

## Summary of Apple Powdery Mildew Trials from 1989 to 2004.

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Susceptible cultivars, high inoculum levels from numerous nontreated trees, and favorable weather for the development of apple powdery mildew (*Podosphaera leucotricha*) generally results in disease every year at OSU's Botany and Plant Pathology Field Laboratory which is located across the Willamette River from Corvallis, OR. The objective of this report is to summarize, in a simple way, the various apple powdery mildew control trials conducted from 1989 to 2004.

Trial results are summarized relative to the nontreated control and expressed on a percentage basis. For example, if the nontreated control had 90% powdery mildew and a certain treatment had 10% powdery mildew then the percent control would be calculated as  $(1 - (10/90)) \times 100 = 89\%$  control. It should be noted that this approach does not focus on rates, timing, weather or other factors highly important for interpretation of the data.

Trials were conducted on any of several cultivars susceptible to powdery mildew including Braeburn, Jonathan or Rome. Results have been averaged across cultivars. Data was based only on current season infections as overwintering flag shoots (infections from last year) were not evaluated. In most cases trees were also evaluated for apple scab control. Thus, all materials were deployed prior to bloom with repeated applications at 1 to 2 week intervals through June.

Several synthetic (Tables 1 and 2), organic, biorational and biological (Table 3) products have been evaluated. The number of times a product has been evaluated is indicated by the "number of trials" column. Some were tested only once while others were tested for multiple years. The more times a product was evaluated (or the higher the number of trials) the more confidence one can have in the summary statistic presented. Unfortunately, there are no statistical comparisons possible between any of these materials given the way this data was summarized. It is not possible to say that 94% control is significantly different from 84% control.

Averages can hide important information. For example, the average of 77% control for Pristine (Table 1) includes several trials aimed at understanding how adjuvants might affect disease control. Data from 2004 (Table 2) indicate that some adjuvant tank mixes with Pristine resulted in better powdery mildew control than if it were used alone.

Table 1. Synthetic materials used alone\*.

<b>Material</b>	<b># of Trials</b>	<b>% Control of Powdery Mildew</b>
Bayleton	4	81
Elite	5	84
Procure	19	93
Rally 40 W	18	94
Rubigan	9	76
Flint	4	87
Pristine	7	77**
Sovran	3	93
Quintec	1	83

\* It is not recommended to use any single material for all applications to control apple powdery mildew. Use different materials from different chemical classes to help prevent the buildup of resistant fungi.

\*\* Average includes several trials aimed at understanding how adjuvants might affect disease control. See Table 2.

Table 2. Pristine used alone or with various adjuvants in 2004.

<b>Material</b>	<b># of Trials</b>	<b>% Control of Powdery Mildew</b>
Pristine alone	1	50
Pristine + oil	1	81
Pristine + Latron B-1956	1	62
Pristine + Sylgard	1	91

Table 3. Organic, biorational and biological materials tested.

<b>Material</b>	<b># of Trials</b>	<b>% Control of Powdery Mildew</b>
Water alone	2	5
Sulfur	4	76
Lime Sulfur*	8	83
Petroleum Oils	2	43
Botanical Oils	4	46
M-Pede (insecticidal soap)	3	93
Sodium bicarbonate	5	65
Seaweed	2	3
Compost Tea (plant based)	1	26
Serenade	4	49

\*Some phytotoxicity observed on Braeburn.