YieldSense®

SeedSense Operators Guide - YieldSense
For Gen2 SeedSense Monitors

Precision Planting®

Contents

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YieldSense Overview

Follow the below steps to set up the 20/20 SeedSense for YieldSense mode. Details for each step can be found in the sections of this manual.

Step 1:
Save Current Implement and Vehicle.

Step 2:
Change Implement Type to 'YieldSense'.

Step 3:
Configure Combine Setup.

Step 4:
Configure Field Setup.

Step 5:
Configure Moisture Sensor.

Step 6:
Complete Crop Setup Process.

Once the above steps have been completed, the system will be ready for operation. For a detailed explanation on how to operate YieldSense, refer to the section of this manual covering the YieldSense Dashboard, Crop Setup, and Load List Management.

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Load/Save Configuration

Before switching between Implement types, save the current vehicle and implement configuration.

Note: If you do not save the current tractor and planter configuration, the current configuration will be erased when switching implement type.

The Load/Save feature can be used to save multiple configurations on the 20/20 SeedSense monitor. This setting can be found by pressing 'Setup', then either the 'Planter' or 'Sidedress' tab.
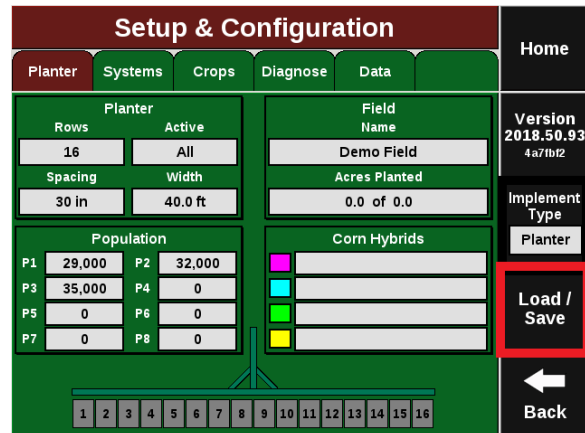
Within the Load/Save feature, a vehicle and implement can be saved.

- **Vehicle** — Contains all GPS measurements for the Tractor.
- **Implement**— Contains all settings from the implement including all components installed, GPS measurements, and general planter or sidedress bar setup.
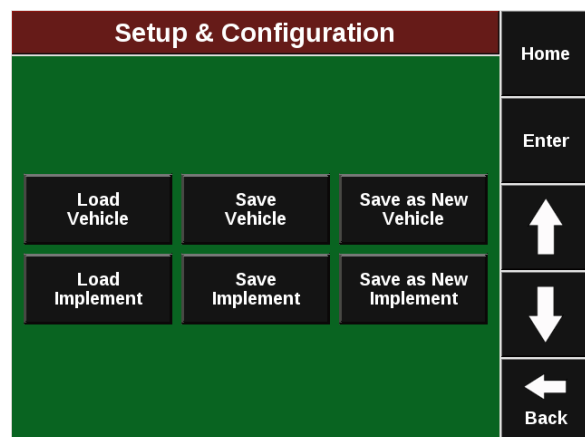
There are three options available under Load/Save for implement and vehicle.

- **Load** — This will allow you to load a previously saved configuration.

    Note If the current configuration has not been saved, loading a new vehicle or implement will overwrite the current settings.

- **Save** — This will save the current settings into the vehicle or implement name selected.
- **Save as New** — This option will save the current configuration as a new configuration name. A new name will need to be assigned for this vehicle or implement.

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Switching to YieldSense

Changing Implement can be done by pressing 'Setup' then 'Implement Type'
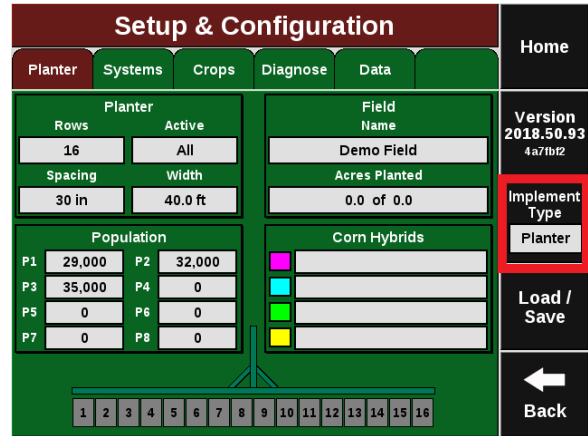
Change the implement type from 'Planter' to 'YieldSense'. Before proceeding, verify that the current implement and vehicle configurations are saved, or the current active configuration will be erased.

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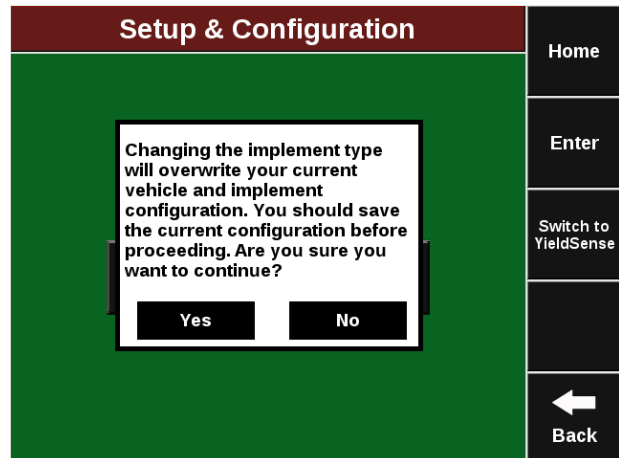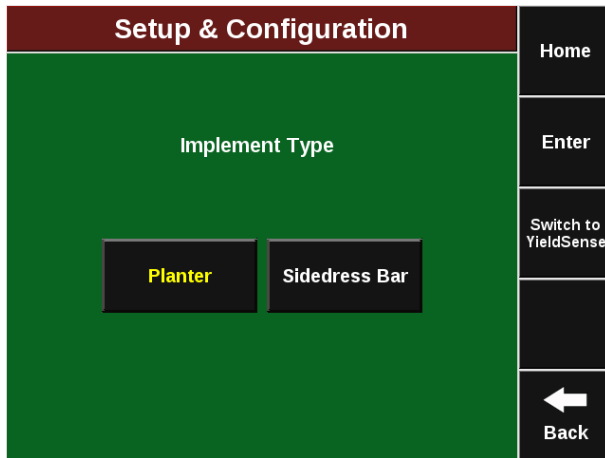
Harvest Tab

Press on "Setup" from the home screen to access the Harvest Tab. The Harvest Tab contains all information regarding the Combine and Head setup. It also contains the Field selection and hybrid tracking settings.
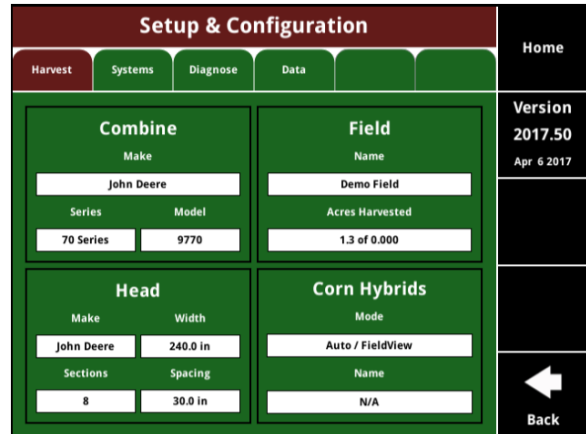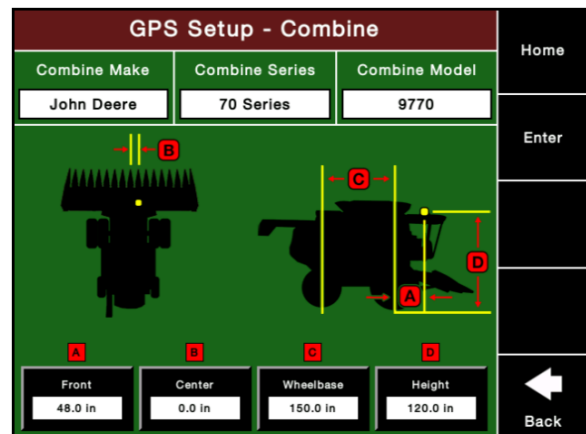

