mSet™

**mSet Operator's Guide
For Gen 3 20|20 Displays**

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Contents

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# mSet System Setup and Operation

There are four requirements for the mSet system to function:

1. mSet 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

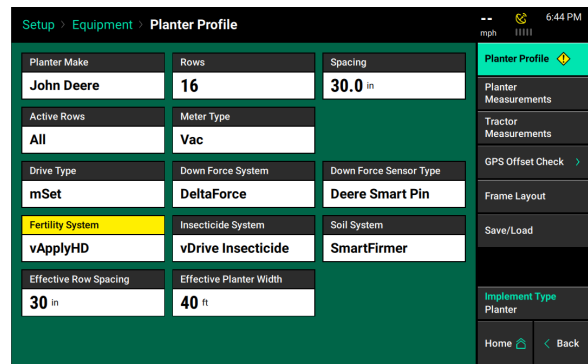4. The planter must be lowered.

Configuring Monitor for mSet

Step 1:
Set mSet as the drive type. Navigate to the planter setup page by selecting, "Setup" – "Equipment" – "Planter Profile".
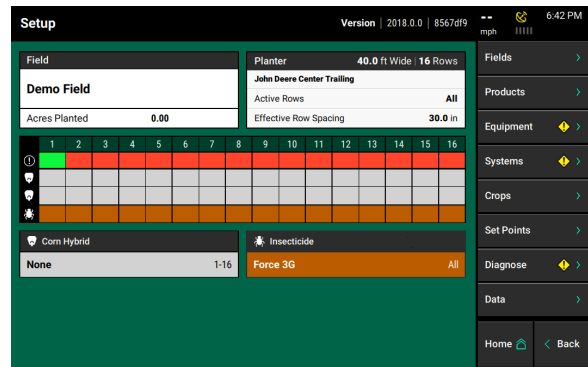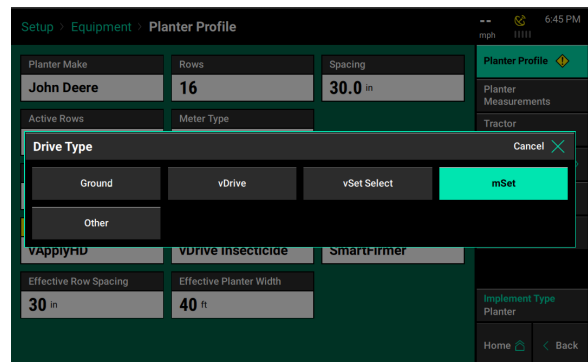
Step 2:
Ensure that "Planter Make", "Rows", "Spacing", "Active Rows", and "Meter Type" are correct.
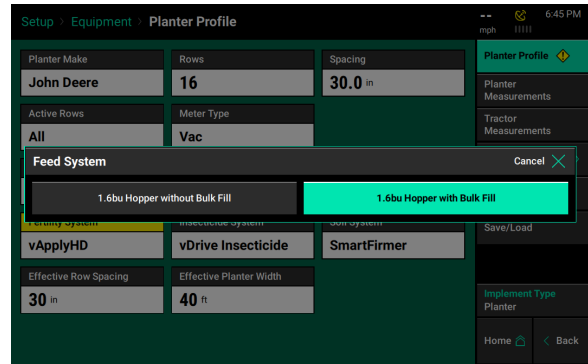
Step 3:
Press the "Drive Type" button and then select "mSet".

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Step 4:

When choosing mSet as the Drive Type, define the feed system that is being used so that the system will control correctly.

