

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 for personal preference in multiple ways by pressing the **DASH VIEW** button in the lower right hand corner.



**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; located under the Plant tab.

**Down Force:**

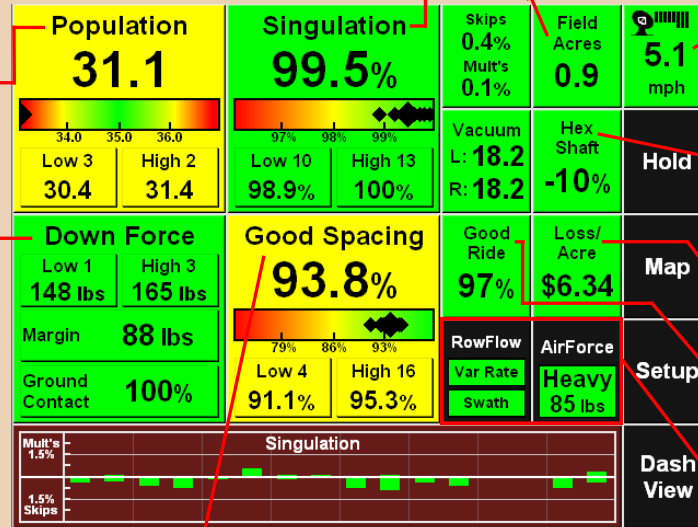
Displays the interaction of forces between the row unit and the soil.

**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.



**Field Acres:**

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

**Speed:**

The satellite dish icon represents use of GPS 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 use of radar for speed calculation.

**Hex Shaft:**

Displays the deviation of **ACTUAL** Population from **DESIRED** Population settings. This is **NOT** actual or measured hex shaft rpm. This is a calculated value. Typical values: **-5% to 5%**. Contributing factors include: Wheel Slip, Improper population set-points, poor meter performance, planter drive line component errors.

**Loss/Acre:**

Based upon user selected Economic/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, respectively.

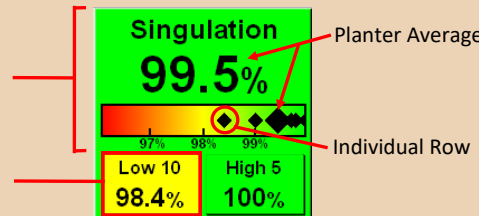
**Good Spacing:**

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.

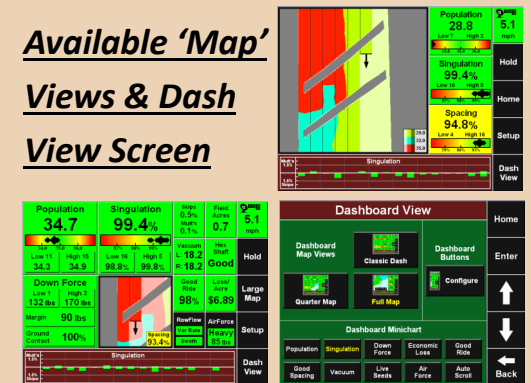
The **Population**, **Singulation**, and **Good Spacing** buttons are displayed with extra detail described below; including a 'rainbow' chart to illustrate individual row units in comparison with the planter average.

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 a specific High or Low button will take you directly to the Row Unit Details page for an in depth look at the specific row unit performance.



**Available 'Map' Views & Dash View Screen**



The 20/20 SeedSense Plant Tab is the initial point for configuring your system to your planter. This page will be used for long term settings (planter make, model, number of rows...etc.) as well as settings that will be selected and changed often; such as Hybrids/Varieties, Client/Farm/Fields, and Population set-points.

**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 is used in acreage calculations. 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; as well as the relationships between them. Properly using this feature will greatly facilitate the records management of your operations. **Unique names are required for each class.** No two fields may have identical names. The same rule applies to Farms and Clients.

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

- 1) A standard 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 [support.precisionplanting.com](http://support.precisionplanting.com). Locate the download under Miscellaneous through the SeedSense product link.

