NAICC

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

PRESENTATIONS

NAICC

TABLE OF CONTENTS

Title page	i
Table of Contents	ii

Emerging Technology Session

Deltapine's Class of 2009 Cotton Varieties	1, 2
ESN® (Environmentally Smart Nitrogen)	3, 4
Optimum® GAT® Herbicide Tolerance Trait	5, 6
Use of UHPLC for the Analysis of Pesticide Residues	7, 8
POWERFLEX™ Herbicide for Use in Winter Wheat	9, 10
SmartStax™ Offers Greater Whole Farm Yield Potential	11, 12
Novel Approaches for Evaluation of Exposure to Fumigants	13, 14
Optimum® AcreMax™ 1 Insect Protection	15, 16
Capture LFR	17, 18
PROSARO: A New Cereal Fungicide Innovation	19, 20

Monsanto Company

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

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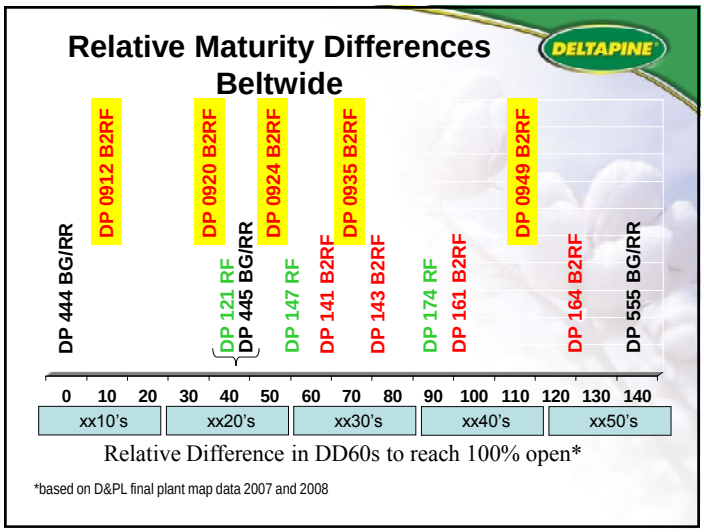
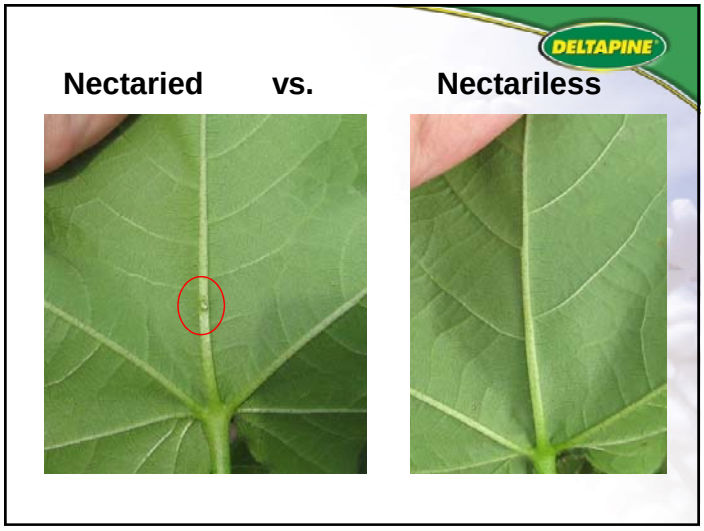
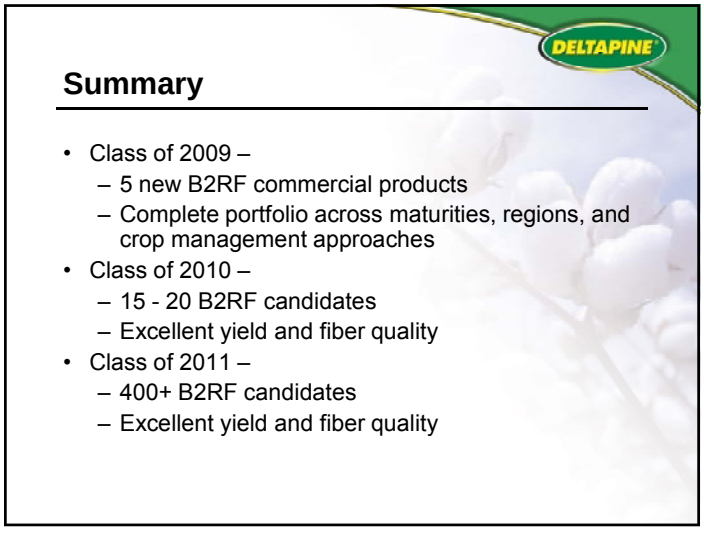
Monsanto Company, *Continued*







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Agrium Advanced Technology

ESN SmartNitrogen

Agrium

A *smarter* source of nitrogen. A *smarter* way to grow.