Step 5:

On the Home screen, a mSet button will appear on the right hand side of the screen in the Standard and Metric tab. This is the mSet control button. It will display population, hybrid, and swath information. Use this button to access the mSet control page. Refer to the mSet Control section for information on how to control mSet
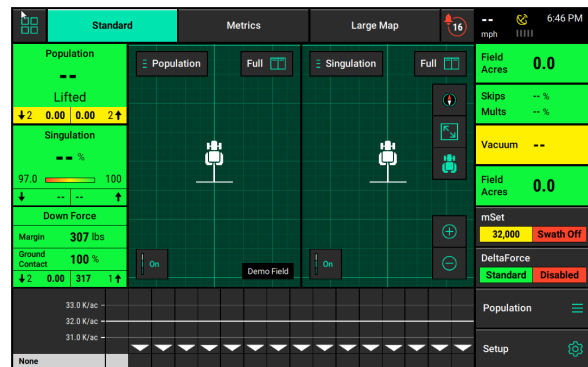
mSet Setup

Step 1:

Navigate to "Setup" - "Systems" - "mSet"
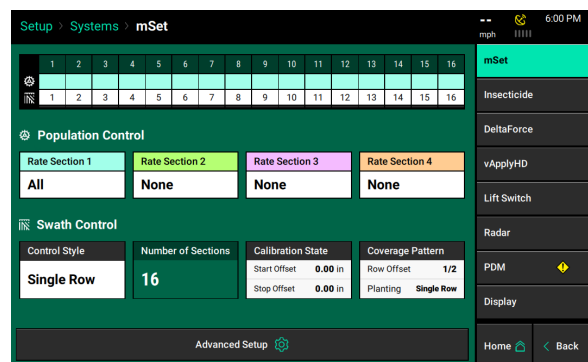
Step 2:

Set up "Population Control". Population Control Setup allows the operator to determine which rows to set to certain populations. The 20|20 can control up to 4 different rate sections at once. Each rate section can be assigned a different population, hybrid (when in manual mode) or seeding prescription attribute. A rate section can be any combination of rows. Any rows not assigned to a rate section will not plant or pass health checks.

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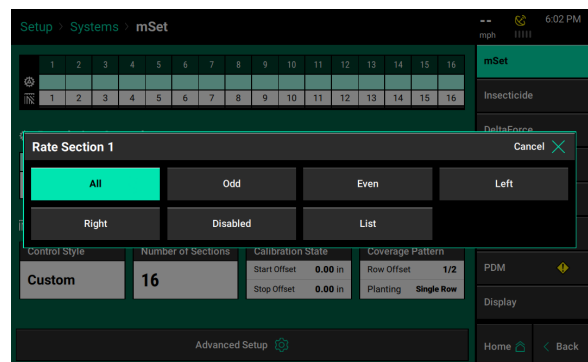
Step 3:

If all rows will have the same population rate, hybrid (in manual control), or 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 different rows or sections.

To set up 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 those row numbers so they turn green.

Note: Ensure that all rows are assigned to a rate section. Any row not assigned to a rate section will not plant.

Step 4:

Set up "Swath Control" Swath Section Setup allows the operator to divide the planter into different swath sections. There are four different options for Swath Control:
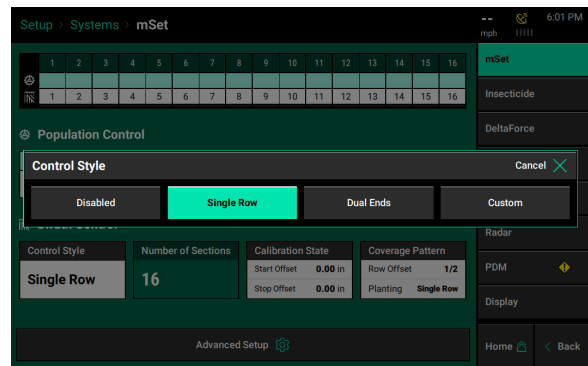
Disabled - Rows will not shut off seeding when entering an area that is already planted.

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.

Note: When setting up multiple Swath Sections, they do NOT have to be the same as the Rate Sections.