Set Point 1	Set Point 2	Set Point 3	Set Point 4
30,000	26,500	28,500	32,000
Set Point 5	Set Point 6	Set Point 7	Set Point 8
34,000	36,000	38,000	0

**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 motors. Choose Specific Rows when planting multiple populations simultaneously on different rows of 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, as well as hybrids/varieties of those crops 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 each hybrid to the particular rows you will be using them in on your planter.

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

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.



**GPS:**

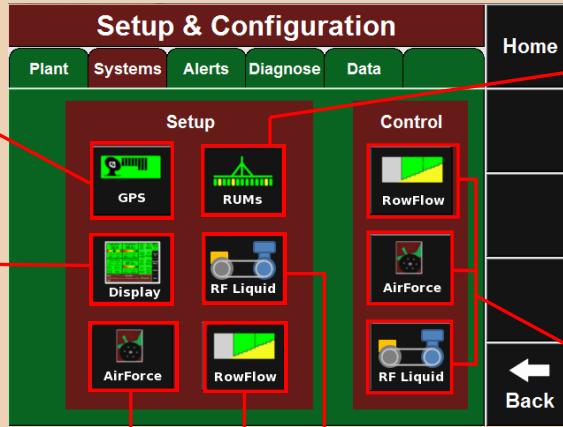
This screen allows you to define the dimensions and offsets for your tractor and planter necessary to provide accurate on-screen mapping.

**DISPLAY:**

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

**RowFlow, AirForce, RF Liquid**

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



**RUMs:**

RUMs Setup provides the ability to troubleshoot the operation of down force sensors. Each row of the planter equipped 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 currently measured by 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 Control**

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

The 20/20 [Alerts Tab](#) allows you to configure when the alerts and alarms will appear on your Home Screen. It also 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**

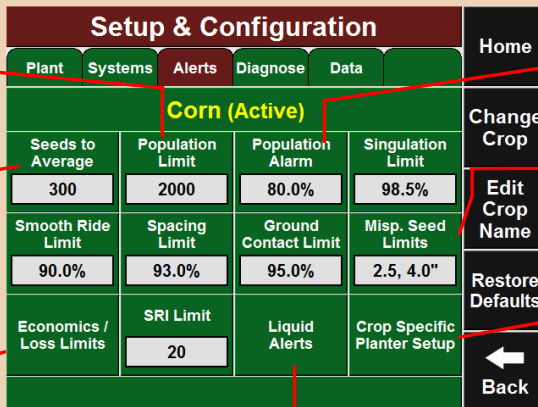
The Population Limit defines how far actual population can stray from your population target before the population button turns yellow.

**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.



**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 classify each seed as a Skip or Double; as well as properly or misplaced seed - **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 be inputting crop specific settings for you planter. **More info on reverse side.**

**Liquid Alerts**

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

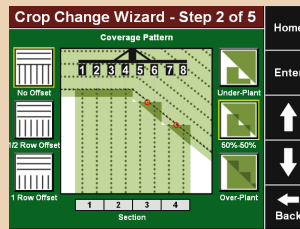
Under the 20/20 SeedSense Alerts Tab, you will find the 'Crop Specific Planter Setup'. If you push anywhere in that box, it will take you to the Crop Specific Planter Setup Page. Once you are on that page, you can begin the 'Setup Wizard' by pressing 'Run Wizard', which will guide you through five separate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

Crop Specific Planter Setup			Home
<b>Beans (Active)</b>			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		
--	--		

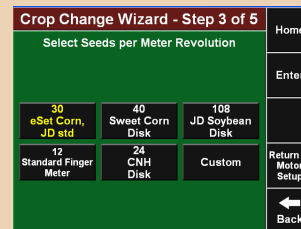
*Note: Not all configurations will require all five steps of the Crop Change Wizard.*



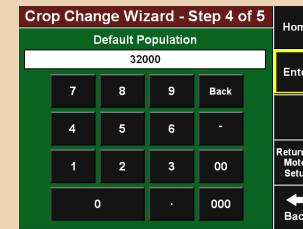
- **Step One:** Set which rows will be used on your planter for this crop.