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.**

Agrium

A *smarter* source of nitrogen. A *smarter* way to grow.

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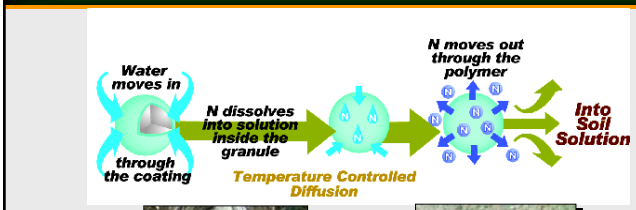
Agrium Advanced Technology, *Continued*

How Does ESN Work?



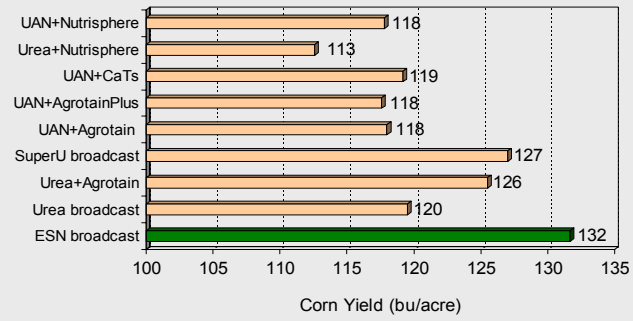
Agrium — A *smarter* source of nitrogen. A *smarter* way to grow.

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

Agrium — A *smarter* source of nitrogen. A *smarter* way to grow.

ESN Increases No-Till Corn Yields S. Illinois, 2007



Average of two locations and three N rates
Source: Dr. S Ebelhar, Univ of Illinois

Agrium — A *smarter* source of nitrogen. A *smarter* way to grow.

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DuPont

Product Introduction

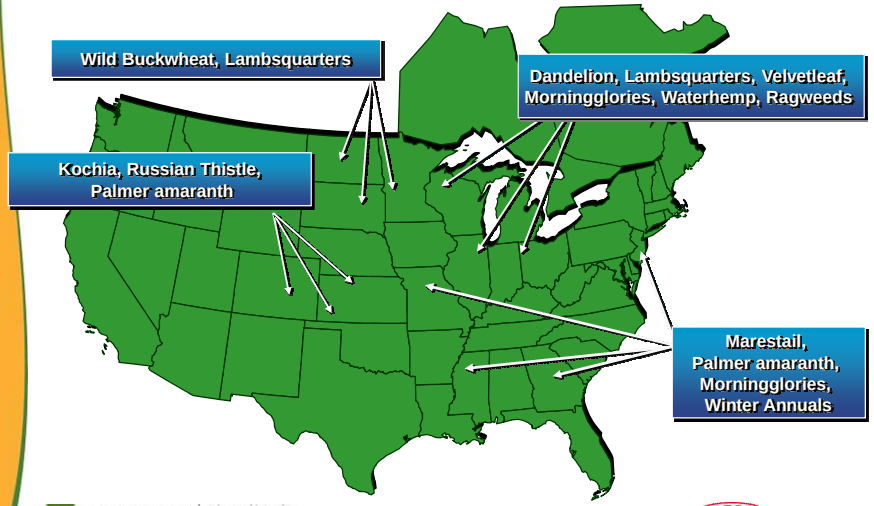
More Flexibility Better Biology

- 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.

PIONEER. A DuPont Company | Science with Service Delivering Success™

DUPONT The miracles of science™

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



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DUPONT The miracles of science™

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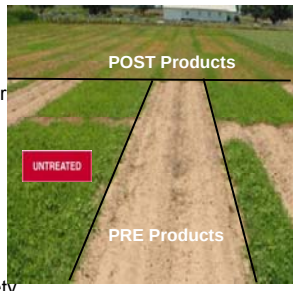
DuPont, *Continued*

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



Herbicide Product Development Trials
No Crop Planted
England, Arkansas; June, 2007

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DUPONT The miracles of science™