Step 5:

Custom Swath Sections

1. Select the total number of sections to set up

2. For each section select the number of rows by pressing the white box in the Number of Rows column to manually enter a value or by using the arrows to increase or decrease the number of rows in a section number

3. "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.
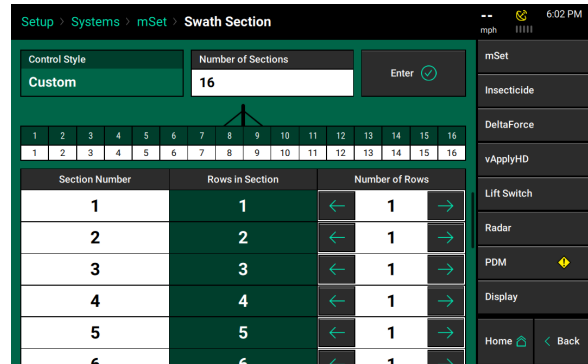
Step 6:

Verify Rate Sections and Swath Sections on the main mSet System page ("Setup" — "Systems" — "mSet").
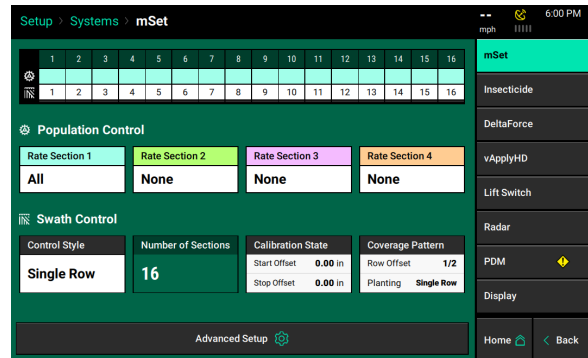
The bottom boxes under the planter indicate the Rate Sections that have been configured and what rows they correspond to.

The top boxes under the planter indicate the Swath Sections that have been configured and what rows they correspond to.

vDrive Clutch Calibration

Calibration State

If the vDrive system is not starting or stopping at the appropriate time, the Calibration State can be used to improve the timing

Confirm GPS offsets and run a GPS Offset Check prior to adjusting the Start and Stop Seeding Offsets.

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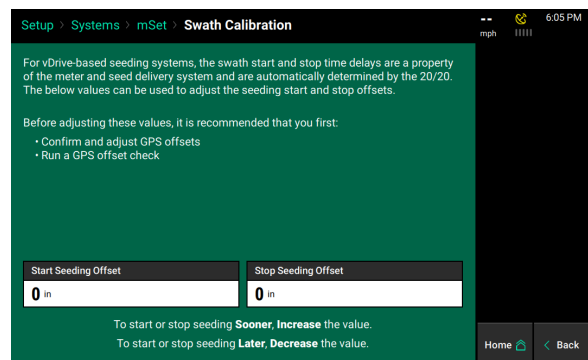
Always dig seeds to verify that the GPS offset measurements are working correctly.

Adjust the Start Seeding Offset to change where the system will begin dropping seeds. Find the distance from where the seeding is actually starting to where it should start by digging. Enter this distance in inches. Negative numbers will move the seeding backwards while positive numbers will more it forwards. Do the same with the Stop Seeding Delay for where the seeding should stop.

The Start Seeding Offset and the Stop Seeding Offset can be adjusted independently of each other. Enter the distance to adjust the offset in inches. Increase the value to start or stop seeding sooner and decrease the value to start or stop seeding later. The range of distances that can be entered is -120 – 120 inches.

Coverage Pattern

Define how the motors operate when entering and leaving already planted areas. Select the offsets and coverage pattern that is optimal for your specific operation.
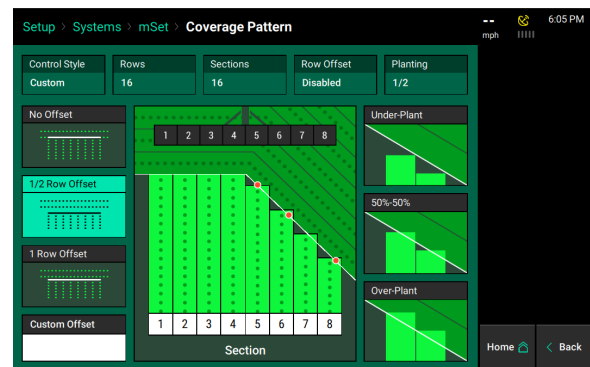
On the left hand side of the screen select a Row Offset. This is the distance from the headlands that seeds start and stop. On the right hand side of the screen select a coverage pattern. This is used when rows are tied together in swath sections.

