



# TRUCK CROP YIELD MONITOR

Tablet PC



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# Truck Crop Yield Monitor

## Tablet PC Version

### Nuts & Bolts

## KB—Yield Monitor

KB Yield monitor is produced by KB Manufacturing in Fisher, MN. Yield Monitor part of the system measures Weight, not Acres. Showing how many LBS of Material that have gone in the truck, not yield. It counts / weights Potatoes, Beets, Rocks and Dirt lumps all the same. So it is important to have the Scales in a position where they are weighing clean product.

*There are 4 base part to the Yield monitor*

- ⇒ *KB Black Box*
- ⇒ *Junction Box (Summing Box)*
- ⇒ *Shaft Speed Sensor (Proximity Sensor)*
- ⇒ *Scales / Load Cells (Weigh Bars)*



Basic principal of the Yield Monitor. Load Cells are replacing idler wheels on the conveyor chain. When the conveyor is not moving, they are reading Static Weight. When the chain is moving, they are reading Rolling Weight. To make the Rolling Weight into something measurable, the Shaft Speed Sensor (SSS) measures the rotation of the drive on the conveyor.

To make the system work, first do “**Test Weight Calibration**” (one time, new systems). Load Cells will weigh 1/4 oz to 500 lbs, but the KB Black Box (KBBB) does not know a value. You must start with a known weight. In this process we set a “0” point on empty conveyor chain, then add a known weight (ex. 50 lbs) for the Static Weight to be accurate. The KBBB now knows these values.

Rolling Weight & “**In Field Calibration**” is the next essential item to having a functioning system. Two important items to understand on Rolling Weight.

- ⇒ First is drive sprocket size. The SSS measures rotation, but really what is measuring is the length of chain loaded with the weight of the material that went by.
- ⇒ Second item is Roll Back on the conveyor. Conveyor Chains move quickly and product can roll back slightly (think of it as wheel slippage). So the scale may be double weighing some of the product. This is where In Field Calibration is critical.

When the calibration’s done, take note that the Static Weight has changed. That is correct! Your 50 lbs weight may now weigh 75 lbs in Static Weight (stop mode). Follow through the “Parameter”, “Test Weight” and “Field Calibrations” and you will be ready to Weigh Loads.

## GK—Truck Crop Yield Monitor

GK software is designed to work together with the KB Yield Monitor. The KB Black Box (KBBB) will do all the Calibration of weights and return LBS of Product per second, handing that data to the GK Truck Crop Yield Monitor (GKTCYM) software data over a 9 Pin Serial connection. The

GKTCYM will also receive a GPS Signal, giving Location, Distance traveled and Harvester Width. With this information it will calculate the Tons/Acre or CWT/Acre and write a map.

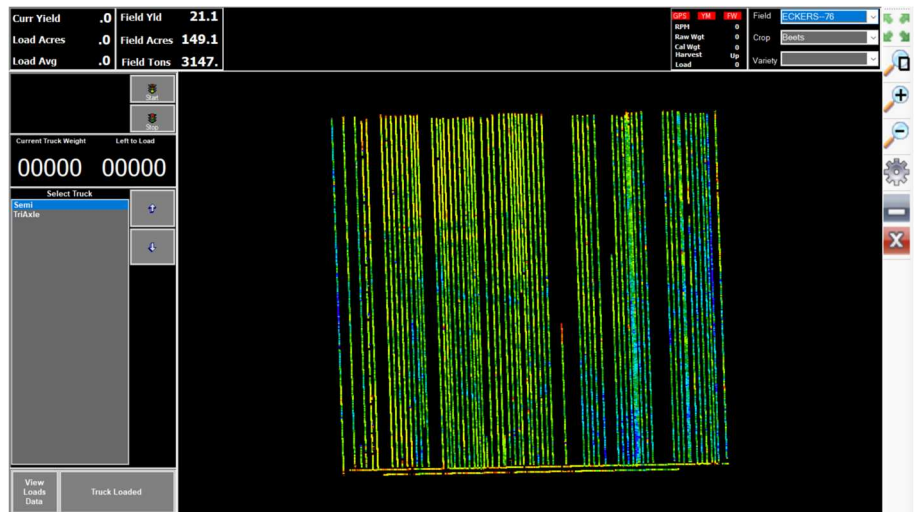
For GKTCYM to work, it must have data coming in on a Serial Port. This is not standard on all Computers. Talk with GK and they will help you find a good solution to run the software on and collect data. USB's are troublesome, do not handle vibration and dust well. USB to serial adapters are NOT suggested. GPS data is required for mapping. We do not need a special GPS, but we do need a GPS that can output a NMEA data string to a serial port (Wired or Bluetooth). The GPS must have a GGA, GSA, RMC or VTG data strings.

Once the KBBB and GPS are connected to the PC, opening the GKTCYM will allow users to put in information about their harvester, trucks & weights, fields and varieties. The system will map all the Crop Yield data. Also the user options to track truck loads, with the PC counting down to "Full Loads", tap of a button will mark the truck as loaded. User will have all the time while loading the next truck to choose the correct Truck from the Truck List. Also, able to view previous load statistics while the system is running. While all of this is going on, GKTCYM is laying down a colored coverage map of the crop harvested.

Along the top of the screen you will see Yield Statistics for where you are at, load averages, and field averages. Indicator lights letting you know that GPS, KBBB, and Data is being written. All tools to make your harvest mapping a little easier and more informative.

Finally, at the end of the season the data can be imported into GK's Ag Data Mapping Solution desktop software. Where you can clean and analyze the crop year.

### Nuts & Bolts





# Truck Crop Yield Monitor

## Tablet PC Version

KB Manufacturing Harvest Monitor (TNKN-0700-BELT)

## How to use parameters

### Parameter Entry:

1. Turn OFF and hold the CAL-1 button.
2. Turn ON while holding the CAL-1 button until the display shows ----- then release the CAL-1 button.
3. Press and release the RUN/STOP button.
4. The display will show 01--nn (The 00 denotes parameter number 1 and the nn may be any 2-digit number representing the current value set for parameter number 1).
5. To change the value of this parameter, press the TOTAL TONS button until the digit you want to change is flashing.
6. Press the CAL-2 button to increment the flashing digit.
7. To cycle to the next parameter, press the TOTAL TONS button until the parameter number is flashing, then increment by pressing the CAL-2 button.
8. Continue steps 5 through 7 for all parameters desired.
9. When finished, press the CAL-1 button to return to the weight display mode.

## Parameter List

- # 0 = (Default 01) Number of pulses per accumulate (1 to 9) Set to the number of pulses that it takes to accumulate when in the RUN mode. For example: To wait for 4 pulses of the proximity sensor before accumulating, then set this parameter to 04. (NOTE: A value of 00 or greater than 09 is not allowed).
- # 1 = (Default 01) The sample/averaging rate. A setting of 1 is the fastest display rate update, and does not average. A setting of 3 (for example) will take 3 samples and average them before updating the displayed weight. MAKE SURE THAT THE UPDATE RATE IS FASTER THAN THE MAXIMUM PULSE RATE FROM THE PROX. SWITCH.
- # 2 = (Default 01) The displayed graduation size. Set at 10 if a graduation size of 10 is required.
- # 3 = (Default 99) LEAVE THIS SET AT 99  
The overload trip-point in hundreds of graduations +1% If the scale is to be 2,500 by a graduation of 1, then a setting of 25 would cause the overload to activate at 2,525.  
Set to 99 if no overload point is desired.  
Set to 00 for a 10,000 graduation overload.
- # 4 = (Default 02) The motion detection window setting. Set this to the number of graduations that will be allowed as a no-motion condition.
- # 5 = (Default 07) ACCUMULATION THRESHOLD  
This parameter is used to set the minimum value that can be accumulated. When the weight is below the "Accumulation Threshold" the scale will not ADD weight in "RUN" mode. When the weight is over the "Accumulation Threshold" it will add to the total weight in "RUN" mode. NOTE: On 12 row WIC, may want to consider using a Threshold of around 10 to 12 for the value.
- # 6 = (Default 00) The decimal point position. i.e., 02 will cause 0.00
- # 7 = (Default 00) The print size and Time/Date option 00=small 01=medium 02=large all with no time/date print  
10=small 11=medium 12=large with time/date printed
- # 8 = (Default 01) Printer pre-spaces (indent) and print inverted x0 = non inverted print  
x2 = inverted print  
0x = no pre-spaces  
2x = 4 pre-spaces (double the digit entered)
- # 9 = (Default 23) Remote data enable / Printer type and baud rate  
x0= 300 baud inverted data  
x1= 300 baud print data  
x2= 1200 baud PR-2 roll-tape printer  
x3= 1200 baud PR-1 ticket printer  
0x= no remote output  
1x= continuous remote output enabled  
2x= For GPS output sent when conveyor pulse in RUN mode



# Truck Crop Yield Monitor

## Tablet PC Version

KB Manufacturing Harvest Monitor (TNKN-0700-BELT)

### Standard Operation Procedures (LCD Display)

This unit has an input for a proximity sensor that senses the revolution of the moving belt. The basic requirement is that the switch makes at least one closure (pulse) when the belt travels the distance of the scale. Each time the pulse is received by the Harvest Monitor, the current weight is accumulated. There are two accumulators, a "load" total and a "grand" total. Calibration is first done by placing of known weight, then after running material and weighing the material on a static scale, adjustments are made by percentage correction.



#### **ZERO BUTTON:**

Has two Functions depending on Operation Mode:

- ⇒ IN THE RUN MODE  
Zero the accumulated weight.
- ⇒ IN THE STOP MODE  
Zero the belt reading with **no material on the belt.**

#### **RUN/STOP BUTTON:**

Changes the unit operation mode.

- ⇒ RUN for accumulation of weights
- ⇒ STOP mode for calibration.
- ⇒ When the system is in this mode, the RUN lamp to the right of the display will flash, and the total will be accumulated.

#### **TOTAL TONS BUTTON:**

To activate an optional printer, press this button. This button also allows the viewing and clearing of the grand total. Press the button and hold it in. The display will show the grand total in tons by 1/10 ton increments. To clear the grand total, press the ZERO button while still holding the TOTAL TONS button.

**Note:** This does not clear the load accumulation; this needs to be done separately by pressing the ZERO button while in the RUN mode.

