

HarvestLab™ & John Deere Constituent Sensing

Training

March 2016



JOHN DEERE

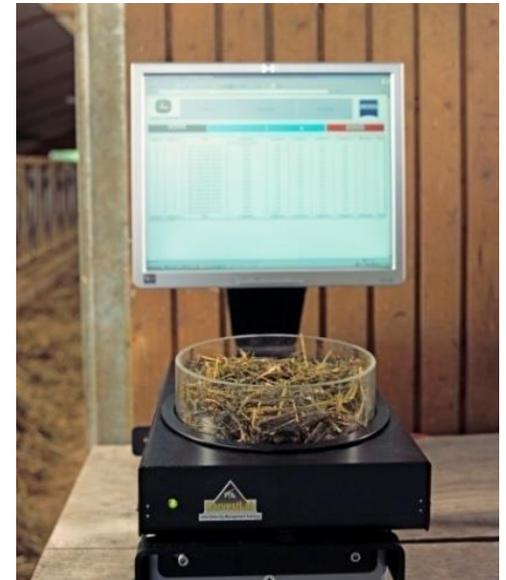
John Deere - HarvestLab™



What is John Deere Constituent Sensing?

HarvestLab™ enhanced with John Deere Constituent Sensing provides the capability to measure not just moisture but also constituents in fresh and ensiled crops for the first time.

- on the SPFH and
- as mobile/stationary unit



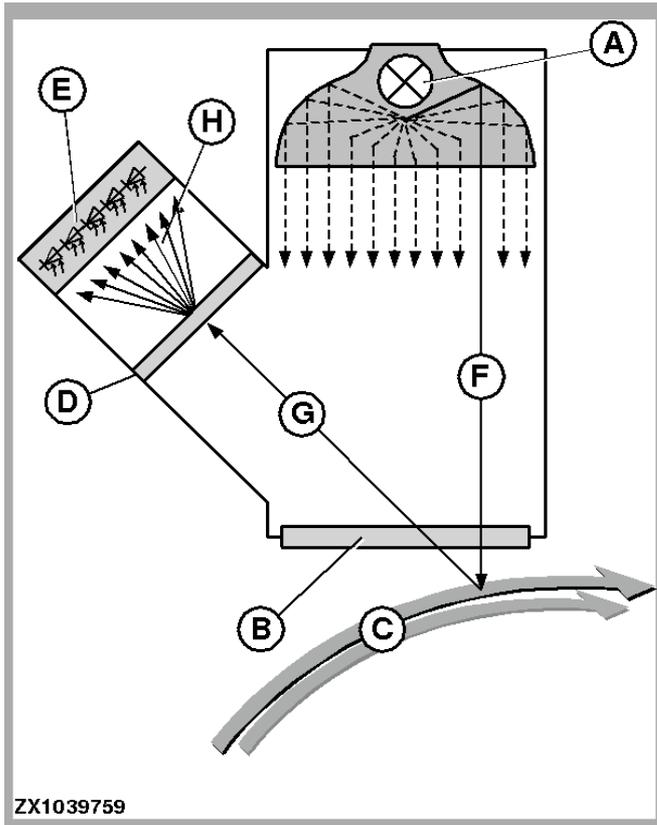
HarvestLab™ Sensor

NIRS Technology: Near Infrared Reflectance Spectroscopy sensor.

- Depending on the moisture content of the material, a certain portion of the light in the infrared range is reflected. The higher the moisture content, the lower the amount of reflected light.
- The intensity of the reflected light is registered by a sensor and transformed to a signal, which is transmitted to the CAN bus.

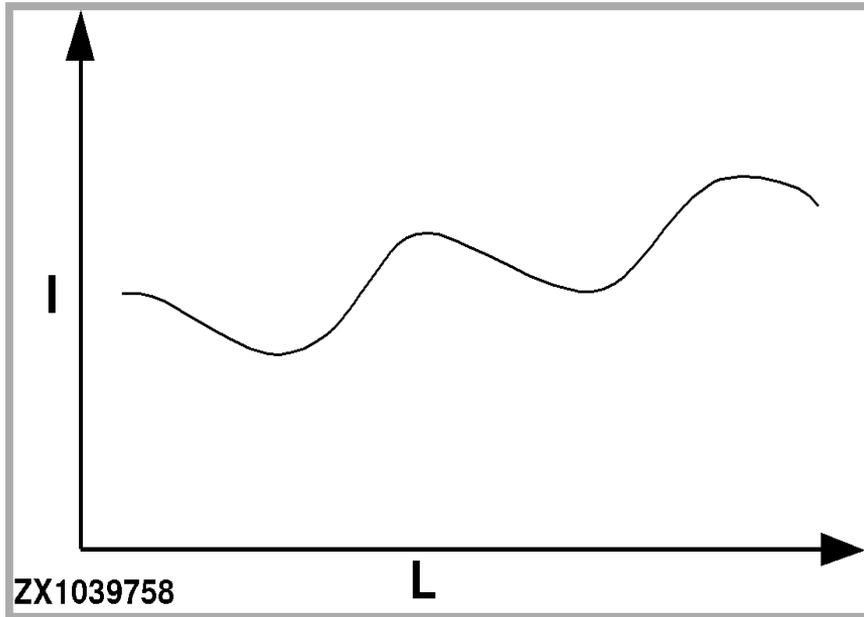
What is John Deere HarvestLab?

LEGEND:



- A - Light
- B - Special Glass (Flange)
- C - Crop Flow
- D - Dispersion Unit
- E - Photodiodes
- F - Emitted Light
- G - Reflected Portion of Light
- H - Dispersed Light (Spectrum Colors)

What is John Deere HarvestLab?



- In a graphic display an reflection curve (similar to the one shown) would be obtained.
- This reflection curve corresponds to the absorptive capacity of the crop in the wavelength monitored.
- The absorptive capacity depends on the crop and its constituent content.

What is John Deere HarvestLab?

- The activation of the NIR sensor contains a very large number of these curves called calibration curves.
- When the NIR sensor performs a measuring procedure resulting in a reflection curve. Then this curve is compared with the reflection curves for the individual crop type previously entered.
- The NIR sensor is not like a moisture sensor on the combine, which is calibrated.
- The NIR sensor is loaded with calibration curves developed by laboratory. It has to be Black and White referenced once a year.

