

Harvest Identification, Cotton Pro

Cotton Industry Integration

April 2021



JOHN DEERE

4.4 mph	1.76 gal/ac
2100 RPM	10.2 ac/h
18 gal/h	

John Deere CP690 Cotton Harvester
Operator: Steve Max
9:29am

Field Analyzer

2016 Cotton Harvest

Layer: Yield Contour

MOISTURE DATA

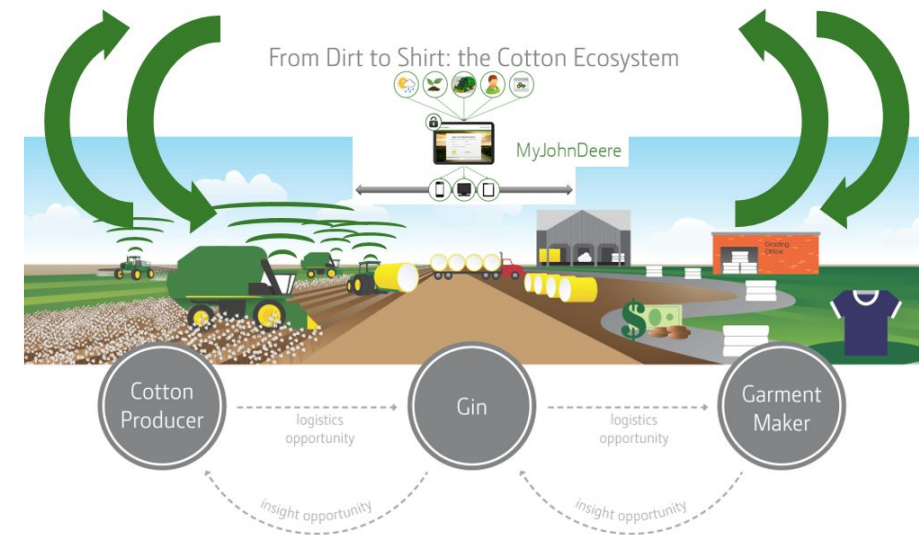
WATER POTENTIAL	100.25%
TOTAL MOISTURE	207,104.91%
MOISTURE CONTENT	2,608.2%

Round Module Tracking Technology

- Harvest Identification, Cotton Pro
 - History of Round Module Tracking
 - Features of HID, Cotton Pro
 - Recent Updates
- Future Updates for HID, Cotton Pro

HID, Cotton Pro Gin Integration Information

- Round Module Wrap RFID Information
- RFID Bridge
- RFID Hardware – Off Board Cotton Harvester
- 3rd Party Integration



Round Module Tracking History



CIMS

- Concept for tracking modules

HID, Cotton

- 19 Data Points
- Logistics Tool
- 1st API approach with eCotton

HID, Cotton Pro

- 27 Data Points
- Field Analyzer Int.
- Moisture and weight tracking

EWR eCotton API

- Feb. 24th API announced
- Software to integrate with Ops Center

Gen4 4640 Compatibility

- MY20 CP/CS690 Factory Installed

2009 - 2011

2012 - 2016

2017 - 2018

2019 & Beyond

7760 RMB Picker

- Shape of cotton harvesting changed forever



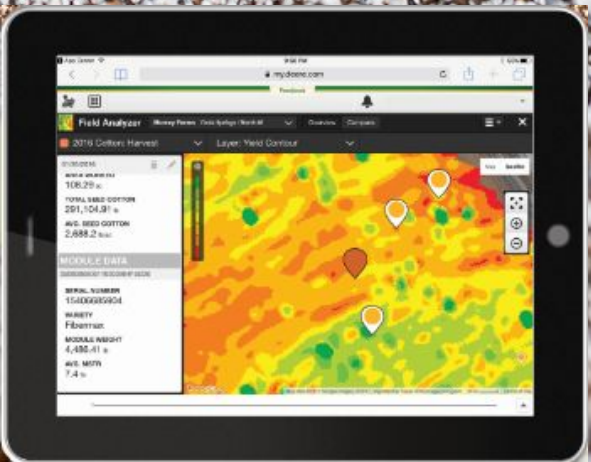
HID, Cotton - Industry Integration

- Core team of ginners, eCotton, Cotton Inc., John Deere, Southern Southeastern Ginners Association
- Focus on integration of HID, Cotton with gin software eCotton
- Technologies to track modules from field staging and on gin yard