#### **CAL-1 & CAL-2:**

Used For Calibration and Data Entry



# Truck Crop Yield Monitor

## Tablet PC Version

KB Manufacturing Harvest Monitor (TNKN-0700-BELT)

### Test Weight Calibration

**This procedure is done to set the initial calibration. From then on, the "Minor" calibration routine can be used.**

1. Turn OFF the Display.
2. Turn ON while holding the CAL-1 button until the display shows----- then release the CAL-1 button.
3. Press and release the CAL-2 button.
4. The display will show the raw UN-calibrated value.
5. Assure that the scale is at a zero load condition.
6. Press ZERO to remove the dead load.
7. Load the scale with a known weight value.
8. The display must now show a value larger than the test weight. If the display is not larger than the weight value, do one of the following.
  - ⇒ Check the load cell size, it may need to be reduced.
  - ⇒ Increase the graduation size.
  - ⇒ Raise the internal amplifier gain by adding the jumper across the gain pins on the main board.
9. When the weight is stable, press the RUN/STOP button and the display will come up with the last used calibration weight that was entered. If this is the same weight as what was placed on the scale, go to step #11.
10. Change the display to show the known calibration weight value.
  - ⇒ Press the TOTAL TONS button to select the flashing digit.
  - ⇒ Press the CAL-2 button to increment the flashing digit.
11. Press the CAL-1 button, and the display will return to the weight display mode, showing the calibrated weight.





# Truck Crop Yield Monitor

## Tablet PC Version

KB Manufacturing Harvest Monitor (TNKN-0700-BELT)

## Yield Monitor in Field Calibration

**My Cal Value is \_\_\_\_\_**

**For this example the Beginning Cal # 620**

### **Example #1: Yield Monitor Reading is Too Low**

The displayed total on the Harvest Monitor is 26500 and truck weight of this load is 38900.

**Truck Weight / KB Weight = Cal change %**

$$38,900 / 26,500 = 1.468\%$$

**Cal # x Cal Change % = NEW CAL VALUE**

$$620 \times 1.468 = 910$$

### **Example #2: Yield Monitor Reading is Too High**

The displayed total on the Harvest Monitor is 56,200 and truck weight of this load is 32,490.

**Truck Weight / KB Weight = Cal change %**

$$32,490 / 56,200 = 0.578\%$$

**Cal # x Cal Change % = NEW CAL VALUE**

$$620 \times 0.578 = 358$$

1. Turn the Display OFF
2. Press & hold the CAL-1 and turn on the display.
3. If done correctly, the display will show - - - - -
4. Press the TOTAL TONS button, this will display the "Current Cal Value"
5. Use the TOTAL TONS button to increment the flashing digit and use the RUN/STOP button to change which digit is flashing.
6. When the New Cal Value has been entered, press the CAL-2 button.
7. With the belt clear & running, press ZERO to balance (zero) the scale.  
- Consider resetting the "Zero Point", next page.
8. Press the RUN button to collect data (should be in "Run" mode)

**Note: Once calibrated, "WRITE DOWN YOUR CALIBRATION VALUE"**





# Truck Crop Yield Monitor

## Tablet PC Version

KB Manufacturing Harvest Monitor (TNKN-0700-BELT)

### Resetting "ZERO POINT"

**This procedure is done to reset the "ZERO POINT"**

**"Zero Point" is the weight that will appear on the display when the power is Cycled (turned off & on).**

1. Turn OFF the Display.
2. Turn ON while holding the CAL-1 button until the display shows----- then release the CAL-1 button.
3. Press and release the CAL-2 button.
4. The display will show the raw UN-calibrated value.
5. Assure that the scale is at a zero load condition.

NO PRODUCT ON THE CHAIN OR OVER THE LOAD CELLS—  
Suggest doing this with the chain running empty at operating speed.

6. Press the "Zero" button

Try to get as close to 0 as you can. If you see both + and - values, should be good.

7. Press the CAL-1 button, and the display will return to the weight display to "Stop" mode, showing "0" or something close if the conveyor is moving.

If the value is not "0" or something close, make sure the chain is clear and repeat the procedure.



# Truck Crop Yield Monitor

## Tablet PC Version

KB Manufacturing Harvest Monitor (TNKN-0700-BELT)

### Time and Date Option

If the time/date option is installed, the time and date can be printed after the weight. The time and date is battery powered and will run when power is removed from the unit.

To View and or Set the Time/Date:

- ⇒ Press the CAL-1 button, and hold until the display shows the current time, and then after a short delay, the date will be displayed.
- ⇒ To set the Time/Date, press and hold the ZERO button, while the time/date is being displayed. After the date has been displayed, the unit will go into the entry mode, with the time display flashing.
- ⇒ Use the TOTAL TONS button to increment the flashing digit, and use the RUN/STOP button to select which digit flashes.
- ⇒ When the correct time has been set, press and release the CAL-2 button to advance to the DATE display.
- ⇒ Use the TOTAL TONS button to increment the flashing digit, and use the RUN/STOP button to select which digit flashes.
- ⇒ When the correct date has been set, press and release the CAL-2 button to return to the weight display mode.



# Truck Crop Yield Monitor

## Tablet PC Version

KB Manufacturing Harvest Monitor (TNKN-0700-BELT)

### Load Cell Connection

#### INSIDE TERMINAL

PIN # 1 = NEG EXCITATION (Black)  
PIN # 2 = POSITIVE EXCITATION (Red)  
PIN # 3 = POSITIVE SIGNAL (Green)  
PIN # 4 = NEGATIVE SIGNAL (White)  
PIN # 5 = SHIELD

REVERSE SIGNAL LINES IF SCALE OPERATES BACKWARDS

INTERNAL CONECTOR DB9 (\* denotes lines for proximity switch)

- \* PIN 1 ---- DC GROUND (Proximity switch ground)
- PIN 2 ---- RS232 CONTINUOUS DATA OUTPUT (OPTIONAL)
- \* PIN 3 ---- PULSE INPUT from proximity switch
- PIN 4 ---- (RS232 SIGNAL INPUT - OPTION)
- \* PIN 5 ---- 5 volt power for solid state proximity switch
- PIN 6 ---- Printer data to pin 3 of printer, or -20ma Printer data
- PIN 7 ---- +20ma Printer
- PIN 8 ---- Continuous data to computer, or - 20ma continuous data.
- PIN 9 ---- + 20ma continuous

#### Printer Data:

Baud rate selectable 300, 600, or 1200  
Data bits are 8 with 2 stop bits and no parity

Nominal single line print data string will be;

Polarity sign / 6 weight digits / LB or KG or TN / Time and  
Date if option is ordered / Carriage Return and Line Feed.

#### Remote Continuous Data:

Baud rate is 1200 fixed.  
Data bits are 8 with 2 stop bits and no parity

Data stream is as follows;

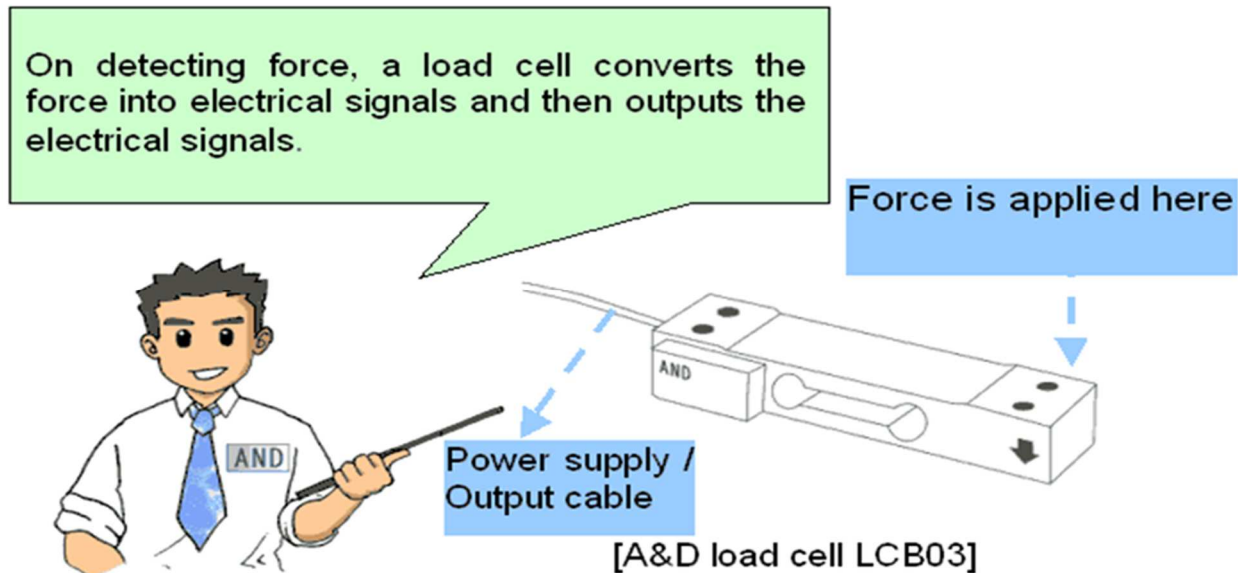
STX / Space or - / 6 weight digits / L / G for gross /  
if negative K N for net

Space or a / Carriage Return / Line Feed  
M if in motion or  
O if in overload



## Trouble Shooting Load Cells

What is a Load Cell?



In the dictionary, a load cell is defined as a “weight measurement device necessary for electronic scales that display weights in digits.”

The sensors that measure force include sensors that utilize springs or piezofilms, pressure elements, displacement sensors, as well as a variety of other sensors. There are also a number of different load cells. These include magnetostrictive load cells, capacitance load cells, gyro load cells, and strain-gauge load cells.



# Truck Crop Yield Monitor

## Tablet PC Version

KB Manufacturing Harvest Monitor (TNKN-0700-BELT)

### Connecting & Testing Proximity Sensor

The Proximity Sensor is the "Heart" of the BYM. It consists of two components.

1. Shaft rotation indicator (below a color with a steel tab)
2. Shaft rotational sensor or Proximity Sensor

This will give a "Pulse" for each rotation of the Shaft. The Proximity sensor is attached to the shaft that drives the chain the "Load Cells" are mounted under. Each "Pulse" will add weight from the load cells.

When installed and functioning correctly, the Proximity sensor will light up a "Red LED" when the metal tab comes within 1/8" of the sensor. This is the "Pulse" it will also show up on the "Conveyor" light on the KB Black Box in the cab. It will also carry across to the GK Yield Monitor and Pulse the "YM" indicator (when the KB Black Box is in "Run" Mode).

If this "Pulse" is coming in erratically, it can be an indicator of mechanical (shaft / collar) issues, or electronic / wiring issues.

#### Examples of problems:

- ⇒ Set screw came loose or bearing went out and you are getting multiple pulses per 1 revolution. Or a wire came loose in the Junction Box. The BYM will read HIGHER than the actual load weight.
- ⇒ Sensor came loose and moved away from collar and you are only getting every other pulse from the sensor. Or a wire came loose in the Junction Box. The BYM will read lower than the actual load weight.



#### Wiring from Proximity Sensor to Junction Box

Sensor Side	Splice	Junction Box Side
Brown	- 12 volts +SENS	Red
Blue	- ground or GRD	Green
Black	- signal - SENS	Black





## Trouble Shooting Load Cells

### **Testing Procedures for Load Cells:**

Disconnect load cell from the sum box. Each cell needs to be tested individually to determine a problem in the system.