Combine Setup

Combine Configuration

To configure the display for your specific combine, press **Setup** on the dashboard screen and press **Combine** under the **Harvest** tab.
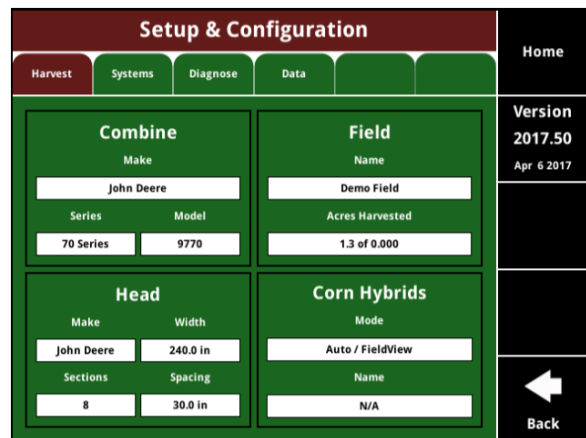

GPS Setup- Combine

To begin entering combine information, enter your Combine Make, Series, and Model by pressing the three buttons at the top and entering the values. Once this information is entered, you will need to enter four GPS measurements.
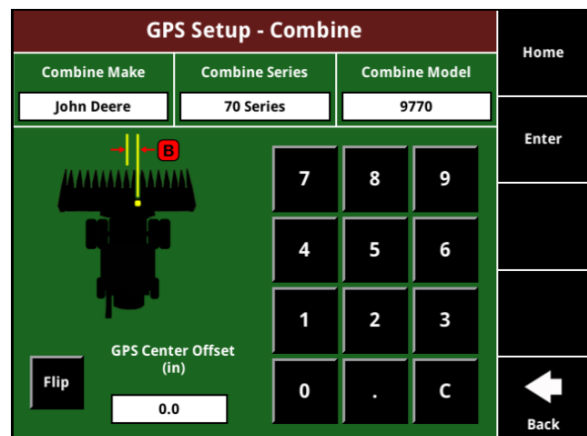
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GPS Front Offset (in)

Press the <u>**Front**</u> button on the Combine Setup page. Now enter the distance, in inches, between the front axle of the combine and the GPS receiver on the combine. If the receiver is behind the axle, press <u>**Flip**</u> to move the receiver behind the axle.
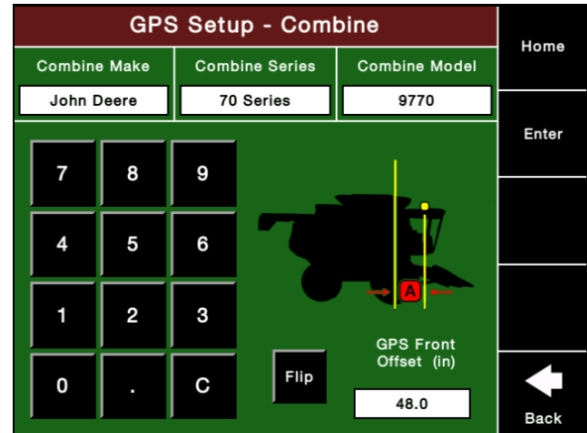
GPS Center Offset (in)

Press the <u>**Center**</u> button on the Combine Setup page. Now enter the distance, in inches, from the GPS receiver to the centerline of the combine. If the receiver is on the other side of the centerline, press <u>**Flip**</u> to move the receiver. If it is directly on center, enter "0".
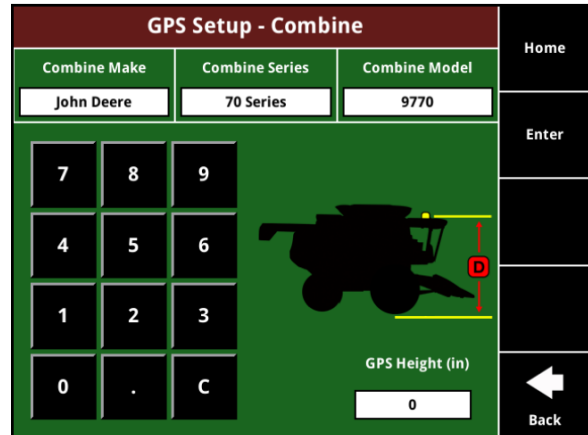
Combine Wheelbase (in)

Press the <u>**Wheelbase**</u> button on the Combine Setup page. Now, enter the distance, in inches, from the center of the front axle to the center of the rear axle of the combine.

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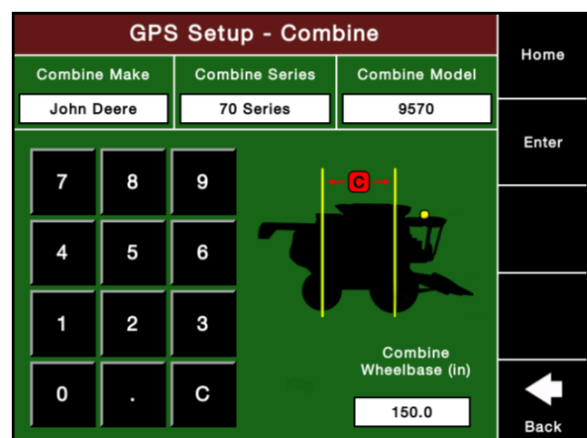
GPS Height (in)

Press the **Height** button on the Combine Setup page. Now, enter the distance, in inches, from the surface of the ground to the GPS receiver.

**Other Paths to Combine Setup**

In addition, you may access the Combine Setup screens by pressing **Setup** on the dashboard screen, then selecting the **Systems** tab, and then pressing **GPS**. This will take you to the GPS Setup Selection screen and you can press **Combine** to get to configure the display for your combine.

