

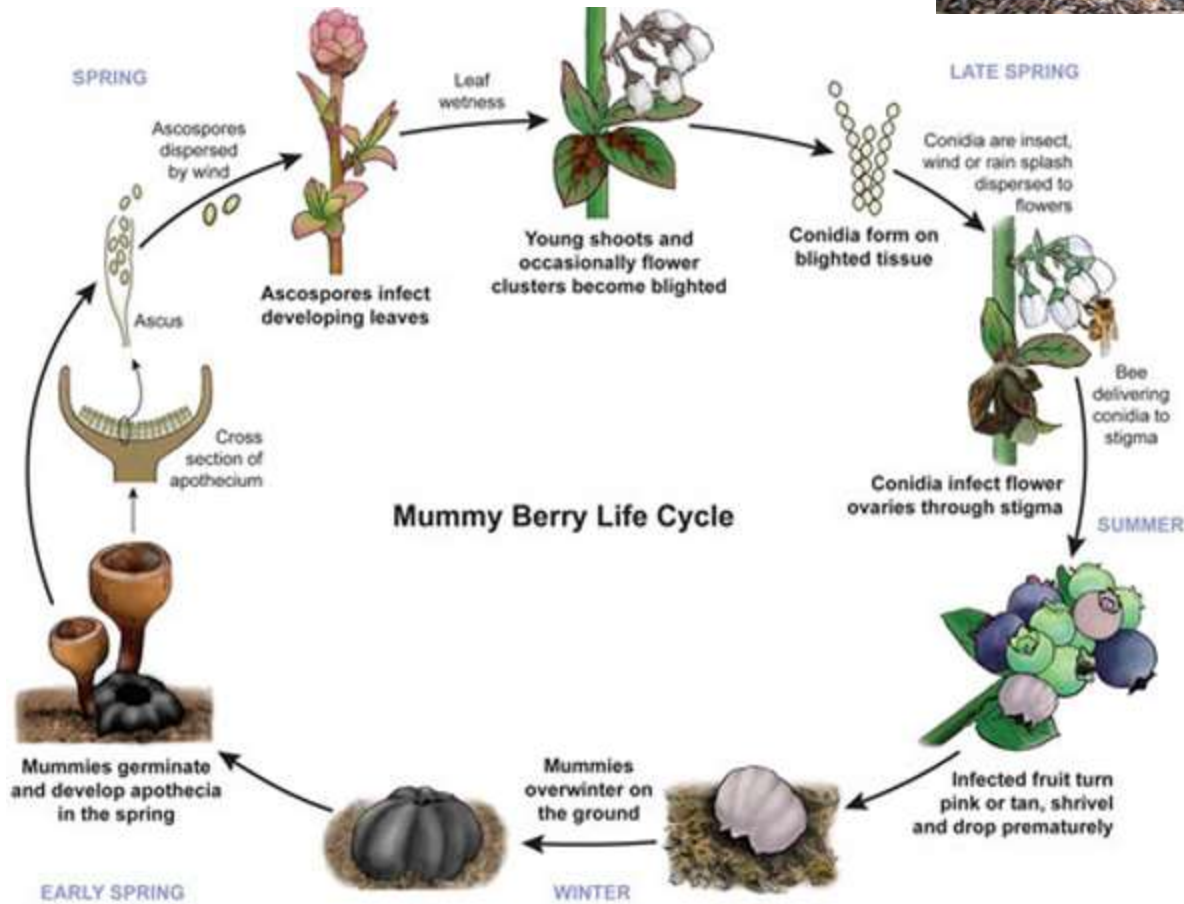
Wild Blueberry Pest Management Update



David Yarborough
74th Maine Ag Show Augusta
January 15, 2015

Mummy berry Monitoring - 2014

Monilinia (Mummy Berry)



Source: Michigan State University Extension

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Risk of Mummy berry Infection

(Fact Sheet 217)

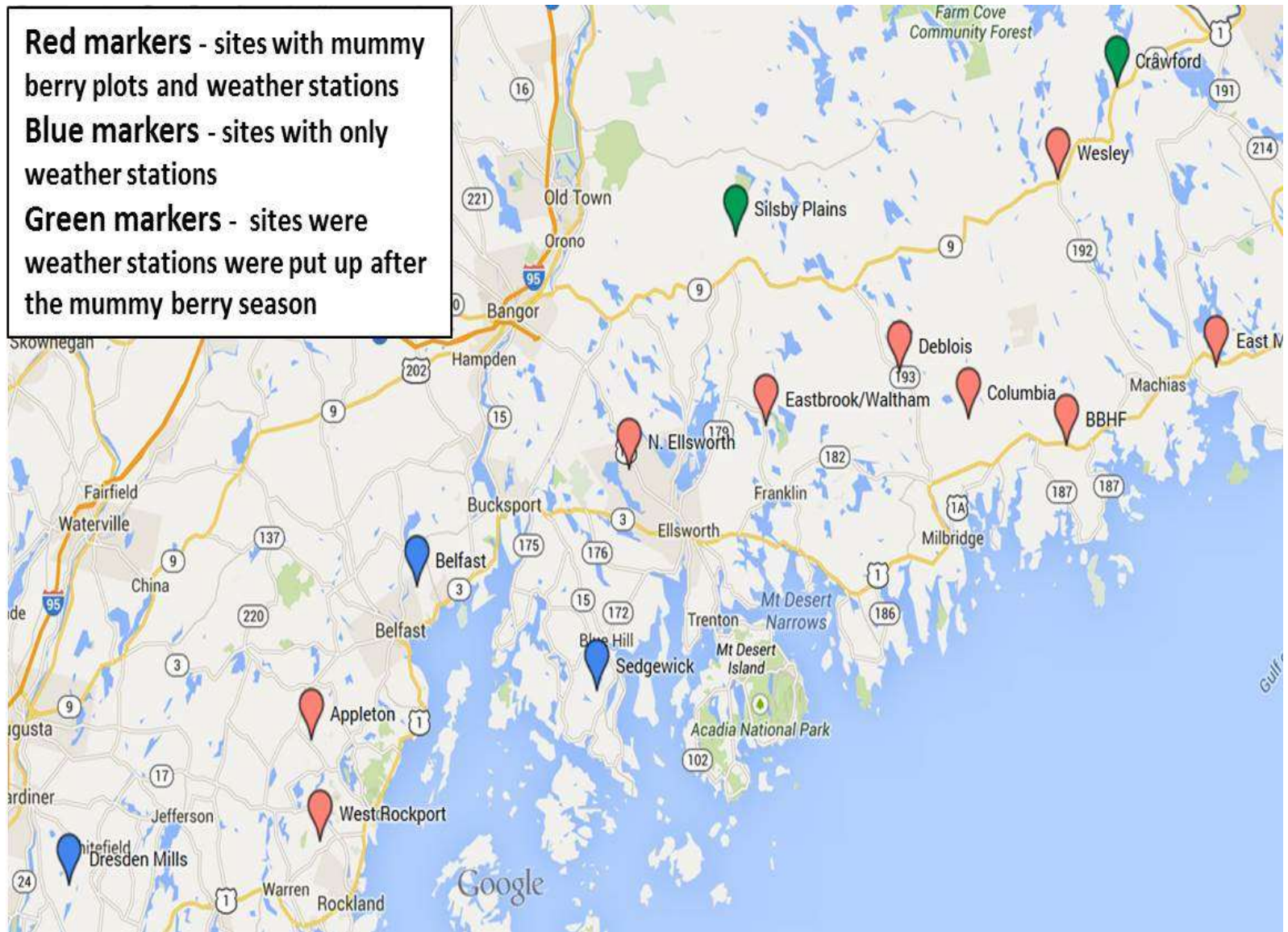


Mean Temperature (°F) during Infection Period				
36°	43°	50°	57°	65°
NONE	NONE	NONE	NONE	NONE
NONE	NONE	NONE	LOW	MOD
NONE	LOW	LOW	HIGH	HIGH
NONE	MOD	HIGH	HIGH	HIGH
MOD	HIGH	HIGH	HIGH	HIGH
MOD	HIGH	HIGH	HIGH	HIGH
HIGH	HIGH	HIGH	HIGH	HIGH



Locations of mummy berry forecast stations and mummy berry plots for 2014

Red markers - sites with mummy berry plots and weather stations
Blue markers - sites with only weather stations
Green markers - sites where weather stations were put up after the mummy berry season



