Research Plot Harvesters
2018 Product Offering and Company Information
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
    - Design
    - Prototype Fabrication
    - Testing
    - Technical Publications
    - Assembly / Manufacturing
      - subcontract components
      - all assembly in-house
  - "Cradle to Grave"

- 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
• 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
1250P Self Propelled Forage Research Plot Harvester
All-In-One Unit for Forage Sampling
1250P – Forage Research Harvester
1250P – Remove Material from Field
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
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
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: 1.1 Sample: 1
Operator Name: J
Station ID: 7
Machine ID: 44
Comments:

Sample Plot ID: Sample:
Sample Weight (lbs): 0
Plot Weight (lbs): 0
Sugar: 4.1 ↑ 5.1 ↑ 6.1 ↑
Starch: 3.1 ↑ 3.2 ↓ 3.3 ↑
NDF: 2.1 ↑ 2.2 ↓ 2.3 ↑
Protein: 1.1 ↑ SN 1.2 → 1.3 ↑
Dry Matter:

Raw File Size: Name:
Summary File Size: Name:


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

<table>
<thead>
<tr>
<th>Products</th>
<th>Sample Preparation</th>
<th>DM</th>
<th>Ash</th>
<th>Protein</th>
<th>Fat</th>
<th>NDF</th>
<th>ADF</th>
<th>Starch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corn silage (forage)</td>
<td>Fresh</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Corn silage</td>
<td>Ensiled</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>High moisture corn (HMC)</td>
<td>Ensiled</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Haylage (forage)</td>
<td>Fresh</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Haylage</td>
<td>Ensiled</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>TMR</td>
<td>Fresh</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Grass &amp; whole crop cereal silage</td>
<td>Fresh</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Grass &amp; whole crop cereal silage</td>
<td>Ensiled</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Grass Silage</td>
<td>Fresh</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Grass Silage</td>
<td>Ensiled</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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</table>
**Aurora Handheld NIR**

### Specifications

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

### 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.
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

• 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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