HID, Cotton Pro Update

- Automated Send Times
- Manual Send Feature

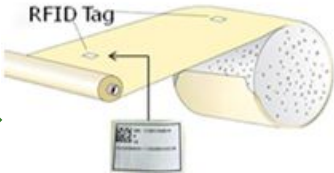
Harvest Identification, Cotton Pro Core Components



Harvest Identification, Cotton Pro



Dirt to Shirt Traceability



RFID Reader



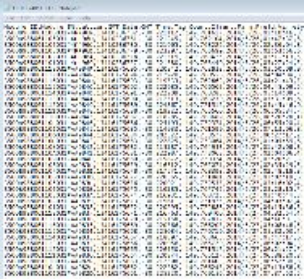
SF6000

HID, Pro Controller

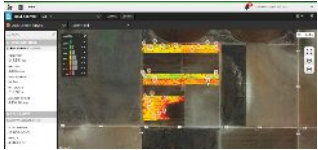
Gen4 4640 Universal Display w/ HID, Cotton Pro



MyJohnDeere



USB or Data Card
MTG JDLink



Field Analyzer



COTTON LEADS™



Information Documented by Harvest Identification, Cotton Pro for Every Module

- Module ID
- Module SN
- Latitude
- Longitude
- GMT Date/Time
- Tag Count
- Client
- Farm
- Field
- Variety
- Machine PIN
- Operator
- Gin ID
- Producer ID
- Local Time
- Field Area
- Season Total
- Diameter
- Moisture
- Weight
- Drop Latitude
- Drop Longitude
- Field Total
- Incremental Area
- Local Date
- Comments



