MORRIS

OPERATOR'S MANUAL

TOPCON XD+
Horizon 5
Electric Drive

N73902-00

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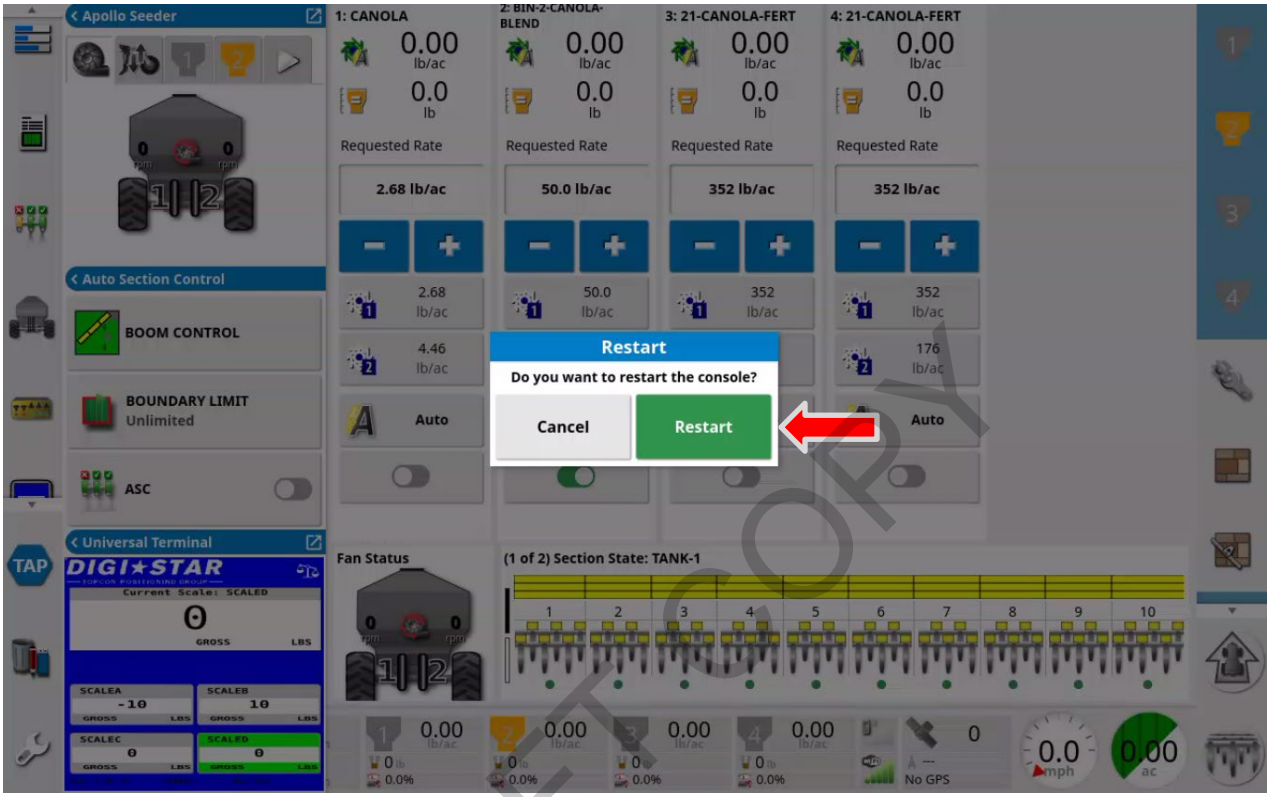
Press the power button, located on the left side of the unit.

To power down the unit press the power button one time. Wait until the small power light on the front of the unit goes out before disconnecting power.

To perform a restart, swipe up from the bottom of the screen and touch the power  symbol

A restart prompt box will appear. Touch the green **Restart** box to continue.



The following steps have been performed at the Morris factory, please review to ensure your device is set correctly.

Press the **Wrench** on the **Bottom Left Corner** to enter the **Set up Menu**

Navigate to **User-Region-Units**. Always start from the bottom of the screen upwards.

-Units - **Imperial (US)**

-Pressure units - **psi**

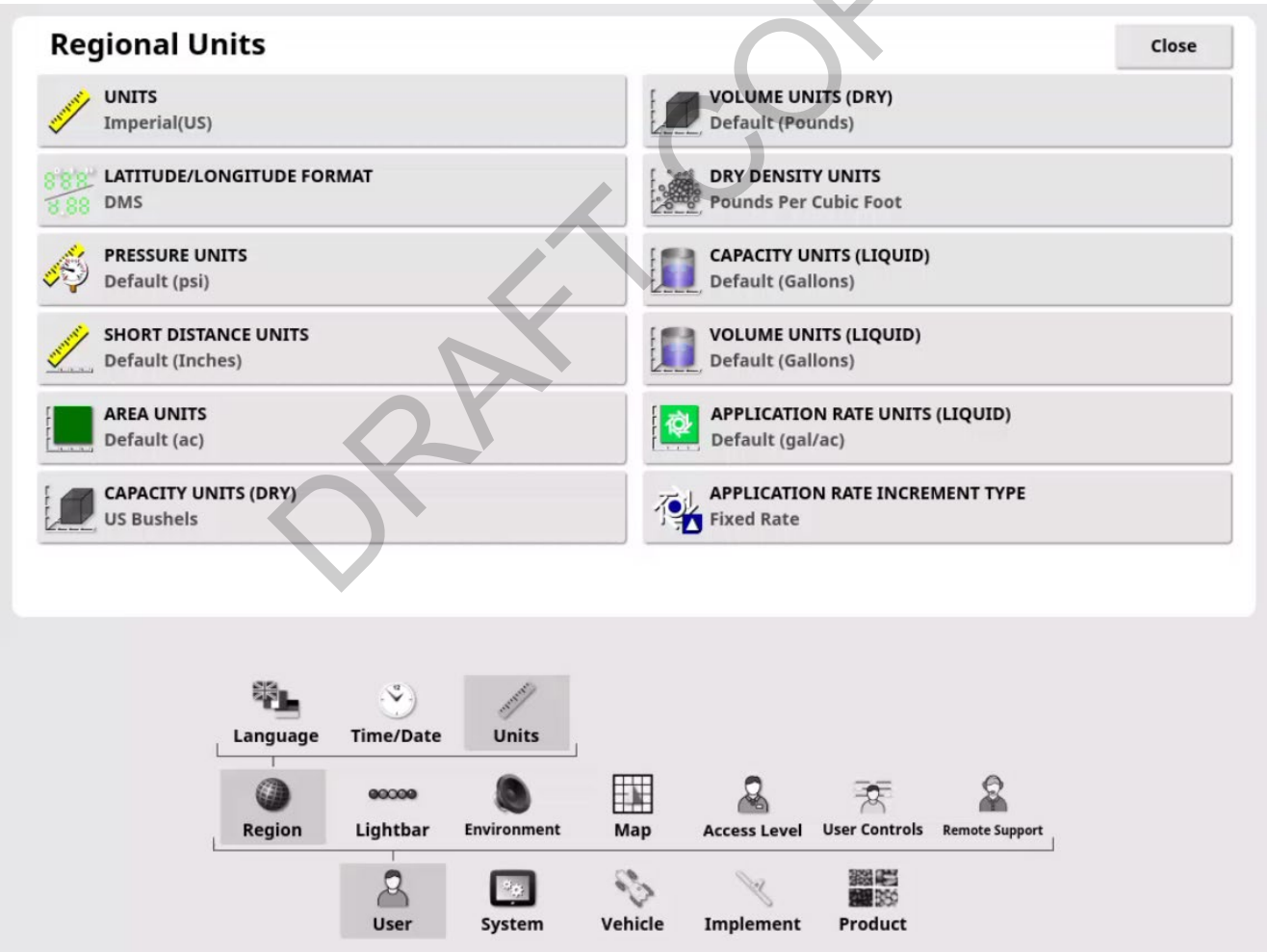
-Short Distance - **Inches**

-Area Units - **AC**

Capacity Units - **US bushels**

Volume Units Dry - **Pounds**

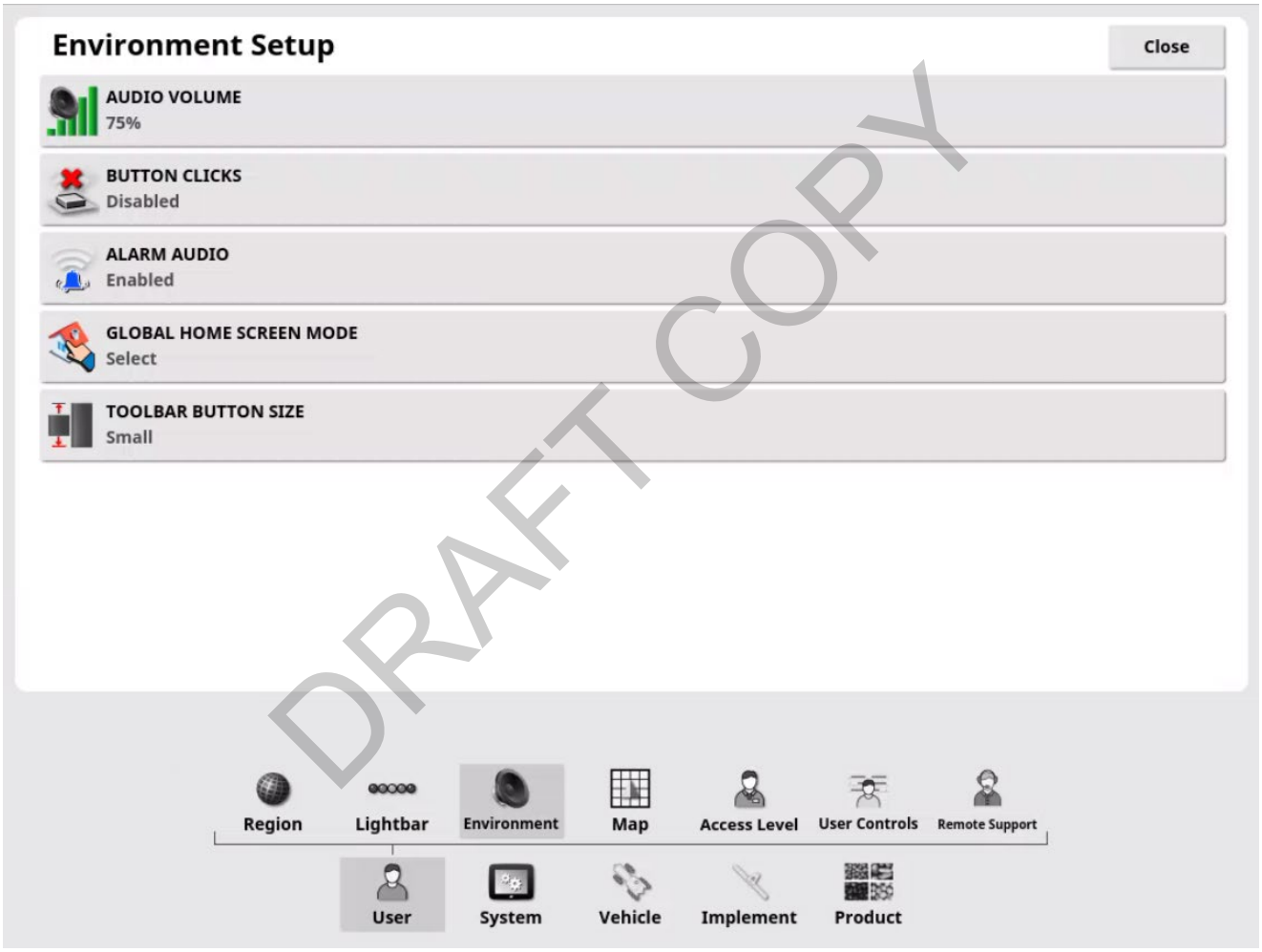
Dry density units - **Pounds per Cubic Foot**



User – Environment

Audio Volume **– 75%** , Adjust the volume to a comfortable level, consider tractor engine noise at working conditions.

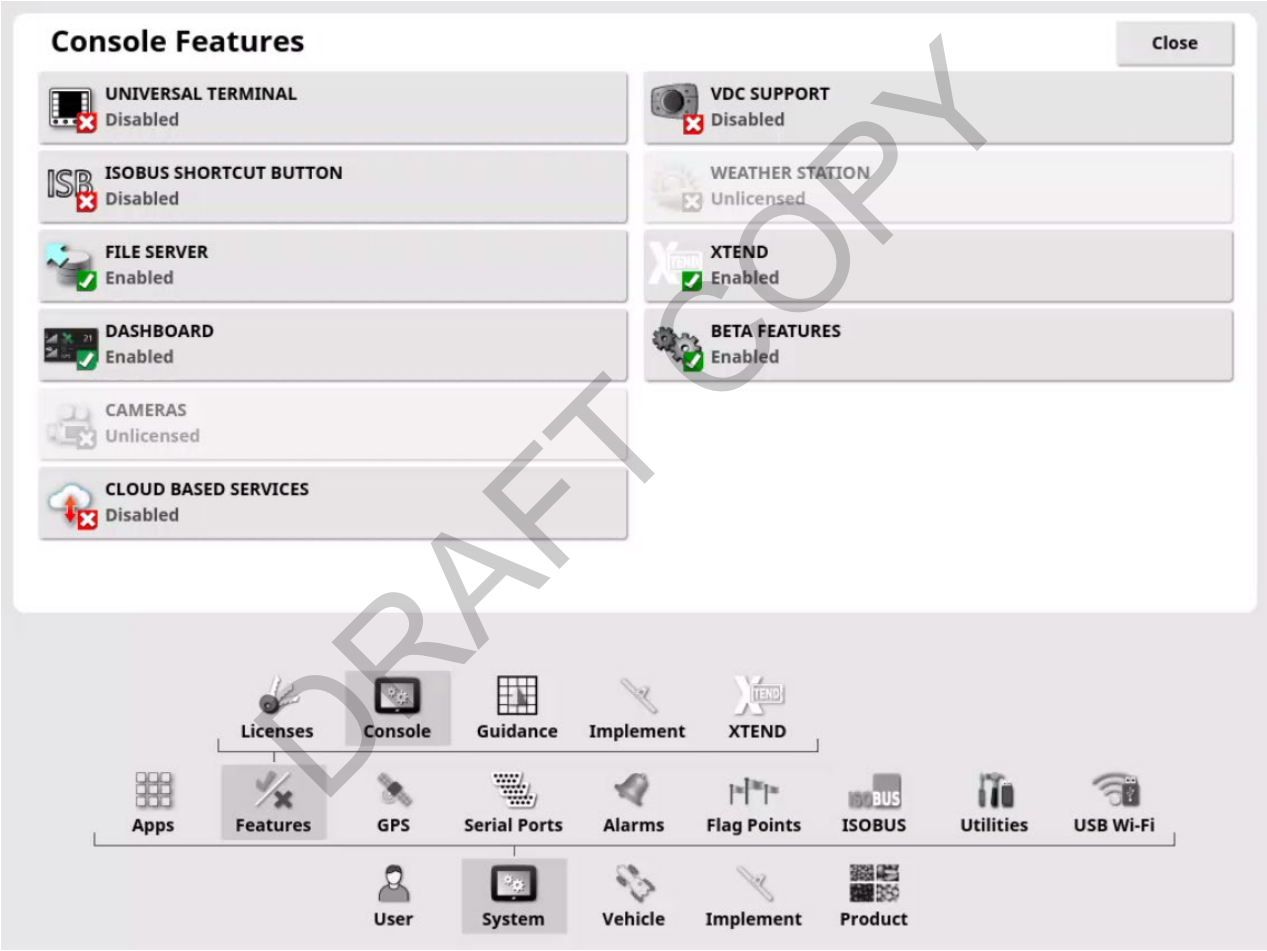
Global Home Screen Mode – **Select**



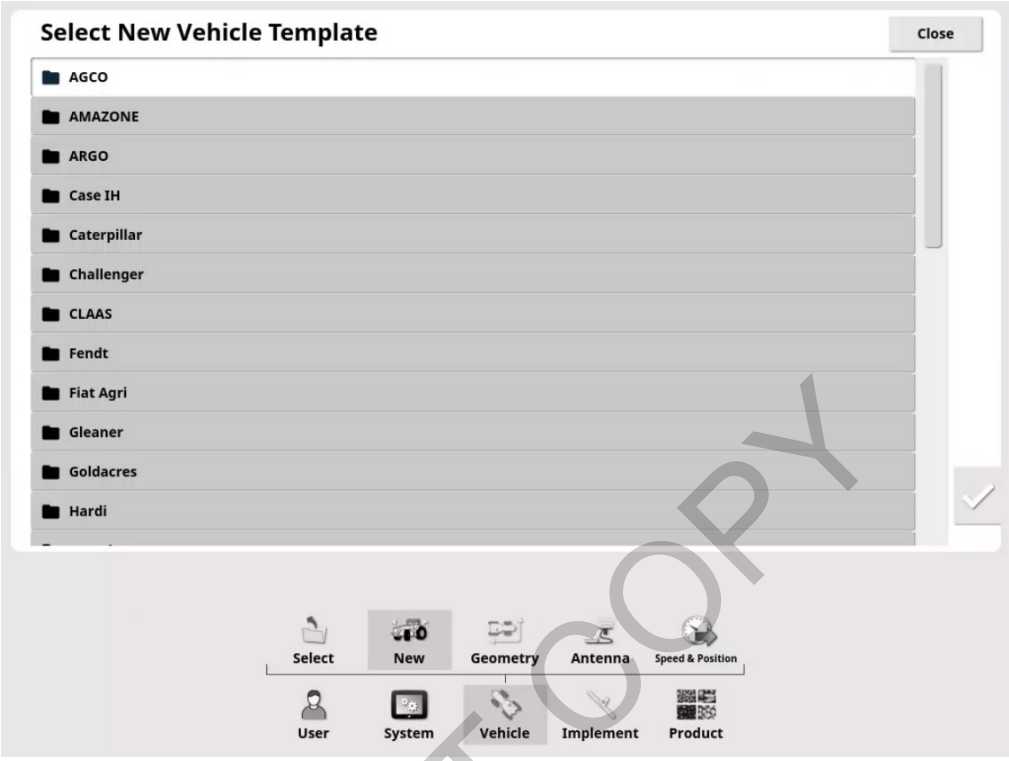
Navigate to **System, Features,** and then **Console**

UNIVERSAL TERMINAL - **Disabled**

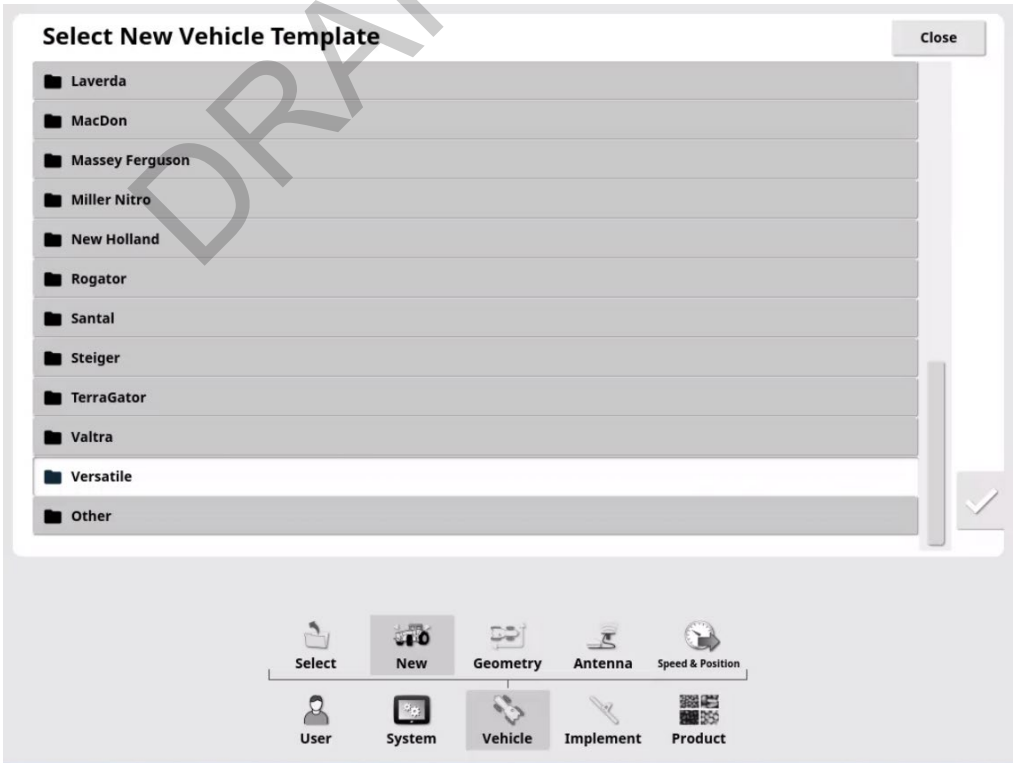
XTEND - **Enabled**



Continue to **Vehicle – New.**

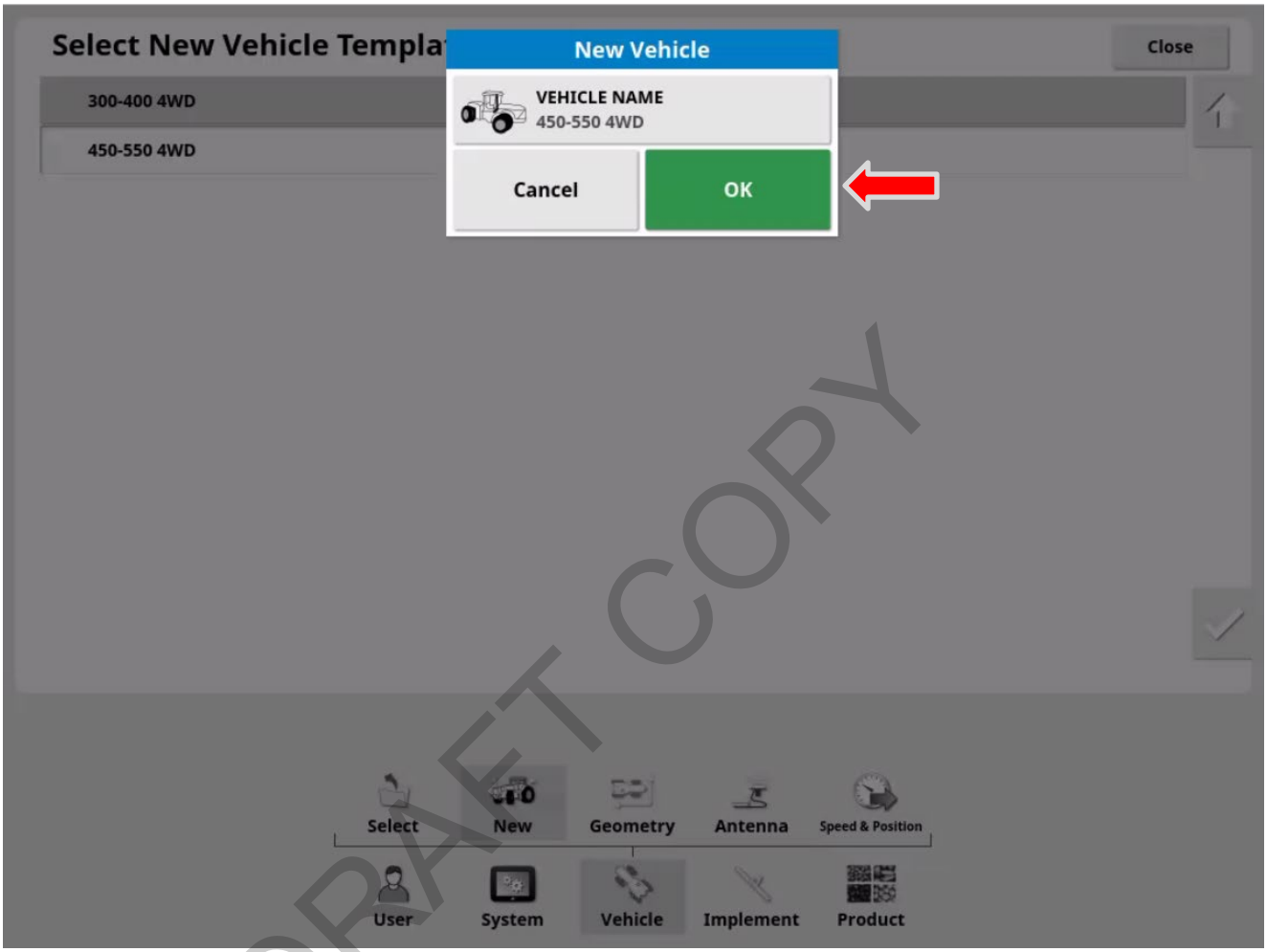


Select your **brand of tractor manufacturer** from the list.

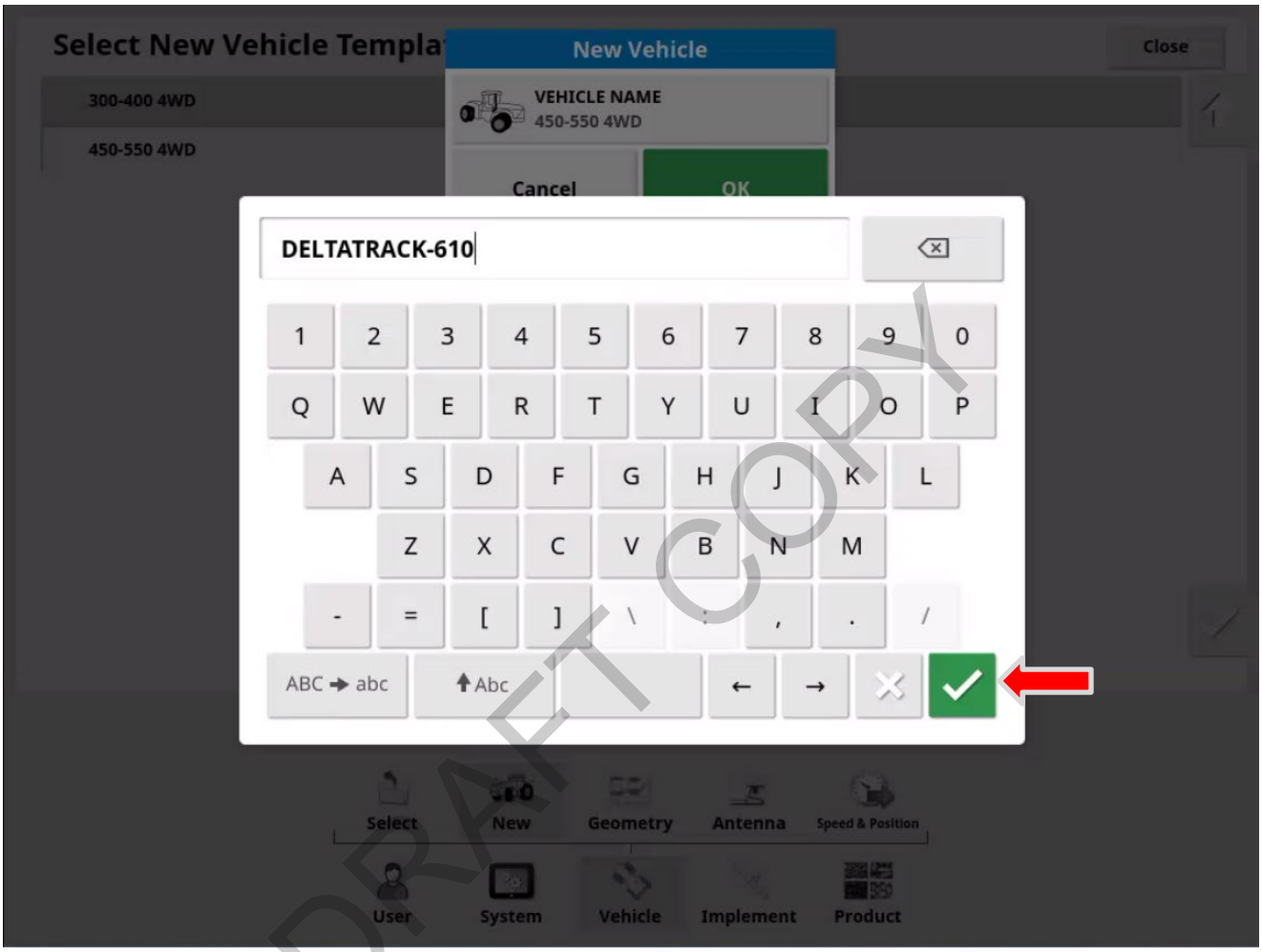


Select the **Model of tractor**. Press the **White Check mark** to Continue.

To adjust the name to match your model of tractor. Press on **Vehicle Name** Icon.



Type in the name of your model of your tractor. Apply with the Green check mark.

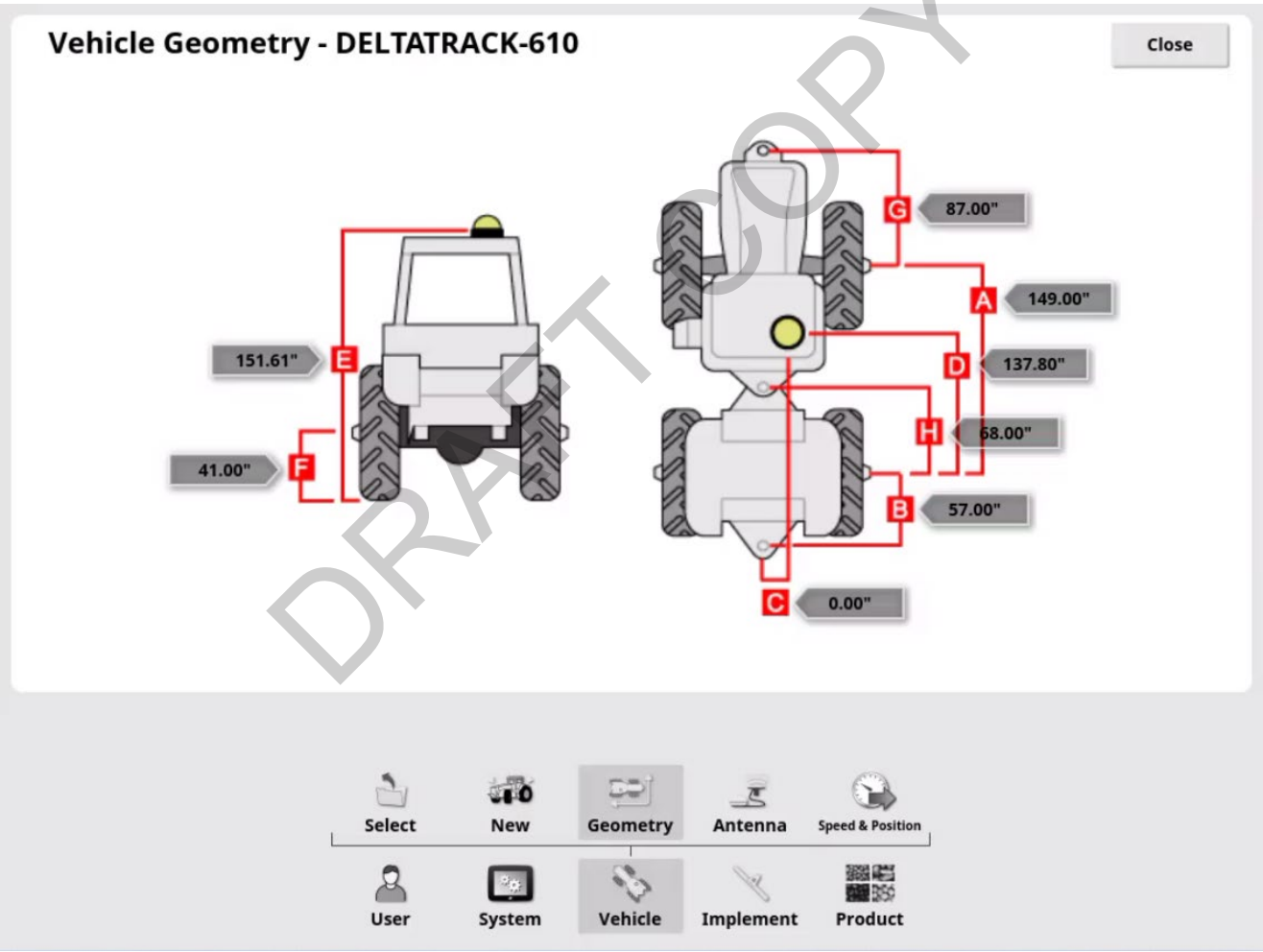


Confirm the model is correct. Apply by selecting OK.

Adjust the dimensions as needed. Using a tape measure record your dimensions on a note pad.

It is very important to have the dimensions as accurate as possible. Especially when equipped with an ICT unit.

Letter C is the GPS antenna Offset from the center of the hitch, normally the antenna is centered, and the value is left at 0.

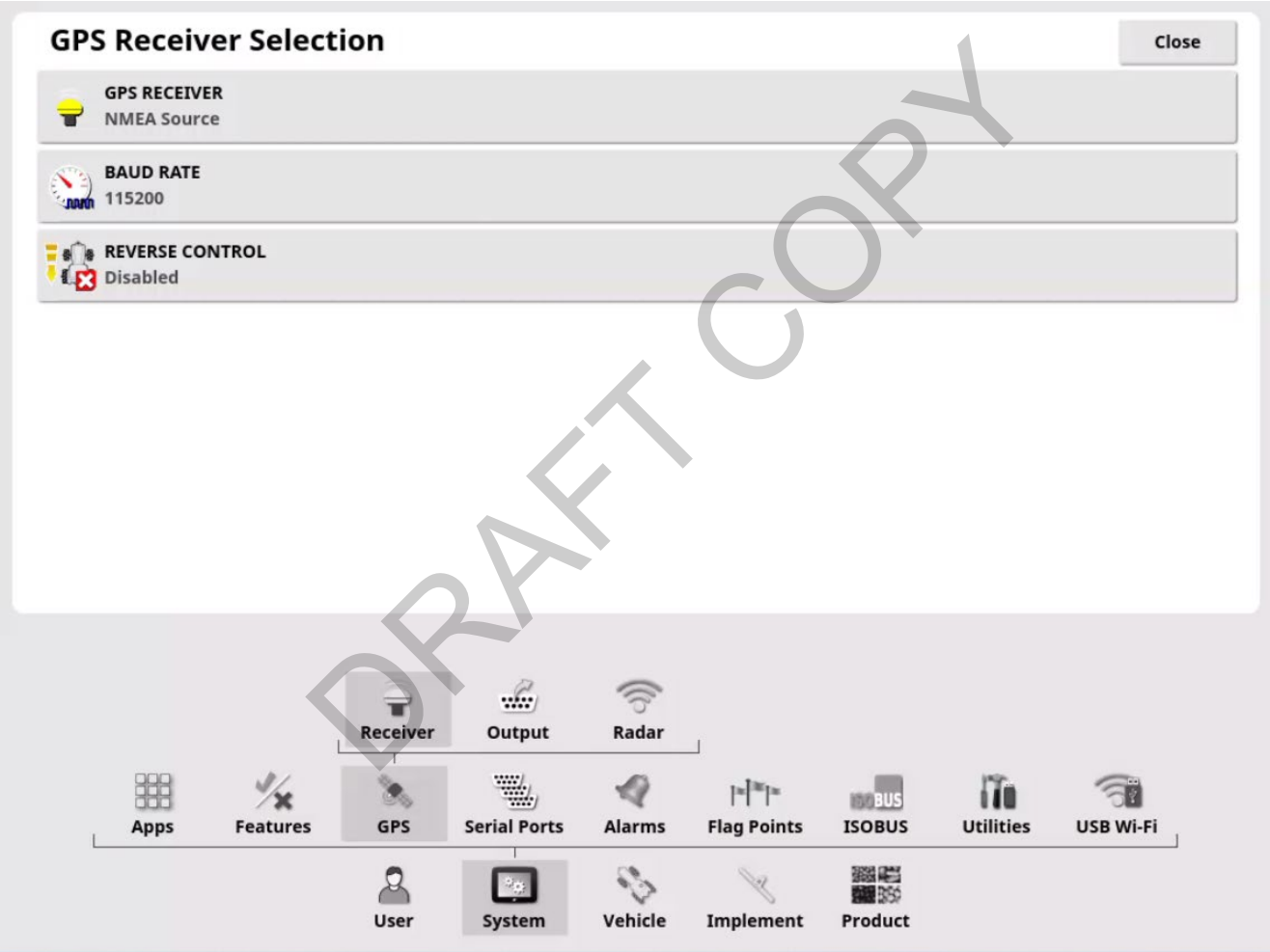


GPS CONNECTIONS

Navigate from **System-GPS-Receiver**.

GPS Receiver – NMEA Source

Baud Rate – 115200

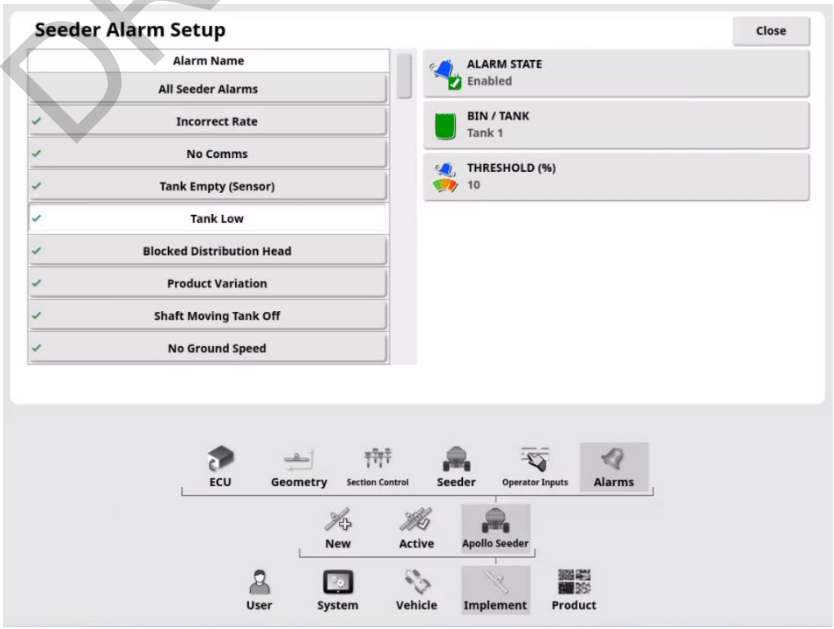


ALARMS

Ensure **All Seeder Alarms** are enabled, only the adjustable parameters are shown below.

Incorrect Rate **-- 5%**

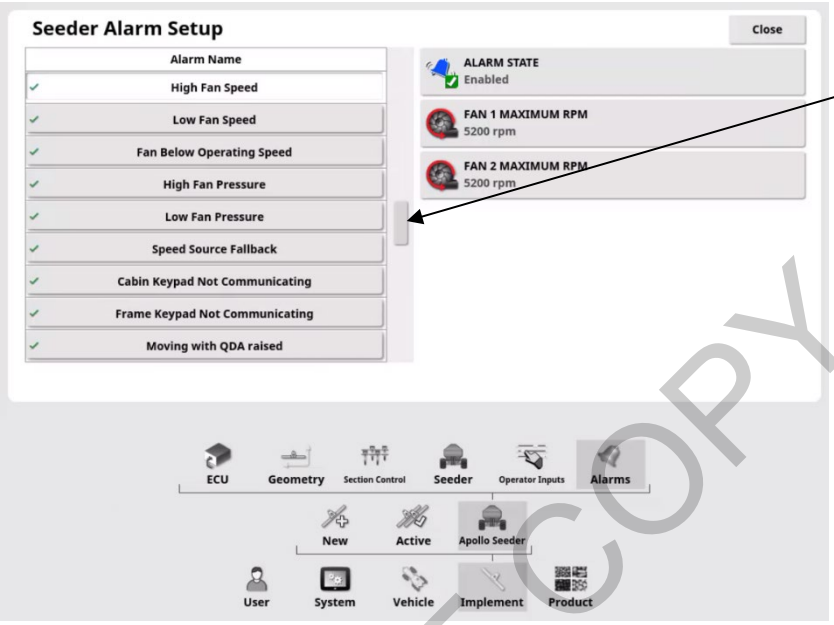
Tank Low – **Threshold 10%**



High Fan Speed –

Fan 1 Maximum RPM 5200 (user adjustable)

Fan 2 Maximum RPM 5200 (user adjustable)

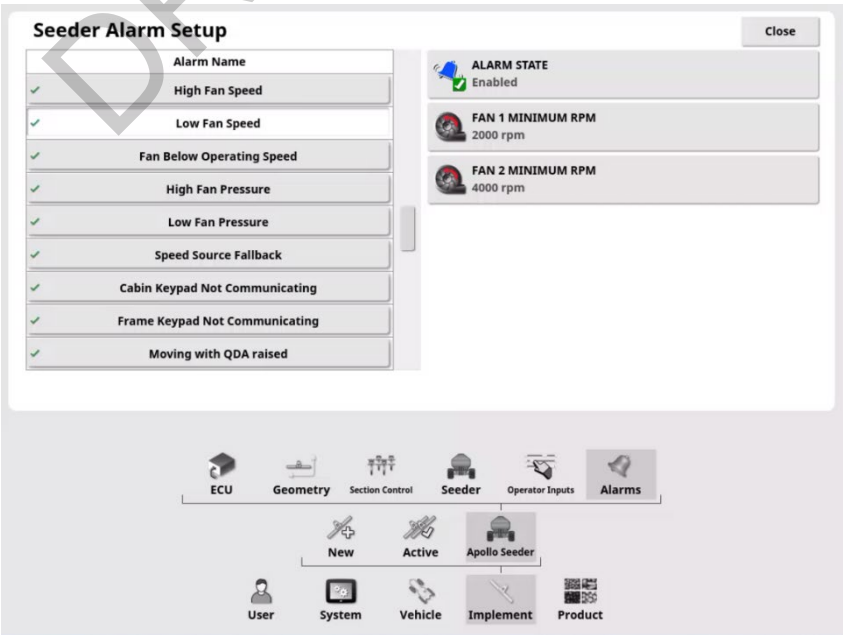


Adjust slider to locate applicable alarms

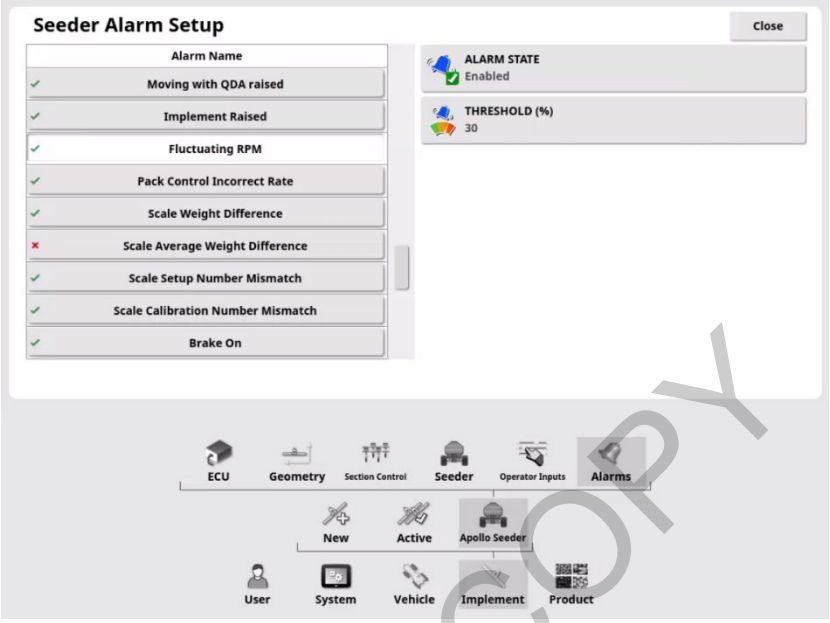
Low Fan Speed –

Fan 1 Minimum RPM 2000 (user adjustable)

Fan 2 Minimum RPM 4000 (user adjustable)



Fluctuating RPM – **Threshold 30%**



Pack Control Incorrect Rate – **Threshold 10%**

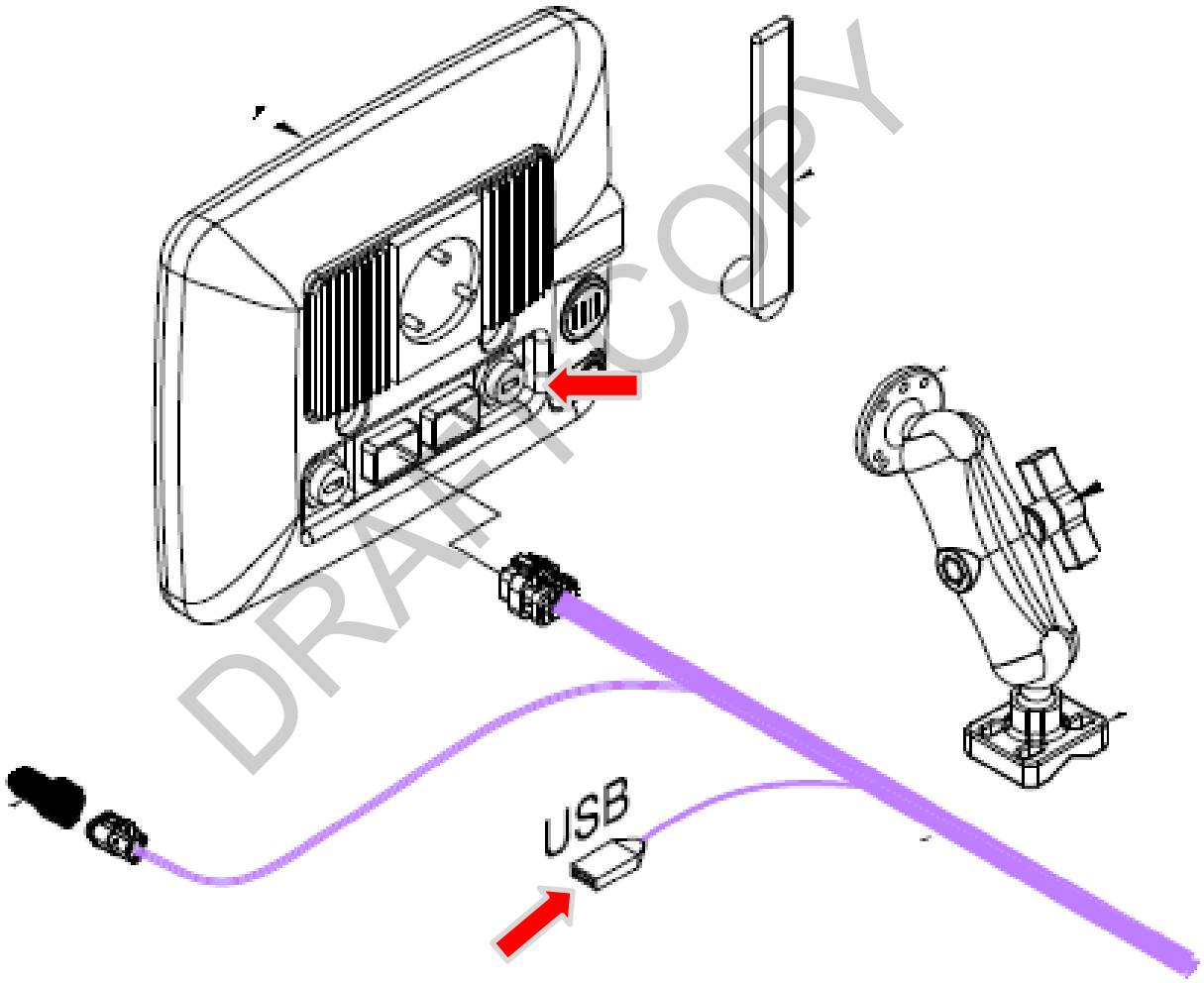
Navigate to **System-Alarms**

Ensure All General Alarms are enabled

Press the Close icon to return back to the Home screen.

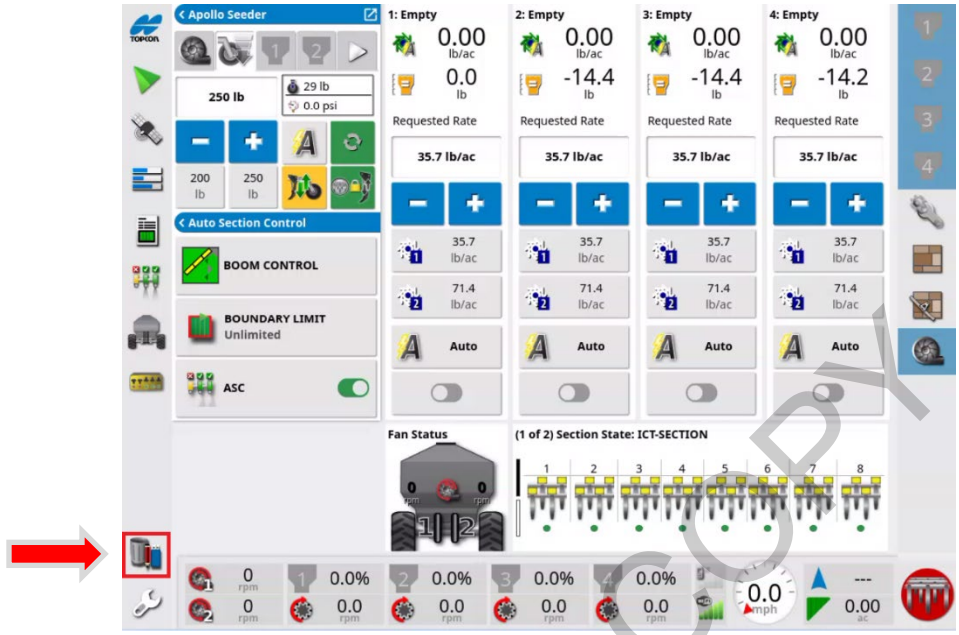
NEED NEW PICTURE

Create a backup profile on USB stick:

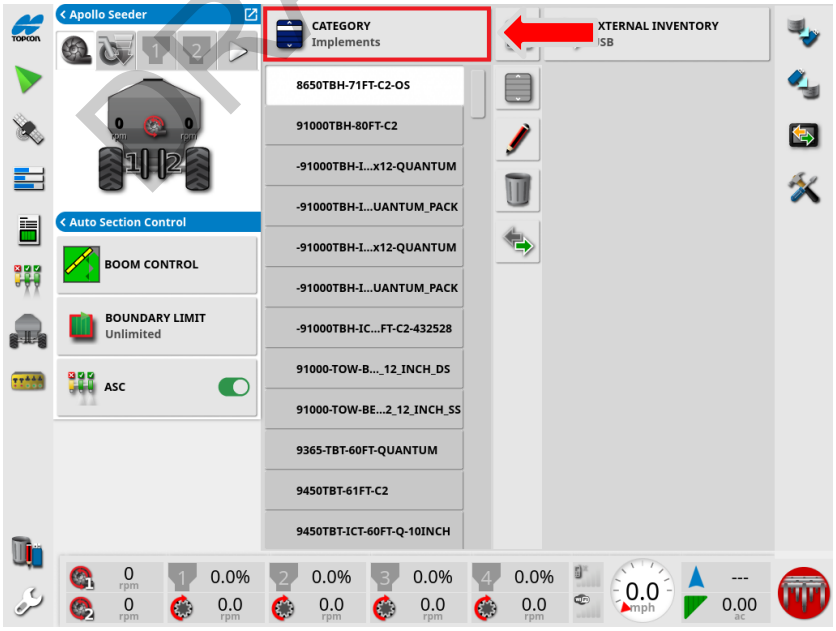


Insert a blank USB stick into either the USB port on the X35 monitor or main harness.

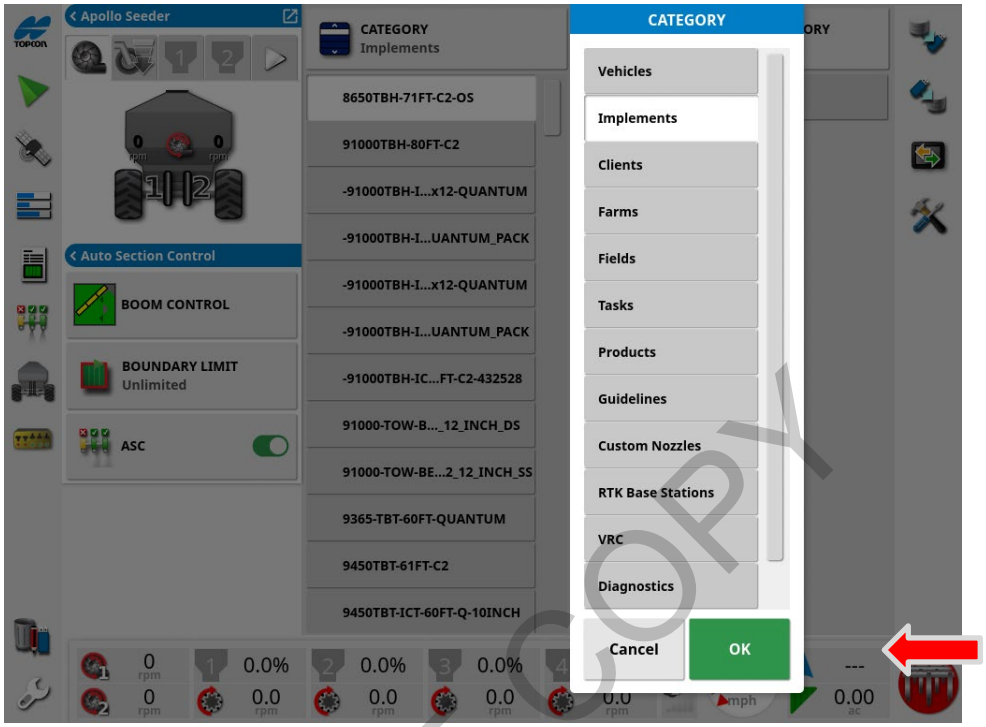
Touch the  Inventory Manager Icon.



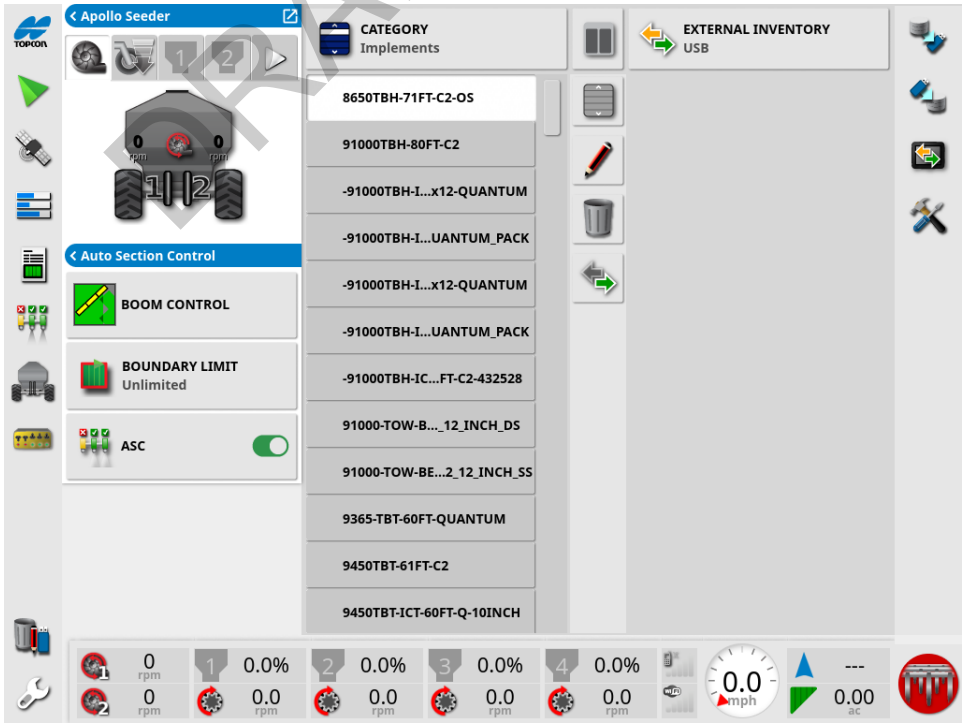
Touch the **CATEGORY** tab.



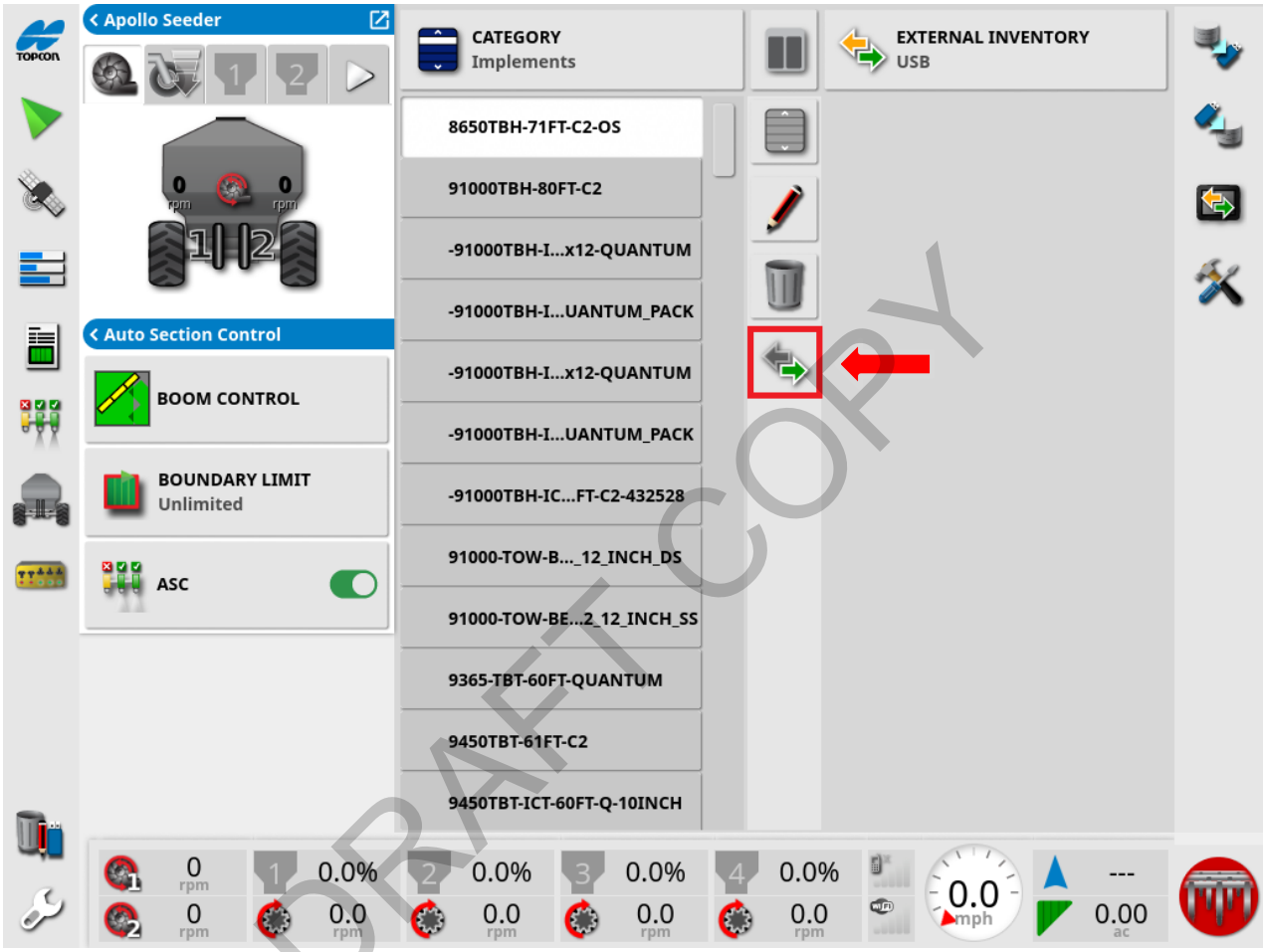
A drop down list will appear, select **Implements** from the list. Touch the Green OK box.



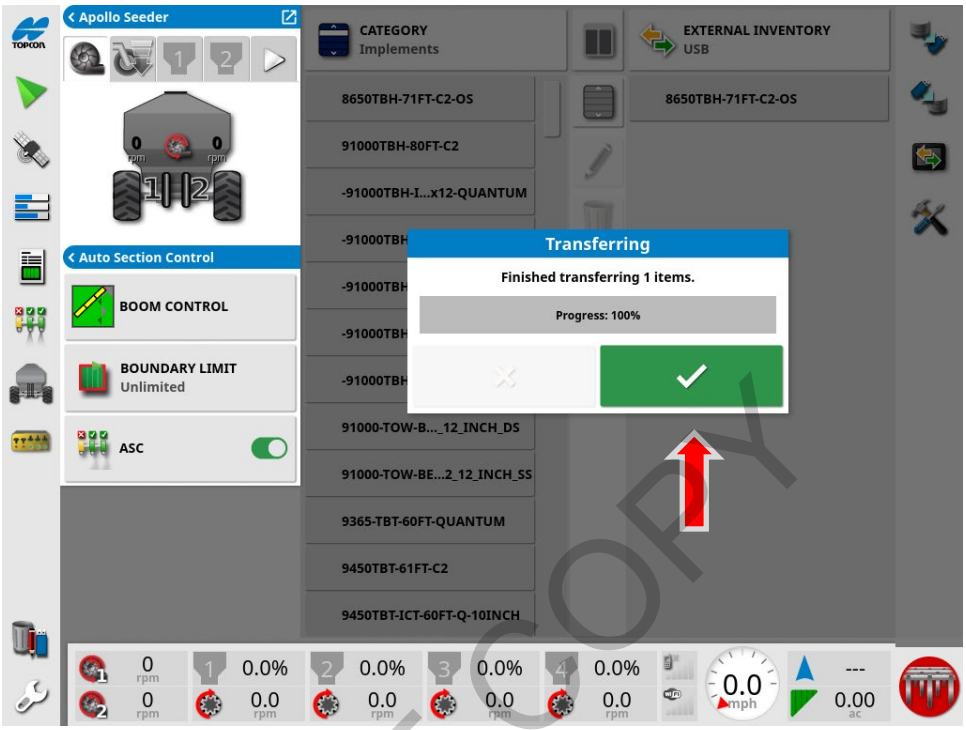
Highlight the Implements you wish to back up.



Touch the  **Export** icon which is in the center of the screen.



The backup profiles will be transferred to the USB stick.



When Complete press the **Green check mark** and eject the USB stick by using the eject feature.

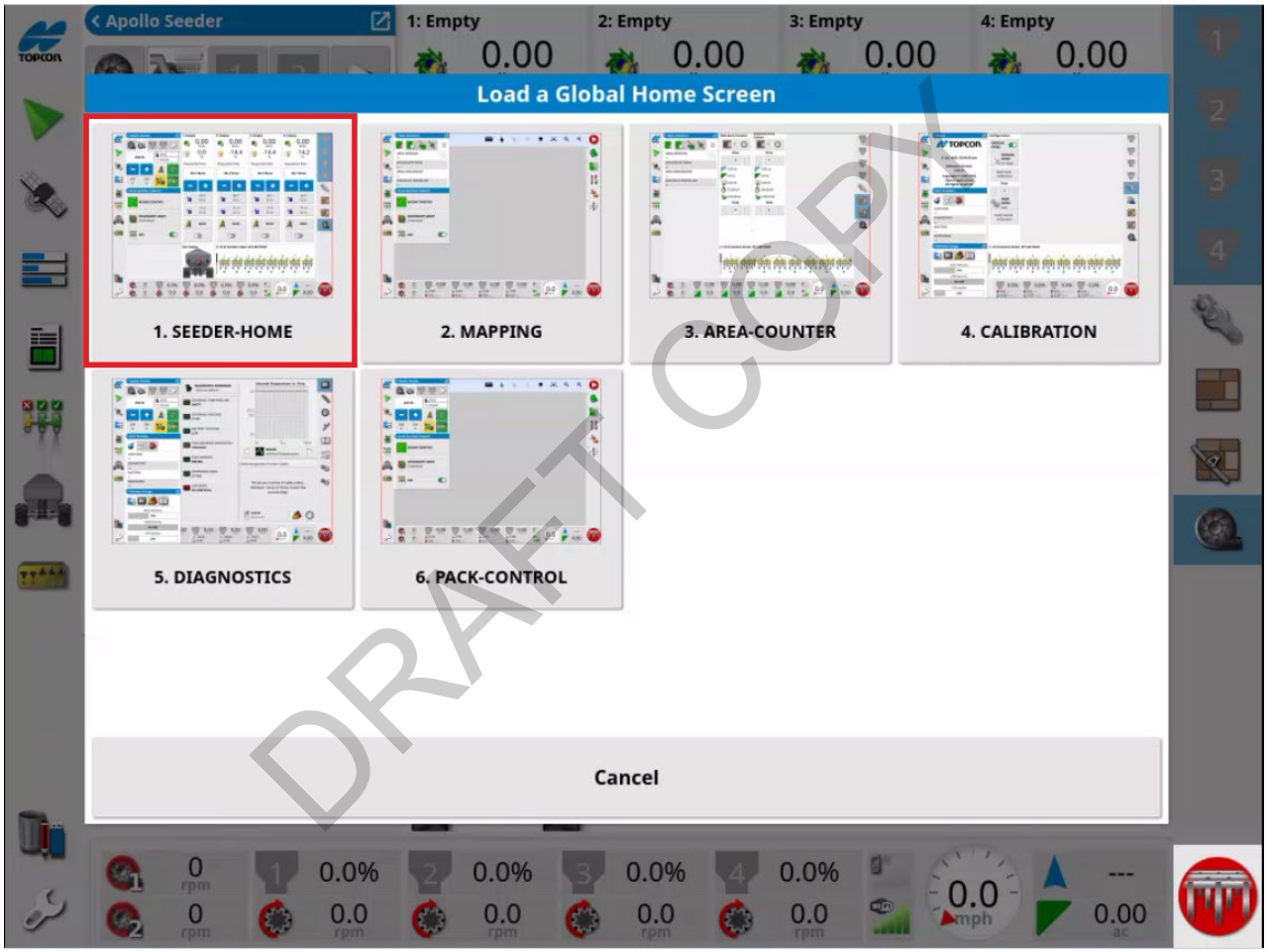
With a label maker add the decal - Morris Back up profile. Keep this USB stick in a safe location.

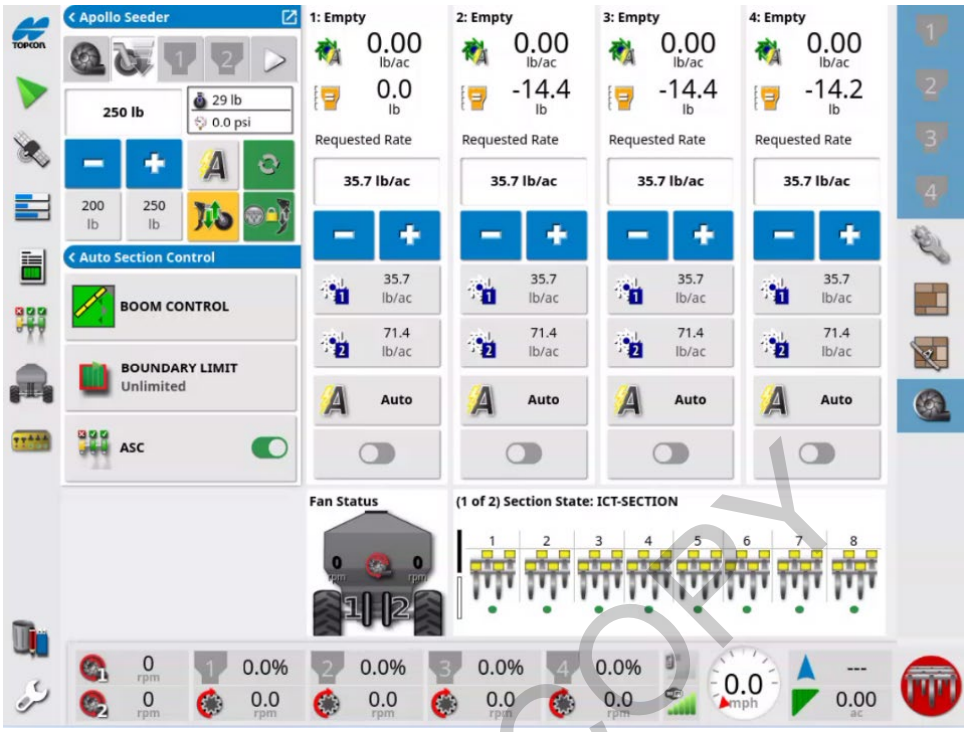
Notes:

Firmware Release for Spring 2020 will include Home Screen Update. System INI.

However – you can review the Home screen layouts. The following are visual references for Home Screen setups

Select **SEEDER HOME**

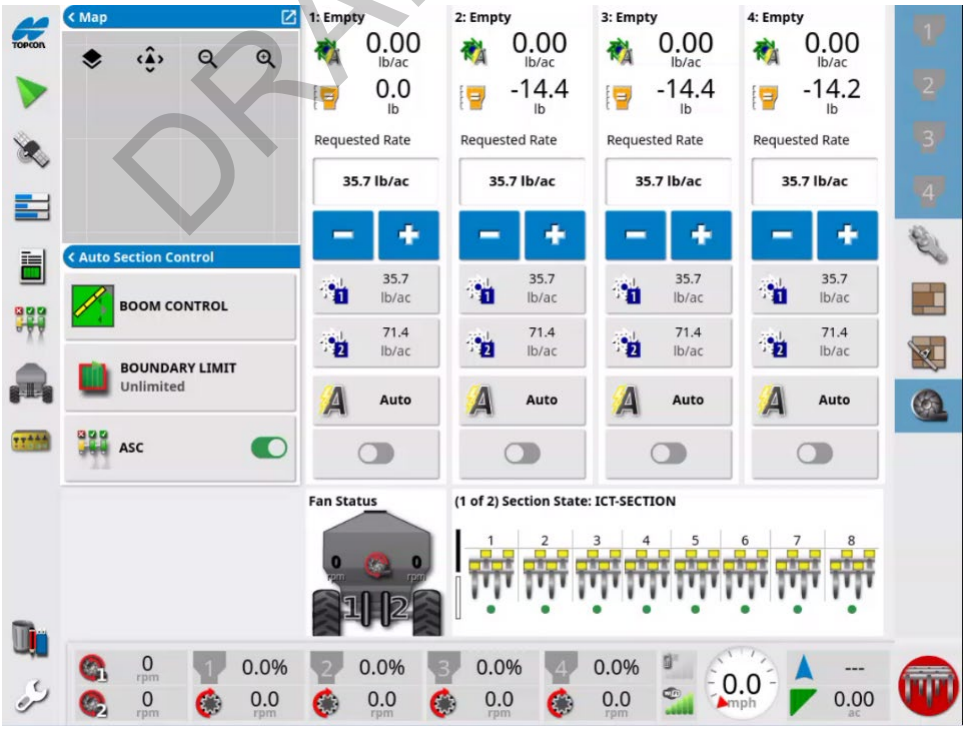




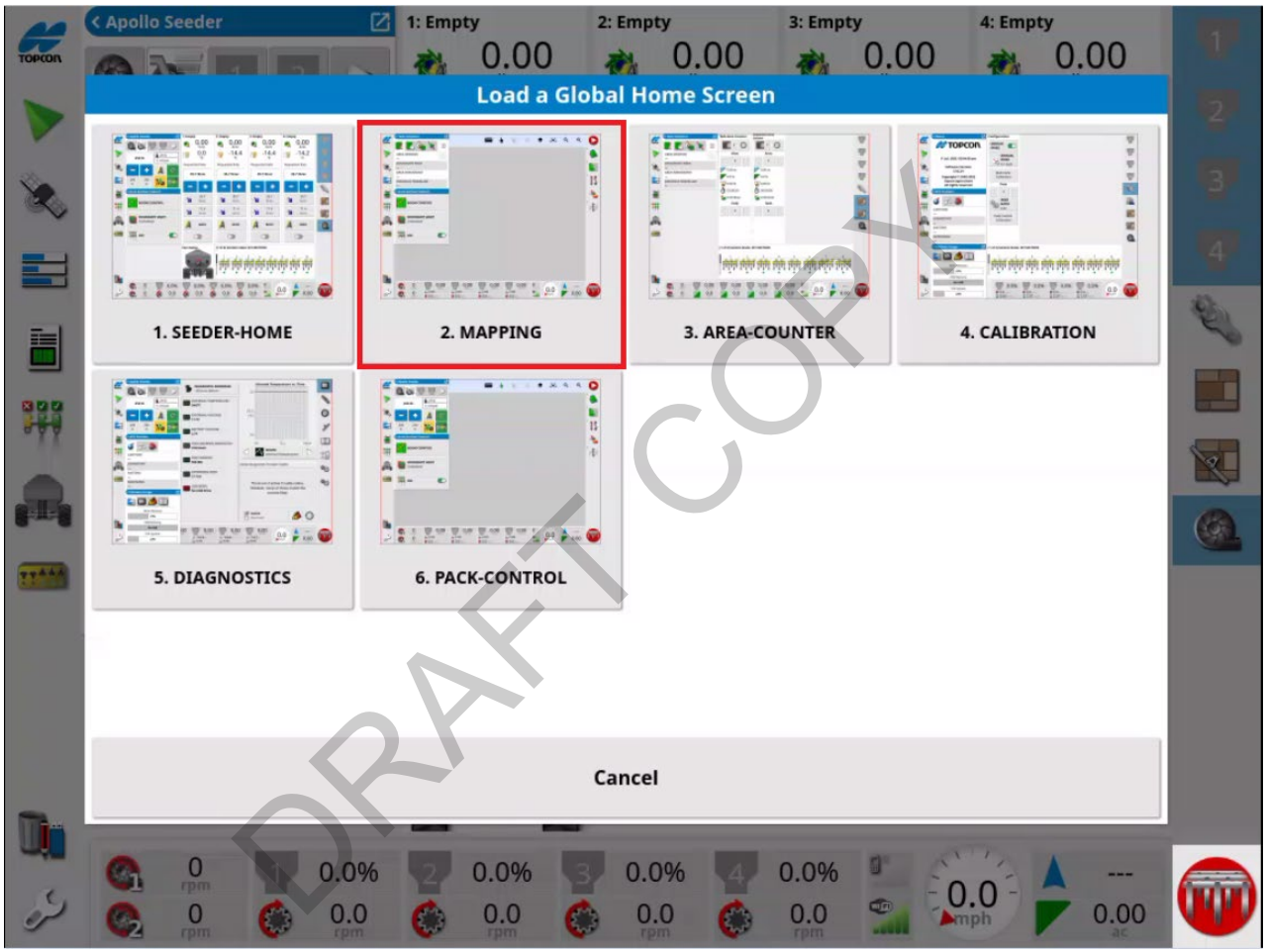
SEEDER HOME

Configuration A - Pack Control – above

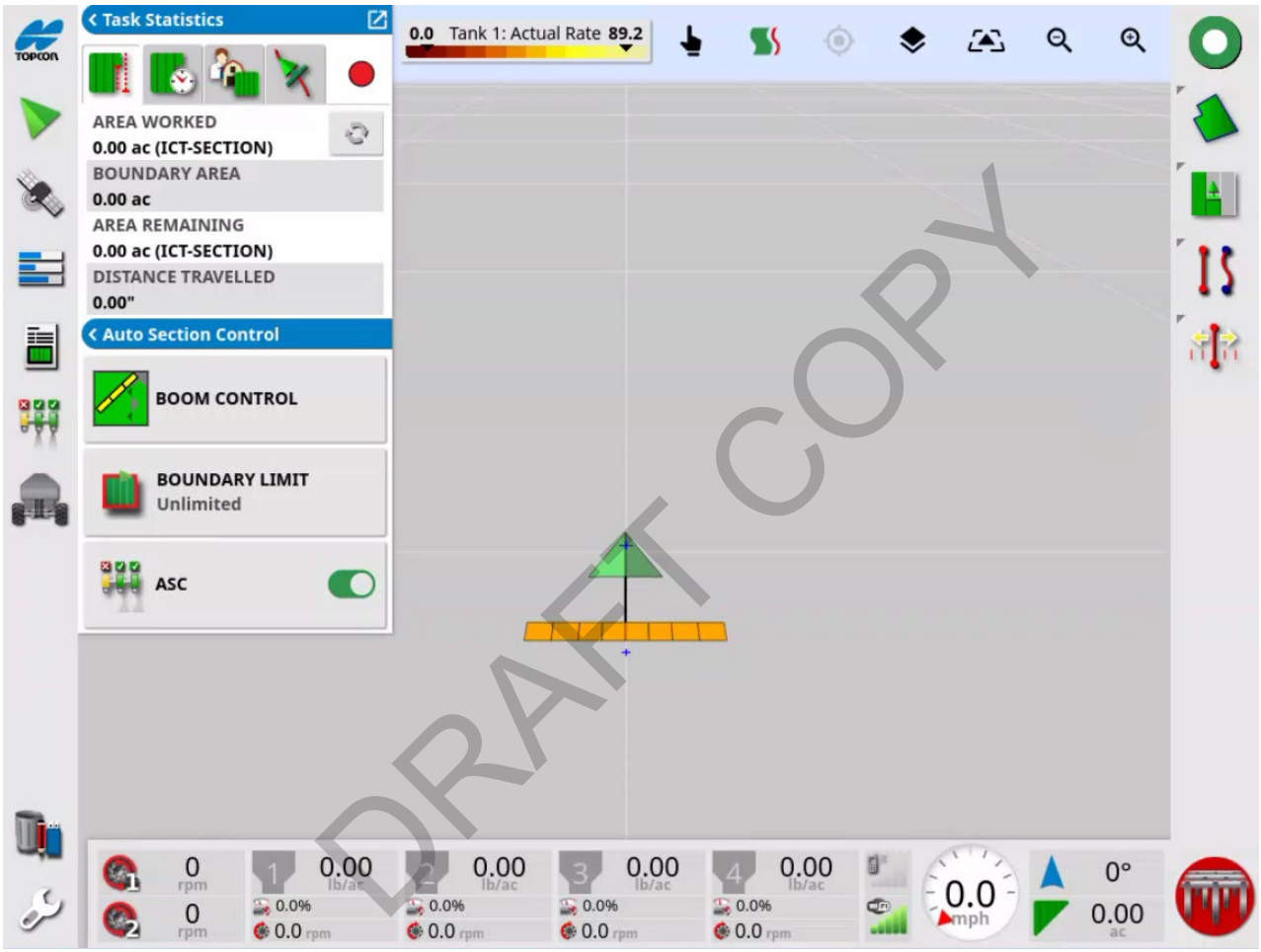
Configuration B – Mapping mini View (no Pack Control)--below



Select **MAPPING**

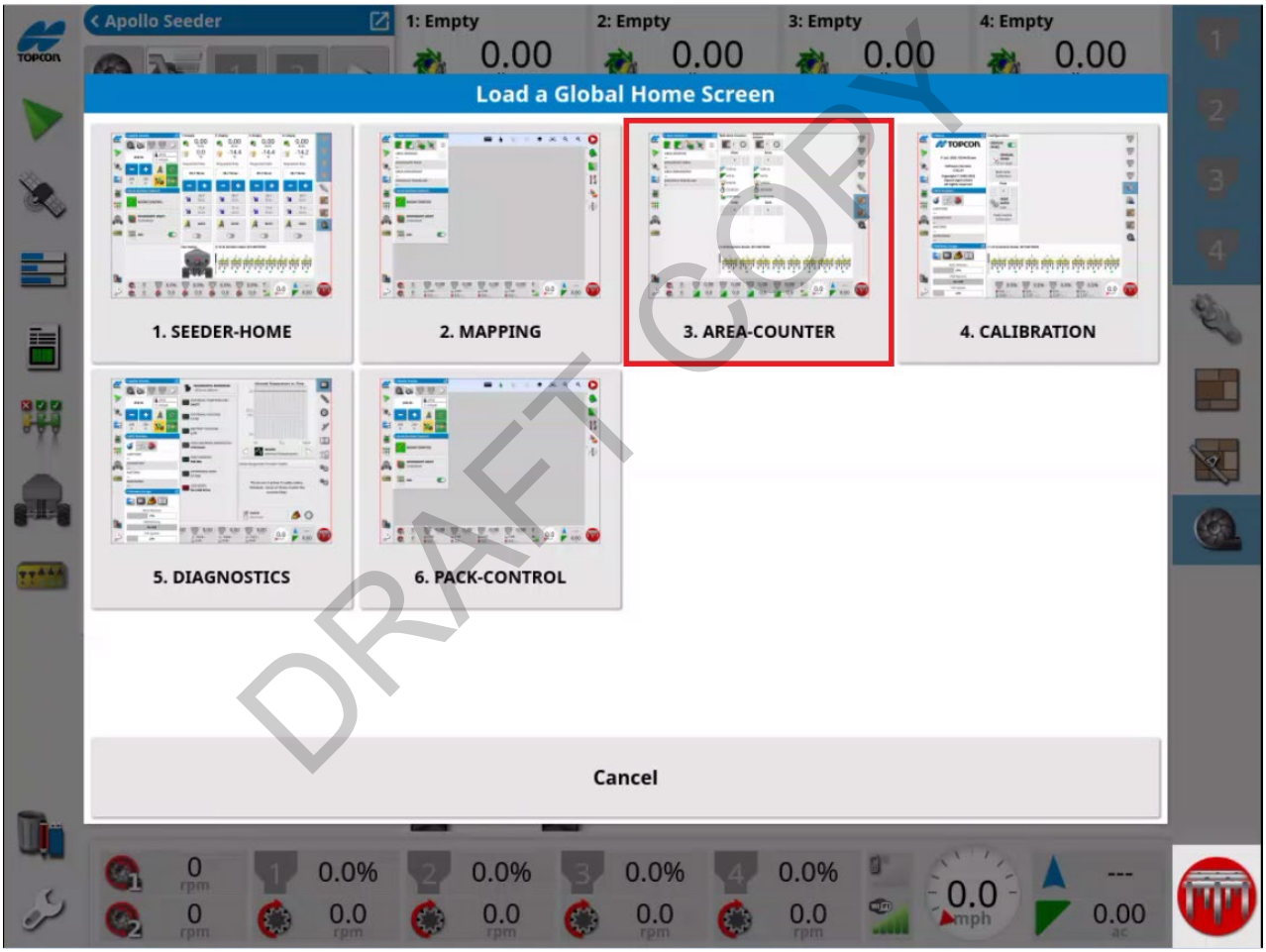


MAPPING

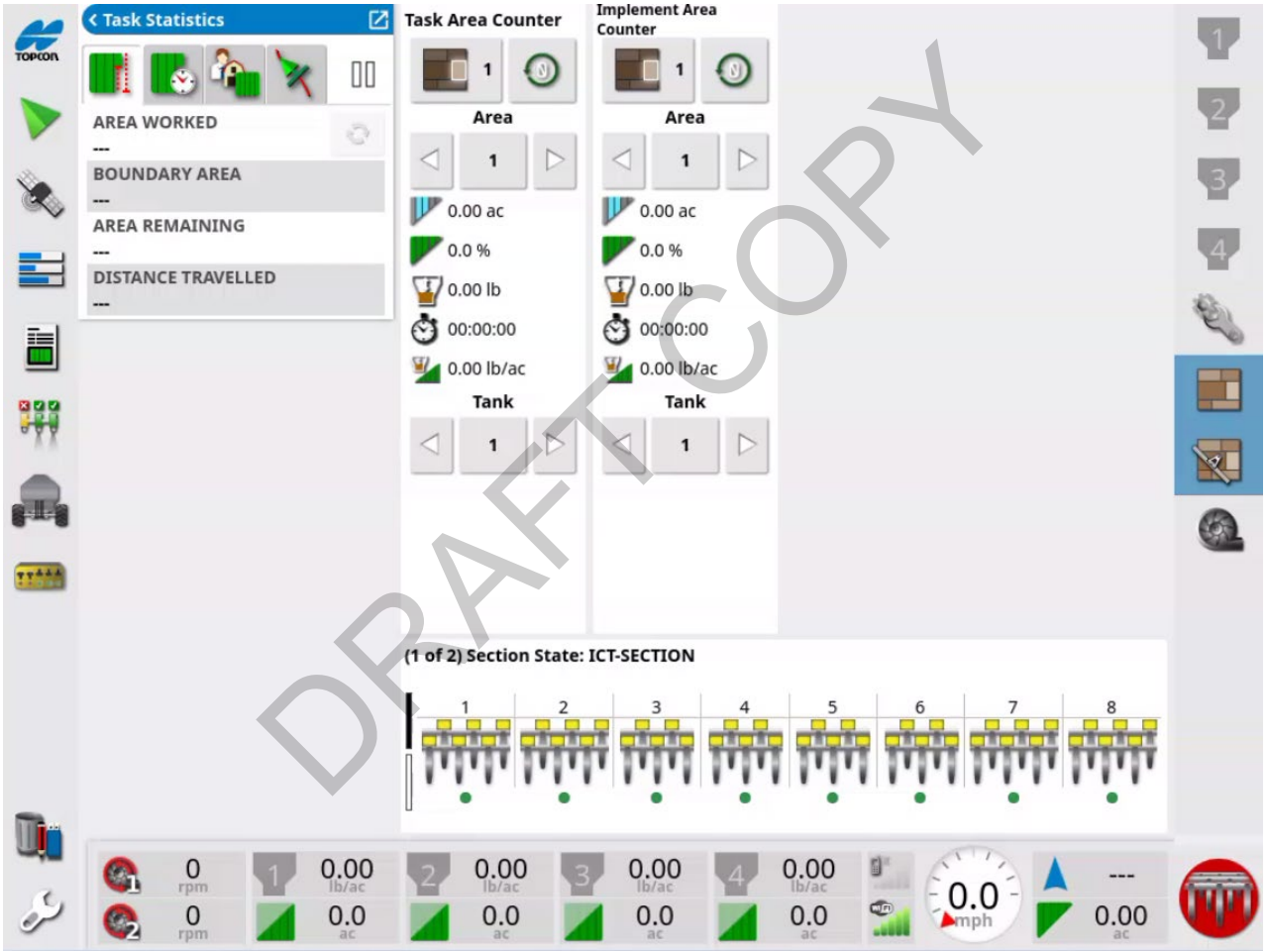


Note: The implement will only appear on the screen if the GPS is configured properly.

