

Title Pesticides as a source of microbial contamination of salad vegetables
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Abstract

Ten commercially available pesticides (insecticides, herbicides and fungicides), used during the production of vegetable produce, were examined as potential sources of microbial contaminants. As purchased, none of the pesticides showed the presence of viable microorganisms (<5 CFU/ml). Using an agar plate diffusion assay, they did not inhibit a range of bacteria of spoilage and public health significance on vegetable produce. After reconstitution in sterile water to their recommended concentration, two of the pesticides supported the survival and growth of inoculated species of *Pseudomonas*, *Salmonella* and *Escherichia coli*. *Listeria monocytogenes* did not survive after inoculation into any of the pesticides.

Pesticides were reconstituted in different sources of agricultural water (bore, dam and river) and examined for survival and growth of microorganisms naturally present in these waters. On storage at 30 °C for 48 h, nine of the pesticides supported the growth of bacterial species present in these waters. Predominant species in the pesticide solutions, before and after storage, varied according to the source, but species of *Pseudomonas*, *Acinetobacter* and *Aeromonas* and various coliforms exhibited significant growth. Unless managed properly (reconstituted in potable water, and used without lengthy storage), pesticides could contribute to the microbial load of vegetable produce, thereby affecting their shelf-life and public health safety.