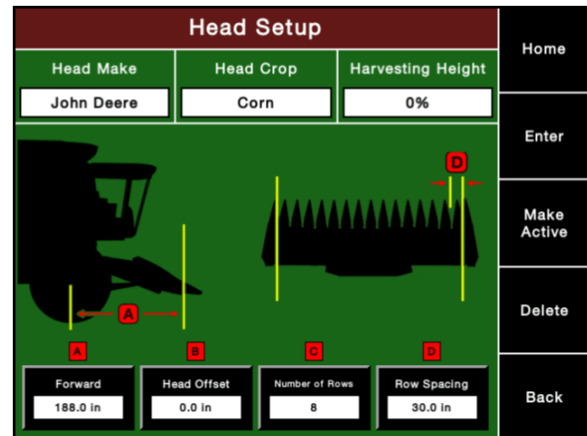Precision Planting
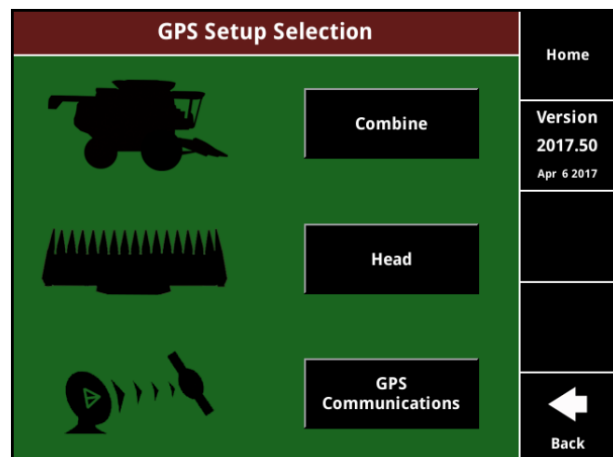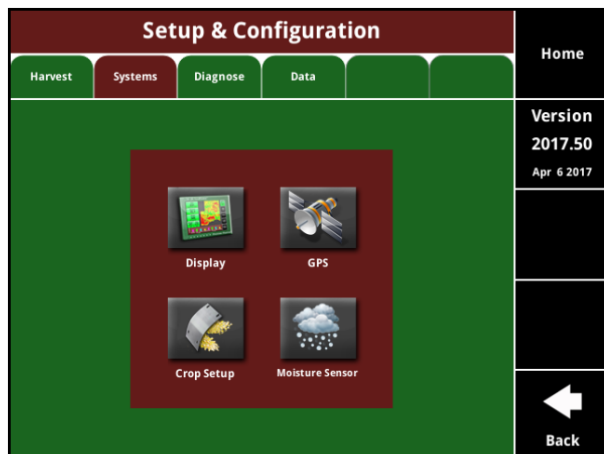
Head Setup

Head Configuration

To configure the display for your specific combine heads, press **Setup** on the dashboard screen and press **Head** under the **Harvest** tab.
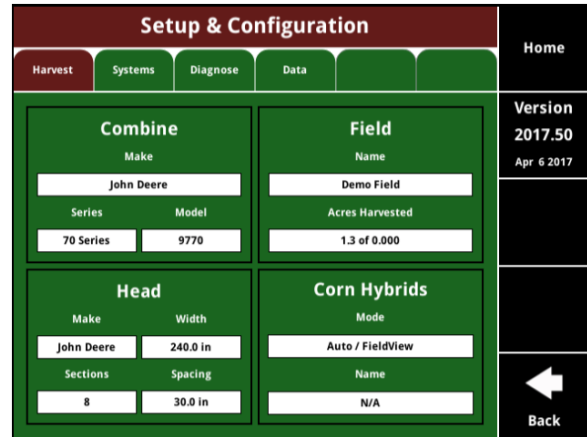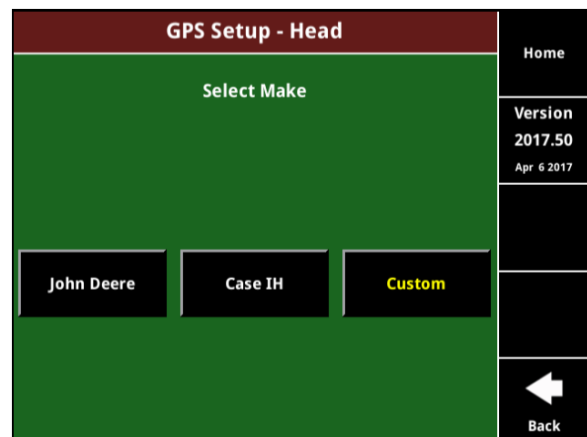
Setup Head

To begin entering head information, enter your Head Make, Head Crop, and Harvesting Height by pressing the three buttons at the top and entering the values.
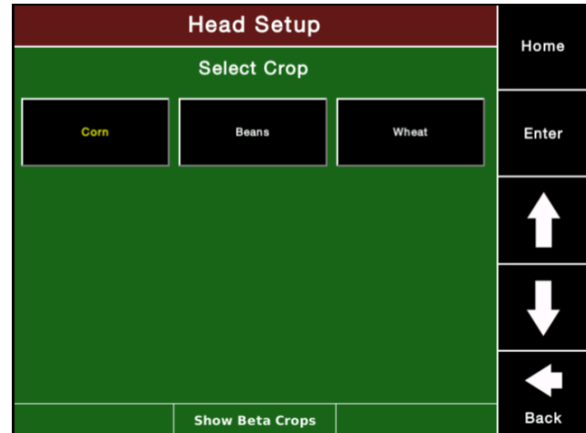
Head Make

Select the **Make** for head. Use **Custom** to type in a name other than John Deere or Case IH.
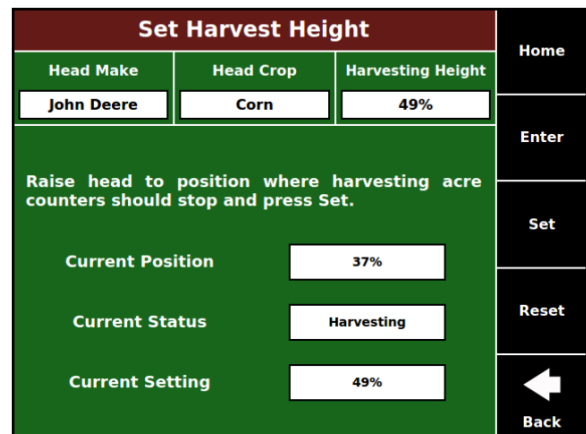
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Head Crop

Select which crop will be harvested with this head.

Harvesting Height

To set the Harvesting Height for the head, raise the head to the position where you want your acre counter to stop recording. If using head presets, this setting should be a few percent below the preset raised position.
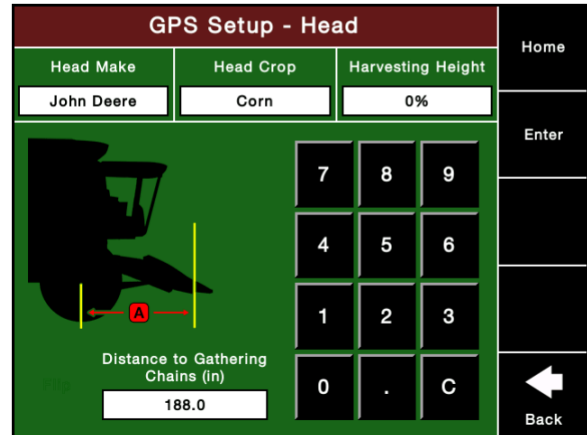
Setup Head

Next enter GPS measurements, the numbers of rows and row spacing.

