

# Precision Planting

The 20/20 [SeedSense Home](#) page is the gathering point of all information on the planter. All information displayed here is mapped and recorded for later review on your home computer. This information can be customized by pressing the **DASH VIEW** button in the lower right hand corner.



955206\_04 12/13

## Singulation:

Displays meter performance. Identifies the percentage of seeds properly singulated by your meters. Contributing factors to this value include: Speed, Good Ride, Seed Size, Seed Shape, Meter type/setting, and performance of planter drive line components.

## Population:

Displays the average number of seeds planted per acre. Color formatting is based upon user created population set points. It is located under the Plant tab.

## Down Force:

Displays the interaction of forces between the row unit and the soil.

**Ground Contact** displays the percentage of time ground contact is properly maintained. 100% GC is defined as at least 20lbs on the gauge wheels, 100% of the time. If force is pushing up on the gauge wheels, desired planting depth *should* be met. Values below 95% may result in shallow planted seed.

**Margin** is the extra weight that *could* be safely removed while maintaining 100% Ground Contact. Typical values should range between: **30-70lbs**.

## Note:

Wet conditions may demand **lower** Margin values.  
 Dry conditions may demand **higher** Margin values.  
 Rows in wheel tracks require additional force, typically 40lbs.

The **Population**, **Singulation**, and **Good Spacing** buttons are shown in detail described below. The "rainbow" displays individual row units in comparison with the planter average.

Touch anywhere in the upper portion to be directed to the second level detail screen. Each row unit has its own individual bar chart.

Touching the high or low button will take you directly to Row Unit Details.

## Field Acres:

Cumulative Acreage counter for current field. Two additional acreage counters are also available by pressing this button.

## Speed:

The satellite dish icon represents GPS communication for speed calculation. The number of bars represent the number of active satellites. Pressing this button directs the user to the GPS Communications Page. A tractor icon represents speed calculation by radar.

## Hex Shaft:

Displays the deviation of **ACTUAL** Population from **DESIRED** Population settings. This is **NOT** hex shaft rpm. It is a calculated value that should range from **-5% to 5%**. Possible hex shaft errors include: Wheel Slippage, Improper population set-points, poor meter performance, planter drive line component errors.

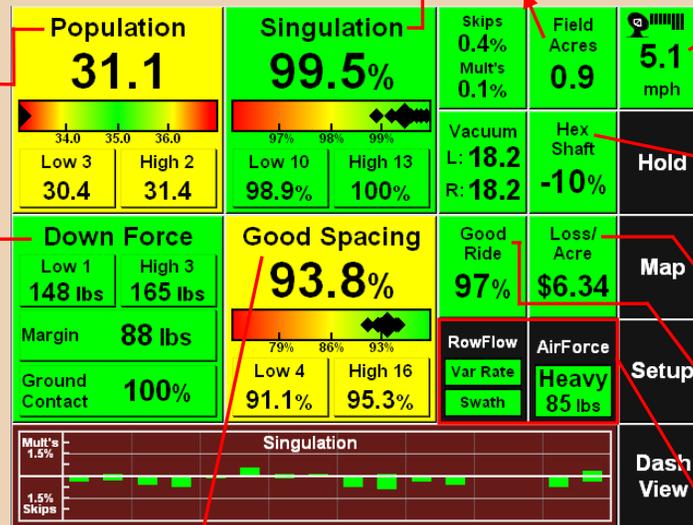
## Loss/Acre:

Based upon user selected economic and agronomic set-points.

## Good Ride:

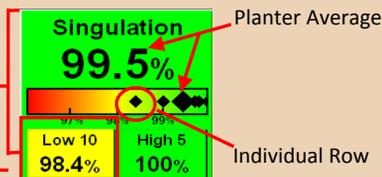
This value is a reflection of row unit bounce. Meter performance will be negatively affected at values below 95%.

Dedicated buttons to navigate directly to the Row Flow Control and the AirForce Control Centers.



## Good Spacing:

Displays the percentage of seeds properly spaced according to user set parameters. The default value for good spacing is >4" between seeds. This default value should be changed in the **Alerts Tab** to reflect the actual seed spacing as dependent on population and row width. The customer must know what the seed spacing should be for each crop and population. See [SeedSense Manual](#) for more info on setting misplaced seed limits and spacing chart.