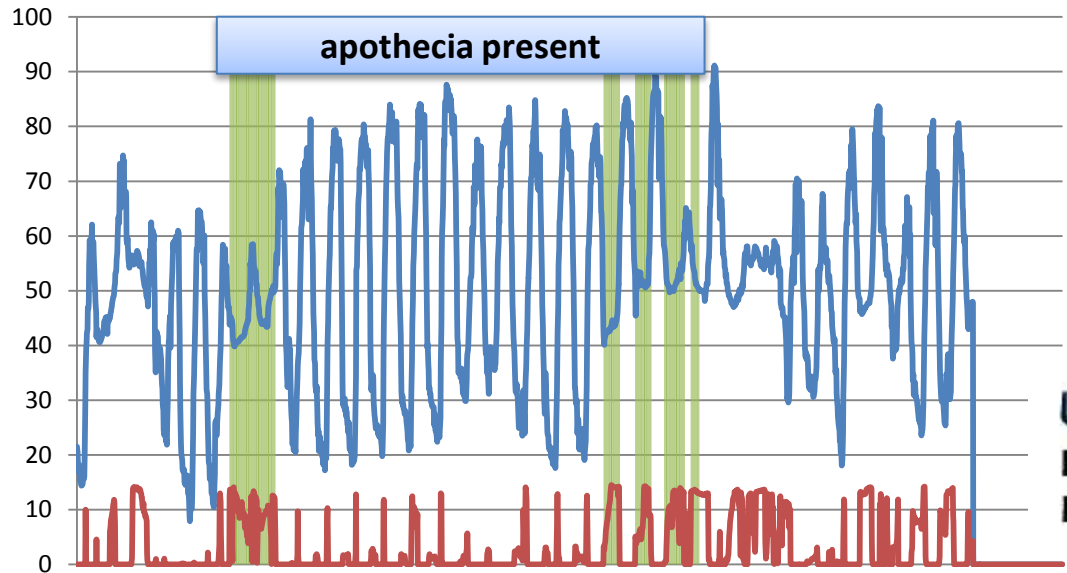


Forecast reports were delivered in three ways:

- 1. in email messages sent out to an email list**
- 2. posted on the Wild Blueberry extension blog and on (<http://umaine.edu/blueberries/blog/>)**
- 3. recorded as answering machine messages**

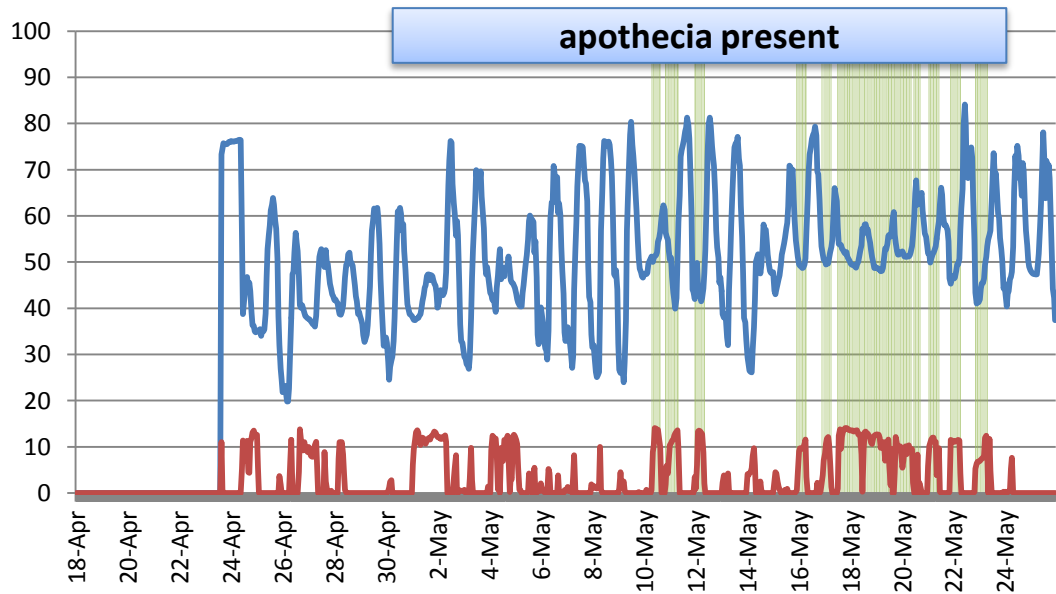


Deblois 2013



University of Maine
Blueberry Disease Model
Data Dashboard

Deblois 2014



18-Apr 20-Apr 22-Apr 24-Apr 26-Apr 28-Apr 30-Apr 2-May 4-May 6-May 8-May 10-May 12-May 14-May 16-May 18-May 20-May 22-May 24-May



F0



F1



F2



F3

Flower bud development stages. F0 and F1 are not susceptible; F2 and all stages afterwards are susceptible.



Monilinia apothecia development from pinhead (i), to mature apothecia producing spores (iii) to old apothecia (iv).

It is time to put out your mummy berry plots for next year

How to put out Mummy berry plots

1. Collect about **150 mummy berries** (**50 for each mummy berry plot**) from *your crop field(s) near harvest* (or from *the process line or winnow piles if you have them*). The mummy berries will be whitish grey and smaller than the berries and will have dropped onto the surface of the leaf litter under the plants, typically where you still see some amongst clusters of healthy berries on stems. Often clones produce different amount of mummy berries, so if there are no mummy berries in one spot, try another area in your field. Often there are more mummy berries at the edges of fields





Monilinia leaf infection, early stages

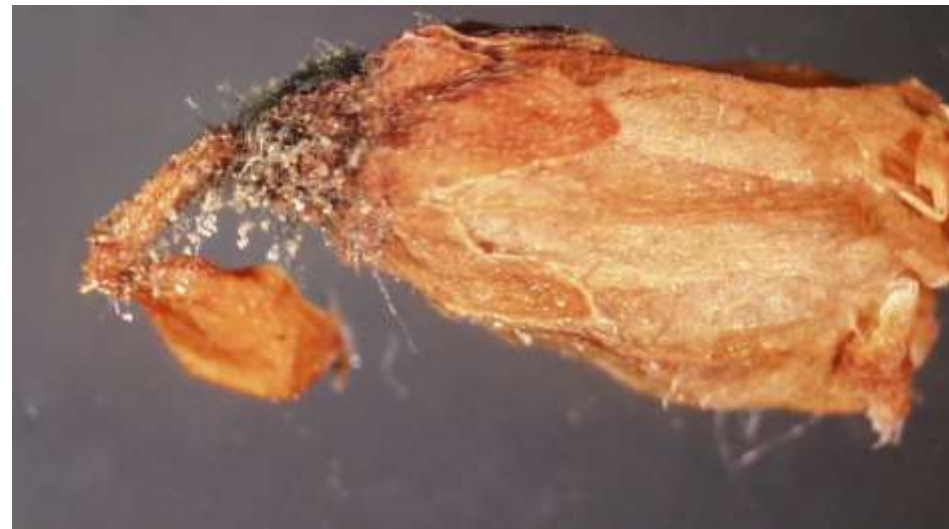


Assessment of *Monilinia* infection (flowers)

Some reports of Botrytis blossom blight and Frost – June 6



There have been some reports of localized patchy frost damage the last week of May followed by Botrytis symptoms showing up this week. Frost will make blossoms more susceptible to Botrytis infection. I have heard this from growers in the Union area and around the Orland area. In one field, we saw low levels of both frost and Botrytis infection on the blossoms. One of the differences to previous years was the very short hairs of the Botrytis sticking out of the base of infected blossoms. A hand lens will be needed to see this kind of Botrytis infection. Please look at previous reports to see pictures of these different diseases.



Frost Damage

Note: All flowers on a stem tend to be affected. On leaves, the youngest leaves in the center of the cluster have been killed.



Mummy berry blight

Note: gray powdery spores (in yellow circles) at base of affected flowers and leaves



Botrytis Blossom Blight



Note: black hairs, some with gray tips, (in yellow circles) coming off of dead leaves and flowers

A Pocket Guide to IPM Scouting in Wild Blueberries 2nd Edition

Compiled and edited by:

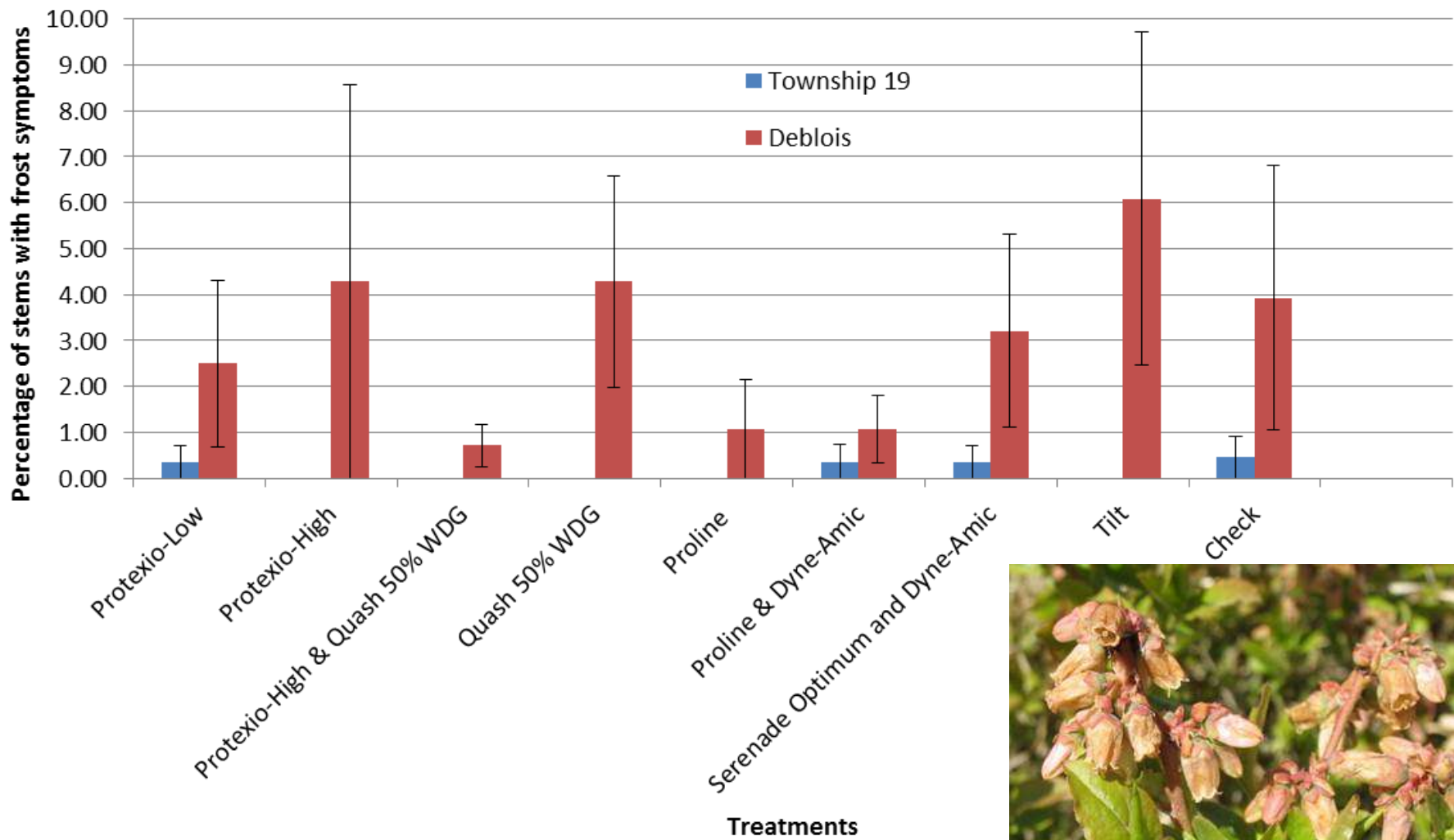
David Yarborough
Frank Drummond
Seanna Annis
Jennifer Cote
Alison Dibble



