

# vDrive<sup>®</sup>

## **vDrive Operator's Guide For Gen2 SeedSense Displays**

## Precision Planting<sup>®</sup>

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# System Setup and Operation

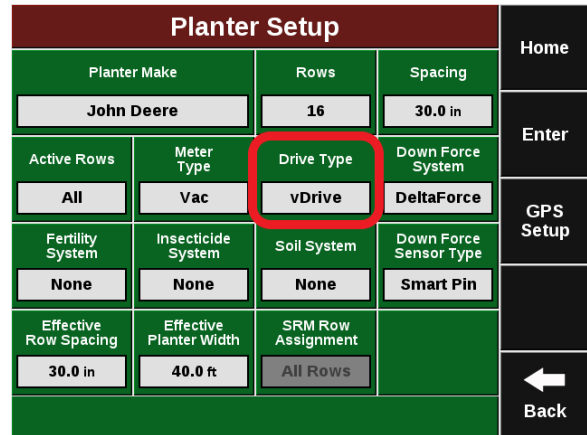
There are four requirements for the vDrive system to function:

1. vDrive must be configured on the 20/20 monitor.
2. There must be a Speed source.
3. The Master Plant Switch on the Cab Control Module must be in the up position.
4. The planter must be lowered.

## Configuring Monitor for vDrive

### Step 1:

Set vDrive as the drive type. Navigate to the planter setup page by selecting, “Setup” – “Planter”.

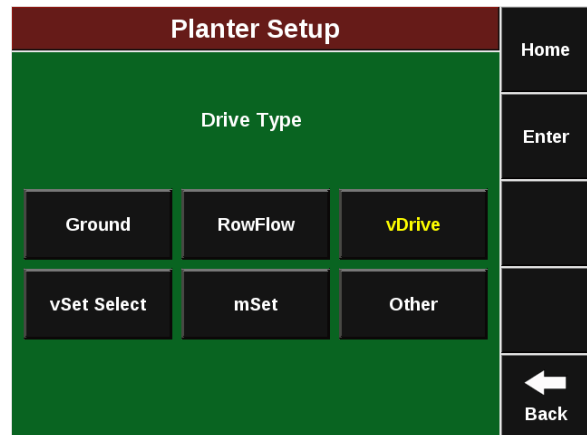


### Step 2:

Ensure that Planter Make, Rows, Spacing, Active Rows, and Meter Type are correct.

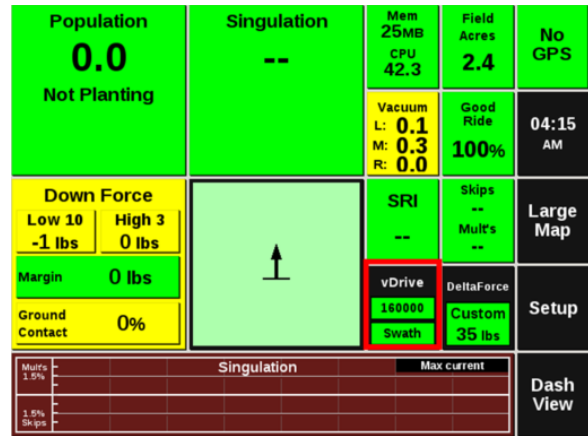
### Step 3:

Press on the “Drive Type” button and then select “vDrive”.



#### Step 4:

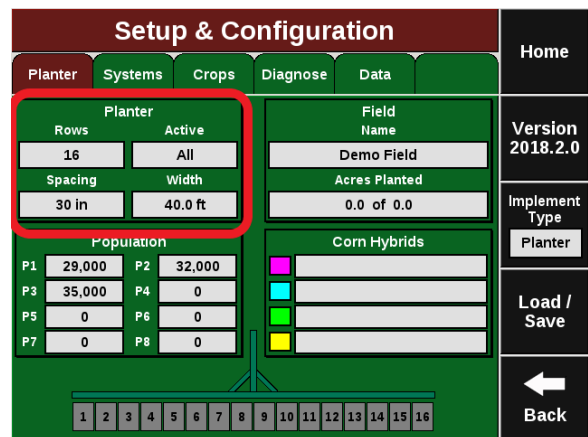
On the home screen the vDrive control button will appear on the right hand side of the screen. It will display population and swath information. Use this button to access the vDrive control page. For more information, see the vDrive Control section below



## vDrive Setup

#### Step 1:

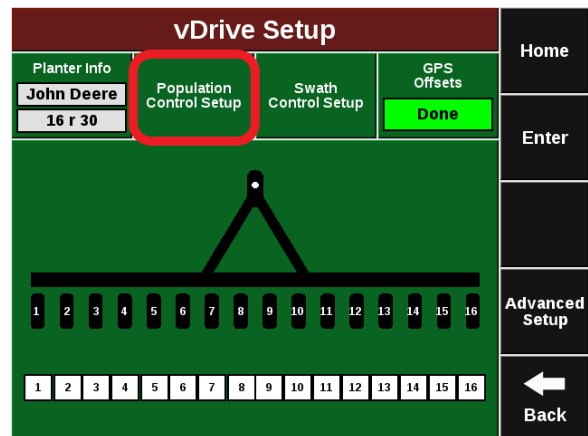
Navigate to “Setup” — “Systems” — “vDrive”. After pressing the Setup button ensure that the correct planter is displayed in the Planter Information box. If this information is not correct, then select “Planter” and set the planter up correctly. Once the planter information is correct; press the “Systems” button to begin the setup process.



#### Step 2:

Setup the “Population Control”. Population Control Setup allows the operator to determine which rows to set to certain populations. The monitor can control up to 4 different rate sections at once. Each rate section can be assigned a different population or seeding prescription attribute. A rate section can be any combination of rows.

**Note:** Any rows **not assigned** to a rate section **will not plant or pass health checks.**



### Step 3:

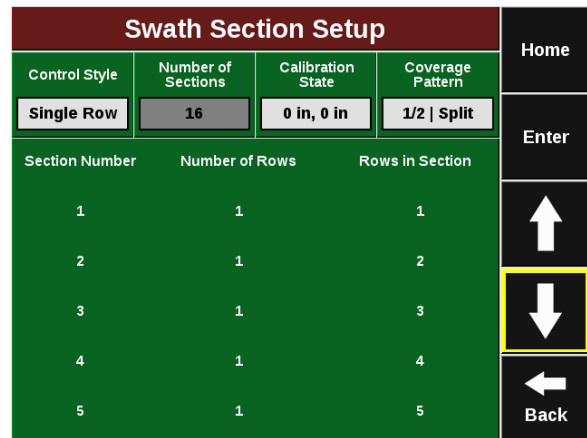
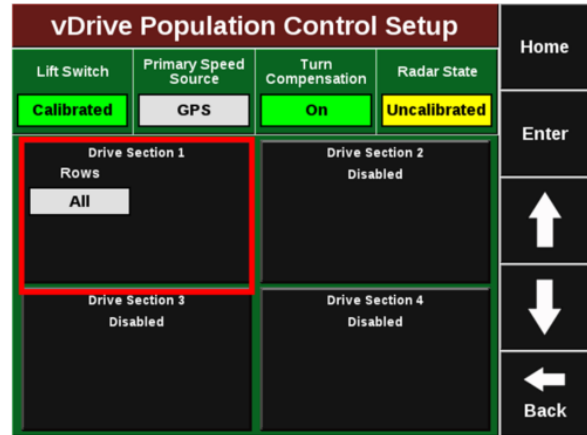
If all rows have the same population rate or the same seeding prescription attribute only one rate section needs to be configured. If only one rate section will be used select “Rate Section 1” and then select “All”. Use multiple rate sections when controlling different population rates between rows or sections.