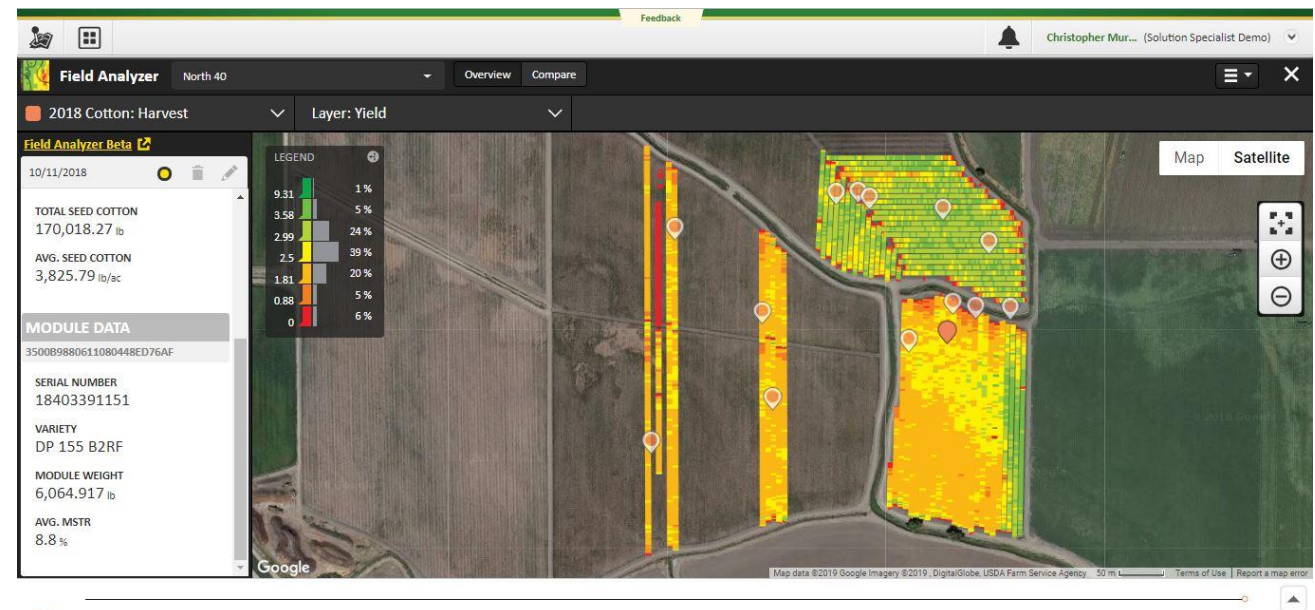
Module ID	Module SN	Lat	Lon	GMT Date	GMT Time	Tag Count	Client	Farm	Field	Variety	Machine PIN	Operator	Gin ID	Producer ID	Local Time	Field Area (Sq m)	Season Total	Moisture (%)	Diameter (cm)	Weight (kg)
3500B988061	17411115335	37.054095	-120.623951	10/11/2018	5:17:31 PM	6	Murray Farms	Delta Springs	North 40	DP 155 B2RF	1N0C690PCH4070003	Dave Hale	BC3496	CM317	10:17:29 AM	3159	1360	10.9	236	2743
3500B988061	17411115334	37.054042	-120.625706	10/11/2018	5:28:27 PM	6	Murray Farms	Delta Springs	North 40	DP 155 B2RF	1N0C690PCH4070003	Dave Hale	BC3496	CM317	10:28:23 AM	6462	1361	10.3	236	2691
3500B988061	17411115333	37.053873	-120.623479	10/11/2018	5:36:03 PM	6	Murray Farms	Delta Springs	North 40	DP 155 B2RF	1N0C690PCH4070003	Dave Hale	BC3496	CM317	10:36:01 AM	9780	1362	10.4	239	2694
3500B988061	17411115332	37.053766	-120.624124	10/11/2018	5:44:24 PM	6	Murray Farms	Delta Springs	North 40	DP 155 B2RF	1N0C690PCH4070003	Dave Hale	BC3496	CM317	10:44:21 AM	13006	1363	10.2	239	2701
3500B988061	17411115331	37.053497	-120.624849	10/11/2018	5:52:57 PM	6	Murray Farms	Delta Springs	North 40	DP 155 B2RF	1N0C690PCH4070003	Dave Hale	BC3496	CM317	10:52:55 AM	16406	1364	10.1	239	2690
3500B988061	17411115330	37.053323	-120.62329	10/11/2018	6:00:45 PM	6	Murray Farms	Delta Springs	North 40	DP 155 B2RF	1N0C690PCH4070003	Dave Hale	BC3496	CM317	11:00:43 AM	19710	1365	9.8	238	2647
3500B988061	17411115329	37.053227	-120.625701	10/11/2018	6:09:49 PM	6	Murray Farms	Delta Springs	North 40	DP 155 B2RF	1N0C690PCH4070003	Dave Hale	BC3496	CM317	11:09:47 AM	23193	1366	9.6	238	2684
3500B988061	17411115328	37.053006	-120.625539	10/11/2018	6:20:07 PM	6	Murray Farms	Delta Springs	North 40	DP 155 B2RF	1N0C690PCH4070003	Dave Hale	BC3496	CM317	11:20:05 AM	27409	1367	9.3	239	2677
