Calantha™: A novel bioinsecticide for Colorado potato beetle control

Effective, precise, and environmentally friendly

Calantha™

Globally, CPB is conservatively estimated to cause damages worth more than USD 500 million.

CPB is challenging to control due to a fast life cycle and a high adaptability.

The pest has developed resistance to over 50 different chemical insecticides.

Effective control of the pest therefore involves numerous applications in one season, using alternate insecticides of different modes of action.

Uncontrolled, CPB can cause complete defoliation and yield losses of up to 80% can be observed.

Powerful new mode of action

Calantha is a new foliar bio-insecticide that provides effective control of Colorado potato beetle (CPB) in potatoes, meeting industry standards for tuber yield and defoliation protection.

Calantha is powered by ledprona, belonging to a new class of insecticides based on RNA, offering a novel mode of action (IRAC Group 35).

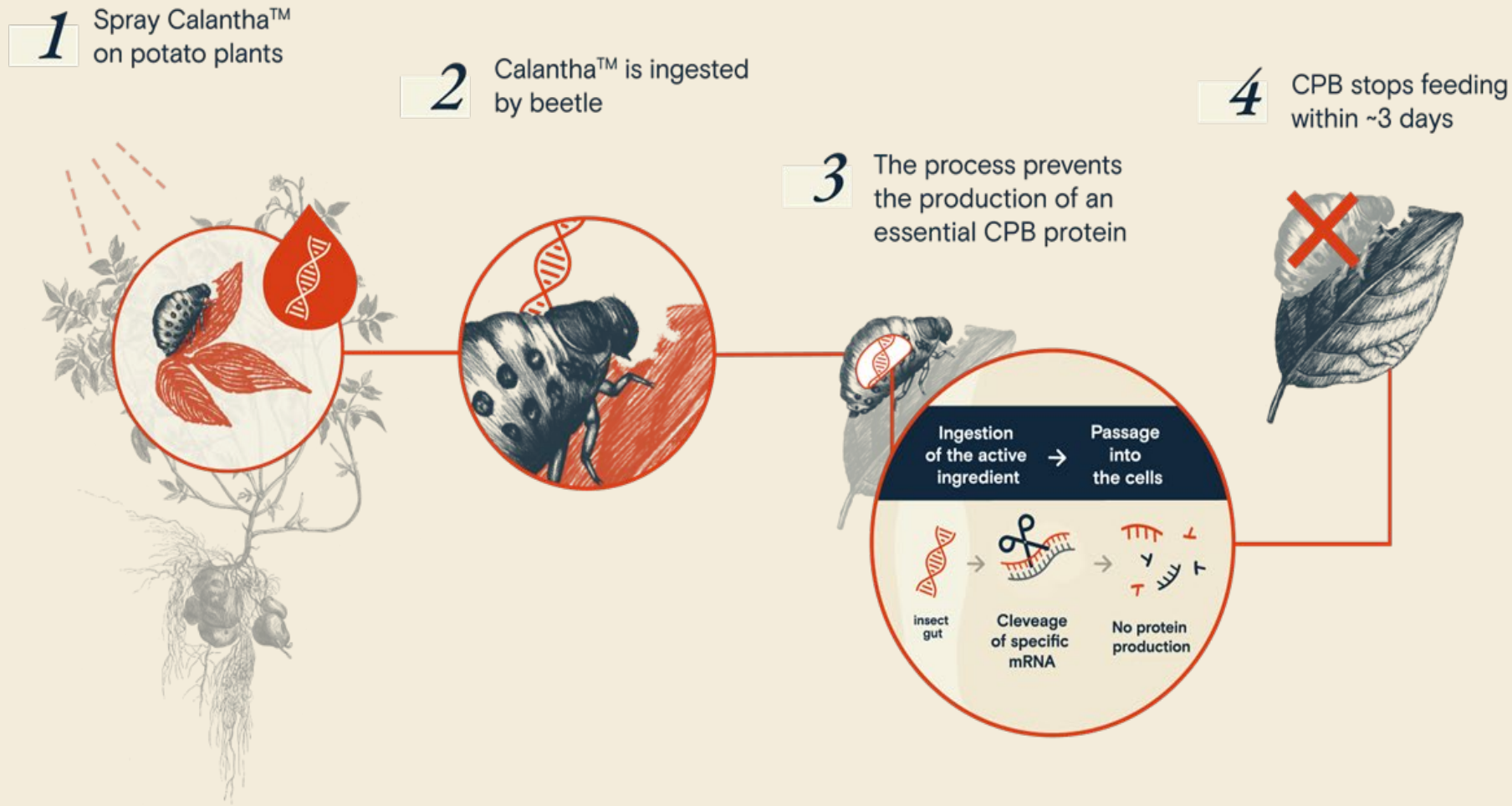
Introducing Calantha in the product rotation is a new key tool for resistance management, improving the toolbox with more options for farmers to effectively control Colorado potato beetle (CPB)