To setup a rate section, select one of the four Rate Sections. Assign appropriate rows to the rate section. This may be Odd, Even, Left, Right or List. When selecting “List”, define which rows are to be used by touching the row numbers. Rows that are crossed off are not assigned to this rate section.

### Step 4:

Set up the Swath Control. Swath Section Setup allows the operator to divide the planter into different swath sections. There are four different options for Swath Control.

**Note:** If setting up multiple Swath Sections, they **do not** have to be the same as Rate Sections.



**Disabled** — Rows will not shut off seeding when entering an area that is already planted.

**Single Row** — Each row will shut off individually as that row enters an area that is already planted.

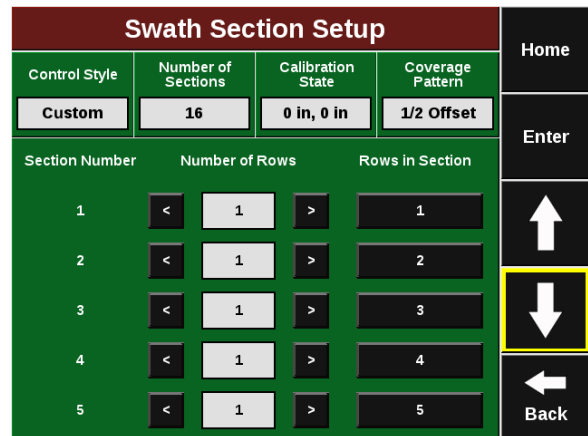
**Dual Ends** — The outside two rows on each end of the planter are linked together. The inside rows are single row swath. Generally used with WAAS GPS correction.

**Custom** — If one of the pre-set settings is not acceptable, a custom setting can be selected. This will allow the operator to group any rows together for swath control.

### Step 5:

#### If Custom is Selected:

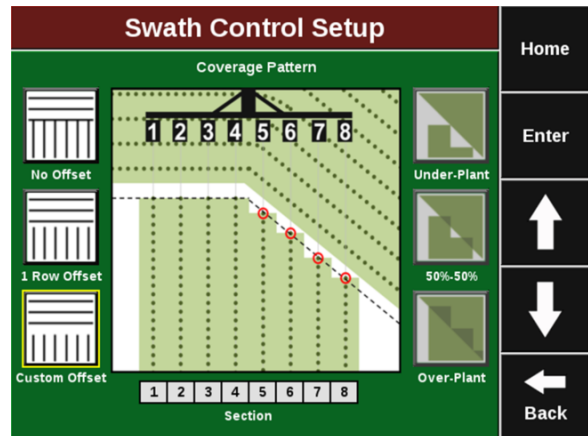
1. Select the total number of sections to set up.
2. For each section select the number of rows by pressing on the white box in the Number of Rows column and manually enter a value or by using the arrows to increase or decrease the number of rows in a section number
3. The Rows in Section will auto-populate as the Number of Rows is determined.
4. If a section does not have rows assigned to it, that section number will be ignored.



### Step 6:

Select the Coverage Pattern for swathing by selecting “Coverage Pattern”. The Coverage Pattern controls how the vDrive will swath to previous planting coverage.

**Note:** The Under-Plant, 50%-50%, and Over-Plant options are only available if rows are tied together in sections for swathing.



**No Offset** – The planter will place the last seed right at the beginning of the headland.

**1 Row Offset** – The planter will stop seeding 1 row prior to the headland.

**Custom Offset** – You manually set the distance away from the headlands the planter will start/stop seeding.

**Under-plant** – The section will shut off when the first row in the section hits the offset point.

**50%-50%** - The section will shut off when the middle of the section hits the offset point.

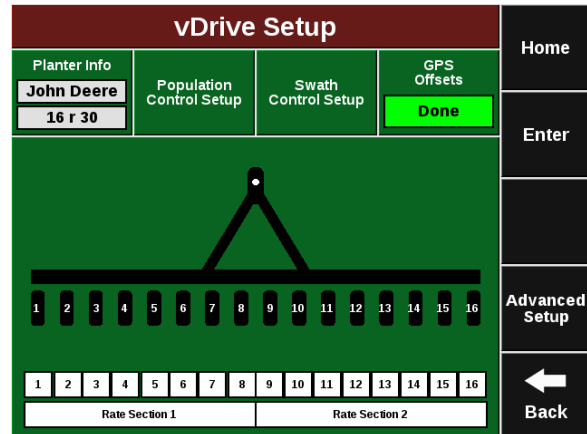
**Over-plant** – Will shut off the section when the last row in the section hits the offset point.

**Step 7:**

**Step 8:**

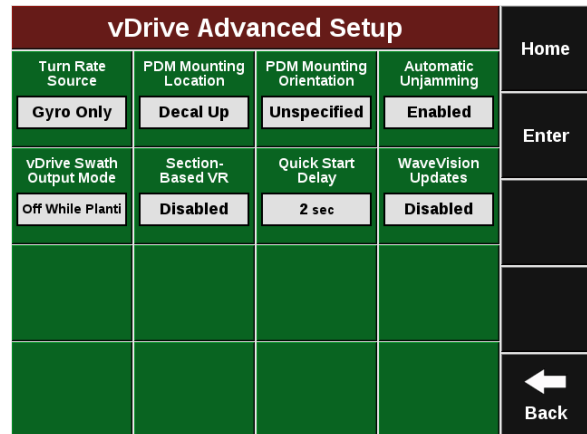
After configuring both the Population and Swath Control, make sure that the system is configured correctly by viewing row assignments on the vDrive setup page. Below the planter, there is a summary of the Swath setup (top row) and the Rate section setup (bottom row). Ensure this is set up properly.

**Note:** Any row that does not have a number below it is not part of a swath section and will not swath off.



## vDrive Advanced Setup

To setup the PDM select “Setup” – “Systems” — “vDrive” — ”Advanced Setup”



**Automatic Unjamming** – vDrive attempts to unjam the meter if a jam is detected. The default setting is Enabled. Select Disabled to not use this feature

**vDrive Swath Output Mode** – configure when and how to send power through the swath output harness only if a swath output harness is installed.

**Off While Planting-** No voltage will be sent through the swath output harness when planting

**On While Planting-** Voltage will be sent through the swath output harness when planting

**Always Off-** Voltage will never be sent through the swath output harness

**Always On-** Voltage will be sent through the swath output harness when the planter is lowered

**Section Based VR** – Control population changes either row by row or by each rate section. When this setting is disabled, each row will change population individually as needed based on

the seeding prescription. This is the default setting. When this setting is enabled, all rows in a rate section will change at the same time based on the seeding prescription.

**Quick Start Delay** – Adjust the length of the countdown when the vSet Select Quick Start button is pressed. See the vDrive Quick Start section below for more information.

**WaveVision Updates** – WaveVision updates are Disabled by default. If the WaveVision Firmware needs to be updated, change this setting to Enabled.

**Primary Speed Source** — GPS is the default Primary Speed Source. When both GPS and Radar are stable, the selected speed source will be the speed source used. On systems where Radar is the desired speed source and both Radar and GPS are stable, select Radar as the primary speed source. (this setting is under the Population Control Setup)

**PDM Mounting Location** - Determine if the PDM is mounted with the decal on the PDM up or if the decal on the PDM is facing down.

**PDM Mounting Orientation** - Determine the orientation of the fuses. The orientation is based on the operator sitting in the cab. Fuses can be orientated either: Forward, Right, Backwards, or Left.

