

Research Plot Harvesters

2017 Product Offering and Company Information



December 2016



Background of RCI

- **Business Created in March, 2004**
- **New Facility – January 2008 (Mayville, WI)**
- **Warehouse Addition – Winter 2013/2014**
- **Newer/Larger facility - 2015**
- **Allied Supplier to John Deere for Attachments for Hay and Forage Equipment**
- **Short line manufacturer of hay mergers, plot harvesters**



RCI Services Offered

-Engineering Services

- Product Development, concept to production

“Cradle to Grave”

- Design
- Prototype Fabrication
- Testing
- Technical Publications
- Assembly / Manufacturing
 - subcontract components
 - all assembly in-house

-Specialties

- Laser Scanning - portable
- Product Testing
 - eDaq data loggers
 - test track or stand/field test

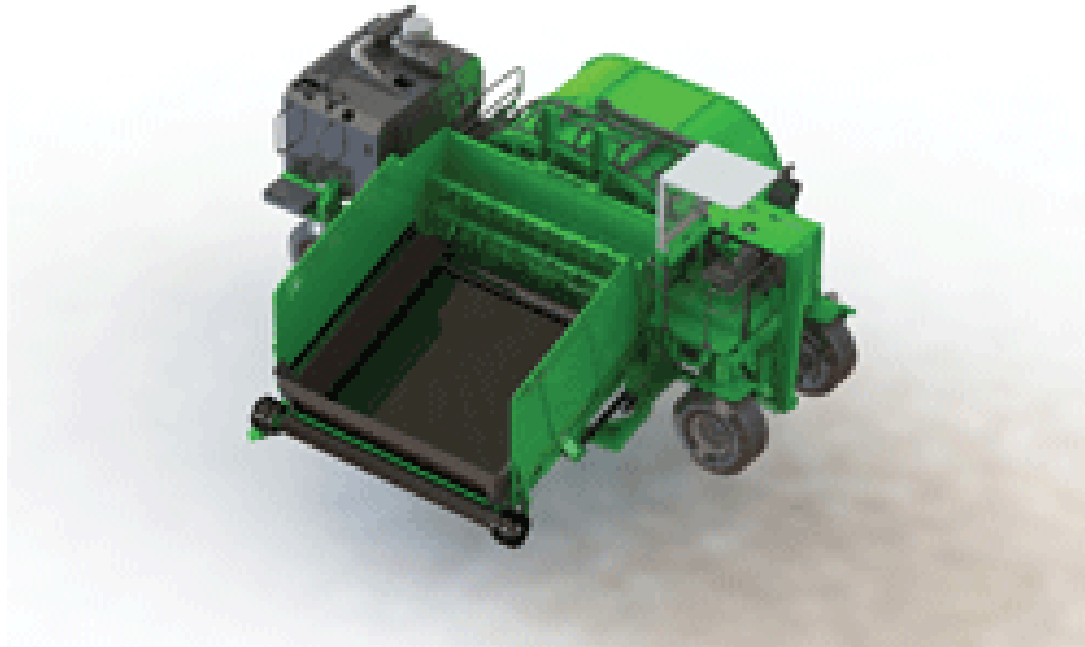


Custom Engineering

- RCI can develop your research plot equipment from the ground up
- From concept through testing to your site, RCI can develop the solution needed
- Experience with products from 5 hp to 600 hp



Custom Engineering



Custom Engineering



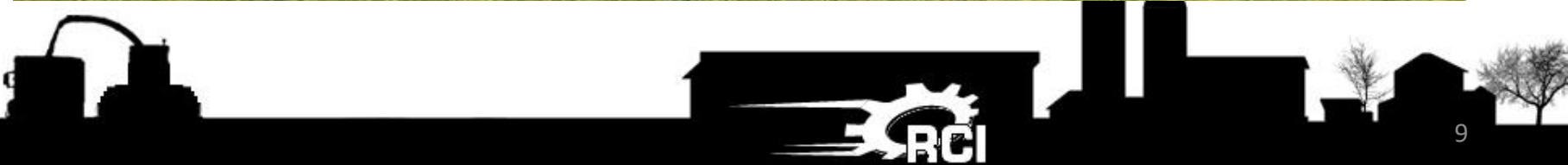
Custom Engineering



Custom Engineering



Custom Engineering



RCI Plot Harvesters

- Since 2007, RCI has been involved in the plot harvester business through:
 - Existing plot harvester modifications / specialization
 - Specialty harvesting machine development
 - Hay, Forage, and Biomass Plot Harvester Development and Manufacturing



RCI Plot Harvester Products

1. Plot Samplers

- Added to existing forage harvester
- Allows for data and sample collection
 - NIR Data
 - Weights
 - Sub sample for lab

2. Plot Harvesters

- Smaller units for smaller plots



Plot Samplers

- 30A Plot Sampler



Plot Samplers

- 130S Plot Sampler



Plot Samplers – cont.

- 30A / 130S Plot Sampler
 - RCI will adapt to any of the following John Deere machines
 - 5000 - 8000 Series Self-Propelled Forage Harvester
 - 3975 Pull-Type Forage Harvester



Plot Samplers – cont.