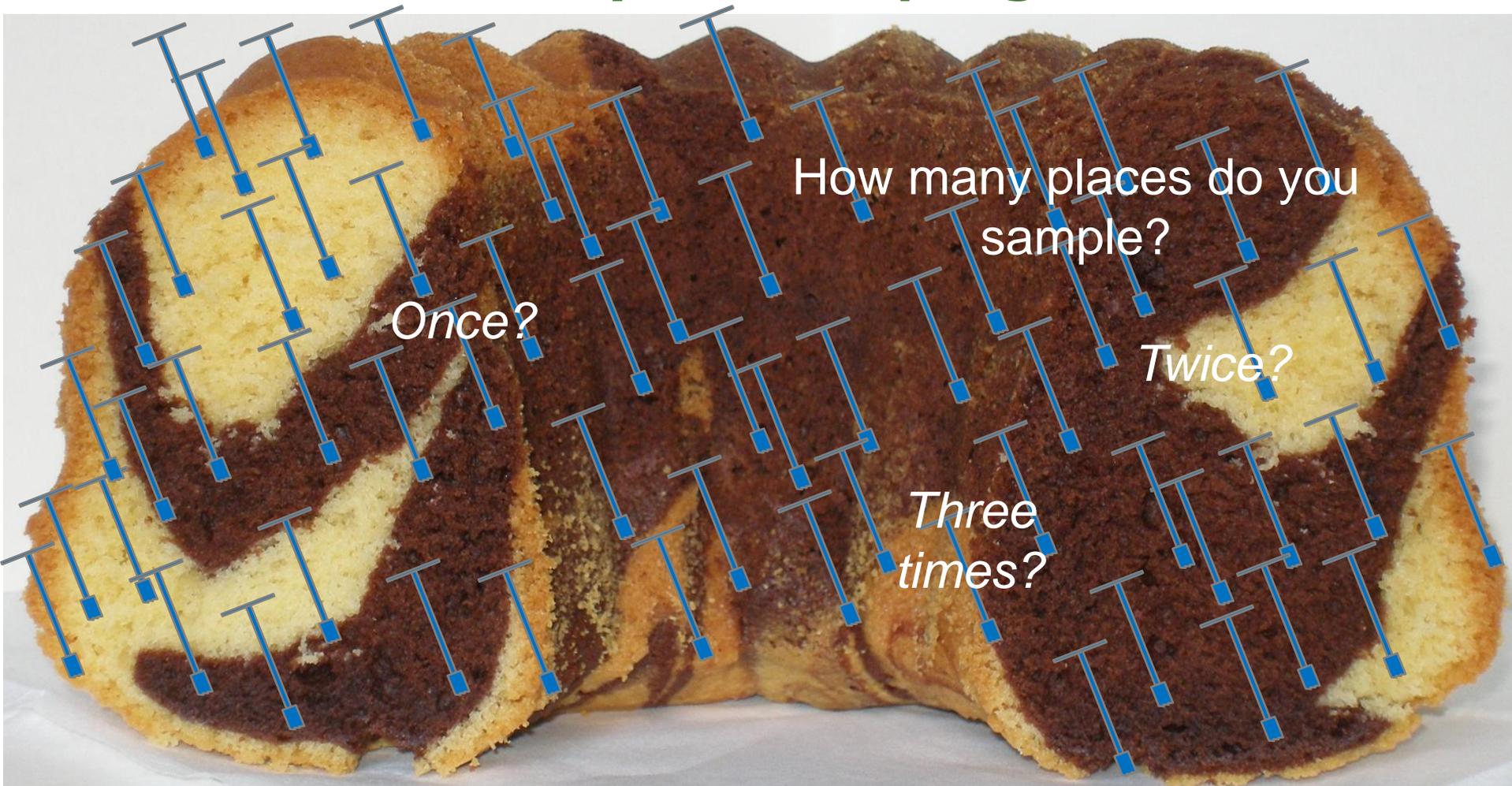
What is John Deere HarvestLab?

- The sensor was introduced into the market in 2007, with the main focus on John Deere SPFH.
- To enable the sensor to be used in other applications, a turntable had also been introduced to allow stationary measurements of forage material.
- At introduction HarvestLab was only able to measure moisture. Since August 2015, it can also measure other constituents within corn.



**BENEFITS TO THE
CUSTOMER**

Calibration accuracy and sampling



Is that representative? → It shows at least a pretty good trend where the results are going to (totals/field or average accuracy value over the silo stock)

How it works on the SPFH



- Sensor is mounted on spout
- → Calibrations are on sensor
- Analyzes material passing by
- Tests almost continuously; more than once per second!



You cannot measure more precise than with HarvestLab™ all over the entire field!

Difference fresh and ensiled material



Fresh material

Different types of material
→ Different calibrations

≠



Ensiled material

Calibration designed for fresh material



Calibration for ensiled material



BUT: Just ONE corn bundle

Product Overview – stationary usage

- Identify feed quality
- Consistently measure & monitor silage quality
- Ability to measure continuously and receive the results directly (causes no shipping delays to laboratories and further delays in receiving the results)
- With permanent measuring, silage quality can be monitored and feed rations can be adopted immediately before the milk yield decreases
- Feed rations can be optimized economically as well
- Biogas plants can monitor and document starch content (e.g) based on corn varieties which helps for agronomic decisions
- Billing advantages based on quality
- The quality indicates the amount of gas production based on ton of silage



Available Activations

Crop	Region 2	Region 4	Note
Corn Silage	Released	Released	Annual update
Alfalfa	Not available	Released	Annual update
Grass	Released	Not available	Annual update
WCS	Not available	Planned 2016	

Activations for freshly harvested and ensiled material are in each crop type included.

Constituents by Crop

Crop	Moisture	ADF	NDF	Starch	Protein	Sugar
Corn Silage	X	X	X	X	X	
Alfalfa	X	X	X		X	X
Grass	X	X	X	X	X	X

John Deere Customer Value

Determine the right harvest time.

High number of samples for a representative result with on board measuring on the SPFH

Identify the value of harvested material in real time.



All-year use due to flexibility for on- and off-board utilization as stationary unit or with the SPFH

Identify quality changes before discovering changes in the milk or biogas production.

The background of the slide is a close-up photograph of green leaves, likely from a plant like corn, with a strong green color cast. The leaves are oriented vertically, with one leaf in the foreground being more in focus than the others in the background.

SYSTEM REQUIREMENTS AND UPDATE PROCEDURE

Components & Software versions

Component	Software Version/ Part number
HarvestLab™ Sensor	V51
GS3 2630 display (only)	SU2016-01
HMS controller (7000 Series SPFH)	AXE55856A (3.42E)
SPFHDOCC (8000 Series SPFH)	AXE30192B
Constituent Sensing Activation	(see next slide)
Programming Harness/ Connection box	KJD10568/ BZ100168
Turntable for stationary usage	BPF10844

Status: Feb 2016

Price page

	Description	Order code	Base code
R2	Corn	881AZ	1010
	Corn Update 2015	881BZ	1005
	Grass	881CZ	2000
R4	Corn	0369PC	1051
	Corn Update 2015	0363PC	1070
	Alfalfa	0369PC	1052
	Alfalfa Update 2015	0363PC	1071

Please check AMS Price pages for latest updates.