## Available Map Views & Dash View Screen



# Precision Planting

The 20/20 **SeedSense Plant Tab** is the first step for configuring your system. (planter make, model, number of rows, etc.) Setting that will be selected and changed often can possibly be: Hybrids/Varieties, Client/Farm/Fields, and Population set-points.



955206\_04 12/13

## Planter:

Pressing anywhere within this quadrant will take you to the planter configuration page. This page is important for setting your 'Effective Planter Width' which calculates acreage. The 'Effective Row Spacing' is used in population calculations.

**NOTE:** Changes made within this page **WILL NOT** affect the planter image at the bottom of this page, beyond the number of rows. Detailed planter images are referenced and modified within the *GPS Setup* and the planter page.



## Field:

Pressing anywhere within this quadrant will take you to the Field setup page. Here is where you will Create, Edit, Delete, and Make Active your Clients, Farms, and Fields. Properly using this feature will greatly facilitate the records management of your operations. **Unique names are required for each class.** Field, Farm and Client names must be unique. No two fields can have identical names.

The operator has two options on how to input this information:

- 1) A computer keyboard and mouse may be plugged into the USB ports on the side of the monitor and used to input the information.
- 2) Upload the information directly from a USB key that has been loaded from the "PC Demo & Setup Tool." This tool is available as a free download at [www.precisionplanting.com](http://www.precisionplanting.com). Locate the download under Technical Support through the SeedSense product link.

## Population:

Pressing anywhere within this quadrant allows you to define the population that you will be planting. Choose Single Setting when planting one population in the field. Choose Multiple Settings when planting multiple populations in the field using variable rate drives. Choose Specific Rows when planting multiple populations across the planter, such as in seed corn operations. For proper performance, ensure that the P1 population is an appropriate population for the crop being planted.

## Hybrids:

Pressing anywhere within this quadrant will take you to the Hybrid setup page. This is where you will be adding different crops and their hybrids for use in the setup of your planter in the 20/20 SeedSense. You can assign up to four hybrids/varieties to your planter. Each hybrid will be color coded and you can assign a Name, Lot number, Shape, Seeds Per Unit, Seeds Per Pound, and Pounds Per Unit. You can also assign a hybrid to particular rows on the planter.

**NOTE:** this page is **ONLY** for planter performance monitoring, it **DOES NOT** affect control of the population.

# Precision Planting

The 20/20 [SeedSense Systems Tab](#) allows you to Setup and Control the various components of the 20/20 System. For SeedSense operators, the only three Setup options available will be GPS, RUMs and Display. AirForce Setup and Control as well as RowFlow Setup and Control will be enabled when those products are connected.

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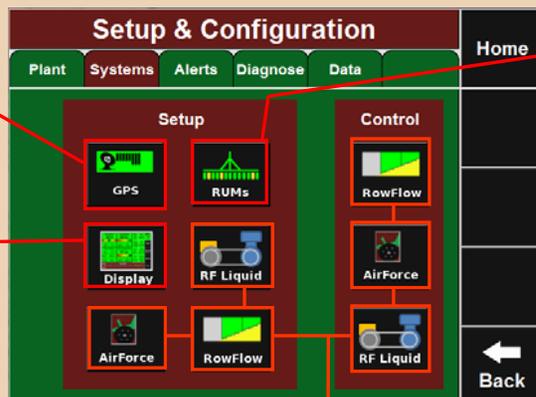
955206\_04 12/13

## GPS:

This screen allows you to define the dimensions and offsets for your tractor and planter necessary to provide accurate on-screen mapping.

## DISPLAY:

The Display Settings screen has a variety of options for customizing how your display unit looks and its operation.



## RUMs:

RUMs Setup provides the ability to troubleshoot the operation of down force sensors. Each planter row with a down force sensor that is in communication with the Smart Connector will be displayed. The Pin Reading shows the weight in pounds or kilograms as applied to the down force sensor. The Cal Factor is used to calibrate the pin reading. **The default value is 85.** Each sensor is listed as Active or Ignored. **Active** indicates that the pin reading is being used in the dashboard calculation for Down Force, Margin, and Ground Contact. **Ignored** indicates that the pin reading is not being included in any of these calculations.

## RowFlow, AirForce, RF Liquid

For more information on the Setup of these three products, see the correct quick reference card for each product.

The 20/20 [Alerts Tab](#) allows you to configure alerts and alarms as they appear on your Home Screen. It allows you to set the number of seeds the 20/20 will be sampling from to present the data on your Home Screen.

