Challenges facing Canola growers!

Stand establishment and PLINAZOLIN® technology - A New Solution

Shad Milligan

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Agenda

Why Stand Establishment Matters?
Factors contributing to stand establishment

Introduction to PLINAZOLIN® Technology
- What and How does the molecule work?
- Global results

EQUENTO® Extreme: A new MOA to evolve stand establishment

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Impact on Stand Establishment and Root Health in:

Positive (+) & Negative (-) Practices Today

Water & Soil Conservation (Reduced Tillage)

- Improved and healthy soils (+++)
- Limited soil erosion i.e. water/wind (++++)
- Excellent moisture @ planting (+++)
- Carryover of soil-borne diseases (---) Crop Residue

Direct Planting

- Time management in the spring (+++)
- Cool soil Temperatures due to crop residue (-)
- Insects/Diseases (-)

Shorter Crop Rotations

- Disease & Insects (---)

Improved Planters & Combines

- Managing Crop Residues (+++)
- Seed to soil placement (+++)
- Accurate Seeding Rates (+++)

Wider Planting Window

- Earlier planting (+++)
- Cool Soils/Frost damage/delay in emergence (--)
- Damping-off (---)

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The Future with Canola in Canada

Canola acres

- ✓ Acres will likely remain high as canola continues to be a more profitable crop.
- ✓ More acres mean tighter rotations and increasing disease and insect pest pressures.
- ✓ There is a growing interest in seeding canola with singulation planter technology. This enables more precise canola seed placement for enhanced survivability.

Key pests

- ✓ Flea beetles are the most common insect pests in canola seedlings, with more striped flea beetles in a wider geography all the time.
- ✓ Cutworms are becoming more relevant as canola acres remain high and it continues to be difficult to predict population outbreaks.
- ✓ Blackleg has been getting more exposure as Canola Council of Canada and agronomists see more blackleg races in more fields and recognize the risk of resistance.

Seed treatment market

- ✓ All canola acres get a foundation seed treatment.
- ✓ Enhanced seed treatment market continues to grow as pest populations and geography change.
- ✓ Seed treatment solutions for airborne blackleg bring peace of mind that the R and MR genetics will perform.
- ✓ Syngenta is the first to introduce seed pelleting technology that makes canola seed more consistent in size – and enhances singulation planter performance.

Stand Establishment is Fundamental in Getting a Successful Canola Crop. The value of foundation seed treatment: From planting to harvest

STAND ESTABLISHMENT

HelixXtra®
vs.
bare seed
Drumheller, AB
June 1999

FLOWERING

HelixXtra®
vs.
bare seed
Manitou, MB
July 1999

HARVEST

HelixXtra®
vs.
bare seed
Standard, AB
September 1999

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A better way to manage early flea beetle pressure.

New technologies can provide protection to avoid a replant due to flea beetle damage.

Photo: 2015 Research Authorization Site, Girouxville Alberta, Syngenta Canada Inc.

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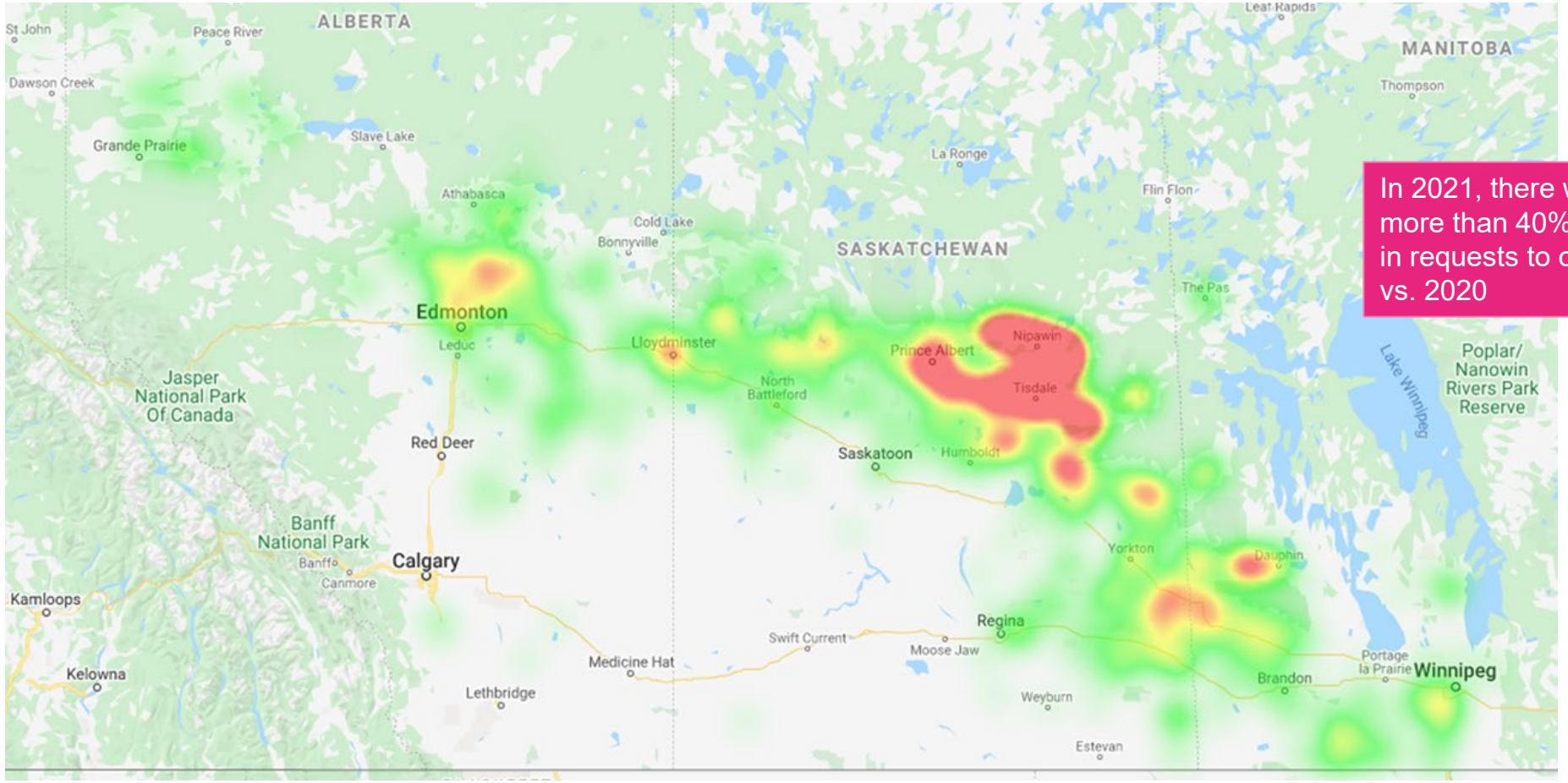
Flea beetle pressure continues to build…