**Turn Rate Source** – Press on the “Turn Rate” button to adjust the turn compensation for vDrive control.

**On** – This is the RECOMMENDED and default setting for all SRM systems. In this setting, both control and monitoring will be based on the speed of each individual row. For example; all rows will keep a consistent seed spacing around curves.

**Control Only** – Each row will control to it’s own calculated speed and will keep consistent seed spacing. However, the reporting will only show a population based on the center of the planter. There will be a high population on the outside rows and lower population on the inside rows of the curve.

**Monitor Only** – Control for all rows will be based on the center of the planter. However, reporting will show a population based on the distance each individual row traveled. Resulting in a higher population for the inside rows and lower populations for the outside rows.

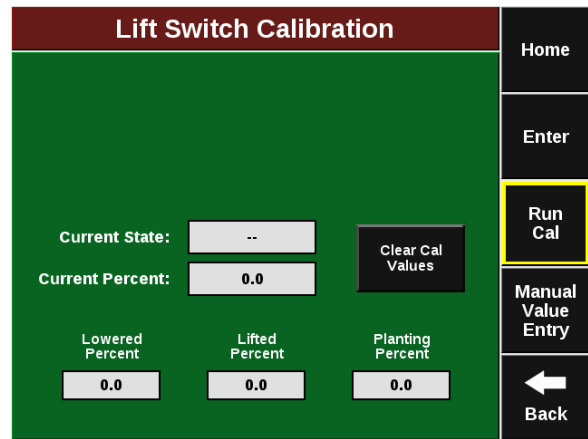
**Off** – both control and monitoring will be based on the speed of the tractor. Seed Spacing will be closer on the inside of the curve and further apart on the outside of the curve.

## Calibrate Lift Switches

A calibrated lift switch is required for vDrive operation. vDrive will only operate when the switch indicates that the planer is lowered. Calibrate the lift switch so that it indicates the correct lifted/lowered state of the planter.



To calibrate lift switches select “Setup” – “Systems” – ”Calibration” — “Lift Switch”.



To calibrate the Lift Switch press the “Run Calibration” button on the right side of the screen. Follow the on-screen instructions. The results will then be displayed on the main Lift Switch Page. For issues with the lift switch not calibrating or functioning correctly, see the Troubleshooting Guides for Lift Switches in the Dealer Service Manual. After a calibration has been completed, verify the system is reading the lift switch correctly by watching the “Current State” information on the Lift Switch page.

Manual values can be entered by selecting the “Manual Value Entry” button.

To clear out the current calibration, press “Clear Cal Values”.

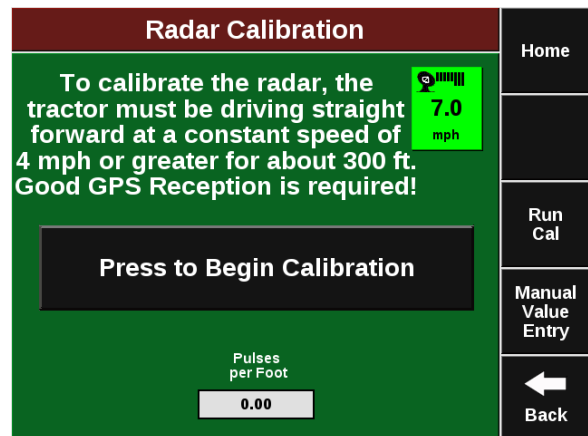
## Calibrate Radar

A speed source is required for vDrive to operate. For best results, GPS and Radar should be used.

To calibrate the radar select “Setup” – “Systems” – ”Calibration” — “Radar Status”

The Radar Status page allows the operator to calibrate the radar.

Select “Calibrate Radar” at the bottom of the screen and then follow the on-screen instructions. The calibration process will require a good GPS signal while the operator drive straight for at least 300 feet at a constant speed of 4 mph or greater.



If the Pulses Per Foot is already known, enter this value manually by selecting the “Pulses Per Foot” box.

**Note:** A GPS speed source must be used in addition to Radar for mapping. See the 20/20 SeedSense Operator’s Guide for information on connecting to GPS.

## Configure Crop Type

For the system to plant correctly, the crop type must be correctly configured. Select “Setup” – “Crops”. Configure each crop type. The information configured on the crops page is saved by crop type.

Crop Setup				Home
Planter	Systems	Crops	Diagnose	
Corn (Active)				Change Crop
Seeds / Disk	Default Population	Active Rows	Swath Coverage Pattern	Edit Crop Name
27	32,000	All	1/2 Offset	
Quick Adjust Pop	Seeds to Average			Restore Defaults
500	300			
Economic Adjustments	Limit Adjustments	Liquid Alerts	Advanced Adjustments	← Back

**Active Crop** – Select the appropriate crop type by pressing “Change Crop”. If the crop type being planted is not available, select “Add Crop” to choose from all available options.

**Seeds/Disk** – Select the correct Seeds Per Disk for the disk being used in the meters. If the seeds per disk are not setup correctly, the applied population will be incorrect.

**Default Population** – Enter a default population that will be used if the system is not given a commanded population. Additionally, select what the system will plant if it goes outside of a seeding prescription that is active. Select “Default” (the default population is used when outside of the prescription) or “Current” (use the same population that was being planted prior to exiting the prescription).

**Active Rows** - Select the rows that will be planted with this crop. Rows not selected will be disabled.

**Swath Coverage Pattern** – Links to coverage pattern setup in vDrive or RowFlow setup menu.

**Quick Adjust Population** – Determines the amount of seeds the population is adjusted by when pressing the + or – button for seeding rate adjustments in the vDrive or RowFlow Control.

**Seeds to Average** - Seeds to Average determines on how many seeds are used in the rolling average for calculating population, singulation, spacing, and SRI. Set this to about 1% of the population for the crop (i.e. for corn, 300 seeds – 1% of 30,000 – is a good setting).

**Offset Distance D & Offset Distance E (Advanced Adjustments)** – If using a Split Row planter with a hitch offset, measurements D & E from the planter GPS Offset setup can be adjusted in the Crop Setup. If moving the hitch offset to different positions for planting different crops, measurements D and E can be saved on a by crop basis in the Crop Setup.

**Change Crop** – Change, Delete, and Add Crops.

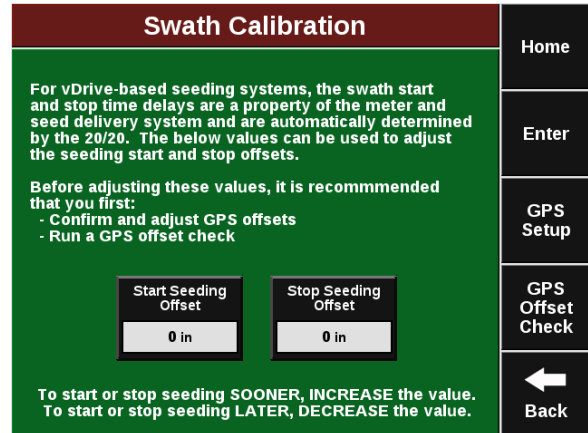
**Add Crop** – Add a crop type to the quick crop selection. The added crops will be available to be selected as the Active Crop. Added crop types will also be available in the Products menu when assigning hybrids.

**Delete Crop** - Delete crop types from the quick selection menu. Deleted crops will not be available when pressing the Active Crop button nor will they be available when assigning hybrids.

## Swath Calibration

For accurate swathing, adjustments will need to be made to the Swath Calibration. Navigate to “Setup” — “Systems” — “Calibration” — “Swath Calibration”.

**Note:** Before proceeding, verify GPS is being received, GPS offsets are confirmed, and the GPS Offset Check has been ran. Refer to the SeedSense Operator’s Guide for further details.



