Foliar potassium nitrate application increased fruit retention and fruit yield in various mango cultivars

The effect on fruit retention, fruit size, tree yield, and fruit quality of inflorescence applications of KNO_3 to mango trees was investigated during two experiments in South Africa. Sprays at 2% or 4% were applied once during full bloom or twice during the active development of the inflorescences and subsequently during full bloom. The first experiment was conducted with eight-year-old 'Tommy Atkins' trees in Constantia, South Africa. Linear increases in number of fruits retained and tree yield were apparently associated with the increase in concentration of KNO_3applied (Table 1). Moreover, these increases were apparently associated with a linear reduction in average fruit weight.

Table 1. Effect of foliar potassium nitrate sprays on yield characteristics of 8-year-old mango trees ('Tommy Atkins').

Treatment	Number of fruits harvested	Average fruit weight (g)	Tree yield (kg)
Unsprayed	205	385	78
1x 2% KNO_3	226	366	83
1x 4% KNO_3	244	367	90

In the second experiment three mango ('Tommy Atkins', 'Heidi' and 'Kent') cultivars were studied. The two- to three-year-old mango trees of uniform size and stage of flowering were grown at Mariepskop Estate, South Africa. In 'Tommy Atkins', the greatest increase in fruit retention and consequently yield (+69%) occurred following one spray at 4% KNO_3 compared to the control. In 'Heidi', two sprays at 4% each gave rise to the greatest yield increase (+400%), and in 'Kent', two sprays at 2% each

increased fruit retention and yield (+60%) the most compared to the untreated control (Figure 1).

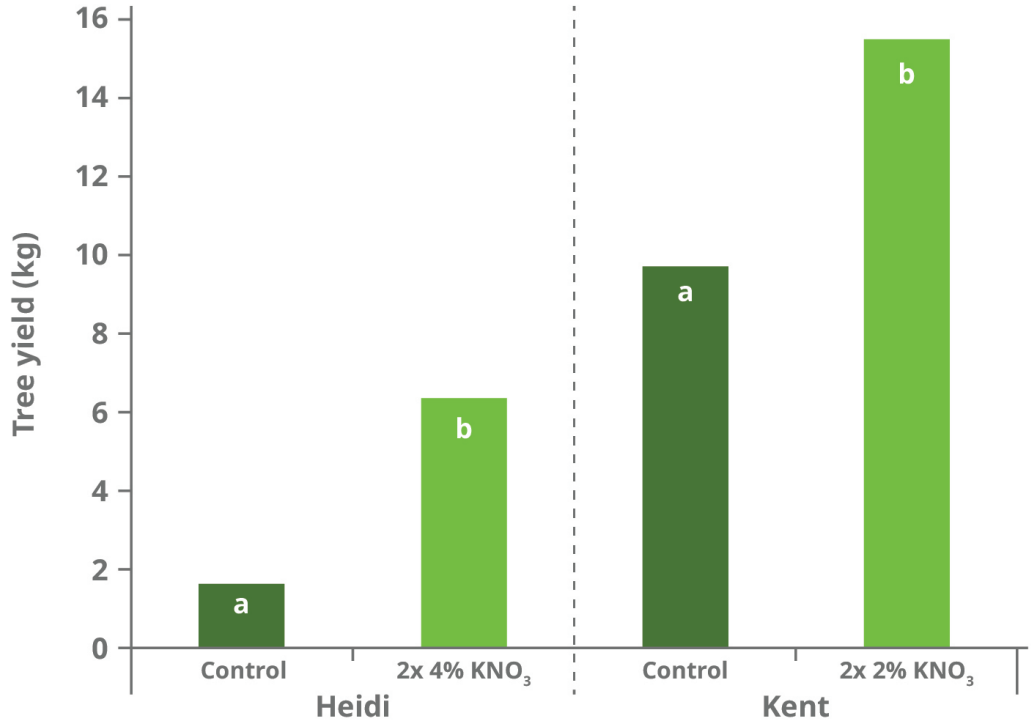

Figure 1. Effect of KNO_3 sprays on tree yield (kg) of two- to three-year-old ‘Heidi’ and ‘Kent’ mango trees.

Increases in fruit retention and tree yield occurred by foliar potassium nitrate application despite all the trees received adequate soil fertilizers. Spraying KNO_3 during flowering resulted not in a reduction in fruit size, although fruit retention and yield were increased. There was no apparent effect of the KNO_3 sprays on fruit quality (ground skin colouration, total soluble solids content, pH, or taste on ripening).