Testing should be done with a volt/ohm meter

Wires:

+Excitation (Red colored wire) is power that runs the Cell Should be 7 Volts if tested in the sum box and monitor is power on.

-Excitation (Black colored wire) is Ground. This is connected to vehicle ground.

+Signal (Green colored wire) is the reading out of the load cell. The reading is in the millivolts.

-Signal (White colored wire) is the reference for the +signal line.

-----  
With the lines disconnected, measure the resistance between the +excitation and -excitation. This measurement would be 380ohms +/- 20 ohms

Now measure the resistance between the +signal and the -signal line and this number should be 350 ohms +/- 3 ohms.

If the cell is damaged, the ohm reading would be out of the range that was listed above. Mechanical damage to the cell creates a non-linear reading of the load cell. Shorting of the cells due to stray voltage or water damage of the cable or cell will cause the cell to drift in readings.





# Truck Crop Yield Monitor

## Tablet PC Version

KB Manufacturing Harvest Monitor (TNKN-0700-BELT)

### Optional—Harvester Lift Switch

Harvester Lift switch will only affect the data on the GK Yield Monitor. This switch will add a signal to the PC. This signal will stop the addition of acres and LBS to the PC Mapping system when the Harvester is in the RAISED position for the "X" number of seconds set in the "Delay Time" under "Yield Monitor Configuration".

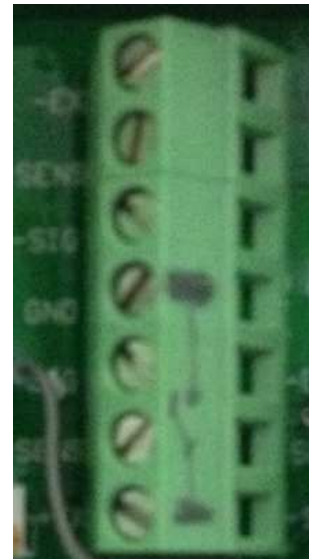
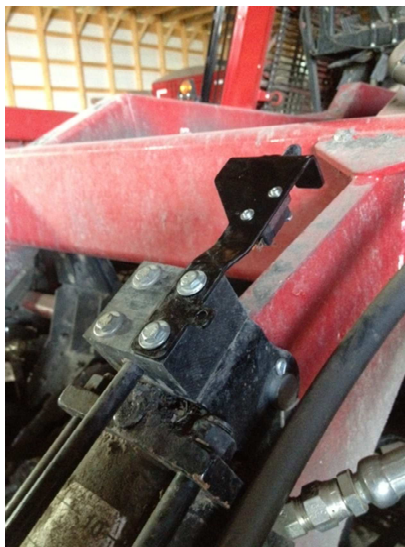
The "Delay Time" is the # or seconds from when the harvester GPS goes over the crop to the time the crop is weighed by the load cells.

Lift switch is an OPTIONAL item. Monitors produced in 2012 and later have the connections in the "Junction Box". Units prior to that need wiring added to them. Units must be sent into KB Manufacturing for retrofitting the KB Black Box.

## INSTRUCTIONS BELOW ARE FOR 2012 AND LATER JUNCTION BOXES

The "Lift Switch" will mount up at the hitch. The Switch will be in an "OPEN" configuration when harvesting and in a "CLOSED" configuration when raised and NOT harvesting (just a 2 wire switch).

In the Junction box, the 2 LIFT SWITCH wires will attach at the marked terminals. It does not matter which wire goes in which terminal, just need 1 wire in each marked position on the block.



## GPS Configuration

All of your Settings are under the "Gear" Icon.  
Click on the GPS Tab

Setup Data

GPS Yield Monitor Fields Trucks Crops Varieties Data

GPS Yield Monitor Fields

GPS Port

Baud Rate

UTM Zone

Find GPS View GPS Data

GK Requires a GPS that  
can output a NEMA GPS Serial string.  
Must have the following data strings turned ON:

GGA  
GSA  
RMC (or VTG)

**Must have GPS data strings set to 1 Hz.**

*NOTE: 5 Hz or 10 Hz or 0.5 Hz will cause  
your acres to add incorrectly.*

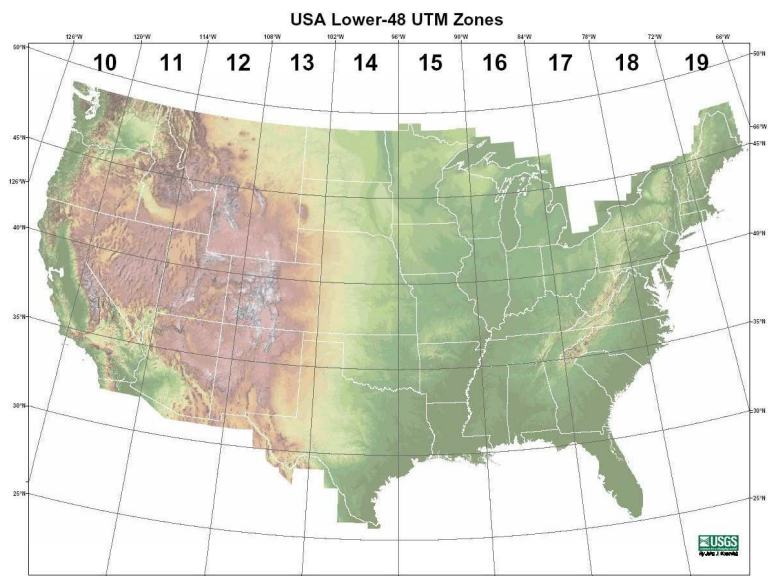
The baud rate of 57,600 is recommended.

*Key here is have the GPS and the  
GK Software on the SAME BAUD RATE.*

To connect to GPS—Suggest using the "Find  
GPS" Button. This will set the Baud  
and GPS Port, automatically.

Operation in the Red River Valley,  
the UTM Zone Setting should be  
left at Zone 14.  
See map if outside of the RRV.

Clicking the "X" in the top right  
corner will exit and also save  
changes.



### Yield Monitor Configuration

Click on the "GEAR" icon  
Go to "Yield Monitor" Tab

	GPS	Yield Monitor	Fields	Trucks	Crops	Varieties	Data
<b>Yield Mon Serial Port</b>		Yield Mon Serial Port		COM3		Row Spacing	22
Choose the correct COM PORT for KB Black Box (KBBB).		Harvester ID		WIC1		Row Count	12
		Low Yield Scale Value		5		Filter Period	4
		High Yield Scale Value		45		Delay Time	12
		(Leave Off) unless you know better.				<input type="checkbox"/> Allow Loads with Zero Area	

#### Yield Mon Serial Port

Choose the correct COM  
PORT for KB Black Box  
(KBBB).

To Test, engage the harvest-  
er. On the KBBB the  
"Conveyor" light will be blink-  
ing. Make sure the KBBB is in  
"RUN" mode. If communications are working, the  
"YM" light in the top Right corner will blink in time  
with the light on the KBBB.

#### Harvester ID

For farms with multiple harvesters that want to  
be able to separate which data came from which  
harvester. Suggest simple name and number  
scheme. Art1 or WIC2. Keep names simple and  
short (less than 8 characters). NO SPECIAL CHAR-  
ACTERS (& \* % \$) - ABC123- \_ are good

#### Low & High Yield Scale Value

These values will set the "Range of color" for  
mapping. It DOES NOT delete or remove yield  
greater or less than these values. It is just a color  
table. You may have to re-select the field for the  
colors to update if you change in season.

#### Row Spacing & Row Count

The row spacing and row count numbers are self-  
explanatory. Set the Row Spacing to the spacing  
of your rows, and the Row Count to the number of  
rows that your harvester collects in a full pass.

#### Delay Time

Delay Time is a calculated number. The number  
that is entered here is the amount of time that  
elapses from when the crop is first introduced into  
the machine until that crop is going across the  
load cells. Suggest 6 to 8 for 6&8 row machines  
and 12 to 14 for 12 row machines (22" row).

When you get to the field, put the harvester  
in the ground and begin harvesting. Count  
seconds in your head from the time you begin  
harvesting until the crop is flowing across the  
load cells. Enter the elapsed time in the delay  
time box. By doing this, the software will look  
back in time to see where it was when the  
crop that is on the load cells now was har-  
vested. This will help to create precise yield  
maps.

#### Filter Period

Filter Period is the number of seconds of  
yield readings averaged using a moving aver-  
age to create the values that will be stored in  
the map. 4 seconds is the suggested setting.  
If the display is updating too smoothly for  
your taste, then decrease the number, if it is  
too erratic, increase the number.

Internally, all yield pulses from the truck  
weight monitor are averaged with the last  
four readings and the amount of time that  
has elapsed to collect those four readings.  
Those four readings are then used to calcu-  
late a crop flow in 'Lbs Per Second'. The filter  
period controls how many 'Lbs Per Second'  
readings are averaged to calculate the final  
yield.

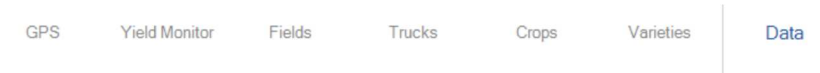
#### Allow Loads with Zero Area

For doing small area plots DO NOT CHECK!

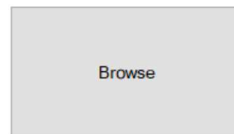


### Setting the Data Home Location & Starting a New Harvest Year

Click on the "GEAR" icon  
Go to "Data" Tab



**ALWAYS set to C:\GKYield\**

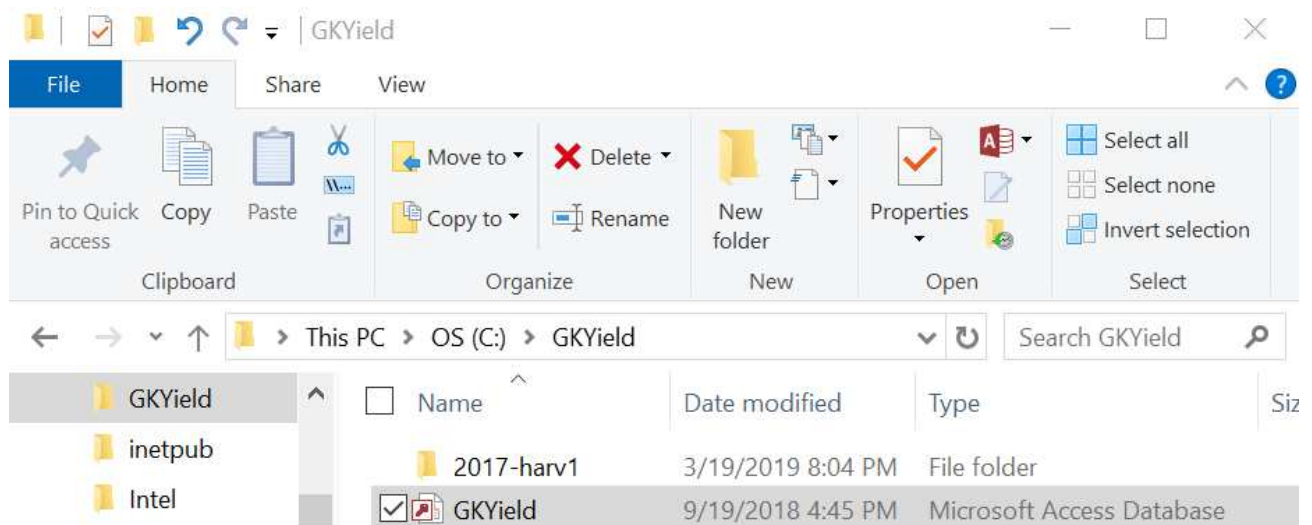


Current Location for Data Storage

C:\GKYield\

## Setting the Database / Software to a NEW Crop Year

1. Close Truck Crop Yield Mapping (TCYM) software.
2. Open "File Explorer"
3. Go to C:\GKYield folder
4. Create a New Folder, name it the "Past Year-harv1" (ex. 2017-harv1)  
NOTE harv1 needed for multiple harvesters
5. Drag the GKYield.mdb into the newly created folder
6. Should now have NO "GKYield.mdb files in the C:/GKYield directory.
7. Start the "TCYM" software
8. You will have to add your trucks and varieties for the new season.