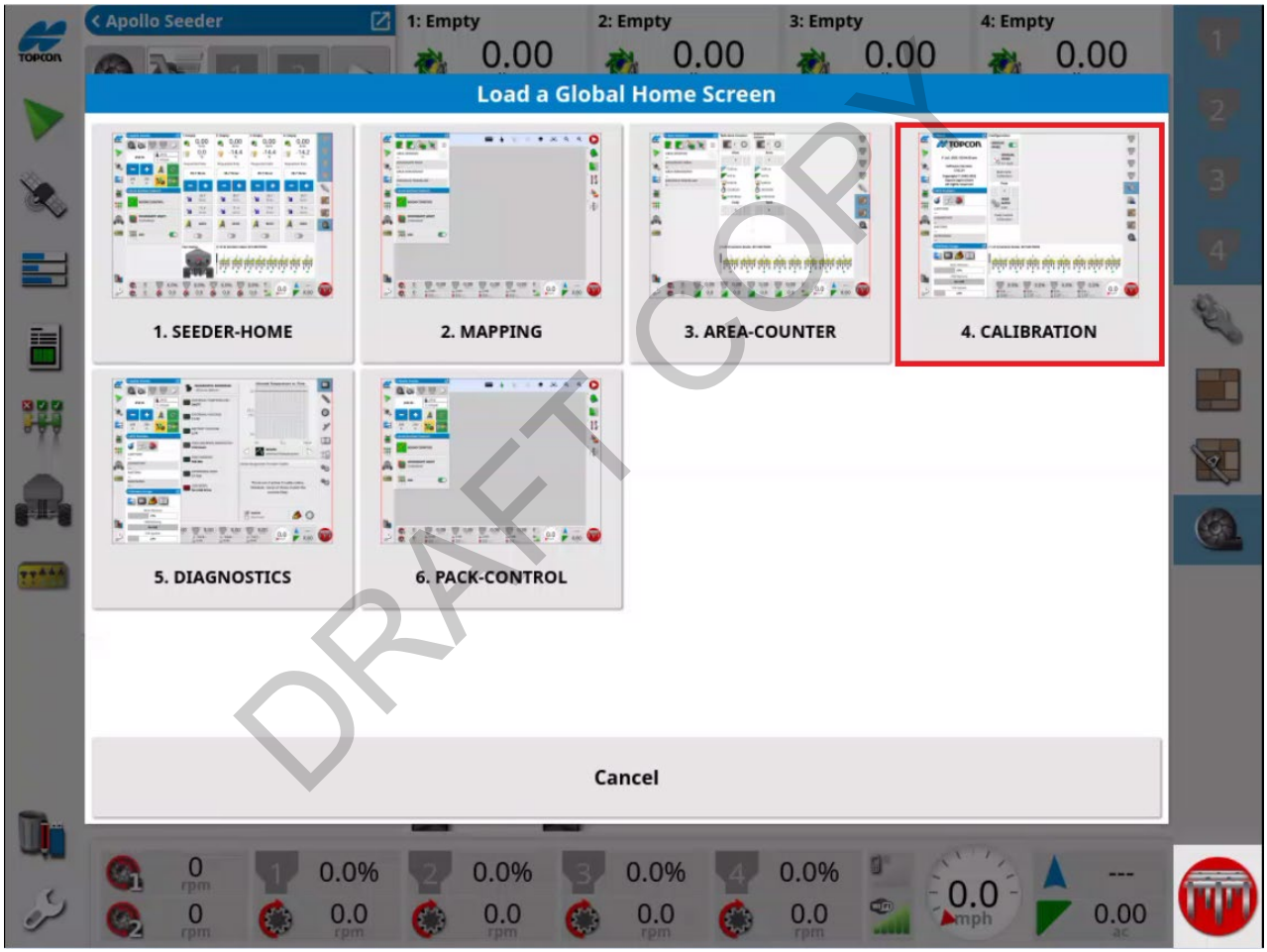
Select **AREA COUNTER**



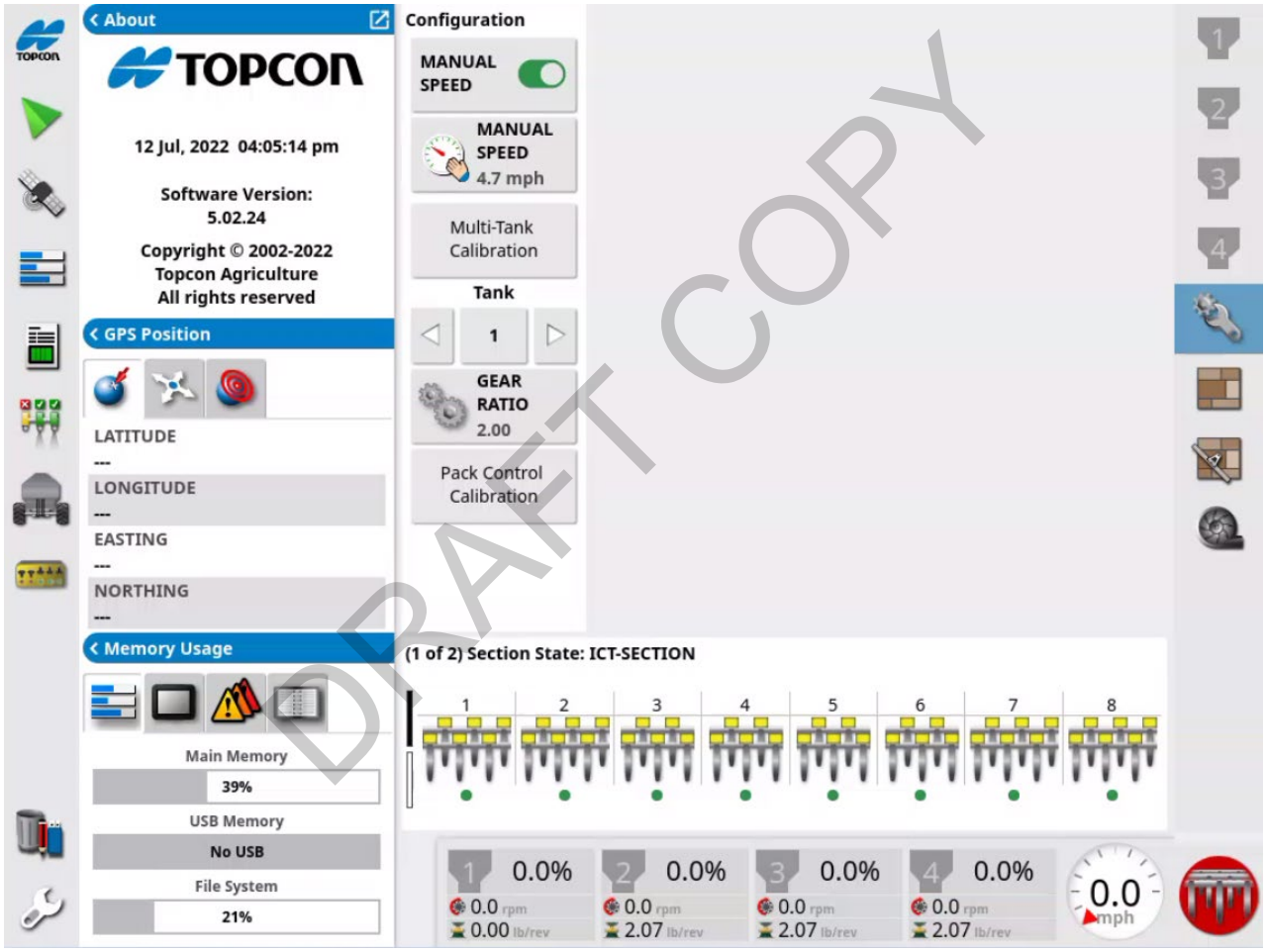
Area Counters



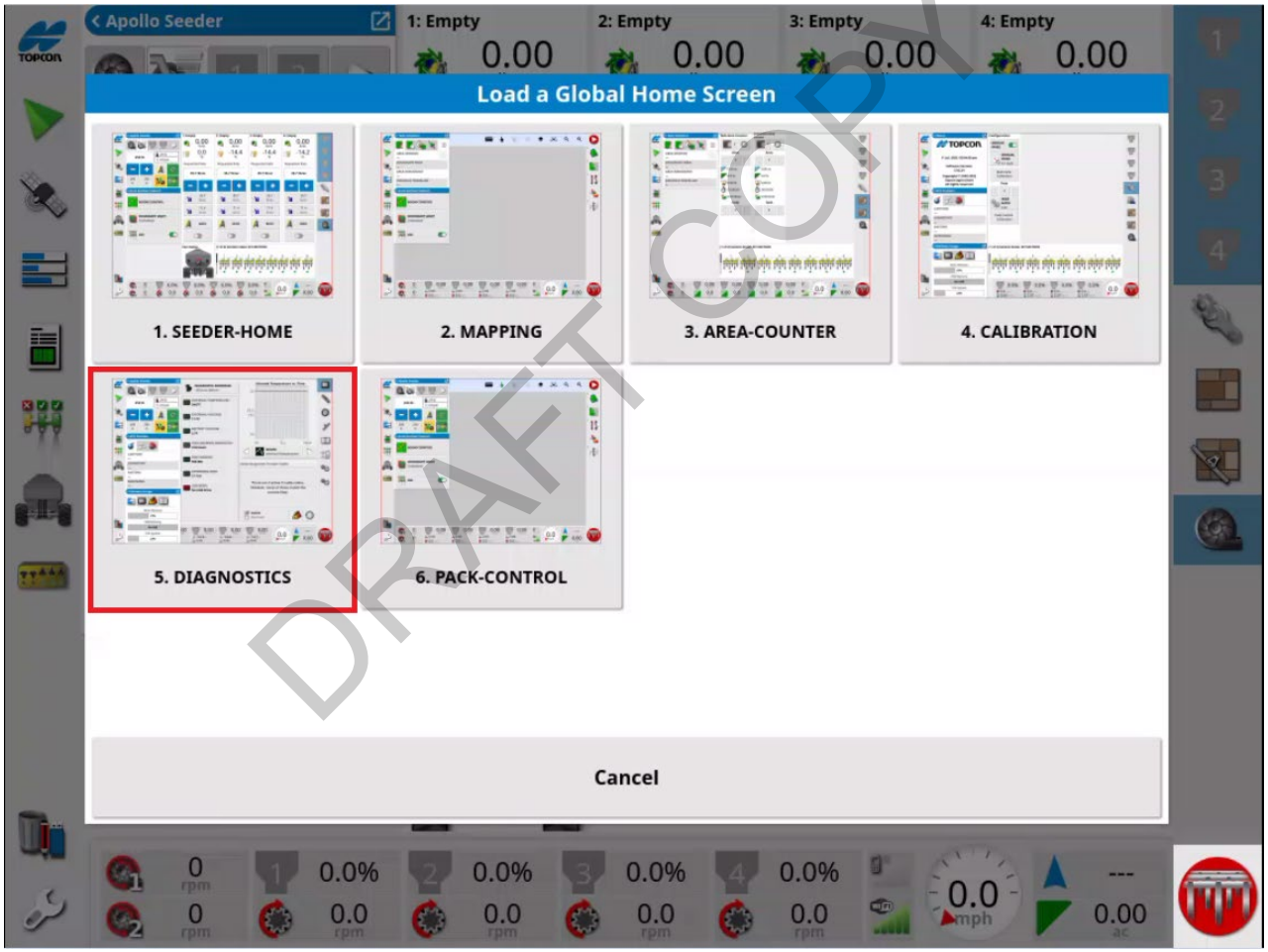
Select **CALIBRATION**



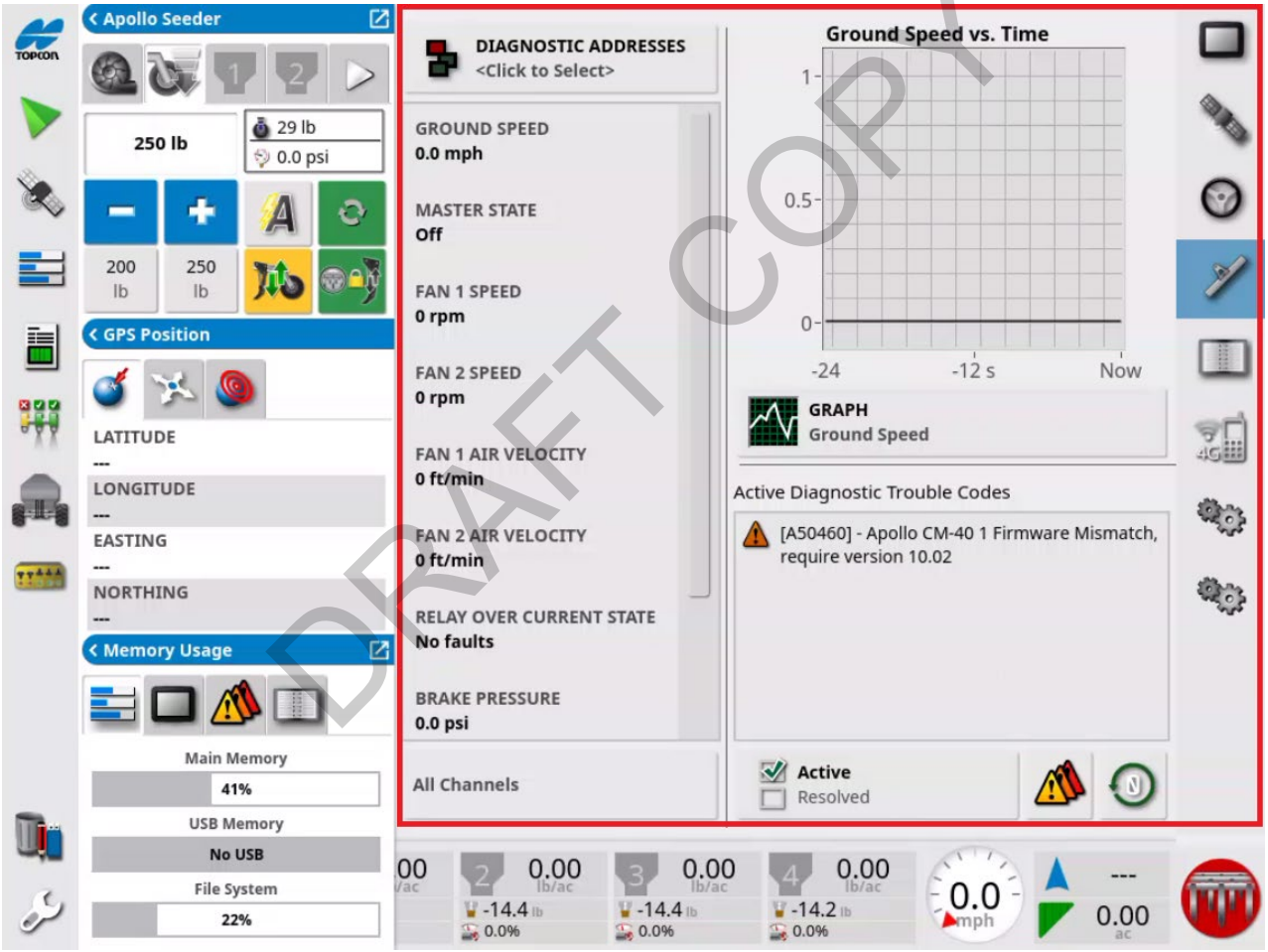
Calibration



Select **DIAGNOSTICS**

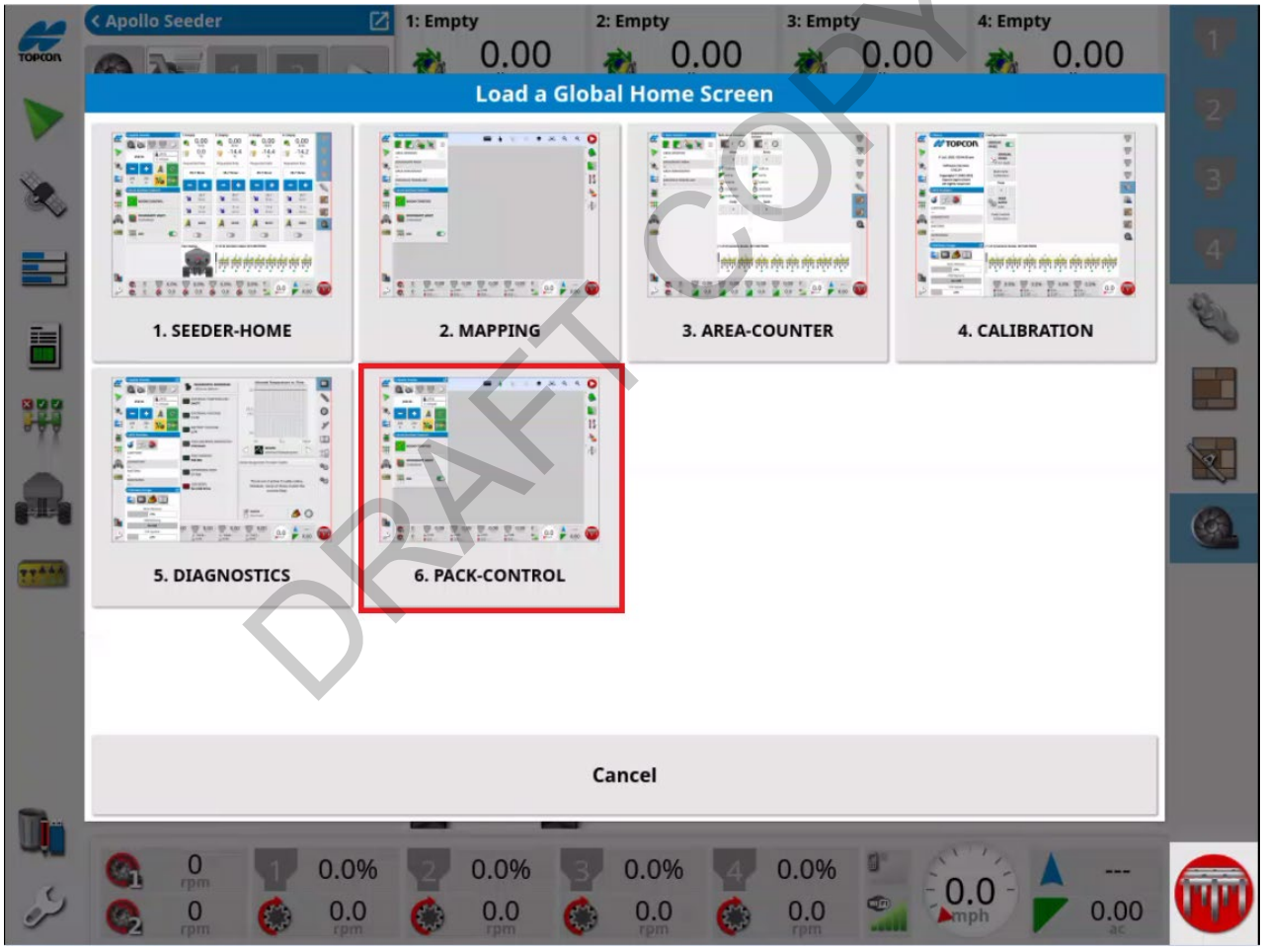


Diagnostics

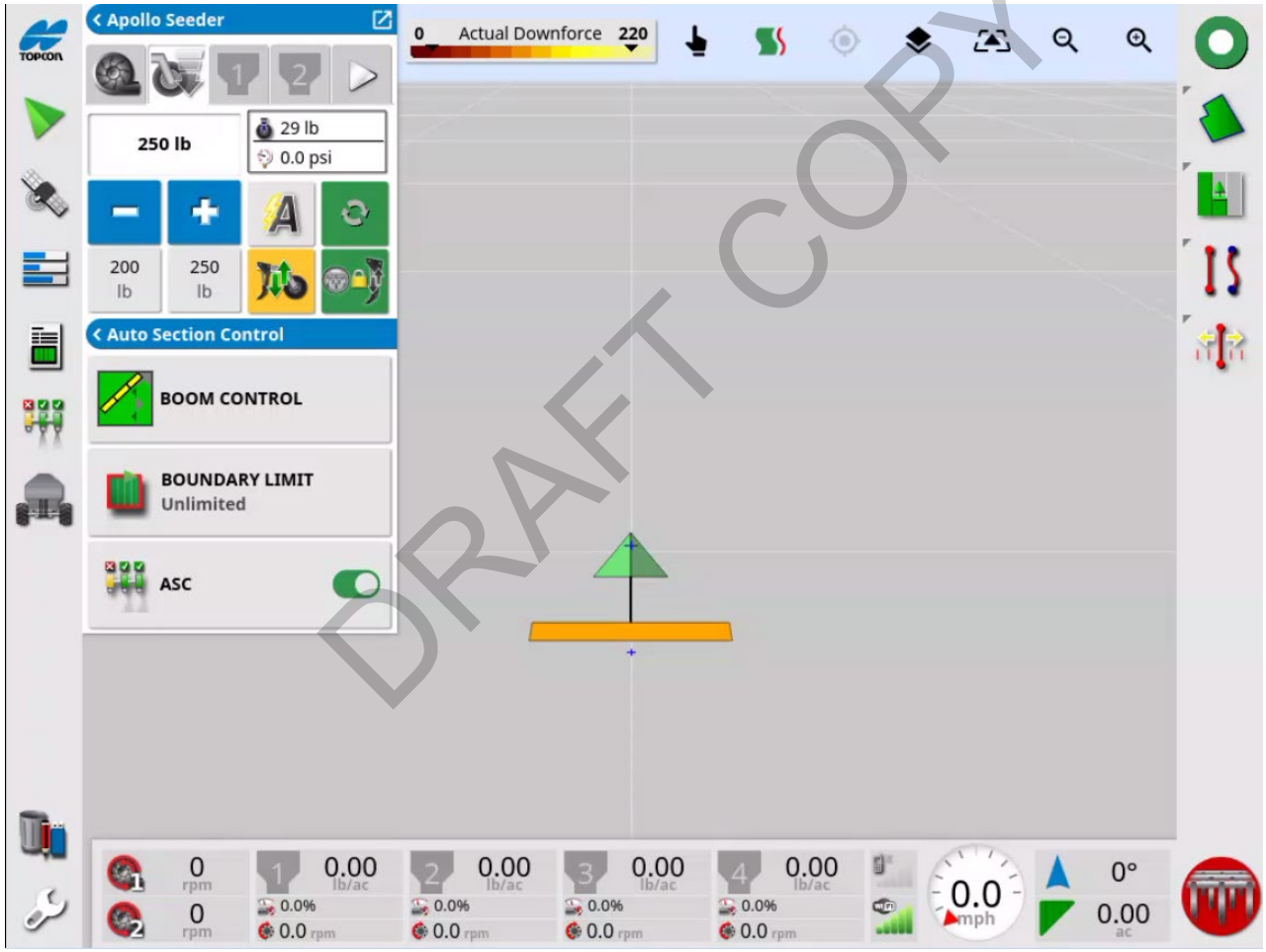


Note: Information within red box is only available to Morris Technicians, diagnostic home screen appearance may differ.

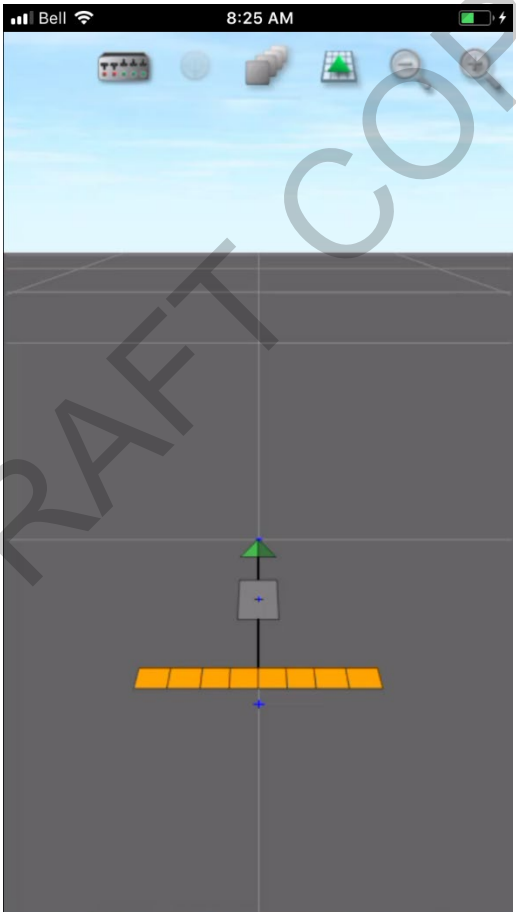
Select **PACK CONTROL**



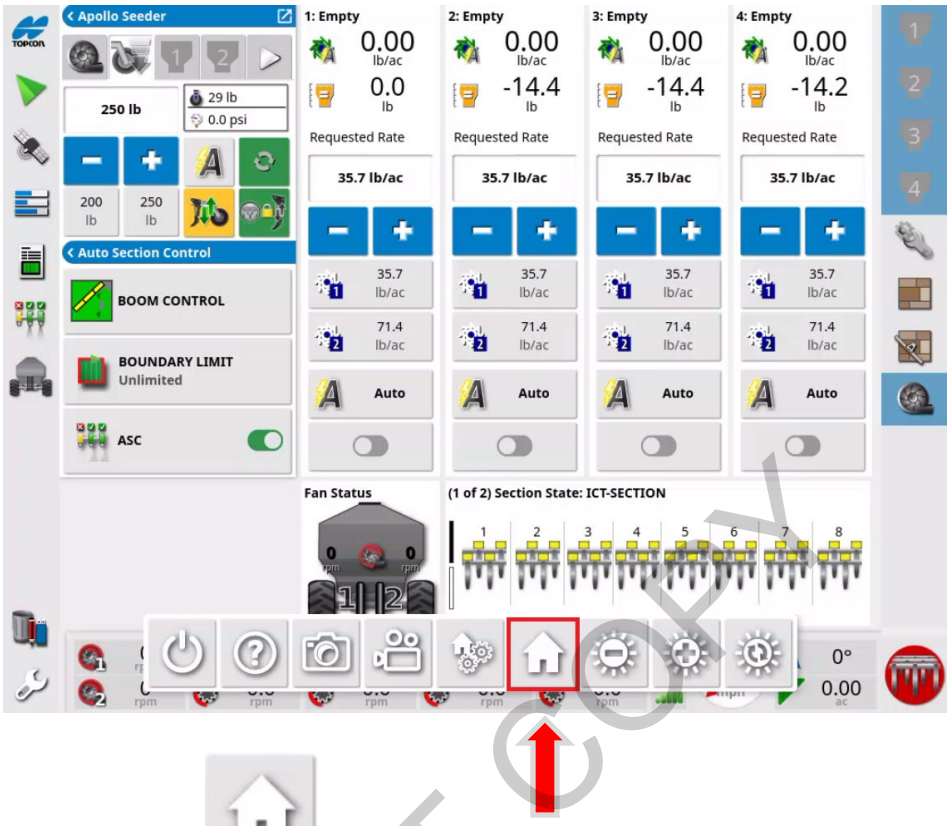
Pack Control



Xtend – Mapping Aux supplement Screen.

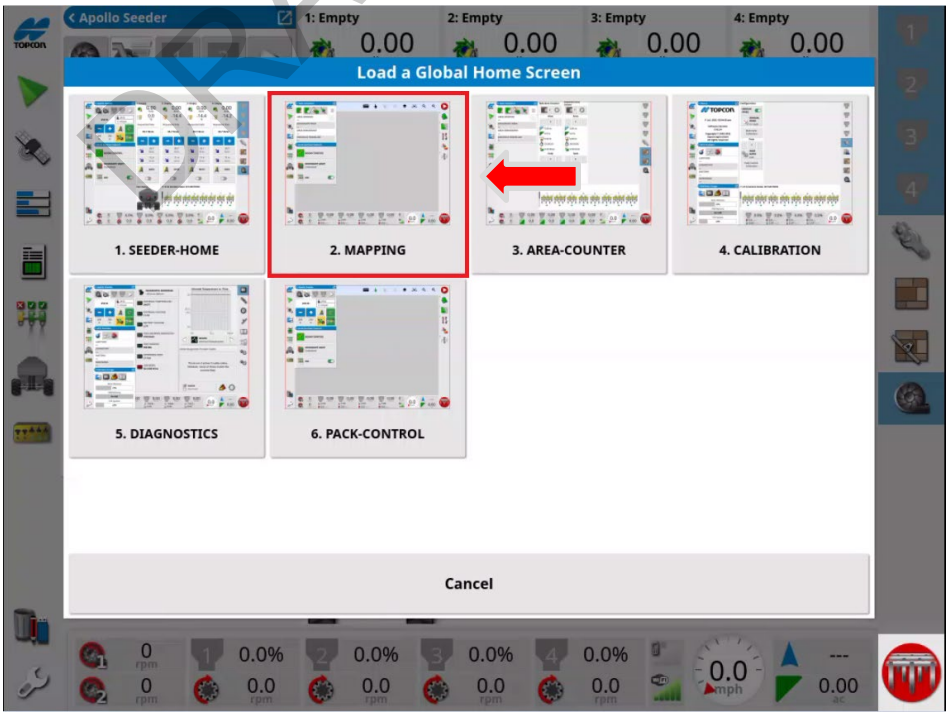


Notes:

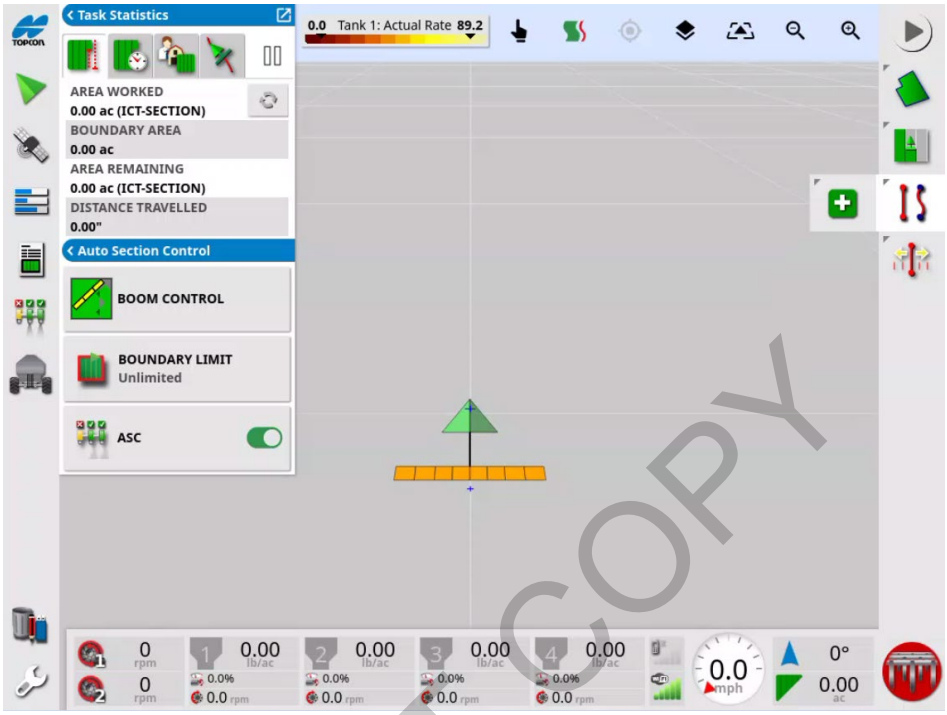


Swipe up and press the Home icon, to access the Global home screen menu at any time.

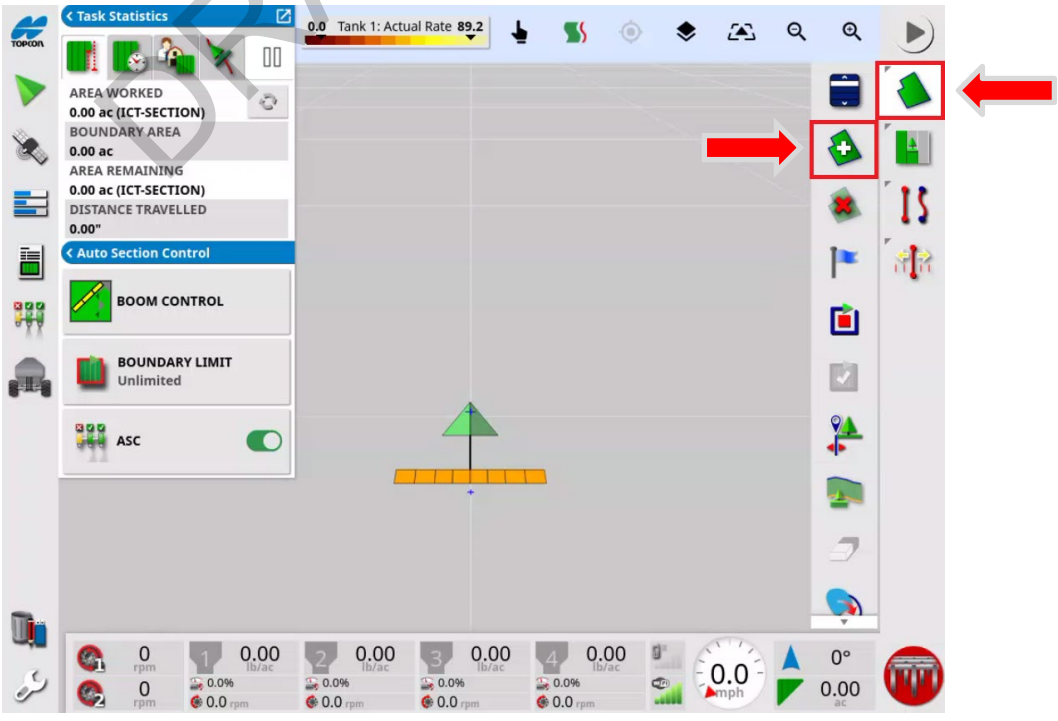
Touch **MAPPING**



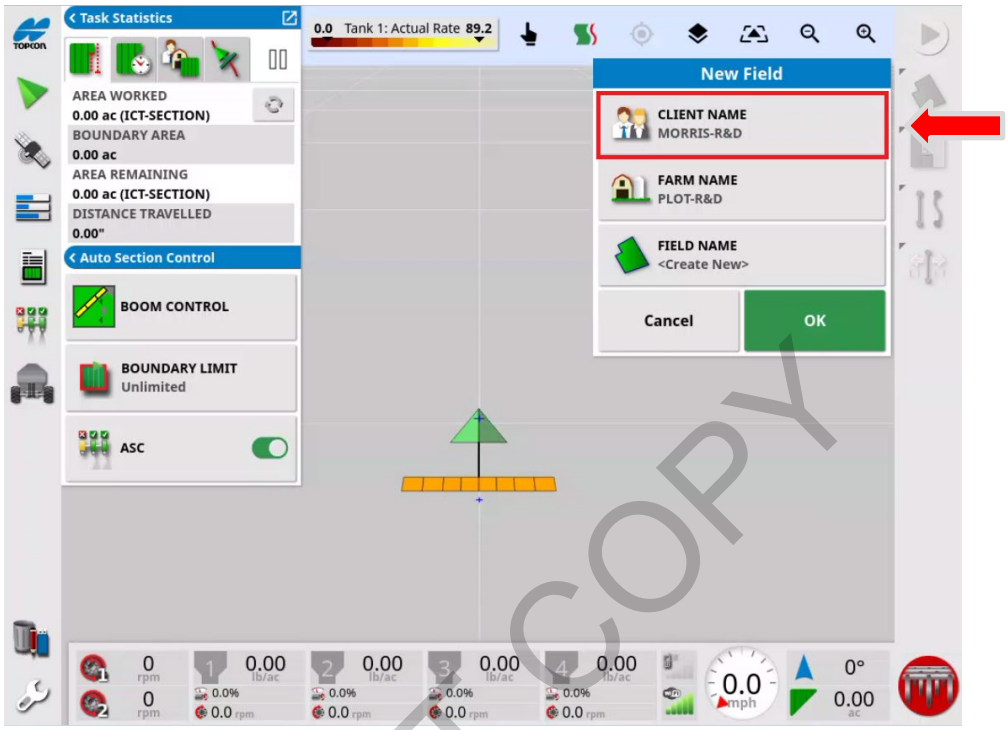
Note: The implement will only appear on the screen if the GPS is configured properly.



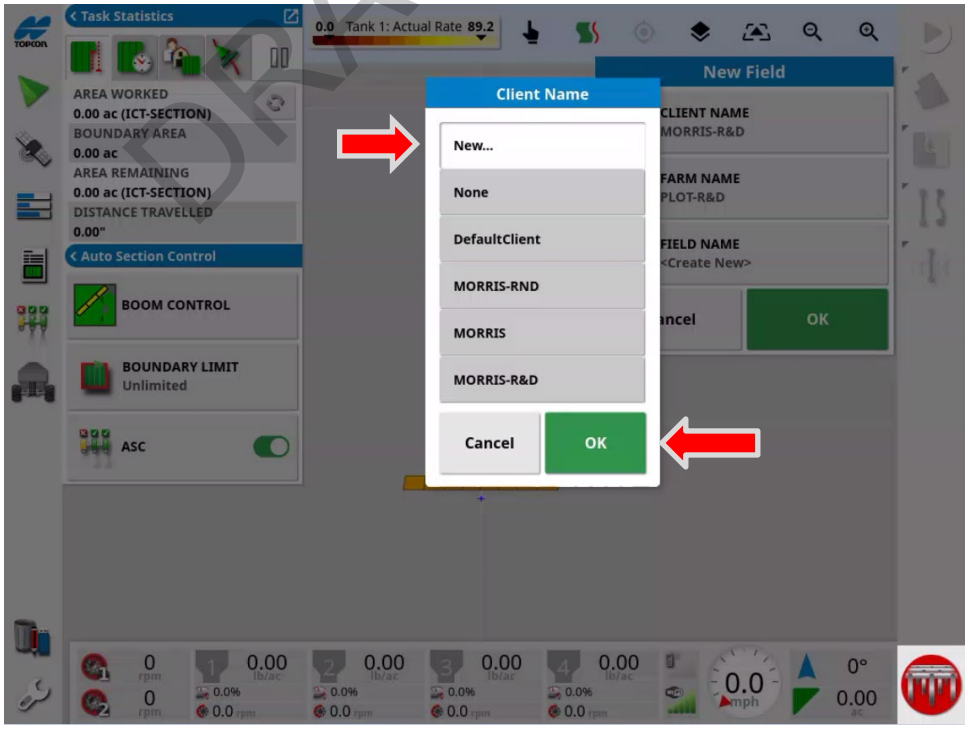
Press the **Field Menu** icon  followed by the **Create New Field** icon 



Press the on **Client Name** tab.

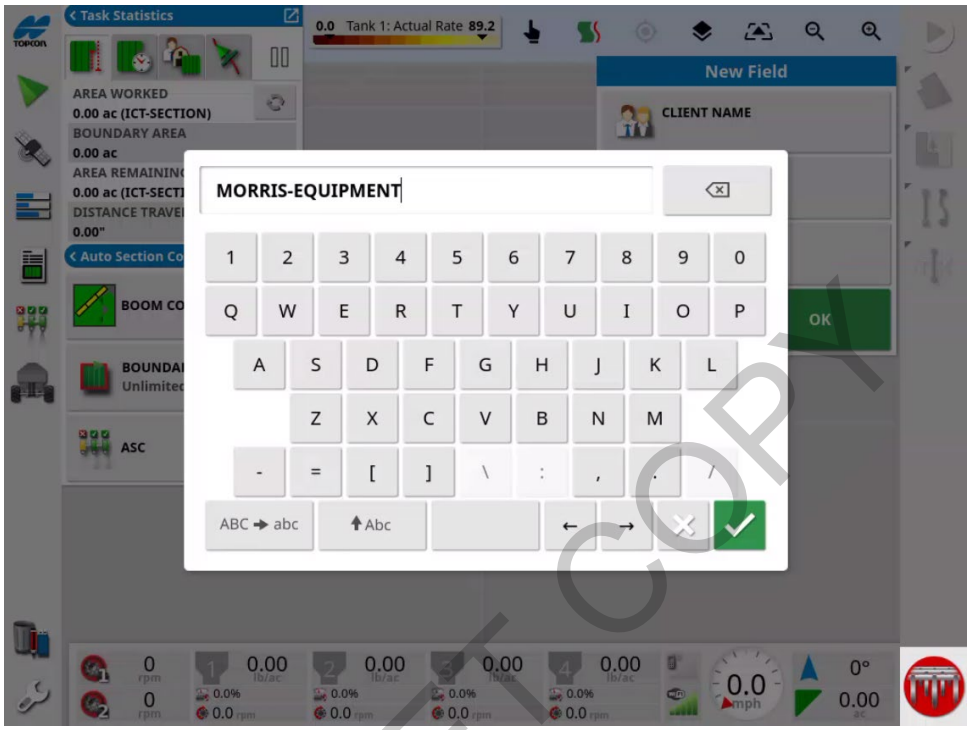


Select **New…**then press the green OK box.

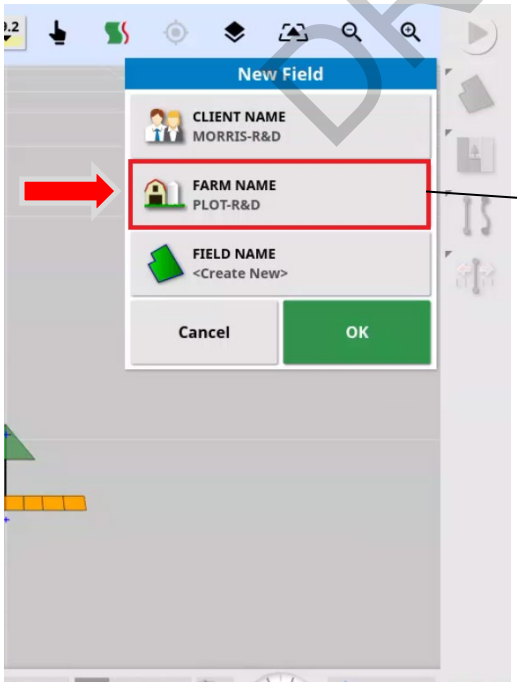


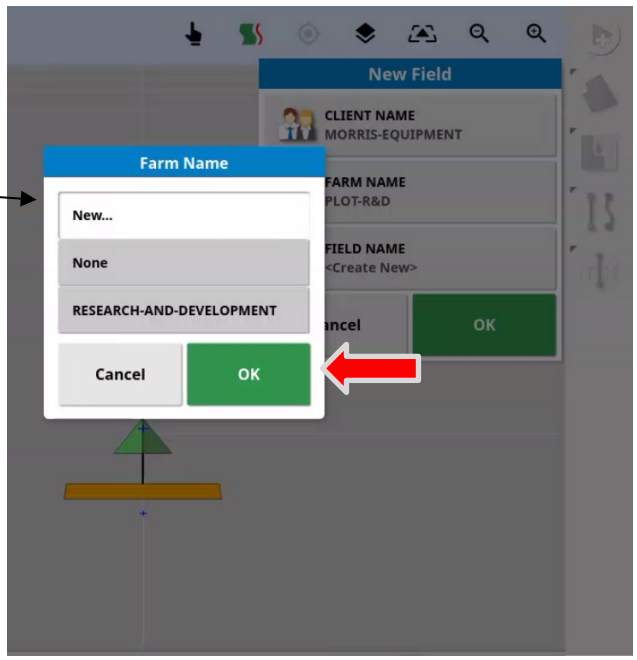
Enter a Name for the Client. **Always use (–). No spaces.**

Confirm new Client name by pressing the Green Check Mark.

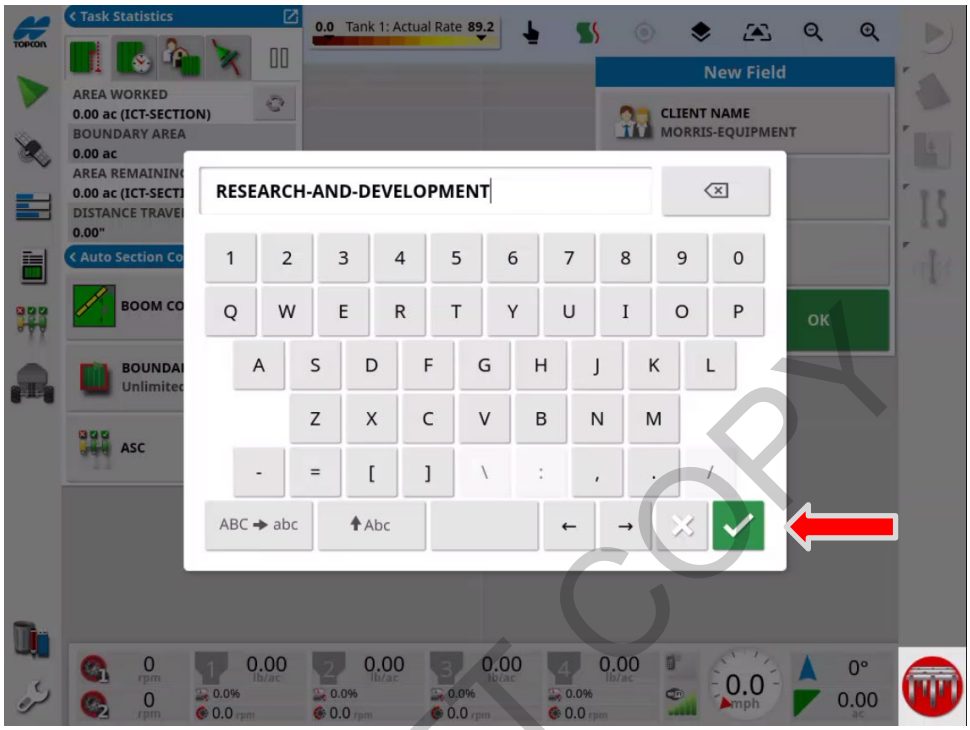


Press on the **Farm Name,** then **<New>** tab. Select **OK**

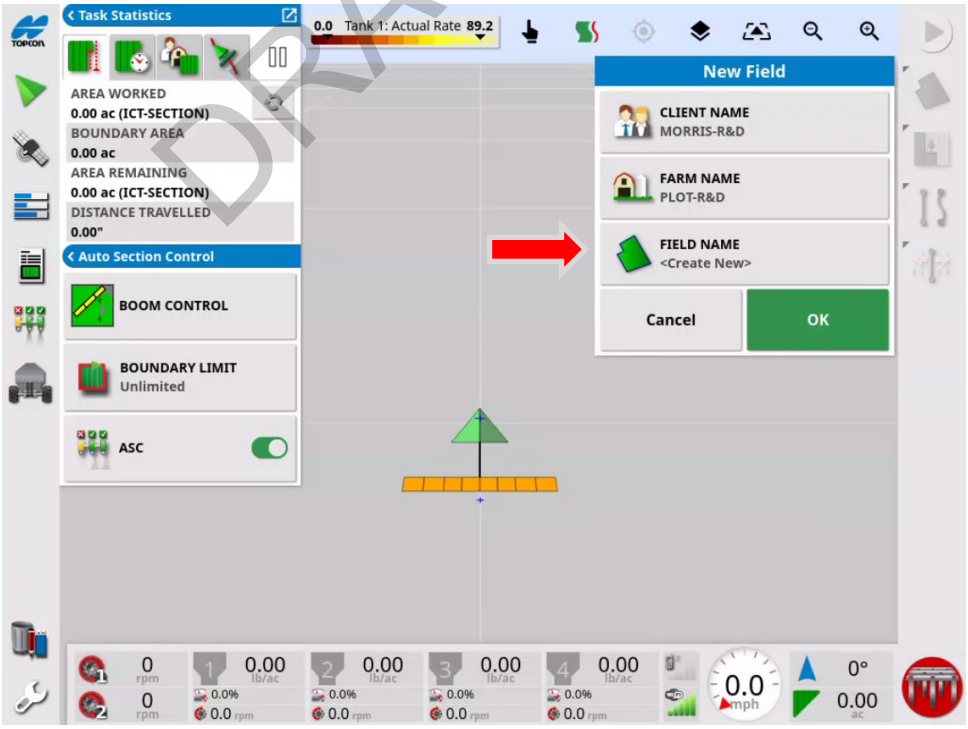




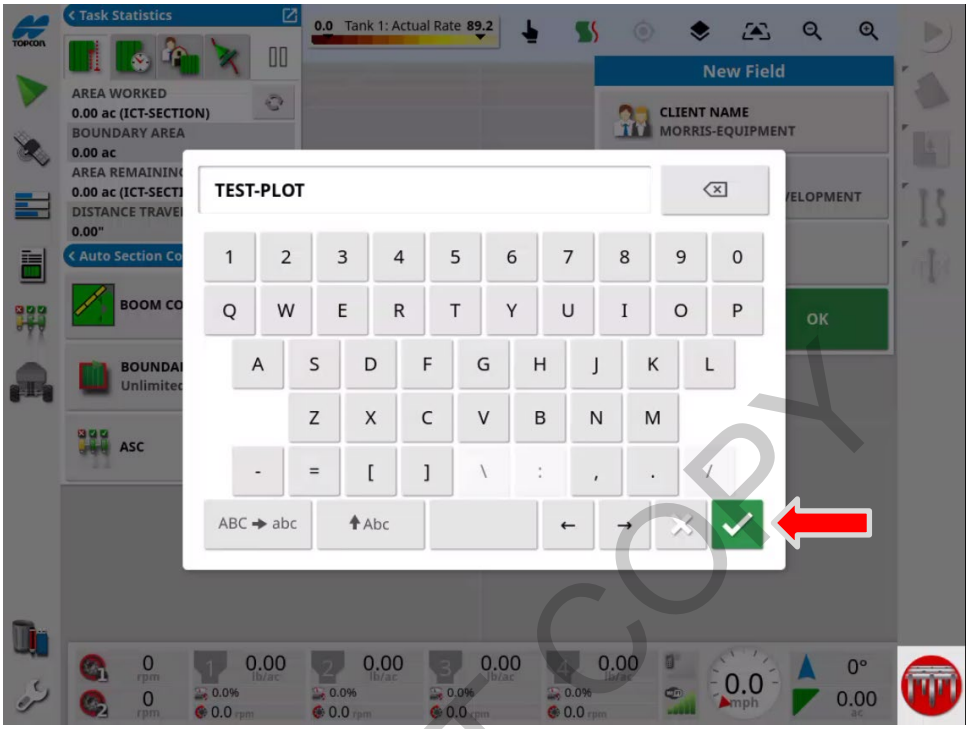
Enter the Farm Name. Apply the setting with the Green Check mark.



Press on the **FIELD NAME <Create New>** tab.

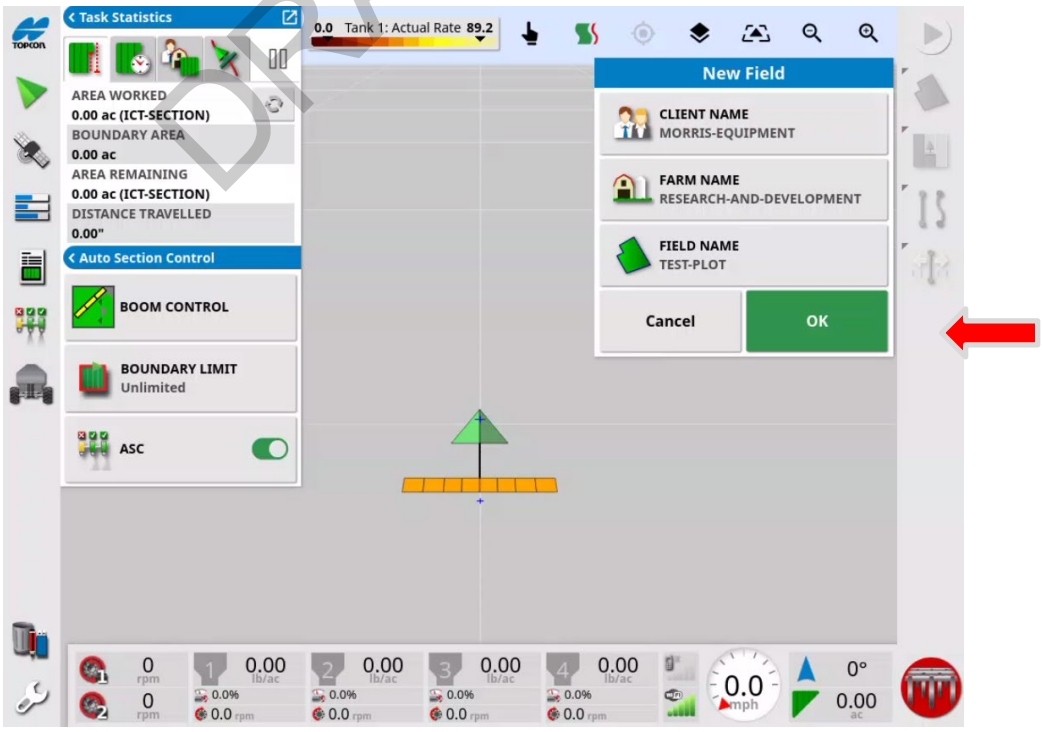


Enter the name of your first field. Apply the setting with the Green Check box.

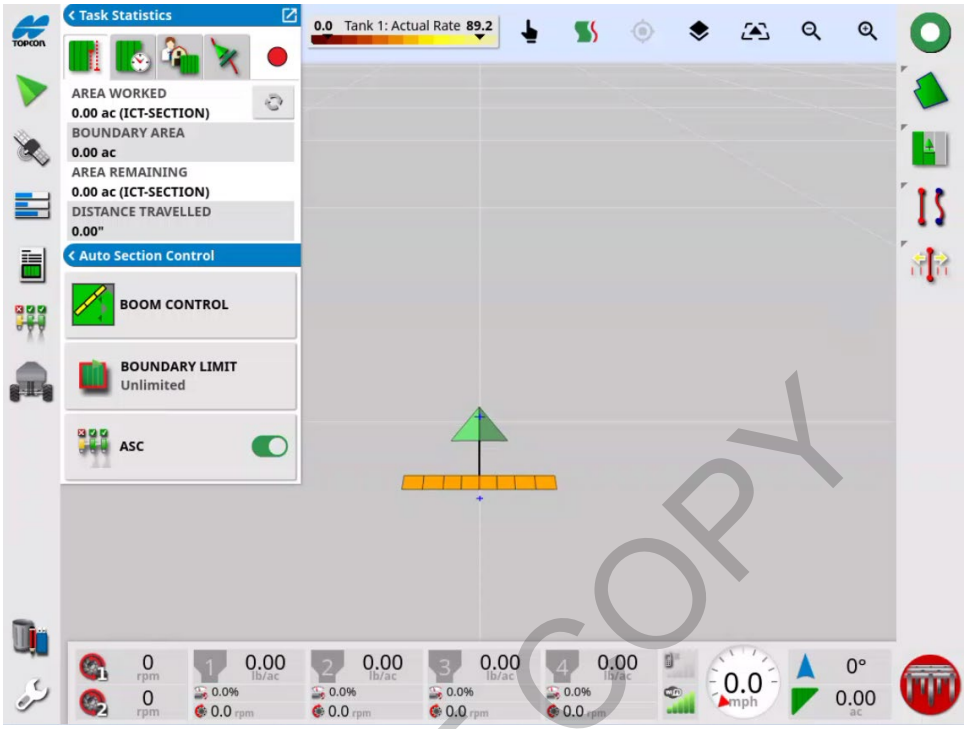


Review the information you entered, apply and save the changes with the **Green OK** box.

Once the Green OK is pressed the field information has been saved.

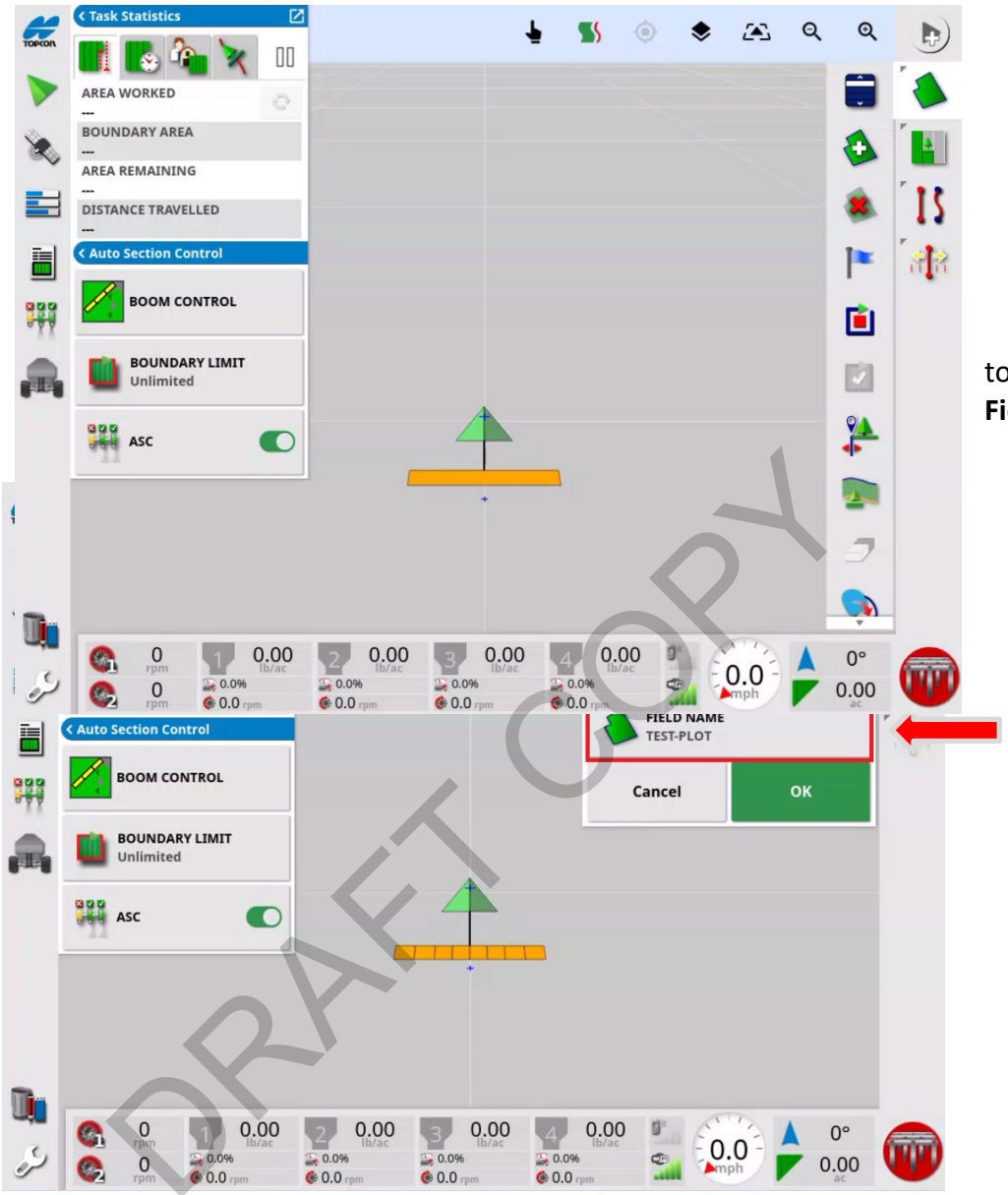


You will now return to the Mapping screen.



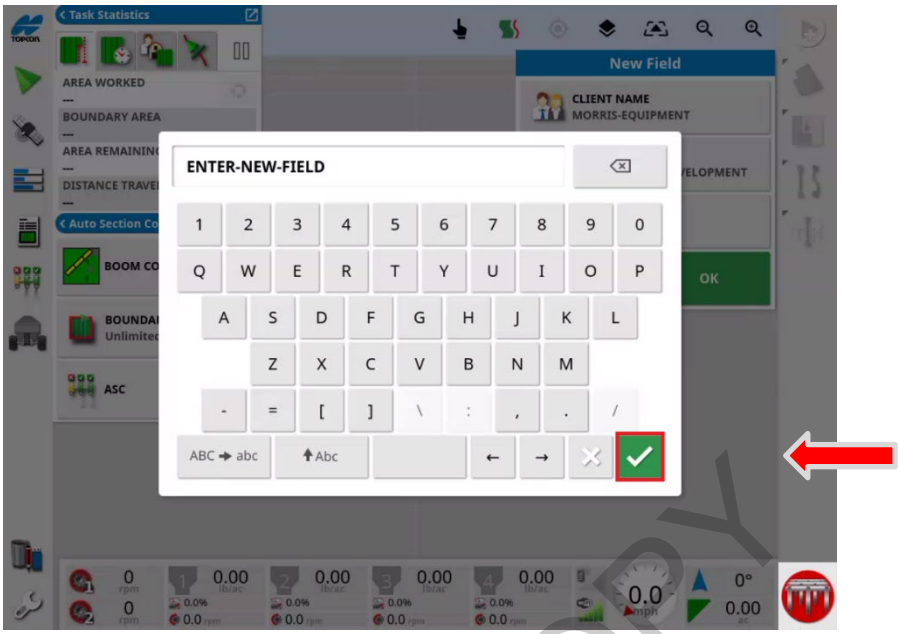
At this time it is recommended to enter all of your fields into the monitor's memory. Simply press the  then  **Create new field** icon once again to add another field.

This time only the **Name.**



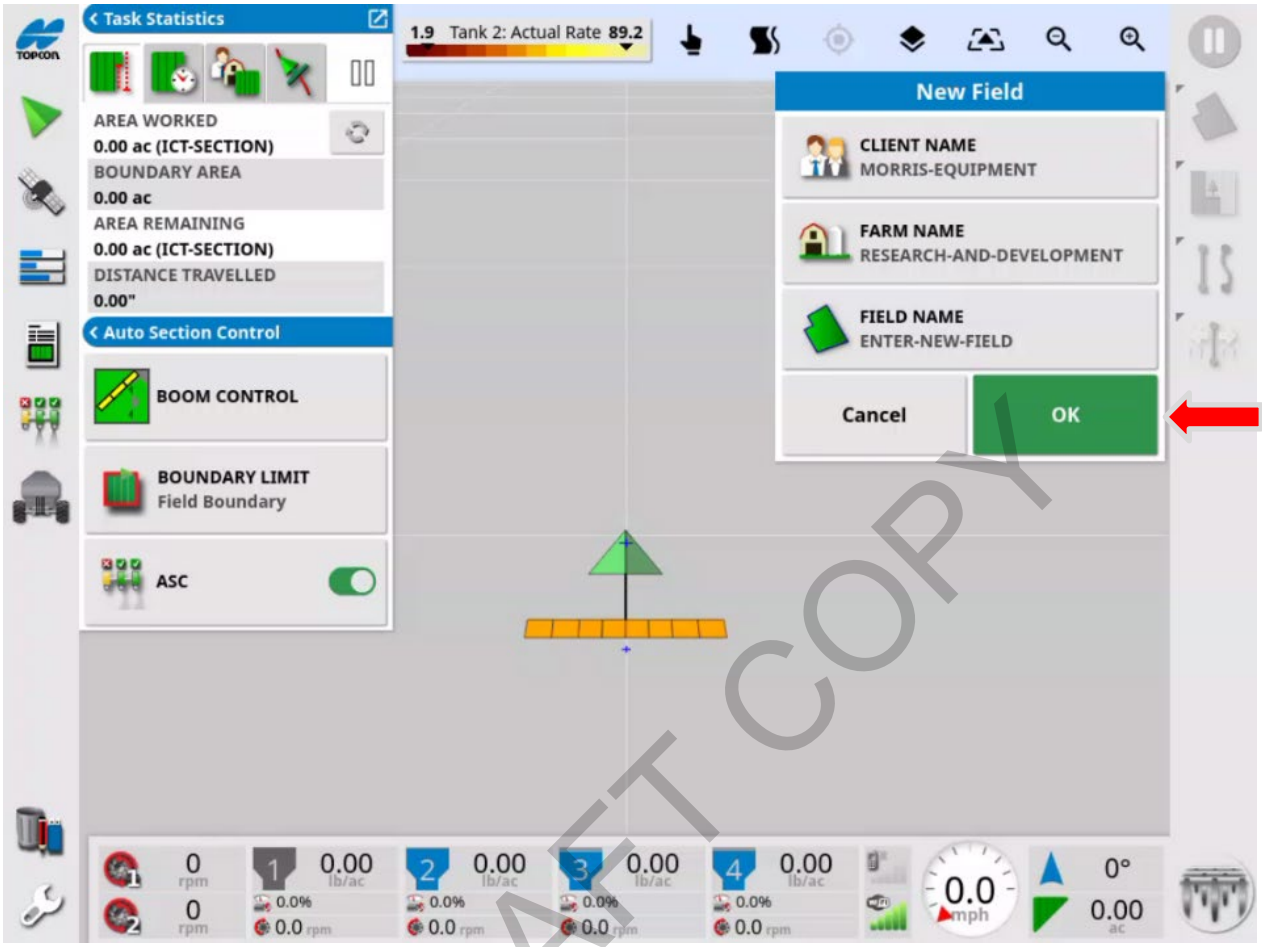
touch **Field**

Enter the new field name. Use nick names or Land location. Apply with the Green Check mark.



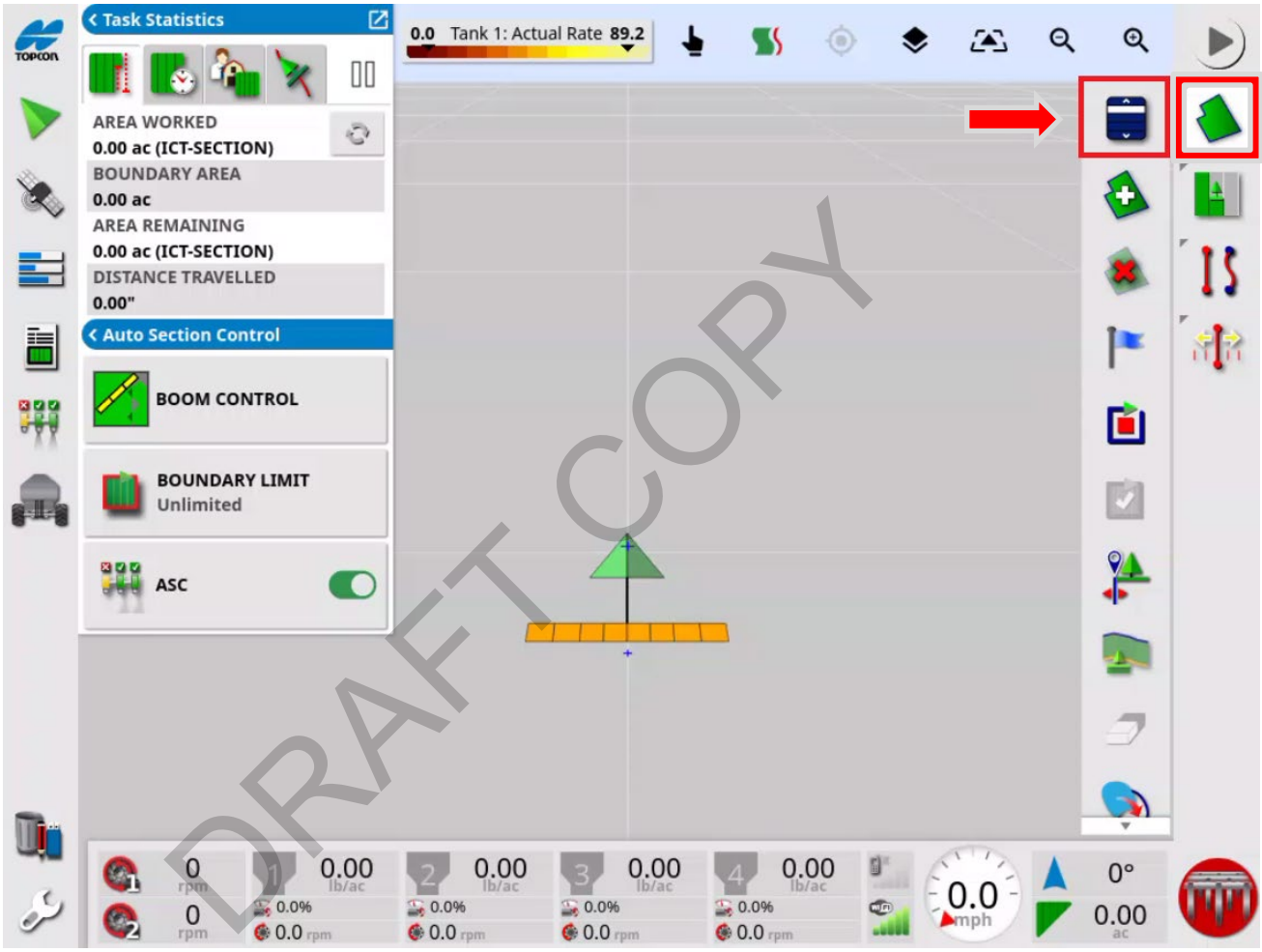
The field has now been saved. Repeat the above procedure to add all your remaining fields into the X35's memory.

Note: Remember to press the Green OK box to Save the field name.

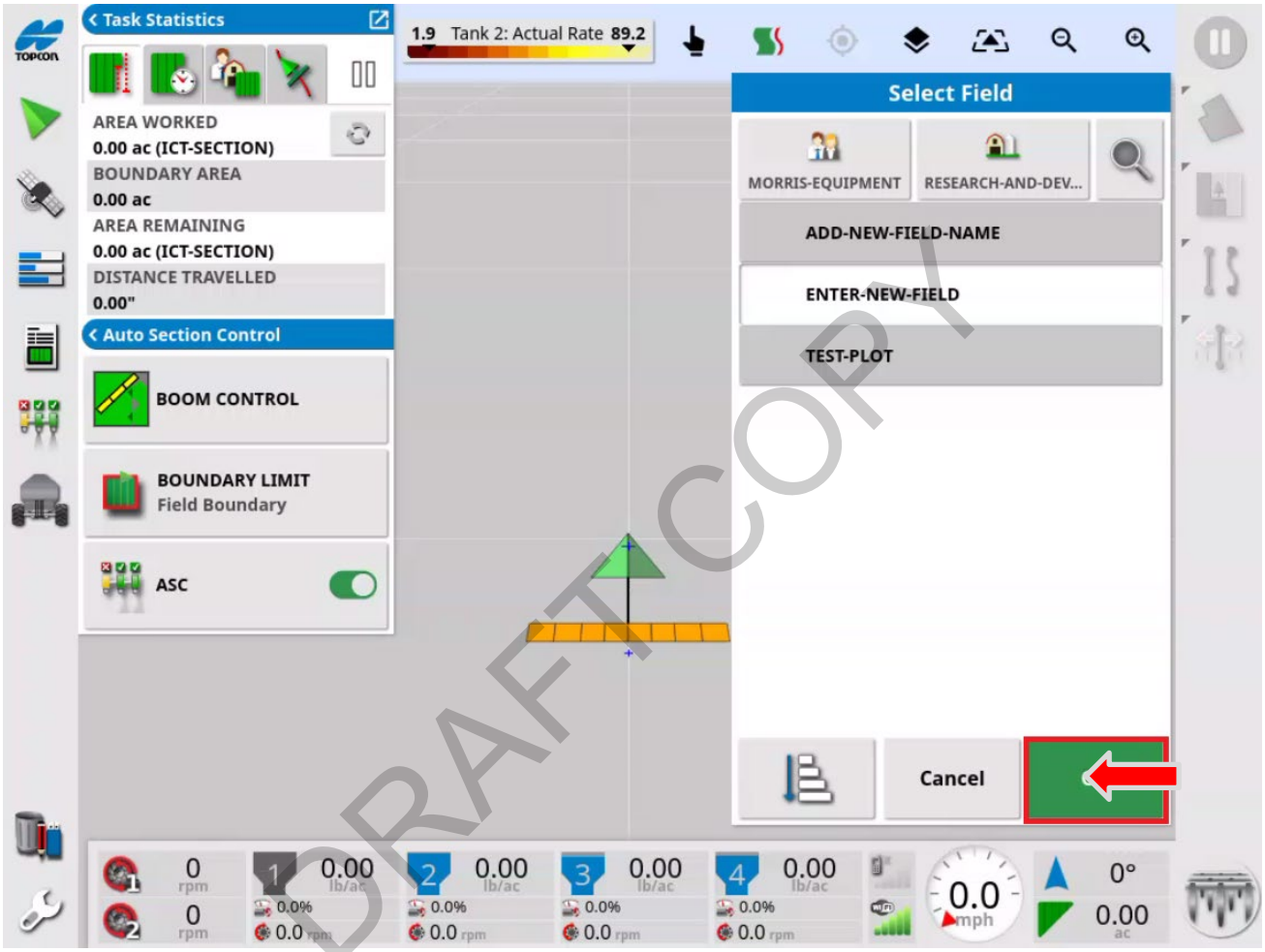


Once you are finished entering your fields Press the  **Field Menu** Icon,

followed by the  **Select Field** icon.

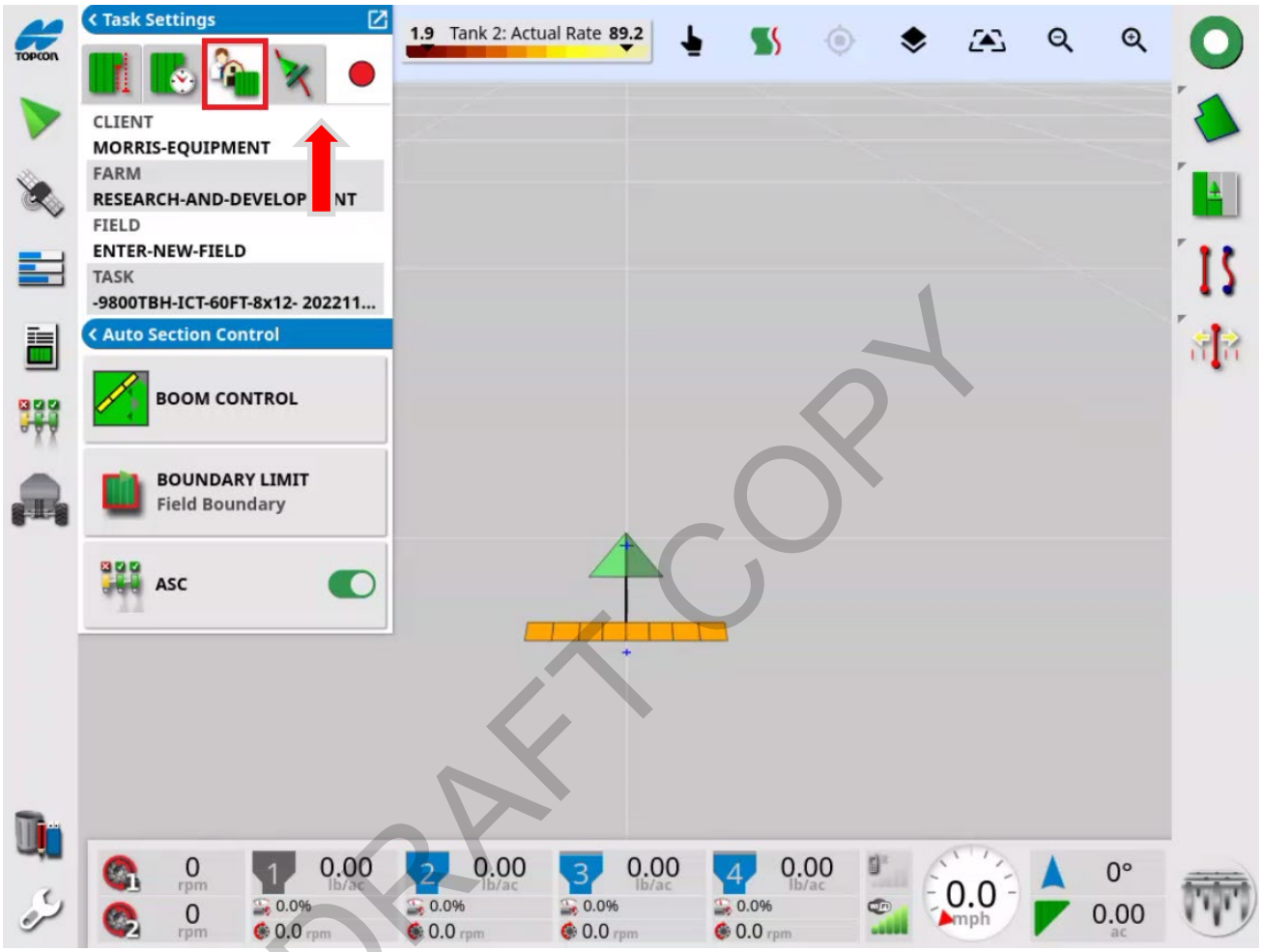


The fields we created are on the list. Select the Field you wish to seed first. Press the Green OK box to apply the settings.



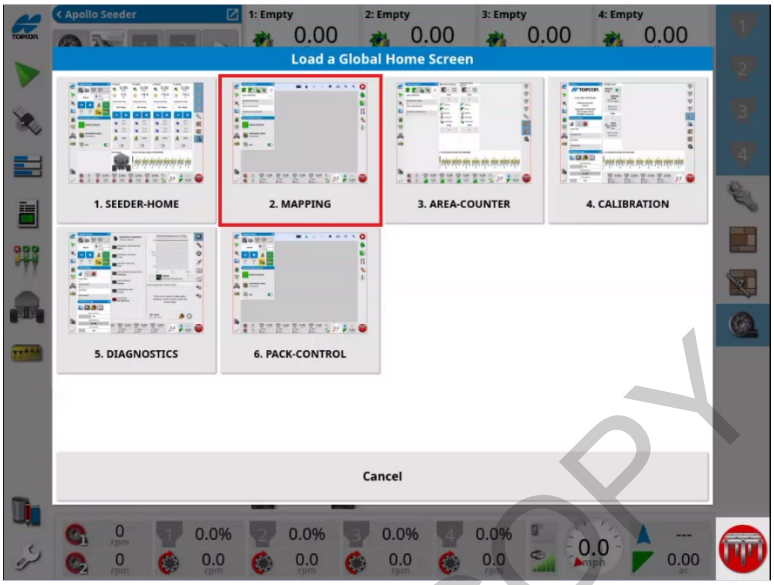
To verify the field selected press the Job Setting Icon  . The current Client, Farm, and Field

will be displayed in the mini view window.

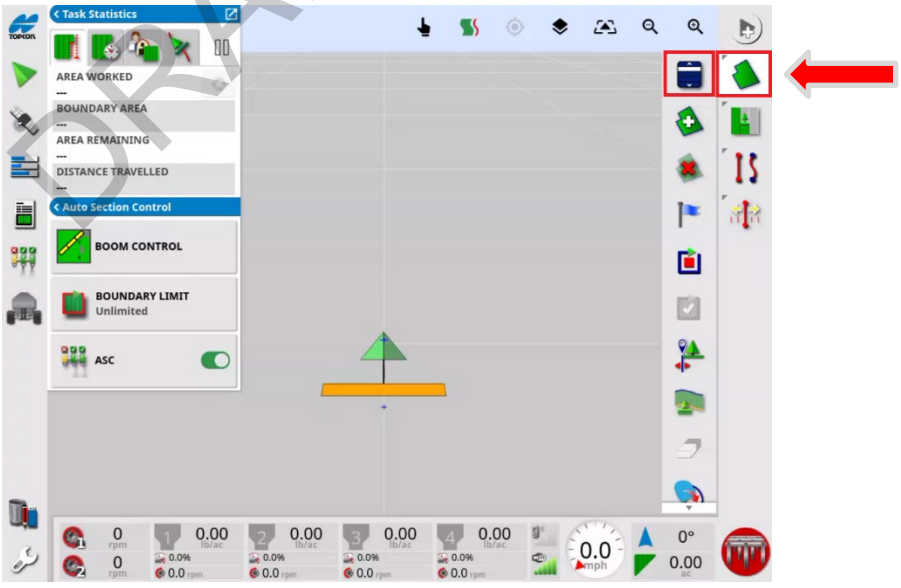


Notes:

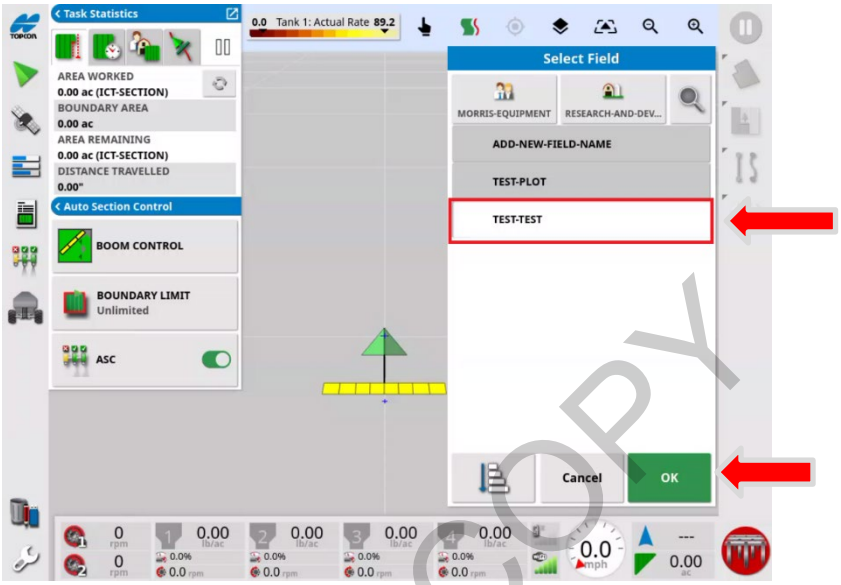
Select **MAPPING**

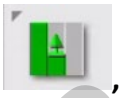
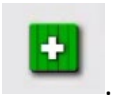


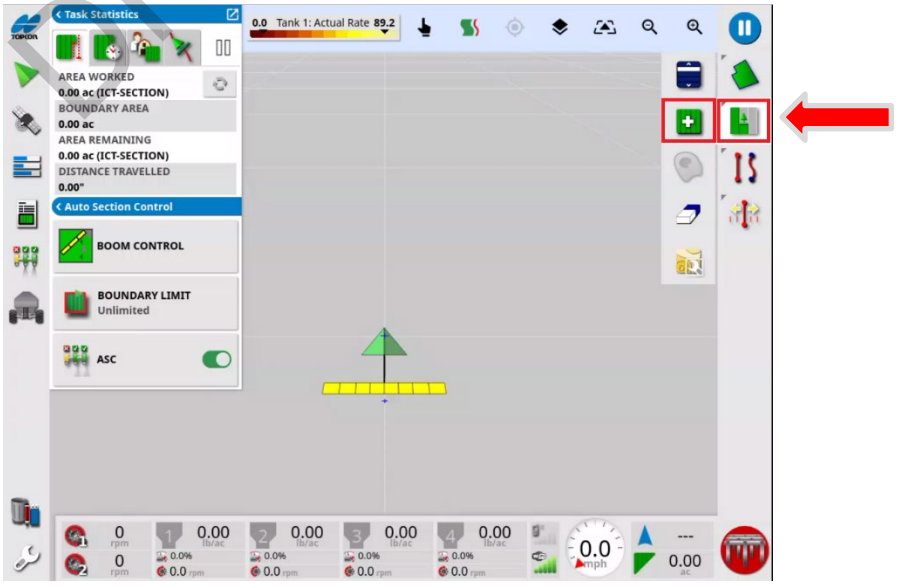
Open the **Field Menu** icon  followed by the **Select Field**  icon.



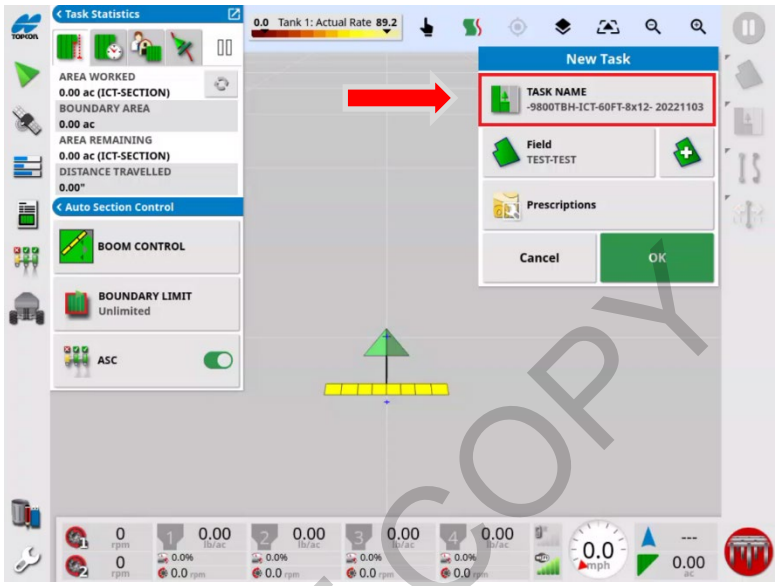
Select the field you wish to work in, followed by the Green OK box to apply the settings.



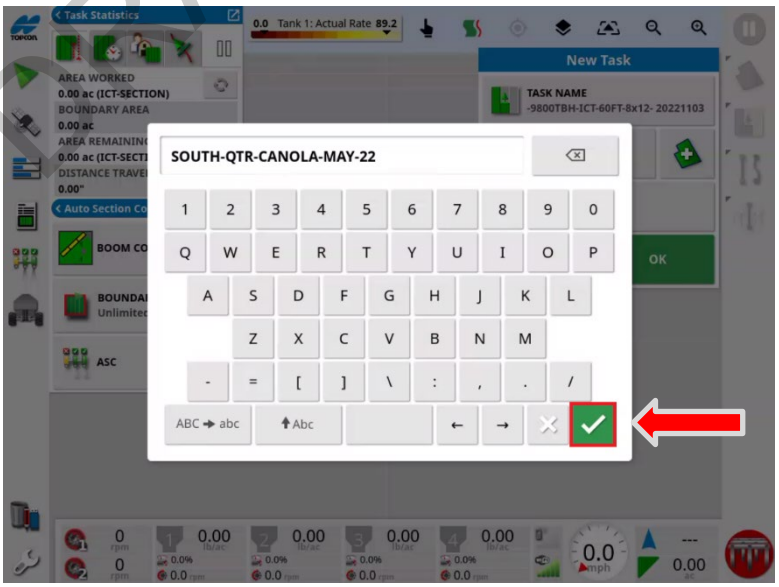
Press the **Job menu icon**  **,** and followed by the **Create New Job** icon  .



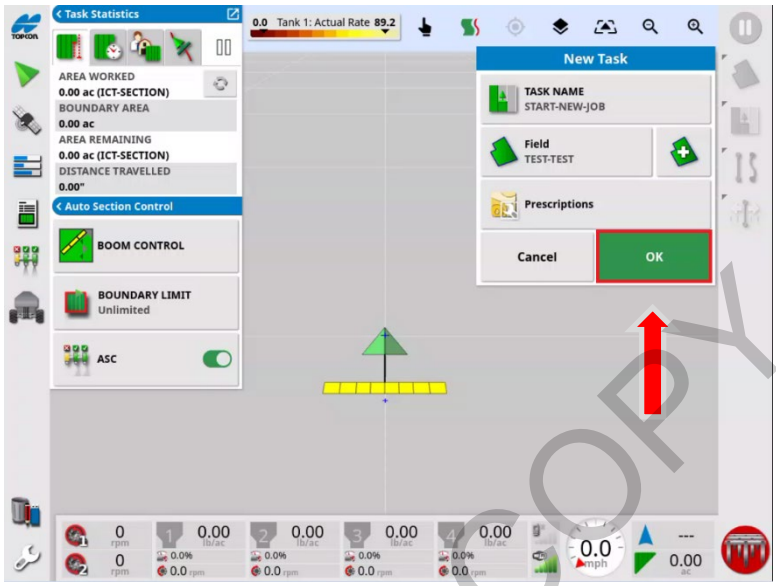
The system will automatically generate a new Job name based on the date. You can proceed to use the default name by pressing the green checkmark. However, the **Job Name** can be edited by simply pressing in the job name window.



It is recommended to edit job name to match the current **Field and Date and Product** used. Example: **SOUTH-QTR-CANOLA-MAY-22;** apply the settings with the Green Check mark.

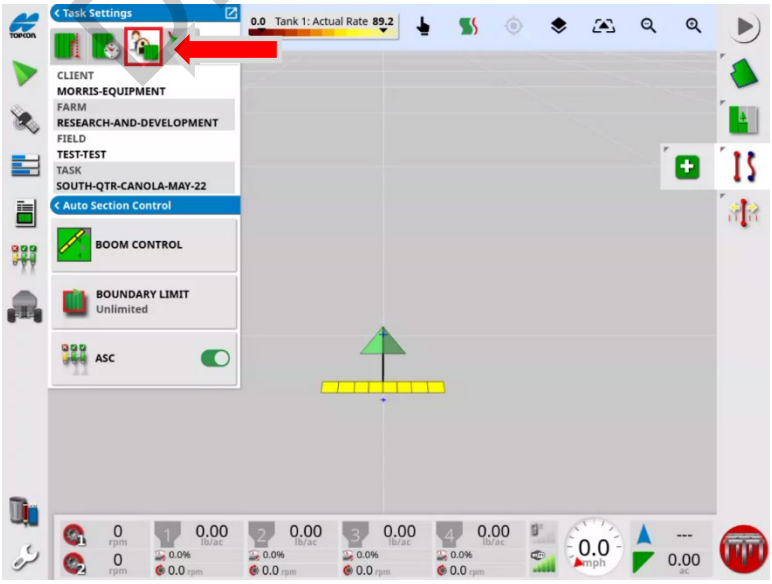


Confirm the **Job Name** with the Green OK box.



Press the **Job Setting** on the Job Statistics mini view to review that the Job information and Field are correct.

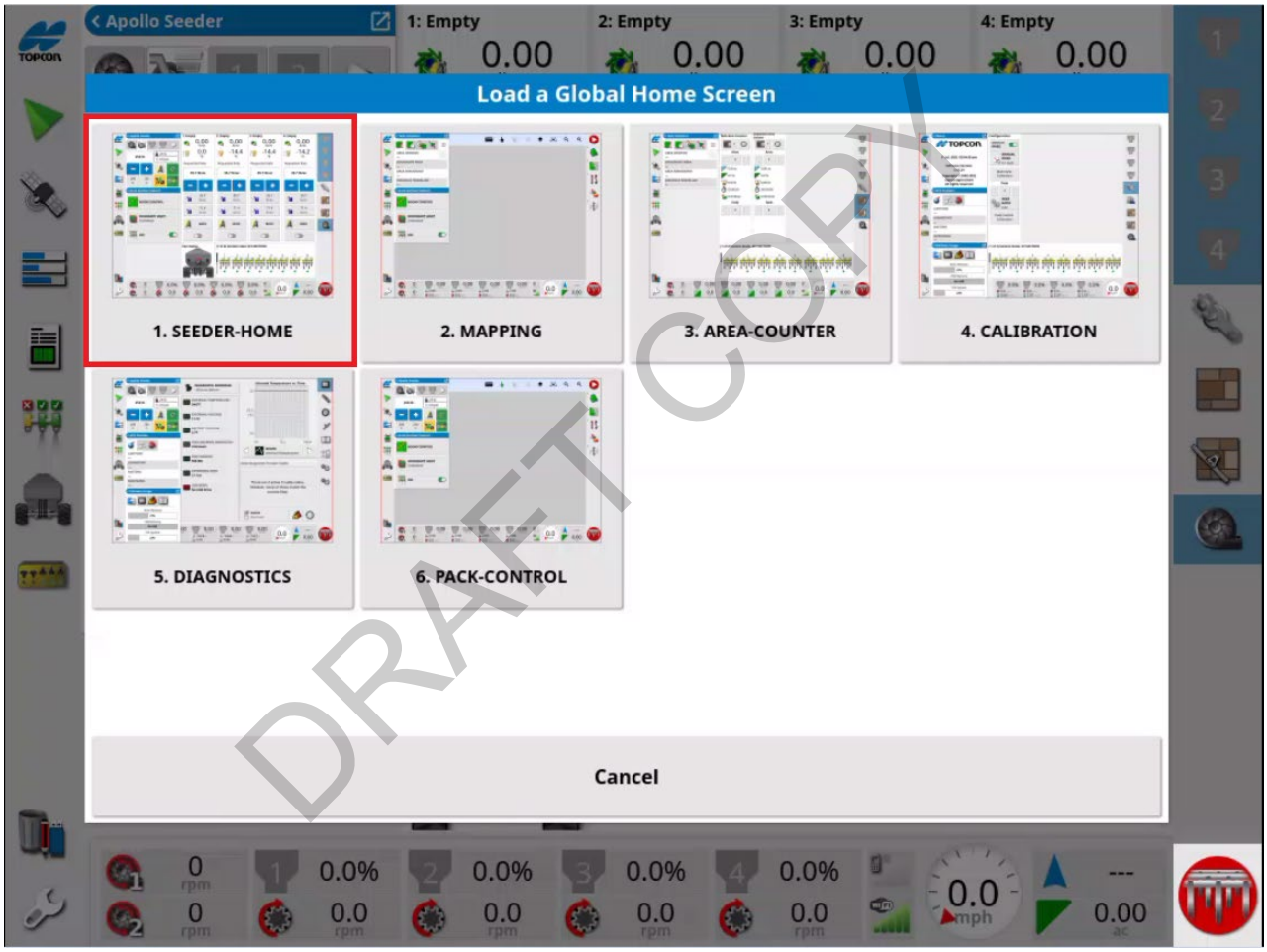
Proceed to -Add product to tanks.



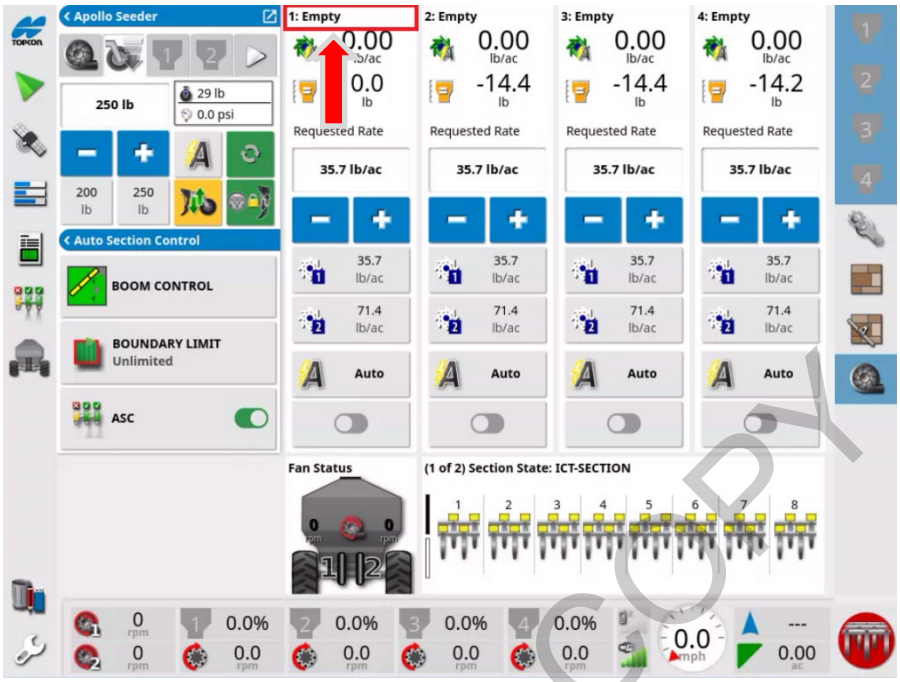
Notes:

Swipe up and press the  Home icon, access the Global Home Screen menu.

Go to **SEEDER-HOME**

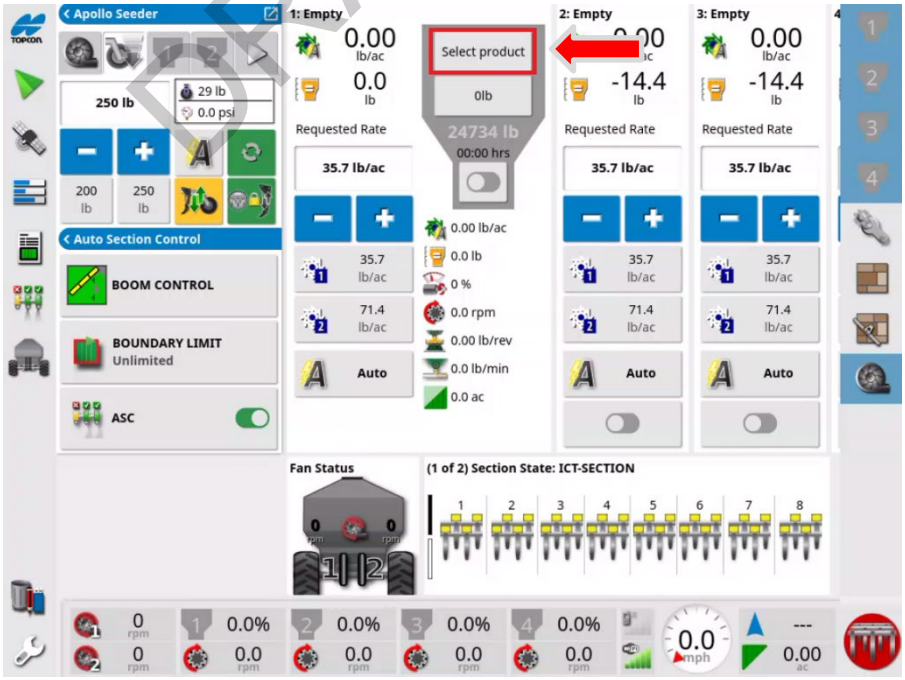


Expand the tank you wish to add the product into by touching the top band.

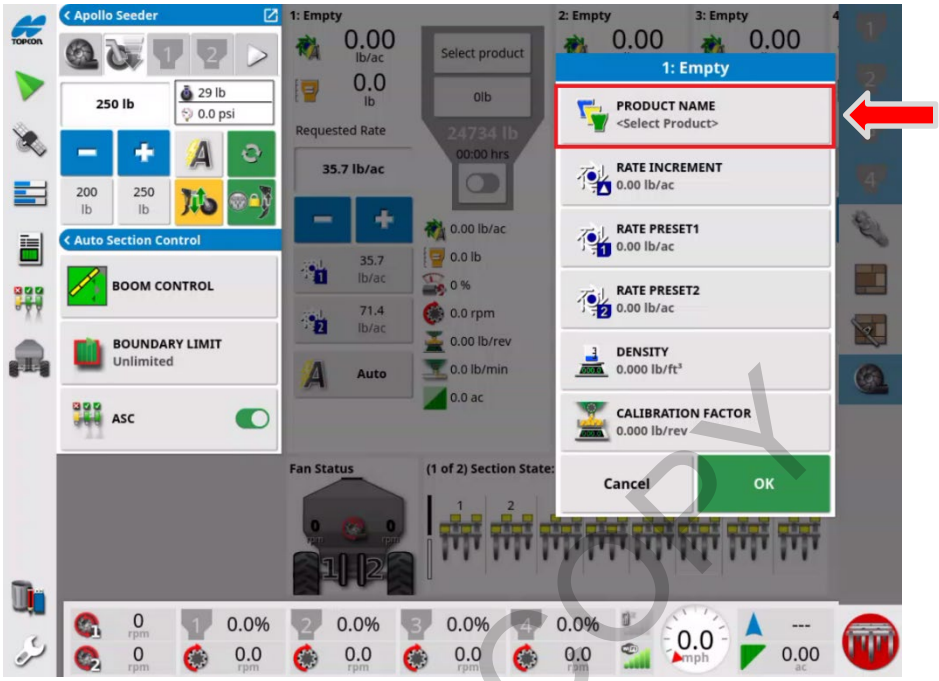


Press on the **Top box** of the Tank image to open the Product Configuration Window

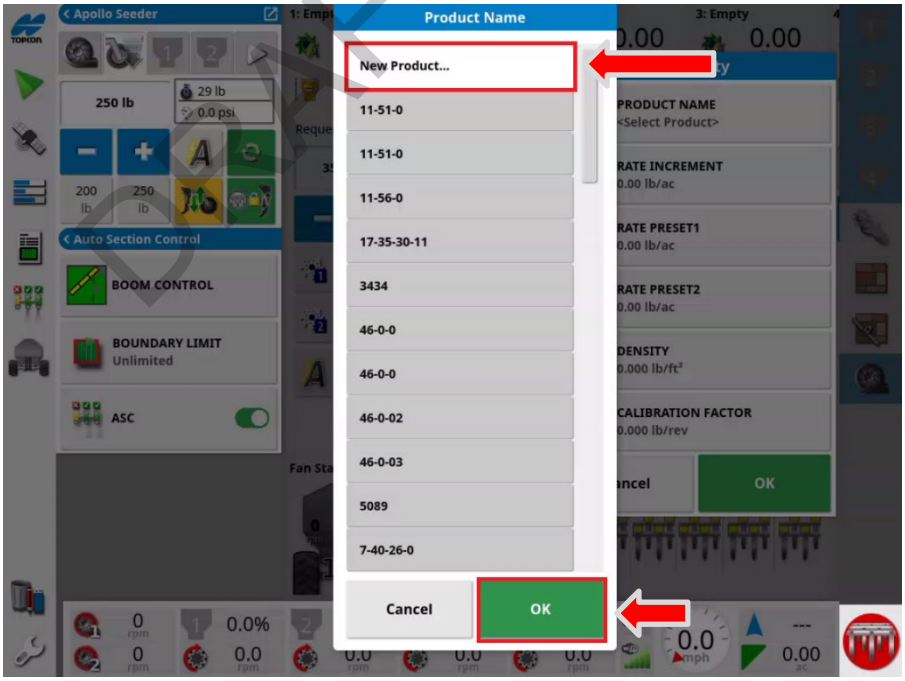
**Note: You must have the Tank fully expanded.



Press on the **Product Name Window**.

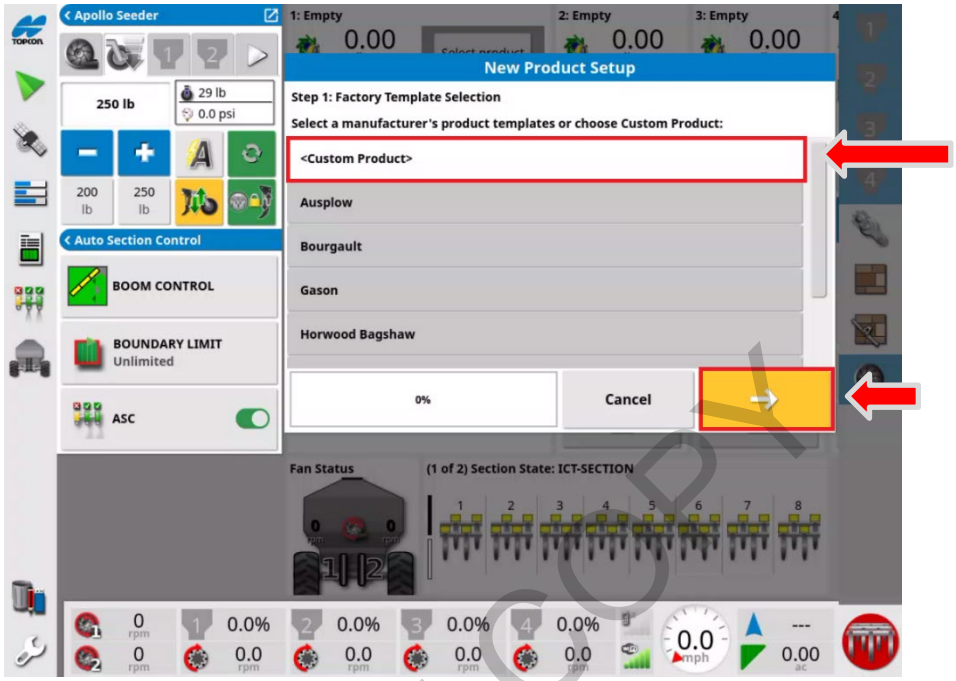


Select **New Product.**

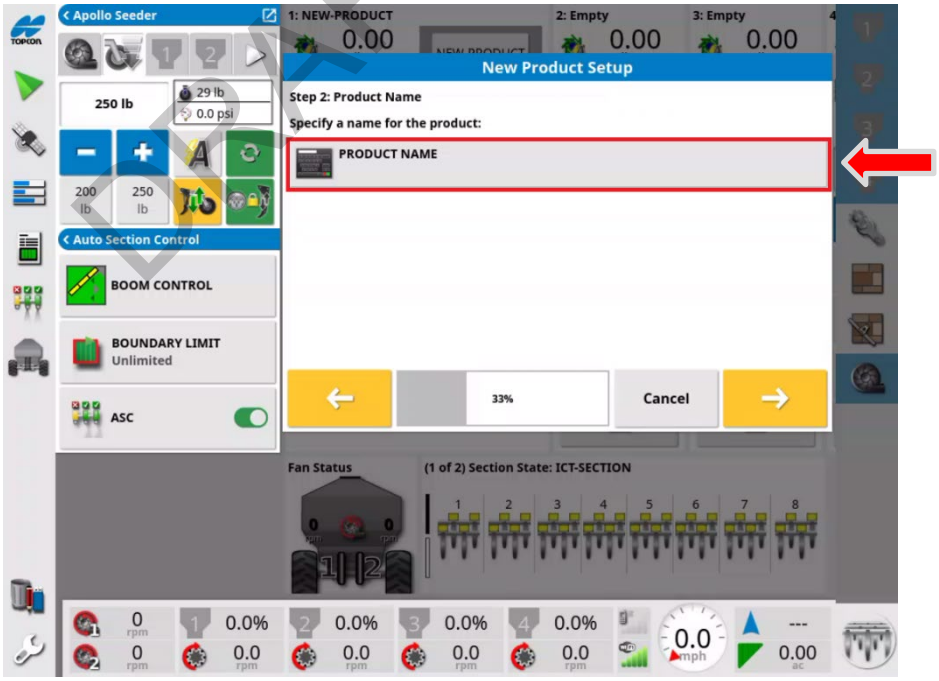


Touch green OK box.

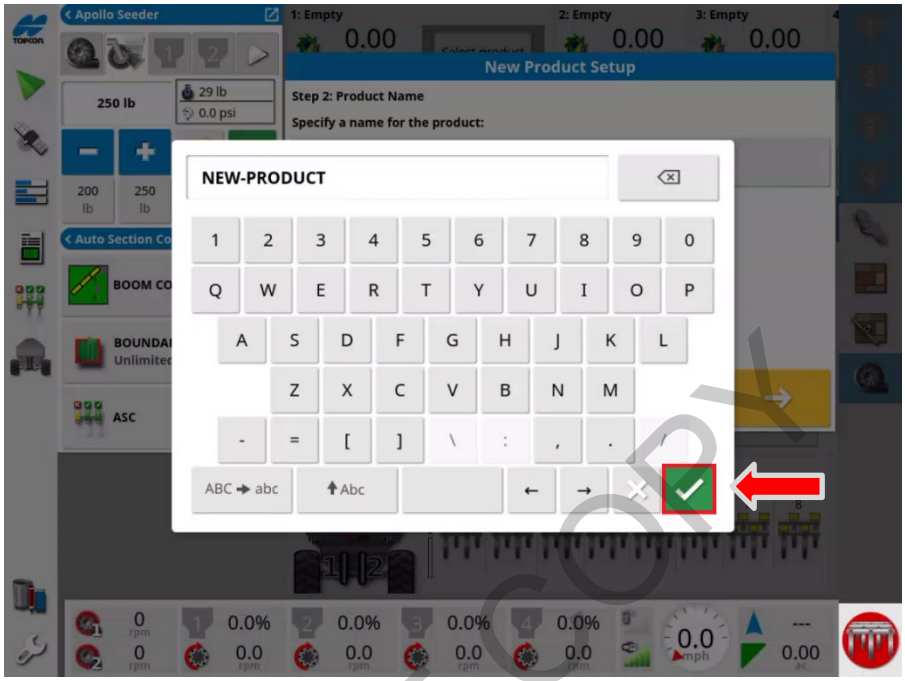
This opens a setup wizard. Select **Custom Product**, then touch the yellow arrow to advance.



