

# Management of Rhabdocline and Swiss Needle Cast

**Dr. Gary Chastagner**

**Plant Pathologist  
Washington State University  
Puyallup, WA  
E-mail: [chastag@wsu.edu](mailto:chastag@wsu.edu)**

**Swiss Needle Cast**

***Phaeocryptopus gaeumannii***



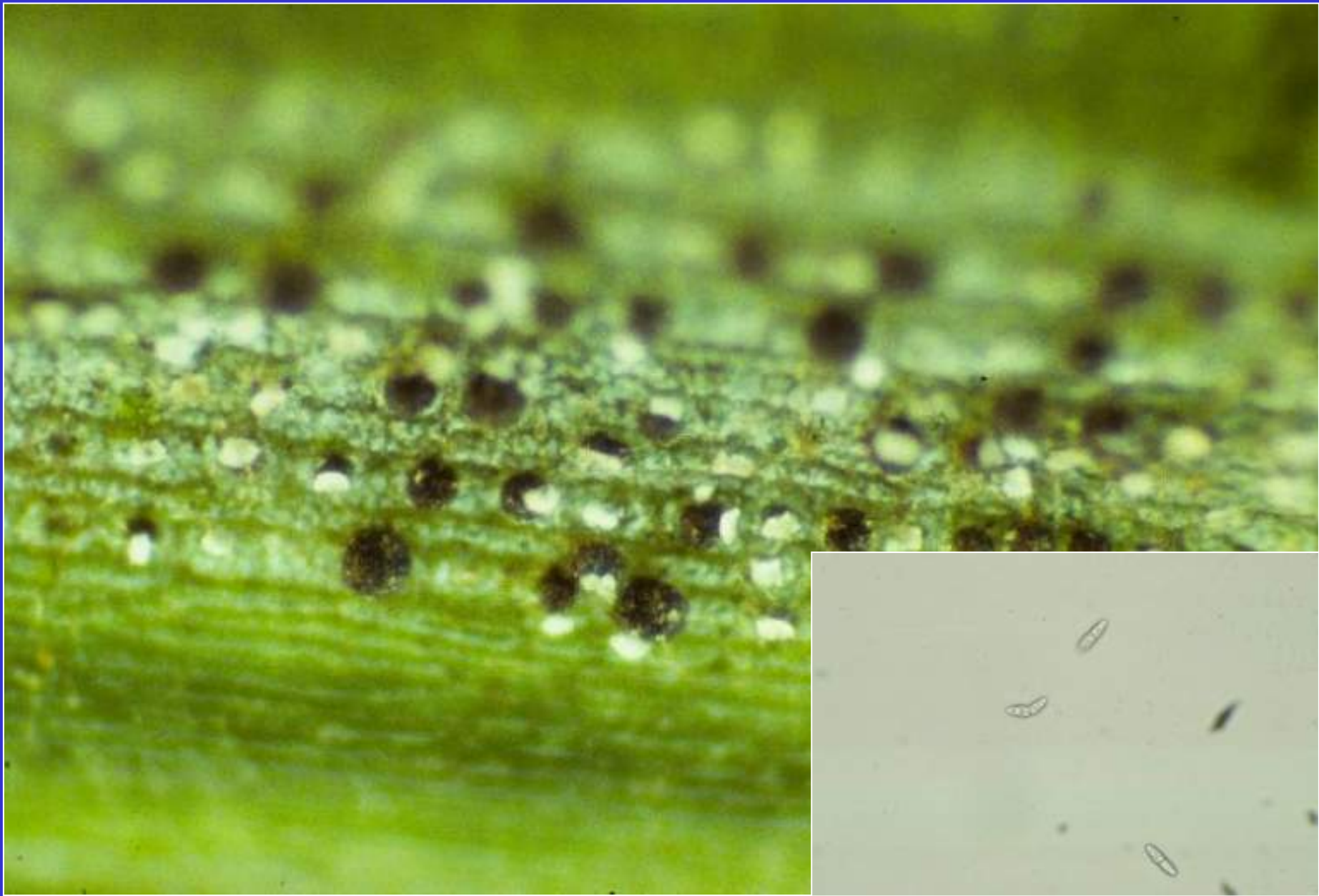






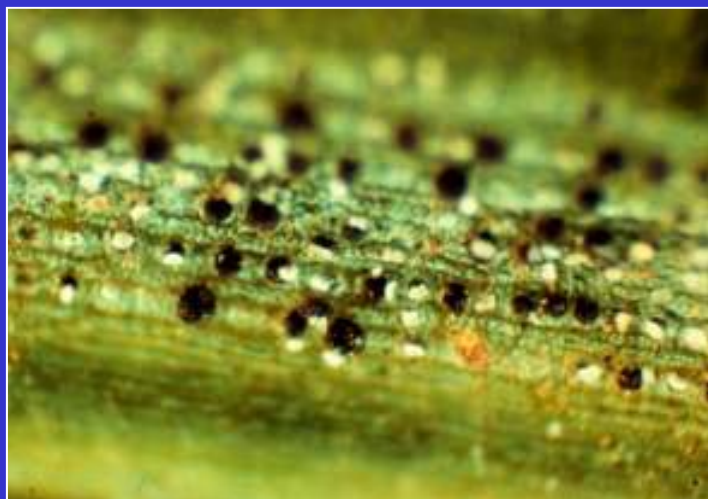






# Disease Monitoring

## Pseudothecia



## Effect of Protectant Applications of Fungicides in 1997 on SNC level in 1998 and Needle Loss and Color in 1999.

Treatment	Product/100 gallons	<u>March 20, 1998</u>	<u>June 6, 1999</u>	
		Disease Index	Needle loss	Color
Check	-	47.5 a <sup>1</sup>	7.5 ab	4.7 a
Cleary's 3336 50W	1 lb	48.9 a	6.6 ab	4.6 a
Heritage 40W	2 oz	47.8 a	6.3 ab	4.4 a
Eagle 40W	2.5 oz	47.8 a	7.8 a	4.3 a
Eagle 40W	10 oz	46.7 a	7.0 ab	3.9 a
