

A photograph of a cherry tree branch. The leaves are mostly green but many are yellowed and covered with small, dark brown spots, indicating a fungal disease. Small, round, green cherries are visible on the branch.

New SDHI Fungicides: Outlook for Cherry Disease Control in 2012

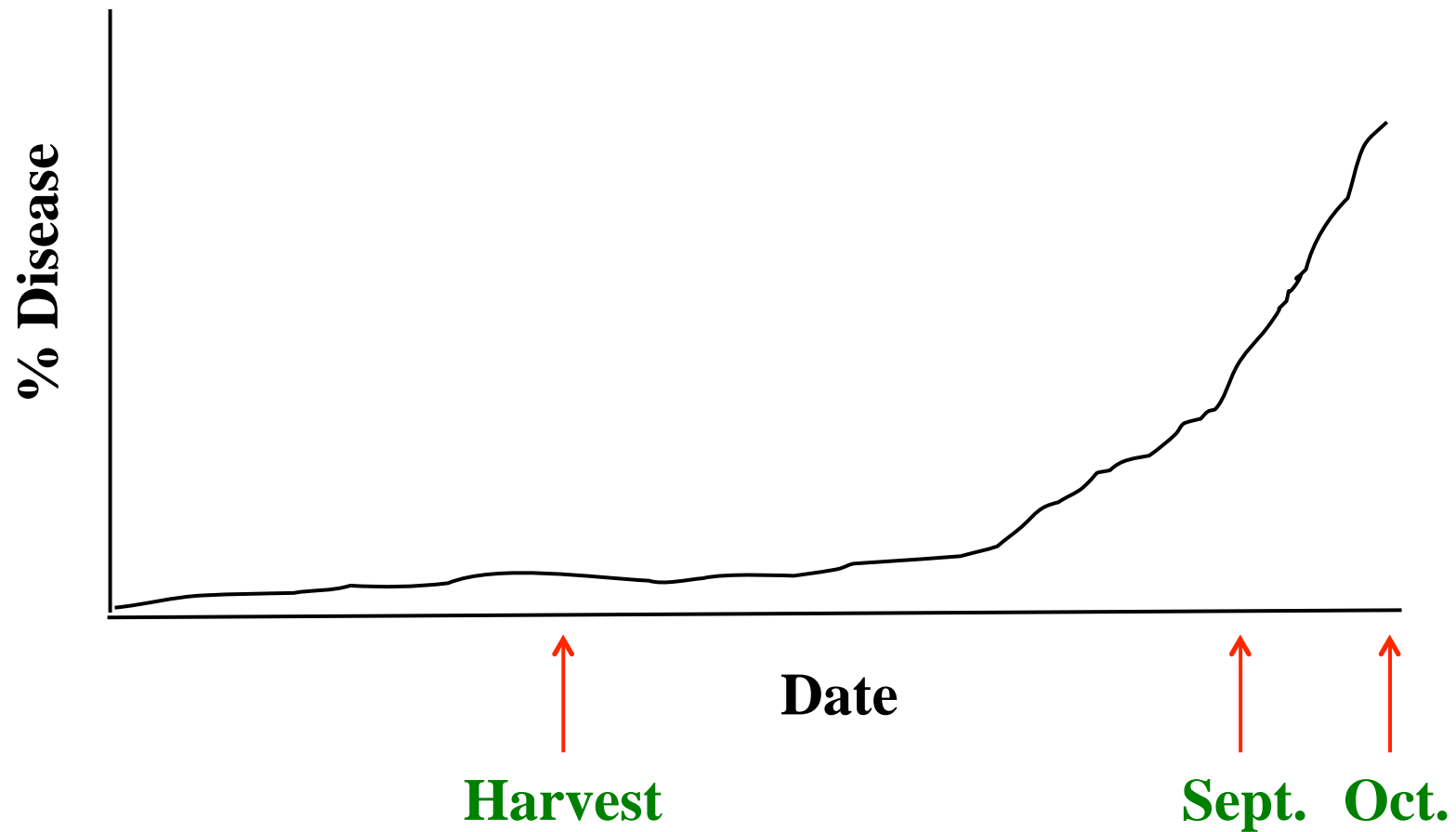
