

Causal Agents of Fruit Rot in Washington Cranberries

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Objectives

- Determine which fungi infect berries during their development and maturation
- Pre-harvest and post-harvest
- Fresh fruit (Grayland) and processed fruit (Long Beach)
- Different fungicide programs
- Currently in the third year of the project

Experimental setup

- Three fresh fruit beds, three processed fruit beds
- All planted with 'Stevens'
- Pre-harvest samples – August 16, September 5, September 26
- Post-harvest samples – October 17, November 7, November 25
- Berries stored in cooler during the duration

Experimental setup (cont.)

- 100 healthy berries plated for all 6 samples in all six beds
- 50 or less rotted berries plated for whichever beds have rot present
- Berries halved, surface sterilized in 10% Clorox, blotted dry on sterile paper towels
- Plated (5/plate) on acidified cornmeal agar
- Fungi identified at 21 days

Percent field rotted fruit – 2013

Bed #	Aug. 16	Sep. 5	Sep. 26	Total
1	0	9.7	15.7	15.05
2	0	9.4	6.5	6.79
3	0	2.6	7.6	7.11
4	0	0.6	0.5	0.53
5	0	0.6	0.5	0.54
6	0	0	4.2	3.22

Percent storage rotted fruit – 2013

Bed #	Oct. 17	Nov. 7	Nov. 25	Total
1	3.5	13.0	9.7	22.49
2	5.4	19.1	14.2	31.29
3	4.5	12.3	10.9	23.29
4	0.5	1.3	1.5	2.98
5	0.7	1.0	1.1	2.45
6	4.1	8.5	12.0	20.99

Fungicides applied – 2013

- 1 = (0) None (22.49)
- 2 = (4) Abound + Indar, Abound + Indar, Bravo, Manzate (31.29)
- 3 = (1) Dithane (several years without fungicides) (23.29)
- 4 = (3) Bravo, Abound + Indar, Manzate (2.98)
- 5 = (3) Abound + Indar, Abound + Indar, Manzate (2.45)
- 6 = (2) Manzate, Bravo (20.99)

Percent field rotted fruit – 2014

Bed #	Aug. 14	Sep. 4	Sep. 29	Total
1	1.7	5.0	7.2	6.03
2	0.4	2.9	1.6	1.64
3	1.2	0	0.2	0.33
4	0	0	0.1	0.08
5	0	0	0.1	0.09
6	0	0.6	0.1	0.13

Percent storage rotted fruit – 2014

Bed #	Oct. 20	Nov. 12	Nov. 25	Total
1	3.5	67.7	38.1	82.32
2	5.4	60.0	44.9	77.50
3	4.5	3.7	5.9	11.25
4	0.5	8.6	7.2	20.15
5	0.7	6.7	6.1	14.05
6	4.1	13.1	17.6	29.86

Fungicides applied – 2014

- 1 = (2) NuCop, Kocide (82.32)
- 2 = (6) NuCop, Abound + Indar, Abound + Indar, Bravo, Manzate, NuCop (77.50)
- 3 = (3) Bravo, Bravo, Manzate (11.25)
- 4 = (5) Bravo, Abound + Indar, Bravo, Abound + Indar, Dithane (20.15)
- 5 = (4) Abound + Indar, Abound + Indar, Bravo, Manzate (14.05)
- 6 = (4) NuCop, Bravo Manzate, Abound + Indar (29.86)

Fungi which cause fruit rot in Washington

– 2002-4 (Pete Bristow)

- Allantophomopsis**
- Botryosphaeria*
- Botrytis*
- Coleophoma
- Colletotrichum**
- Fusicoccum*
- Penicillium
- Pestalotia
- Phomopsis
- Phyllosticta
- Physalospora
- Synchronoblastia

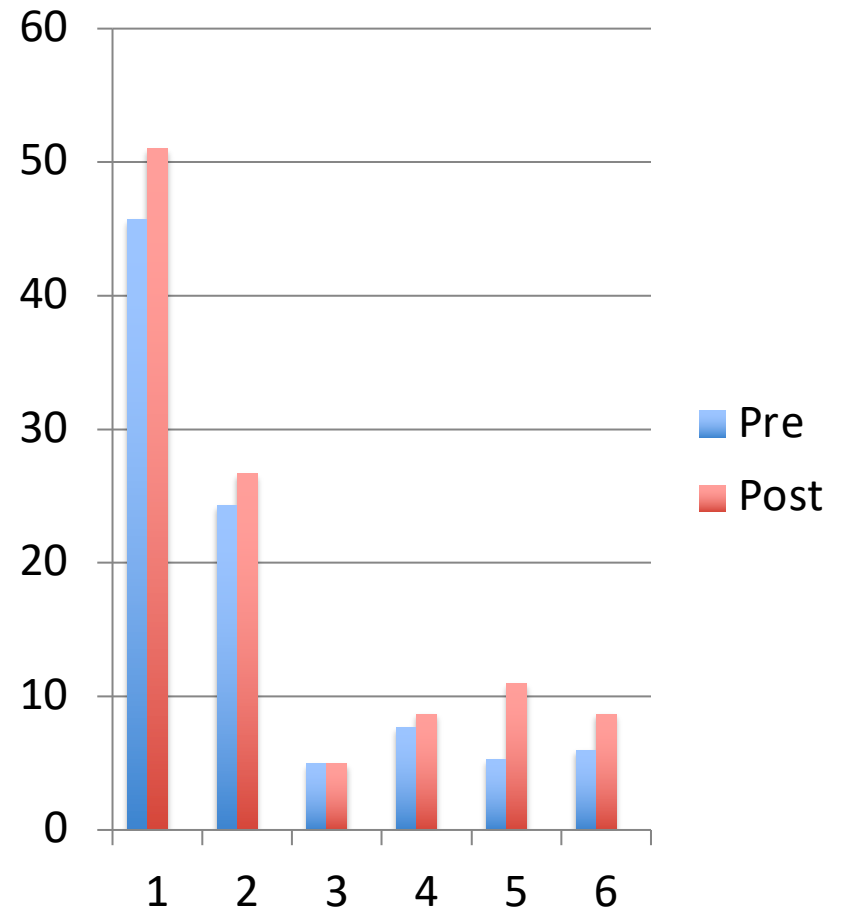
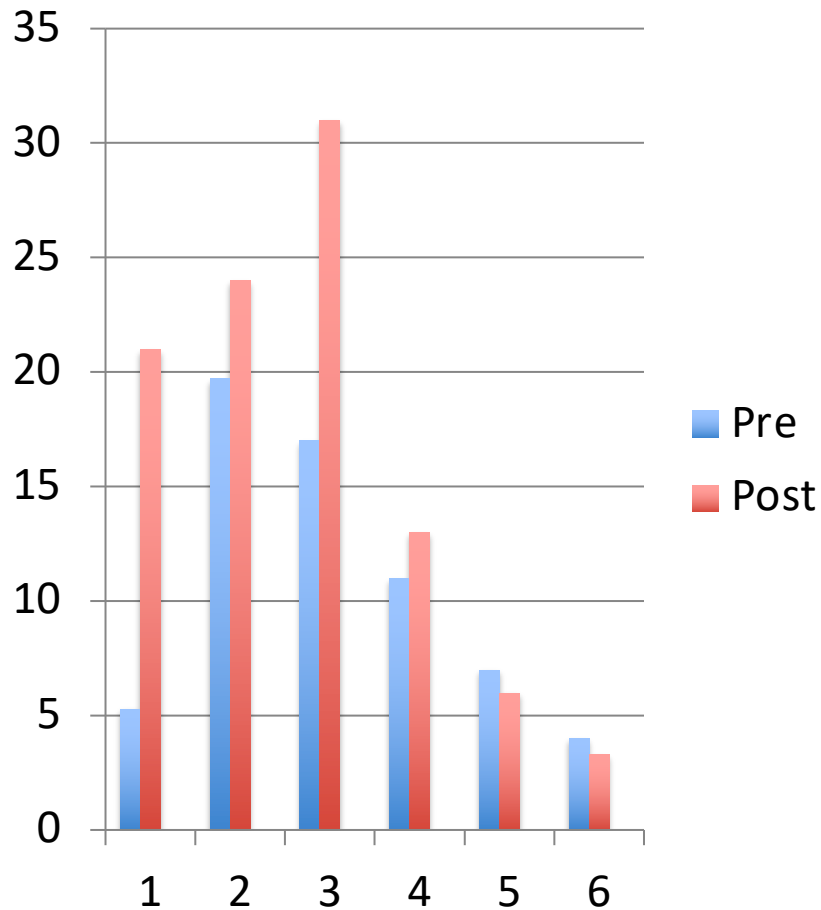
Endophyte – a plant living within another plant, usually as a parasite (plant = fungus)