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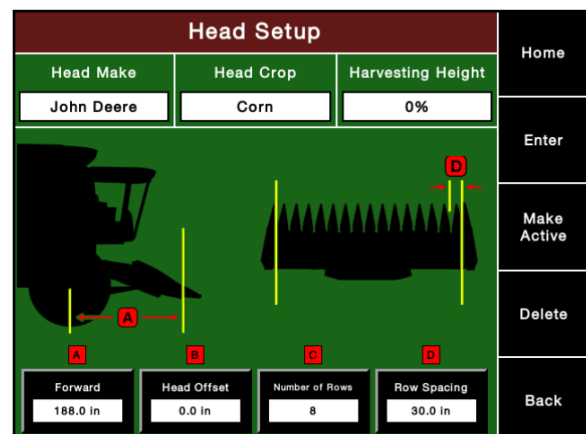
Forward Distance (in)

Press the **<u>Forward</u>** button on the Head Setup page. Now enter the distance, in inches, between the center of the front axle of the combine and the front of the gathering chains on the head.
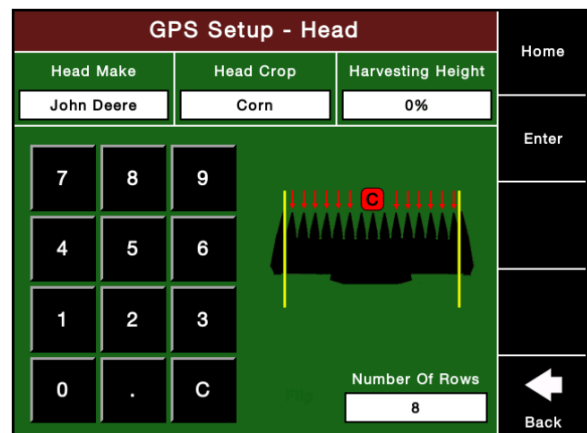

Head Offset (in)

Press the **<u>Head Offset</u>** button on the Head Setup page. Now enter the distance between the centerline of the combine and the centerline of the head. If it is off center to the left, press **<u>Flip</u>**.
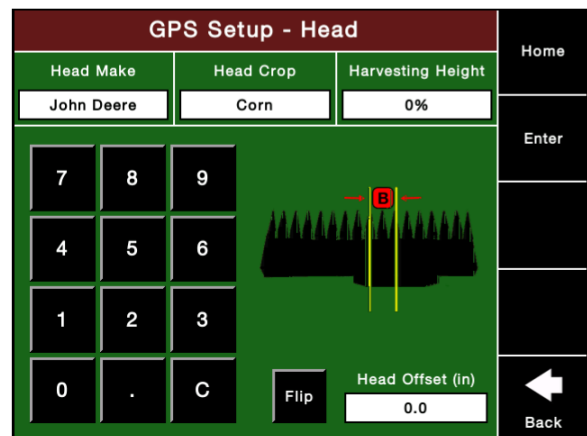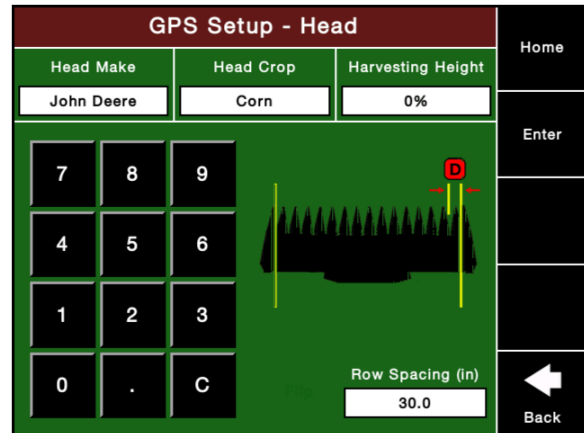

Number of Rows

Press the **<u>Number of Rows</u>** button on the Head Setup page. Enter the number of rows for the head.

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Row Spacing (in)

Press the **Row Spacing** button on the Head Setup page. Enter the row width for the head.

Other Paths to Head Setup

In addition, you may access the Head Setup screens by pressing **Setup** on the dashboard screen, then selecting the **Systems** tab, and then pressing **GPS**. This will take you to the GPS Setup Selection screen and you can press **Head** to configure the display for your head.
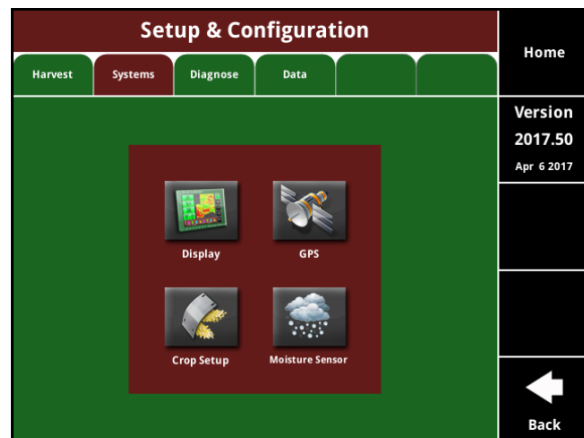
Special Note for Platform Heads

For platform heads, row spacing and row width is replaced by swath sections and harvestable width. Enter the number of swath sections into which you would like the head to be divided (up to 32) remembering that the quality of your GPS will determine the accuracy of swath width adjustment.

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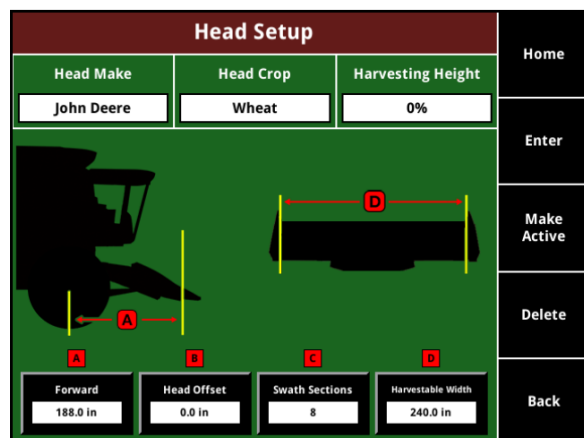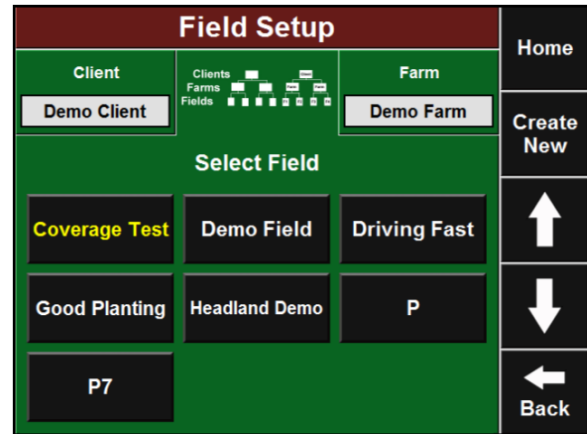
Field Management

Field Configuration

Press **Field** under the **Harvest** tab to select fields to activate.
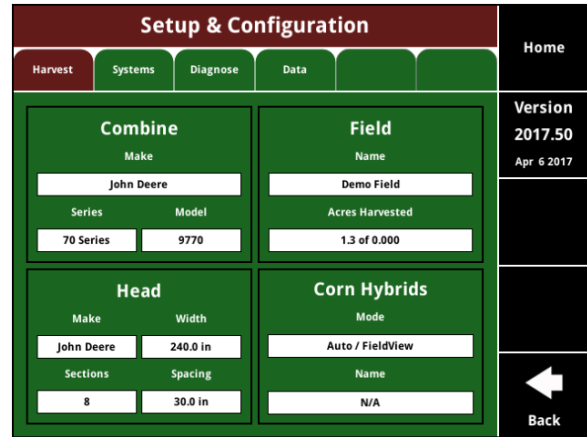

Field Setup

As with SeedSense, fields are organized in a three tiered structure under clients and farms. Select **Client** to pick the appropriate Client, then **Farm** to select the appropriate Farm, then select the desired field from the list and press **Make Active**.