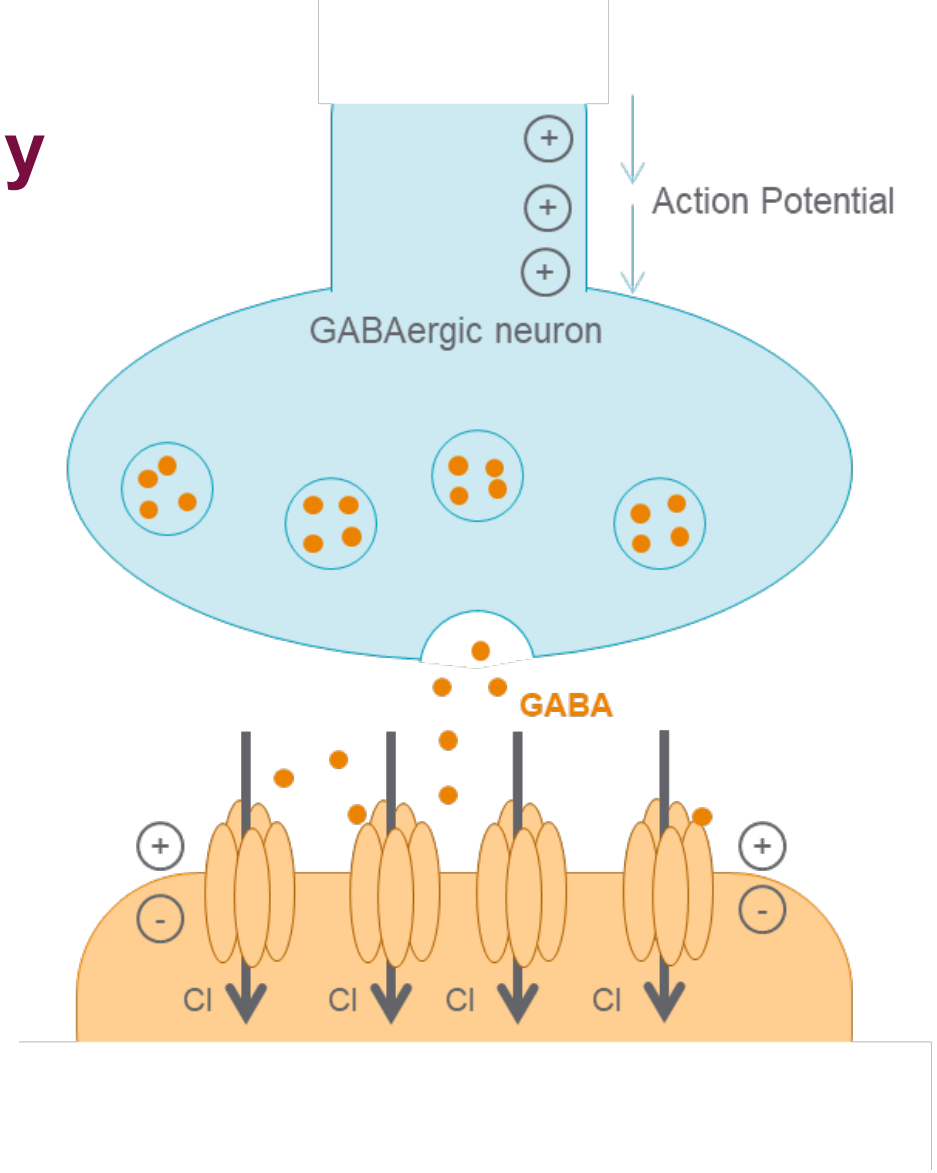
In 2021, there was a more than 40% increase in requests to overspray vs. 2020

Source: AgCall, 2021. Heat map indicates relative reports of crucifer and/or striped flea beetle pressure. The absence of any colour does not necessarily indicate absence of pests or lack of pest pressure. Trademarks are property of their respective owners.

Introducing: PLINAZOLIN® technology

A new unique MOA

- The active ingredient: **Isocycloseram**
- IRAC Group 30
- **Acts by contact and ingestion**
- Symptoms include paralysis and inactivity
- No known cross resistance to other insecticides
- Complements neonicotinoids and diamides in seed treatment



Mode of action: GABA-gated chloride channel allosteric modulator

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PLINAZOLIN® technology in Canola

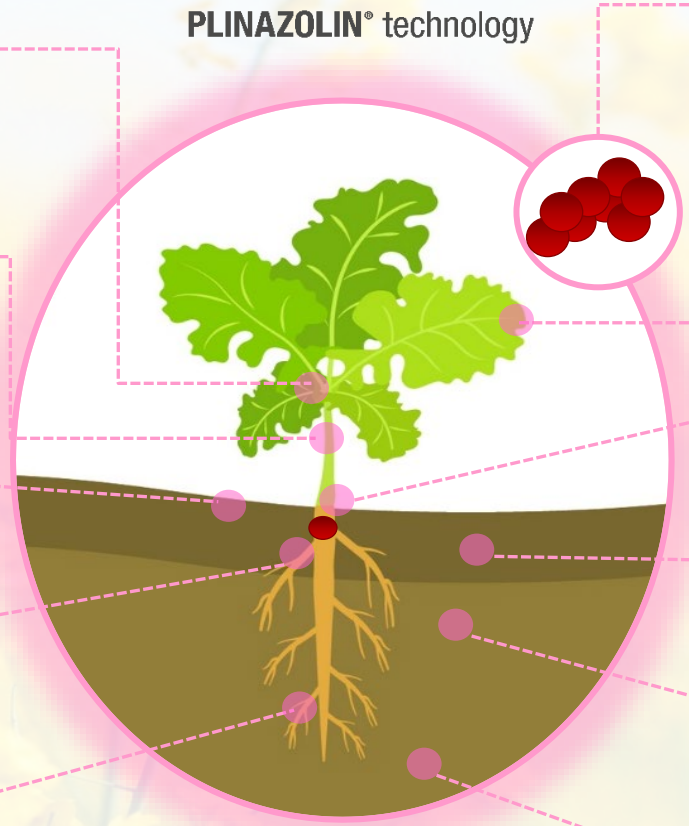
Paralysis of pests which stops feeding
Novel mode of action

Dual action on pest
Contact and ingestion

Kills pests as well as protects crop
Removes pest from soil & surface

Ensures early plant establishment
Seeds and emerging plants protected

Negligible systemic movement into foliar tissue
Targets soil and surface pests



Full germination potential and plant establishment
Good stability on seed

Good tolerance on targeted crops
Excellent crop safety

No vapour effect, safe to use and apply
Low volatility

Reduced contamination of ground water
Resists leaching into soil

Reduced contamination of ground water
Novel mode of action

Strong binding to soil particles, very little movement in the soil
Targeted protection

360° INNOVATION INSPIRED BY YOU™

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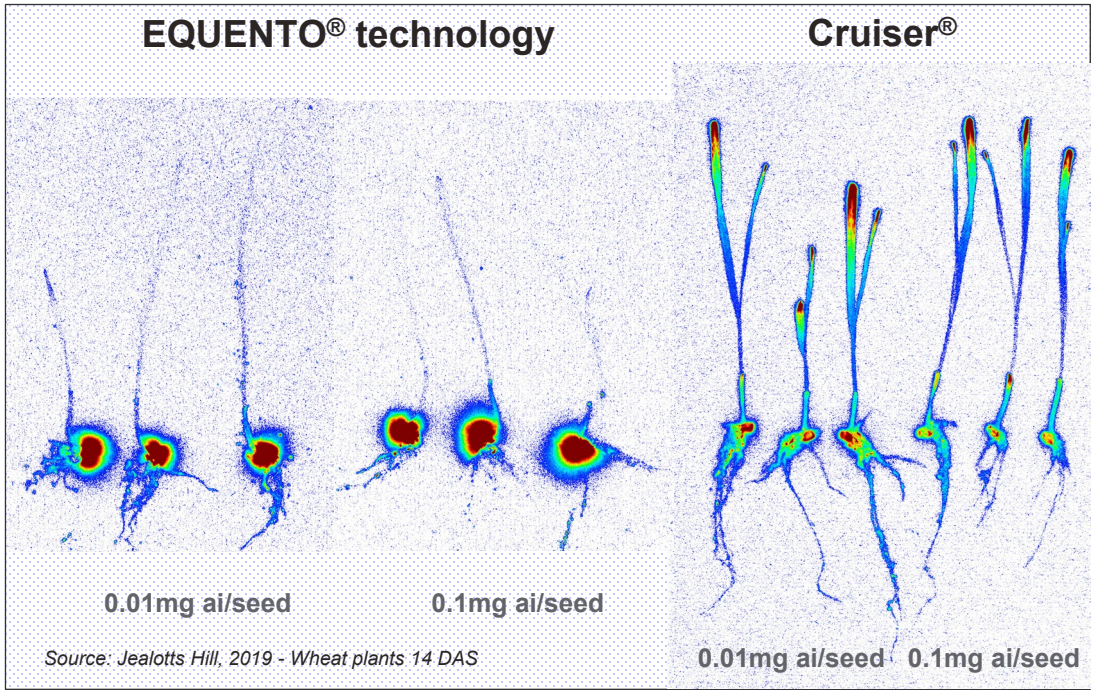
Physical chemical properties of EQUENTO®

