

## Fertilising to reduce *Ganoderma* risk

Paul Nelson & Carmel Pilotti

PNGOPRA trials at Poliamba are showing *Ganoderma* basal stem rot to be higher in poorly fertilised palms than well-fertilised palms. The fertiliser trials at Maramakas (251) and Luburua (252) test different rates and combinations of fertilisers and treatments have been applied since 1991. In 1996, palms at the two sites started to show effects of *Ganoderma* infection, and the incidence has been increasing ever since. The spread of *Ganoderma* in the trials gave a unique opportunity to study the effect of fertilisers on *Ganoderma* incidence.

### Luburua Trial 252

As the total number of *Ganoderma*-affected palms increased over recent years, the effect of fertilisers and soil depth became evident (Figure 1). At p values lower than 0.1, we are more

incidence. In New Ireland, potassium deficiency is the major limitation to crop yield, and yields are greatly improved by application of MOP. The MOP treatment also had the largest overall effect on *Ganoderma* inci-

(such as low rainfall) caused additional stress on the palms which could not be reversed by fertilising. At Maramakas, *Ganoderma* incidence was positively associated with soil depth in some years.

### The Bottom Line

How do we interpret these results? Healthy palms have a better chance of

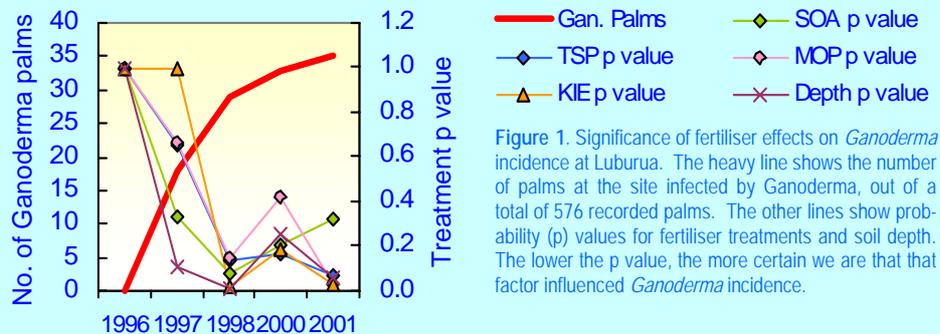


Figure 1. Significance of fertiliser effects on *Ganoderma* incidence at Luburua. The heavy line shows the number of palms at the site infected by *Ganoderma*, out of a total of 576 recorded palms. The other lines show probability (p) values for fertiliser treatments and soil depth. The lower the p value, the more certain we are that that factor influenced *Ganoderma* incidence.

dence, as shown in Figure 2. Soil depth was also important; for every 10 cm increase in soil depth, *Ganoderma* incidence decreased by 2.9%.

### Maramakas Trial 251

In the 1996-2000 period, effects of fertiliser on *Ganoderma* incidence were similar at both Maramakas and Luburua, but in 2001 fertiliser effects were no longer significant at Maramakas. There are several possible explanations. Perhaps palms

survival than malnourished palms when exposed to *Ganoderma*. Palms that are not adequately fertilised suffer stress. This stress appears to reduce the palms resistance to the rot caused by *Ganoderma* infection. The implication for management is that adequate nutrition must be ensured in areas prone to *Ganoderma* infection. In addition to its direct effect on crop yield, fertiliser application appears to enhance the palms ability to cope with the disease in areas where the inoculum pressure is high.

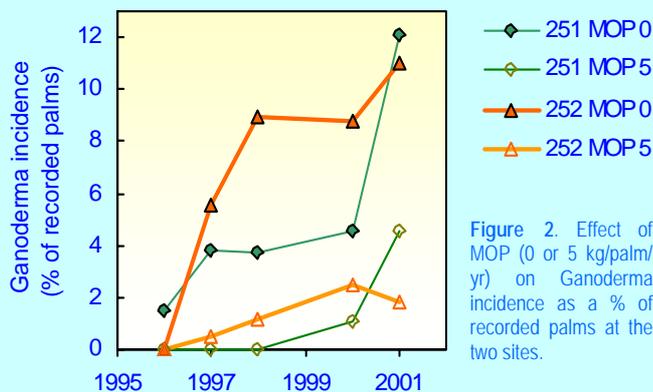


Figure 2. Effect of MOP (0 or 5 kg/palm/yr) on *Ganoderma* incidence as a % of recorded palms at the two sites.

than 90% certain that *Ganoderma* incidence was affected by that factor. So in 2001, for example, application of potassium as muriate of potash (MOP), phosphorus as triple superphosphate (TSP), magnesium as kieserite (KIE), and soil depth all had a significant influence on *Ganoderma*

already had undetected infection in earlier years which only became evident in 2001. This may be due to the natural variation in disease resistance of the different palms. An alternative explanation is that other environmental effects