

Title Microbiological evaluation of fresh-cut organic vegetables produced in Zambia
Author Kabwit Nguz, John Shindano, Simbarashe Samapundo and André Huyghebaert
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Abstract

This study was undertaken to assess the microbiological quality of fresh-cut organic vegetables produced in Zambia. Fresh-cut organic mixed vegetables and green beans produced in Zambia were analysed for aerobic plate counts, coliforms, *Enterobacteriaceae*, *Escherichia coli*, *Bacillus cereus*, *Clostridium perfringens*, *Listeria monocytogenes*, *Salmonella* spp., *Staphylococcus aureus*, and yeast and mould counts. The study included 160 samples for most of the parameters. The vegetables were grown on farms meant primarily for the export market. The vegetables were treated/washed with $150 \mu\text{g ml}^{-1}$ chlorine solution at the processing plant prior to sampling. The aerobic plate count ranged between $3 \log_{10}$ and $9.7 \log_{10}$ CFU/g, with the highest count recorded for green beans. The largest grouping (26.1%) of vegetable samples fell between 3 and $4 \log_{10}$ CFU/g. Coliform counts were between $1.0 \log_{10}$ and $7.7 \log_{10}$ CFU/g. The highest incidence level was 31.4% for total coliform counts between $3 \log_{10}$ and $4 \log_{10}$ CFU/g. *E. coli* was only detected on mixed vegetables in the range of $0.6 \log_{10}$ to $3 \log_{10}$ CFU/g, while *Enterobacteriaceae* counts ranged between $1.6 \log_{10}$ and $9.8 \log_{10}$ CFU/g with the highest counts being found on green beans. The highest incidence level was of 25.8% for counts within the same range as the aerobic plate counts. Yeast and mould counts showed the highest incidence level between $5 \log_{10}$ and $6 \log_{10}$ CFU/g with an overall range between $1.5 \log_{10}$ and $5.6 \log_{10}$ CFU/g. *L. monocytogenes*, *Salmonella* spp. and *S. aureus* were detected in 20%, 23.1% and 83.9% of samples, respectively. *C. perfringens* and *B. cereus* were not detected in any of the samples analysed.