

A Comparative Analysis on Presence of Pesticide Residues in Selected Vegetables Grown in Conventional Agricultural Fields and Good Agricultural Practices (GAP) Certified Fields

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“Sri Lanka Good Agriculture Practices” was launched in 2016, aiming to supply safe production to consumers. The main objective of this study was to compare between GAP certified agricultural production, and conventionally farmed agricultural production, mainly the vegetables for the presence of pesticide residues for a selected number of pesticides. Simple random sampling was performed at ten selected sites belonging to Nuwara-Eliya and Puttalam districts in order to collect samples. Sample extraction was performed according to the Association of Analytical Communities Official Method 2007.01 and analysis was done using Liquid Chromatography-tandem Mass Spectrometry. At the initial stages of the study, a field survey was conducted and following results were obtained. The percentage of samples with any detection (34.09%), out of the total number of samples (44), was lower than the percentage of samples without any detection (65.09%). Out of 26 pesticides, 16 pesticides were absent in any of the samples tested. Moreover, there was no association ($p>0.05$) between, the type of farming system vs. presence of any pesticide residue and selected district vs. presence of any pesticide residue. Statistical tests performed, include a continuity correction of 0.5. However, presence of residues of Carbendazim was significantly different ($p<0.05$) between samples collected from GAP fields and conventionally farmed fields where the presence of Carbendazim residues in conventional farming system was higher than that of GAP certified fields. Mean concentration values obtained for Carbendazim were 8.39, 7.54, 7.57 in ppb for GAP certified vegetables while 8.70, 8.35 and 8.70 in ppb for conventionally farmed vegetables. Any of the observed levels of tested pesticide residues in production obtained from both farming systems did not exceed the Maximum Residue Levels (MRLs) specified by the Codex Alimentarius Commission and the MRLs issued by the Gazette Extraordinary, No. 2023/34, 14.06.2017 issued by the Government of Sri Lanka.

Keywords: Good agricultural practices, Liquid chromatography-tandem mass spectrometry, Maximum residue levels, Pesticide residues