Evaluation of a universal slow release sulphur dioxide sheet for the South African litchi export industry

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Abstract

Studies on the efficacy of slow release sulphur dioxide (SO_2) sheets commenced during the early 2000s in South Africa. The results showed that the sheets significantly reduce the risk of fungal infections when placed in the bottom of litchi cartons containing commercially fumigated 'Mauritius' litchi fruit. The trials further revealed that the maximum SO_2 residue limits as specified by the European Union (10 ppm in aril) was not exceeded when using the sheets. In subsequent trials, the fumigation dosage and number of sheets to be used with both 'Mauritius' and 'McLean's Red' litchi fruit were refined and appropriate recommendations were formulated. In order to standardize the sheet for usage with all South African litchi carton types, a 'one sheet fits all carton types' sheet (Grapetek™) was evaluated. To do this, the sheet was tested in combination with export and local market cartons from three manufactures. The trial was again performed with both the 'Mauritius' and 'McLean's Red' cultivars and the fruit were stored under export simulation conditions (30 days at 1°C) followed by a shelf life phase of 12 days at 13°C. This standardized slow release sulfur dioxide sheet was found to significantly reduce fungal infections during the mid to late stages of the shelf life period. An interaction between the sheet and carton type was also recorded. Generally, well ventilated export cartons gave better results than poorly ventilated local market cartons.