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Paper Title **Evaluation of Species of Alicyclobacillus that Cause Spoilage of South African Fruit Juices**

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ABSTRACT

Species of Alicyclobacillus are acid-tolerant and heat-resistant bacteria that cause spoilage of heat-treated fruit juices stored at room temperature. Spoilage has been reported in apple, pear, orange, peach, mango and white grape juice, as well as in fruit juice blends, fruit juice containing drinks and tomato products, such as tomato juice and canned tomatoes. These endospore-formers have been shown to survive pasteurisation conditions of 95°C for 2 min. During the past decade, Alicyclobacillus species have become a major cause of spoilage in pasteurised fruit juices, leading to significant economic losses. Currently very little is known about the species present in South Africa, as well as the source and route of contamination.

Alicyclobacillus spp. were isolated from orchard soil, processing plants and from fruit juice and concentrates. The isolates were identified based on morphological, biochemical and physiological properties. Identification to species level was done by 16S ribosomal RNA gene sequencing and confirmed by PCR-RFLP analysis. Results indicate that species of *A. acidoterrestris* and *A. acidocaldarius* are found in the soil and throughout the processing environment. This is the first report on the isolation of these species from orchard soil and their presence in soil suggests a possible source of contamination of the final product. Wash water used to clean fruit before processing contained a significant load of Alicyclobacillus spp. and it is recommended to treat wash water to reduce this microbial load during processing.