

Impact of agrochemical usage of paddy cultivation at Welipothewelayaya, Thissamaharama in Sri Lanka.

Kaushalya, K.L.R., Wijenayake, T.R. and Gangabadage, C. S.*

Department of Chemistry, University of Ruhuna, Matara, Sri Lanka

The impact of the use of agrochemicals on paddy cultivation at Welipothewelayaya in Hambantota district was investigated. Two sites selected for this study were named as organic farming site (OFS) and conventional farming site (CFS). Only organic fertilizers and not any chemical fertilizers and pesticides have been used at OFS during the last six-years whereas chemical fertilizers and pesticides have extensively been used at CFS. Soil and water quality parameters; pH, conductivity, DO, COD, Hardness, P-content, Pb-content, and NO_3^- -N content of these two sites were analyzed using chemical, UV-vis and AAS spectroscopic methods. In addition, 10 rice samples from both sites were analyzed for Cd content using ICP-MS. The COD and total hardness of water found to be 41.6% and 18.5% respectively which are higher in CFS than OFS. The determined P-content, Pb-content and NO_3^- -N content of soil are also 24.0%, 43.2%, and 36.8% respectively again higher in CFS than OFS. The pH of both sites found to be slightly alkaline and comparable. In addition, the analysis of Cd-content of rice samples from OFS gave 6-8 ng/g whereas that of from CFS showed 30-60 ng/g, indicating that Cd-content of the rice samples obtained from CFS is considerably high. These results revealed that most of the soil and water quality parameters, as well as Cd-content of rice at CFS, are considerably high compared to OFS due to extensive usage of agrochemicals. Therefore, it is clearly evident from this studies that there can be a future health risk to human due to conventional farming methods.

Keywords: paddy cultivation, conventional & organic farming, agrochemical usage, heavy metals

*Corresponding author: chinthaka@chem.ruh.ac.lk