3500B988061	17411115327	37.053102	-120.623067	10/11/2018	6:26:27 PM	6	Murray Farms	Delta Springs	North 40	DP 155 B2RF	1N0C690PCH4070003	Dave Hale	BC3496	CM317	11:26:23 AM	30665	1368	9.2	236	2570
3500B988061	17411115326	37.053058	-120.625001	10/11/2018	6:33:38 PM	6	Murray Farms	Delta Springs	North 40	DP 155 B2RF	1N0C690PCH4070003	Dave Hale	BC3496	CM317	11:33:35 AM	34167	1369	9.2	239	2661
3500B988061	17411115325	37.05285	-120.627207	10/11/2018	6:40:18 PM	6	Murray Farms	Delta Springs	North 40	DP 155 B2RF	1N0C690PCH4070003	Dave Hale	BC3496	CM317	11:40:15 AM	37578	1370	8.9	240	2616
3500B988061	17411115324	37.052746	-120.628189	10/11/2018	6:47:50 PM	6	Murray Farms	Delta Springs	North 40	DP 155 B2RF	1N0C690PCH4070003	Dave Hale	BC3496	CM317	11:47:47 AM	41283	1371	8.7	239	0
3500B988061	18403391167	37.052621	-120.625484	10/11/2018	7:09:06 PM	6	Murray Farms	Delta Springs	North 40	DP 155 B2RF	1N0C690PCH4070003	Dave Hale	BC3496	CM317	12:09:04 PM	44493	1372	8.8	239	2619
3500B988061	18403391166	37.052664	-120.623237	10/11/2018	7:25:46 PM	6	Murray Farms	Delta Springs	North 40	DP 155 B2RF	1N0C690PCH4070003	Dave Hale	BC3496	CM317	12:25:44 PM	47788	1373	8.3	240	2659
3500B988061	18403391165	37.052515	-120.626046	10/11/2018	8:10:18 PM	6	Murray Farms	Delta Springs	North 40	DP 155 B2RF	1N0C690PCH4070003	Dave Hale	BC3496	CM317	1:10:16 PM	50892	1374	7.6	236	2486
3500B988061	18403391164	37.052481	-120.628382	10/11/2018	8:16:06 PM	6	Murray Farms	Delta Springs	North 40	DP 155 B2RF	1N0C690PCH4070003	Dave Hale	BC3496	CM317	1:16:04 PM	54209	1375	7.6	239	0
3500B988061	18403391163	37.05229	-120.625324	10/11/2018	8:23:04 PM	6	Murray Farms	Delta Springs	North 40	DP 155 B2RF	1N0C690PCH4070003	Dave Hale	BC3496	CM317	1:23:02 PM	57211	1376	7.6	237	2522