Single row swath sections can adjust the offset, but not the coverage pattern (since each row is acting independently of each other for swath control).

If any swath section has more than one row, then both the offset and coverage pattern can be adjusted.

Select an Offset: (Left side of the screen)

    No Offset – The planter will place the last seed when stopping and the first seed when starting right at the beginning of the headland.

    ½ Row Offset – The planter will stop/start seeding half the distance of the planter's row spacing from the headland.

    1 Row Offset – The planter will stop/start seeding 1 row from the headland.

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

Select the Coverage: (Right side of the screen)

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Note: "Section" refers to the swath sections that were setup for the Swath Control Style. Each section will control independently of each other.

Underplant – The section will shut off when the first row in the section hits the offset point.
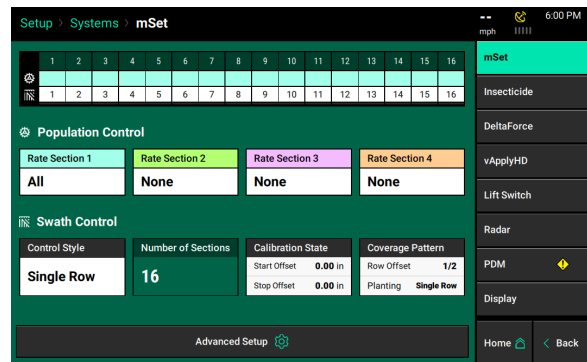
50%-50% - The section will shut off when the middle of the section hits the offset point.

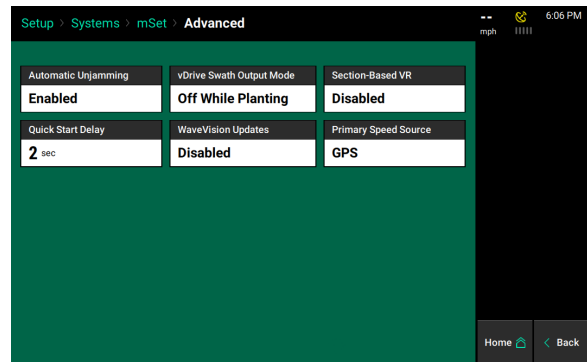**Overplant –** Will shut off the section when the last row in the section hits the offset point

mSet Advanced Setup

mSet Advance Setup Page

From the mSet Setup screen, select the "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.

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Quick Start Delay – Adjust the length of the countdown when the mSet 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)

Blower Control Mode – ***This setting is only available when 1.6 bu hoppers with Bulk Fill is selected as the feed system. The blower control module controls when the bulk tank fan is blowing seed to the meters. When planting with the hybrid in the bulk tanks the blower is on and when the hybrid is planting that was placed in the 1 bushel box the blower is off. The default setting for the Blower Control Mode is Automatic. In Automatic mode, the system will automatically turn it on and off depending on which hybrid is being planting. In this advanced setting, the operator can turn the blower to either always On or always Off.

Flow Reducer Mode – ***This setting is only available if Mini Hopper is selected as the feed system. The Flow Reducer reduces the air flow from the bulk tank that is currently not feeding seed to the mSet System. This helps to prevent seed from jamming in the seed delivery lines. In Automatic Mode, the system will automatically adjust the Flow Reducer as the hybrid being planted switches. The operator can also select between Open – no air for either bulk tank is reduced, Blue Only – only seed in the Blue tank will transfer to the Blue meter, and Orange Only – only seed in the Orange tank will transfer to the Orange meter.

Flow Reducer Offset (*Required) – ***This setting is only required and available if Mini Hopper is selected as the feed system. Each flow reducer has a sticker on it showing a calibrated offset. This is considered the zero position (fully open). This offset <u>MUST</u> be entered for the Flow Reducer to be fully open when needed.

SRM System Calibrations

For mSet to function are the planter must be lowered and there must be speed.

