Mummy berry and its management

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Mummy berry disease caused by *Monilinia vaccinii-corymbosi*

Visible effects of mummy berry on plants

Leaf blight

Flower death

Replacement of berries with mummy berries

Spores produced on infected flowers and leaves infect healthy flowers

Infected flowers produce mummy berries

April: mummy berries germinate and produce cups with ascospores

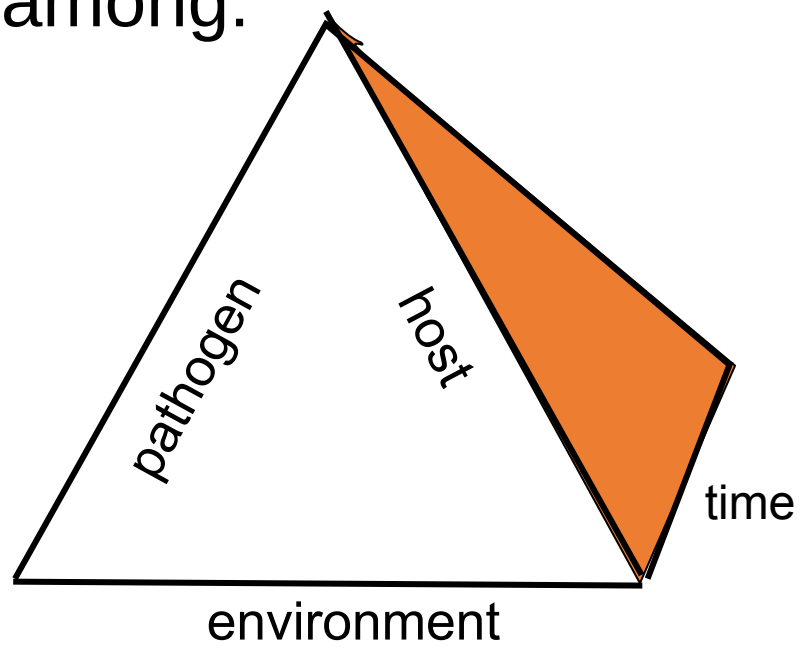
Mummy berries overwinter in soil

Ascospores infect open leaf and flower buds when leaves wet long enough

Whether disease occurs and its severity is determined by interactions among:

- host(s)
- pathogen
- environmental conditions

and the timing of all of three



What can also affect disease occurrence and severity is management.

Infection by fungus that causes Mummy Berry requires:

1) Mummy berry cups producing infective spores

2) Susceptible Leaf and flower buds

3) Leaf wetness from rain or fog

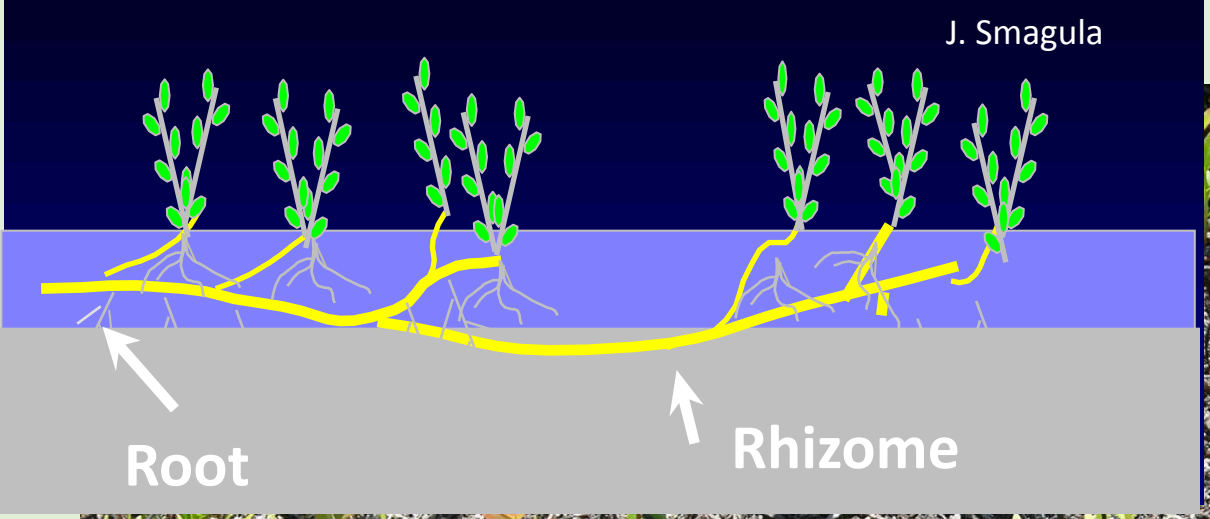

August, vegetative year

Genetic diversity in lowbush blueberries

- Genotypes vary in timing of development AND susceptibility to diseases

Diversity in bud opening among genotypes

Completely closed buds



May, vegetative year

Highbush blueberries – low diversity, but easier cultivation

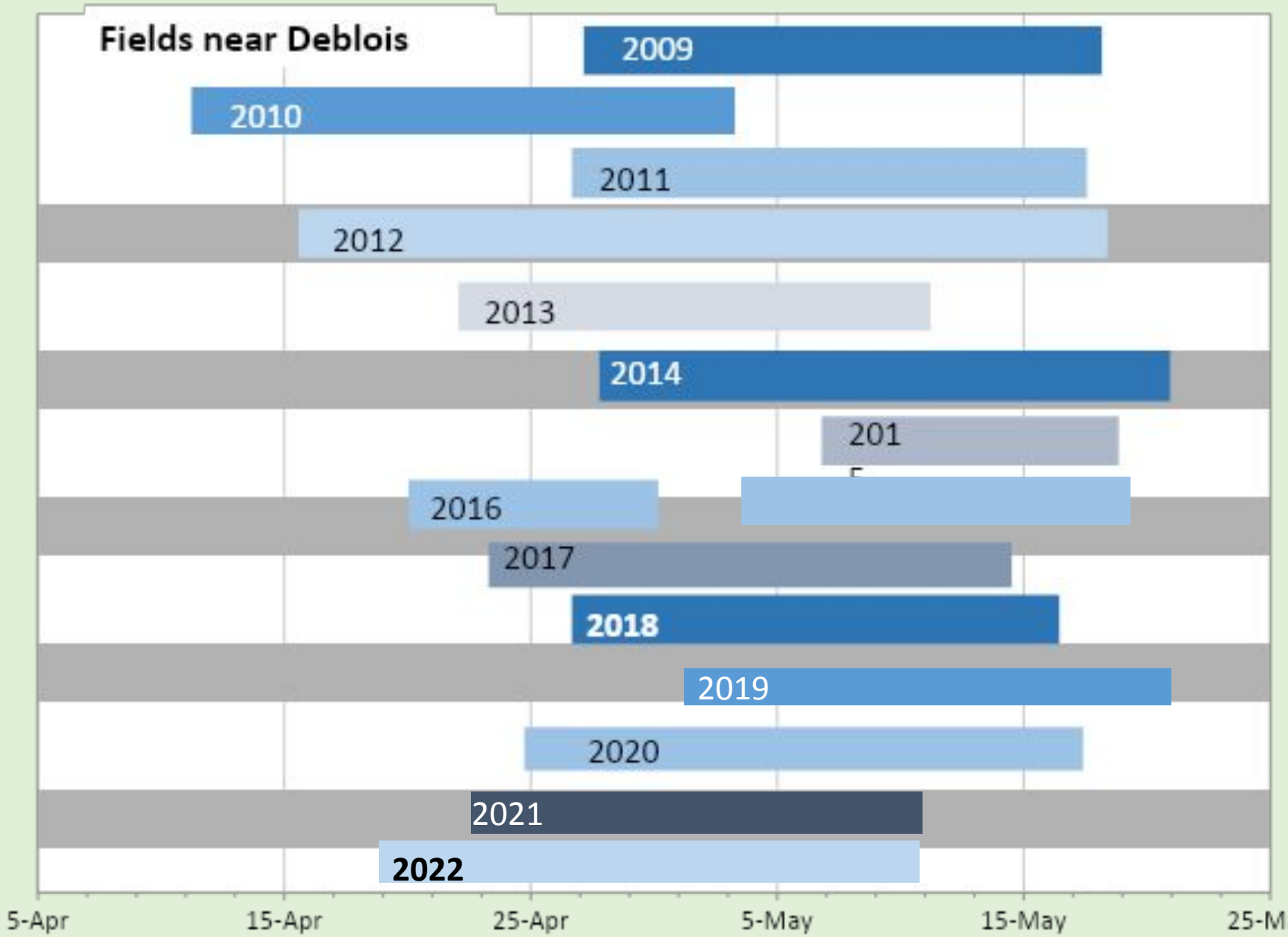
When is fungus producing infective spores?

Apothecia producing infective spores

Mummy berries overwinters for one to two, maybe three, years

Apothecia (cups) produced in spring

Monilinia Apothecia Presence – 2009 to 2022



When are plants susceptible?