Latent pathogen

Latent infection

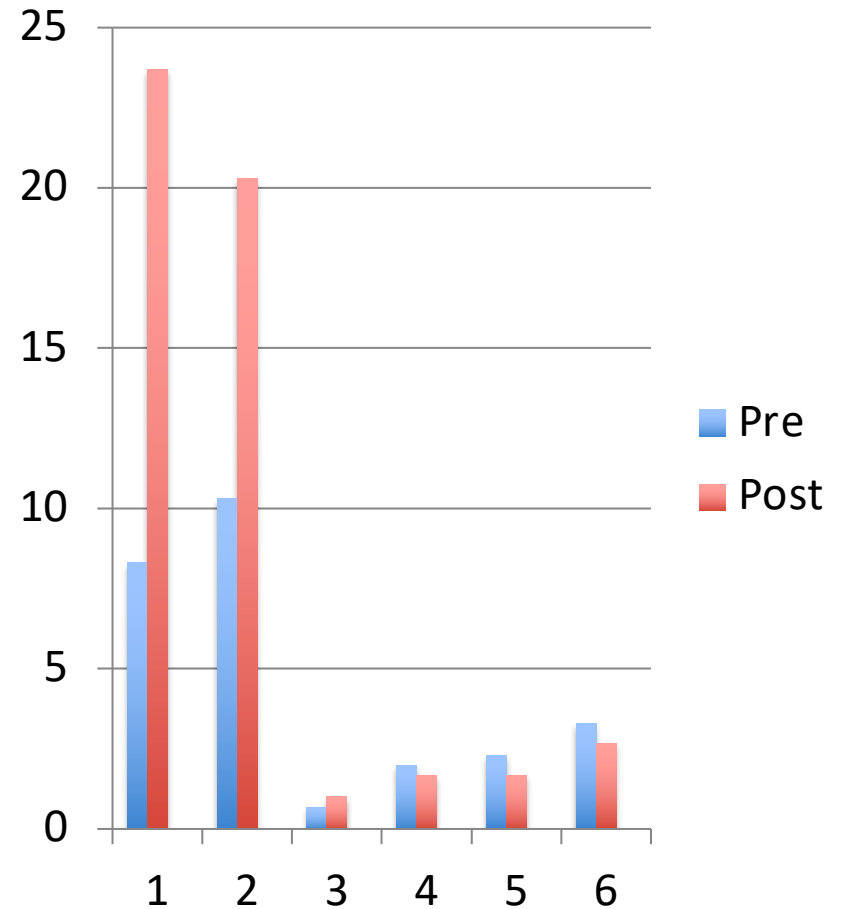
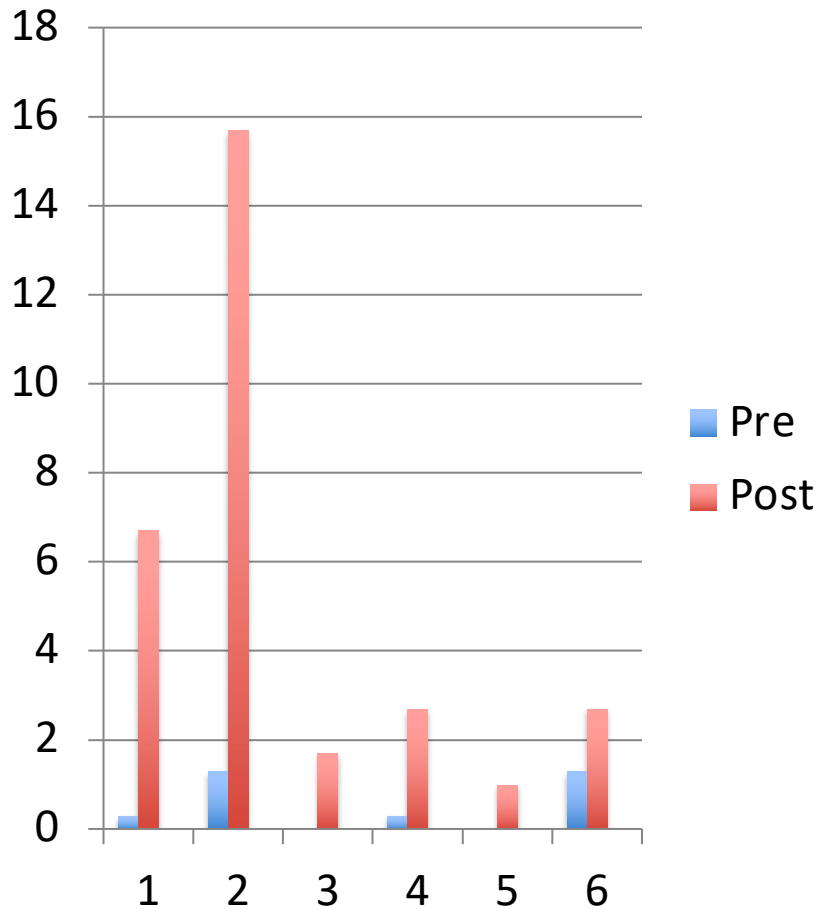
Allantophomopsis – Healthy berries

2013 and 2014



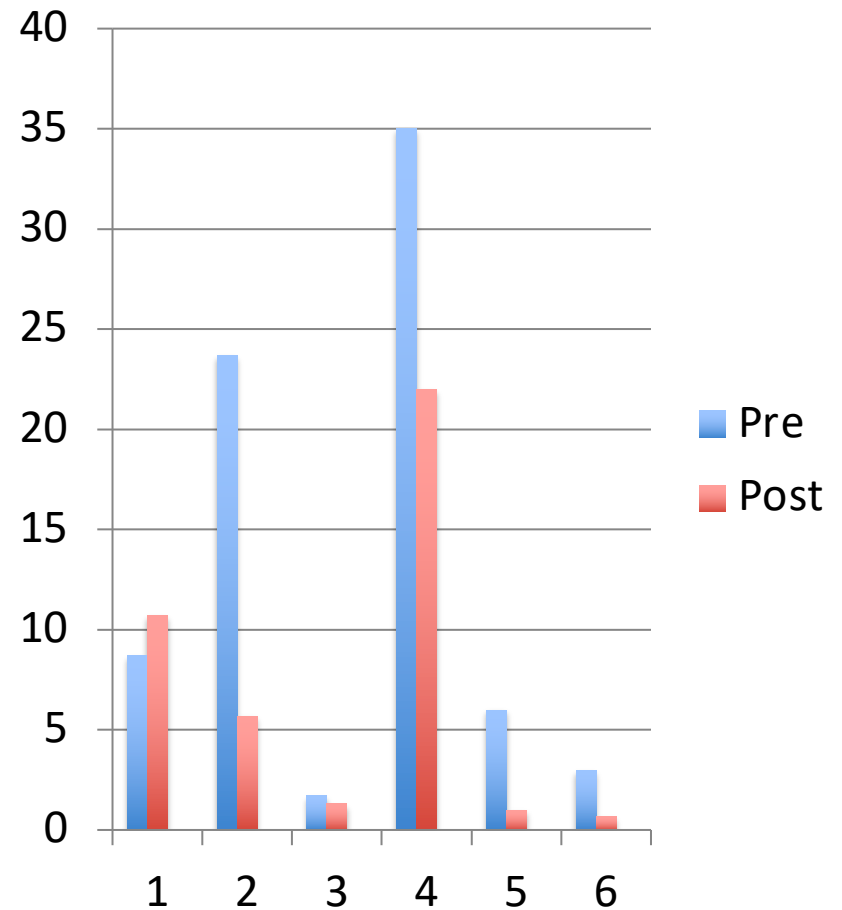
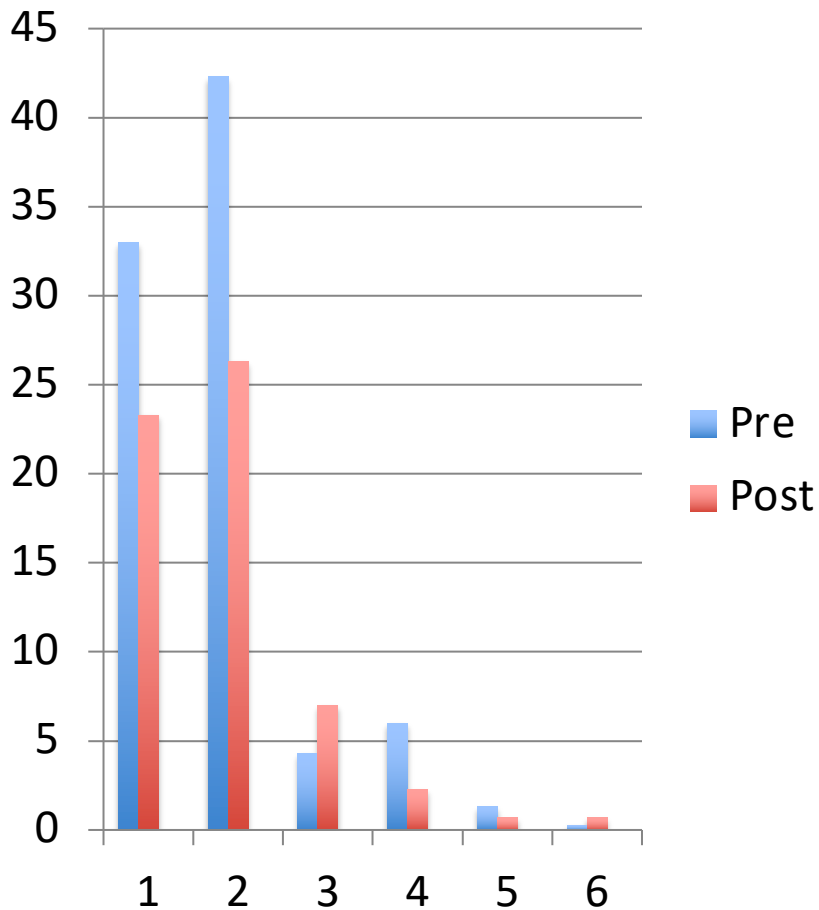
Coleophoma – Healthy berries

