

The Changing Landscape for Canola within DuPont Pioneer



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1974:

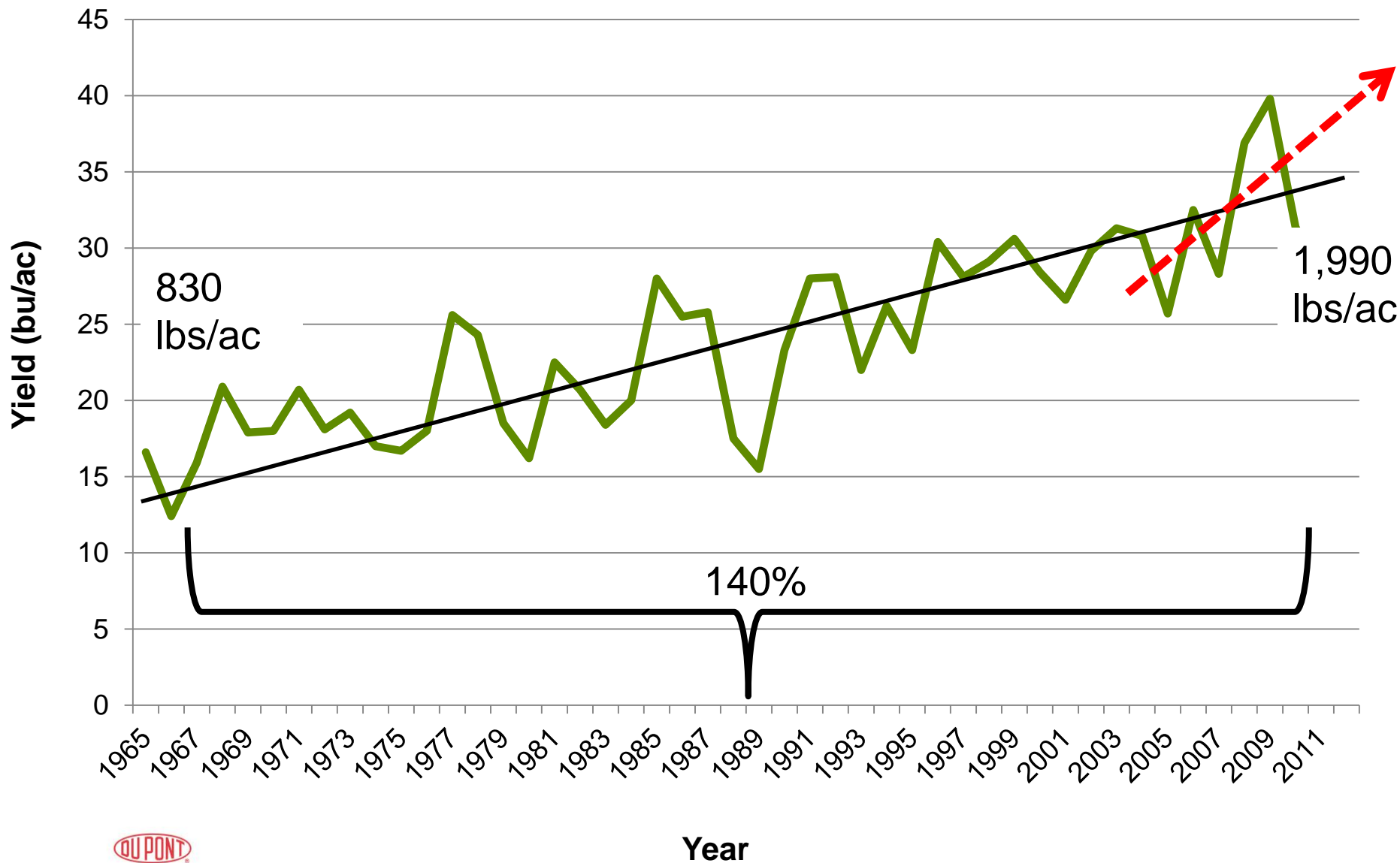
- “Tower” the first *B. napus* canola variety is released.
- Canola planted ~ 500,000ac
- Average yield ~ 17 bu/ac
(850 lbs/ac)



2014:

- Hybrid and herbicide tolerant canola (99%) dominate the market.
- Canola planted ~ 20.2 million ac
- Average yield ~ 34.4 bu/ac
(1,720 lbs/ac)

1965-2012: Western Canada Average Rape/Canola Yield



How are we going to get there??