Syllit 65W	1 lb	50.0 a	6.3 ab	4.2 a
Syllit 65W	3 lbs	47.8 a	8.4 a	4.7 a
Banner 1.1 EC	2 fl. oz	47.8 a	6.1 ab	4.1 a
Benlate 50W	1 lb	48.4 a	4.8 b	3.8 a
Fore 80W	1.5 lbs	50.0 a	5.6 ab	3.9 a
Bravo 720	2.75 pts	19.4 b	1.0 c	2.3 b
Bravo 720	5.5 pts	11.1 c	1.4 c	1.4 b

<sup>1</sup> Numbers followed by the same letter are not significantly different, P=0.05, DMRT



**Germination of *Phaeocryptopus gaeumannii* ascospores on water agar amended with two formulations of sulfur.**

Sulfur concentration µg ai/ml	Percent germination <sup>1</sup> (48 hr @ 20°C)	
	Thiolux 80W	Golden Dew 92%
0	85.5±2.5	85.5±2.5
4	49.7±5.1	41.0±5.1
8	21.3±3.7	21.4±3.4
40	4.8±1.1	8.6±1.7
80	0.0±0.0	2.7±1.0
400	1.7±1.3	3.1±1.6
800	0.0±0.0	0.0±0.0

<sup>1</sup> Averages ± standard errors of two experiments.