**Available as printed guide
and may be down loaded
as PDF for Smartphone**

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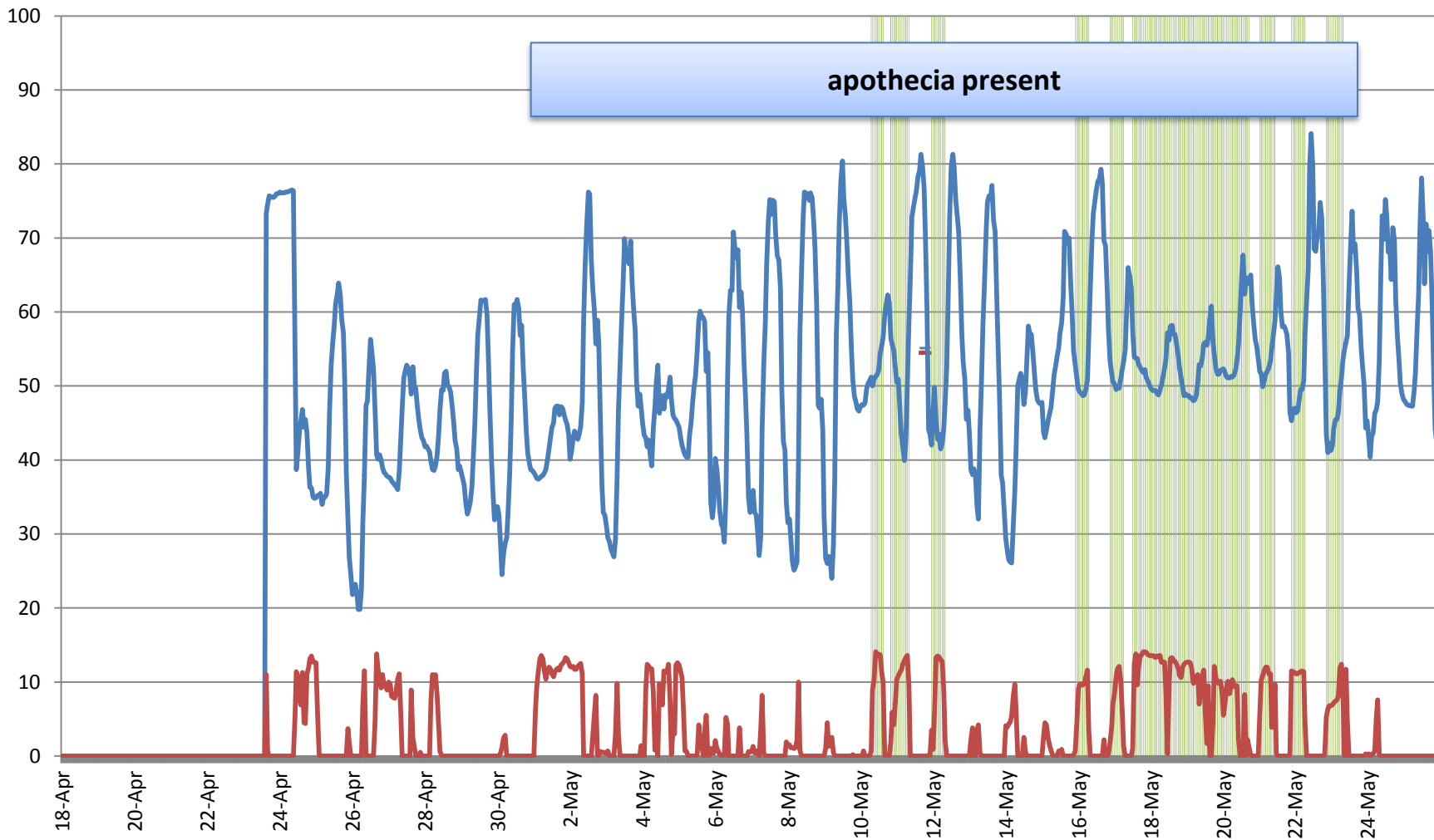


Mummy berry Fungicide Trials 2014 Results

Mummyberry Control Treatments - 2014

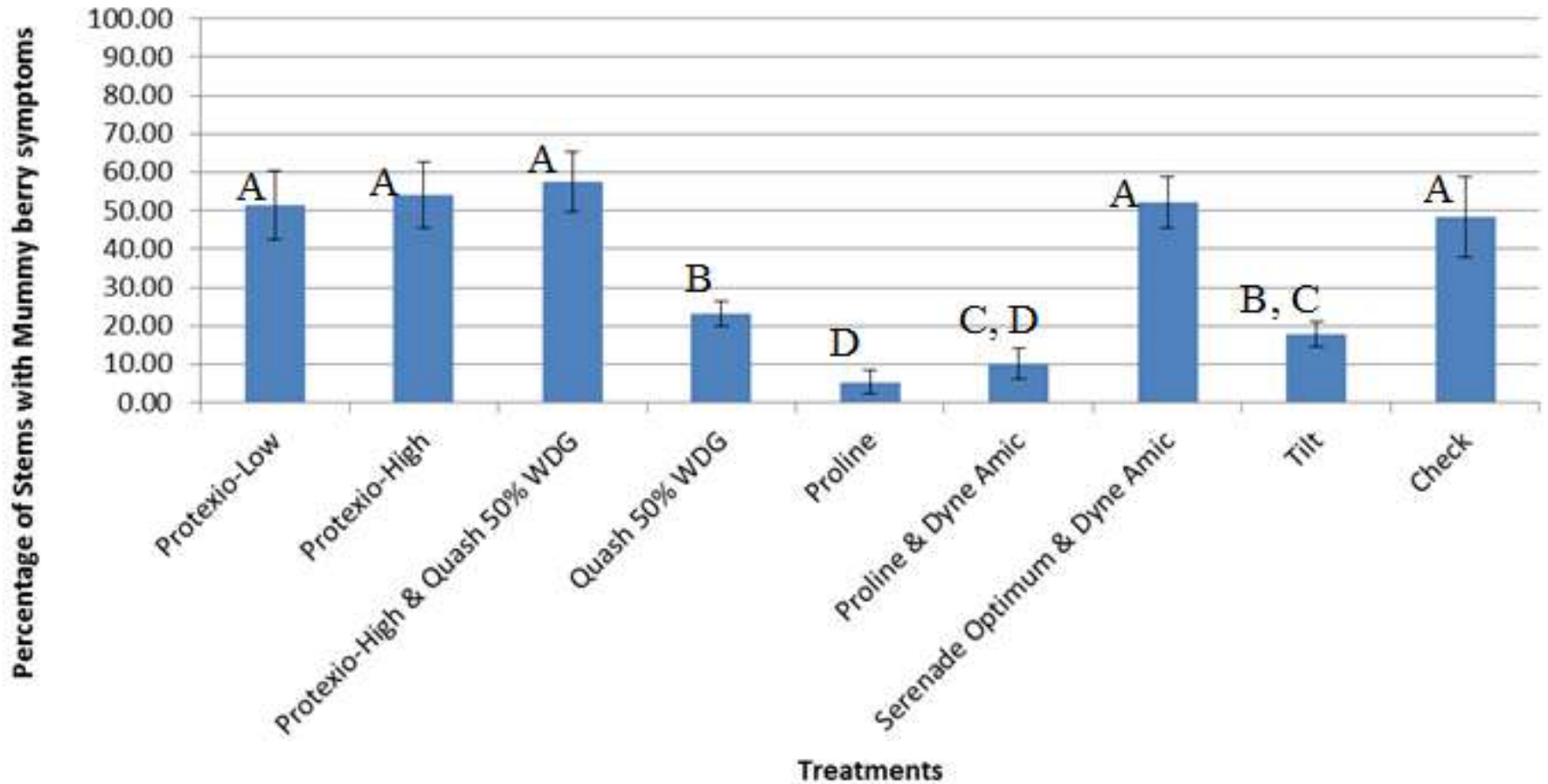
Treatment (Trade Names)	Material	Manufacturer	FRAC group	EPA Registration Number	Registered on Blueberries
Protexio - Low	fenpyrazamine	Valent USA	17	59639-179	No
Protexio - High	fenpyrazamine	Valent USA	17	59639-179	No
1 st spray Protexio - High, 2 nd spray (not applied) Quash 50% WDG	fenpyrazamine and metaconazole	Valent USA	17 and 3	59639-179 and 59639-147	No
Quash 50% WDG	metaconazole	Valent USA	3	59639-147	Yes
Proline	prothioconazole	Bayer Crop Science	3	264-825	Yes
Proline and Dyne-Amic (surfactant)	prothioconazole	Bayer Crop Science (Helena Chemical Company)	3	264-825 (5905-50071-AA)	Yes
Serenade Optimum and Dyne-Amic (surfactant)	Bacillus subtilis, bacteria	Bayer Crop Science (Helena Chemical Company)	none	264-1160 (5905-50071-AA)	Yes
Positive Control - Tilt	propiconazole	Syngenta	3	100-617	Yes