- Near Future and Today:
 - “Protector” Brand: Sclerotinia & Clubroot [Blackleg]
 - Pioneer R&D Canola GM Trait Development
 - Optimum Gly Canola
 - Liberty Link Canola from Pioneer
 - Clearfield (CL)
- Today:
 - Top Performance (current hybrids)
 - Smartphone / Tablet Technology
 - Canola Calc
 - Encirca View

DIVIDING THE ENVIRONMENT



BIOTIC FACTORS

- Sclerotinia
- Clubroot
- Blackleg
- Flea Beetles
- Herbicide Resis

TRAIT STACKS

- Sclero/CR
- CR/Shatter
- Sclero/CR/Shatter

ABIOTIC FACTORS

- Shatter Tol
- Cold/Frost Tol
- Flowering Heat Stress Tol
- Water-Logged Tol
- Drought Tol

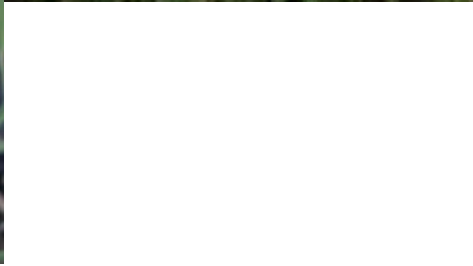
Native Traits vs GM Traits

- Future of plant breeding is in enhanced native trait expression
 - Molecular marker selection
 - Able to legally gain proprietary protection
 - Economically more feasible to bring to market
 - No regulatory hurdles/delays



Pioneer Canola Research Targets for Native Traits:

- Shattering Tolerance
- Cold tolerance / stress tolerance (heat/drt)
- Blackleg
- Increase Sclero Tol
- Nitrogen Use Efficiency
- Flea Beetle (GM)
- Trait Integration
- Stacks (CR/Sclero, Shatter/Sclero, etc.)

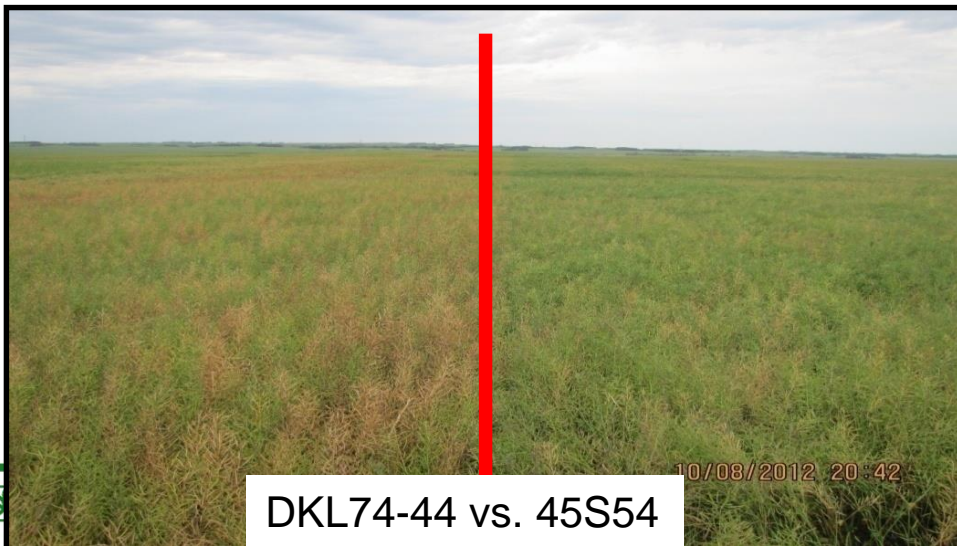




**“NEW” way to manage
Sclerotinia (White Mold)**



Pioneer® Brand 45S51 –
*first commercial sclerotinia
resistant hybrid (2009)*



DKL74-44 vs. 45S54

10/08/2012 20:42

Stem Comparisons

45H31 - 55% infected



45S52 - 13% infected



Nanton, AB; August, 2012

- Both stem and leaf resistance (native trait / non-GM)
- Pioneer has a 15-20 year history into the research, breeding, and development of sclerotinia tolerant products!