# Hybrid Setup

Hybrid Configuration

To enter the hybrid information for the specific crop you are harvesting, press **SETUP** on the dashboard screen and press **HYBRID** under the **HARVEST** tab.

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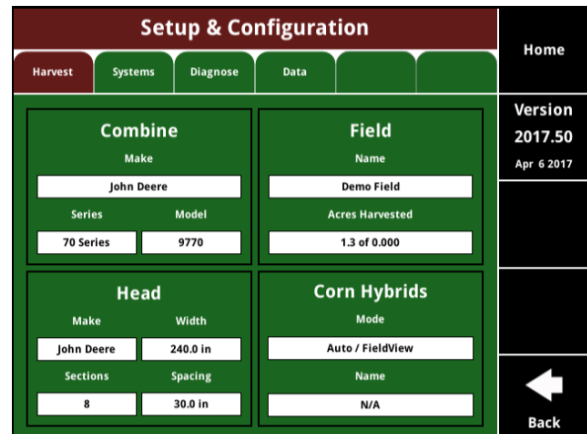
Hybrid Configuration

Once selected you will have the option of selecting two different modes. Press **MODE** to switch between AUTO and MANUAL mode.

- **AUTO**- Uses 20/20 SeedSense planting data in Fieldview for yield by hybrid for row by row accuracy.

- **MANUAL**- Uses the hybrid entered into the 20/20 for yield by hybrid for head width accuracy.
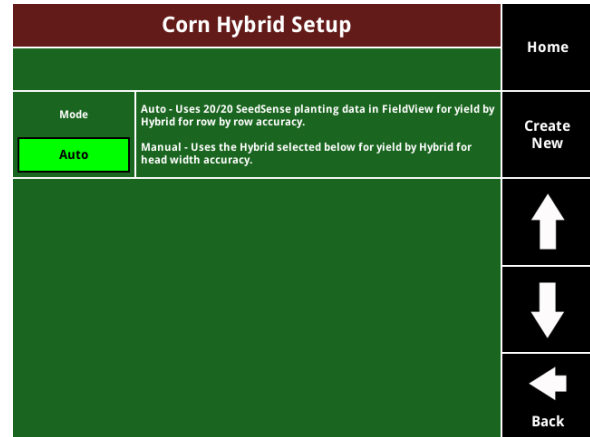
Hybrid Configuration

If using manual mode you have the option to create a new hybrid by selecting **CREATE NEW**. You can enter the hybrid in and select it from the list, or enter a hybrid in and select **ADD CUSTOM** once you input the hybrid name.
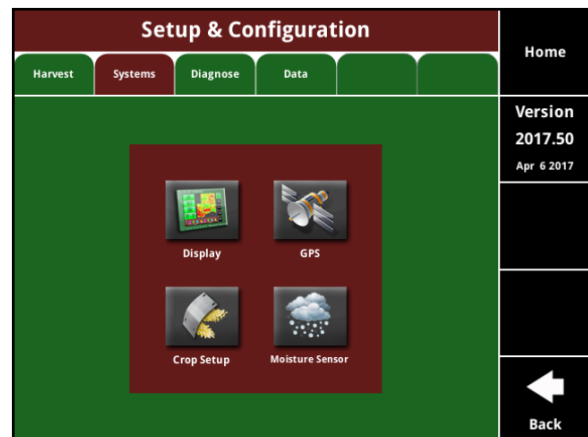
Precision Planting®
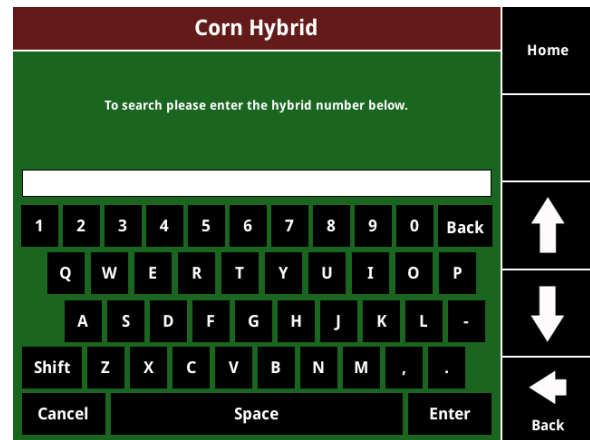
Systems Tab

Press on "Setup" then "Systems" from the home screen to access the Systems Tab. The Systems Tab contains all information regarding the Crop Setup, Moisture Sensor Setup, Display settings and GPS settings.
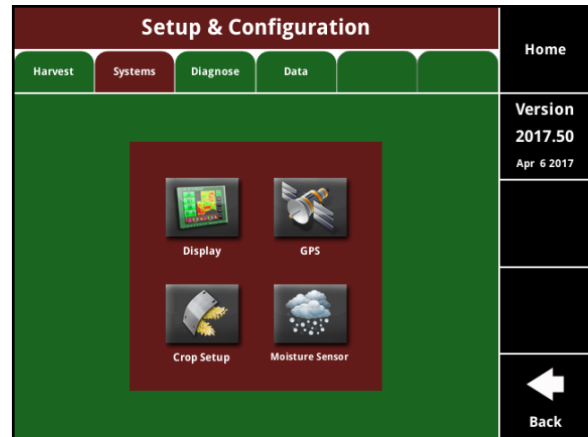
Moisture Sensor Setup

Moisture Sensor Setup

Press **Setup** on the home screen, select the **Systems** tab, and press **Moisture Sensor,** to configure the moisture sensor.

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Moisture Sensor Setup

Select which type **Moisture Source** you are using. If using the combines factory installed moisture sensor select **OEM CAN**. If you have installed Precision Planting Moisture Sensor select **Precision Planting**. If using an AgLeader Moisture Sensor and do not have an AgLeader Display in the cab select **Aftermarket AL Analog**. If using an AgLeader Moisture Sensor and do have an AgLeader Display in the cab select **AL CAN**. *Wide/Silver* or *Narrow/Black* is referring to the actual shape and color of the moisture sensor. Lastly, fixed moisture lets a fixed moisture number be put in that will not change.

The **Moisture Offset** allows you to calibrate your moisture sensor to a certified moisture sensor. the offset as necessary until the moisture sensor values match your samples. First adjust moisture on combine display or AgLeader display. If a moisture offset is entered in the combine display, it will not need to be entered in the 20/20. If entered in an aftermarket display, it will need to be entered in the 20/20.
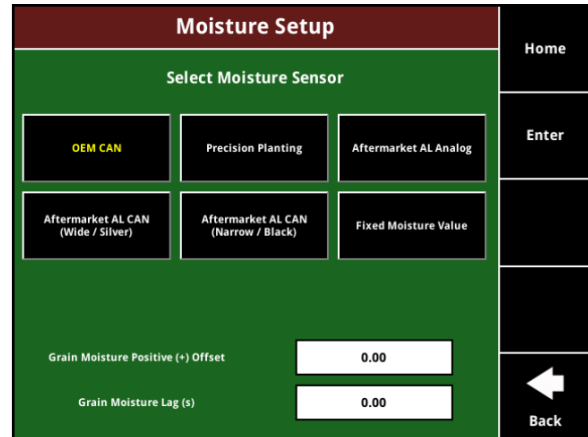
Crop Setup Settings

Crop Setup

To view or reset a Crop Setup, press **Setup** on the home screen, select the **Systems** tab, and press **Crop Setup**.