Deblois 2014

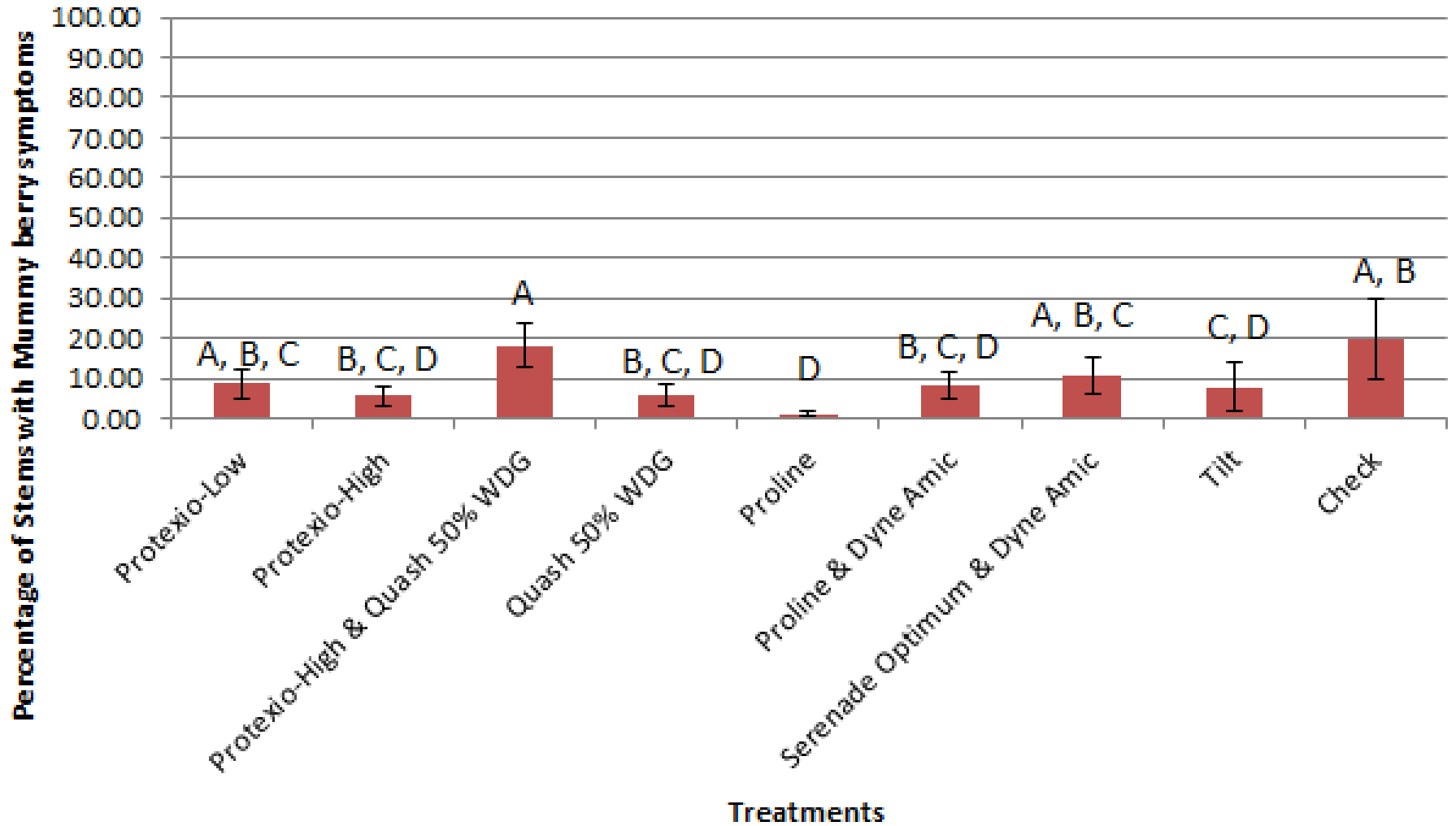


One application on May 12 *

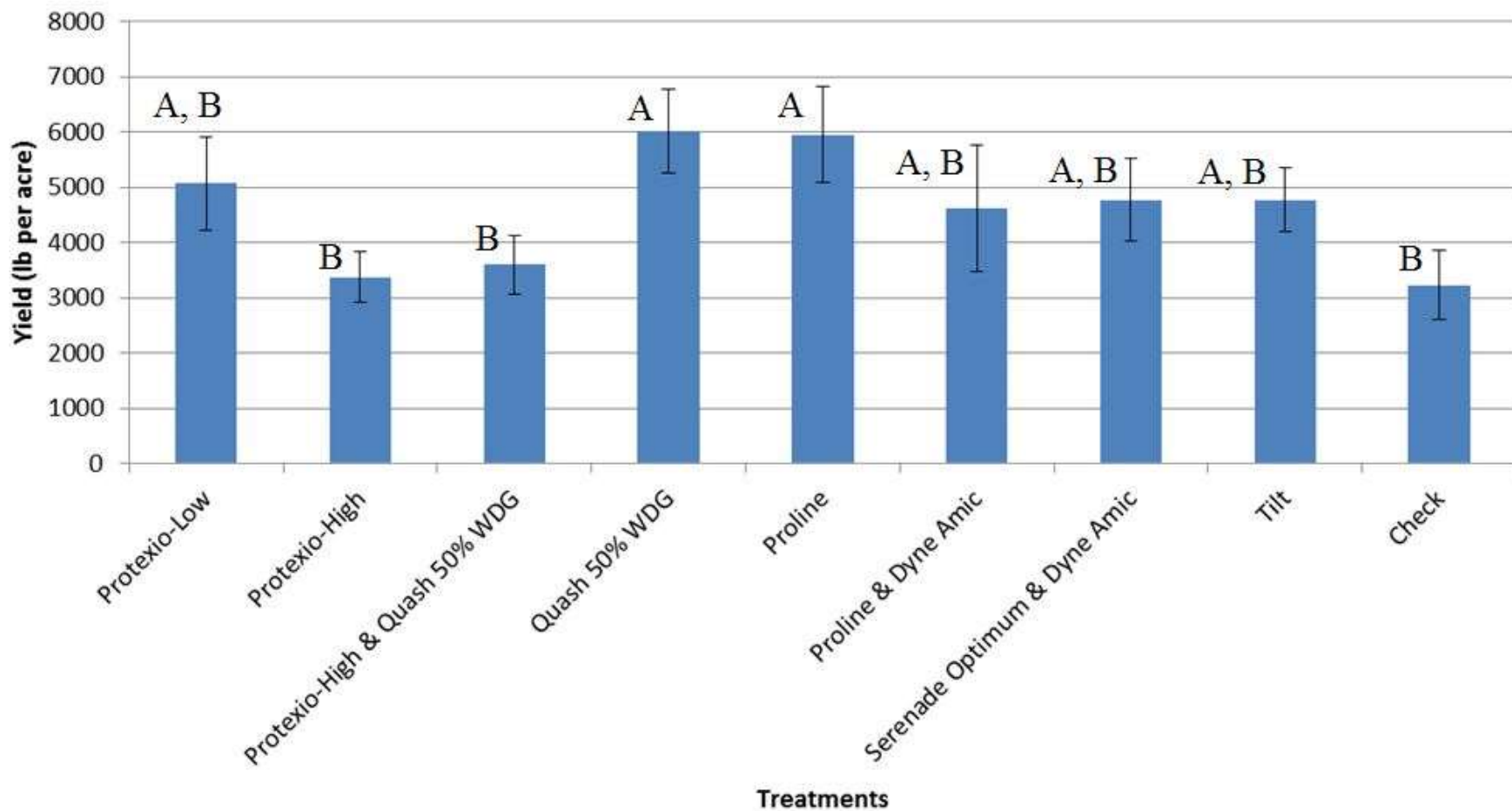
Township 19



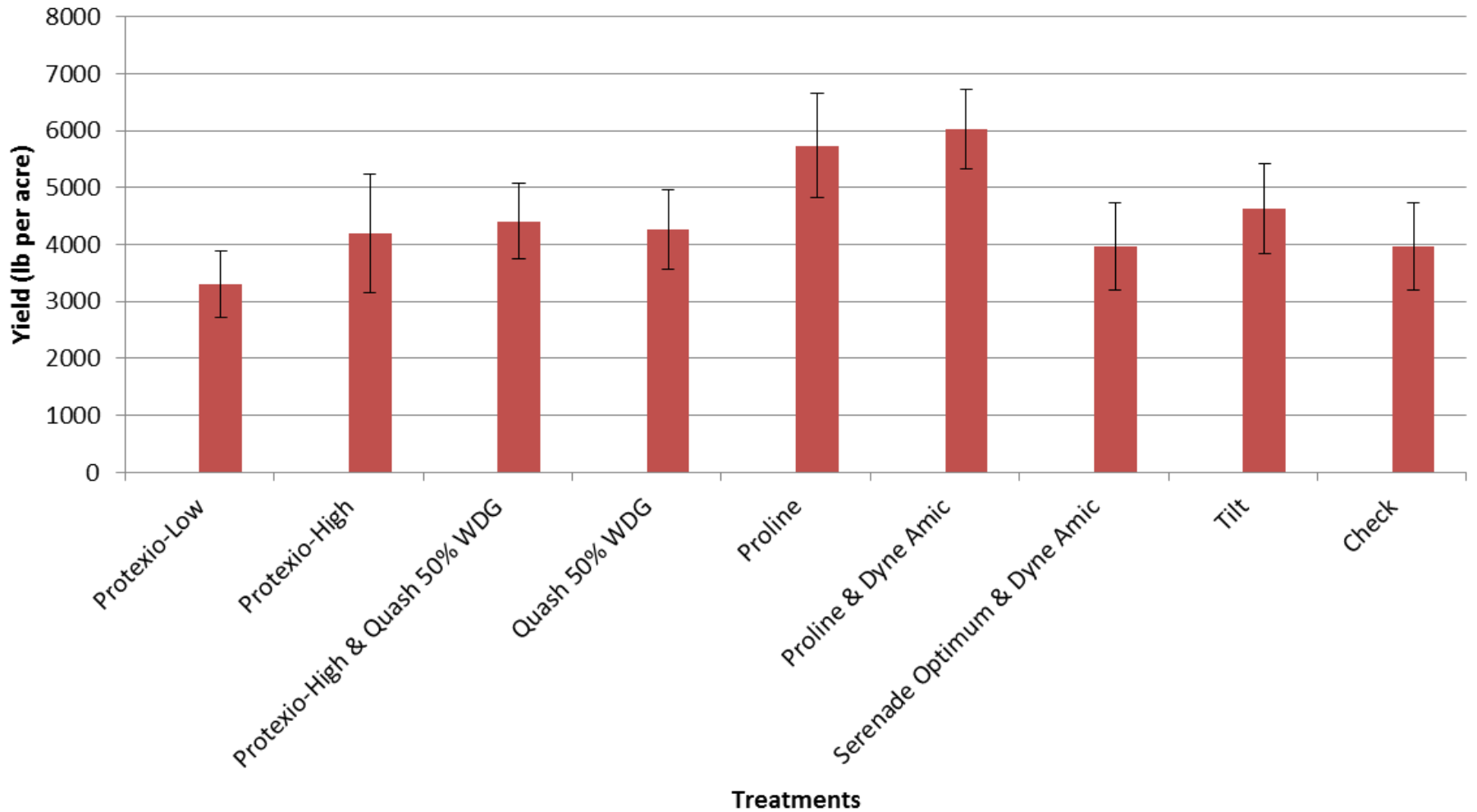
Deblois



Fungicide Trial Average Plot Yields-Township 19



Fungicide Trial Average Plot Yields-Deblois





Proline on Lowbush Blueberries



What is Proline?

- Active Ingredient: Prothioconazole
- Chemical Class: Triazolinthiones, Group 3
- Mode of Action: Inhibits the demethylation process and sterol formation in fungi
- Formulation: 480 SC
- Packaging: Liquid jug



Product Features

- Flexible and cost effective tool to manage economically important diseases in the sprout or fruiting year
- Foliar, broad-spectrum systemic fungicide
- New fungicide in a existing group 3 class for wild blueberries



Product Benefits

- Protects against leaf spot diseases including:
