

Monitoring Tractor Fuel Use

Improving Energy Efficiency on Irrigated Australian Cotton Farms

The Improving Energy Efficiency on Irrigated Australian Cotton Farms project aims to deliver an industry-wide awareness campaign that provides tailored energy efficiency information and tools to irrigators and their advisors. This activity received funding from the Department of Industry as part of the Energy Efficiency Information Grants Program.

Introduction

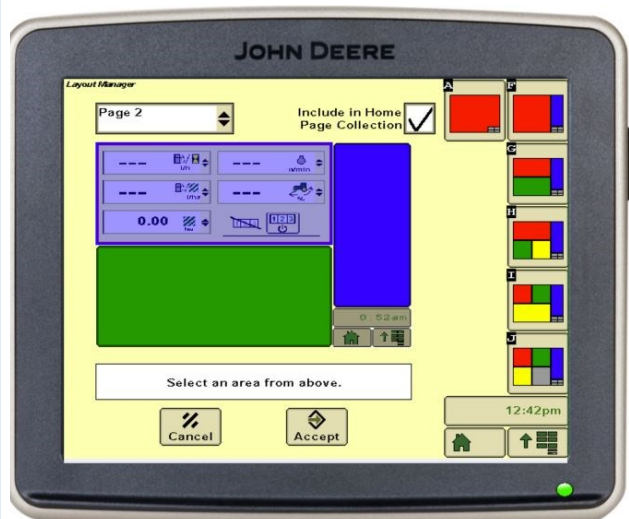
Excessive wheel slip and engine speed can waste fuel.

Tractor Performance Monitors (TPMs) have the ability to show fuel use parameters which an operator or grower can use to check their fuel consumption for an operation. This fact sheet uses the GreenStar 3 display to illustrate the key settings and calibrations needed to show accurate fuel use consumption and associated indicators.

Adjusting the Layout

To have the GreenStar display show fuel use on the screen in conjunction with other information the layout needs to be adjusted:

MENU → LAYOUT MANAGER[#]



Green Star Menu Option - Layout Manager

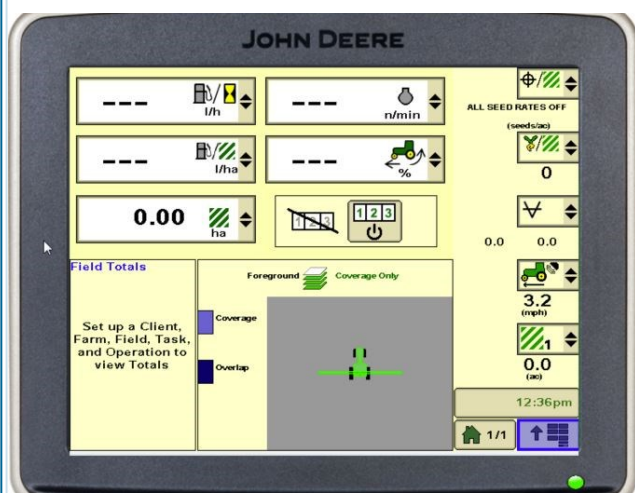
Displaying fuel use and wheel slip provides a feedback loop to the operator. This allows changes in operational practice to be made to save fuel.

1. Select the layout that only has three sections.
2. When the layout enlarges, press the upper large rectangle and choose the *Performance Monitor* and press *Graphical Display*.

Setting the Performance Monitor Fields

Next the performance monitor fields should be adjusted to show the key fuel use parameters.

MENU → PERFORMANCE MONITOR[#]



Home Screen displaying fuel use parameters

Place the following in the first five fields: Fuel use (L/h); Fuel use (L/ha); Total area; Wheelslip; and, Engine speed. Completing this step will allow the fuel use parameters to show in the home screen of the display.

Monitoring Tractor Fuel Use

Initialising the recording function

To ensure both the accumulated area and wheel slip are measuring correctly, the implement width, radar and 'zero wheel slip' need to be set:

MENU → PERFORMANCE MONITOR → SETTINGS[#]

Width: Select width and enter the width of the machine ensuring the area is tallied correctly.

Area Counter: Select the source you want to use to start and stop the recording of the accumulated totals and coverage maps.

Radar Calibration: Press 'Start', drive 123 meters, measured in a way independent from the tractor, the press 'Stop'. Note: it is advisable to not use the radar as a speed source due to it easily losing its calibration.

Wheel slip calibration: Drive on a flat, level, hard surface (or as close to this as possible), with no load, and between 7 km/h and 9 km/h. Then press the 'zero slip' button.

With these settings complete, the values will be accurate.

Recording Information

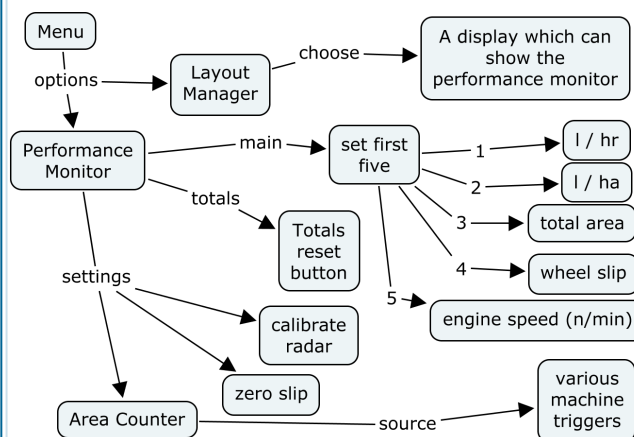
The totals screen shows accumulated area, fuel use as well as accumulated averages. There are two reset buttons which zero totals accumulated in the display's memory; one for distance and one for everything else.

MENU → PERFORMANCE MONITOR → TOTALS[#]

Press the "→ 0" icon located in the main area of the totals screen at the start of the field operation. The display is now ready to accurately measure fuel use data and totals

For further information on Monitoring Tractor Fuel Use or the Improving Energy Efficiency on Irrigate Australian Cotton Farms project please contact the Cotton Research and Development Corporation on 02 6792 4088 or the CottonInfo Team member in your area.

can be read from this screen at the end of an operation.



Options used in this factsheet

Saving Fuel

With wheel slip and engine speed showing on the home page, the fuel consumption can be monitored. Wheel slip should be in the following ranges: Firm ground – 6% to 13%; Tilled ground – 8% to 16%; Very sandy ground – 10% to 18%. If it is not in this range your tractor may not be ballasted correctly for your operation.

Ballasts need to be adjusted to suit the power demand of the tractor and travel speed so check this comprehensive guide to ballasting tractors: <tinyurl.com/kpk3f9w>. It is advisable to choose the lowest engine speed practical for a particular ground speed.

Conclusion

With the GreenStar set up according to this fact sheet, fuel consumption can be monitored. For general setup not relating to fuel consumption, see the GreenStar tutorials presented on You Tube by CTIGreestar: <tinyurl.com/mdezywo> or download the simulator for training: <tinyurl.com/m53zlda>.

[#] The menu options will change depending upon the machine and GreenStar version.