No movement in the plant

- **Very Low Water solubility**
  - 1.2 mg/litre @ pH 7.21 @ 20°C
- **Low Vapour Effect**
  - Saturated vapour concentration (SVC) << 2 x 10-11 g/L at 20°C
- **Lipophilic: binds to soil OM**
  - Log P 5.38 at pH 7.05 and 25ºC.

These studies indicate that PLINAZOLIN® technology will protect the seed very well in the ground but may benefit from the partnership of more systemic insecticides to complete the spectrum as a seed treatment.



- **EQUENTO® technology remains bound to the seed**, with limited movement in the stem and into the roots.
- **CRUISER® is systemic**, with high levels uptake and movement in the plant

^{14}C Intensity

Images represent total ^{14}C, which may include parent and metabolites

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Results from around the world!

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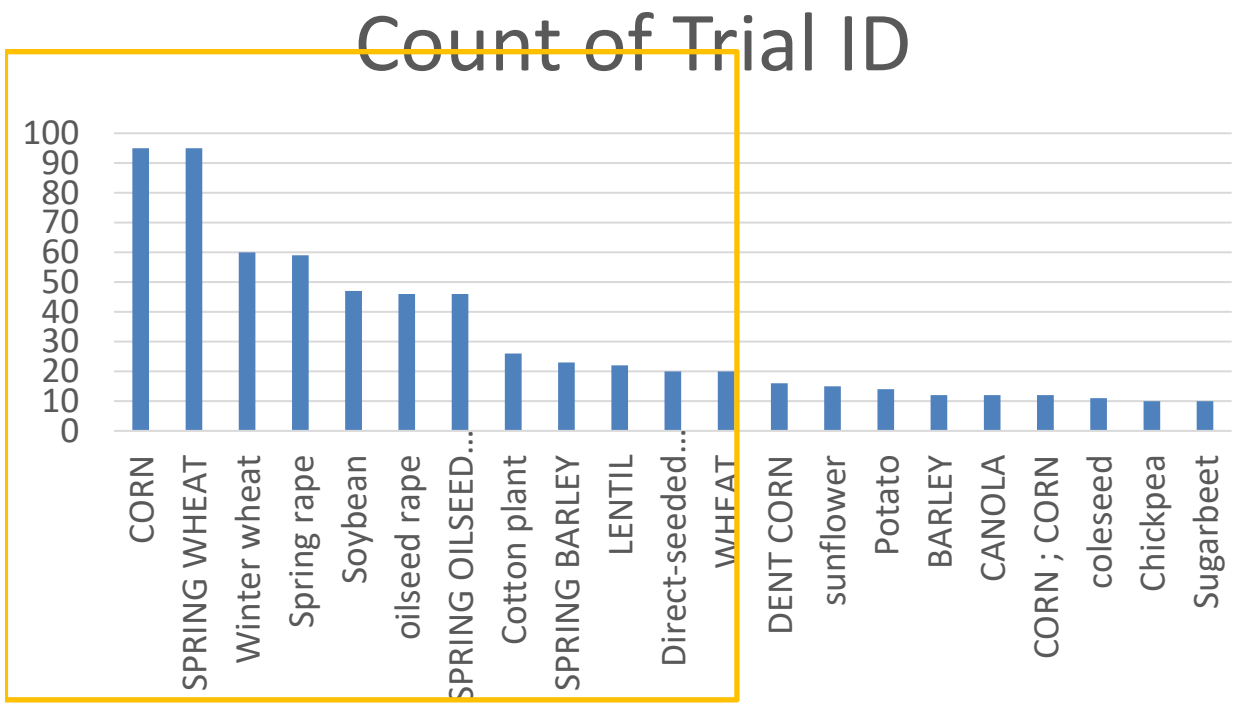
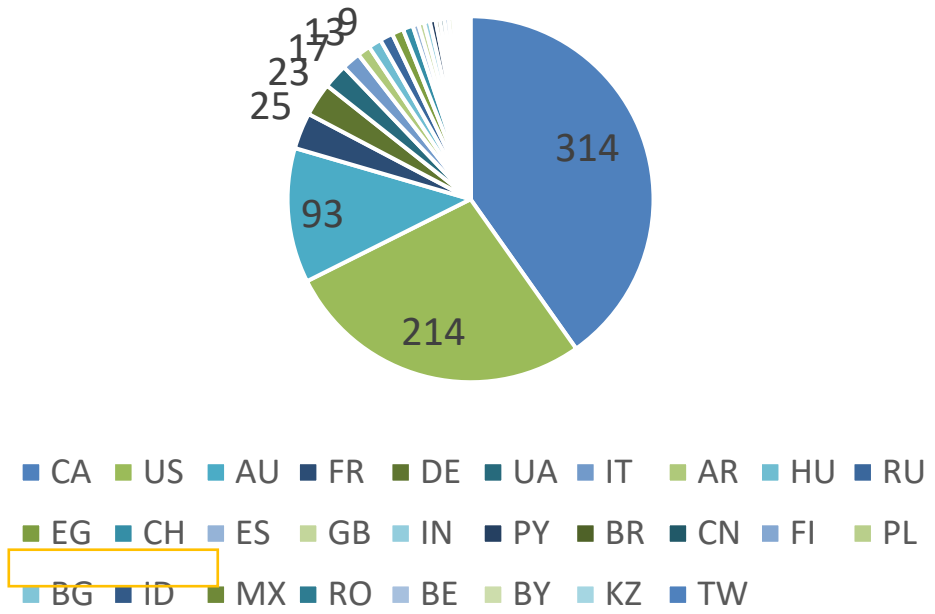
Studies Conducted Around The Globe

PLINAZOLIN® technology – Trials overview across years

- **Trials done globally up to 10 000 (all types of application)**
- **Up 800 only Seed treatment since 2013**



