Nitric oxide fumigation delays mango fruit ripening

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Abstract

Hard mature green 'Kensington Pride' mango fruit were fumigated with 0, 5, 10, 20 and 40 $\mu L.L^{-1}$ NO gas for 2 h and allowed to ripen at ambient temperature (21±1°C) to evaluate its effects on fruit ripening. NO-fumigation treatments significantly ($P \leq 0.05$) suppressed ethylene production and respiration rates during fruit ripening. NO treatments (20 and 40 $\mu L.L^{-1}$) retarded fruit softening (hand firmness) and delayed fruit ripening by 2-days as compared to all other treatments. NO-fumigated (40 $\mu L.L^{-1}$) ripe fruit exhibited significantly higher pulp cohesiveness, springiness and chewiness as compared to all other treatments. NO fumigation retarded fruit color development (visual colour, L^*, a^*, b^*, C^*) and delayed the reduction of $h°$ during fruit ripening. The concentrations of SSC, total sugars, glucose and fructose in the ripe fruit were significantly reduced in response to NO treatments. In conclusion, the postharvest fumigation of NO (20 $\mu L.L^{-1}$) suppressed climacteric ethylene production, respiration rate, retarded colour development, softening consequently delayed mango fruit ripening.