2017 Emerging and Evolving Technology Session

National Alliance of Independent Crop Consultants

PRESENTATIONS

Hyatt Regency at the Arch St. Louis, Missouri
2017
Emerging and Evolving Technology Session

National Alliance of Independent Crop Consultants

Spensa Technologies

Hyatt Regency at the Arch
St. Louis, Missouri
Protecting Non-GMO Crops with Revolutionary Insect Traps

Abstract

Stephen Roswarski, Spensa Technologies
Purdue Research Park: 1281 Win Hentschel Blvd, West Lafayette, IN, 47906
EMERGING Technology

Consumer demand for non-GMO crops only continues to increase. In light of these demands, along with the recent reports that GMO traits have not been effective for some insect pests, new technologies are being introduced to the market to help prevent pest problems. One such emerging technology is the Z-Trap Network, which helps to identify, monitor, and treat pest problems while also enabling near real-time pest management capabilities for non-GMO crops. In this presentation, Johnny Park will explore how growers and retailers alike can implement solutions like the Z-Trap Network to manage insect pests more effectively and proactively.
Protecting Non-GMO Crops with Revolutionary Insect Traps
Increasing pest resistance to GMO traits

Demand for Non-GMO

Importance of in-season management
Collect structured and quantitative pest data

Send high impact visual reports all within an easy-to-use mobile interface
Major row crop pests are migratory

Z-Trap Network will be able to monitor and forecast pest migrations
2017
Emerging and Evolving Technology Session
National Alliance of Independent Crop Consultants
Dow AgroSciences
Hyatt Regency at the Arch
St. Louis, Missouri
Resicore® Herbicide with trusted residual activity deep into the growing season

Abstract

Bobby Haygood, Dow AgroSciences, Indianapolis, IN

Evolving Technology

Resicore® Herbicide is a new corn herbicide concept that uniquelyformulates three proven active ingredients never seen before in a single offering. This exclusive formulation contains three separate modes of action and does not include atrazine or glyphosate. Resicore herbicide is expected to provide control of a broad spectrum of grass and broadleaf weeds, including many herbicide-resistant weeds. Resicore herbicide is intended to exceed industry standards with residual activity for weed control deep into the growing season.

*TM Trademark of The Dow Chemical Company (“Dow”) or an affiliated company of Dow. Resicore is not registered for sale or use in all states. Contact your state pesticide regulatory agency to determine if a product is registered for sale or use in your state. Always read and follow label directions.

Dow AgroSciences

Hyatt Regency at the Arch
St. Louis, Missouri
2017
Emerging and Evolving Technology Session
National Alliance of Independent Crop Consultants

Excellence Through Stewardship
Hyatt Regency at the Arch
St. Louis, Missouri
Abstract

Eric Van Ausdal
Excellence Through Stewardship 1201 Maryland Ave SW, Washington DC 20009
EVOLVING Technology

Excellence Through Stewardship is a global not-for-profit organization that promotes the universal adoption of best practices for the full lifecycle of agricultural biotechnology products. We assist member organizations in the implementation (or improvement) of stewardship programs and quality management systems and then facilitate independent 3rd-party audits to verify them. The agricultural biotechnology industry’s changing nature demands constantly evolving best technology management practices. ETS is at the forefront of that evolution, and through a commitment to continuous improvement, develops new tools and resources to meet the evolving needs of the industry. ETS is an excellent means to demonstrate your organization’s commitment to stewardship that the industry demands.
Excellence Through Stewardship (ETS) is a global industry-coordinated organization that promotes the universal adoption of stewardship programs and quality management systems for the full life cycle of biotechnology-derived plant products.

The agricultural biotechnology industry is highly committed to the responsible management of its products and continues to invest in stewardship practices and quality management systems. Excellence in stewardship is the key to maintaining the freedom to operate across the value chain.
Stewardship is a life cycle approach to product management. It is the responsible way to manage biotechnology-derived plant products from their discovery and development, to their use.

Plant Product Life Cycle

Support Regulatory Compliance
Maintain Product Integrity
Assist in Preventing Trade Disruptions
Maximize Technology Benefits
Share Best Practices
Promote Stakeholder Engagement
Drive Continuous Improvement
Excellence Through Stewardship

At ETS, our members:

1. Commit to **principles and best management practices** for the responsible global management (handling, governance, oversight, etc.) of biotechnology derived plant products.