Tolerance Reduction

45H31 - 55% infected

45S52 - 13% infected



approx 60-65% reduction
in infestation

*Future (2-3 yrs) hybrids are targeted for 75% to 80%+, making fungicides uneconomical even under high pressure

Sclerotinia Disease Tolerance

- Erratic shaped and/or small fields with expected sclero pressure
- Habitually wet fields (minimize wheel ruts)
- Fields with strong history of sclero host crops – sunfl, canl, dry beans
- Fields with lower to moderate productivity



45S56

- New in 2014 with Mid-Season Maturity
- Best Yielding Sclero hybrid
- Good/Strong standability '14
- Oil content predicted at well above average
- Blackleg = MR (6)
- Move to 46S53 for stronger blackleg control



8 January 2015

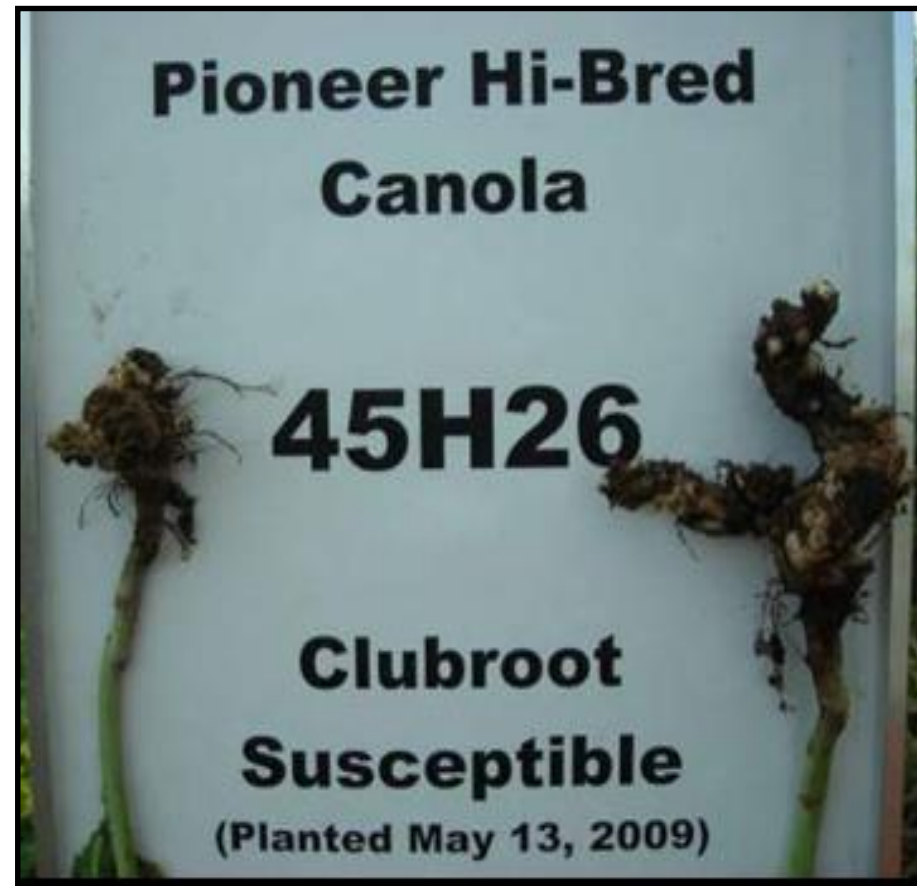




Pioneer® Brand 45H29
The *first* Clubroot Resistant
Canola Hybrid (2009)



Pioneer® Brand
45H29 – *first commercial clubroot resistant canola in the market*



Non-GM – Genetic Tolerance sourcing



45H33

- Clubroot / RR trait package
- Blackleg rating = R or 7(-)
- Strong standability in 2014
- Strong early emerg & vigor
- Positive harvest handling comments – swath or straight-cut
- Very High Yielding Canola



Blackleg

- Increasing R&D efforts to strengthen genetic tolerances to a wider array of pathotypes
- Provide better information to sales team and customers on hybrid by blackleg tolerance levels



Optimum Gly™ Canola

- Brand-new gly trait for canola only
- De-Regulated in Canada and US (first developed GM trait from DuPont Pioneer)
- Trait selected and hybrid integration taking place; performance looks encouraging
- Increased crop safety – opportunity for greater weed control flexibility
- Pending all over-seas regulatory approvals -- on track for late-decade launch



Liberty Link Canola

- Pioneer negotiated access to the raw trait (Bayer)
- Deregulated in US and Canada
- Hybrid development fully engaged; performance is very encouraging
- Field scale product testing and evaluation will take place in 2016
- Seed production risk taken to ensure good supply for late-decade launch
- R&D using forward breeding with conv. genetics



Clearfield (CL)

- Non GM canola – no tech fees (lower seed cost/acre)
- Gly susceptible volunteer
- “Beyond” (imi) herbicide for post-emergence broadleaf weed control



46H75

- Blackleg = R or 7
- Strong standability
- Strong early emerg, vigor & canopy closure
- Good harvest handling
- Very High Yielding CL

Pioneer 2015 Canola Line-up

– Preferred High Oil Hybrids (Agri-Industries)

- 45H29 (RR/CR)
- 46S53 (Sclero/RR)
- 46H75 (CL)

Others:

- 45H33 (RR/CR) – highest yielding
- 45H31 (RR) – harvestability
- 45S56* (Sclero/RR) - best yielding sclero hybrid
- 45H76 (CL) – Blackleg (8), straight-cut

Pod Shatter tolerance

- Pending Canadian registration - Winter 2014/15 for spring '15: RR/Shatter Tol product
 - *Low supply volumes for 2015



Questions?