**NW O&V Show;
January 24, 2012**

George W. Sundin

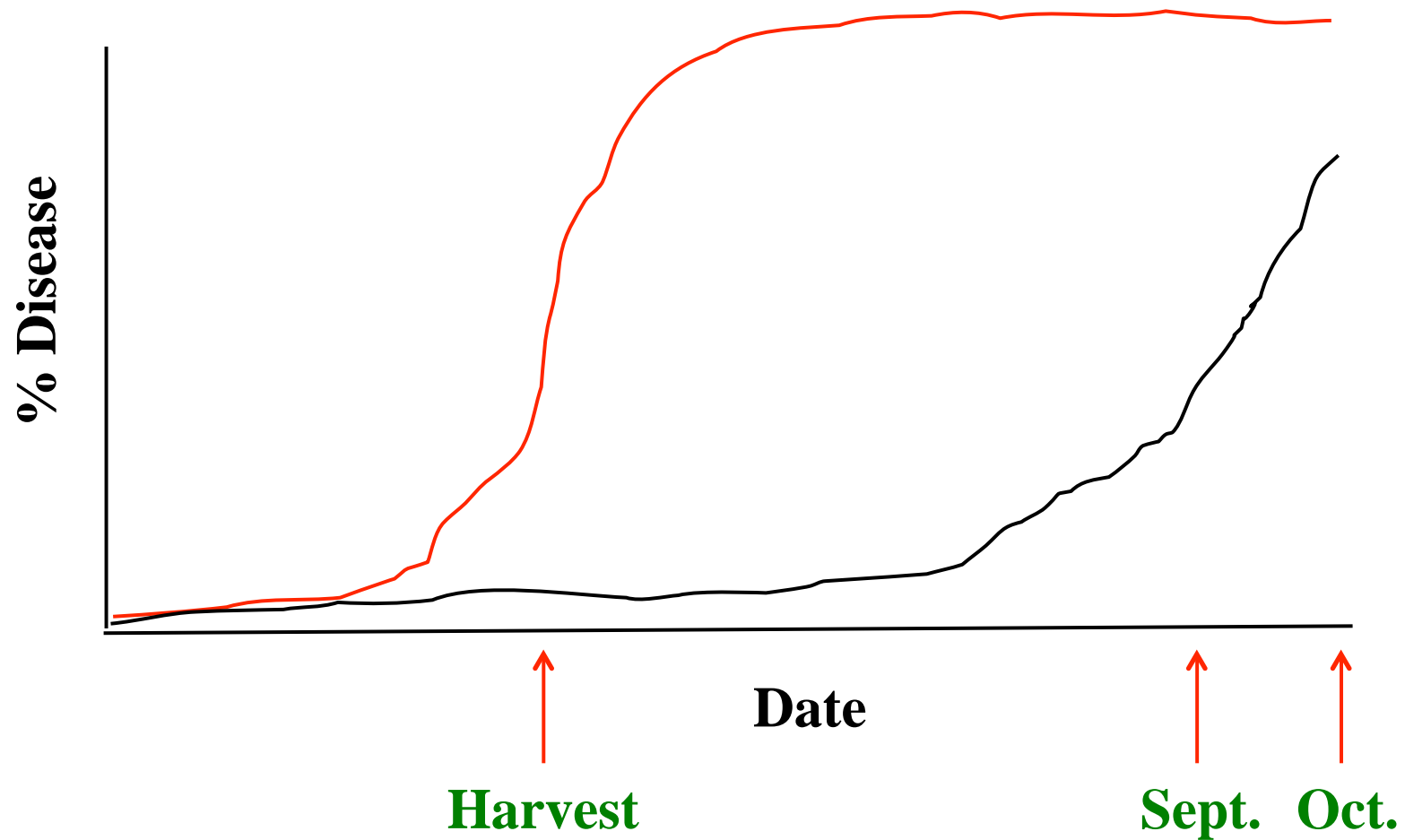
**MICHIGAN STATE
UNIVERSITY**



Fungal Disease Epidemics

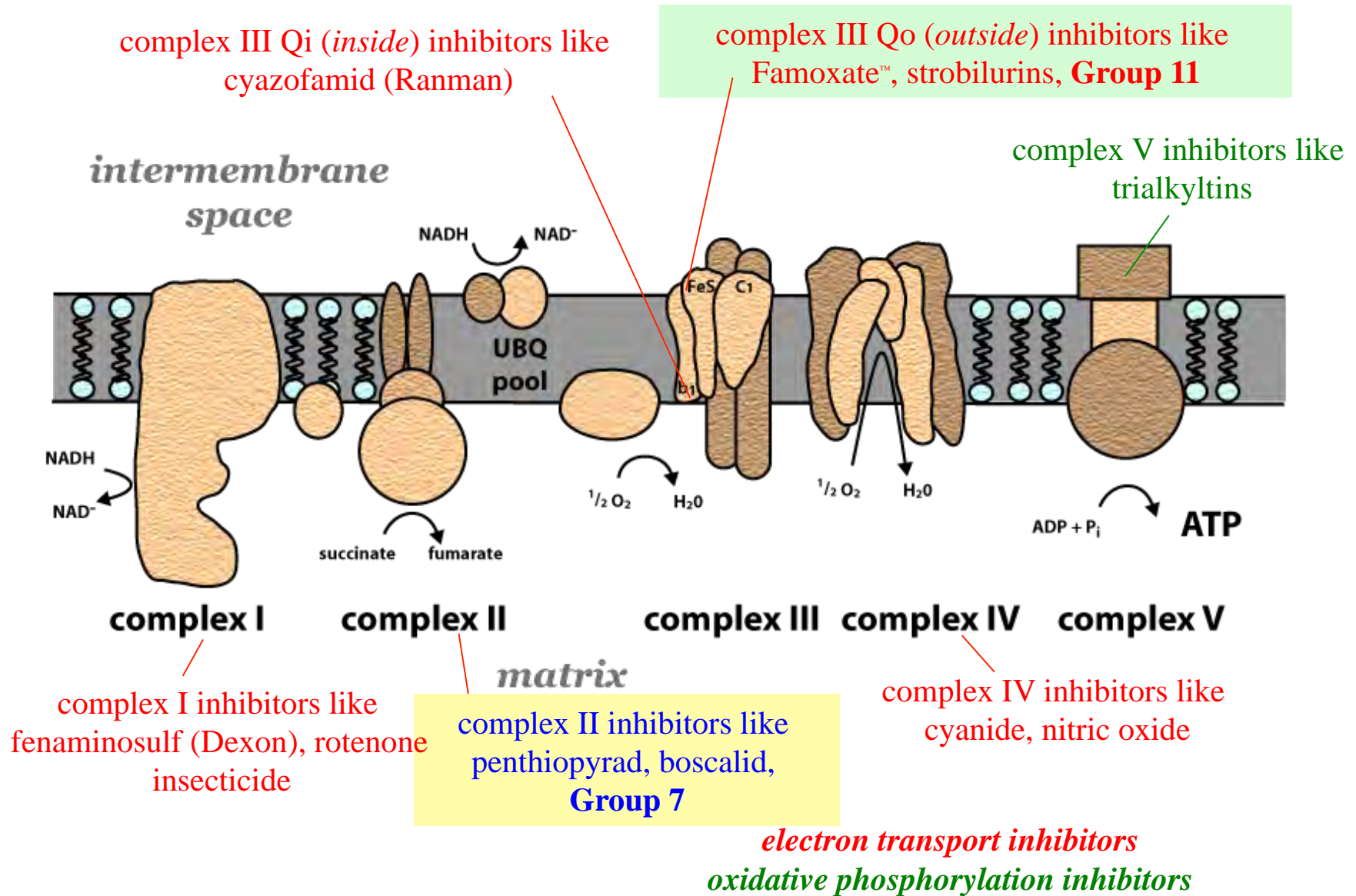


Fungal Disease Epidemics





The vital role of respiration – a target for newer fungicides and pesticides



Commercial succinate dehydrogenase (SDHI) Fungicides

- **Boscalid** – a.i. of fungicide **Endura**
 - Tree fruit – sold in a premix with pyraclostrobin (**PRISTINE**)
- To be registered in 2012:
- **Fluopyram** -- **Luna**
- **Fluxapyroxad** -- **Merivon**
- **Penthiopyrad** -- **Fontelis**