Distribution worldwide



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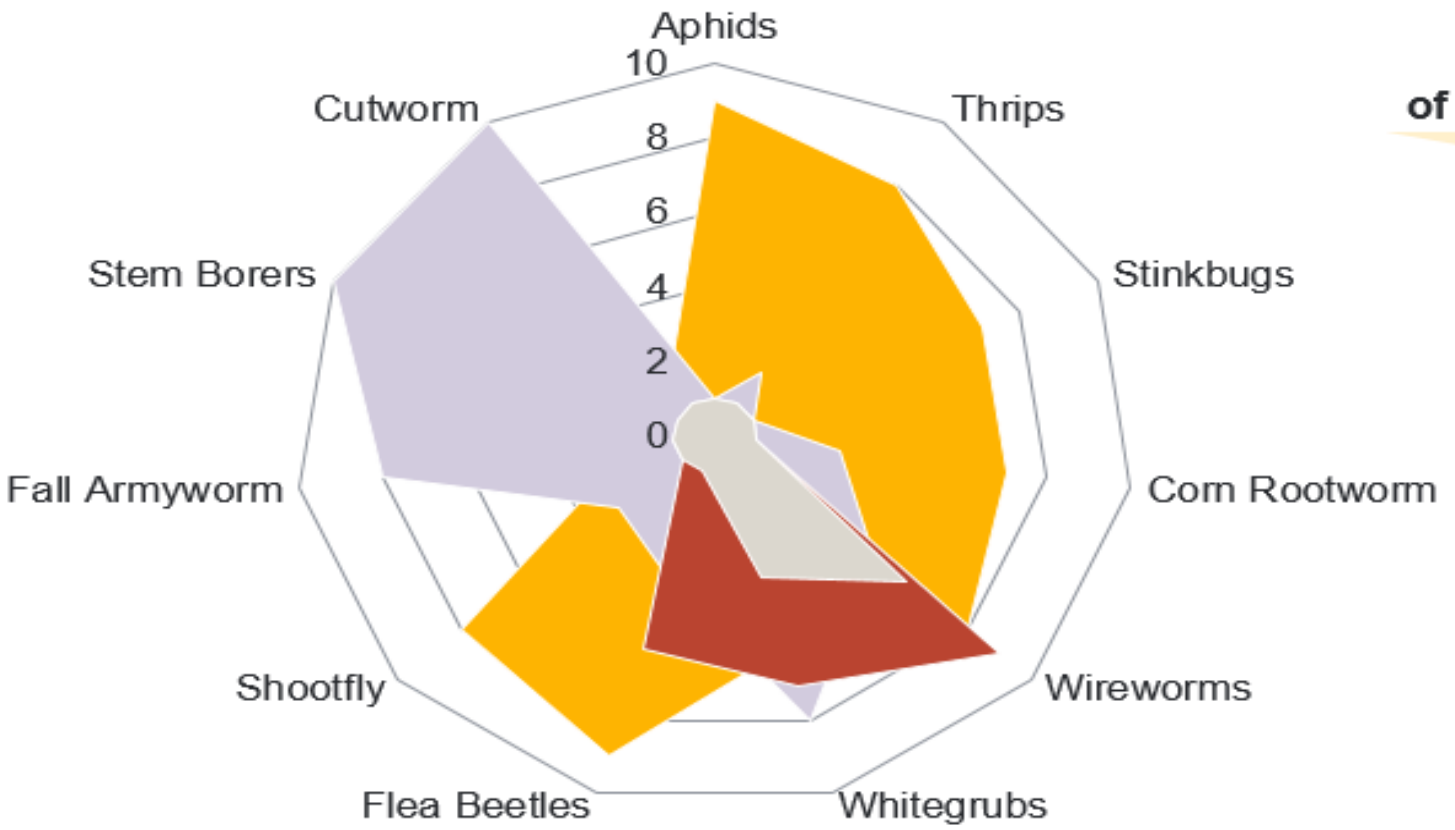
New use patterns under development across the world!



Spectrum of Activity of Seed-Applied Insecticides

- **CRUISER® (THMX)**
- **FORTENZA® (CYNT)**
- **PLINAZOLIN® technology**
- **FORCE® (TEFL)**

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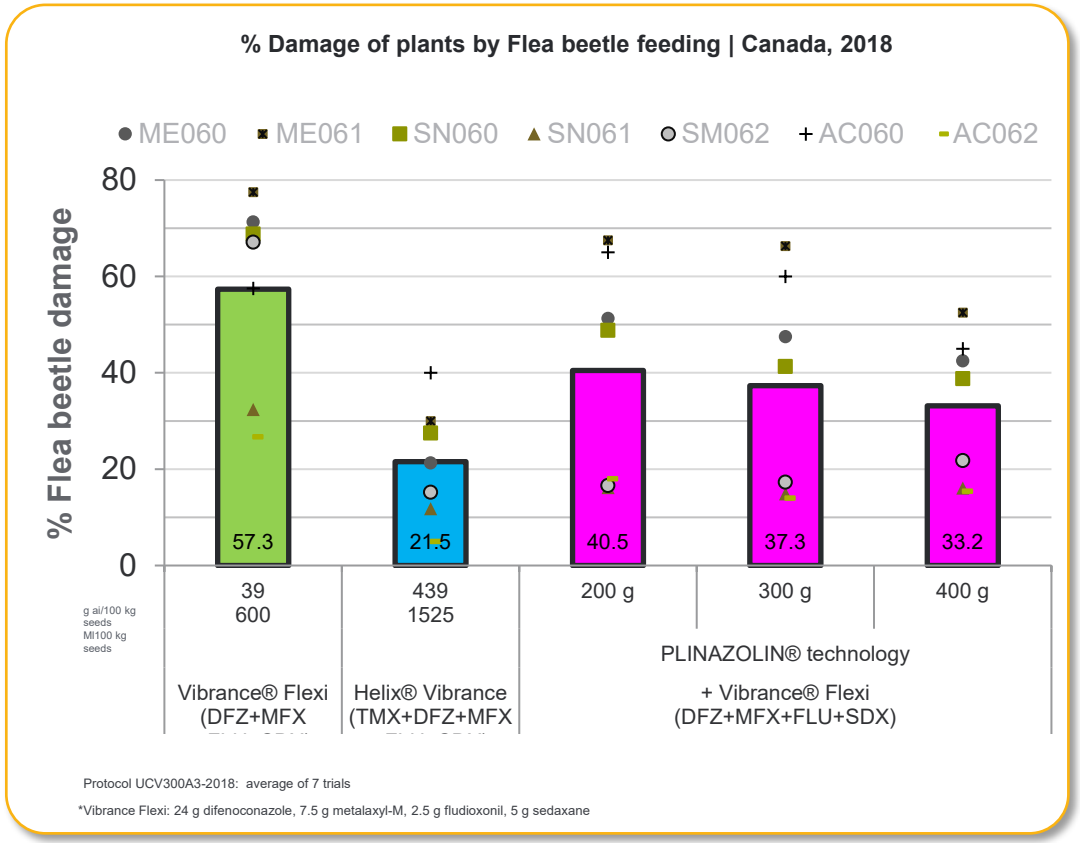
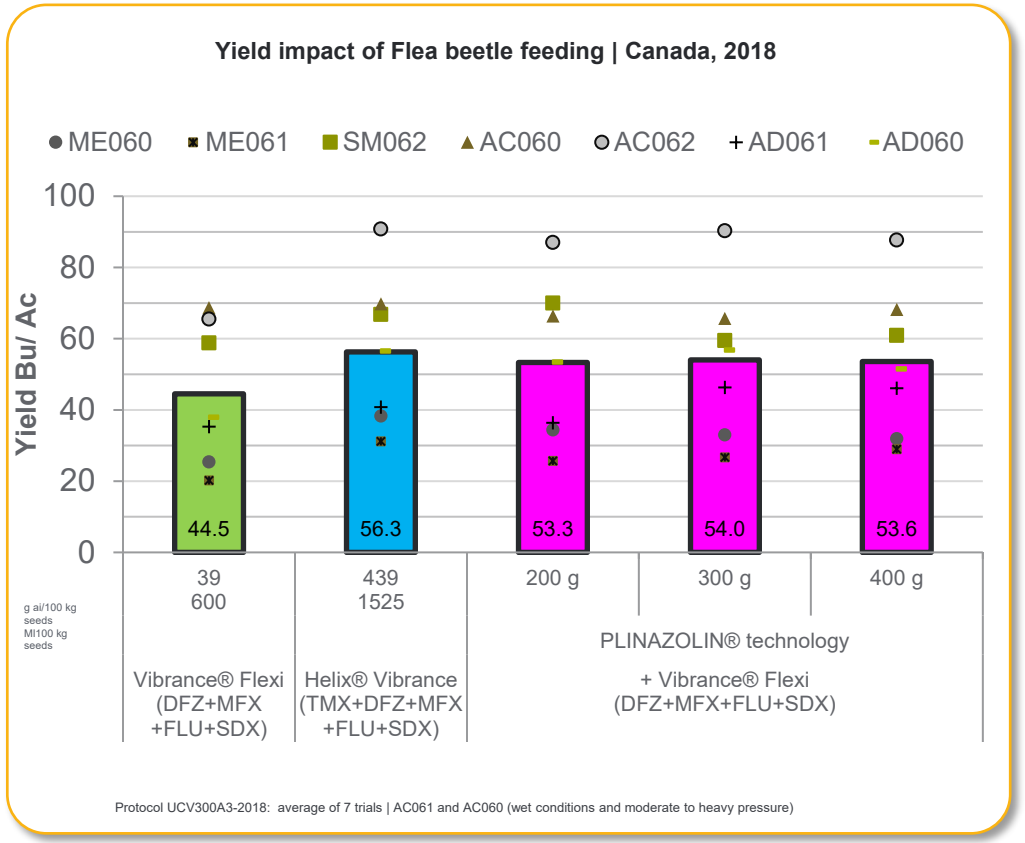
A new partner for CRUISER® on Flea Beetle in Canola