### Fields Tab

Click on the "GEAR" icon

Go to "Fields" Tab

1. Click the "+" Icon—Add new Field
2. Field ID: - Type in field Name
3. Click "Save Disk"
4. Click the "+" Icon—Add new Field
5. Field ID: - Type in field Name
6. Click "Save Disk"

**This is a touchy sequence. Don't skip "SAVE"**

When typing Field IDs:

**ONLY USE    ABC 123 -\_**

**Less than 15 Charters**

**Dans-Qtr**

**GOOD WORKS**

**DO NOT USE (\*&\$#!+.<=>,:";)**

**Dan's 1/4**

**BAD THINGS HAPPEN**

Setup Data

GPS    Yield Monitor    **Fields**    Trucks    Crops    Varieties    Data    At 4 ▶

1 of 1

**+** **X** **Disk**

Add New Field

Click the + to Start a New Record, Enter a field ID, Click the Disk when Done to Save

Field ID:

q w e r t y u i o p Backspace

a s d f g h j k l ' Enter

Shift z x c v b n m , . ? Shift

Ctrl &123 :-)

### Trucks Tab

Click on the "GEAR" icon

Go to "Trucks" Tab

1. Click the "+" Icon—Add new Truck
2. Truck ID: Type in Truck Name
3. Net Weight : Lbs of Product truck can haul legally. Must be a NUMBER.  
(Empty weight (no dirt) - Max DOT weight)

4. Click "Save Disk"

**This is a touchy sequence. Don't skip "SAVE"**

When typing Truck IDs:

**ONLY USE    ABC 123 -\_**

**Less than 15 characters**

**Blue-White\_Pete**

**GOOD WORKS**

**DO NOT USE (\*&'\$#!+.<=>,;"')**

**Blue & White Peterbuilt**

**BAD THINGS HAPPEN**

Setup Data

GPS   Yield Monitor   Fields   **Trucks**   Crops   Varieties   Data   At

1 of 1

Click the + to Start a new record, Enter a Truck ID and Net Weight, Click the Disk when Done to Save

Truck ID:

Net Weight:

Save Data

### Crops Tab

Click on the "GEAR" icon

Go to "Crops" Tab

1. Click the "+" Icon—Add new Crop
2. Crop Name: Type in Crop Name
3. Lbs/Unit Divisor: Use only NUMBERS  
2000 for Ton  
100 for cwt  
1 for lbs
4. Harvest Unit: use Ton or cwt or lbs
5. Tare Percent: Type in a Number.
6. Click the "Save Disk"

When typing Crop Name & Harvest Unit:

**ONLY USE ABC**

**DO NOT USE (\*&'\$#!+.<=>,:";)**

### TARE NOTES:

Tare is the amount of dirt you haul that is NOT product. This value comes from 2 sources,

"quality lab %" + Dirt Hopper on piler.

Suggest 3% for dry, 5% for normal and 8% for muddy. This Value does adjust the Weight and Yield calculations, but does not adjust the Gross Weight.

GPS

Yield Monitor

Fields

Trucks

Crops

Varieties

Data

At < >

1 of 3

Crop Name:

Beets

Lbs/Unit Divisor:

2000

Harvest Unit:

Ton

Tare Percent:

5



### Varieties Tab

Click on the "GEAR" icon

Go to "Varieties" Tab

1. Click the "+" Icon—Add new Variety
2. Variety ID: - Type in Variety Name
3. Click "Save Disk"
4. Click the "+" Icon—Add new Variety
5. Variety ID: - Type in Variety Name
6. Click "Save Disk"

**This is a touchy sequence. Don't skip "SAVE"**

When typing Variety IDs:

**ONLY USE ABC 123 - \_**

**GOOD WORKS**

**DO NOT USE (\*&\$#!+.<=>,;"')**

**BAD THINGS HAPPEN**

Setup Data

GPS Yield Monitor Fields Trucks Crops **Varieties** Data At 4 ▶

1 of 3

Click the + to Start a new record, Enter a Variety or Treatment ID, Click the Disk when Done to Save

Variety ID:

Virtual Keyboard:

q	w	e	r	t	y	u	i	o	p	Backspace	
a	s	d	f	g	h	j	k	l	'	Enter	
Shift	z	x	c	v	b	n	m	,	.	?	Shift
Ctrl	&123	:-)							<	>	



Now that all of the settings are in place and you have Fields, Trucks and Crops, here is the operation instructions for use.

### Steps:

1. Select the "Field" in the upper right box
2. Select the "Crop" in the upper right box
3. Select the "Variety" in the upper right box
4. Click "Start"
5. View harvest information in the lower right box
6. Select the truck that is being loaded
7. Click the "Truck Loaded" button to write the weights to database

As long as GPS Status is OK, the GPS indicator light will remain green.

Each time a reading is received from the Yield Monitor, the "YM" Indicator Light will flash Green.

Once YM light has blinked enough to meet the "Filter Period" value with weight and movement the "FW" light will blink Green, showing it is writing Yield Data.

### View Loads Data

Click on the "View Loads Data"

This will open a "Load Data" table shown below.

Very useful tool, but it requires user to click the "Truck Loaded" button between loads or between Varieties / Treatments.

Values / loads in the table are breaks created by users clicking "Truck Loaded"

Gross Weights here can be used for Calibration.

**PLEASE DO NOT USE THE DELETE / SAVE BUTTONS at the top of the "Load Data" database. It will delete yield data!**

Current Truck Weight

00000

Left to Load

00000

Select Truck

Semi

TriAxle

↑

↓

View Loads Data

Truck Loaded

Load Data											
1 of 70											
	ID	FieldID	HarvesterID	LoadID	TruckID	Weight	Area	DateLoaded	GrossWeight	LoadAverageYld	SugarPerc
	695	BECKER...	Art1	67		27.12	1.347	10/10/2018 2:...	56460	20.3	0.0
	694	BECKER...	Art1	66		11.58	0.502	10/10/2018 12:...	24870	23.8	0.0
	693	BECKER...	Art1	65		25.96	0.909	10/10/2018 12:...	53520	28.6	0.0
	692	BECKER...	Art1	63		21.53	0.937	10/10/2018 12:...	45020	23.3	0.0
	691	BECKER...	Art1	62		21.94	0.928	10/10/2018 12:...	45230	23.6	0.0
	690	BECKER...	Art1	61		22.48	1.054	10/10/2018 12:...	46890	21.5	0.0
	689	BECKER...	Art1	60		21.03	0.799	10/9/2018 11:...	43450	26.4	0.0
	688	BECKER...	Art1	59		23.38	0.753	10/9/2018 11:...	48420	31.2	0.0
	687	BECKER...	Art1	58		48.47	2.155	10/9/2018 11:...	100070	22.5	0.0
	686	BECKER...	Art1	57		25.14	1.038	10/9/2018 10:...	51950	24.2	0.0
	309	BECKER...	Art1	57		24.96	1.331	9/19/2018 10:...	51650	18.8	0.0
	308	BECKER...	Art1	56		24.91	1.343	9/19/2018 10:...	51520	18.5	0.0
	307	BECKER...	Art1	55		24.97	1.436	9/19/2018 9:5...	52330	17.7	0.0
	306	BECKER...	Art1	54		27.27	1.446	9/19/2018 9:4...	56280	18.9	0.0
	305	BECKER...	Art1	53		61.83	3.554	9/19/2018 9:3...	132140	18.0	0.0
	304	BECKER...	Art1	52		0.00	0.003	9/19/2018 8:5...	50	0.0	0.0
	303	BECKER...	Art1	51		9.66	0.493	9/19/2018 8:5...	20100	19.8	0.0
	302	BECKER...	Art1	50		14.67	0.724	9/19/2018 8:4...	30360	20.3	0.0

## Getting started with Office Software

To get started with the office software, you will need to install some more software on your office computer or laptop. This PC must be a windows based computer supporting windows XP / Vista / Windows 7 / Windows 8.

Installs are found on the GK Technology Inc. website.

Go to—

- [www.gktechinc.com/adms32](http://www.gktechinc.com/adms32)
- Install ADMS
- [www.gktechinc.com/Downloads/YieldEditor102.exe](http://www.gktechinc.com/Downloads/YieldEditor102.exe)
- Install Yield Editor

You are now ready to process your "Yield Data"

---

## Updates for In Field Displays

To get updated software for your infield display computer, go to this web page.

[www.gktechinc.com](http://www.gktechinc.com)

- Products
  - Beet Yield Monitor
  - Beet Yield Updates

Download & install the file that is correct for your harvesters.

Please note, you will need to "UNINSTALL" your previous version.



### Processing Yield Data

**First Step**—Go to the Field Display with a USB drive.

Turn on the Display and go to **"Windows File Explorer"** or **"My Computer"**

Go to the **"C:/"** drive

Right click on the **"GKYield"** folder & **"Copy"**

Go to your **"Removable Drive"** & **"Paste"**

**Second Step**—Go back to your Office PC

Open the GK desktop software **Ag Data Mapping Solutions (ADMS)**

In the processing of the Beet / Potato Yield data, we will be using 2 software packages. Though this arrangement may seem clumsy, the tools supplied in the Yield Editor will allow us to quickly process & clean up Beet & Potato Yield data.

In **ADMS**, go to **"Import Yield"** & **"GK Truck Crop Yield Data"**

- Select the **"Grower"** & **"Farm"** to work with.

