Nufarm/Valent
OMAFRA Spring Apple Thinning Meeting

April 29, 2019
# Nufarm Apple Program

## Apple

<table>
<thead>
<tr>
<th>Stage</th>
<th>Chateau</th>
<th>New Parasol FL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dormant</td>
<td></td>
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<tr>
<td>King Bloom</td>
<td>Blossom Protect</td>
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<tr>
<td>Full Bloom</td>
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<tr>
<td>Petal Fall</td>
<td>MaxCel Promalin</td>
<td>MaxCel</td>
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<tr>
<td>Fruit Development</td>
<td>Retain (July-September)</td>
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<td>Fruit Present</td>
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<tr>
<td>Post Harvest</td>
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</table>

- **Promalin**: DiPel, XenTari
- **MaxCel Promalin**: Clutch DiPel, XenTari
- **MaxCel**: Clutch DiPel, XenTari
TECHNICAL INFORMATION

HERBICIDE GROUP
> Group 14

ACTIVE INGREDIENTS
> Flumioxazin 51.1%

PACKAGING
> 4 x 1.13 kg case

RAINFAST
> Requires ½ inch of rain or irrigation for activation

PCP #
> 29231
Chateau Herbicide

113g/ac on coarse textured soils with <5% OM
170g/ac on medium textured soils with <5% OM

- Moisture necessary for activation
  - ½ inch rain or irrigation
- Should be applied as a uniform broadcast application to the orchard floor or as a band directed at the base of the trunk
- Should be tank mixed with glyphosate for control of emerged weeds
- Do not apply after budbreak unless using a hooded or shielded boom
Parasol® FL

ONE OF THE SMALLEST AND MOST CONSISTENT COPPER PARTICLE SIZE FORMULATIONS AVAILABLE

TECHNICAL INFORMATION

CHEMICAL CLASS
> M1 fungicide

ACTIVE INGREDIENTS
> Copper hydroxide 24.4%

PACKAGING
> 2 x 10 L case

RAINFAST
> 2 hours

PCP #
> 25901
Parasol® FL

Now Registered on Tree Fruit including:

- **Apple** and Pear
  - Fire Blight (*Erwinia amylovora*)
  - Bacterial Blight (*Pseudomonas syringae*)

- **Apricots**
  - Coryneuym blight (*Coryneum carpophilum*)

- **Cherries**
  - Bacterial Canker (*Pseudomonas spp.*)

- **Nectarine and Peach**
  - Coryneum Blight (*Coryneum carpophilum*)
  - Leaf Curl (*Taphrina deformans*)
Parasol® FL - Apples

- Rate
  - 1.9L/ac

- Application Information:
  - Fall – Apply after 50% leaf drop
  - Spring – Apply at silvertip

  - Can make up to 2 applications per year
Blossom Protect™

FITS WELL IN A FIRE BLIGHT PROTECTION PLAN IN POME FRUIT

TECHNICAL INFORMATION

CHEMICAL CLASS
> N/A – Biological

ACTIVE INGREDIENTS
> Aureobasidium pullulans

PACKAGING
> 12 kg box: Blossom Protect (1.5 kg canister) + Buffer Protect (10.5 kg bag)

RAINFAST
> Avoid application when heavy rain is in the forecast

PCP #
> 30552

BIOLOGICAL FUNGICIDE

Grow a better tomorrow
Blossom Protect

• **Aureobasidium pullulans** is a biological fungicide active against fire blight in apples

• Application timings - up to 5 applications per year during bloom, when conditions favour fire blight
  - Apply the day before predicted infection conditions and follow up 2 days after if infection risk is still high and blossoms are open
Mode of Action
Antagonism – competition for space/nutrients

Mode of Action:
Untreated

E. amylovora
Inoculation

Blossom Protect™

pH 7
Infection

pH 4

Reduced growth of E. amylovora
Blocking the infection site (Nektarthods)
Disrupted chemotaxis of E. amylovora by acidification

A. pullulans
E. amylovora
What about scab control products?

• Can be tank mixed with:
  - Sulfur products
  - Anilinopyrimidines (Cyprodinil, Pyrimethanil and Mepanipyrim)
  - Some sterol biosynthesis inhibitors (Penconazol, Fluquinconazol)

• Other fungicides have to be applied separately from Blossom Protect, 1 day before or 2 days after.
  - Captan, dithianon, lime sulfur, strobilurines, difenoconazol etc.
XenTari

NEW! Biological Insecticide
**Bacillus thuringiensis aizawai, strain ABTS 1857**

XenTari contains a specialized ratio of Cry-toxin proteins that provide highly effective control of armyworm and diamondback moth.