 - Blueberry rust (*Thekopsora minima*)
 - Septoria leaf spot (*Septoria* sp.)
 - Valdensinia leaf spot (*Valdensinia heterodoxa*)
 - Monilinia blight (*Monilinia vacciniicorymbosi*)
- Increases floral bud numbers
- Results in increased fruit yield and size as shown by yield data collected in the fruit year

Septoria



Photo Credit: Department of Agriculture, Fisheries and Aquaculture, NB.
<http://www.gnb.ca/0171/10/0171100029-e.pdf>

Blueberry Rust



Photo Credit: David Percival

Valdensinia



Photo Credit: David Percival

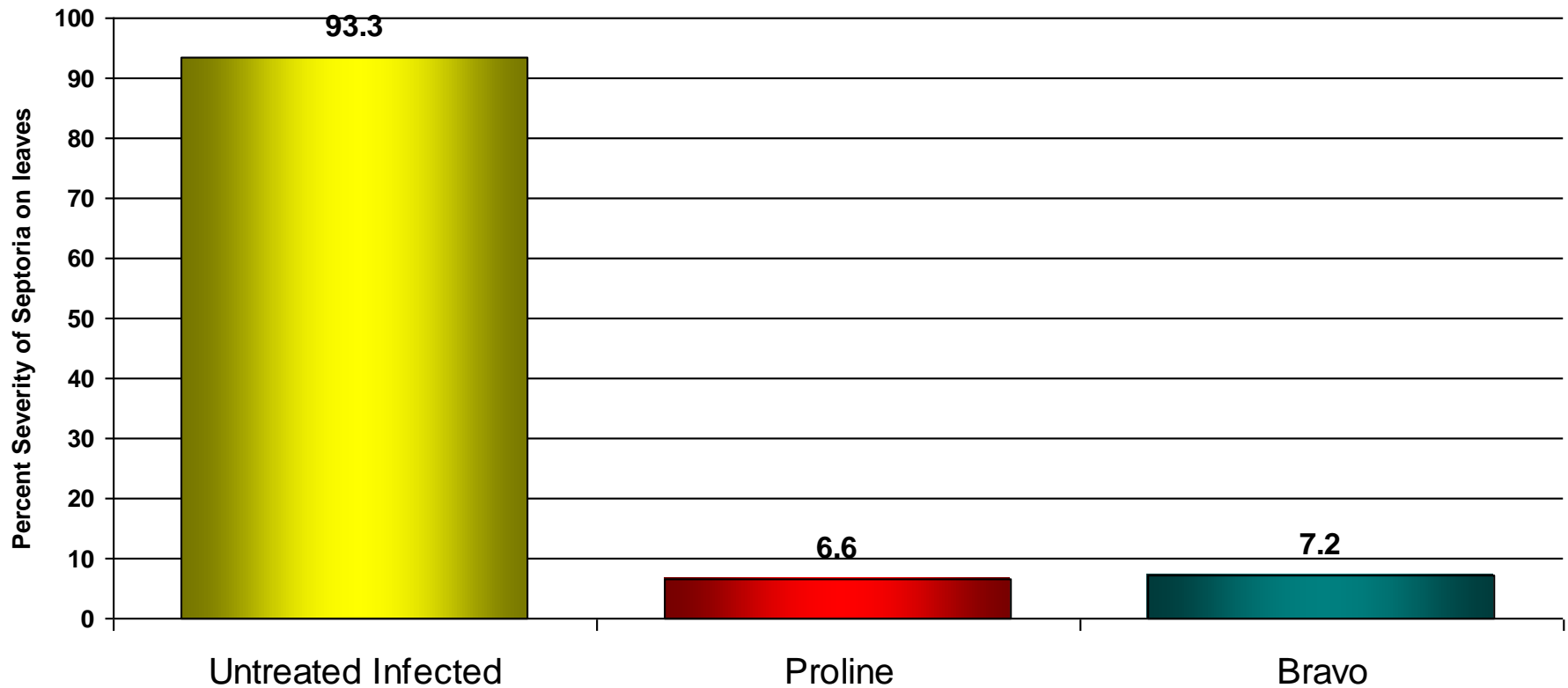
Problems associated with Leaf Spot Diseases



- Wild blueberry leaf spot diseases lead to premature defoliation which can lead to:
 - berry drop before harvest
 - reduction in fruit bud size
 - reduction in yield potential for the following year