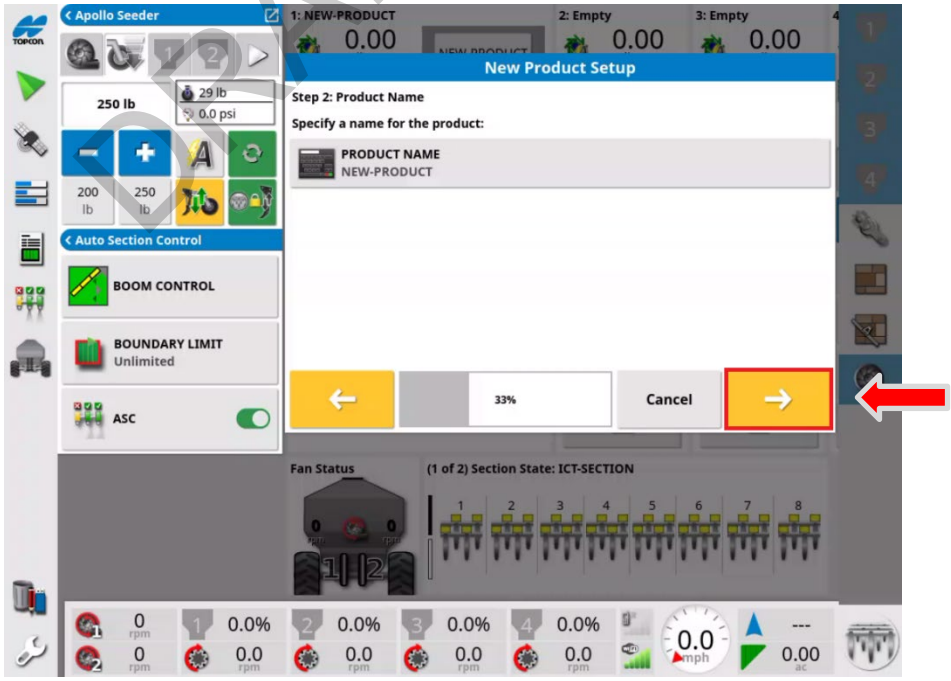
Touch the **PRODUCT NAME** box**.**



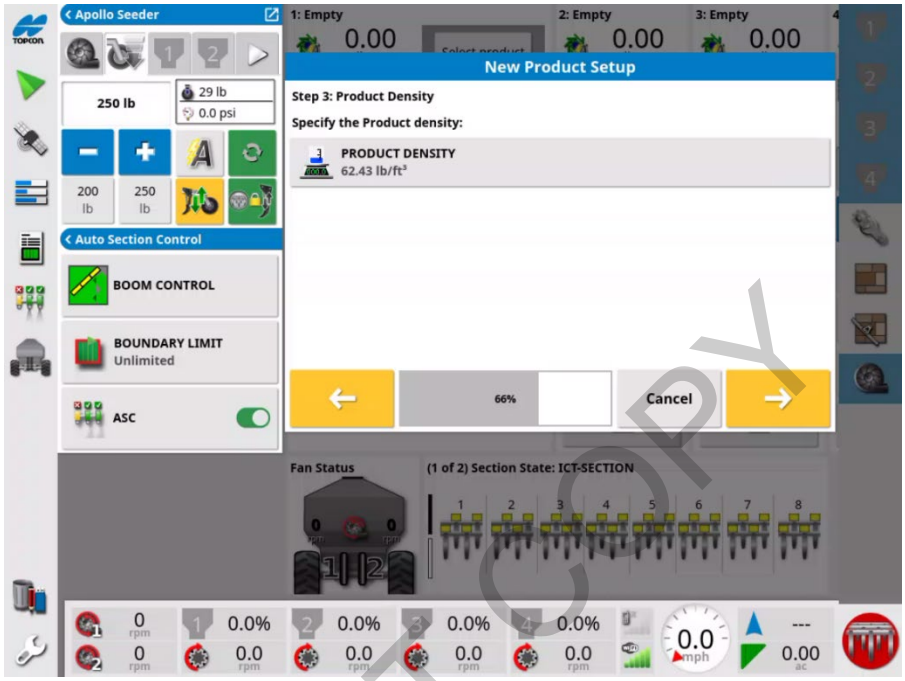
Enter a product name, as an example we are using **NEW-PRODUCT**, followed by the Green Check mark.



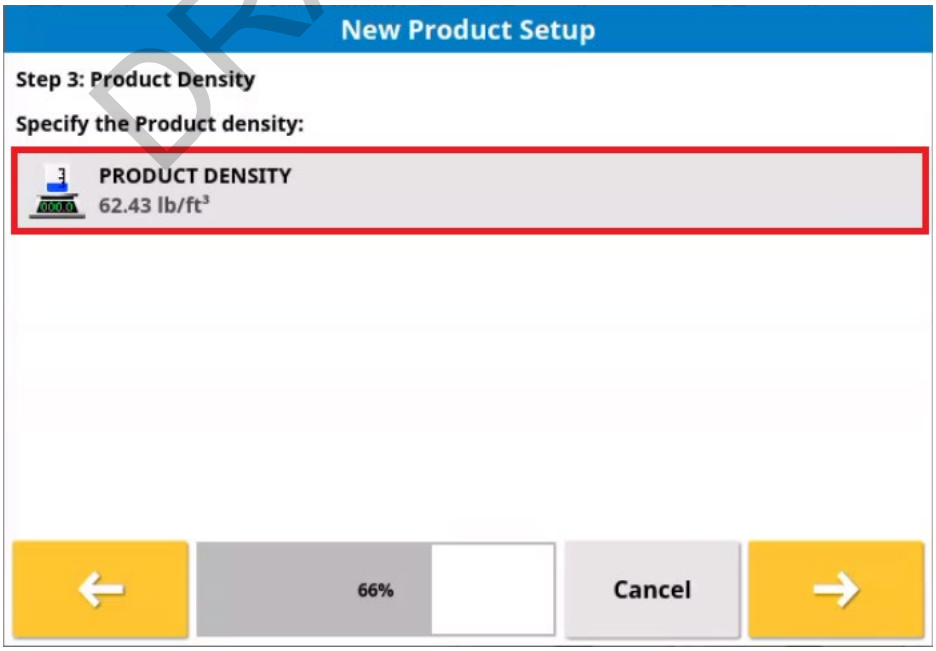
Proceed with the Yellow forward arrow



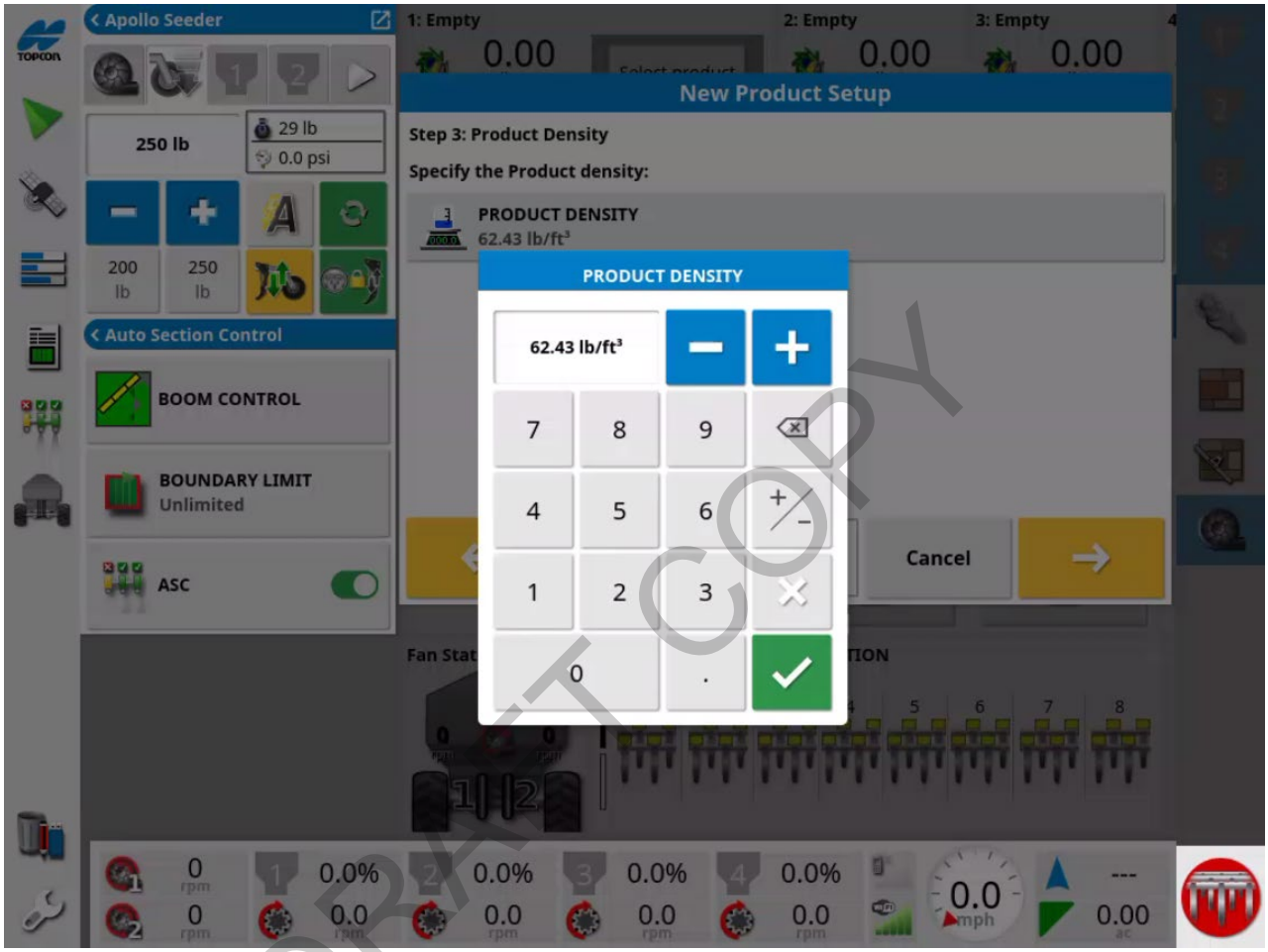
Enter the density of the Product. The density of the product can be requested by the distributor of the seed or fertilizer manufacturer. If a density is not available proceed with the default value provided.



If you would like to enter the density, press on the Product Density Tab.



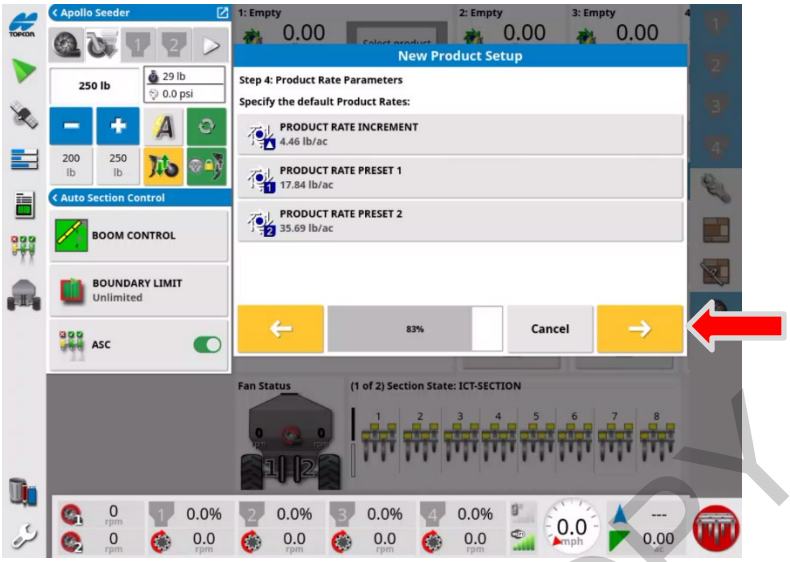
Enter the new density value from the product manufacturer. Followed by the green Checkmark.



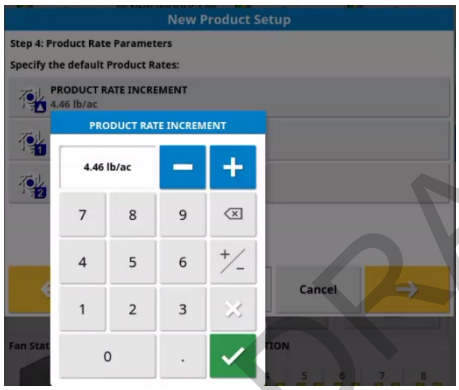
Note: The X35 default rate is Pounds Per Cubic Foot. These settings can be changed in Regional Units.

(Touch the wrench in the lower left corner, then select User user, Region region, Units Units.)

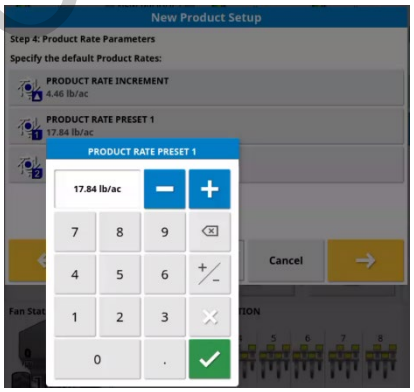
Enter Product **Rate increment** and **Preset Rates** by touching the applicable boxes, then advance with the yellow arrow.



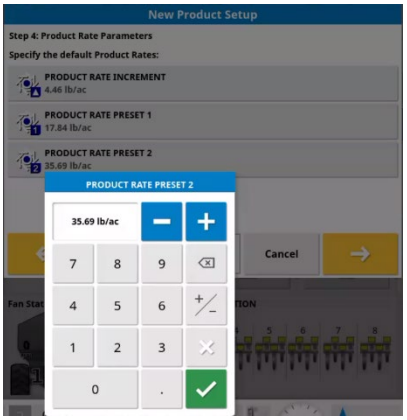
Rate increment- Used for quickly bumping the rates up or down (+/-) while moving.



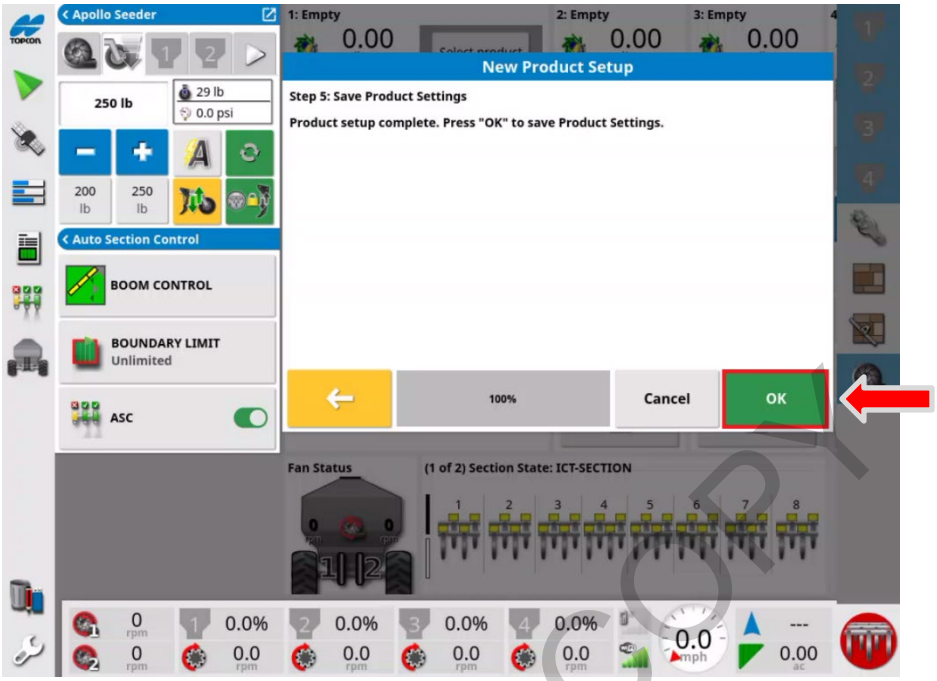
Preset 1 – Enter the desired rate you will be Seeding at.



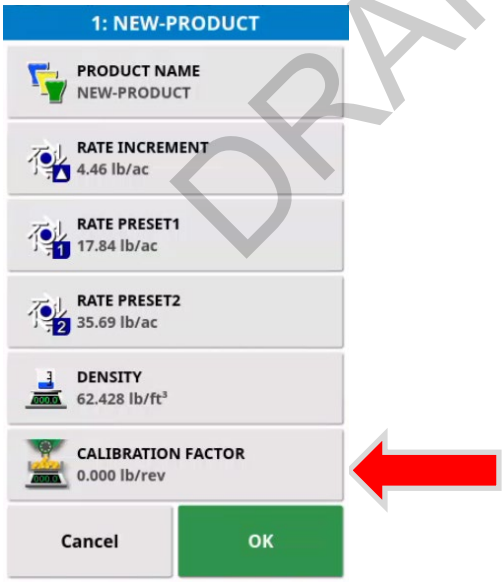
Preset 2 – Can be used as a secondary rate as desired, example a lower rate used on hilltops or areas of the field which do not require as much product.



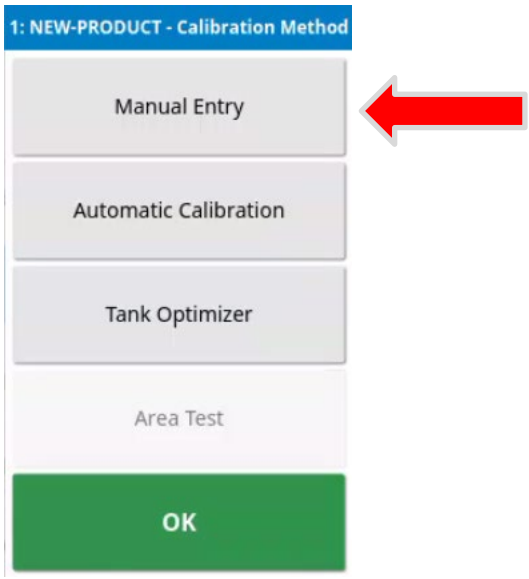
Proceed by touching the Green OK box.



Add a generic Calibration Factor By touching calibration factor

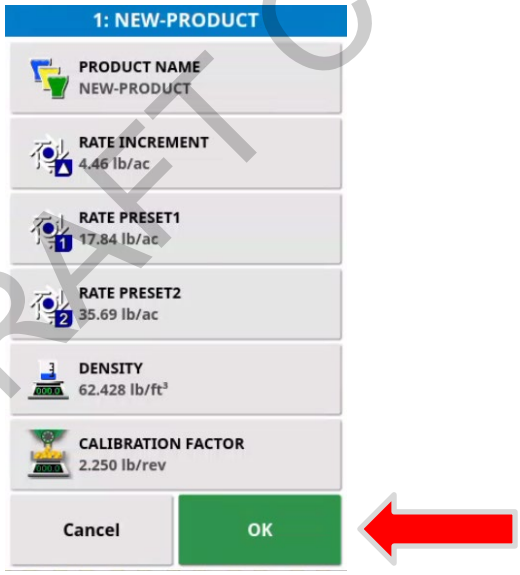


Touch **Manual Entry** Icon.



Touch the **CAL FACTOR** box, and enter a generic value of **2.25 lb/ac,** and apply by touching the **Green Check Mark, then Green OK box.**

Review the product data, once satisfied with the values Apply with the Green OK box.

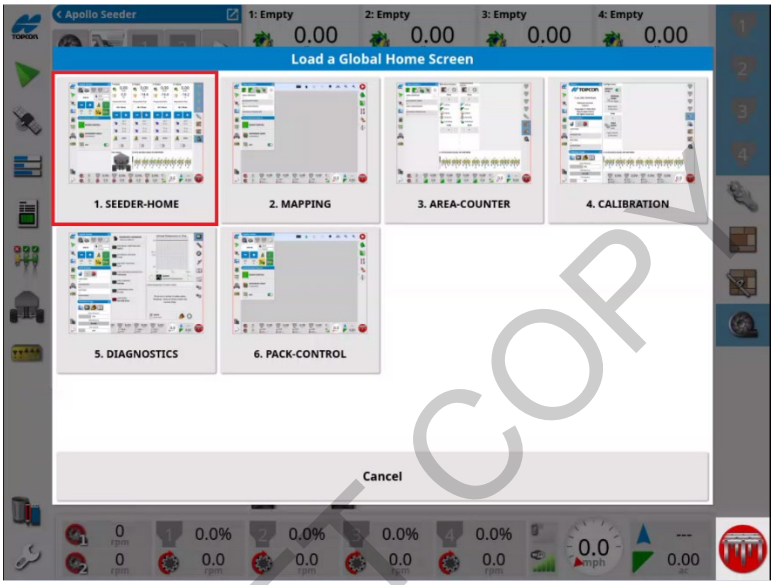


You be prompted to Fill the Tank with the new Product. You can choose to fill the tank at this time.

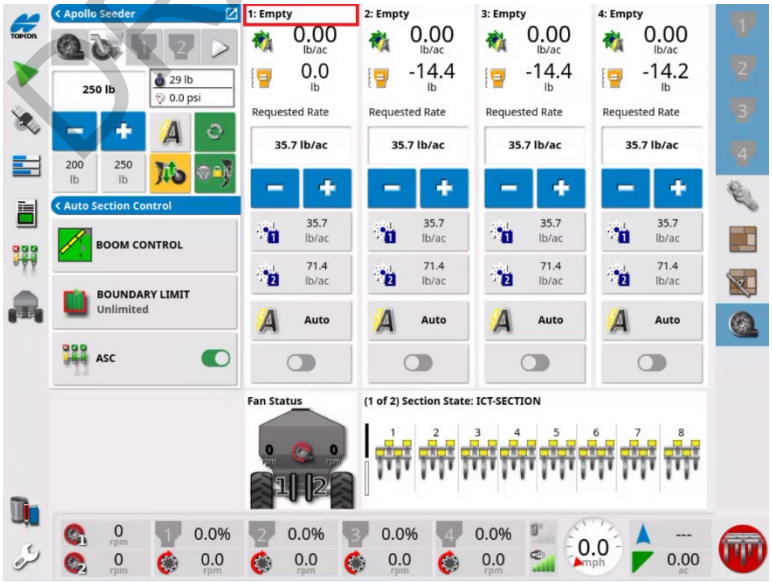
Notes:

Swipe up and press the  Home icon, access the Global Home Screen menu.

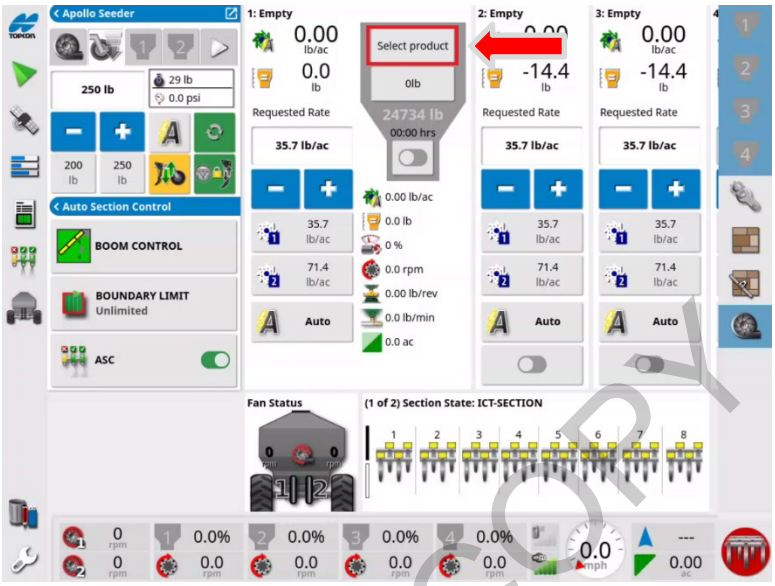
Select **SEEDER-HOME**



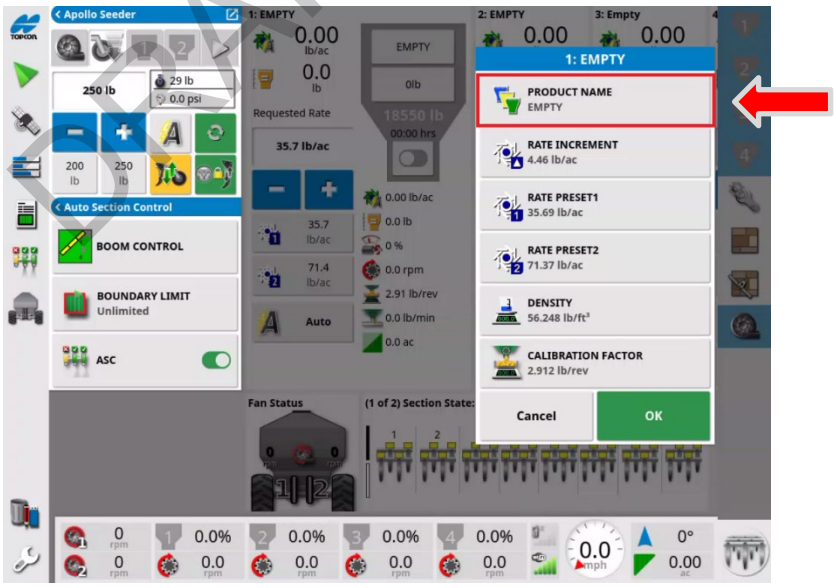
Expand the tank you wish to add the Product into by touching on the top Band.



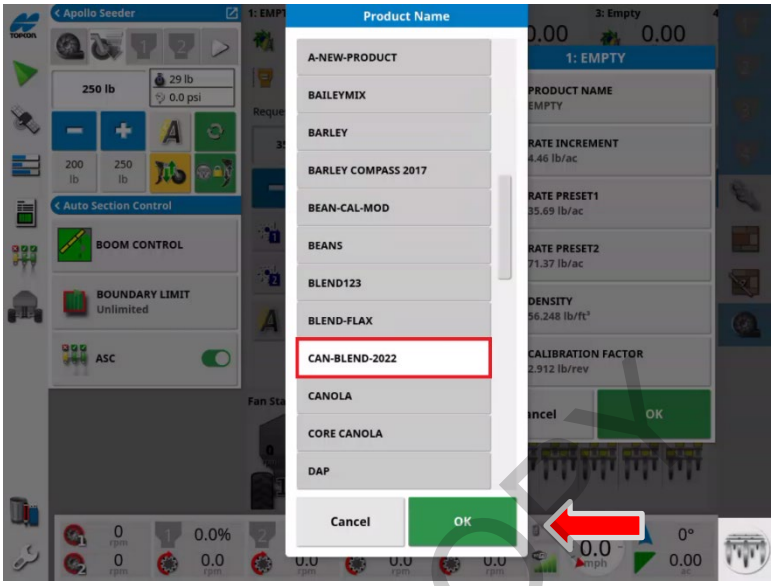
Touch the **SELECT PRODUCT** box.



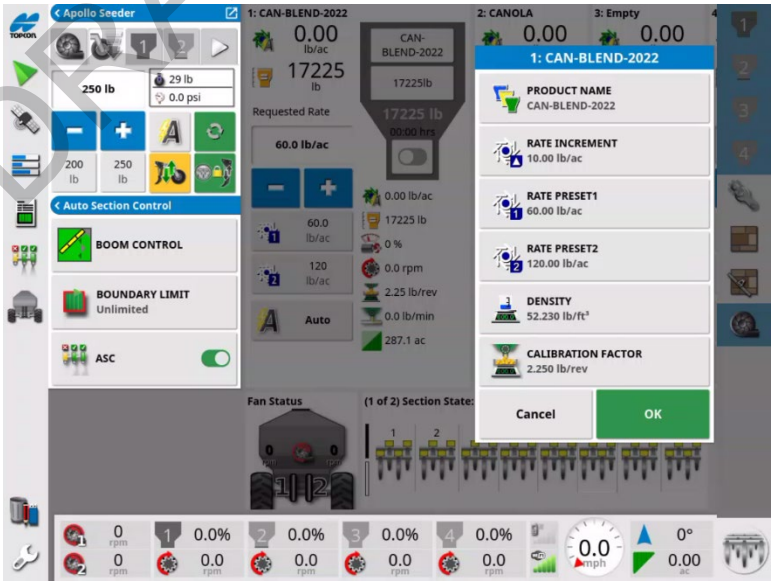
Touch the **PRODUCT NAME** box.



Select Product from the list. Proceed by touching with Green OK box.



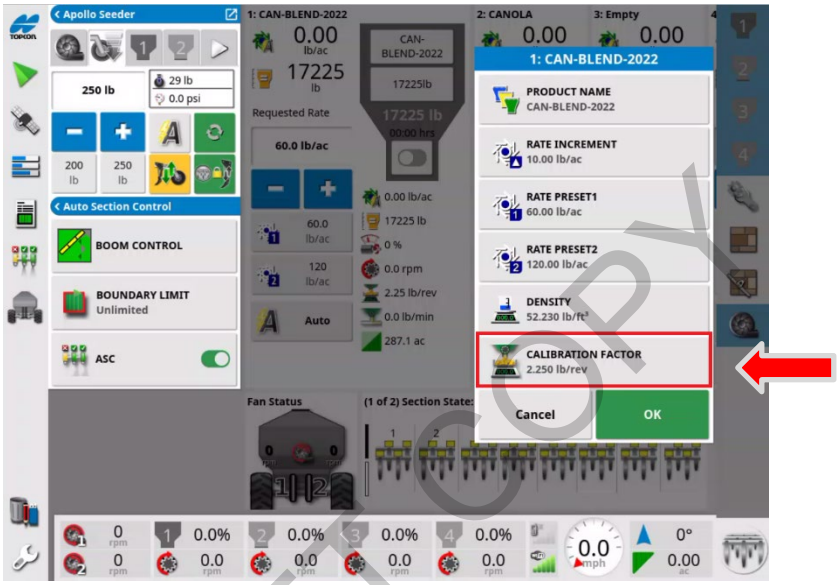
Review the **Rate Presets** and **Rate Increment** settings.



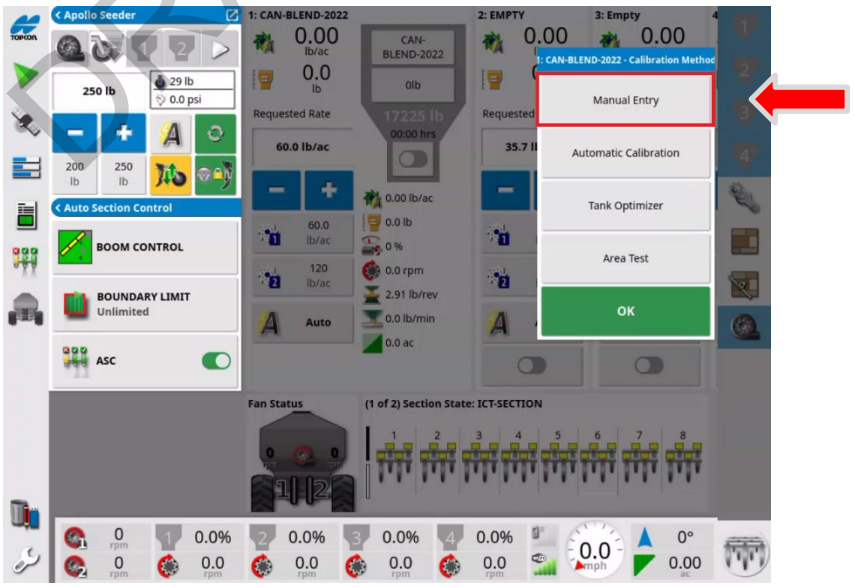
*****ENSURE A CALIBRATION FACTOR IS ENTERED*****

Note: If this is the first time using this product you will need to add a calibration factor.

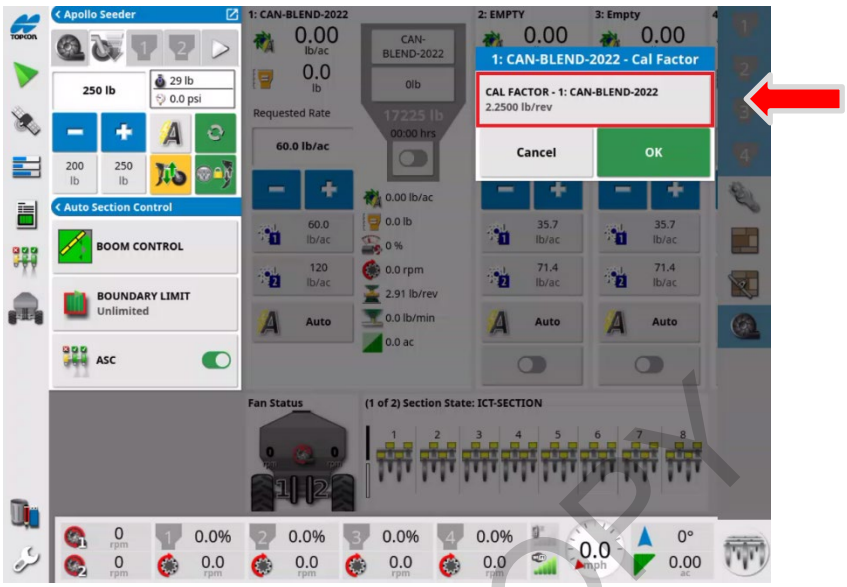
Simply touch the Calibration Factor window.



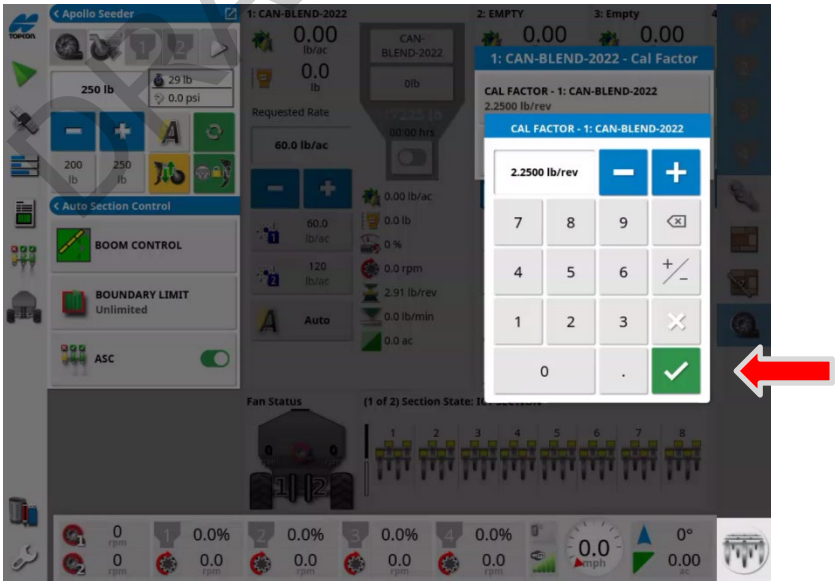
Touch **Manual Entry**



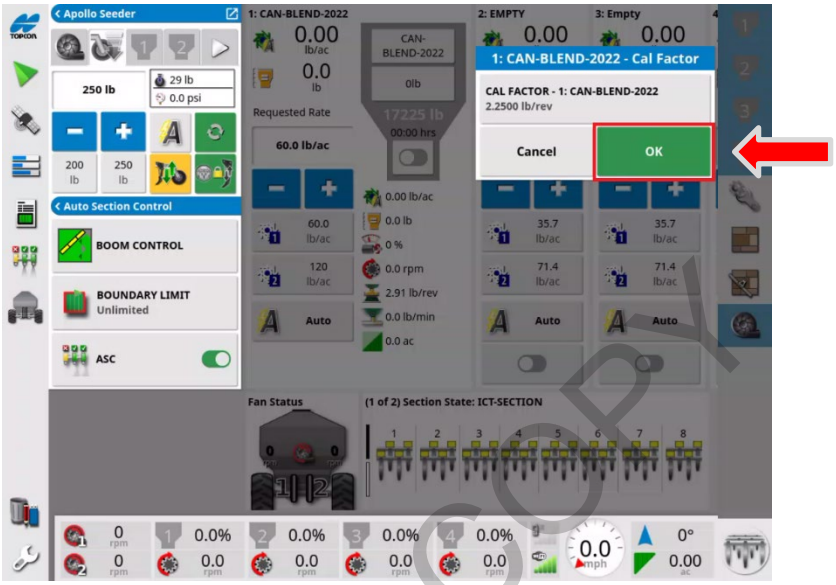
Touch the **CAL FACTOR** Icon.



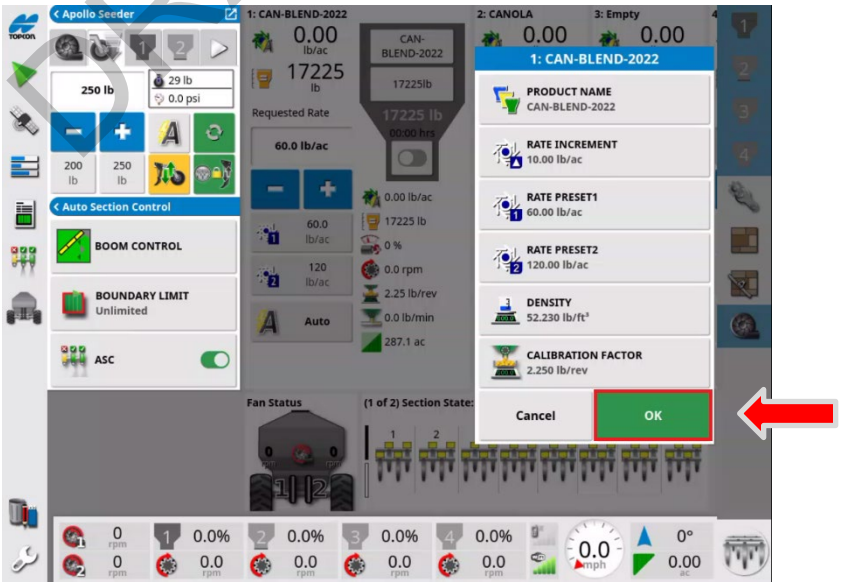
Using the keypad enter the following Cal factor **2.25 lb/Rev.** Touch **Green Check mark**.



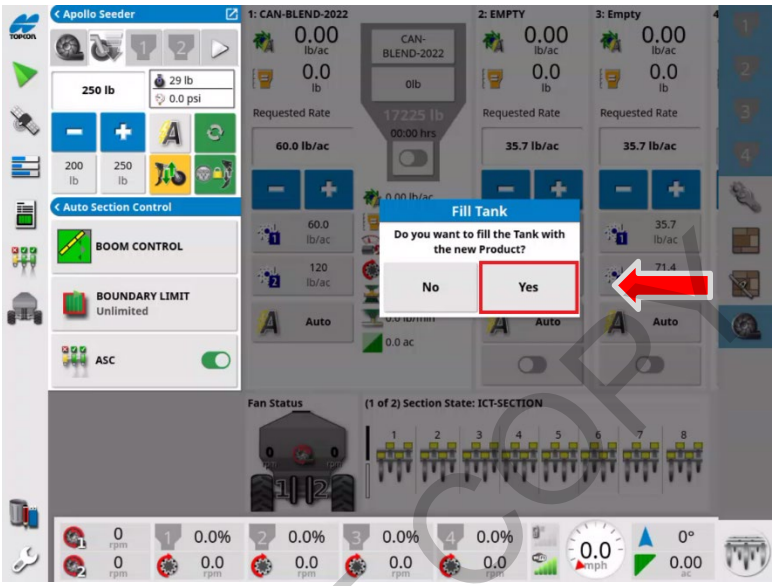
Review the Cal Factor is set, touch the **Green OK box**.



Review the settings are correct touch the **Green OK box**.

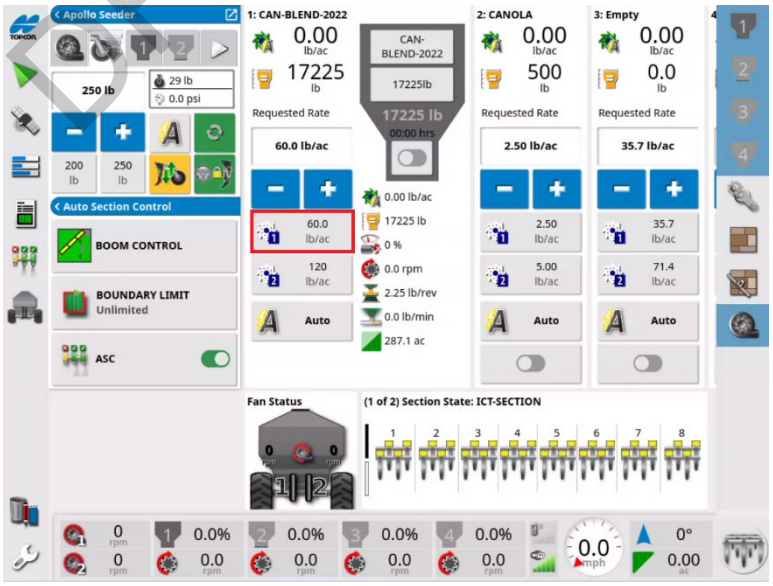


Do you want to fill the Tank with the New Product? **Yes**

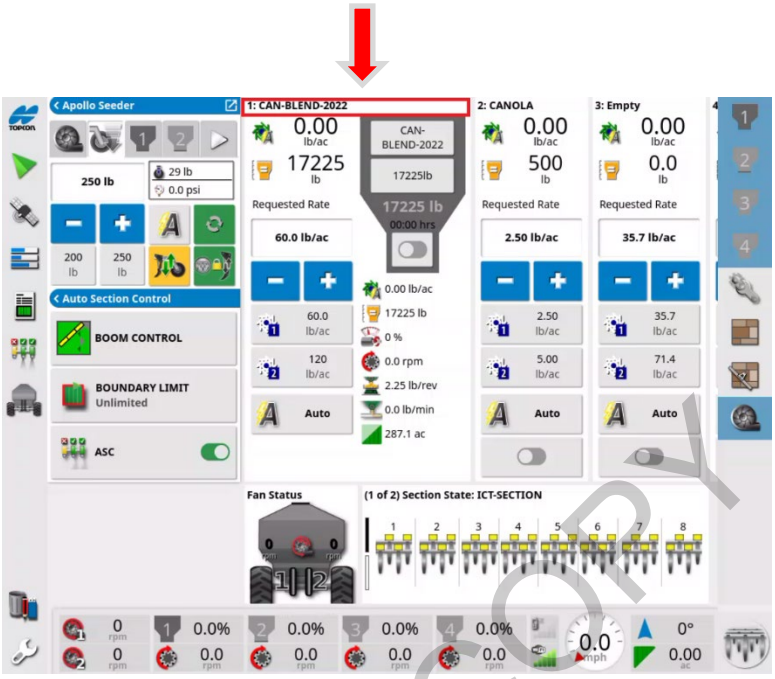


Tank 1: has been filled with the desired product **CAN-BLEND-2022**.

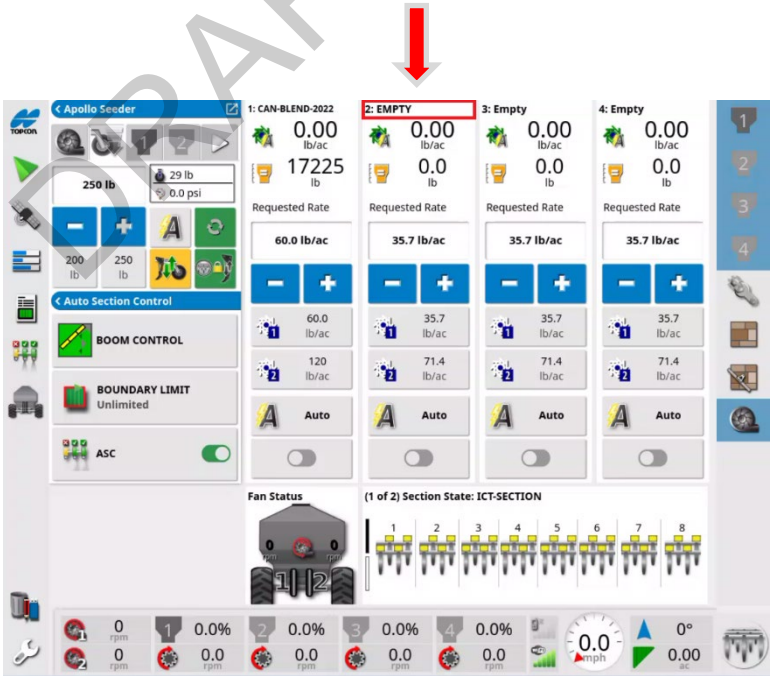
Note: **Preset 1** is automatically populated in the requested Rate window **60lb/ac.**



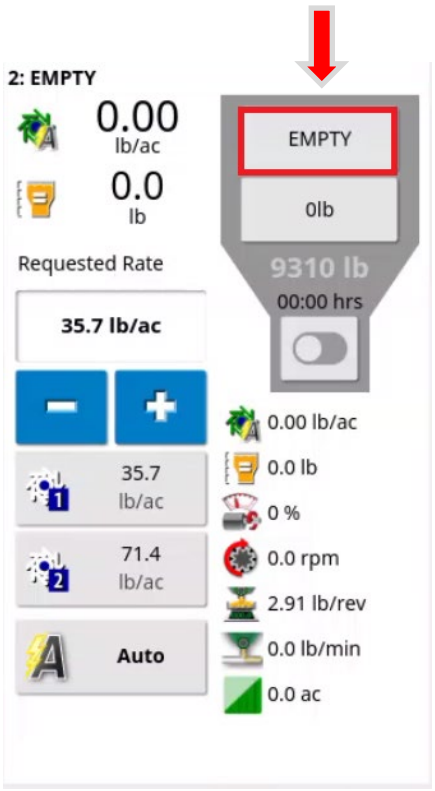
Touch the top band to Minimize Tank 1

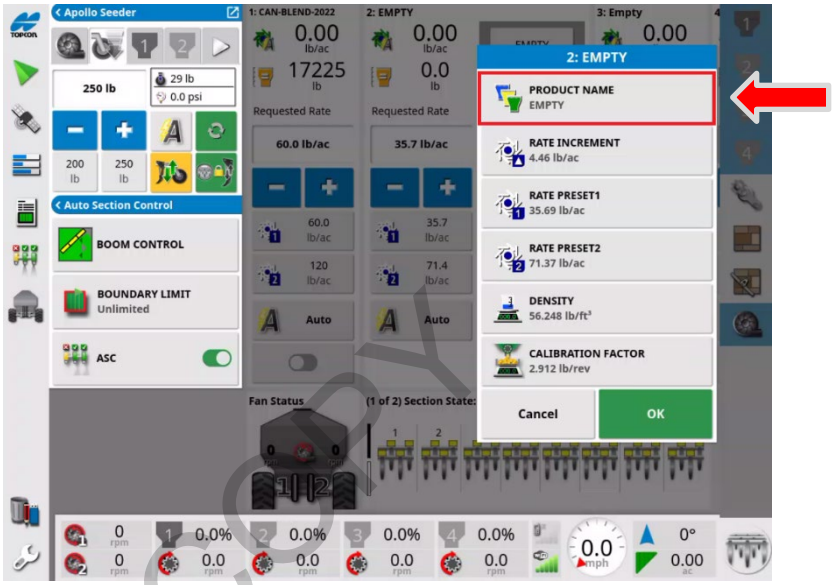


Now touch the Top band on next envelope to Expand Tank 2. We will add a product that won't fill this tank.

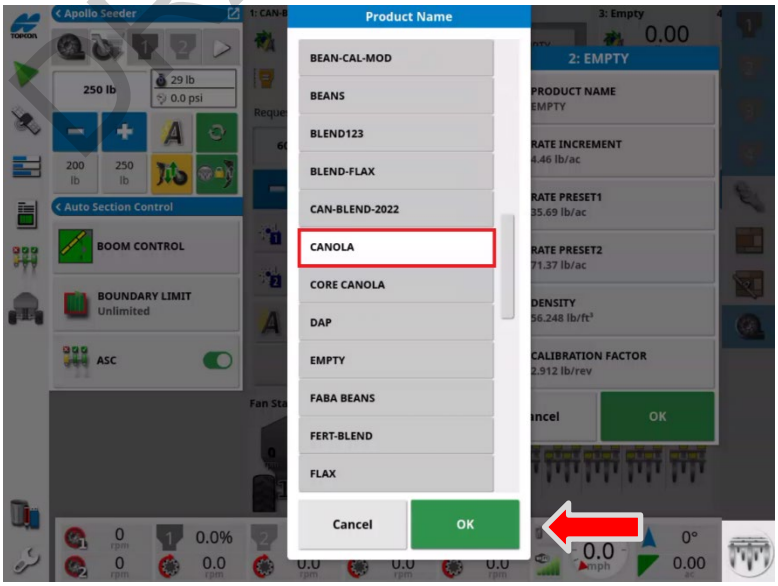


Touch on the top box of the tank 2 expanded section, then touch the **PRODUCT NAME** box.

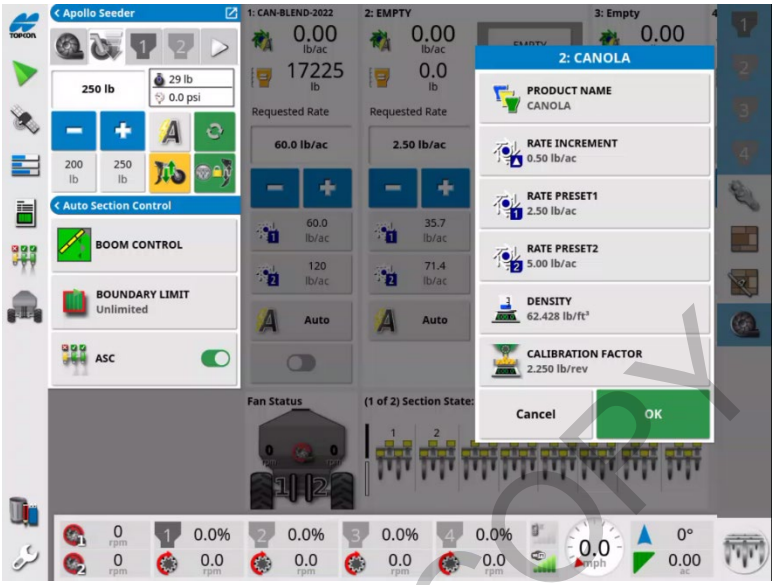




Select the Product from the list. Proceed by touching with Green OK box.

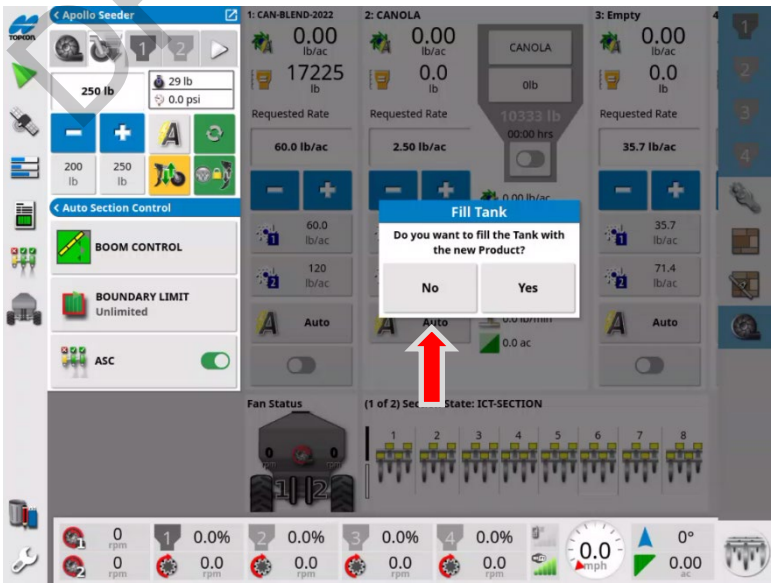


Adjust Increment settings, rate presets and ensure a calibration value is entered, Review and proceed with the Green OK box.

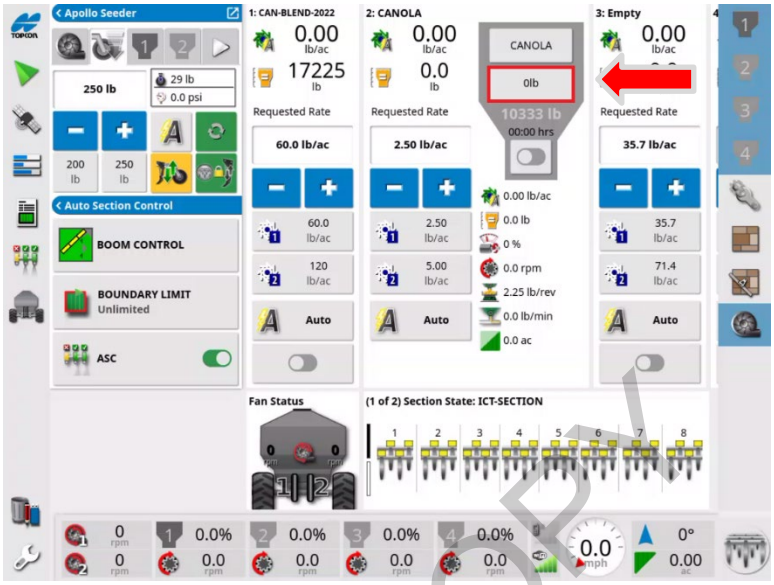


Do you want to fill the Tank with the New Product? **NO**

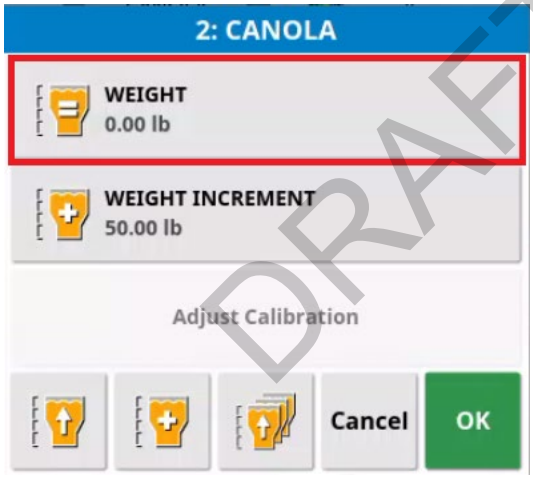
***Since we are adding Canola to the tank, we will use a different fill method.**



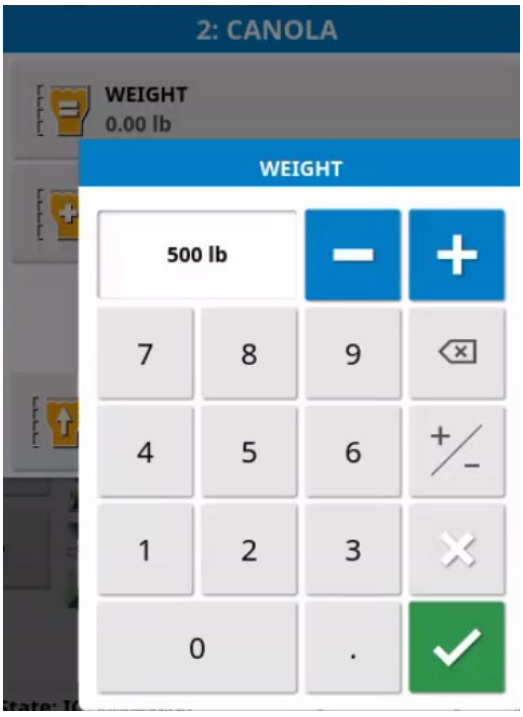
Touch the **Tank Fill Window.**



Option A - Touch the **Weight** icon.

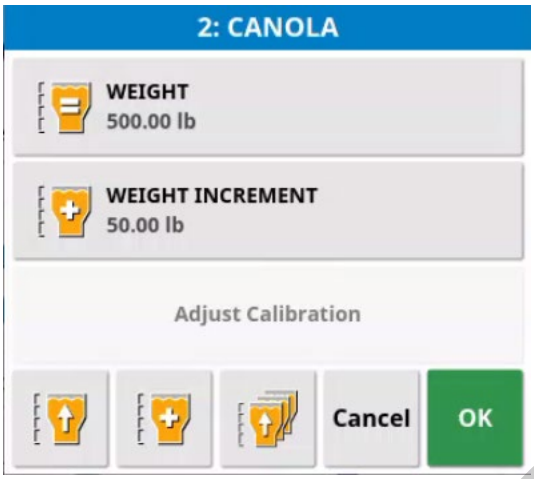


Using the keypad enter the Weight manually.



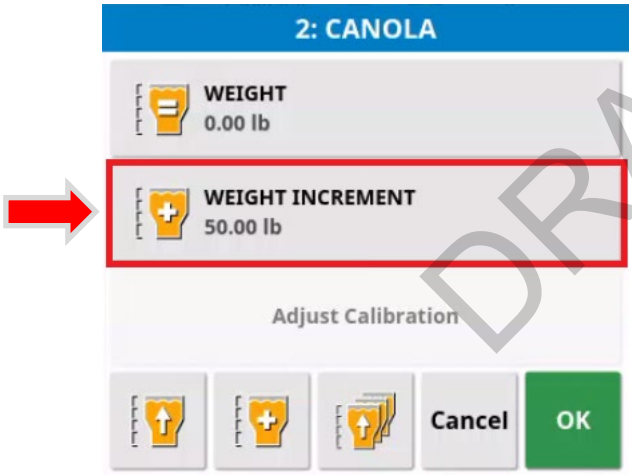
Proceed by touching the green checkmark.

The box should look like this:



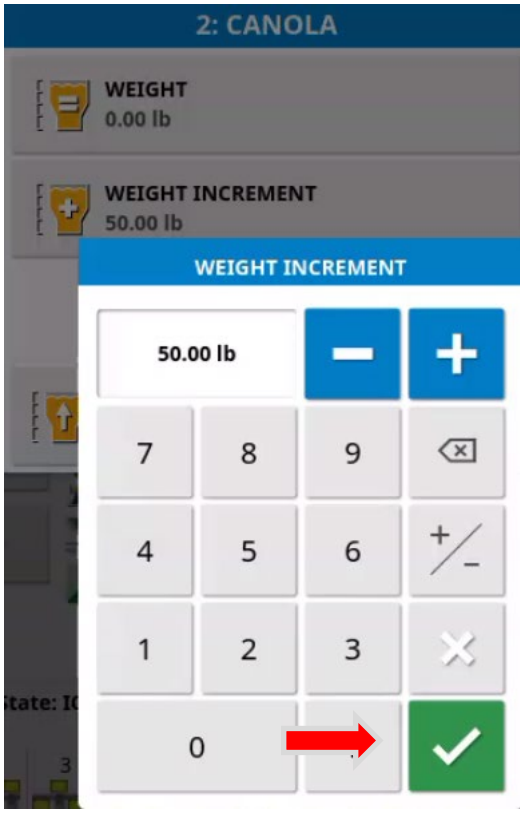
Option B – Set a Weight Increment

Press **WEIGHT INCREMENT** box.



Enter desired increment.

Example: Each Canola Bag = **50lbs per bag**

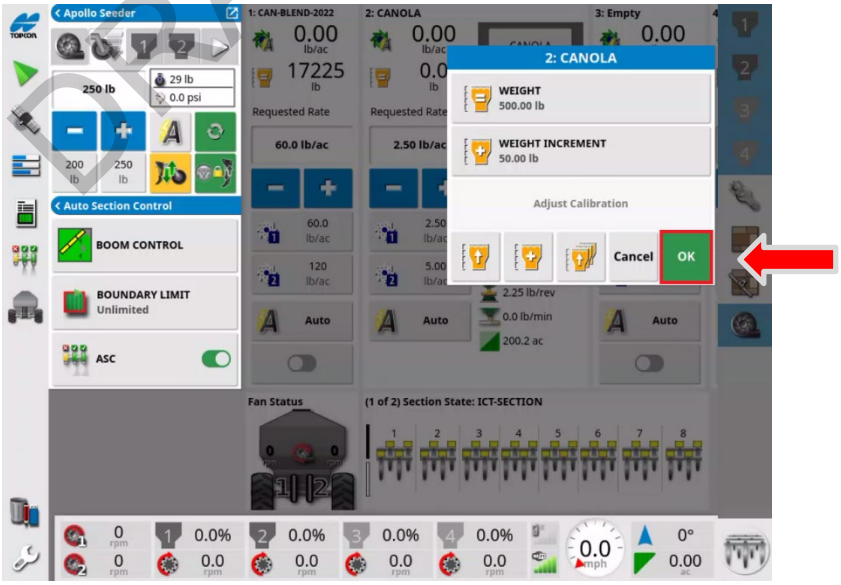


Accept with Green Checkmark.

Touch the  (Increase weight by “weight increment”) **Icon**

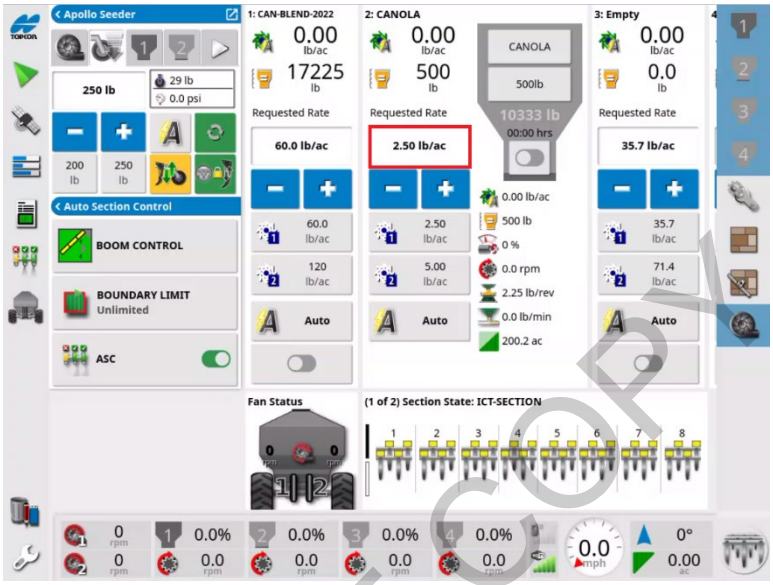
Each press of the icon will increase the total weight by one preset increment **50lb x 10 = 500lb.**

The tank weight is now **500lbs**. Apply the changes with the Green Check mark.

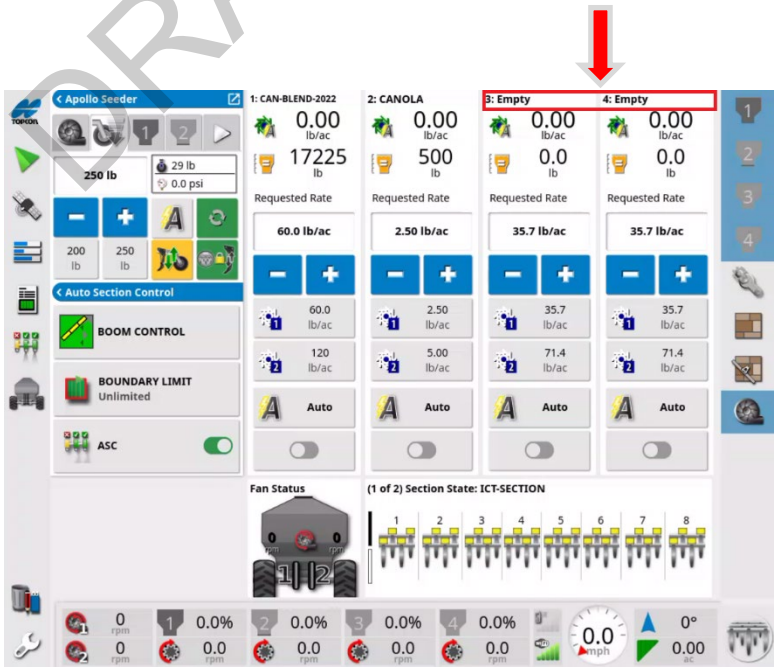


Tank 2: has been filled with the desired product **CANOLA.**

Note: **Preset 1** is automatically populated in the requested Rate window **2.5lb/ac.**



Continue to add products into the Tanks 3 or 4 by touching the top band for desired tank and repeat applicable steps.



Notes:

NOTE: BEFORE STARTING CALIBRATION ENSURE THAT THE PRODUCT HAS A CAL FACTOR ASSIGNED.
REFER TO: ADDING PRODUCT TO TANK - CHAPTER 6

Rate Calibration

The practice of doing a rate calibration is strongly recommended, as it will confirm the **actual** amounts of product dispensed per motor revolution **(Weight/Rev)**.

Weight/Rev (Calibration Factor) is used by the monitor to determine the shaft motor rpm required to deliver the correct application rate.

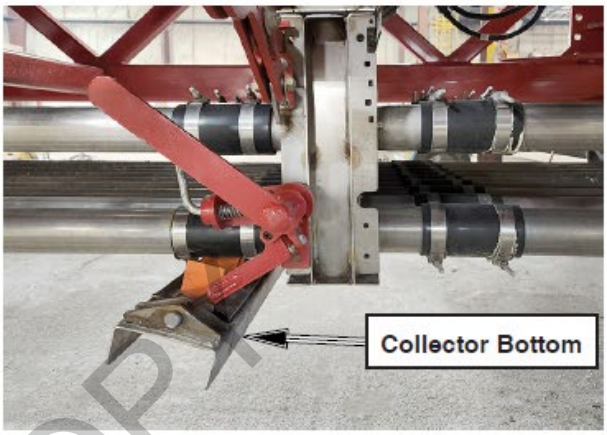
The following procedure should be followed for every change of product.

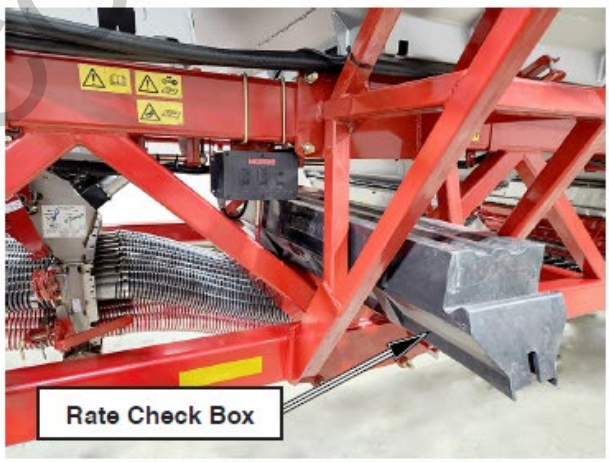
- Open collector bottom.
- Set Flapper Valves to "**Calibration**" (Bottom Pipe) as per collector valve decal.
- Remove rate check box from the storage bracket.
- Slide the rate check box onto the collector body.
- **Prime metering wheels first** by using the XD+ monitor. This monitor can pair with a Tablet or Smart Phone to the XD+ for remote calibration.

Note: The APU must be running to ensure correct voltage to motors is maintained.

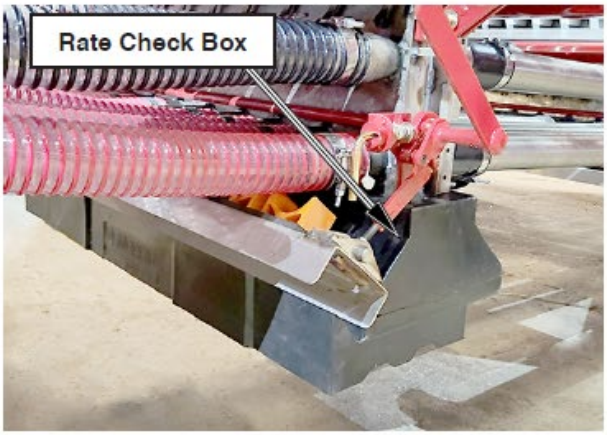
Note: Ensure the fan is not running.

- Empty material from rate check box and reinstall it on the collector bottom.

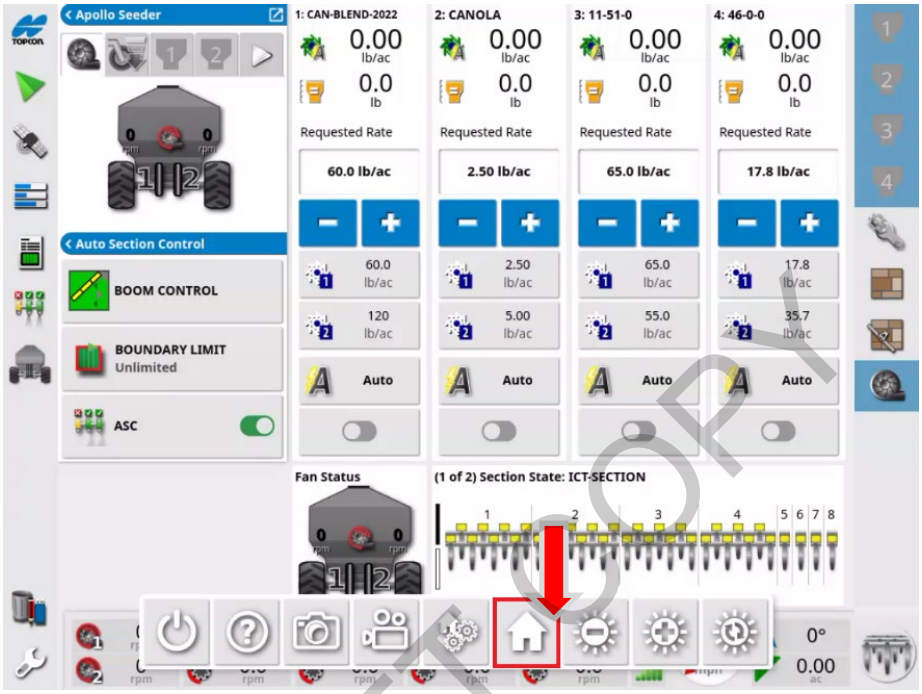




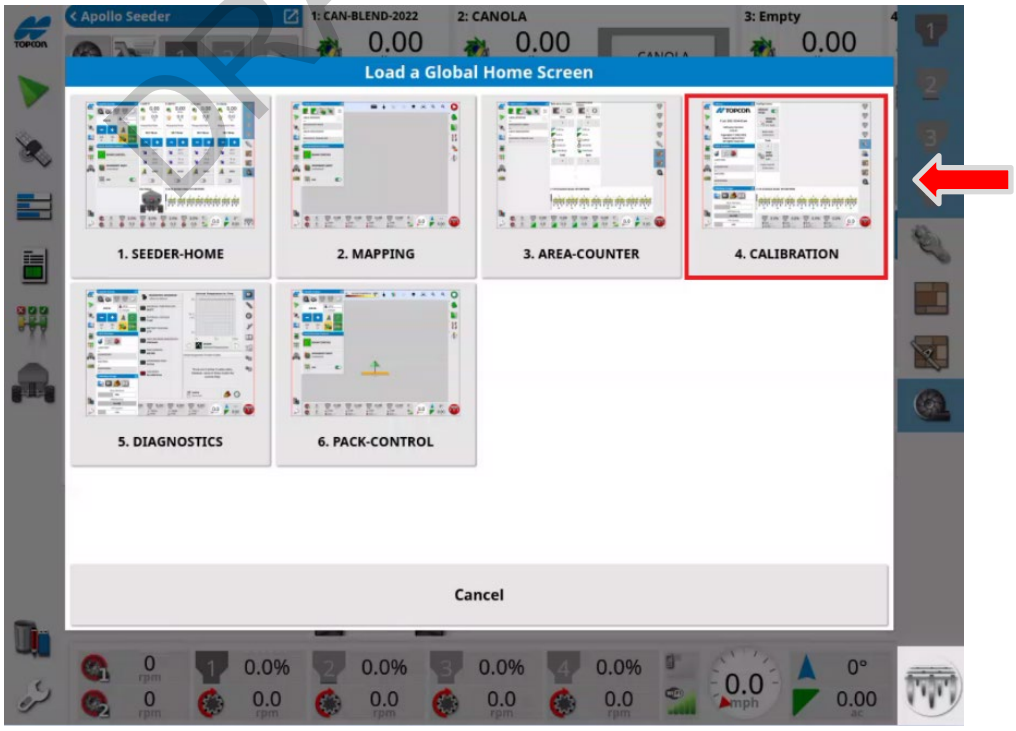
Rate Check Box Storage Location

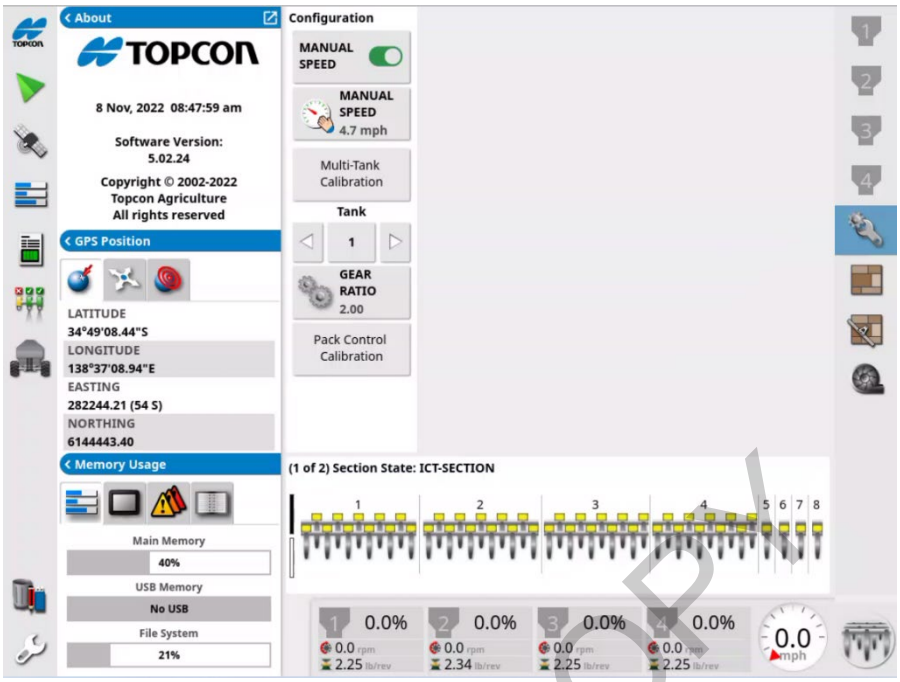


Swipe upwards above the Topcon logo to reveal the Ribbon menu, Press the  **icon to** load the Global Home screen menu.

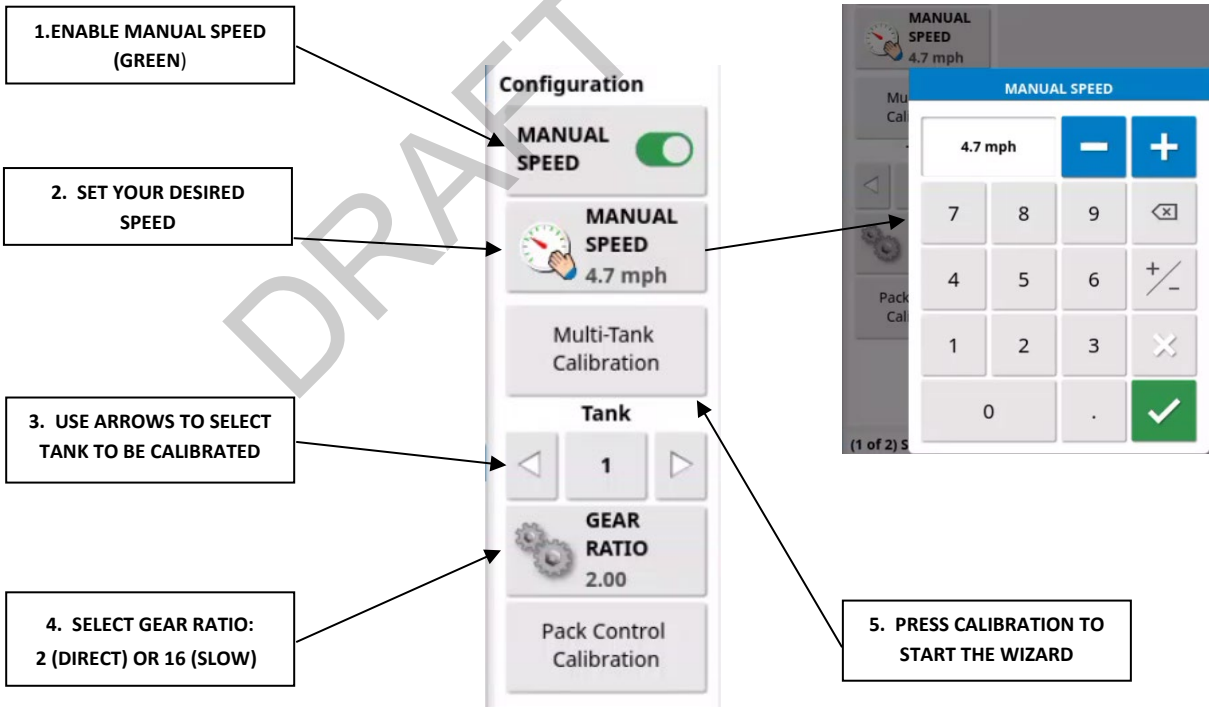


Select the **Calibration** page.



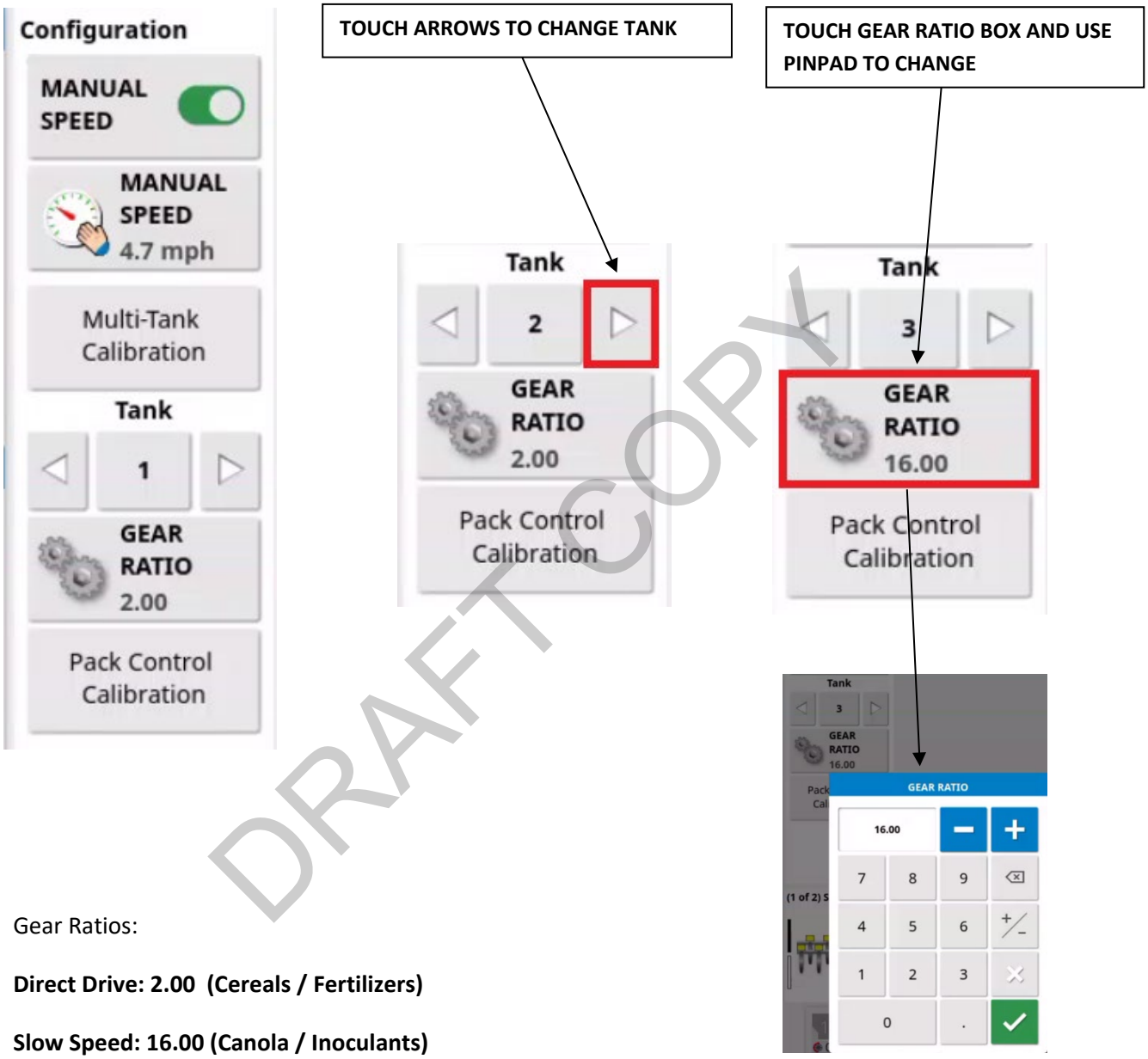


Set the parameters for the Calibration.



****Follow the above step in sequence. ****

****Ensure the Gear Ratios are set correctly for each Tank.****



Gear Ratios:

Direct Drive: 2.00 (Cereals / Fertilizers)

Slow Speed: 16.00 (Canola / Inoculants)

See CHART SPECS on the next page for when to switch RATIOS.

NOTE: Check Motor load - if calibration exceeds 85%, switch to Direct.

If direct is on the bottom end of the motor load, consider changing to Slow speed.

Direct Drive

RATE CHART AIRSEEDER		SEED PLATE	DENSITY LBS/FT 3
FERTILIZER 46-0-0	—F1—	MEDIUM	48
FERTILIZER 34-17-0	—F2—	MEDIUM	52
FERTILIZER 20.5-0-0-24	—F3—	MEDIUM	60
FERTILIZER 11-51-0 (COARSE AGGREGATE BLENDS)	—F4—	COARSE	56
FERTILIZER 0-0-60 0-45-0	—F5—	COARSE COARSE	67 62

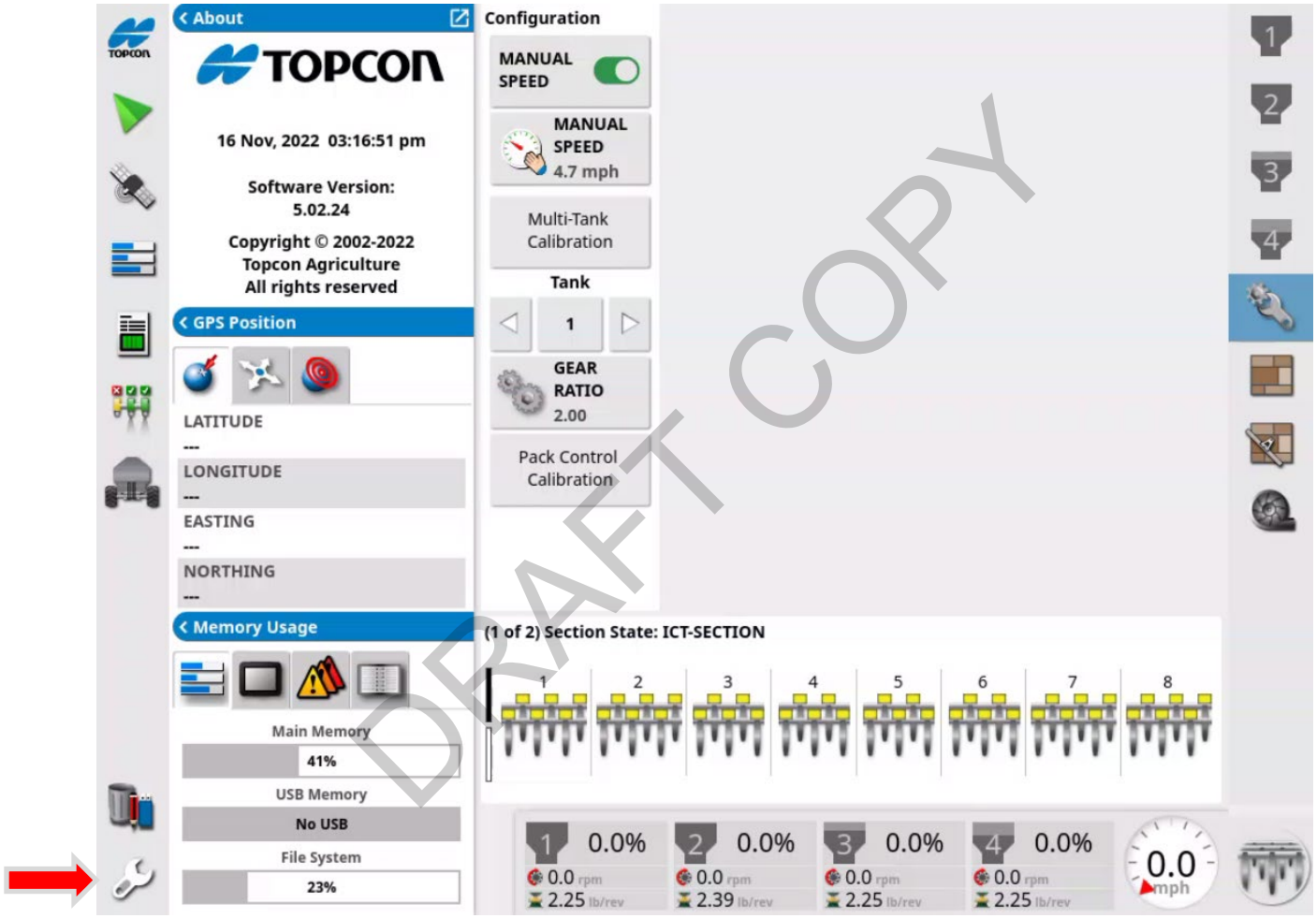
Direct Drive

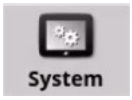
RATE CHART AIRSEEDER		SEED PLATE	DENSITY LBS/BUS
SAFFLOWER	—S—	MEDIUM	26
OATS	—O—	MEDIUM	39
BARLEY	—B—	MEDIUM	50
FLAX	—X—	FINE	54
SPRING WHEAT DURUM WINTER WHEAT FALL RYE	—W—	MEDIUM	62 63 60 56
LENTILS (LAIRD)	—L—	MEDIUM	60
LENTILS (ESTON)	—E—	MEDIUM	60
PINTO BEANS	—P—	COARSE	59
FABA BEANS GARBONZO BEANS CHICK PEAS (LARGE)	—Z—	COARSE COARSE COARSE	62 62 57
ADMIRAL PEAS (SMALL & MEDIUM)	—A—	COARSE	62

Slow Speed Drive

RATE CHART AIRSEEDER		SEED PLATE	DENSITY LBS/BUS
CANOLA	—C—	FINE	52
MUSTARD CANARY SEED	—M—	FINE	56 44
ALFALFA CLOVER	—A—	FINE	42 45
NODULATOR	—N—	MEDIUM	70
TAG TEAM	—T—	MEDIUM	53
EDGE	—E—	FINE	78
FORTRESS	—F—	FINE	50
RIVAL	—R—	FINE	55

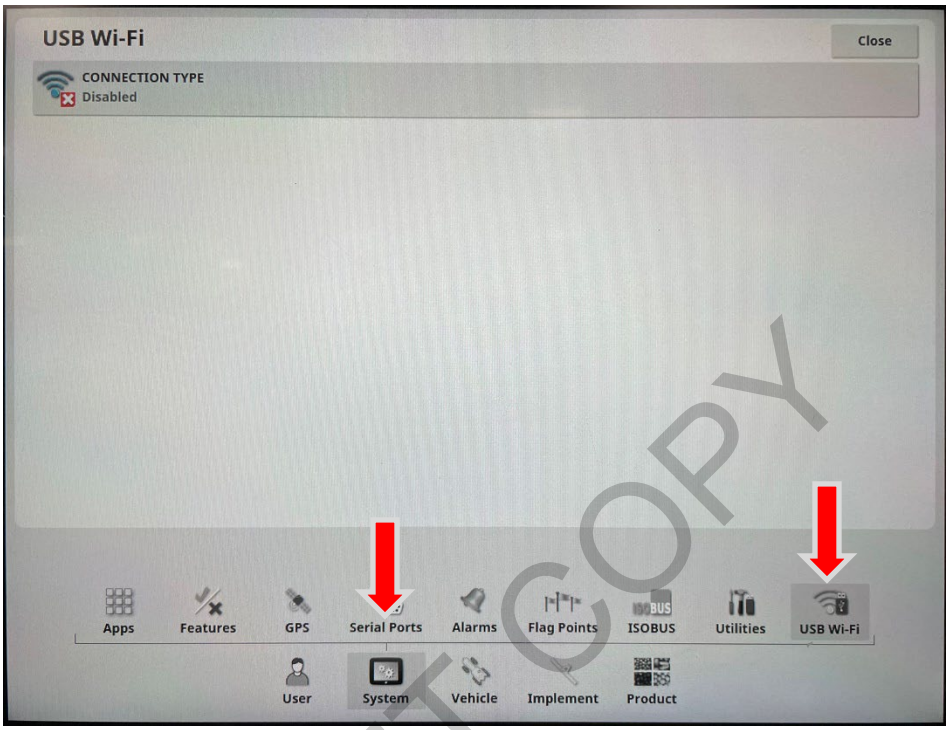
Touch the  **wrench** on the lower left corner of the screen.



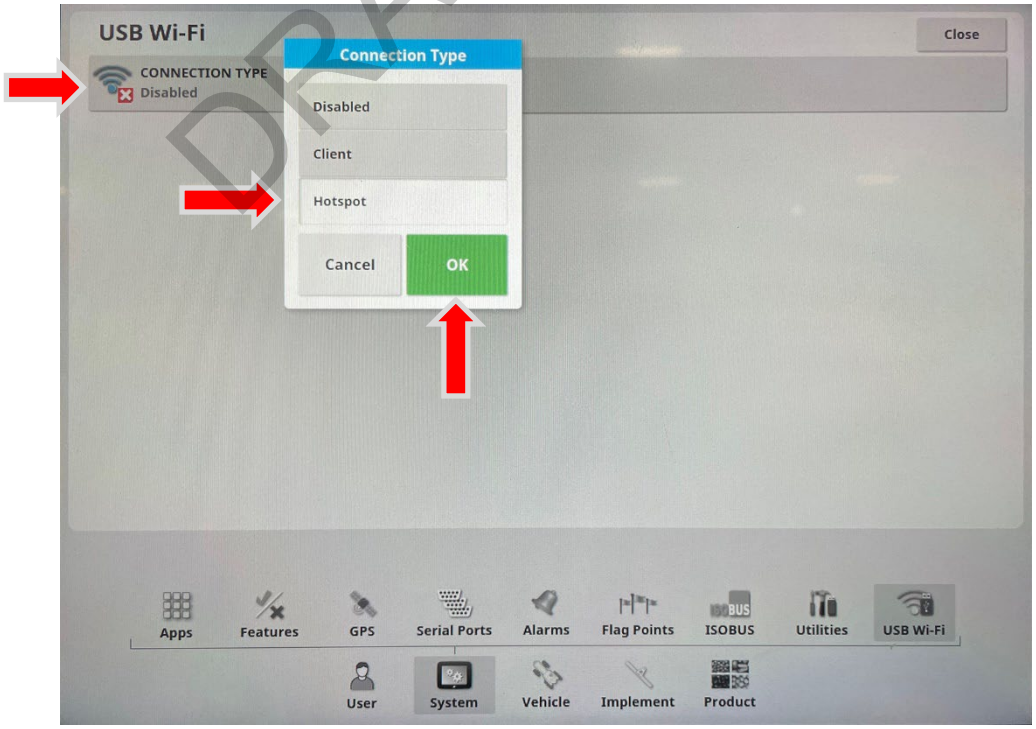
Now touch the **System** 

icon, followed by the **USB Wi-Fi** 

Icon.

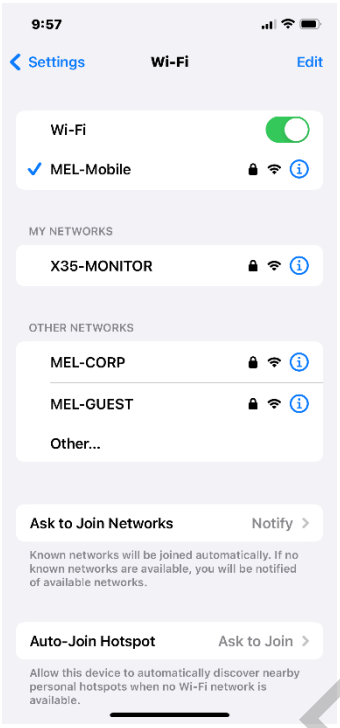


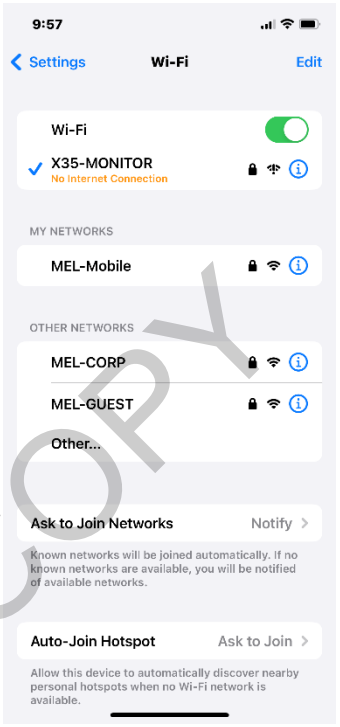
Touch the **CONNECTION TYPE** bar, then select **Hotspot**. Apply with the green OK box.



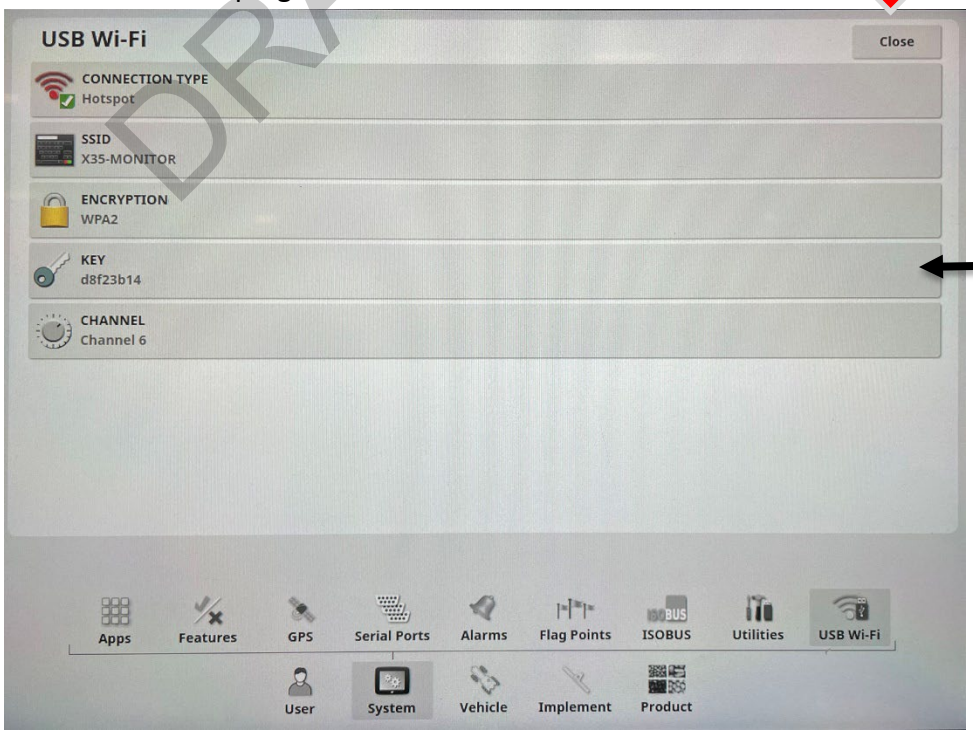
On your mobile device (IOS shown) open your Wi-Fi menu.

An **X35-MONITOR** option should be present. Select it now and enter password, shown as **Key** on your monitor.

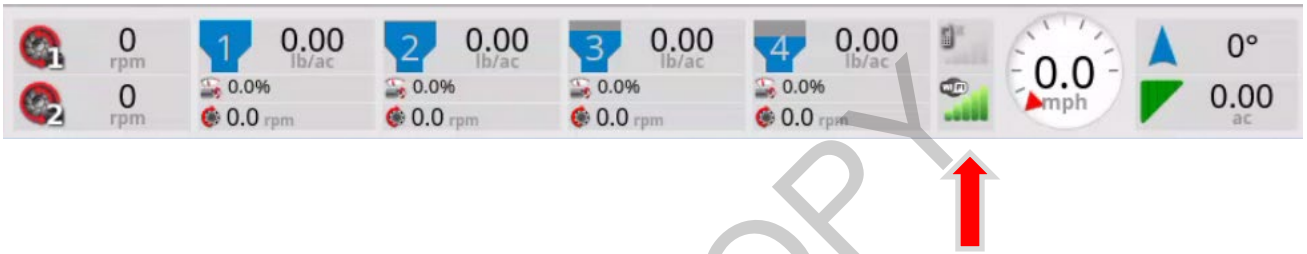




Touch the **Close** icon in the top right corner to return to the calibration screen



Ensure the monitor and device are paired by viewing the signal bar status.

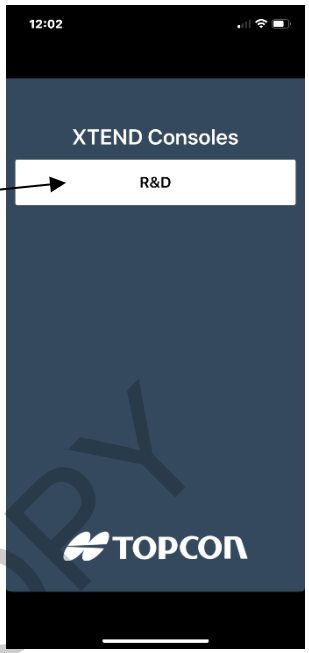


YOU MAY NOW OPEN THE XTEND APP or if Xtend is not used please review the Calibration using Keypad tutorial.

