California Avocado Society 1984 Yearbook 68: 179-181

The Investigation of Nutrition, pH, and Ridomil® on Suppression of *Phytophthora* Root-Rot in Avocado (a progress report)

A.W. Whiley, K.G. Pegg, and J.B. Saranah—
Maroochy Horticultural Research Station, Queensland (Australia) Department of Primary Industries; Plant Pathology Branch, Indooroopilly, Qld.; and Maroochy Hort. Res. Sta.—respectively.

(This paper is reprinted from Research Report No. 3, Maroochy Horticultural Research Station, Queensland [Australia] Department of Primary Industries.)

This experiment investigates the integration of nutrition, pH, and Ridomil® applications into a management strategy to suppress *P. cinnamomi* development and enhance tree productivity.

Helyar and Allen (1981, unpublished) suggest that a high cation fertilizer treatment will suppress root rot. This experiment uses three annual applications of Ca++ (Gypsum) and K+ (Potassium sulfate) to achieve high levels in the root zone.

Soil applications of elemental sulphur have proven effective for the control of pineapple root rot which is also caused by *P. cinnamomi* (Pegg, 1977). A pH value of 4.0 reduced the activity of *P. cinnamomi*, controlled root and heart rot, and did not adversely affect vegetative growth of pineapple plants. Liming infested soils increased root and heart rot (Pegg, unpublished) and experimental work in South Africa (Wood and Moll, 1981) indicates that liming avocados aggravates root rot and induces aerial decline in trees.

Current recommendations for Ridomil® are for 2.5 g.a.i. m-2. A rate of 1 g.a.i. m-2 is being used in a preventative schedule together with differential nutrition and pH levels.

Yield data collected six months after the commencement of the programme showed no significant differences between treatments. Yield data at eighteen months after commencement of the treatments are presented in Table 1.

While the desired pH levels in each treatment were not achieved, nevertheless significant differences between the high level to the medium and low levels occurred. This was reflected in fruit yield which gave increased productivity at lower pH levels.

It was surprising to find that the application of Ridomil® depressed fruit yield. Ridomil ® is known to be phytotoxic, though at the rates used in this experiment it is unlikely that this would have occurred. Suppression of the disease by this treatment would lead to a more active root system supplying greater amounts of nutrients and moisture to the tree. With young Fuerte trees this could lead to greater vegetative growth at the expense of fruitfulness. Supportive data are not available at the time of preparation of this paper.

Fertilizer treatments had no significant effect on fruit yield and there was no significant

interaction between treatments.

Table 1. The effects of pH, Ridomil®, and fertilizer on tree fruit yield, 1983.

pH Treatments		Fruit Yield (kg tree-1)
Desired	Actual	
6.5-7.0	6.11	25.09
5.5-6.0	5.55	46.28
4.5-5.0	5.39	42.84
LSD (0.01)	0.29	LSD (0.05) 14.62

Ridomil® Treatments	Fruit Yield (kg tree-1)
Nil	47.18
Ridomil® 25 WP at 1.0 gm	28.95
	LSD (0.01) 15.97

Fertilizer Treatments	Fruit Yield (kg tree-1)
Q7 at 17 g m	38.64
High cation	37.49
	N.S.

References

Pegg, K.G., 1977. Soil application of elemental sulphur as a *Phytophthora cinnamomi* root and heart rot of pineapple. Aust. J. Expl. Agric. Anim. Husb. 17: 859-865.

Wood, R., and Moll, J.N., 1981. Results obtained in 1980 from avocado root rot field trials. S.A.A.G. Assoc. Yearbook. 4:105-108.