1. Plant a test pass for swathing against.
2. Drive into and out of it with several closing wheels lifted, or dig seed on several rows to verify swath placement.
3. Enter the average of the offset coming out of the headland (starting) into the “Start Seeding Offset”.

**Note** To stop sooner, increase the value, to stop later, decrease the value. (A negative value can be set)

4. Enter the average of the offset coming into the headland (starting) into the “Stop Seeding Offset”.

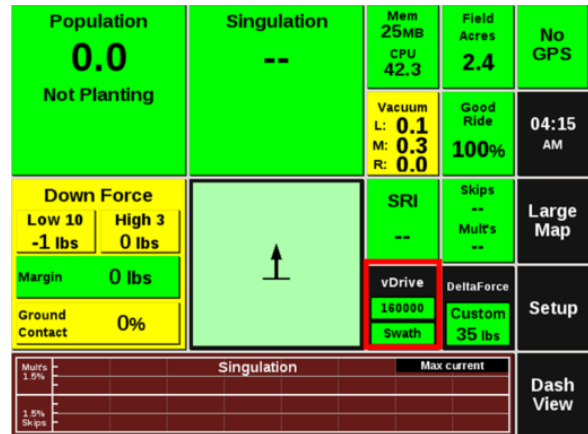
**Note** To stop sooner, increase the value, to stop later, decrease the value. (A negative value can be set)

5. Drive into and out of the pass again with several closing wheels lifted, or dig seed on several rows to verify swath placement after the adjustment.

If further adjustments are needed, complete steps 2–5 again. Refer to the Dealer Service Manual if swathing is not consistent.

## vDrive Control

The vDrive Control button is located on the right hand side of the home screen. This button will display the status of the two functions of vDrive: Population and Swath Control



### vDrive Control Button Population Legend

**Variable** – A seeding prescription is assigned and the vDrive system is in variable rate mode.

**Multiple** – the vDrive system is in manual mode and there are multiple rate sections configured

**Rate Off:** Unable to plant because the master plant switch being in the down position.

**A Number is Displayed** – the vDrive system is in manual mode with only a single rate section. The number that is displayed is the commanded manual population rate for that rate section.

**Green:** System is functional and has a commanded rate

**Yellow:** There is a prescription assigned to the active field, but the system is set to plant a manual rate.

**Red:** Unable to plant.

### vDrive Control Button Swath Legend

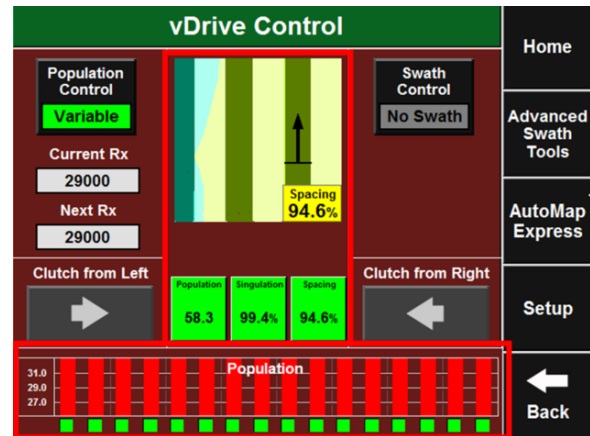
**Green:** Swath Control is enabled and set to automatic mode

**Yellow:** Swath Control is enabled and set to manual mode

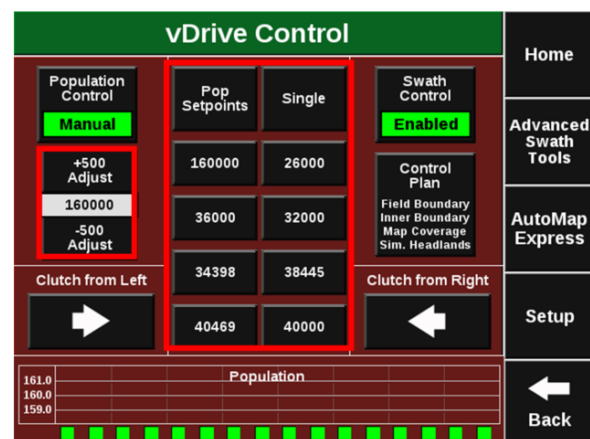
**Red:** Swath Control is disabled due to the swath switch being in the off position on the Cab Control Module or the planter is swathed off due to coverage.

## Population Control

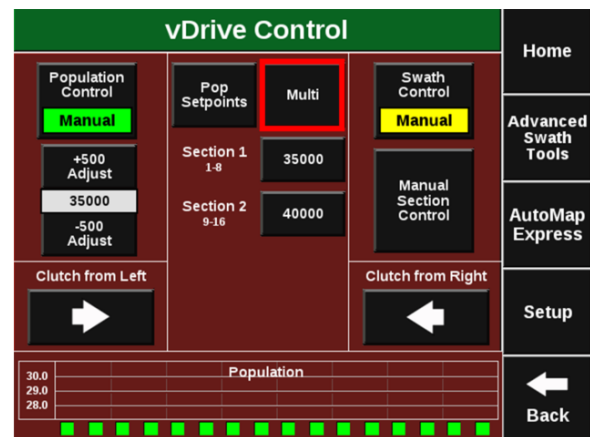
Press the vDrive button to access the Control Screen. To manually assign or adjust the seeding population rate, select “Population Control” on the left side of the screen, this will switch the system between Variable and Manual. If multiple rate sections were configured in vDrive setup, select between “Single” or “Multiple”. If a single rate section was configured, use “Single”.



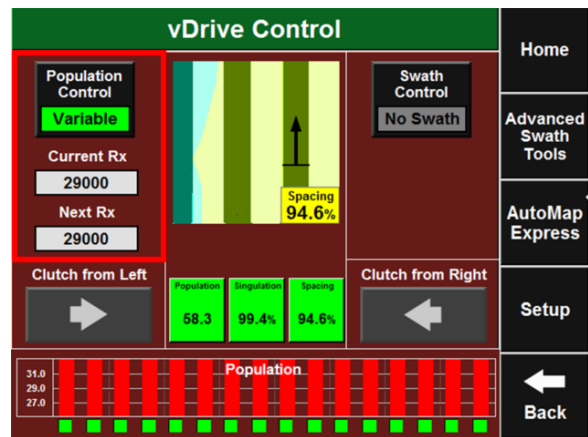
**Single** – Assigns the same population rate to all rows. Select a preset population from the list of population set points displayed on the screen (configure this list using the “Edit Set Points” button on the right hand side of the screen) and use the + or - buttons to increase the rate by 500 seeds (or the amount that the “Quick Adjust Population” was set to in the Crops setup), or tap on the white box displaying the current population to manually enter a rate.



**Multiple** - Assign a different population to each Rate Section that was configured during the vDrive Setup. Use the + and – buttons to adjust the populations up or down the same amount for each Rate Section, or tap on each population to manually enter a new population for each Rate Section. The + and – buttons will adjust by the amount set for the “Quick Adjust Population” in the Crops menu.