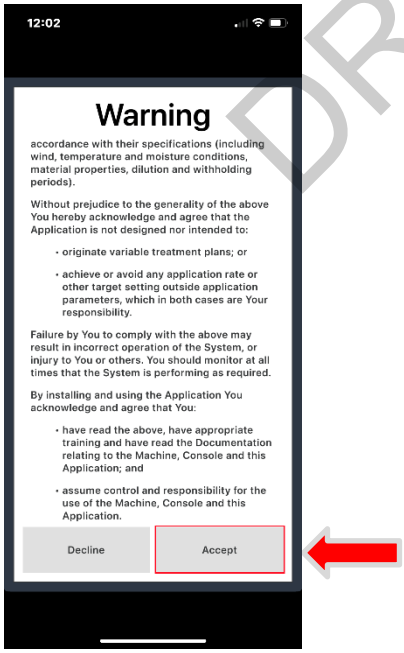
Note: If there is no connection present, check that the wi-fi is enabled on your device or reference Xtend Wi-fi set up.

OPEN the XTEND APP on your device.

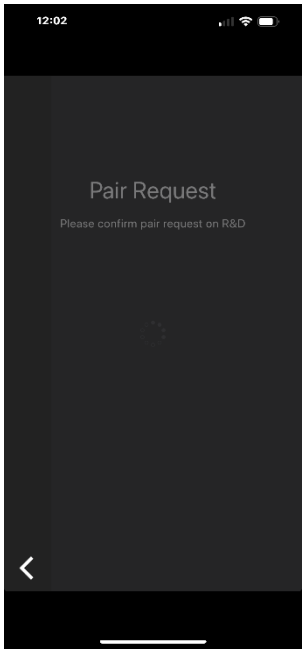
Press on the Ip address box



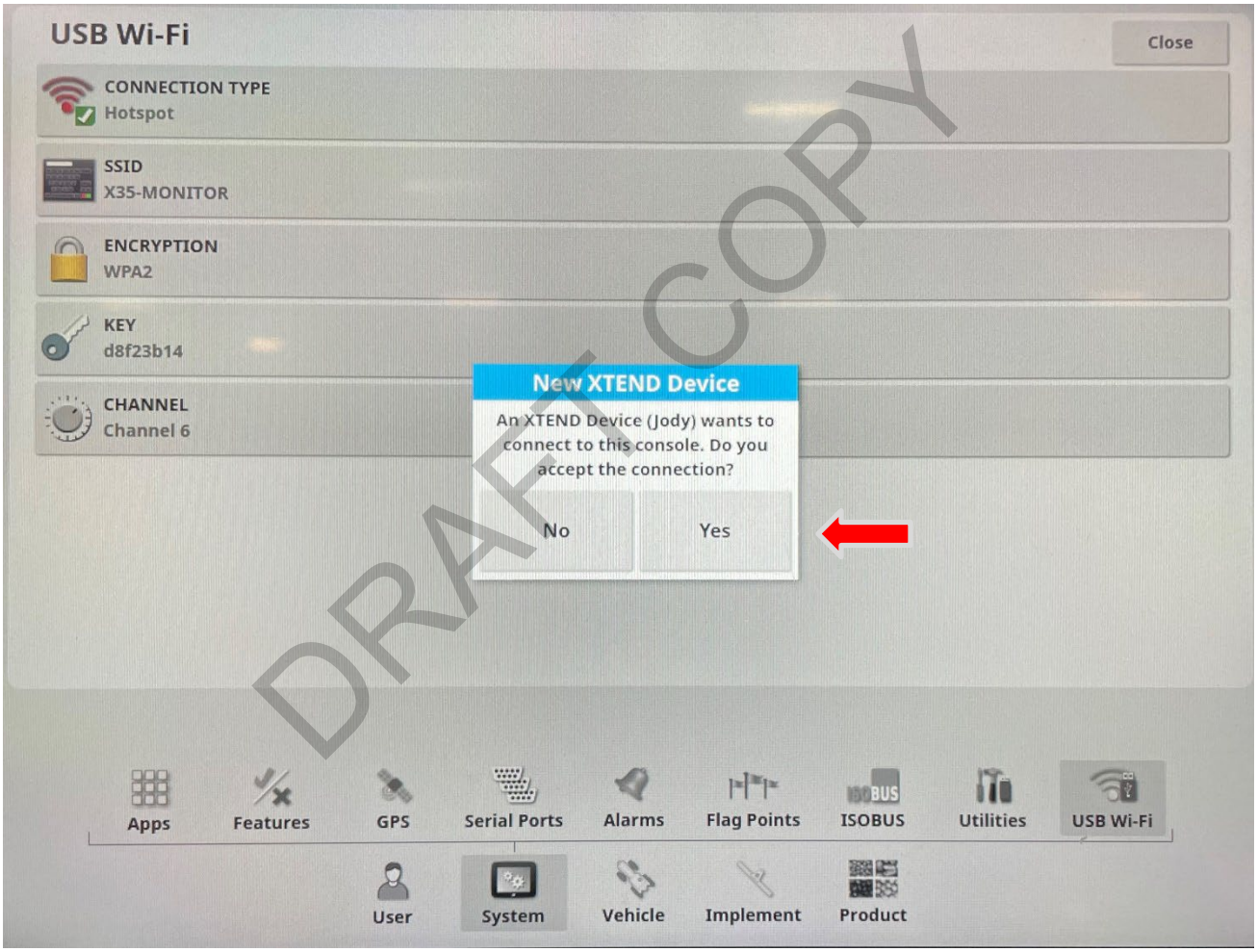
Read the Warning disclaimer and select Agree to proceed.



A Pair Request from the device to the monitor will initiate.



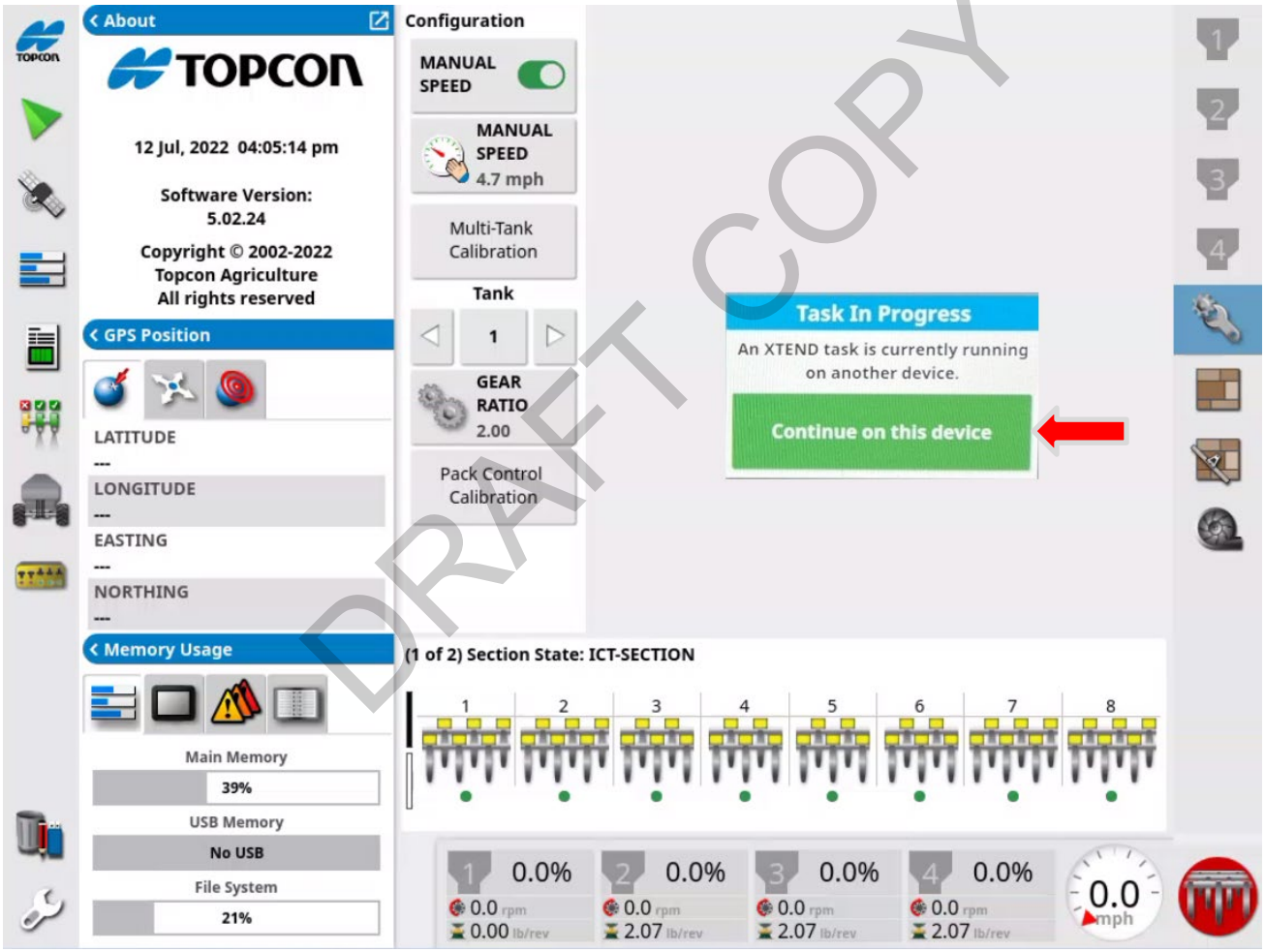
Accept the connection on the X35 display by pressing the **Yes** icon.



Xtend App functions will now display on your device, allowing full control of the X35 display.

Note: If you would like to cancel the Xtend controls and return the control the X35 display, you may

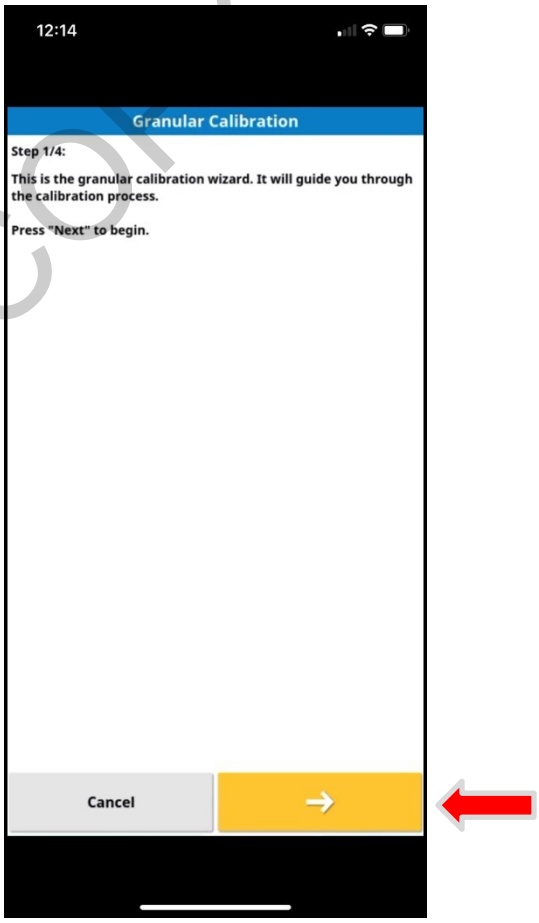
press **Continue on this device** prompt at any time.



The Xtend App is now communicating with the X35, touch the **Aircart** icon, followed by the **Tank Calibration** Icon.

Touch **Automatic Calibration**.

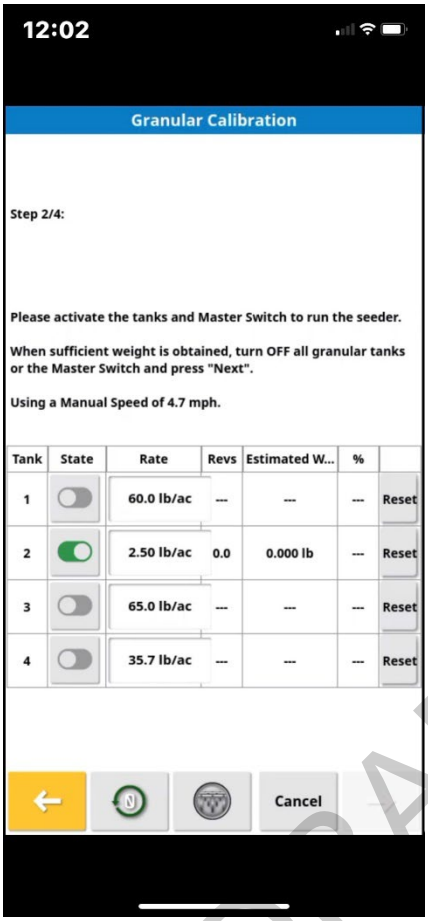
Step 1/4 Indicates that you've entered the Calibration Wizard. Touch the Yellow Forward Arrow to advance.

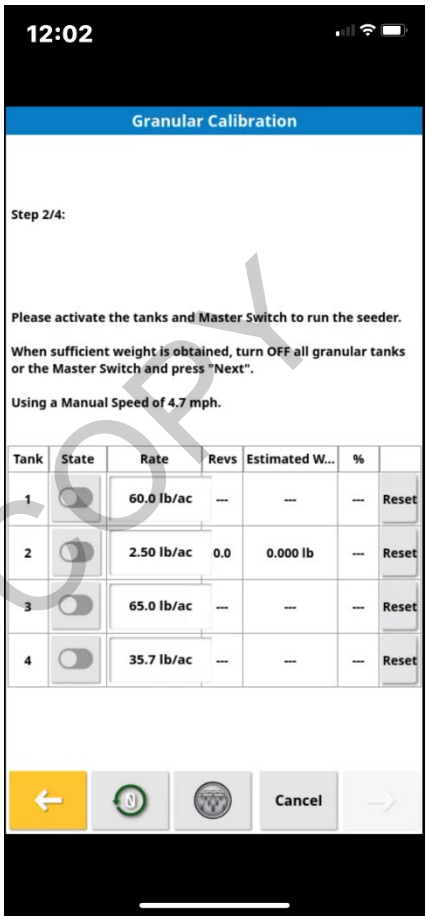


Step 2/4 Enable the State of the Tank you would like to Calibrate.

 Tank State Green = Tank On

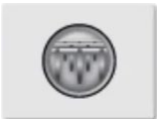
 Tank State Grey = Tank Off



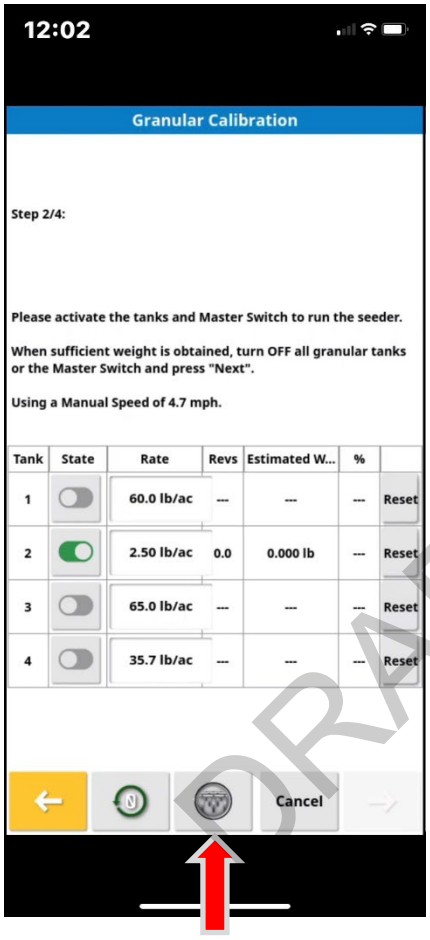


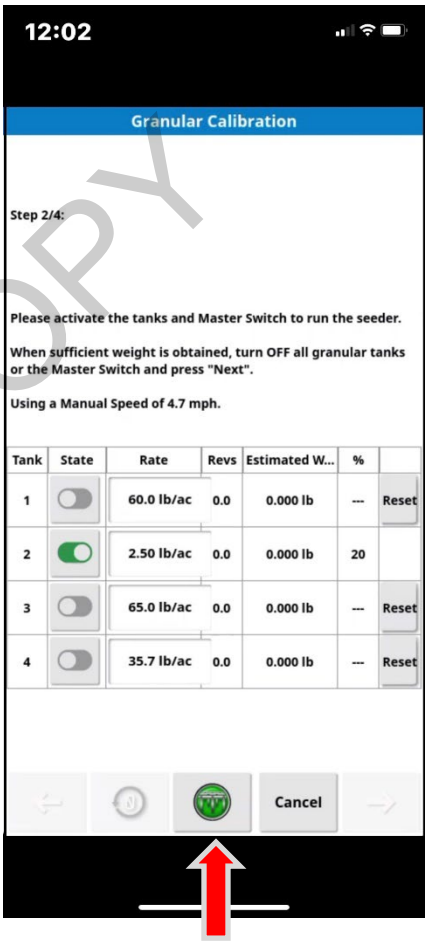
Metering is Active and is ready to discharge product. The Tank Preset 1 Rate will automatically be displayed.

Prime the metering system - this allows the metering wheel flutes to fill with product for an accurate calibration.

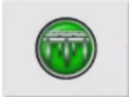
Turn the Metering system **ON** by touching the  virtual Start / Stop icon.

****Caution: The metering will engage and distribute the product into the sample collector****



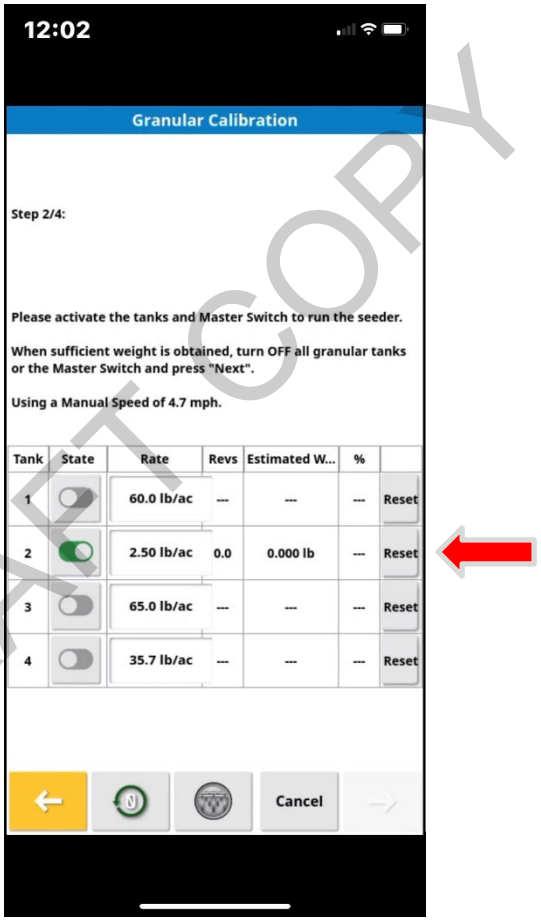


Note: The indicator lights are now Green which confirms that Metering is On and Actively flowing.

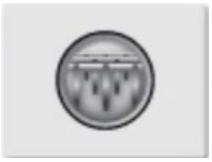
Allow a few rotations of the meter shaft to ensure all meter wheel flutes are filled. Touch the  start/stop icon to stop the metering system.

Remove the sample collector and empty the product back into the tank. Since this is not an actual calibration but only to ensure the metering wheels are primed, it is not necessary to weigh the priming sample.

Clear the priming data by pressing the Reset Icon.

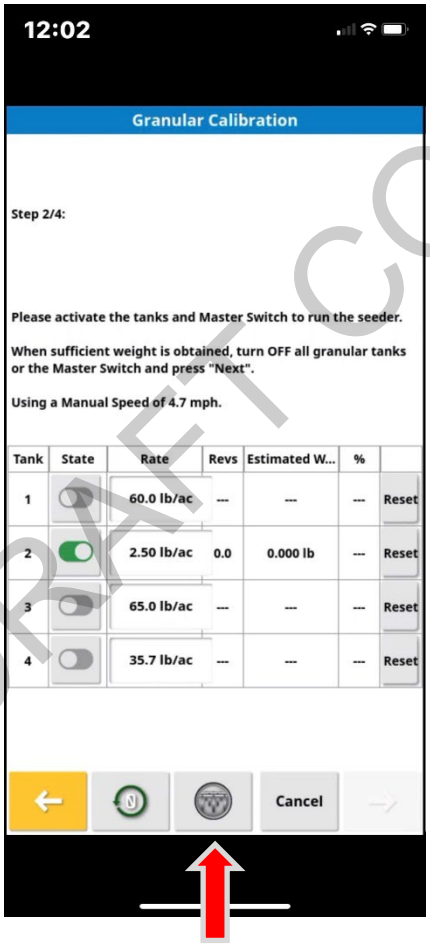


Replace the sample collector tray onto the collector flange. We will now perform an actual calibration.

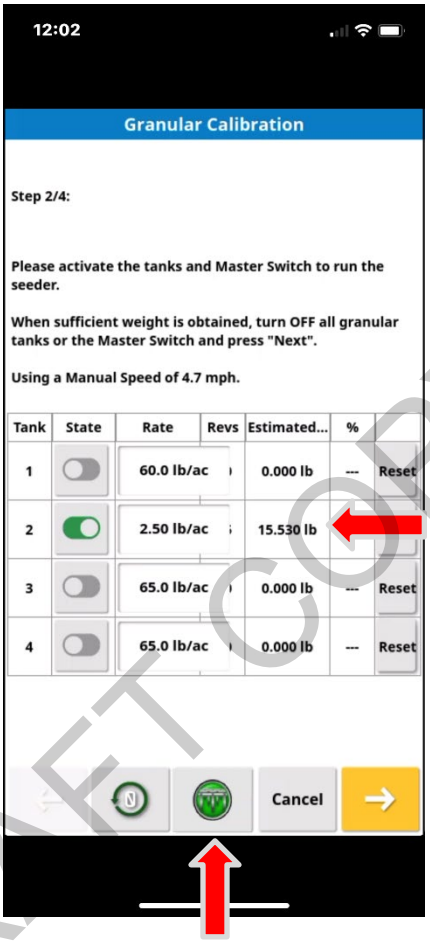
Turn the metering system ON by pressing the  virtual Start / Stop key.

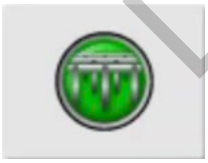
Caution: The metering will engage and distribute the product into the sample collector.

Note: The indicator lights are now Green which confirms that Metering is On and Actively flowing.



The **Estimated Weight** will count continuously as product is collected into the Sample Collector.



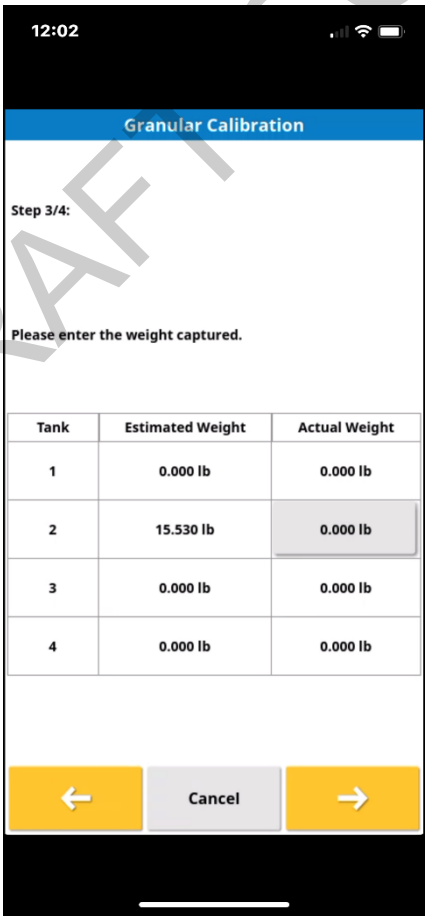


Stop the Metering when the Estimated weight is around *15.00lbs*. Proceed with the Yellow Forward Arrow. 

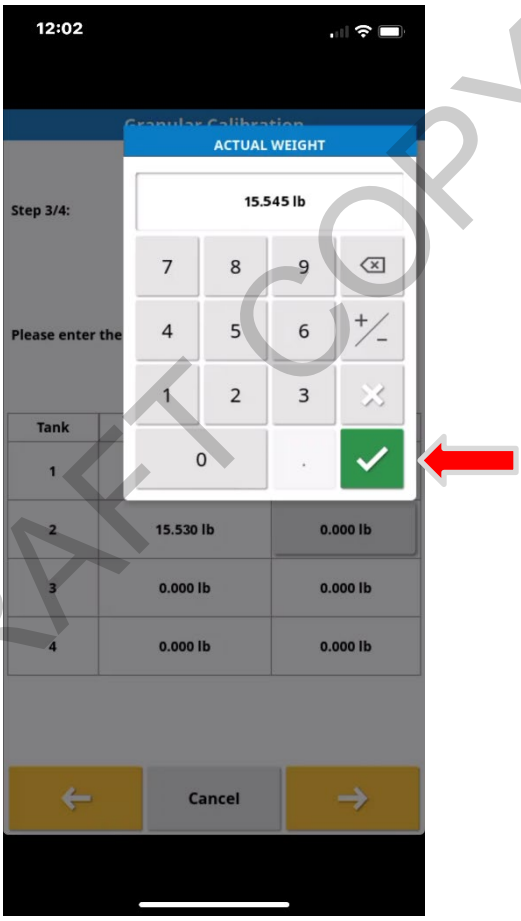
Remove the **Collector Tray** and **Weigh the Product** using the provided scale.

****Note: Remember to subtract the weight of the rate check box from the total sample weight.****

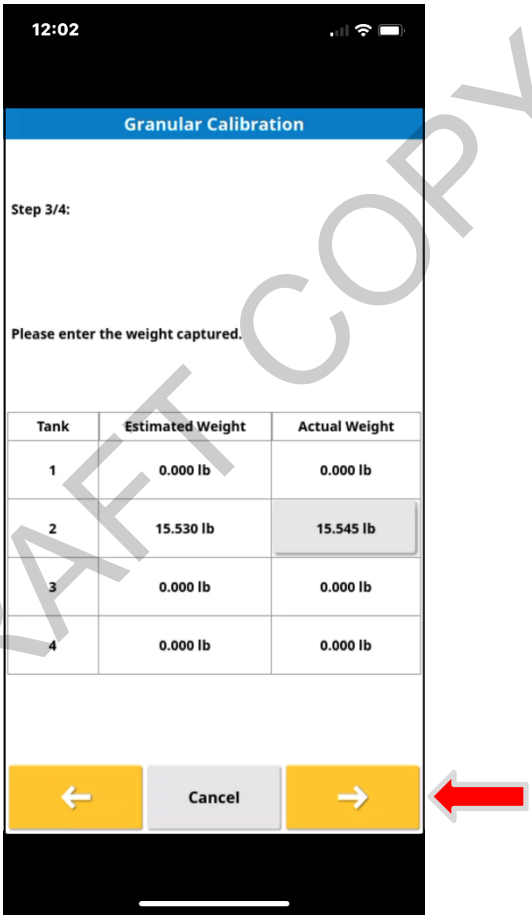
Touch the Tank **Actual Weight** icon.



Enter the actual weight from the scale display, Followed by the Green Checkmark.

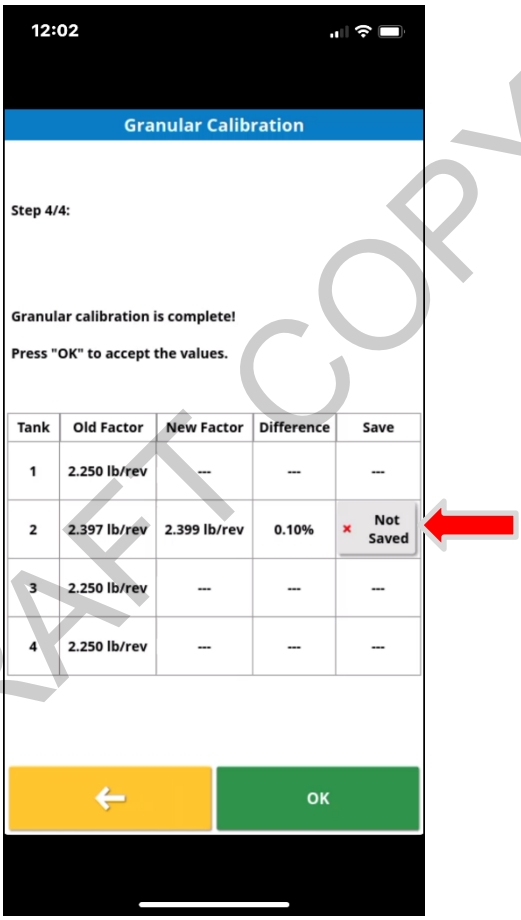


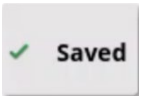
Review the information entered is correct, proceed to the next screen by touching the **Yellow Forward arrow.**



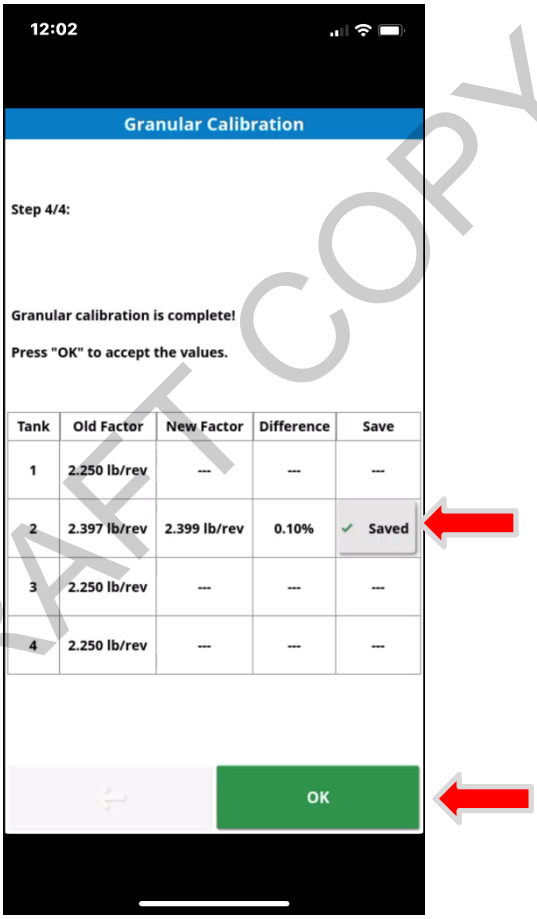
Press the on the 

Not Saved icon to **SAVE** the updated Calibration Factors.

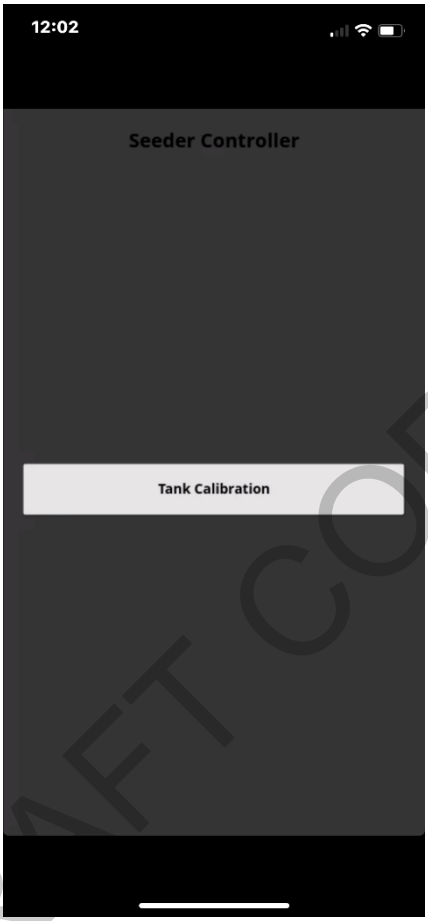


The Save status will change to 

Saved. Exit and Apply the Calibration Factor by pressing the Green OK box.



Repeat the Calibration procedure until you are satisfied with the results. It is recommended to repeat the calibration procedure 2 more times per tank to fine tune and verify the calibration factors are accurate.



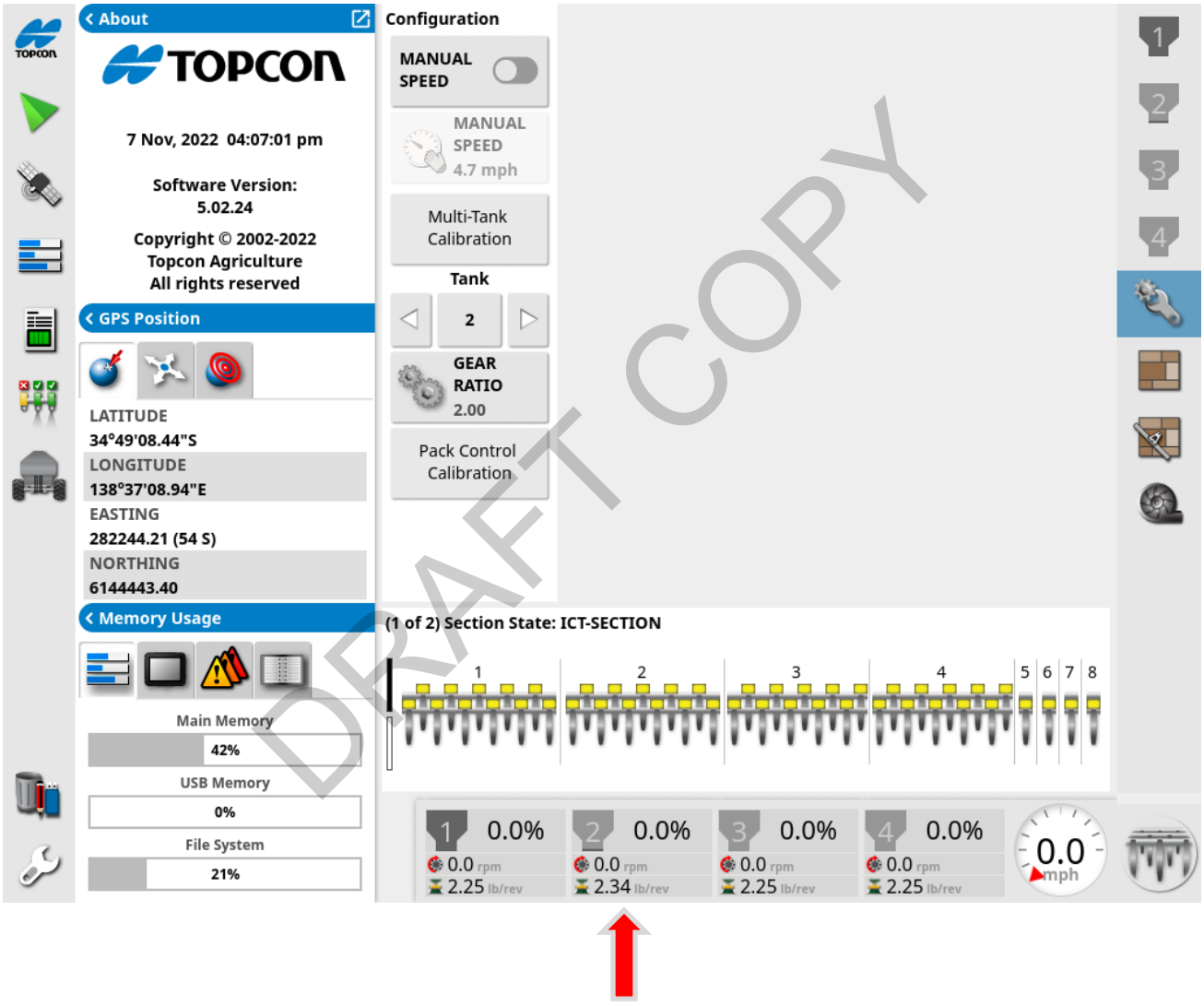
The calibration should become accurate to 1%.

If multiple calibrations are performed and the system does not become accurate to 1% check seed plate settings and monitor the motor load. Check for binding in the driveline and ensure the ICT sections are retracting freely into the application position

Repeat the Calibration procedure on the remaining tanks.

Return to the X35 monitor

Note: the new Calibration Factors are displayed at the bottom of the Dashboard.



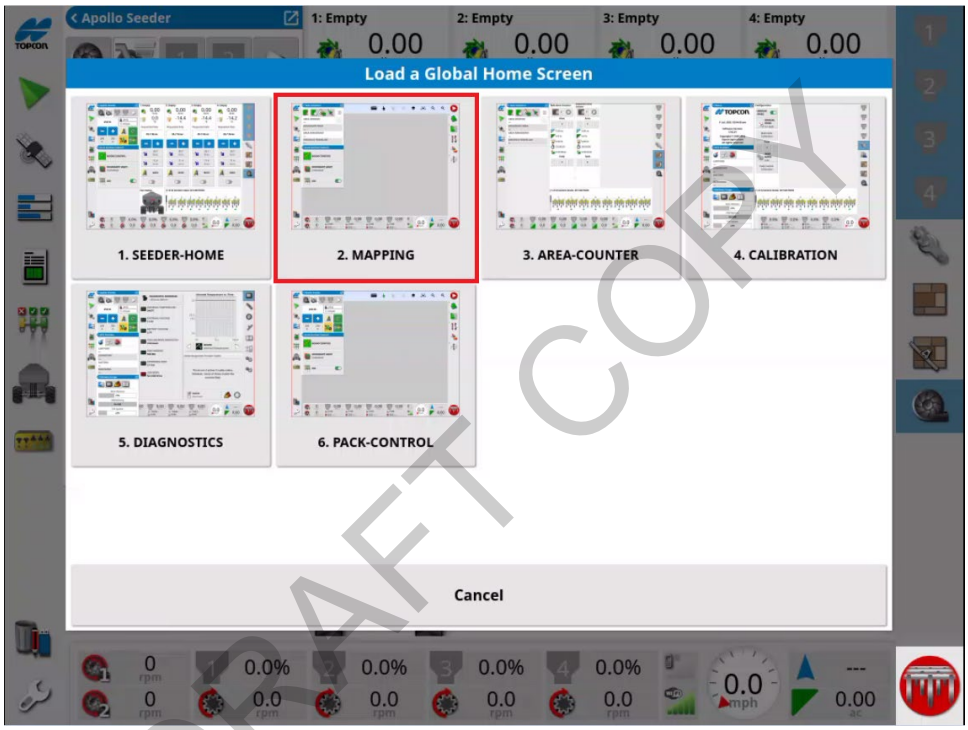
****Do not press the icon, this is for reference only****

NOTES:

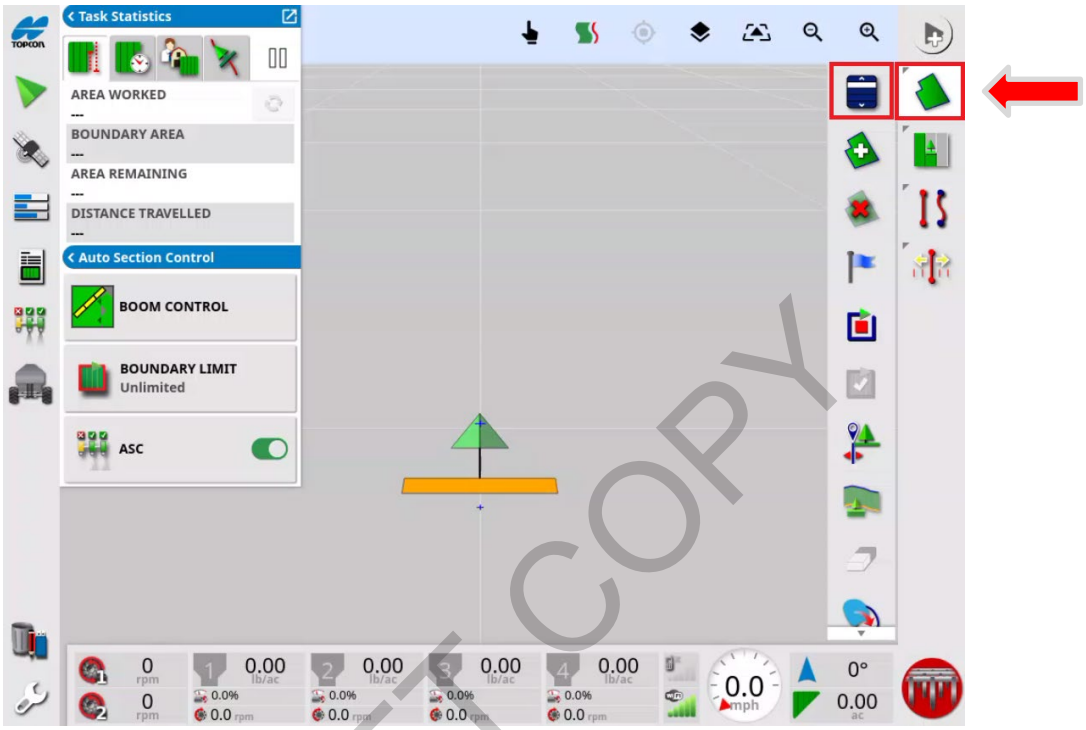
Follow the previous chapters. At this stage you will have;

- Created Fields
- Added Products to Tanks
- Preformed Calibration tests on all Tanks

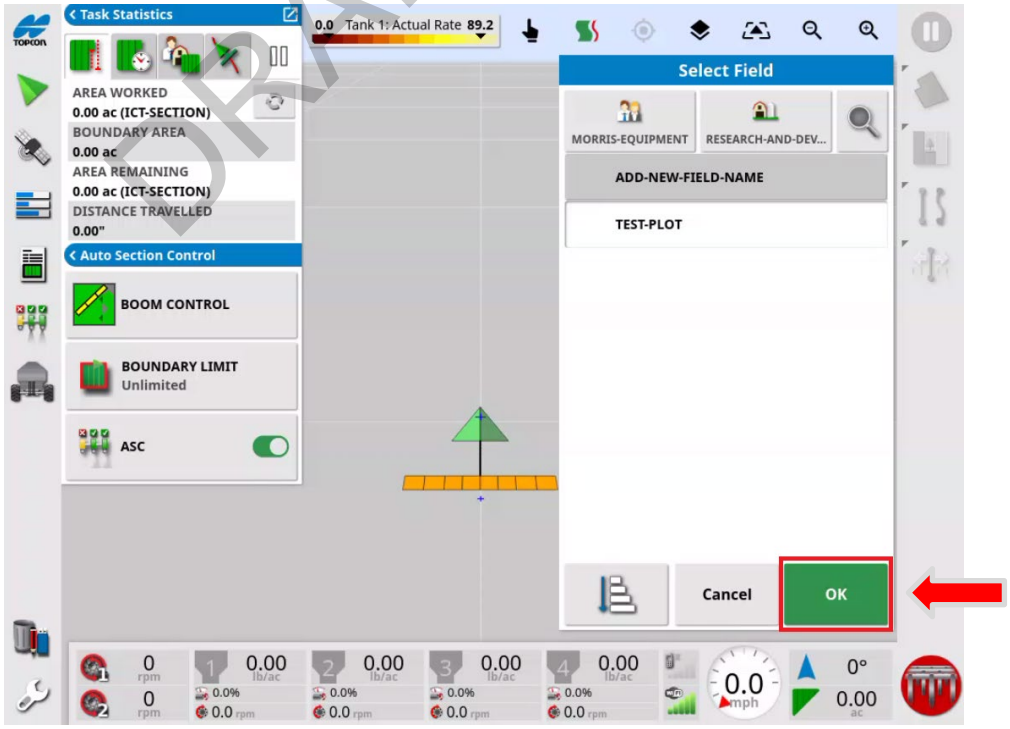
Select **MAPPING**

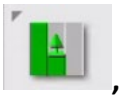
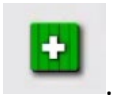


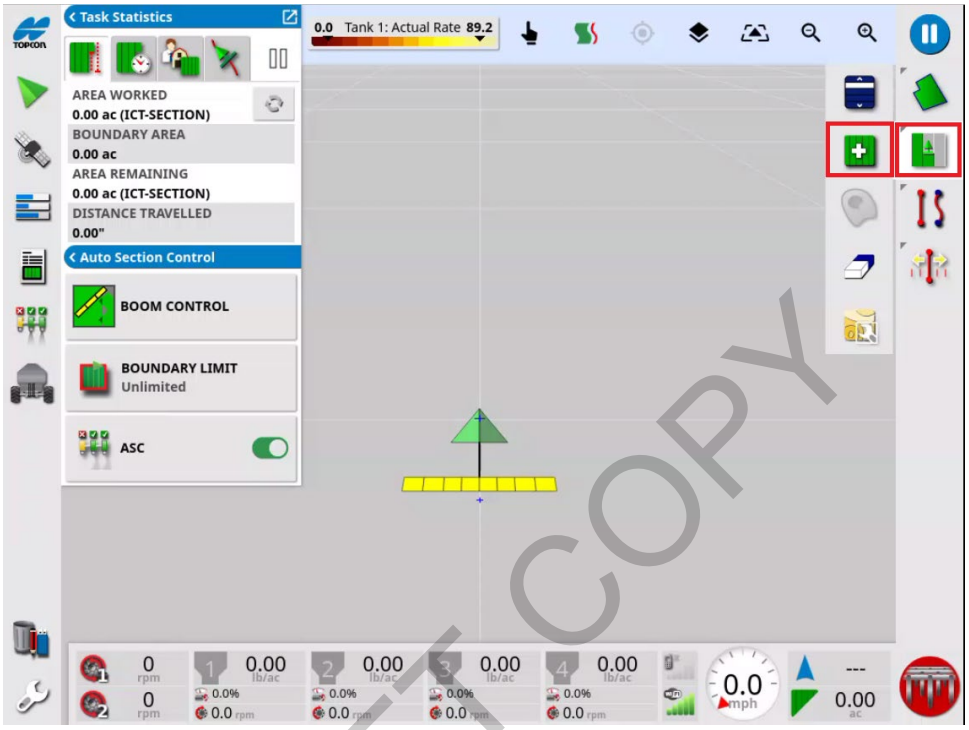
Open the **Field Menu** icon  followed by the **Select Field**  icon.



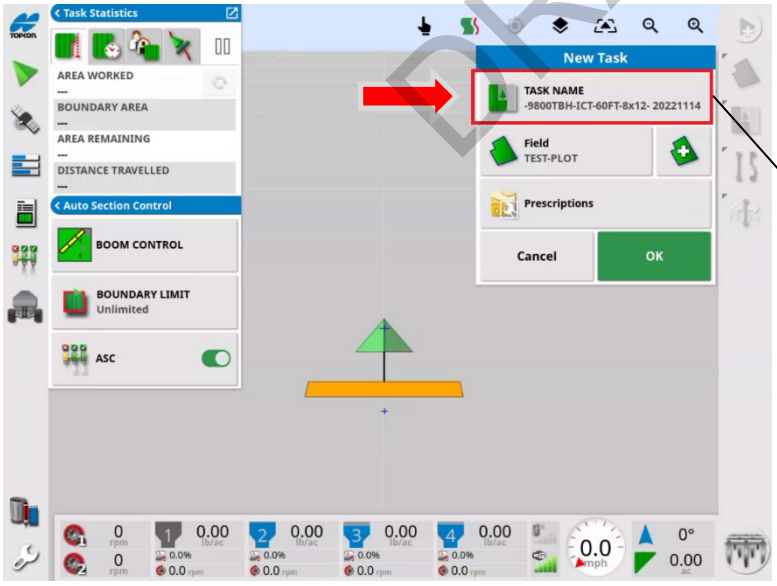
Select the Field you wish to seed. Press the Green OK box to apply the settings.

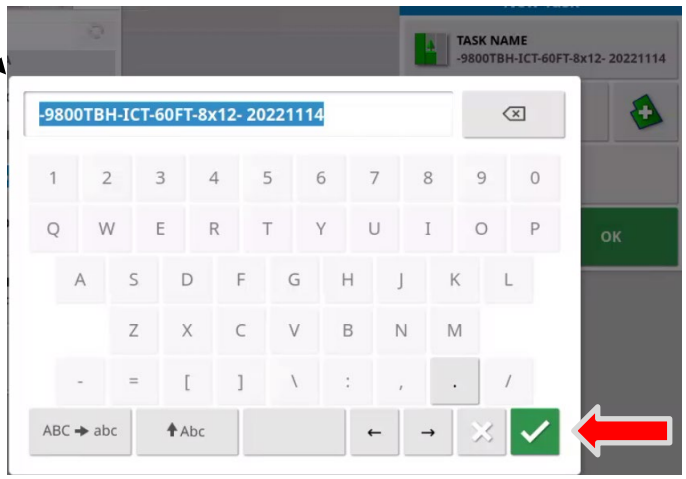


Press the **Job menu icon**  **,** and followed by the **Create New Task** icon  .

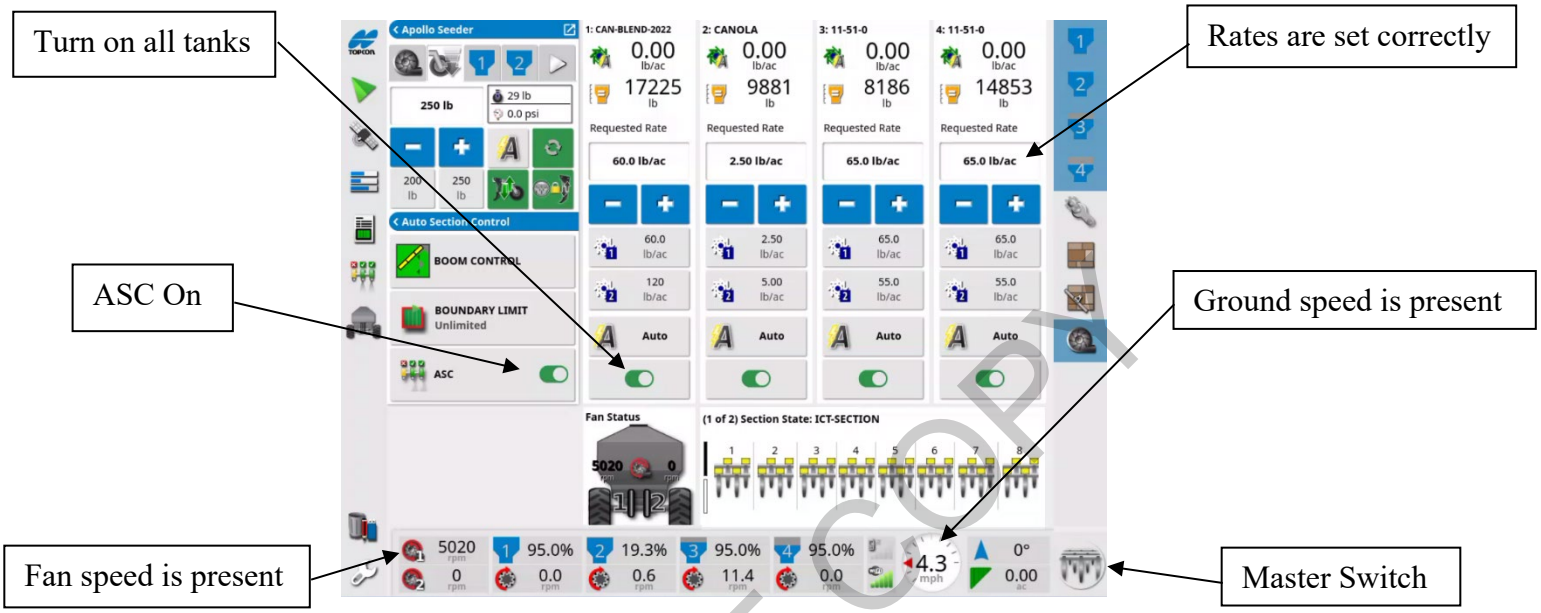


Use the provided or create a **New Task** by touching the Task Name box and entering a new name. Press the Green Check Mark to accept.

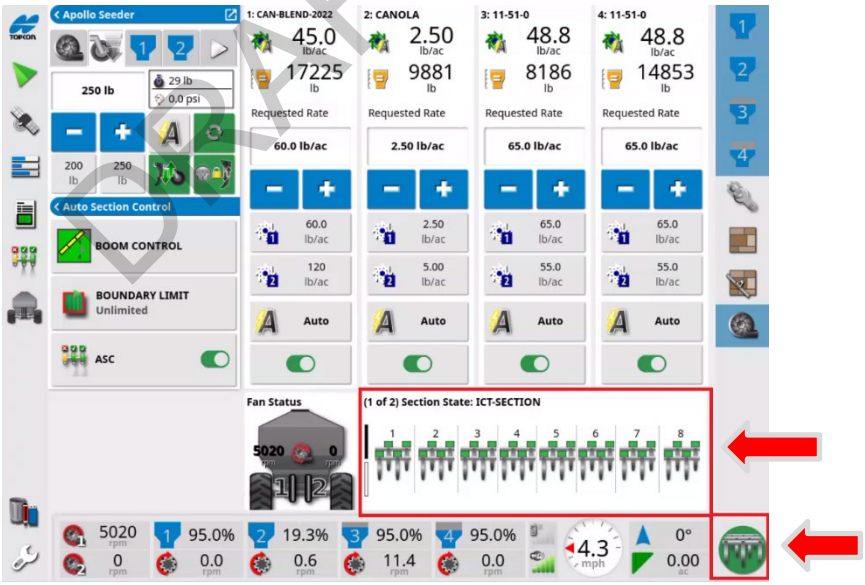




Return to the Seeder Home screen. Ensure the following items are checked before engaging the **Master Switch**.



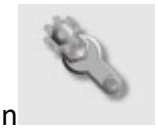
The following icons on the Seeder Home screen will change colours when the Master Switch is active.

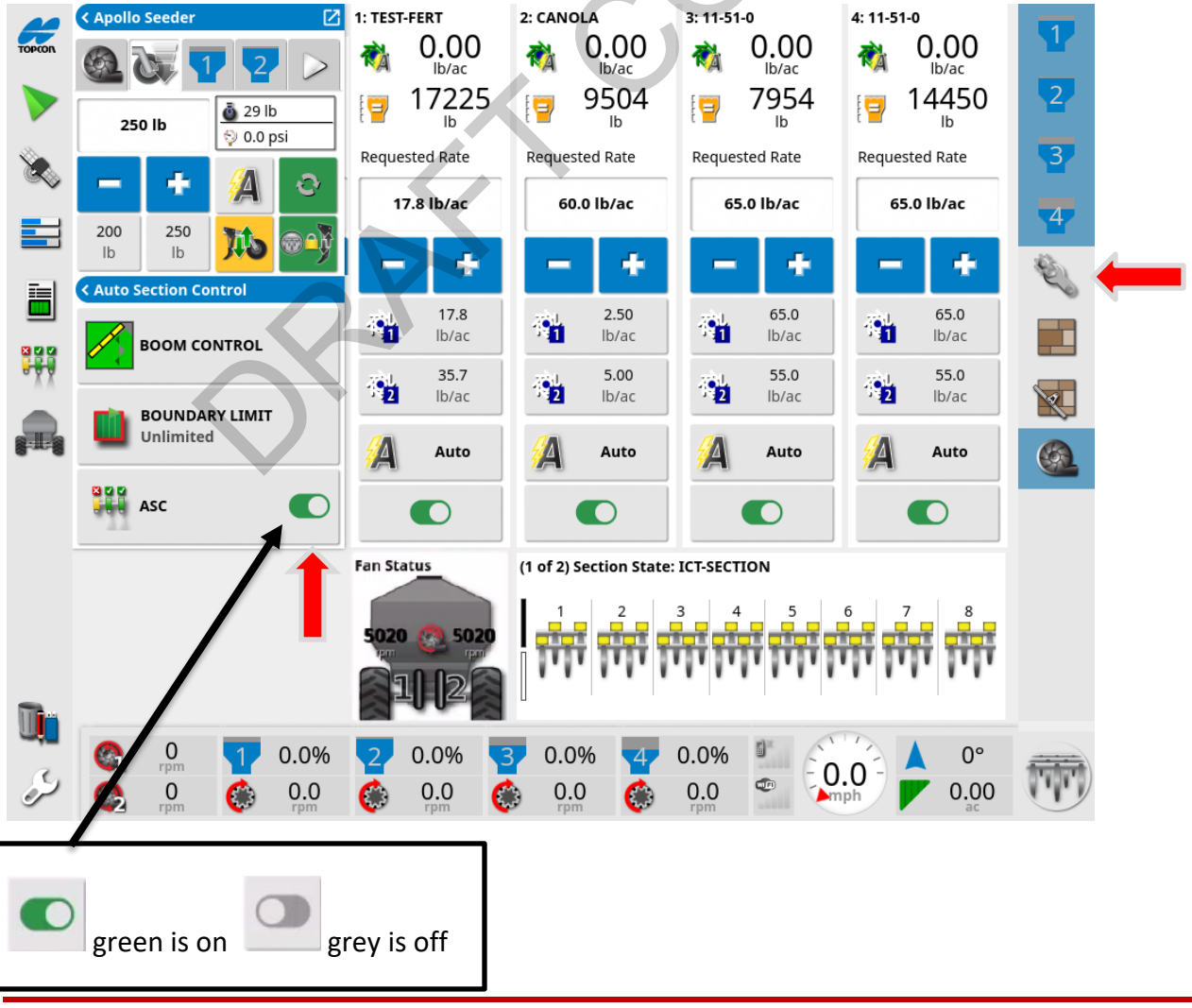


Note: There is a several second delay for features on the screen to change to the colour green, this is based on the transition time of the product from the metering wheels to the openers.

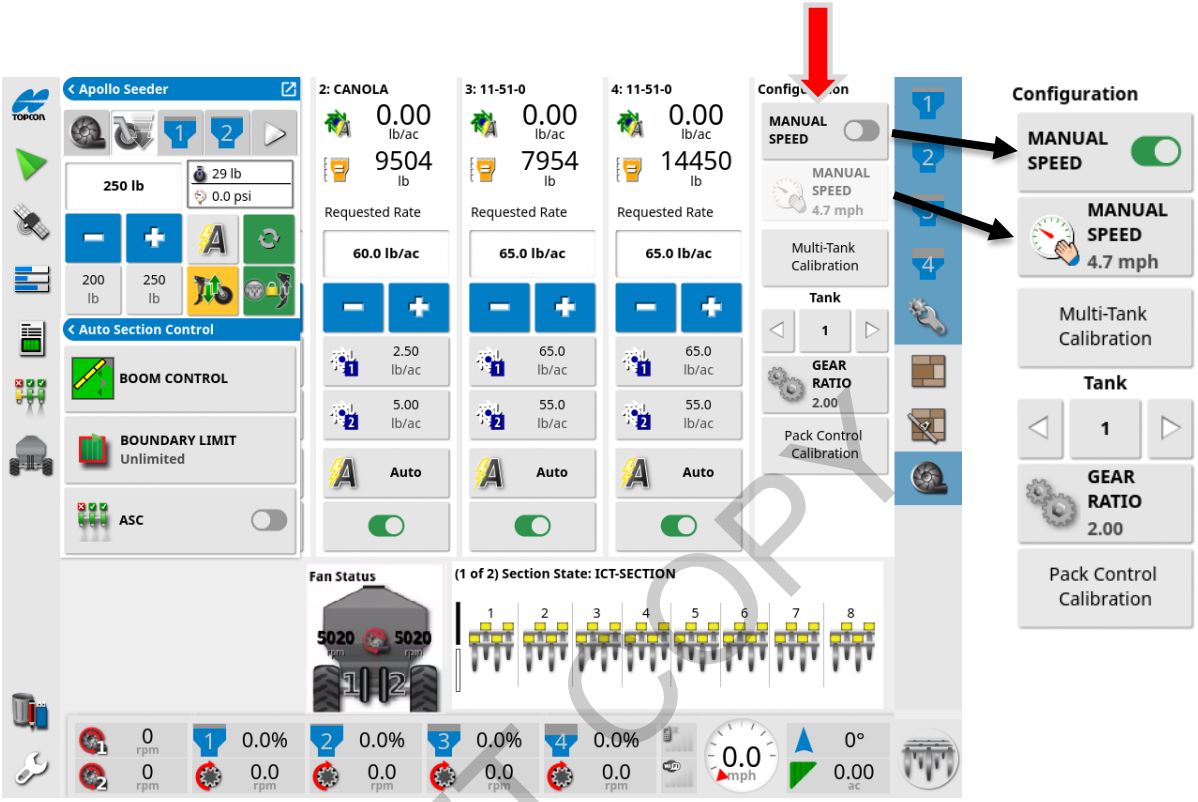
It is recommended that a run check be performed to ensure that no primary or secondary runs are blocked. This will also ensure that all runs are routed properly to each corresponding head, as well as to the correct port in the seed boot.

Start by lowering the openers to the ground and ensuring the fan or fans are running and the collector flappers are in the correct position as per your preference.

On the Home screen turn of the **ASC,** and touch the wrench and gear icon  located on the right hand side of the screen.

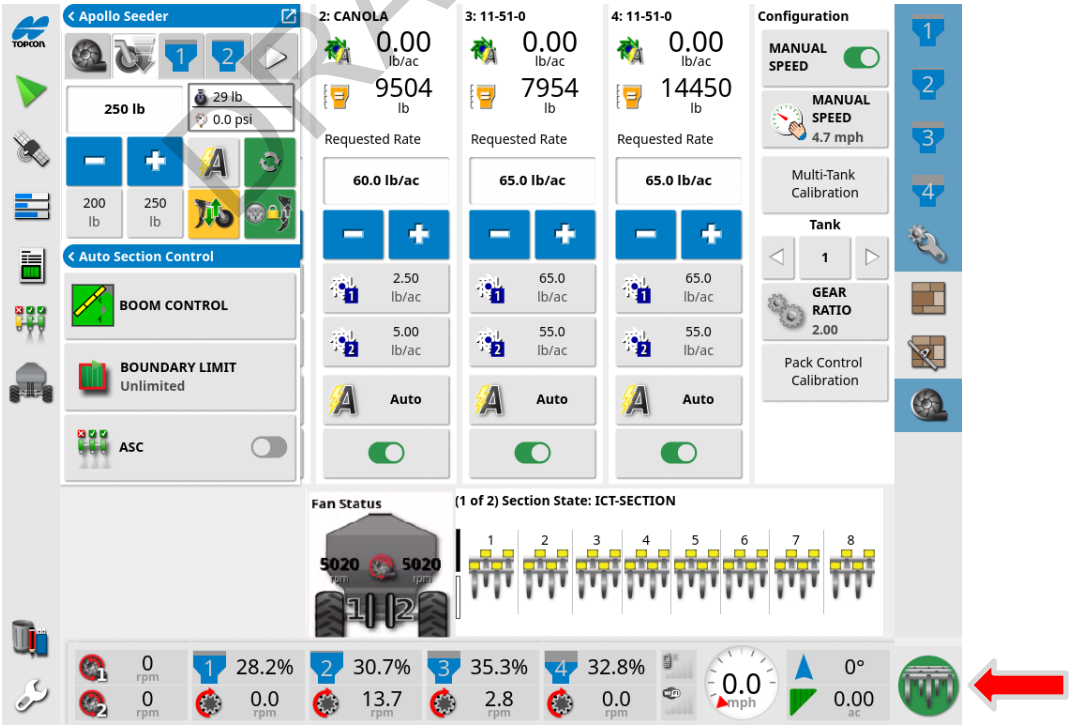


Touch the Manual Speed button, the icon should turn green, and the speed readout box will darken.



Now touch the Master Switch

** Caution the metering will now engage and start distributing product**



Allow the system to run for approximately 10-15 seconds.

Go to the drill and look behind each seed boot to make sure the correct product has come out the intended port of the seed boot.

If you find no product behind the seed boots:

- check for any plugged or pinched hoses

-ensure applicable tanks are turned on

-ensure collector flappers are positioned correctly

-ensure tank shutoffs are open

-ensure fans are operating

If you find the seed and fertilizer are being dispensed backwards:

-ensure secondary hoses are connected properly from the head to the boot

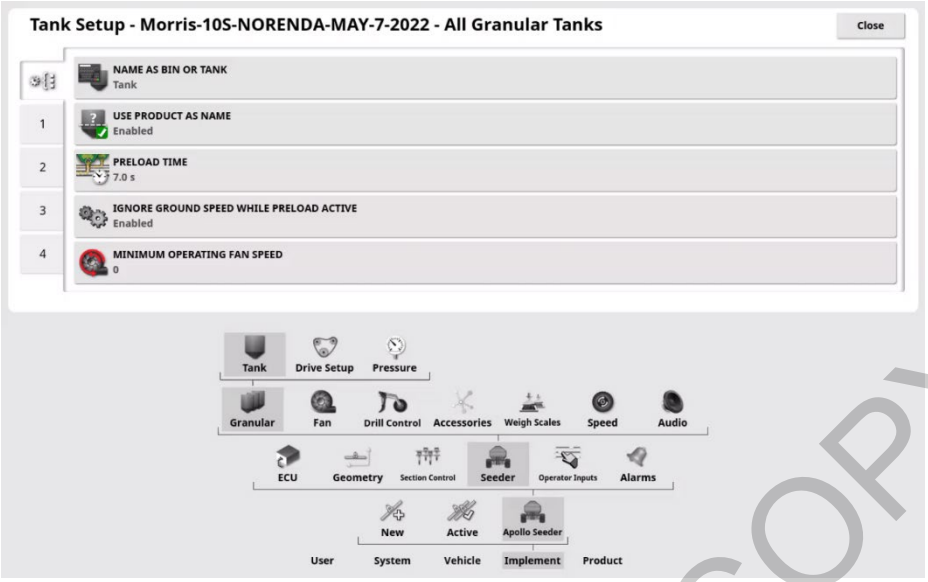
-ensure the primary hoses are connected properly off the front of the cart and at the couplers

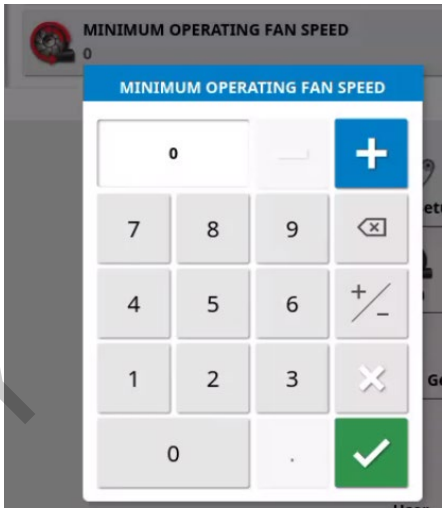
-ensure the collector flappers are positioned correctly

****Turn the ASC back on and turn off the manual speed before you begin seeding****

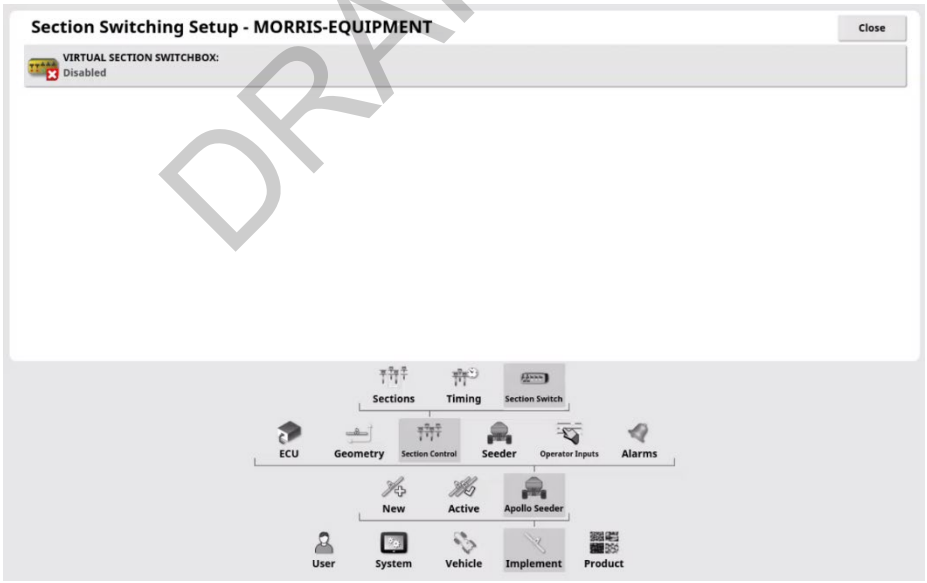
With this system you may also check on each individual electric motor to be sure they are dispensing product. To do so perform the following steps:

Touch the Setup Wrench:
Navigate to **IMPLEMENT—APOLLO SEEDER—SEEDER—GRANULAR—TANK.**

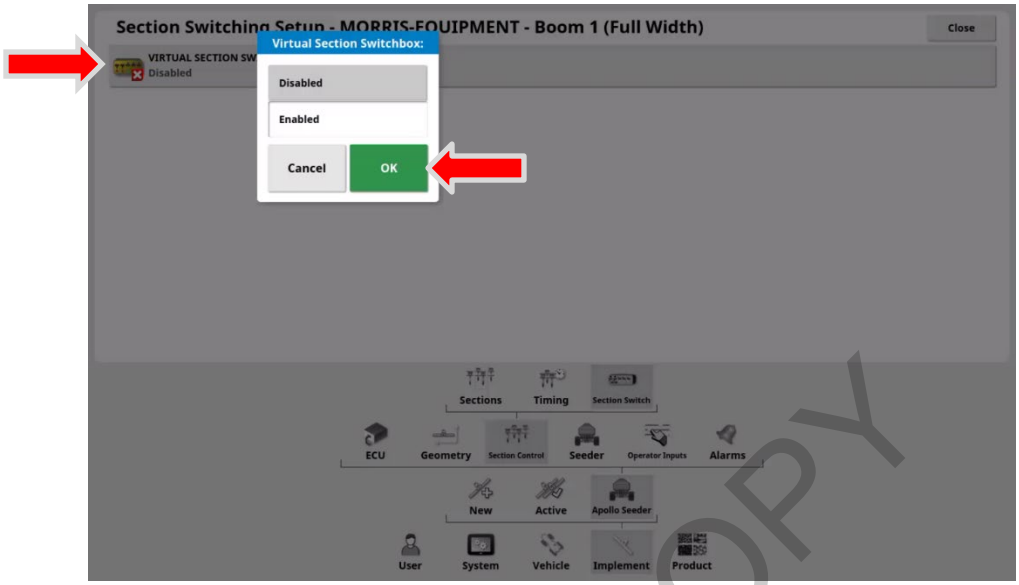




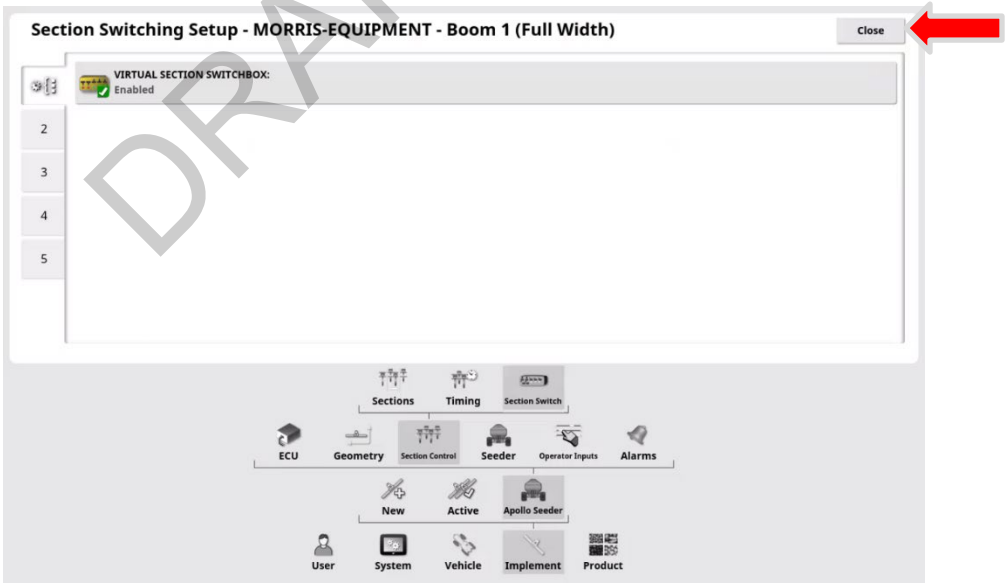
Set the **MINIMUM FAN SPEED** to 0. Touch the green check mark.
Next navigate to **IMPLEMENT—APOLLO SEEDER—SECTION CONTROL—SECTION SWITCH.**



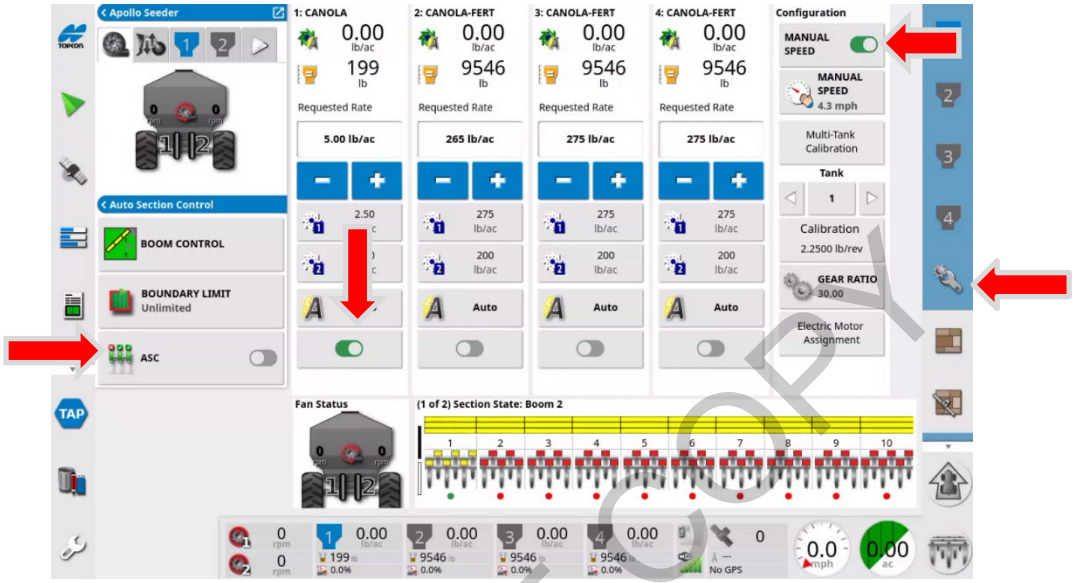
Touch **Virtual Section Switchbox,** select enabled and press OK.



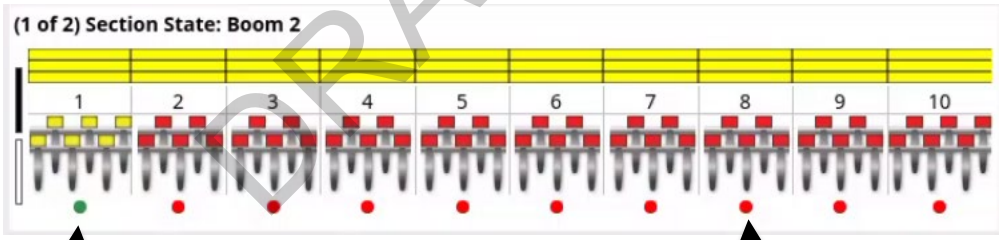
Touch Close, and return to the Seeder Home Screen.



Once you are back to the **Seeder Home screen**, ensure the **ASC** is turned off, touch the configuration icon  and turn on manual speed. Turn on only the tank you which to check motors on, in this case we will check tank 1.



In the Section State box, turn off all sections except section 1. Once the sections are turned off the indicator light below should change from green to red, and the sections will turn from yellow (READY), to red (OFF)



Section State: Yellow with green indicator = READY

Section State: Red with red indicator = OFF

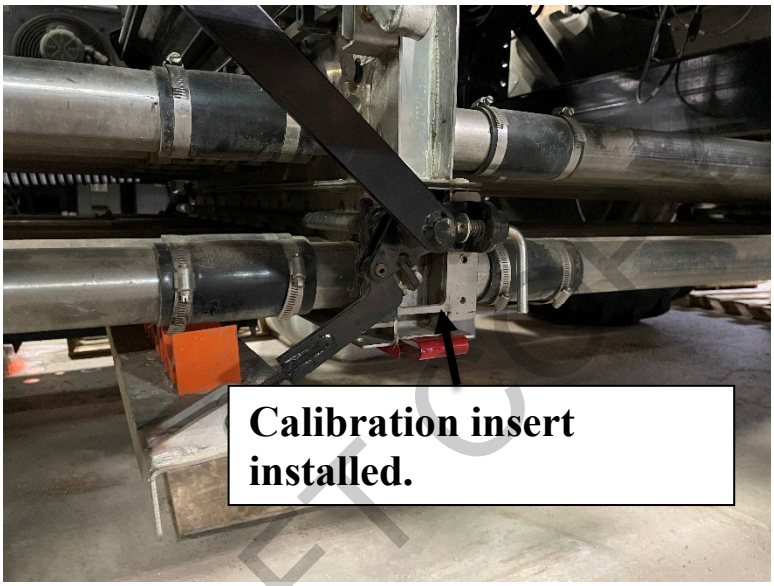
****Note: ensure your boom section corresponds with the tank that you have on****

Tank 1- Boom2
Tank2- Boom3
Tank3- Boom4
Tank3- Boom5

There are two ways to verify your motors are turning and dispensing product:

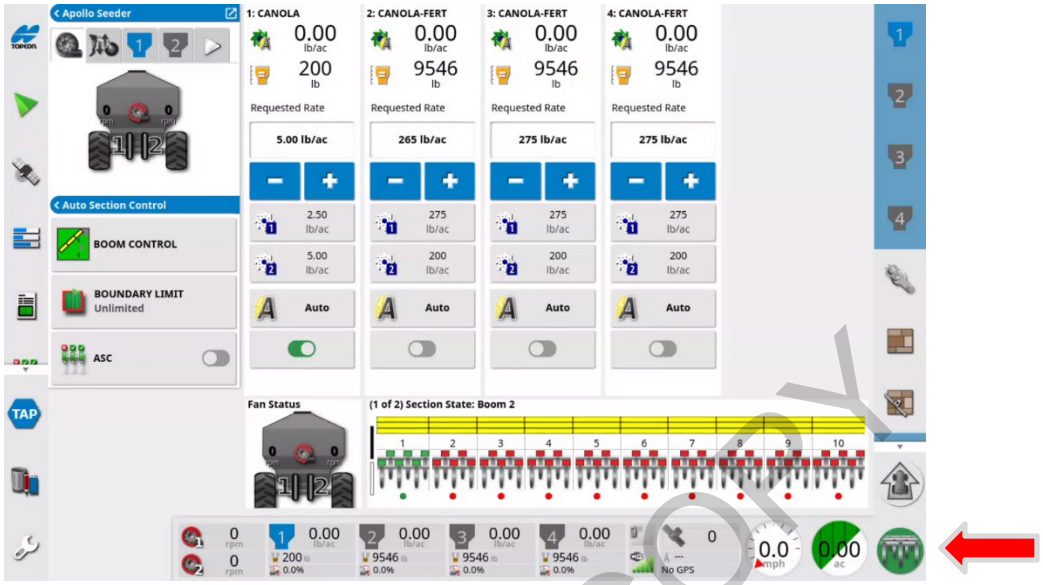
-With the fans ON, have a helper check the ground below the openers after each section is toggled ON/OFF to ensure product comes out.

-With the fans OFF go to the tank that you are checking and open the clean-out door located on the bottom of the collector. Install the calibration insert, move the flappers to the bottom/clean out position.

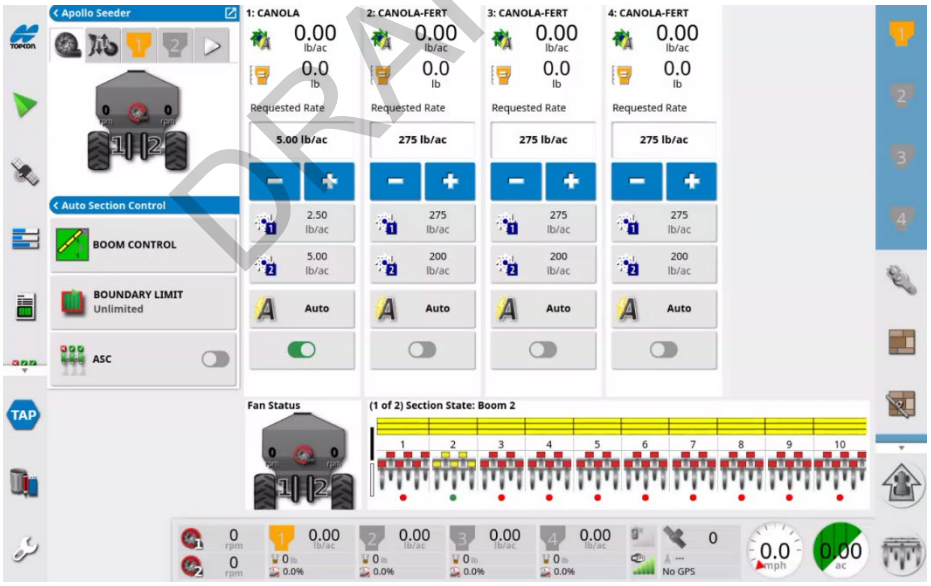


Remember when you are verifying product, that the sections are numbered 1-10 right to left from the front view of the air cart.

Touch the Master and let the metering run for 5-10 seconds, then touch the master again to stop.



Product should have run out the bottom of the collector belonging to the selected tank.
Once you have verified the product has been dispensed, turn off section 1, turn on section 2 and repeat for the remaining sections in tank 1.



After you have finished verifying all the motors in tanks 1, turn it off turn on tank 2. Remove the calibration Insert from tank 1, install it into tank2, and repeat the above process.

**Before you begin seeding;

-make sure your clean-out doors are closed, and the flappers have been set to your desired position.

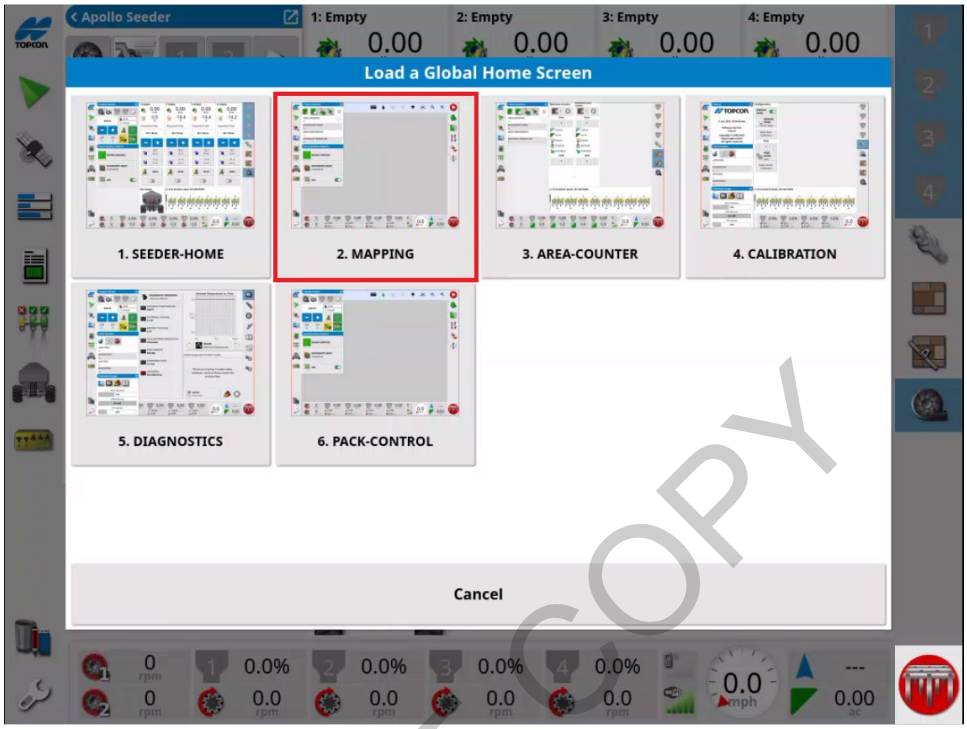
-return to the tank menu in setup and reset the minimum operating fan speed to 2000.

-return to the section control menu in setup and disable the virtual switch box to avoid accidentally disabling any sections.

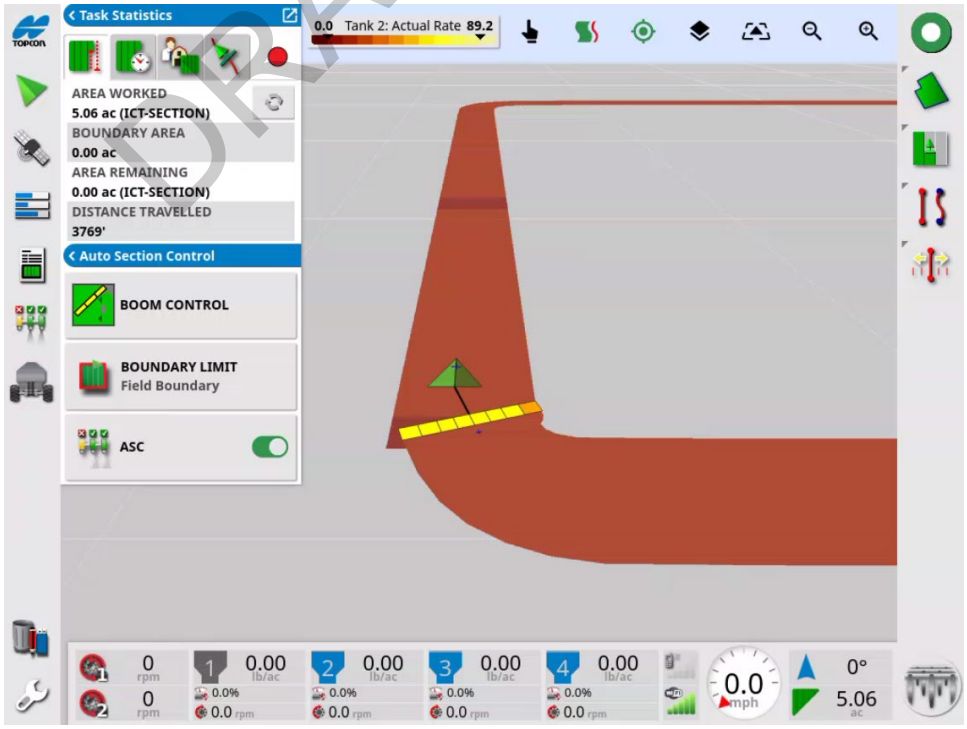
-turn ASC back ON

Notes:

Select **MAPPING**

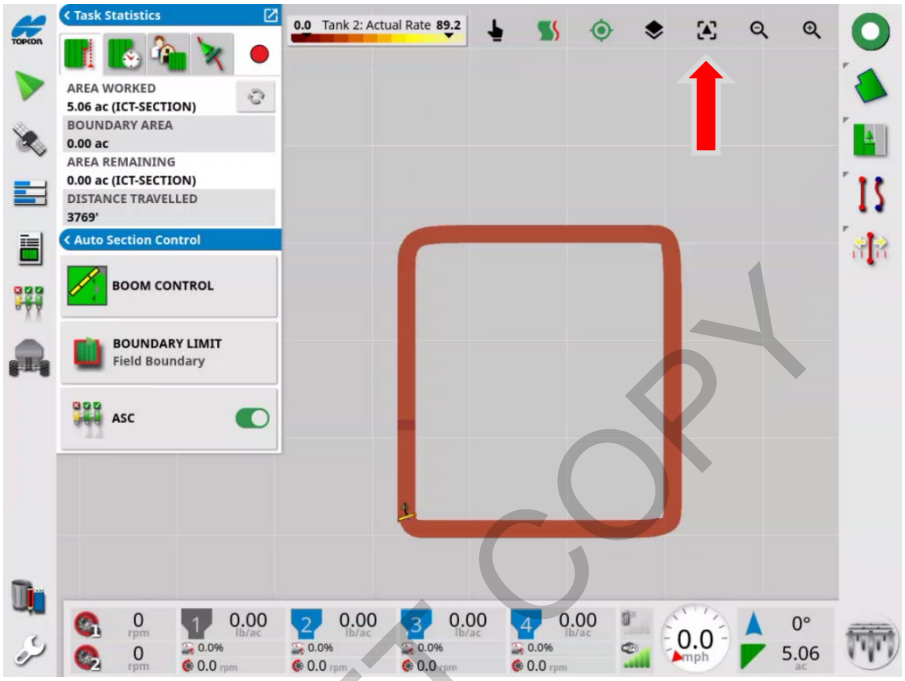


Proceed with your headland pass. Once the outside pass is competed, drive straight into the treated area, we want a closed perimeter of coverage.

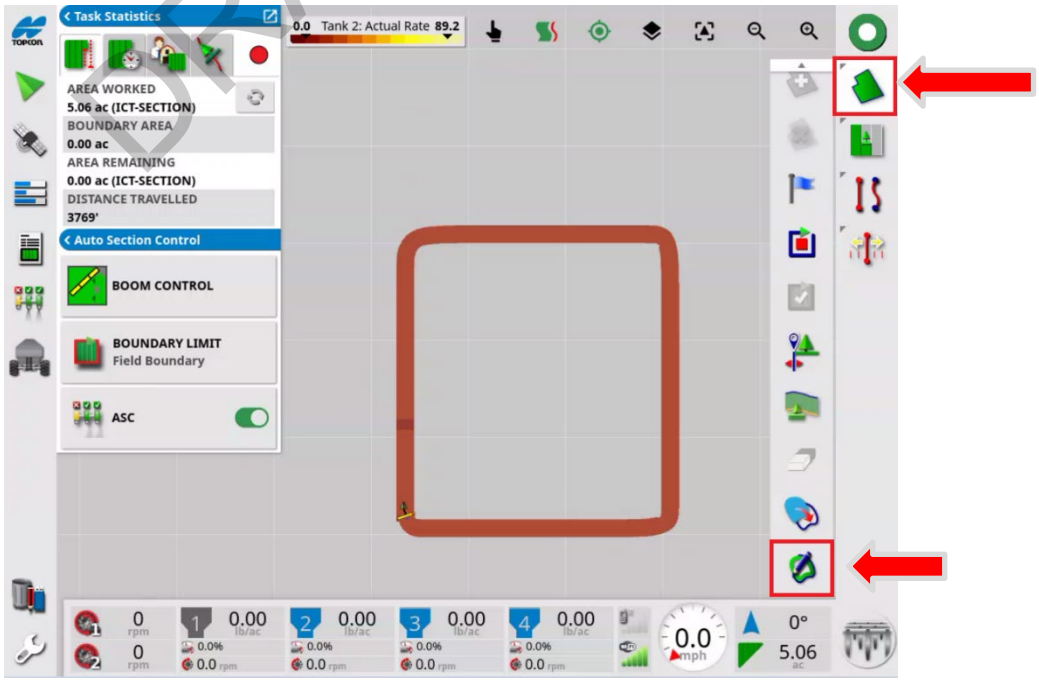


Touch the Toggle Map view icon  .

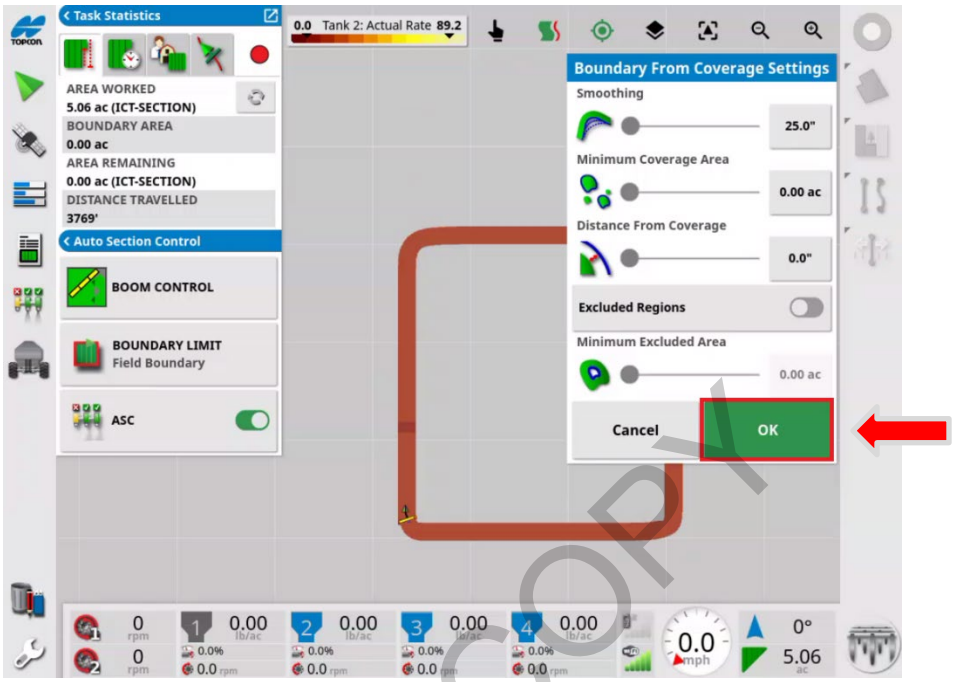
Note: how the head pass is a closed loop of coverage, we cannot have any open gaps.



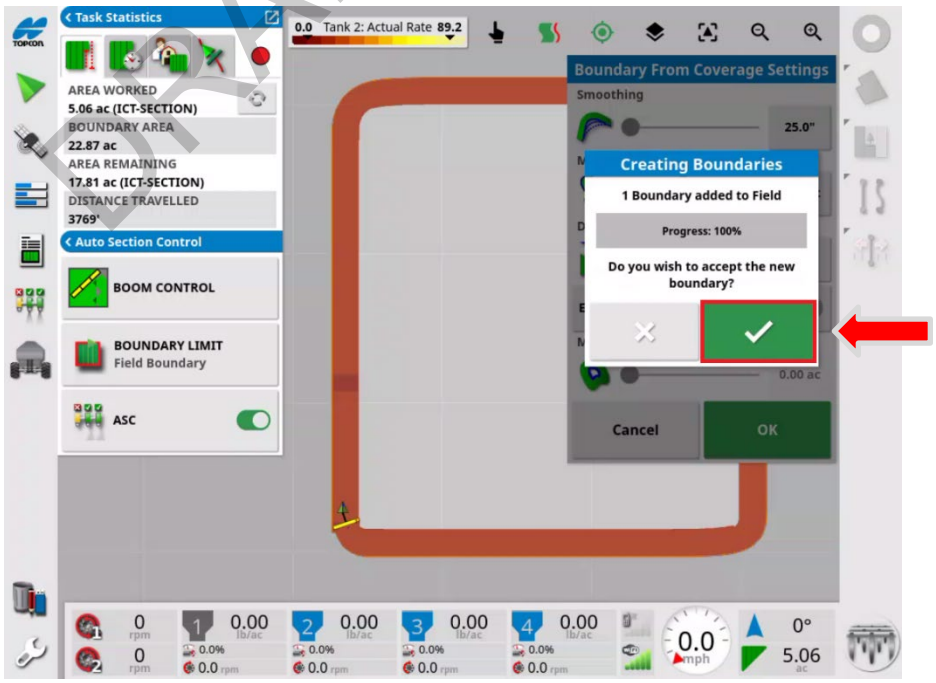
Touch the Field icon  followed by the Create Boundary from Coverage  Icon.



Use the default settings. Proceed by pressing the Green OK box.

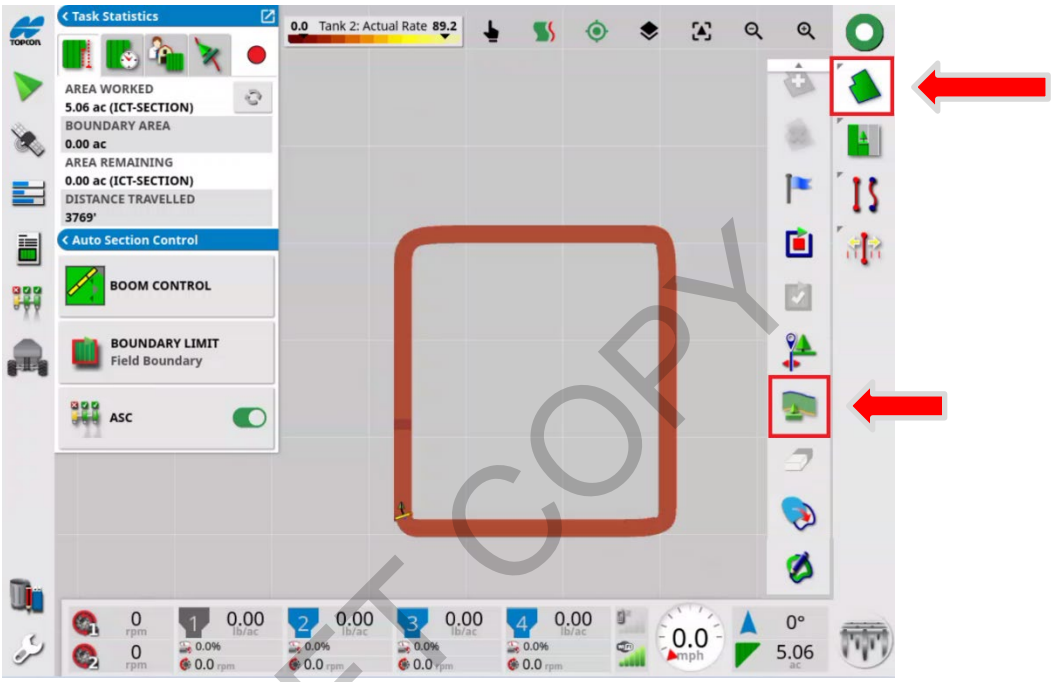


Creating Boundaries message will be displayed. The outer area of the boundary will darken with less visible grid lines. Accept the Boundary by proceeding with the Green check mark.