- 30A Plot Sampler – 3975 Mount



130S Sampler



130S Sampler



1250P Self Propelled Forage Research Plot Harvester



Operator Station

- RCI Cab – Crenlo
 - Two person cab
 - Operator
 - Sampler
 - Allows for safe placement of sample operator if needed
 - Air conditioning, heat, reduced dust and noise
 - Can be operated by one person in long term
 - » Reduce manpower in machine
 - » Safer operating environment



Operator Station



Operator Station

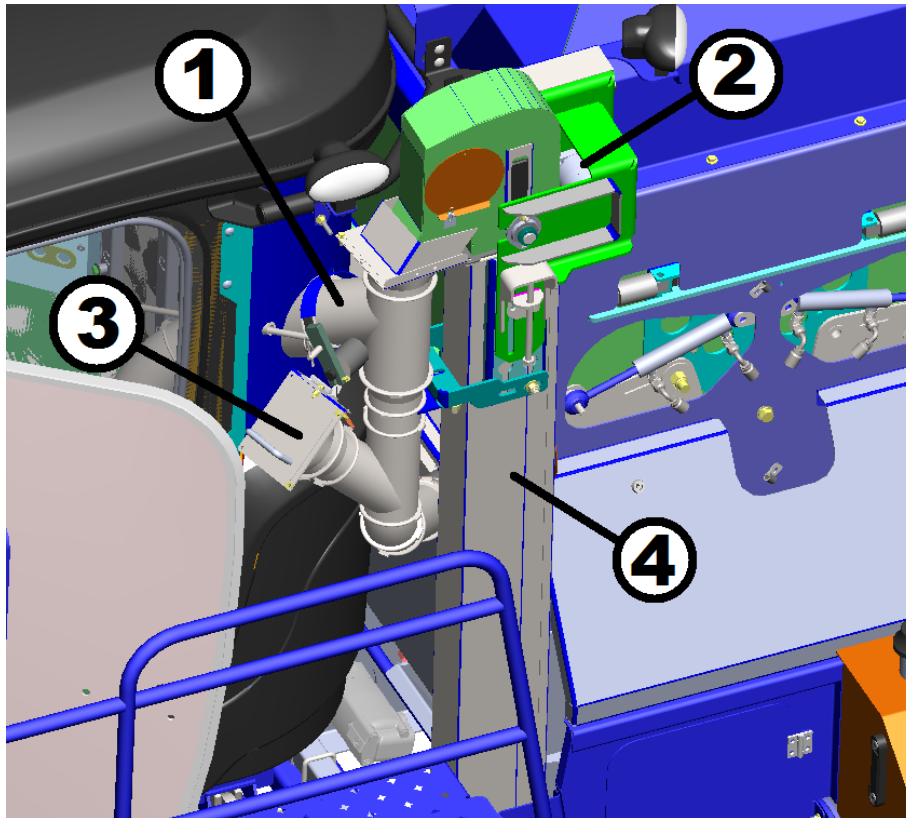


Operator Station Sample Collection



Operator Station

Sample Collection



1 – Discharge Tube

2 – Drive Unit

3 – Return Port

4 - Elevator



Header Options

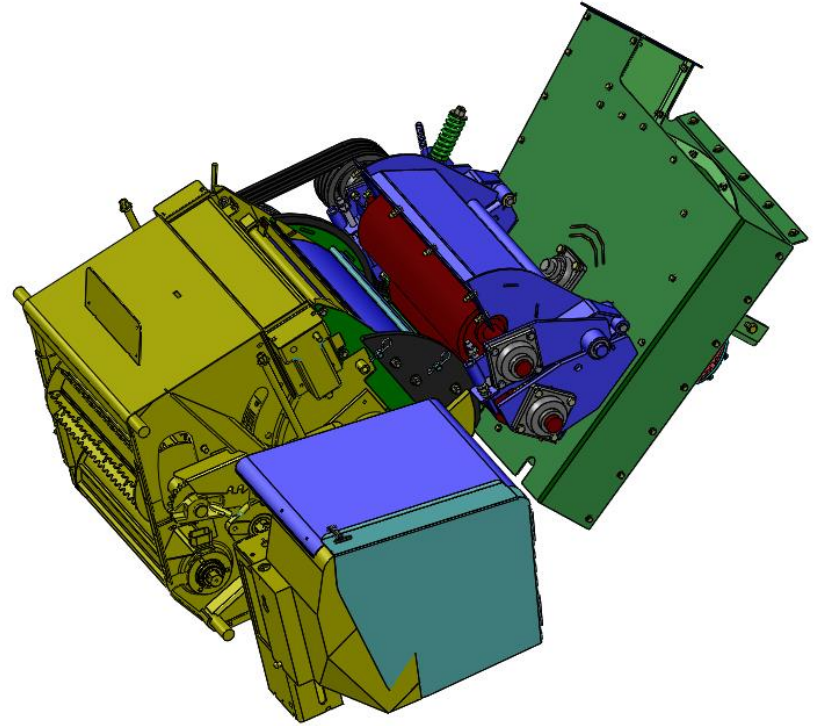
- John Deere 3-row narrow header
- 30" rows
- Will also fit:
 - RCI 7' Hay Pickup
 - RCI 9'6" Hay Pickup
 - Future: RCI Direct Cut Header
 - John Deere 38" 3-row header
 - John Deere 4-row header
 - Kemper 4-row header with adapter



