National Alliance of Independent Crop Consultants
2009 Annual Meeting
Preparing For Our Future
Memphis, Tennessee

PRESENTATIONS
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## Emerging Technology Session

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Deltapine’s Class of 2009

- DP 0912 B2RF (07W505B2R2)
- DP 0920 B2R2 (07W901B2R2)
- DP 0924 B2RF (07W902B2R2)
- DP 0935 B2RF (MCS 0701 B2RF)
- DP 0949 B2RF (07W514B2R2)

New DP numbering system - 2009 releases and beyond

- Year or release -
  - DP 09xx – Class of ’09 (released in 2009)
  - DP 10xx – Class of 2010, etc.
- Maturity designation – last 2 digits
  - 10 → 19 = Early maturity
  - 20 → 29 = Early/mid
  - 30 → 39 = Mid maturity
  - 40 → 49 = Mid-Full maturity
  - 50 → 59 = Full Maturity
- E.g. DP 0924 B2RF and DP 0935 B2RF
**Summary**

- **Class of 2009** –
  - 5 new B2RF commercial products
  - Complete portfolio across maturities, regions, and crop management approaches
- **Class of 2010** –
  - 15 - 20 B2RF candidates
  - Excellent yield and fiber quality
- **Class of 2011** –
  - 400+ B2RF candidates
  - Excellent yield and fiber quality

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*Relative Difference in DD60s to reach 100% open*

*based on D&PL final plant map data 2007 and 2008*
Effective, Efficient, Environmentally Smart Nitrogen

*The first and only polymer-coated, controlled-release nitrogen for broad-acre agricultural crops.*

Alan Blaylock, Ph.D., Senior Agronomist, Agrium U.S. Inc, Denver, CO

What is ESN?

- ESN is a patented polymer coatings applied to soluble nitrogen fertilizer.
- **ESN releases nitrogen by diffusion through the polymer coating rather than by breakdown of the coating**
- ESN’s release rate is determined by soil temperature and moisture.
- Nitrogen is supplied to the crop closer to the time the crop needs it, reducing potential for loss to the environment.
How Does ESN Work?

Urea completely dissolved

Small solid urea core

Empty ESN capsules

Urea still solid

N moves out through the polymer

Temperature Controlled Diffusion

Water moves in through the coating

What Are the Benefits of ESN?

• **Improved agronomics**
  – Improved nitrogen-use efficiency
  – Reduced number of fertilizer applications
  – Increases seed/seedling safety
  – Consistent nutrient supply means controlled vegetative growth and more grain or fruit production

• **Reduced environmental risk**
  – Less nitrogen exposed to loss
  – Reduced nitrate leaching and runoff
  – Reduced greenhouse gas emissions from denitrification and ammonia volatilization

ESN Increases No-Till Corn Yields

S. Illinois, 2007

Average of two locations and three N rates

Source: Dr. S. Ebelhar, Univ of Illinois
Product Introduction

More Flexibility Better Biology

- 2008 Optimum® GAT® corn and soybeans and DuPont herbicide programs were introduced at 25 universities across the country.

- Optimum® GAT® herbicides from DuPont:
  - Performed better than standard herbicide treatments on most weed species in corn and soybeans in preemergence and/or postemergence programs.
  - Will help control resistant weeds and are based on resistant management principals.
  - A grower will have a choice of weed control programs in Optimum® GAT® crops.

The Optimum® GAT® Trait Allows for Creation of Unique Product Concepts that Address Regional Weed Control Needs
DuPont Herbicides Designed for the Optimum® GAT® Trait

DuPont™ Instigate™, Trigate™ and Diligent™ herbicides

- Powerful Answers
  - Manage tough weeds
  - Enable multiple modes of action for "built-in" resistance management
  - Provide contact plus residual

DuPont™ Traverse™ and Freestyle™ herbicides

- Flexible Solutions
  - Expand application timing
  - Maximize crop rotation flexibility
  - Deliver uncompromised crop safety

DuPont Market Segment Examples

**Segment** | **Fall / Spring Burndown** | **PRE fb** | **POST** | **Sensitive Crop Rotation Areas**
--- | --- | --- | --- | ---
**Crop** | **Traverse™ + Freestyle™ + glyphosate** | **Instigate™ + Freestyle™ + glyphosate** | **Trigate™ + glyphosate** | **Affinity® Broadspec + glyphosate**
Com | | | | 
Soybeans | | | | 

fb: followed by
Ultrafast High Performance Liquid Chromatography for the Analysis of Pesticide Residues