2013 and 2014



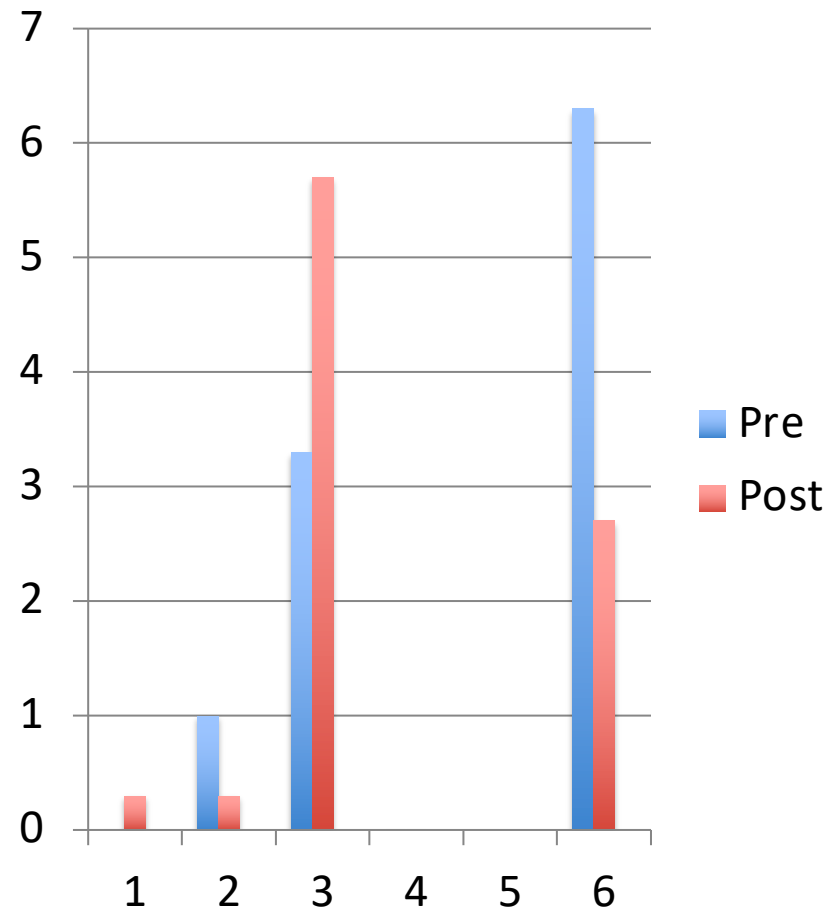
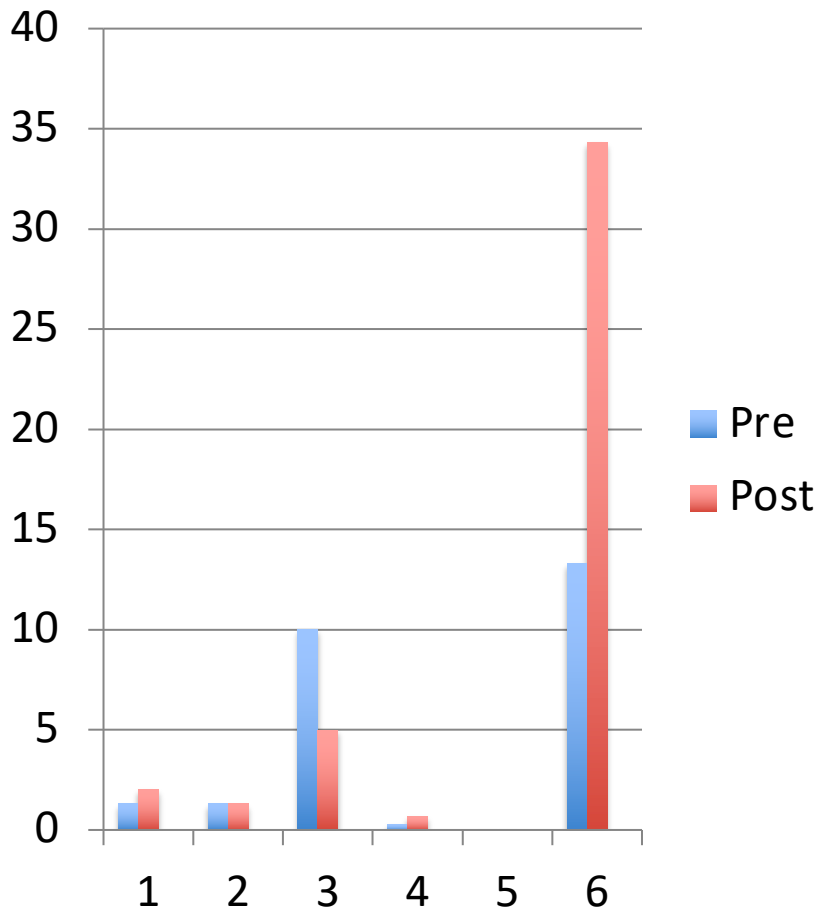
Colletotrichum – Healthy berries

2013 and 2014



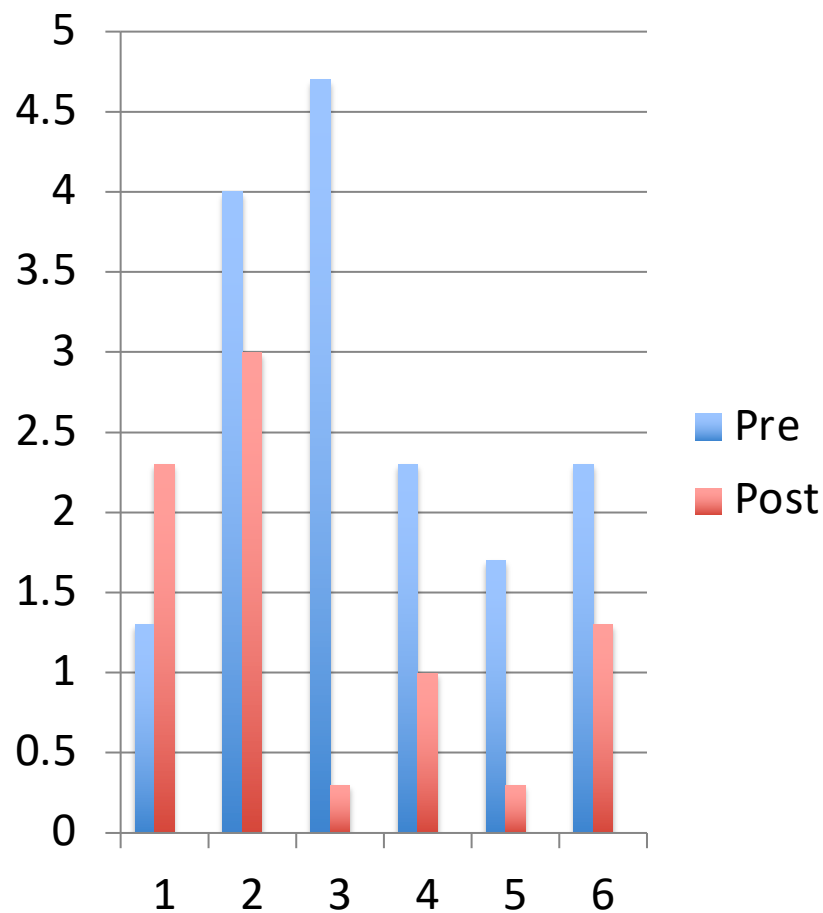
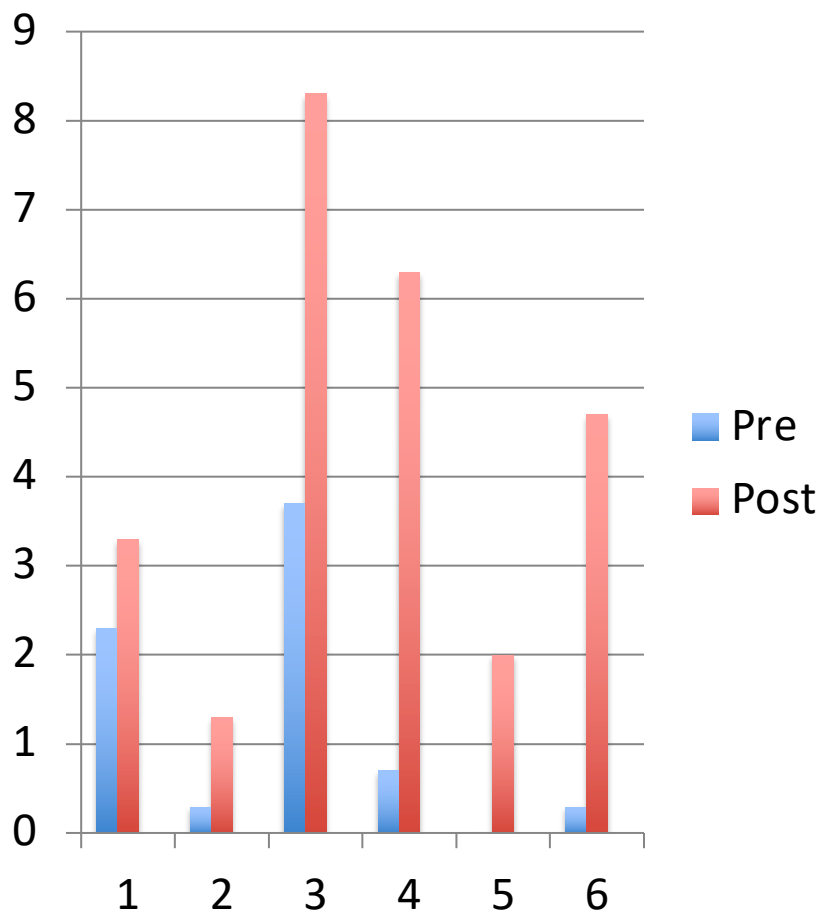
Fusicoccum – Healthy berries