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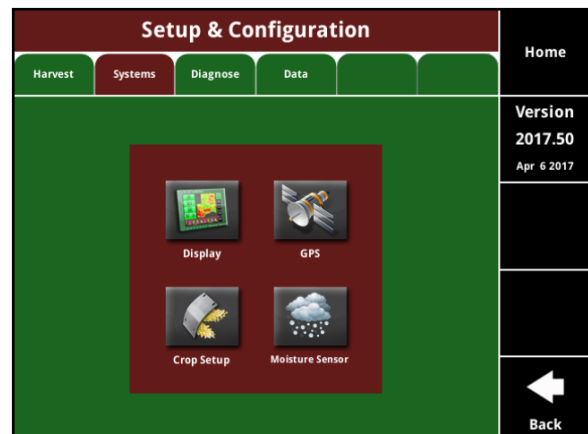
Crop Setup

- **Edit**— Allows manual entry/ revision of actual weight
- **Reset** — Reset selected crop back to "not setup". Crop constant returns to 1.00.
- **Reset All** — Reset all crops to "not setup" and return crop constants to 1.00.

Crop Setup

Edit Crop Setup gives the ability to reset the crop constant as well as adjust the crop attributes . The Attributes listed are Nominal Moisture, Nominal Weight, & Shrink Factor.

Note: You may change these crop defaults to that your dry yield calculations are using the same constants as your local elevator. Shrink Factor is only available for corn.

YieldSense Settings

Display Settings

The display may be configured to your specifications in Harvest just as in Planting mode. To access Display Settings, press **Setup**, then select the **Systems** tab, and press **Display**.

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Display Settings

On the display settings screen, you may modify your dashboard buttons, set your volume, enter the date/time, toggle between English and metric units, adjust your screen brightness, etc.

Flow Sensor Lag

Flow Sensor Lag defines the number of second that pass between when the grain enters the head and the grain hits the paddle. This number can be adjusted if the yield maps overlap into headlands or stop short of headlands. Make small adjustments to this number (a few tenths at a time) to adjust flow sensor lag until maps look correct.

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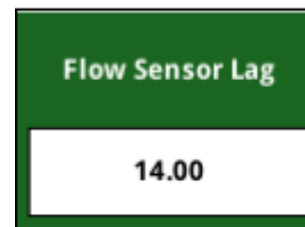
Advanced Display Settings

| Display Settings				Home
Automatic Swath	**Automatic Swath Sensitivity**	**Streaming Coverage**	**Field Boundary**	**Version 2018.1** Apr 27 2018
Enabled	0.20	Enabled	Enabled	
Tie Outer Rows Together	**Grain Property Kit**	**Crud Brush**	**Sprocket Tooth Count**	⬆
Disabled	Disabled	Installed	11	
GPS Processing				⬇
Legacy				
				⬅ Back

- Automatic Swath – If enabled, rows or swath sections will turn off automatically when entering areas previously harvested. If disabled, rows or swath sections will always be on when harvesting unless manually disabled.

- Automatic Swath Sensitivity –Refers to the percentage that a row needs to be off center before is it automatically swathed off. A setting of 0.2 means if there is less than 20% of the row in between two rows of corn (combine has shifted over more than 80% of the row width into an already harvested row) then the outside row will swath off. The lower the setting the less sensitive the system is because the combine can shift over further before automatically swathing off.

- Streaming Coverage — If enabled, allows the swathing of multiple devices in different combines in the same field.

- Field Boundary – If enabled, a field boundary can be assigned in the Field Setup page. The boundary will automatically swath off rows on the combine head if they go outside of the boundary

- Tie Outer Rows Together – This links the swath control of the outside two rows together on either side of the head. They will swath on and off together. Generally used when RTK GPS Correction is not available.

- Grain Property Kit – If the Grain Property Kit (bucket on the chain) has either been removed or is not available for the combine model being used then this setting should be changed to Disabled. If the Grain Property Kit is installed then this setting must be Enabled in order for the system to use the information gathered from it.

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- Crud Brush – If the crud brush has been removed or damaged and is not working properly, then this setting should be Disabled. This will stop popups from being displayed. If the crud brush is installed then keep this setting set to Enabled.
- Sprocket Tooth Count – Enter the number of teeth on the sprocket in the clean grain elevator.
- GPS Processing- Set to Legacy as default, but changing to Enhanced allows for the accelerometer to be used for GPS positioning.

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20/20 YieldSense Dashboard

Dashboard Screen

The dashboard screen, shown at left, provides the basic numeric data provided by the YieldSense system. In addition, it provides access to setup and load screens. The area at the bottom of the screen shows active head width and provides the ability to vary the active head width.
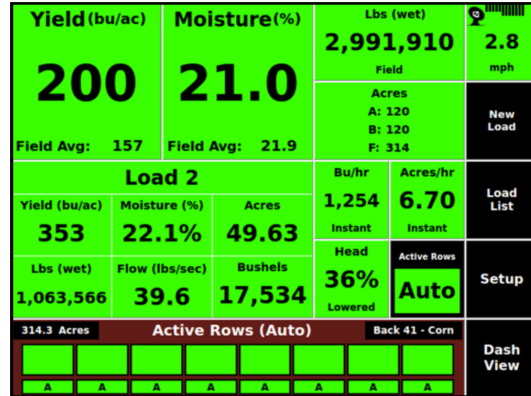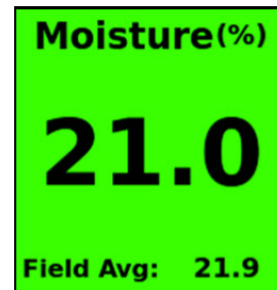
Yield

The Yield box displays two values of dry yield in bushels per acre (bu/ac). The "Instant" value represents yield at your current position and is based on a three second average. Field Average is the average dry yield for the entire field.
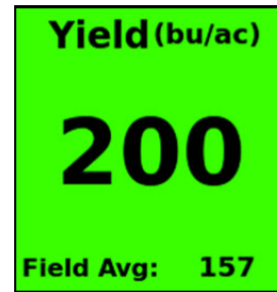
Moisture

The Moisture box displays two values for moisture measured by the moisture sensor. The "Instant" value represents the moisture of the grain at your current position and is based on a three second average. Field Average is the average of moisture for the entire field.

Load

The Load box displays information for the active load. The values are Yield, Moisture, Acres, Lbs., Flow, and Bushels.

Note: Loads will not show until the crop setup is complete.