Susceptible to MVC

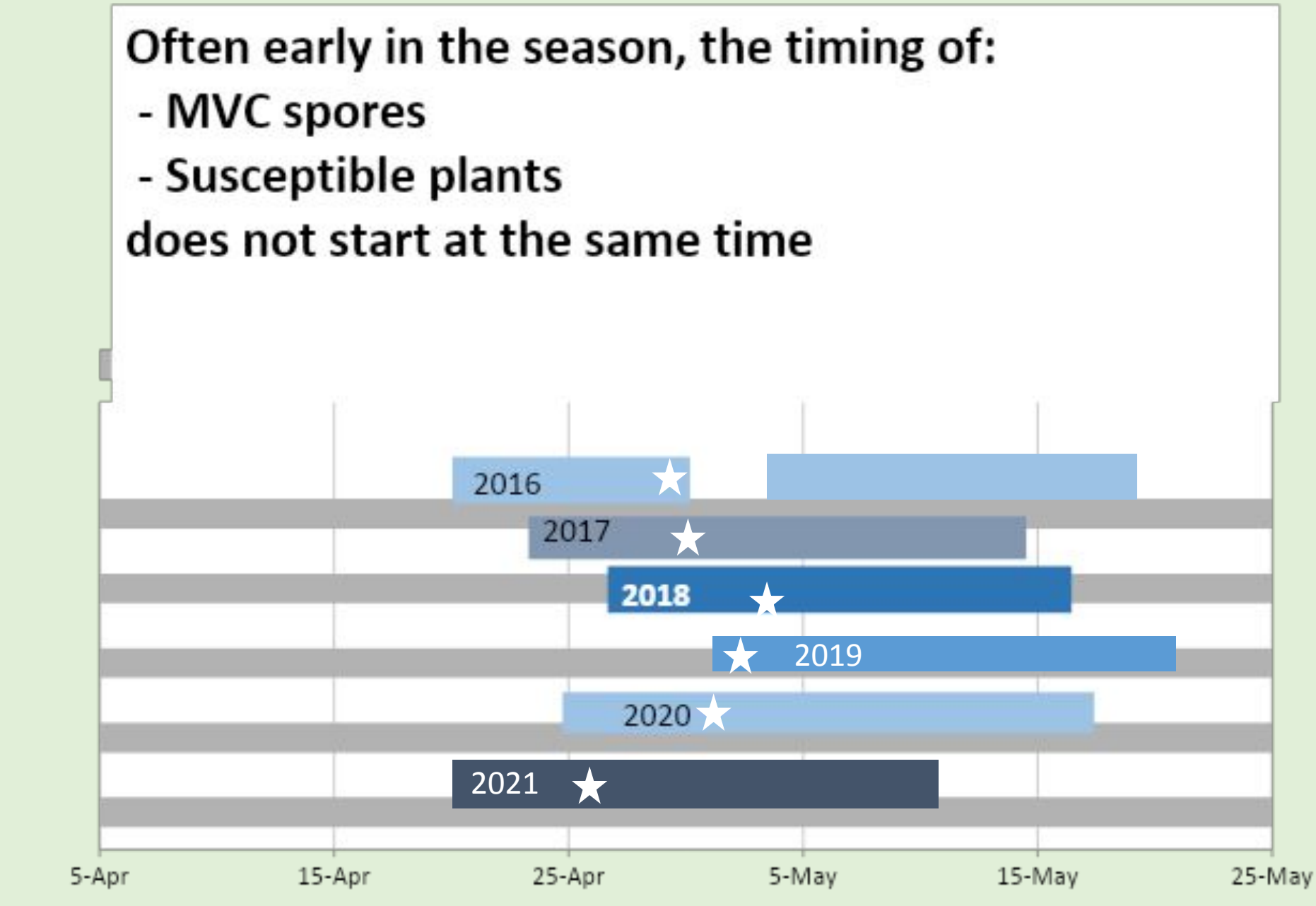
V2

30 to 40% in F2 (T2) crown stage

Often early in the season, the timing of:

- MVC spores
- Susceptible plants

does not start at the same time



What weather conditions required for fungus to infect the plant?

1) Mummy berry cups producing infective spores

2) Susceptible Leaf and flower buds

3) Rain or Fog period producing long enough leaf wetness at a suitable temperature

Risk of Mummy berry Infection

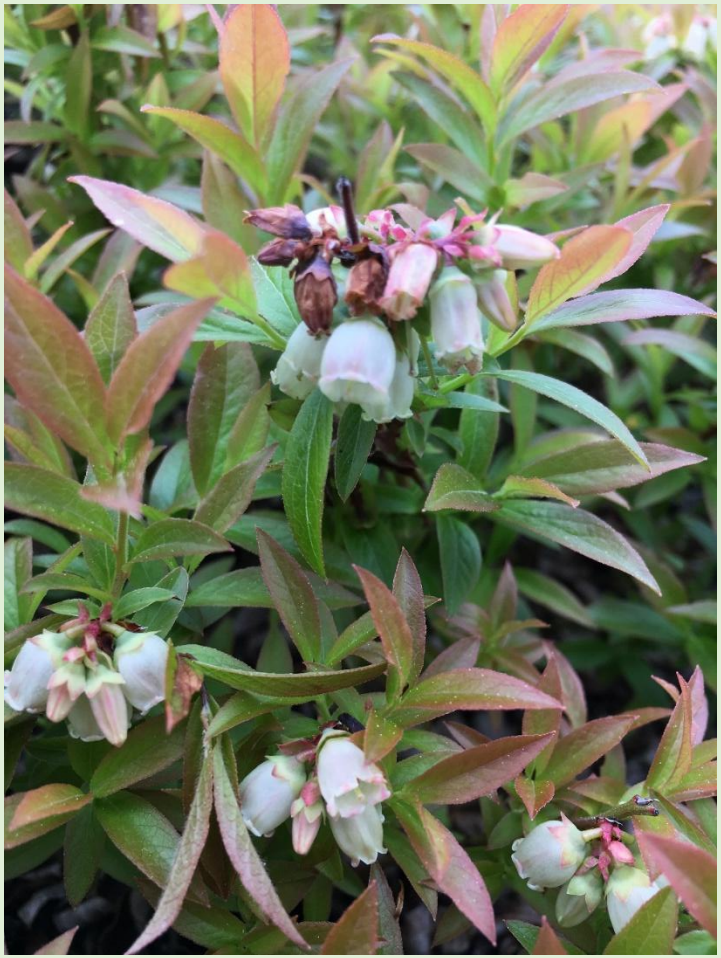
(Maine Coop Extension Fact Sheet 217)

	Mean Temperature (°F) during Infection Period
Wetness Duration (Hours)	36°
2	NONE
4	NONE
6	NONE
8	NONE
10	MOD
15	MOD
24	HIGH

Data from Paul Hildebrand and Rick Delbridge, Agriculture and Agri-Food Canada, Nova Scotia.