John Deere Constituent Sensing Activation

1. HarvestLab™ Software update → V51.
2. Open Web and write down challenge code. Follow instructions in HarvestLab Stationary use installation guide: PFP16068
3. StellarSupport → Constituent Sensing Activation → Sign in
4. Enter HarvestLab™ sensor serial number → Challenge code → COMAR order number
5. Download calibration file bundle (.zip file) and save it on PC.
6. Click “Activate” and receive activation code from StellarSupport
7. Go back to HarvestLab™ sensor → open website → navigate to “Calibration Administration page”
8. Upload calibration file bundle (.zip file) from PC to the HarvestLab™ sensor
9. Do not unzip the file. The .zip file needs to be uploaded.
10. Calibrations will appear on “Calibration Administration page” → Status “inactive”
11. Enter Activation code received from StellarSupport
12. Calibrations will appear on “Calibration Administration page” -> Status “active”
13. HarvestLab™ sensor is ready for John Deere Constituent Sensing use

Points to remember

- Update HarvestLab™ sensor for JD Constituent Sensing functionality → V51
- Use USB stick for software update from:
 - V40 → V51. unzip file to USB stick
 - V42 → V51 and higher, do not unzip the update file!
- Connect USB Stick to HarvestLab™ sensor and update from stick via website
- Wait until update is done. This may take up to 20 minutes!!!
- Use website for calibration upload and activation.
- Upload calibrations first before entering the activation code.
- Upload calibrations from PC; ***not*** from USB stick.
- Corn bundle includes fresh and ensiled calibrations
- Calibration bundles and updates based on crop types
- Just ONE bundle for machine and stationary usage – *no more updates needed!*
- SPFH will display the “fresh” calibration automatically



STELLAR SUPPORT UPDATE PROCEDURE

Step 1: Go to StellarSupport.deere.com



The screenshot displays the StellarSupport Global website interface. At the top left is the John Deere logo, and at the top right is the text "STELLARSUPPORT GLOBAL". Below this is a green horizontal bar. The main content area is divided into three columns representing different regions: North America, Europe, and Africa. Each region lists countries with their respective flags and the supported languages. There are also sections for Latin America, Australia, and China. At the bottom of the page, there is a footer with links for "Contact Us", "Privacy and Data", "Legal", and "Accessibility", along with a copyright notice for 2015 Deere & Company.

JOHN DEERE STELLARSUPPORT GLOBAL

NORTH AMERICA

- United States of America **English**
- Mexico (México) **Español**
- Canada **English French**

LATIN AMERICA

- Argentina **Español**
- Brazil (Brasil) **Português**
- Chile **Español**
- Columbia (Colombia) **Español**
- Costa Rica **Español**
- Guatemala **Español**
- Paraguay **Español**
- Peru (Perú) **Español**
- Uruguay **Español**

EUROPE

- France **Français**
- Germany (Deutschland) **Deutsch**
- Italy (Italia) **Italiano**
- JDInternational **English**
- Russia (РОССИЯ) **Русский язык**
- Spain (España) **Español**
- UK/ Ireland **English**

AFRICA

- South Africa **English**

AUSTRALIA

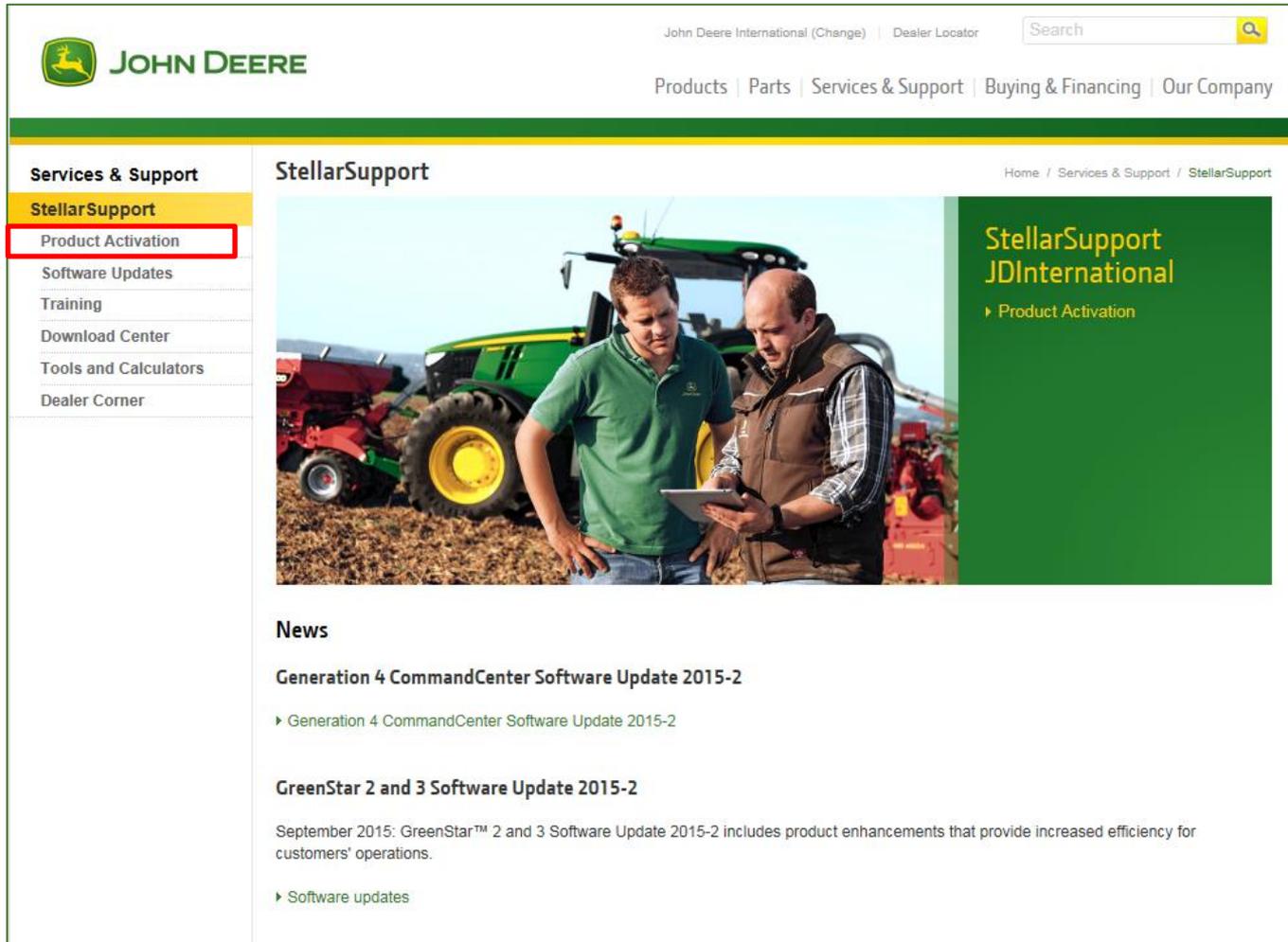
- Australia / New Zealand **English**

CHINA

- China **简体中文**

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Step 2: Select Product Activation



The screenshot shows the John Deere website's StellarSupport page. The top navigation bar includes the John Deere logo, "John Deere International (Change)", "Dealer Locator", a search bar, and links for "Products", "Parts", "Services & Support", "Buying & Financing", and "Our Company". The left sidebar menu under "Services & Support" lists "StellarSupport", "Product Activation" (highlighted with a red box), "Software Updates", "Training", "Download Center", "Tools and Calculators", and "Dealer Corner". The main content area features a "StellarSupport JDInternational" banner with a "Product Activation" link, a photo of two men in a field looking at a tablet, and a "News" section with articles for "Generation 4 CommandCenter Software Update 2015-2" and "GreenStar 2 and 3 Software Update 2015-2".