Note: If the Lift Switches, Radar, and PDM have already been configured and calibrated during the setup of a different product (e.g. vDrive) this process does not need to be repeated.

Step 1:
Ensure that the Lift Switches have been calibrated and are functioning correctly. The Lift Switch systems page can be found by navigating to "Setup" – "Systems" – "Lift Switch"– "Run Calibration".

Step 2:
Both GPS and Radar should be used as speed sources. If Radar is installed, verify that the Radar calibration has been completed. The Radar Status systems page can be found by navigating to "Setup" – "Systems" – "Radar".

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Step 3:

The PDM must also be setup correctly for mSet to have optimal performance. Ensure the PDM Mounting Location & Orientation are set correctly and zero the gyro. These settings can be found under "Setup" – "Systems" – "PDM".

For more information on setting up and calibrating the SRM System, see the 20|20 Operator's Guide and the vDrive Operator's Guide.

Configure Crop Type

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

Note: Place the baffle setting on the meter to 1.
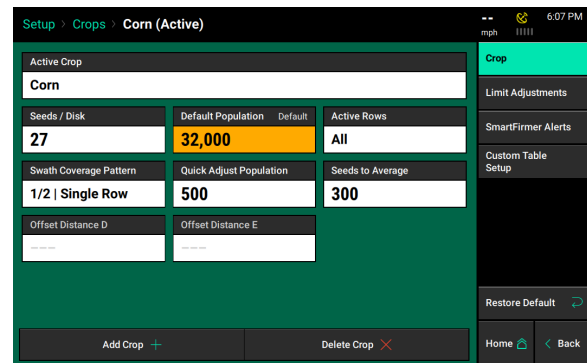
Active Crop – Select the appropriate crop type by pressing on the "Active Crop" button. If the crop type being planted is not available, select "Add Crop" to select from all available options.

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 between "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). After selecting the default population, press the check mark button. Finally, select which tank (Orange or Blue) that will be used to plant the default population. Only one hybrid can be selected. Essentially, you are selecting a default rate and a default hybrid.
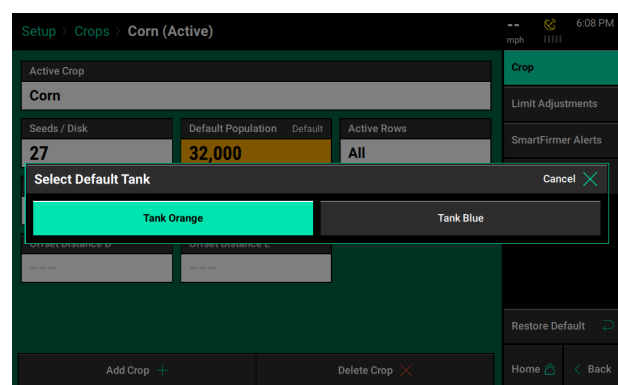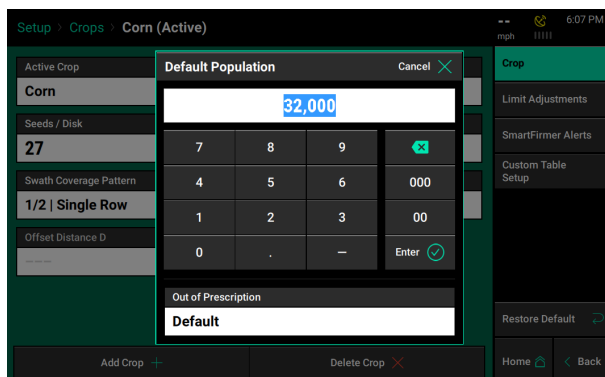
Active Rows - Select the rows on the planter to plant with. Rows not selected will be disabled.

