Using the Topcon X20 Controller in Conjunction with the GreenStar 2 Guidance System for Spreading

EQUIPMENT AND SUPPLIES

- Topcon X20 Unit
- GreenStar 2 (GS2) Display
- StarFire™ iTC Receiver
- John Deere NMEA output cable

X20 SETUP

- Using the John Deere NMEA output cable, connect the serial end to a COM port on the back of the X20 and the other end in-line with the current StarFire™ iTC receiver cabling as shown in Figure 1. Note which COM port is used as you will need this in the next steps.

Figure 1. Connecting the X20 to a StarFire™ iTC Receiver.

- Turn on the X20. The software should automatically boot up but if it doesn’t, select the “Lynx1” icon on the desktop as shown in Figure 2.

Figure 2. X20 Desktop Screen

- The next screen should be the “X20 Product Selection” screen as shown in Figure 3. Ensure that the “Spreader Controller” and “Guidance & Steering” icons are selected. If not, select <STOP> at the bottom of the screen then ensure they are selected. Once selected, press the <START> icon.
By default the “Guidance” screen is displayed. Select the yellow, possibly grey, box in the bottom right-hand corner of the screen to go to the “Spreader Control” screen as shown in Figure 4.

Figure 3. Product Selection Screen

Figure 4. Guidance (left) and Spreader Control (right) Screens

Make sure that the correct COM port (usually COM port 1) is selected for communication between the X20 and the StarFire™ iTC receiver. From the “Spreader Control” screen, select <Options>, <Config.> tab, select the correct COM port that the serial cable is plugged into as shown in Figure 5. Also, make sure that GPS is selected under “Speed From” then select <CLOSE>.

Figure 5. Selecting the correct COM port and speed source.

Make sure that you have selected the material that you are using and entered the desired application rate(s) with coinciding gate height and disc RPMS.

- From the Main Spreader Screen, select <Options>, <Granular Tab>, <Settings>
- Insert gate width and gate height.
- Gate height should be determined from the manufacturer’s recommendations for desired application rate(s).
- Select <OK>.
  - Select <Products Tab>.
    - Highlight the desired material.
    - If desired material is not listed, select <Change Product List>, name the material, select <Change Density>, and enter the measured bulk density in the appropriate units. Select <Save to List>, <Yes>, <Close>.
    *NOTE*: With any new material, calibration of the X20 and spreader is recommended to attain optimum delivery and distribution of material.
  - Select <Close>.
  - From the working screen, select <Tank/Bin> icon in the top left-hand corner.
    - In the menu on the right-hand side of the screen, enter the desired application rate by selecting the <Calculator Icon>.
    - Make sure the desired product is displayed. If not, select the <Calculator Icon> next to “Product” to choose the desired material.

**JOHN DEERE GREENSTAR 2 (GS2) Setup**

- From the GS2 “Home” home screen, you can establish job details such as the client, farm name, and field name by entering the information on the right side of the screen as shown in Figure 6.
- Also from the GS2 “Home” screen, select what type of reference line (i.e. AB line, AB curve, etc.) you wish to use by choosing from the list under “Tracking Mode.” This is shown in Figure 6.

![Figure 6. GS2 Home Screen](image)

- After selecting the type of reference line, select <NEW>, name the line/curve and set the desired track spacing. Select the “Accept” button as shown in Figure 7 when finished.
Before establishing your reference line, make sure that a 3D GPS position fix has been obtained for your respective correction signal. The strength of the signal is shown on the GS2 “Home” screen under the receiver icon as shown in Figure 7. Driving the tractor around for a few minutes will help to obtain good signal strength if it is initially poor.

When you are ready, begin establishing the reference line. Depending on the type of reference line chosen, establishing point A will be different. Either select the <Set A> button or the <Record> button on the GS2 screen. The reference line can then be established during the first pass while spreading. At the end of the first pass, select <Set B> or the “Record” button again to stop recording.

**NOTE:** You can establish the reference line while spreading over the first pass if you wish.

**ESTABLISH THE REFERENCE LINE AND SPREADING**

1. Engage the PTO to working RPM’s (approximately 2000 RPM).
2. Select the <Master Switch> button shown in Figure 8. The button will turn from red to green. This will turn both the conveyor and discs on.

3. You are now ready to begin spreading.
4. Turn the tractor around to set up the next pass. Once the tractor icon on the GS2 screen is near the beginning of the next line, select <Steering Wheel> button on the screen until it becomes green and you see “Steer On” as shown in Figure 9.
5. Now select the <Auto> button on the control panel within the tractor cab as shown in Figure 11 or engage auto-guidance as applicable to your tractor.
6. As you continue to make passes throughout the field repeat steps 4 & 5.