	



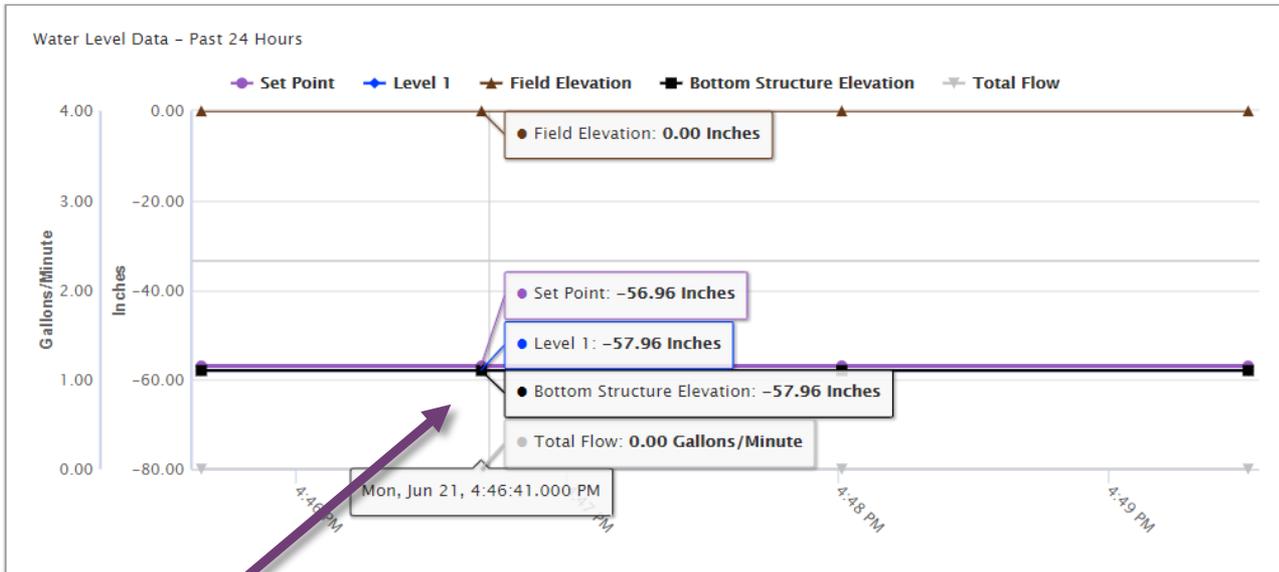
Total Flow Year To Date: 12686 gallons

Site Information

Name: ADC Demo, RSG1548
 Stop Log 1 Distance: -11.96"
 Field Elevation: 950.00' Above Sea Level
 Bottom of Structure Elevation: 945.17' Above Sea Level
 Set Point: 57.0" ↓

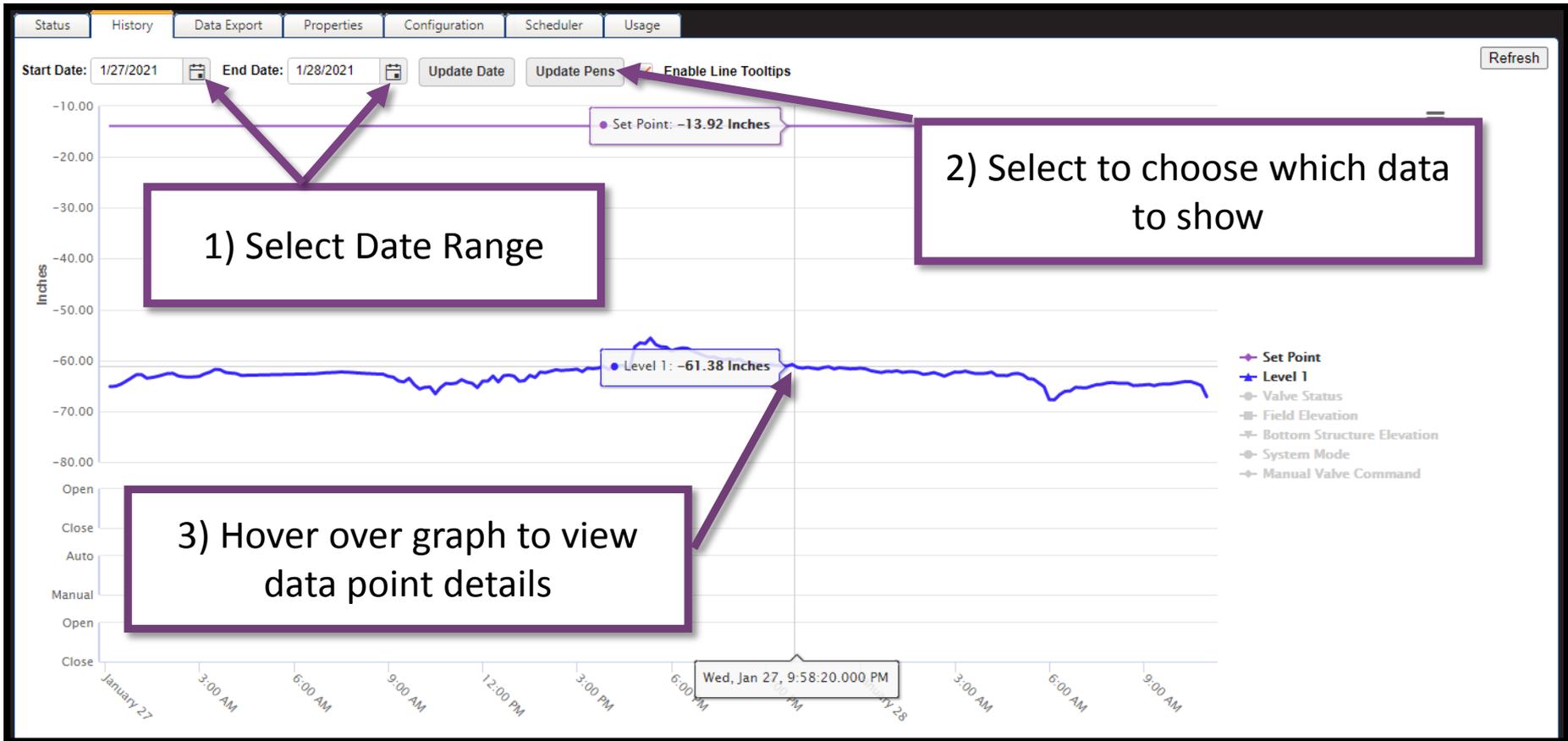
Drainage Water Management (Above Set Point Level Table):