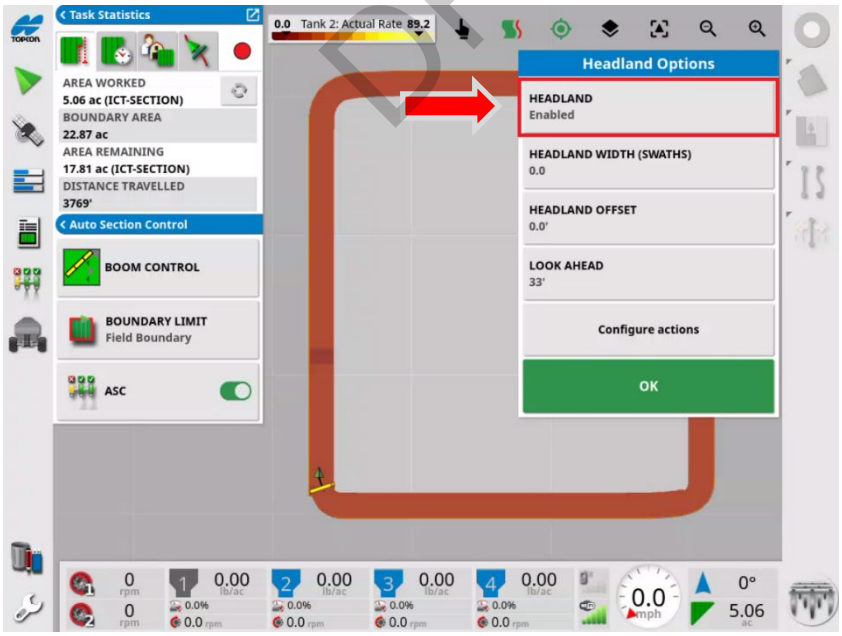


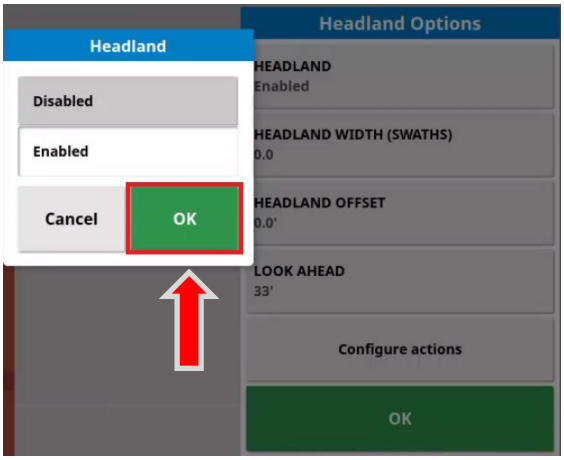
Now that a boundary has been created, there a several new Headland and ASC options which have now become available.

Press the Field  followed by the Configure Headland for this Implement  icon.

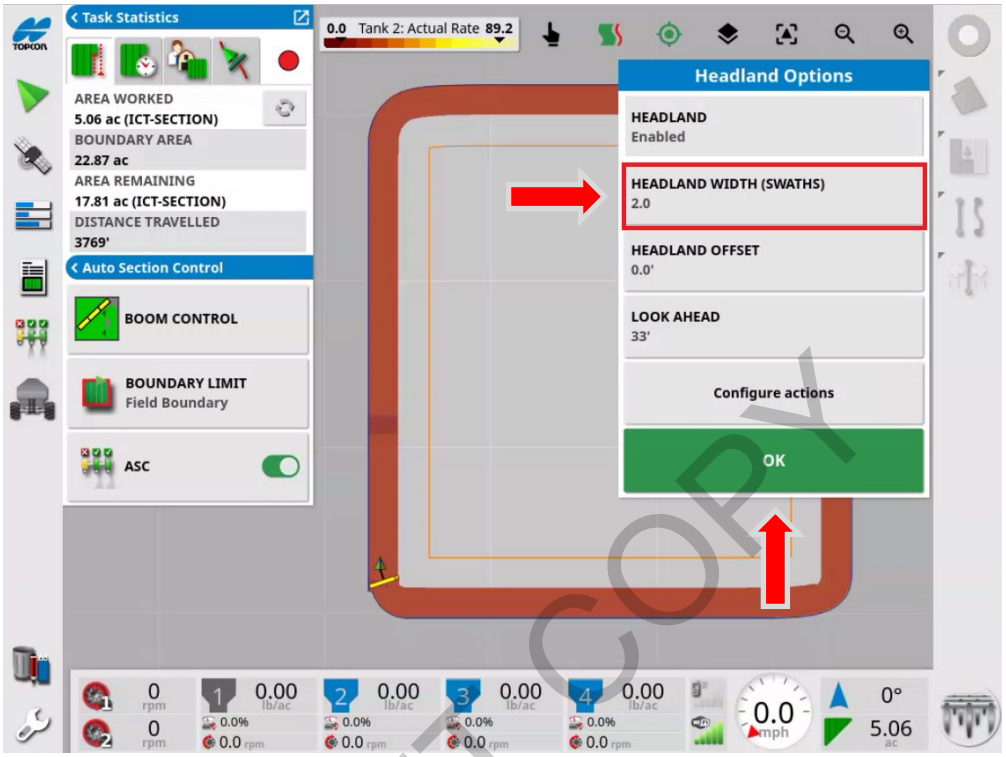


Press on the Headland icon, select Enable followed by the Green OK box.





Press on the **Headland Width (Swaths)** icon.



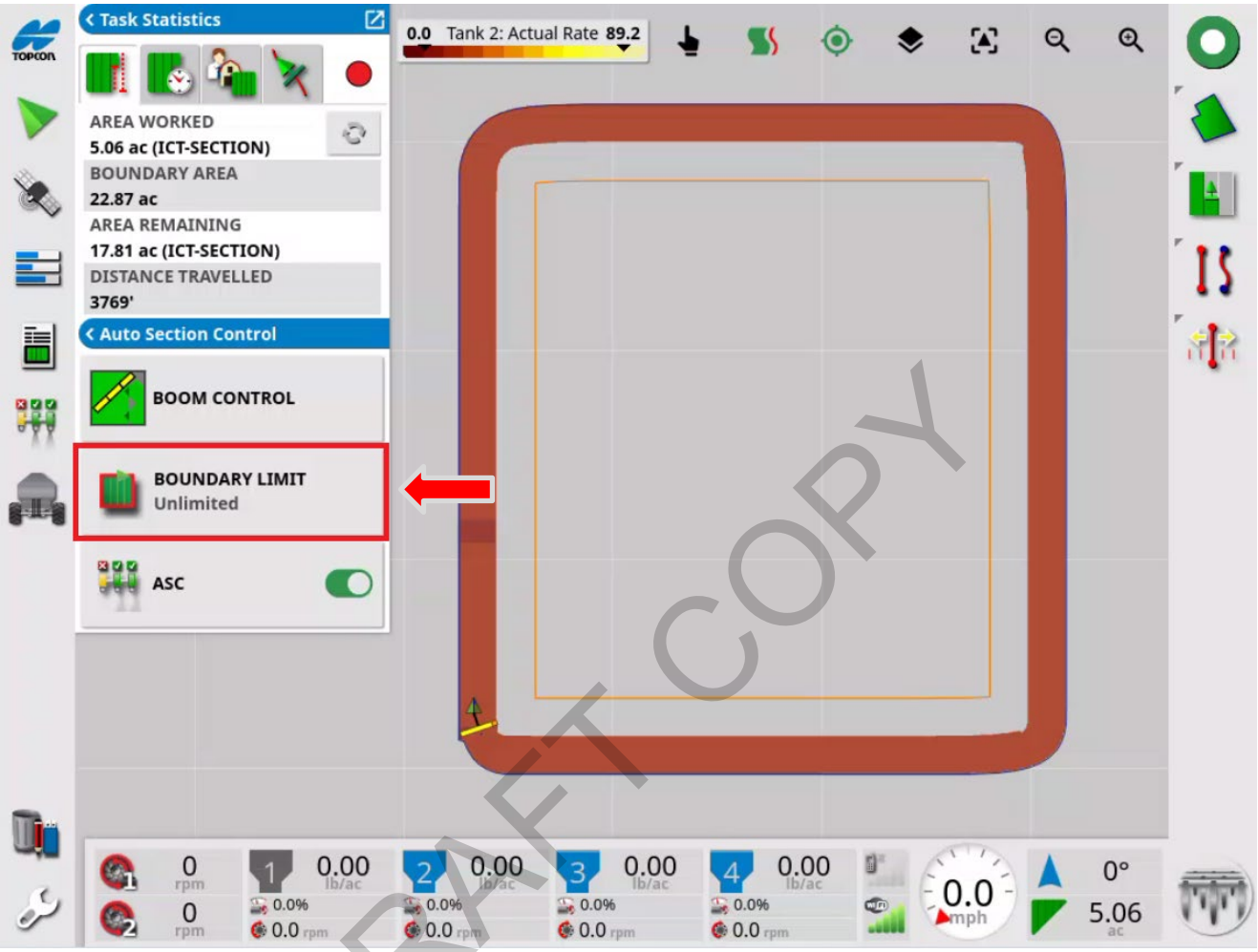
Enter the number of headland swaths desired. Example: 2.0 Swaths

Note: A larger number of swath widths maybe used, this will depend on your implement width and vehicle travel speed.

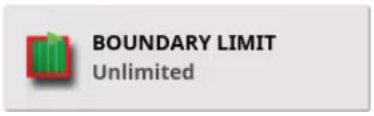
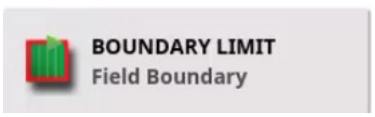
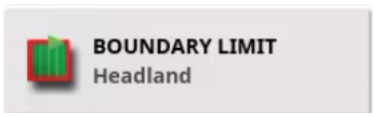
Apply the settings with the Green check mark

A virtual headland peremiter will now be displayed in an **Orange** border. Review and Apply the settings with the Green OK box.

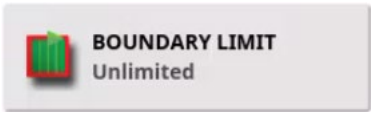
Under the **Auto Section Control** mini view, Press the **Boundary Limit** Icon.



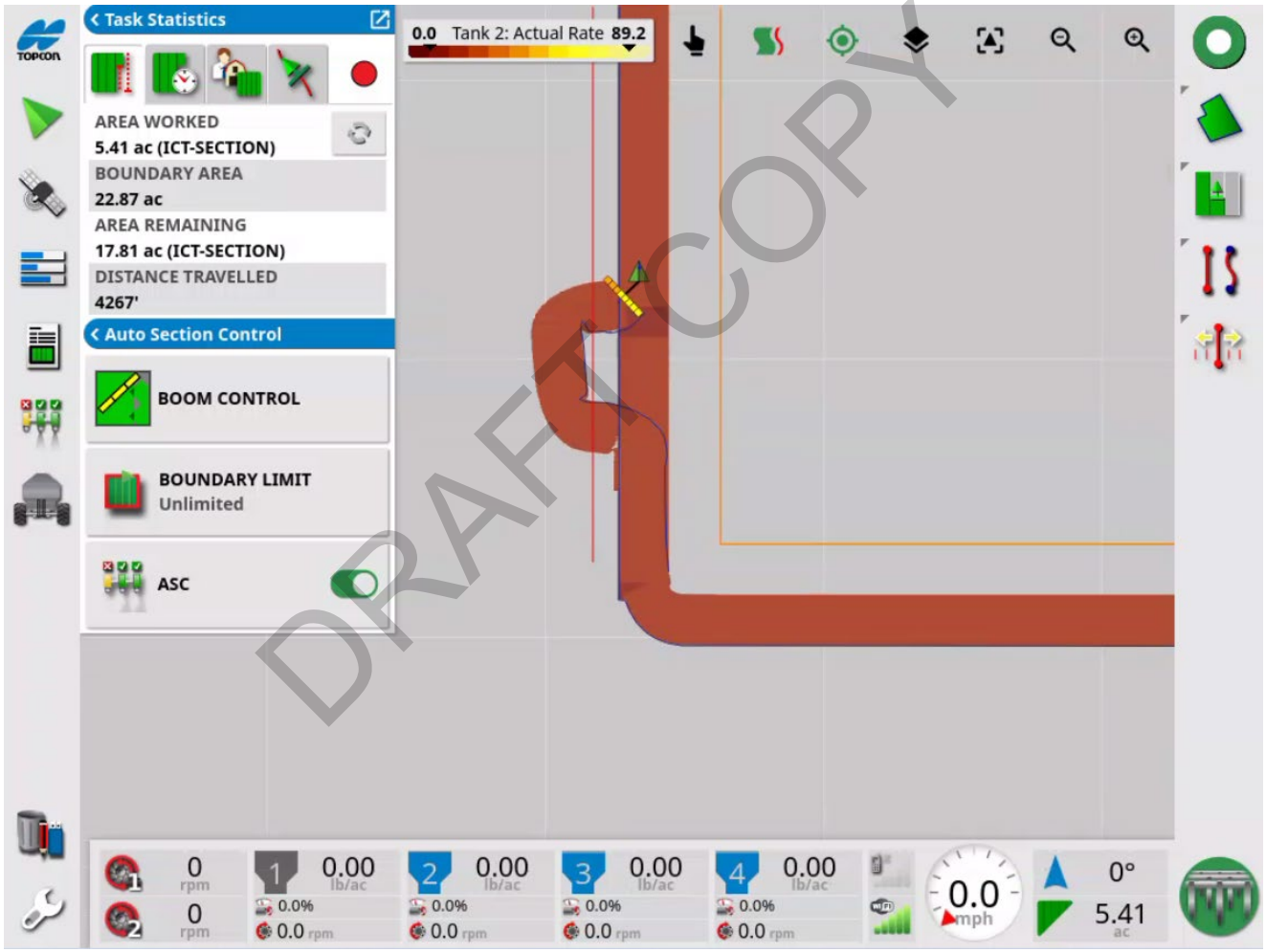
The following settings are available:

Unlimited	Field Boundary	Headland
		

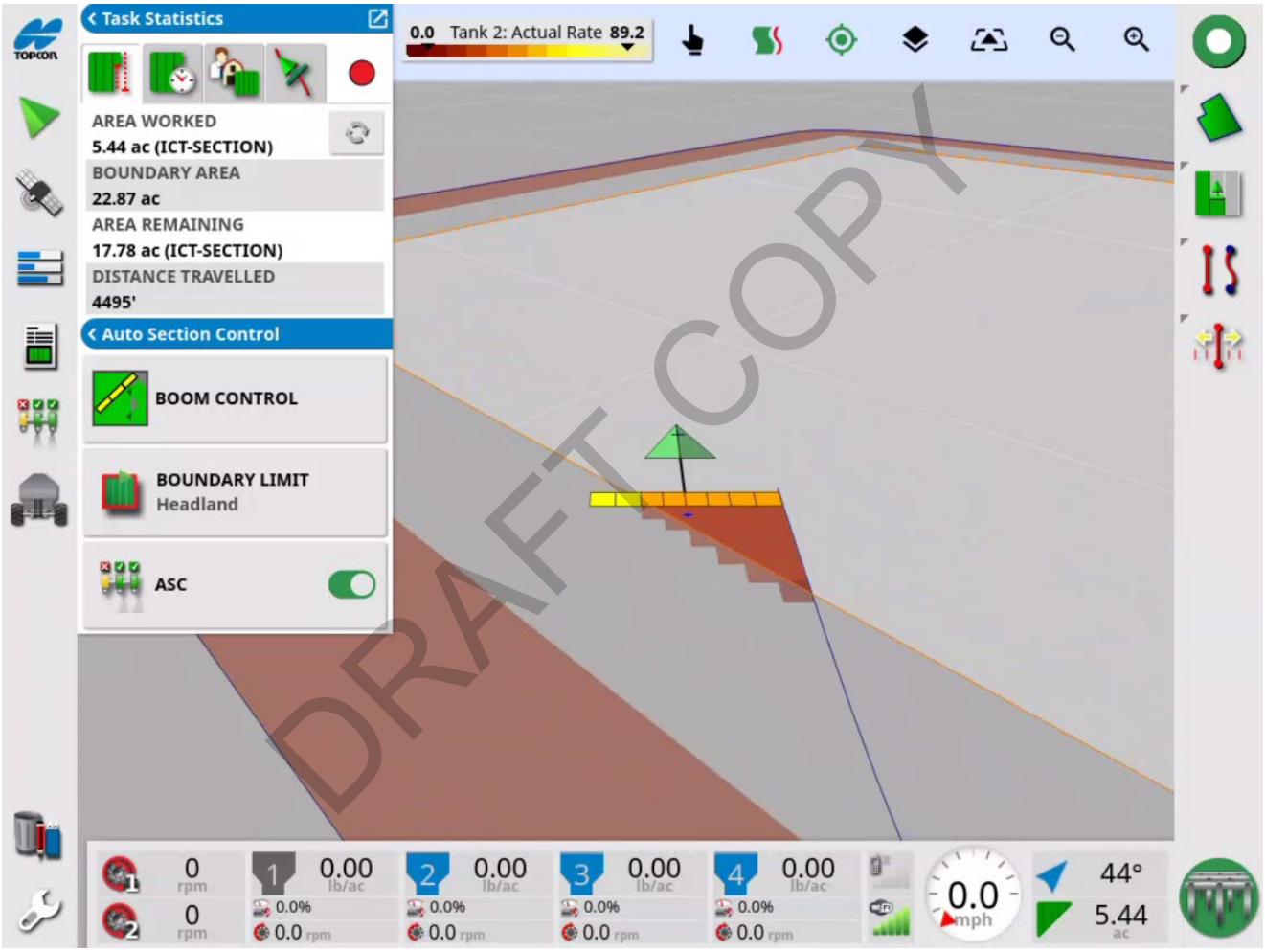
You may also toggle you view back to  Perspective View



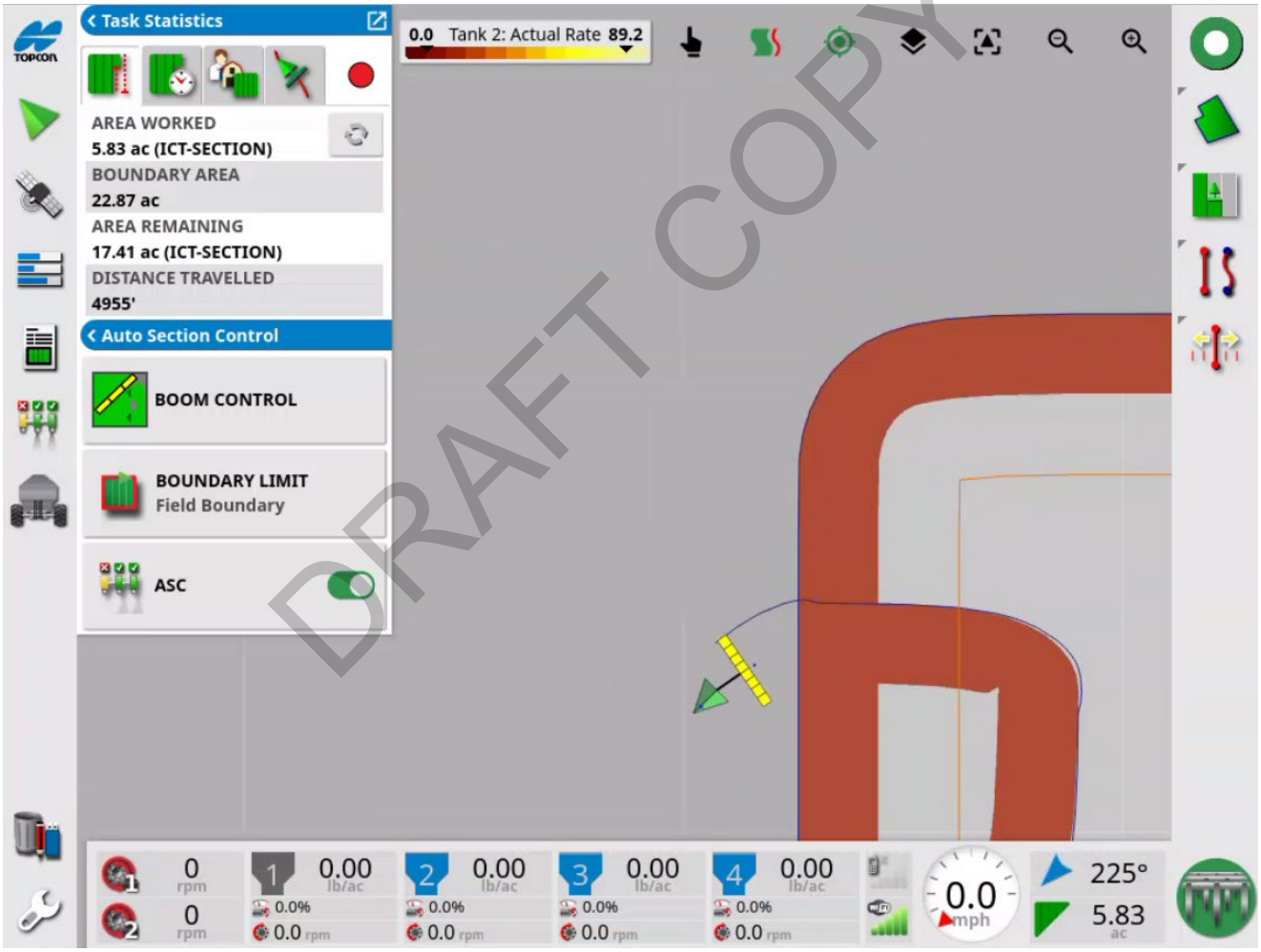
Unlimited, Provides unrestricted application of product in all areas. Allows hired men to seed outside of your fields into the neighbor's field. It is recommended to use only seed on **Headland** and **Field Boundary** settings.



Boundary Limit - Headland - will exclude the headland area from receiving product, thus this region is seeded last to cover up any tracks and prevents seed disturbance and over compaction.

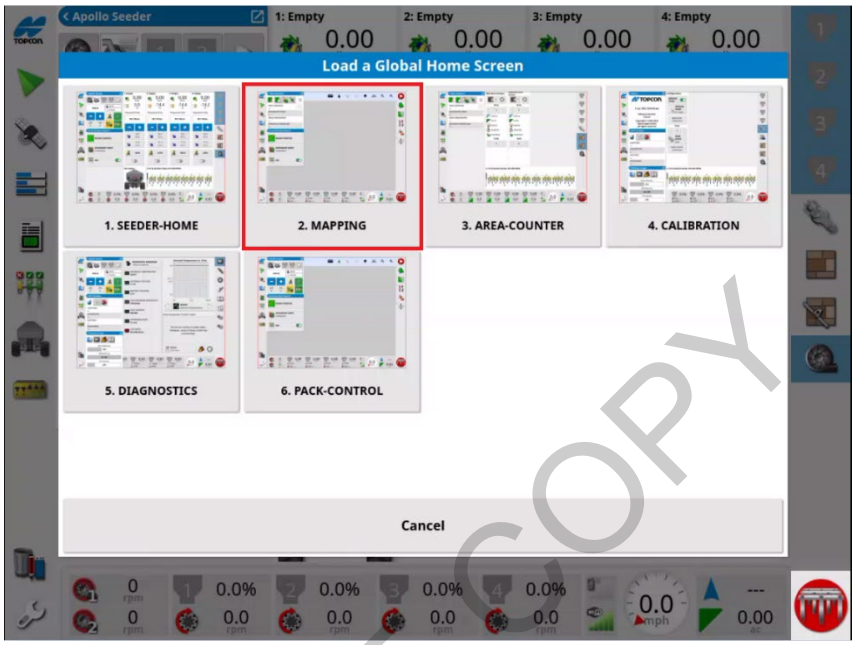


Boundary Limit - Field Boundary –the application of product within the boundary zone of the field. If the implement travels outside of the boundary of the field the metering system will not activate. This is useful to ensure the operator is seeding inside the correct field. Also, during Headland turns it prevents false applications as the ASC is not trying to activate the metering with false look ahead predictions.

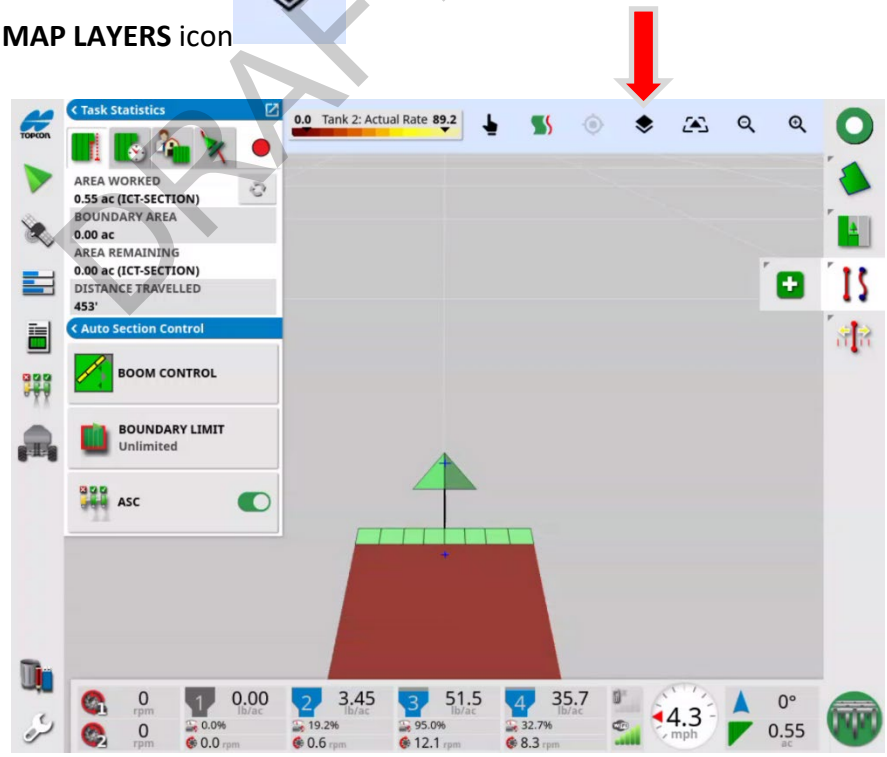


Notes:

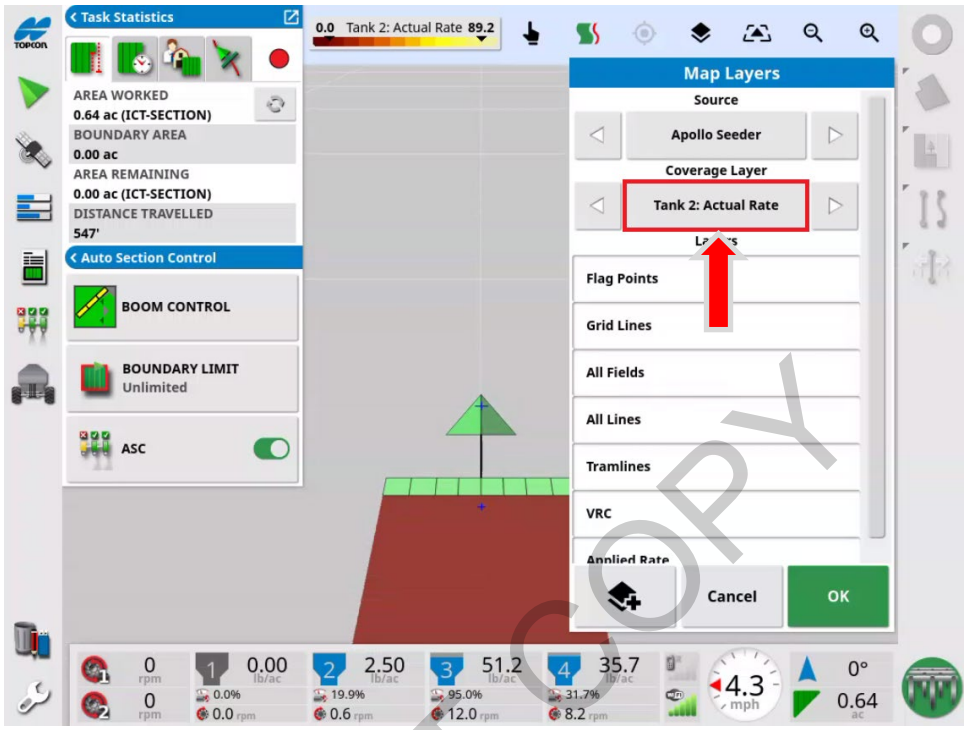
Swipe up and touch the  icon. Select **MAPPING**



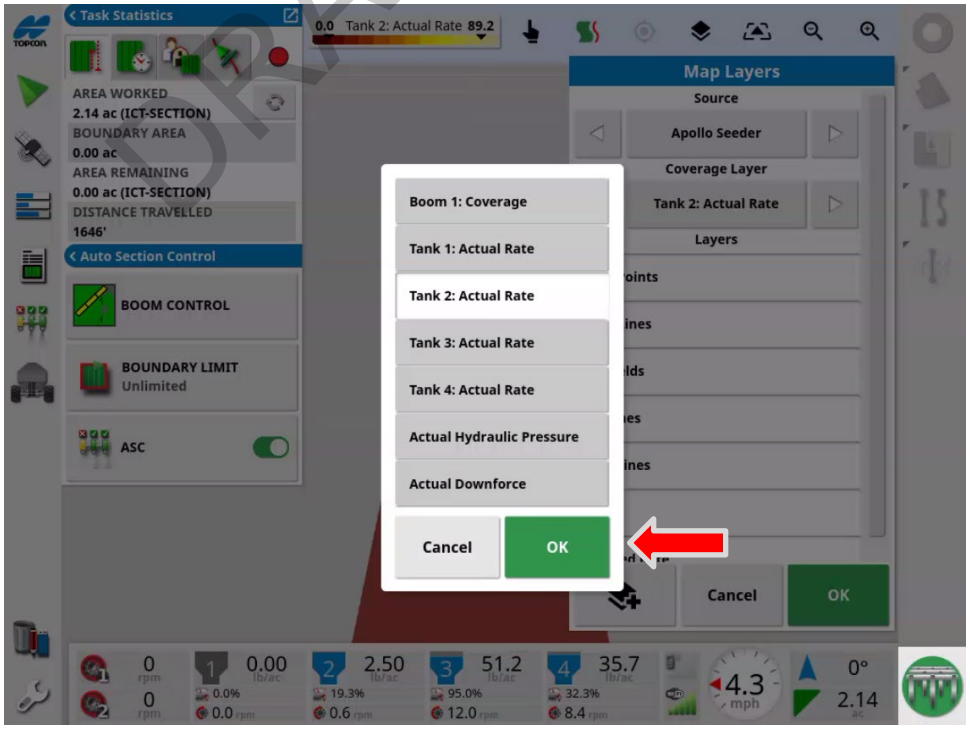
Touch the **MAP LAYERS** icon 

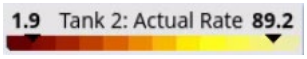


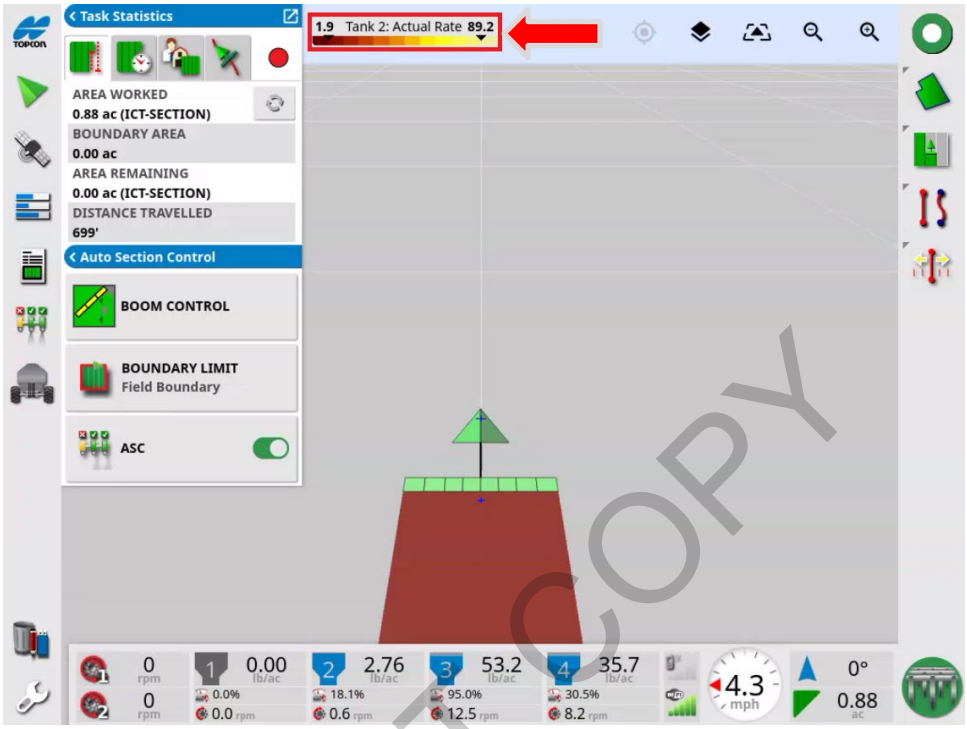
Now, touch the **Coverage Layer** box.



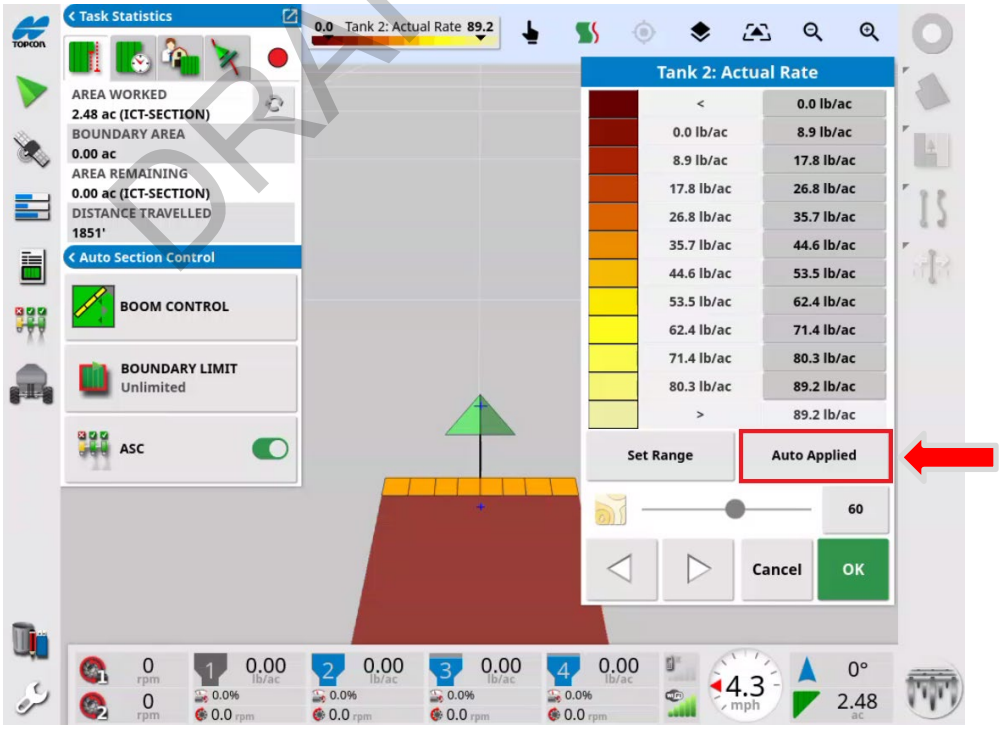
Touch desired tank and press the Green OK box.



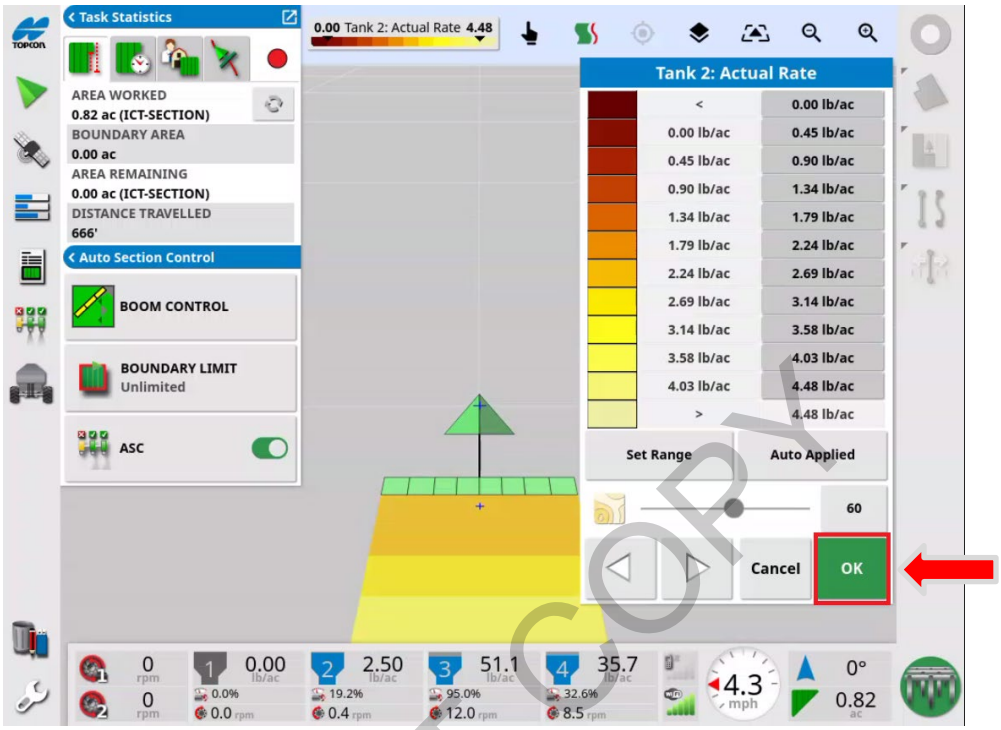
Press on the Color Band icon  at the top of the screen.



Now press the **Auto Applied** icon.

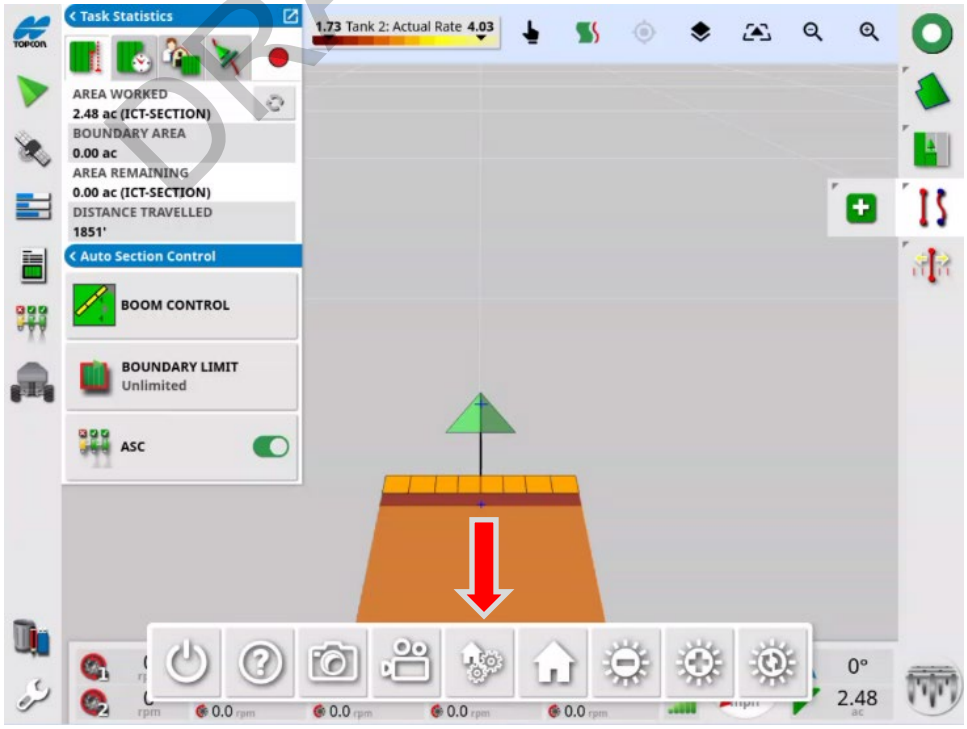


The map will now show the range in which the tank is currently seeding. Accept with the Green OK box.

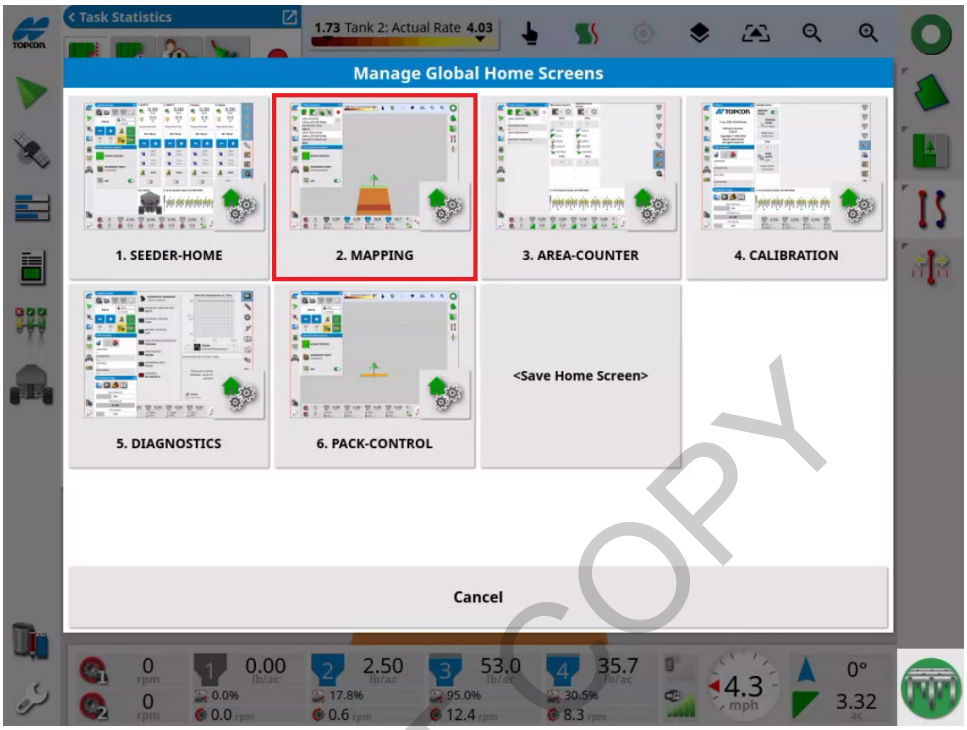


Repeat the above steps for all your tanks.

Save the Map layer settings by swiping upwards and selecting the  Icon.

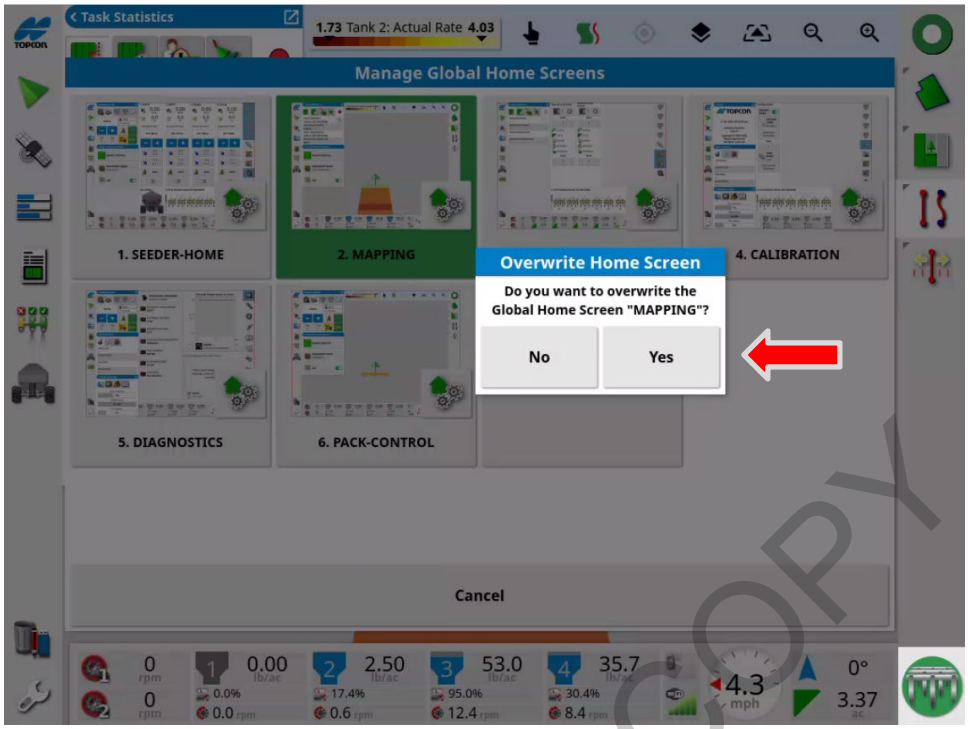


Touch the mapping box.

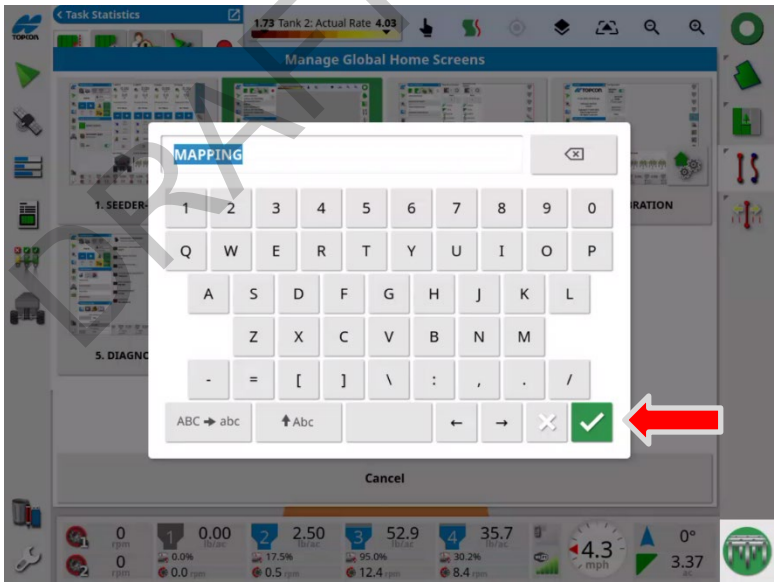


A prompt will be displayed, Do you want to overwrite the Global Home Screen “Mapping”?

Touch **Yes**



Simply Press the Green Check Mark to confirm the name.



The Actual Rate Data will now be displayed as a multicoloured graph, each colour shade represents the lb/ac value. Toggling to the overhead view  is a useful method to validate that the application rates have been applied properly. Return to the Map layers  icon to

select and view the other tanks.

Notes:

Section 9:
Pack Control

Section Contents

Pack Control Installation

Install Pack Control Spindle and Arm to the first opener right of center line on the front row of the main frame.

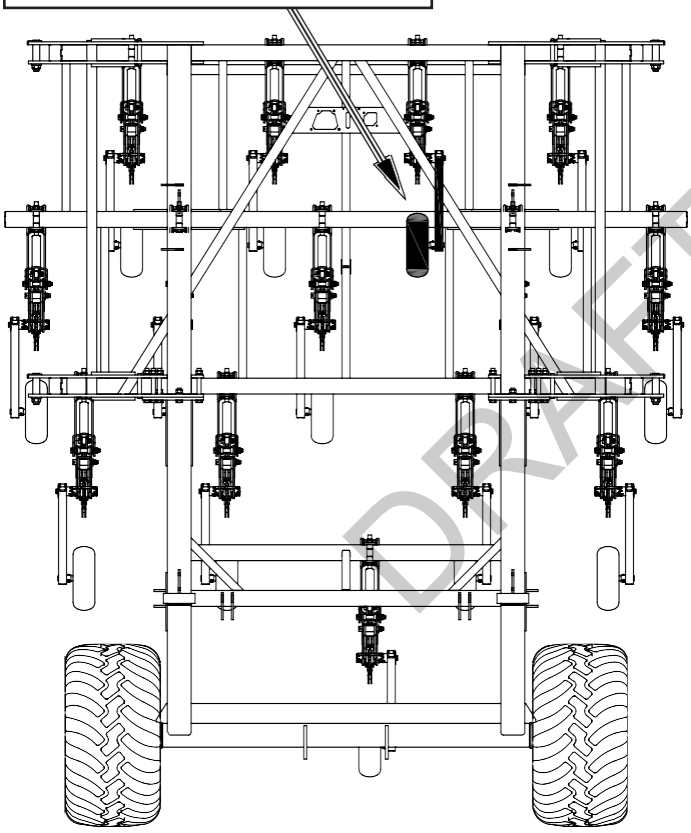
Check to ensure load cell is installed correctly with the stamp "**TOP**" facing upward. (Wire notch at the 9 o'clock position.)

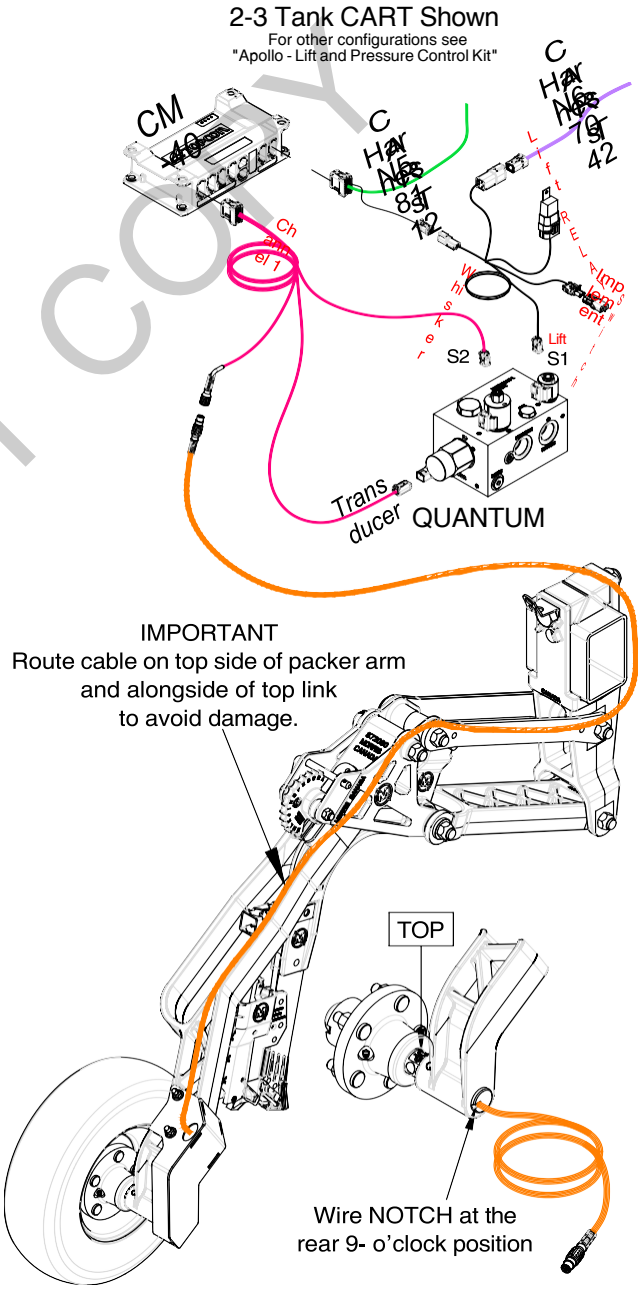
Route spindle cable through slot on cable guard and attach guard to packer arm.

Secure spindle cable to top side of packer arm with tie straps.

Route the cable along the side of the top link to front side of opener avoiding any pinch points.

Install Pack Control Spindle and Arm on the front row of the main frame - First opener to the right of center line.

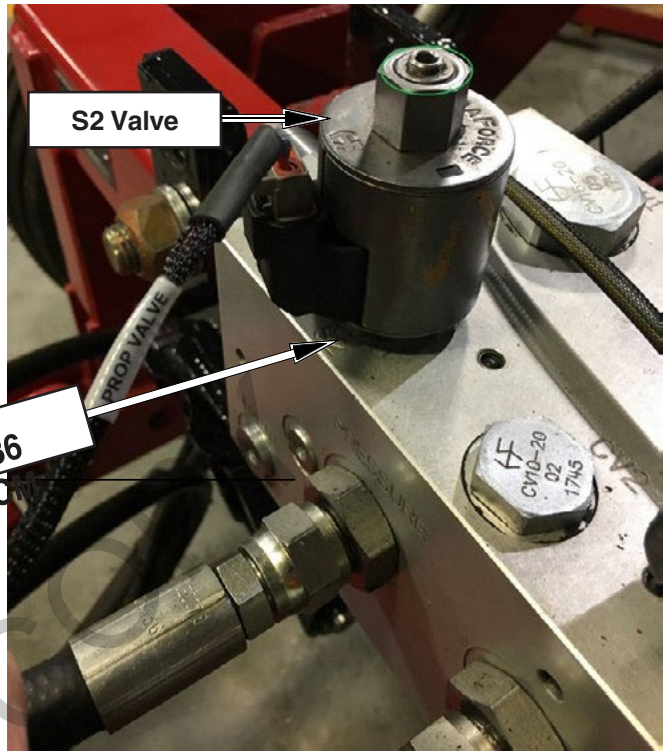




Pack Control Installation - Continued

Check the stamping on the base of the S2 Valve, it should be **TS12-36CM.**

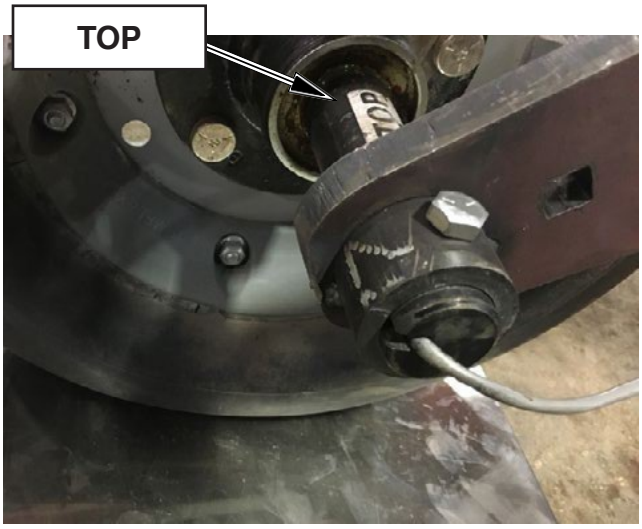
If it is a 36AM cartridge replace it with Valve Cartridge S68007 (36CM)



IMPORTANT

To operate Pack Control, the S2 Valve must have Valve Cartridge - TS12-36CM (Part Number S68007)

The TS12-36CM Valve is optimized for use with the Topcon Pack Control System where as the TS12-36AM Valve is used exclusively with the Jem Control System. The 36AM operating range is incorrect for the X35 Apollo System.

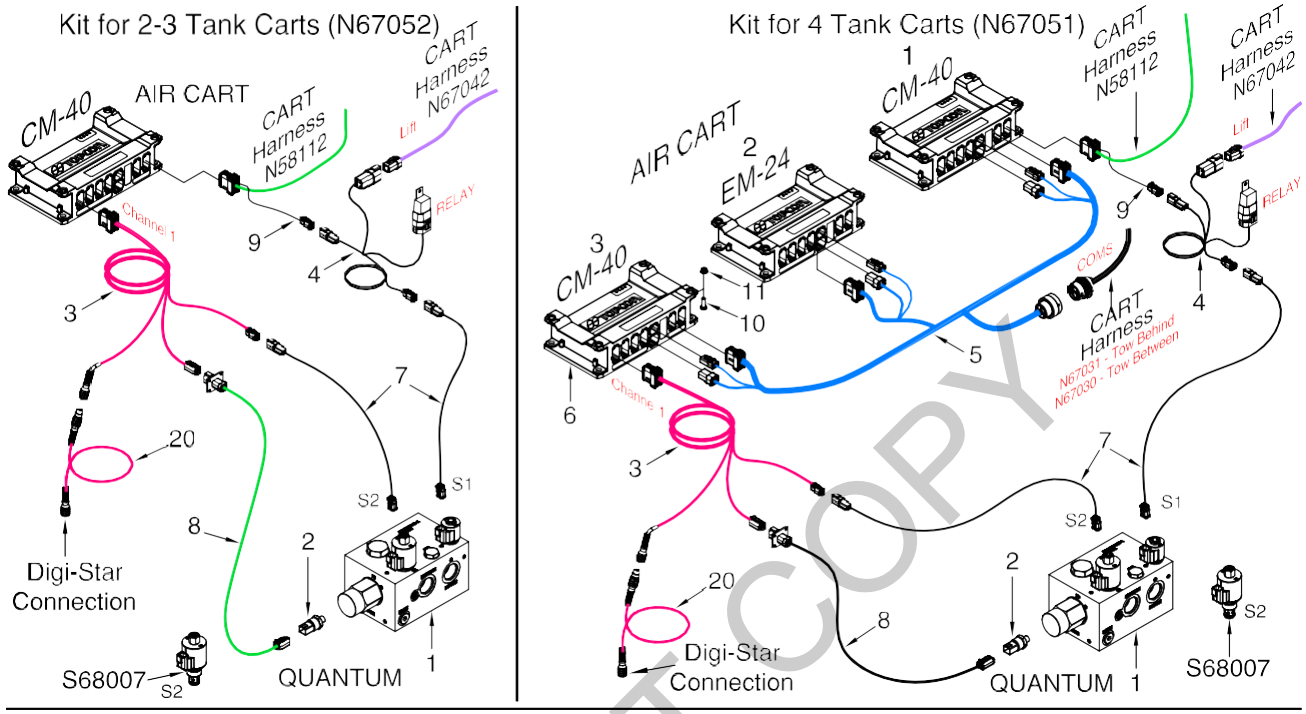


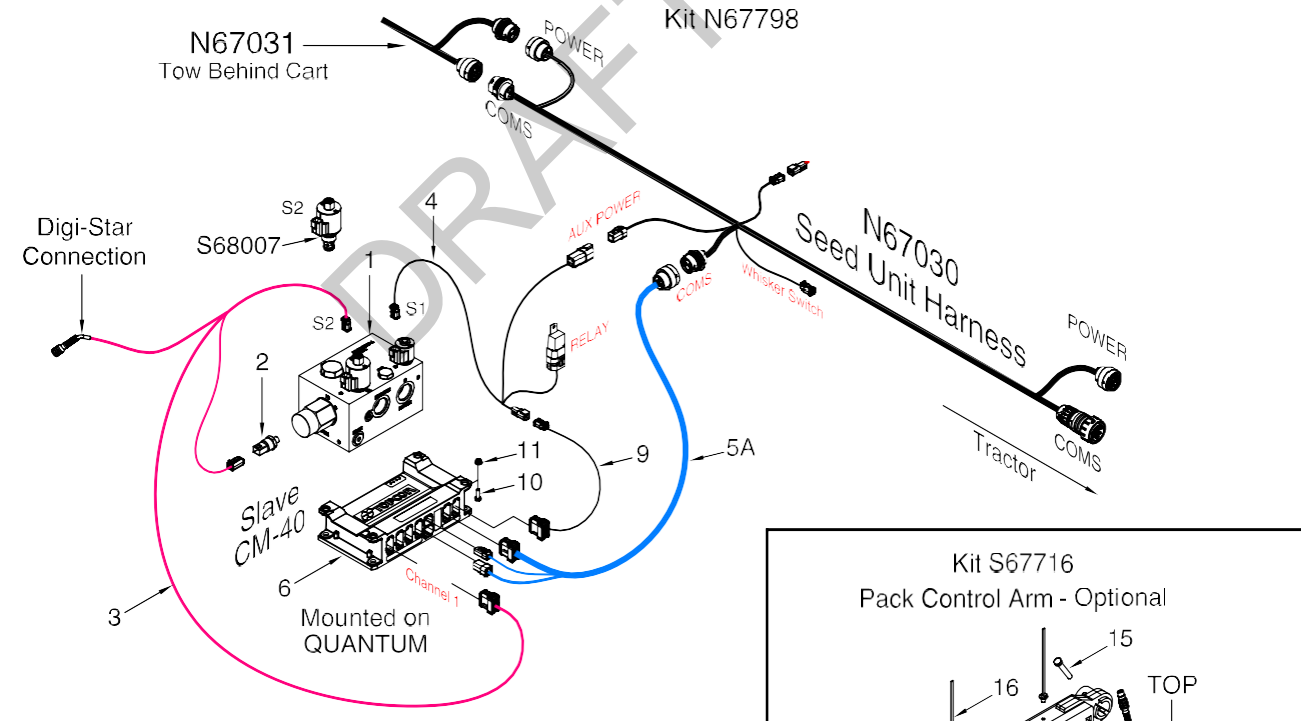
Pack Control Spindle Orientation - Top Decal Must be facing up.

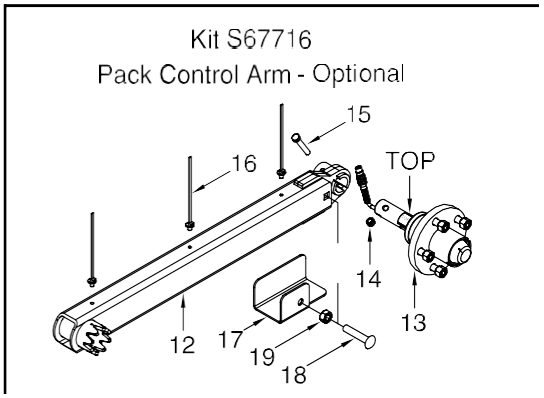
Note: Guard S69154 removed to show Spindle.

Pack Control Installation - Continued

X35 Apollo - Lift and Pressure Control Wiring







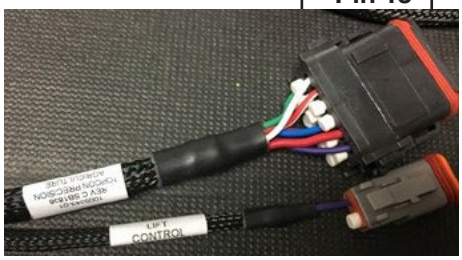
Note: To operate the Pack Pressure Arm, Manifold S64940 requires the S2 valve must be replaced with S68007 Valve Cartridge - TS12-36CM

Pack Control Installation - Continued

X35 Apollo - Lift and Pressure Control Wiring - Continued

Item	Part No.	Description	Qty
1	S64940	Manifold - Opener Control (Requires S68007 see note below)	1
	S68006	Manifold - Opener Control - 2000 psi (Includes S68007)	
2	K62977	Pressure Transducer	1
3	N67045	Harness - Pack Control (1026291-01)	1
4	N67046	Harness - Lift Control (1006258-01)	1
5	N67037	Harness - Triplex ECU Adapter (1005038-01)	1
5A	N67038	Harness - Single ECU (1005036-01)	1
5B	N68000	Harness Extension - 2m - (1028492-01) - Optional	
6	N55950	Apollo Master Module ECU - CM-40 - (AGA5339)	1
7	N59010	Harness Extension - Work Switch - 5m - (AGA4468)	2
8	N64671	Pressure Transducer Extension Harness - 7m - (1024230-01)	1
9	N68001	AUX Lift Lower Signal Adapter	1
10	W-187	Hex Bolt - 3/8 x 1 1/4 Lg - Bolts ECU to plate under manifold	4
11	D-5279	Locknut - 3/8 Serrated Flange	4
	N67052	Lift and Pressure Control Kit for 2-3 Tank Carts (Includes Items 3, 4, 7 and 8)	
	N67051	Lift and Pressure Control Kit for 4 Tank Carts (Includes Items 3, 4, 5, 6, 7 and 8)	
	N67798	Lift and Pressure Control Kit for 4 Tank Carts Tow Behind ONLY (Includes Items 3, 4, 5A, 6, 9, 10 and 11)	
		Pack Control Arm - Optional	
12	S66267	Packer Arm - Digi-Star	1
13	S67715	Axle Assembly - Digi-Star (Includes S66278 Spindle - Digi-Star)	1
14	M-3388	Lock Nut - 3/8 Unitorque	1
15	W-479	Hex Bolt - 3/8 x 2 1/4 Lg	1
16	S67885	Zip Tie - Push Mount	3
17	S69154	Guard - Pack Master Cable	1
18	S47593	Carriage Bolt - 1/2 x 3 1/2 Lg	1
19	F-3405	Locknut - 1/2 Unitorque	1
20	N68002	Extension Cable - Optional	
	S67716	Pack Control Arm Assembly (Includes Items 12 to 19)	
	S71738	Pack Control Stubble Guard Field Kit (Includes Items 17 to 19)	

Pin 13



X35 Apollo - Wiring

Ensure the Single Purple wire is installed in pin 13 (Relay signal out on the Auxiliary harness) as shown. (Cart Harness N58112)

Connect 1006258-01 Lift lower harness to the following connections:

Trunk /Whisker - to the single wire connection to pin 13 on Aux harness

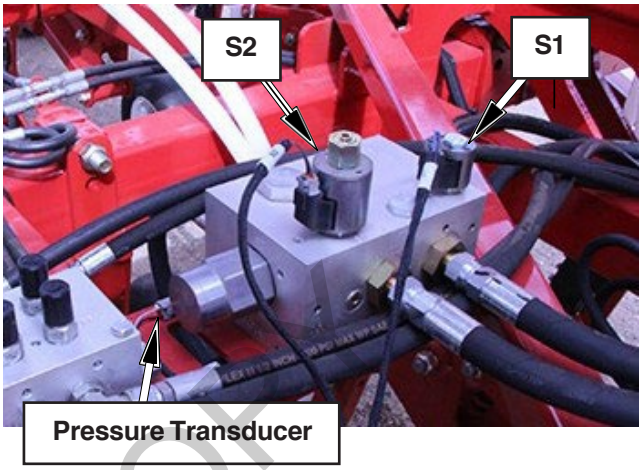
Relay Power - to AGA5343 ECU harness DTP power connector - (remove dust cap).

Lift Solenoid - to S1 on JEM Manifold block on Quantum drill

What is Pack Control?

The goal of the Pack Control system is to always maintain a consistent packing force across all areas of the field no matter the

Soil Types, Vehicle Speed, Moisture Content, Desired Seed Depth, and Boot designs.



Pack Pressure Control

Quantum drills equipped with the Topcon Pack Control option include a new packing arm [S67716]. The arm consists of a special Digi-Star spindle assembly [S67715] which is capable of measuring the downforce being applied onto the Packing Wheel.

The target Packing Force is entered into the X35 monitor. Once the desired Packing Force is set, the Topcon control loop analyzes the signal from the Spindle and will increase / decrease the amount of hydraulic pressure of the S2 solenoid to maintain the requested Packing Force Target.

Note: There is only 1 load cell spindle therefore the forces it is reading will be applied to the entire drill width.

What Is Lift Control?

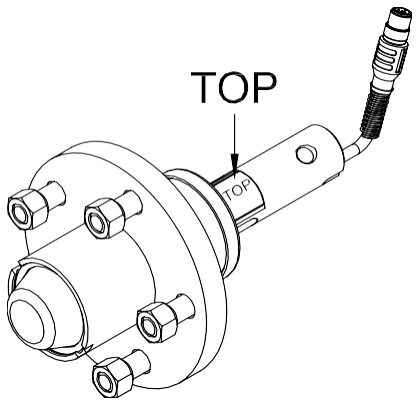
Lift control allows for automated lifting and lower functions of the Morris Quantum Drill.

Benefits:

This reduces operator fatigue and ensures consistent repeatable lifting and lowering sequences

The drill can be set to raise and lower in virtual Headland boundaries, and when encountering previous treated areas.

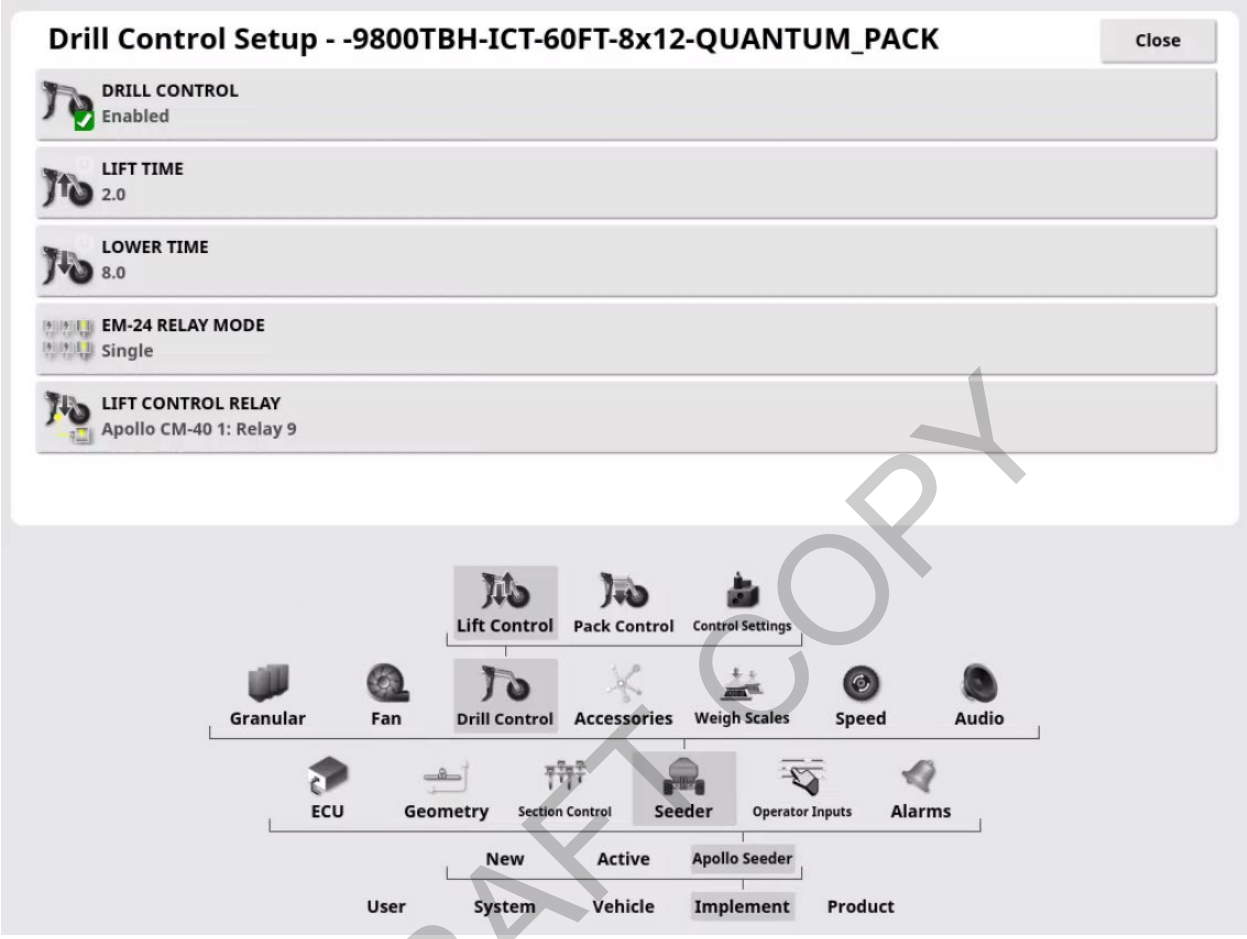
Lifting and lowering times can be adjusted independently in the settings menu.



Technician Settings

Set-up of the **Pack Control System** can only be performed by trained Service professionals - as certain parameters are not accessible by standard operators, and access to the menus require unlocking with Dealer / Technician mode password.

Technician Settings - Continued



In the set-up menu navigate to:

Implement - Seeder - Drill Control - Lift Control

Drill Control: **Enabled**

Lift Time: **2.0 Seconds**

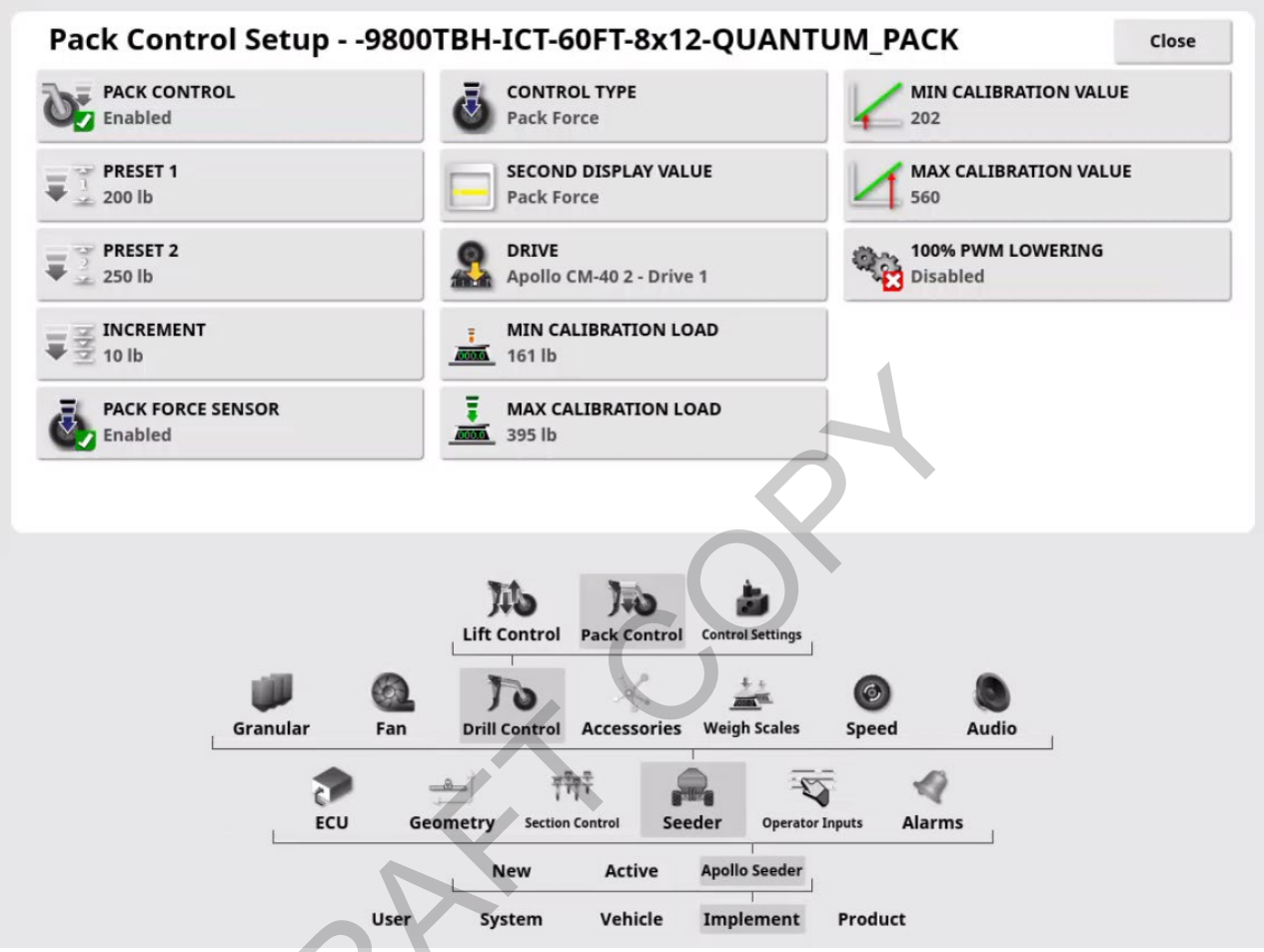
Lower Time: **8.0 Seconds**

Lift Control Relay: Apollo **CM-40 1: Relay 9** (TOPCON ECUS are mounted on AIRCART)

Apollo **CM-40 2: Relay 9** (USE ONLY IF TOPCON CM-40 ECU IS MOUNTED DIRECTLY ON QUANTUM)

Refer to wiring illustration for details on page 4.

Technician Settings - Continued



Implement - Seeder - Drill Control - Pack Control

Pack Control: **Enabled**

Preset 1: **200lb / 90kg** (do not set below 200lb / 90kg)

Preset 2: **250lb / 115kg**

Increment: **10lb / 5kg**

Pack Force Sensor: **Enabled**

Control Type: **Pack Force**

Second Display Value: **Pack Force**

Map Value: **Pack Force**

Drive Configurations:

2 Tank with Liquid - Apollo **CM-40 1 - Drive 2**

3 Tank with Liquid - Apollo **CM-40 2 - Drive 1**

2 or 3 Tank Granular Only - Apollo **CM-40 1 - Drive 1**

4 Tank Granular - Apollo **CM-40 2 - Drive 1**

*** * * IMPORTANT * * ***

100% PWM Lowering - Disabled

Note: Disabled is the recommended setting as feature may cause damage to openers in certain operating conditions.

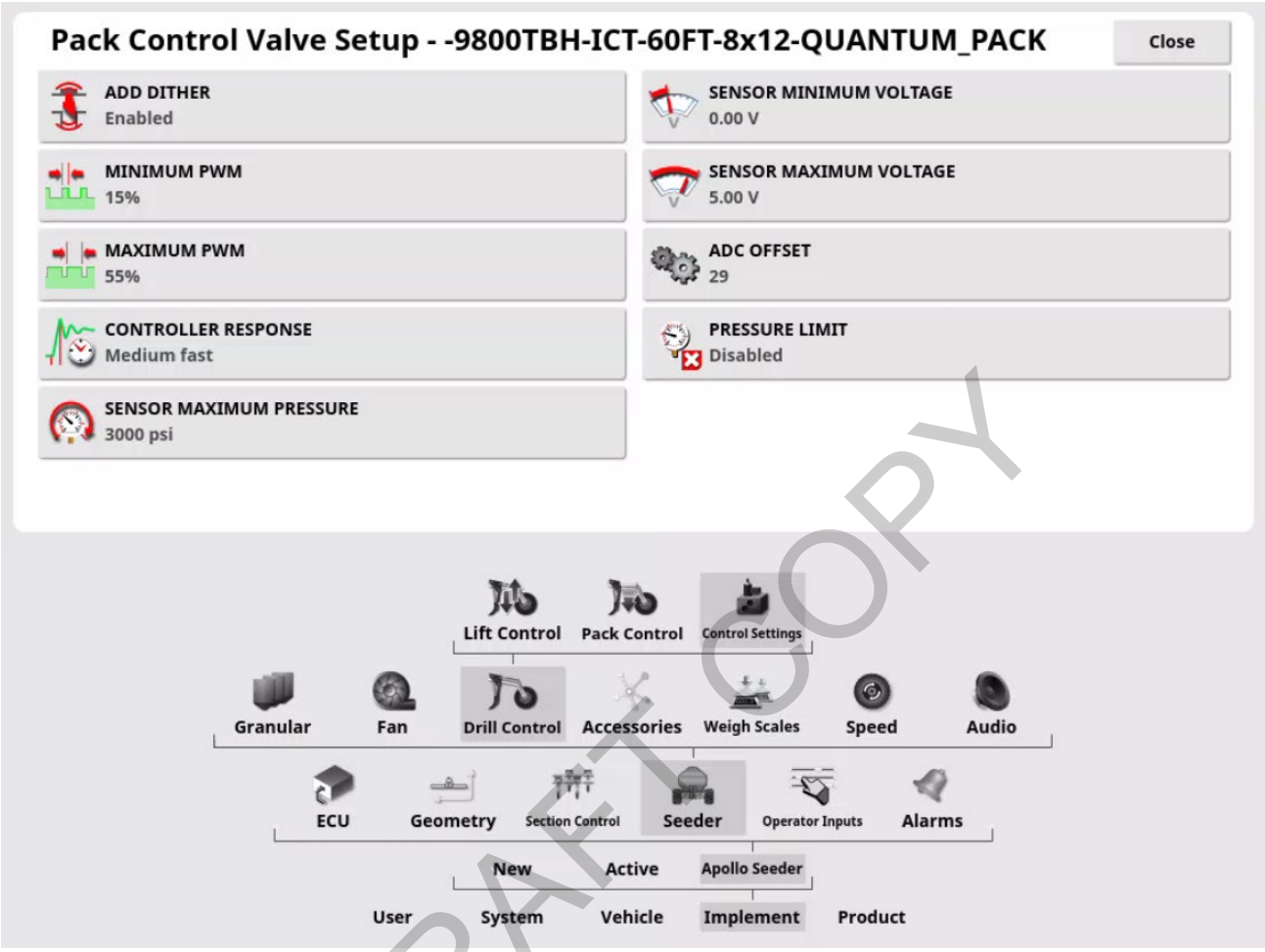
Min Calibration Load: **152 lbs** (these numbers will be overwritten during calibration procedure)

Max Calibration Load: **439 lbs** (and are provide as a recommendation, if your values are not near these baselines, the calibration has been compromised)

Min Calibration Value: **1628 (New packer Arm)**

Max Calibration Value: **2055**

Technician Settings - Continued



Implement - Seeder - Drill Control - Control Settings (Technician mode only)

Add Dither: **Enable**

Minimum PWM: **15%**

Maximum PWM: **55%** (Do not exceed 55% or damage to Quantum can occur) **- 2000 psi TS12-36CM**

Controller Response: **Medium Fast**

Sensor Maximum Pressure: **3000psi**

Sensor Min Voltage: **0.00 V**

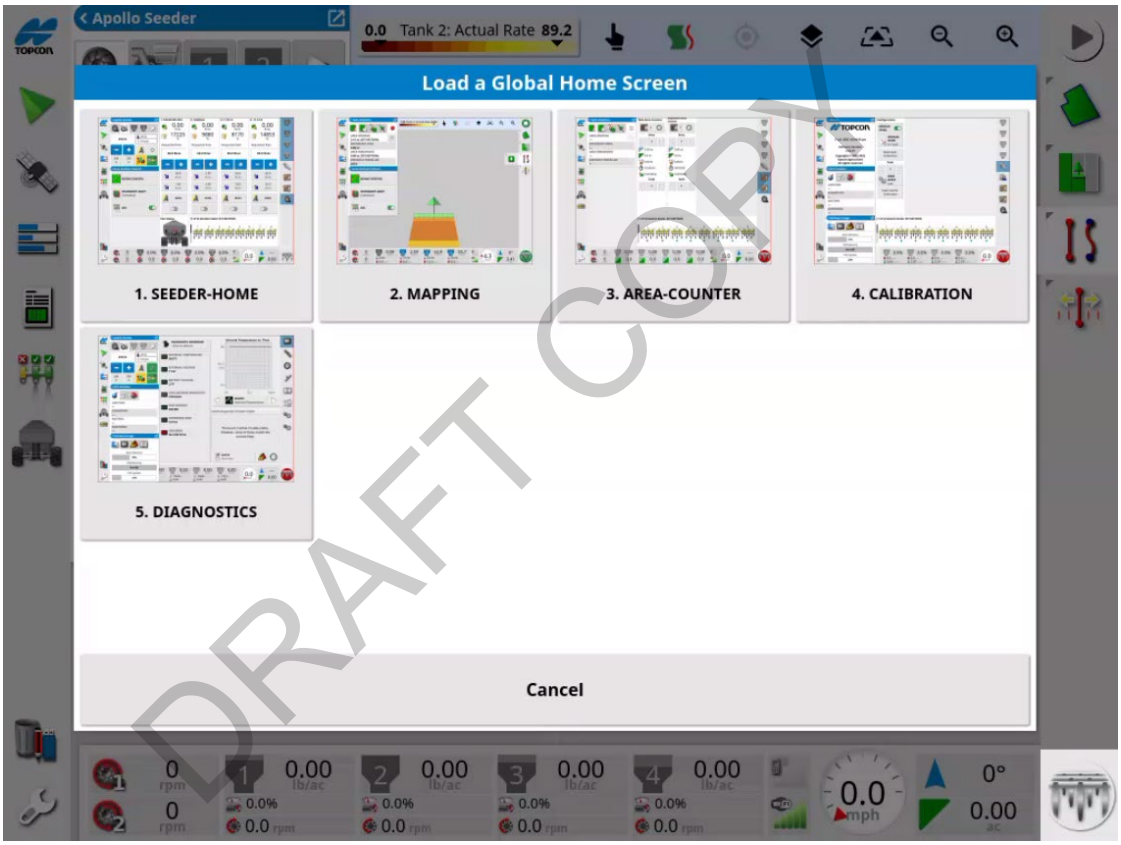
Sensor Maximum Voltage: **5.00 V**

ADC OFFSET: **29**

Pack Control Home Screen Set-Up

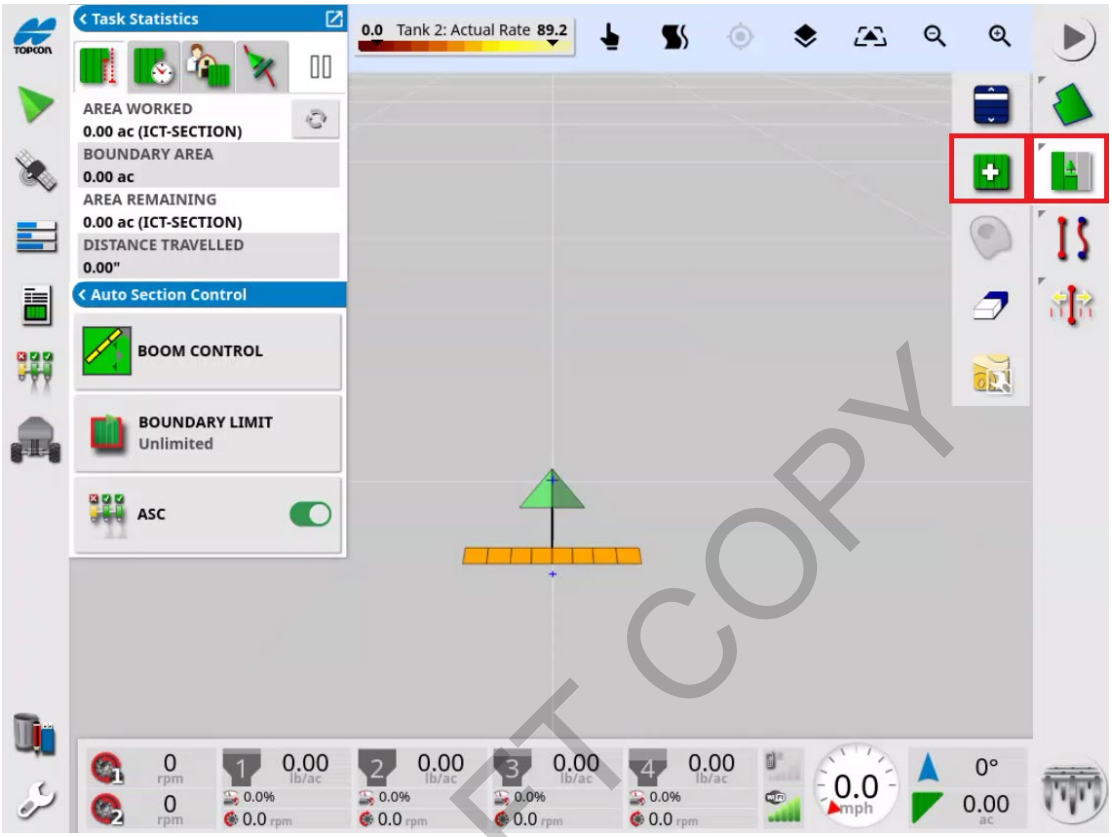
1. A dedicated Pack-Control Home Screen is required for the configuration of the Pack Control System.

NOTE: GPS SIGNAL IS REQUIRED FOR THIS TUTORIAL

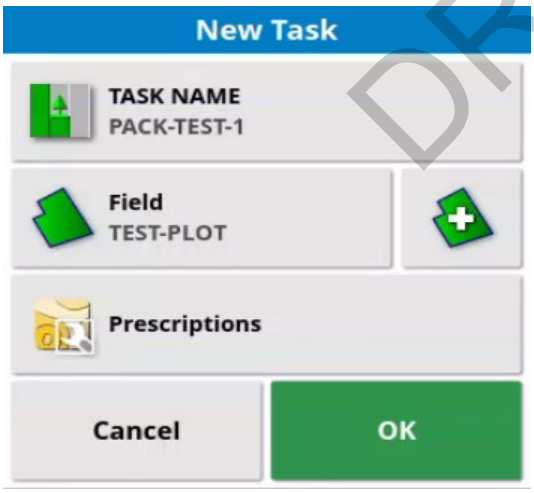


2. The first step is to create a dedicated Pack-Control Home Screen, start by select the Mapping screen.

Pack Control Home Screen Set-Up - Continued

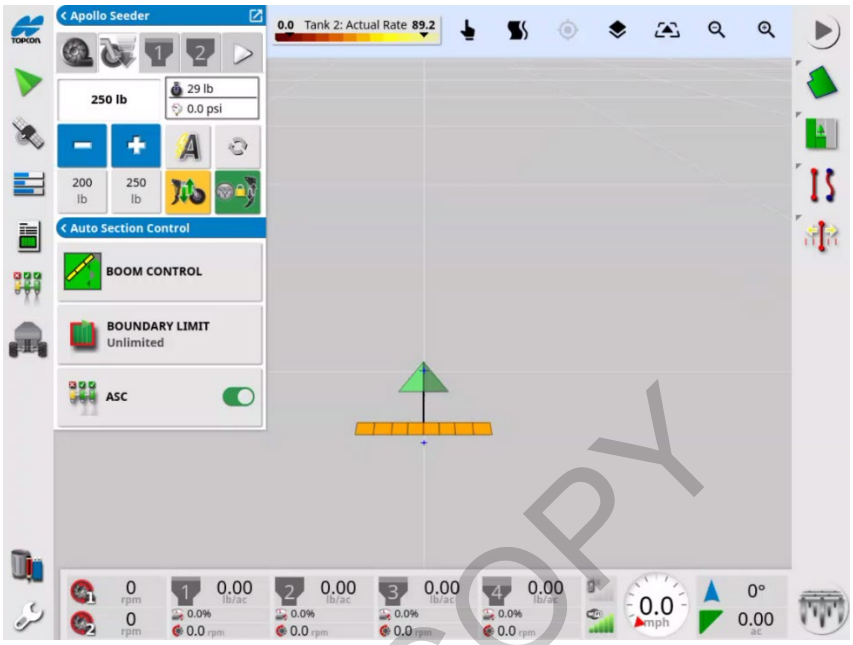


3. Touch the Create a new Job Icon

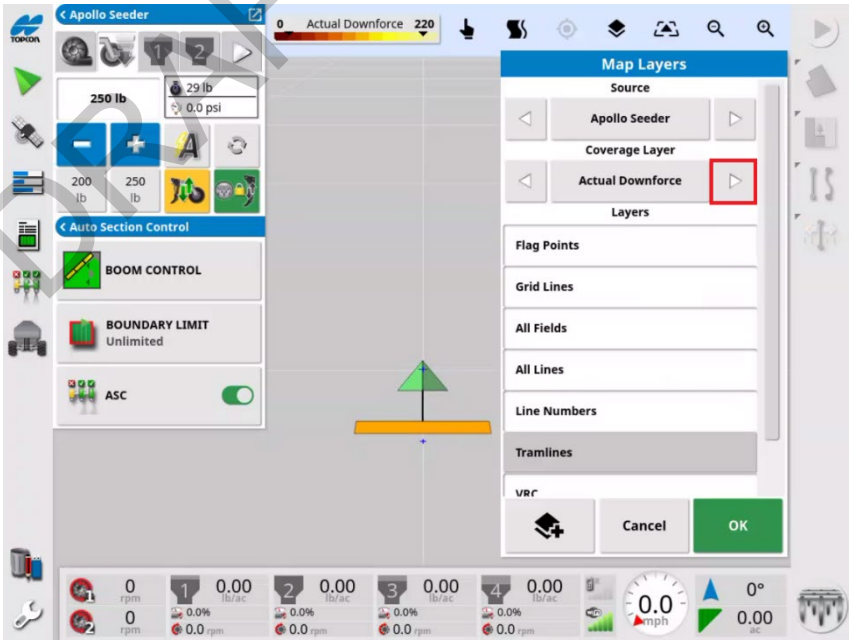


4. Create a new Job - **PACK-TEST-1**

Pack Control Home Screen Set-Up - Continued

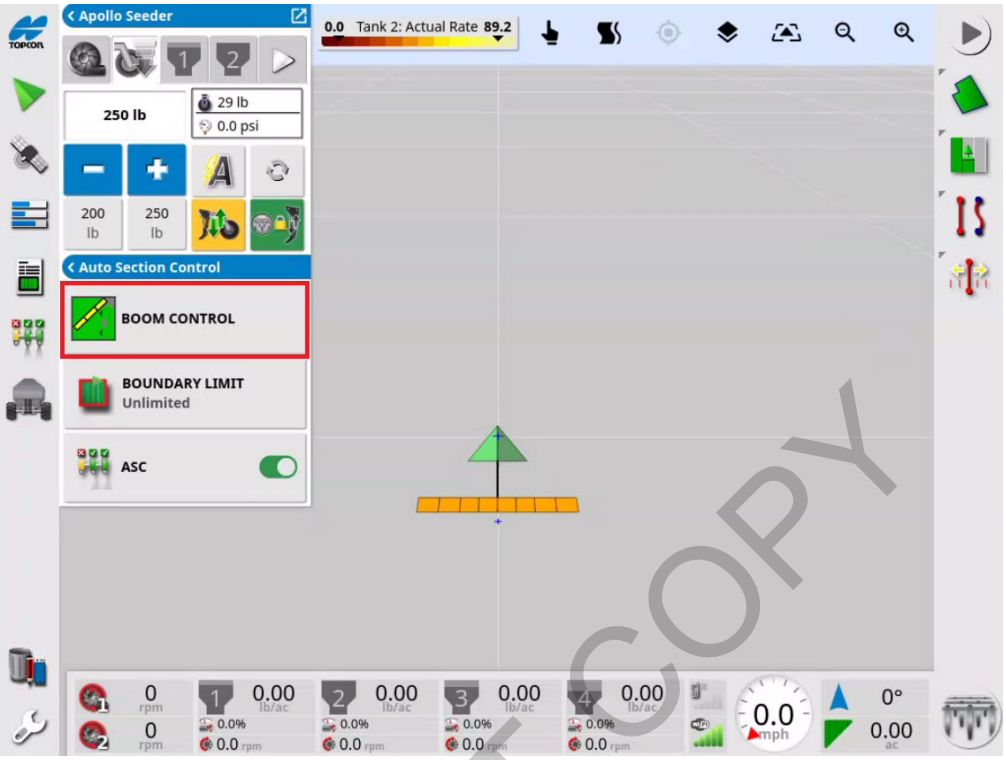


5. Add the  **Seeder Control** to the top mini view location, followed by pressing the  **Pack Control** Icon.

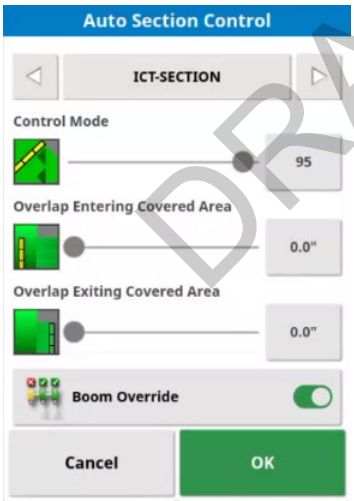


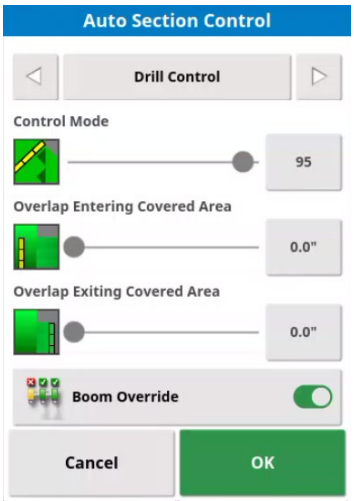
6. Open the **Map Layer**  Icon, and Adjust the **Coverage Map** arrow to **Coverage** and the **Tank** arrow to **Pack Control**. Apply the settings with the Green check mark.

Pack Control Home Screen Set-Up - Continued



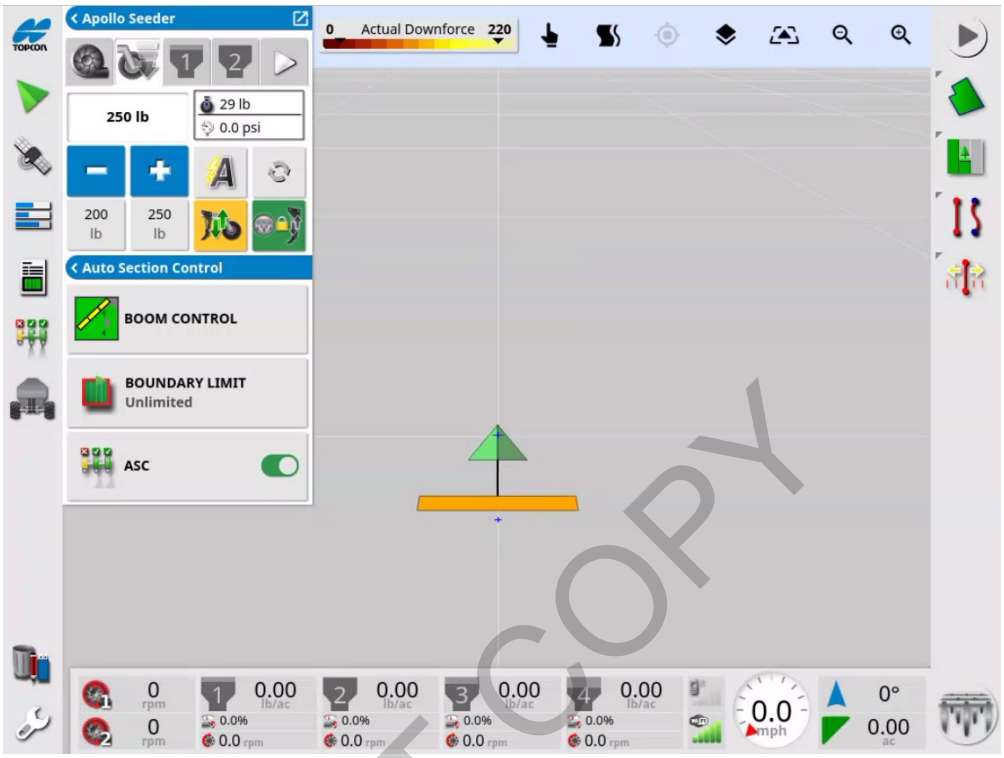
7. Open the **Boom Control** Tab located inside the Auto Section Control Mini View window.