UHPLC at a Glance

- UHPLC: An emerging technology in agricultural analytical chemistry
- Small column particles (<2 microns) and high pressure pumps (5,000-12,000 psi)
- Allows for use of higher mobile phase flow rates and shorter columns without loss of chromatographic efficiency
- Many commercial models available
- EPL employs 3 Waters Acquity UPLC® systems with triple-quad MS and UV detectors
Advantages of UHPLC

- Speed!: Run times 5-10x faster than HPLC
- Improved resolution (peak separation) and sensitivity (signal to noise)

**UHPLC VS. HPLC**

HPLC run time =
15 min.
C18: 150 x 2.1 mm x 5 µm

UHPLC run time =
2 min.
C18: 50 x 2.1 mm x 1.7 µm

Benefits to Our Customers

- Improved data quality: ↑Sensitivity, ↑Resolution, ↑Accuracy, ↑Precision
- Shorter study turnaround times
- Greater flexibility
- Increased lab capacity
- Competitive analytical costs
PowerFlex™ is a new post emergence grass and broadleaf systemic herbicide developed by Dow AgroSciences for use in spring and winter wheat.

- Grass spectrum includes: wild oat, foxtail, downy brome, cheat, Italian ryegrass (including Hoelon and glyphosate resistant biotypes)
- Broadleaf spectrum includes: mustards, pigweed, lambsquarter, bedstraw, chickweed, henbit, etc.

- Active ingredient: pyroxsulam
- Formulation: Dry granule (7.5% WG)
- Use Rate: 3.5 oz / A
- Mode of action: ALS (group 2)
Application

- **Timing:** Post emergence (fall or spring)
  - Apply to actively growing crop and weed targets
  - Crop (3-leaf to tiller)
  - Grass weeds 2-leaf to 2-tiller; Broadleaf weeds 2 inches or less

- **Adjuvants:**
  - NIS (0.25% – 0.5%) or COC (1% – 1.25%)

- **Application with liquid nitrogen:**
  - PowerFlex may be applied in a spray solution containing N, but it should not be composed of more than 50% liquid N (not to exceed 30 lbs of actual N per acre).
  - A NIS at a maximum of 0.25% v/v is recommended.

**Control of Italian Ryegrass**

<table>
<thead>
<tr>
<th>% Visual Control</th>
<th>PowerFlex</th>
<th>Olympus</th>
<th>Flex</th>
<th>Osprey</th>
<th>G&amp;B</th>
<th>Axial</th>
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<tbody>
<tr>
<td>Fall Application</td>
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<tr>
<td>PowerFlex Olympus</td>
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<tr>
<td>Fall Application</td>
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<td></td>
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<tr>
<td>Spring Application</td>
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</table>

**Control of Downy Brome**

<table>
<thead>
<tr>
<th>% Visual Control</th>
<th>PowerFlex</th>
<th>Olympus</th>
<th>Flex</th>
<th>Osprey</th>
<th>Maverick</th>
<th>Finesse</th>
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<tr>
<td>Fall Application</td>
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<tr>
<td>PowerFlex Olympus</td>
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<tr>
<td>Fall Application</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Spring Application</td>
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</tbody>
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**PowerFlex also offers:**

- Excellent crop tolerance
- Short crop rotation intervals
  - 5 months to soybeans
  - 9 months to corn, sorghum and many other crops
- Short grazing restriction (7 days)

**Resistance management recommendations include:**

- Apply PowerFlex only once per season
- Use full labeled rates
- Rotate herbicide mode of action
- Use non-ALS & non-ACCase products in rotational crops
New value and opportunity for farmers: REFUGE ACRES

Combination of multiple modes of action for insect control creates the potential to reduce refuge acres

The south can now enjoy a 20% refuge and stage has been set for future refuge reduction as future products like SmartStax™ are developed

Product Concept:
YieldGard VT Triple PRO™

Increase On-Farm Yield

Dual Effective Dose Provides Enhanced Durability

Combination of multiple modes of action for insect control creates the potential to reduce refuge acres

The south can now enjoy a 20% refuge and stage has been set for future refuge reduction as future products like SmartStax™ are developed

Today: On-Farm Average 145bu/A

Tomorrow: On-Farm Average 148bu/A

*Assume a 10 bu/A advantage of YieldGard VT Triple PRO (150 bu/A) over the non-insect traited refuge (140 bu/A)
On average, 20% of farmers every year are docked for aflatoxin contamination. Of the farmers docked, they are docked on 40% of their grain. The average dockage is $0.25/bushel.