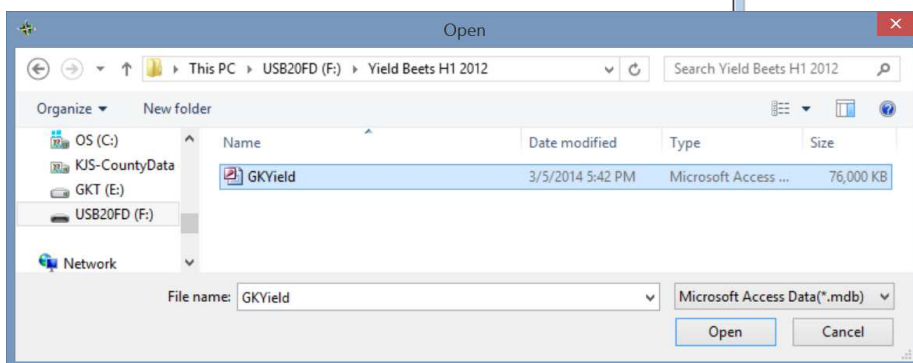
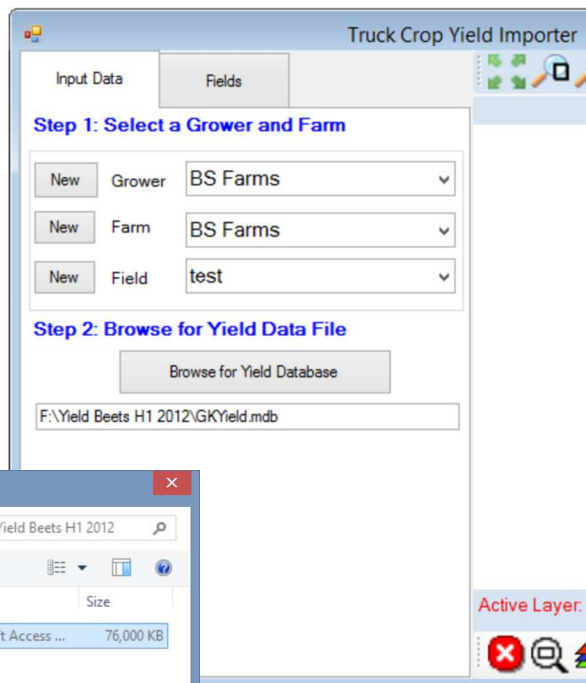
*\*\* NOTE: The **"Field"** does not matter, the software will create "NEW" field names off the names you used in the Beet Yield Monitor.*

-Click **"Browse for Yield Database"**

- Browse out to the **"Removable Drive"**

- Select the **"GKYield.mdb"**

- Click **"Open"**



### Processing Yield Data

Click on the **"Fields"** tab

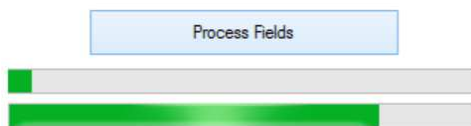
Left click and **"check"** to fields to be imported

Or

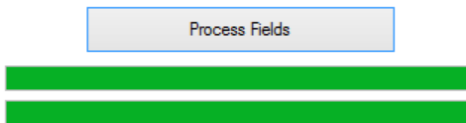
Right click for other section options

Once selected—Click **"Process Fields"**

While processing the **"Progress"** bars will show how far through the process the software is.



When **"Finished"** both bars will be **"GREEN"**

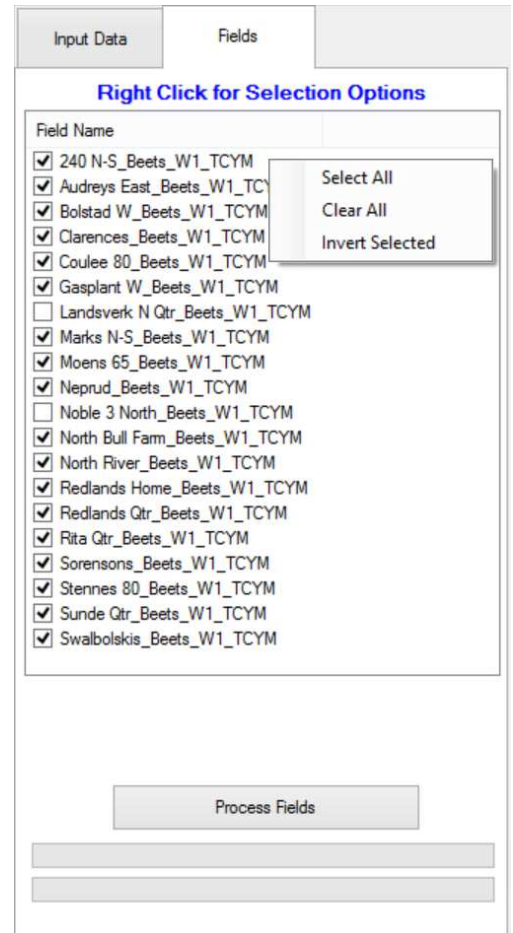


Now **"Close"** the **"Truck Crop Importer"** window.



Back at the **"Start Screen"** in **"ADMS"**

Click the **"Map Window"** button



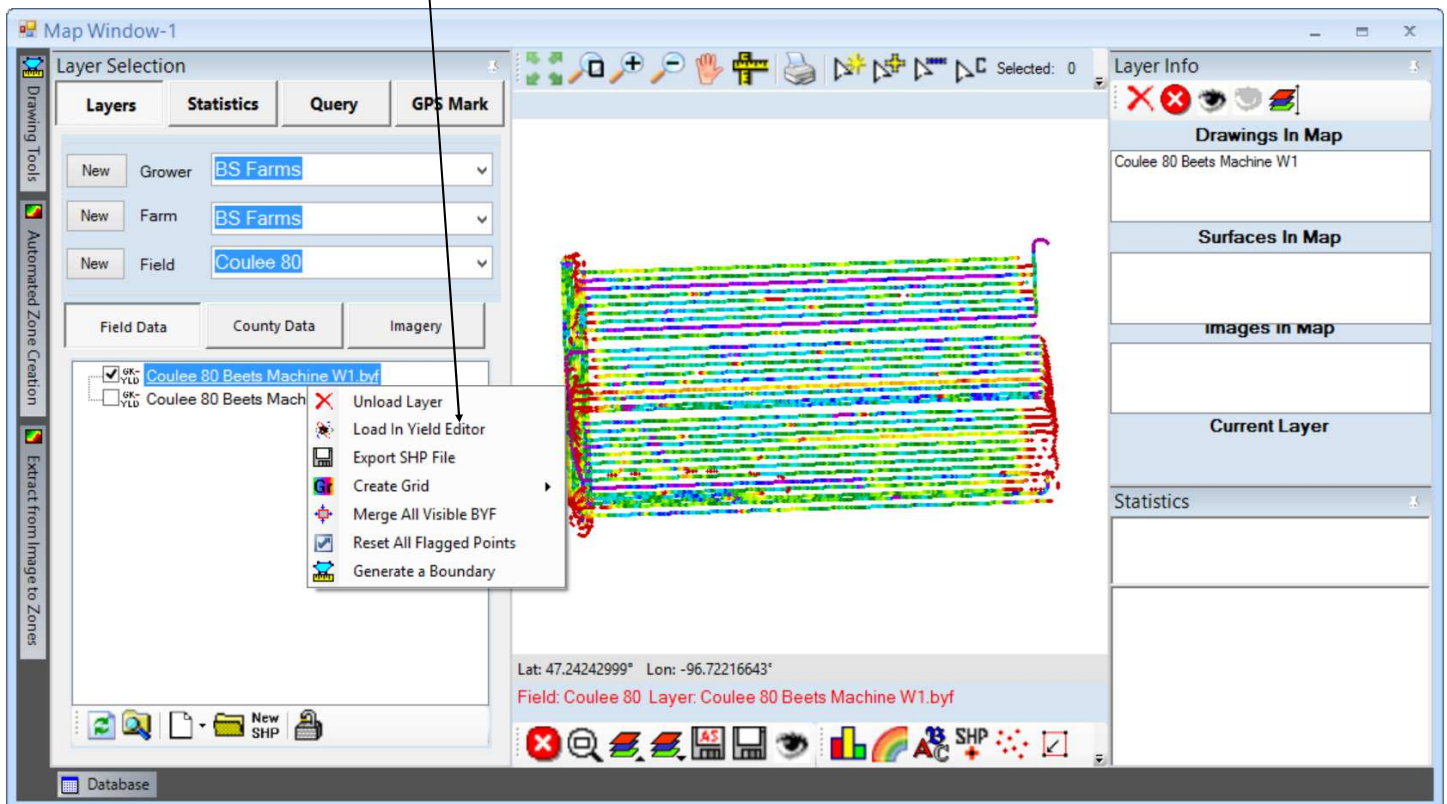
### Processing Yield Data

In "Map Window" select the "Grower / Farm / Field" to work with.

Check on the GK-YLD—.byf file

"Right" click on the "byf-File Name"

Choose Load in "Yield Editor"



### Processing Yield Data

This will open you into "Yield Editor"; an excellent tool for cleaning up yield data. Upon the first use, you may need to add "Beets" to the Crop list.

⇒ Under the "Load/Import Files" tab

⇒ Check the "Edit Table ?"

⇒ Fill in "Crop Type" = "Beets"

"Density" = "2000"

"Market Moisture" = "0"

Click "Add"

Scroll down the list and confirm that it was added.

Uncheck "Edit Table"

**Yield Editor**

**Load/Import File**

Import AgLeader Advanced or Greenstar Text File

Select Grain Type and Properties

Crop Type	Density	Market Moisture
Soybean	60	13.0
Sorghum	56	13.0
Wheat	60	13.5
Potato	1	0.0

Selected Grain Type and Properties

Soybean 60 13

☐ Edit Table?

UTM Cor

UTM C  
can be  
coordin  
required  
desired

14

Preview Imported File:

**Yield Editor**

**Load/Import File**

Import AgLeader Advanced or Greenstar Text File

Select Grain Type and Properties

Crop Type	Density	Market Moisture
Soybean	60	13.0
Sorghum	56	13.0
Wheat	60	13.5
Potato	1	0.0

Selected Grain Type and Properties

Beets 2000 0.0

☒ Edit Table?

Modify  
Add  
Remove

UTM Cor

UTM C  
can be  
coordin  
required  
desired

14

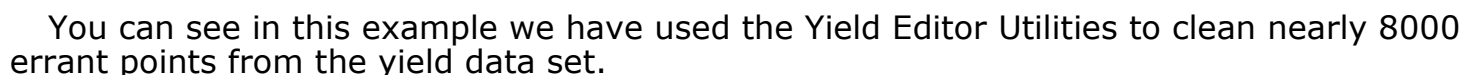
Preview Imported File:

Otherwise, just select the correct crop type by "Double Clicking" on it in the list.