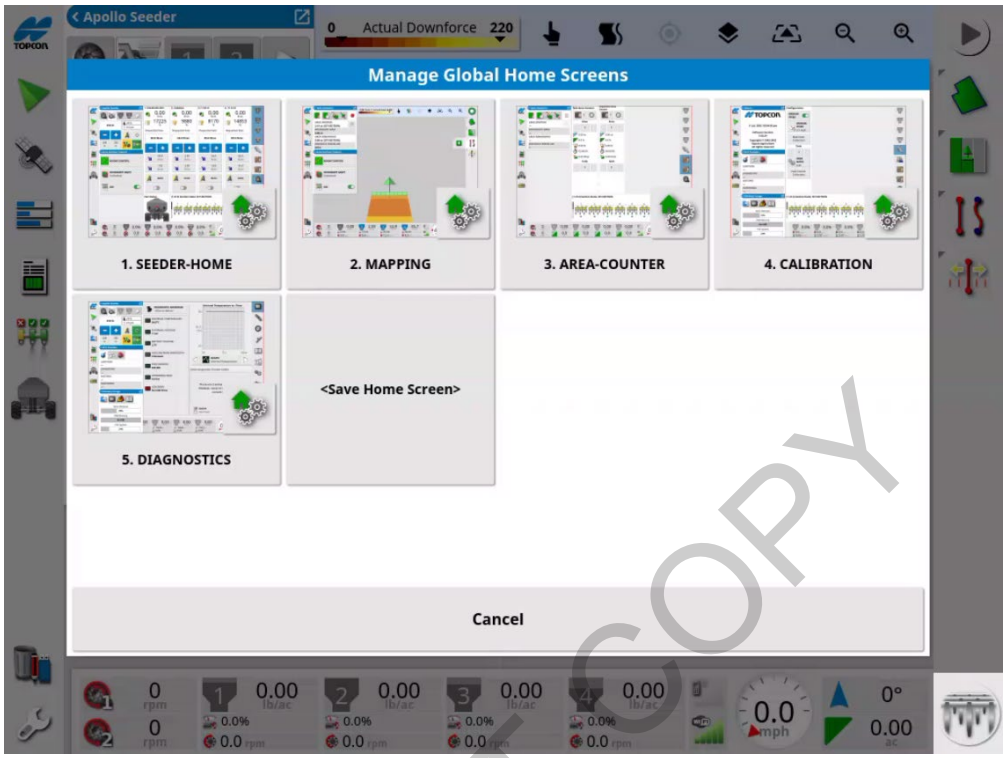
8. Adjust the Auto Section Control Threshold for **ICT-Section 95%** and **Drill Control to 95%**.
   Apply with the Green Check Mark.
   Setting to 95% - avoid Gaps, some overlap of application will occur near existing coverage and boundaries.
   The threshold adjusts how much of the section must travel through the coverage before turning On / Off.

Pack Control Home Screen Set-Up - Continued

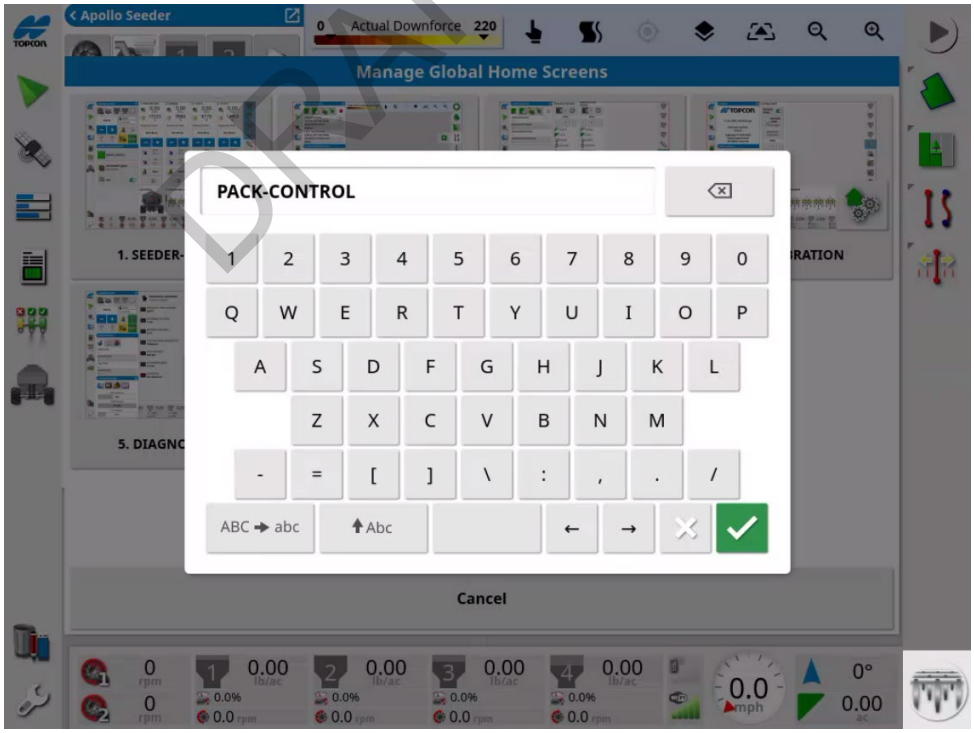


9. Swipe Up to reveal the dashboard ribbon and press the  **Manage Home** screen

Pack Control Home Screen Set-Up - Continued

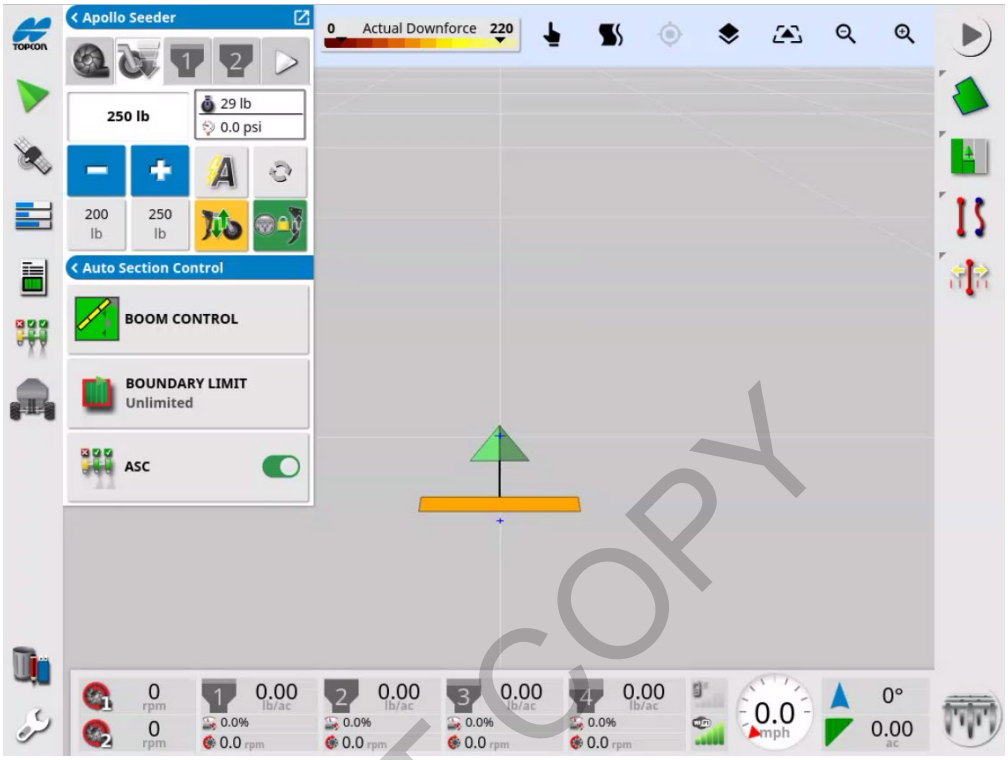


10.Press the **<Save Home Screen>** Icon.



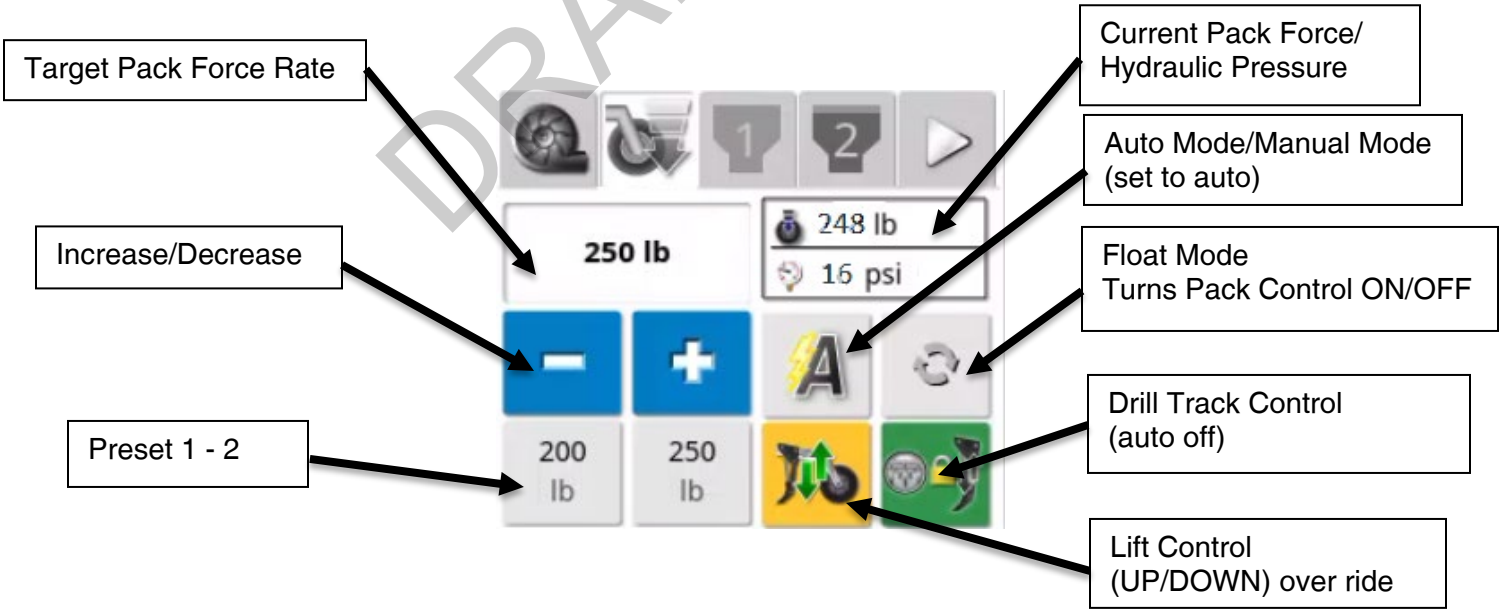
11.Name the home screen **Pack-Control**, followed by the Green check mark.

Pack Control Home Screen Set-Up - Continued



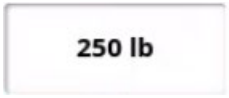
12.A Home Screen optimized for the **Pack-Control** is now available.

Note: Familiarize yourself with the Lift / and Pack Control Icons shown below.



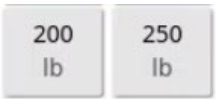
Pack Control Home Screen Set-Up - Continued

Familiarize yourself with the Lift / and Pack Control Icons:



Target Pack Force Weight display window.

Increase or decreases the amount of desired Packing Force



Preset 1-2 Pack force targets

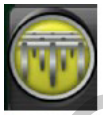
Rate Control Mode is set to - Automatic

Pack Control - On/Off (Float mode)

Lift Control On/Off (Up/Down Override)

Drill Track - (Auto Lift) locks the opener Lift Lower controls to the  Master Switch.

Familiarize yourself with the Master Switch Icons:



Yellow
Auto section control has the master switch turned off.

Yellow / white
Seeder controller is in preload mode (for granular products). The seeder will turn on when the countdown timer reaches zero.

Green
Seeder controller is on and working. Select the master switch to turn the seeder off.

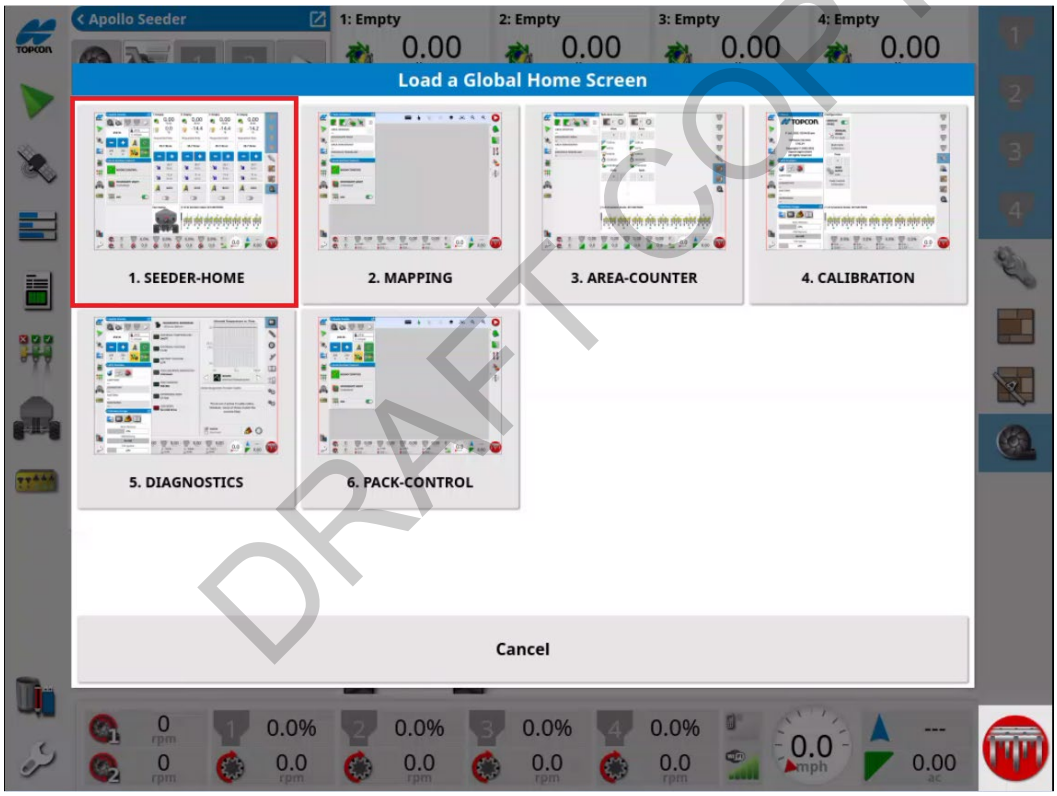
White
Seeder controller is in standby. Select the master switch to turn the seeder on.

Red
Seeder controller is off and cannot be used.

Blue
Virtual or keypad master switch is on. Implement master switch is off

Setting Lift Lower Functions

1. Perform the following procedures:
   - Lift Lower Set up
   - Lift / Lower testing (stationary)
   - Lift Lower with Fan speed test

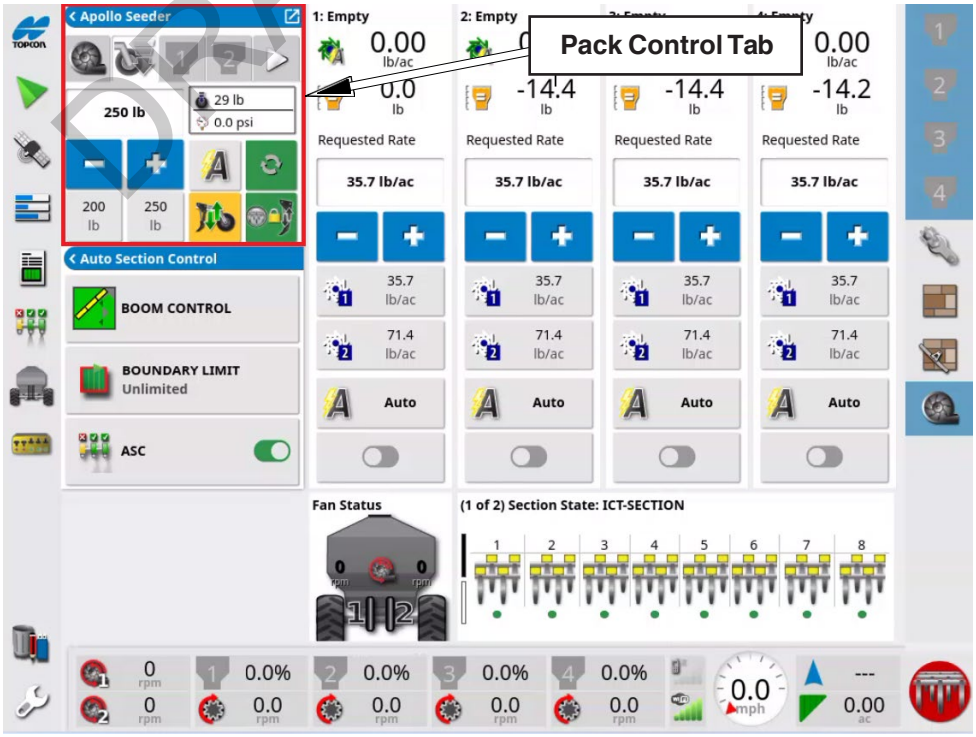


2. Open the Seeder Home Screen.

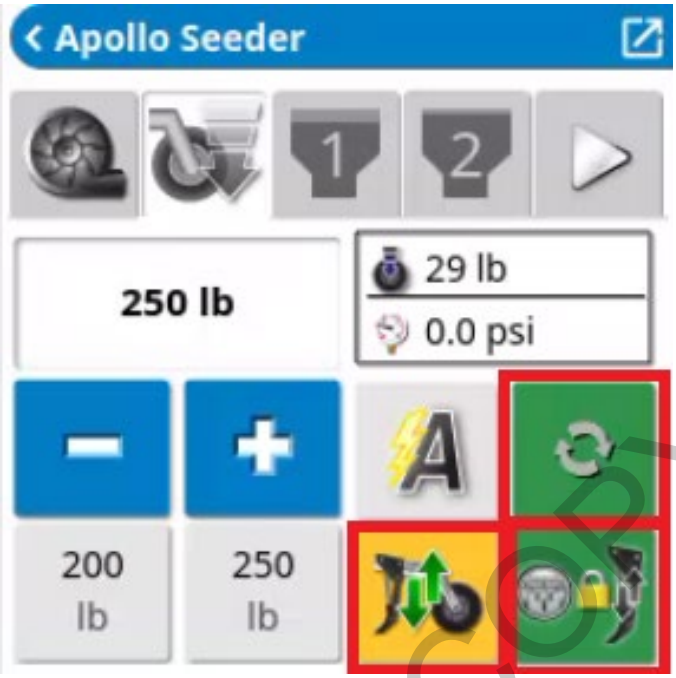
Setting Lift Lower Functions - Continued

3. If the **Pack Control** mini view is not displayed press the  **Pack Contro**l Icon inside the Seed Controller mini view.

4. The **Pack Control** Tab is now opened.



Setting Lift Lower Functions - Continued



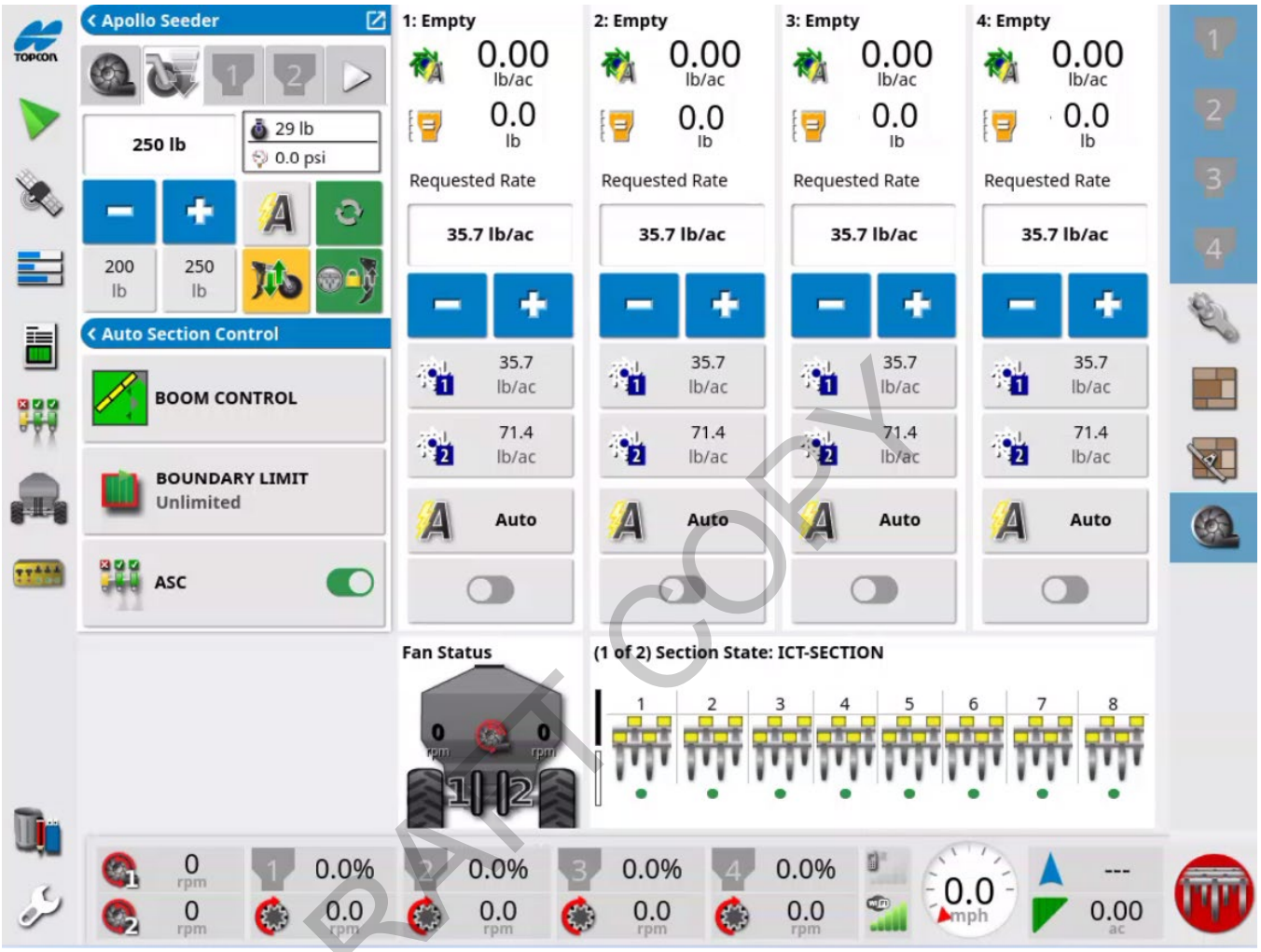
5. Enable the following icons on the Pack Control system:
   Click each icon until they match colors below.


Pack Control - ON


Drill Lift Track Control - ON


Lift Control – Automatic (Green Arrows with Yellow Background)

Setting Lift Lower Functions - Continued



6. Ensure all **Tanks are OFF** for the next test.

Setting Lift Lower Functions - Continued

*****WARNING THE OPENERS WILL NOW BECOME ACTIVE AND WILL LOWER WITH THE MONITOR CONTROLS*** unexpected automatic cycling of raising and lowering can occur.**

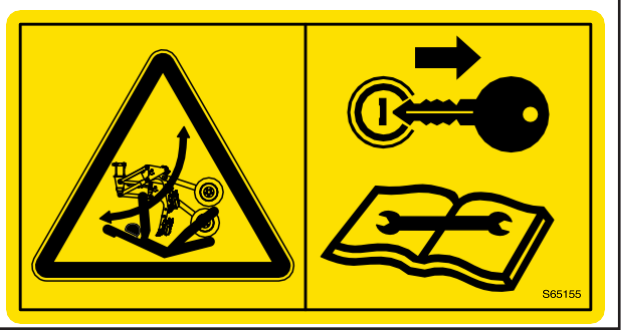
7. Testing the LIFT / LOWER HYDRUALIC functions.

- Place the Tractor in  Park and unfold drill if not already in Field Position.

Warning

Openers drop with full down force when powering up or rebooting the X35 with hydraulics engaged.

Ensure opener hydraulic system is disabled before working underneath machine.



Setting Lift Lower Functions - Continued

- Perform a visual inspection for bystanders around or under the Quantum Drill once clear, proceed to rotate the Openers ball valve into open unlocked position.
- Opener lift / lower Hydraulics are normally connected to the #1 SCV.
- Contact your Dealer for correct hydraulic plumbing.
- Push the Opener Hydraulic lever forward until it locks into Continuous operation.

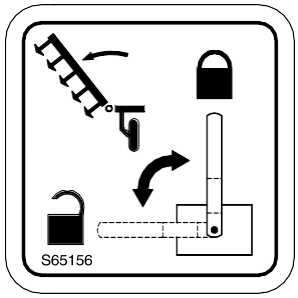
  Set the tractor SCV to 40% see “Tractor User Guide” for setting of Hydraulic systems

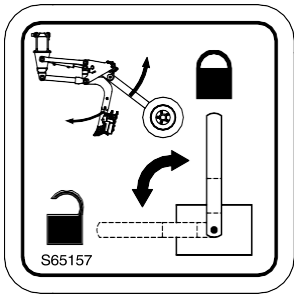
Tractor SCV should be set to 25GPM.

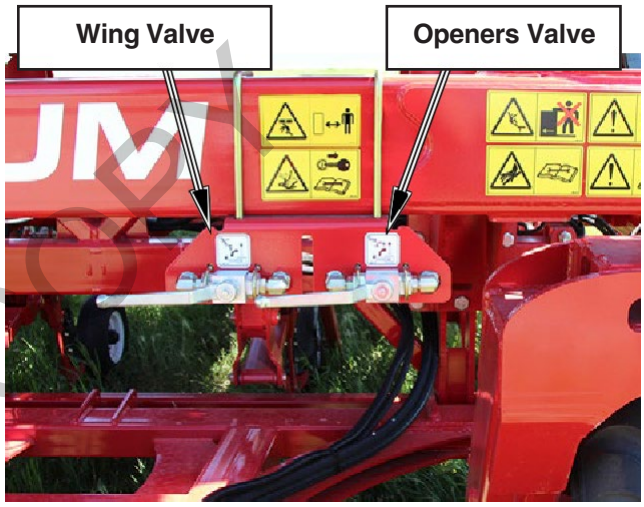
If not set the QUANTUM opener valve will flow up to 35 gpm which could starve the oil flow from the Air Cart Fan. Total Fan speed should not drop by more than **300 RPM** while the drill is lowered.

During normal operation, using the suggested settings with the tractor hydraulics engaged the openers should now be in the raised position.

Note: If the openers do not raise or lower correctly, adjust hoses or tractor hydraulic controls orientation.

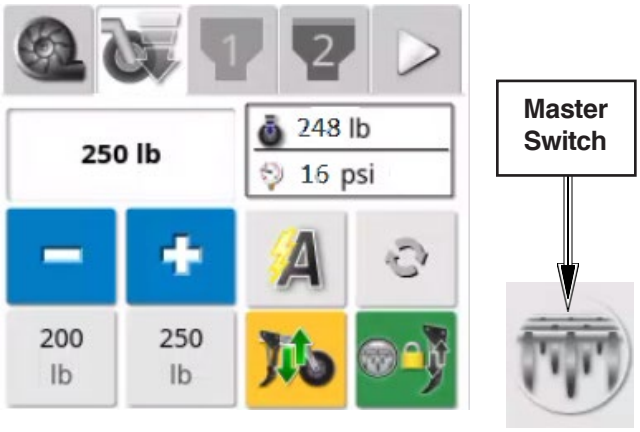




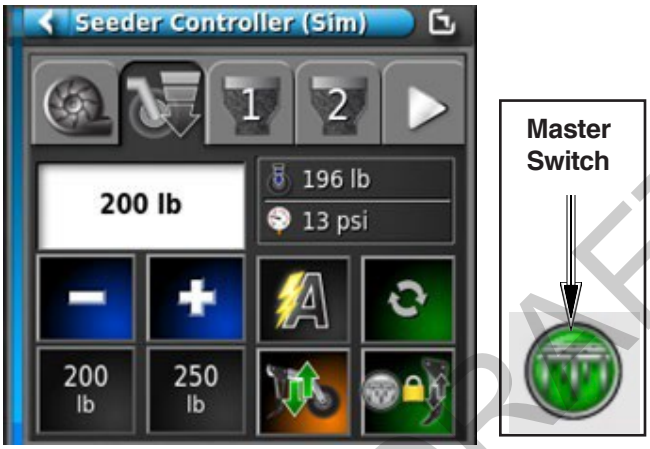


Valves in Unlocked Position

Setting Lift Lower Functions - Continued



- Using the above settings, the Openers are being commanded from the Monitor to be in raised position.



- Pressing the Master switch, the openers will now begin to lower into the working position. Cycle the openers several times up and down to ensure proper functionality.

Note: The Lift Control Icons change colour to represent their current state

Yellow / Green - Opener are Raised in the Transport Position.

Orange - Openers are transitioning from Raised into the Lowered position.

Green - Opener are lowered, sequence is complete, Pack Control is active.

Yellow / Red - Automatic mode OFF - (Raised test operation).

Setting Lift Lower Functions - Continued

- Once satisfied that the openers are lifting and lowering correctly, bring Fan 1 and Fan 2 up to normal operating speed.
- Perform additional raising and lowering tests of the drill, however pay close attention to the Fan speed.
- The Morris Quantum drill should be able to lower into the working position within 7 seconds without any substantial fan speed interruption.
- If you experience excessive fan speed drop, please review information on optimizing Quantum hydraulic plumbing. **Contact your Dealer for correct hydraulic plumbing.**

Total Fan speed should not drop by more than **300 RPM** while the drill is lowered.

Calibration (Floor Scale Method)

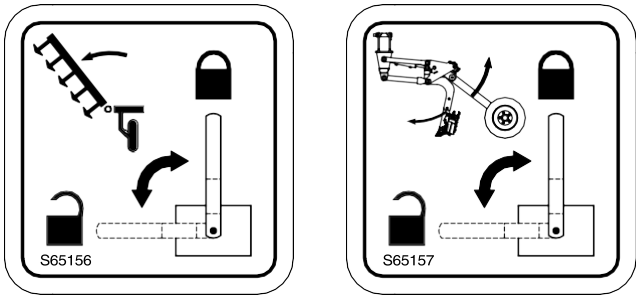
1. Positon Drill on a flat level surface to perform the calibration procedure.
2. Raise Drill into the Up position, turn off Tractor Hydraulics and Lock the Opener Ball valve into locked position.
3. Remove the Shank assembly.

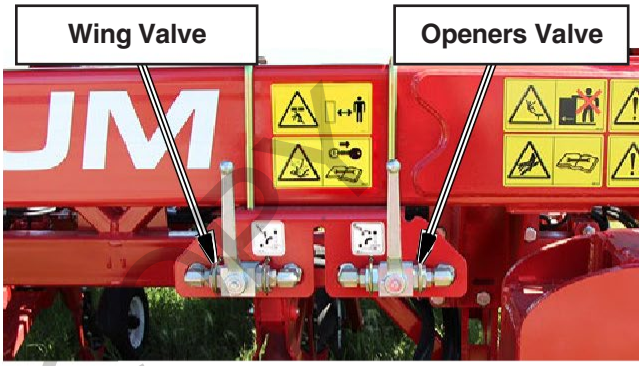
   Place Pan Scale under Packer Wheel.

   Align scale so Packer Wheel will sit in the middle of scale.

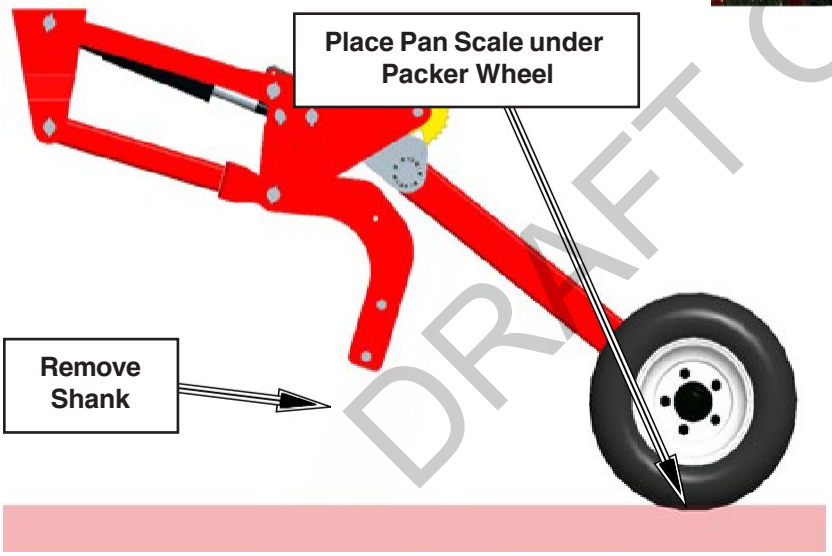
   Open Ball Valve to normal operation.

Note: Use a Pan Scale with a range of 0-450 lbs. (0-200 kg) with fresh batteries installed.





Valves in Locked Position



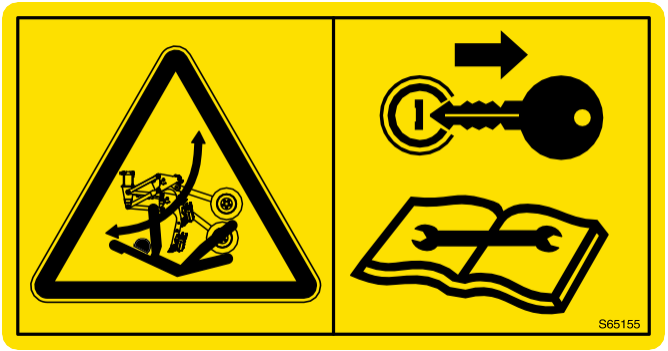
Note: The Loadcell decal Top must be facing Upwards.

Important: Perform the calibration procedure on a flat level surface.

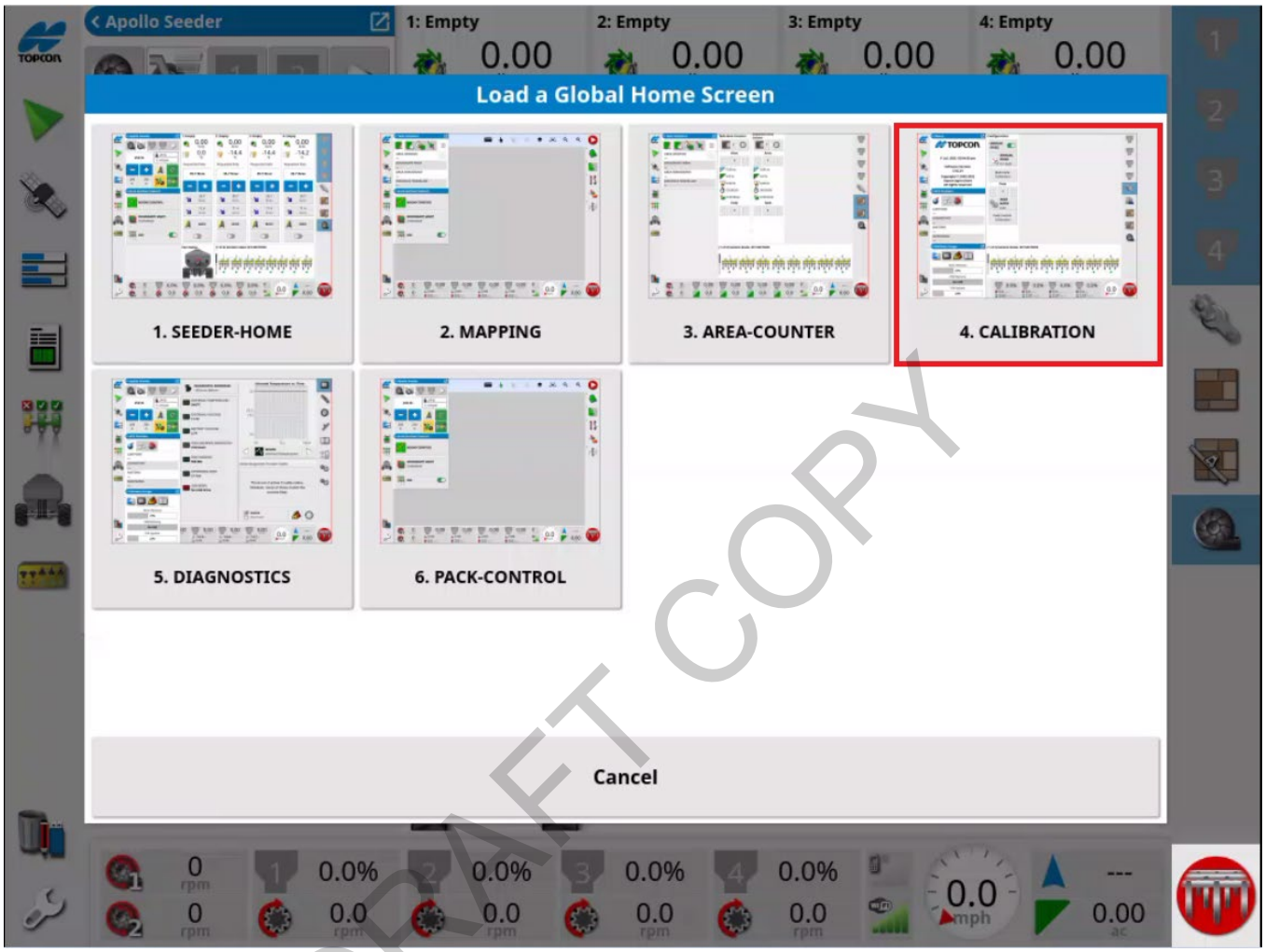
Warning

Openers drop with full down force when powering up or rebooting the X35 with hydraulics engaged.

Ensure opener hydraulic system is disabled before working underneath machine.

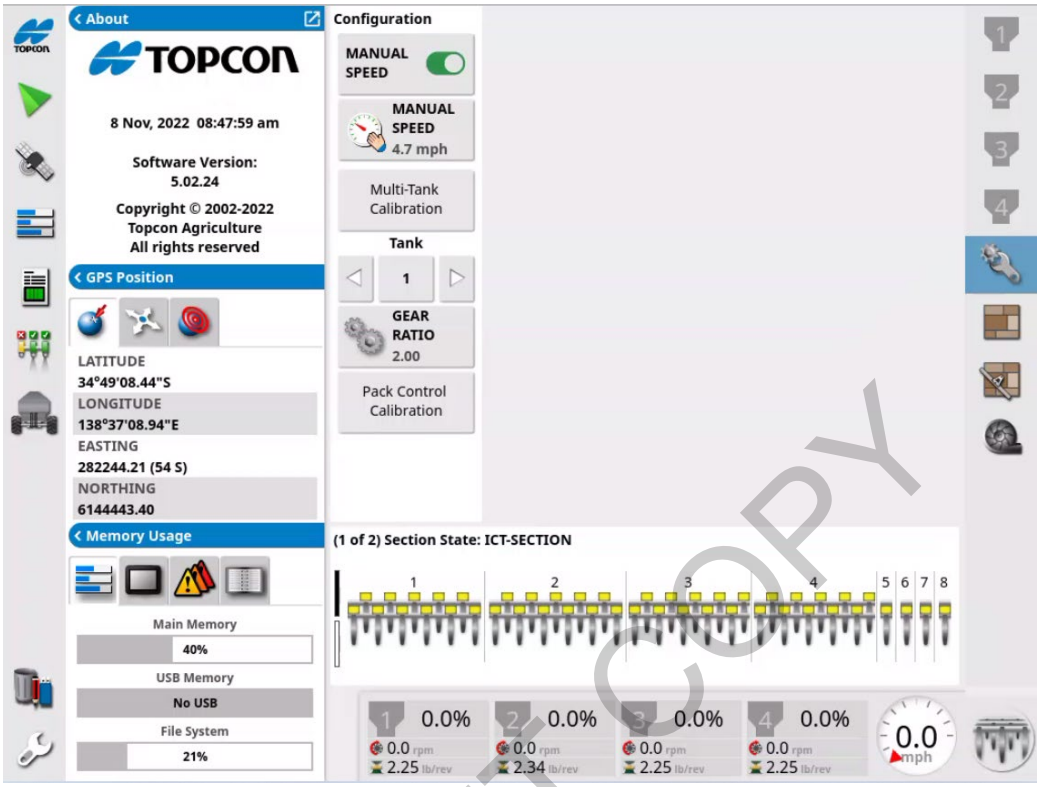


Calibration (Floor Scale Method) - Continued

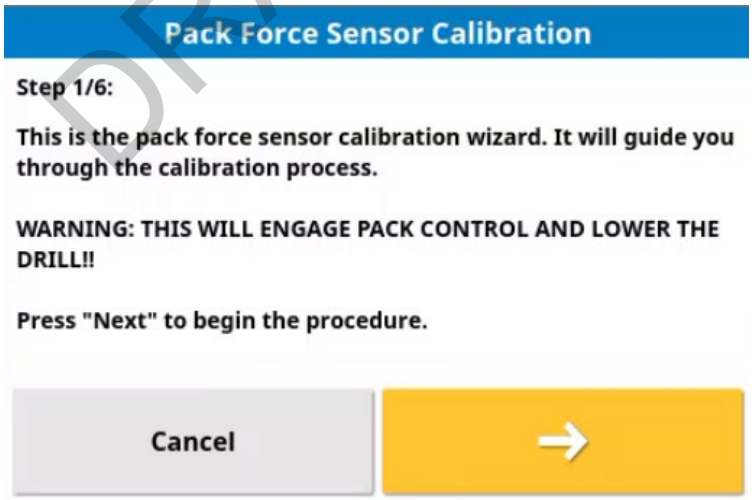


4. Select **Calibration** from the Global Home Screen menu.

Calibration (Floor Scale Method) - Continued



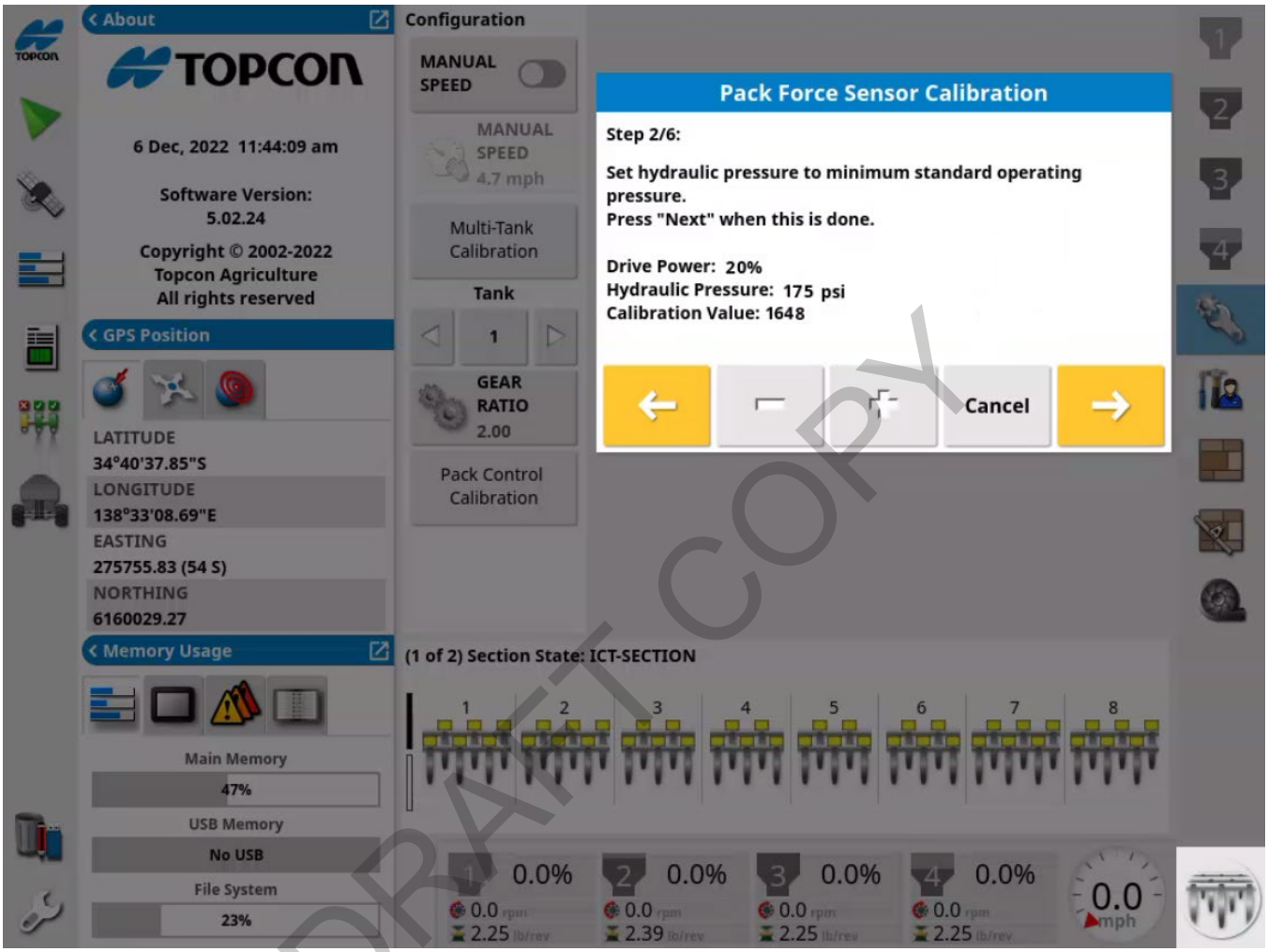
5. Press the **Pack Control Calibration** Icon



6. Read the Warning and check for bystanders once clear, engage the Tractor Lift Lower Hydraulics circuit - Followed by the Yellow arrow.

*****Warning the Drill will now lower into the working position*****

Calibration (Floor Scale Method) - Continued



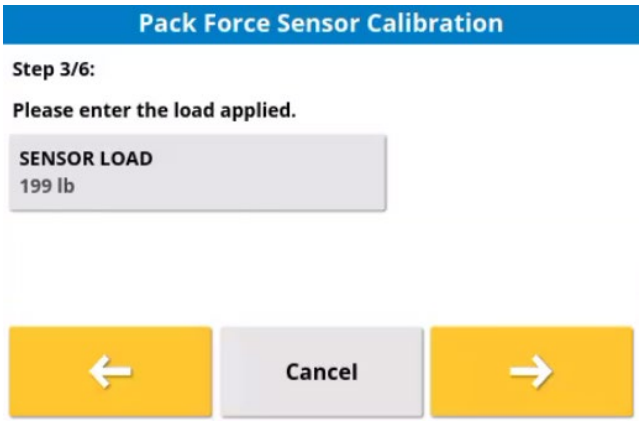
7. Note: Turn on **Master Switch**  to energize the circuit.

Increase the Drive Power % by pressing on the  icon until 20% is displayed.
Press the Yellow Forward Arrow to proceed.

Calibration (Floor Scale Method) - Continued

8. Enter the weight displayed on the Pan Scale.

9 Proceed with the Yellow arrow (Note: Do not use the numbers used in this guide, enter the weight from the Pan Scale).

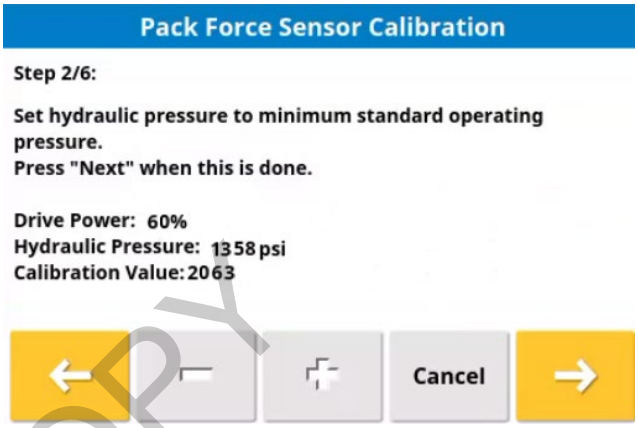


Calibration (Floor Scale Method) - Continued

10. Increase the Drive Power % by pressing on the  icon until 60% is displayed.

    The system pressure should be between 1350psi and 1450psi (this will depend on oil temp).

Note: These settings are for Valve Cartridge TS12-36CM only.



STOP ! DO NOT Press the Yellow Forward Arrow, you must **first read the weight value from the Floor pan scale** before Proceeding to the Step 5.

During Step 4/6 the Drive Power to the solenoid is active, if you move to Step 5 the Drive power is switched off and the calibration will be incorrect.

Once the Drive power is at 60% , go to the scale and read the Value displayed.

VERY IMPORTANT !!!

Go read the Floor Pan Scale

(take a picture of it for reference)

Before Proceeding to the Step 5

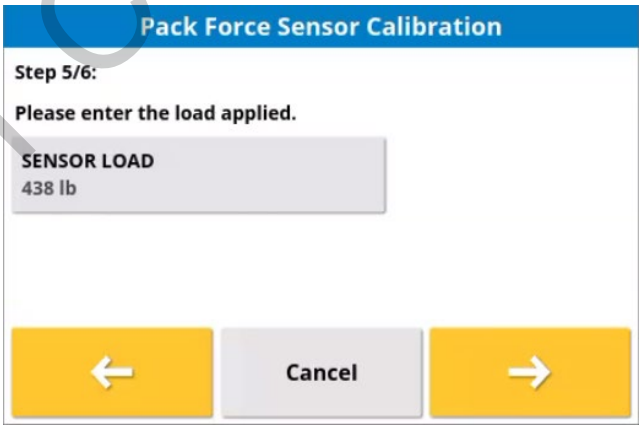
Calibration (Floor Scale Method) - Continued

11. Press Arrow to Proceed to step 5.

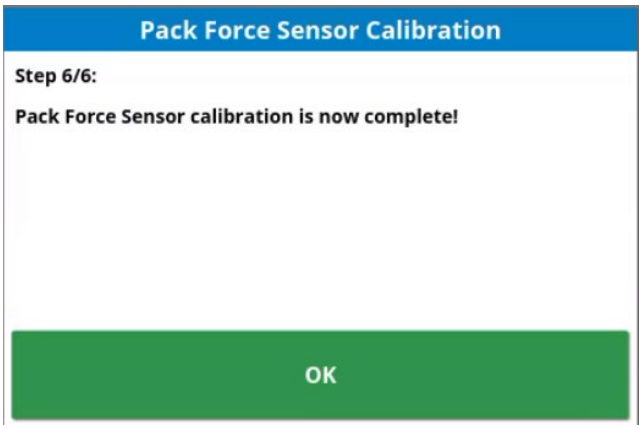
    Enter the weight that was displayed on the Pan Scale (review the picture you just took for verification).

    If the weight is under 400 lb, the calibration has been performed incorrectly

12. Press Arrow to Proceed to step 6.



13. Apply with the Green Check Mark.



14. Turn off Master Switch 

In Field Test

Once the Lift/Pack setup and Pack calibration has been completed the following tests need to be performed to adjust settings to field conditions and operator's preferences.

-Lift Lower testing (Dynamic)

-Field test / passes (Dynamic)

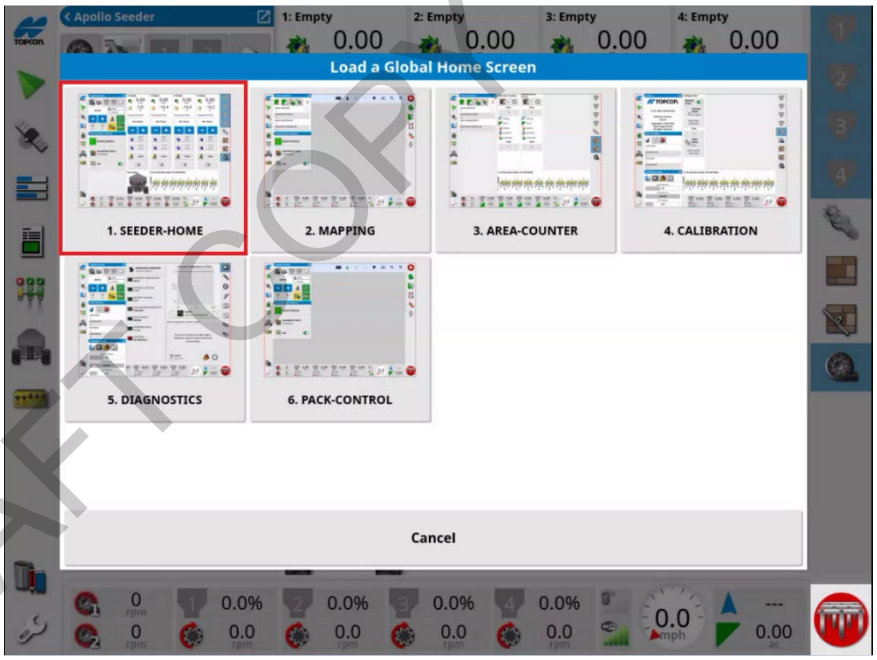
-Pack control settings (basic operation)

-Pack Control Map Layers

-Key pad assignment

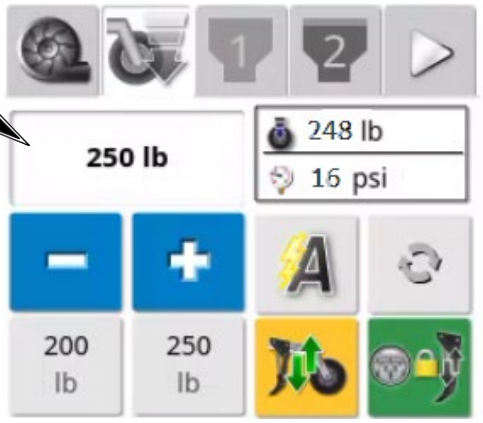
Lift Control Test

Open the Seeder-Home Screen.



Set a Packing Force Target, by typing in a value or by using the Preset icons.

Review your Pack Control settings, to match the picture.



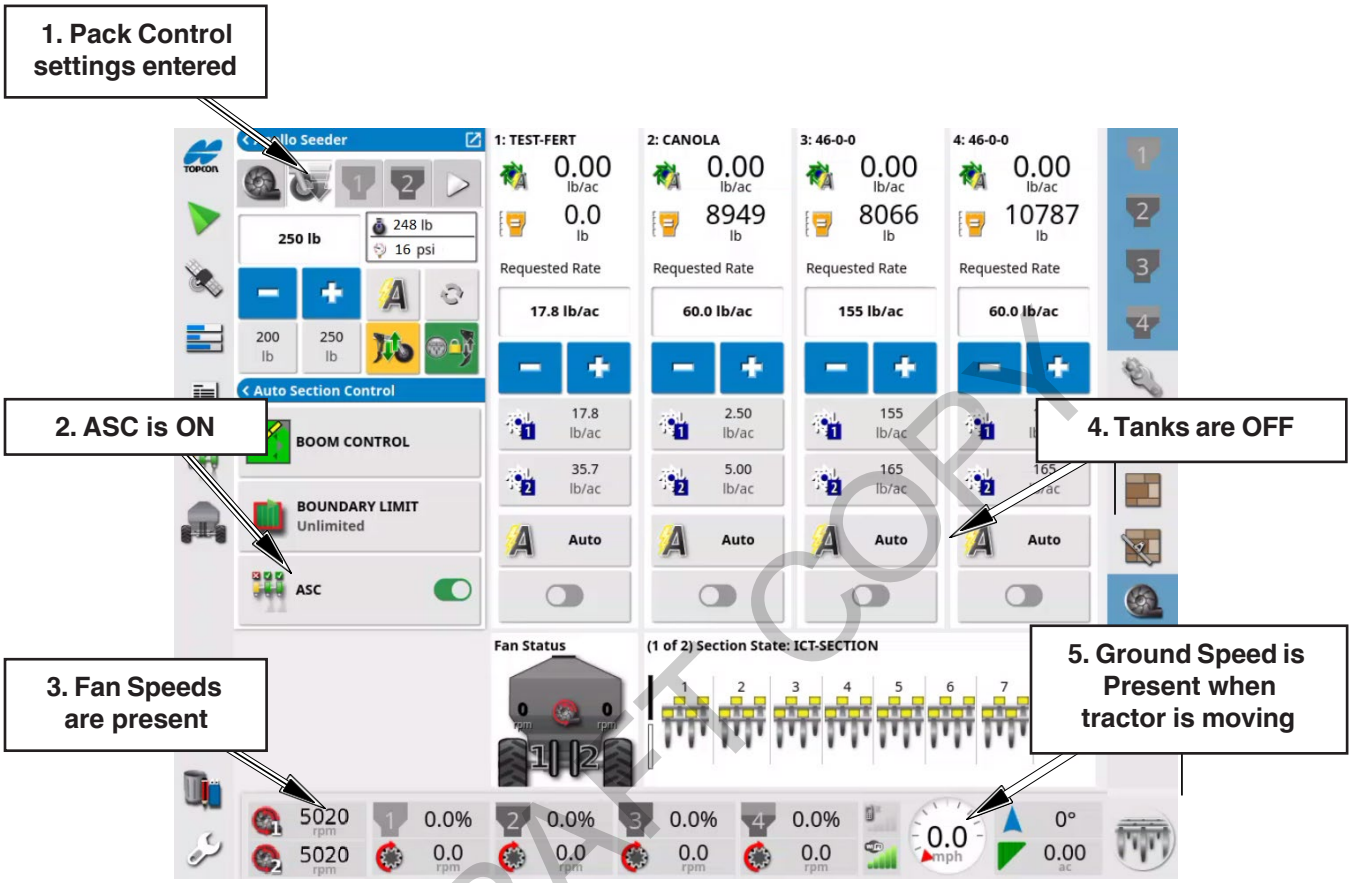
1. Enable the following icons on the Pack Control system:

Pack Control - ON

Drill Lift Track Control - ON

Lift Control – Automatic (Green Arrows with Yellow Background)

Lift Control Test - Continued

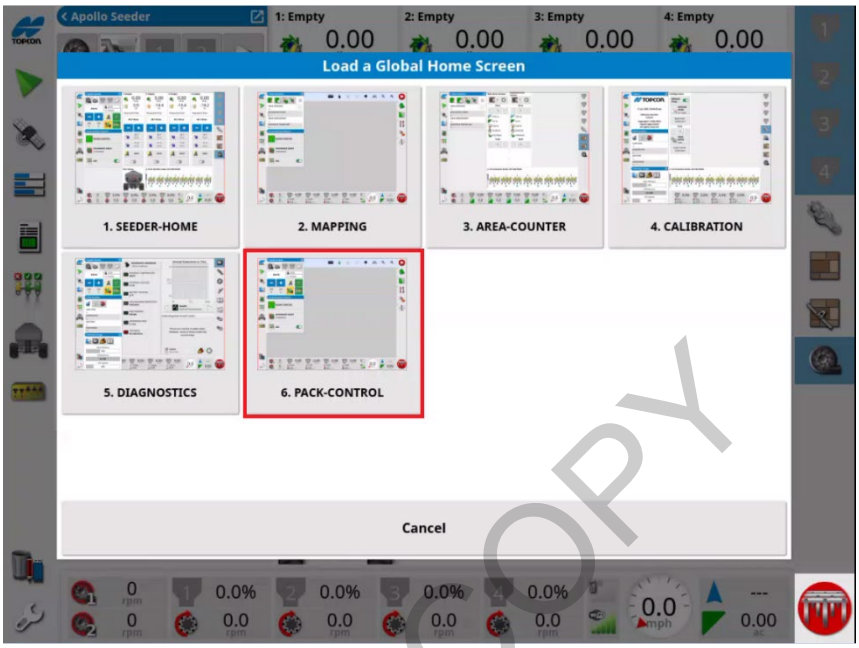


2. Ensure the following items are Ready and proceed to a test area in the field.

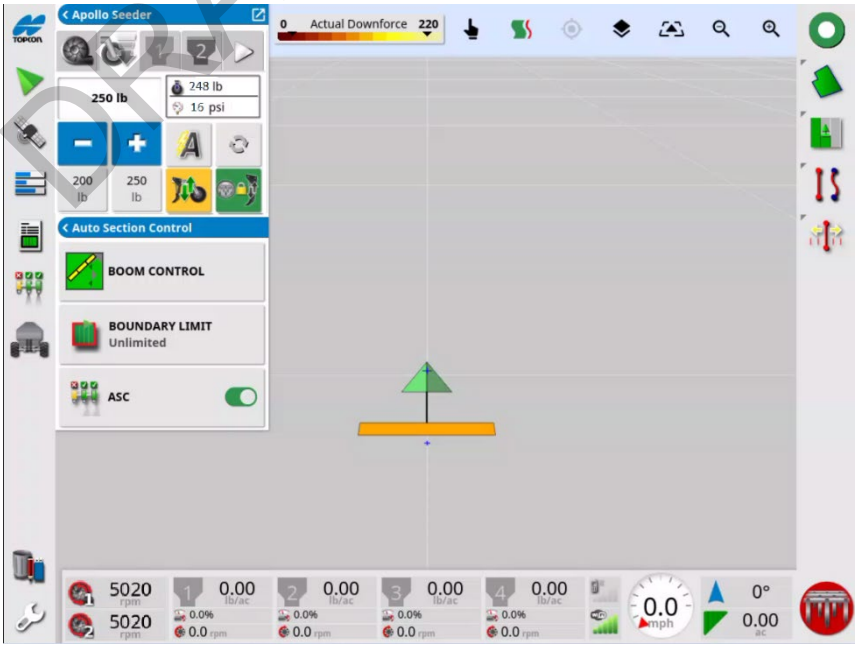
- Pack control setting are entered correctly
- ASC is ON
- Fan Speed is above 1000RPM
- Tanks are Off
- Ground Speed is present when tractor is moving

NOTE: Product **will not** be applied during this test

Lift Control Test - Continued

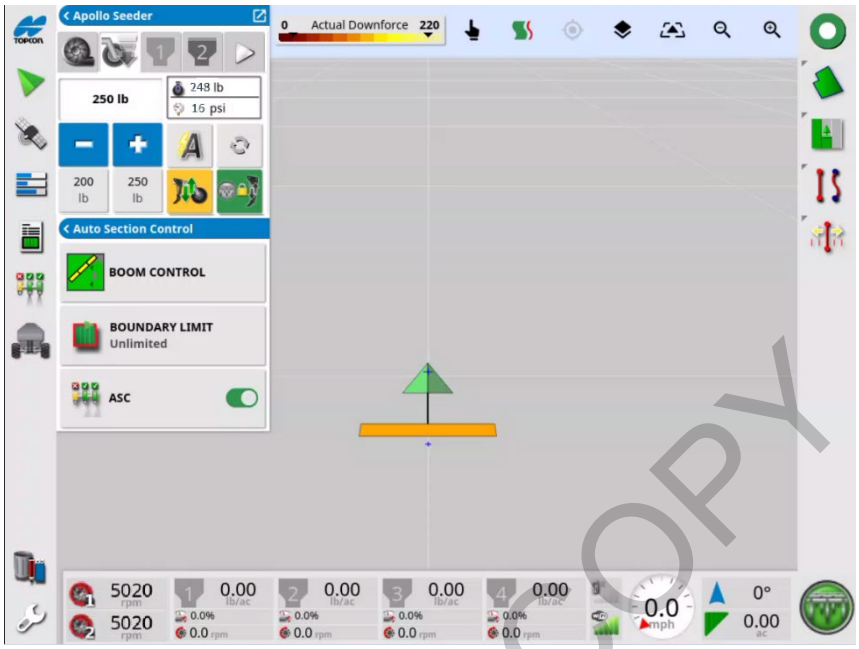


3. Select **Pack-Control** from the Global Home Screen menu.



4. Double check the Ground Speed, Fan, ASC , and Pack-control are set properly

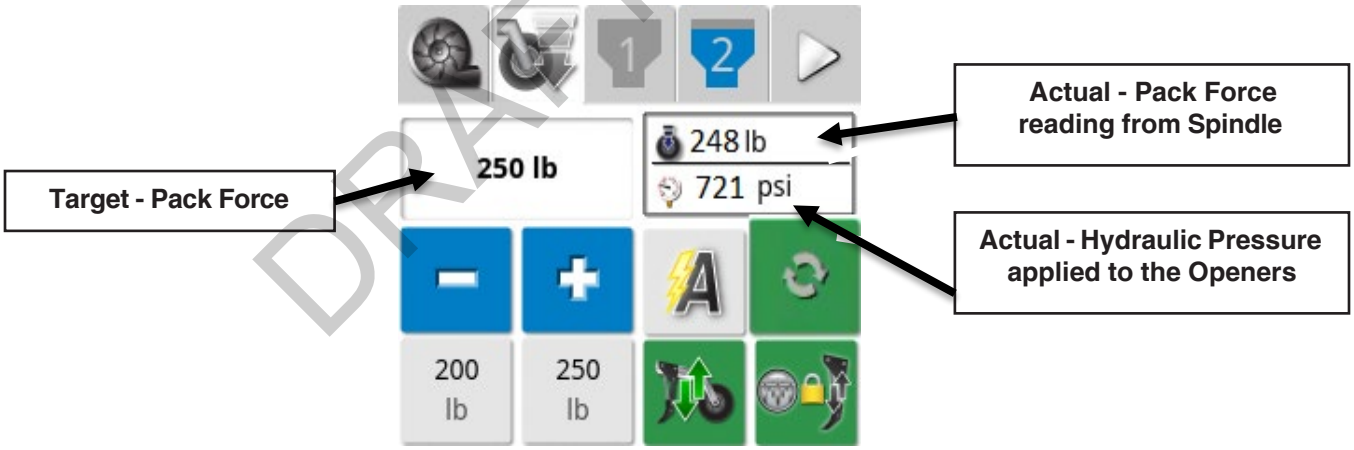
Lift Control Test - Continued



5. Press the  . Master Switch

Lift Control Test - Continued

6. The openers will now begin to lower into the working position under hydraulic pressure.

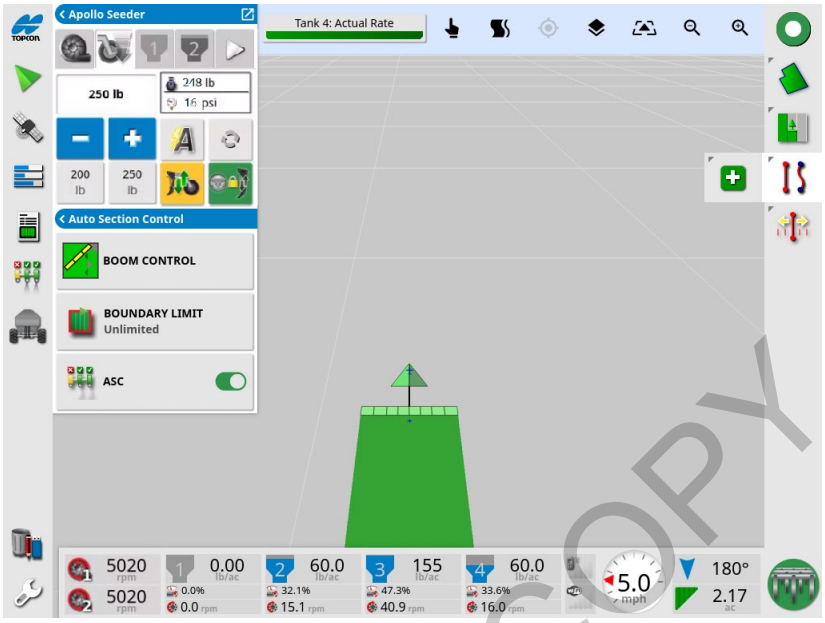


7. The openers at this point should now be fully lowered into the soil and locked into the working position.

   The control system will now try to match the requested Pack Control Target rate.

   The Actual Packing Force Rate being read from the Loadcell spindle is displayed in the upper right-hand side window.

Lift Control Test - Continued



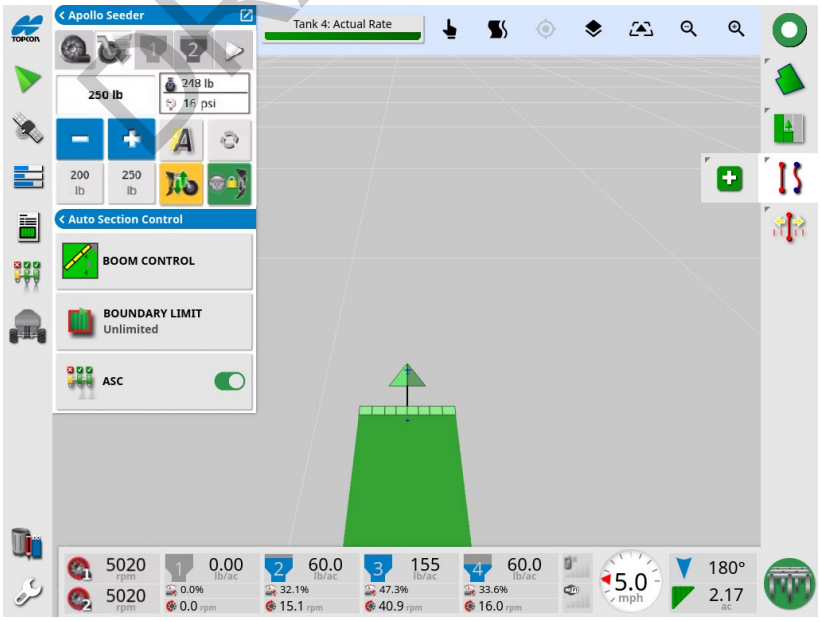
8. The Hydraulic Pressure will fluctuate depending on the soil conditions, this is normal as the control system is adjusting the hydraulic pressure continuously maintain the desired packing force over the variable field terrain.

   Hydraulic Pressure will automatically increase while travelling over rough and highly compacted soil.

   Hydraulic Pressure will automatically be reduced when travelling over soft loamy conditions.

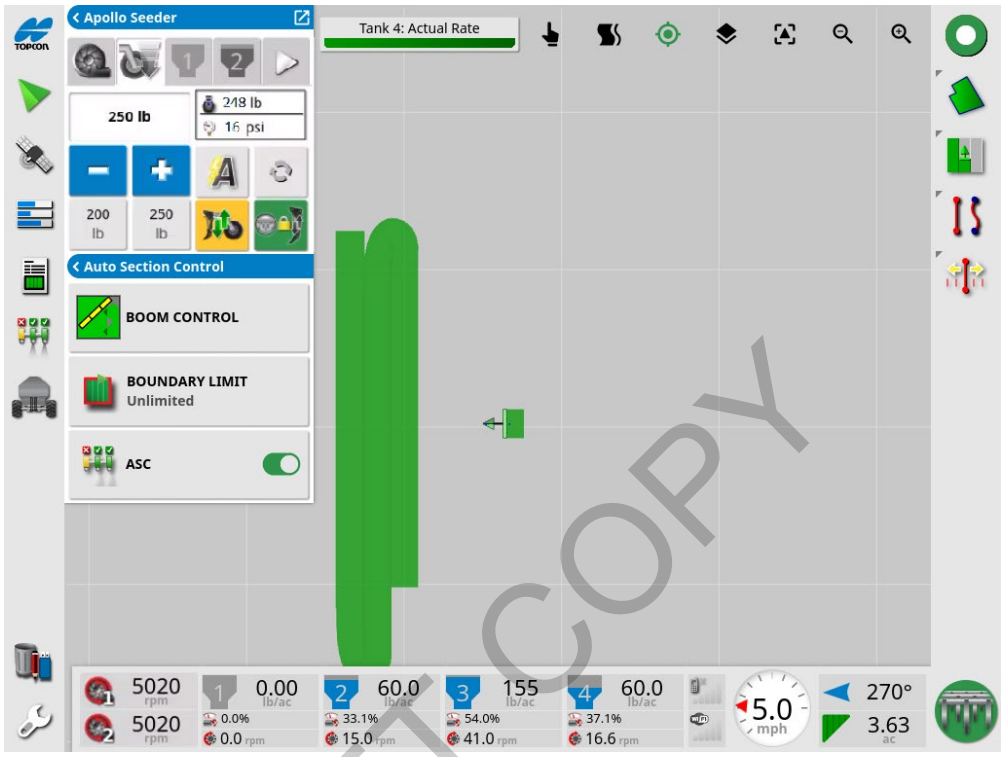
The goal of the Pack Control system is to always maintain a consistent packing force across all areas of the field.

NOTE: Detailed information on the Pack Control is located in latter areas of this document, only the basic operation is required to verify the Lift Lower automation segment of this lesson.



9. Continue to drive forward and create 3 back to back coverage passes. Drive approximately 2 squares on the map (650' / 200M). It is recommended to set an A/B line on the tractors steering system at this time.

Lift Control Test - Continued

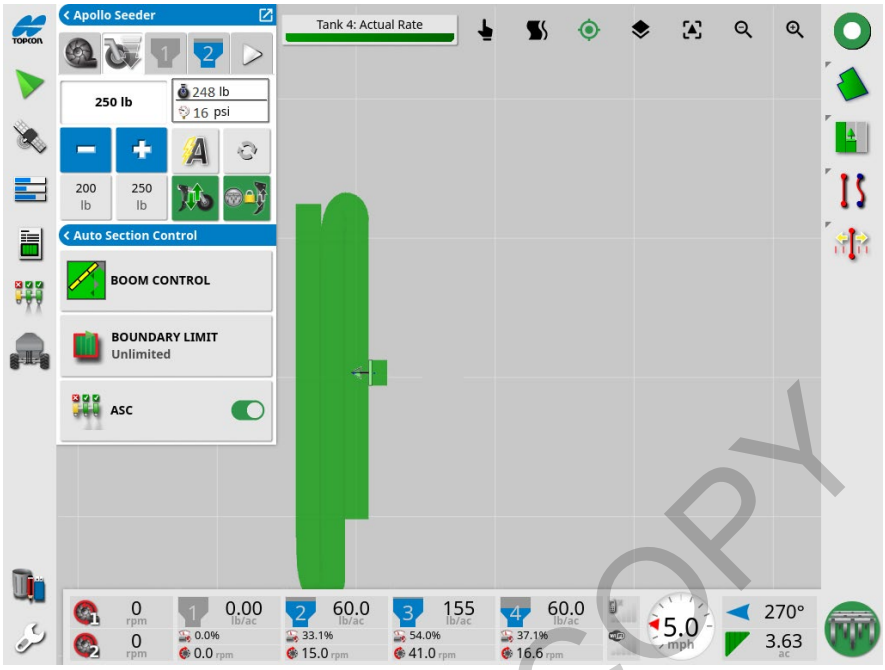


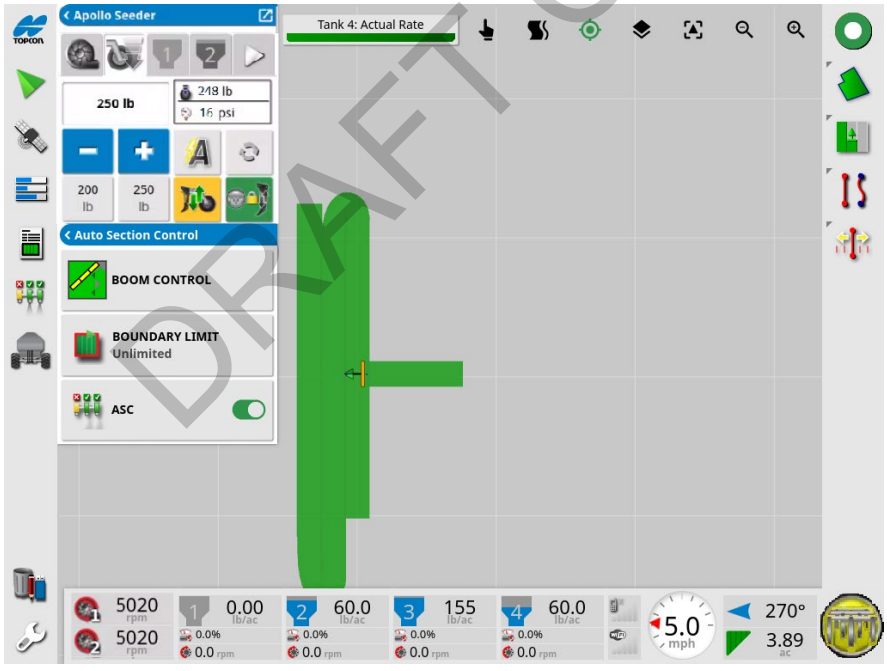
10. Once the 3 x passes are complete adjust your screen to the overhead view by toggling the **Overhead View** Icon  .

Align the implement to the coverage at a 90° heading, engage the  **Master Switch** and proceed to drive directly through the coverage area without stopping at normal operating speeds. We are now testing the automation of the drill **Lift / Lower** functions.

Note: Ensure the  **ASC** feature is ON.

Lift Control Test - Continued

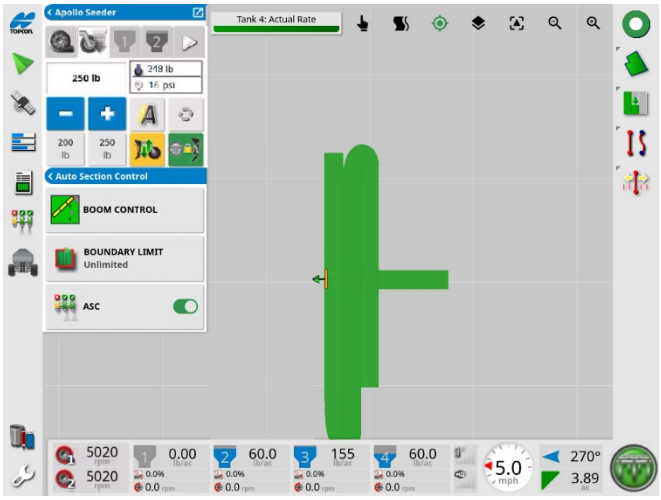


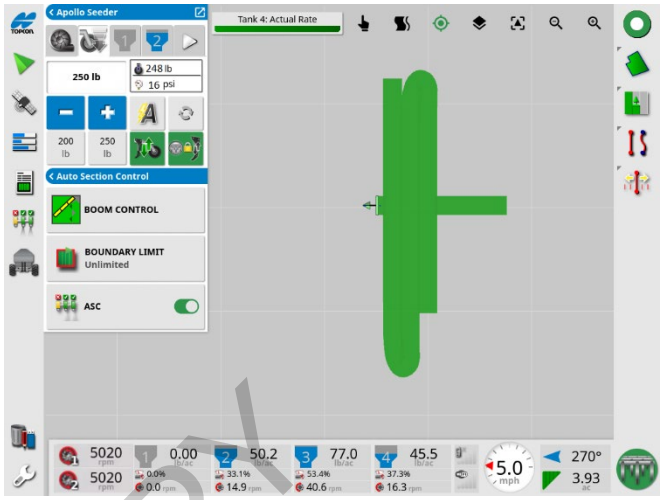


11. When approaching headlands and previously treated coverage areas, the control system will automatically raise the openers out of the ground.

Note: The color of the Lift Control  **and Master Switch**  **are Yellow indicating that the ASC system has automatically turned the Master Switch off (ready to lower).**

Lift Control Test - Continued



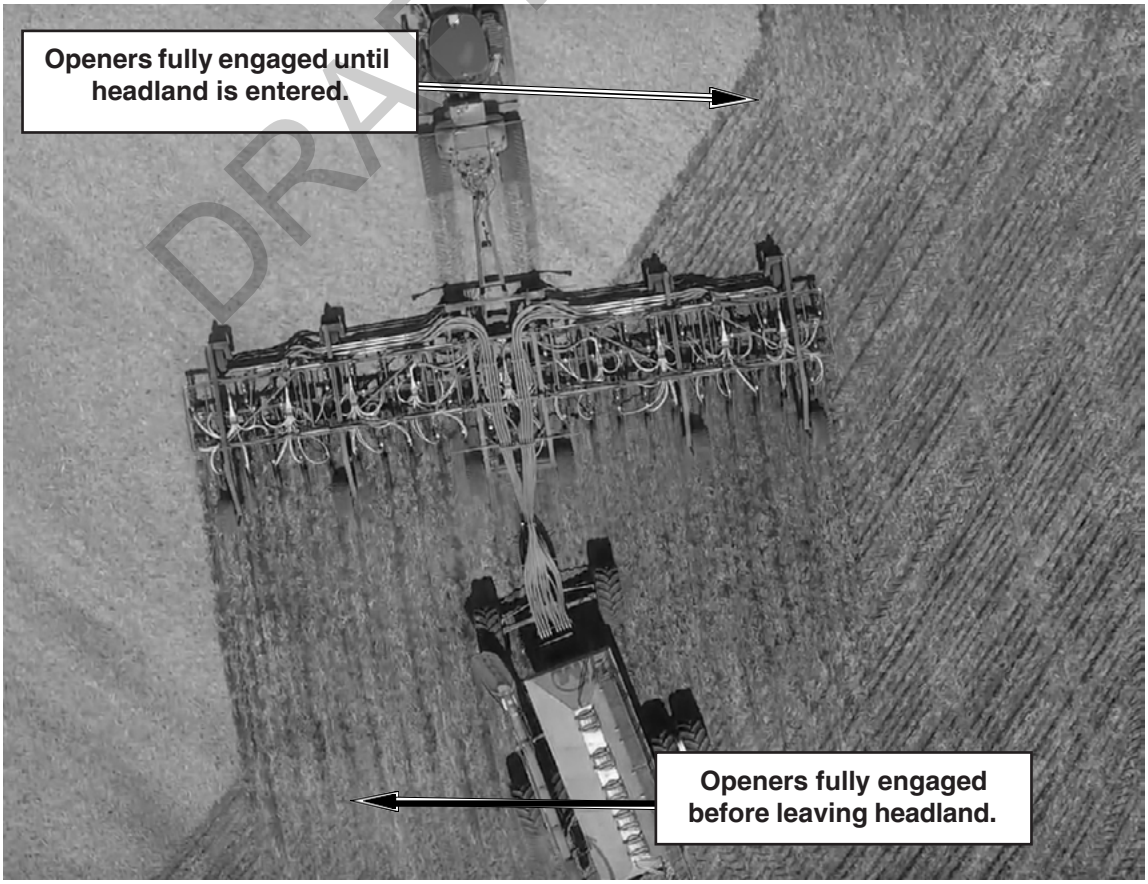


12. As the implement exits the previously treated area and passes into the untreated coverage area, the control system will automatically lower the implement.

    The Master Switch and Lift Control return to their normal operation showing the green color state. The Drill should now be completely lowered and openers locked into the working position.

    Exit the Tractor and verify the Lift and Lower coverage. Inspect that the latest pass furrows are firmly packed slightly before leaving the previously treated area.

Caution the Hydraulics are still running at this point. It is recommended to turn the opener tractor hydraulics off when exiting the vehicle

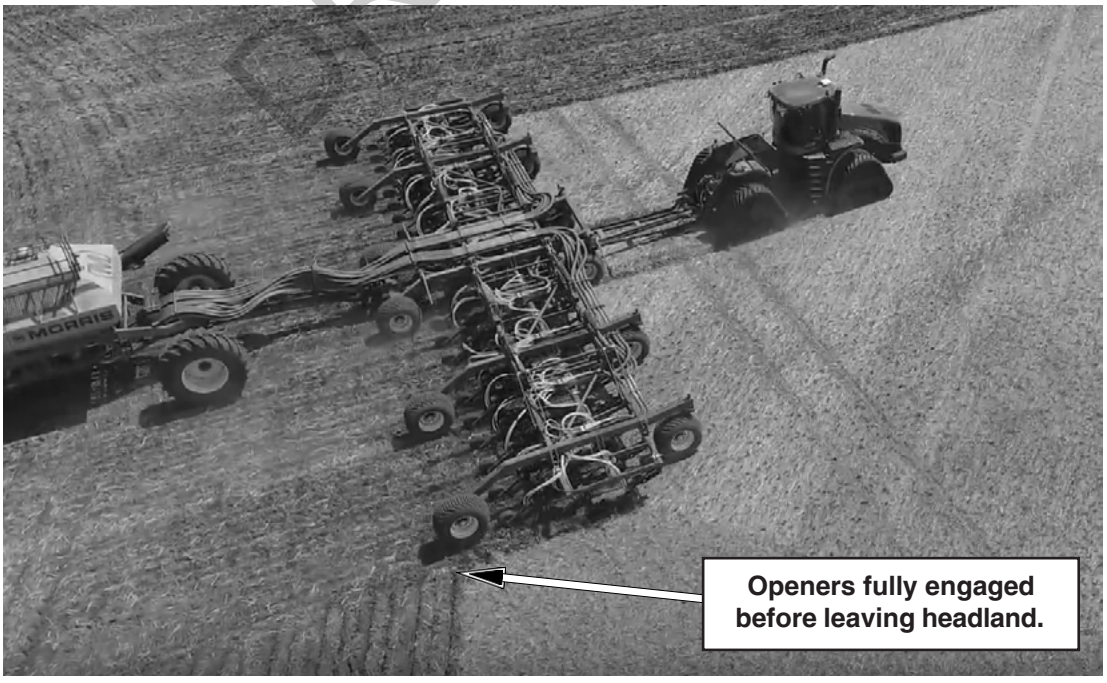


Lift Control Test - Continued

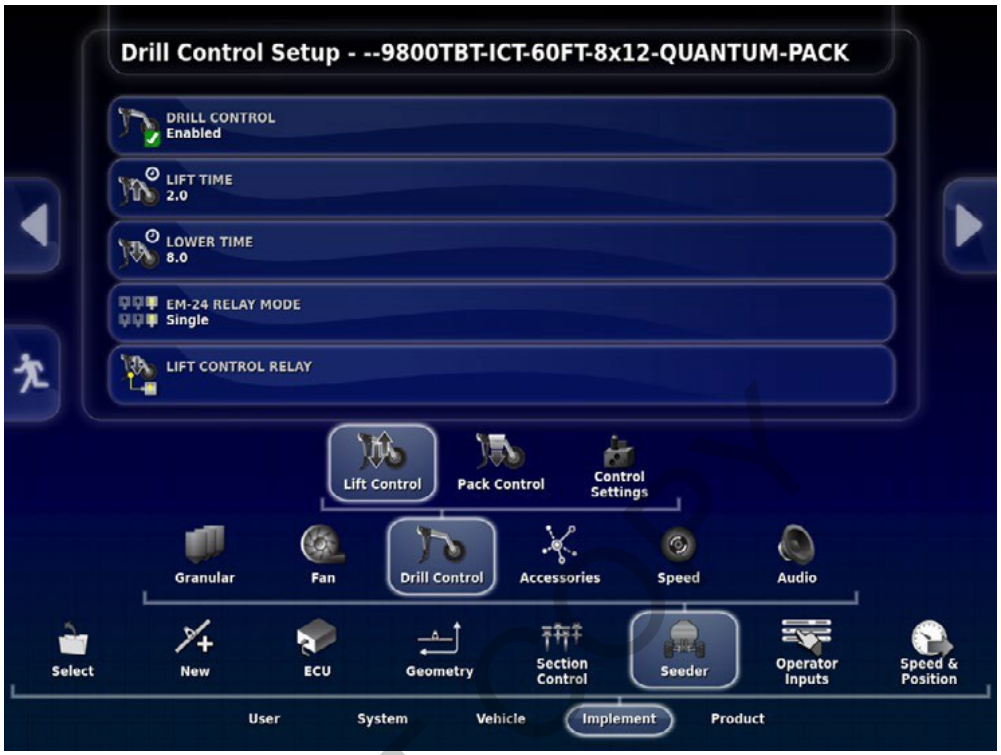
Try to achieve approximately 3' (1 M) of overlap at 4.3mph, however the timing for Lift / Lower can be adjusted as per the operator's preference. However, be cautious when adjusting these times.

Note: A Dealer or Morris Service Technician is necessary to unlock the Lift time editing panel. Lowering Time is adjustable on all user levels.

If your Quantum is equipped with the optional Accumulator kit, the lowering times may need additional look ahead time (headland perimeter) to refill the accumulator's internal reservoirs.



Lift Control Test - Continued



13.To adjust the Lowering time, press the Setup Wrench, and navigate to:

Implement - Seeder - Drill Control - Lift Control

Increasing the Lowering time will allow the drill to lower sooner and provide more overlap and ensure the openers are locked into the working position.

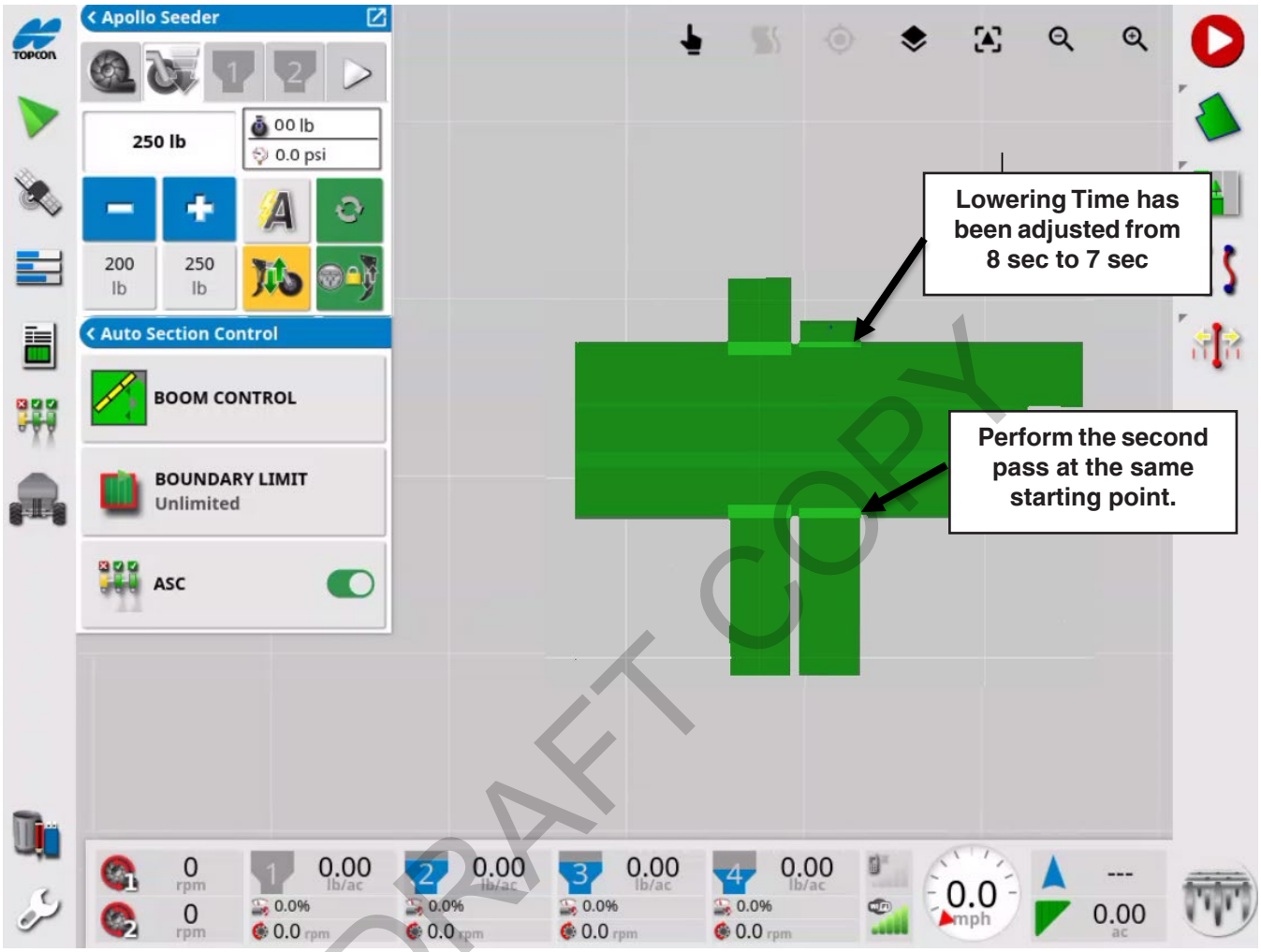
Decreasing the Lowering time will allow the drill to lower later and provide less overlap.

Risks - openers are not at working position - seed depth is affected.

Recommendation is adjusting the lowering times in .5 seconds intervals.

Travel Distance			
MPH	Feet/second	kph	m/s
3.75	5.50	6	1.67
4	5.87	6.44	1.79
4.25	6.23	6.84	1.90
4.5	6.60	7.25	2.01
4.75	6.97	7.5	2.08
5	7.33	8	2.22
5.25	7.70	8.5	2.36
5.5	8.07	8.85	2.46
5.75	8.43	9.25	2.57
6	8.80	9.66	2.68
6.25	9.17	10	2.78
6.5	9.53	10.46	2.91

Lift Control Test - Continued



14. Drive around and make a second pass starting at the same side as the first pass, this will make it easier to compare the Lift and lower times against each other.

Note: The as applied coverage map show the locations of where drill has been lowered, the time change has pushed the lowering closer to the edge of the previously treated area.

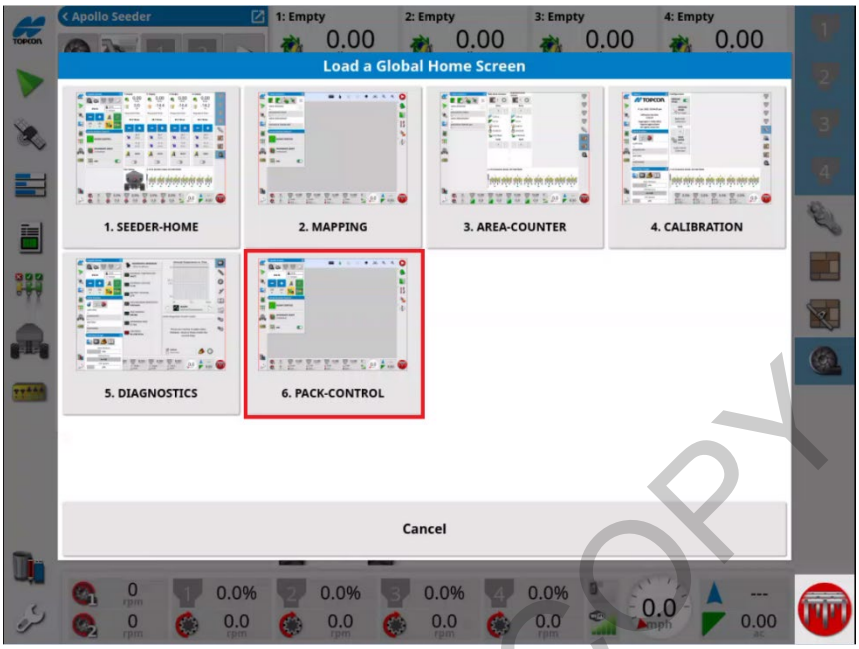
Lift Control Test - Continued

15. Perform an additional pass at a 45° angle.

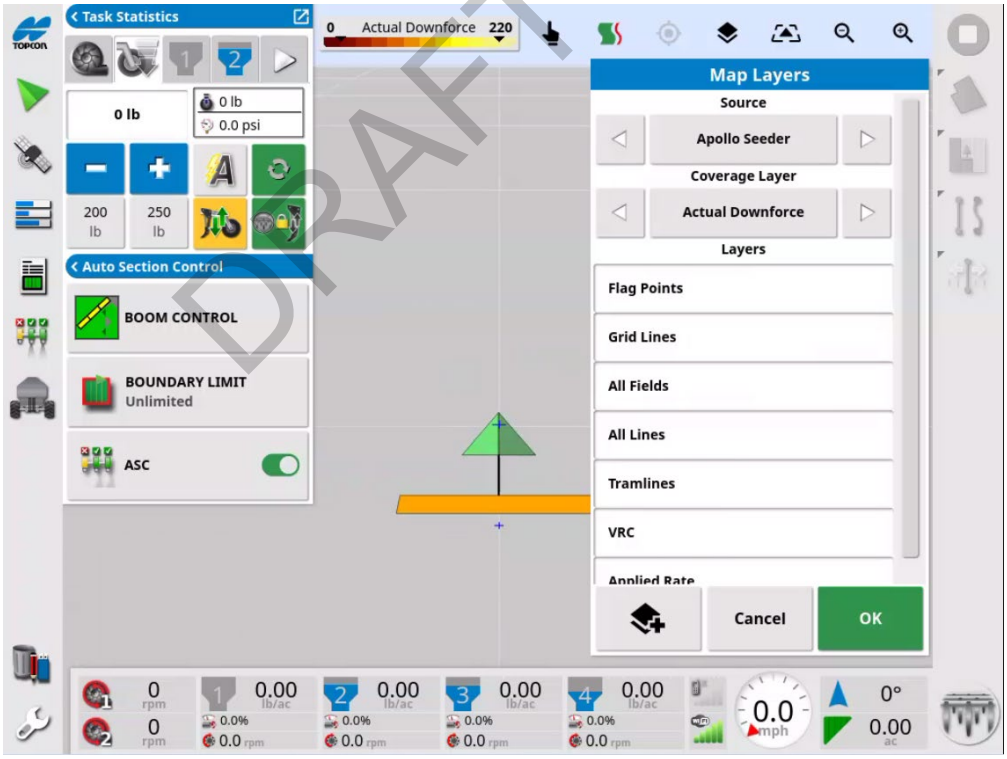
16. Notice how the entire implement must fully travel through the previously treated area, only once the entire drill is inside the coverage will the Lift command be activated.