2. Can use **high quality technical resources** to help implement related stewardship and quality management systems (QMS).

3. Undergo a **Global Stewardship Audit Process** involving an independent third-party audits to verify that members have developed and implemented appropriate stewardship programs and quality management systems.

Guidance and Auditable Areas:
- General Product Stewardship
- Product Launch Stewardship
- Maintaining Plant Product Integrity
- Incident Response Management
- Resistance Management
- Product Discontinuation

Potential Auditable Activities:
- Headquarters
- Laboratory
- Containment Facility (i.e., greenhouse / growth chambers)
- Plant and Seed Multiplication / Production
- Confined Field Trial
- Commercial Plant and Seed Distribution
Membership

Membership is available to organizations engaged in discovering, developing, handling or commercializing biotechnology plant products. Current membership includes more than 40 organizations from around the world from small one location research groups to large multi-nationals to contract researchers working with all sorts of crops. Membership includes access to all our technical resources, internal support and unique networking opportunities. Our generous yearly dues structure reflects our knowledge of the different sizes and abilities of our members. Designed to Accommodate any Size, Scope or Type of Operation
Stop by our booth to learn more!

ExcellenceThroughStewardship.org
2017
Emerging and Evolving Technology Session

National Alliance of Independent Crop Consultants

Charah Agricultural Products
Hyatt Regency at the Arch
St. Louis, Missouri
SUL4R-PLUS® granular calcium sulfate engineered to improve crop yield

Abstract

Daron Bell
Charah Agricultural Products, 12601 Plantside Drive, Louisville, KY 40299
EMERGING Technology

SUL4R-PLUS® fertilizer is a granular calcium sulfate engineered to improve crop yield. While synthetic gypsum previously has been used in agriculture, Charah Agricultural Products has a patent-pending process to create granules making sulfur application easier and meeting the farming industry’s increasing demand for sulfur. Unlike any other sulfur fertilizer available, SUL4R-PLUS’s granular form makes sulfur and calcium application efficient and immediately available to the plants, enhances soil quality, boosts yield, and improves the health of crops. It can be applied and blended with other dry inputs, spreads evenly for superior coverage, and contains calcium with boron and zinc options available.

Charah Agricultural Products

Hyatt Regency at the Arch
St. Louis, Missouri
It's all about the PLUS.
SUL4R-PLUS granular calcium sulfate fertilizers provide revolutionary performance and formulation:

- **SUL4R-PLUS®**
  - Ca 21%, S 17%

- **SUL4R-PLUS® ZINC**
  - Zn 3%, Ca 18%. S 16%

- **SUL4R-PLUS® BORON**
  - B 1.5%, Ca 18%, S 15%
• Patent-pending process creates uniform granules
• Every granule delivers every nutrient so efficient nutrition to the plant
• Consistent shape and density for minimal segregation
• Works with other inputs for easy blending and applications
• Spreads evenly 90 – 120 feet
• 7 to 10 times greater granules per square foot
• Highly soluble for immediate impact
• Retains density and shape in heat and humidity
• Dust-free handling
• Phosphorous-free
• Spread pattern tested and endorsed by New Leader
• Leads market in quality and consistency
Visit
SUL4R-PLUS.com
or call
844-822-8385
for more information
2017
Emerging and Evolving Technology Session
National Alliance of Independent Crop Consultants

EAG Laboratories
Hyatt Regency at the Arch
St. Louis, Missouri
Evolving Strategies for Isolating Edible Crop Fractions

Abstract

Del A. Koch, Presenter
EAG Laboratories – Columbia; 7200 E. ABC Lane, Columbia MO 65202
EVOLVING Technology

For magnitude of the residue (MOR) studies performed according to US EPA’s crop field trials guidance, there is increasing interest in determining the residues of pesticides in the crop edible portion only (for at least a selected number of samples generated by field trials), which creates special challenges for some raw agricultural commodities. Melon pulp (only) samples, in particular, will be presented as a case study. The factors to be considered when deciding whether to have the melons peeled at the field cooperator site, versus peeling frozen whole melons following receipt at the analytical laboratory, will be considered and discussed.
Evolving Strategies for Isolating Edible Crop Fractions