Header



Cutting Components



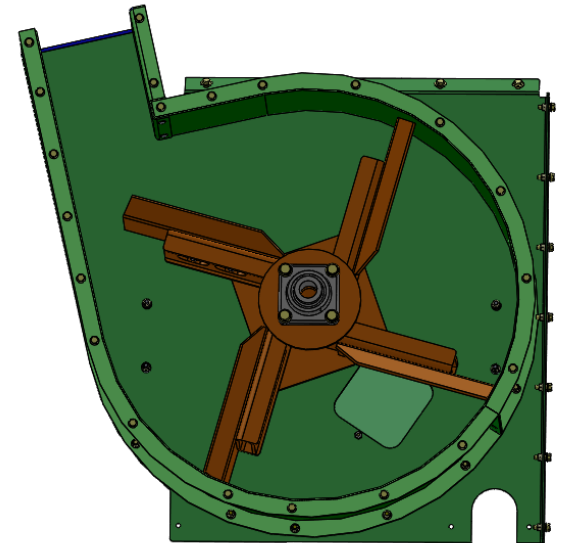
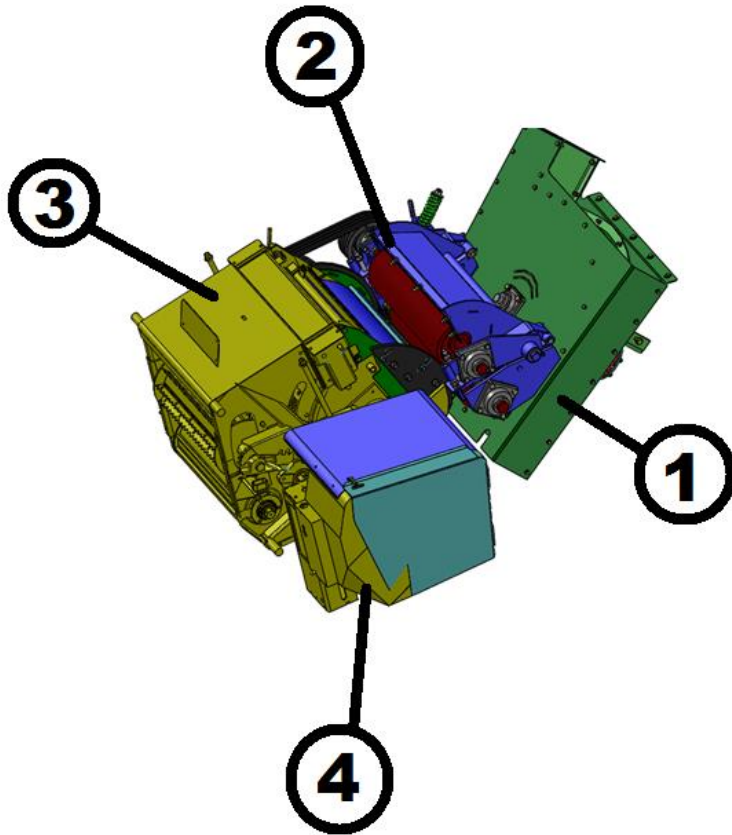
Accelerator