## Yield Editor Color Table

**Blue = Low Yield**



At this point and time, we suggest NOT using the "Moisture Delay", "Start Pass Delay", "End Pass Delay", "Minimum Swath", "STD Filter", "Header Down Req", "Position Filter" or "Adjust for Moisture?". The reason being these items are not logged. If you have a header up-down switch the "Start Pass" / "End Pass" MAY work well.

Please DO USE—

**Flow Delay** – Adjusts time from GPS to load cell weighing process.

**Max Velocity**—Speeds faster than this value will be deleted.

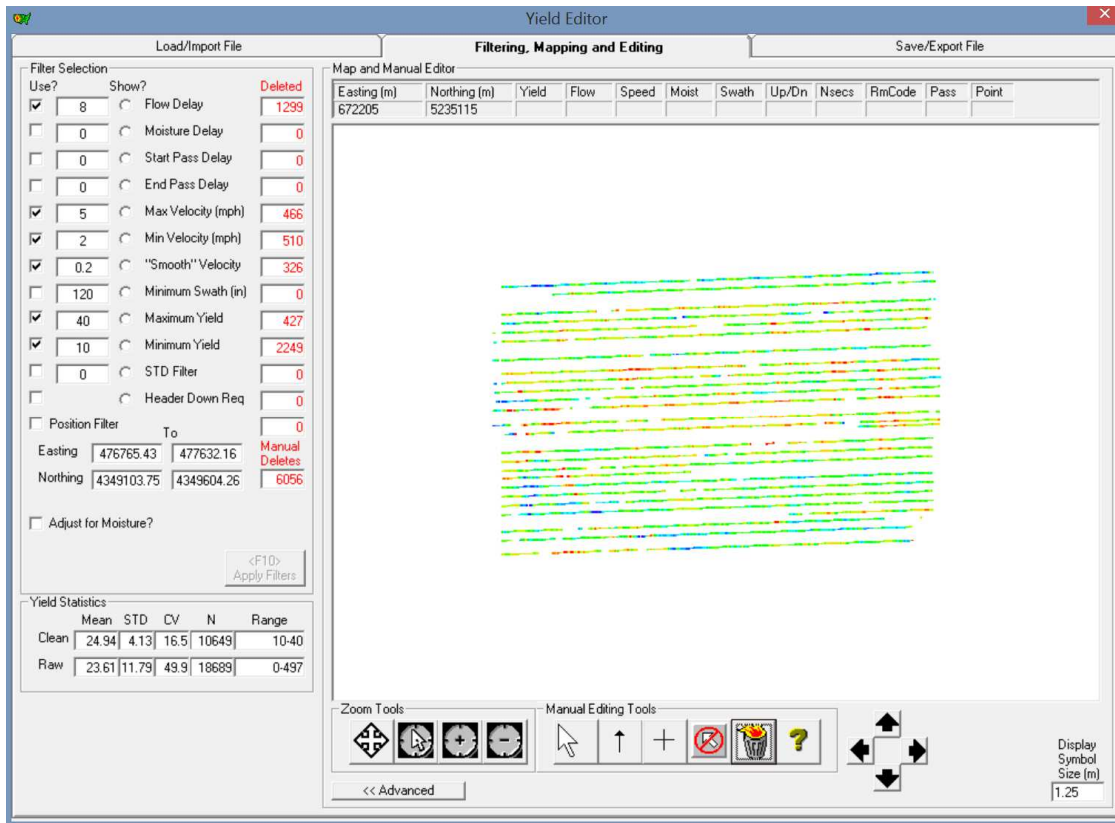
**Min Velocity**—Speeds slower than this value will be deleted.

**“Smooth” Velocity**—Used to help identify those regions where rapid velocity changes have taken place. A ratio of 0.2 means that points with velocity changes of more than 20% compared to its neighbors should be removed.

**Maximum Yield**—Yields greater than this value will be deleted.

**Minimum Yield**—Yield less than this value will be deleted.

### Processing Yield Data



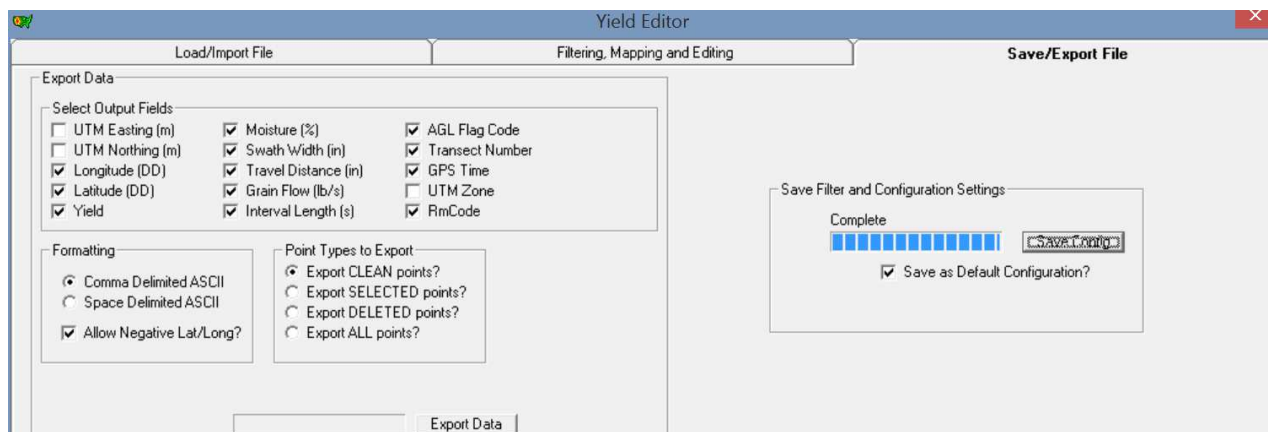
### Yield Editor Color Table

Red = High Yield

Blue = Low Yield

Next you can use the “Manual Editing Tools” on the bottom toolbar. This will allow you select points and “Delete” or trash them. There is no “UNDO” button.

Once done cleaning data, it is suggested that you go to the “Save/Export File” tab and check the “Save as Default Configuration?” and click “Save Config”. This will save the settings for your next fields (max—min yield / flow delays).

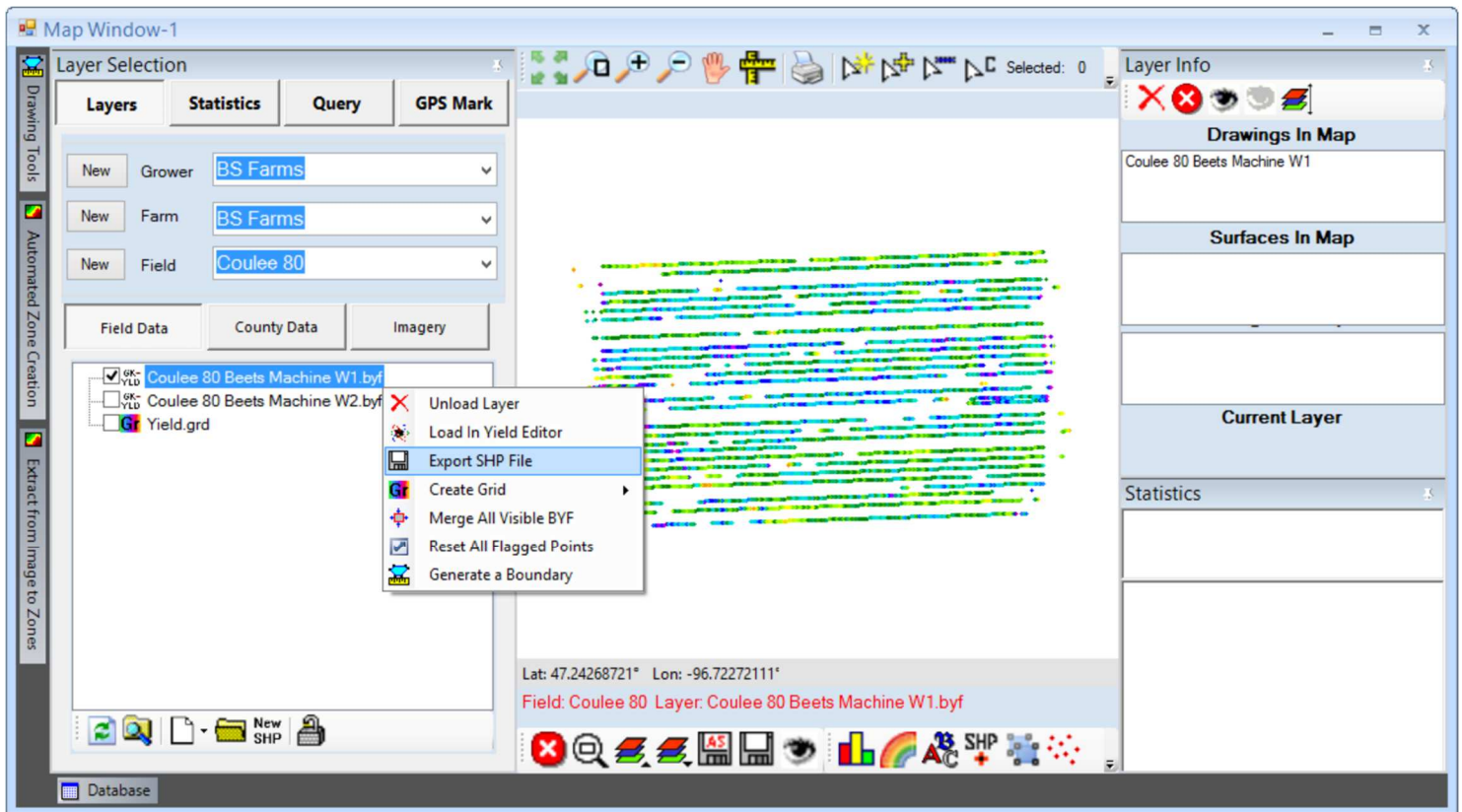


Upon clicking the “X” to close the window, all the settings & deleted points will apply to the data in ADMS.