Del A. Koch, Presenter
EAG Laboratories – Columbia
7200 E. ABC Lane, Columbia MO 65202

NAICC 2017 Annual Meeting
January 17-21, 2017
Hyatt Regency at the Arch
St. Louis, MO
Raw Agricultural Commodity (RAC), as Defined, Does Not Always = Portion To Be Analyzed

- FDA’s PAM I defines various “whole” RACs (1), citing US EPA regulations that compliance with a pesticide tolerance is based the whole commodity (2), but…
  - Allows for exceptions based upon specific tolerances, giving the example of an organophosphate insecticide on melons specifying “the edible portion with rind removed” (3), even though most other tolerances specify the whole commodity (4).
  - For stone fruits (e.g., peaches, cherries, etc.) and olives, pits are to be removed to produce the RAC.
  - However, citrus fruit and bananas (like melons) are not peeled when generating the RAC.
- Exceptions to the strict RAC definitions are now commonly being employed in order to address risk assessment concerns.

(2) 40 CFR 180.1 (j)
(3) 40 CFR 180.157
Additional Considerations Beyond the USA

- JMPR (Joint FAO/WHO Meeting on Pesticide Residues) makes the distinction between data for dietary intake assessment and data for MRL (i.e., tolerance) evaluation, and recommends that bananas (for example) be separated into peel and pulp. OECD 509 calls for separation of citrus, but not bananas.
  - Peel and pulp residue level differences can be significant for foliar-applied products, while systemic uptake into the crop typically results in a more even distribution which may not warrant the extra expense of separate analyses.
  - While analysis of a selected number of separated peel and pulp samples may be used (along with the measured weights of each component) to calculate a distribution factor that can be applied to all study samples, some uncertainties will result (especially if total residue levels are low).
- A further means of generating more realistic residue levels for dietary exposure assessments is to analyze selected samples as “Prepared for Consumption,” which may specify rinsing or washing of the commodity prior to analysis.
Generation of the Portions To Be Analyzed in the Field versus in the Laboratory

• Challenges to laboratory generation (from whole commodity)
  • Some commodities are difficult to handle in the frozen state – melons can be peeled while frozen, but this requires a sharp implement, and some practice.
  • Entire commodity must be shipped (for melons, peeling could be combined with quartering and shipping just ½ of the sample volume otherwise.
  • For stone fruits such as cherries, removal of the pits from the frozen commodity requires cutting the individual fruits in two and removing the pit manually, while keeping everything on (dry) ice. Pitting may be accomplished much more quickly when the fruits are fresh by utilization of a pit remover.
Generation of the Portions To Be Analyzed in the Field versus in the Laboratory (Cont’d)

• Challenges to generation of analysis portion in the field (from whole commodity)
  • Logistics (such as manpower limitations) may preclude the capability for the samples to be peeled, pitted, etc. in a timely manner.
  • Because the possibility of enhanced enzymatic degradation (of the target analytes) are amplified once the commodity is pitted (or peeled, in the case of melons), immediate transfer to a freezer or placing on dry ice dry after pitting/peeling is another possible logistical constraint.

• Commodities such as almonds which typically require shelling, to be followed by separation into hulls (a livestock feed commodity) and nutmeats are typically handled efficiently in a field setting.

• Please stop by the EAG Booth in the Exhibit Hall for further discussions!
2017
Emerging and Evolving Technology Session

Bayer CropScience
Hyatt Regency at the Arch
St. Louis, Missouri
Glytol LibertyLink TwinLink Plus® Cotton – Double Herbicide Tolerance and Triple Insect Protection

Abstract

Walt Mullins
Bayer
EMERGING Technology

Bayer will launch the Glytol LibertyLink TwinLink Plus cotton technology in 2017 in Fibermax and/or Stoneville varieties. This new trait technology stacks glyphosate and Liberty® tolerance with three insect Bt genes for triple insect protection. This trait technology combines the most robust commercial tolerance to both glyphosate and Liberty as well as the highest level of Lepidopteran insect protection (particularly against bollworms and fall armyworms) that is on the market today. With three different sites of action for insect control (Cry1Ab, Cry2Ae and Vip3A Bt genes) working simultaneously, this technology will significantly improve the level, consistency and sustainability of Lepidopteran insect control over the current standards.