The active ingredient, classified as a bio-insecticide, is effective at a use-rate of a few grams per acre - significantly lower than most currently used insecticides.

How it works

Mode of action

Consumption of the active ingredient causes the Colorado Potato Beetle to stop eating and eventually expire from its own toxins.



Solid data package

Tested and confirmed reliable

Calantha's effectiveness has been confirmed through more than 250 field trials between 2018 and 2023 across USA, Canada and Europe .

These trials encompass small and large plot field trials under all relevant conditions in key potato producing regions across North America and Europe – involving both reputable CRO's and universities.

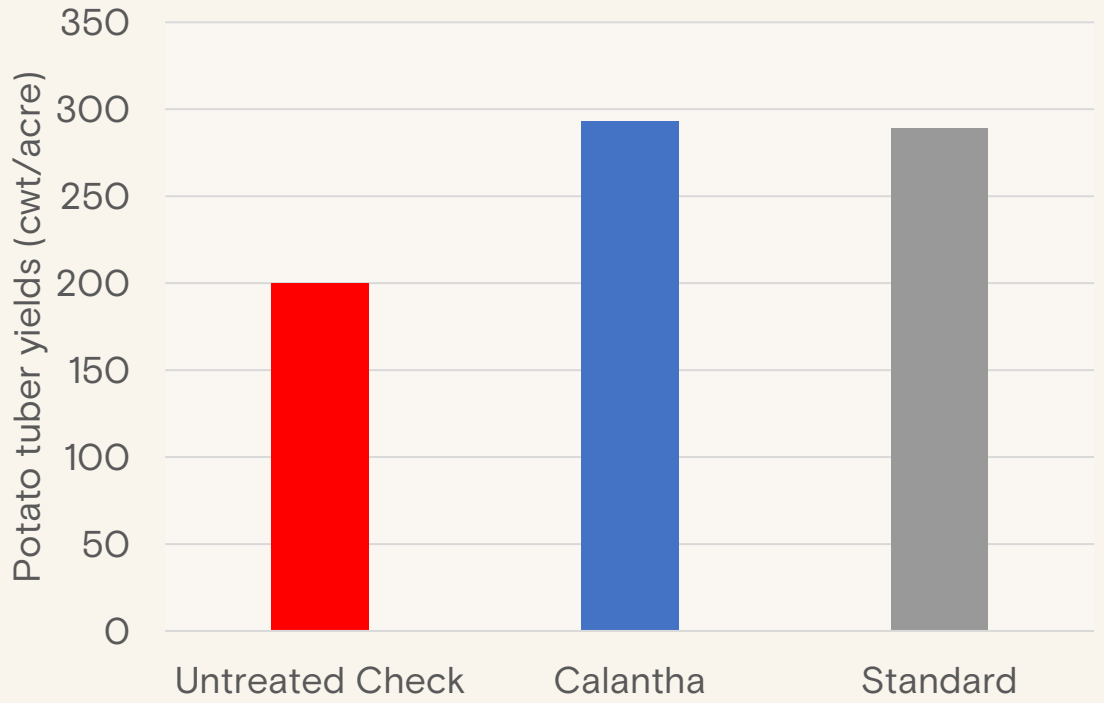
In addition, extensive large scale field trials with prominent industry growers using a range of standard application equipment are confirming the efficacy and ease of use

Protects tuber yield

Calantha consistently controls CPB, meeting industry standards for yield and defoliation protection.