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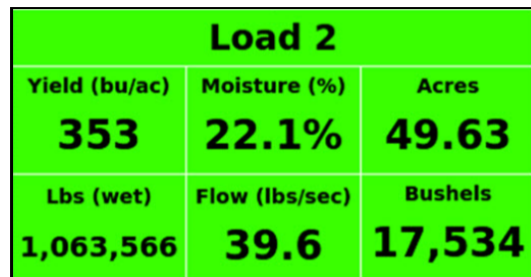
Active Rows (Automatic Swath Control)

Automatic Swath Control is enabled by default .
Rows or Sections of the head will turn off
automatically when entering areas previously
harvested.
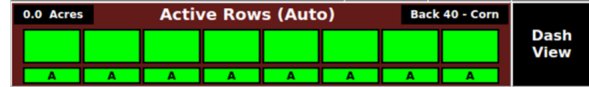
Active Rows (Manual Mode)

Manual Mode allows you to adjust active rows by
pressing arrows to the left and right . In manual
mode all rows will re-activate when the head is
lifted and lowered.
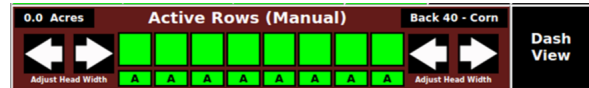
GPS Speed and Satellite Connections

This box displays your planter speed according to
the GPS receiver. Above the speed, a satellite
dish icon indicates that the receiver is functioning
and each bar indicates a satellite in view. For best
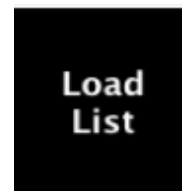results, you should see at least one of the longer
bars on the right.
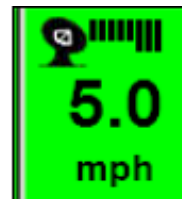
New Load

To create a new load, press the **New Load** button.
At this point the Load box will increment to the
next load number and all values will reset to zero.
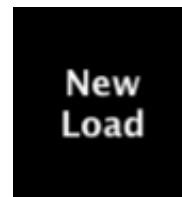
Load List

To review and edit loads for the active field, press
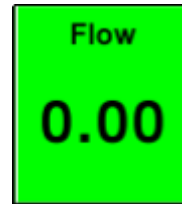the **Load List** button.

Setup

To access the setup and configuration screens,
diagnostic screens, and data transfer screens,
press the **Setup** button.

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Flow

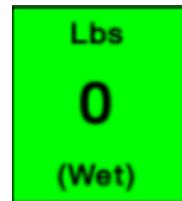Grain flow across the Flow Sensor measured in pounds per second.

Lbs (wet)

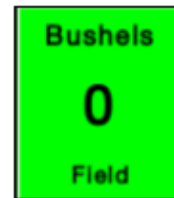The total mass of grain harvested.

Yield (wet)
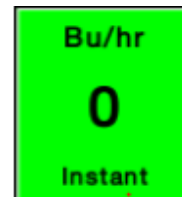
Wet weight divided by acres harvested.

Bushels

Dry weight divided by crop pounds per bushel. If dry weight is less than nominal moisture for a crop then wet weight is used. We do not scale up dry pounds to be more than wet weight.

Bushels/ Hour

Instant bushels rate scaled up to an hour.

Active Rows

Displays swath status. When in Automatic mode, the button is green and says Auto. When in manual mode, the button is yellow and says Manual.
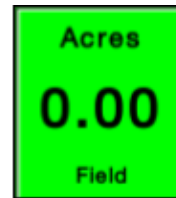
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Acres/ Hour

Distance traveled times Active Head Width
scaled up to an hour.

Acres (Field)

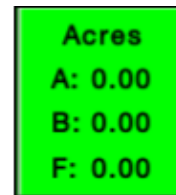Distance traveled times Active Head Width for
the active field.

Acres (A or B)

Distance traveled times Active Head Width.
These acre counters are independently resettable
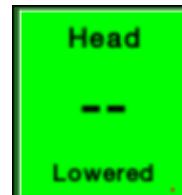allowing the user to measure acres in whatever
way is most useful.

Acre Summary

Displays all three acre counters—A, B, and
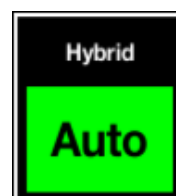Field– on a single button.

Head

Displays current head height percentage as well
as status of lifted or lowered.

Hybrid

The Hybrid Button will display which hybrid is
currently being harvested. If the field was planted
with FieldView the hybrid be available
automatically and if not you can add the hybrid
manually.

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Crop Setup

Crop Setup (Step 1)

Crop setup must be completed once per season for each crop. With an empty hopper, Press **Start** to begin accumulating measured weight as you harvest.
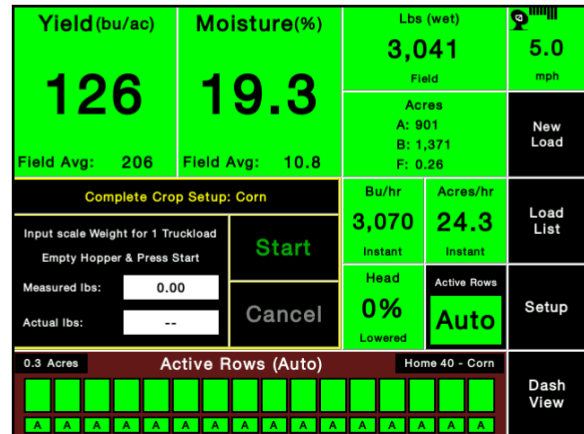
Crop Setup (Step 2)

Once at least 25,000 lbs. is harvested, press **Next** to stop the accumulation of measured weight. You may continue harvesting while waiting for the actual weight to be determined.
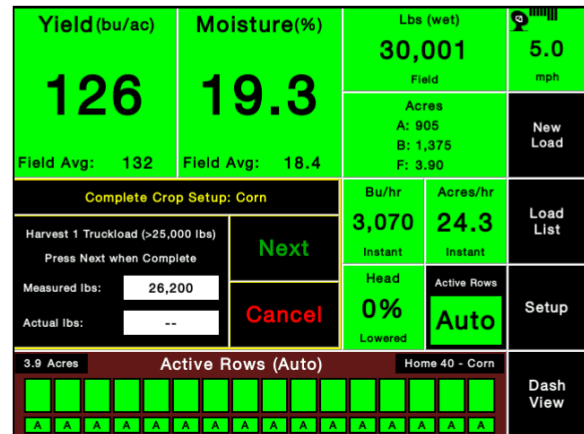
Crop Setup (Step 3)

Press **Next** again to enter the scale weight when you receive it. Use a certified scale to determine the actual weight for this setup load. Using a weigh wagon as source of weight is NOT recommended.

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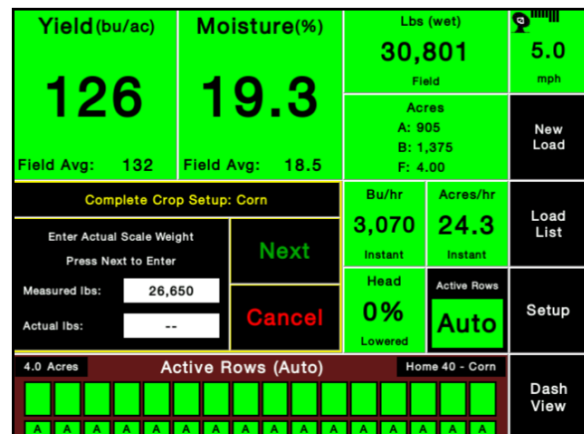
Crop Setup

Upon entering the actual weight, a popup will inform you that Crop Setup is complete for this crop and the Crop Constant will be displayed. The crop constant will be applied back to the beginning of the field and your data and maps will be re-calculated accordingly.