Bayer CropScience

Hyatt Regency at the Arch
St. Louis, Missouri
Walt Mullins
NAICC Annual Meeting - 2017
EMERGING and EVOLVING TECHNOLOGIES III
• TwinLink® Plus expresses three Bt genes:
  - Cry1Ab, Cry2Ae, and Vip3a
• Improved protection against bollworm and fall armyworm
• Three modes of action for better IRM
• Both Cry genes contain the “BAR” gene marker which gives TwinLink full commercial tolerance to Liberty® herbicide equal to the current LL trait in GlyTol®/LibertyLink®
  – Also provides full tolerance to glyphosate
TwinLink Plus Study (2013)

Dr. Jeremy Greene – Clemson Univ.

% Boll Damage

- GlyTol/LL (FM9250)
- GlyTol/LL/B2 (ST4946)
- TwinLink (FM966)
- TwinLink (11A)
- TwinLink + Vip3a (FM966)
- TwinLink + Vip3a (11A)
- TwinLink + Vip3a (22A)
- TwinLink (22A)
- TwinLink + Vip3a (11A)
- TwinLink (FM933)
- TwinLink + Vip3a (FM933)

90% Boll Damage

P < 0.0001

Indices:
- a
- bc
- cde
- fg
- bcd
% Reduction in Damaged Squares and Bolls as compared with non-Bt Cotton

(Dr. Scott Stewart, Univ. of Tennessee, 2015)

N = 336
• Improved bollworm control
• Excellent fall armyworm control
• Improved consistency of worm control
• Three Bt genes for better IRM
• Best Liberty® tolerance on the market
• Available in both Stoneville® and Fibermax® varieties
2017
Emerging and Evolving Technology Session
National Alliance of Independent Crop Consultants

Farm Dog Technologies
Hyatt Regency at the Arch
St. Louis, Missouri
Creating the system of record for pest and disease management

Abstract

Liron Brish
Farm Dog Technologies, Arnon 6/9, Tel Aviv, Israel 63455
EMERGING Technology

With almost $60 billion spent on pesticides yet continued 20% to 40% crop loss due to pest and disease, our methods of managing these threats is failing. The lack of a standardized and comprehensive system of record of findings and treatments impedes any substantial improvements. Farm Dog is the first such system of record which improves grower-agronomist communication and provides field-specific and regional-level data analysis. Full offline functionality and hand-in-hand development with leading scouts has resulted in an easy-to-use tool currently utilized on 100,000+ acres and $150 million worth of crops protected.

Farm Dog Technologies

Hyatt Regency at the Arch
St. Louis, Missouri
FARM DOG
Precision agriculture for pest and disease management

BOOTH 606

January 19, 2017
www.farmdog.ag
What can you do with Farm Dog?

- Easily document scout data and observations from any phone or tablet, off-line and on-line
- Communicate your findings in real-time with your growers, scout teams, and all other stakeholders
- Manage and track your workforce and time spent in the field
- Analyze your findings
59-F-4N, Rice

SEP 8  9:22 AM

GROWTH STAGE

Heading 50%  Heading 60%  Heading 70%

BROWN LEAF SPOT

RICE BLAST

STEM BORER

LOG VISIT

Scout Report

59-F-4N, Rice

SEP 8  9:22 AM

FARM DOG

BOOTH 606

BOOTH 606

www.farmdog.ag
Workforce management

- Control who sees what fields
- Manage observations lists and data in real-time
- GPS and time tracking customization

BOOTH 606

www.farmdog.ag
Analysis – treatment efficacy

Lannate 100 / Telstar 100 FAIL
Dorsan 150 / Titan 100 SUCCESS

BOOTH 606
2017
Emerging and Evolving Technology Session

National Alliance of Independent Crop Consultants

Winfield United
Hyatt Regency at the Arch
St. Louis, Missouri
StrikeLock®: A novel HSOC adjuvant with drift and deposition properties