1 – Accelerator

2 – Kernel Processor

3 – Cutterhead / Feedroll Assembly

4 - Gearbox

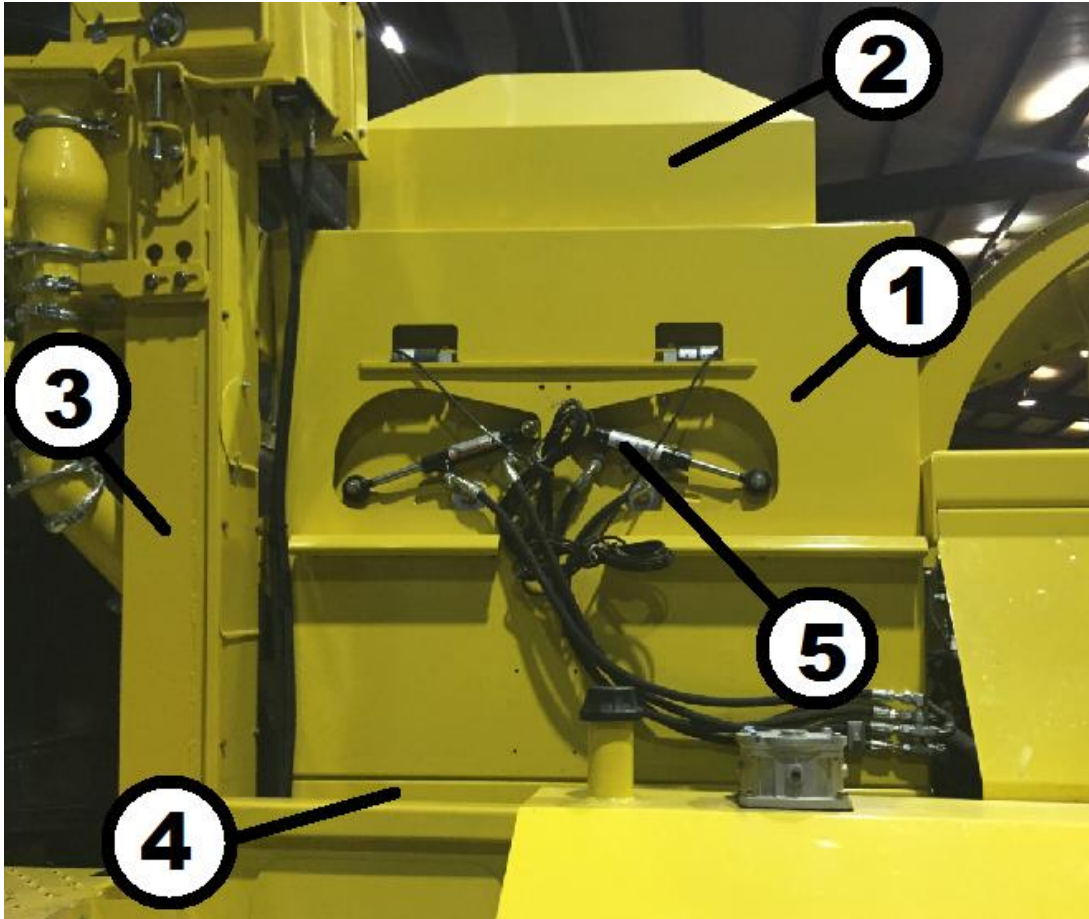


Plot Sampling

- 130S Plot Sampler is integrated to the 1250P



130S Upper Hopper



1 – Upper Hopper

2 – Hood

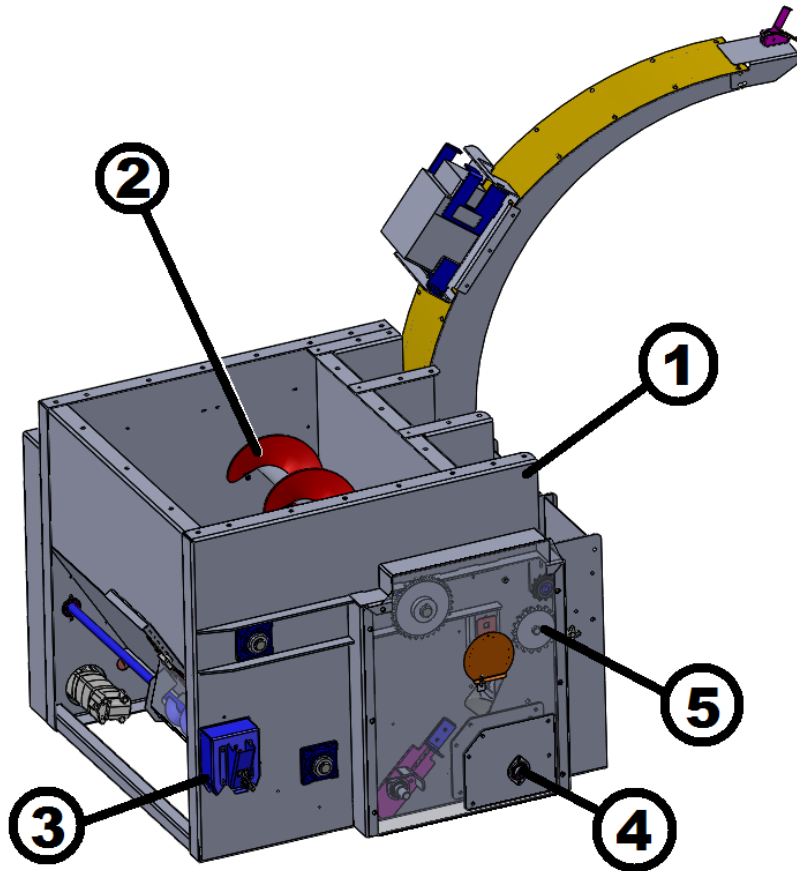