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Swath Coverage Pattern – Links to the coverage pattern setup. See the mSet setup for more information on the Swath Coverage Pattern

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

Seeds to Average - Seeds to Average determines on how many seeds are used in the rolling average for calculating population, singulation, 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 – 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 – Add and delete crop types to the quick crop selection. The added crops will be available to be selected as the Active Crop.

mSet System Control

The mSet Control button is located on the right hand side of the home screen. The "mSet" button displays the status of the three functions of mSet: Population, Swath Control, and Hybrid Control.
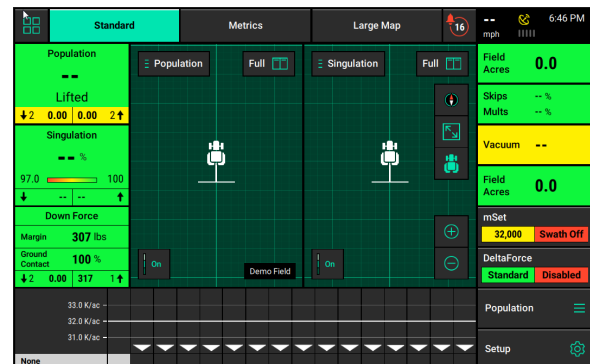
mSet Control Button Population Indicators

> **Variable** – multi-hybrid seeding prescription is assigned and the mSet system is in variable rate mode.

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

> **A Number is Displayed** – the mSet 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.

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

> **Red:** Master plant switch is off.

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vDrive Control Button Swath Indicators

**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 because the swath switch is in the off position on the Cab Control Module.

mSet Population and Hybrid Control

The mSet Control screen allows the operator to manually control the mSet system or toggle on a seeding prescription if a file is assigned to the active field. For a seeding prescription to be used select "Variable" at the top of the screen. Variable will automatically be selected when a prescription has been assigned to the active field.

To manually control the mSet system, select the population control once to go into "Manual" mode. Here all configured Rate Sections will be displayed. For each rate section the Population and Tank can be adjusted. To adjust all rate sections at the same time press the + or – buttons to change by 500 seeds. To change the Tank that seed is being planted from select the tank color button..
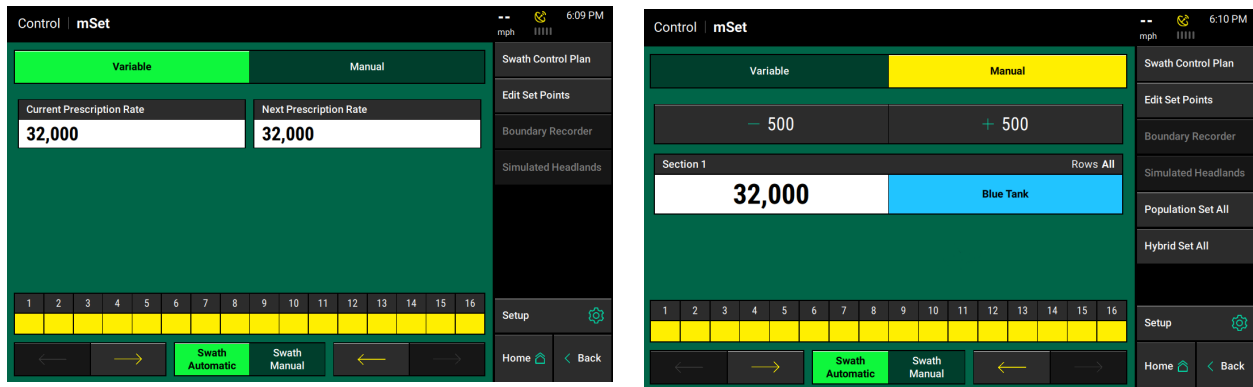
To adjust a single rate section's population, press on the population rate that is displayed. Then either select a population from the Population Set Points or press the white box at the top and enter a rate.

mSet Swath Control

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

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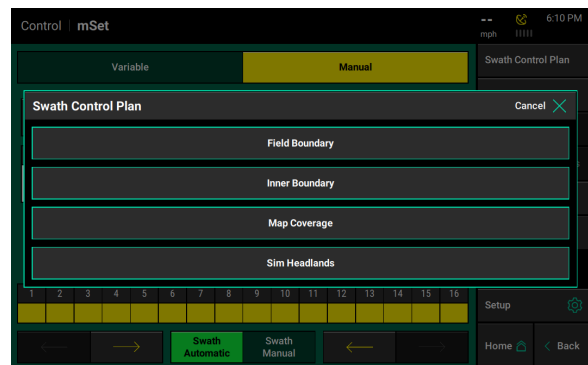
Items on the list that are outlined and in bold are active components of the Swath Control Plan. These components that are active are what the planter will automatically swath on and off to while planting. Those that are not are inactive and will not be controlled to.