When is best time to manage mummy berry disease?

This is too late!



Management of diseases

Cultural methods

- Pruning
- Mulching
- Sanitation

- Fungicides

- MONITORING and SCOUTING!

Pruning – lowbush blueberries

- Disrupts pathogen lifecycle by changing plant development stage available when spores are produced (mummy berry)
- Increases plant debris layer and may bury some inoculum
- UNFORTUNATELY dead leaves can also insulate fungal structures over the winter

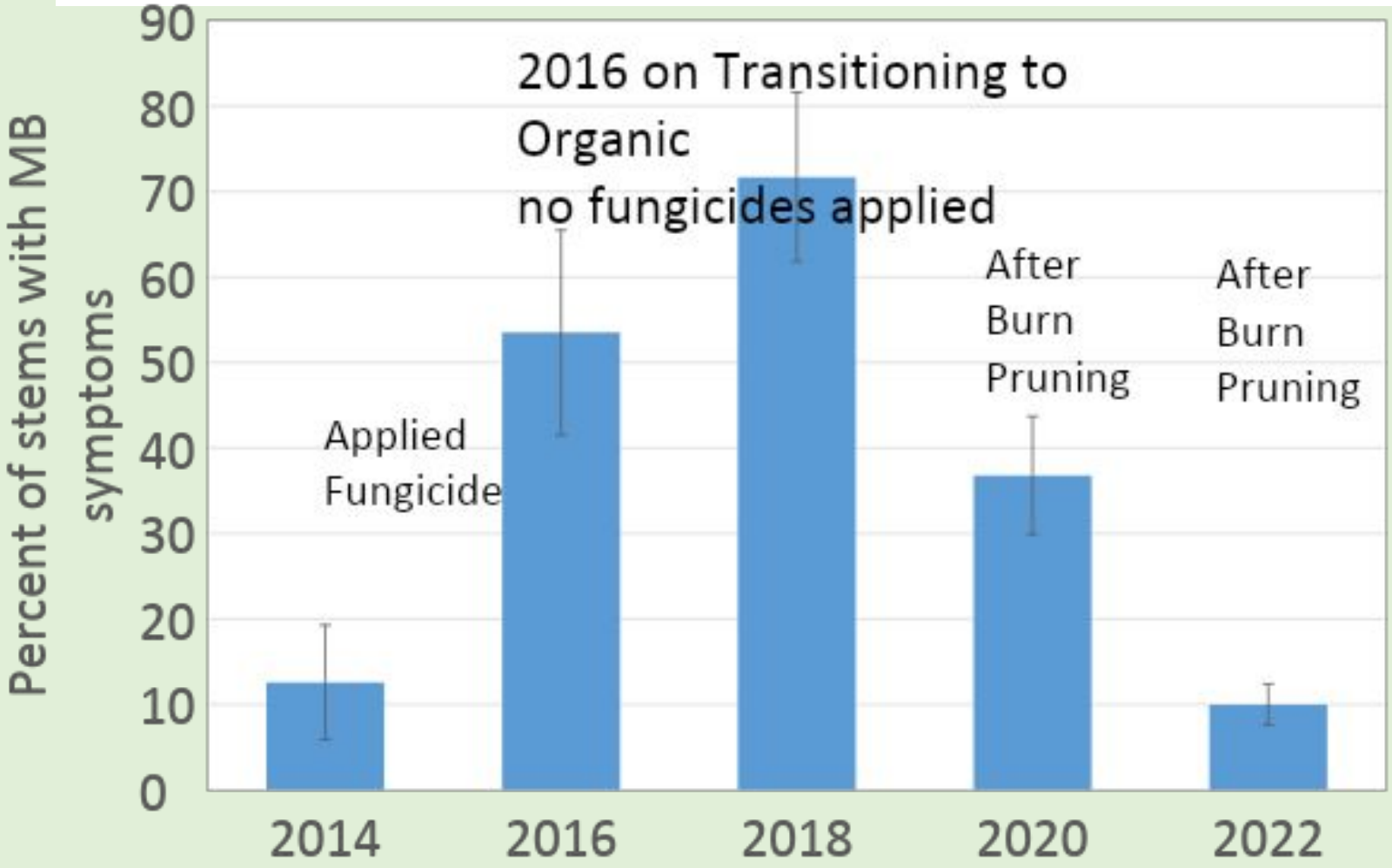

Burn pruning – helps destroy infected plant material and pathogen structures

Effect of pruning method on mummy berry

Pruning method	Number of crop cycles	Mummy berry (infected stems/m^2)
Remained mowed	1 crop cycle (1987)	19.8
	2 crop cycles (1989)	45.0