3 – Sample Elevator

4 – Lower Hopper

5 – Door Cylinders



130S Lower Hopper



1 – Auger Box

2 – Augers

3 – Sub-Sample Discharge

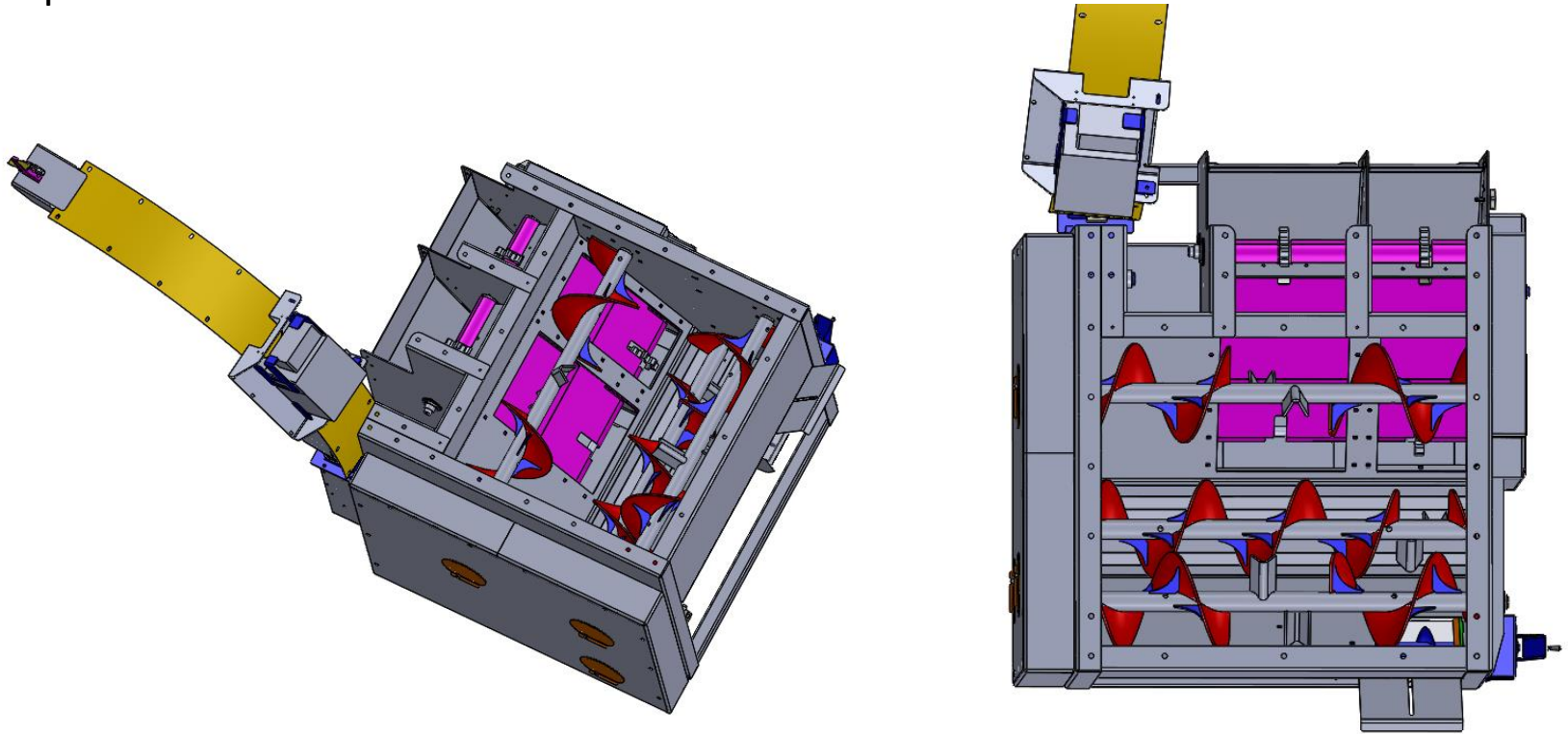
4 – Cross Auger Drive

5 – Conveyor Drive

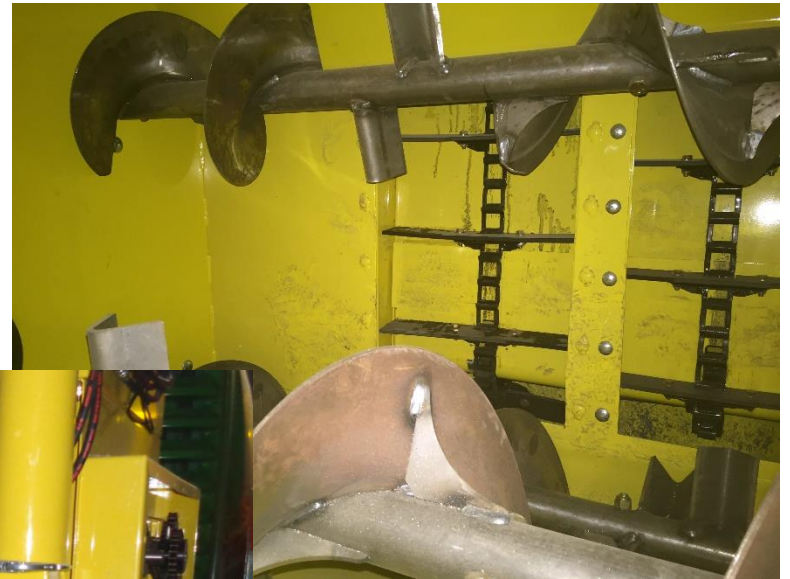
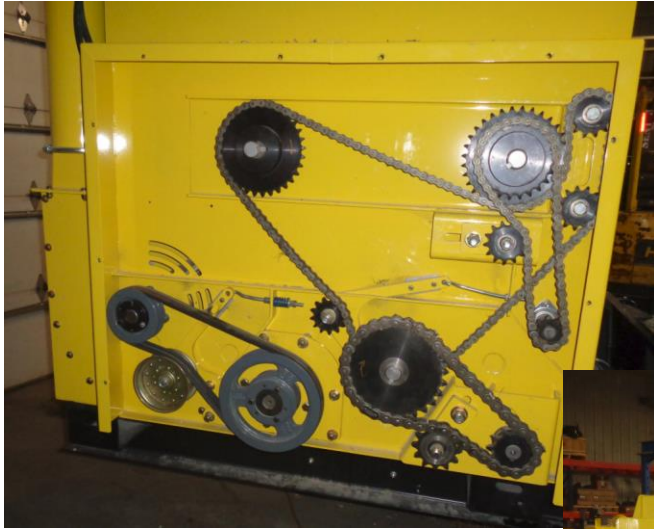