Poor Grain Quality Can Cost $37.50 / Acre!

- On average, 20% of farmers every year are docked for aflatoxin contamination
- Of the farmers docked, they are docked on 40% of their grain
- The average dockage is $0.25/bushel

$0.25/bu x 150 bu/a average yield = $37.50/a

Marketing Horizons (April '08, 226 Farmers) DPL Region

SmartStax™ Raises Whole Farm Yield

FEATURE:
Eight Trait Technology

ADVANTAGE:
Best Spectrum & Reduced Refuge

BENEFIT:
Greater Whole Farm Yield

*Commercialization dependent on many factors, including successful conclusion of regulatory processes
Fumigants are an important class of compounds used for a variety of applications including: pre-harvest crop protection (soil fumigation); post-harvest crop protection (protection from pest damage to stored grains); removal of pests in harvested commodities (coffee, spices, etc.); and protection from structural pests (home/office and building materials).

Soil fumigants are effective against soil born diseases, fungi, nematodes, weeds, etc. Over the past decades several soil fumigants have been used worldwide, including the most popular, methyl bromide. Currently a number of fumigants have undergone reregistration eligibility review and from these reviews a number of label and use pattern changes have been proposed.
**Typical Soil Fumigants**

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Chemical Structure</th>
<th>Molecular Formula</th>
<th>Molecular Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>DMDS</td>
<td><img src="image" alt="DMDS Structure" /></td>
<td>C₂S₂H₆</td>
<td>94.2</td>
</tr>
<tr>
<td>Chloropicrin</td>
<td><img src="image" alt="Chloropicrin Structure" /></td>
<td>CCl₃NO₂</td>
<td>114.4</td>
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<tr>
<td>1,3-Dichloropropene</td>
<td><img src="image" alt="1,3-Dichloropropene Structure" /></td>
<td>C₂H₄Cl₂</td>
<td>111.0</td>
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<tr>
<td>Telone</td>
<td><img src="image" alt="Telone Structure" /></td>
<td>C₂H₄Cl₂</td>
<td>111.0</td>
</tr>
<tr>
<td>Metam Sodium</td>
<td><img src="image" alt="Metam Sodium Structure" /></td>
<td>C₂H₄NaS₂</td>
<td>129.2</td>
</tr>
<tr>
<td>MeI</td>
<td><img src="image" alt="MeI Structure" /></td>
<td>CH₃I</td>
<td>142.0</td>
</tr>
<tr>
<td>MeBr</td>
<td><img src="image" alt="MeBr Structure" /></td>
<td>CH₃Br</td>
<td>142.0</td>
</tr>
</tbody>
</table>

**Efficacy Trial**

- Raised Bed Shank Application/Single Rig
- Raised Bed Shank Application/Three Rigs
- Drip Fumigation (Chemigation)

**Design for On-Field & Off-Field FLUX Monitoring**

- Comparison ISCST3 and Integrated Flux (Normalized to 1X through 6X units)
- Total Flux integrated horizontal flux
- ISCST3 ambient based flux

Note: The Square Box represents the Treated Field. Each Large Circle represents a specific concentric circle at a specific distance from the Treated Field. The Small Circles represent individual Air Monitoring Stations.
Optimum® AcreMax™ 1
Insect Protection

First single-bag solution for corn rootworm:
• Result of over 5 years of continued research
• Refuge reduction from 20% down to 2 to 5%
• Refuge in the bag - no more separate CRW refuge
• Based on the strength and unique characteristics of the CRW trait in the Herculex® family of products

Optimum® AcreMax™ 1 insect protection is not yet available for sale or use. Products, benefits and concepts described above are subject to full regulatory approval. Herculex® and the HX logo are registered trademarks of Dow AgroSciences LLC.

Each bag contains:
• Up to 98% of a Pioneer® brand hybrid with Herculex® XTRA insect protection.
• No less than 2% of a Pioneer hybrid with the Herculex® I trait.
• Compatible herbicide tolerance in all seeds.
• Insecticidal seed treatment on all seeds.

2 to 5% Refuge
• Range accounts for production process.
• 5% upper limit is conservative for CRW.

2 to 5% CRW Refuge In The Bag

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The Right CRW Trait for the Job

The Optimum® AcreMax™ 1 system is possible only because of the unique characteristics of the CRW trait.

- CRW resistance to this trait is rare and hasn’t been discovered.
- Strong anti-feedant mechanism protects roots while minimizing CRW adaptation to the trait.
- Rather than a quick, lethal response, the insecticidal proteins make roots an unacceptable host.