Commercial SDHI Fungicides

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 - Tree fruit – sold in a premix with pyraclostrobin (**PRISTINE**)
- To be registered in 2012:
- **Fluopyram** – **Luna**
 - + **QoI (Strobilurin)**; + **DMI**; or + **AP**
- **Fluxapyroxad** – **Xemium**
 - + **QoI (Strobilurin)**
- **Penthiopyrad** -- **Fontelis**

Commercial SDHI Fungicides for Cherry

- **Boscalid – a.i. of fungicide **Endura****
 - Tree fruit – sold in a premix with pyraclostrobin (**PRISTINE**)
- **To be registered in 2012:**
- **Fluopyram – Luna**
 - + **QoI (trifloxystrobin) – LUNA SENSATION**
- **Fluxapyroxad – Xemium**
 - + **QoI (pyraclostrobin) -- MERIVON**
- **Penthiopyrad -- Fontelis**

Commercial SDHI Fungicides

- What you will hear about these fungicides:
- Luna Sensation and Merivon are premixes of 2 active ingredients for built in resistance management
- What you need to remember about these fungicides:
- Both of these fungicides are at risk of resistance development AND they have been used for CLS control in Michigan for several years

Fungal Disease Control Chemistries, 2012

- Chlorothalonil – Bravo and generics
- Pristine – **contains an SDHI component**
- Strobilurins – Gem, Adament
- Syllit
- Copper
- Captan
- Sterol-inhibitors

- **SDHIs – succinate dehydrogenase inhibitors**

Fungal Disease Control Chemistries, 2011

- **New SDHI chemistries**
 - **Luna Sensation (Bayer) – strobry + SDHI**
 - **Merivon (BASF) – strobry + SDHI**
 - **Fontelis (Dupont)**

 - **Q8Y78 (Dupont) – strobry + SDHI**

Cherry Disease Control Experimental Trials

- **Trials run at NWMHRS**
 - **Bill Klein, Myron Anderson**
- **Montmorency & Balaton; Montmorency**
- **16 treatments; 8 treatments**
- **Petal fall, shuck split, 1st - 4th covers**
- **Ratings on July 15, August 25**

Penthiopyrad Efficacy – Leaf Spot

Year	Nontreated	<u>Penthiopyrad</u>	
	Control	14 fl oz/A	20 fl oz/A
2006	90.9 a	76.6 b	45.9 c
2007	81.6 a	59.9 b	35.7 c
2008	47.2 a	16.9 b	11.4 c
2009	91.0 a	72.7 b	76.4 b
2011	58.5 a	41.1 b	45.4 b

Late August, early September defoliation

Penthiopyrad Efficacy – Leaf Spot

Year	Nontreated	<u>Penthiopyrad</u>		<u>Dodine</u>
	Control	14 fl oz/A	20 fl oz/A	
2006	90.9 a	76.6 b	45.9 c	32.6 d
2007	81.6 a	59.9 b	35.7 c	
2008	47.2 a	16.9 b	11.4 c	1.9 de
2009	91.0 a	72.7 b	76.4 b	4.5 e
2011	58.5 a	41.1 b	45.4 b	

Late August, early September defoliation

Fluopyram Efficacy – Leaf Spot (Evaluated using a premix with trifloxystrobin)

Year	Nontreated Control	<u>Fluo + tri</u> 14 fl oz/A	<u>Pristine</u> 10.5 oz/A
2008 fs	47.2 a	0.8 e	2.6 de
2009 p	91.0 a	17.1 d	19.4 d
2011 p	58.5 a	8.9 c	9.0 c

**2 chlorothalonils; 4 cover sprays of test chemistries
Late August, early September defoliation**

Leaf Spot Control, Highlights

% Defoliation, Aug 25

Pristine, 12 oz	4.5 g
Bravo (AB); Gem, 3 fl oz (CDEF)	7.2 g
Bravo (AB); Luna Sensation 5 fl oz (CDEF)	8.9 g
Control	58.5 ab