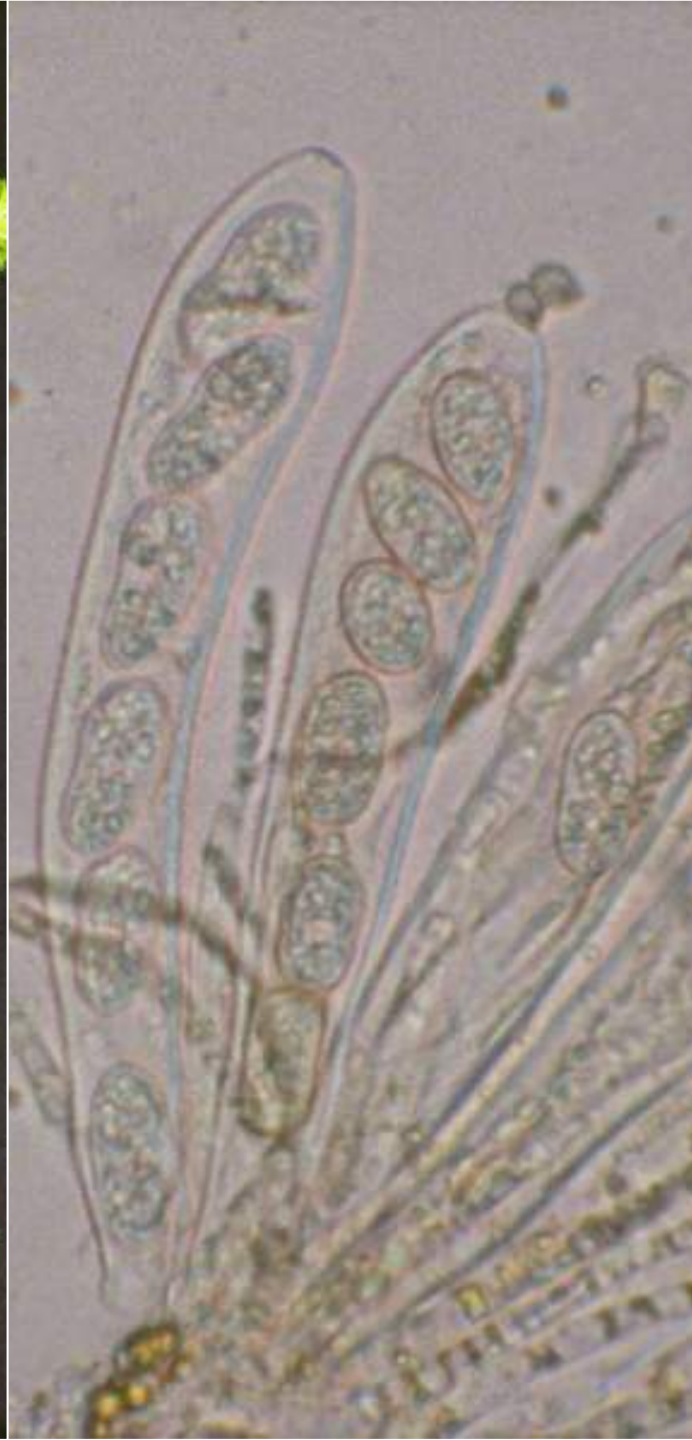


# Rhabdocline Needle Cast

*Rhabdocline pseudotsugae* and  
*R. weirii* with five subspecies













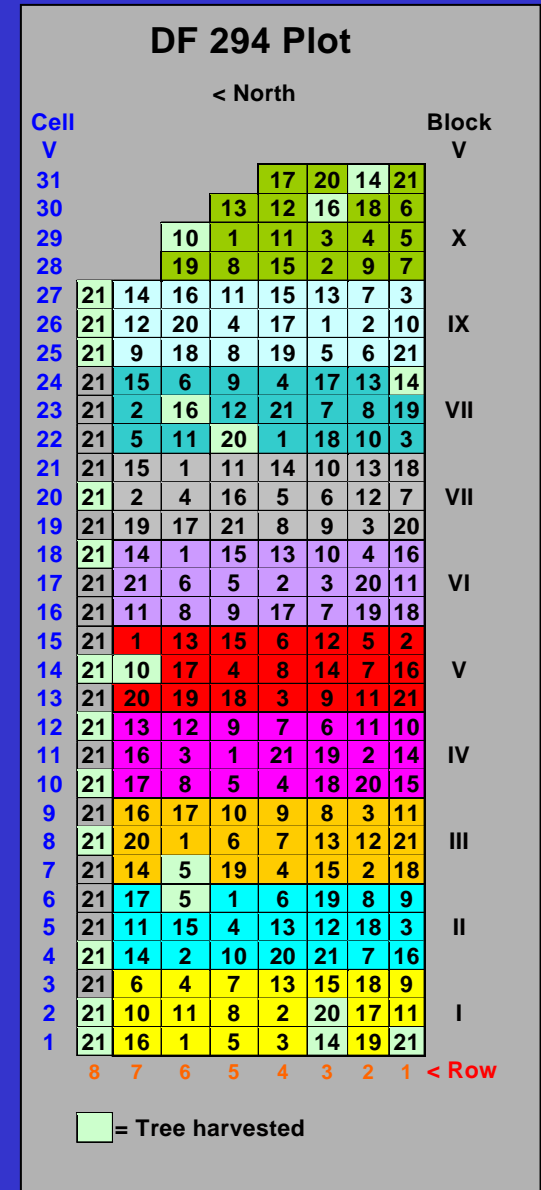
# Rhabdocline Susceptibility Varies by Seed Source