### Viewing Data in ADMS

Back in ADMS you can now

- Export as a SHP file to take the data to another software package.
- Merge the BYF with other "Visible" harvest data set
- Create a .GRD layer that can be used for VRT or data analysis



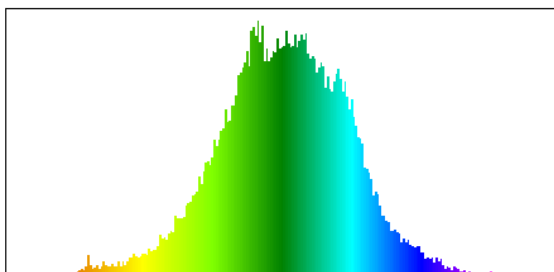
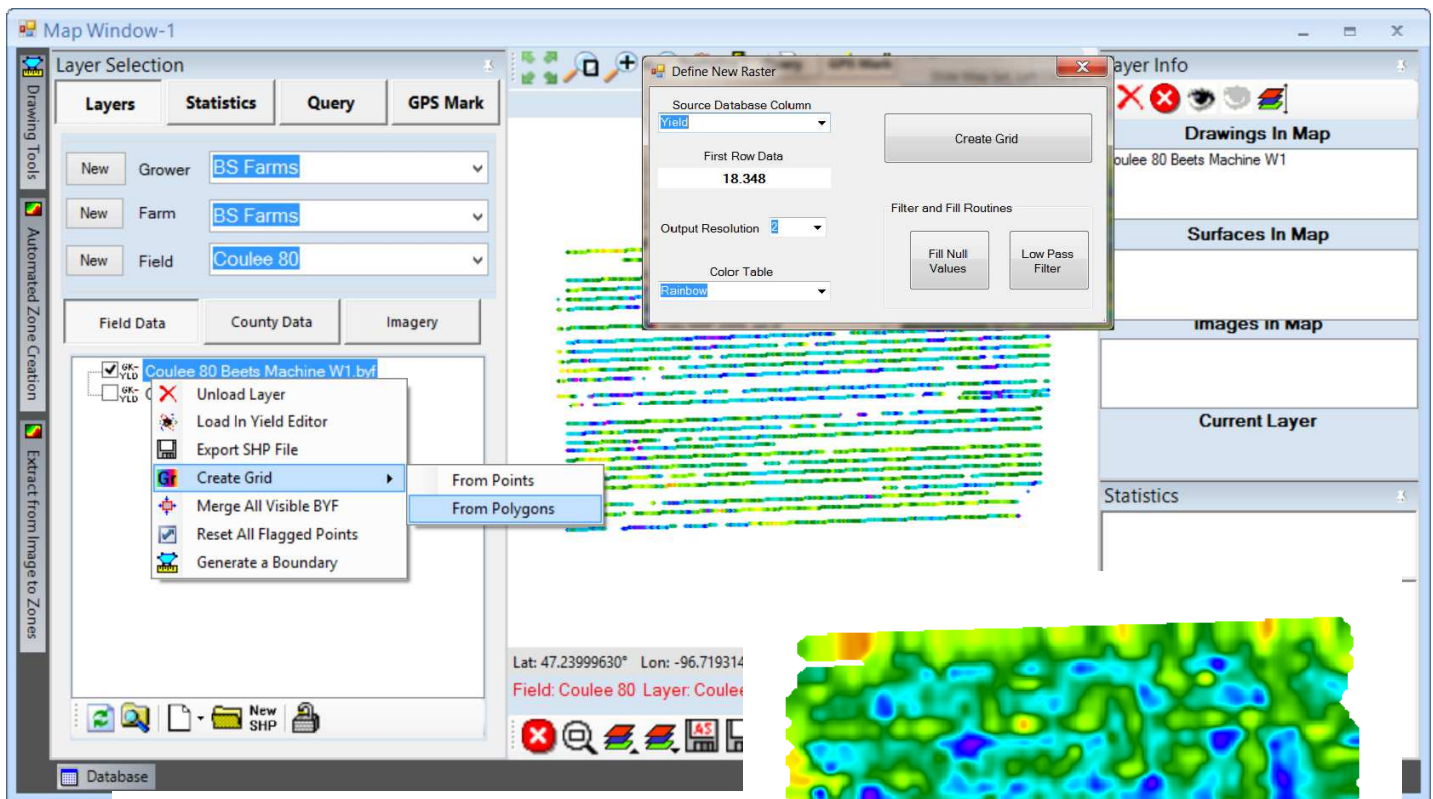
### Viewing Data in ADMS

You have now cleaned your Yield Data and perhaps merged multiple Harvesters. The Yield data is either in a .byf file format. This format is NOT ready for making management zones or use in scripts. It must be converted into a .grd format.



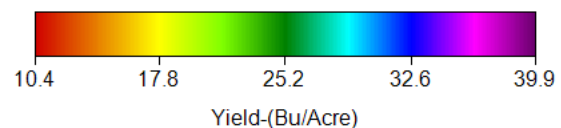
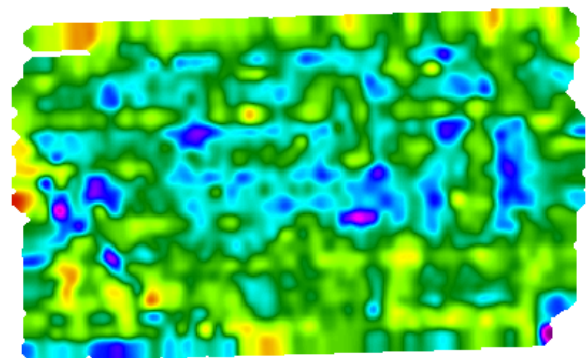
### For Analysis or VRT map creation:

1. Right Click on the "GK-YLD-.byf"
2. Choose "Create Grid" and "From Polygons"
3. Click "Create Grid" button - *(stop at any step here for visual analysis)*  
Use the "Fill Null Values" button to fill in areas that don't have Yield Data  
Use the "Low Pass" button to smooth out the data (Suggest 2 or 3 clicks)



Average: 25.1  
Std Dev : 3.45

Area: 73.91 Acres  
Total: 1859 Bu





### John Deere—Yield Monitor Interface

The John Deere-Yield Monitor Interface (JD-YMI) system consists of three items:

- ⇒ GK—JD-YMI—Box
- ⇒ GK-JD-YMI—Cabling
- ⇒ JD—1120 Specialty Crop Yield Interface



### GK—JD-Yield Monitor Interface Box—

- ⇒ This box converts KB weights and information into data that the John Deere 1120—Specialty Crop Yield Monitor box can read.
- ⇒ Indicator Lights -
  - Green Light - Blinks 1 per second with the transfer of data packets to the JD 1120 box. Shows data was sent, not received.
  - Red Light - Basically a duplicate of the “Conveyor” light blinking each time the proximity sensor is pulsed. This triggers weight accumulation and transfer of data. This communication will only happen if the KB Box is in “Run” mode.
  - Blue Light - Generally this is a power light, also indicates the unit is running correctly.



### Wiring –Pin Out for GK-JD-YMI Cable

#### 9 Pin Serial

- 2 Green
- 3 Red or White
- 5 Black

#### 2 Pin Weather Pack - Power

- A Red
- B Black

#### 4 Pin Deutsch

- 1 Red
- 2 Yellow or White
- 3 Black
- 4 Green

#### 30 Pin Cinch

- A1 Red
- B1 Black
- C1 Green
- D1 Yellow or White
- F2 Blue
- F3 Purple

#### 12 Pin Deutsch

- 1 Green - serial
- 2 Red or White - serial
- 3 Black - serial
- 5 Purple - cinch
- 6 Blue - cinch
- 11 Red - Power
- 12 Black - Power

### John Deere—Yield Monitor Interface

**Connecting Cabling:** You must first have the KB—Yield Monitor system installed. This Interface is the data collection side of the monitor system. To connect the system:

1. Place the GK-JD-YMI Box and JD-1120 box to the right side of the seat, or behind the seat.
2. **4 pin Deutsch** (2) Connect to the CAN connectors back to the ISO plug. On the back of the tractor.
3. Unplug existing 4 pin from ISO & plug new cable in between.



4. **Serial cable (9 pin)** goes to the KB Black Box



5. **JD—Accessory Plug** goes to the JD—Power Strip.



6. NOTE there is an open **2 pin Weather Pac**.

This connection is open to connect to the KB

BYM Black box for power.

- JD 1120 is on a KEYED POWER

- The KB Black Box is on all time LIVE power



## John Deere—Yield Monitor Interface

Setting up your JD—GS3 or GS4 Display:

After plugging in all the wiring. Turn on the key.

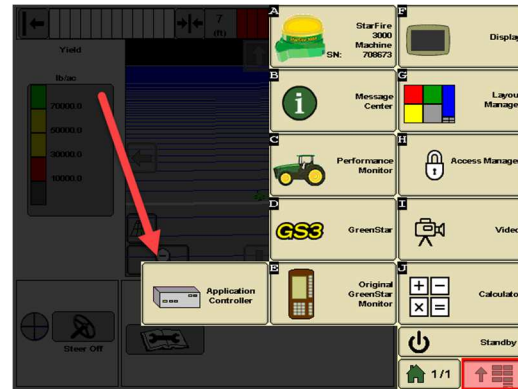
- The GS3 or GS4 will power on.
- The GK—JD-YMI—Box will turn on also.
  - Blue light (Power)
  - Green light blinking (sending communications for 1120)



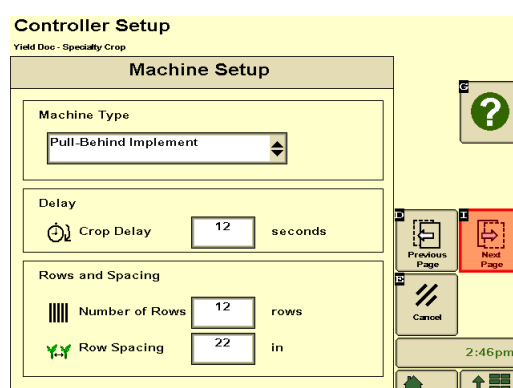
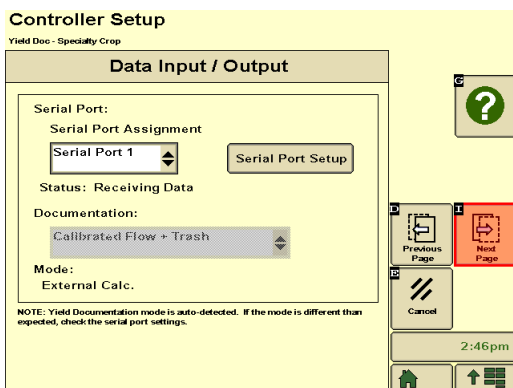
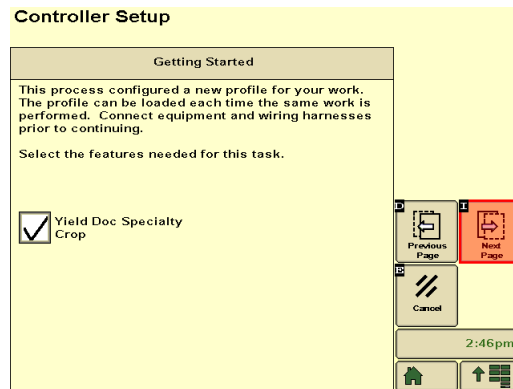
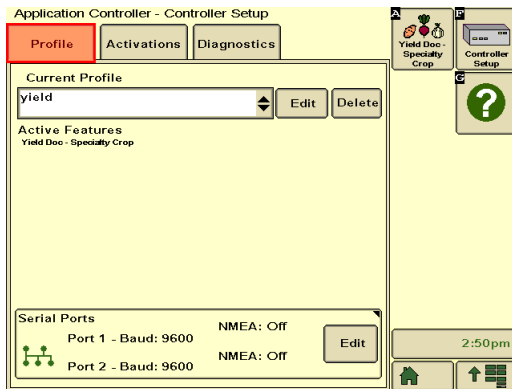
On the GS3/GS4 screen, notice the "Application Controller" icon

Tap on the "Application Controller" icon

At this point, we suggest you look at your "Operator's Manual" Yield Documentation, Specialty Corp. As you may have to enter or add an activation code? (page 30-2)



Next data is to be used in coordination with the John Deere manual.