2013 and 2014



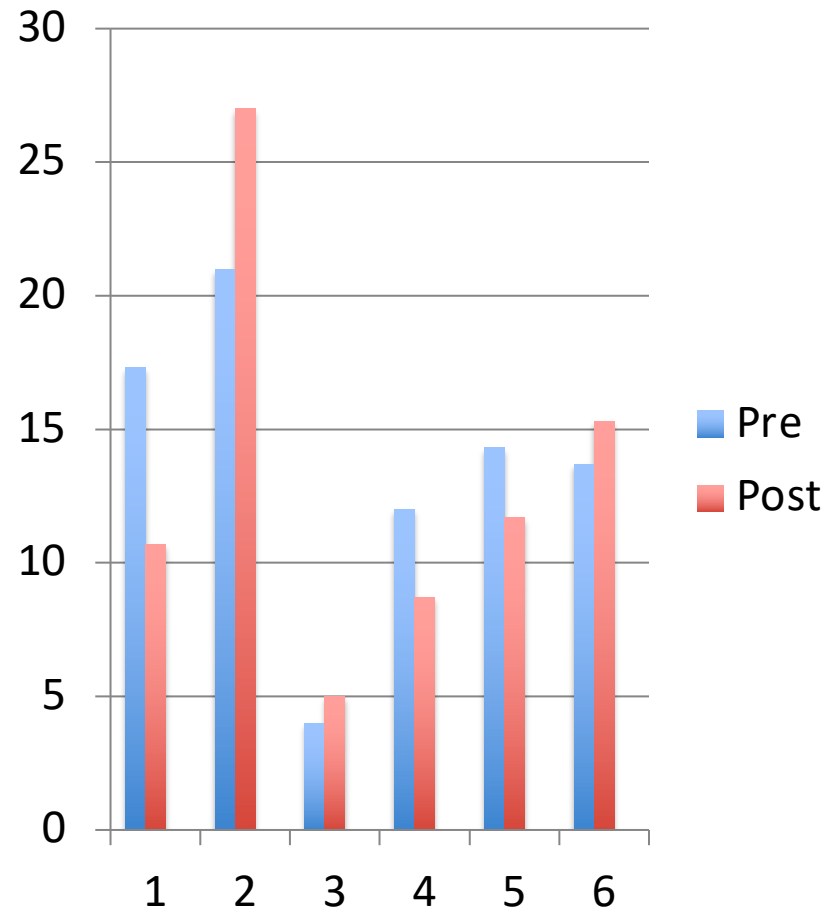
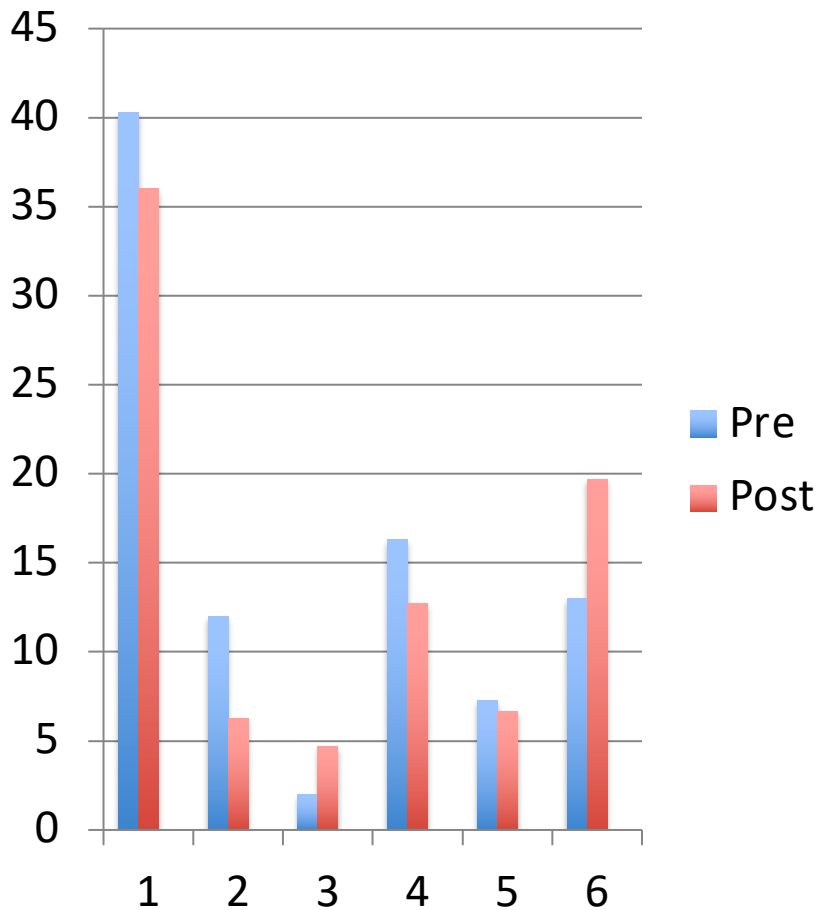
Phomopsis – Healthy berries