Calantha's effectiveness has been confirmed through more than 250 field trials between 2018 and 2023 – and confirmed under practical conditions, on farm, in extensive large scale, EUP trials across USA in 2023

Tuber yield protection in high infestation conditions

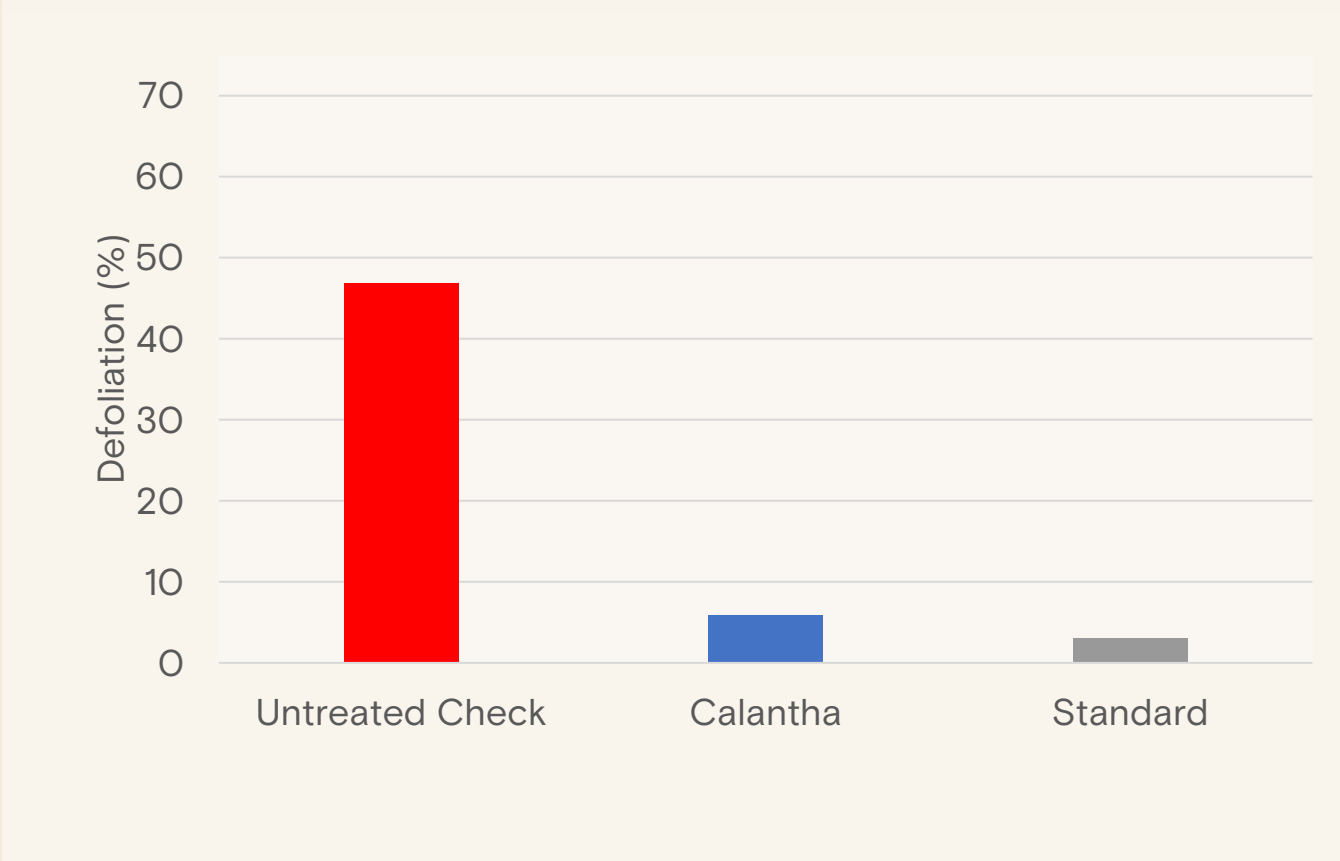


USA - Trial summary across 13 trials with >15% defoliation in untreated control plots from 2019-22