Abstract

Jo Gillilan, Ph.D.
Winfield United, Shoreview, MN
EMERGING Technology

StrikeLock® is a novel MSO-HSOC adjuvant that optimizes performance of hydrophobic herbicides with the additional benefit of drift control and droplet deposition. MSO-HSOC adjuvants are classified as containing 25-50% w/w surfactant with a minimum of 50% w/w oil. MSO-HSOC’s have shown excellent compatibility with glyphosate while providing equivalent performance to other oils. US field trials supported that StrikeLock® had equal or better efficacy to other MSO-HSOC products, while maintaining glyphosate compatibility. Drift performance testing revealed a decrease in fine droplet production comparable to other commercial drift reduction agents. StrikeLock® will be available in the marketplace in 2017.
Introduction of StrikeLock™: A Novel Adjuvant System

NAICC 2017 Evolving and Emerging Technologies
St. Louis, MO
Jan 19, 2017

Jo A. Gillilan*, Ryan J. Edwards, Greg K. Dahl, Eric P. Spandl, Joe V. Gednalske, Raymond L. Pigati, David A. Van Dam
StrikeLock™

- Newest member of the InterLock® family of adjuvants
- MSO based HSOC with added drift/deposition aid and performance increasing surfactant
- Specifically designed for use with oil loving herbicides or herbicides that are more efficacious when an MSO is added
- Optimizes deposition and limits drift- more droplets land on the target
- Use Rate: 0.5% v/v or 6.4-8 fl oz/A

Sharpen 2 fl oz (21 DAT)  
Sharpen 2 fl oz + StrikeLock 12 fl oz (21 DAT)
DRIFT MITIGATION SHARPEN®

Average % Fines < 150µm: AIXR11006

Average % Fines < 150µm: XR11006
Giant Ragweed

3 studies

Percent Control (%)

4 DAA
8 DAA
15 DAA

SHARP (0.5 fl oz) + N-PAK (2.5% V/V)
SHARP (0.5 fl oz) + STLK (8 fl oz)
SHARP (0.5 fl oz) + STLK (12 fl oz)
SHARP (0.5 fl oz) + DES (12 fl oz)
SHARP (0.5 fl oz) + NOBLE (16 fl oz)

Roundup Powermax® (22 fl oz) added to all treatments
2017 Emerging and Evolving Technology Session

National Alliance of Independent Crop Consultants

FieldX Inc.

Hyatt Regency at the Arch
St. Louis, Missouri
Abstract

Tim Welle
FieldX Inc., PO Box 91176, Raleigh, NC 27675

Evolving Technology

FieldX Inc. is launching a web-app as part of the FieldX suite of software. This web-app complements the FieldX apps currently available on the iPad, iPhone, and PC. It provides the ability for consultants to view and manage their data from any internet connected device.

The initial release will include the following set of features:

- Manage picklists, including chemicals, varieties, weeds, insects, and diseases.
- Create and update templates for journal entries.
- Add new growers, farms, and fields.
- Create and edit field borders by tracing over online maps.

This initial release will be available in January 2017.
FieldX® Software Platform

NAICC Emerging Technology Session
January 19, 2017

Tim Welle
Director of Business Development
FieldX Inc.
FieldX Overview

• Cloud based software platform
• Includes native apps for iPad, iPhone, and Windows
• Provides consultants and their growers the ability to collect, manage, and share field data.
New for 2017 - FieldX Dashboard

• A web-app that is part of the FieldX Platform
• Complements the current native FieldX apps
• Provides the ability to manage data from any internet-connected device, including smartphones and tablets
• Available in the first quarter of 2017
More Information

Stop by booth #213 for a demo
2017 Emerging and Evolving Technology Session

National Alliance of Independent Crop Consultants

Helena Chemical Company

Hyatt Regency at the Arch
St. Louis, Missouri
Three Improved Herbicide Formulations from Helena Chemical Company

Abstract

Michael C. Cox, Ph.D.
Helena Products Group, Helena Chemical Company, Memphis, TN 38120