Services & Support

- StellarSupport**
- Product Activation**
- Software Updates
- Training
- Download Center
- Tools and Calculators
- Dealer Corner

StellarSupport

Home / Services & Support / StellarSupport

StellarSupport JDInternational

- Product Activation

News

Generation 4 CommandCenter Software Update 2015-2

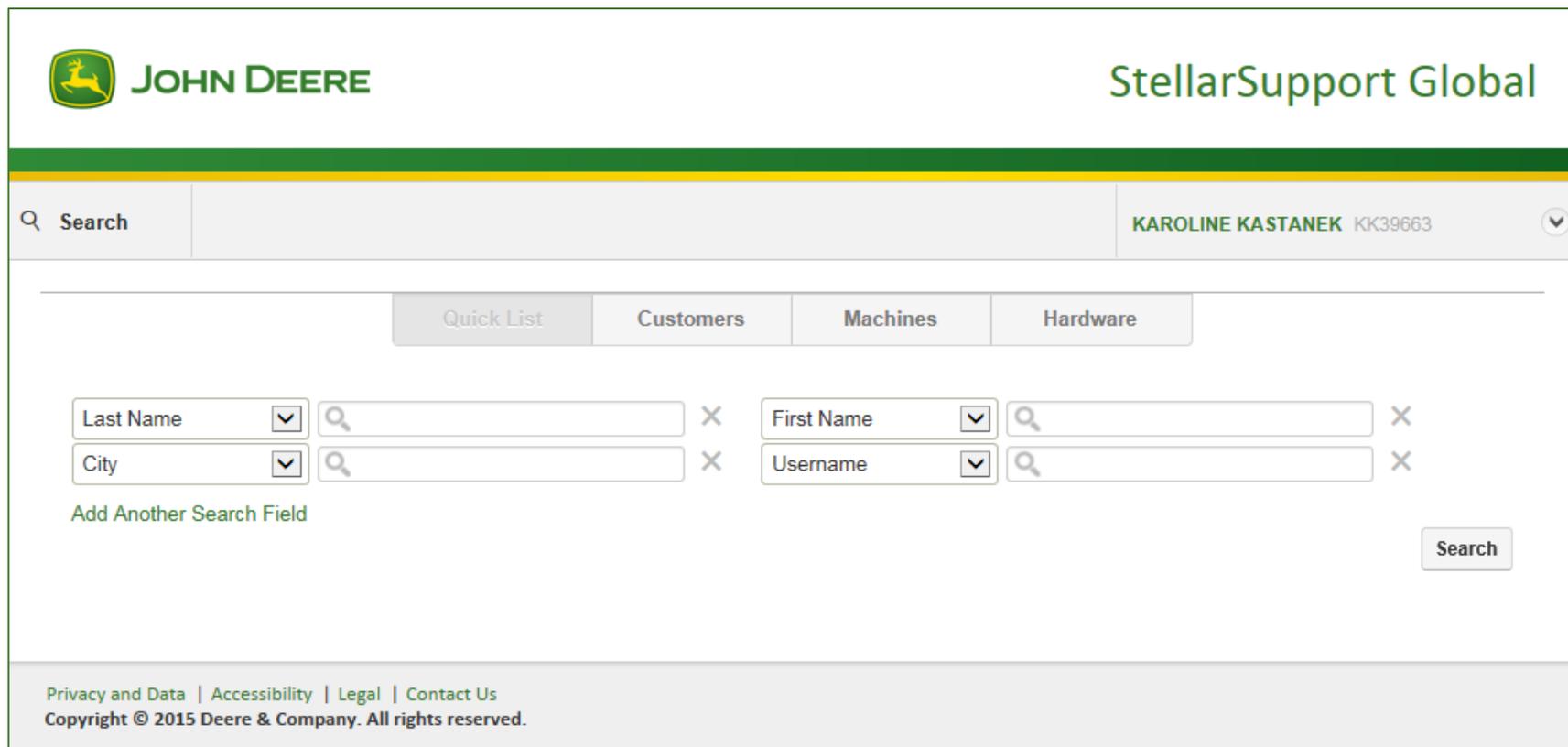
- Generation 4 CommandCenter Software Update 2015-2

GreenStar 2 and 3 Software Update 2015-2

September 2015: GreenStar™ 2 and 3 Software Update 2015-2 includes product enhancements that provide increased efficiency for customers' operations.

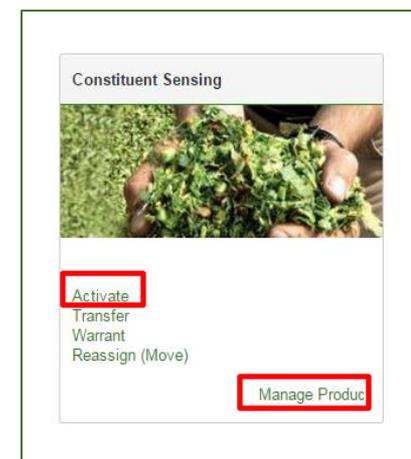
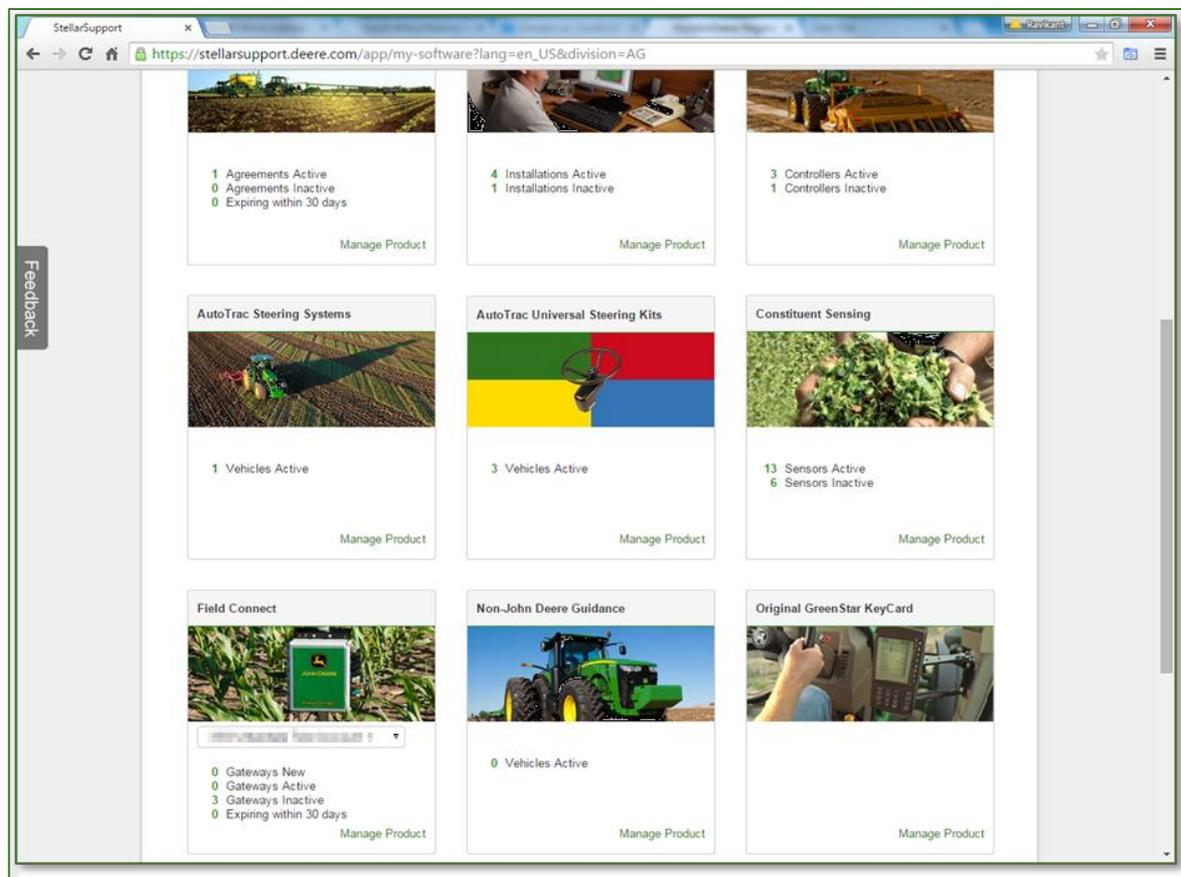
- Software updates