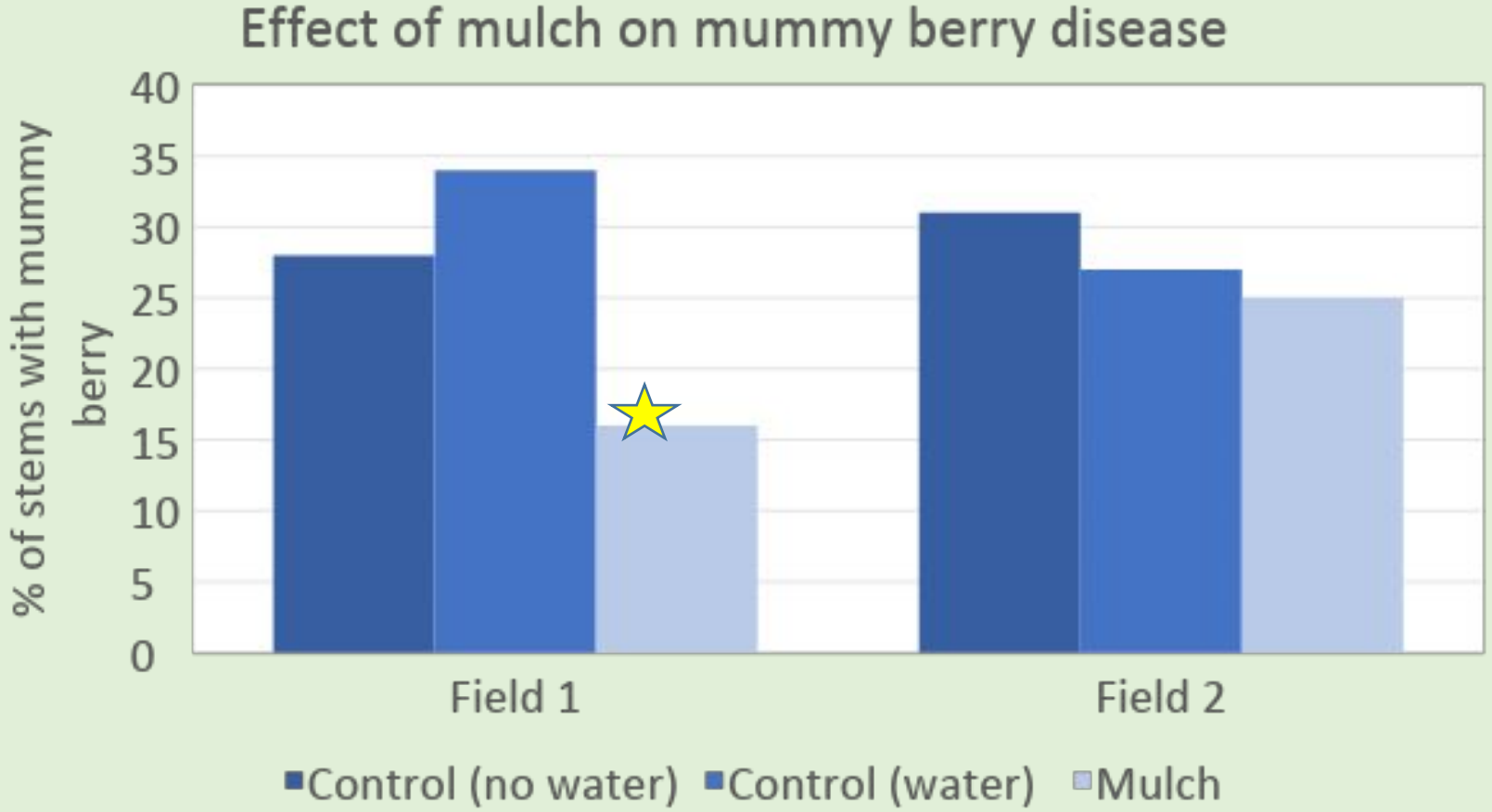
(David Lambert, 1990)