DuPont Herbicides Designed for Crops Containing the Optimum® GAT® Trait

DuPont Brand	Use	Key Weeds
Traverse™	Fall and spring burndown prior to corn or soybeans	Winter annuals No-till weeds Mares tail
Instigate™	Burndown or preemergence use for corn	Gly resistant weeds ALS resistant weeds Tough to control weeds
Trigate™	Contact plus residual postemergence use for corn	Gly resistant weeds ALS resistant weeds Tough to control weeds
Diligent™	Burndown or preemergence use for soybeans	Gly resistant weeds ALS resistant weeds Tough to control weeds
Freestyle™	Postemergence use for corn or soybeans	Gly "challenged" weeds Morningglory Lambsquarters

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DuPont Market Segment Examples

Segment / Crop	Fall / Spring Burndown fb POST	PRE fb POST	Total POST	Sensitive Crop Rotation Areas
Corn	Traverse™ fb Freestyle™ + glyphosate	Instigate™ fb Freestyle™ + glyphosate	Trigate™ + glyphosate	Affinity® BroadSpec + glyphosate
Soybeans	Traverse™ fb Freestyle™ + glyphosate	Diligent™ fb Freestyle™ + glyphosate	Freestyle™ + glyphosate	Affinity® BroadSpec + glyphosate -or- Enlite® fb glyphosate

fb: followed by

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EPL Bio Analytical Services

Ultrafast High Performance Liquid Chromatography for the Analysis of Pesticide Residues

EPL BIO ANALYTICAL SERVICES

Excellence, Passion and Leadership in Agriculture

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

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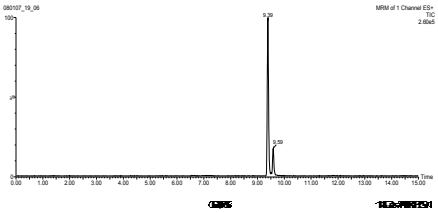
EPL Bio Analytical Services, *Continued*

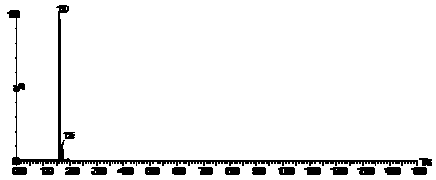
Advantages of UHPLC

- 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

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Dow AgroSciences

Dow AgroSciences

Dow AgroSciences

PowerFlex™

Herbicide

™Trademark of Dow AgroSciences LLC

Bobby Haygood

NAICC 2009 Annual Meeting

Memphis, TN

Dow AgroSciences

- 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)

™ Trademark of Dow AgroSciences LLC

Dow AgroSciences, *Continued*

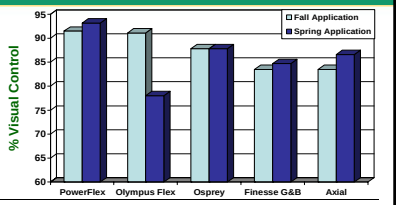
Application

Dow AgroSciences

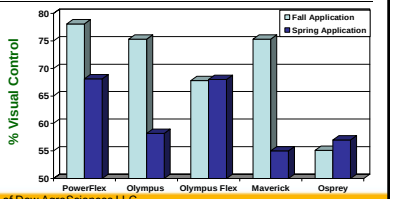
- Timing: Post emergence (fall or spring)
  - Apply to actively growing crop and weed targets
  - Crop (3-leaf to tiller)
  - Grass weeds 2-leaf to 2-tiller; Broadleaf weeds 2 inches or less
- Adjuvants:
  - NIS (0.25% – 0.5%) or COC (1% – 1.25%)
- Application with liquid nitrogen:
  - PowerFlex may 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.