- *Maine (2), Michigan (1), Minnesota (1), New York (3), North Dakota (1), Washington (2), Wisconsin (3)*
- *2-3 foliar applications applied every 7 days*
- *Industry standard insecticides included Spinosad, chlorantraniliprole, abamectin and lambda-cyhalothrin*
- *Both Calantha and Standard insecticide plots had a neonicotinoid insecticide applied at planting*

Protects against defoliation

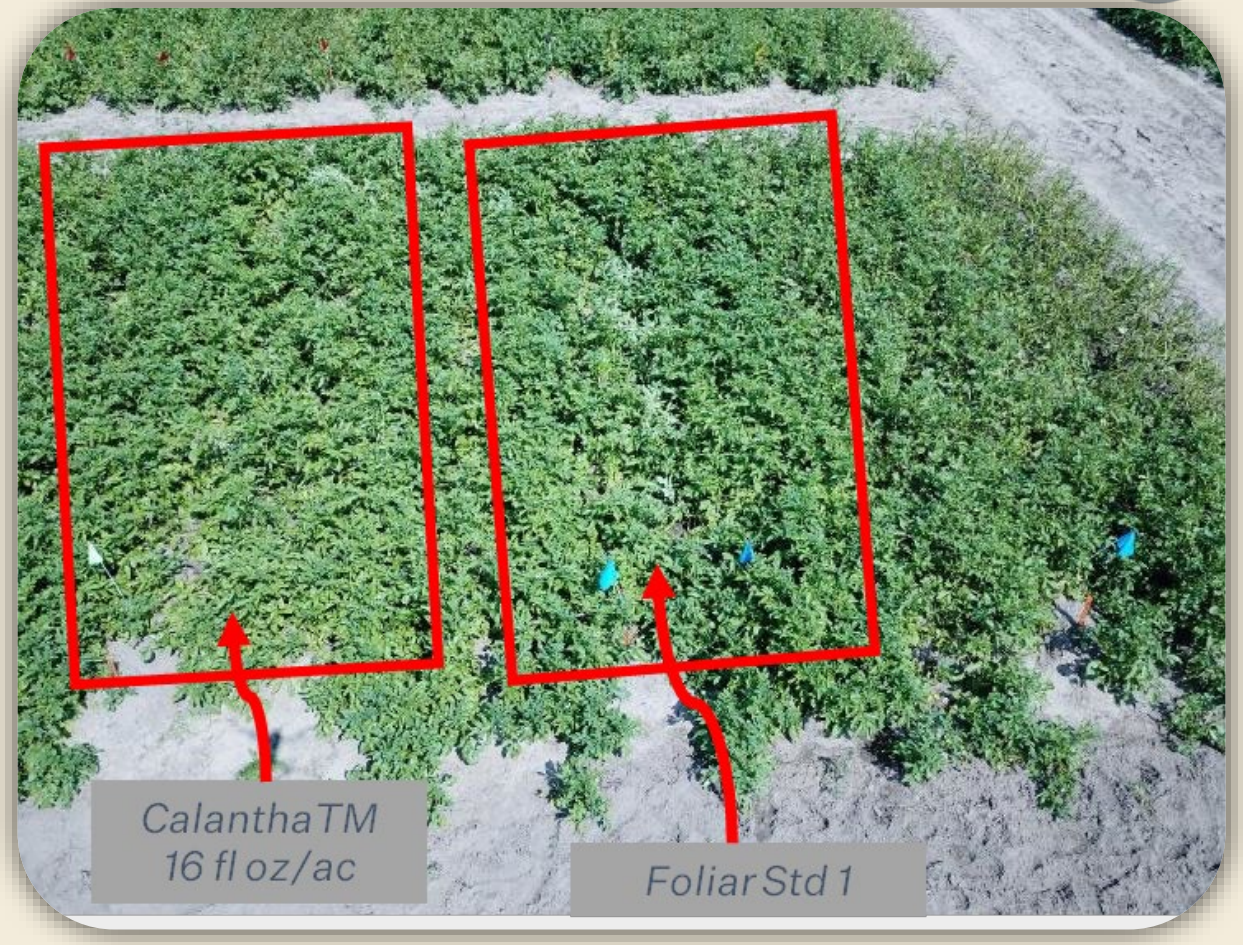
% CPB Defoliation from different foliar treatments