Note: Individual sections do not lift on the Quantum.

Pack Control Test

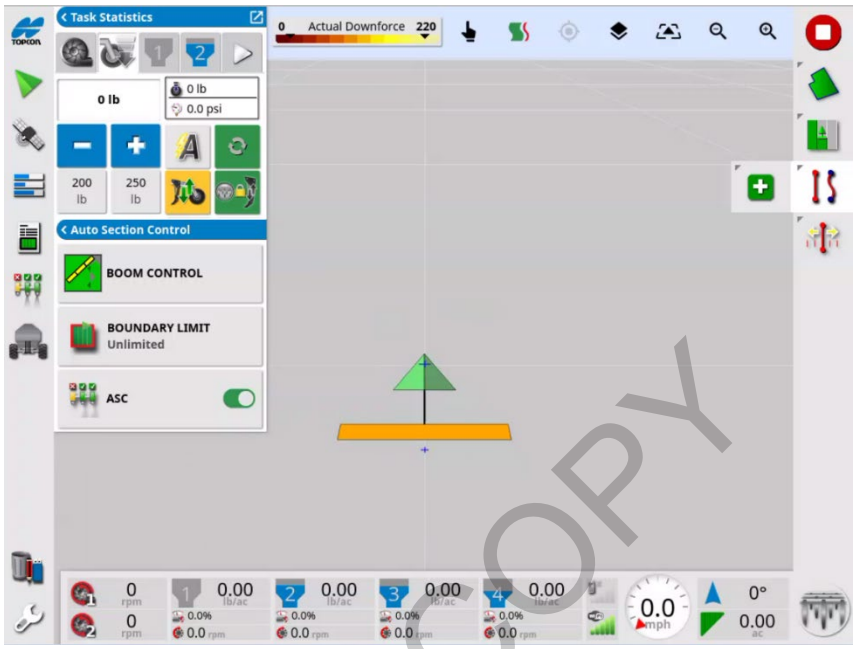


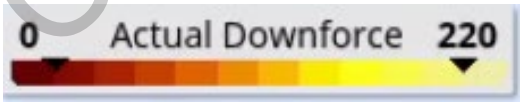
1. Select **Pack-Control** from the Global Home Screen menu.



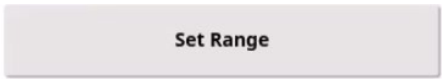
2. Open the **Map Layer**  Icon, and toggle the Coverage Map arrow to **Applied Rate Map**, and the Tank Arrow to **Pack Control**. Apply the settings with the Green check mark.

Pack Control Test - Continued

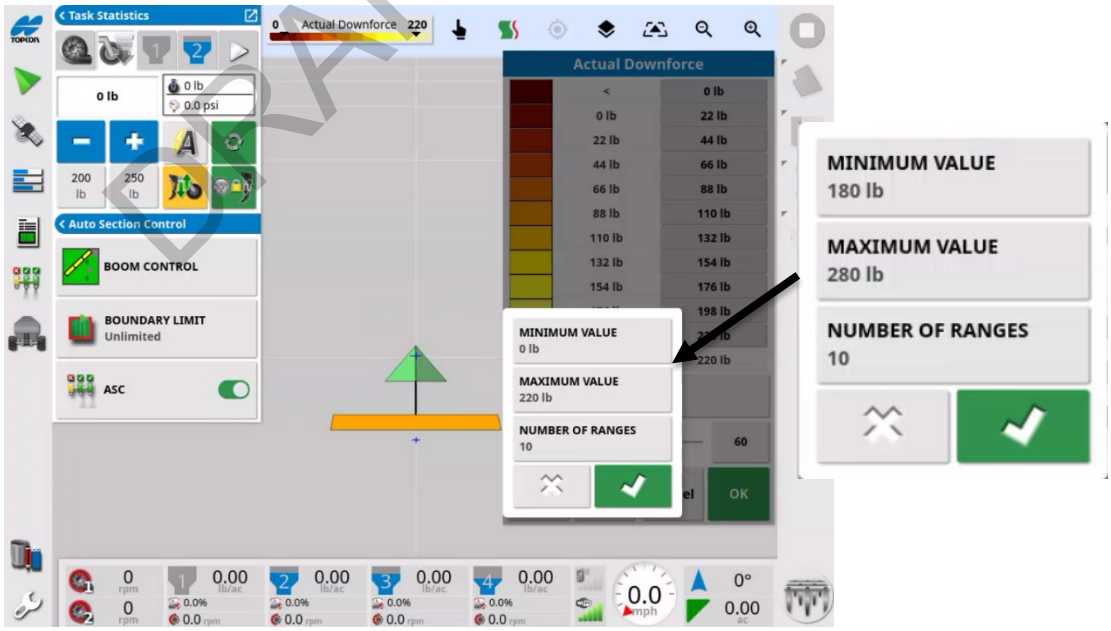


15. Open the Pack Control map Legend, by pressing on  located at the top of the screen.

Pack Control Test - Continued

16. Press the 

Set Range Icon.



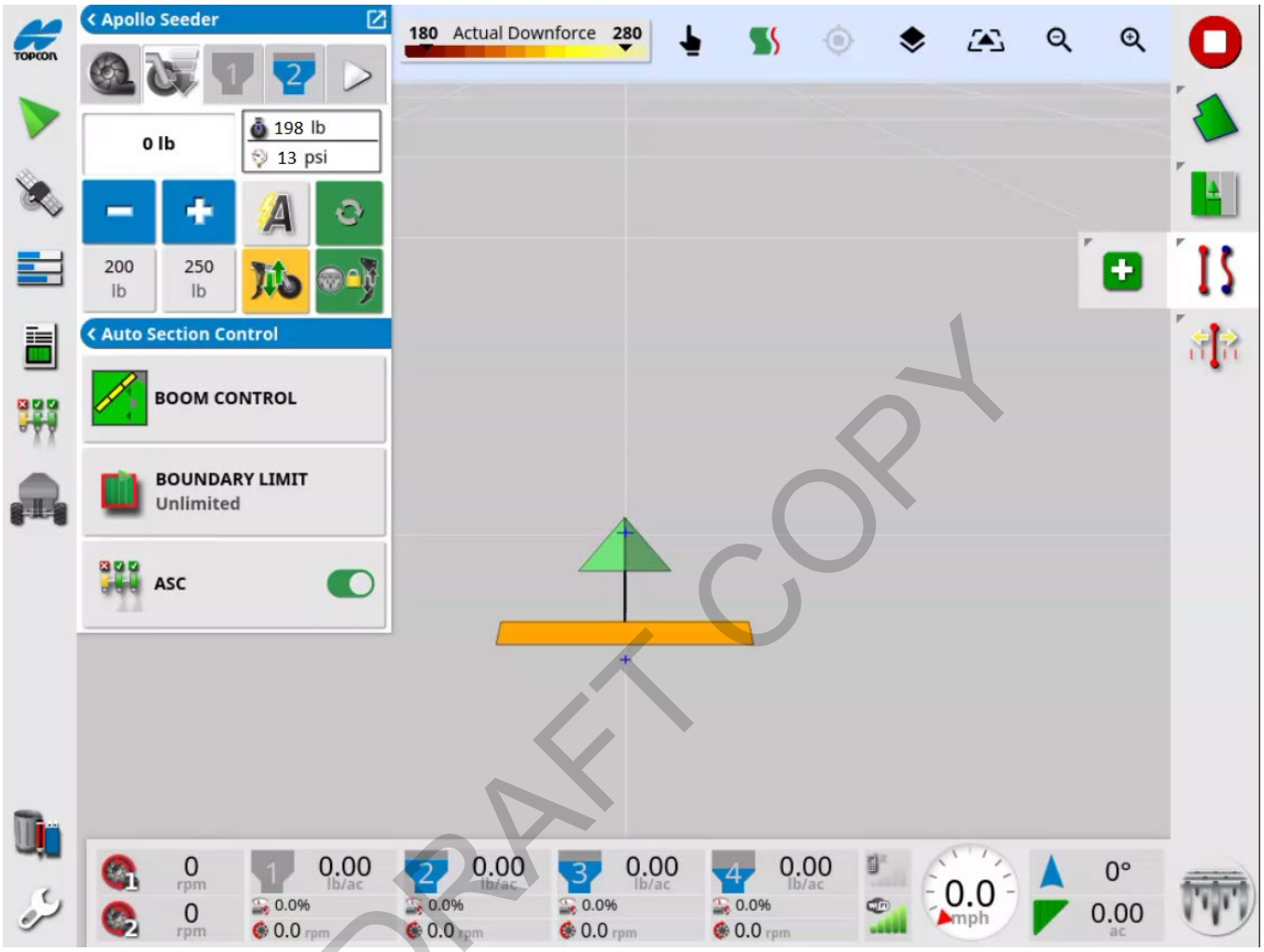
17. Adjust the Minimum and Maximum Values.
18. Set the values to Min 180lb and 280lbs. Apply with the Green check mark.

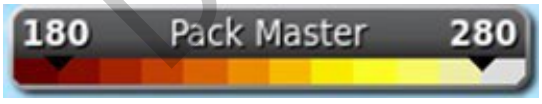
Pack Control Test - Continued

19. Review the settings are correct, Notice the color legend represent a different levels of packing force.

The color legend can also be changed, by pressing on the  arrow keys. You can choose to use a different color band if desired, or simply use the default colors by applying the changes with the green check mark.

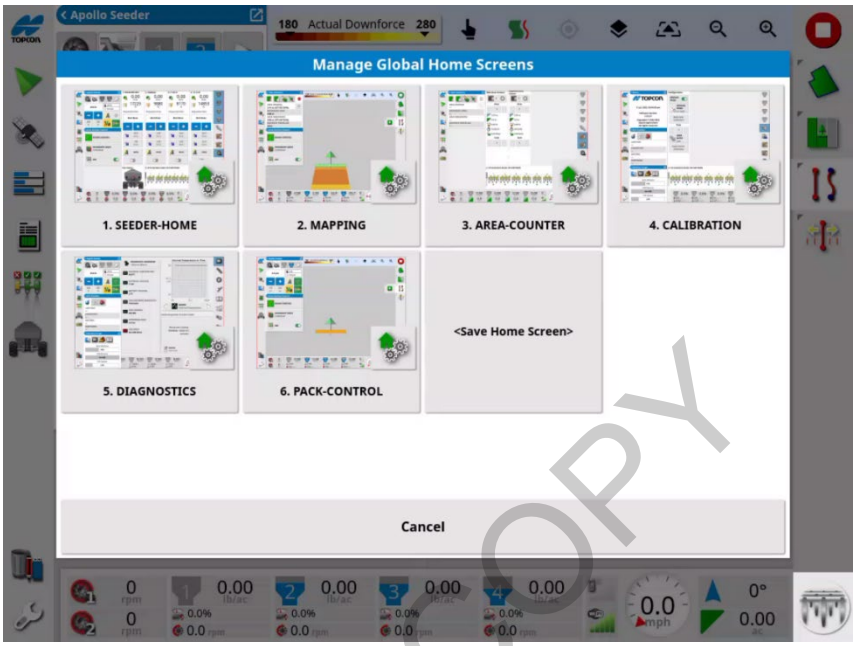
Pack Control Test - Continued



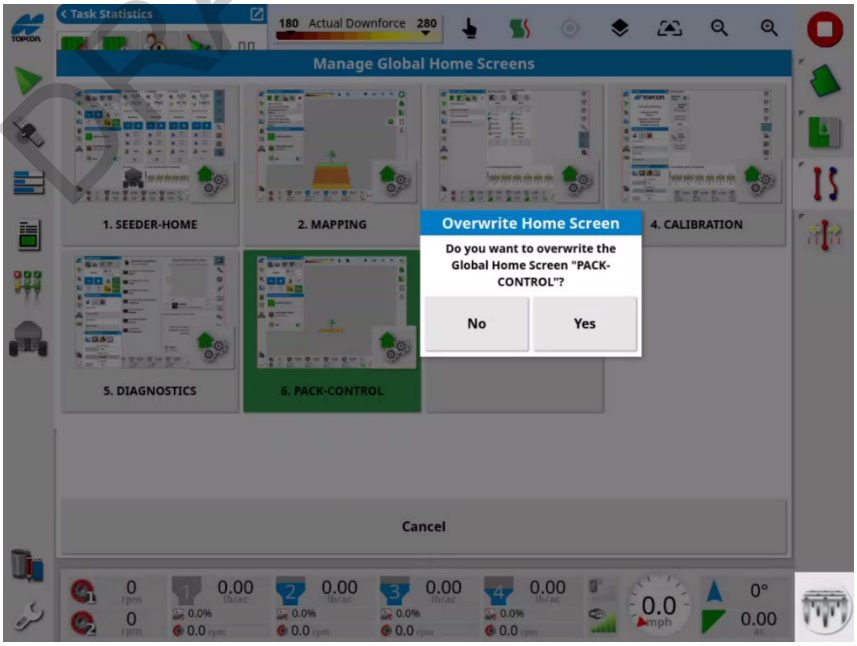
20. Note the legend 

now shows the Minimum and Maximum Pack force Values assigned. These colors will be displayed on the coverage map of the actual packing force applied in the field.

Pack Control Test - Continued

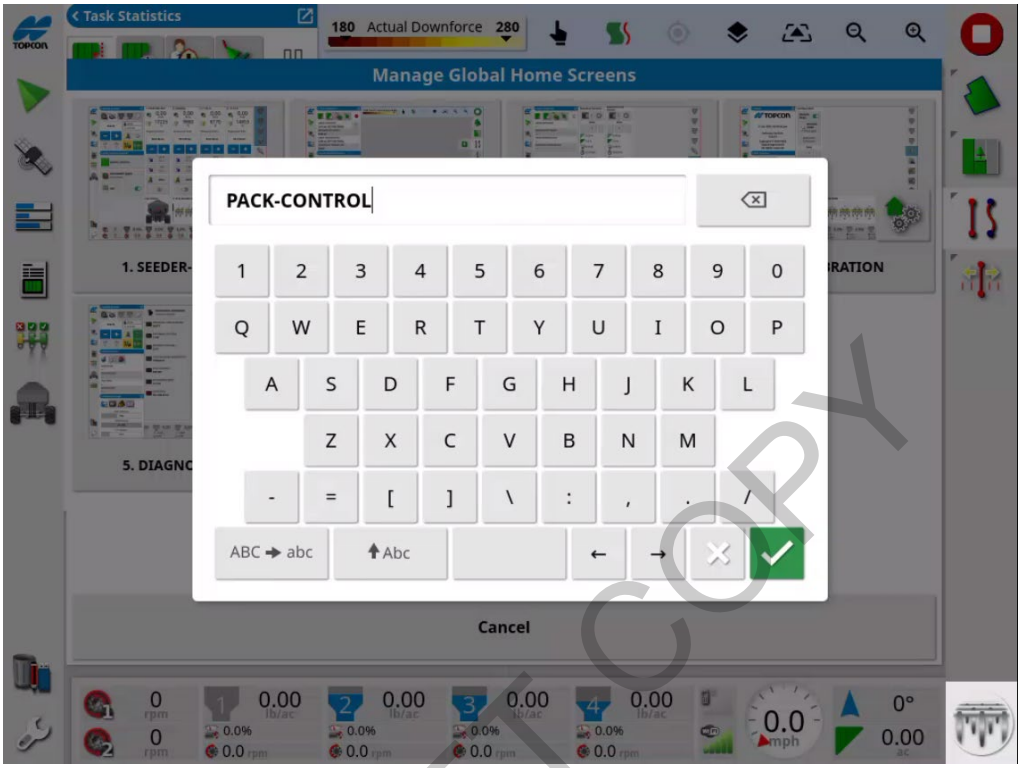


21. Swipe Up to reveal the dashboard ribbon and press the  Manage Global Home screen. Then press the center of the Pack-Control icon. Do not press the green house.



22. Overwrite Home screen - select the **Yes** Icon.

Pack Control Test - Continued



23. Simply press the Green check mark.

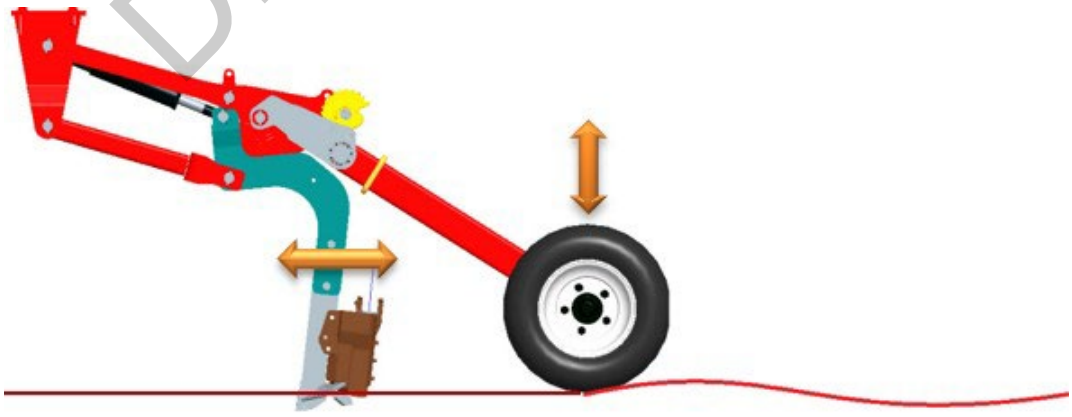
24. Increase the Pack Control to 250lb by pressing the Preset 2 Icon.

Pack Control Test - Continued

25. Since the system is now being commanded to apply 250lb of packing force, the pack control coverage map is now painting a different shade of colour. This is a quick reference and provides validation that the system is functioning correctly.

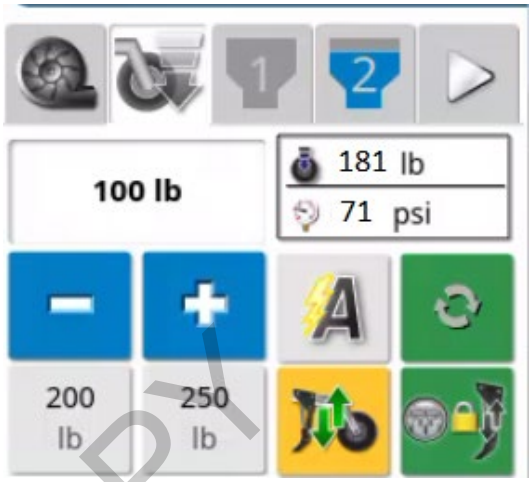
Note: The pack control coverage map should be very uniform, and should not consist of many colour ranges, if the map colour is up and down, you likely have the system set too low.

26. Experiment with different pack control values to suit your field conditions.

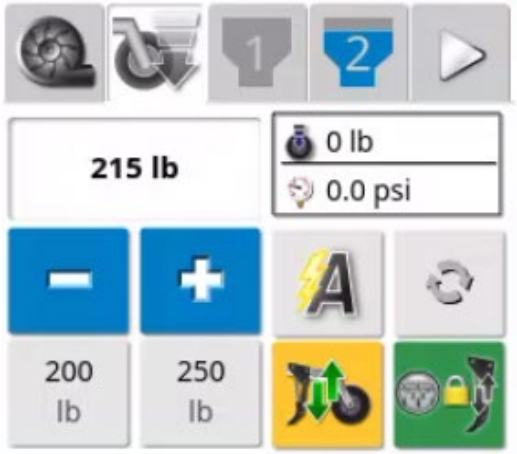


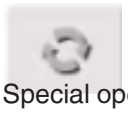
27. During a test pass, have someone drive along side the Quantum and inspect the openers. Communicate with each other on the current settings used and if the openers appear to be locked into the working position. If they appear to be kicking back or “dancing” try increasing the Pack Control settings by pressing the  icon. This will increase the packing pressure in 10 lb increments.

Pack Control Test - Continued



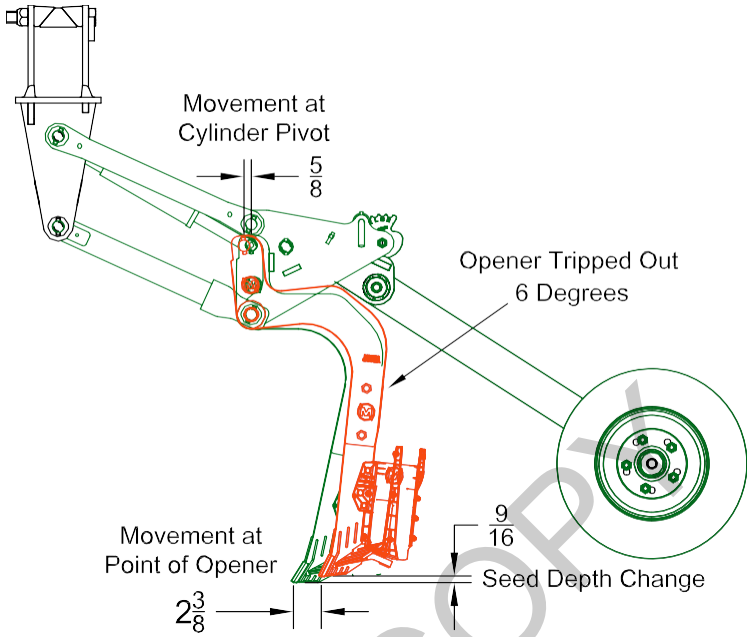
28. If the Pack Force is set incorrectly an Alarm will be displayed - If the minimum Pack Force is set too low the control system will perform erratically. It is recommended to set the system above 200lb packing force, this allows the PWM to operate in a usable range.





29. Special operation - Pack Control - On/Off (Float mode) button when toggled to OFF, allows the openers to Float over terrain in the downward working position with no pressure applied. This function is useful when travelling over a wash out or in muddy conditions when the unit is on the verge of becoming stuck. Using Float feature allows for the application of product to be broadcast on top of the ground.

Pack Control Test - Continued



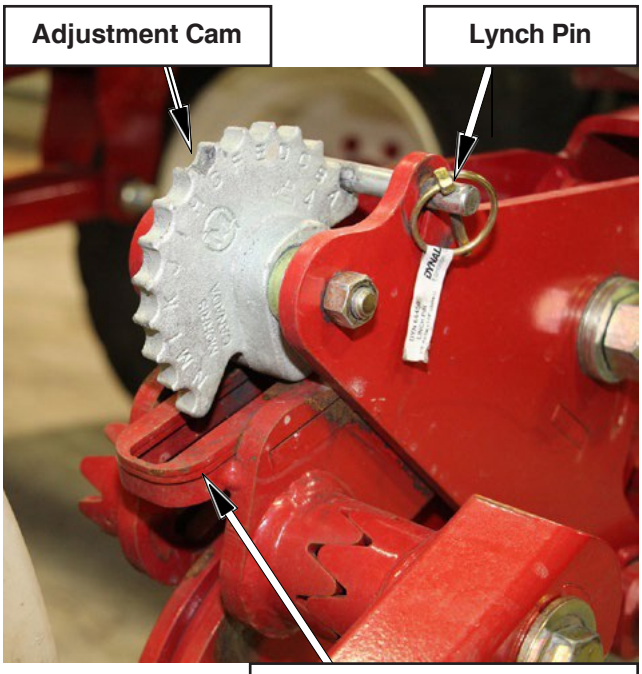
If the Morris Quantum minimum operating Pack Force is set too low (generally under 200lbs of Pack Force) this could cause the system to fall out of the locked working position. This is due to the draft forces of the soil exceeding the amount of hydraulic pressure, the openers will drag backwards into a partially tripped position. If the opener shank assembly becomes partially tripped the seed depth accuracy will become compromised as the seed depth does in fact change. Even if the openers are slightly pushed back from the locked working position to 6°, the changes in geometry can altered the seed depth by over 1/2".

Increasing the Packing Force Settings to increase the Seeding Depth is not recommended.

Using higher Pressures / Pack Force settings causes higher Trip out forces, which requires more Power to pull the drill, added fuel consumption, as well as additional wear on the packer tires.

Only adjusting the seed depth by using the depth cam located on the row unit assemblies.

If the seed depth cam is adjusted, a new Pack Force control setting may be required in order to have good firming of soil in the furrow.

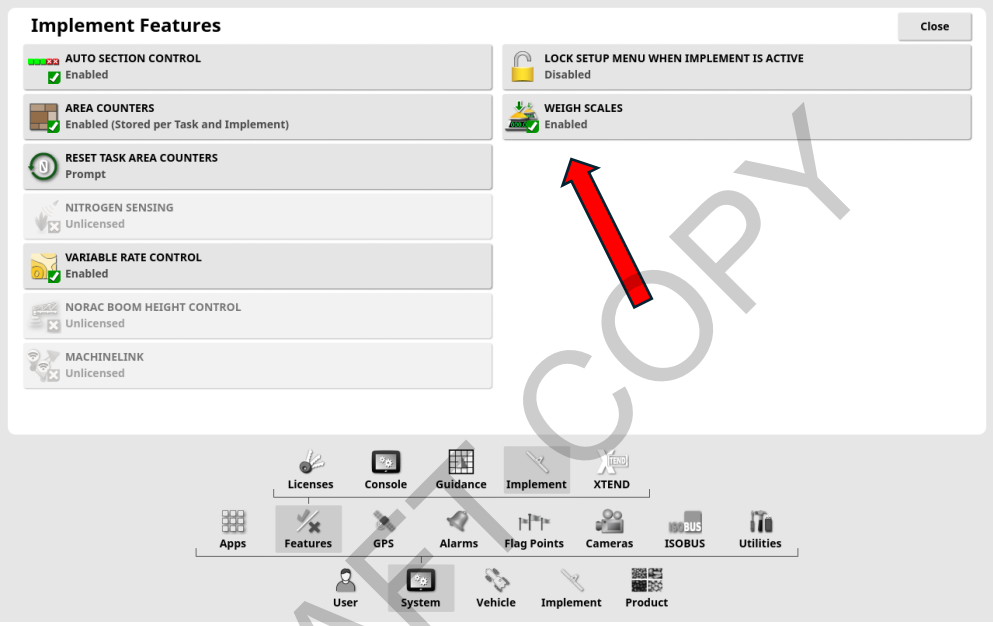


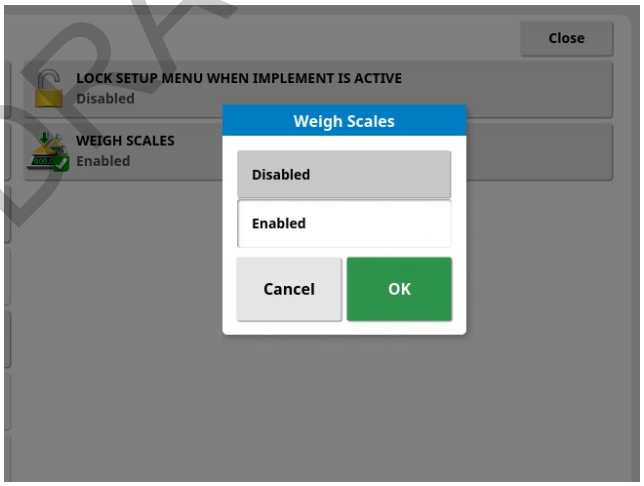
Notes

Load Cells

Enabling Load cell system – Set from factory.

- To enable weigh scales, select **SYSTEM / FEATURES / IMPLEMENT** and enable the **WEIGH SCALE** options.

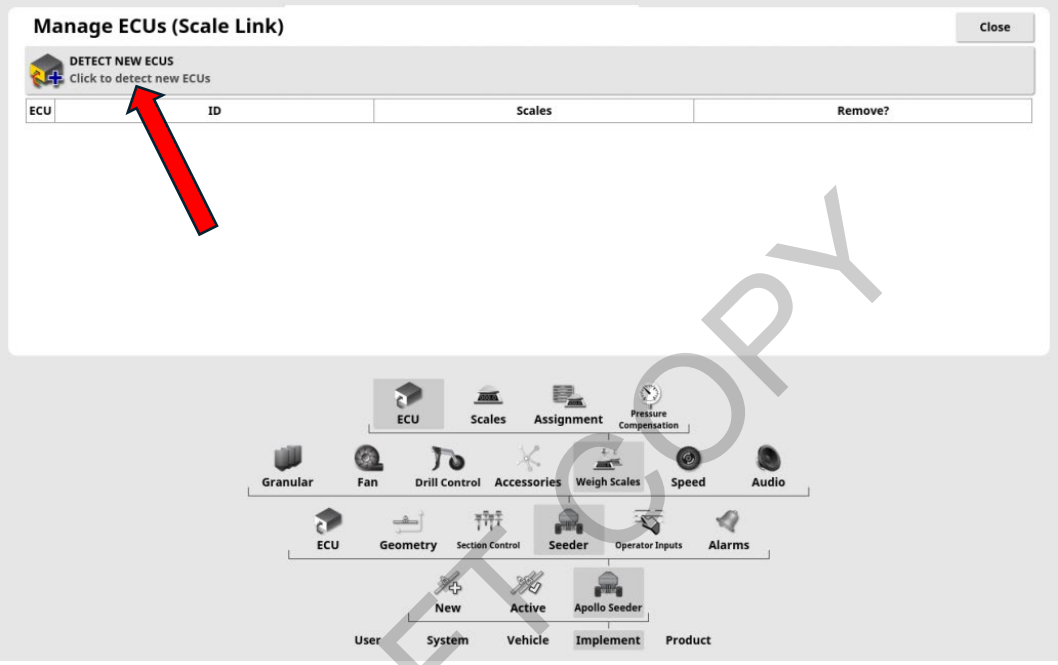




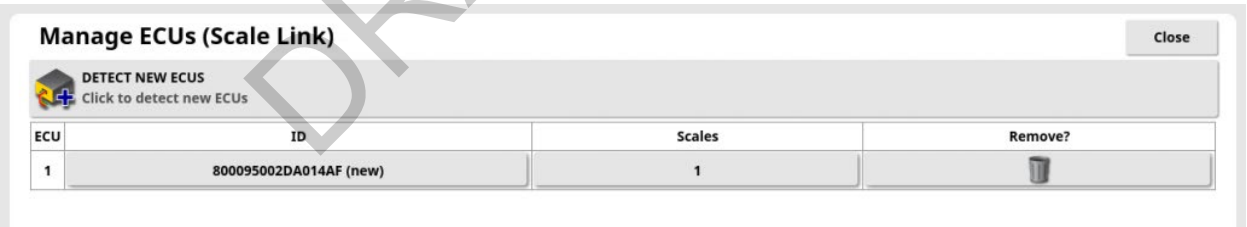
- Once enabled, Features such as the “Tank Fill Wizard” and “Auto Cal” will become enabled.

Managing/Assigning Load Cell ECU – Set from Factory

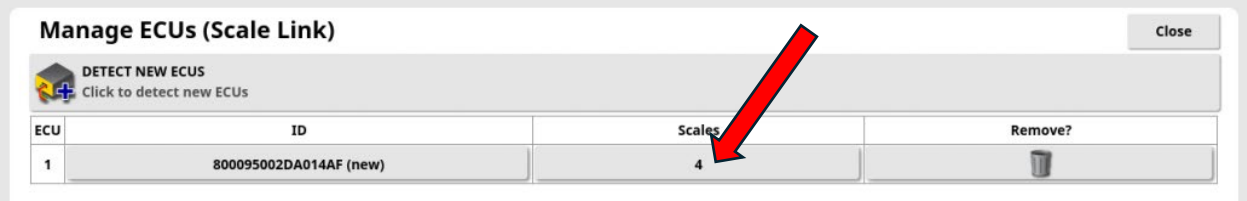
- With the scale option enabled, assign the weigh scale ECU to the TopCon System.
- Select **IMPLEMENT / APOLLO SEEDER / SEEDER / WEIGH SCALES / ECU** and select **DETECT NEW ECUS.**
- Once the auto detect has detected "1 new Scale Link ECU(s)" select ok to assign it.



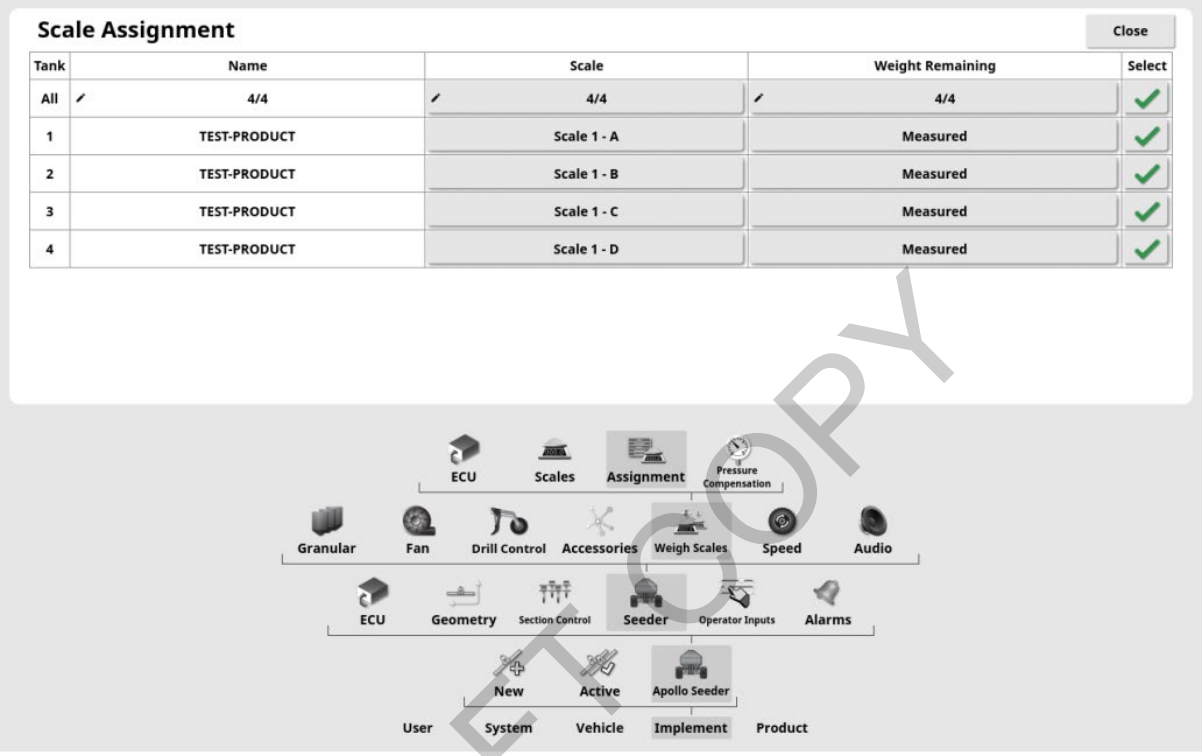
- The scale link ECU has now been successfully paired to the TopCon System.
  - There will only be **one** scale ECU per air cart.



- The next step is to configure the load cell ECU to match the Morris Tank.
- Select **IMPLEMENT / APOLLO SEEDER / SEEDER / WEIGH SCALES / ECU** and change the number to scales from **1** to **4.**



- Select **IMPLEMENT / APOLLO SEEDER / SEEDER / WEIGH SCALES / ASSIGNMENT**.
  - In the “Scale” column, assign each scale to the appropriate tank, ie; Tank 1 = Scale 1 – A, Tank 2 = Scale 1-B, ect..
  - In the “Weight Remaining” Column, set load cell value to Measured for all tanks.

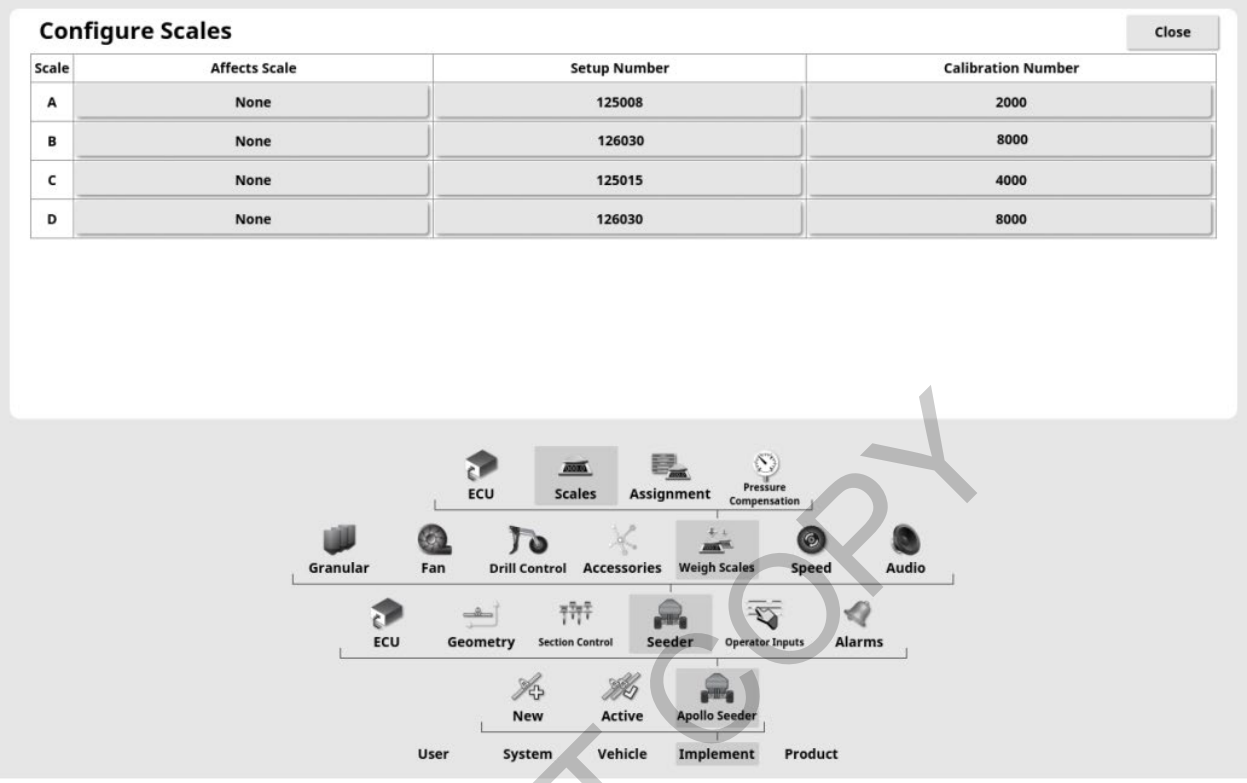


- Once the load cells have been assigned to the appropriate tank, Select **IMPLEMENT / APOLLO SEEDER / SEEDER / WEIGH SCALES / SCALES.**
- For each tank, assign the appropriate **Setup Number** and **Calibration Number.**
  - These numbers are based on the size of load cell used on each tank.

	Imperial		Metric	
Load Cell	**Setup #**	**Cal #**	**Setup #**	**Cal #**
5k	125008	2000	525004	907
10K	125015	4000	525007	1814
20K	126030	8000	525014	3629

Cart	**Load Cell Location**			
	Tank 1 Scale **A**	Tank 2 Scale **B**	Tank 3 Scale **C**	Tank 4 Scale **D**
660	5K	10K	10K	20K
820	5K	20K	10K	20K
1050	5K	20K	10K	20K

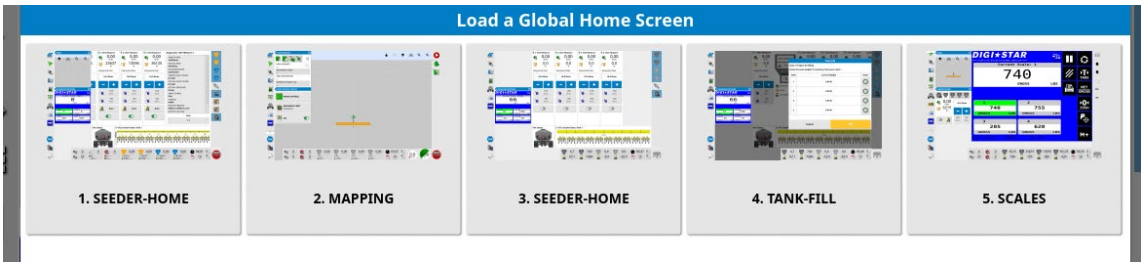
- Note the “Affects Scale” column is requried to be set to None.



- The scale system corrects for the additional weight of air introduced from tank pressurization.
- The default value may be adjusted if it does not seem to be accurate. This value is found by selecting **IMPLEMENT / APOLLO SEEDER / SEEDER / WEIGH SCALES / PRESSURE COMPENSATION.**

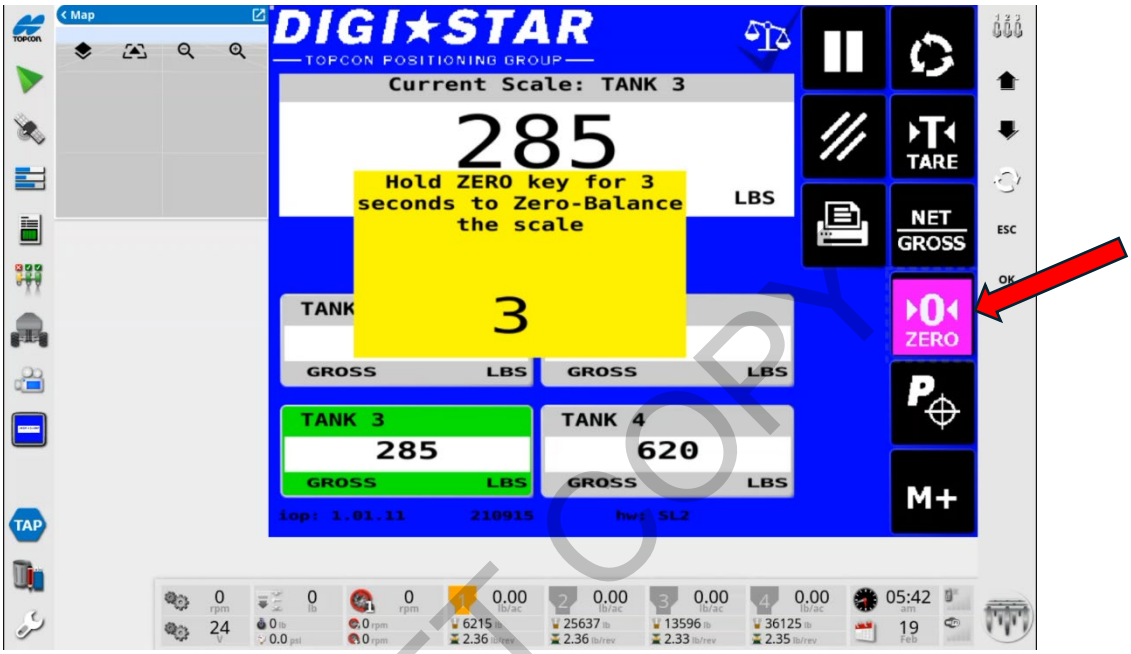
- After the load cells have been assigned, setup and calibrated, select the “Scales” home page from the global home screen page.

  - Accessed by swiping up from bottom of screen and selecting the home icon.



  - The DIGI STAR scale page can also be accessed by selecting the Universal Terminal and maximizing the window.

- *****CRITICAL STEP**** It is crucial that there is no product in the tank or anything or one on the walkways while zeroing the scales.
- From the “Scales” home screen select each tank or the tank which has been reassigned and zero the scales by pressing and holding zero for 3 seconds.



- The scales have now been successfully paired to the tank and are ready to use.

Scale link in Universal Terminal

Keys used on Scale link in Universal Terminal

Note: Not all keys are shown on every screen.

 - Home – Returns to home screen

 - Enter setup screens

- Tare – Sets net scale value to 0. Gross value will hold total weight on scale

- Toggle between Net and Gross values for selected tank

- Zero tank scale – **ONLY USED DURING CALIBRATION/SETUP**

 - Preset weight for loading prescribed amounts of product

- Adds displayed value to memory

 - Pause

 - Cancel

 - Print

- Clear Memory

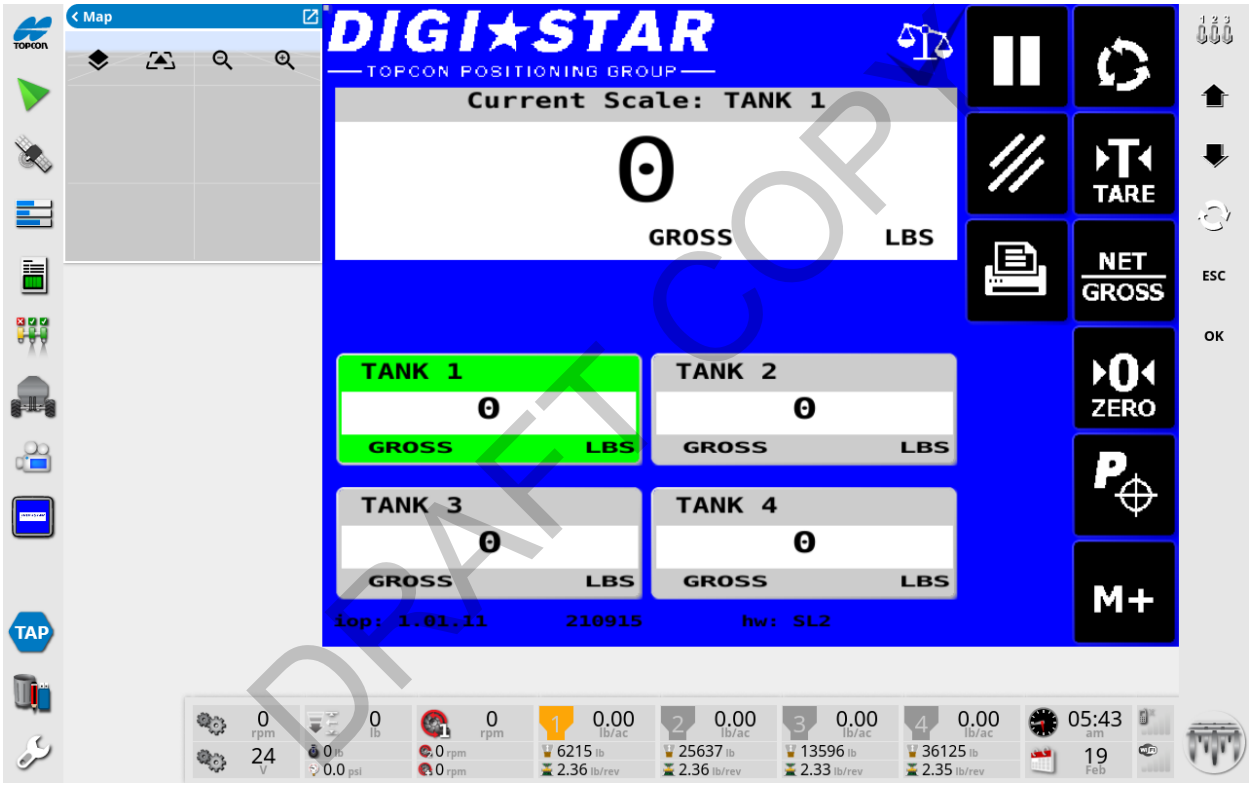
 - Configure main screen layout

 - Enter

- To enter Direct Access Numbers

NAVIGATION

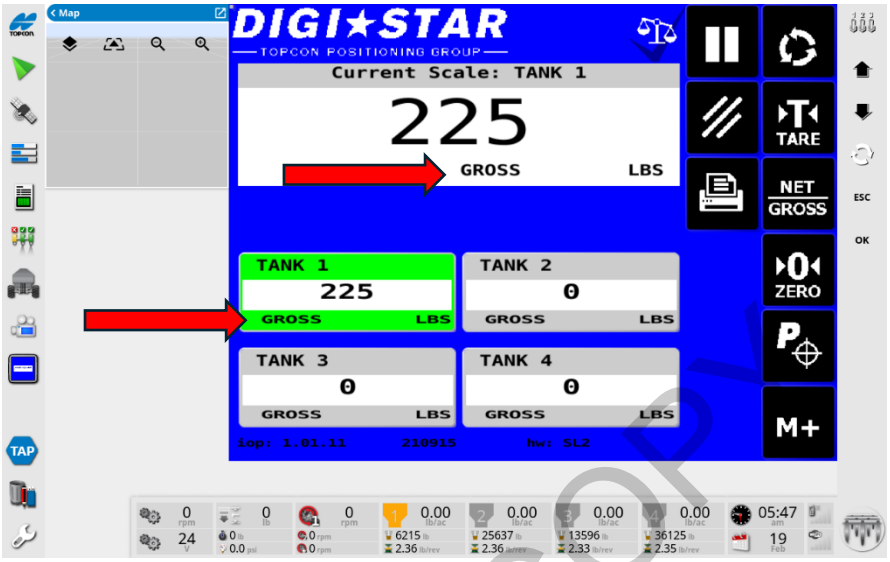
- Select the “Scales” home page from the global home screen page.
    - Accessed by swiping up from bottom of screen and selecting home icon.



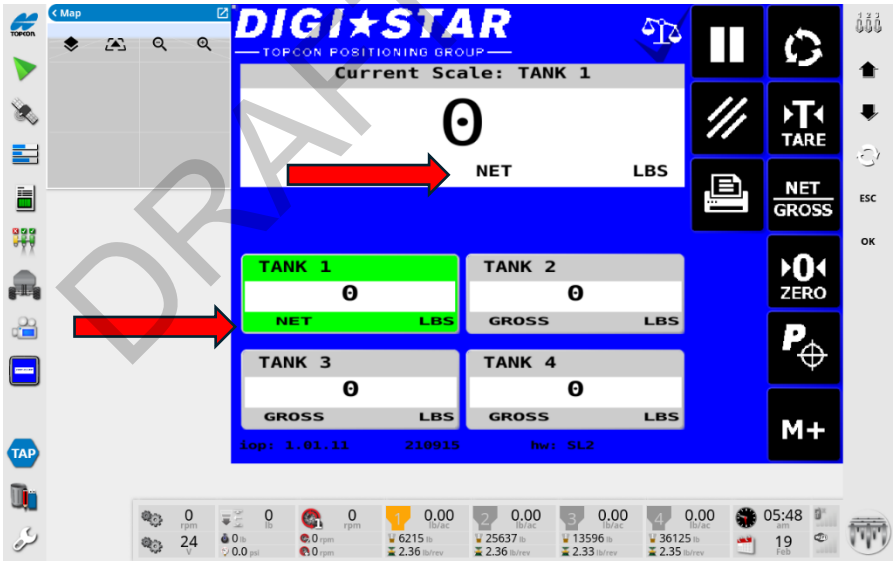
- This display shows the four scales, initially labelled: Tank 1, Tank 2, Tank 3 and Tank 4 (setup from factory). Each scale can have customized settings.
- The size and position of individual scale information can be changed.
- Different scale names, setups (weight units, count size, ect.) and calibrations are possible.
- In the four scale setup shown above, the scale that is shown with a green background (Tank 1) is also displayed in the large top banner.

Tare/Net/Gross

- **DO NOT USE "ZERO TANK SCALE" BUTTON.**
- When and where to use these features is left to the operators discretion.



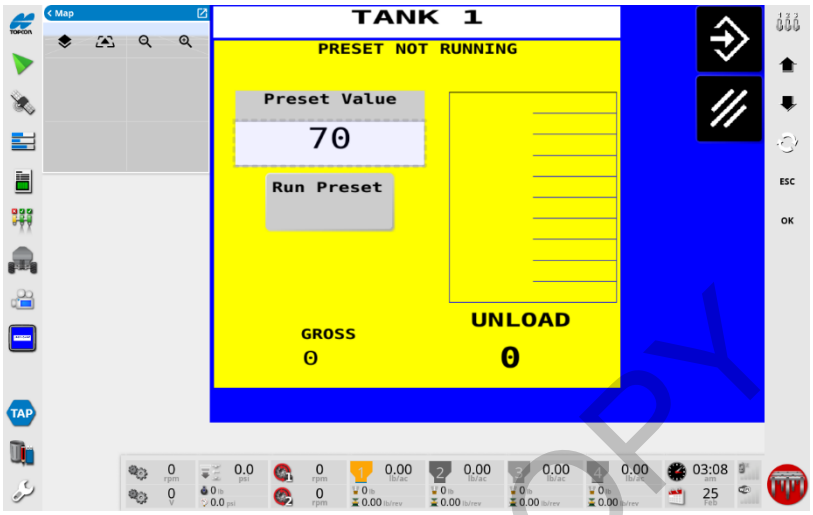
- With the desired tank selected, select the "tare" button to set the "Net" value of product in the tank to 0.



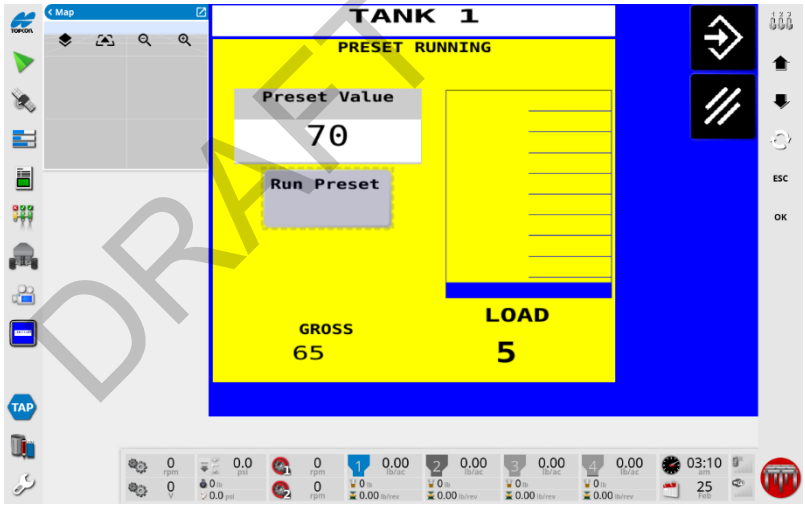
- Notice now that the tank weight is set to "Net" and the value is now 0.
- The tank weight can be toggled between "Net" and "Gross" by selecting the Net/Gross button. The Gross value will remain as the total amount of product in the selected tank.
- The "Measured Weight" value used in the Seeder Home page is the Gross tank value.

Tank Preset

- Select the desired tank you would like to set a tank fill preset and then select the preset button  .



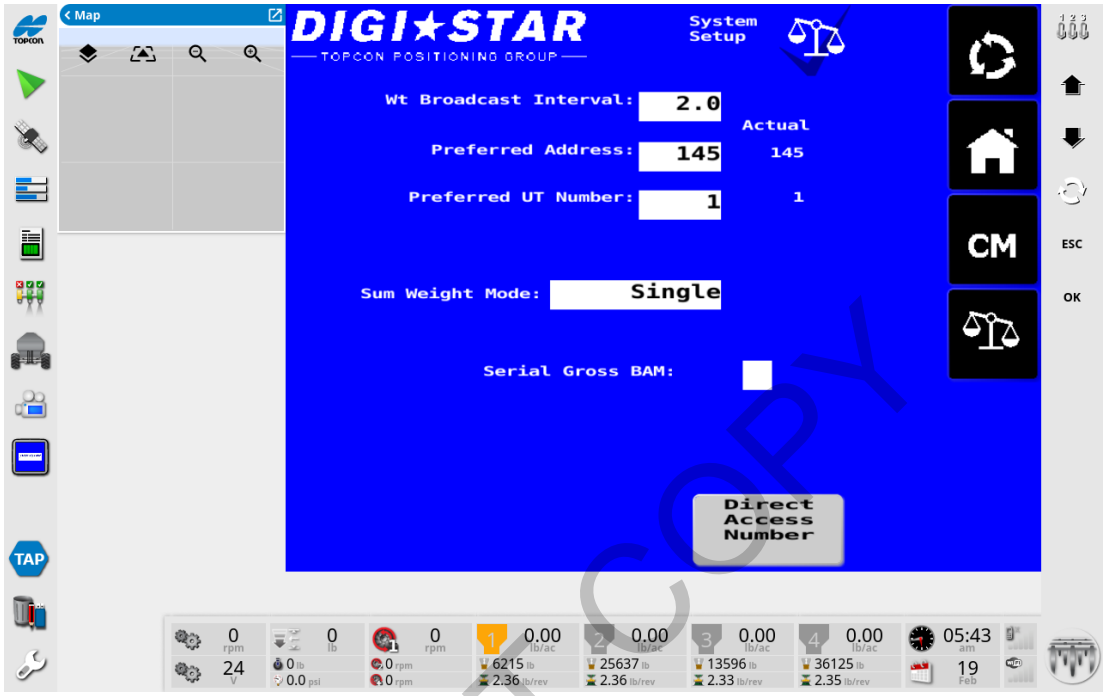
- Touch white box under “Preset Value” and enter desired amount of product weight.
- Select “Run Preset” and begin filling tank.



- Gross Value – Will increase as weight is added to the tank.
- Load – Indicates amount of product remaining to be loaded.
- Once loading is completed, select the enter button to return to the scale link universal home screen.

System Setup Screen Overview – Set from Factory

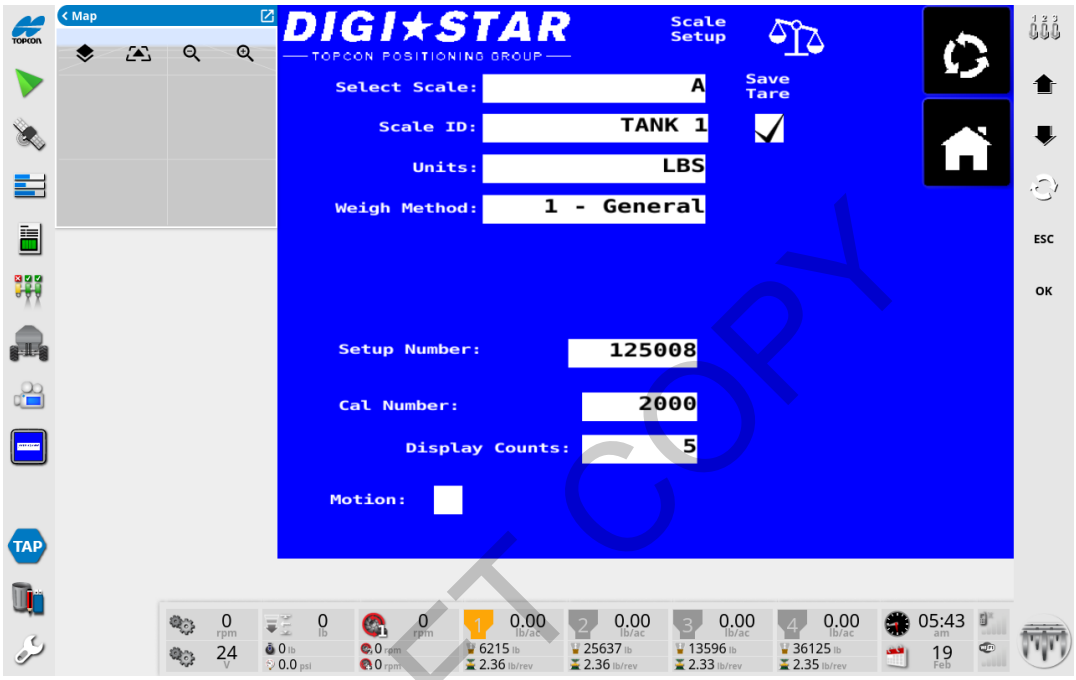
- Select "Enter setup Screen" button  to access system setup.



- Wt Broadcast Interval – How often scale sends a weight reading.
- Preferred Address – Auto assigned by system when load cell ECU is assigned and configured.
- Preferred UT Number – Auto assigned by system when load cell ECU is assigned and configured.
- Sum Weight Mode – Required setting is Single. This is automatically entered via the Setup # during the ECU Managing/Assigning process.
- Serial Gross BAM – Serial weight is sent to specific equipment. Must remain unchecked.
- Direct Access Number – Access and Edit D.A.N numbers. These are used to change specific settings in the scale link. Changes to the DAN settings should not be made without training or system knowledge.

Scale Setup Screen Overview – Set from factory

- Select "Enter setup Screen" button  to access system setup and then select the "Enter setup Screen" button  again to access Scale Setup screen.



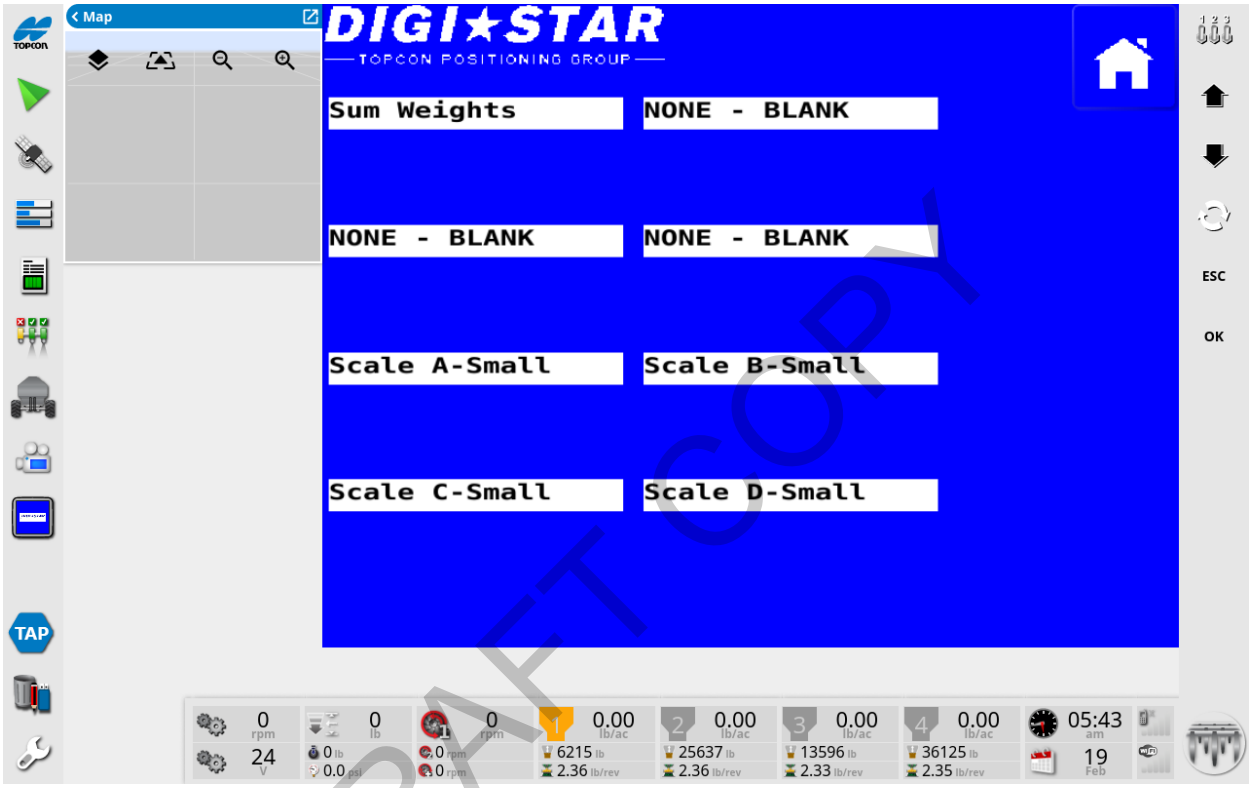
- Select Scale – Touch the white box to select which scale settings to edit.
- Scale ID – ID or name of selected scale. Touch the white box to edit the value.
- Units – Units scale displays in. Do not edit this value to be different from the units your drill is configured to.
- Weigh method – Sensitivity as to how weight numbers move.
- Setup Number – Touch the white box to edit the set up number. This number configures multiple settings in one location. Includes: Weigh Method, Gain, Count Size & Capacity.
    - These numbers are dependent on size of load cell; a list of setup numbers can be found in the **Managing/Assigning Load Cell ECU instructions.**
- Cal number – Calibration number, sets the calibration of the scale. Adjust to make the scale system more accurate if you notice a large error.

$$New\ Cal\ \# = \frac{Known\ Weight}{Displayed\ Weight} * Current\ Cal\ \#$$

- Display Counts – Multiples in which the weight will change by
    - The system will use absolute values for its calculations, display counts only affects what the user views.
- Motion – Must remain <u>unchecked</u>. If selected it will prevent certain calculations from being performed while system senses motion.

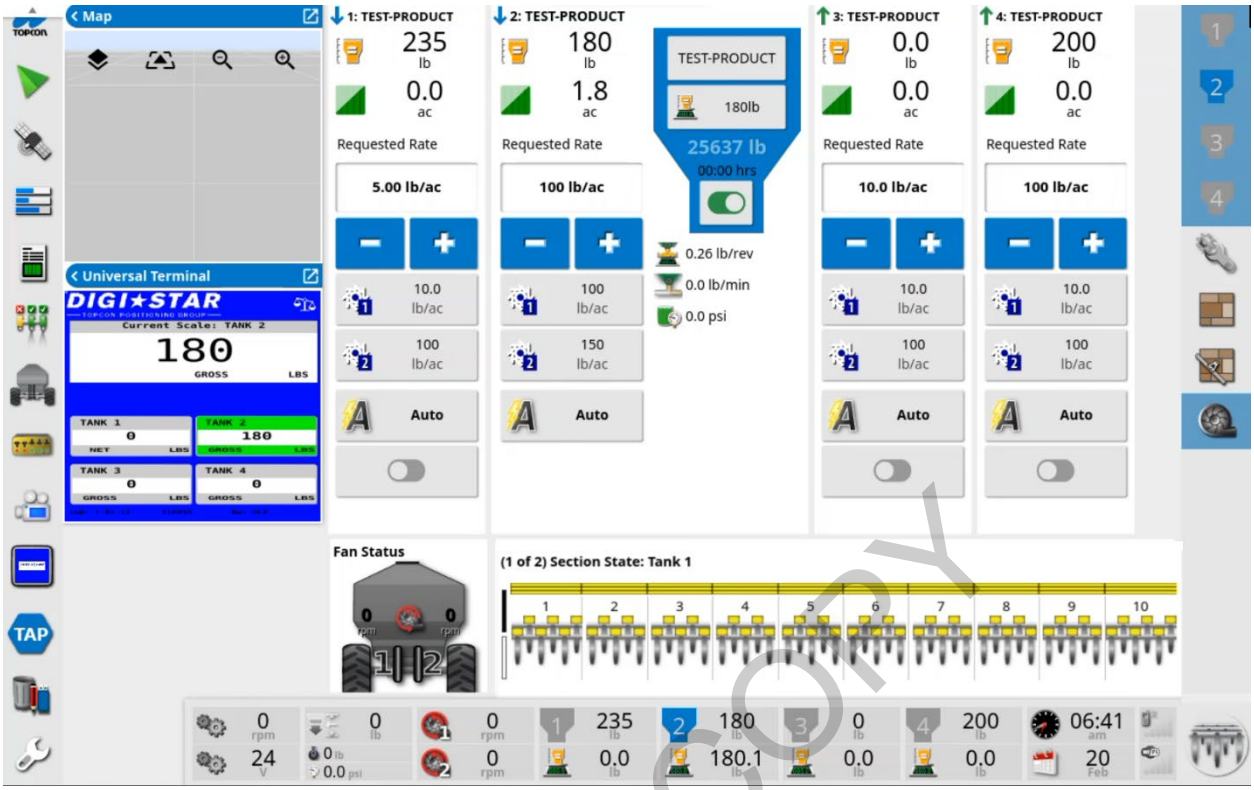
Configure Main Screen Layout – Set from factory

- Select “Enter setup Screen” button  to access system setup and then select the “configure main screen layout”  button.



- The scale link universal home screen can display up to 8 windows for the available 4 scales.
- Use the drop-down menus to configure the main screen if desired.

Home Page Layout 10B-Weigh Scales



 - Calculated Weight: The calculated remaining in the Tank

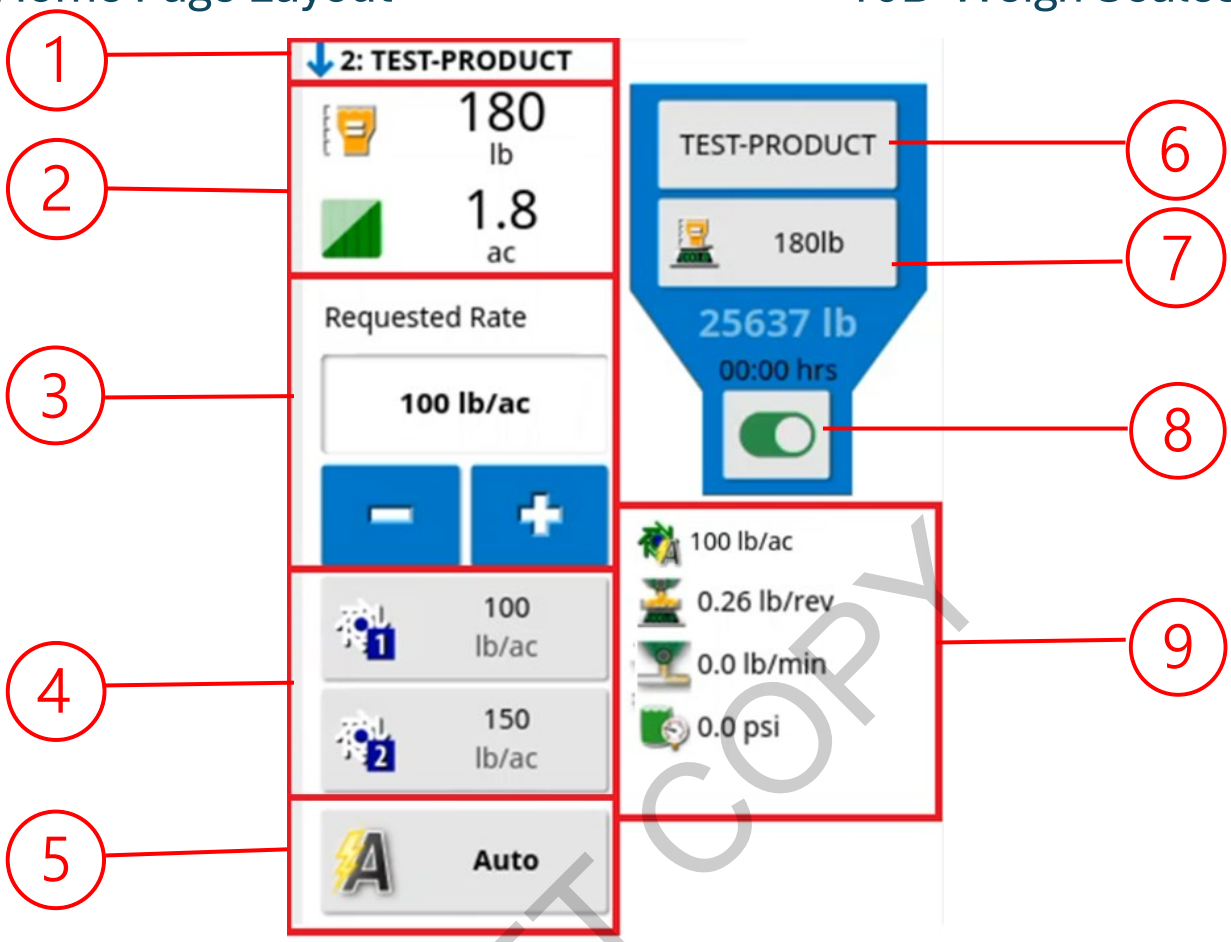
 - Area Remaining: The calculated area that can be seeded with the remaining product in the tank

 - Calibration Factor: The calibration factor

 - Pressure: The pressure that is present in the selected tank

 - Discharge Rate: The amount for product being discharged per minute.

 - Application Rate: The Current application rate.



1. Selected Tank, collector position (Top or Bottom run), Product assigned to tank.
2. Display up to two parameters related to the specific tank. Selecting opens a customize data window with a list of available parameters to be displayed.
3. Requested rate. Used to enter and display the application Rate. The control system will use the calibration factor to adjust the motor rpm to match this rate. Increase/Decrease requested rate by preset increment. Increment amount is set via product specifications shown with icon 6.
4. Preset quick change application rates. User defined via product specifications shown with icon 6.
5. Rate control mode selector. Select between Variable rate and Auto Control for specific tank.
6. Product configuration. Opens product selection window for the tank.
7. Tank Fill. Opens the tank fill window to access fill wizard and auto calibration.
8. Tank metering On/Off. Turn tank on or off with switch. Green on, red off.
9. Display up to five tank parameters specific to the tank. Selecting opens a customize data window with a list of available parameters to be displayed.

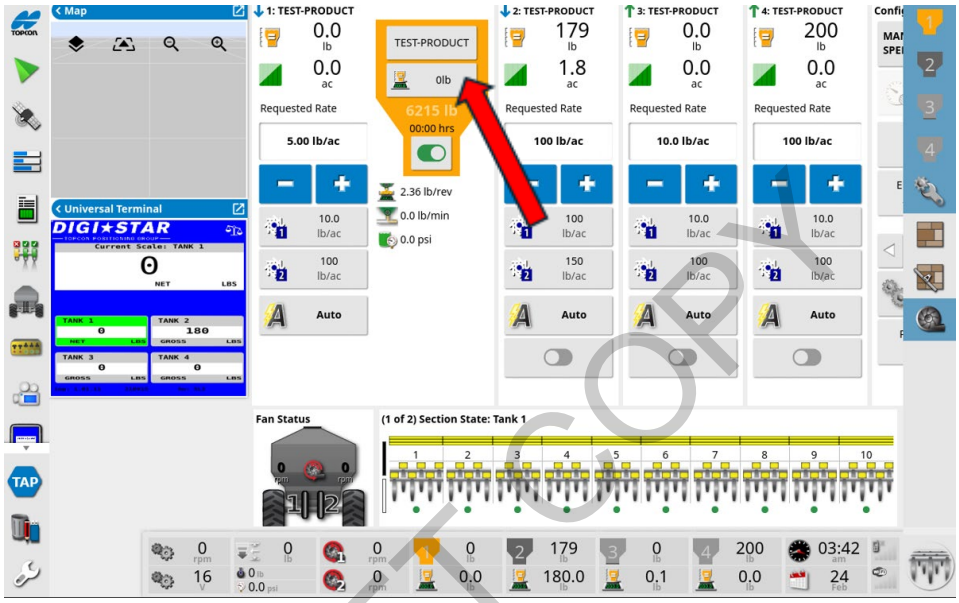
Preferred parameters to display in Regions 2 and 9.

- Region 2
  - Calculated Weight Remaining – the calculated weight of product remaining in tank.
  - Area Remaining – The calculated area that can be seeded with the remaining product in the tank. Adjusting the Requested Rate can stretch or shrink the area remaining.
- Region 9
  - Application Rate – The current application rate.
  - Calibration Factor - The calibration factor.
  - Discharge Rate – Displays amount of product being discharged per minute. This can be used in conjunction with the Measured Weight to plan and coordinate fill times.
  - Pressure – Displays the pressure that is present in the selected tank.

Tank Fill

Operation

- From the seeder home screen. Expand a tank and select the desired **Tank Fill** button.



- In the **Tank Fill** window, there are 5 different options for filling the Calculated Weight for each tank.

- Set Calculated Weight: Manually set weight of product in tank

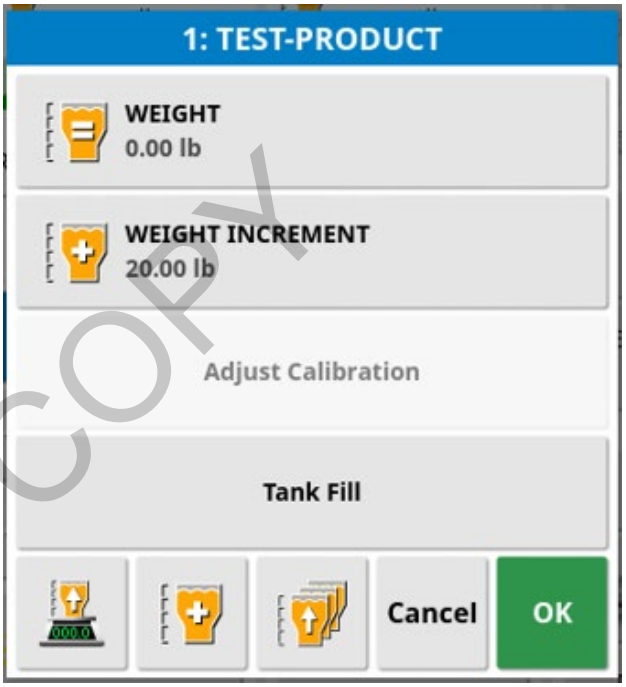
- Weight Increment: Set the weight increment to be used when adding product to tank by increments. Ie, 50lb bag of canola

- Set tank weight to Measured Weight – Sets the weight of the selected tank to the gross weight measured by the scales.

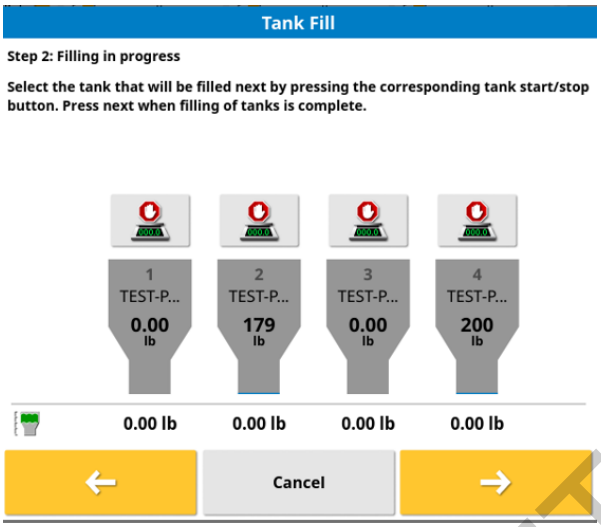
- Increase weight by 1 increment – Adds product by the increments set amount.

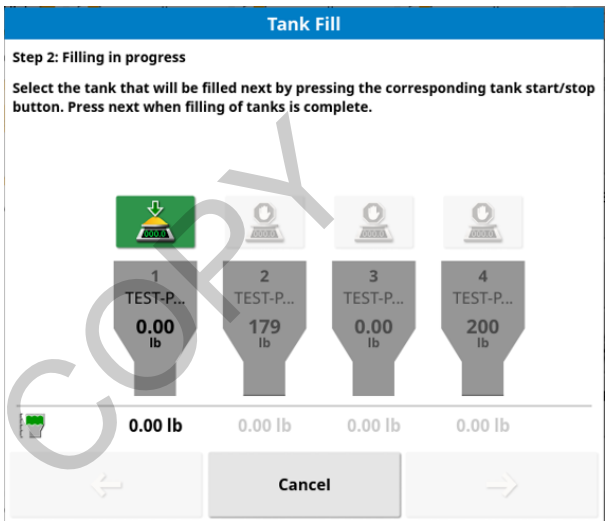
- Fill all tanks to Measured Weight – Set the weights of all tanks with a dedicated scale to the Measured Weight.

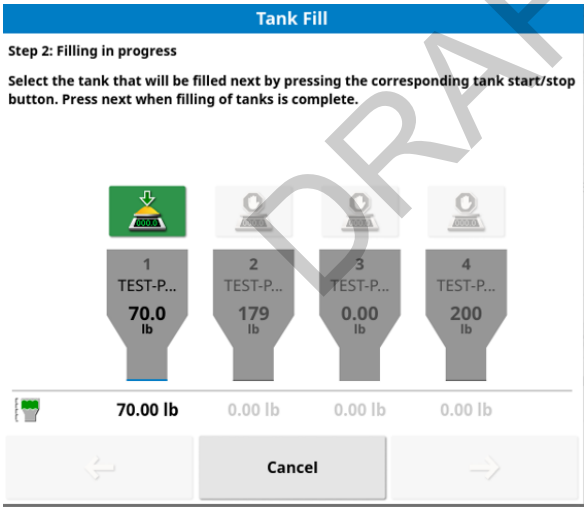
- Opens the Tank Fill Wizard.

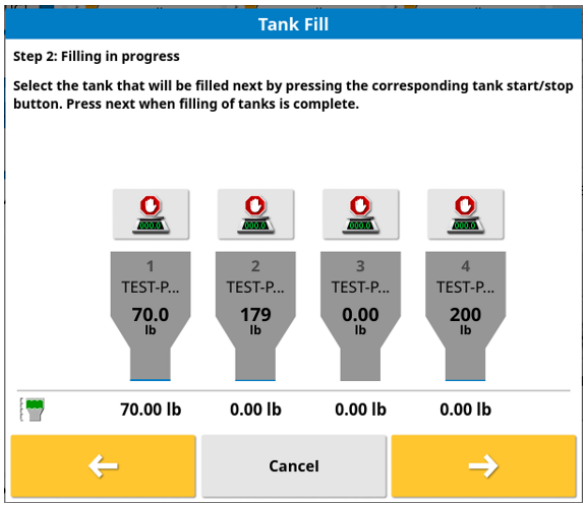


- In the Tank Fill Wizard, you will first be prompted to reset any tank Calculated Weights to 0 if necessary.
- Press start/stop button  of the tank to be filled, add the required product then press the start/stop button again once the required amount of product has been added.



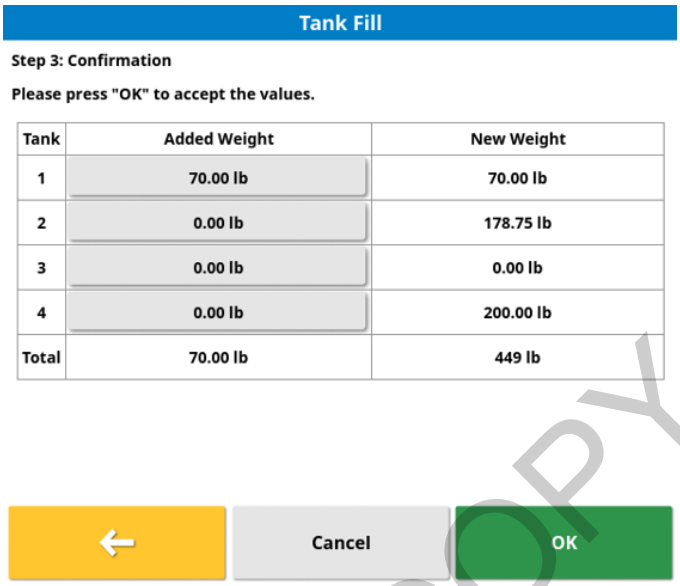






- Repeat the previous step for all tanks being filled.
- Once the required product has been added to all tanks press the next arrow. 
- The final step is to confirm the weight added to each tank. This will set each tank's Calculated Weight to the "New Weight" value.

- Note the “New Weight” column displays the sum of the Added Weight and the Calculated Weight.



Auto Calibration

Enabling Feature – Set from factory.

- To enable the Auto Calibration feature, tank scales must be active and configured. See **Enabling Load cell system and Managing/Assigning Load Cell ECU** instructions.

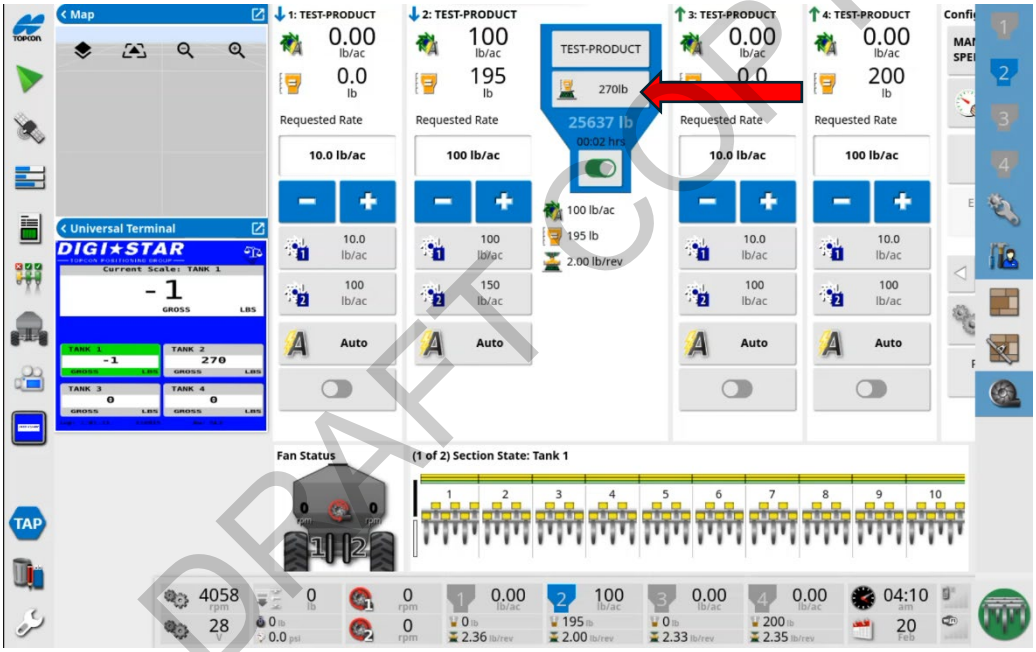
Associated Alarms – Set from factory.

- Select **IMPLEMENT / APOLLO SEEDER / ALARMS**
- **Incorrect Rate –** Allowable percent difference between "Application Rate" and "Requested Application Rate". Error indicates a "Calibration Factor" error unless the "Requested Application Rate" is beyond the capacity of the metering wheel and motor.
- **Scale Weight Difference –** Allowable percent difference between the "Calculated Weight Remaining" and the "Measured Weight". Can be customized per tank. This indicates that the "Calibration Factor" is incorrect and should be adjusted; or a section has unexpectedly stopped applying product.

  - If the above Scale Weight Difference is ignored, it will not start a new monitoring cycle until the metering system has cycled off/on (i.e. turning around on the headland).

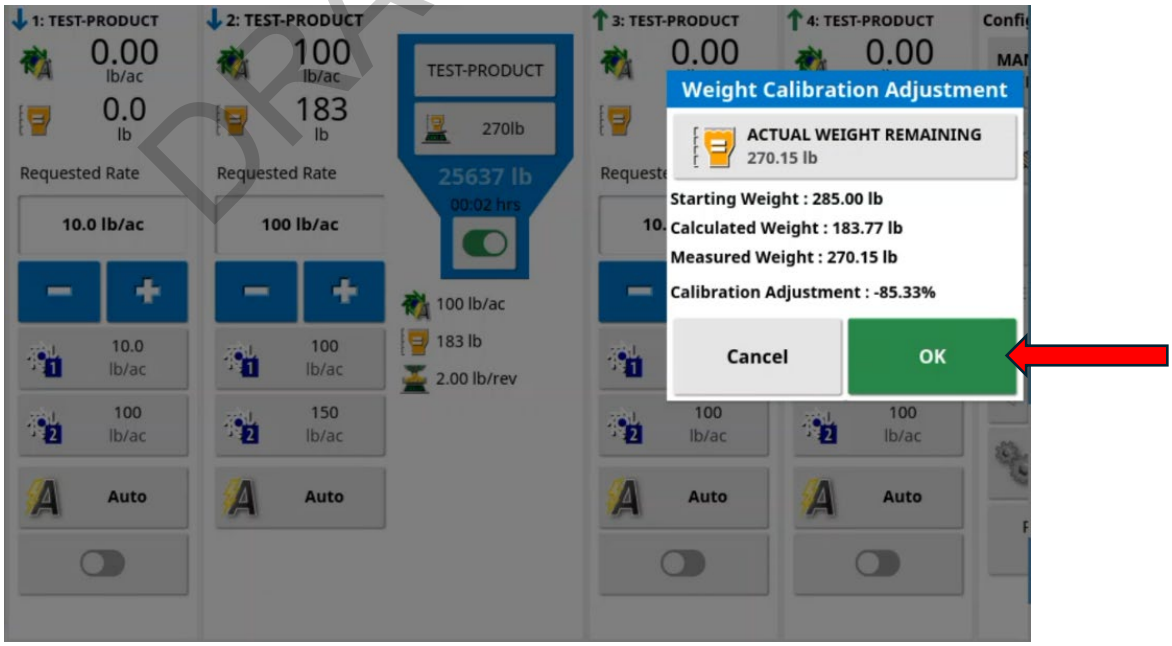
Using Auto Calibration

- The larger the sample size, (i.e. the more product that has been metered) the higher the accuracy of the Auto Calibration. If an operator performs an Auto Calibration immediately following a Scale Weight Difference Error, the adjusted calibration won't be as accurate compared to waiting a little longer.
- If a Weight Difference Error is encountered unexpectedly, it is a sign that a section may have stopped applying product.
- If a Weight Difference Error is encountered unexpectedly, (i.e. after successful calibration) it is a potential sign that a meter has stopped applying product due to a mechanical failure, product bridging or an air leak on the tank.
- It is recommended that an operator performs at least one manual calibration before starting to seed.
- From the Seeding Home page, expand the desired tank and select the **Tank Fill** button.

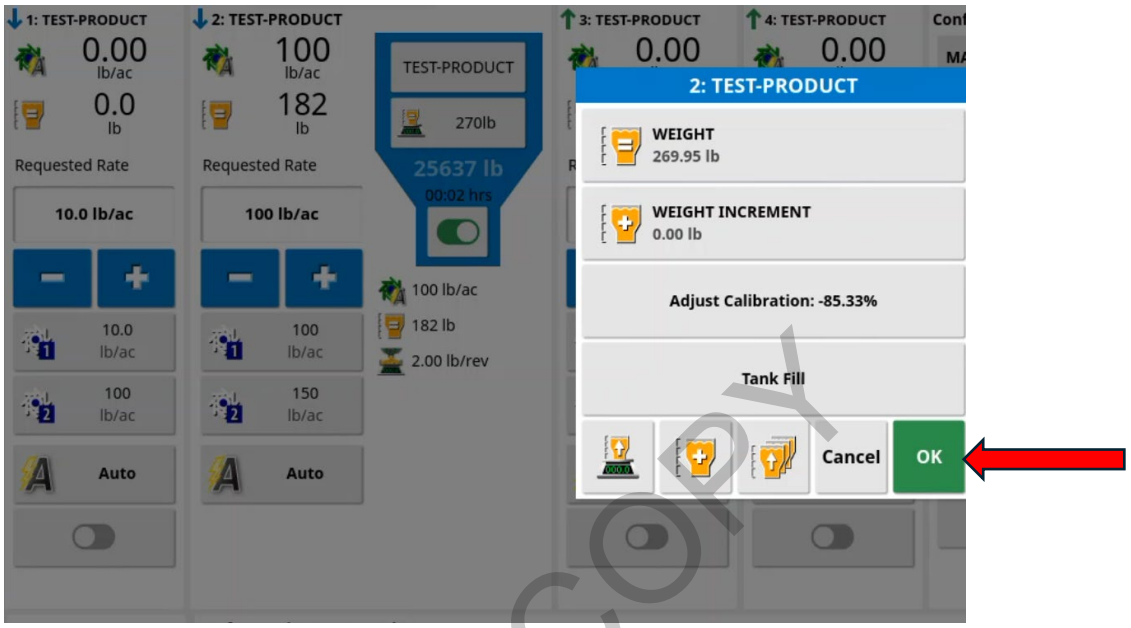


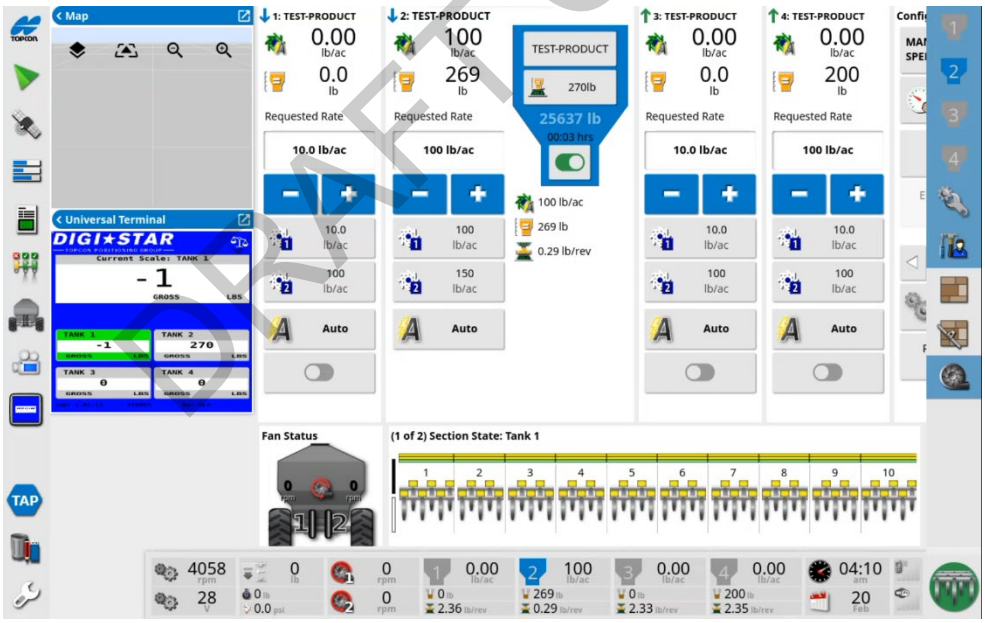
- With the **Tank Fill** menu open, select **Adjust Calibration.**

- When the **Adjust Calibration** button is selected the system will take a snapshot of the related parameters. It will then recommend a Calibration Adjustment based on the Actual Weight Remaining, Starting Weight, Calculated Weight, and Measured Weight.
    - The error in the example below is from an extreme fabricated simulation.
- Select OK to accept the calibration adjustment.

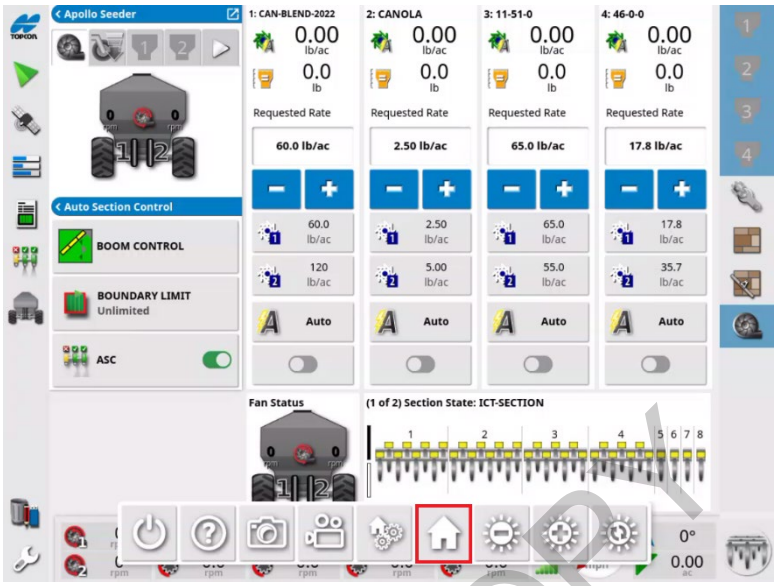


- Select OK to apply this Calibration Adjustment and return to the Seeder Home screen. Upon accepting this Calibration Adjustment, the Calculated Weight will be set to match the Measured Weight.

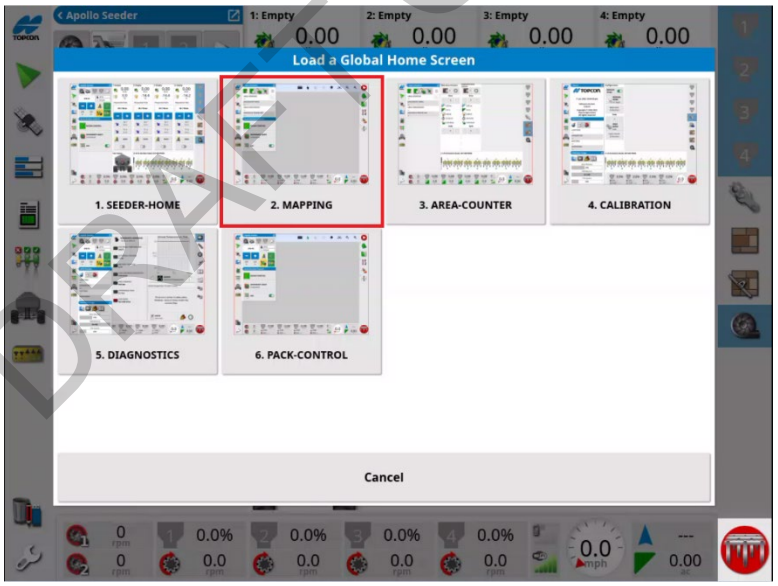




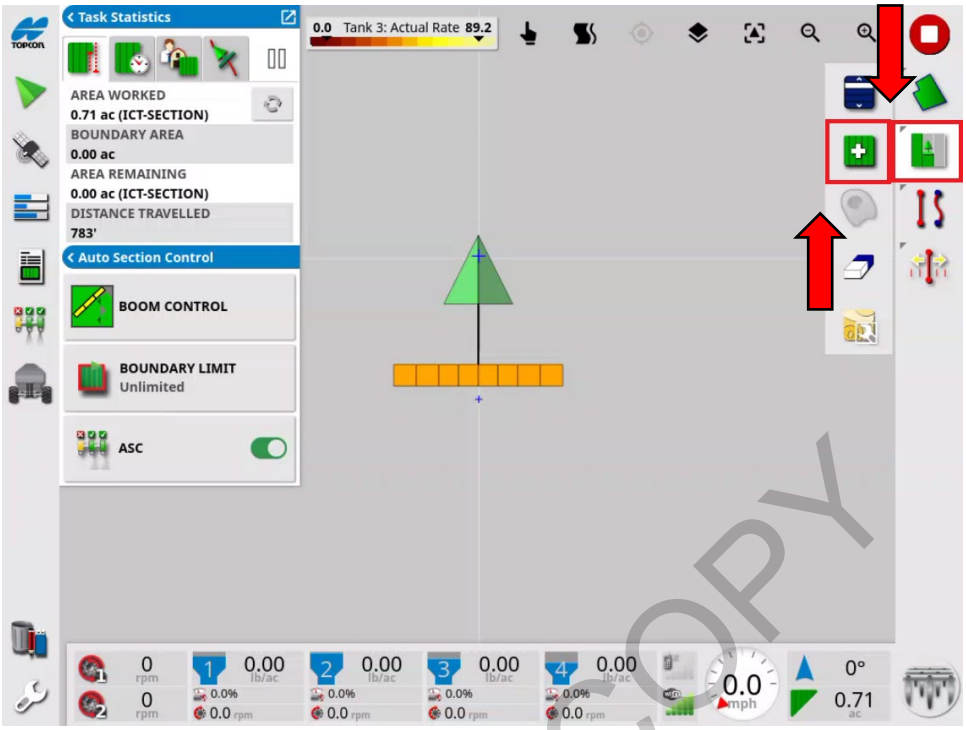
- If a Scale Weight Difference Error had occurred, this will reset the alarm to start a new monitoring cycle.