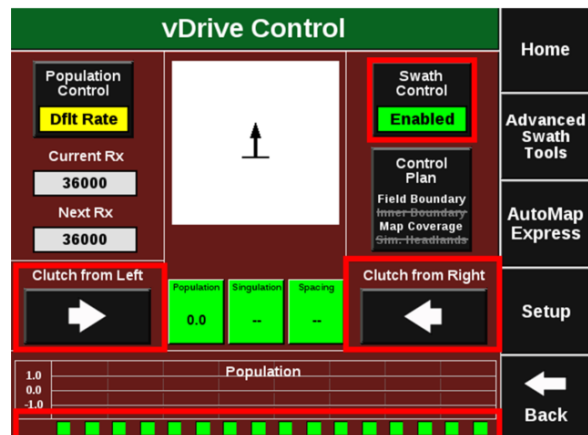


If a seeding prescription is assigned to the active field, Variable mode will be selected as the default setting. When in Variable mode, the system will control to the seeding prescription. To move from Variable mode to Manual mode, select “Manual” at the top of the screen. This ignores the assigned seeding prescription and continues to plant at the assigned manual rate. Manual will turn yellow on both the vDrive Control page and the Home Screen if a manual rate is selected when there is also a seeding prescription assigned to the active field.



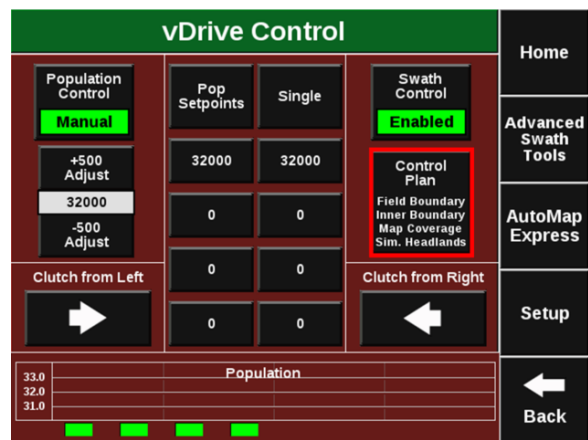
### Swath Control

The vDrive Control screen includes controls for Swath. If the Swath Control switch on the CCM is in the up position, use the vDrive Control screen to configure the automatic swath settings and to switch back and forth between manual and automatic swath control mode. When Swath Automatic is selected, press on “Swath Control Plan” to configure what the vDrive motors will swath to.



**Note:** The status of the vDrive swath sections can be viewed at the bottom of the screen in the mini chart. Yellow color indicates swathed off. (Not Planting)

Items in the Swath Control Plan that are outlined and in bold are active components of the Swath Control Plan. The planter will automatically swath on and off to these components while planting. Those that are crossed out are inactive and will not be controlled to.



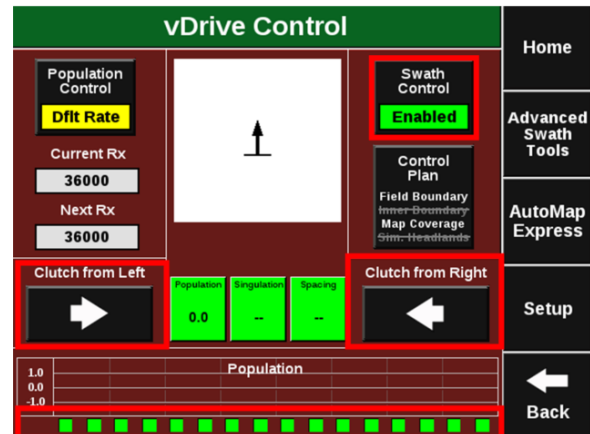
**Field Boundary** – Swath rows off if they go outside of the field boundary that has been assigned to the active field.

**Inner Boundary** - Swath rows off if they go inside of an inner boundary that has been assigned to the active field as part of a boundary file.

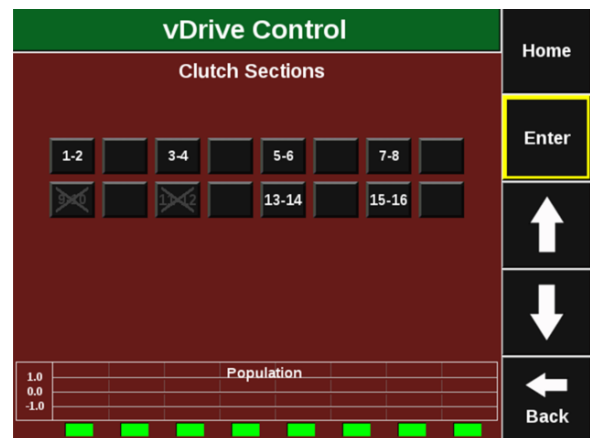
**Map Coverage** - Swath rows off that cross into an area of the field that has already been planted.

**Simulated Headlands** - Swaths rows off to an offset from the field boundary to allow headlands to be planted last. Simulated Headlands must be configured before the system will use them for swath control.

Pressing “Swath Control” will switch between Manual and Automatic swath control. Rows can be manually swathed off from either side of the planter by pressing the arrows. The boxes below the dashboard mini chart indicate the vDrive swath status. Yellow indicates that the motor is swathed off. (not planting)



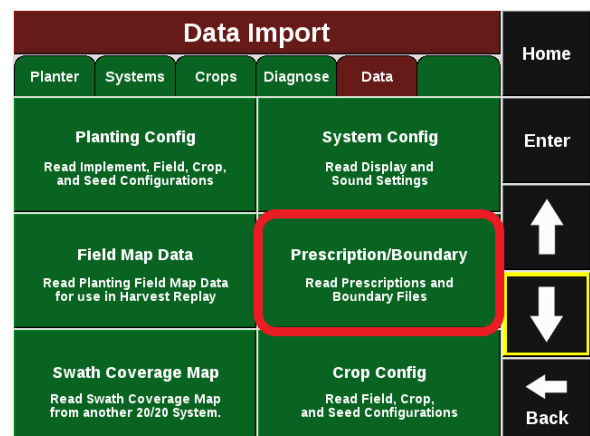
Additionally, the boxes representing rows on the planter can be manually swathed off/on by pressing “Manual Section Control”. Boxes that are crossed off are swathed off.



## Prescriptions and Boundaries

### Importing Files onto the Display

When importing Prescriptions and Boundaries onto the display, both the Prescriptions and Boundary files must be in the form of a shape and include at minimum the .shp, .shx, & .dbf file extensions. Load all of the files on the root drive of the USB drive or in a folder titled “2020 SeedSense”. Insert the USB drive into the side of the display. Then select “Setup” – “Data” – “Import” – “Prescription/Boundary”





## Assigning Prescriptions and Boundaries to a Field Name

Once Prescriptions/Boundaries have been imported into the display, they must then be assigned to the appropriate field names. To assign to a field select “Setup” – “Field” – Select either the Active Field or another Field name (selecting a different Client or Farm name may be required to locate the appropriate Field name). The Field Setup page has options to assign both a Boundary and Prescription.

Field Setup			Home
Client / Farm	Field Name	Entrance	Enter
Demo Client	Demo Field	0.00000 0.00000	
Field Number	Tillage	Field Acres	Delete Field
		0.0	
			Delete Coverage Map
			Attribute
			Boundary File
			Back

**Note:** Only one prescription can be assigned to each individual field. Prescriptions can be for seeding, liquid, and/or insecticide. To combine multiple types into one prescription, create separate attributes for seeding, liquid, and insecticide. If no seeding prescription is assigned, a manual rate must be selected in the vDrive or RowFlow Control Page.

**Note:** A field can have either a Boundary or a Seeding Prescription, both a Boundary and Seeding Prescription, or neither assigned to it. A boundary file is only used for swathing off rows on the planter if they go outside of the boundary. A boundary file can have both an exterior and interior zones.

**Note:** The option to assign a prescription will only be available if RowFlow or vDrive is configured as the Drive Type and a rate section or motor configuration has been configured.

