

Abstract

The effect of preharvest soil application of potassium on the development of the physiological disorder called internal browning (IB) in harvested pineapple fruit was studied. Potassium was applied as a soil dressing at 4–20 g of K₂O per plant in three split applications at 8, 24 and 40 weeks after planting. Fruit were harvested 19 months after planting and were harvested at two maturity stages, classified as color break (CB) or half ripe (HR) and stored at 7 °C and 95% RH for 15 days followed by 5 days at 25 °C to simulate commercial handling. IB was more severe in HR than in CB fruit. Application of potassium reduced IB in fruit of both maturities. Maximum response was achieved with 16 g of K₂O per plant. Phenolic content of CB and HR fruit from plants treated with potassium was reduced up to 38 and 39%, respectively. Polyphenoloxidase (PPO) and phenylalanine ammonia-lyase (PAL) activities varied according to the stage of maturity with higher activities in the ripe fruit. Potassium treatment promoted a progressive and more accentuated decrease of PPO activities in HR when compared to CB fruit. Similarly, PAL and POD activities were lower in fruit from plants treated with potassium as was the incidence of IB. This work showed that soil applications of potassium to growing pineapple plants could improve fruit quality.