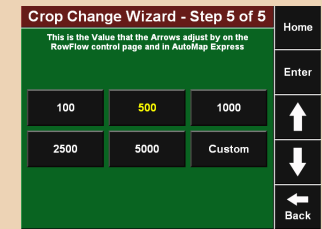
- **Step Two:** Configure the coverage pattern of your planter at your Headlands. Once you have selected the coverage pattern, press Enter to go to Step Three.



- **Step Three:** Select your metering system. If you have a metering system with a seeds per meter revolution that is different than the options listed, you can set a custom number under the 'Custom' button.



- **Step Four:** Set your Default Population. This is the population your planter will automatically revert to in the case that you lose GPS signal or drive outside your Prescription Map.

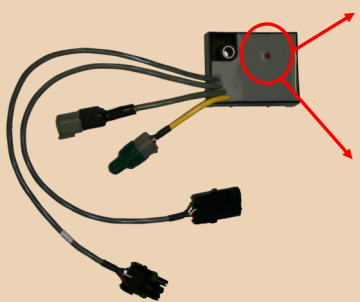


- **Step Five:** Set the value by which the arrows will adjust by on the RowFlow control page and in AutoMap Express.

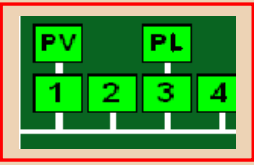
### Diagnostic Lights

The Smart Connector, Row Unit Module, RowFlow Harness, and AirForce Module all have diagnostic lights located on them. The operator can diagnose problems with the different systems based on the lights. All the diagnostics from the lights are done based on if the lights are on and if they are on, are they blinking and how fast are they blinking. The color and number of the lights have no diagnostic benefit. The following chart gives the key to what each light means.

- |   |  |
|---|--|
| • <b>No Light:</b>                                  | <b>No</b> Power— <b>No</b> communication             |
| • <b>Solid Light:</b>                               | <b>Good</b> Power— <b>No</b> Communication           |
| • <b>Fast Blink (Faster than 1 blink per sec.):</b> | <b>Good</b> Power— <b>Non-Standard</b> Communication |
| • <b>Standard Blink (1 blink per sec.):</b>         | <b>Good</b> Power— <b>Standard</b> Communication     |



The 20/20 SeedSense Diagnostic Tab is the primary location for troubleshooting issues related to the operation of the 20/20 system including the display, one or more Smart Connectors (SC 1 & SC 2), up to 64 rows, as well as your control systems. To see each Module Diagnostics, press their respective quadrant.



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

**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

- Home
- Reset Modules
- Seed Data
- Device Status
- Back

**Reset Modules**

Tap this button and your 20/20 will refresh communication between the Display & the installed components on the planter rows, which would include RUMs, Sensors, Smart Connector(s), as well as AirForce & RowFlow modules. This is a common step to clear fails and reconnect to 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.
- ! 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.

**Snapshot**

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

**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 may be enabled for GPS, RowFlow, Swath, CAN, and for the 20/20 monitor.

**System Log**

Press anywhere in this area and you bring up the System Event Log. This is the location where all changes and alerts that occur within the 20/20 will appear.

**Basic Diagnostics**

20/20 will highlight problems with yellow boxes except for voltage problems. Voltages should be within ranges listed below.

- Smart Connector, Display, RowFlow, AirForce, 10.5v– 15.5v
- RUM ≥ 7.5v

Display Unit			
Serial Num	8200023	Date/Time	Tue Sep 07 2010 11:11:37
Reg Code	1234567	Disk Usage	0% of 2048 MB
HW Version	0	SW Version	4.06.04 - Jun 25 2010

GPS			
Time (UTC)	Thu Feb 18 2010 13:47:25		
Fix Quality	Longitude	Latitude	Sat in View / Avg
Valid	-89.48617	40.35742	8 / 8
Baud	Comm Freq	Comm Qty	
Demo	5 Hz	100.0%	