## John Deere—Yield Monitor Interface

Setting up your JD—GS3 or GS4 Display:

More Pictures of setting up a GS3

**Controller Setup**  
Yield Doc - Specialty Crop

**Units Setup**

**Units**

Area  
Acre (ac)

Mass  
Pounds (lb)

Previous Page Next Page Cancel

2:46pm

**Controller Setup**  
Yield Doc - Specialty Crop

**Load Documentation**

☒ Enable Load Documentation using File Server

Client: Knutson Sugarbeets  
Farm: Scott  
Field: T-10-50  
Operator: scott  
Machine PIN: RW8230D001177

Load 1 Event Name: L1  
Load 2 Event Name: L2

Accumulating

File Server State: Connected, Idle  
File Server Exit Code: OK

In order to operate and view runtime load information, setup a half page homepage layout.

Previous Page Next Page Cancel

2:46pm

**Controller Setup**  
Yield Doc - Specialty Crop

**Summary**

Profile Created Successfully.

Previous Page Cancel Accept

2:46pm

This should be the Last setup screen. Tap Accept

This is "Serial Port" "Edit"

**Serial Port 1**

Baud Rate: 9600  
Used By: Yield Doc Specialty Crop

☐ Enable NMEA

NMEA Message Type: GGA, GSA, RMC  
NMEA Rate: 1 Hz

Diagnostics  
Tx - Pin F2  
Rx - Pin F3  
Line Count: 2630  
Last Rx Line: \$DOCFLOW,0.0

Reset Line Count

Return

2:50pm

### John Deere—Yield Monitor Interface

Setting up your JD—GS3 or GS4 Display:

Look at “Yield Doc Specialty Crop” button

Application Controller - Yield Doc - Specialty Crop

Status Setup Calibrations Diagnostics

Yield Doc Specialty Crop Controller Setup

Current Profile **yield** Profiles

External Calc. Enabled

External Calc. Enabled

Cal. Flow 0.0 CAL lb/s

Trash 2 %

2:50pm

Application Controller - Yield Doc - Specialty Crop

Status **Setup** Calibrations Diagnostics

Yield Doc Specialty Crop Controller Setup

**Data Input / Output**

Mode: External Calc. Documentation: Flow and Trash Edit

**Equipment**

Machine Type: Tow-Behind Number of Rows: 12 rows Edit

Crop Delay: 12 seconds Row Spacing: 22 in

**Load Documentation**

Enabled Edit

**Units**

Area Units: Acre (ac) Mass Units: Pounds (lb) Edit

2:50pm

**Data Input / Output**

Serial Port: Serial Port Assignment Serial Port 1 Serial Port Setup

Status: Receiving Data

Documentation: Calibrated Flow + Trash

Mode: External Calc.

NOTE: Yield Documentation mode is auto-detected. If the mode is different than expected, check the serial port settings.

**Machine Setup**

Machine Type: Pull-Behind Implement

Delay

Crop Delay: 12 seconds

Rows and Spacing

Number of Rows: 12 rows

Row Spacing: 22 in

**Load Documentation**

☒ Enable Load Documentation using File Server

Client: Knutson Sugarbeets

Farm: Scott

Field: T-10-50

Operator: scott

Machine PIN: RW6230D001177

Load 1 Event Name: L1

Load 2 Event Name: L2

**Units Setup**

Units

Area: Acre (ac)

Mass: Pounds (lb)

2:51pm

Application Controller - Yield Doc - Specialty Crop

Status Setup **Calibrations** Diagnostics

Yield Doc Specialty Crop Controller Setup

**Flow Calibration**

Flow Calibration Value 1.000 Calibrate

2:51pm

**Flow Calibration**

Select 'Start New Load' to begin calibration process. Once a load has been filled and weighed, return to this screen to enter correct weight values. Flow calibration value will be modified.

Raw Weight 0 lb

Weight 0 lb

Current Load Weight 0 lb

Idle

Start New Load

Flow Calibration Value 1.000

Return

2:51pm

Application Controller - Yield Doc - Specialty Crop

Status Setup Calibrations **Diagnostics**

Yield Doc Specialty Crop Controller Setup

External Calc. Enabled

Raw Flow 0.0 lb/s Cal. Flow 0.0 CAL lb/s

Status	Condition	Is Ready
Disabled	Yield Doc Specialty Activated	Yes
Enabled	Data Valid	Yes
Enabled	Serial Communicating	Yes
Enabled	Is GPS Communicating, Ready	Yes
Enabled	Connected to John Deere Doc.	Yes
Enabled	Sending Data to Display	Yes
Active	Harvesting	No

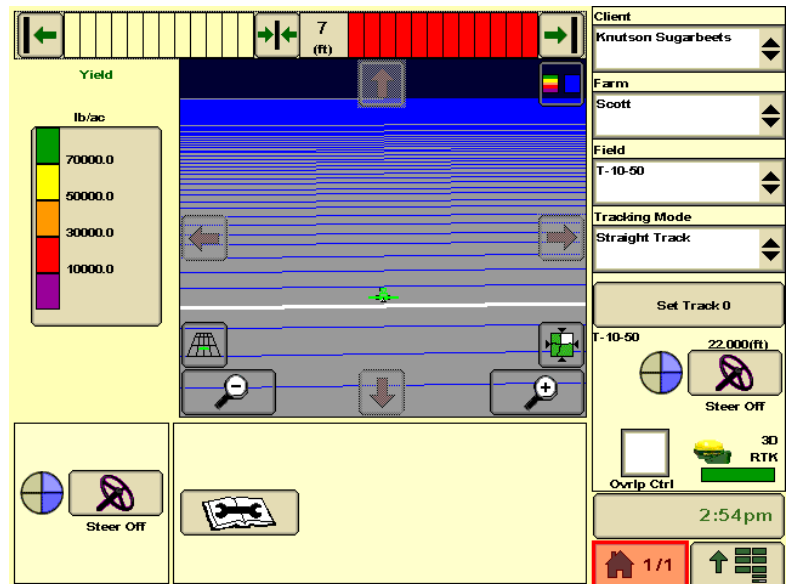
2:51pm



## John Deere—Yield Monitor Interface

At this point you should be able to “run” & “map view” screen and see everything working.

NOTE—may have to rest your map units to “tons” on beets. or “cwt” on potatoes to get the graph to show preferred values. “lbs” seems to be default.



### Reminder:

- Calibrations are to be done on the KB Black box.
- The “Conveyor” light is the heart of the system. When the Conveyor light blinks, (KB Box in Run mode) it will Add Weight (if it meets the threshold value).
  - “Run” Mode on the KB Black Box will allow data to go to the JD Display
  - “Stop” Mode DOES NOT allow data to transfer or accumulate weight.
- When conveyor light blinks the red light on the GK-JDYI Box will blink also.

### Suggestions & Recommendations

Here are some suggestions for making your system work better.

#### **KB Yield Monitor (Black Box)**

- Hook to "Fused" 12 volt power (NOT Keyed Power)
- Once up and running for the season, leave the unit "On" if possible
- Calibrate the best you can during early harvest if possible
- Consider re-setting your "Zero Point" if you are having problems (Page 14)

#### **GK Technology Yield Monitor PC (Mapping)**

- Hook PC to "Fused" 12 volt power (NOT Keyed Power)
- Set GPS to 1 Hz on the NEMA output
- Need GGA / GSA / RMC NEMA output strings (VTG can be used in place of RMC)

#### **GK John Deere-Yield Monitor Interface (Mapping)**

- Hook John Deere Accessory Strip - 12 volt power (Keyed Power)
- Data runs from KB Black Box through GK Interface box to John Deere 1120 box.
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PC	PASS	NOTES
Power Wire (all time live)		No cracks / breaks / sharp bends / loose wires at connections
Fields updated		Go to C:GKYield\ Rename GKYield.mdb to 2019yield.mdb
Settings - Truck/Field/ID#		Start software - check settings - enter Field / Truck info.
		-- GPS - Set to 1 Hz with GGA / GSA / RMC or VTG (baud & COM)
PC Powers on / off		PC working - suggest checking windows updates if on internet.
Data / Reading - Conv		Start software-Select Field-"Start" - GPS Green - YM Green Blink
		-- YM blinks when harvester is running and BYM in Run Mode
<b>Cable - PC to KB Black Box</b>		
Nicks / Cuts / Pinching		No cracks / breaks / sharp bends / loose wires at connections
Nuts / Screws		Cable tight at the end - so the connection stays together
<b>KB Black Box</b>		
Power Wire (all time live)		No cracks / breaks / sharp bends / loose wires at connections
Screen Digits		All digits on the screen appear to be functioning
Parameters		Check values (see next page)
Test Weight -		Get a Weight - 30 to 60 lbs suggested - (testing loadcells)
Weights Left		Weight just on the left side Load Cell wheel
Weights Right		Weight just on the right side Load Cell wheel
Weights Middle		Weight in middle (3 values should be within 20% of each other)
Conveyor Light Blinks		When the harvester is running the conveyor light blinks
<b>Cable - KB Black Box to Junction Box</b>		
KB End Clean		connections all level & tight / no corrosion / no water
Nicks / Cuts / Pinching		No cracks / breaks / sharp bends / loose wires at connections
<b>Junction Box</b>		
Mount / Grommets		Connections into box are tight cables are not letting water in.
Dry / Clean Inside		Inside the junction box - clean and dry
Connection Board		Board is corrosion free and phillips mount screws are tight
Connections		Small Reg. Screws to wires are all tight
Lid Sealed		Cover Seals tight on finish (watch for pinching wires).
<b>Cable - Junction Box to Shaft Sensor</b>		
Nicks / Cuts / Pinching		No cracks / breaks / sharp bends / loose wires at connections
<b>Shaft Sensor</b>		
Housing /Collar /Pulsing Bolt		Metal that "Pulses" the sensor is tight and no "Play" in bearing
Sensor		Sensor/mount/wire all look good & red light blinks on rotation
<b>Cable - Junction Box to Load Cells</b>		
Nicks / Cuts / Pinching		No cracks / breaks / sharp bends / loose wires at connections
<b>Load Cells</b>		
Wire connection		Wire into the loadcell good / no cracks (do not adjust Nut)
Mounting		bolts tight and chain straight across the top
Bogie Wheels		Wheels are good no notching or flat spots.