# Susceptibility Trials at WSU Puyallup

1. 9 seed sources
2. 20 seed sources obtained from Dr. Ed Palpant at Pennsylvania State University and one standard PNW coastal Christmas tree source



# Susceptibility of different sources of Douglas-fir to Rhabdocline needle cast and the effectiveness of Bravo 720 in controlling disease development

Provenance	Needle Cast Rating <sup>1</sup>	
	Unsprayed	Sprayed
Cibola	70.0a	16.6a
Apache	51.4ab	1.9a
San Isabel	32.3abc	7.5a
Lincoln N.F. (b)	30.2abc	1.1a
Lincoln N.F. (a)	25.4abc	1.9a
Santa Fe	21.3bc	1.2a
Carson	17.3bc	0.3a
Coconino	15.7bc	3.0a
Rio Grande	5.0bc	0.2a
Upper Clearwater, ID	0.8c	0.0a

<sup>1</sup>0=no disease & 100=severe disease, DMRT (P=0.05)



## Susceptibility of different sources of Douglas-fir to Rhabdocline needle cast over 5 years.

WSU No.	Seed Source	No. of trees	Avg. Rating <sup>1</sup>	% of trees w/ no disease
18	Gila N. F., Emody Pass NM	10	66.5	0
12	Lincoln N.F., Capitan NM	8	27.9	50
10	San Juan N.F., Red Creek CO	10	23.5	30
13	Santa Fe N.F., Dalton NM	10	21.7	0
14	Lincoln N.F., James Canyon NM	10	14.2	30
20	Lincoln N.F., NM	10	10.9	40
16	Carson N.F., Taos NM	10	10.8	40
11	Starkey Exp. For., Goose Egg Draw OR	12	7.3	73
19	Spokane N.F., Little Spokane Riv.	10	4.3	80
3	Shuswap, Scotland B.C.	10	4.1	70
17	OR Seed Zone 015	10	3.8	30
15	Santa Fe N.F., Holy Ghost NM	10	2.7	80
6	Shuswap, Eagle Bay B.C.	10	0.7	80
21	PNW Standard	10	0.5	67
9	Colville N.F., WA	10	0.2	90
5	Shuswap, Adams Lake B.C.	10	0.1	80
8	Mt. Baker N. F., Darrington	10	0.1	80
4	Shuswap, Adams Lake, B.C.	10	0.0	90
1	Shuswap, Scotland B.C.	10	0.0	100
2	Shuswap, Scotland B.C.	10	0.0	100
7	Clearwater N.F., Powell Ranger Stat. ID	10	0.0	100

<sup>1</sup>Rated on a scale of 0 (none) to 100 (>75% on needles with severe symptoms)

# Genetic Variation in Susceptibility within Provenances





# Effectiveness of Fungicides in Controlling Rhabdocline Needle Cast



May 8, 2003 spray

## Effectiveness of a single application of fungicides in controlling *Rhizoctonia* needle cast.

Treatment <sup>1</sup>	Product/100 gal	Disease rating
Check	-	76.7 a <sup>2</sup>
Medallion 50W	4 oz	65.6 ab
Switch 62.5WP	6 oz	59.9 ab
Heritage 50W	4 oz	48.3 b
Kocide DF	2 lb	47.6 b
Insignia 20WP	4 oz	24.6 c
Daconil Weather Stik 720	2.75 pt	22.5 c
Thiolux	60 lb	18.9 c
Daconil Weather Stik 720	5.5 pt	6.2 c
Fore 80W	1.5 lb	5.7 c
Compass 50W	4 oz	3.4 c

<sup>1</sup>Latron CS-7 was added to all treatments except Daconil at the rate of 8 oz/100 gal.

<sup>2</sup>Numbers followed by the same letter are not significantly different, P = 0.05, DMRT



## **Disease Management**

- **Plant resistant seed sources**
- **Remove highly susceptible trees**
- **Protect trees with fungicides**

# Thank You

**Note: Always check the label prior to application of any pesticide to make sure you are using properly registered products in your disease management program.**

## Questions?

