(Mortensen and Gray, 1986). However, the high anthracnose susceptibility of 'Orlando Seedless' might have obscured the PD evaluation (Table 1). When compared to other breeding lines, 'Orlando Seedless' appeared to have a stronger PD survivability or tolerance.

'MidSouth', 'Suwannee', 'Lake Emerald', and 'DN3-43' were *significantly more* resistant to anthracnose disease than other cultivars/breeding lines. A similar trend was observed in black rot resistance. 'MidSouth', 'Suwannee', 'DC1-56', 'Orlando seedless', and 'Blanc du Bois' were significantly more resistant to downy mildew than other cultivars and breeding lines. It should, however, be noted that the evaluations of diseases in this study were late in the season. The evaluation time in this study was appropriate for PD but may not for anthracnose, black rot and downy mildew.

In summary, this study evaluated the resistance of four diseases of bunch grapes in north Florida on six year old vines. Our results showed that 'Mid South', 'Suwannee' 'Blanc du Bois', and 'Orlando Seedless' have relatively high overall disease resistance.

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FOLIAR APPLIED PHOSPHORUS FERTILIZERS INHIBIT PEACH GUMMOSIS[1]

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Abstract. **Foliar applications of K_2HPO_3 and K_2HPO_4 reduced the amount of peach gummosis (*Botryosphaeria dothidea* (Moug. ex Fr.) Ces & de Not.) occurring in 1996 and 1997 in peach trees at Gainesville.**

Peach tree gummosis was first observed in the Ft. Valley, Georgia area in 1970 and by 1974 Weaver (1974) reproduced the disease symptoms by inoculating healthy trees with mycelia of *Botryosphaeria dothidea* (*B. ribis*). In the spring of 1981 Reilly and Oke (1982) surveyed and found the pathogen in 25 counties in Georgia and other locations in Alabama, Florida and Louisiana. While three species are involved (Britton and Hendrix, 1982), *B. dothidea* is thought to be the main one. *B. dothidea* is almost ubiquitous in the south and is pathogenic on many native woody trees and shrubs in Georgia including pecan, blueberry, cassia, and cotton. Infection is thought to occur through lenticels, pruning wounds and other mechanical injuries, and in some instances, the peach fruit. Little is know regarding the spread and distribution of *B. dothidea* in Florida. All peach varieties appear to be susceptible with some more so than others. Chemical control programs for Florida are lacking and some recommendations made for other peach production areas in other states are not cost effective. Currently, only orchard sanitation by removal of prunings or chopping them with a flail mower is recommended for control.

In the early 1980's research workers in South Africa and Australia began evaluating phosphoric acid and salts thereof as a means of controlling certain phycomycete fungi i.e, *Phytophthora, Pythium,* and *Plasmopra.* Coffey and Joseph (1985) soon afterwards confirmed the effectiveness of phosphoric acid. The mode of action is thought to be two fold; it has a direct fungicidal effect against the pathogen as an HPO_3^{-1} anion (also HPO_3^{-2}) and, probably more importantly, it elicits for phytoalexin production, which enhances the phytoimmune system (Mucharromah and Kue, 1991). Concurrent with phosphonate research in South Africa, Reuveni et al., 1993 in Israel began evaluating various forms of phosphates as biocompatible fungicides for control of various pathogens in the Ascomycetes and Basidiomycetes.

This paper describes experiments to test the effect offoliar sprays of K_2HPO_3 and K_2HPO_4 as a treatment against peach gummosis in north Florida. Two years of field evaluations in peach are presented.

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Table 1. Effect of K_2HP0_3 and K_2HP0_4 on peach gummosis trial at Gainesville, Florida in 1996.

	Treatment	Rate/100 gal	Lesions/tree[1]
1.	K_2HP0_3	1%	8.3 ab
2.	K_2HP0_4	1%	11.0 ab
3.	K_2HP0_3 - K_2HP0_4	1% + 1%	5.0 a
4.	Control	0%	23.3 b

[1]Gummosis - *Botryosphaeria dothidea.* Three-year-old single tree plots with four replications in a randomized complete block design. Rated 18 Sept., 1996 following application dates on 14 Feb., 27 Mar., 16 Apr., 22 May, 19 June, 19 July, 21 Aug., and 11 Sept. Treatment means followed by different letters differ at the 5% probability level.

Materials and Methods

Experiment No. 1. Three- year-old single-tree plots of mixed peach varieties were assigned in a randomized complete block design with 4 replications. Applications were made with a "SOLO" back pack sprayer. Trees were sprayed at 80 psi to run off. Applications were made eight times in 1996 (14 Feb., 27 Mar., 16 Apr., 22 May, 19 June, 16 July, 21 Aug., and 11 Sept. Number of lesions per tree was recorded on 18 Sept., 1996.

Experiment No. 2. Four-year-old single tree plots with a paired control of same variety with four replications were assigned in a randomized fashion. Applications were made with a "SOLO" back pack sprayer at 80 psi to run off. Application in 1997 were made on 28 Jan., 18 Feb., 26 Mar., 22 Apr., 20 May, 17 June. Trees were rated on 28 July 1997. The infection rating system was 1 = <5 lesions, 2 = 5-25 lesions, 3 = 25-75 lesions, and 4 = >75 lesions.

Results and Discussion

Experiment No. 1. Control of *Botryosphaeria dothidea* expressed as number of lesions per tree, is presented in Table 1. Dipotassium phosphate (K_2HP0_4) provided the poorest control of all the treatments, whereas the combination product of K_2HP0_3 + K_2HP0_4 provided the best control. K_2HP0_3 was intermediate in pathogen control in 1996.

Experiment No. 2. In 1997, paired controls were utilized in order to lessen varietal differences. A numerical infection rating system was employed because the level of infection was much greater than that in 1996. Control of *B. dothidea* parallels those results observed in 1996 even though the control vs treatment differences, although favoring the treatments, were not significantly different for any one at 5%. The best control was obtained with the K_2HP0_3 + K_2HP0_4 mixture and the poorest control with K_2HP0_4.

Table 2. Effect of K_2HP0_3 and K_2HP0_4 on peach gummosis at Gainesville, Florida in 1997.

Treatment	Rate/100 gal.	Peach gummosis Rating (avg.)
K_2HP0_3	1%	2.25 a
Control	0%	3.00 a
K_2HP0_4	1%	3.25 a
Control	0%	3.75 a
K_2HP0_3 - K_2HP0_4	1% = 1%	1.25 b
Control	0%	3.50 a

[1]Rating system: infections/tree where 1 = <5, 2 = 5-25, 3 = 25-75, and 4 = >75 lesions. Rated 7 July, 1997 following application dates on 28 Jan., 18 Feb., 26 Mar., 22 Apr., 20 May, and 17 June. Single tree plots with four replications. Paired treatments with different letters are significant at the 5% level.

In both 1996 and 1997, the 1% K_2HP0_3 + K_2HP0_4 was the best treatment for controlling peach gummosis. The data should be interpreted cautiously because synergism may not account for the superior activity of the K_2HP0_3 + K_2HP0^4 treatments. It may have been that 2% of each fertilizer would have given similar results as 1% of each fertilizer together. A fertilizer product composed of K_2HP0_3 + K_2HP0_4 has many advantages; worker protection and re-entry would be minimal, with a 1% solution of each fertilizer application, environmental concerns would be far less than with some other conventional products, and this treatment would also provide the peach grower a very cost effective alternative.

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