



Foliar application of paclobutrazol in combination with potassium nitrate enhanced flowering and fruiting of mangosteen

A study was conducted to determine the effect of paclobutrazol (PBZ) application combined with potassium nitrate or Bicomine (a plant growth regulator) on flowering and fruiting of mangosteen (

*Garcinia mangostana*

L.). The trial was carried out during the 2003/2004 growing season at MARDI Research station, Bukit Tinggi in the northern Peninsular of Malaysia. Fourteen-year-old mangosteen trees, uniform in vigour and canopy size were selected for this experiment and standard orchard management practices were applied.

Treatments imposed were: 1) untreated control, 2) PBZ applied as soil drench at 2 g/tree followed by foliar application of Bicomine (at 1 mL in 6L of water) on 18 December followed by weekly applications during flowering and fruit development, 3) PBZ applied as foliar spray (at 1000 ppm) on 18 December followed by weekly foliar sprays with 2% KNO<sub>3</sub> until flowering and 4) PBZ applied as foliar spray (at 1000 ppm) on 18 December followed by weekly sprays with Bicomine (at 1 mL in 6L of water) during flowering and fruit development. Each treatment consisted of 10-single-tree replicates.

The results in Table 1 demonstrate that soil application of PBZ combined with Bicomine was not effective to enhance flowering or increase yield. Foliar application of paclobutrazol followed by foliar applications of potassium nitrate or Bicomine enhanced both flowering and fruiting of mangosteen, compared to the control. Total yield in weight of harvested fruits per tree did not show any significant differences



between the treatments with foliar PBZ and  $\text{KNO}_3$  or Bicomine ( $p < 0,05$ ). Both treatments increased yield compared to untreated control, even if trees sprayed with PBZ +  $\text{KNO}_3$  produced less flowers and number of fruits per tree than those sprayed with PBZ + Bicomine (Table 1). The fruit size from foliar PBZ + Bicomine treated trees was significantly smaller than that from the other treatments. The increased number of fruits per tree may be the cause of this reduction in fruit weight. Other aspects of fruit quality were not affected regardless of the treatments imposed to the trees.

Table 1. Effect of treatments on flowering and yield of mangosteen. S= soil drench, F= foliar spray. The means with the same letter within the same column are not significantly different (LSD,  $P < 0,05$ ).

Treatment	Flowers/tree	Number of fruits/tree	Yield (kg/tree)	Fruit weight (g)
Control	830 c	328 c	22,9 b	80,7 a
PBZ (S) + Bicomine (F)	871 c	345 c	23,7 b	79,9 a
PBZ (S) + 2% $\text{KNO}_3$ (F)	1068 b	423 b	33,9 a	82,3 a
PBZ (F) + Bicomine (F)	1318 a	495 a	35,1 a	65,9 b

S = Soil applied, F = Foliar applied