130S Lower Hopper

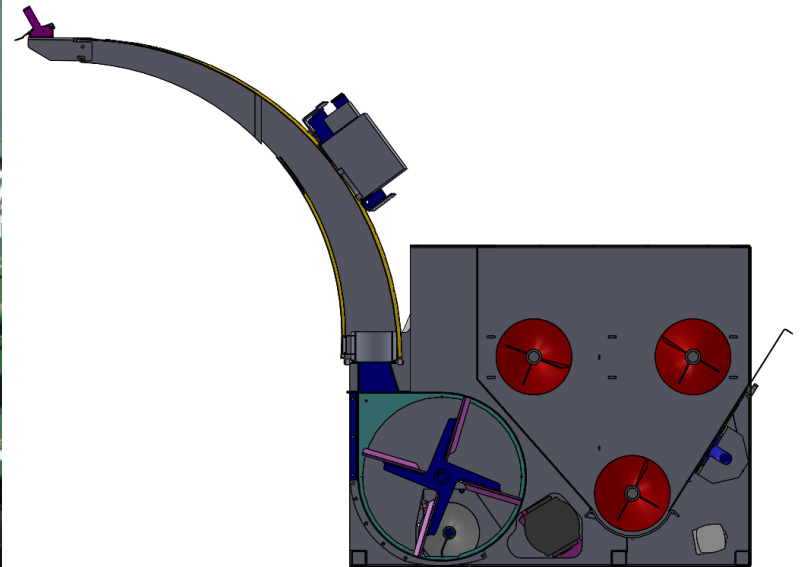
Top View



130S Lower Hopper



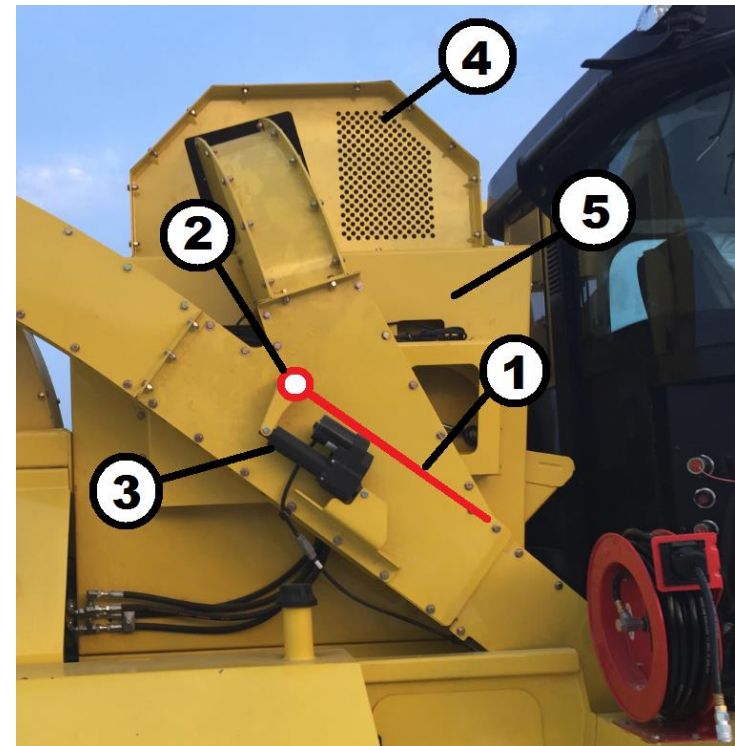
130S Discharge Blower



Bypass Chute

- Crop flow can bypass upper hopper for opening of fields

- 1 – Gate (Bypass)
- 2 – Pivot Pin
- 3 – Actuator
- 4 – Upper Hopper Hood
- 5 – Upper Hopper



Engine

- John Deere 6068 Tier IV
- 250 hp (current)
 - Future – 275 hp (when released)
- No DEF
 - Meaning: no extra fluid in field
- Built-in air compressor



Cooling System



Service

- Air compressor on board
- Cab tilts on pins to RH side at 45 deg to open frame for service



Drive Information

- Hydrostatic Drive
 - Eaton pumps
 - Auburn Gear Final Drives
 - HydraForce Manifolds
 - Wachendorf Controls
 - Eaton Controls
 - Funk Transmission (John Deere)
- Components Chosen on Best Quality Available
- Transmission Service available through Deere dealers



Dimensions

- Base unit (less header)
 - Under 8'6" wide for transport
 - 23' long
 - Weight – TBD (est at 15,000 lbs with head)
 - Height – less than 10' tall

- All designed to be able to be pulled on gooseneck behind 1-Ton pickup truck if so desired.



Plot Sampler

- RCI specializes in turn-key plot harvesters that include the following:
 - Full rebuild of Forage Harvester
 - Installation of Plot Sampler
 - Calibration of Sampler
 - Calibration of NIR Unit
 - Configuration for Field Operation
 - Annual support and inspection plans



Advantages of RCI Plot Samplers

- Dedicated hydraulic system including tank
 - Eliminates additional load on base machine hydraulics
 - More reliable
- Better inclusion of NIR data
- Simplicity of operation
- Better integration to base machine



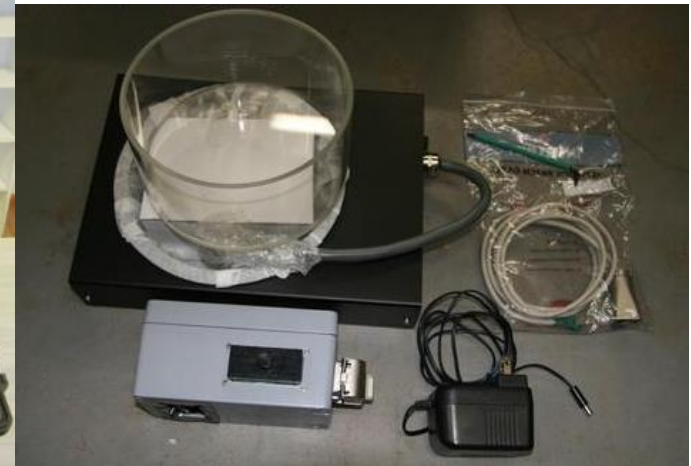
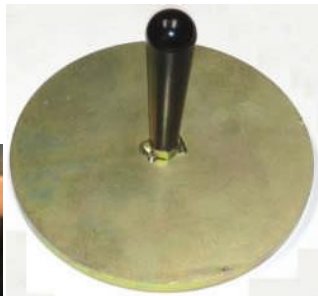
Plot Sampler Options

- NIR Technology
 - RCI can adapt the John Deere HarvestLab or Zeiss Corona / Corona Extreme NIR unit to any plot harvester as desired by customer.
 - RCI has proprietary software to communicate with the NIR
 - RCI also offers data services for custom curves, calibration of units, and other support



Plot Sampler Options

- Stationary / Laboratory NIR Bundle
 - Complete with RCI NIR Case, Software, Dish, Tamper
 - Allows NIR to be used for desktop applications throughout the year



PlotPro by RCI

- Control System for Research Plot Harvesters
 - Gathers data from different aspects and retains in one system
 - NIR Data
 - Weights
 - GPS (optional)
 - Simplifies electrical system
 - Import maps direct from PRISM
 - Combines the sampler control so only one tablet, one program is needed





Ready To Harvest

Harvest Plot ID: Sample:

Sample Plot ID: Sample:

Operator Name:

Station ID:

Machine ID:

Comments:



Sample Weight (lbs):	0
Plot Weight (lbs):	0
Sugar:	
Starch:	
NDF:	
Protein:	
Dry Matter:	

6,1 ↑	6,2 ↓	6,3 ↑
5,1 ↑	5,2 ↓	5,3 ↑
4,1 ↑	4,2 ↓	4,3 ↑
3,1 ↑	3,2 ↓	3,3 ↑
2,1 ↑	2,2 ↓	2,3 ↑
1,1 ↑ SN	1,2 →	1,3 ↑

Raw File Size: Name:

Summary File Size: Name:

Gather Data

Zero Scales

Manual Cleanout

NIR Reference

Manual NIR Read

```

4:01:08 AM : NIR reference read starting
4:01:08 AM : Waiting for NIR reference
4:01:38 AM : NIR reference read complete
4:01:38 AM : NIR reference requested
4:01:38 AM : NIR reference read starting
4:01:38 AM : Waiting for NIR reference
4:02:09 AM : NIR reference read complete
4:02:09 AM : Begin harvesting Plot 1,1 Sample 1 of 1. When finished, wait for scale to stabilize, then press Enter to Gather Data.
    
```



Aurora Handheld NIR

- Handheld measurement of forages and grains
 - Multiple constituents
 - Fast, accurate results
 - Simply the best NIR technology in your hand



Aurora Handheld NIR

RCI Aurora NIR Calibrations

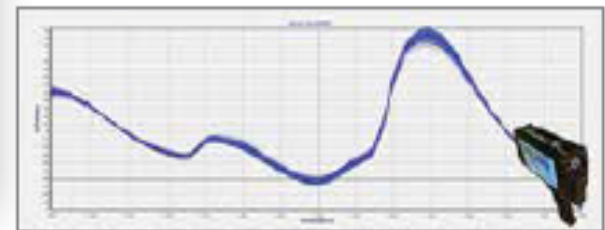
Products	Sample Preparation	DM	Ash	Protein	Fat	NDF	ADF	Starch
Corn silage (forage)	Fresh	✓	✓	✓	✓	✓	✓	✓
Corn silage	Ensiled	✓	✓	✓	✓	✓	✓	✓
High moisture corn (HMC)	Ensiled	✓	✓	✓	✓	✓	✓	✓
Haylage (forage)	Fresh	✓	✓	✓	✓	✓	✓	✓
Haylage	Ensiled	✓	✓	✓	✓	✓	✓	✓
TMR	Fresh	✓	✓	✓	✓	✓	✓	✓
Grass & whole crop cereal silage	Fresh	✓	✓	✓	✓	✓	✓	✓
Grass & whole crop cereal silage	Ensiled	✓	✓	✓	✓	✓	✓	✓
Grass Silage	Fresh	✓	✓	✓	✓	✓	✓	✓
Grass Silage	Ensiled	✓	✓	✓	✓	✓	✓	✓



Aurora Handheld NIR

Specifications

RCI AURORA NIR	
Sensor	InGaAs array with 256 pixels, range 950-1650nm
Scanning method	Reflectance, with automatic internal reference
Body	Aluminium, with sapphire window.
Dimensions	9.05 x 4.72 x 2.75 inches (23 x 12 x 7 cm)
Weight	Less than 4.4 lbs. (2 kg)
Volume	Less than 122 cubic inches (2 liters)
Batteries	Lithium-ion, capacity 30Wh, up to 2h continuous work Optional: capacity 110Wh, up to 8h continuous work
Computer	Incorporated in the body, touchscreen tablet with 7 inch screen
Connectivity	2xUSB, Ethernet, WLAN, Bluetooth
Calibrations	Preloaded or proprietary by costumers. Accepts calibration from UCAL, UNSCRAMBLER, GRAMS
Options	Wireless keyboard and mouse



Software

The Aurora NIR software integrates InProcess (manufacturer) making data exportation customizable and applicable on different platforms, such as xml, csv, Excel and pdf. In the Android mobile application, the report is customizable with notes and photographs of the sample.