Effect of burn pruning in one field



Mulching after pruning – late fall or very early spring

- Need to have mulch spread at least 1 inch thick before cups emerge



Kristen McGovern, MS, 2007

Mulching – other advantages

Organic field / not irrigated

Conventional field / irrigated

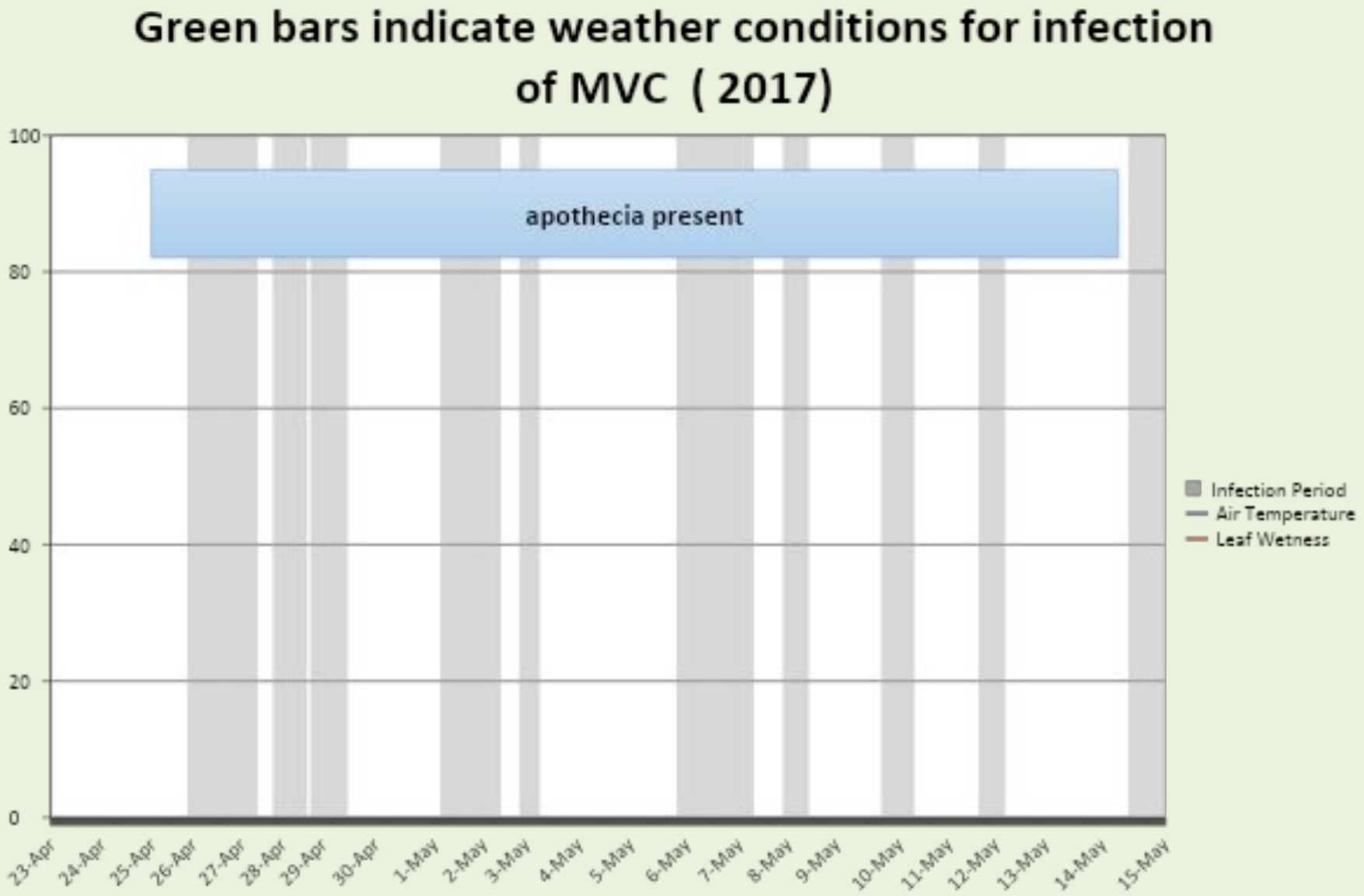
Highbush blueberries

- Spot burning under plants with lots of mummy berries, or burning leaf litter under all plants
- Mulching – at least 2 inches deep
- Cultivation – bury mummy berries

Fungicides

- Most are protectants and must be applied before infection
- Last 7 to 14 days depending upon material and weather
- Need to be applied at a suitable stage
- Applied to early or late – waste of time, material and money

Timing of fungicide applications



Date	Events	Risk of Mvc
6-Apr		
7-Apr	Apothecia present	
8-Apr		
9-Apr	Possible Monilinia Infection	
10-Apr	Possible Monilinia Infection	
11-Apr	Approx. 30 to 40% of buds at F2	
12-Apr		
13-Apr		
14-Apr		
15-Apr		
16-Apr		
17-Apr	Possible Monilinia Infection	
18-Apr		
19-Apr		
20-Apr		
21-Apr		
22-Apr	Possible Monilinia Infection	
23-Apr	Possible Monilinia Infection	
24-Apr		
25-Apr		
26-Apr		
27-Apr	Possible Monilinia Infection	
28-Apr	Possible Monilinia Infection	
29-Apr	Possible Monilinia Infection	
30-Apr		
1-May		
2-May		
3-May	Apothecia dead	
4-May		