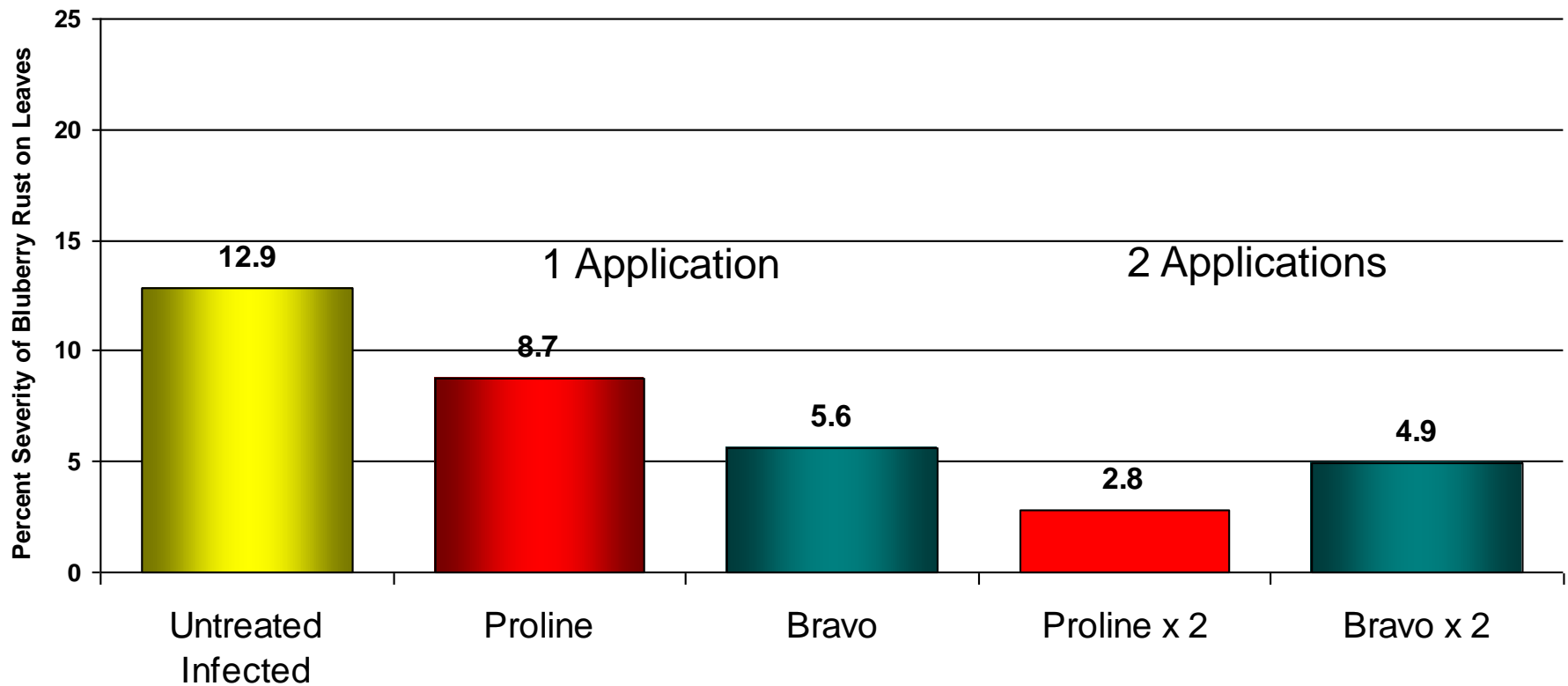
- Leaf spot disease incidence and severity has been increasing over the past few years in Atlantic Canada and Maine with the warmer temperatures and longer growing season

Blueberry Septoria (sprout year)



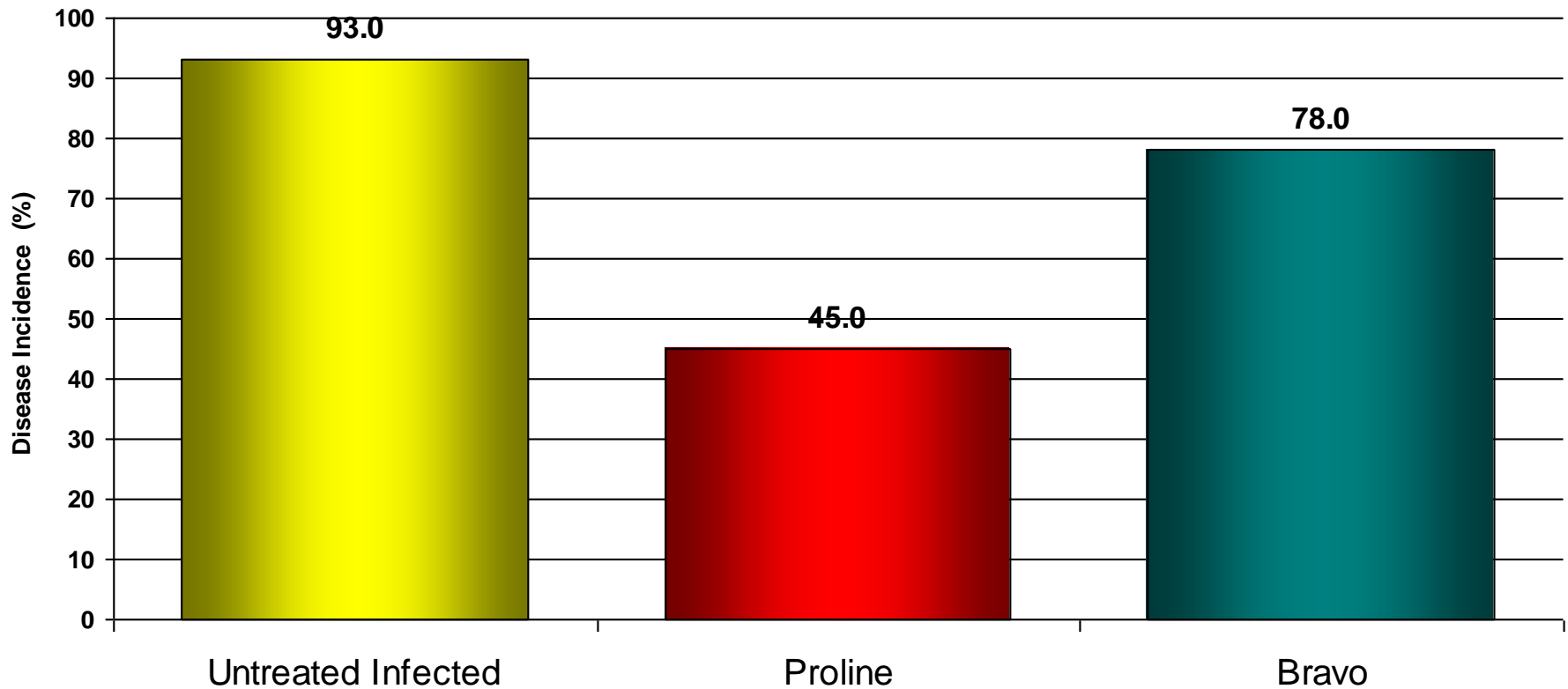
Source: 1 trial, Nova Scotia

Blueberry Rust (sprout year)



Source: 2 trials, Nova Scotia

Blueberry Disease Incidence (sprout year) all diseases (rust, Valdensinia and Septoria



Source: 2 trials, Nova Scotia
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Application Timing

- First application at first signs of disease for *Septoria*, rust or *Valdensinia*
 - Second application, if necessary, 10-14 days later
- For *Monilinia* blight, begin applications at F2 with apothecia are present
 - Second application of Proline or another approved fungicide 5-10 days later
- Use of Agral 90 or Agsurf at 0.125% (V/V) is recommended



Use Pattern Overview

- Use Rate: 5.7 oz/a
- Application Timing: When disease threatens
- Application Type: Ground
- Rainfastness: When dry
- REI: 24 hours
- PHI: 7 days
- Max Applications: 2

Sprout Year Commercial Trial Nova Scotia



Sprout Year Commercial Trial Nova Scotia



Untreated

Proline + Bravo

Sprout Year Commercial Trial Nova Scotia



- Sprayed on July 2010, Pictures taken on June 17, 2011



Untreated



Proline + Bravo

Sprout Year Commercial Trial Nova Scotia



- Sprayed on July 2010, Pictures taken on June 17, 2011



Untreated



Proline + Bravo

Fungicide Comparison Trials - Quebec



- In 2012, Club Conseil Bleuets conducted a comparison trial of 7 fungicides in lowbush blueberries
- Proline was compared against 6 other fungicides (Pristine, Fontelis, Nova, Serenade, Jade, Maestro)
- Results showed that Proline was the only product that provided a level of disease control distinguishable from the untreated check, and thus the only product they will recommend as a fungicide in lowbush blueberries