### Boundary:

To assign a Boundary File to the selected field, press the “Boundary File” button. This will display ALL shapefiles that have been imported into the display. Ensure that the appropriate boundary file is selected. After selecting the boundary file name, an attribute can be selected. It is not necessary to select an attribute for a boundary file.

**Note:** Boundary files that have been recorded by the display can also be assigned to the field using the same process.

Field Setup			Home
Client / Farm	Field Name	Entrance	Enter
Demo Client	Demo Field	0.00000 0.00000	
Field Number	Tillage	Field Acres	Delete Field
		0.0	
			Delete Coverage Map
			Attribute
			Boundary File
			Back

## Seeding Prescription:

To assign a Seeding Prescription to the selected field, press the “Prescription” button. This will display ALL shapefiles that have been imported into the display. Choose the appropriate prescription for the field name. After selecting the prescription name, an attribute MUST be selected for each rate section that has been setup for the planter. An attribute is based on a defined product and contains a single defined rate for each management zone and is defined/named during the creation of the prescription. A different attribute can be selected for each rate section (allowing each rate section to be controlled by a different attribute/seeding rate), or the same attribute can be selected for each rate section.

Field Setup			Home
Client / Farm	Field Name	Entrance	Enter
Demo Client	Demo Field	0.00000 0.00000	
Field Number	Tillage	Field Acres	Delete Field
		0.0	
		Prescription	Delete Coverage Map
		Attribute	
		Boundary File	Back

The name of the prescription assigned to the field will be displayed in the Prescription box while the Attribute names assigned to rate sections will be displayed in the Attribute box.

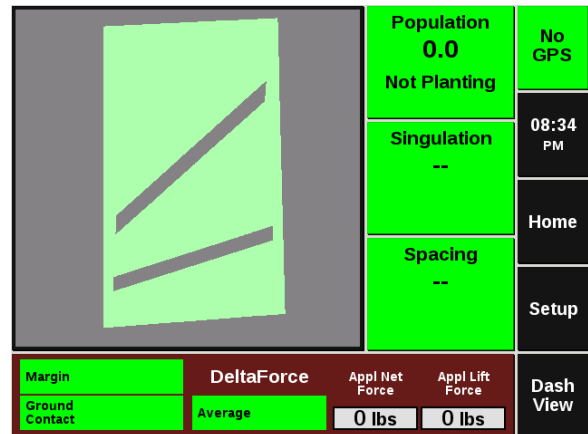
## Prescription & Boundary Processing Modes

At the bottom of the prescription assignment screen there is an option to adjust the Prescription Polygon Processing Mode. While this mode can be adjusted, the “Standard” setting is the default setting and is the processing mode most commonly used. Changing the mode to “All Exterior” adjusts the way the monitor reads the polygons that create the different zones. They are changed so the display reads all the zones as exterior polygons (ignores interior polygons). This polygon processing mode should only be changed if there are issues with the display correctly reading the prescription or boundary file.

Field Setup		Home
Select Prescription File		Enter
** None ** (No Prescription Map)		
Headland Pop		↑
RowFlow Demo Boundary		
RowFlow Demo Pop		↓
Standard Polygon Processing Mode	All Exterior Polygon Processing Mode	Back

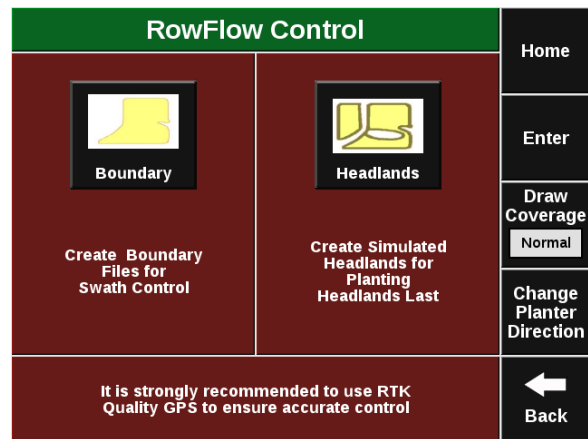
## Viewing the Boundary and Prescription

Boundary and Prescription files that have been assigned to a field can be viewed on the home screen for the active field.



## Recording Boundaries & Simulated Headlands

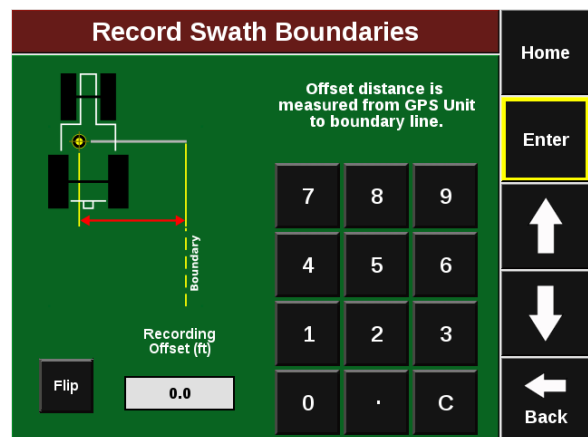
Pressing the “Advanced Swath Control” button on the RowFlow or vDrive Control screen gives access to two Advanced Swath Tools. These tools should only be used with RTK quality GPS to ensure accurate performance. Using poorer quality GPS can result in drifting boundaries and inaccurate clutch control.



### Recording Boundaries

Pressing the “Boundary” button takes you to the Record Swath Boundaries screen. Boundaries recorded are for Swath Control only. They do not play a role in variable rate seeding except that they can be used in AutoMap Express to generate a soil map.

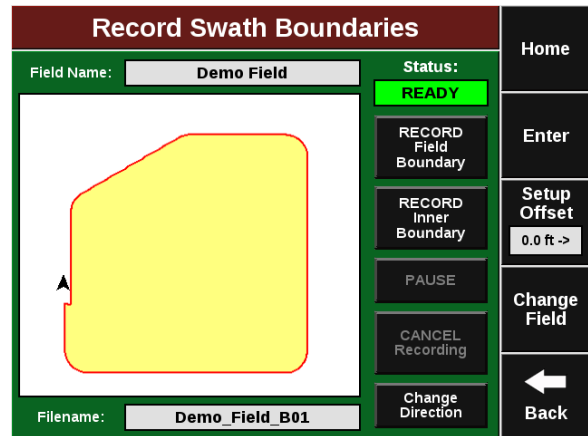
Before recording a boundary, you will need to enter a Recording Offset Point. Press the “Setup Offset” button on the Record Swath Boundaries page. Now, enter the distance from the GPS unit to where you would like the boundary line to be recorded. If you are recording to the opposite side of the vehicle, press the FLIP button.



### Step 1:

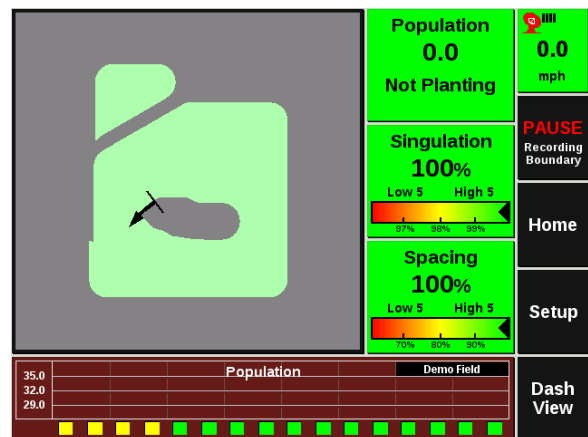
To begin recording, press “Record Field Boundary”. As you drive the boundary, it will be displayed on the screen. Press the “Pause” button to pause recording (such as when turning a corner) and “Cancel” to cancel the recording. If you are planting while recording, you may press “Home” to see the dashboard screen.