## Population Limit

The Population Limit defines how far actual population can stray from your population target before the population button turns yellow.

## Seeds to Average

Seeds to Average determines how many Seeds the population, singulation, and spacing data is based upon. This should be set to **1% of target population.**

## Economic/Loss Limits

Enter here how the economic loss is calculated.

## Liquid Alerts

The set points limits for liquid alerts are entered here for both the pressure and flow alerts.

Setup & Configuration				Home
Plant	Systems	Alerts	Diagnose	Data
<b>Corn (Active)</b>				
Seeds to Average	Population Limit	Population Alarm	Singulation Limit	Change Crop Edit Crop Name Restore Defaults Back
300	2000	80.0%	98.5%	
Smooth Ride Limit	Spacing Limit	Ground Contact Limit	Misp. Seed Limits	
90.0%	93.0%	95.0%	2.5, 4.0"	
Economics / Loss Limits	SRI Limit	Liquid Alerts	Crop Specific Planter Setup	
	20			

## Spacing Limit, Smooth Ride Limit, SRI Limit, Ground Contact Limit, and Singulation Limit,

These define when the corresponding button on your Home Screen will turn yellow.

## Population Alarm

Population alarm defines when a row is considered to be in Row Fail status and the alarm is sounded. The default settings for this value are **80%-120%** of your target value.

## Misplaced Seed Limit

This provides the definitions by which the SeedSense will identify each seed as a skip, double, or a misplacement. **Refer to your Owner's Manual** for a detailed discussion of the impacts of these values.

## Crop Specific Planter Setup

This is where you will input crop specific settings for you planter. **More info on reverse side.**

# Precision Planting

Under the 20/20 SeedSense Alerts Tab, you will find the 'Crop Specific Planter Setup'. Once you are on that page, you can begin the 'Setup Wizard' by pressing 'Run Wizard', which will guide you through five separate steps to customize the setting of your 20/20 SeedSense to your particular planter and crop.

Crop Specific Planter Setup			Home
Beans (Active)			Enter
Active Rows			Run Wizard
Odd			
Coverage Pattern	Offset Distance D	Offset Distance E	← Back
0   Split	--	--	
Seeds / Disk	Motor Default Pop	Quick Adjust Pop	
30	32,000	500	
Base Pop	Incremental Change		
--	--		

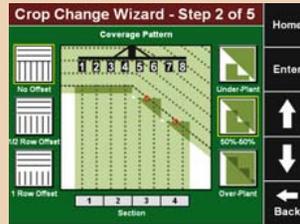


955206\_04 12/13

**Note:** Not all configurations will require all five steps of the Crop Change Wizard.



- Step One:** Set which rows will be used on your planter for this crop.



- Step Two:** Configure the coverage pattern of your planter at your headlands. Once you have selected the coverage pattern, press Enter.



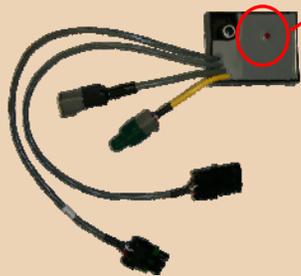
- Step Three:** Select your metering system. Those with meters that are not listed, use the Custom tab to manually enter the number of Seeds per Meter Revolution.



- Step Four:** Set your Default Population. This is the population your planter will automatically revert to if GPS signal is lost or outside of Prescription Boundary files.



- Step Five:** Set the value by which the arrows will adjust by on the RowFlow control page and in AutoMap Express.



## Diagnostic Lights

The Smart Connector, Row Unit Module, RowFlow BaseHarness, and AirForce Module all have diagnostic lights located on them. The operator can diagnose problems with the different systems based on the lights. Each diagnostic scenario displays meaning for power, communication, and software programming. This list gives the key to what each light means:

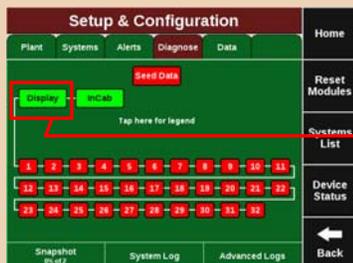
- No Light:** No Power—No communication
- Solid Light:** Good Power—Programming
- Fast Blink (>1 blink/sec.):** Good Power—No Communication
- Standard Blink (=1 blink/sec.):** Good Power—Good Communication

# Precision Planting

The **Diagnose Tab** is the primary location for troubleshooting issues. To access SeedSense diagnostics, press the **Display** button on the Diagnose page.