Evolving Technology

Herbicide resistance and off-target movement warrant the use of multiple tank-mix partners and improved product formulations. Helena Chemical Company recently launched three proprietary herbicides co-formulated with adjuvant systems that improve field and tank-mixing performance. Sinister is the free acid form of fomesafen used for pre- and postemergence weed control in soybeans, and contains an adjuvant package that enhances glyphosate performance as a tank-mixing partner. Antares is an enhanced liquid formulation of sulfentrazone used for preemergence weed control in soybean, sunflower, and other crops. Opti-DGA is an improved formulation of the diglycolamine salt of dicamba, labeled for spring preplant, summer fallow, and fall postharvest burndown of nuisance weeds commonly found to be resistant to glyphosate and PPO herbicides. All three herbicides have shown superior efficacy and compatibility with other herbicides and fertilizers in field and lab experiments.
• 2.87 lb fomesafen acid; PPO Inhibitor; PRE & POST herbicide
• Similar chemistry –
  ✓ Flexstar (Na salt fomesafen)
  ✓ Reflex (Na salt fomesafen)
• Contains “in-can” adjuvant system, protected by HCC patent
• Enhanced leaf surface coverage, reduced evaporation
• Formulation designed to enhance glyphosate performance
• Improved tank-mixing compatibility with glyphosate and paraquat

**GROUP 14 HERBICIDE**

• 4 lb DGA dicamba salt (CLARITY) based system; auxin mimic, POST herbicide
• Contains “in-can” adjuvant (OPTIMA), protected by HCC patent
• Contains a foam control system; low odor
• Preplant burndown & post-harvest weed control; **not for in-crop use**
• Similar chemistry –
  ✓ Clarity (DGA salt dicamba)
  ✓ Banvel (DMA salt dicamba)

**OPTI-DGA™ HERBICIDE**

• 4 lb sulfentrazone; PPO Inhibitor; PRE & early POST herbicide
• Similar chemistry –
  ✓ Aim (carfentrazone)
  ✓ Sharpen (saflufenacil)
  ✓ Valor (flumioxazin)
• Group 14 herbicides inhibit an enzyme involved in the synthesis of a precursor of chlorophyll (PROTOX inhibitor)
• Plant death results from destruction of cell membranes due to the formation of free radicals
• Improved soil wetting and percolation
• Enhanced glyphosate compatibility

**ANTARES™ HERBICIDE**

• 4 lb sulcotrione; PPO Inhibitor; PRE & early POST herbicide
• Similar chemistry –
  ✓ Aim (carfentrazone)
  ✓ Sharpen (saflufenacil)
  ✓ Valor (flumioxazin)
• Group 14 herbicides inhibit an enzyme involved in the synthesis of a precursor of chlorophyll (PROTOX inhibitor)
• Plant death results from destruction of cell membranes due to the formation of free radicals
• Improved soil wetting and percolation
• Enhanced glyphosate compatibility

**GROUP 14 HERBICIDE**

• Improved tank-mixing compatibility with glyphosate and paraquat

**GROUP 4 HERBICIDE**
Cold Storage Stability

Cold Storage - 10 Degrees F Overnight

Compatibility w/ K salt Glyphosate

Na salt Fomesafen Sinister Na salt Fomesafen Sinister

1 hr Overnight
<table>
<thead>
<tr>
<th>Product</th>
<th>Active Ingredient Source</th>
<th>“Co-formulated” Adjuvant System</th>
<th>Rain Fastness Potential</th>
<th>Spreading And Wetting Performance</th>
<th>Glyphosate Absorption Agent</th>
<th>Water Hardness Compatibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH Optimized Diglycolamine salts</td>
<td>Yes Co-formulated with wetting, spreading, and compatibility agents US Patent Protected</td>
<td>Two - Four Hours</td>
<td>Excellent Performance</td>
<td>Yes</td>
<td>Good Contains Compatibility Agents that prevent problems due to formation of insoluble salts</td>
<td></td>
</tr>
<tr>
<td>Dicamba - DGA</td>
<td>Diglycolamine Salts</td>
<td>No adjuvant capabilities</td>
<td>Four Hours Minimum</td>
<td>Poor No co-formulated adjuvant</td>
<td>No</td>
<td>Potential compatibility problems in hard water due to amine salts</td>
</tr>
<tr>
<td>Dicamba – DMA</td>
<td>Dimethylamine Salts</td>
<td>No adjuvant capabilities</td>
<td>Four Hours Minimum</td>
<td>Poor No co-formulated adjuvant</td>
<td>No</td>
<td>Potential compatibility problems in hard water due to amine salts</td>
</tr>
</tbody>
</table>
Tank-mixing Compatibility and Performance