**Note:** If “Pause” is selected, and the location changes, the system will snap a line to the new location.



### Step 2:

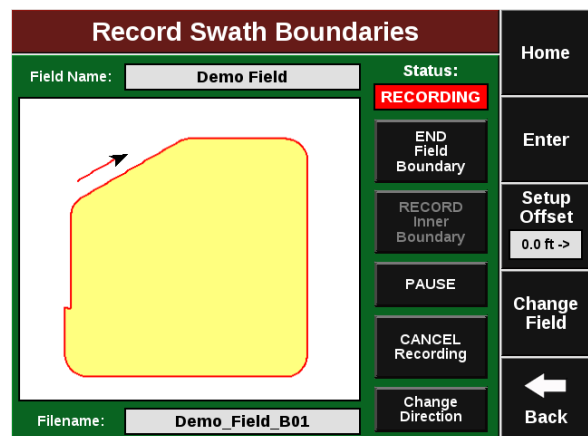
If planting while recording a boundary, the black button below the speed indicator will indicate your recording status. Pressing this button will return you to the Record Swath Boundaries screen.



### Step 3:

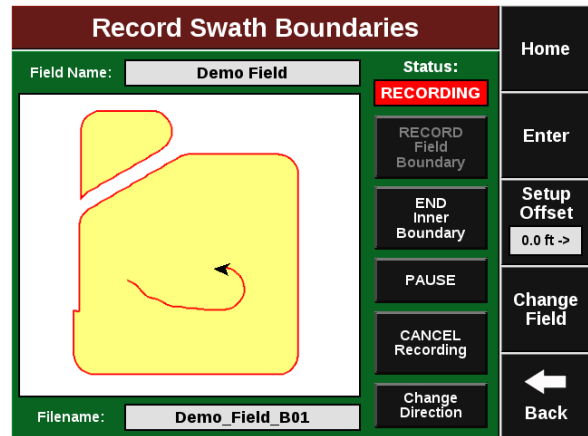
Once your boundary comes within one offset-width of the starting point, you will be prompted to either close the boundary or continue recording. This completes the recording of the field boundary. You may now choose to record an additional Field Boundary using the same process. This must be a boundary applying to the same field.

**Note:** If “End Inner Boundary” is pressed, the system will automatically snap a line to the start of the boundary.



#### Step 4:

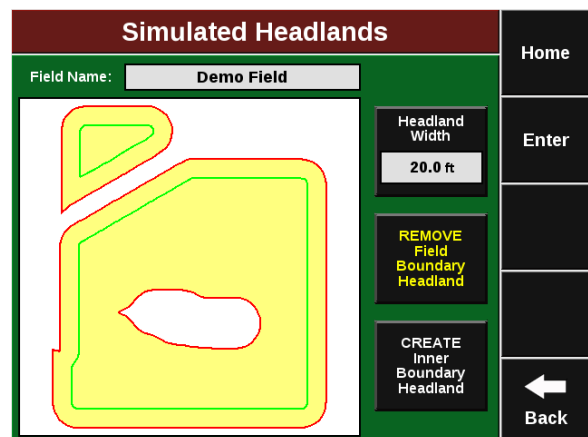
Inner boundaries may also be recorded by selecting “Record Inner Boundary”. This can be completed independently of an exterior boundary.



#### Simulated Headlands

Pressing the “Headlands” button on the Advanced Swath Tools page brings you to the Simulated Headlands screen. This feature offsets the field boundary for planting them last.

To create a simulated headland, designate the width of the headland. Press the “Headland Width” button and enter the desired width in feet. Now press the “Create Field Boundary Headland” and/or the “Create Inner Boundary Headland” buttons to create a simulated headlands. To remove the simulated headlands, press the buttons which are now labeled “Remove”.



#### AutoMap Express

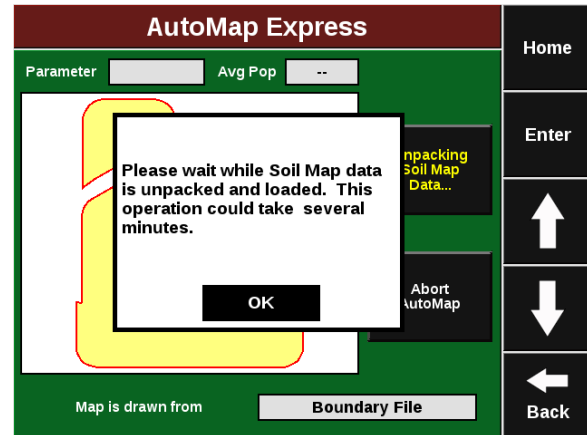
AutoMap Express is a feature within the 20/20 display that allows you to generate variable rate seeding prescriptions while in the field or edit existing prescriptions with up to 400 polygons. To use AutoMap Express, you will need to plant around the outside edge of your field, record a boundary by driving the border of the field with a tractor or ATV immediately before creating the prescription, or import an RTK-quality boundary. Any of these methods will allow AutoMap Express to load the USDA soil data for the field and generate a soil zone-based prescription map.

### Step 1:

Once you have loaded a boundary for the field or planted a pass around your field, you may use AutoMap Express. Press the RowFlow or vDrive button on the home screen and then press the “AutoMap Express” button on the right side of the screen. Insert a USB drive with USDA soil data for your county and press “Get USDA Soil Map for Field”.

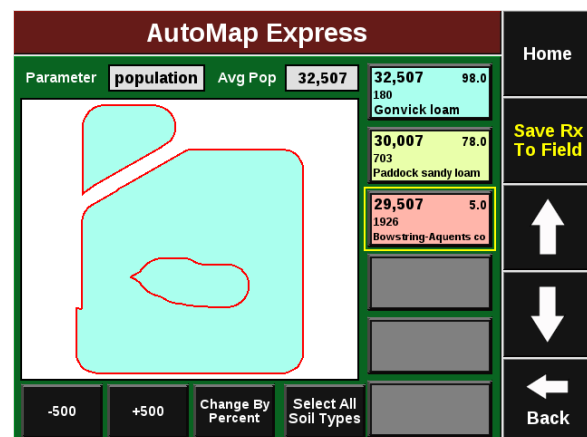
**Note:** The 2012 USDA maps can be downloaded at <https://support.precisionplanting.com/soildata/>

**Note:** You may also choose to get the “USDA Soil Map for Field” before you have closed coverage. If you do, it will generate a map based on the farthest extents of the area you have planted.



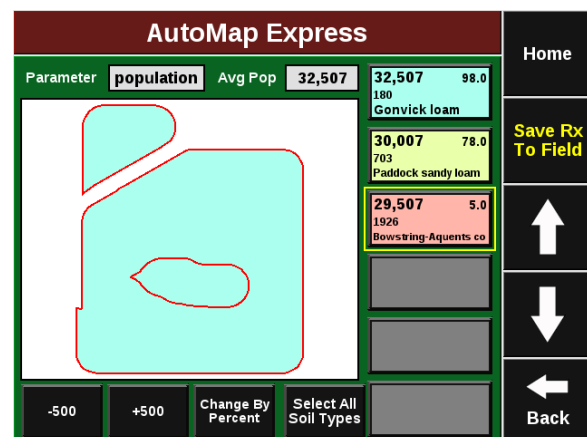
### Step 2:

Once the soil map loads (this process may take up to two minutes), you will be able to see the different soil types both on the map and on the corresponding colored buttons on the right. The name of the soil type will be displayed below the population on each soil type button. The number displayed is the Corn Yield Index, if available. If that is not available, Crop Productivity Index is used. If neither value is available, then N/A is displayed.