Leaf Spot Control, Highlights % Defoliation, Aug 25

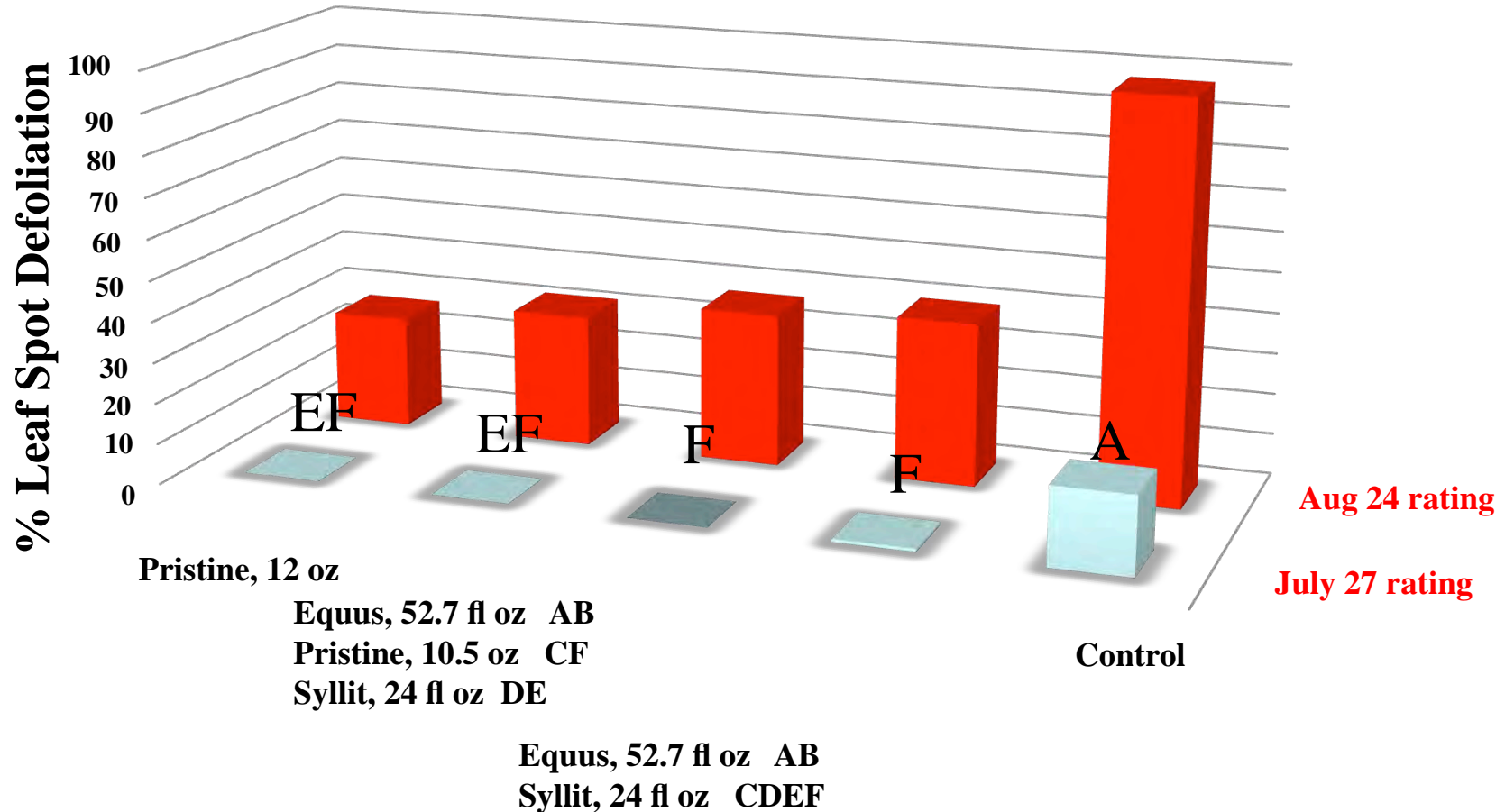
Fontelis, 14 fl oz	41.1	def
Fontelis, 20 fl oz	45.4	cde
Q8Y78, 18 fl oz	32.1	f
Pristine, 12 oz	4.5	g
Control	58.5	ab