2013 and 2014

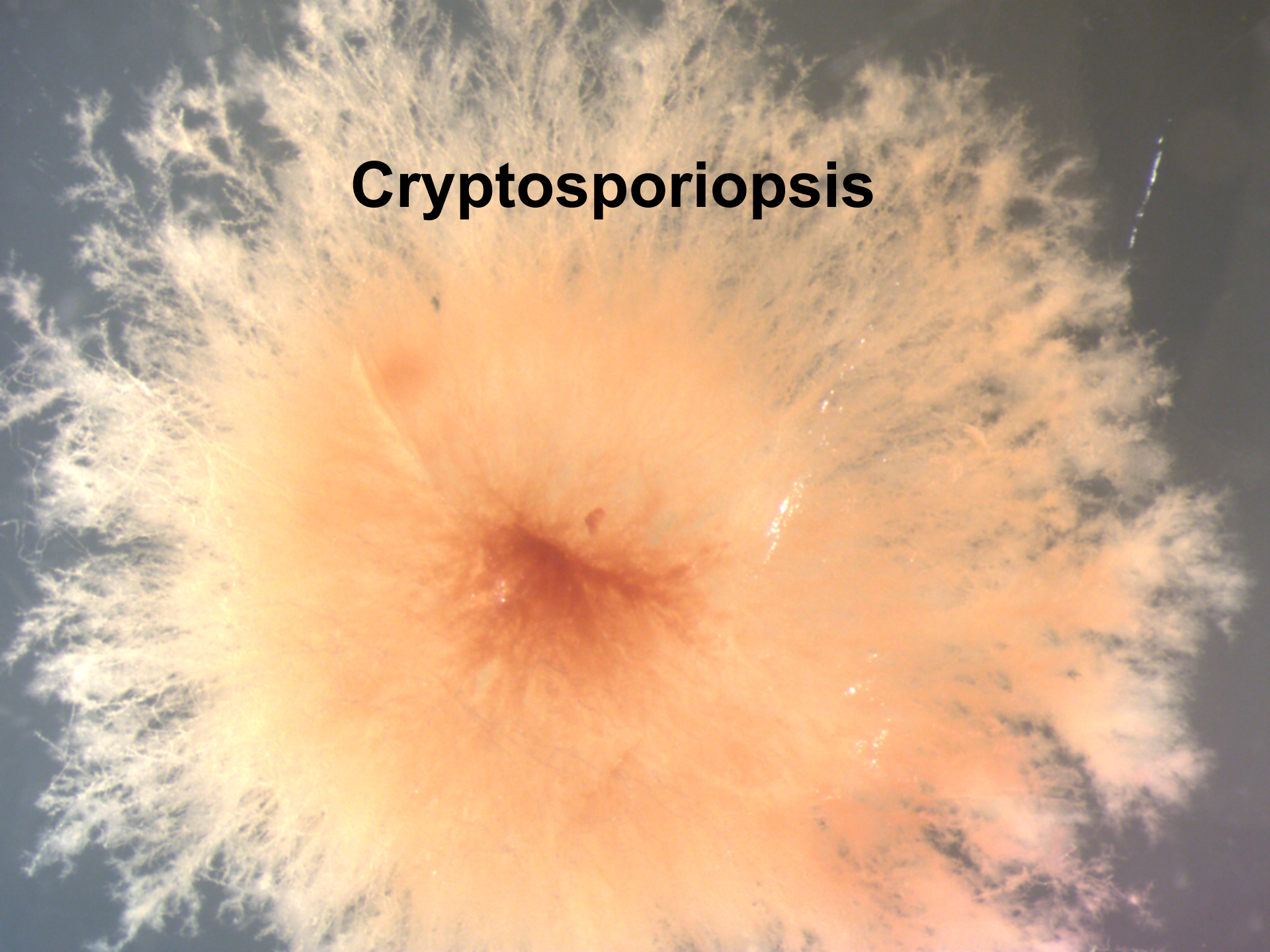


Physalospora – Healthy berries

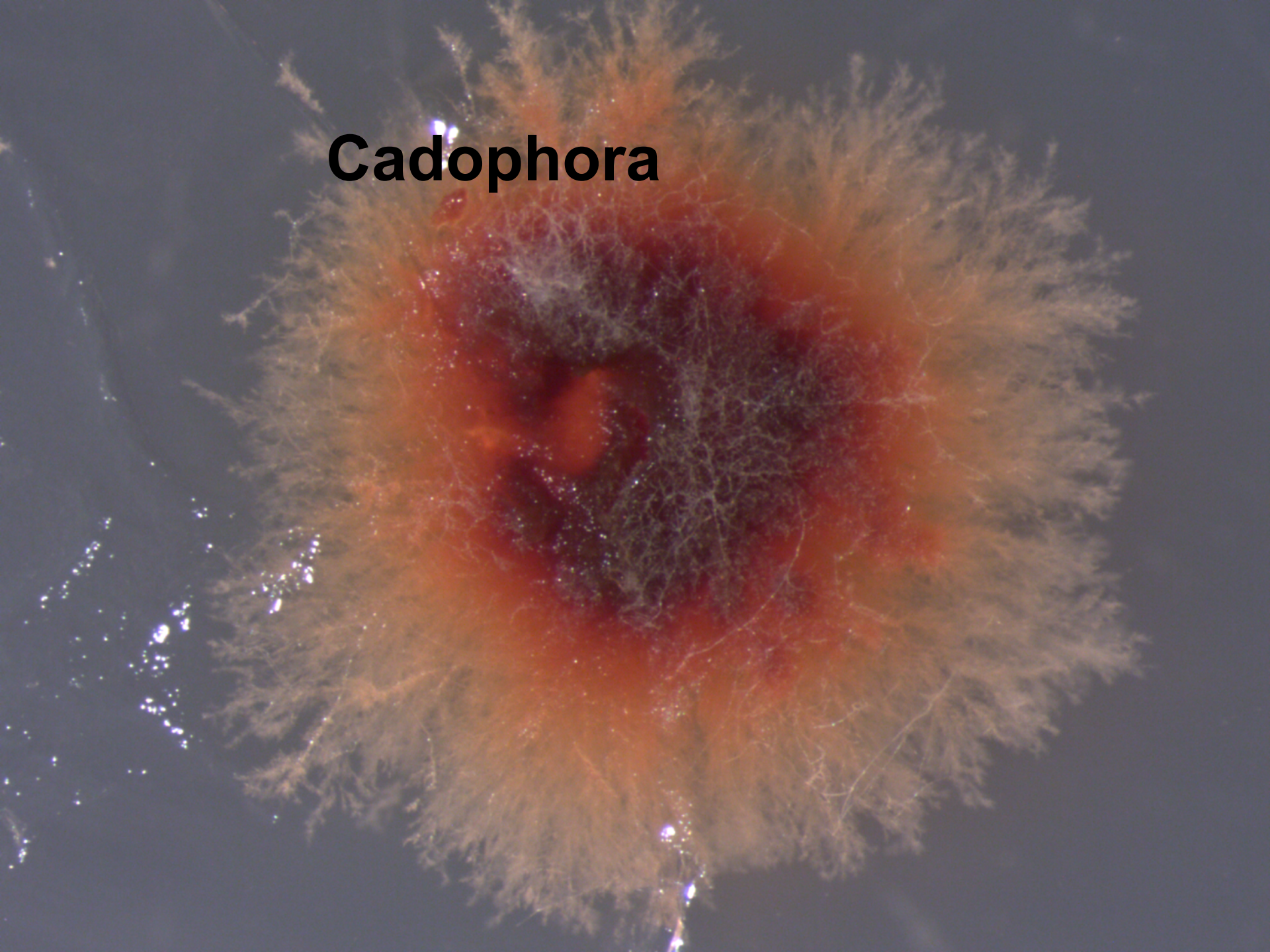
2013 and 2014



Cryptosporiopsis

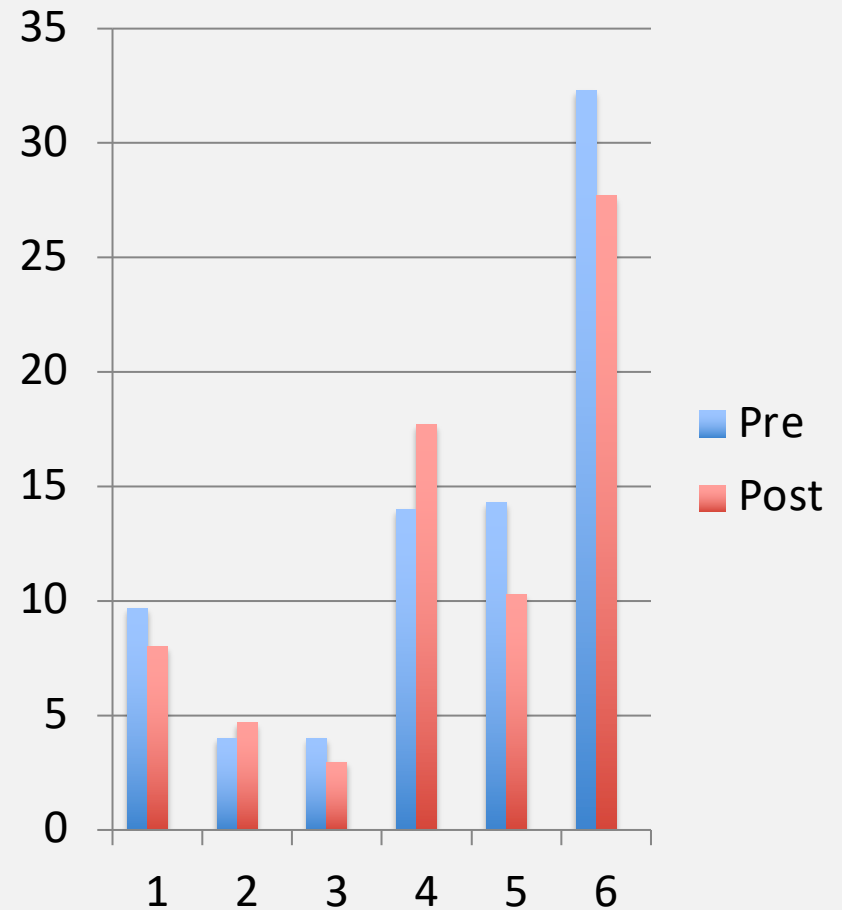
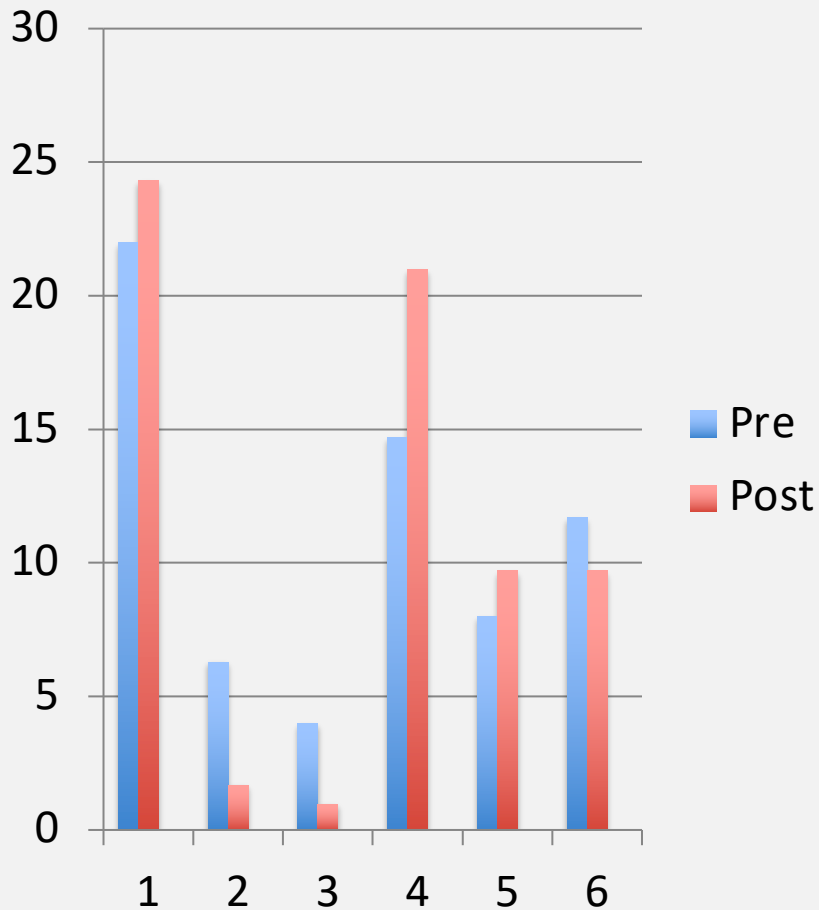


Cadophora

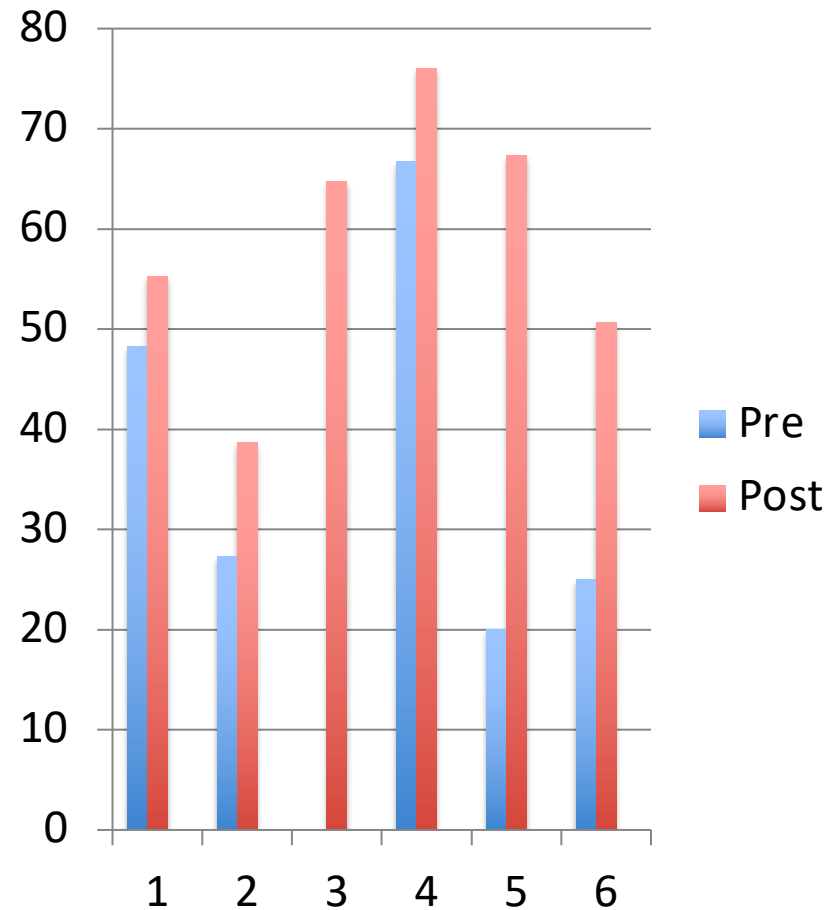
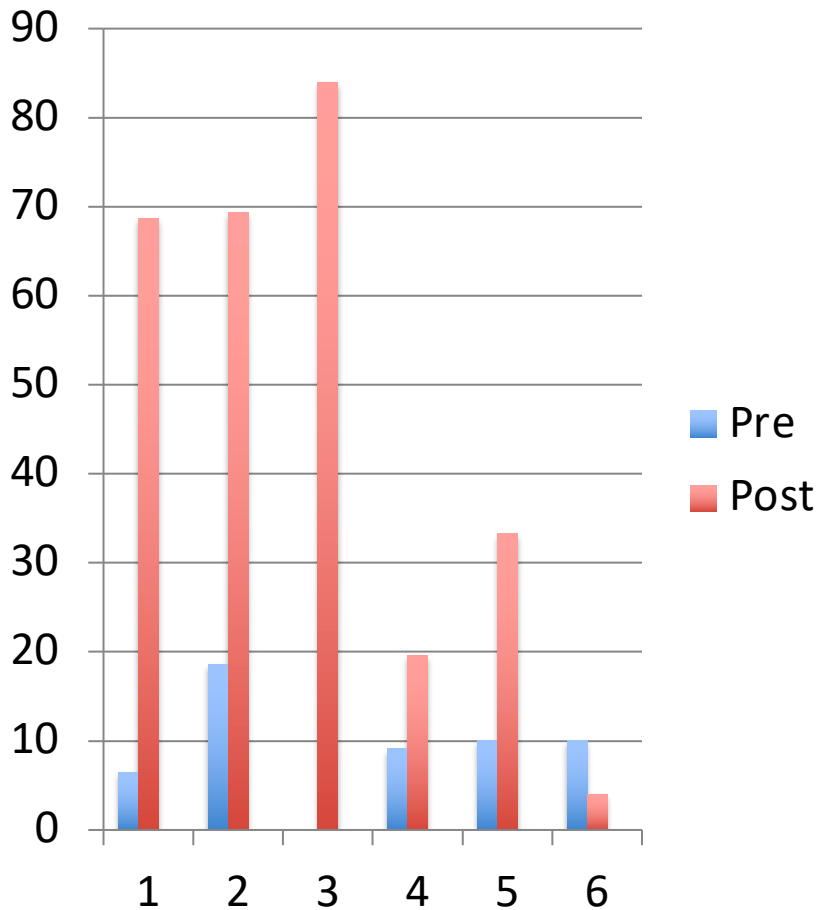