USA – Trial summary across 40 trials with >15% defoliation in untreated control plots from 2019-22

- Maine (10), Michigan (2), Minnesota (2), New York (8), North Dakota (4), Oregon (1), Virginia (1), Washington (5), Wisconsin (7)
- 2-3 foliar applications applied every 7 days ; data tahen ~3 weeks after first foliar application
- Industry standard insecticides included Spinosad, chlorantraniliprole, abamectin and lambda-cyhalothrin

Comparable efficacy to commercial standards



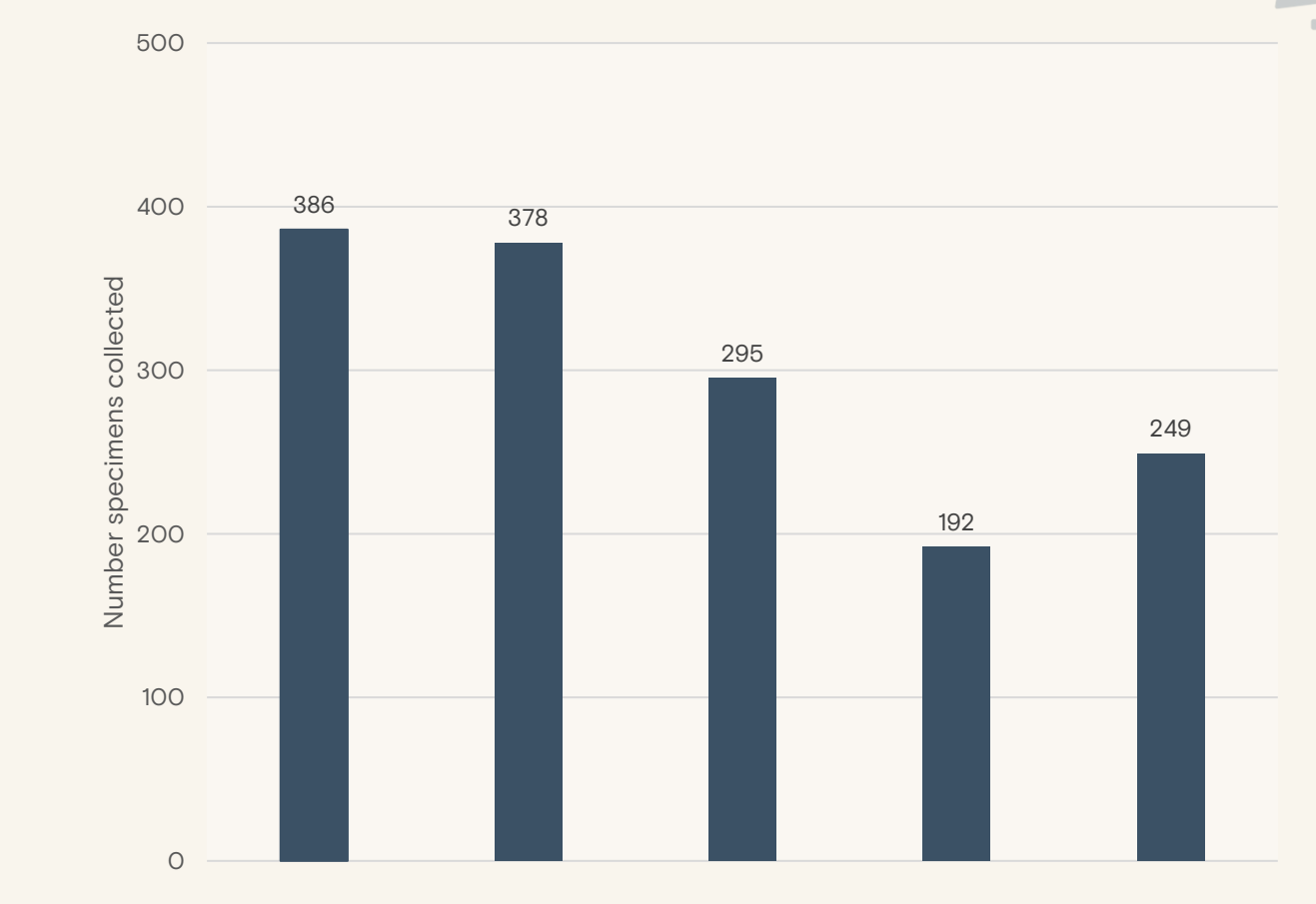
Excellent selectivity towards non-target arthropods