Smart Connector 1A			Smart Connector 1B		
HW Ver	Voltage	Resets	HW Ver	Voltage	Resets
3	11.6	0	3	11.7	0
Errors	Delays	Unresp	Errors	Delays	Unresp
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

**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.

RowFlow Module 1			
HW Ver	Voltage	Resets	
0	--	0	
Errors	Delays	Unresp	
0.0%	0.0%	0.0%	

AirForce Module			RUM Row 1	
Serial Num	Voltage	Resets	Voltage	Std Dev
	12.0	0	7.9	0.0
Errors	Delays	Unresp	Errors	Resets
0.0%	0.0%	0.0%	0.0%	0

RUM Row 3		RUM Row 5		RUM Row 15	
Voltage	Std Dev	Voltage	Std Dev	Voltage	Std Dev
		7.9	0.0	7.9	0.0
Errors	Resets	Errors	Resets	Errors	Resets
				0.0%	0

**Note: In order to scroll down and see all of your devices under the 'Device Status', you must press the down arrow.**



The 20/20 SeedSense Data Tab allows you **Import, Export, and Delete** the data in your 20/20 SeedSense. It is also the place you can **Update** your Software, as well as setting up your SeedSense for Remote Viewing, Monitor Sharing, and the Registration of your 20/20 SeedSense.

## Export

Pressing anywhere inside this box will take you to the Export page. There are five types of exports you can accomplish here.

- **Planting Config**, which includes your Planter, Field, Crop and Seed Configurations. This is used after initial setup to save as back-up in the event of losing the setup configuration.
- **System Config**, which includes your Display, Sound, and Down Force Settings. This also is used after initial setup to save as back-up in the event of losing the setup configuration.
- **Old Field Map Data** from previous planting seasons.
- **New Field Map Data** from the current planting season.
- **Swath Coverage Map** for use in another 20/20 SeedSense and RowFlow.

**\*Best Practice:** Export copy of planter configuration to USB drive to keep on hand and export Field Data annually at a minimum

## Web Setup

**NOTE: The functions listed below require a Wireless Internet Card to be plugged into the side of the Monitor**

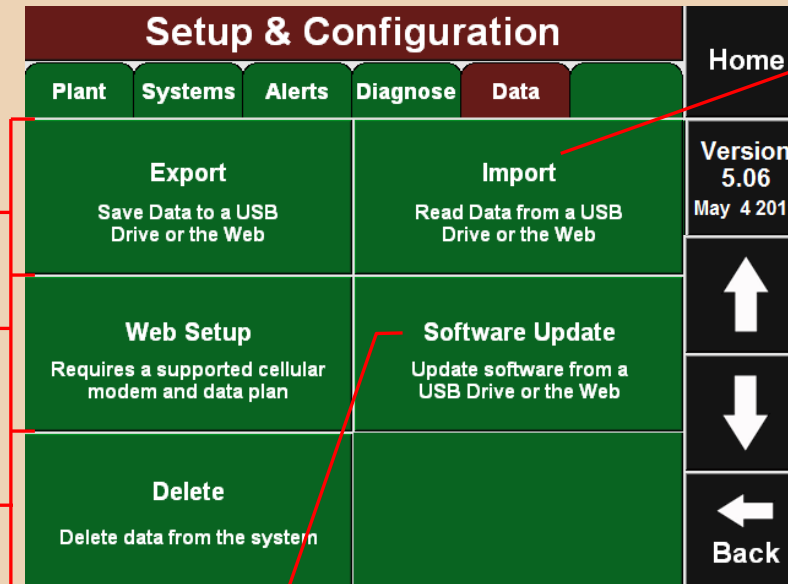
Pressing anywhere inside this box will take you to the Web Setup Page. On this page, you will be able to:

- 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 the IP address you will use to access this 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

Pressing anywhere inside this box will take you to the Delete Page. This is the location where 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 anywhere inside this box will take you to the Import page. From here, you can import files into your 20/20 SeedSense from a USB flash-drive.

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

## Software Update

Pressing anywhere inside 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 on '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 all components. **DO NOT CYCLE TRACTOR OR 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.**