Lvl Number	Lvl Height	Wait Timer	Duration	Timer Status
1	1.0"	72.00 hrs	2.00 hrs	
2	2.0"	48.00 hrs	6.00 hrs	
3	4.0"	24.00 hrs	24.00 hrs	
4	6.0"	0.25 hrs	72.00 hrs	



1) Hover over graph to view data point details

The history tab lets you set a date range to view.



On the data export tab you can select a range of water level data to export as a CSV.

The screenshot shows a web interface with a navigation bar at the top containing tabs: Status, History, Data Export (highlighted), Properties, Configuration, Scheduler, and Usage. A Refresh button is located on the right side of the navigation bar. Below the navigation bar, there are two date input fields: 'Start Date: 1/29/2021' and 'End Date: 2/11/2021', each with a calendar icon to its right. To the right of the date fields is an 'Export to CSV' button. Two purple arrows originate from a box labeled '1) Select Date Range' and point to the calendar icons of the start and end date fields. Another purple arrow originates from a box labeled '2) Select to generate CSV file' and points to the 'Export to CSV' button.

Status History **Data Export** Properties Configuration Scheduler Usage

Refresh

Start Date: 1/29/2021 End Date: 2/11/2021 Export to CSV

1) Select Date Range

2) Select to generate CSV file

The properties tab can be used to apply math and logic functions to data collected by the AWLCS system.

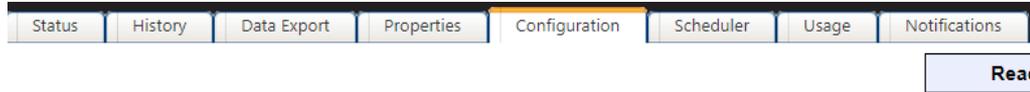
[Status](#)
[History](#)
[Data Export](#)
[Properties](#)
[Configuration](#)
[Scheduler](#)
[Usage](#)
[Refresh](#)

Mile Post:
 Postal Code:
 Nearest Population Center:
 Delivery Point Number:

[✓ Save changes](#)
[⊘ Cancel changes](#)
[⚙ Multiple Changes](#)
[fx Math/Logic](#)

ID ↑	Device Register	Properties						Charting		Notifications
		Type	Field Name*	Value Writable*	Active*	UOM*	Default Pen*	Color*	Include In Alarm*	
Type: Bit										
ADF_AutoValve...	reg7	Bit	Valve Status	false	true	Open/Close	true		false	
ADF_CurrentDr...	reg6	Bit	Current Drainage Mode	false	true	On/Off	false		false	
ADF_Drainage...	reg852	Bit	DrainageMode	false	true	Irrigation & Drainage/Drain... Water Management	false		false	
ADF_IOpenDur...	reg34	Bit	IOpen Duration Active	false	true	On/Off	false		false	

The configuration tab allows you to input details of your AWLCS system.



Structure Control Type
Automatic ▼

Chamber Count
2 ▼

Height
71.00" ▲▼

Width
11.63" ▲▼

Structure Size
8.00" ▲▼

Field Elevation
950.00' Above Sea Level ▲▼

Bottom of Structure Elevation
945.17' Above Sea Level ▲▼

Pipe Type
Corrugated ▼

Pipe Size
8" ▼

Pipe Grade
0.05% ▲▼

Lower Valve 1
Yes ▼

Lower Valve 1 Type
Standard ▼

Lower Valve 1 Size
8" ▼

Lower Valve 2

1) Use drop down menus to choose component types

2) Select system specific values

On the scheduler tab you can automate the system management.