Dow AgroSciences

Control of Italian Ryegrass



Control of Downy Brome



™ Trademark of Dow AgroSciences LLC

Dow AgroSciences

- 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

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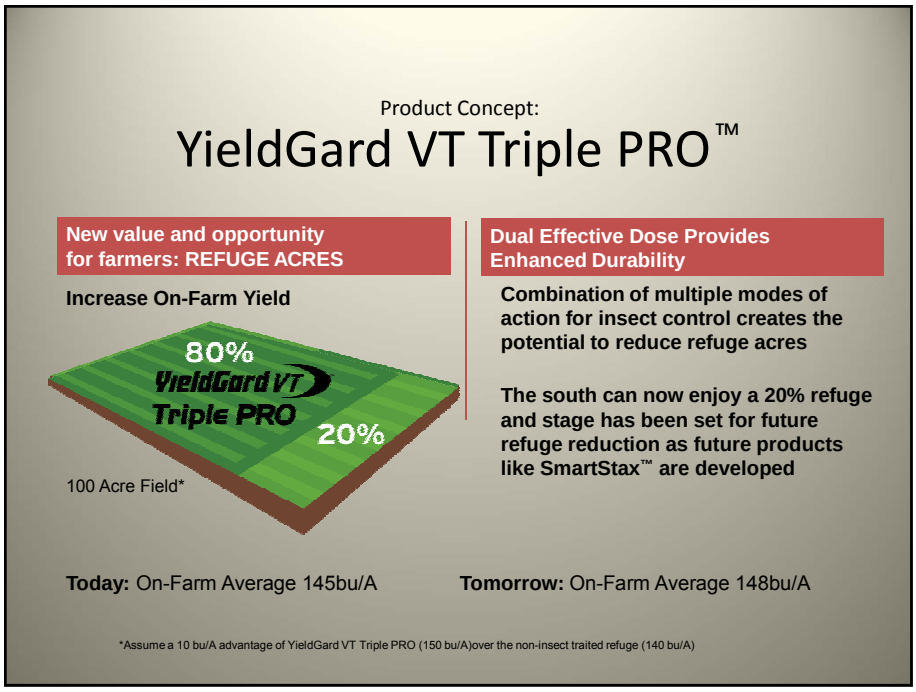
Monsanto Company



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Monsanto Company, *Continued*

SmartStax™: The Best Spectrum

	SmartStax™	Roundup Ready 2 Yield / Triple PRO	YieldGard VT Triple PRO	Agrisure 3122
PRIMARY PESTS				
European Corn Borer (*Ostrinia nubilalis*)	X	X	X	X
Southwestern Corn Borer (*Diatraea graandiosella*)	X	X	X	X
Northern Corn Rootworm (*Diabrotica barberi*)	X	X	X	X
Western Corn Rootworm (*Diabrotica virgifera virgifera*)	X	X	X	X
Corn Earworm (*Helicoverpa zea*)	X	X		
SECONDARY PESTS				
Fall Armyworm (*Spodoptera frugiperda*)	X	X		
Western Bean Cutworm (*Richia albicosta*)	X		X	
Black Cutworm (*Agrotis ipsilion*)	X		X	

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

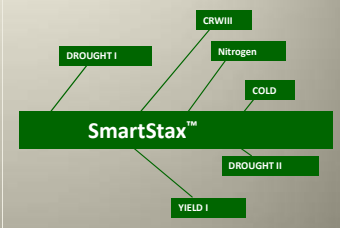
SmartStax™ Raises Whole Farm Yield

FEATURE:
Eight Trait Technology

ADVANTAGE:
Best Spectrum & Reduced Refuge

BENEFIT:
Greater Whole Farm Yield

Building the platform for 2010 and beyond…



*Commercialization dependent on many factors, including successful conclusion of regulatory process

JRF America

Novel Approaches for Evaluation of Exposure to Fumigants

Presented By: Rodney M. Bennett
Jai Research Foundation America

National Association of Independent Crop Consultants (NAICC) Annual Meeting
January 28-31, 2008

JAI RESEARCH FOUNDATION A Global Contract Research Organisation

Background

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.

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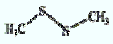
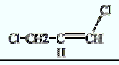
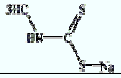
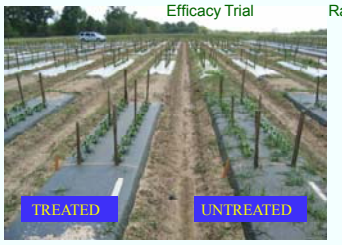
JRF America, *Continued*

Typical Soil Fumigants

Jai Research Foundation

Chemical Name	Chemical Structure	Molecular Formula	Molecular Weight
DMDS		$C_2S_2H_6$	94.2
Chloropicrin [PIC]		CCl_3NO_2	164.4
1,3-Dichloropropene Telone		$C_3H_4Cl_2$	111.0
Metam Sodium		$C_2H_4NNaS_2$	129.2
MeI	**3HC-I**	CH_3I	142.0
MeBr	**3HC-Br**	CH_3Br	94.9

Efficacy Trial

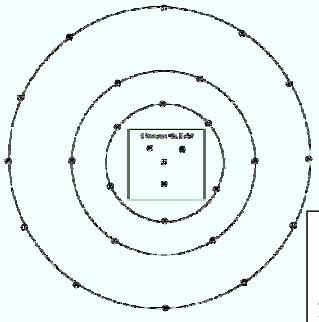


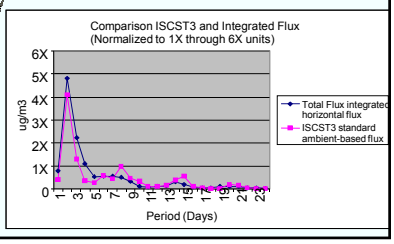
Raised Bed Shank Application/Single Rig

Raised Bed Shank Application /Three Rigs

Drip Fumigation (Chemigation)

Design for On-Field & Off-Field FLUX Monitoring





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.