PIONEER[®]
BRAND
CANOLA


CANOLA

Smartphone / Tablet apps

Verizon 8:35 PM 100%

iPad Only Any Price All Categories By Relevance All Ages

pioneer canola see...



Pioneer Canola Seed Rate Calculator

Pioneer Hi-Bred International, Inc. >

4+

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Details Reviews Related

Description

Easily estimate canola seeding rate and final stand using the Pioneer Canola Seed Rate Calculator.

Features:

- Calculate using your Target Stand of Live Plants per square foot or Target Seeding in pounds per acre.
- Make adjustments for seed size, germination, survivability, and row spacing.
- Outputs estimated seeding rate, final stand, live plants per square meter, acre, and foot of row.
- Easy to use; available for iPad®

All products are trademarks of their manufacturer.

Information

Seller	Pioneer Hi-Bred International, Inc
Category	Business
Updated	Jun 10, 2013
Version	1.0
Size	26.1 MB
Rating	Rated 4+
Family Sharing	Yes
Compatibility	Requires iOS 6.0 or later. Compatible with iPad.
Languages	English

Featured Top Charts Explore Purchased Updates

Calculator

Canola Seeding Calculator



Calculator

Estimate from Target Plant Density

Estimate from Lbs Seed/Acre

Estimate from Lbs Seed/Acre

Estimated Final Stand **5.27** Plants/Sq Ft

Target should be 6-10 Plants/Sq Ft

Plants per SqM **56.7** Plants/SqM

Live Plants per Acre **229,518** Plants/Acre

Live Plants per foot of row **4.39** Plants/Foot of Row



Adjust Situation Below

Target Seeding in Lbs/Acre Lbs per Acre

1000 Seed Weight Grams/1000 seeds

Important -Consult Seed Tag

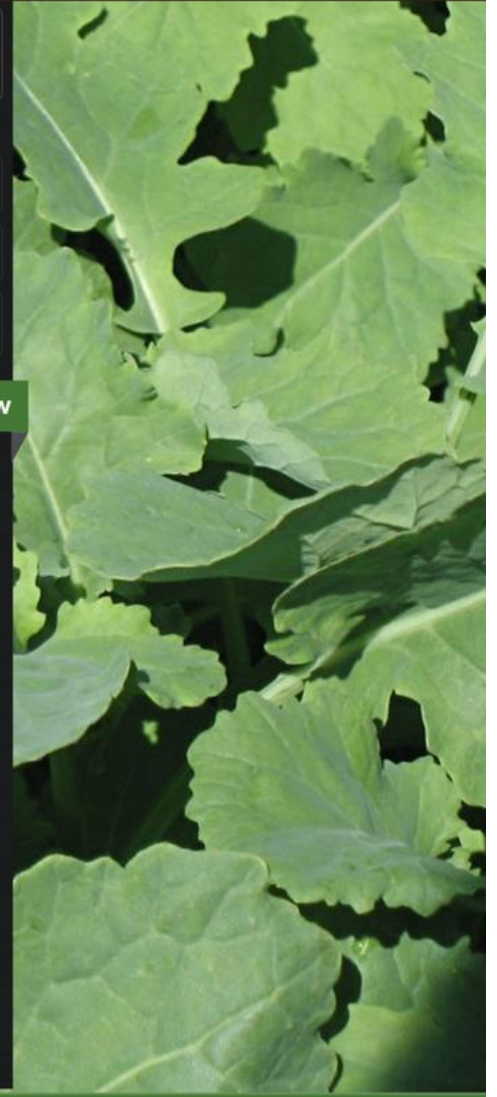
Germination percentage **92 %** Germination

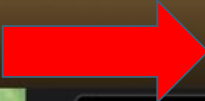


Estimated Survival Percent **50 %** Survival



Row Spacing Inches between rows





Estimate from Lbs Seed/Acre

Calculated Final Stand	5.27	Plants/Sq Ft
Ideal stand should be 6-10 Plants/Sq Ft		
Live Plants per SqM	56.7	Plants/SqM
Live Plants per Acre	229,518	Plants/Acre
Live Plants per foot of row	4.39	Plants/ Foot of Row



