The Precision Agriculture Opportunity (Precision Irrigation Focus)

Nebraska Governor’s Economic Summit, July 12, 2018
CropMetrics overview

- Precision Agriculture
  - CropMetrics: Precision Irrigation Technology
Nebraska is a natural seedbed for precision ag / precision farming technology that increases farm productivity.

The precision ag market to reach $7.8 billion by 2022, growing at ~15% per annum.

- **Ag Biotechnology**
  On-farm inputs for crop & animal ag including genetics, microbiome, breeding, animal health.

- **Farm Management Software, Sensing & IoT**
  Ag data capturing devices, decision support software, big data analytics.

- **Robotics, Mechanization & Equipment**
  On-farm machinery, automation, drone manufacturers, grow equipment.

- **Novel Farming Systems**
  Indoor farms, aquaculture, insect, algae & microbe production (excludes consumer home grow kits).

- **Agribusiness Marketplaces**
  Commodities trading platforms, online input procurement, equipment leasing used by farmers.

- **Bioenergy & Biomaterials**
  On-farm ag waste processing, biomaterials production, anaerobic digesters (excludes supply chain companies).

- **Farm-to-Consumer eGrocery**
  Online platforms for farmers to sell and deliver their produce direct to consumers.

- **Miscellaneous**
  Land management tech, financial services for farmers, etc.
CropMetrics overview

- Precision Agriculture

  - **CropMetrics: Precision Irrigation Technology**
Nebraska’s has been a leader in high-productivity irrigation
CropMetrics at a glance

- **Description**: Premier provider of advanced agronomic-based irrigation solutions (precision irrigation management)
- **Headquarters**: North Bend, NE (near Omaha, NE)
- **Founded**: 2009
- **Employees**: 15 employees (independent dealer network of ~300 partners)
- **Product**: Irrigation optimization-as-a-service
- **Regional Sales**
  - Central Plains
  - Eastern/South/Southwest
  - Pacific Northwest
  - International
The challenge: Water stress imperils productive agricultural economy and the environment

Many agricultural areas are experiencing significant water stress

Solutions are needed

- Agriculture is responsible for over 70% of the global withdrawals of water
- At the same time, efficient use of water is necessary to feed the world
- The world needs greater crop per drop
- Farmers need greater profit per drop

Areas in red will reach critical water stress levels by 2050 and in many cases are already there, due to extensive agriculture
CropMetrics was founded by a grower focused on unlocking profitability.

Unoptimized irrigation = unrealized potential

Emerging technology available for variable rate seeding; variable fertilizer application

However, irrigation delivery often remains “one rate for the field”

Optimized irrigation = unlocked profitability

- CropMetrics offered first commercially available software solution for variable-rate irrigation for center pivots (VRI)
- CropMetrics VRI varies water application in accordance with varying soil productivity levels
CropMetrics has built the most powerful package of irrigation solutions in the industry (Virtual Optimizer)

Virtual Optimizer helps growers:

- **Irrigate precisely**: Ability to deliver different rates of irrigation for every part of a field.

- **Update and anticipate irrigation to maximize yield**: Continually updates prescriptions based upon:
  - Weather
  - Soil conditions
  - Crop requirements

CropMetrics optimizes models based on continuity on historical acres across many crops and growing conditions.
(1) **CropMetrics optimizes irrigation amount** based on actual plant needs.

- **Total water uptake curve**
- **Root depth**
- **Water uptake profile**

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**Crop Development**

- **VT**
- **V18**
- **R1**
- **R4**
- **R5**
- **R6**

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**CropMetrics system**

- Tracks plant growth and optimizes irrigation for current phase and future phases of plant growth.

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**CropMetrics**

- Yield Optimization Technology
(2) CropMetrics also optimizes spatially through variable rate irrigation corresponding to different yield zones.
Realizing the Precision Irrigation Opportunity: What matters?

**Technology matters,**

Insights through technology are critical to a profitable enterprise.

**Adoption matters more,**

CropMetrics always thinks "grower first", not technology first.

**Trust matters most!**

The CropMetrics + advisor + producer partnership is an ongoing relationship.
CropMetrics customers substantially increase profits through “smart” agronomy-grounded irrigation

Typical CropMetrics corn grower

- Typical 15-20% increase in yields under optimized irrigation
- Typical **water savings** of 20 – 50% compared to unoptimized fields

| Optimization through “smart” irrigation goes straight to the bottom line |
|-----------------------------|----------------|
| Yield Increase | Total profit margin increase |
| Water / Energy Savings | $30-70/acre |

Garden City, KS grower (Dwane R.)
$56/acre impact in 2017
The CropMetrics system provides industry-leading irrigation analytics software as-a-service (SaaS) delivered along-side a trusted advisor.