Q8Y78 – stroby + Fontelis

Leaf Spot Control, Highlights Defoliation, Aug 25

1 – Merivon 500SC 4.5 fl oz.....	ABCDEF	13.9 e
2 – Merivon 500SC 5.5 fl oz.....	ABCDEF	7.5 e
3 – Merivon 500SC 6.5 fl oz.....	ABCDEF	11.2 e
4 – Pristine 38WG 12.5 oz + Latron B-1956 7.7 fl oz.....	ABCDEF	30.3 c
5 – Gem 500SC 3.8 fl oz + Latron B-1956 7.7 fl oz.....	ABCDEF	48.8 b
6 – Bravo Ultrex 82.5% WDG 3 lb..... Pristine 38WG 10.5 oz..... Syllit FL 24 fl oz + Captan 80WDG 2.5 lb..... Pristine 38WG 10.5 oz.....	AB C DE F	21.6 d
7 – Syllit FL 24 fl oz.....	ABCDEF	14.0 e
8 – Untreated control		88.4 a

Leaf Spot Control – Pristine (2010)



News and Notes; Cherry Disease Control

- **Level of leaf spot infection on July 15 was similar on Merivon, Pristine, Gem treatments in this block**
- **However, level of infection did not increase in Merivon treatments between July 15 and Aug 25**
- **Infection increased and defoliation did as well in Gem and Pristine treatments in this block**

Brown Rot Control, Sweet Cherry 'Ulster' Highlights

Pristine 38WG 14.5 oz	AB	55.4 a*
Quadris Top 2.71SC 14 fl oz.....	AB	16.4 b
Inspire XT 4.17 EC 7 fl oz	AB	21.1 b
Inspire Super 2.82 EW 20 fl oz	AB	25.9 b
Untreated control		51.8 a

Trees inoculated; one branch in each quadrant

Two sprays, July 1 and July 8

Rating on July 15 – 200 fruit per tree

Brown Rot Control, Sweet Cherry 'Emperor Francis' Highlights

1 – Fontelis 1.67 SC 14 fl oz.....	AB	55.0 b
2 – Indar 2F 6 fl oz.....	AB	33.9 cd
3 – Fontelis 1.67 SC 20 fl oz.....	AB	51.4 bc
4 – YT669 2.08SC 20 fl oz	AB	40.1 bcd
5 – YT669 2.08SC 8 fl oz	AB	41.5 bcd
6 – YT669 2.08SC 8 fl oz + Regulaid 0.25% v/v	AB	42.8 bcd
7 – Q8Y78 SC 18 fl oz.....	AB	25.1 d
8 – Merivon 6.5 fl oz	AB	37.1 bcd
9 – Luna Sensation 500 SC 5 fl oz	AB	38.1 bcd
10 – Control		80.5 a