Adjust Situation Below

Target Seeding in Lbs/Acre Lbs per Acre

1000 Seed Weight Grams/
1000 seeds

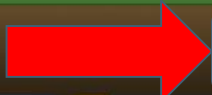
Important -Consult Seed Tag

Germination percentage **92 %** Germination

Estimated Survival Percent **50 %** Survival

Row Spacing Inches
between rows





Estimate from Target Plant Density

Calculated Seeding Rate	7.31	Lbs per Acre
Live Plants per SqM	75.3	Plants/SqM
Live Plants per Acre	304,920	Plants/Acre
Live Plants per foot of row	7	Plants/ Foot of Row

Adjust Situation Below

Target Stand of Live Plants Plants/Sq Ft
 Ideal stand should be 6-10 Plants/Sq Ft

1000 Seed Weight Grams/
1000 seeds

Important -Consult Seed Tag

Germination percentage **92 %** Germination

Estimated Survival Percent **50 %** Survival

Row Spacing Inches
between rows

Late April/ Early May
Planting conditions:





Estimate from Target Plant Density

Calculated Seeding Rate	5.05	Lbs per Acre
Live Plants per SqM	75.3	Plants/SqM
Live Plants per Acre	304,920	Plants/Acre
Live Plants per foot of row	5.83	Plants/ Foot of Row

Adjust Situation Below

Target Stand of Live Plants Plants/Sq Ft
 Ideal stand should be 6-10 Plants/Sq Ft

1000 Seed Weight Grams/
1000 seeds

Important -Consult Seed Tag

Germination percentage **95 %** Germination

Estimated Survival Percent **70 %** Survival

Row Spacing Inches
between rows

Late May / Early June
Planting conditions:





EncircaSM View
Pioneer Hi-Bred



EncircaSM View 4+

Pioneer Hi-Bred International, Inc. >



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Details

Reviews

Related

Description

Keep your fields at your fingertips and capture important information with this GPS powered field documentation tool. EncircaSM View pinpoints your field location via satellite imagery so you can record notes or photos on the spot. Instantly organize your crop scouting information on your mobile device or through seamless integration with the EncircaSM View website, where you can also access aggregated data from a community of EncircaSM View users. You can also easily share notes with local experts to help inform management decisions.

Features:

- * Displays field boundaries for participating customers
- * Easy to use interface
- * Instantly map and organize data with notes and photos
- * Share your observations with local experts

IMPORTANT!

- If you have an existing pioneer.com account, please use the same email address when creating your new EncircaSM services account.
- If you are a Pioneer Sales Professional or Dupont Pioneer employee, create your EncircaSM services account with the same username and password used to login to your Pioneer computer.

What's New

Nov 7, 2014



OCTOBER 2014

10/07/2014 Cartwright, Marc
by the bins west of Hwy 32
These #P05T24 soybeans are ready for harvest. I don't see much for white mo...



Hart's Soyb Seed Prod
10/03/2014 Cartwright, Marc

Smith - Walhalla PKP
10/03/2014 Cartwright, Marc
airport
Plot hybrids from north to south: DKC27-55 39D97 P7443R P7632AM P7332R DKC27-55 Plot looks unifor...



SEPTEMBER 2014

Field Bros Corn - East St...
09/26/2014 Cartwright, Marc
Corn (#P7332R) has been affected/ killed by frost on most plants, but a small per...



About 34,000 ears/ac population
1/8 to 1/4 Starch Line
Ears are 14 to 16 kernels around and 30+ long
Weed control good, minimal leaf disease (common rust)

Bill S. P8673AM1
09/12/2014 Cartwright, Marc
About 34,000 ears/ac population 1/8 to 1/4 Starch Line Ears are 14 to 16 kern...



Field Bros -soyb
09/12/2014 Cartwright, Marc
These soybeans are showing some general stress - maybe too much water...



Isane Corn Plot
09/10/2014 Didrikson, Dana
#P7332R #39D95 #P8210R #P7443R #39V05 #Sept10th



Isane Soybean Plot





EncircaSM View 4+
Pioneer Hi-Bred International, Inc. >

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Upgrade options include:

Premium package - On farm weather station and enhanced DTN info

Encirca Yield Nitrogen (corn)

Encirca Yield Stand – VRS Rx for corn and soybeans



Lethbridge, AB – Canola seed production facility and seed production research

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Georgetown, ON – Worldwide canola breeding HQ and parent seed facility for Pioneer





Thank You
Questions?