Step 3: Select Search and the Search by Customer



The screenshot displays the John Deere StellarSupport Global search interface. At the top left is the John Deere logo, and at the top right is the text "StellarSupport Global". Below this is a search bar with a magnifying glass icon and the word "Search". To the right of the search bar, the user's name "KAROLINE KASTANEK" and ID "KK39663" are displayed, along with a dropdown arrow. Below the search bar is a navigation menu with four tabs: "Quick List", "Customers", "Machines", and "Hardware". The "Customers" tab is currently selected. Below the navigation menu are four search input fields, each with a dropdown menu and a magnifying glass icon. The fields are labeled "Last Name", "First Name", "City", and "Username". Each field has a small "X" icon to its right. Below the search fields is a link that says "Add Another Search Field". To the right of the search fields is a "Search" button. At the bottom of the page, there is a footer with the text "Privacy and Data | Accessibility | Legal | Contact Us" and "Copyright © 2015 Deere & Company. All rights reserved."

Step 4: Viewing the Customer's My Software Page, select Manage Product, then Activate in the Constituent Sensing Tile



Step 5: Select "Activate New Sensor" radio button, enter challenge code and select "Next"

John Deere Constituent Sensing Activation

Here you can activate the John Deere Constituent Sensing calibrations you have purchased. You can select an existing serial number or add a new one using the "Add new sensor serial number" field. Enter the challenge code for the selected serial number and click on the "Next" button to continue.

Sensor serial number	PCNR00A 000000	PCNR00A 000001	PCNR00A 000002	PCNR00A 100200	PCNR00A 100300	PCNR00A 100400
	<input type="radio"/>					
DAL_Corn_R4	ACTIVE		ACTIVE	ACTIVE		ACTIVE
DAL_Corn_R2					UPGRADE PENDING	ACTIVE
DAL_Alalfa_R4						
DAL_Corn_R4_V2		ACTIVE	ACTIVE	ACTIVE		
DAL_Corn_R2_2014						
LKS_Grass_R2_2015						ACTIVE
DAL_Alalfa_R4_2015						
DAL_Corn_R4_2014						
DAL_Corn_R2_2014						

Note: only use the "add new sensor serial number" field, if the serial number is NOT shown in the grid above

Activate New Sensor (Challenge Code Required)
Serial Number (example: PCNR00A123456)

Activate Existing Sensor (Challenge Code Required) Challenge Code

Reactivate (Challenge Code Required)

Enter Confirmation Code

Cancel Upgrade

*** Attention: Always use the latest challenge code of the John Deere Constituent Sensor, otherwise the compiled activation code does not work. The challenge code changes after every product activation.**

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Step 6: Enter the COMAR Number, select the dealer name and click "Next" button

John Deere Constituent Sensing Activation

Please enter the required information below and click on the "Next" button to continue:

Sensor serial number: PCNR00A100006

COMAR order number: (e.g. 123456)

Dealer name:

You are about to "Activate" a Subscription Service or a Software Activation.

Use of this Subscription Service or Software Activation, and all rights and obligations of John Deere and the Customer (as identified in the applicable contract), are governed by the terms and conditions outlined in the applicable Subscription Service and Activation Contracts available [here](#).

If these terms and conditions are not agreeable, **do not proceed** and do not use the Subscription Service or Software Activation.

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Step 7: Enter your text message preferences and select "Next"

John Deere Constituent Sensing Product Confirmation

You are about to activate the following product:

DAL_Corn_R4

Please review the content of your order and click the "Next" button. Otherwise, click the "Back" button to use a different COMAR order.

Text Message

Send text message with activation code(s) to my cell phone.

Text message address: (What's this?)

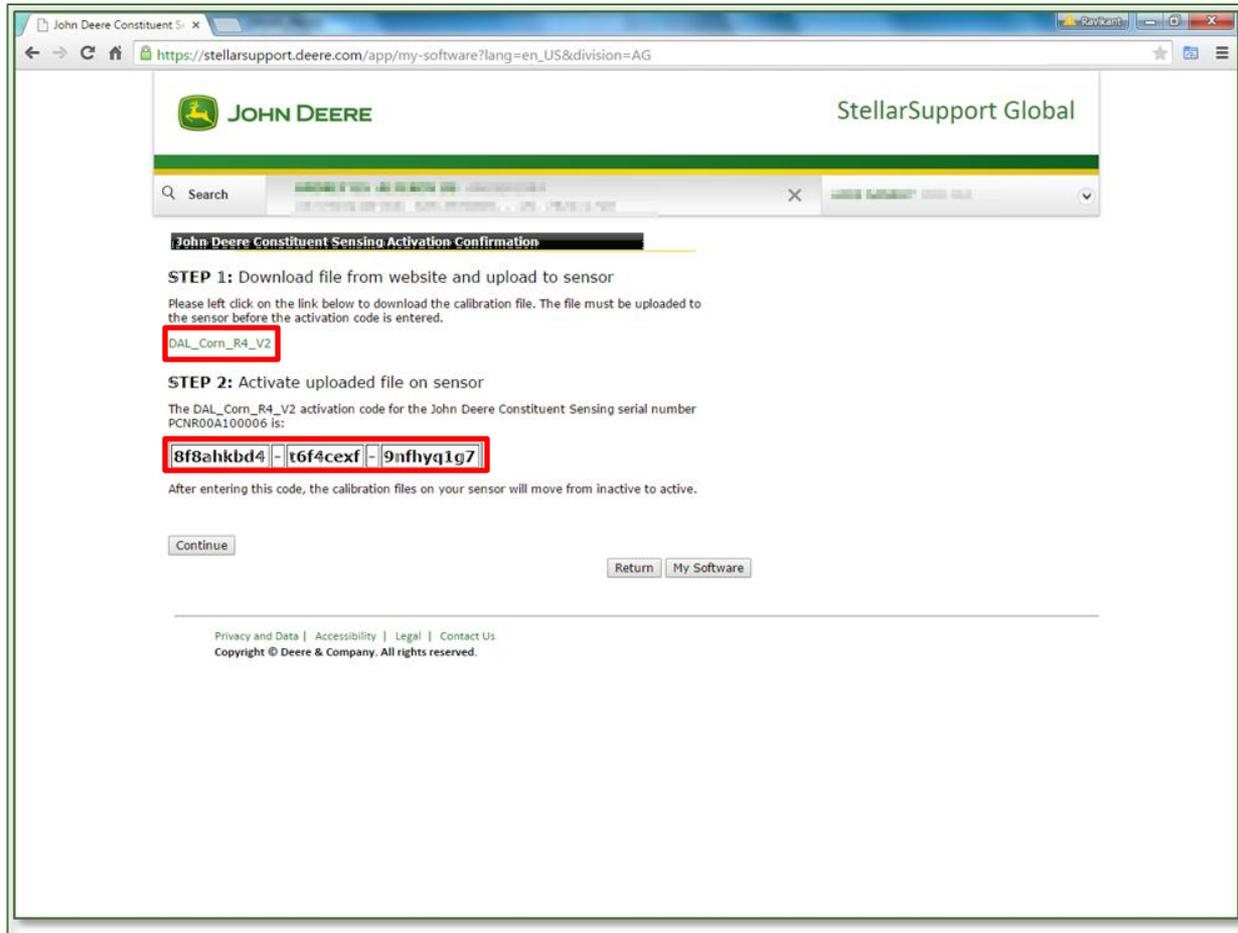
Store text message address for future use.