955206\_04 12/13



The small boxes above your rows indicate the presence of a Row Unit Module (RUM) on that particular row. The letters inside the box indicate different sensors installed and RUM connection.

### Legend

- P= Load Sensor
  - V= Vac or Pressure Sensor
  - L= Lift Switch
  - R= Pressure Sensor (RF Liquid)
  - F= Flow Sensor (RF Liquid)
- Note: Each RUM only has one additional sensor after the load sensor (RUM=Pin + Sensor)

### Snapshot

The Snapshot button will create a detailed report of the last 1,000 seeds that were planted. The report can be exported and submitted to Precision Planting for diagnostic examination by trained professionals.

### System Log

The System Log button stores all changes, updates, and events that occur within the 20/20.

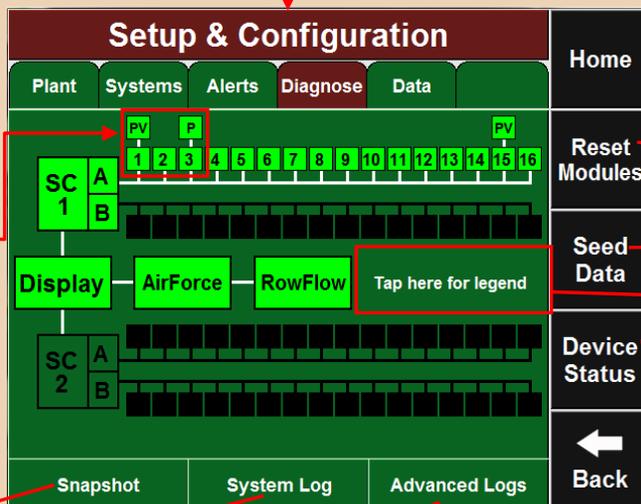
### Advanced Logs

The Advanced Logs button allows for the operator to enable more detailed data logging for troubleshooting purposes. It also is where the detailed data report is exported. Detailed data reports for GPS, RowFlow, Swath, CAN, and for the 20/20 monitor can be extracted.

### Basic Diagnostics

20/20 will highlight problems with yellow boxes except for voltage problems. Healthy voltages should be within ranges as listed:

- Smart Connector, Display, RowFlow, AirForce, **10.5v— 15.5v**
- RUM  $\geq 7.5v$



### Reset Modules

This button will refresh communication between the Display & the installed components on the planter rows. Possible modules that would reset are the following:

- RUMs, Smart Connector(s), AirForce Module, and RowFlow Modules
- Reset Modules is a common step to clear fails and reconnect a device.

### Seed Data

Tap this button and you will see the number of seeds each row has seen pass through their respective sensor.

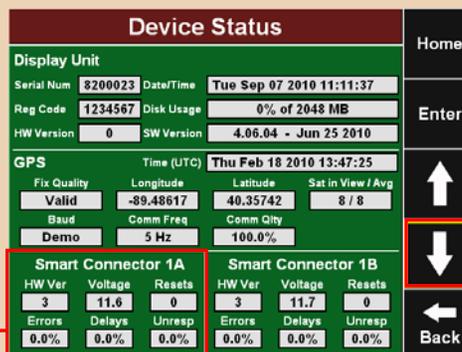
- 1 Green: Working Correctly. Device communications are good.
- 2 Yellow: Device is being updated or is not 100% functional.
- 3 Red: Failed or Missing. Device is expected, but not detected.
- 4 White: Unexpected. Sensor is detected, but is not expected.
- 5 Black: Disabled. Row has been disabled in planter config.

### Legend

Tap anywhere in this area and it will bring up a legend to interpret the colors presented in the diagnose page.

### Device Status

On this page you will find technical information on your 20/20 SeedSense and the various devices attached to it. This includes: the Display Unit, the GPS, the Smart Connector(s), the RowFlow Module(s), the AirForce Module, and the RUMs.



**Note: To scroll down and see all of your devices, press the down arrow.**



# Precision Planting

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955206\_04

12/13

The 20/20 SeedSense **Data Tab** allows you **Import, Export, Delete, and Update** monitor software.