All studies performed confirm little to no impact on non-target organisms tested, leaving beneficials unaffected.

Abundance and specimen richness remained unaffected where Calantha was applied

Neonicotinoid at planting and broad-spectrum insecticides impact populations

Total number of above ground beneficial insect specimens collected during 2021 in Idaho



Soil appl.	None	None	Neonicotinoid	Neonicotinoid	Neonicotinoid
1st gen	None	**Calantha**	Avermectin	Neonic+pyreth	Spinosyn
2ndgen	None	**Calantha**	pyrethroid	Avermectin	Diamide

All treatments included +/- soil neonic / 3 foliar apps to 1st generation CPB / 2 apps to 2nd generation CPB. Samples collected ~every 2 weeks with vacuum sampler.
** Part of 2-year study across the USA*

Fits seamlessly into current practices

Calantha is an aqueous-based liquid formulation (SL)

Laboratory, as well as practical large-scale testing on farms confirm:

- Calantha is highly effective regardless of tested application method.
- Calantha has shown good tank-mixing compatibility with tested mixing partners
- Calantha is easy to handle and store
  - No issues mixing and applying.
  - No specific limitations (heat, cold, light)

Successful large scale EUP tests with commercial growers in 2023

- (~20 acres per site) in ME, MI, MN, NY, ND, OR, WA and WI
- Ground, aerial (including drone) and chemigation applications tested

What do farmers say?

Michigan farmer

Completely different and new chemistry is desperately needed to maintain our options.

We value its specificity, as we want to protect beneficials and non target organisms

It is easy to use and handle

Very effective and a perfect tool for first generation.

Remember to scout and apply timely

Wisconsin farmer 1

- We need new tools to keep our toolbox effective
- Zero residues is important for us
- I will use it as core product against the first generation

Wisconsin farmer 2

A much needed novel technique in the toolbox used to manage the pest populations

A chance to learn and uuntnderstand the pest lifecycle better

Calantha's environmental profile helps us not only manage the pest, but also our crops and our environment - protecting our landscape and our ressources

Recommended positioning

Use rate

- 16 fl oz/ac = 3.8 g ai/ac

Application Timing

- Optimal timing @ 10-50% egg hatch – Early, shortly after egg hatch begins
- Best crop protection when applying on L1/L2 larval stages

Frequency

- 2 (if 1 generation/season) - 4 (if 2 generations/season) successive applications to a single generation – then rotate to another MoA

Application interval:

- 7-10 days depending on population and conditions timing

Summary

- *New effective solution against CPB*
- *Powered by brand new technology and mode of action*
- *New tool for resistance management*
- *Efficacy and crop protection matching level of current premium chemical solutions*
- *Cost competitive to other premium solutions*
- *Fully compatible with farmers' standard practices*
- *Minimal handling restrictions for applicators*
- *No preharvest interval*
- *No detectable residues*
- *Excellent selectivity to beneficials and pollinators tested*

Thank you!