A second “stacked” rootworm trait is not necessary for effective crop protection and extended durability.

Optimum® AcreMax™ 1 Corn Borer Refuge Options

For maximum corn rootworm protection

CRW Refuge:

The right size: 2 to 5% since CRW resistance is rare
The right place: In-the-bag CRW trait compatibility
At the right time: Maximum random mating

CRW Protection:

Expect CRW protection similar to Herculex® RW or Herculex XTRA with refuge blended at 2 to 5%.

Optimum® AcreMax™ 1 insect protection is not yet available for sale or use. Products, benefits and concepts described above are subject to full regulatory approval.
Capture LFR: New Formulation Technology

- Capture is specially formulated for growers who use liquid pop-up fertilizers.
- Special Liquid Fertilizer Ready™ formulation keeps Capture LFR mixed in solution for a consistent, uniform application across the field with no mechanical agitation required.
- In one pass seed is planted, fertilized and protected with Capture LFR sprayed directly over the seed, in furrow with fertilizer.

The Benefits of LFR

- At-plant, a “Zone of Protection” that controls cutworms, wireworms, grubs, and other seed and seedling pests.
- Starter fertilizer allows maximum nutrient efficiency by placing the product close to the root system.
- This allows a quick start and healthier plants to maximize yields and profit.
Mixes Easily with Liquid Fertilizer or Water

After 30 minutes with no agitation, Capture LFR (left) is still in suspension. The other liquid insecticide shows noticeable separation.

A Healthier Crop
Untreated vs Fertilizer + LFR

Wireworms Control - Potatoes

<table>
<thead>
<tr>
<th>Product</th>
<th>Rate/Method</th>
<th>% Control</th>
<th>Yield CWT/Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capture LFR</td>
<td>In-Furrow</td>
<td>90%</td>
<td>287</td>
</tr>
<tr>
<td>Mocap</td>
<td>0.5 gal/A</td>
<td>70%</td>
<td>225</td>
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<tr>
<td>Untreated</td>
<td></td>
<td>8%</td>
<td>242</td>
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</table>

Multi-Insect Complex at Planting

- Wireworms (1 per bait station)
- Grubs (2 per cubic feet)
- Seedcorn Maggots
- Cutworms (3% cutting)
- Armyworms (25% plants damaged)

Expanded Crop Opportunities

- Tuberous & Corm vegetables (including potatoes)
- Cucurbits (including melons, cucumbers, squash)
- Brassicas (including cabbage, broccoli)
- Dried beans & peas
- Corn (including sweet, pop, field, seed)
- Peppers
- Tobacco
- Tomato
- Succulent Peas and beans
Prosaro: A New Cereal Fungicide
Innovation from Bayer Crop Science

EPA Registration in 2008:

PROSARO is the new global standard for preventive treatment of scab (Fusarium head blight) with outstanding foliar disease control.

Best control of scab
Best suppression of DON levels
Best protection through the flowering period

PROSARO provides world-class preventative/curative foliar disease control.

Rust spp.  Septoria GUm Blotch
Powdery Mildew  Septoria Leaf Spot
Tan Spot  Net Blotch
Spot Blotch  Scald

Target Crops: Wheat and Barley

Exceeds the established performance of FOLICUR!
Scab Control

- Prosaro offers the best available activity on scab which contributes to increased grain quality and yield
- Best tool for reducing deoxynivalenol (DON) levels
- By managing scab and reducing DON levels, crop yield and quality potential are protected
- Preserving crop quality and marketability are the key factors in meeting contract specifications, avoiding discounts and achieving the greatest possible profit

General Application Parameters

- Apply at early flowering on wheat (Feekes 10.51) or full head emergence on barley for optimal activity on scab and to halt leaf disease development
- May be applied at flag leaf emergence if leaf diseases are present and later scab infections are not anticipated
- Use rates of 6.5 to 8.2 fl oz/a (421 SC formulation)
- Rainfast within 2 hours of application
- Ground or aerial application permitted

Prosaro Wheat Yields

- In 98 side-by-side wheat trials (spring, winter and durum), a single application of Prosaro at Feekes 10.51 (15% bloom), provided an average yield increase of 6.95 bu/acre as compared to the untreated control and a 2.53 bu/acre increase as compared to Folicur®.
- Wheat yield response to one Prosaro application at Feekes 10.51 in 149 university and field demo trials conducted from 2001-2007. Prosaro gave an average yield increase of 6.91 bu/acre as compared to the untreated and provided a positive yield increase in 94.6% of all trials.