Protocol UCV300A3-2018: average of 7 trials

*Vibrance Flexi: 24 g difenoconazole, 7.5 g metalaxyl-M, 2.5 g fludioxonil, 5 g sedaxane



Protocol UCV300A3-2018: average of 7 trials | AC061 and AC060 (wet conditions and moderate to heavy pressure)

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A new partner for CRUISER® on Flea Beetle in Canola

UNTREATED

PLINAZOLIN®

UNTREATED

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Photos: C. Weiss, In-House Field Trial Canada, 2022

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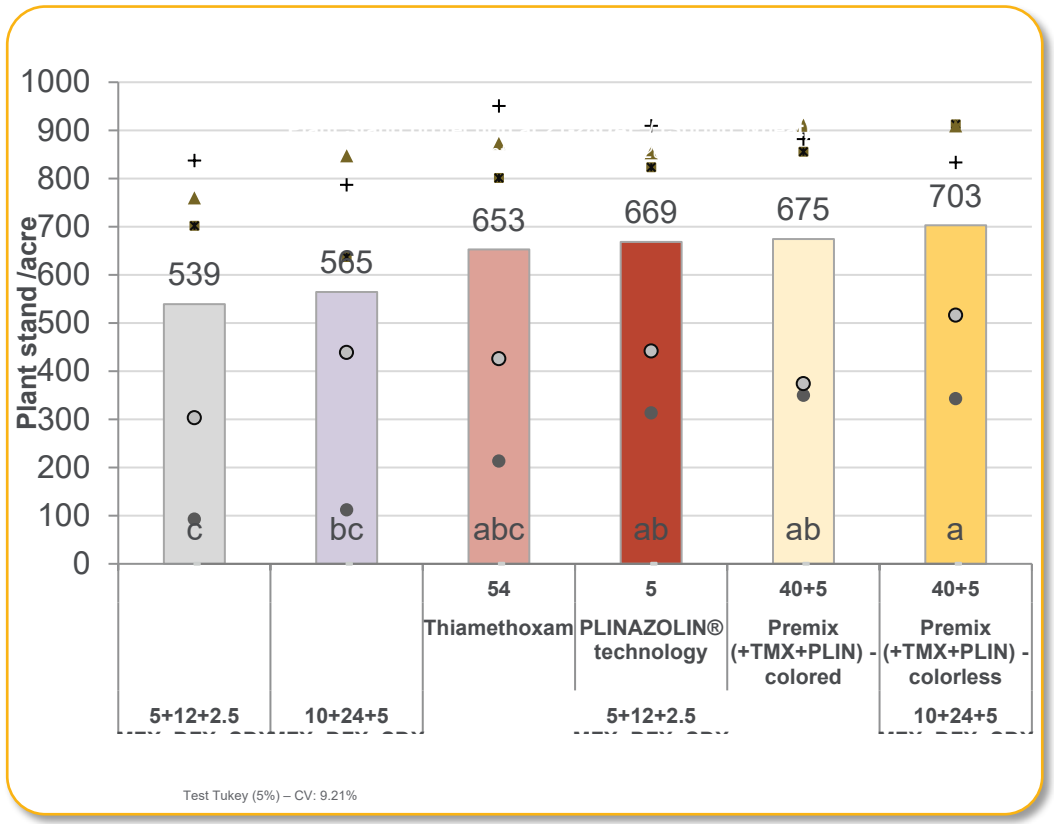
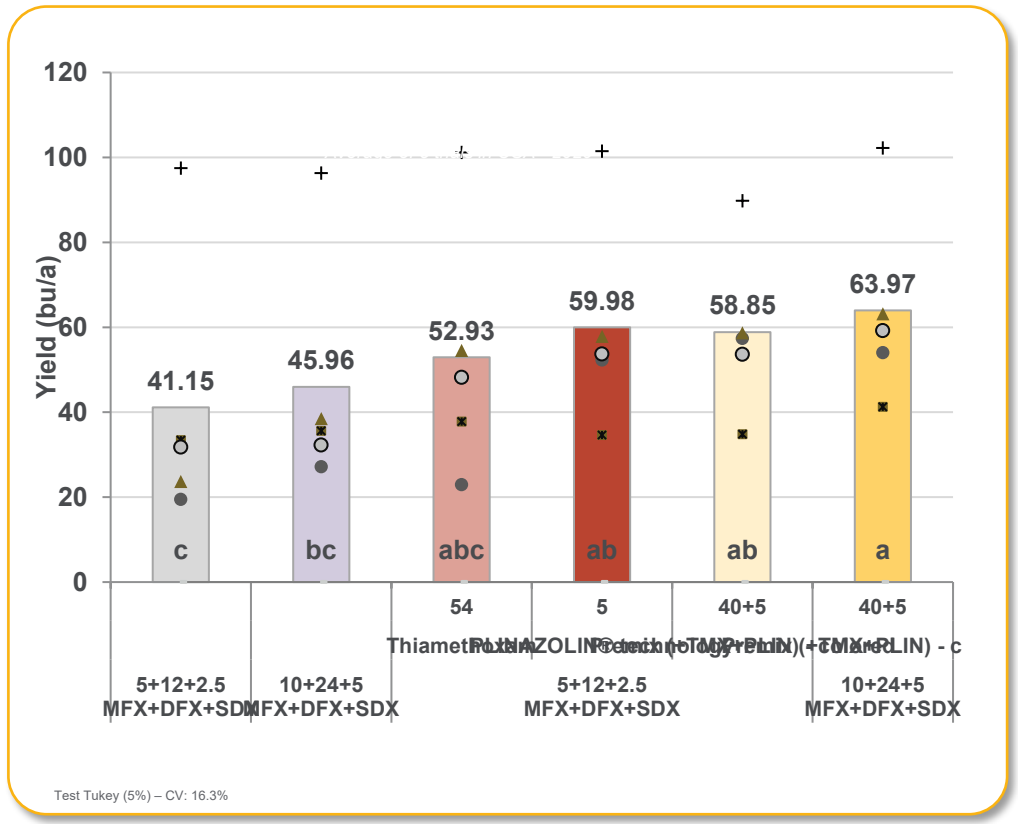
PLINAZOLIN® delivering reliable performance in all different formulation - Solo and in mixtures.