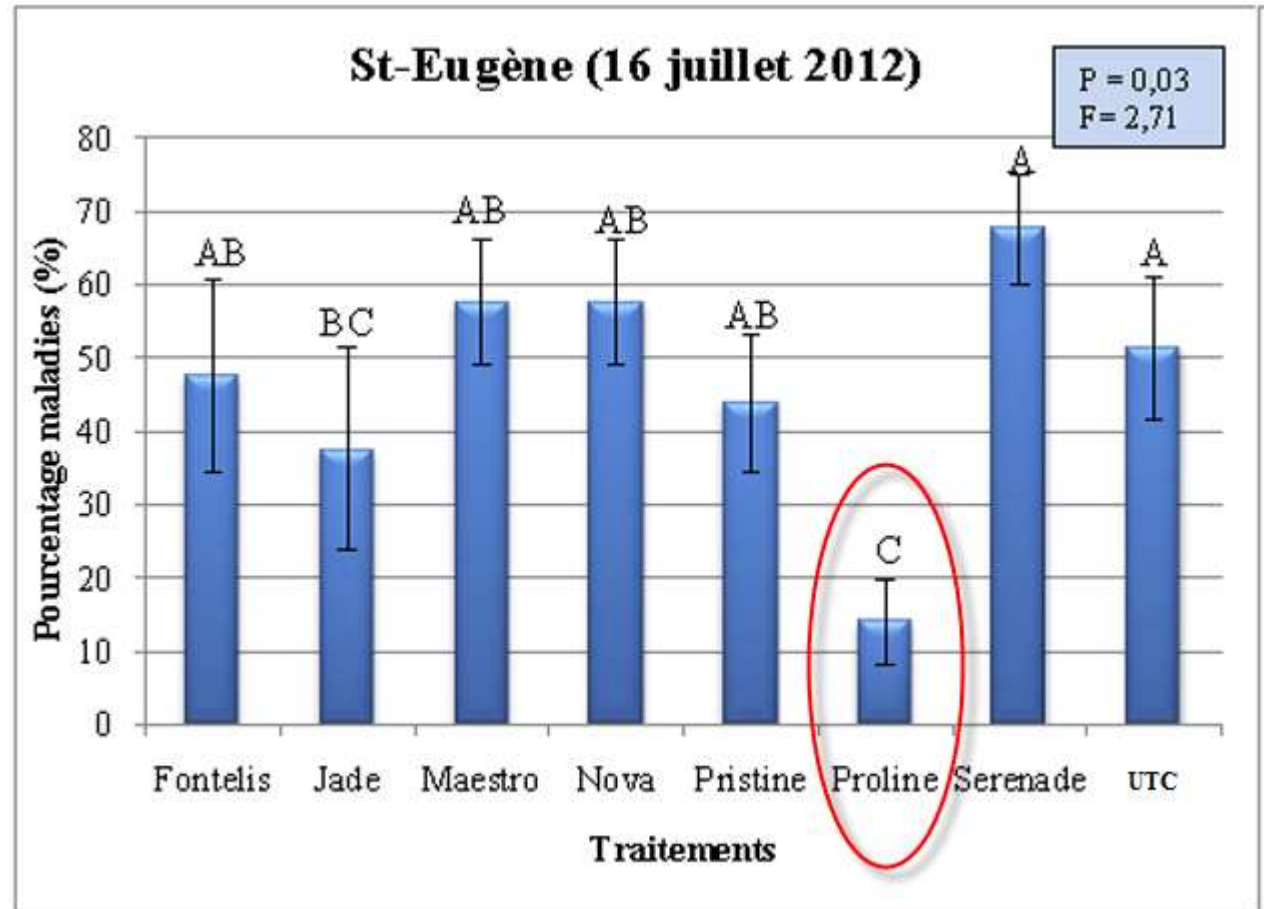
Sprout Year Research Trial St-Eugène, Quebec



Leaf Disease, Septoria leaf spot and Rust in Sprout Year St-Eugène, Quebec



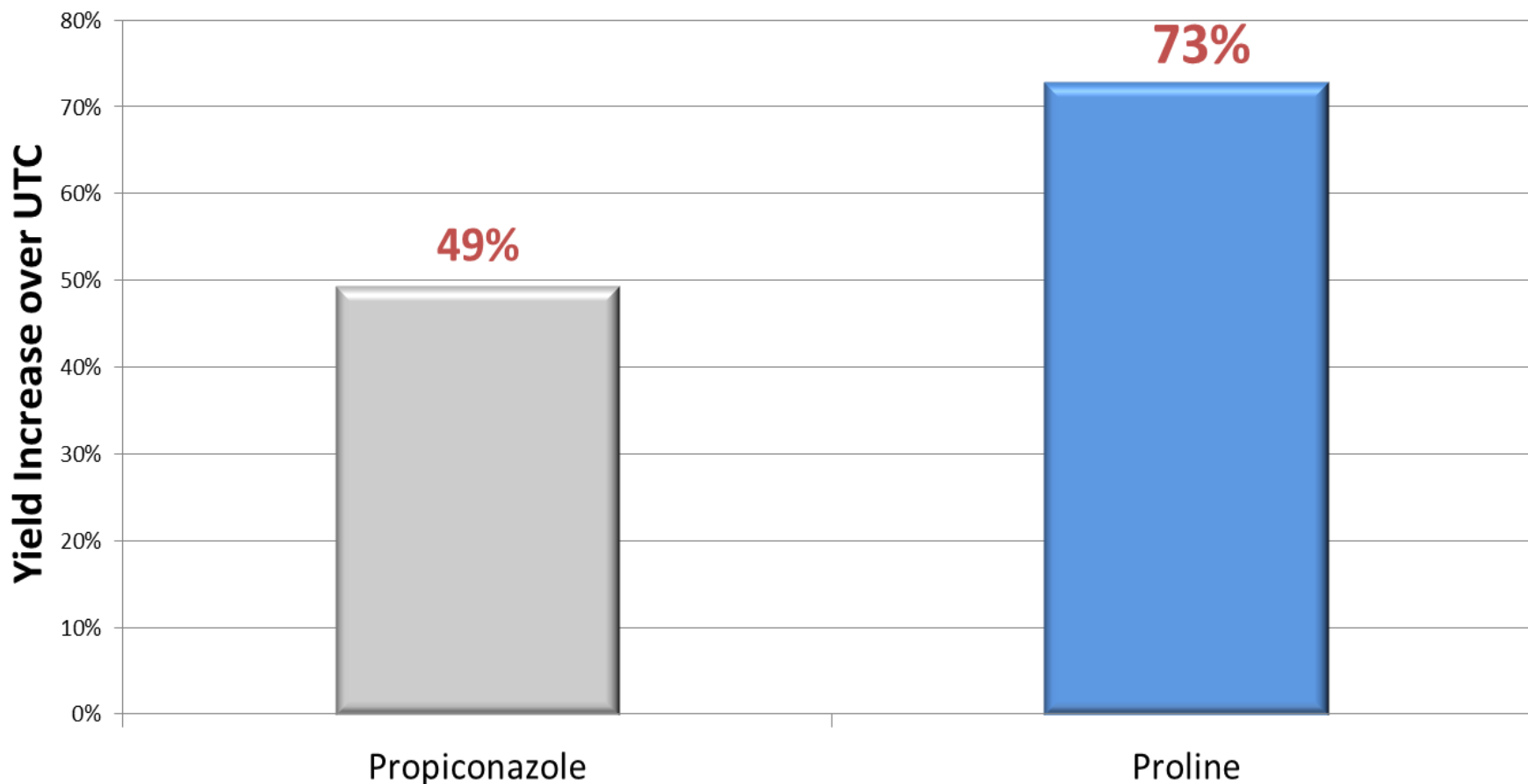
- % Disease shown after 2 applications, 11 DALA
- Proline provided a level of disease control superior by 20% over other treatments