*This should not be used for customers outside the United States.
*Normal text messaging fees apply. Contact your service provider for text message rates.

Next Back

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Step 8: The Activation Code will be generated. Download the file form. You will upload this to the sensor later.



The screenshot shows a web browser window with the URL https://stellarsupport.deere.com/app/my-software?lang=en_US&division=AG. The page header includes the John Deere logo and "StellarSupport Global". A search bar is visible below the header. The main content area is titled "John Deere Constituent Sensing Activation Confirmation".

STEP 1: Download file from website and upload to sensor
Please left click on the link below to download the calibration file. The file must be uploaded to the sensor before the activation code is entered.
[DAL_Corn_R4_V2](#)

STEP 2: Activate uploaded file on sensor
The DAL_Corn_R4_V2 activation code for the John Deere Constituent Sensing serial number PCNR00A100006 is:
8f8ahkbd4 - r6f4cexf - 9nfhq1g7

After entering this code, the calibration files on your sensor will move from inactive to active.

Buttons: [Continue](#), [Return](#), [My Software](#)

Footer: [Privacy and Data](#) | [Accessibility](#) | [Legal](#) | [Contact Us](#)
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Step 9: The sensor serial number will be displayed on the screen

John Deere Constituent Sensing Activation

Here you can activate the John Deere Constituent Sensing calibrations you have purchased. You can select an existing serial number or add a new one using the "Add new sensor serial number" field. Enter the challenge code for the selected serial number and click on the "Next" button to continue.

Sensor serial number	JOA 00	PCNR00A 100006	PCNR00A 100008	PCNR00A 100009	PCNR00A 100010	PCNR00A 100011	PCNR00A 100015
DAL_Corn_R4	PENDING						
DAL_Corn_R2							ACTIVE
DAL_Alfafa_R4						WARRANTED	
DAL_Corn_R4_V2		ACTIVE					
DAL_Corn_R2_2014							
LKS_Grass_R2_2015			ACTIVE				
DAL_Alfafa_R4_2015							
DAL_Corn_R4_2014							
DAL_Corn_R2_2014							

Note: only use the "add new sensor serial number" field, if the serial number is NOT shown in the grid above

Activate New Sensor (Challenge Code Required)
 Serial Number (example: PCNR00A123456) Challenge Code
 Activate Existing Sensor (Challenge Code Required)
 Reactivate (Challenge Code Required)
 Enter Confirmation Code
 Cancel Upgrade

*** Attention: Always use the latest challenge code of the John Deere Constituent Sensor, otherwise the compiled activation code does not work. The challenge code changes after every product activation.**

Step 10: Upload calibration file from Laptop/PC

John Deere HarvestLab - Windows Internet Explorer

File Edit View Favorites Tools Help

http://192.168.0.1/cgi-bin/calibrationadministrationpage

John Deere HarvestLab

JOHN DEERE

Measurement
Measurement Settings

Calibration Administration

System Status
System Settings

ZEISS

27 Jul 2012 02:34 PM

Calibration Information

#	Status	File Action	Crop	Constituent	Company	Calibration ID	Filter	Calibration Release
1	active		Alfalfa ensiled	Moisture	VDLUFA	1000	0	05/09/2012
2	active		Alfalfa freshly harvested	Moisture	VDLUFA	100	0	05/31/2012
3	active		Boot stage WCS freshly harvested	Moisture	VDLUFA	600	0	05/07/2012
4	active		Corn Silage ensiled	Moisture	VDLUFA	1100	0	05/09/2012
5	active		Corn Silage freshly harvested	Moisture	VDLUFA	200	0	05/04/2012
6	active		Grass Silage ensiled	Moisture	VDLUFA	1200	0	05/09/2012
7	active		Grass Silage freshly harvested	Moisture	VDLUFA	300	0	05/07/2012
8	active		WCS ensiled	Moisture	VDLUFA	1300	0	05/09/2012
9	active		WCS freshly harvested	Moisture	VDLUFA	400	0	05/04/2012

Add Browse...

(Sensor storage space: 22528 kByte, free: 21056 kByte, available: 93%)

Activation / Deactivation

http://www.johndeere.com/

Internet | Protected Mode: Off

100%

Step 12: Add calibration to sensor

The screenshot shows the John Deere HarvestLab Calibration Administration interface. At the top, there is a navigation bar with the John Deere logo, 'Measurement' (with sub-links for 'Measurement Settings' and 'Calibration Administration'), 'System Status', and 'System Settings'. A ZEISS logo and the date '27 Jul 2012 02:34 PM' are also present. Below this is the 'Calibration Information' section, which contains a table of calibration records. At the bottom of this section, there is an 'Add' button and a text input field containing the file path 'C:\Users\SS09343\Documents_TEMP\DAL_DAL_Corn_'. A red box highlights this area. Below the input field, there is a status message: '(Sensor storage space: 22528 kByte, free: 21056 kByte, available: 93%)'. The bottom of the page shows the 'Activation / Deactivation' section.

#	Status	File Action	Crop	Constituent	Company	Calibration ID	Filter	Calibration Release
1	active		Alfalfa ensiled	Moisture	VDLUFA	1000	0	05/09/2012
2	active		Alfalfa freshly harvested	Moisture	VDLUFA	100	0	05/31/2012
3	active		Boot stage WCS freshly harvested	Moisture	VDLUFA	600	0	05/07/2012
4	active		Corn Silage ensiled	Moisture	VDLUFA	1100	0	05/09/2012
5	active		Corn Silage freshly harvested	Moisture	VDLUFA	200	0	05/04/2012
6	active		Grass Silage ensiled	Moisture	VDLUFA	1200	0	05/09/2012
7	active		Grass Silage freshly harvested	Moisture	VDLUFA	300	0	05/07/2012
8	active		WCS ensiled	Moisture	VDLUFA	1300	0	05/09/2012
9	active		WCS freshly harvested	Moisture	VDLUFA	400	0	05/04/2012

Add Browse...
(Sensor storage space: 22528 kByte, free: 21056 kByte, available: 93%)