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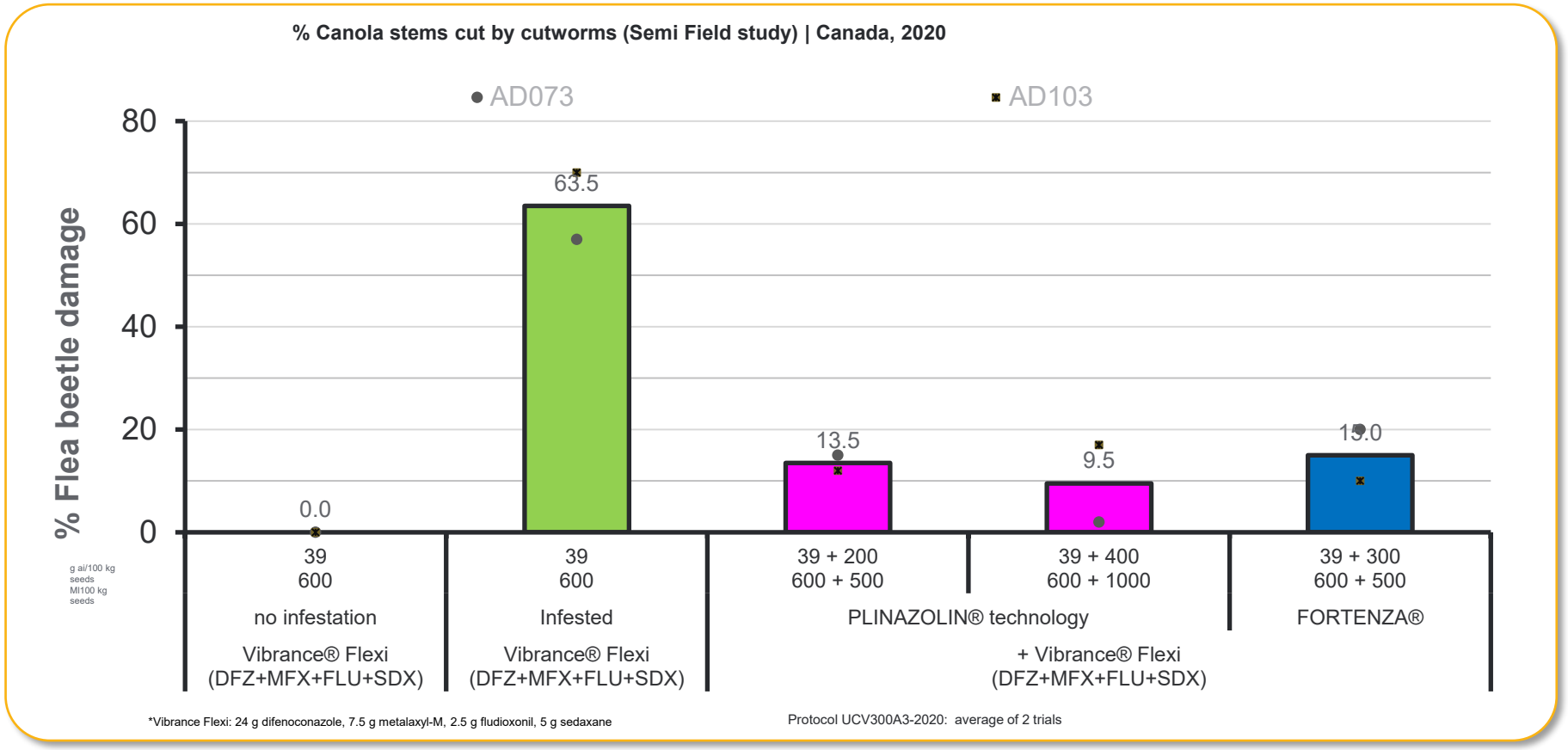
A new partner for CRUISER® on cutworm in Canola



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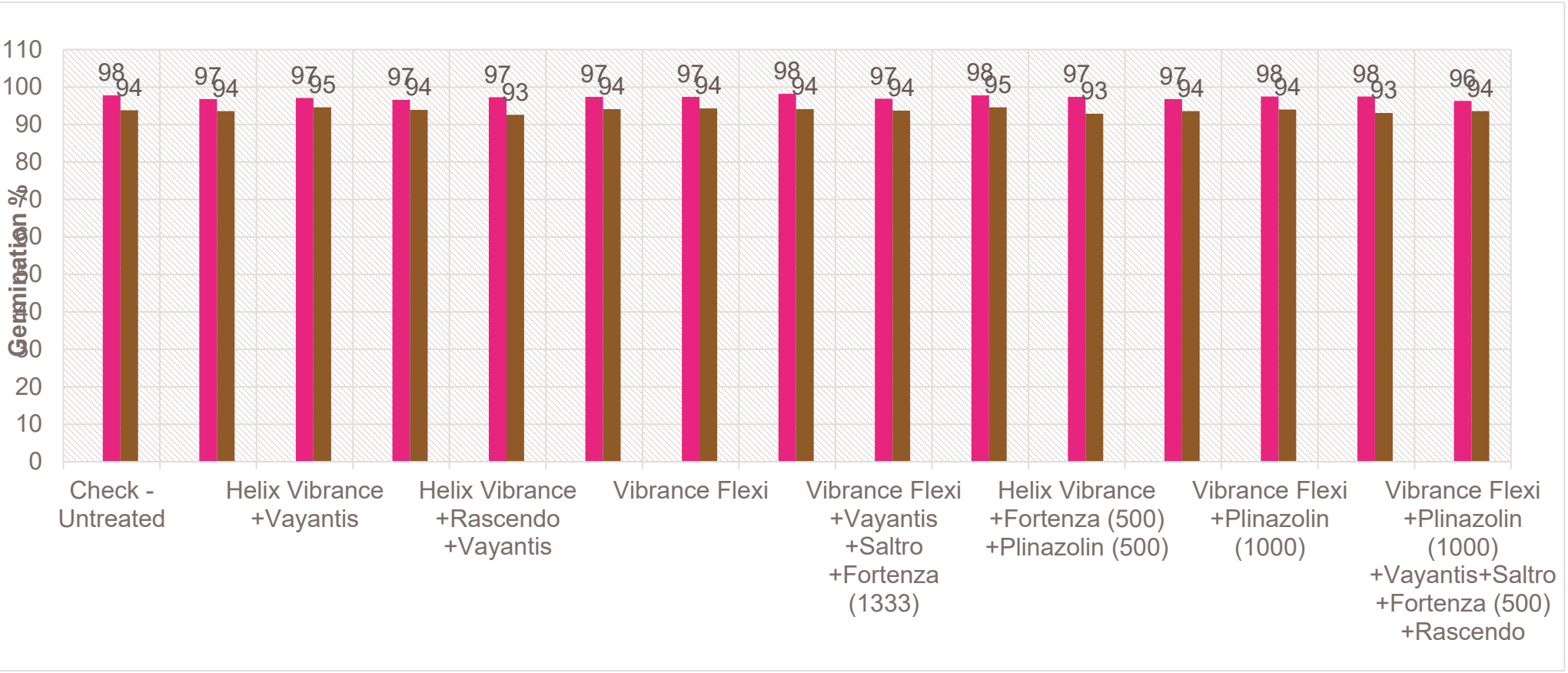
Excellent seed safety. No negative effect on crop establishment



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What is EQUENTO® Extreme?