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 any 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 the headlands to be planted last. Set the offset distance when configuring simulated headlands.

On the mSet Control page, operators can switch between Automatic and Manual swath control. Rows can be manually swathed off from either side of the planter by pressing the arrows. Additionally, the box representing rows on the planter can be manually swathed off/on by pressing-holding-swiping any of the boxes. Boxes that are yellow are swathed off.
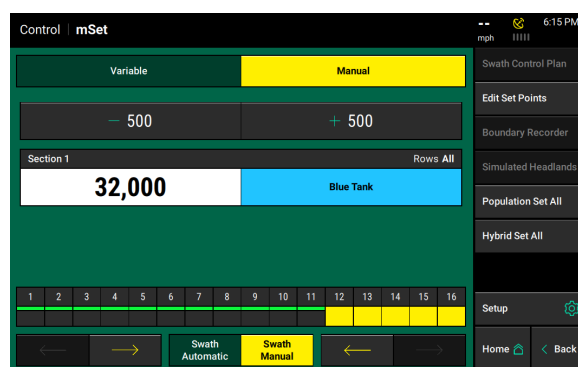

vDrive Quick Start

The vDrive Quick Start button allows the operator to start spinning the meters while stopped. This allows 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 to when the motors begin to spin is 2 seconds. This time can be adjusted in the Quick Start Delay located in the mSet Advanced Setup Page.
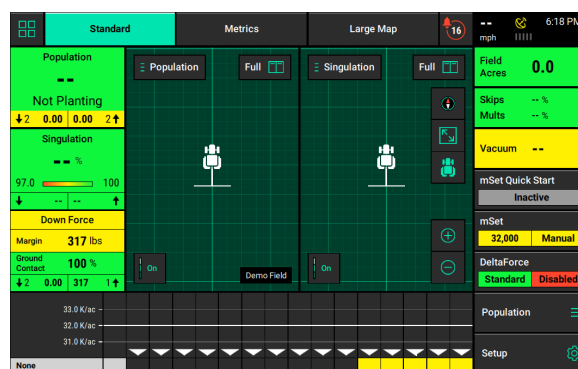
Note: The vDrive Quick Start button must be added to the home screen before it can be used. See the 20|20 Operator's Guide for information on configuring the home screen.
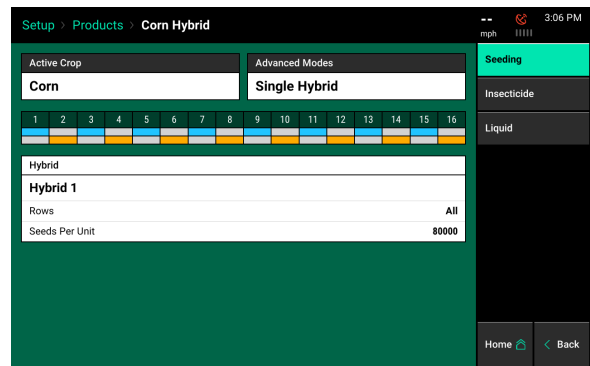
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Hybrid Modes