Calibration uploaded but not active

Calibration Information

#	Status	File Action	Crop	Constituent	Company	Calibration ID	Filter	Calibration Release
1	active		Alfalfa ensiled	Moisture	VDLUFA	1000	0	05/09/2012
2	active		Alfalfa freshly harvested	Moisture	VDLUFA	100	0	05/31/2012
3	active		Boot stage WCS freshly harvested	Moisture	VDLUFA	600	0	05/07/2012
4	inactive	Delete	Corn Silage ensiled	Acid Detergent Fiber (ADF)	Dairyland Labs	1131	0	06/15/2012
5	inactive	Delete	Corn Silage ensiled	Crude Protein	Dairyland Labs	1111	0	06/13/2012
6	active		Corn Silage ensiled	Moisture	VDLUFA	1100	0	05/09/2012
7	inactive	Delete	Corn Silage ensiled	Moisture	Dairyland Labs	1101	0	06/13/2012
8	inactive	Delete	Corn Silage ensiled	Neutral Detergent Fiber (NDF)	Dairyland Labs	1141	0	06/13/2012
9	inactive	Delete	Corn Silage ensiled	Starch	Dairyland Labs	1121	0	06/13/2012
10	inactive	Delete	Corn Silage freshly harvested	Acid Detergent Fiber (ADF)	Dairyland Labs	231	0	06/15/2012
11	inactive	Delete	Corn Silage freshly harvested	Crude Protein	Dairyland Labs	211	0	06/13/2012
12	active		Corn Silage freshly harvested	Moisture	VDLUFA	200	0	05/04/2012
13	inactive	Delete	Corn Silage freshly harvested	Moisture	Dairyland Labs	201	0	06/13/2012
14	inactive	Delete	Corn Silage freshly harvested	Neutral Detergent Fiber (NDF)	Dairyland Labs	241	0	06/13/2012
15	inactive	Delete	Corn Silage freshly harvested	Starch	Dairyland Labs	221	0	06/13/2012
16	active		Grass Silage ensiled	Moisture	VDLUFA	1200	0	05/09/2012
17	active		Grass Silage freshly harvested	Moisture	VDLUFA	300	0	05/07/2012
18	active		WCS ensiled	Moisture	VDLUFA	1300	0	05/09/2012

Step 13: Enter Activation Code (Step 8)



Measurement
Measurement Settings

Calibration Administration

System Status
System Settings



27 Jul 2012 02:40 PM

Activation / Deactivation

Sensor Serial No.: 001883

Challenge Code: n12b6er

Confirmation Code: 1

Enter the Activation/Deactivation Code (maximum 26 characters)

Activation successful



Measurement

Measurement Settings Calibration Administration

System Status

System Settings




27 Jul 2012 02:40 PM

Calibration Information

#	Status	File Action	Crop		Company	Calibration ID	Filter	Calibration Release
1	active		Alfalfa ensiled		VDLUFA	1000	0	05/09/2012
2	active		Alfalfa freshly harvested		VDLUFA	100	0	05/31/2012
3	active		Boot stage WCS freshly harvested		VDLUFA	600	0	05/07/2012
4	active		Corn Silage ensiled		Dairyland Labs	1131	0	06/15/2012
5	active		Corn Silage ensiled	Crude Protein	Dairyland Labs	1111	0	06/13/2012
6	active		Corn Silage ensiled	Moisture	VDLUFA	1100	0	05/09/2012
7	active		Corn Silage ensiled	Moisture	Dairyland Labs	1101	0	06/13/2012
8	active		Corn Silage ensiled	Neutral Detergent Fiber (NDF)	Dairyland Labs	1141	0	06/13/2012
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10	active		Corn Silage freshly harvested	Acid Detergent Fiber (ADF)	Dairyland Labs	231	0	06/15/2012
11	active		Corn Silage freshly harvested	Crude Protein	Dairyland Labs	211	0	06/13/2012
12	active		Corn Silage freshly harvested	Moisture	VDLUFA	200	0	05/04/2012
13	active		Corn Silage freshly harvested	Moisture	Dairyland Labs	201	0	06/13/2012

Message from webpage



Activation was successful

OK

Finish!

John Deere HarvestLab - Windows Internet Explorer

File Edit View Favorites Tools Help

http://192.168.0.1/cgi-bin/calibrationadministrationpage

John Deere HarvestLab

JOHN DEERE

Measurement
Measurement Settings

Calibration Administration

System Status
System Settings

ZEISS

27 Jul 2012 02:40 PM

Calibration Information

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2	active		Alfalfa freshly harvested	Moisture	VDLUFA	100	0	05/31/2012
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7	active		Corn Silage ensiled	Moisture	Dairyland Labs	1101	0	06/13/2012
8	active		Corn Silage ensiled	Neutral Detergent Fiber (NDF)	Dairyland Labs	1141	0	06/13/2012
9	active		Corn Silage ensiled	Starch	Dairyland Labs	1121	0	06/13/2012
10	active		Corn Silage freshly harvested	Acid Detergent Fiber (ADF)	Dairyland Labs	231	0	06/15/2012
11	active		Corn Silage freshly harvested	Crude Protein	Dairyland Labs	211	0	06/13/2012
12	active		Corn Silage freshly harvested	Moisture	VDLUFA	200	0	05/04/2012
13	active		Corn Silage freshly harvested	Moisture	Dairyland Labs	201	0	06/13/2012

http://www.johndeere.com/ Internet | Protected Mode: Off 100%

A close-up photograph of several green plant leaves, likely corn, with a bright yellow text overlay. The leaves are arranged vertically, with one leaf in the foreground being more prominent and showing clear vein structure. The background is a soft-focus green.

ANALYZING SAMPLES AND EXPECTED RESULTS

Range of measurements

- The accuracy is different for each constituent due to the nature of the amount of each within the crop.
- The expected results for fresh corn are as follows based on dry matter:

Constituent	Expected Values (%)
Dry Matter (DM)	28 to 35
Acid Detergent Fiber (ADF)	28 to 32
Neutral Detergent Fiber (NDF)	45 to 55
Starch	25 to 40
Crude Protein	7 to 10



Range of measurements

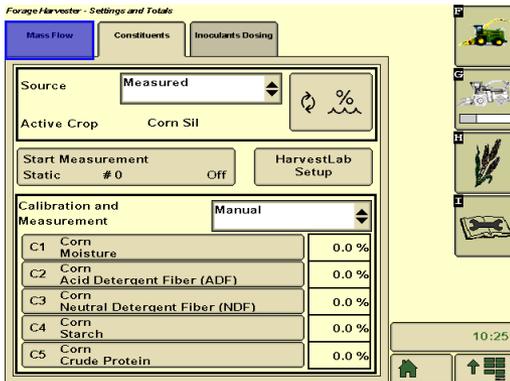


- Values displayed on SPFH's GS3 2630 Display take dry matter into consideration.

- Values displayed in the website while in stationary mode are displayed "as is".



- After calculating website values with dry matter values they will be the same as on the SPFH.