Yellow spreading – Healthy berries

2013 and 2014

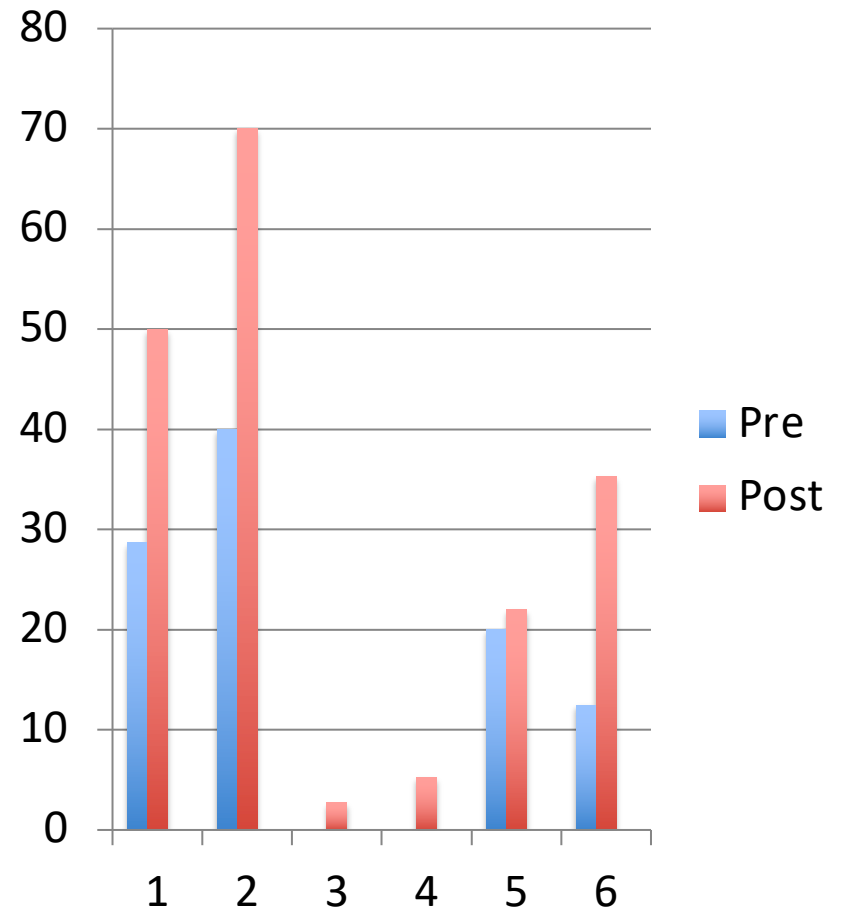
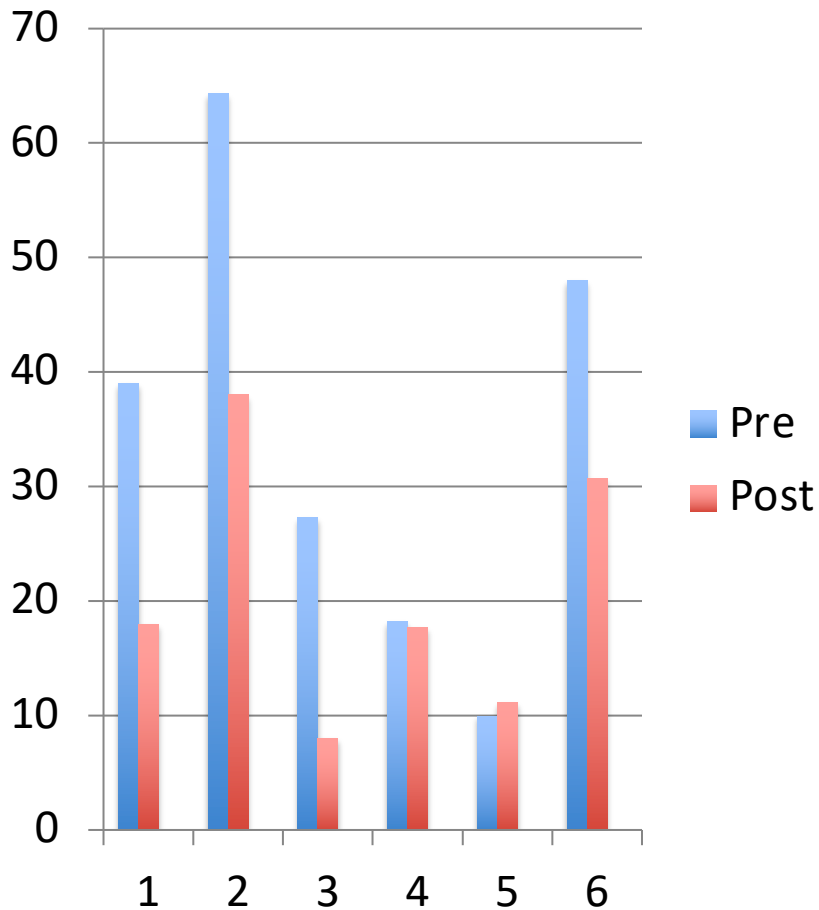


Allantophomopsis – Rotted berries 2013 and 2014



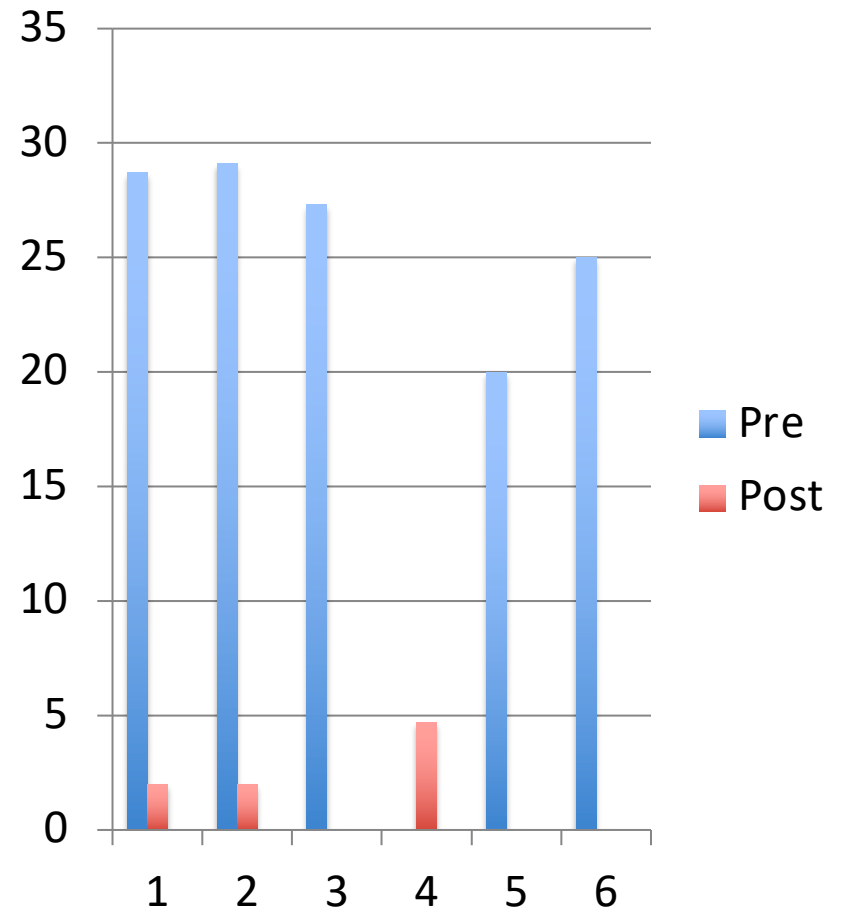
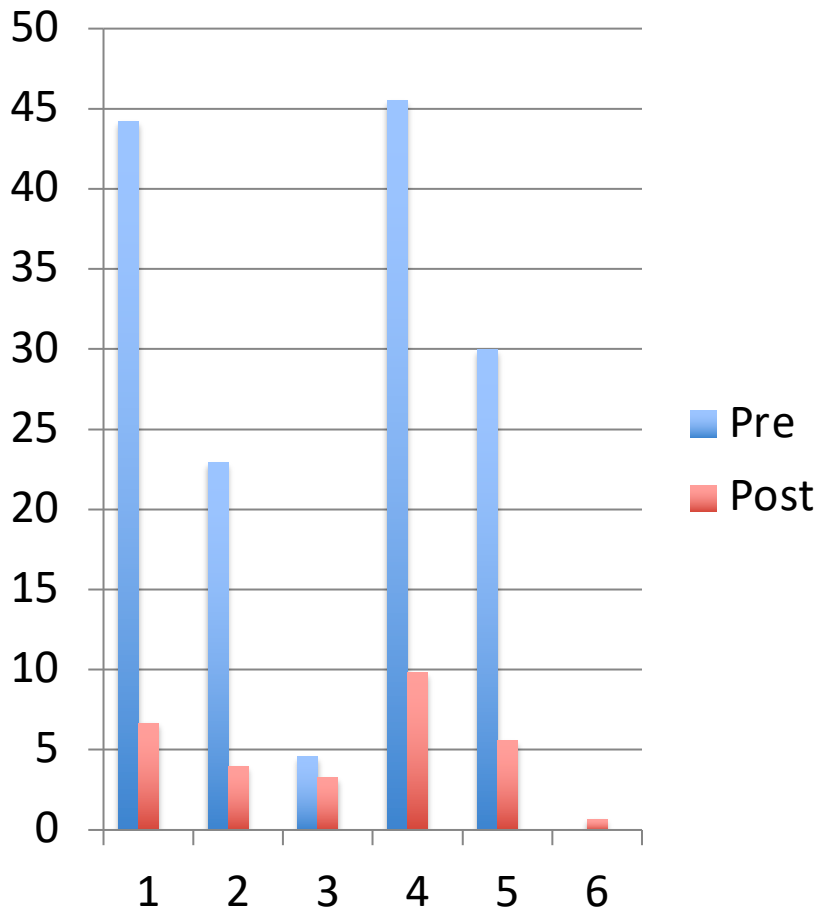
Coleophoma – Rotted berries