BLANKET + 4 other products in 10 GPA tank-mix

+ 4 other products in 10 GPA tank-mix

Spray mix Infiltration through hydrophobic sand Overnight
Postemergent Activity – 24 HAT

Surface tension and contact angle for ANTARES and generic sulfentrazone are essentially identical. ANTARES, however, shows superior penetration through wax paper.
2017
Emerging and Evolving Technology Session
National Alliance of Independent Crop Consultants
Sentera
Hyatt Regency at the Arch
St. Louis, Missouri
Live NDVI Data in the Field

Abstract

Greg Emerick
Sentera, 6636 Cedar Ave South, Minneapolis, MN 55423
EMERGING Technology

Sentera’s new LiveNDVI™ technology is not only an industry first, but the only solution available that allows users to live-stream UAV-captured TrueNDVI™ (normalized difference vegetation index) imagery while standing at the field edge, without an internet connection.

There is no faster way for consultants and growers to make informed decisions than to leverage live-streamed NDVI data. LiveNDVI technology translates near-infrared (NIR) data into understandable TrueNDVI imagery, on the sensor, while the UAV is in-flight.

Sentera’s LiveNDVI is the only solution, in the world, that offers real-time NDVI streaming.

LiveNDVI revolutionizes how decisions are made, recommendations are formulated, and relationships are developed.

Sentera
Hyatt Regency at the Arch
St. Louis, Missouri
TRUE NDVI TODAY

1. NIR Data captured in flight
2. NDVI calculated on the ground after landing UAV
3. View static NDVI maps & data

NDVI = \frac{(NIR - R)}{(NIR + R)}
2017 IS A GAME CHANGING YEAR

1. NIR Data captured in flight
   - NDVI data calculated ON Double 4K sensor
2. Process NDVI Data ON Sensor In Real Time!
   - 30 frames per second
2017
Emerging and Evolving Technology Session

National Alliance of Independent Crop Consultants

ICL Specialty Fertilizers
Hyatt Regency at the Arch
St. Louis, Missouri
ICL Specialty Fertilizers – bringing innovative solutions to farmers

Abstract

Olena Castello, Ph.D.
ICLSF North America, 6581 South County Rd 250E, Greencastle, IN

ICL Specialty Fertilizers offers a range of specialty products that includes innovative technologies such as controlled release fertilizers and a leading range of solubles for the specialty agricultural market. ICL Specialty Fertilizers develops state-of-the-art specialty products. Our focus on innovation has driven us to develop the world’s leading Controlled Release and Water Soluble Fertilizers use in Agriculture, Horticulture and Turf markets. The first market includes all growers of nursery stock and perennials in open fields and in pots and containers. The second encompasses all forms of specialty agriculture ranging from fruit to vegetables and arable crops. The third comprises all facilities that use turf, ranging from golf courses and sports fields to sod production and municipal landscaping.
ICL Specialty Fertilizers develops state-of-the-art specialty products. Our focus on innovation has driven us to develop the world’s leading Controlled Release and Water Soluble Fertilizers use in Agriculture, Horticulture and Turf!

Olena Castello, Ph.D.
Market Development & Technical Service Lead, U.S.
What are Controlled Release Fertilizers?

Benefits of including CRF in crop nutrition programs

1. Increases nutrient use efficiency (N,P, K...+ micros)
2. Reduction of Nutrient losses to the environment
3. Prevention of nutrient fixation in the soil
4. Maintaining or increasing crop yield at reduced nutrient application rates
5. Eliminating multiple fertilizer applications
6. Environmentally friendly
**CONTROLLED RELEASE FERTILIZERS**
Agroblen Total | Agrocote (E-MAX, Poly-S, Resin)

**GRANULAR FERTILIZERS**
Polysulphate (OMRI certified)

**FOLIAR FEED**
Agroleaf Booster | Agroleaf Starter

**SPECIALTIES**
H2Flo

**DRIP FEED**
Agrolution | Agrolution pH Low
PeKacid | NovaMAP | Peak
**Short crop cycles (10-12 wks):**
- Onion / Celery / Vegetables