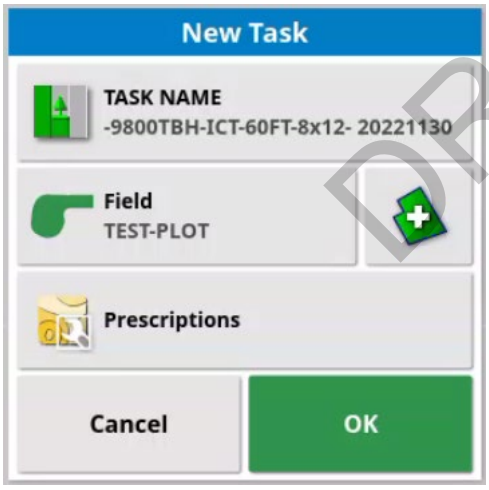
Select the **MAPPING** screen.



Touch **Task**, then **Create New**

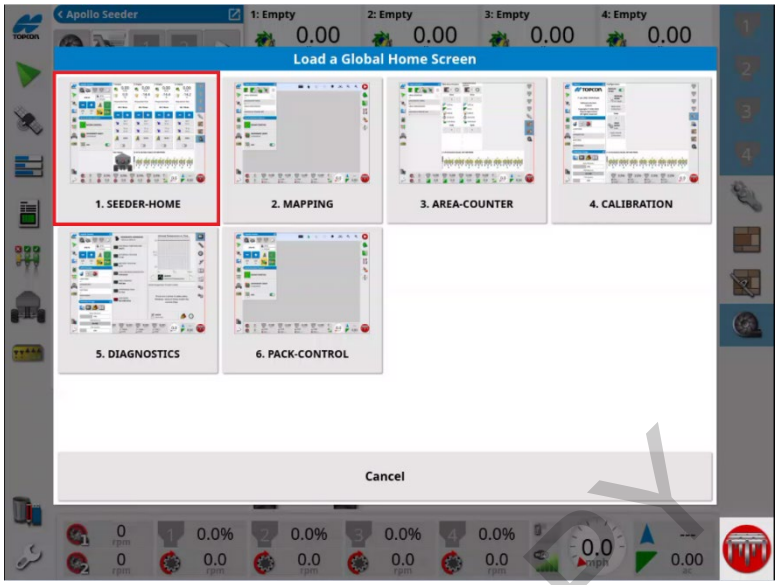


Touch the **TASK NAME** box, and name new task **SECTION-TEST**



Accept with the green check mark.

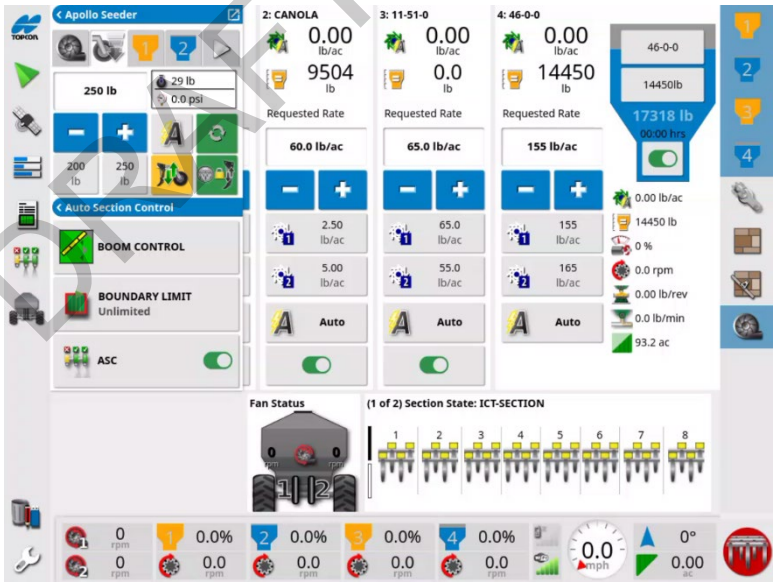
Swipe up from the bottom of the screen and select **SEEDER HOME**



Now we need to select the tank that is furthest away from the drill.

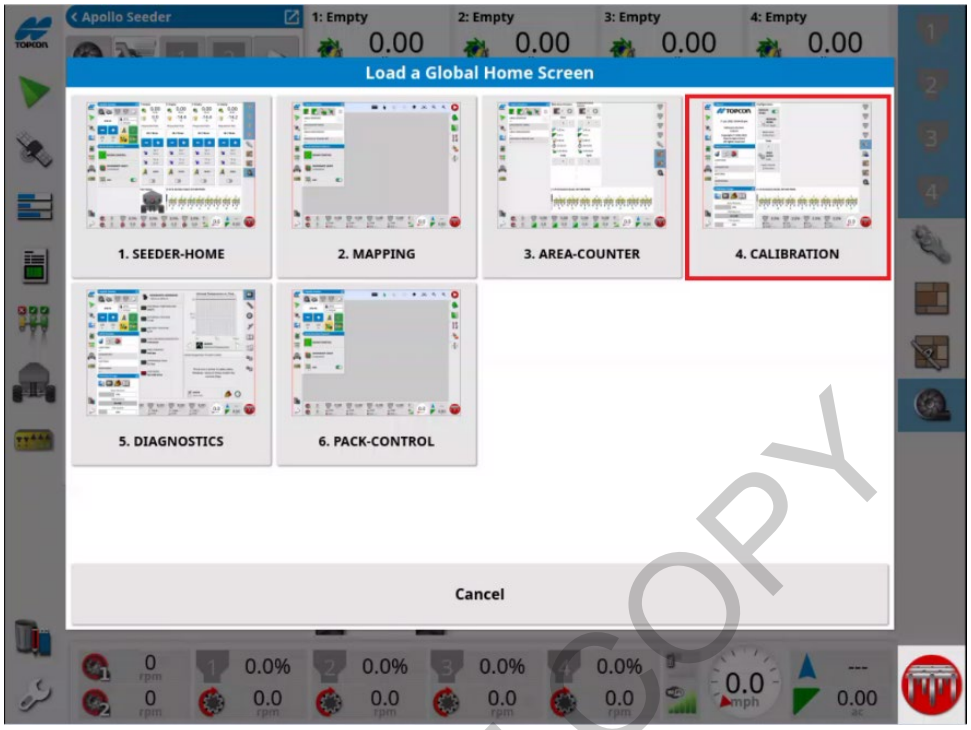
Tow behind-Tank 4

Tow between- Tank 1

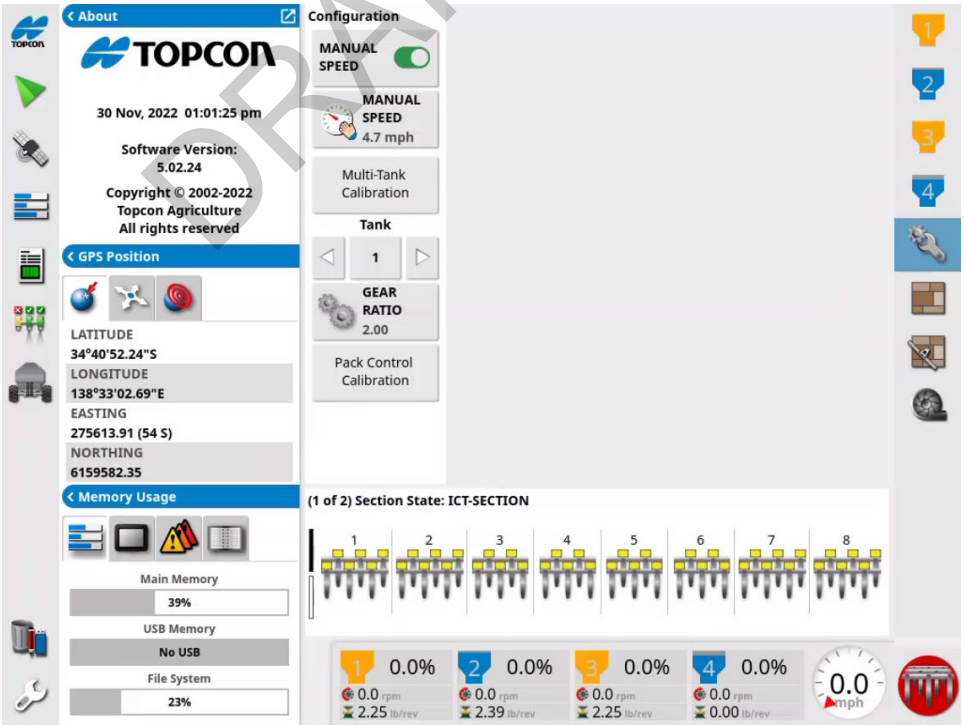


Expand the applicable tank and add a highly visible product. We recommend 46-0-0

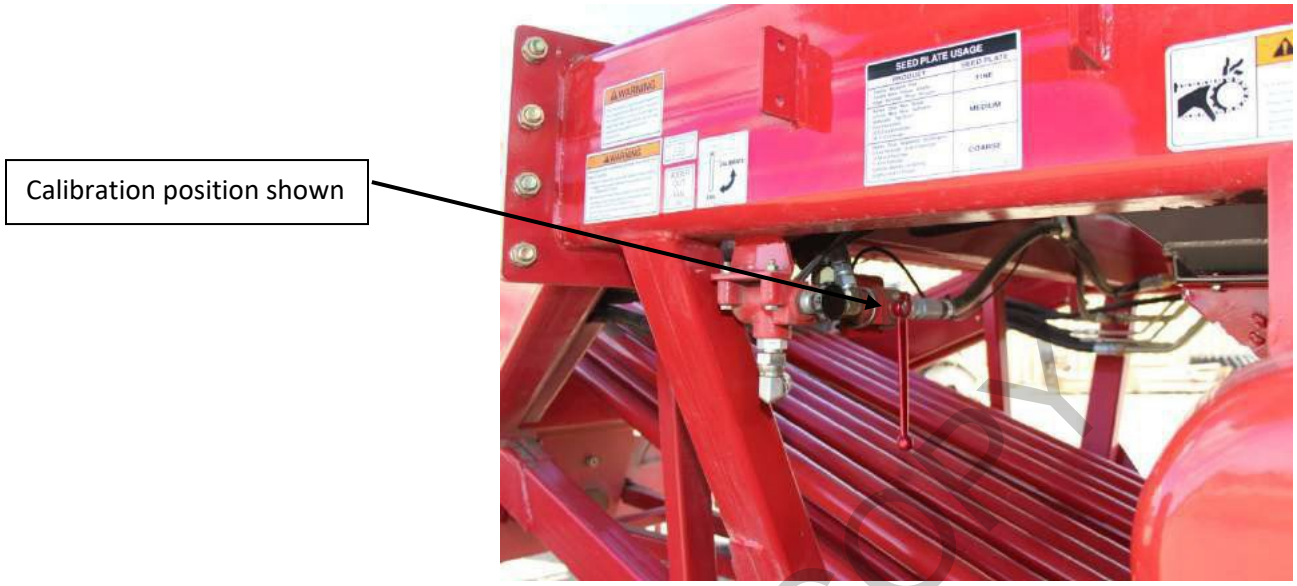
Navigate to the **CALIBRATION** page.



Perform a calibration of the test product for each tank. Refer to the calibration section of the X35 User Guide if needed.

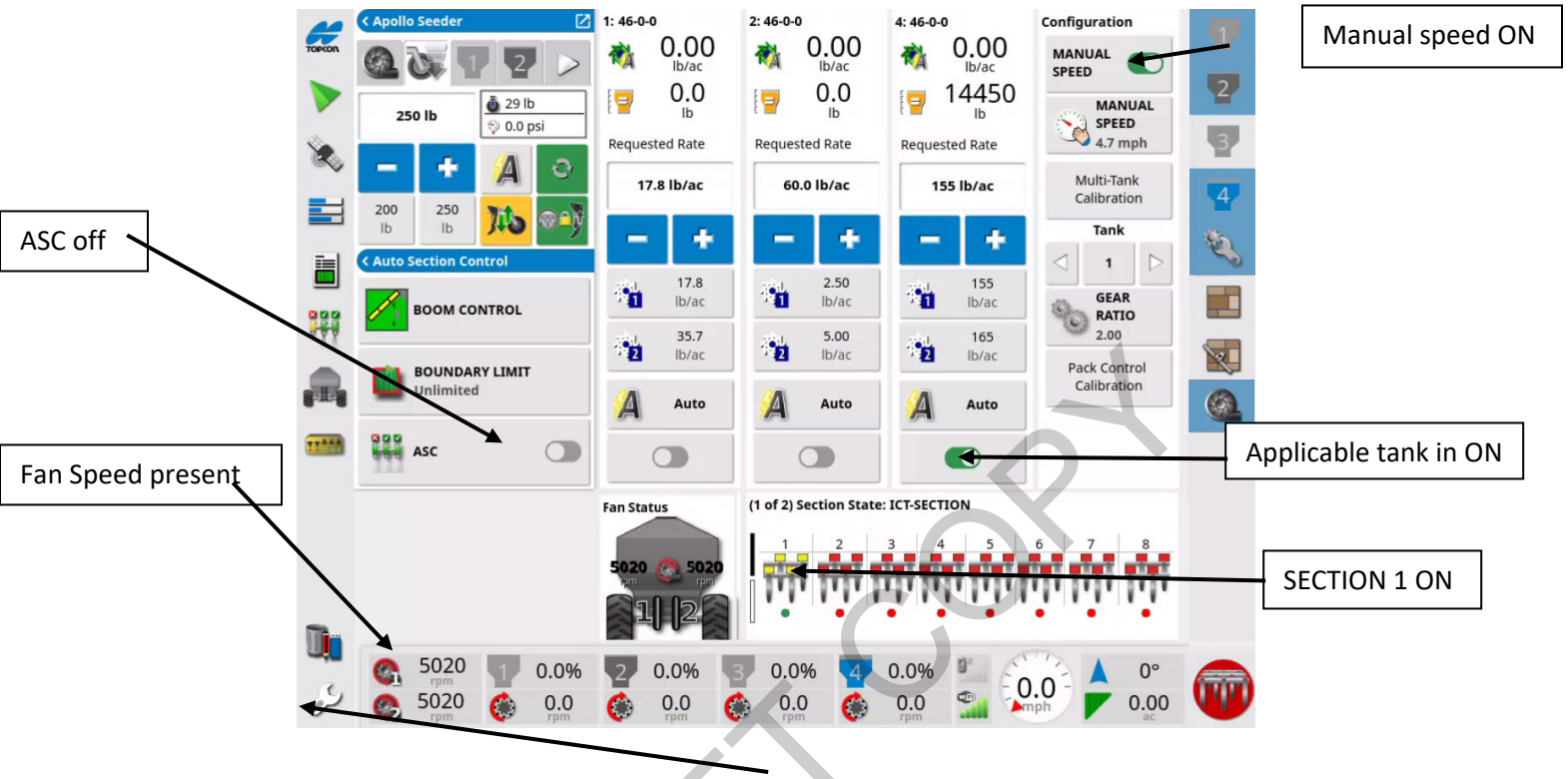


Once the calibrations are completed, close the lids, divert the oil back to the fan and return the air cart to normal seeding operation.

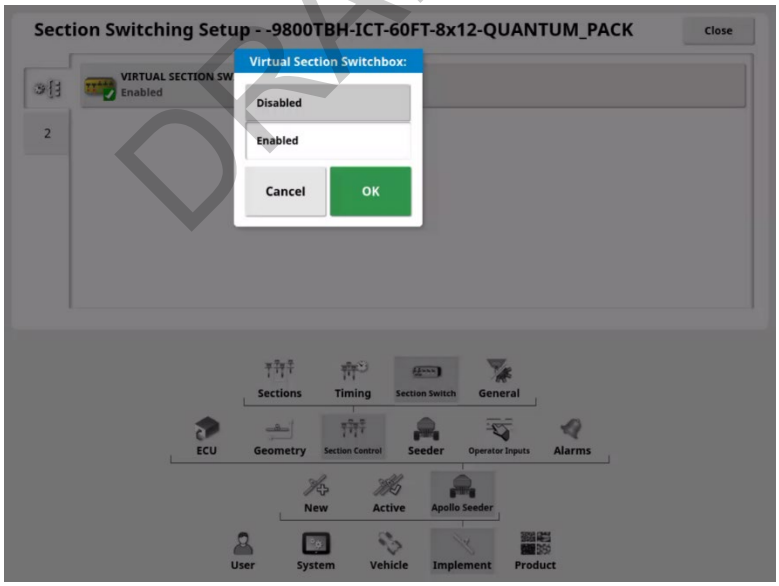


Return to the **SEEDER HOME** screen

The following functions need to be performed:



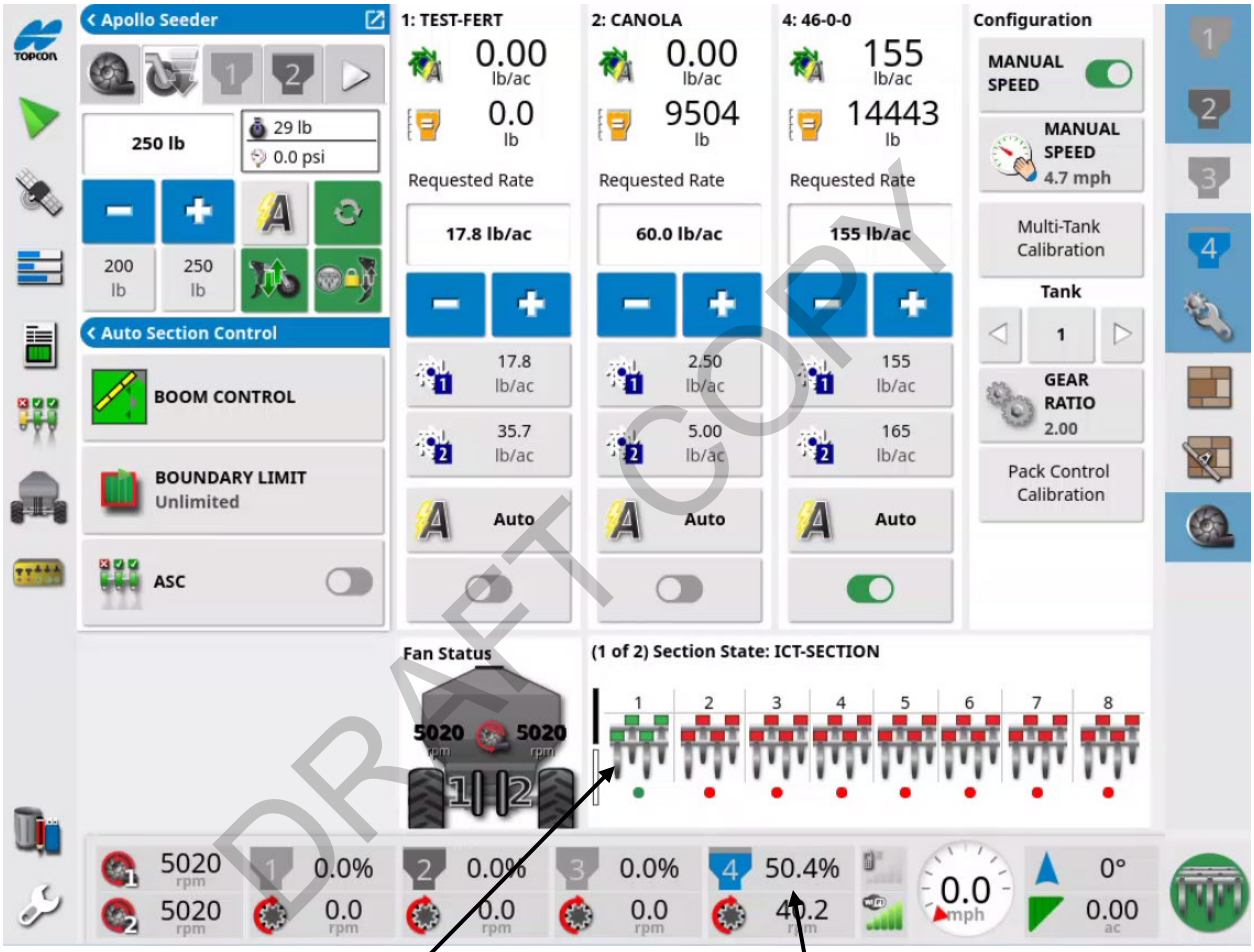
Sections can be turned on and off by touching the **Wrench** , then **Implement--Apollo seeder--Section control--Section switch**. Choose to enable or disable.



It is recommended during seeding the Section switch be disabled to prevent accidental deactivation of a section.

Have a stop watch ready to time how long it takes for the product to travel from the meter body to the openers. Document your times. (SEE TIME TABLE SHEETS AT THE BACK OF THE MANUAL)

Engage Master Switch, start timer.



Section State

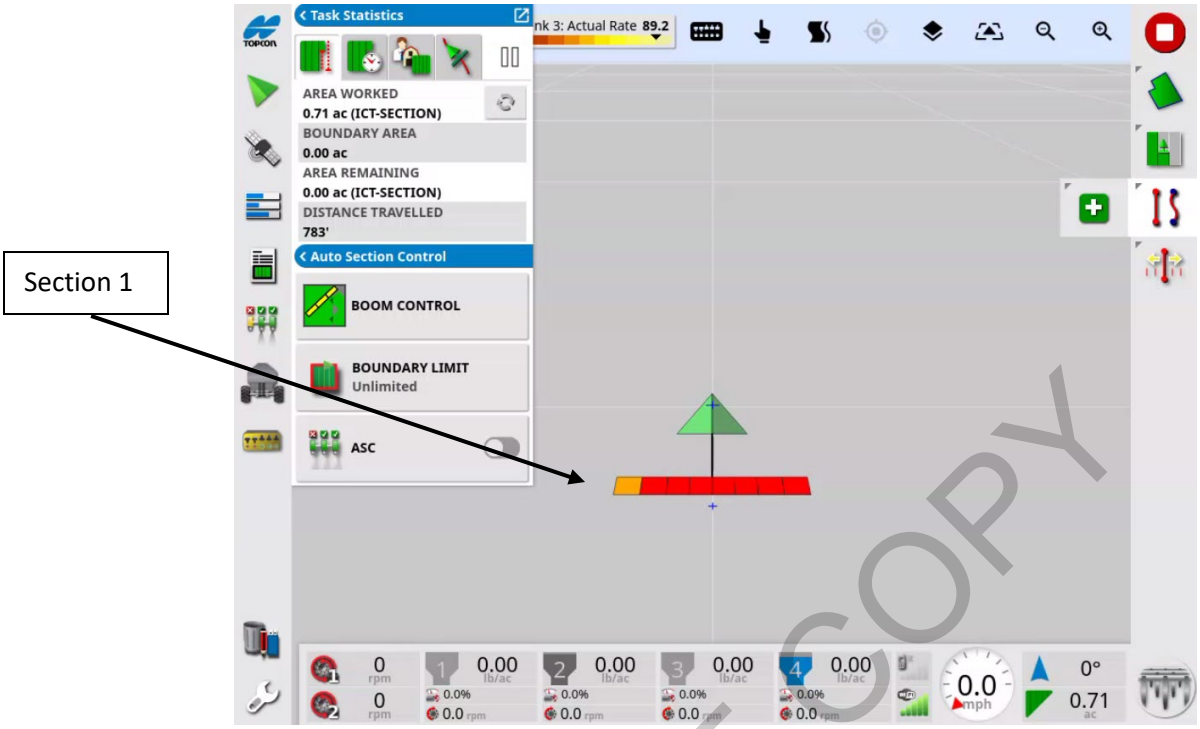
RED: off

YELLOW: ready

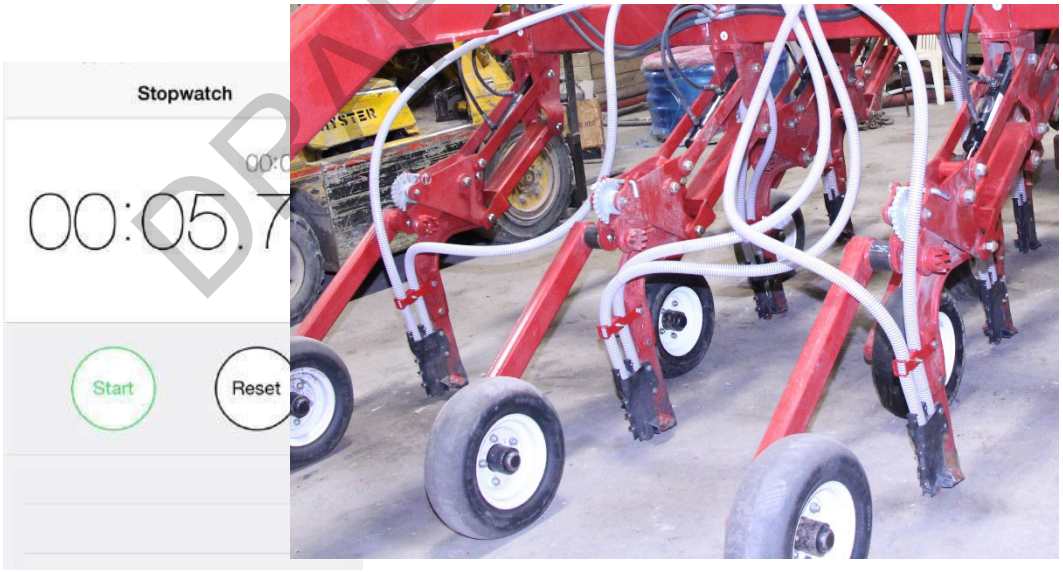
GREEN: ON/product flowing

TIP: watching the motor load/PWM valve is a good reference to let you know when the motor has engaged.

Section 1 is **ALWAYS** the outer left wing.



Picture is for reference only



Stop the timer once the product reaches the openers. Make sure the product dispensed matches the section**. Document your times.**

Turn the master on again, once the product is flowing at the openers, turn the master off, start the timer and record how long it takes for the product to stop flowing. **Document your times.**

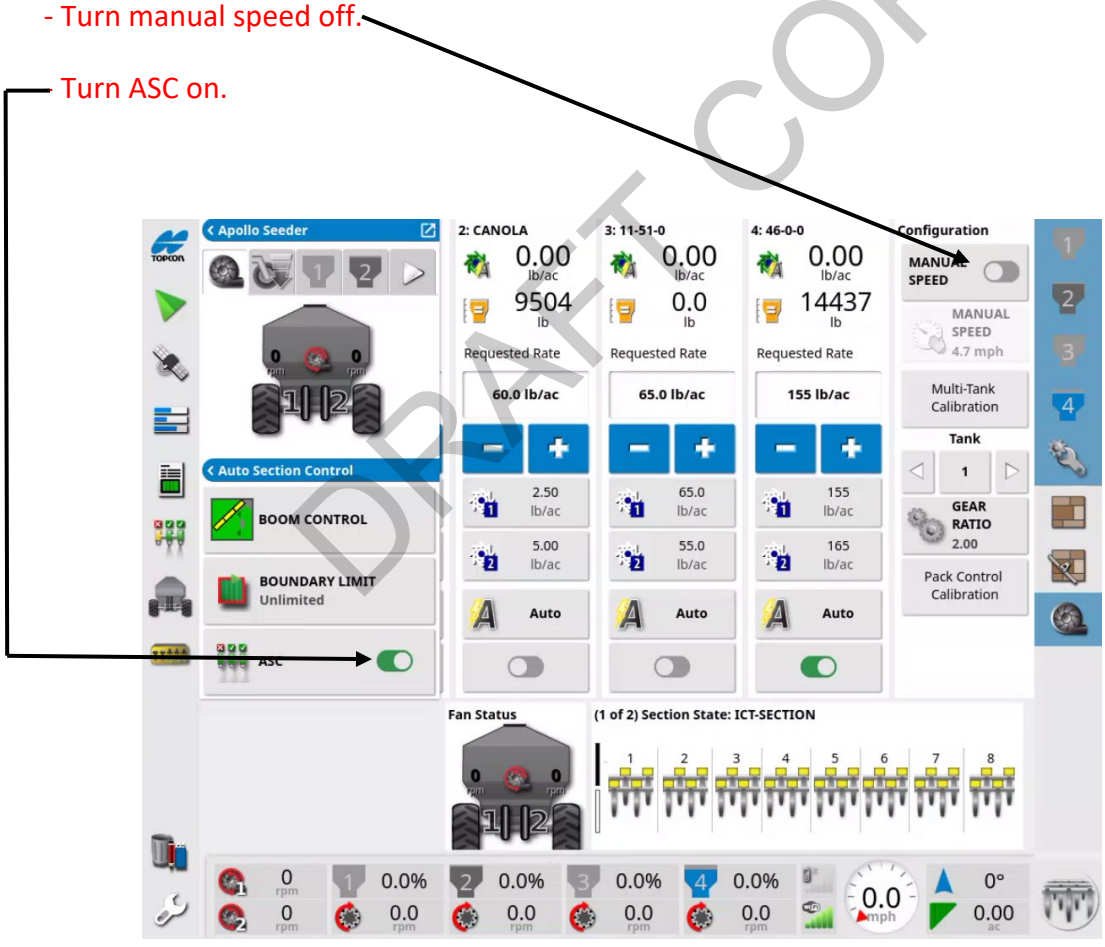
It is recommended you measure the start and stop times at least 3 times or until a consistent time is achieved. ** This is the customer responsibility not the service tech.**

Turn off section 1, turn on section 2 and repeat the above steps until all the sections are timed.

**Once testing is complete be sure to:

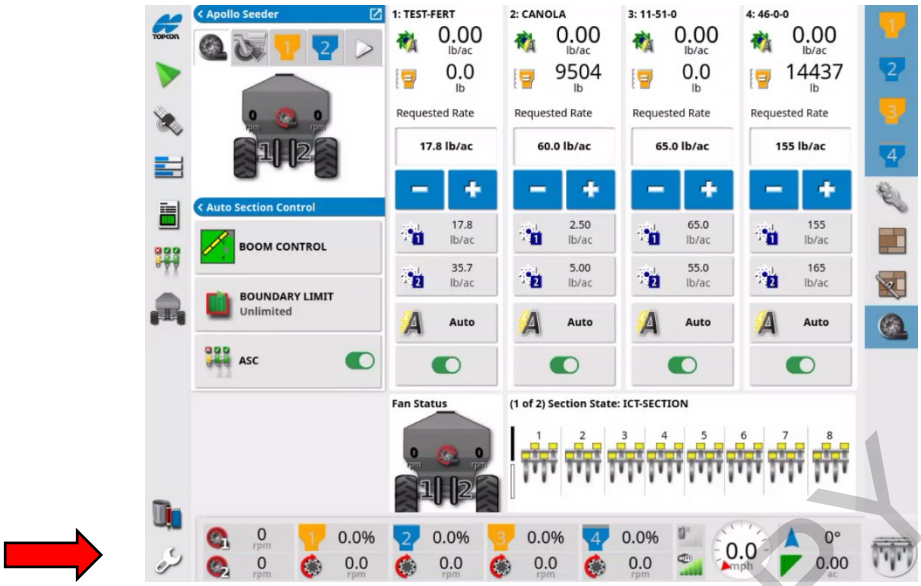
- Turn manual speed off.

- Turn ASC on.

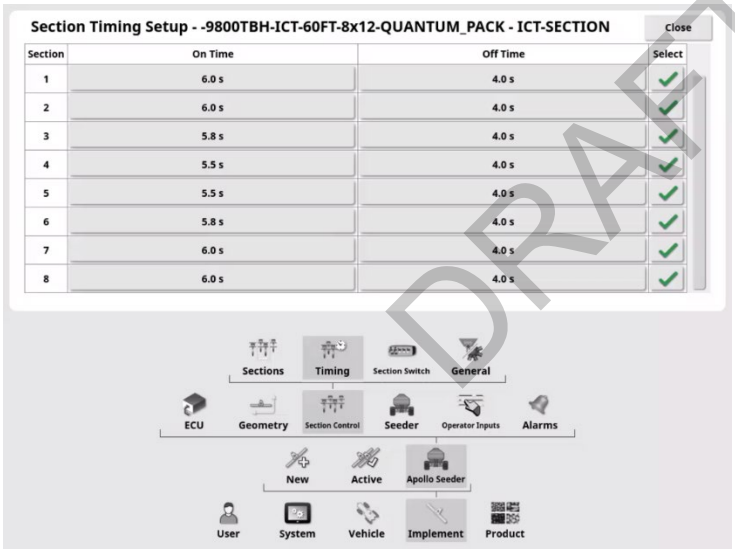


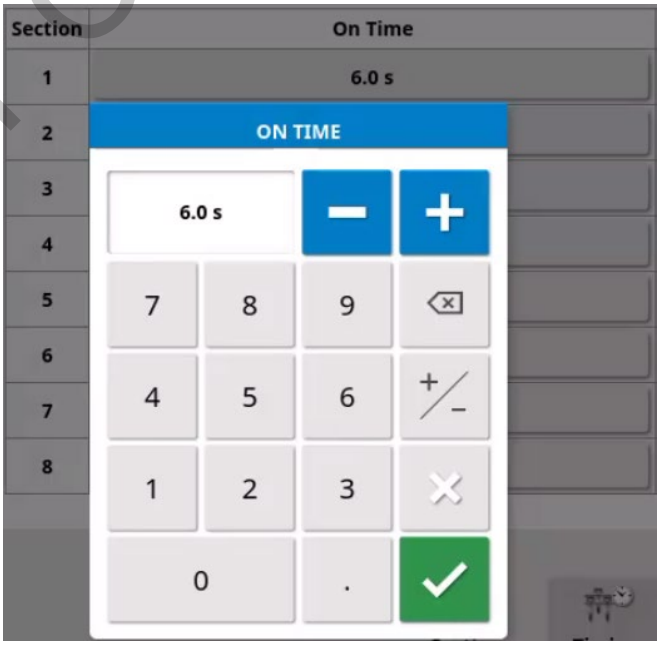
Now touch the Setup Wrench

1-ICT Section On/Off Timing Test



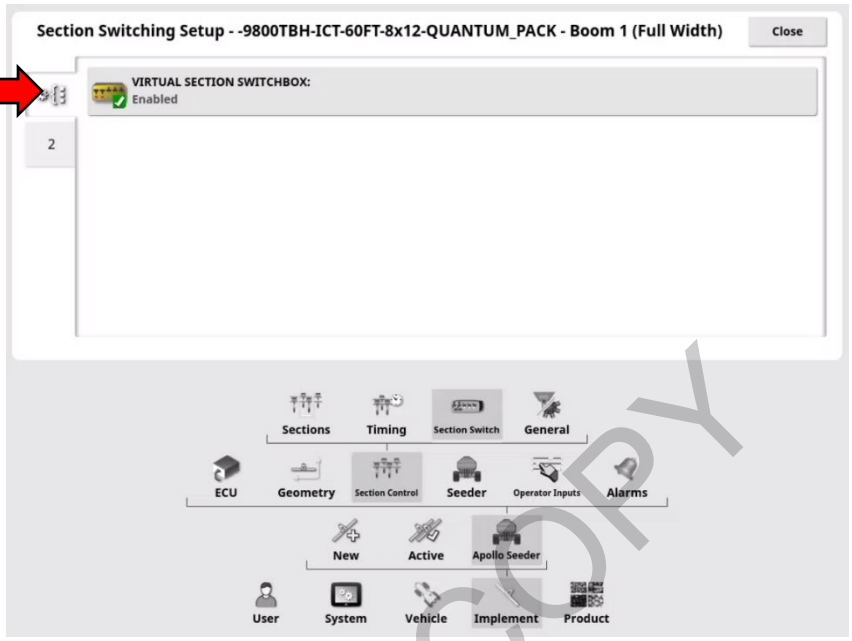
Navigate to **IMPLEMENT—APOLLO SEEDER—SECTION CONTROL—TIMING.** Adjust the section ON/OFF times based on your documented times. Simply touch the applicable section and input the desired time.



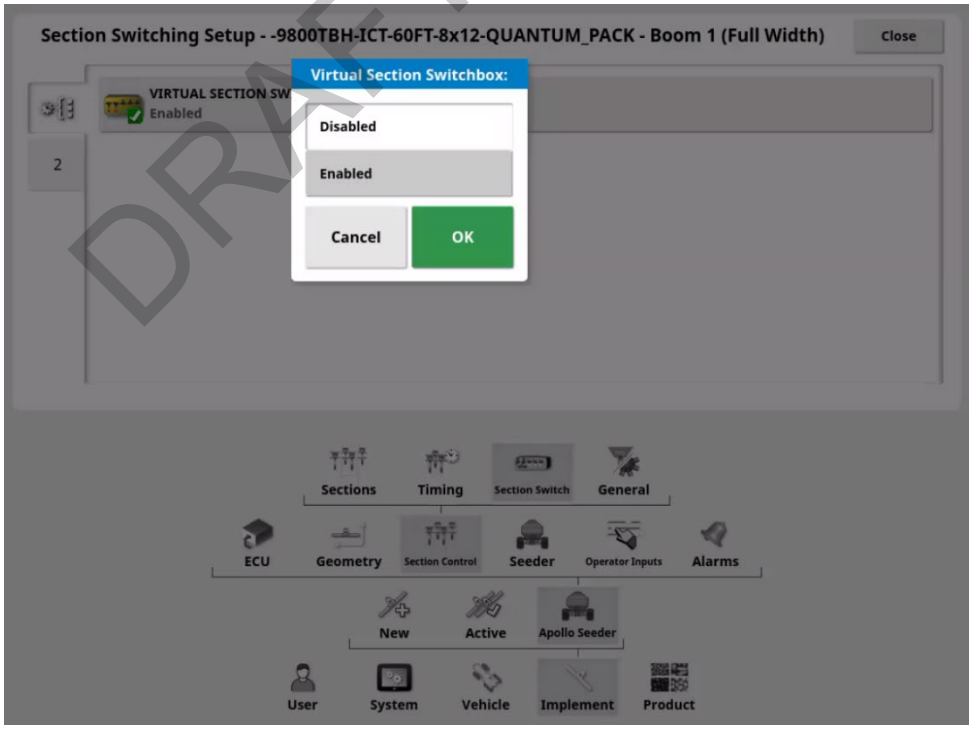


Note: the outer sections should appear to be higher than the center sections. This is because the product must travel a farther distance through the outer primary hoses.

Navigate to **IMPLEMENT—SECTION CONTROL—SECTION SWITCH** and disable the virtual section switch.



The section switch should only be used during the setup procedure. The switchbox can cause sections to be turned off accidentally by careless operator error.



Exit to the **Home screen.**

1-ICT Section On/Off Timing Test

TIMETABLE

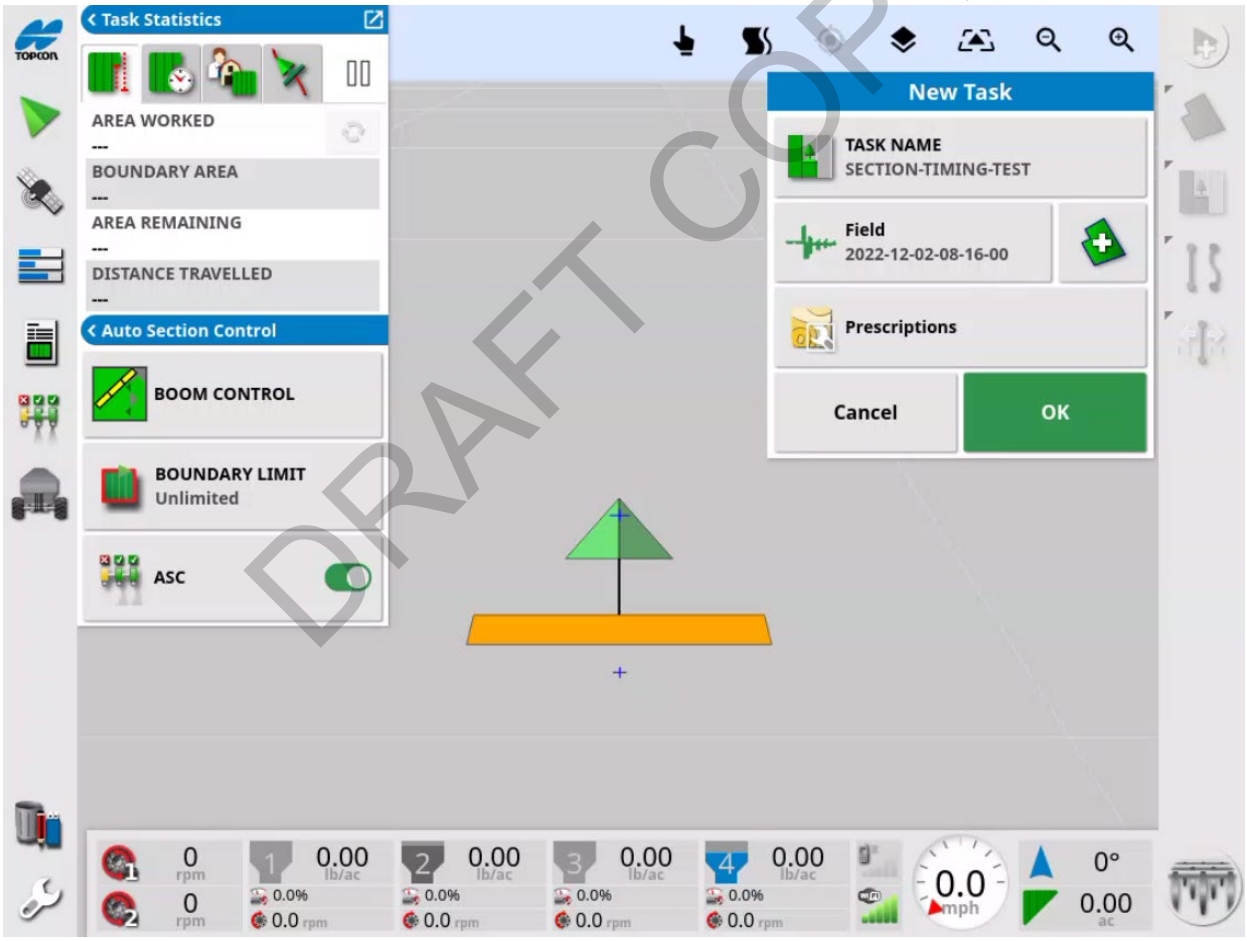
SECTION	1	2	3	4	5	6	7	8	9	10
ON										
OFF										
ON										
OFF										
ON										
OFF										
ON										
OFF										
ON										
OFF										

The purpose of the section timing is to turn on the metering system a few seconds ahead of crossing into an unseeded area to compensate for the lag time it takes the product to travel through the air system to the openers.

In this lesson we will be adjusting the timing correctly to fine tune the amount of overlap you are comfortable with as the implement crosses over the headland to seeded and unseeded ground.

Drive your tractor and implement into an open field. You are going to need a large open area as we will be making several passes in each direction to “dial in” the section ON/OFF times.

Let’s start by creating a new task and call it **SECTION-TIMING-TEST.**

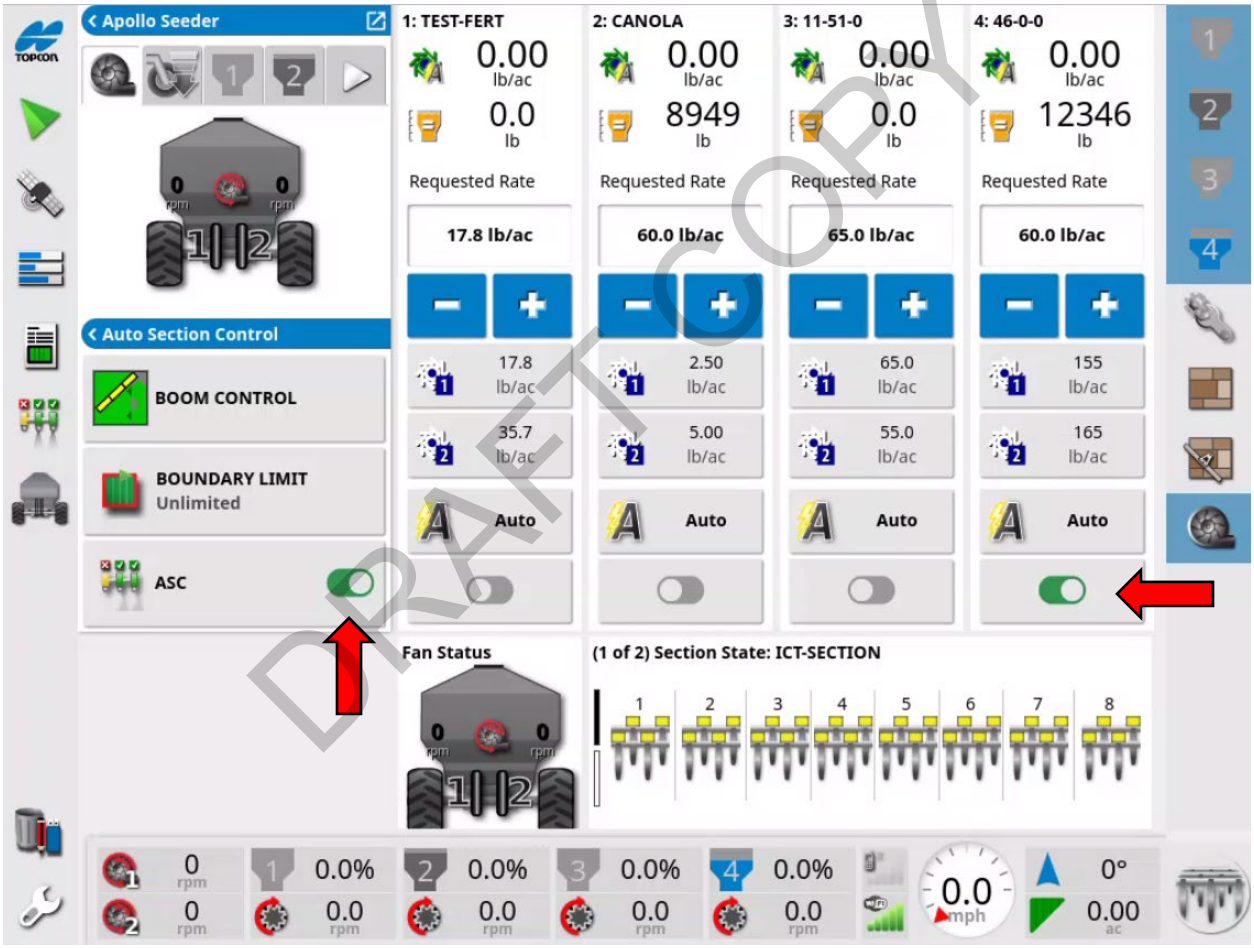


Navigate to the **Home Screen** and turn on the tank that is furthest away from the drill.

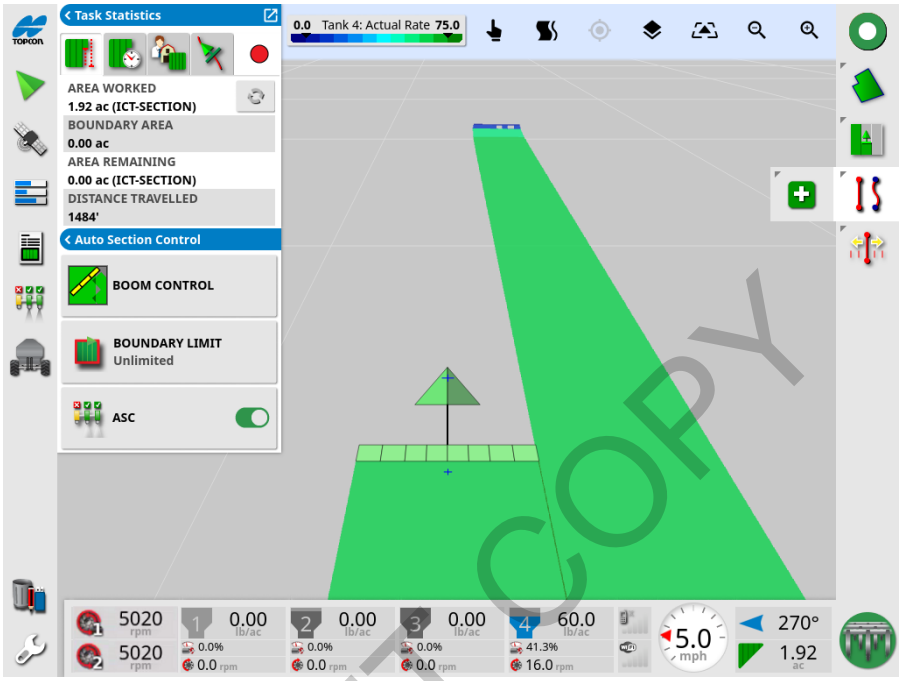
Tow behind – tank 4

Tow between – tank 1

Verify ASC in turned **ON.**

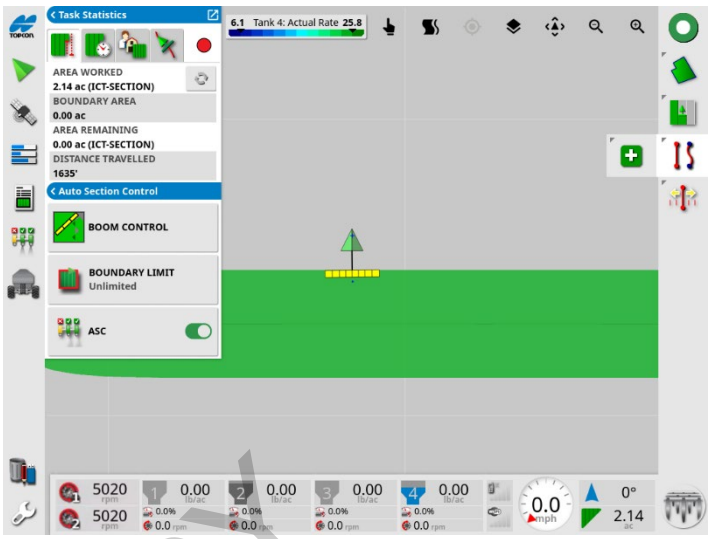


Make 2 passes side by side, covering approximately 300m in each direction to create 2 swath widths of coverage area. It's recommended to set and A-B line in your guidance system to avoid any gaps.



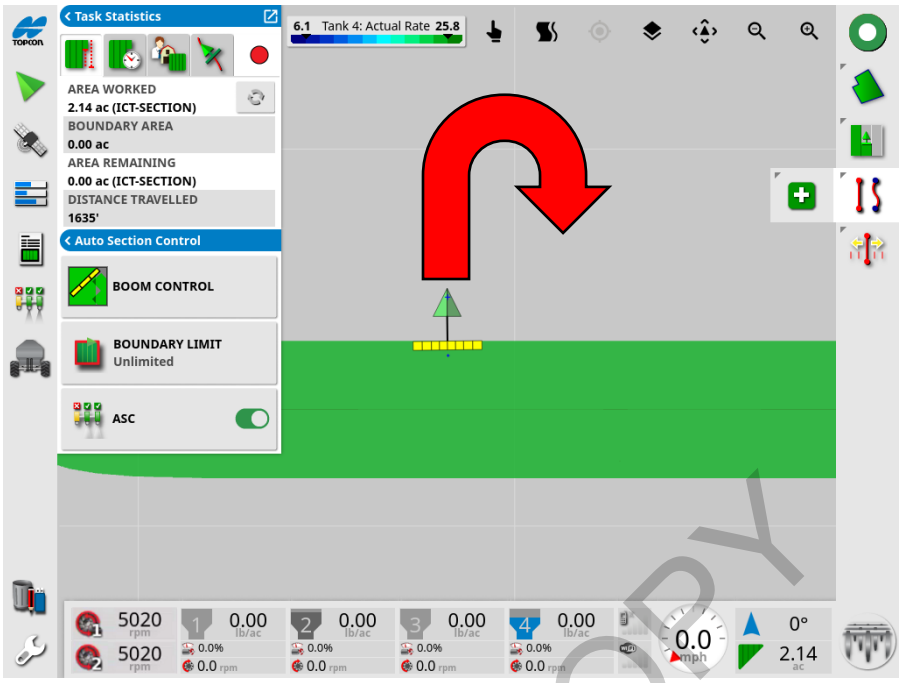
Geometry check

After the two passes are completed, turn the Master Switch **OFF.** Toggle the map view to overhead  , and drive the implement perpendicularly to the coverage area and align the most forward opener to the very edge of the first pass.



The implement on the map **MUST match the real implement on the soil. Contact your dealer or the Morris 360 help line if you're are unable to get them to match correctly.**

Drive forward approximately 100m and make a U-turn to head into the previously covered are at a normal rate of speed.



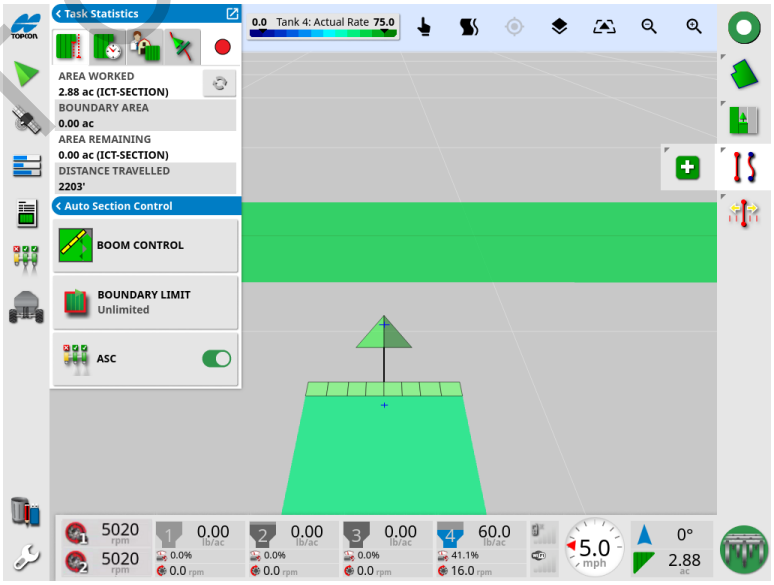
Toggle the map back to perspective view

-Engage the Master Switch.

-Fully engage openers into the soil.

-Drive into the coverage area applying product

at a normal rate of speed.



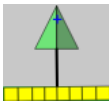
As you enter and exit the covered area:

-The ASC will have disengaged the metering system a few seconds before entering.

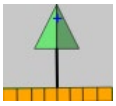
-The ASC will have re-engaged the metering system several seconds early to compensate for the lag time of the product flow in the air system.

You may have a helper drive along side the unit to verify ON/OFF times.

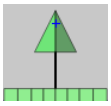
TIP: WATCHING THE MOTOR LOAD WILL ALLOW YOU TO KNOW WHEN THE METERING SYSTEM HAS ENGAGED AND DISENGAGED



Yellow=System Ready



Orange=product transitioning between air cart and openers

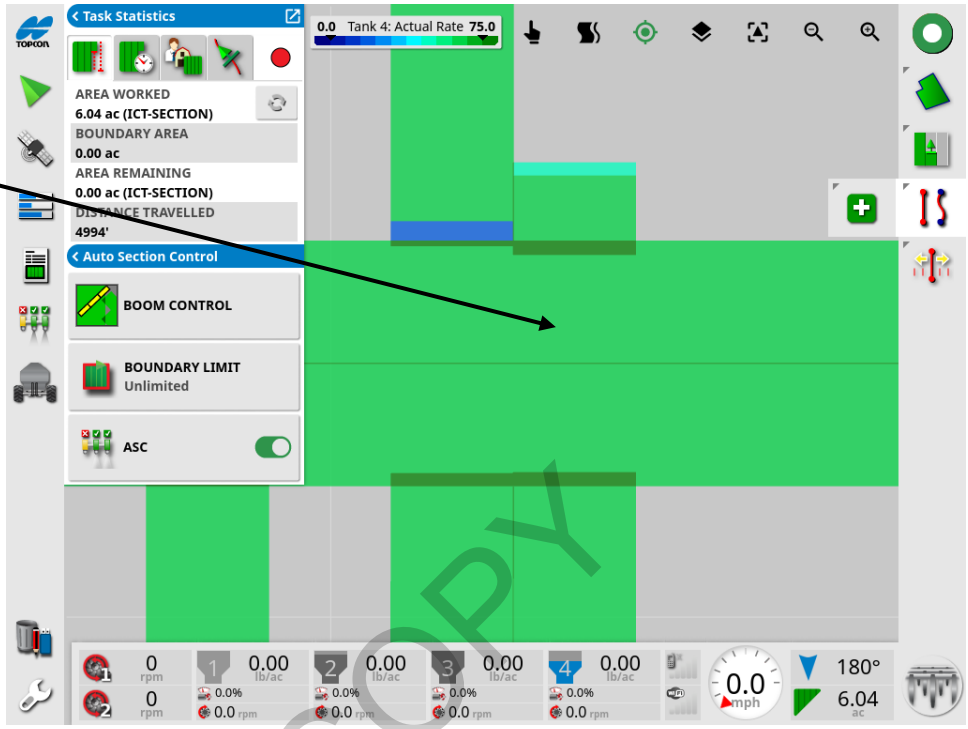


Green= System On/Product flowing

Notice how there is a slight amount of overlap.

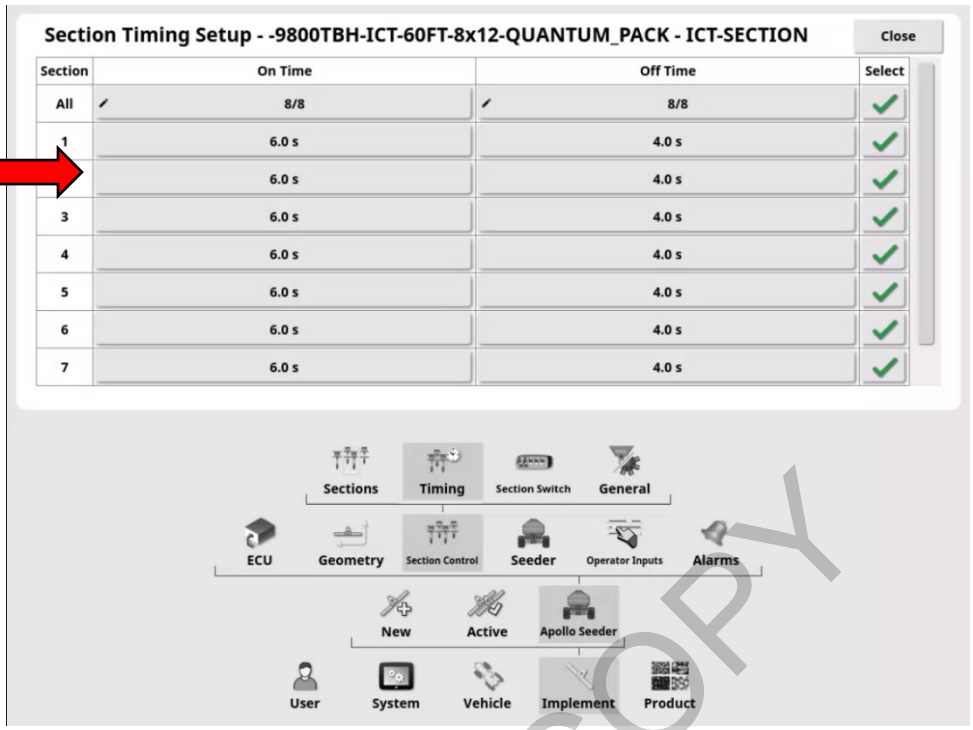
Verify product has been applied slightly before existing coverage

Verify product has ended slightly after existing coverage

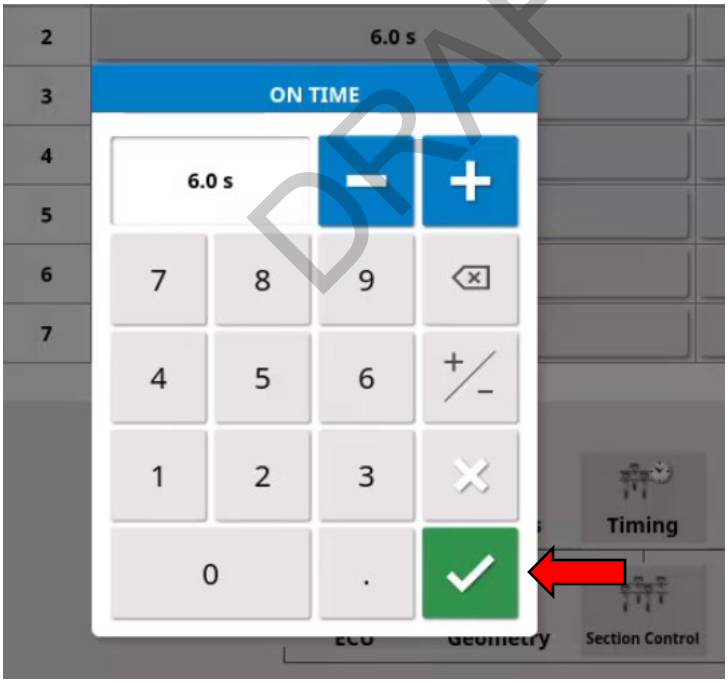


Examine the furrow by digging up the soil to verify where the actual product begins and ends.

Navigate to the section timing screen—**IMPLEMENT—APOLLO SEEDER—SECTION CONTROL—TIMING.**



Adjustments can be made to achieve a safe level of overlap. Simply touch on the section you wish to fine tune, and enter a new time, and accept with the green check mark.

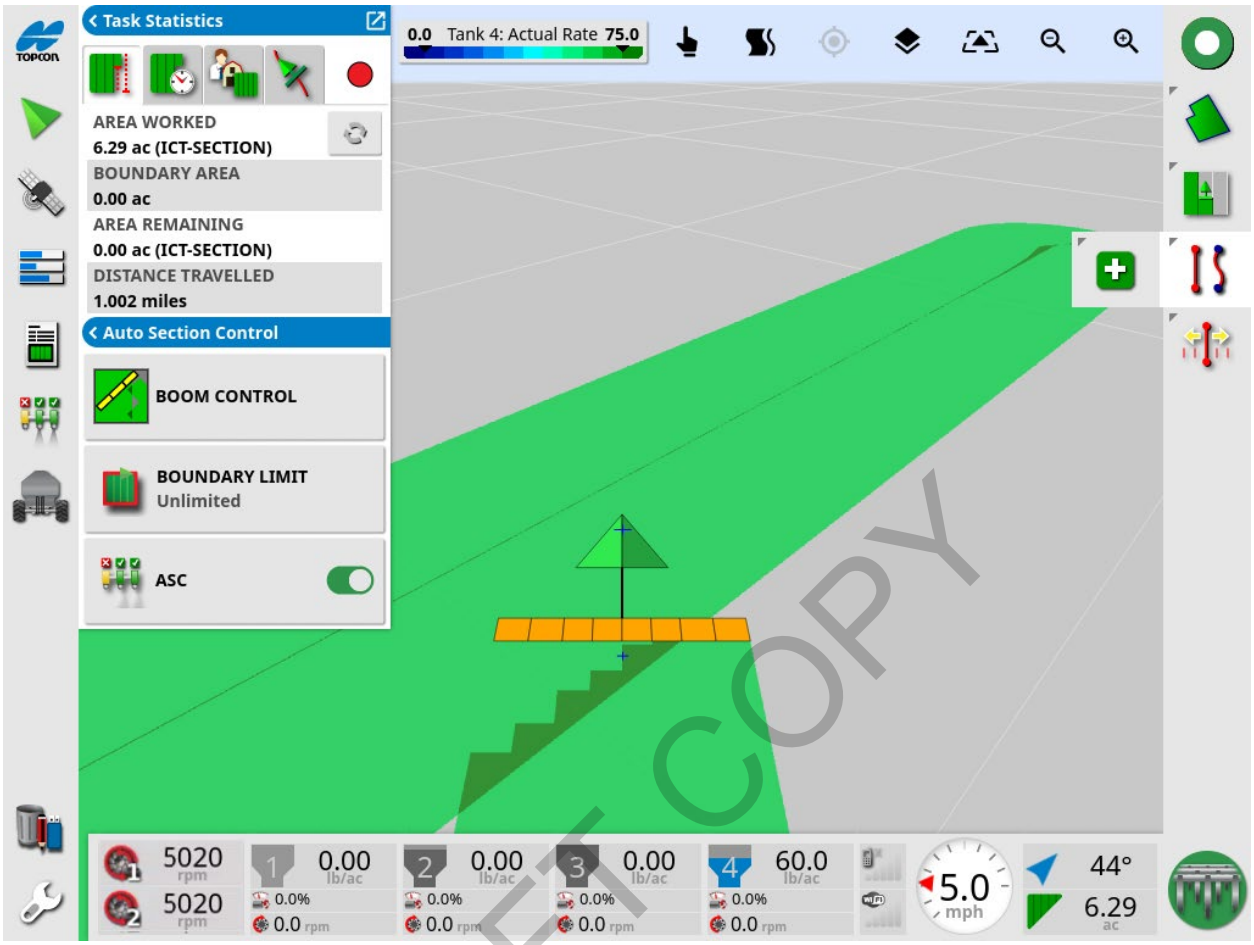


-An increase in On time=more overlap

-A decrease in Off time=more overlap

Be aware the small adjustments are all that is required. At 5.0 mph the drill covers nearly 90 inches per second

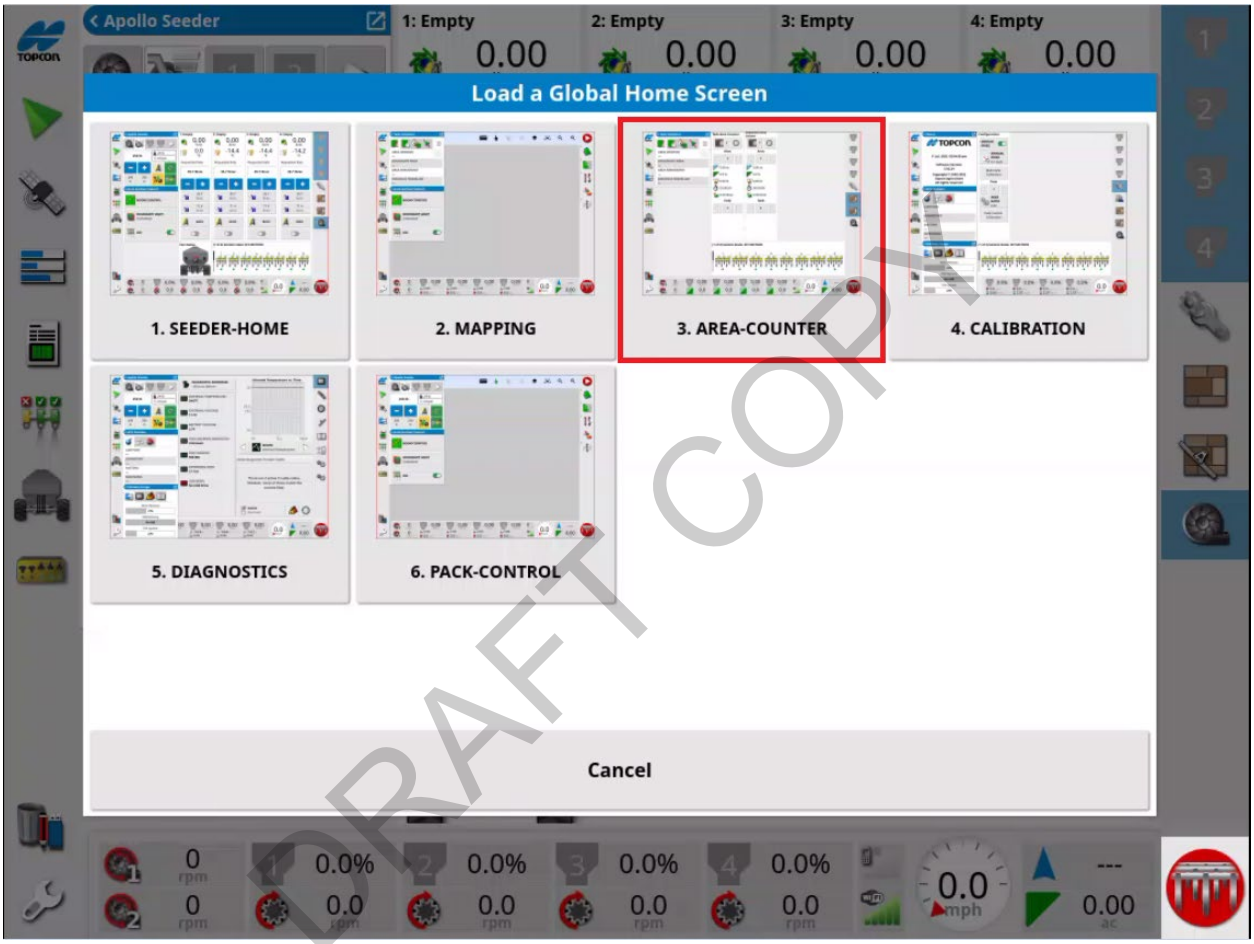
Now that your timing is dialed in, try seeding at a 45-degree angle. Experiment with the overlap control to best suit your conditions.



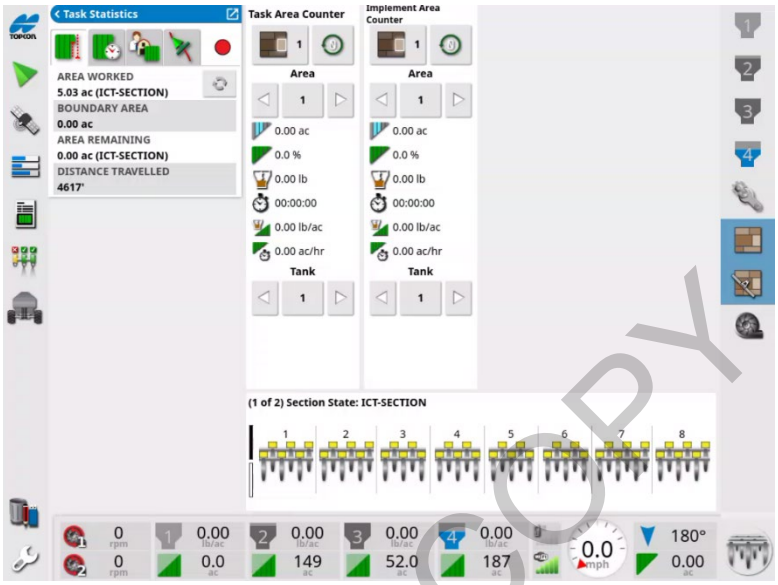
When needed turn the ASC off to seed into previously covered areas, or to finish up inside headlands.

Notes:

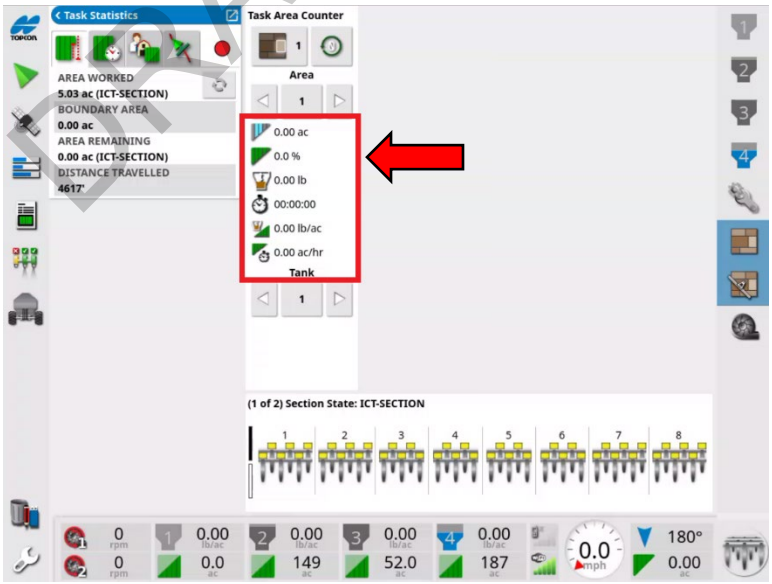
Swipe up from the bottom of the screen and select **AREA-COUNTER**.



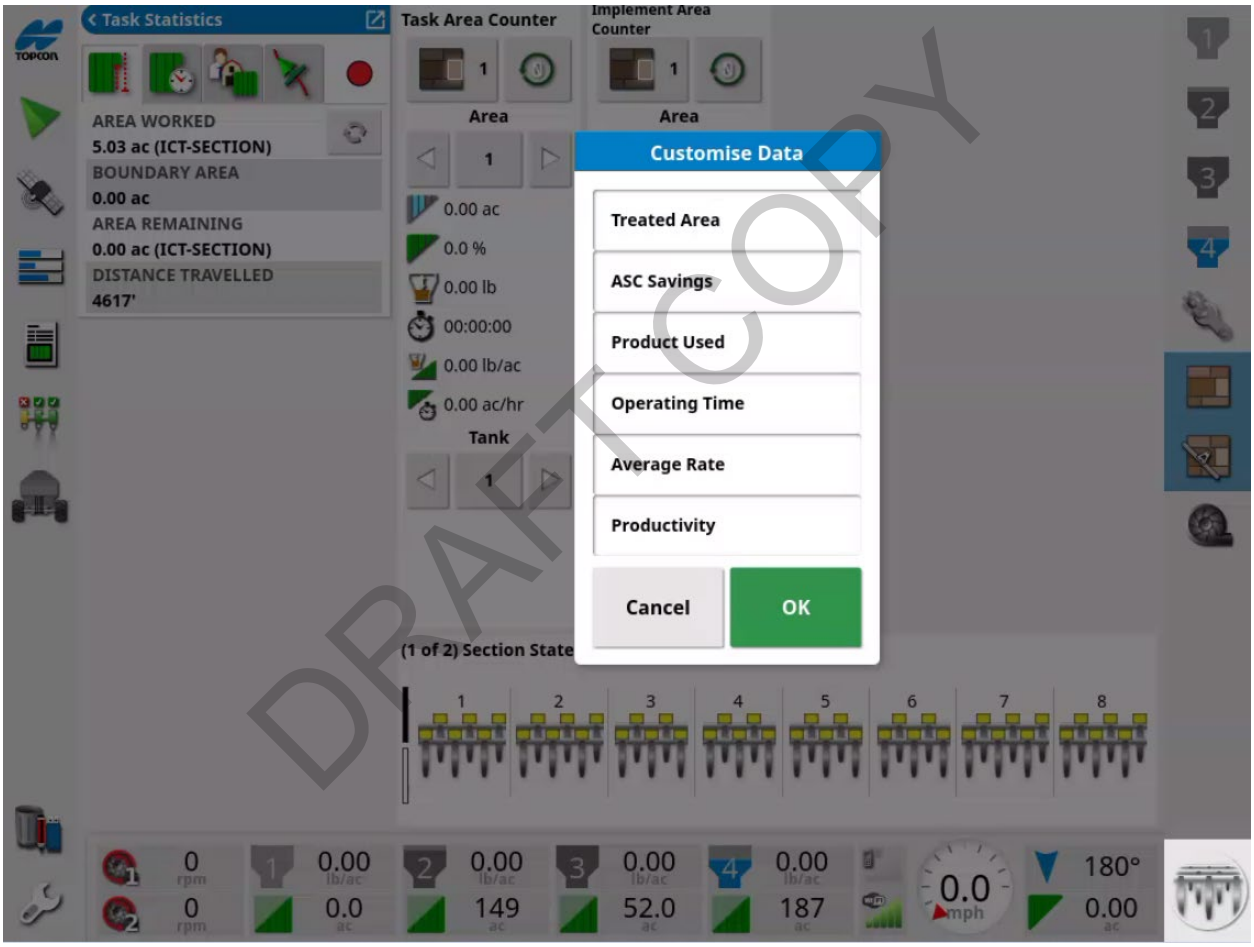
In this screen you have the ability to view the data compiled for different areas based on your current task.



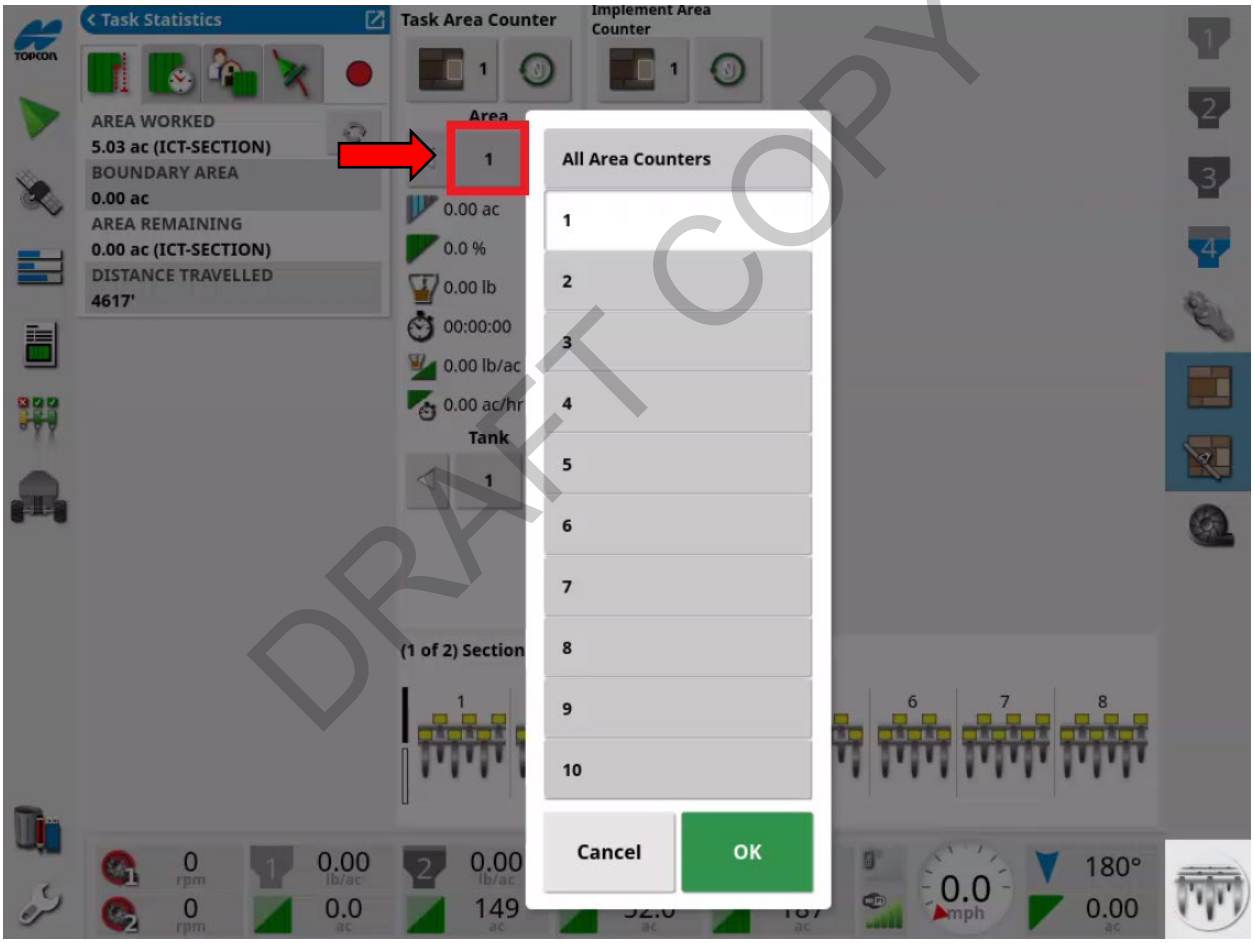
Here you can customize the data that you would like the counter to track. Just touch anywhere in the area below the area box.



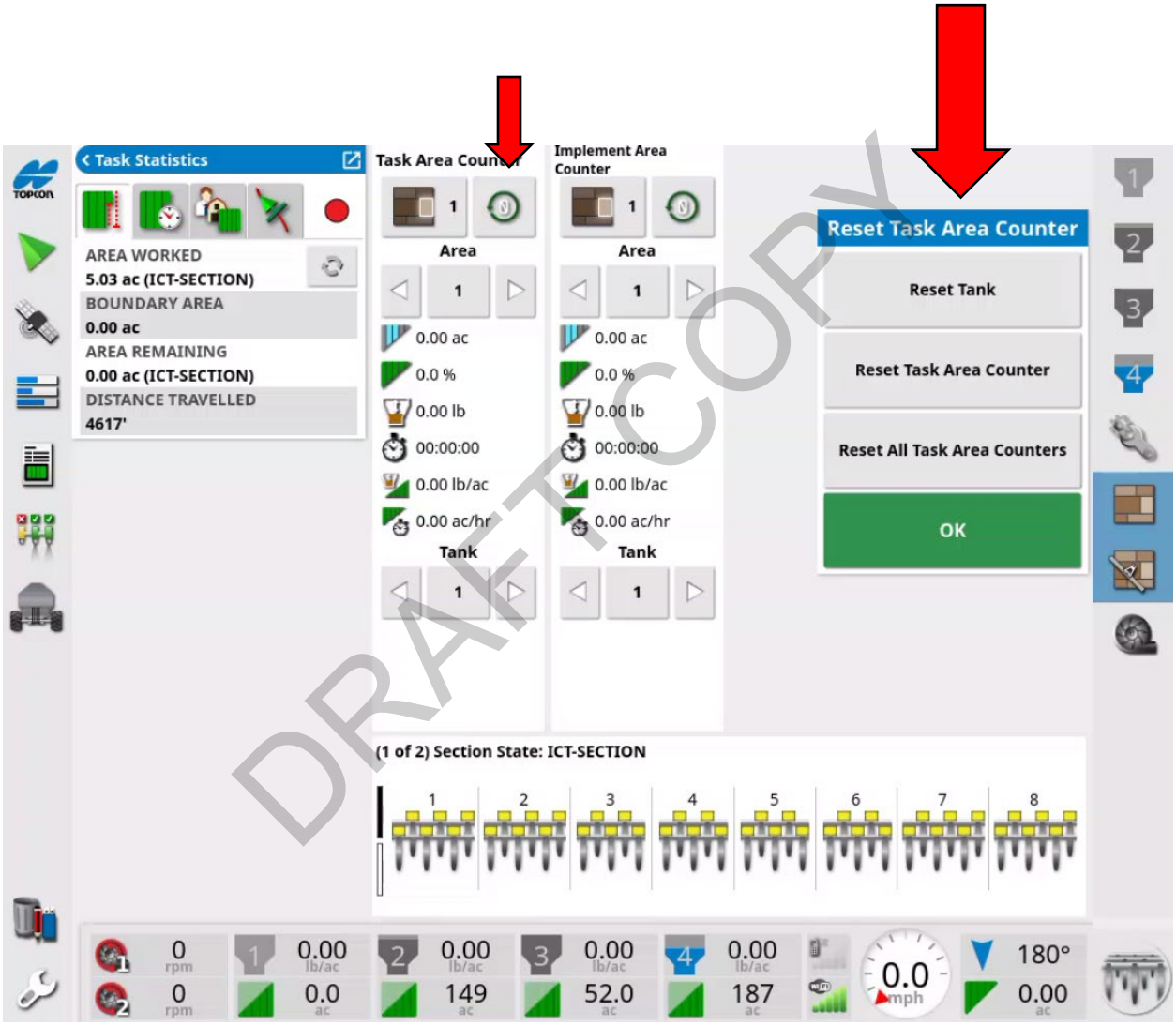
This brings up the **Customize Data Menu**, here you can choose any of the 6 options. The options will show up in order below the area selector.



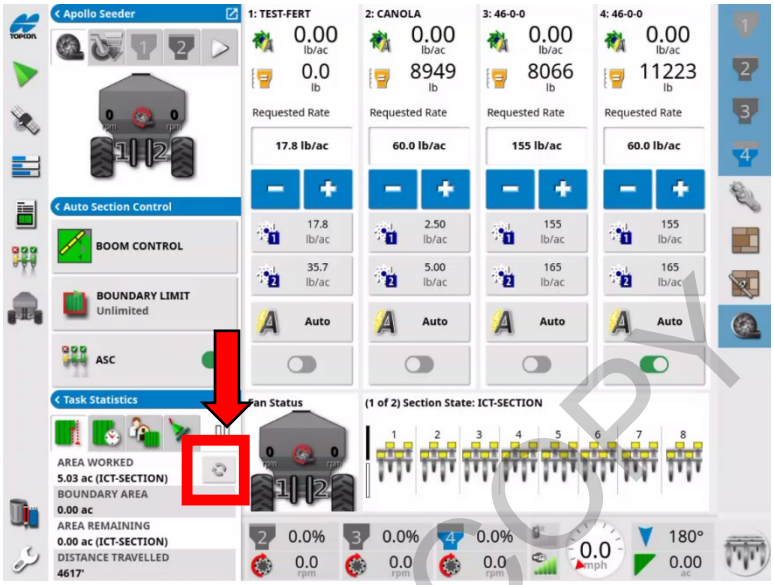
In the main acre counter tab, touch the small box with a 1 in it. This is an **area selector;** it brings up a manual way to select what areas you would like to check on.



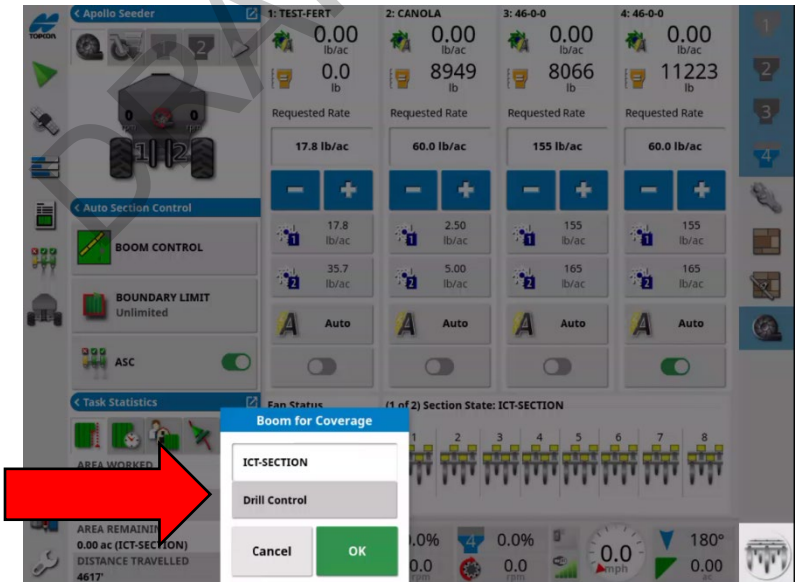
To reset counters after a task is completed just touch the  reset button. This will bring up a list of different counters that can be reset.



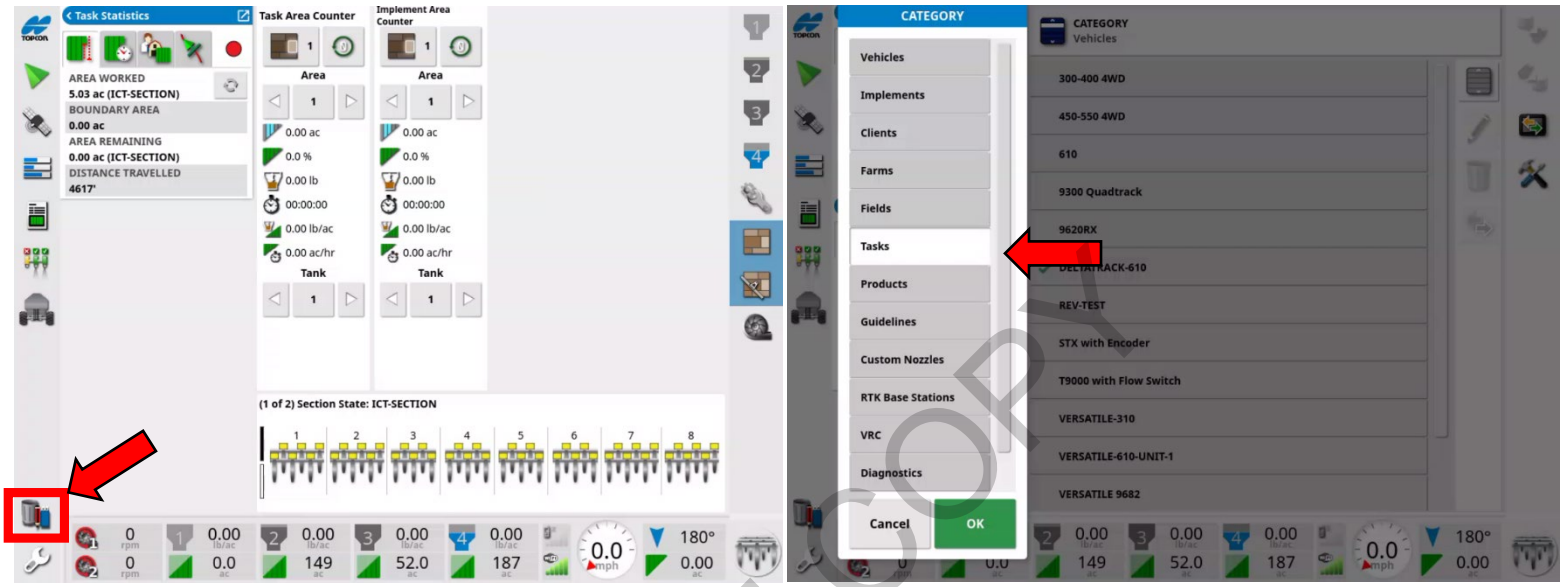
You can watch a live area counter while seeding in the **Task statistics** window. You can select which section counter you watch if you have an ICT enabled machine. You can watch either full width or ICT section counting.



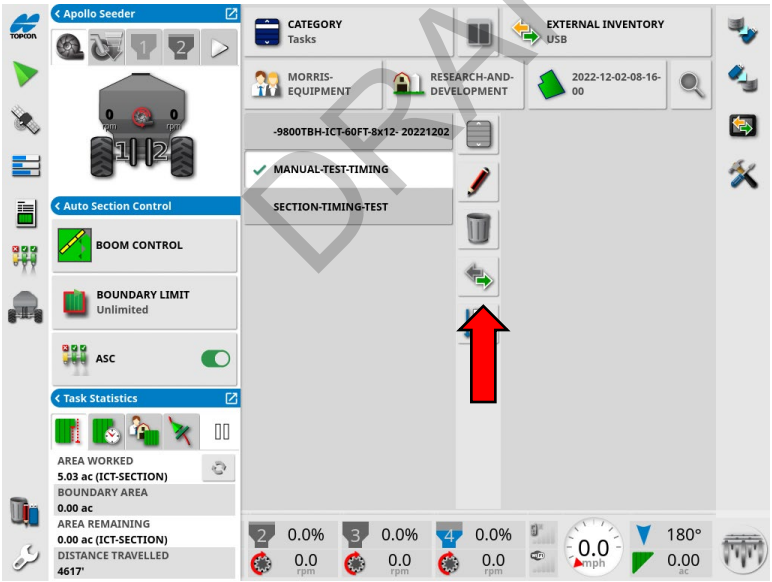
Touch the grey circled arrows, this will open a box in which you select where you count from.



With acre counters and job statistics you have the ability to export the compiled data in the form of map reports. You can then analyze the map reports to get an understanding of your seeding performance for the season. To do so touch the **inventory manager** icon and look for the tasks category.



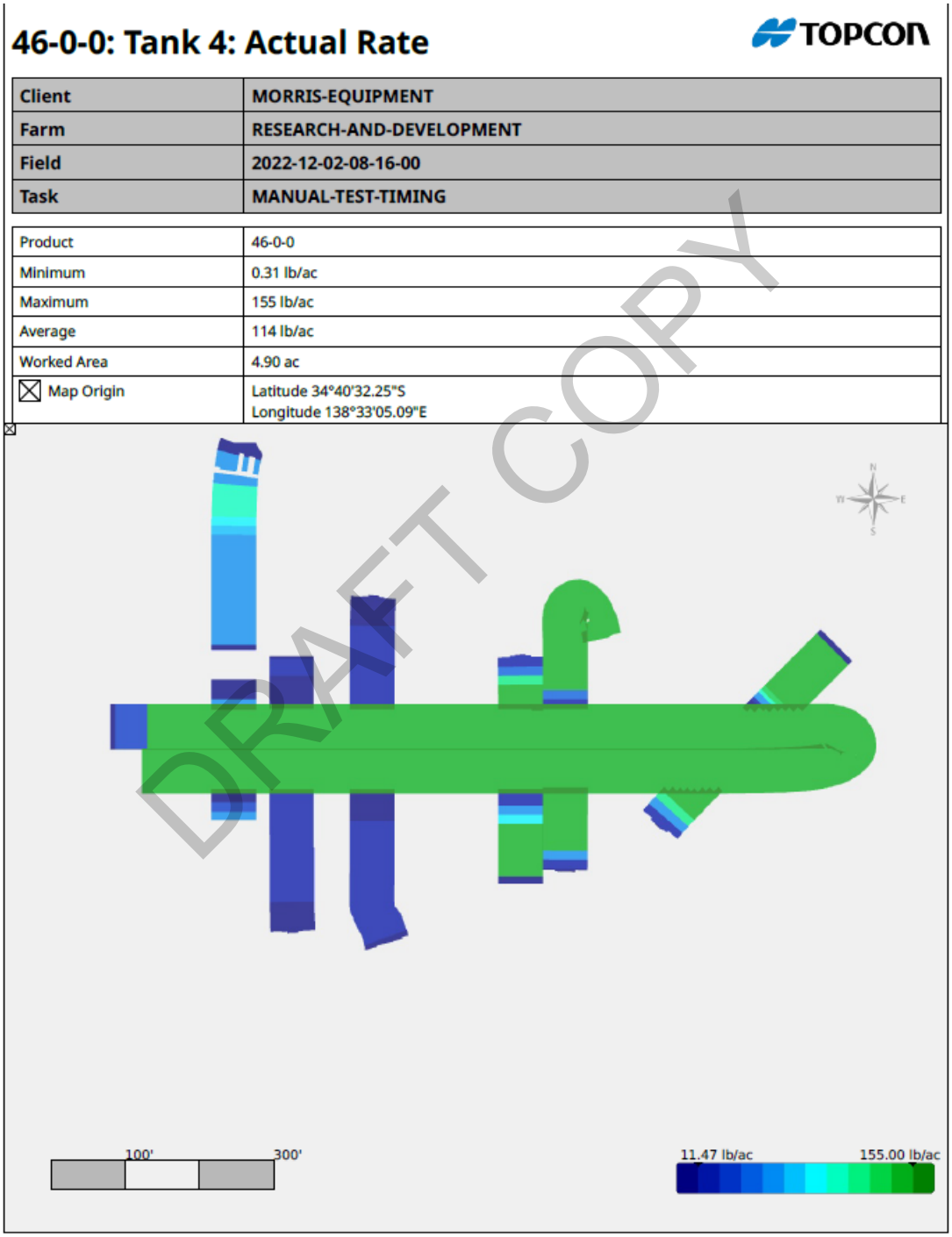
Once into the tasks tab, move through your client tree and select whichever field and resulting task you want. In this case it's the **MANUAL-TEST-TIMING** task.



Note: You must have a USB stick inserted to export files to.

Once you have highlighted the desired task, touch the export button on the right side.

Once a report has been transferred to your USB device, it will be seen as a PDF report with multiple pages showing different counter data in the form of maps. An example below shows the ICT coverage area over a map of the task area.



46-0-0: Tank 4: Actual Rate

TOPCON

Client	**MORRIS-EQUIPMENT**
Farm	**RESEARCH-AND-DEVELOPMENT**
Field	**2022-12-02-08-16-00**
Task	**MANUAL-TEST-TIMING**

Product	46-0-0
Minimum	0.31 lb/ac
Maximum	155 lb/ac
Average	114 lb/ac
Worked Area	4.90 ac
☒ Map Origin	Latitude 34°40'32.25"S Longitude 138°33'05.09"E

Notes:

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Printed in Canada

March 2024