### Step 3:

To adjust the target population of all soil types together, press the “Select All Soil Types” button. All soil types will now be highlighted. You can now adjust the target populations of all soil types at the same time using the arrows at the bottom left of the screen.



## vDrive Quick Start

The vDrive Quick Start button allows the operator to start spinning the meters while stopped. This will allow the operator to start moving while the meters are already spinning, helping to avoid any skips in the field. Press the button once to begin a countdown. When the countdown reaches zero, the meters will begin to spin. They will spin at a simulated speed of 3 mph and will continue to spin for seven seconds or until the speed of the planter is greater than 3 mph. The default time when the button is pressed is 2 seconds until the motors begin to spin. This time can be adjusted in the Quick Start Delay located in the vDrive Advanced Setup Page.



The Quick Start button will be green and say “vDrive Quick Start” when not in use.



When it is pressed it will begin to countdown to zero.



When it changes to say “vDrive Quick Start Active” (flashing between green and yellow) the meters will begin to spin.

The vDrive Quick Start button must be added to the home screen before it can be used. Add the quick start button when editing the dashboard. Refer to the SeedSense Operator’s Manual on how to configure the Dashboard.

## Cab Control Module Functionality



The switch on the left hand side is the Master Plant switch. For all control products to function the Master Plant switch must be in the up position. If it is in the down position, all control products will immediately be disabled.

The three switches in the middle are swath section switches for vDrive and Motor section switches for RowFlow. Toggle these to the down position to swath off a rate/motor section. If all rows are assigned to the same rate section on vDrive the planter will be divided into the three parts with each toggle switch controlling swath for one third of the planter. If these switches are in the down position, the rows assigned to the switch will be shut off. Assign rows to rate sections in the vDrive/vSet Select setup screens.

The outside two switches in the middle are also used to auto load the meters. Raise these two switches up together for one second to load the meters. Meters will spin and dispense some seed as seed is loaded to the disk. This allows seed to immediately be dispensed from the meter when beginning to plant.

To continue to spin the meters, lift and hold these two switches. Meters will continue to spin as long as they are held up.

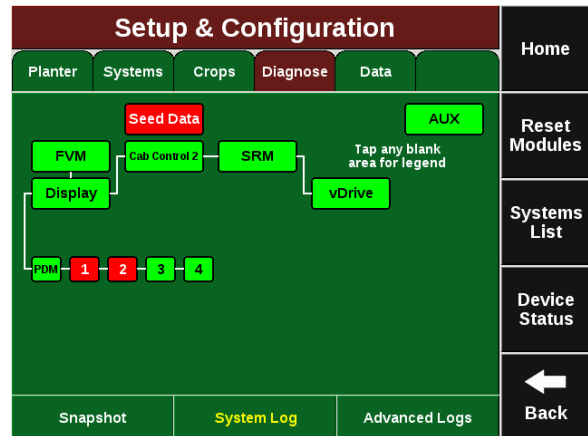
The switch on the right side is the Master Swath switch. If this switch is in the down position, all rows will immediately be swathed off. (Continue planting)



## vDrive Diagnostic Information

Prior to planting ensure that all planter diagnostic information is ok. Select “Setup” – “Diagnose”. Everything should be green on the diagnose page. Select any blank area to view an explanation of what each color indicates.

**Note:** Modules may be updating during initial connection. Once updates are complete, all modules should be green. If the modules are not green, confirm that the number of rows and planter setup is correct. If still experiencing issues, refer to the Dealer Service Manual .



### Color Legend:

Green - the system is working correctly and communications are good.

Yellow – a Device or sub-component is not 100%

Red – Device has failed, or is expected, but not detected.

White – Device is detected, but is not expected.

Black – Row has been disabled in the planter configuration.

Gray – Device is being detected, updating firmware, or unreachable.

### vDrive Level 2 Diagnose Page

Select the vDrive button on the Diagnose page to verify that all information looks good on the vDrive level 2 diagnose page.

Row	Pop Actual	Pop Cmd	RPM Actual	RPM Cmd	Stability	Supply Volts	Drive Amps	Duty Cycle
1	Missing	32000	0.0	0.0	0%	12.0	0.00	0%
2	Missing	35000	0.0	0.0	0%	12.1	0.00	0%
3	Swath	35000	0.0	0.0	0%	12.0	0.00	0%
4	Swath	32000	0.0	0.0	0%	12.0	0.00	0%

**Population Actual** - This is the measured population the meter is actually planting reported by the seed tube sensors. Rows that say “Not Apply” indicates these rows are not planting.

**Population Command** - The target population you want to plant.

**RPM Actual** - The actual RPM of the vSet meter.

**RPM Command** - The RPM of the meter needed to reach the target population.

**Stability** - Measures the variance of the drag on the motor. The higher the stability percentage the smoother the vDrive motor will be turning.

**Supply Volts** - The amount of volts being sent to the vDrive motor. Average range of supply volts - 12-15 volts

**Drive Amps** - The amperage the vDrive is pulling while in operation.

Standard operating range of current draw at 5mph

- Corn - .4-.6 amps
- Beans - .7-.9 amps

**Duty Cycle** - The percent of time that power is commanded on where the on/off cycles are occurring at 35 kHz.

Information about the Lift State (Raised or Lowered), Radar & GPS Speed, what the Forward Acceleration is, the Master Plant Switch (On or Off), and the Turn Rate being measured by the PDM is displayed at the bottom of the page.

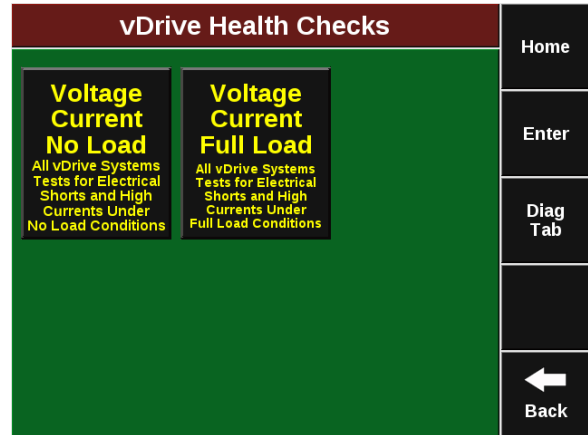
**vDrive Light Status**

The vDrive motors themselves give diagnostic information by using the red LED light.

<b>Light Pattern</b>	<b>Meaning</b>
No Light ( )	Device is not powered
Solid Light (____)	Device is being updated
Fast Blink (5Hz) (.....)	Device is powered, but lost communication
Steady Blink (1 Hz) (- - - -)	Device is powered and is communicating
Erratic Blink (.-.-.-)	Device is powered, but never communicated

## vDrive Health Checks

Always perform a health check on the vDrive system after installation or sitting for long periods of time. Perform any health checks in yellow before planting. Access the vDrive health check page by selecting “Setup” – “Systems” – “Health Checks” There are two vDrive Health Checks that can be run.



**Voltage Current No Load:** vDrive motors will cycle to assess performance of the electrical and mechanical systems. It will test for electrical shorts and high currents under no load conditions. No seed or vacuum is required for this test.

**Voltage Current Full Load:** vDrive motors will cycle to assess performance of the electrical and mechanical systems while vacuum is engaged and seed is present. It will test for electrical shorts and high currents under full load conditions. Seed and vacuum are required for this test.

Select each test to run and follow the on screen instructions when performing the tests.

A report card will be given for each row after completion of each Health Check.

**Note:** For assistance with diagnosing failed health checks, see the Troubleshooting Diagrams in the Dealer Service Manual.