2013 and 2014



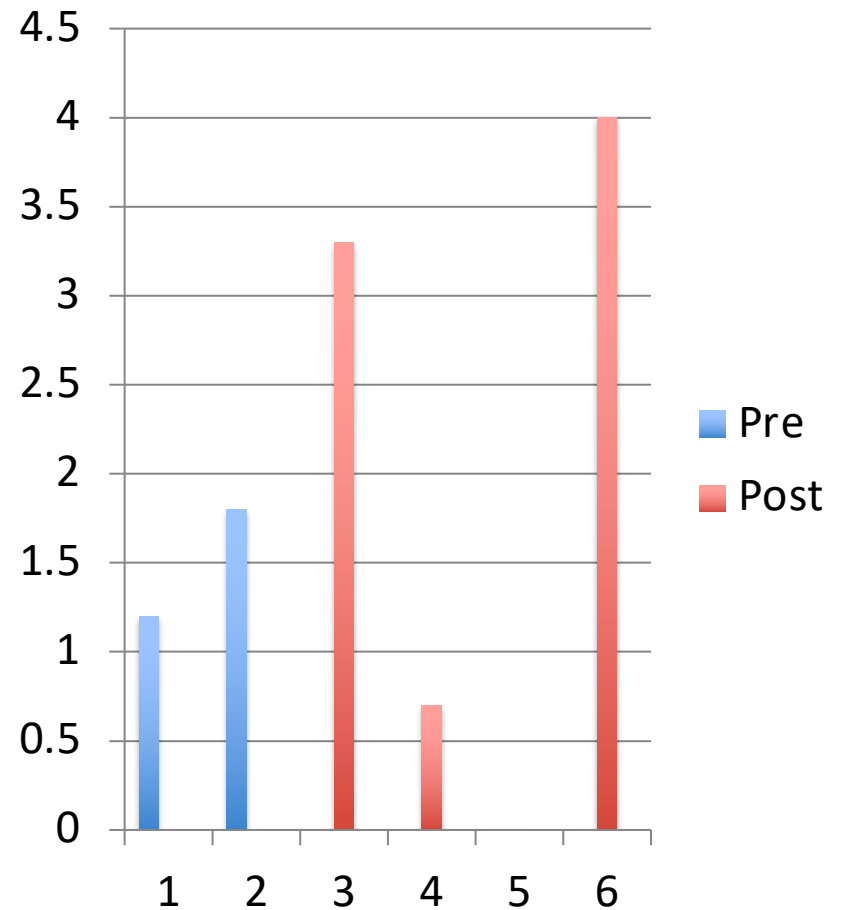
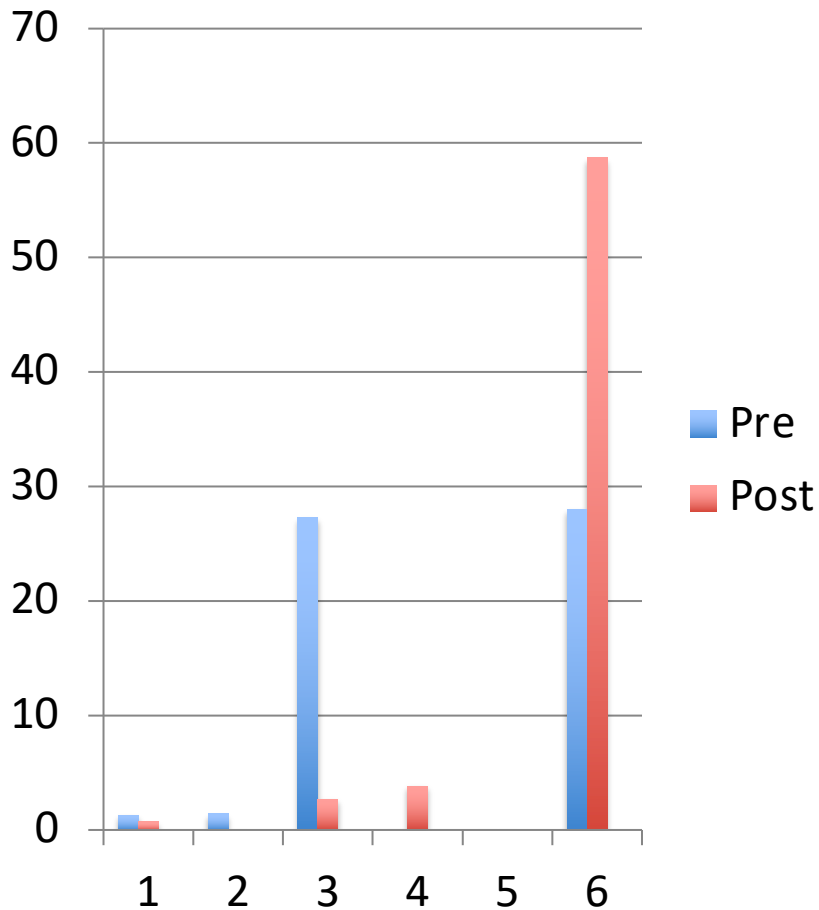
Colletotrichum – Rotted berries

2013 and 2014



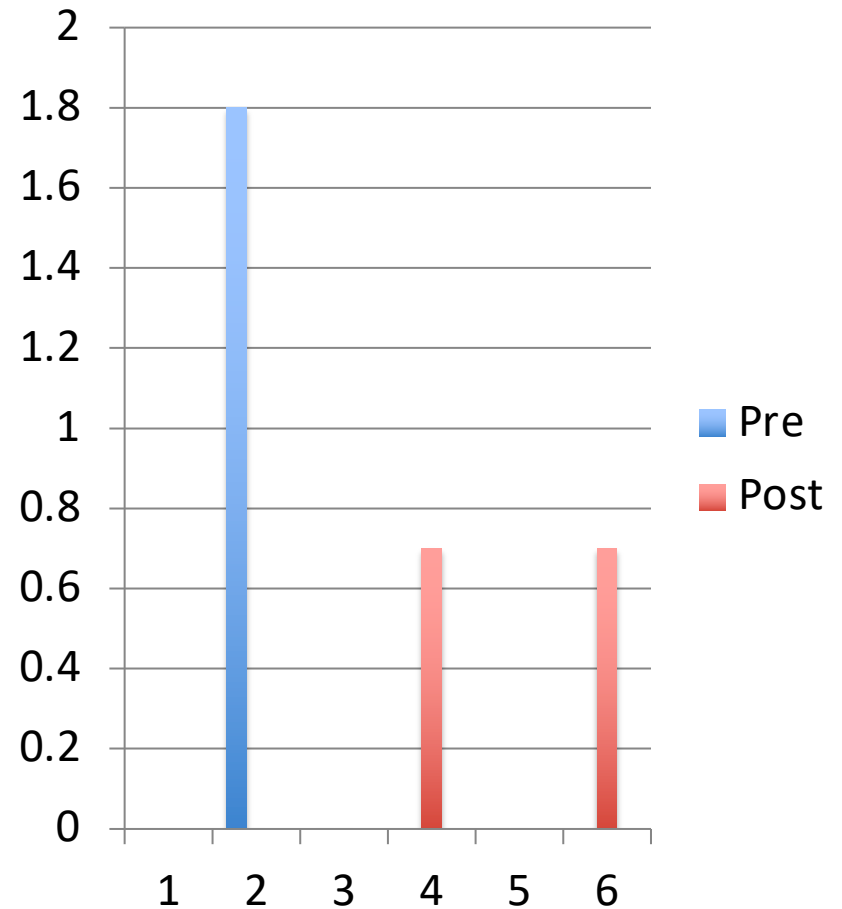
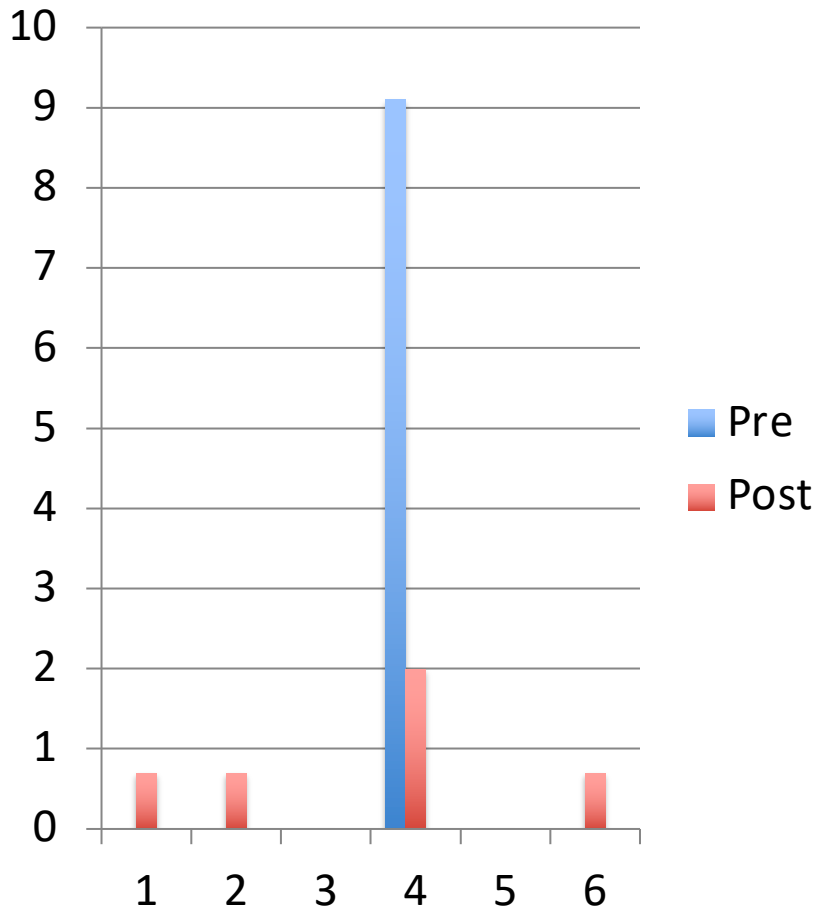
Fusicoccum – Rotted berries