Equento® + Cruiser®

= Equento® Extreme
PLINAZOLIN® technology

EQUENTO® Extreme
Product Highlights

- EQUENTO® Extreme technology is a powerful insecticide solution, delivering above and below ground protection against **early season insect pests in canola.**
- **Applied in a mixture of EQUENTO® and CRUISER®** seed treatments, delivering fast-acting, long-lasting protection with proven crop safety.
- Ideal soil movement and plant uptake properties provide **consistent performance under a wide range of growing conditions.**
- **Novel modes of action** support **resistance management strategies** for a range of seedling establishment pests, particularly **Redlegged earth mites**
- EQUENTO® Extreme technology will be available through your certified canola seed provider for the 2024 planting season.

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EQUENTO® Extreme - Insect Pests on label

Control of Aphids:

Green Peach
(*Myzuus persicae*)

Grey Cabbage
(*Brevicoryne brassicae*)

Suppression of:

Lucerne Flea
(*Sminthurus viridis*)

Protection from:

Redlegged Earth Mites
(*Halotydeus destructor*)

Wireworm

Bronze Field Beetle

Photos from Cesar Australia – Julia Severi and Andrew Weeks

EQUENTO® Extreme - Insect Pests on label

Canola Pests	EQUENTO® Extreme	CRUISER® Opti	Poncho® Plus
Aphids:			
Green Peach Aphid			
Grey Cabbage Aphid			
Redlegged Earth Mite			
Blue Oat Mite			
Lucerne Flea			
Cutworm			
Wireworms:			
Bronze Field beetle			

Control
Suppression
Protection
Not On Label
Not called out

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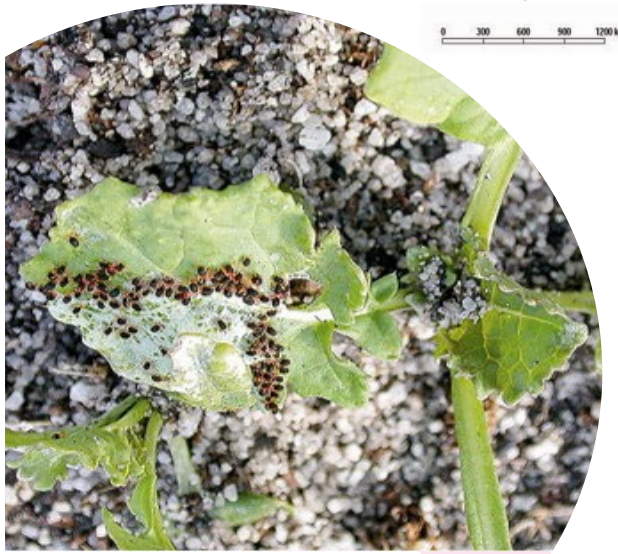
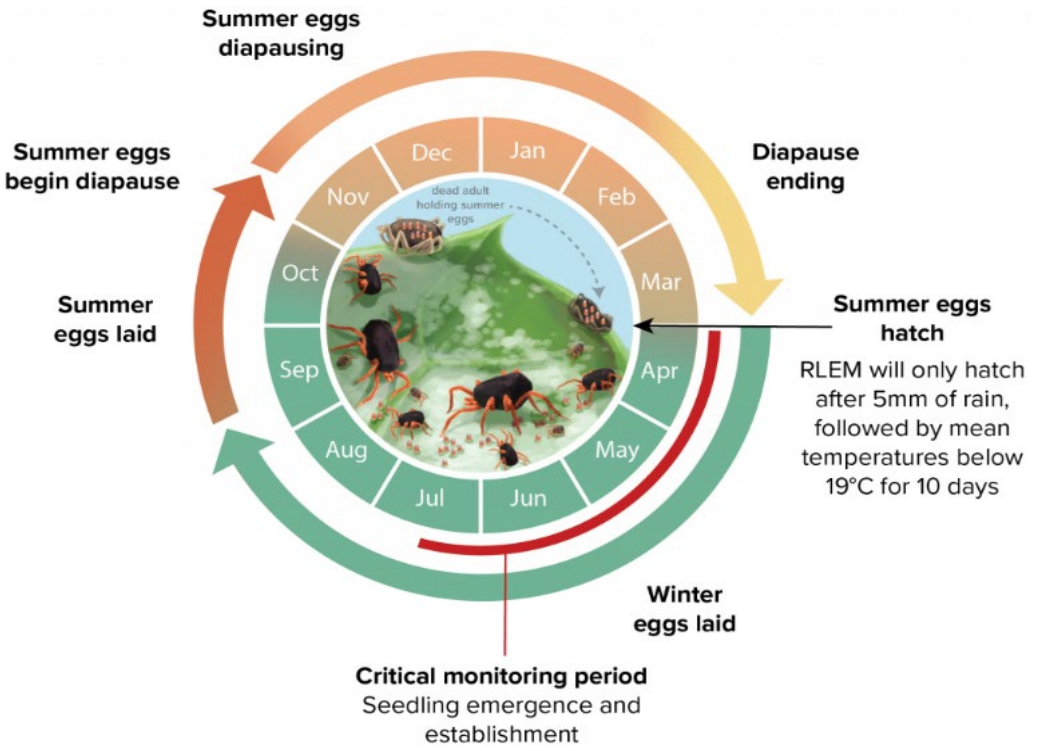
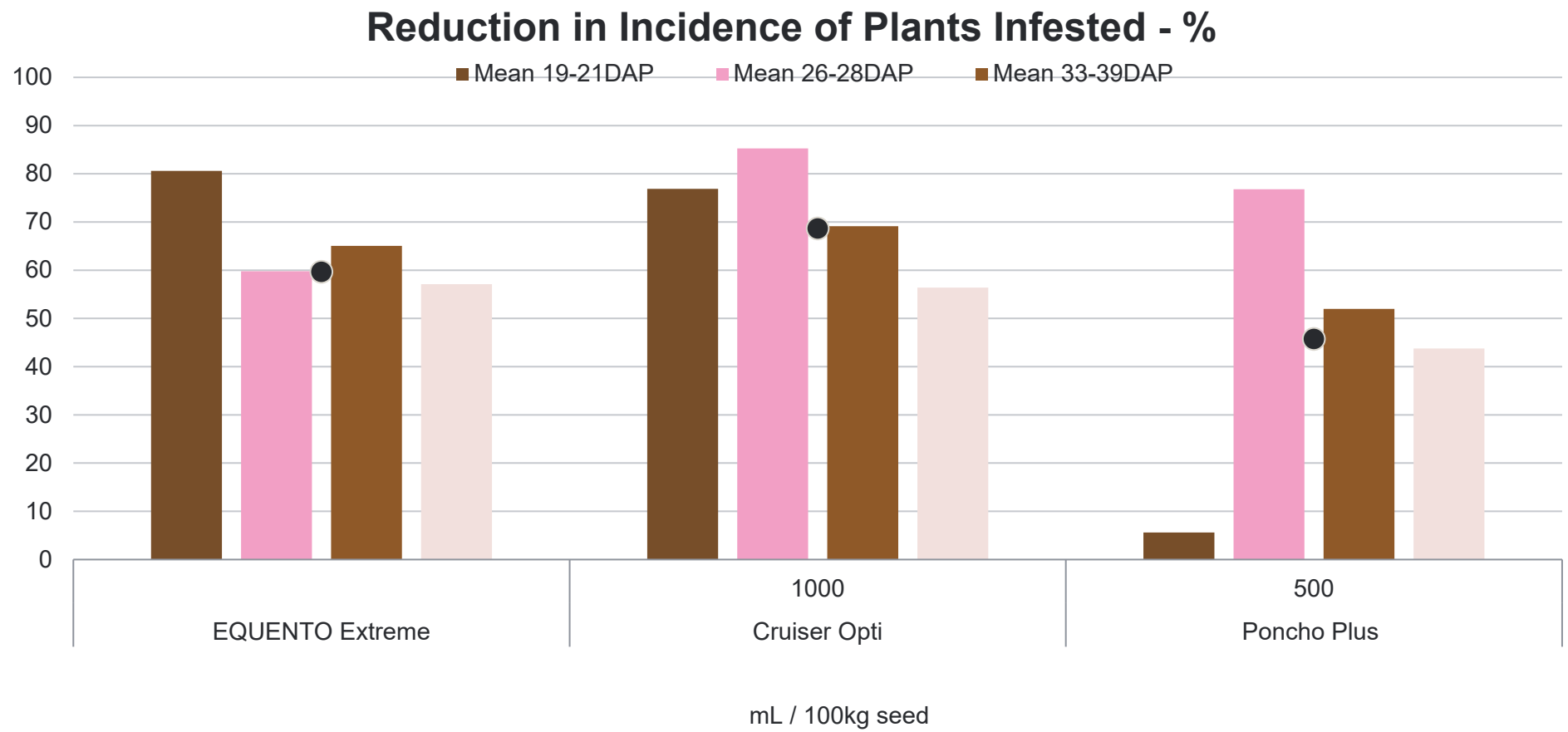
Redlegged Earth Mite (RLEM): Life Cycle/Distribution/Damage