Harvest Identification, Cotton Pro



Value to the **Producer**

- Merge module data with yield mapping to visualize trends
- Optimize fleet performance
- Traceability across farms, fields, operators, etc.
- Easily view module attributes within JD Ops Center
- Improved communication with the Gin(s)
 - Prioritize module movement
 - Wireless data transfer
 - Accountable records



Harvest Identification, Cotton Pro



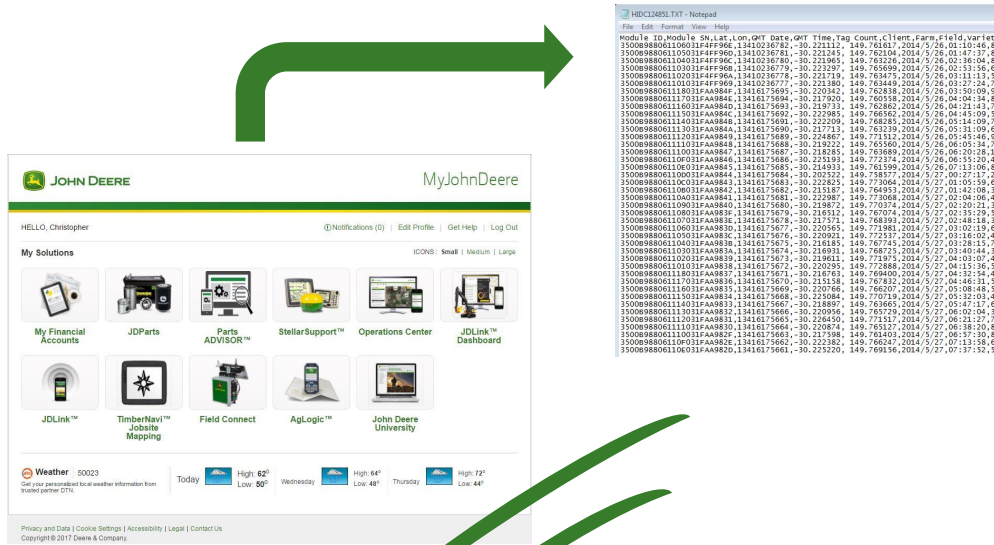
Value to the **Ginner**

- Forecast what is coming from the field before arrival
- Increased accuracy of inventory records
 - Gin the *right* cotton at the *right* moisture at the *right* time
- Trace movement of modules from point of entry to gin yard to feed floor
- Plan ginning schedule with more accurate moisture data