Fungicides

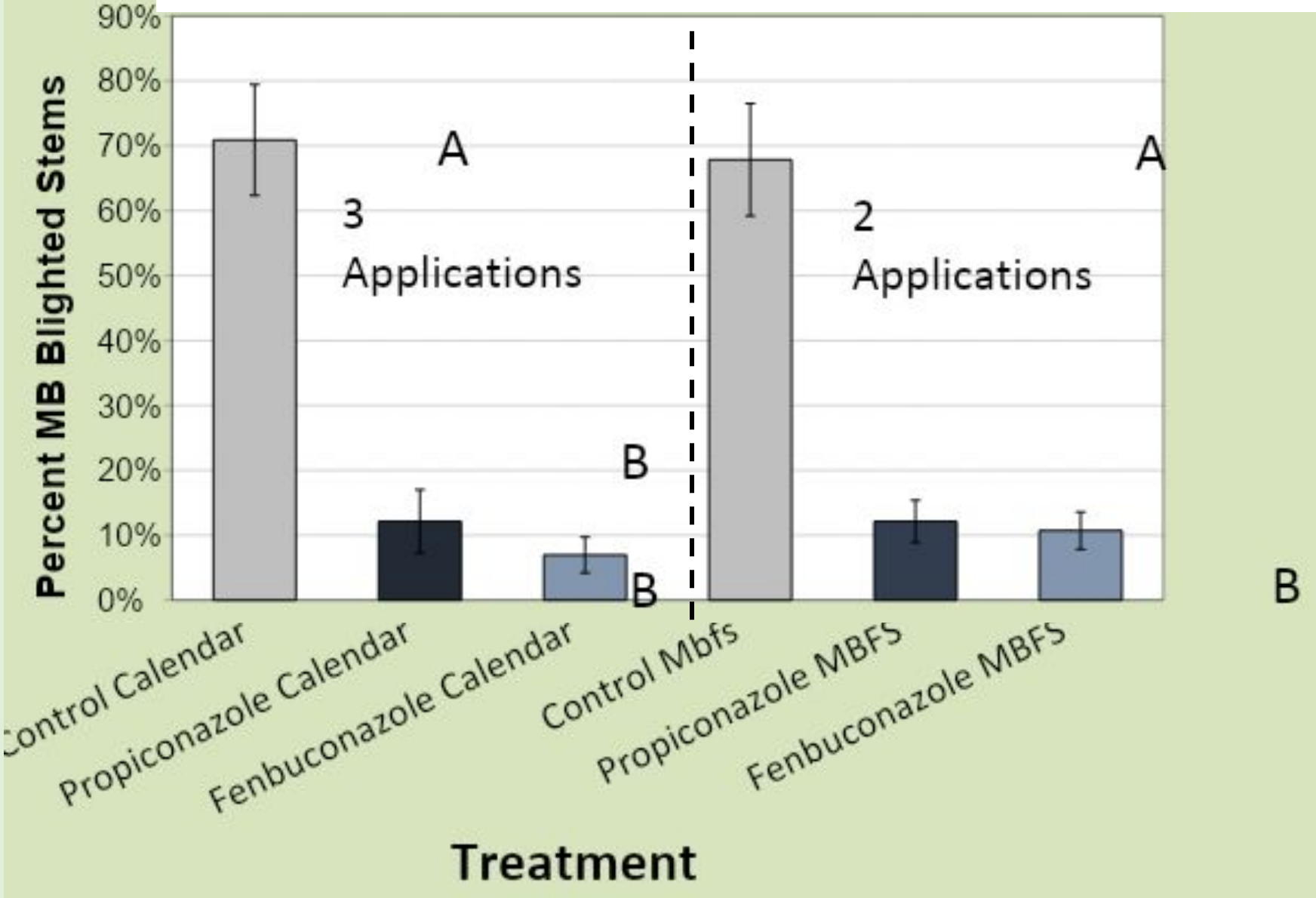
Azole fungicides: propiconazole and fenbuconazole