**Middle long crop cycles (13-17 wks):**
- Strawberries
- Cotton / Tobacco
- Potato / Tomato
- Maize – Sweet & Pop Corn

**Long crop cycles (18+ wks):**
- Raspberries / Blueberries
- Cranberries
- Sugar Cane
- Citrus
- Tree Nuts – Almonds / Pecans
- Fruit tree
1. **Efficiency**
   - Improve nutrition delivery and efficiency

2. **Economy**
   - Reduce fertilizer, labor and resource costs
   - Generate more return on investment per season

3. **Ecology**
   - Minimize nutrient loss due to leaching, volatilization and runoff
2017
Emerging and Evolving Technology Session
National Alliance of Independent Crop Consultants
IRAC
Hyatt Regency at the Arch
St. Louis, Missouri
Update on Bt Resistance in Corn Rootworm and Final EPA Stewardship Measures

Abstract

Sean Whipple, ISK Biosciences Corporation, representing IRAC-USA

The 2009 discovery of corn rootworm (CRW) resistance in Bt corn prompted EPA to initiate an assessment of this problem resulting in the 2014 release of a Draft Stewardship Framework to enhance current CRW resistance management and preserve Bt CRW technology. After considering comments from CRW experts, growers and agricultural groups, EPA released a refined CRW Resistance Management Framework for Bt corn in April 2016. Implementation and reporting requirements of this program are the obligation of CRW product registrants. This will require the cooperation of growers and consultants to incorporate effective management strategies and for detection of potential resistant populations. The program is built around educational outreach and requirements for Companies to investigate reports of unexpected damage and test to confirm resistance. In cases were resistance is confirmed Companies are require to implement mitigation strategies.
B.t. Corn Grower Education and Stewardship

- Agricultural Biotechnology Stewardship Technical Committee: Formed in 2000 to support and promote the stewardship and acceptance of plant-incorporated protectants (PIPs) and crops of modern biotechnology including proactive stewardship and development of industry practices and standards.

Members: B.t. corn registrants or others with related responsibilities for insect resistance management
- Bayer CropScience
- Dow AgroSciences
- DuPont Pioneer
- Monsanto
- Syngenta
ABSTC Members Coordinate the Compliance Assurance Program (CAP)

The Compliance Assurance Program (CAP):

• Industry-coordinated compliance assurance activities for IRM associated with B.t. trait products in corn that require a structured refuge

• In addition to educational and promotional examples cited earlier, the CAP is comprised of two grower-focused components:
  • Anonymous Grower Survey
  • On-Farm Assessment for Refuge Compliance

• The grower survey provides information regarding grower adherence to refuge requirements and grower awareness of refuge requirements

• The On-Farm Assessments are conducted by 3rd parties and are intended to identify non-compliant growers and help bring them back into compliance
Key New IPM Stewardship Requirements for CRW

- Encourage a multi-year crop rotation strategy
  - Soybean/other non-host crop; pyramided trait products; alternative CRW modes of action; non-\textit{B.t.} corn

- Guidance on soil-applied insecticides (SAIs)
  - SAIs not recommended with CRW \textit{B.t.} traits for control of CRW except under limited circumstances
  - SAIs should only be used with non-CRW \textit{B.t.} corn
  - SAIs should not be necessary for CRW control with pyramided CRW trait \textit{B.t.} corn products

- Consult with extension, crop consultants, or other local experts
Crop Rotation is Key to Successful CRW Management

• Rotation to a non-host crop (e.g., soybean) generally should be a component of long-term cropping systems

• Crop rotation is the primary option for managing CRW in fields with greater than expected CRW feeding damage

• Crop rotation mitigates any potential for actual *B.t.* resistance
New Terms of CRW Registrations
Maintain Flexibility for Growers

• Recommendations for crop planning, seed purchasing, and CRW management

• Strong emphasis on crop rotation as best management practice (BMP)

• Strong emphasis on reducing unnecessary use of soil-applied insecticides (SAI)

• Continue rapid transition to pyramided-trait products over time

• Continue emphasis on refuge compliance for resistance management

• Stewardship of B.t. Corn is Critical for the Long-Term Durability of These Technologies
2017
Emerging and Evolving Technology Session

National Alliance of Independent Crop Consultants

Thank You!
The End!

Hyatt Regency at the Arch
St. Louis, Missouri