Note: If this is the first crop setup you have completed for the year, the crop constant will be applied retroactively to all fields harvested of the same crop for that year.
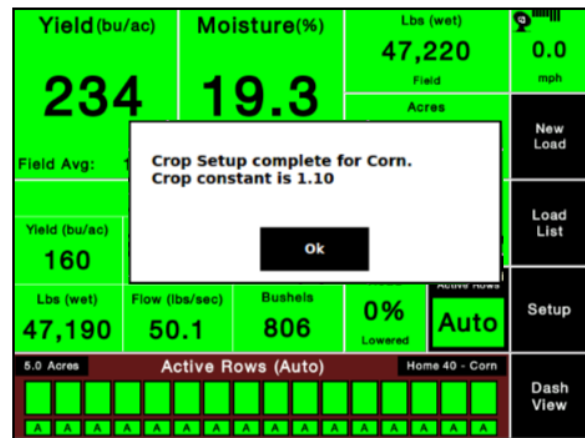
Load List Management

Load List management can be found on the Home Screen by pressing "Load List" on the right side of the page.
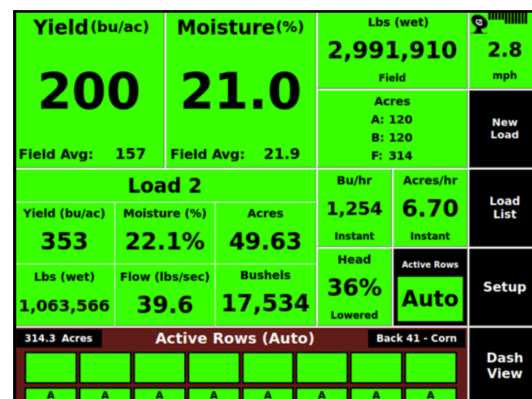
Load List

The Load List screen presents all of the loads taken for the active field with most recent load at the top. For each load except the active load, both actual and measured weight are displayed along with other metrics. You can also create a new load from this screen by pressing **Create New**. Combine totals display at the bottom. Adding the actual field total will perform a **Field True Up.** This feature will scale the wet lbs in the Load List appropriately to match elevator actual. **Load True Up** Is also available where as well to scale base upon entered load actuals.
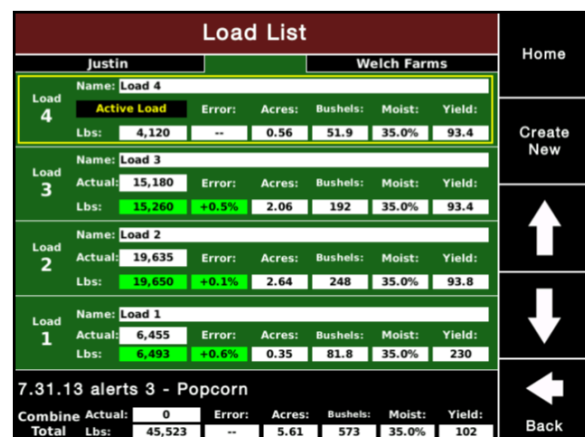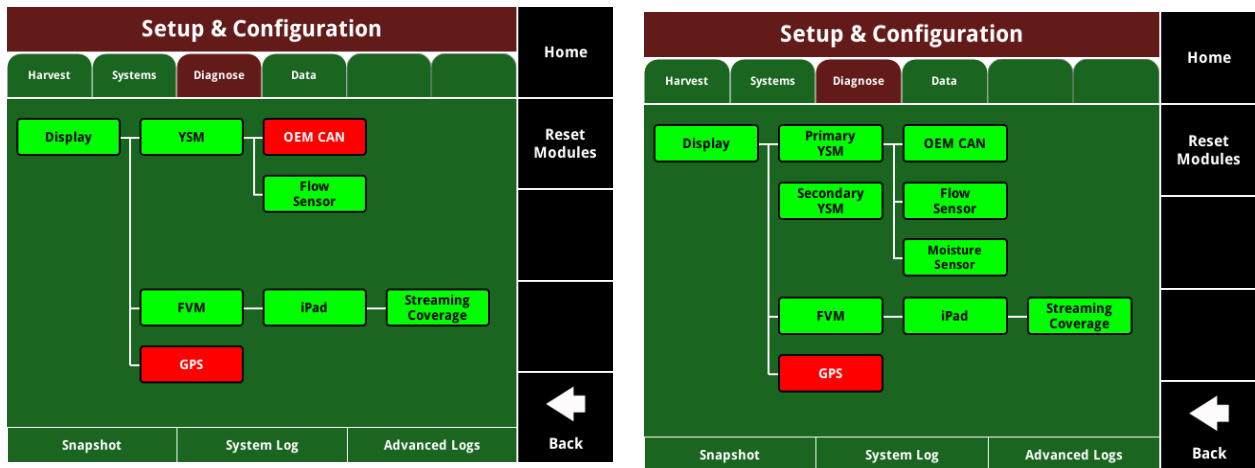
Load List (Edit Load)

Touch any load but the active load to **edit** the values for that load. Only the name of the active load may be edited.

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Diagnose Page

To navigate to the diagnose page, press **SETUP** on the dashboard screen and press the **DIAGNOSE** tab. In the diagnose tab there will be:

- Display
- YSM
- Secondary YSM (if installed on a combine with no CAN network)
- OEM CAN
- Flow Sensor
- Moisture Sensor (if installed on a combine when not using or reading off of the CAN network)
- FVM (FieldView Module)
- iPad
- Streaming Coverage
- GPS

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YSM

The YSM (YieldSense Module) is what processes all of the information for the YieldSense system. In the YSM tab on the diagnose screen it includes the following:

*   Connected

*   HW Version

*   Communication Quality

*   Serial Number

*   Firmware Version

*   Active and Detected Tooth Count

*   YSM Crop Type

*   Display and YSM Machine Configuration

*   YSM AUX (which shows the gyro information)

Secondary YSM

The Seconday YSM will be displayed on combines that do not have a CAN network and we will add a second YSM to make the CAN. The Secondary YSM tab includes the following:

*   Connected

*   HW Version

*   Communication Quality

*   Serial Number

*   Firmware Version

*   Engine RPM

*   Feeder House Angle

*   Separator Status

*   Wheel Speed

*   Gear

*   Ground Speed Frequency

*   Elevator Speed Frequency

*   Feeder House Position Voltage

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OEM CAN

The OEM CAN button on the diagnose page is showing the CAN information we are receiving from the combine. It includes the following:

- Connected
- Model
- Moisture
- Feeder House Angle
- Separator Status
- Engine RPM
- Wheel Speed
- Gear Position
- Auger Status

Flow Sensor

The flow sensor tab on the diagnose page is showing the information gathered from the impact sensor in the clean grain elevator. It will show the following:

- Connected
- Crud Build Up
- Missing/Broken Paddle
- Flow Rate
- NH Frequency
- Elevator Frequency
- Crud Brush Force
- Flow Coefficient
- Missing Property Bucket
- Channel A and B Voltage and Diagnostic Information

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Moisture Sensor

There will be a moisture sensor tab displayed if the moisture sensor selected is not OEM CAN. It will display the following:

- Connected
- Analog Moisture
- Analog Temperature
- Moisture Temperature Voltage
- Moisture A and B Voltage
- Motor Status
- Motor State
- Grain Present
- Proximity Sensor Voltage
- Detected Harness

Moisture Sensor Status			
Connected	Analog Moisture	Analog Temp	Home
Yes	1.34	89.0	
Moist Temp Voltage	Moist Voltage A	Moist Voltage B	Version 2018.1
3.08	7.87	7.77	Apr 27 2018
Motor Status	Motor State	Grain Present	
Normal	Off	No	
Prox Sensor Voltage	Detected Harness		
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