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Pioneer Hi-Bred

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

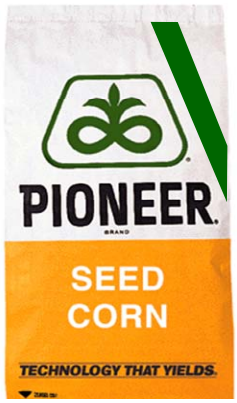
PIONEER. A DUPONT COMPANY

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® Insect Protection technology by Dow AgroSciences and Pioneer Hi-Bred. ® Herculex and the HX logo are registered trademarks of Dow AgroSciences LLC.

2 to 5% CRW Refuge In The Bag

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

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.



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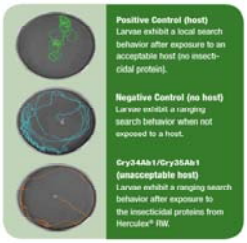
Pioneer Hi-Bred, *Continued*

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.

PIONEER. A DUPONT COMPANY

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.

Optimum® AcreMax™ 1 Corn Borer Refuge Options

For maximum corn rootworm protection

Pioneer has developed and will implement an extensive insect resistance management education program pending EPA approval.

PIONEER. A DUPONT COMPANY

Optimum® AcreMax™ 1 and Optimum® AcreMax™ 2 insect protection are not yet available for sale or use. Products, benefits and dates described above are subject to full regulatory approval.

Optimum® AcreMax™ 1 Insect 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%.

PIONEER. A DUPONT COMPANY

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FMC

Capture LFR: New Formulation Technology

LFR Liquid Fertilizer Ready 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

FMC

CAPTURE LFR

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.

FMC

CAPTURE LFR

NAICC

FMC, *Continued*

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.

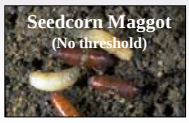
A Healthier Crop
Untreated vs Fertilizer + LFR

FMC

Multi-Insect Complex at Planting

Wireworm Control - Potatoes

Product	Rate/Method	Rating % Control	Yield CWT/acre
Capture LFR	25.5 oz In-Furrow	86%	287
Mocap	0.5 gal/A banded	70%	225
Untreated		0%	242



Cutworms
(3% cutting)

( ) approximate thresholds for corn production

FMC

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

FMC

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Bayer CropScience

BAYER

PROSARO™

Prosaro: A New Cereal Fungicide Innovation from Bayer Crop Science

EPA Registration in 2008:

Bayer CropScience

PROSARO™

A New Cereal Fungicide for Scab/Foliar Disease Control

PROSARO 421 SC contains **Prothioconazole** – a **new active** ingredient with higher levels of activity against scab.

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.
- Powdery Mildew
- Tan Spot
- Spot Blotch
- Septoria Glum Blotch
- Septoria Leaf Spot
- Net Blotch
- Scald

Target Crops: Wheat and Barley

Exceeds the established performance of **FOLICUR!**

Bayer CropScience

NAICC

Bayer CropScience, *Continued*

PROSARO™

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**

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PROSARO™

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

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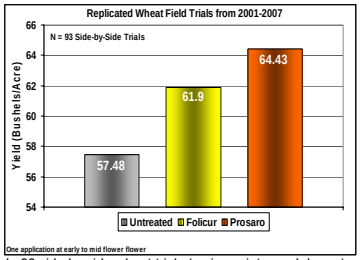
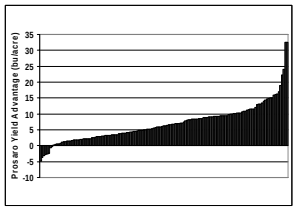
Prosaro Wheat Yields



In 98 side-by-side wheat trials (spring, winter and durum), a single application of **Prosaro** at Feekes 10.51 (15% flower), provided an average **yield increase of 6.95 bu/A** as compared to the untreated control and a 2.53 bu/A 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/A** as compared to the untreated and provided a **positive yield increase in 94.6% of all trials.**

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