- initially recommended with some systemic activity and “curative” activity

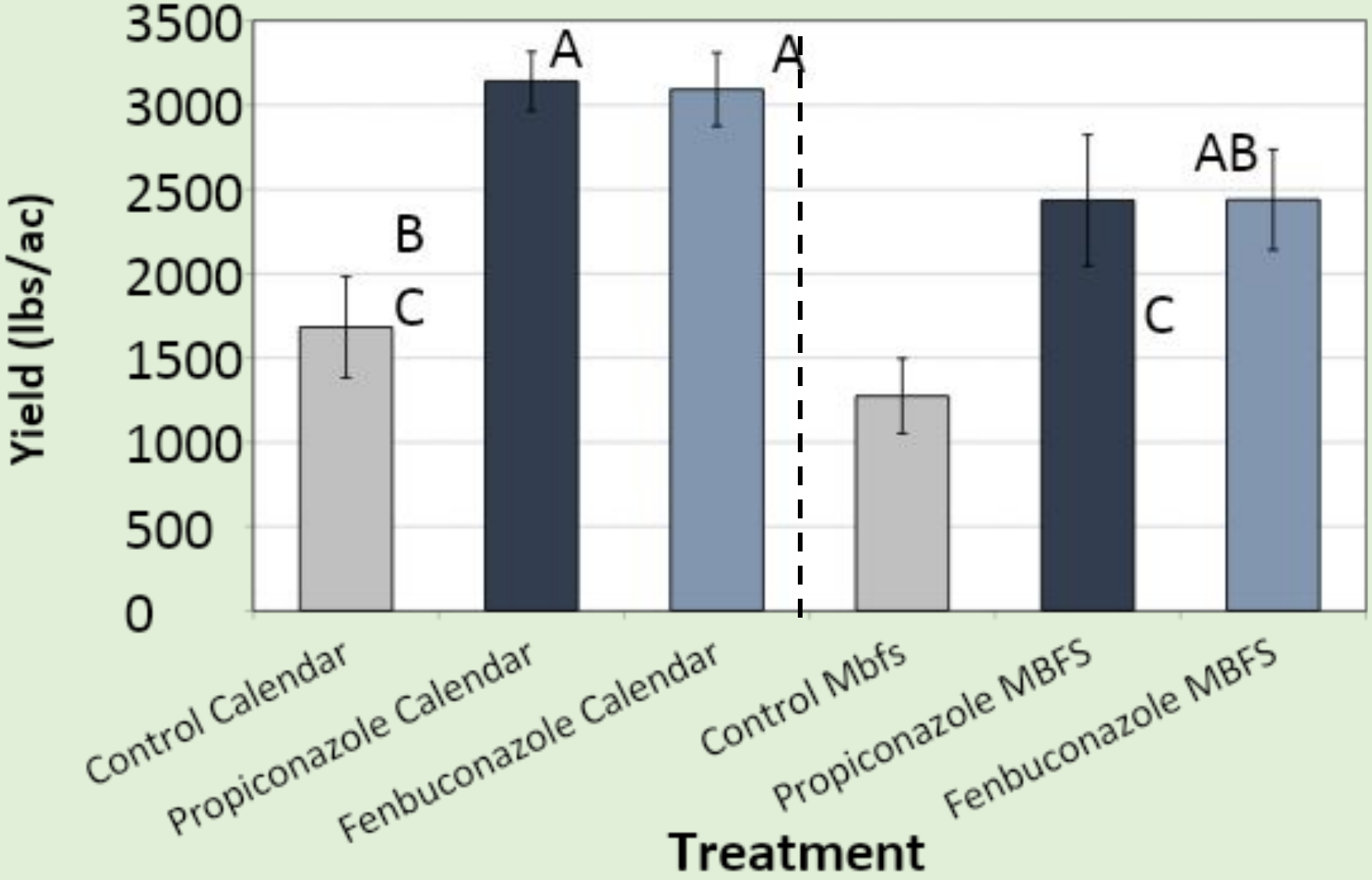
Calendar – every 7 to 10 days

MBFS - within 72 hours of the start of a possible Mvc infection

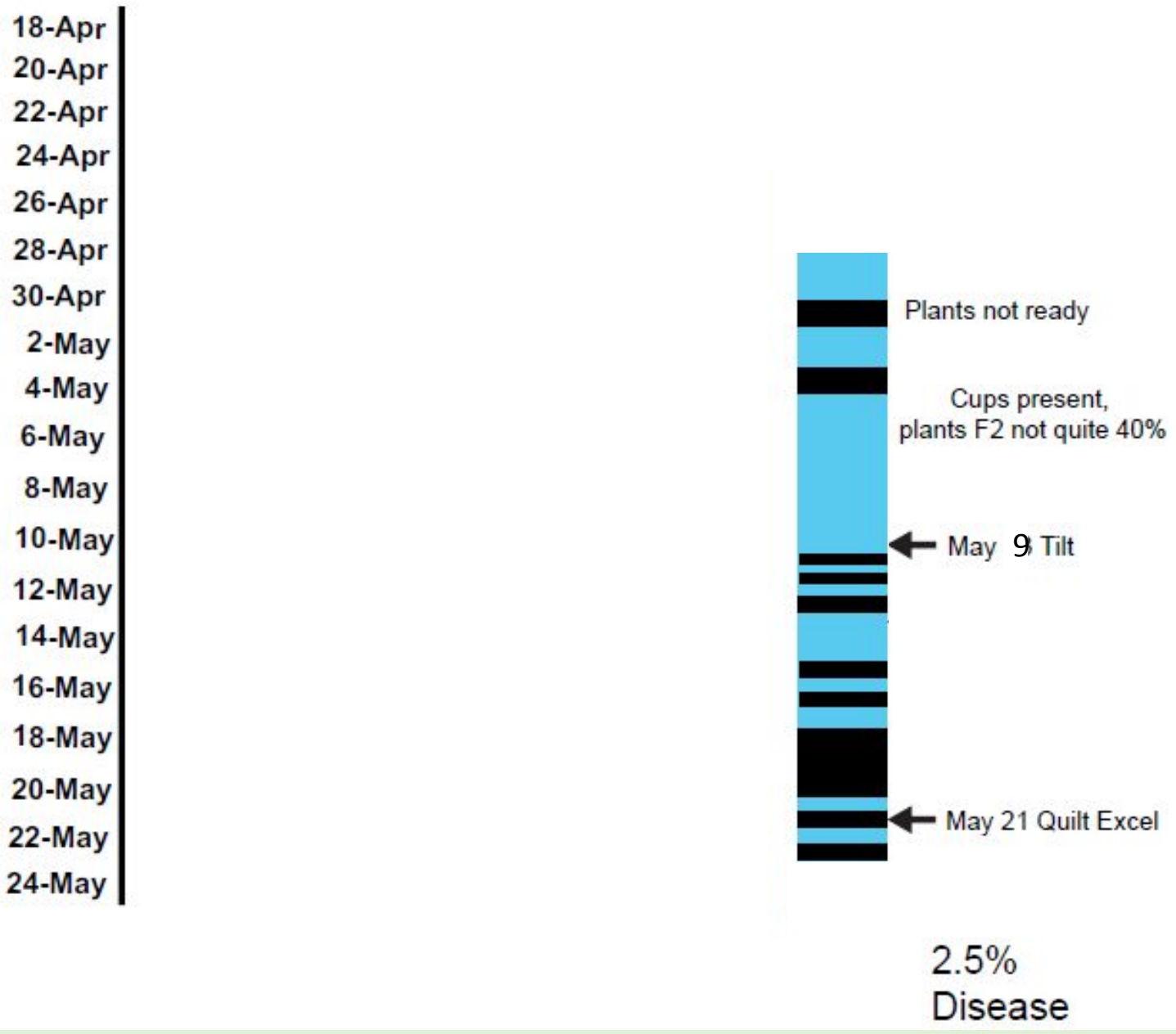
Comparison between Calendar based applications and use of the mummy berry forecasting system - 2009



Blueberry Yield - 2009



Data 2014


Field 2
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
Plants not ready
Cups present, plants F2 not quite 40%
May 9 Tilt
May 21 Quilt Excel
2.5% Disease

Disease control

- Put out mummy berry plots (recommend 3 per field) in fall after harvest
- Are there particular areas that have a lot of mummy berries, consider spot burning or mulching (cultivation in highbush)
- In spring
  - Check mummy berry plots for cups
  - Check plants for development
  - When planning fungicide applications, consider if weather conditions will likely to promote infection

Acknowledgements

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Or leave message on Blueberry Hotline, disease option

Graphic: Laura Penman

Questions?