2013 and 2014



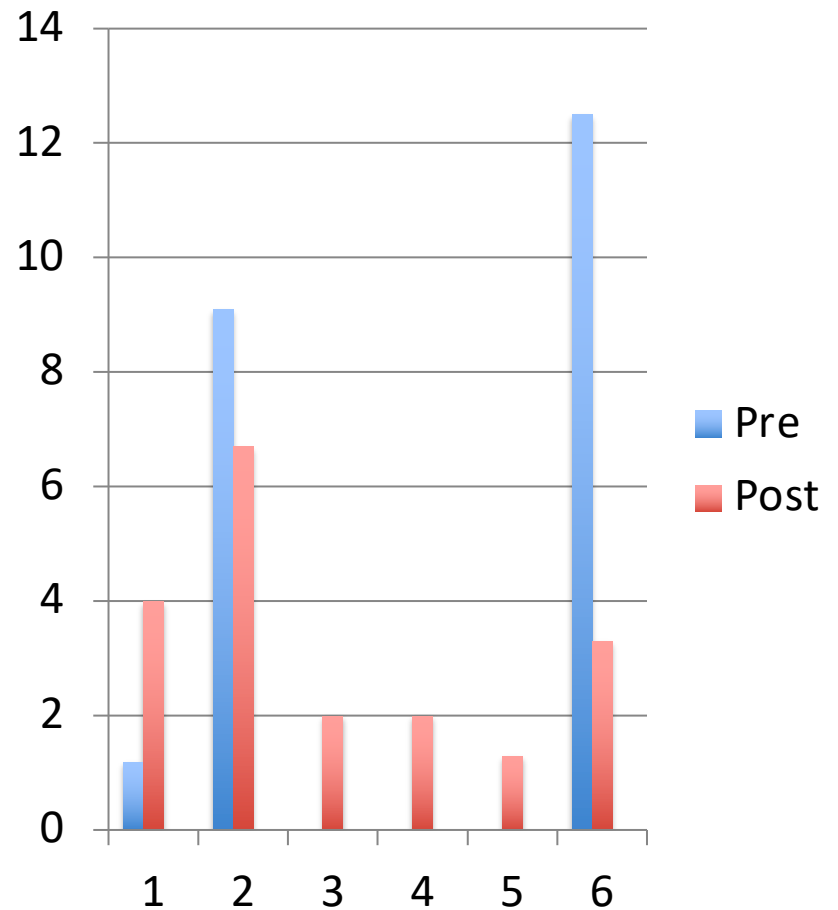
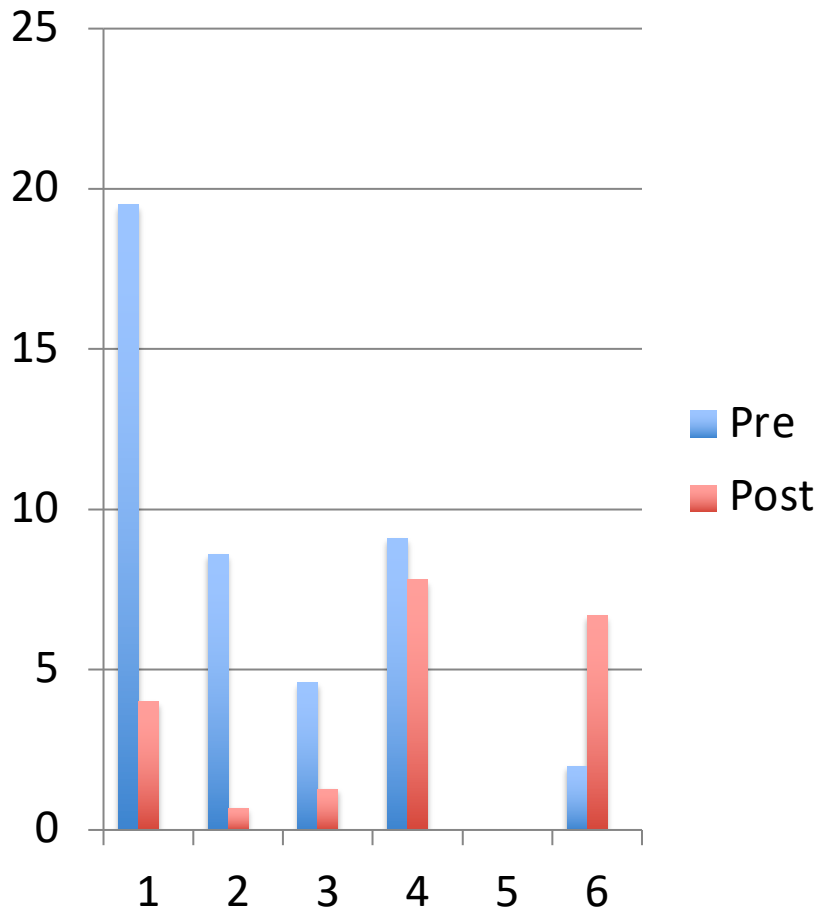
Phomopsis – Rotted berries

2013 and 2014



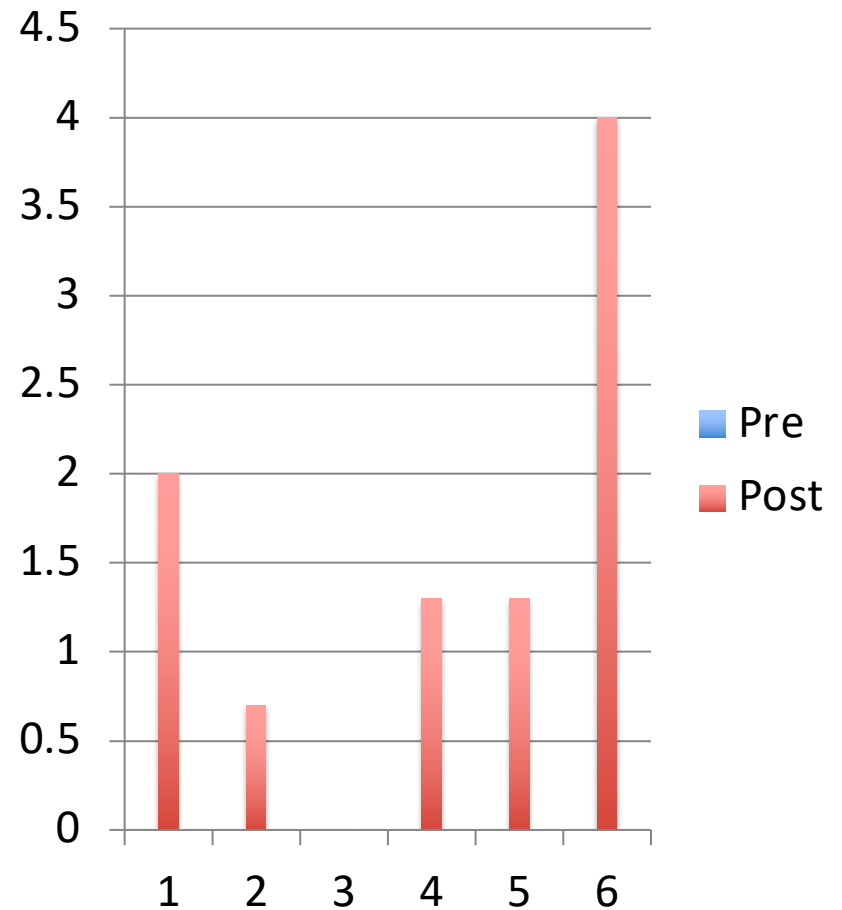
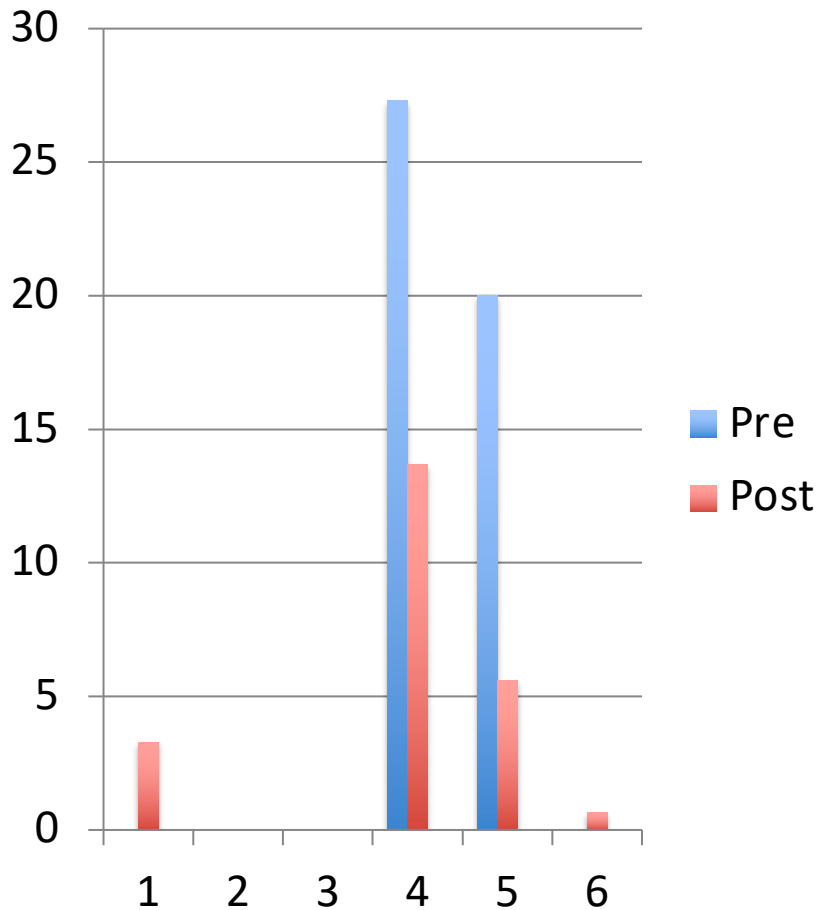
Physalospora – Rotted berries

2013 and 2014



Yellow spreading – Rotted berries

2013 and 2014



Fungi which cause fruit rot in Washington – 2013-4

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- Pestalotia
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- Physalospora**

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Questions?