1) Select to Add a new set point schedule

The screenshot shows the Scheduler tab interface. At the top, there are navigation tabs: Status, History, Data Export, Properties, Configuration, Scheduler (highlighted), and Usage. A 'Refresh' button is located in the top right corner. Below the tabs is a '+ Add New Set Point Schedule' button. The main area contains a table with the following data:

Date	Time until date	Set Point	
08/28/2021 12:00:00 AM	211 days, 11 hrs, 53 mins	6 in ↓	Edit Delete

At the bottom of the table, there is a pagination bar with a '1' in a circle and '1 - 1 of 1 items' on the right.

2) Choose to edit/delete an existing set point schedule

You can add or edit management set points and their schedule.

Edit Set Point Schedule

Date: 8/28/2021 12:00 AM

Mode: Irrigation & Drainage

Set Point Direction: Below Field Elevation

Set Point: 6.0

Drainage Water Management (Above Set Point Level Table):

Level	Height Above Set Point (Inches)	Wait Timer (Hours)	Duration (Hours)
1	2	3	1
2	4	2	2
3	6	1	4
4	8	0	8

Irrigation & Drainage (Below Set Point Level Table):

Level	Height Below Set Point (Inches)	Wait Timer (Hours)
1		
2		
3		
4		

Update Cancel

1) Fill all information

2) Select each cell and enter the appropriate levels and times

On the usage tab you can view the history of changes made to the AWLCS system.

The screenshot shows the 'Usage' tab in a web application. At the top, there are navigation tabs: Status, History, Data Export, Properties, Configuration, Scheduler, and Usage. Below the tabs, there is a 'Refresh' button. The 'Display' section has radio buttons for 'Commands' (selected) and 'Notifications'. There are date pickers for 'Start Date' (1/28/2021) and 'End Date' (2/11/2021), along with 'Filter' and 'Reset' buttons. Below this is a table with the following columns: Requested, Username, Sent Date, Response Date, Cancelled, Command, and Parameters. The table content is empty, displaying 'No commands to display.'. At the bottom of the table area, there are pagination controls: a set of arrows and a page number '1', a dropdown menu showing '10', and the text '0 commands in 1 pages'.

1) History will appear here

Select notifications to add, edit, or deactivate system alerts.

Agri Drain CORPORATION

Save as Home Page

Dashboard Notifications Settings Sign Out

Notifications

Display Active Status: Active Inactive All

Asset Names	Asset Type	Rule Name	Notification Types	Time Between Notifications	Default
<input type="text"/>	<input type="text"/>				

No records to display.

« ‹ 1 › » 10

0 notifications in 1 page

Add Edit Deactivate

1) Select to Add a new notification

2) Choose Edit or Deactivate to make changes to an existing alert

You define the conditions that will trigger a notification alert.

The screenshot shows a configuration form for a notification rule. At the top, there is a dropdown menu for 'Asset Type' set to 'Agri Drain' and a checkbox for 'Set Rule as Default for all Agri Drain Assets'. Below this are two columns: 'Assets: Assets Not Included in Rule' and 'Assets: Assets Included in Rule'. The 'Sample Field' asset is highlighted in the 'Not Included' column and is being moved to the 'Included' column. Below the asset lists are fields for 'Rule' (a dropdown menu), 'Rule Description', 'Medium' (with 'Email' selected and 'SMS' unselected), and 'Please Select a Time' (a dropdown menu). At the bottom, there are fields for 'Email Message' and 'Email CCs', followed by a note: 'Email addresses must be semi-colon separated (eg: test@email.com; test2@email.com)'. 'Submit' and 'Cancel' buttons are at the bottom right.

1) Choose Assets to include in the rule

2) Move the highlighted assets to the included/not included box

3) Select Desired Rule

You define the conditions that will trigger a notification alert.

The screenshot shows a configuration interface for a notification rule. At the top, the 'Asset Type' is set to 'Agri Drain' and there is a checkbox for 'Set Rule as Default for all Agri Drain Assets'. Below this, there are two columns: 'Assets: Assets Not Included in Rule' (empty) and 'Assets: Assets Included in Rule' (containing 'Sample Field'). A 'Rule' dropdown is set to 'Please Select a Rule'. The 'Rule Description' field is empty. The 'Notification Medium' is set to 'Email' (checked) and 'SMS' (unchecked). The 'Time Between Notifications' dropdown is set to 'Please Select a Time'. The 'Email Message' field is empty. The 'Email CCs' field is empty. At the bottom right, there are 'Submit' and 'Cancel' buttons. A small note at the bottom reads: 'Email addresses must be semi-colon separated (eg: test@email.com; test2@email.com)'.

4) Select the notification type

5) Select time between Notifications

6) Fill contact information

7) Select Submit when done

**Contact us today to learn more about
our Smart Drainage System and our
full line of water management
products!**

Phone: 800-232-4742

Web: www.agridrain.com

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