Trees inoculated; one branch in each quadrant

Two sprays, July 1 and July 8

Rating on August 1 – 200 fruit per tree

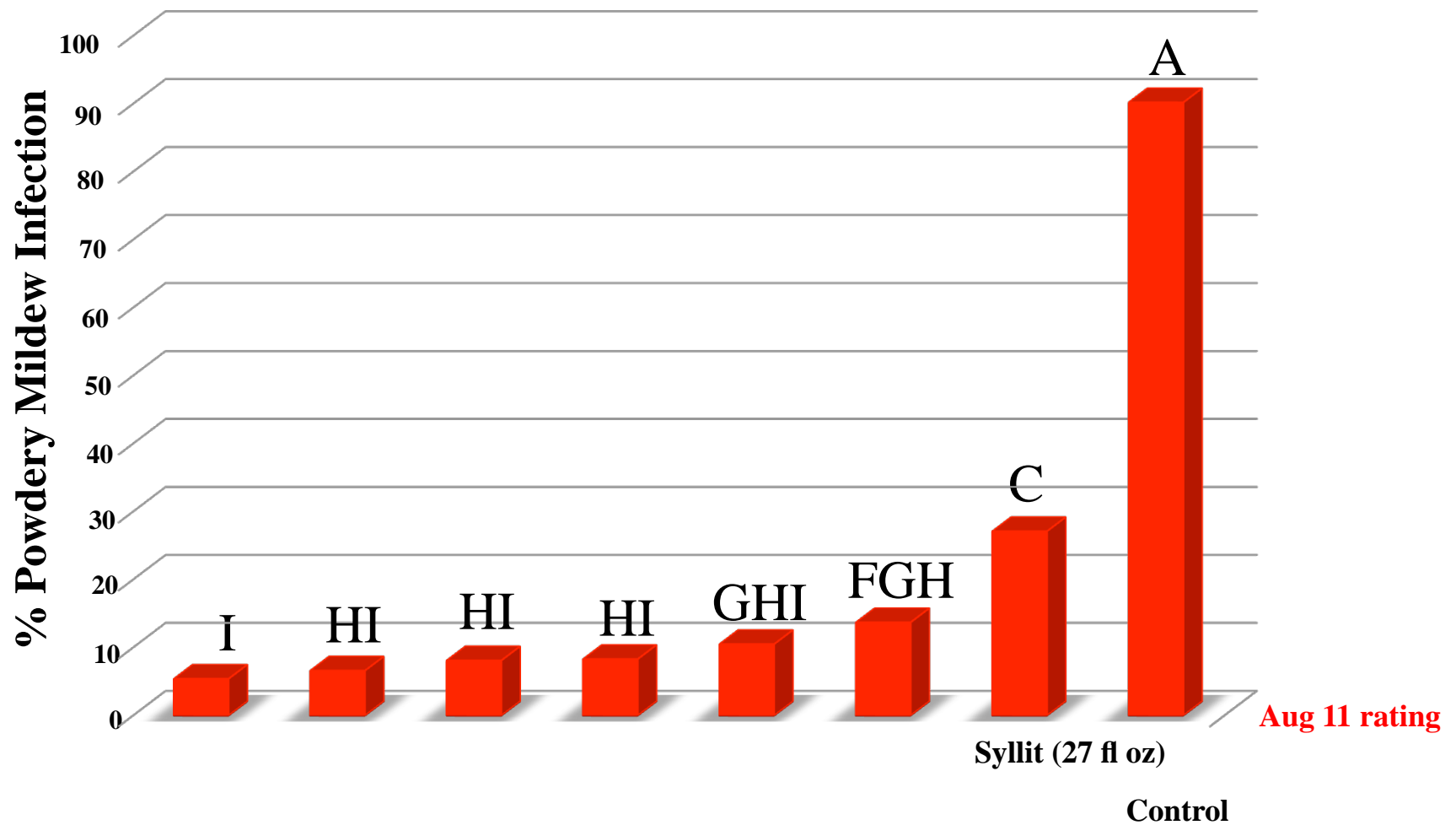
Powdery Mildew Control, Highlights

Pristine, 12 oz	0.9 f
Equus (AB); Syllit, 24 fl oz (CDEF)	18.1 bc
Equus (AB); Captan (CDEF)	26.5 a
Control	19.1 b

Powdery Mildew Control, Highlights

Equus (AB); Syllit, 24 fl oz (CDEF)	18.1 bc
Equus (AB); Pristine (CF)	
Syllit, 24 fl oz (DE)	1.9 ef
Control	19.1 b