## Export

This button brings up the Export page where the following five types of exports can be done:

- **Planting Config**- includes your Planter, Field, Crop and Seed Configurations.
- **System Config**- includes your Display, Sound, and Down Force Settings.
- **Old Field Map Data**- from previous planting seasons.
- **New Field Map Data**-from the current planting season.
- **Swath Coverage Map**- for use in multiple 20/20 monitors with RowFlow systems.

**\*Best Practice:** Export copy of planter configuration to USB drive to keep on hand and export Field Data once planting is done.

## Web Setup

**NOTE: WEB SETUP requires a Wireless Internet Card to be plugged into the side of the Monitor**

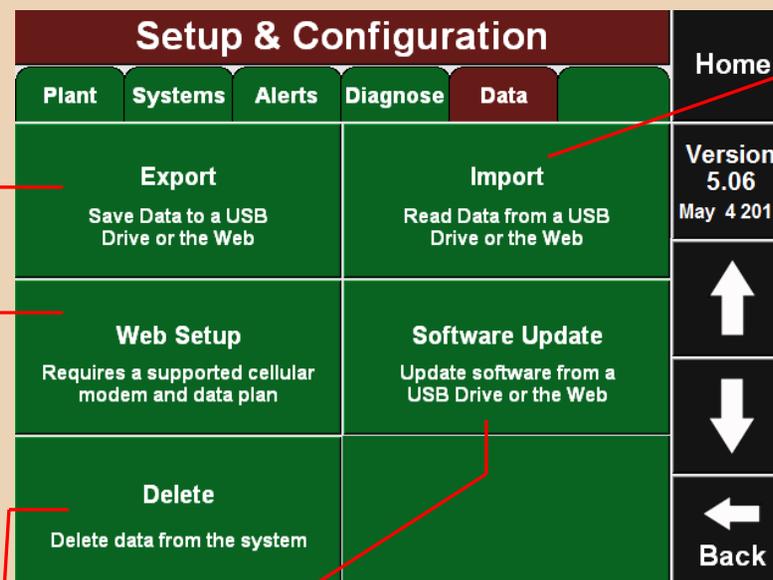
On this page, you will be able to:

- Complete online Registration.
- Enable Display Sharing.
- Access a Remote 20/20 Display. In order to allow your 20/20 SeedSense to be accessed by a remote display, click on 'Enable Remote Sharing'. You will then be given an IP address which will be used to access the display remotely. In order to view this display remotely, you must press on 'Access Remote Display'. The SeedSense will then prompt you for an IP address. Enter the IP address the Display you are trying to access gave you when you pressed on 'Enable Remote Sharing'.

## Delete

The Delete Page you can delete any information you currently have on your 20/20 SeedSense.

- Field Map Data from your current planting season.
- Old Field Map Data from previous seasons.
- 20/20 Recorded Boundaries which were recorded with Advanced Swath.
- Imported RowFlow Coverage Maps.
- Old Coverage Map Data.
- All Data. (This button may be found by pressing on the down arrow.)



## Import

Pressing this box takes you to the Import page. From here, you can import files into your 20/20 SeedSense from a USB flash-drive.

- **Planting Config**- Imports Planter, Field, Crop and Seed Configurations.
- **System Config**- Imports Display, Sound, and Down Force Settings.
- **Field Map Data**- Imports Planting Field Map Data for use in Harvest Replay.
- **Prescrip/Boundary**- Imports Prescription and Boundary files.
- **Swath Coverage Map**- Imports Swath Coverage Map from another 20/20 SeedSense.
- **Demo files** Press the Down Arrow, and press on the 'Demo Files' box. When importing the Demo files, you will be importing them in a 'zipped' folder on the root of your drive.

## Software Update

This box will take you to the Software Update Page. Once you have inserted a USB flash-drive into your SeedSense with an update on it, press 'Software Update'. The SeedSense will then find any update you may have on your flash-drive. Press on the software version you would like to update to and then press 'Enter'. Once the 20/20 is done updating, a pop-up box will ask you to remove the USB flash-drive and press 'OK'. The SeedSense will then reboot with the new software update in place. Upon reboot, the system may require a few minutes to properly update. **DO NOT CYCLE MONITOR POWER DURING THIS PROCESS.**

**Note: When downloading your 20/20 SeedSense Update to the USB thumb-drive, make sure to download it to the 'root' of the drive. Do not place the file in any folder on the USB thumb-drive.**