**Sensors and data streams**

- Soil moisture sensors
- Weather stations
- Weather forecasts
- On-field rain buckets
- Other advanced sensors and data streams

**Engineered connectivity with data streams**

**Integrated suite of analytics**

- Crop growth models
- Irrigation Schedule
- Equipment status
- Rainfall
- Variable-rate prescription
- Irrigation Records
- Weather forecasts
- Moisture sensor

**Local, trusted advisor**
The **CropMetrics Virtual Optimizer Pro** is built to scale

- **VO-Pro offering**
  - **Irrigation and crop optimization**
    - Ability to link with any sensor (moisture sensor, rain gauge, etc.)
  - **Ability to use algorithms, without additional sensors**
  - **Fully-autonomous irrigation** (patent pending)
    - Updates irrigation program automatically based upon proprietary algorithm

- **Service platform**
  - Now a complete software-as-a-service (SaaS) model, with cloud-based delivery
  - Major update to infrastructure complete – ready to scale
  - Open API links for integration opportunity with other industry products which do not have irrigation solutions

CropMetrics has with multiple years of irrigator data which help calibrate Virtual Optimizer models

Source: Google.com, HighQuest analysis
CropMetrics solves many problems faced by farmers who irrigate

<table>
<thead>
<tr>
<th>Problems faced by growers</th>
<th>Solution to growers</th>
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</thead>
<tbody>
<tr>
<td>…do not <strong>know when and how much to irrigate</strong> in changing conditions</td>
<td><strong>Confidence to irrigate sufficiently and profitably</strong></td>
</tr>
<tr>
<td>… often sold isolated sensors and stranded data – <strong>cumbersome and costly</strong></td>
<td><strong>A single, integrated and simplified platform</strong></td>
</tr>
<tr>
<td>… receive <strong>very limited support</strong> for ag technology in the field</td>
<td><strong>Local, trusted advisor support</strong></td>
</tr>
<tr>
<td>… a tendency towards “wait and see”, <strong>with very limited adoption</strong> of farming technology</td>
<td><strong>Accelerated adoption – currently 90%+ renewal rates</strong></td>
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CropMetrics leverages a large set of partner relationships

<table>
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<tr>
<th>Probe companies</th>
<th>Irrigation equipment OEMS</th>
<th>Digital agronomy and farm management</th>
<th>Ag Retailers</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Sensoterra</td>
<td>• Valley</td>
<td>Several in dialogue</td>
<td>3 large national retailers</td>
<td>Drip irrigation</td>
</tr>
<tr>
<td>• Sentek</td>
<td>• Zimmatic</td>
<td></td>
<td>+ 4 other regional retailers</td>
<td>Several in discussion</td>
</tr>
<tr>
<td>• AquaCheck</td>
<td>• Reinke</td>
<td></td>
<td>+ 4 others in dialogue at national-level</td>
<td>Farm Management</td>
</tr>
<tr>
<td>• WaterMark</td>
<td>• TNL</td>
<td></td>
<td></td>
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Many companies are attracted to CropMetrics’ brand-agnostic strategy
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CropMetrics is led by a seasoned team with both farming and industry experience

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<th>Pre-2018 Team</th>
<th>2018 Addition to Management Team</th>
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</table>
| **Nick Emanuel**  
Founder; CTO | **Lee Addams**  
Chief Executive Officer |
|   |   |
| Founded CropMetrics; led pioneering technical teams at John Deere for remote sensing and analytics applications; active manager of 2,000 acre family farm;  
M.Sc. Univ of Nebraska (Agronomy, Remote Sensing) | Former SVP Strategy at Valmont Industries (irrigation industry, Omaha, NE); co-founder Good Earth Irrigation; strategy advisor to technology and Fortune 500 companies (McKinsey & Company- leader in water practice; HighQuest Partners – managing director);  
Ph.D Stanford University (Hydrology / Environmental Sciences);  
B.Sc Brigham Young University (Applied Physics) |

| Kylen Hunt  
Head of Sales | Nick Lammers  
Head of Agronomic Services |
|---------------|---------------------------|
| Development of CropMetrics PDS network; Transformational Training Programs;  
certified John Maxwell Trainer; former irrigation specialist roles | 30 years in the seed business; led Monsanto AquaView project;  
M.Sc University of Nebraska (Agronomy, Agriculture Economic, Education) |
CropMetrics 2018-2019 growth plan

1. Continue build out of the powerful VO-Pro software platform
   - The most powerful set of irrigation software solutions available today

2. Enable connectivity for the “field ecosystem”
   - Existing partnerships with next-generation networking technology providers
   - Automated “Smart Pivot”, continually updating based on changing conditions
   - Powerful mobile interfaces
   - B2B solutions to validate efficient irrigation
   - Automated controls to feedback to software

3. Roll out innovative service models
   - Early successes with a corporate account (NAPI) and ag retailer partner (Helena)
   - Dedicated staff to work directly with the largest corporate growers

4. Continue investment into our industry-leading distributor network
   - 300+ consultant / distributors already active throughout the U.S.
   - Continued investment into PDS network expansion
   - Introduce automation into the sales process

Innovative solutions for the grower

Today

Growth plan

Reaching the grower

1
2
3
4

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- Continue build out of the powerful VO-Pro software platform
CropMetrics is taking on investment in 2018 to accelerate growth

Current and planned fundraising

- **Planned**: $6M Series B round in Q3 2018

  - Offering selective investors early access to Series B through convertible note (term sheet available)

  - Existing commitment of $300K already secured from existing Nebraska-based CM investors

Primary goals of Series B financing

- Further CropMetrics SaaS model, integrating new tools and upgrading mobile platforms

- Push further into new hardware connectivity, together with partners

- Aggressively develop innovative go-to-market models (retailers, corporate farms)

- Strengthen and expand precision data specialist network

- Expand internationally

  + Selectively add management talent and sales/development staff to meet the above goals