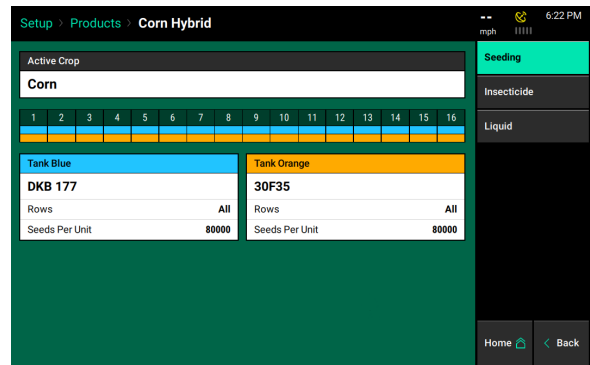Hybrid Modes can be found under "Setup" — "Products" — "Advance Modes".
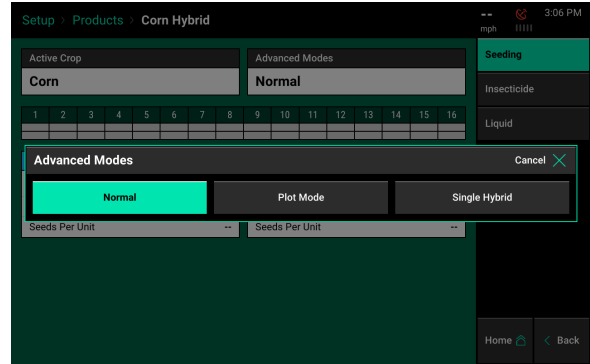
Single Hybrid Mode (only with mini hoppers)

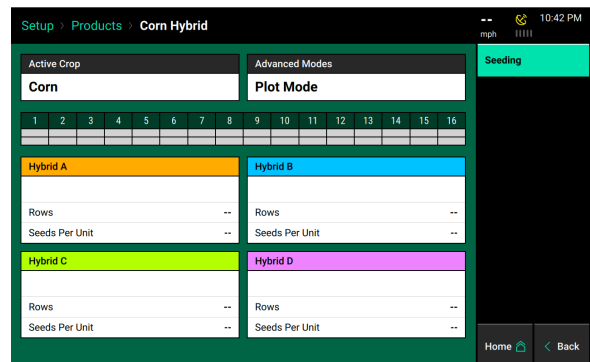Single hybrid allows you to plant one hybrid with the whole planter.

Normal Hybrid Mode

Normal hybrid planting mode gives you the option to plant two different hybrids.

Plot Mode

Plot mode gives you the option to plant and map up to four different hybrids. This mode can be accessed by pressing "Advanced Modes".

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mSet Diagnostic Information

Prior to planting ensure that all planter diagnostic information is ok. Select "Setup" – "Diagnose". Everything should be green on the diagnose page.

Note: Select "Color Legend" to view an explanation of what each color indicates.
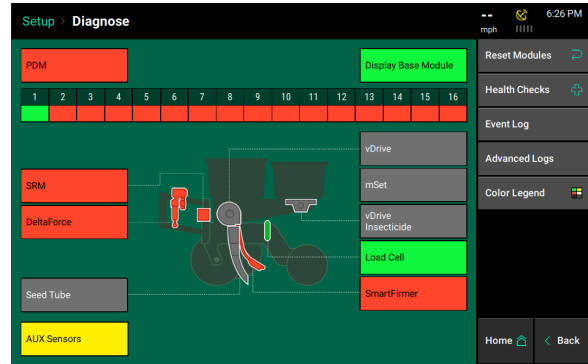
Green - the system is working correctly and communications are good.

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

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

White – Device is detected but not expected.

Black – Row has been disabled in the planter configuration.

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

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.

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mSet Level 2 Diagnose

The color of mSet on the main diagnose page will indicate if there is an issue somewhere within the system. Select the mSet button on the Diagnose page to verify that all information looks good on the mSet level 2 diagnose page.

Active Tank: The active hybrid that is being planted at the time.

CMD Tank: The commanded hybrid to be planted at the time.

Level Sensor: Shows the health of the level sensor.

1. Red – Faulted or not detected.

2. Green – Healthy sensor range. Will say CAL for initial sensor learning. If a sensor is recalibrating it will show Recal.

Temperature: The temperature of the level sensor.

Supply Volts: Supply voltage at the mSet module which is housed in the Seed Selector

CAN Communication Light Status

The communication lights on the mSet meters give diagnostic information by the red LED light.

Light Pattern	Meaning
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, never communicated

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