Starch = 38.8%

Sample #	Spectra #	Time	Acid Detergent Fiber (ADF)	Crude Protein	Moisture	Neutral Detergent Fiber (NDF)	Starch
			Corn Silage ensiled 09/08/2012				
			Corn Silage ensiled 10/10/2012				

Starch = 12.4%

Use this formula to convert website values:

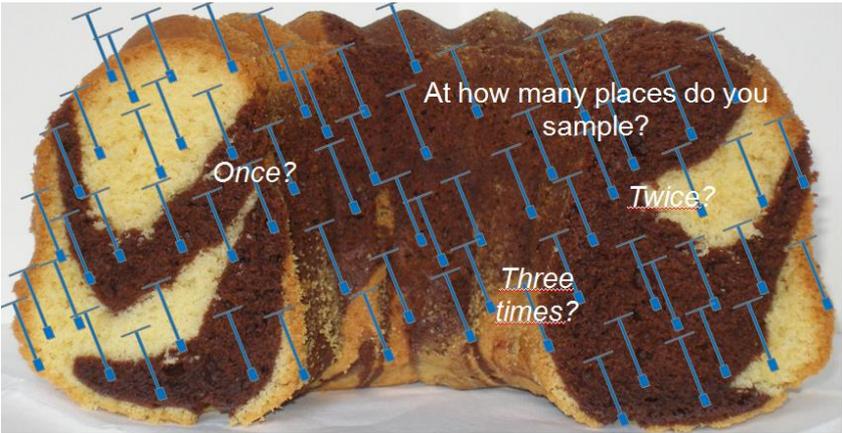
$$(\text{Constituent value (starch)}/\text{Dry matter value}) \times 100\% = \text{Starch\% with DM}$$

$$(12.4 (\text{starch})/32) 0,3875 \times 100 = 38,8\% \text{ Starch with DM}$$

Range of Measurements

Results from the laboratory will be different, as they analyze only a small sample taken from a large trailer.

HarvestLab	Laboratory
Analyzes 40 kg/sec	Analyzes 3 kg in 24 hours (oven dry)
Analyzes entire field/trailer	Analyzes 0,03 % of 10 t sample
10 t equals 250 measurements	10 t equals 3 measurements



Sample preparation for the stationary measurements

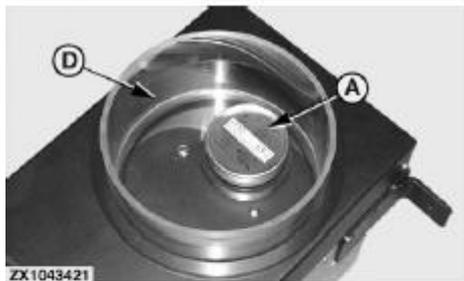
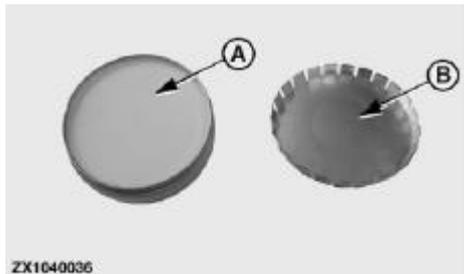
- Measure the sample 3 times.
 - Mix the sample between each measurement.
 - The Repacks should be set to 3 so that after 3 measurements an average will be calculated.
-
- If a Sensor measurement result is in question:
 - Check the Validation
 - If invalid, do a Black and White reference and
 - check DTAC solution 76169.



DIAGNOSTIC TOOLS

A close-up photograph of several green plant leaves, likely corn, with a yellow text overlay. The leaves are arranged vertically, with one leaf in the foreground being more in focus than the others. The lighting is bright, creating a vibrant green color. The text 'DIAGNOSTIC TOOLS' is centered horizontally and vertically in a bold, yellow, sans-serif font.

Wavelength Validation - Definition



A—Wave Length Standard
B—Cover

C—Apply the wave length
standard and Validate
D—Glass Bowl

- The wavelength validation checks sensor functionality.
 - It should be done if results appear to be wrong
 - Or at the customer's discretion (i.e. once, twice a week)
- It does this by checking the known/expected wavelength to be reflected from this wavelength Validation Standard.
- The value will then be compared to the known value from the sensor's memory.
- If it is valid, it is functioning properly.
- If it is invalid, the percent displayed indicates the offset from the expected value. A black and white reference should be done, followed by another wavelength standard check.
- This invalidity could be due to:
 - Dirt on the flange or glass bowl
 - The wrong wavelength validation can
 - Bulb brightens deterioration - bulbs cannot be changed and are not available as spare parts. When bulb is broken, please replace the HarvestLab Sensor.

Black and White Reference

- The Black and White reference procedure is done by the Dealer to “calibrate” the HarvestLab Sensor.
- When is it necessary to do the Black and White Reference:
 - Optical way changes: new flange installed; switched between SPFH and Stationary mode
 - Validation is invalid
 - Measurement results are in question
 - SPFH is in inspection (once a year)
- The kit KJD10569a includes an absolute white reference material and a black pipe, which will demonstrate absolute black.
- If this procedure still does not bring the validation reading back to valid, after doing it 3 times, DTAC should be contacted for further actions to be taken.

DTAC SOLUTIONS

DTAC solutions for Constituent Sensing

- Protein inaccuracy: readings fluctuate between 0 and 100% on the SPFH display while on the WebUI in stationary use a red 'x' is displayed i.e. reading out of range or negative.
 - **DTAC solution 94646, and upload V46 software to the sensor.**
- NDF ensiled reads the same as ensiled moisture while in WebUI.
 - **DTAC solution 93993 using the NDF correction wizard**
- HarvestLab does not boot up after the V42 software update.
 - **DTAC solution 93763 using the Time fix wizard (T-Fix is included since V44)**
- Analyzing constituents sensing data using Apex or LandData desktop software is limited.
 - **Fixed with Apex version 3.4.0.538 and LandData Agrar-Office 5.0**
- HarvestLab inaccurate
 - **DTAC solution 76169**

HARVESTLAB CHANGES

A close-up photograph of green corn leaves, showing the texture and veins of the leaves. The leaves are slightly out of focus, creating a soft background. Overlaid on the image is the text 'HARVESTLAB CHANGES' in a bold, yellow, sans-serif font.

HarvestLab Flanges

There are 3 flange kits available:



BPF10670
For 70x0 Series
SPFH only



BPF11048
For 8000 Series
SPFH only



BPF11146
For John Deere
Manure Sensing
and 8000 Series
SPFH

Changes to HarvestLab Parts

- REMAN sensor SE502945 will be delivered without a flange.
- There are different reasons that you may not receive the complete core credit after sending a broken HarvestLab Sensor back to REMAN. The core reductions can be found in DTAC solution 75752.

Description	Core Credit Reduction in %
HarvestLab RMA sensor return sheet has to be attached	Deduction depends on Region
Core Return Form (JDPoint) has to be attached	10 Euro (Region 2) and \$25 (Region 4)
Wavelength standard is missing	50%
Wavelength standard damaged or flange missing	0%
Glass window damaged (top side)	0%
Sensor housing damaged or defective	50%
Mounting brackets damaged or defective	50%
Mounting brackets removed	100%
Any housing screws (also on bottom side) removed	100%
Sensor not in its original packaging	50%
Uncleaned, manure contaminated sensors	50%

HarvestLab Parts

		R2	R4
HLab Sensor	Sensor Bundle	BPF10582	
	REMAN Sensor	SE502945	
7000 series SPFH	Bracket Kit 7x50/7x80 (- MY13)	BZ100157	
	Bracket Kit 7x80 (MY14 -)	BPF10768	
	Flange Kit 7000 series SPFH	BPF10670	
	Bracket	HXE64878	
Stationary	Turn Table	BPF10844	
	Glass Bowl	BPF10842	
	Press Plate	BZ100213	
8000 series SPFH	Bracket Kit 8000 series SPFH	BXE10574	
	Flange Kit 8000 series SPFH	BPF11048	
Special Tools	Black and White Refernce Kit	KJD10569a	
	Programming Harness	KJD10568	
	Magnetic Reference Holder	KJD10833	



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