Application Programming Interface (API) with MyJohnDeere.com

Automate the receipt of HIC files from MJD to gin.
Go to <https://developer.deere.com> to get started



Pull HIC files automatically from MJD account

Gin software API interface

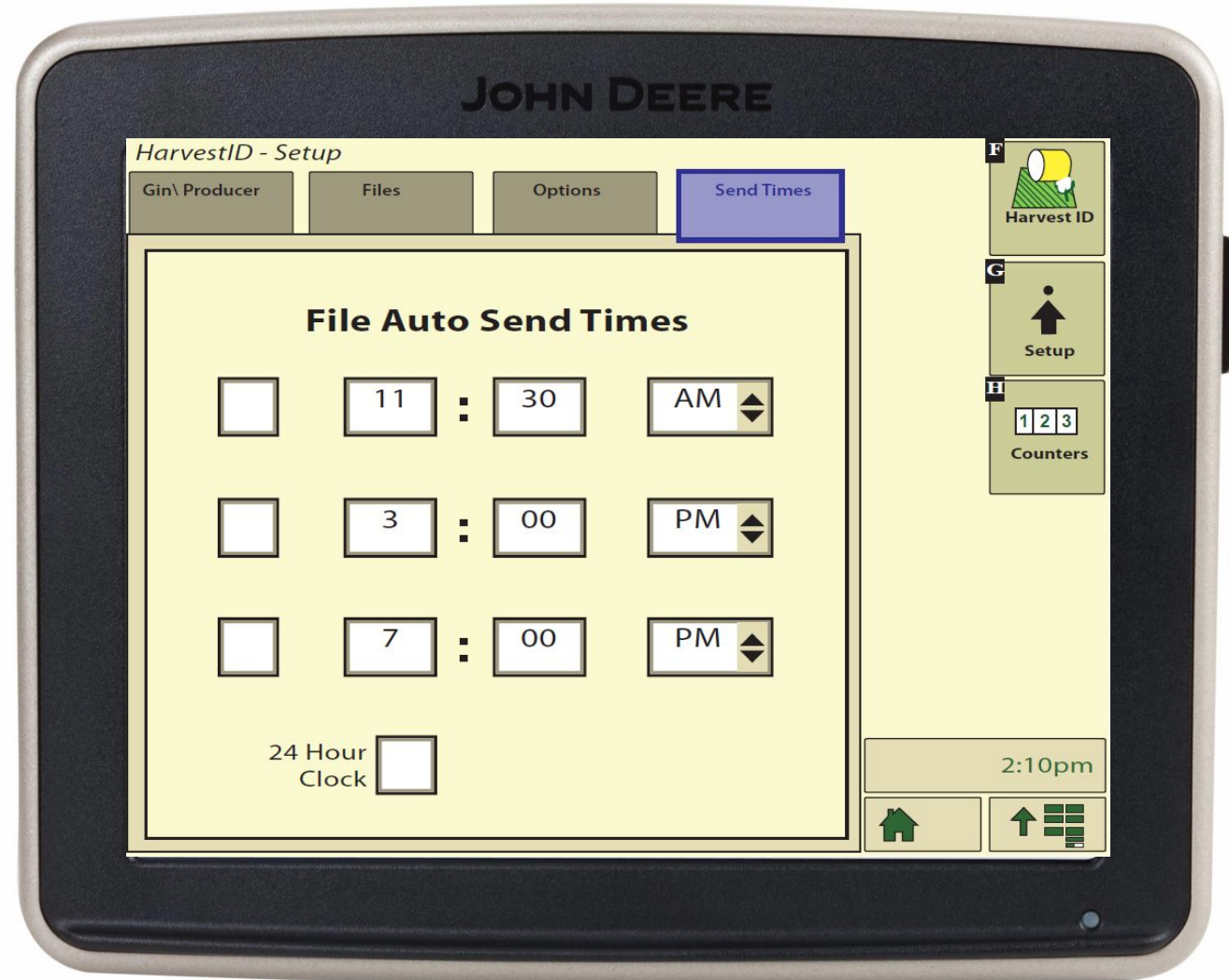
Module pickup/expected delivery list



HID, Cotton Pro Recent Updates

Value Proposition Highlights

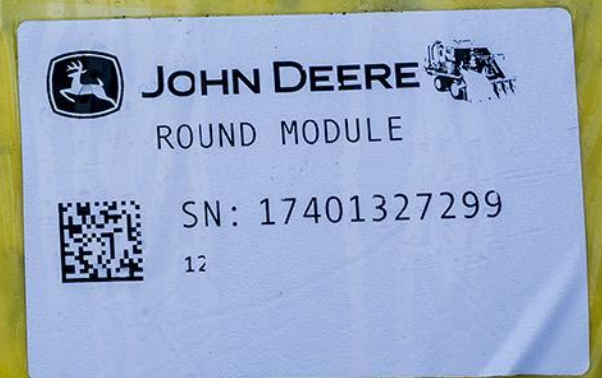
- Automatically send HID, Cotton Pro files at specific set times
- HID, Cotton Pro files available in Ops Center for ginners
- Faster transfer of information between cotton harvester and gin