Redlegged earth mite biology and lifecycle. Illustration by Elia Pirtle, Cesar Australia

EQUENTO® Extreme – Redlegged Earth Mites



Reduction in Incidence of Plants Infested with Red Legged Earth Mite as a % and assessed at 4 timings up to 6 weeks after planting across canola. 5 trials were conducted in New South Wales, Victoria, South Australia and Western Australia. Trials were conducted by Syngenta Field Biology team and CROs in 2019.

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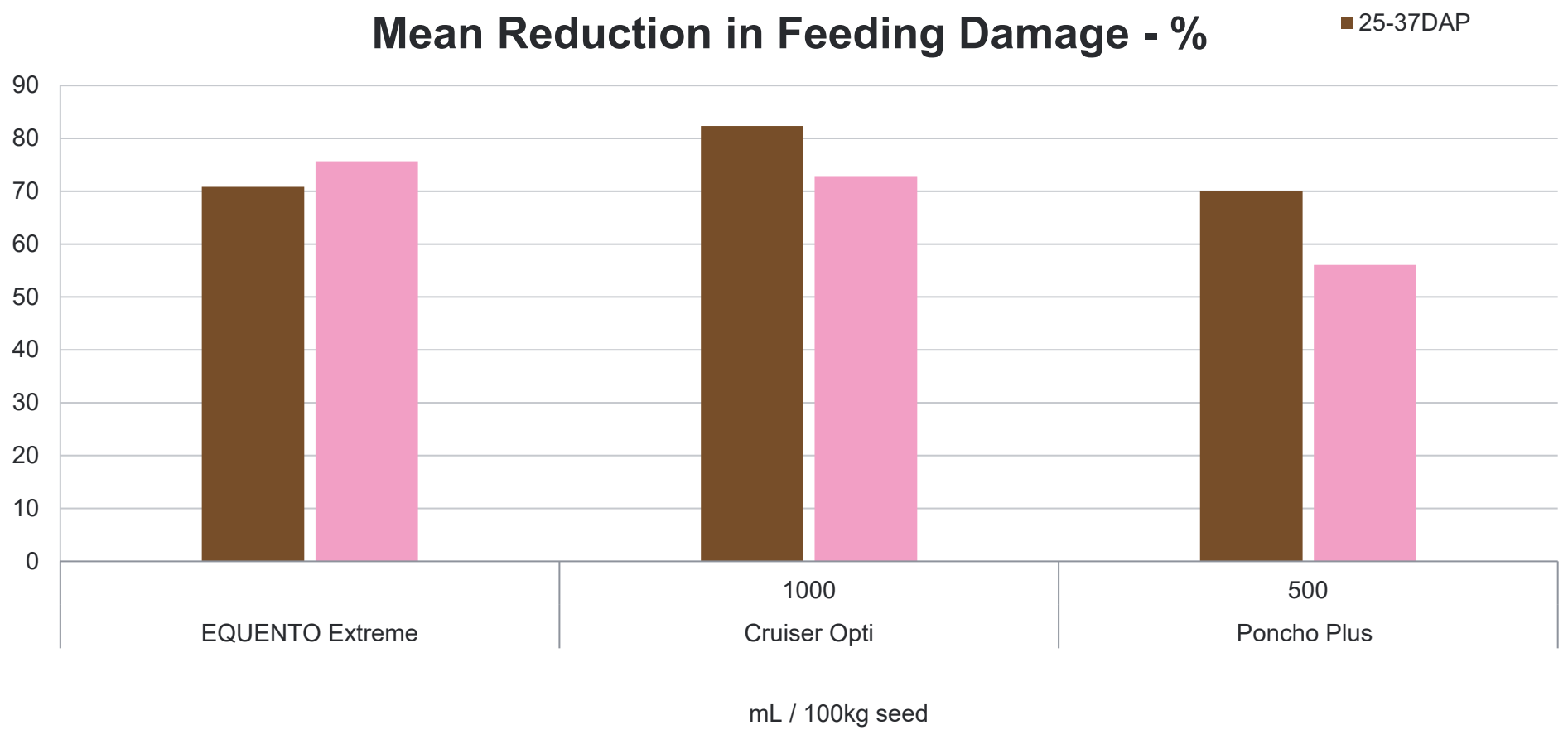
EQUENTO® Extreme – Redlegged Earth Mites



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In summary,

- EQUENTO® Extreme technology is a powerful insecticide solution, delivering above and below ground protection against **early season insect pests in canola.**
- Ideal soil movement and plant uptake properties provide **consistent performance under a wide range of growing conditions.**
- Contains **new group 30 mode of action supporting resistance management**.
- **Excellent crop safety** with no negative effect on germination.
- **3–4 week protection** for emerging seedlings.
- 2 Weeks shorter grazing witholding period to competitor products.
- **Excellent physical compatibility** with other seed treatments.
- Supported by industry leading product development and support by The Seedcare Institute.

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THANK YOU