Actual Yields in lb/ac: Proline 5117.65; Propiconazole 4202.91; UTC 2898.73

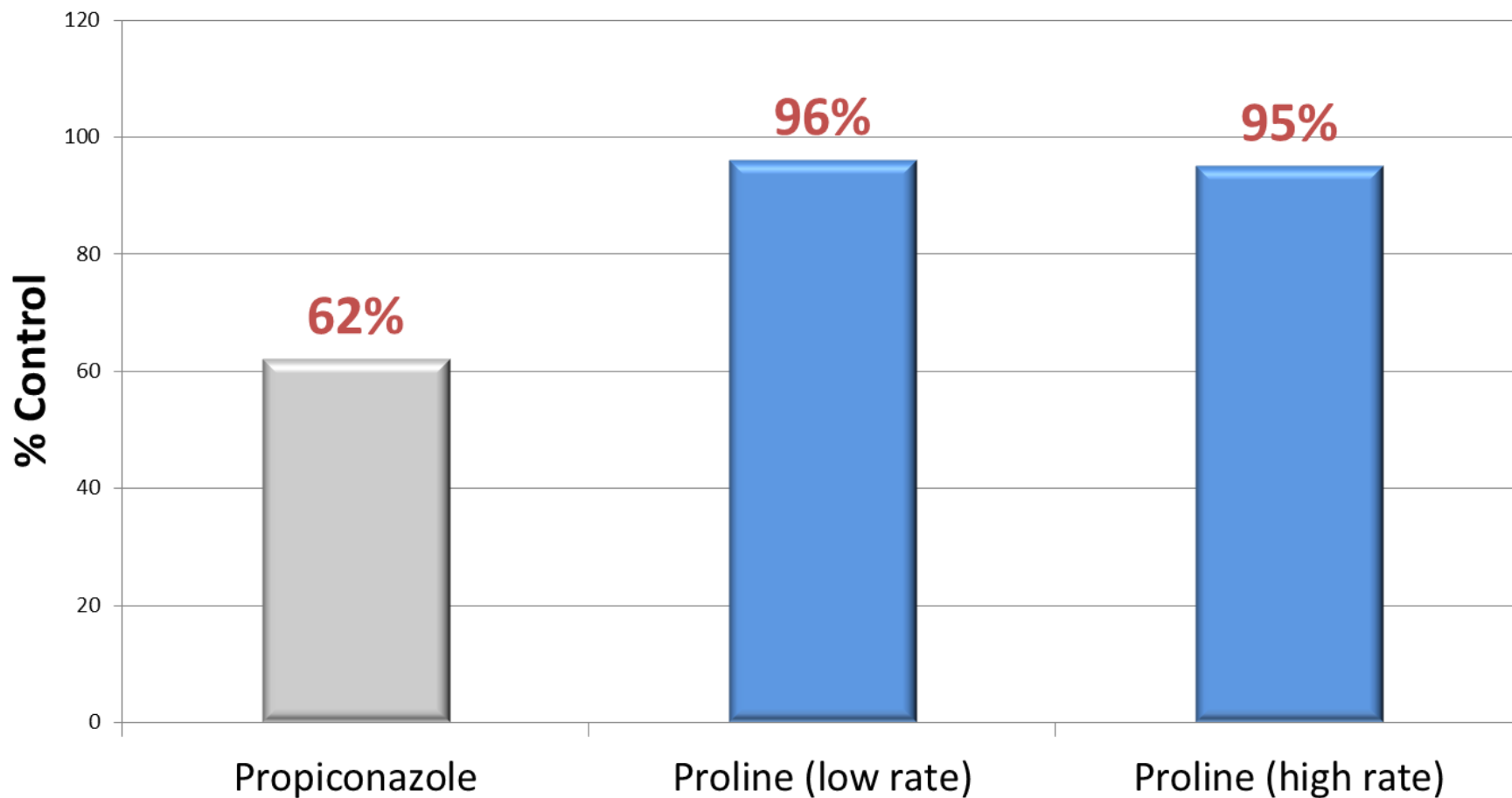


Harvested Berry Yield Increase



Nova Scotia and PEI, 2009-2011

Monilinia Control

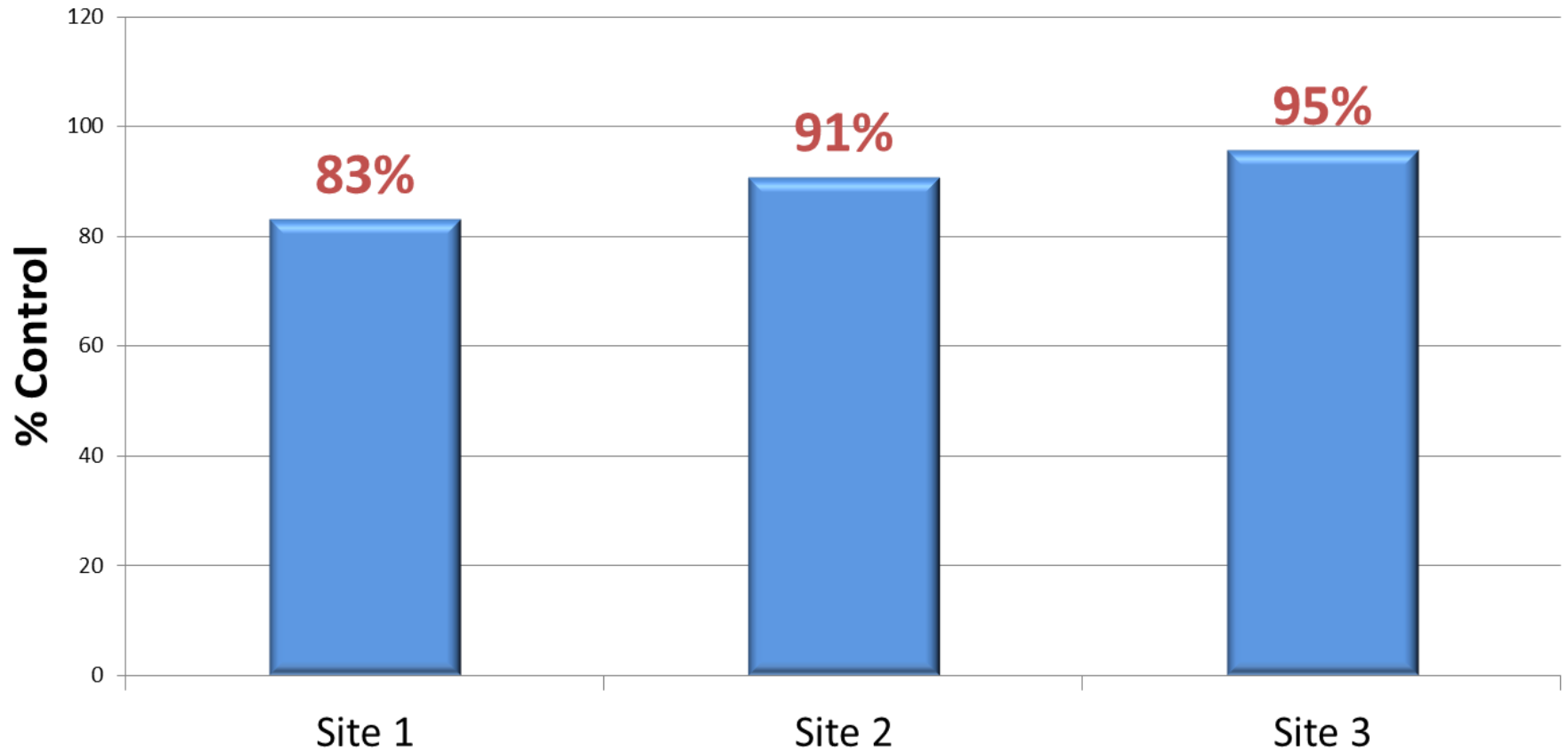


Nova Scotia, 2011

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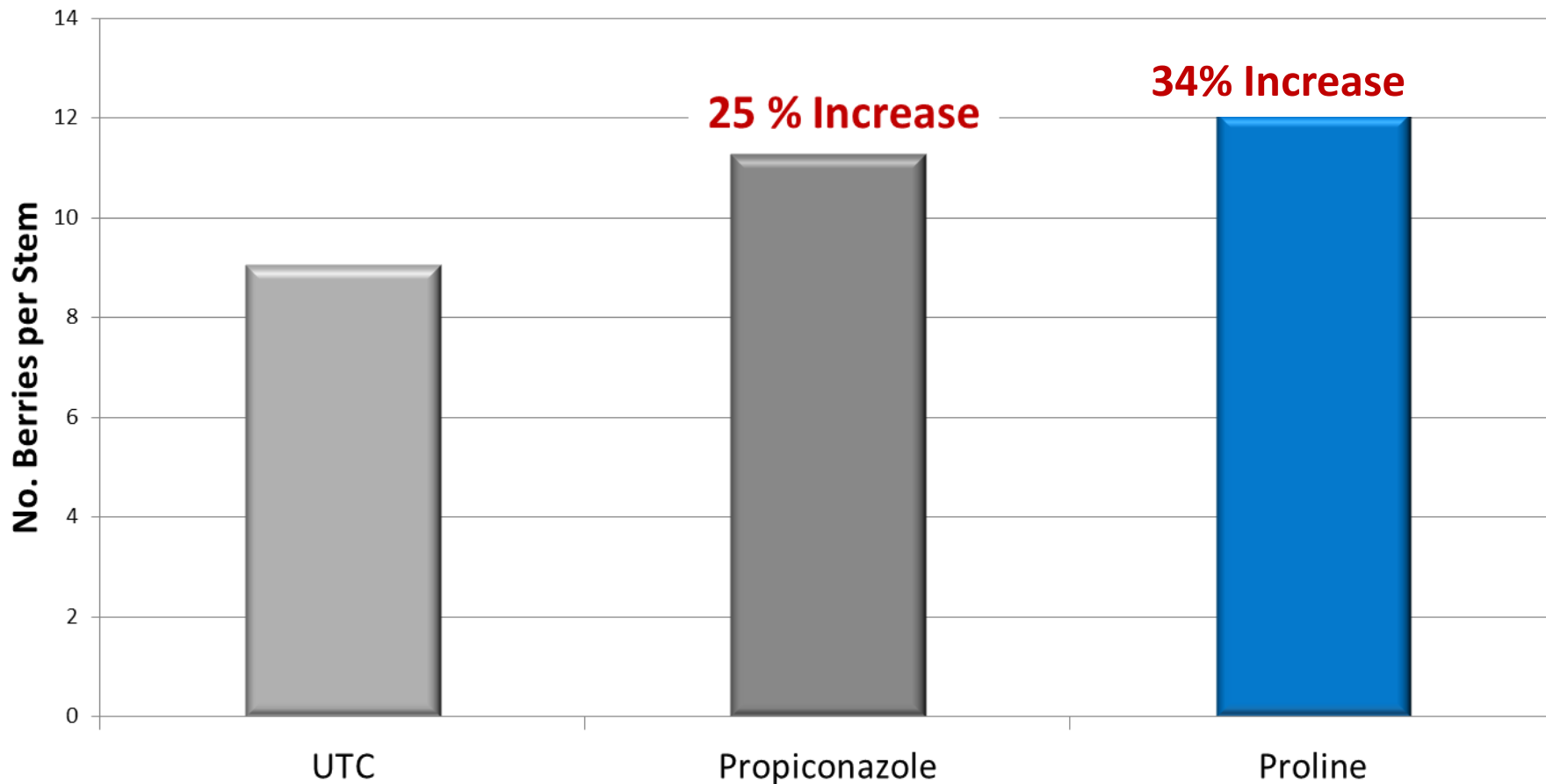


Valdensinia Control



Nova Scotia, 2010

More Set Fruit with Proline



*increase over UTC
Nova Scotia and PEI, 2009-2011
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More Set Fruit with Proline



Untreated



Treated with Proline



Aborted fruit in the unsprayed



Questions???