Powdery Mildew Control, Highlights



Program treatments with Luna, Fontelis, Pristine, Gem

News and Notes; Cherry Leaf Spot Control

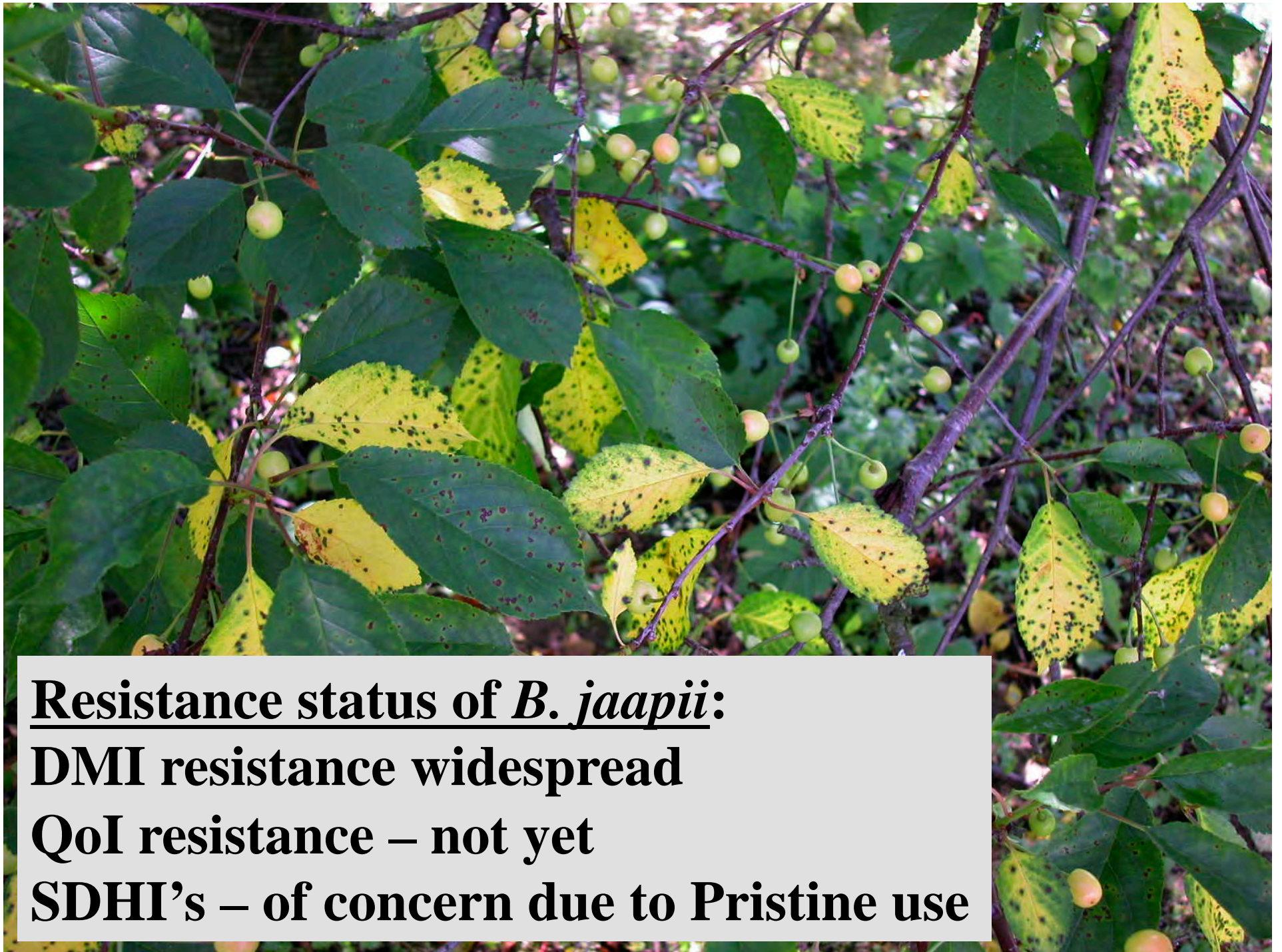
- **New SDHIs – Merivon and Luna Sensation; Fontelis**
 - **Captan should be added for resistance management**
- **Syllit FL – excellent leaf spot control; limiting defoliation**
 - **Syllit + Captan – recommended for resistance management**
- **Copper – excellent leaf spot control; limiting defoliation (1.2 lbs metallic/A)**

News and Notes; Brown Rot Control

- **New SDHIs – Merivon and Luna
Sensation; Fontelis**
 - **Will control brown rot**
- **Indar remains the best option**

News and Notes; Cherry Leaf Spot Control

- **Pristine and Gem – tank mix with Captan**
- **Might be some shifting happening in MI orchards**
- **We are examining boscalid sensitivity this winter**



Resistance status of *B. jaapii*:

DMI resistance widespread

QoI resistance – not yet

SDHI's – of concern due to Pristine use

Summary

- **SDHI's are coming out in 2012**
- **Pristine has been used in apple and cherry**
- **Exposure of key pathogens has already occurred**
- **Efficacy:**
 - **Apple scab – G to VG**
 - **Leaf spot – VG to E**
 - **Powdery mildew – VG to E**
 - **Amer brown rot – G to VG**



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