

Title The effect of strategically timed pre-harvest fungicide applications on post-harvest decay of mango

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Abstract

Stem-end rot, soft brown rot and anthracnose are the most important post-harvest diseases of mango fruit in South Africa. Management of mango diseases is mainly based on orchard sanitation, pre-harvest fungicide applications and post-harvest hot water and prochloraz treatments. In general anthracnose is well controlled by these management strategies. Controlling stem-end rot and soft brown rot is, however, problematic. During the 2004/2005 growing season, the replacement of some fungicides, with specifically timed other fungicides, in semi-commercial, pre-harvest spray programs, were evaluated. The main objective was to evaluate the effect of strategically timed fungicide applications, early and late in standard programs. Additionally the effect of these pre-harvest programs in combination with post-harvest treatments with fludioxonil and prochloraz was also evaluated. The objective of this study was to evaluate the effect of different chemicals, strategically placed in pre-harvest spray programs and applied as post-harvest dip treatments, on post-harvest decay of mangoes in semi-commercial trials. Different results were obtained at different trial sites, due to several variables such as cultivar, disease pressure, climate, and spray efficacy. Fungicide programs, applied during the 7-month period from flowering to harvest, had specific effects regarding the causal pathogens and severity of post-harvest diseases. The timing of a specific fungicide application could influence efficacy of a program, but other factors such as coverage and disease pressure played an equally important role. The addition of oil to azoxystrobin improved coverage of especially the fruit, and therefore, disease control. Other additives to improve disease control on mangoes should be investigated. Efficacy of azoxystrobin was also improved by increasing spray volume. Results at Jonkmanspruit showed that higher spray volumes, compared to Bavaria and Ryfontein, improved efficacy of disease control. The importance of good pre-harvest spray programs to ensure effective control of post-harvest diseases was confirmed in this trial. The value of using certain fungicides during the late blossom and early fruit set period in order to decrease stem-end rot was also confirmed in this study. At Bavaria Estates, the advantage of using carbendazim/flusilazole (Punch C) and azoxystrobin (Ortiva) in some programs was demonstrated. At Jonkmanspruit, propiconazole (Tilt) and Ortiva reduced the occurrence of stem-end rot. Anthracnose was only controlled effectively when spray volume and frequency of application was sufficient to ensure continuous

protection against infection. Post-harvest dip treatments clearly reduced decay of mangoes obtained from all three sites. When pre-harvest programs were effective and disease pressure was reduced in the orchard, post-harvest decay could be controlled more effectively. Results clearly showed that low post-harvest decay is associated with effective protection of fruit throughout the growing season, irrespective of the post-harvest control strategy. Fludioxonil showed superior control of stem-end rot and effectively reduced anthracnose, while prochloraz controlled anthracnose very effectively and showed some control of stem-end rot during these trials.