Windows



Apple



Android



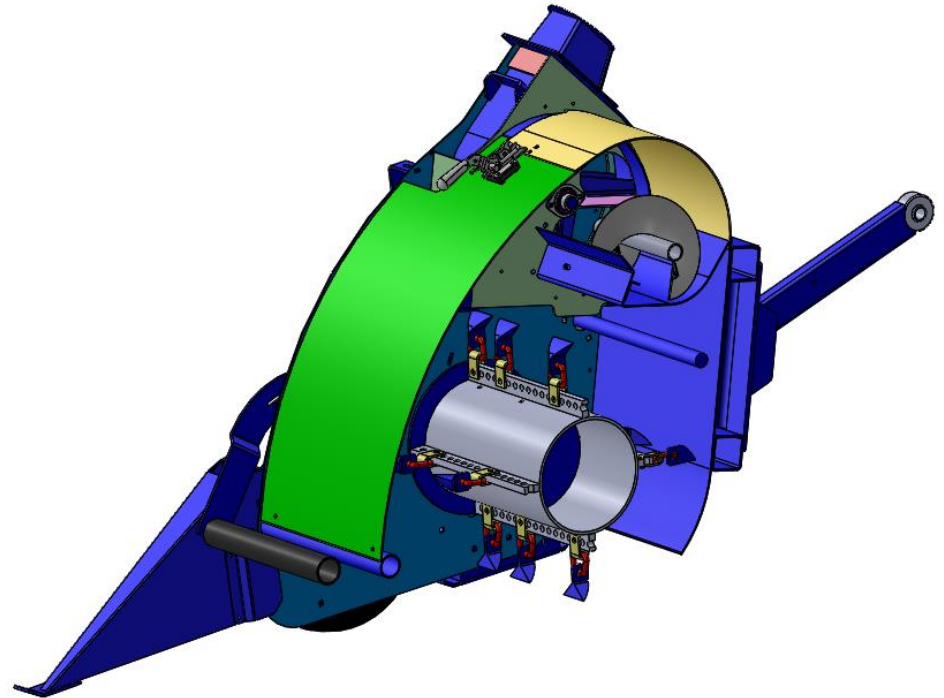
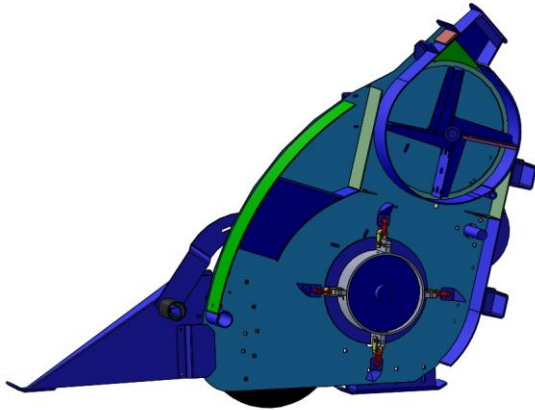
RCI Research Plot Harvesters

- RCI Specializes in Plot Harvesters for research plots for Hay, Forage, and Biomass
 - General Options
 - Width
 - 36” or 48”
 - 36A or 48A
 - Power Unit
 - Towable RCI Unit
 - Utility Tractor
 - John Deere Front Mower



Plot Harvesters - Header

- Header Function
 - Flail Cut
 - Cross Auger
 - Re-cutter Blower



Plot Harvesters - Samplers

- Sample Hopper Options
 - Bagging
 - Small Hopper (15 cu. Ft.)
 - Medium Hopper (25 cu. Ft)
 - Large Hopper (36 to 42 cu. Ft)
 - Can customize option for customer need



Plot Harvesters - Samplers

– Bagging



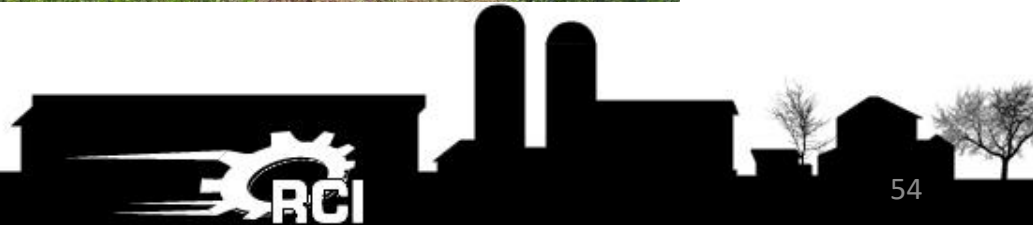
Plot Harvesters - Samplers

- Small Hopper (15 cu. Ft.)
 - Dumps to larger Hopper (42 cu. ft.)



Plot Harvesters - Samplers

– Medium Hopper (25 cu. Ft.)



Plot Harvesters - Samplers

- Larger Hopper (36 cu. Ft.)



Plot Harvesters

- Towable Plot Harvester



Plot Harvesters

- **Towable Plot Harvester**

The Towable Plot Harvester is used to harvest test plots of alfalfa, grass, switch grass, or other forages and/or biomass crops. The unit has an integrated trailer and suspension system such that it can be towed from site to site at highway speeds without trailers or specialized vehicles.



Plot Harvesters

- 156P Towable Plot Harvester (2015)

- Product Highlights

- Features Kohler 3-Cylinder Diesel engine rated at 56hp (turbocharged, Tier IV)
- Integrated trailer and suspension system for high speed transport without the use of a trailer
- Sliding hitch and hydraulic jack stand to allow the operator to easily connect to a towing vehicle
- Hydraulic drive system for simplicity of drives and service points
- Fits 48A and 36A Headers
- Options for bagging system or rear hopper, both with integrated scale system
- Steering wheel operation with zero-turn-radius for maneuvering in tight areas
- Torsion bar suspension to allow for comfortable operation on uneven terrain and during towing
- Machines can be custom painted to any machine color as an option.



Plot Harvesters

- Towable Plot Harvester



Plot Harvesters

- 48A Tractor Mount Plot Harvester

The 48A Tractor Mount Plot Harvester is used to harvest test plots of alfalfa, grass, switch grass, or other forages and/or biomass crops. The unit adapts to a small utility tractor along with a rear hopper assembly for cost-effective sample collection.



Plot Harvesters

- 36A/48A Front Mower Mounted Plot Harvester

The 36A Front Mower Mounted Plot Harvester is used to harvest test plots of alfalfa, grass, switch grass, or other forages and/or biomass crops. The unit adapts to John Deere 1585 Terrain Cut Front Mower power unit along with a rear hopper assembly for cost-effective sample collection.



1585 Terrain Cut with 36A/48A



1585 Terrain Cut with 36A/48A



Plot Harvester Support Plans

– Tiered Support Levels

- Platinum, Gold, Silver, Bronze, and NIR only
- Support for complete machines if needed
 - Various support levels including the following:
 - » Annual inspections
 - » Annual calibrations
 - » Spare machine backup
 - » Cloud data management
 - » Software updates
 - » Spare NIR service
 - » NIR repair service



For More Information:

Contact Us

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