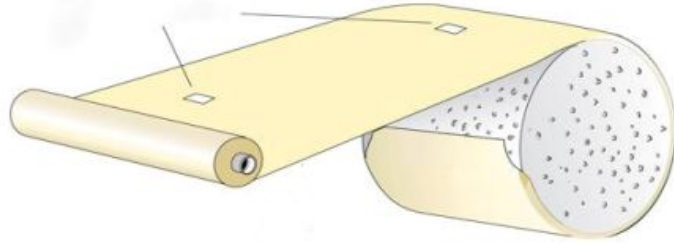
MY20 Updates



HID, Cotton Pro Gin Integration Information



Round Module Wrap RFID Information

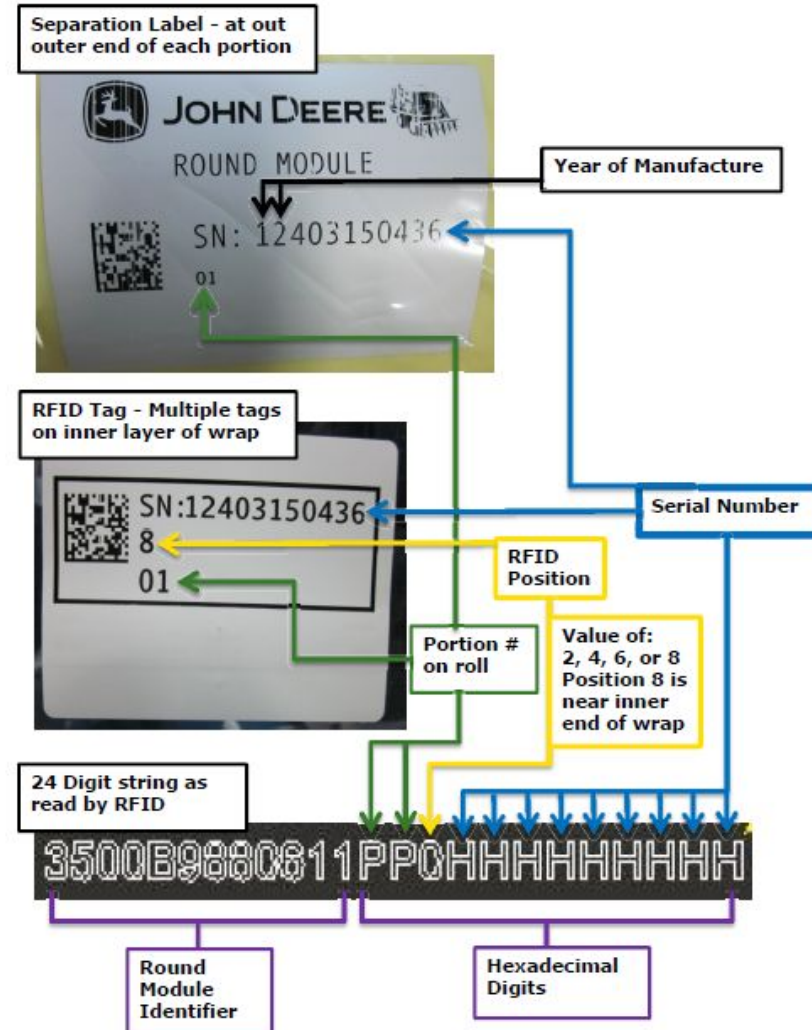


- Monza[®] 5 UHF tag chip used in TAMA RMW[™] – chip is industry leader in reliability, consistency – made by Impinj
 - EPCglobal and ISO 18000-6C compliant
 - Detailed specs available on Impinj website
- John Deere holds exclusive patents for RFID tags embedded in cotton round module wrap – significant R&D to develop, implement and maintain (Patent #'s US7694491, US8071196, US8087216)
- Available exclusively in TAMA RMW[™] with patented Z-lock
- On-board RFID antennae supplied by Intermec
- Round Module Wrap will have 4 tag chips

Electronic Product Code – GID-96 standard

- **EPC** – universal identifier that provides unique identity for every physical object in the world – open standard
- RFID tags in TAMA RMW™ are encoded using industry standard **General Identifier 96 (GID-96)** coding scheme
- **GID-96** - general purpose standard that is used to identify things that (1) either don't fall neatly into other tag data standards or (2) do not have a barcode heritage.

Separation Label and RFID Tag Correlation to RFID String



Round Module Movement



Harvest Identification, Cotton – Module traceability in the field

RFID Bridge

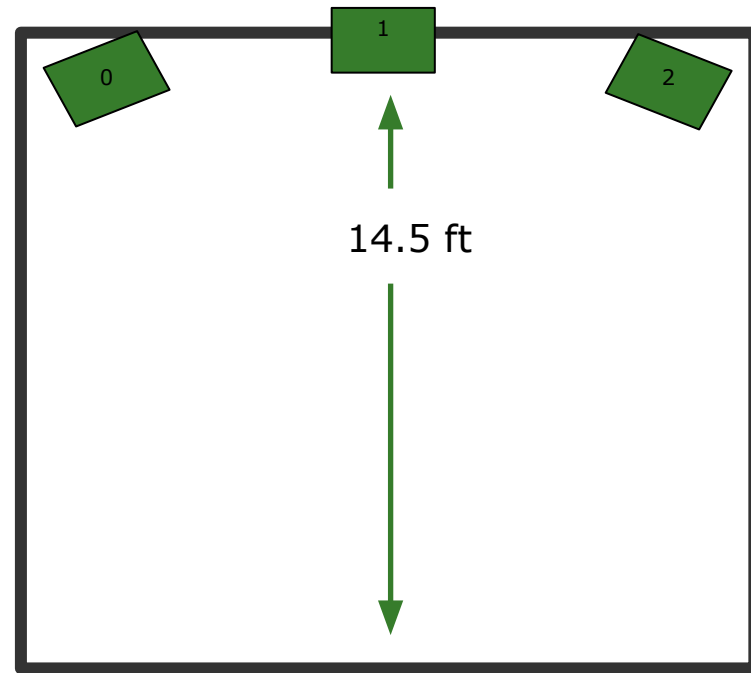


Gin Yard

RFID Reader on feed floor

This is a visual representation of module traceability from the field to gin feed floor.

RFID Bridge - Gin Recommendations



Antenna Placement:

Three antennas are recommended located approximately 14.5 feet high, with 5 feet between each unit. The outside units should be angled inwards at 25 degrees as shown in the picture above and in the previous slide.

Vehicle Speed:

In order to give the antennas the best opportunity to read difficult tags, the vehicle needs to be moving through the portal at approximately 1 mph but not over 2 mph.

3rd Integration – Gin Software and Support



Cotton Harvest
Files Download
Utility





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