**Key Lep. species:**

- *Spodoptera frugiperda*
  - Fall army worm
- *Spodoptera eridania*
  - Southern armyworm
- *Plutella xyostella*
  - Diamondback moth

**Additional insecticidal components:**

- **VIP3A** – soluble Cry-like insecticidal protein
- **Spores** – invade the insect body
- **PD-100** – soluble Cry toxin synergist
XenTari – application information and insects controlled

**Rate:** 202-648g/ac

**Timing:** at pink stage and if populations are heavy at petal fall
Applications may need to be made on a weekly basis

**Pome Fruit**
- Cankerworms
- Codling moth
- Fruittree, oblique-banded, redbanded, varigated leafroller
- Oriental fruit moth
- Tufted apple budworm
- Winter moth

**Stone Fruit**
- Cankerworks
- Varigated, fruittree and oblique-banded leafroller
- Oriental fruit moth
Clutch®
50 WDG

PROVIDES FAST ACTING, LONG LASTING, BROAD-SPECTRUM CONTROL OF TOUGH PESTS IN A VARIETY OF CROPS

TECHNICAL INFORMATION

CHEMICAL CLASS
> Group 4A

ACTIVE INGREDIENTS
> Clothianidin 50%

PACKAGING
> 6 x 680 g case

RAINFAST
> For foliar applications avoid application when heavy rain is in the forecast

PCP #
> 29382
# Clutch in Apples

<table>
<thead>
<tr>
<th>INSECT CONTROLLED</th>
<th>RATE</th>
<th>PHI</th>
<th>APPLICATION INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aphids</td>
<td>140-210 g/ha</td>
<td>7</td>
<td>Apply after petal fall and prior to insect populations reaching damaging thresholds or prior to damage caused by stings or tunneling occurs</td>
</tr>
<tr>
<td>Leafhoppers</td>
<td>(56.7-85 g/ac.)</td>
<td></td>
<td>If pest pressure continues, follow up with a second application 10-14 days later for all pests except Oriental fruit moth and Codling moth (observe a 14-day interval for these pests)</td>
</tr>
<tr>
<td>Brown marmorated stink bug (suppression only)</td>
<td>210-420 g/ha</td>
<td></td>
<td>Apply Clutch post-bloom only</td>
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<tr>
<td></td>
<td>(85-170 g/ac.)</td>
<td></td>
<td>Do not apply more than 2 applications per season and do not exceed 420 g/ha/season</td>
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<tr>
<td>Codling moth (suppression only)</td>
<td>210-420 g/ha</td>
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<tr>
<td>Oriental fruit moth</td>
<td>(85-170 g/ac.)</td>
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<td>Leafminers</td>
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<td></td>
<td>(56.7-85 g/ac.)</td>
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<tr>
<td>Pear psylla</td>
<td>280-420 g/ha</td>
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<td>(113.4-170 g/ac.)</td>
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<td>Plum curculio</td>
<td>210 g/ha</td>
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PMRA Clothianidin Decision

• The following uses have been cancelled by the PMRA: strawberry, pome fruit, stone fruit, municipal/residential/industrial turfgrass.

• Last date of use will be April 2021
  - Some uses granted extension due to lack of alternatives
  - Pome and stone fruit allowed use until April 11, 2022 for BMSB

• The proposed phase-out DOES NOT include sod farms, golf courses, potato, grapes, cucurbits

• PLEASE NOTE: This decision only relates to impact on pollinators. The final decision related to the Special Review on impact to aquatic invertebrates is expected in January 2020; the proposed decision for the aquatic invertebrate Special Review calls for the cancellation of all agricultural clothianidin-containing end use products, including seed treatment.
  - This Special Review may result in further uses being proposed for phase-out.
# Nufarm Apple Program

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Thank you!

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