EFFECTS OF DIFFERENT LAND USES ON WATER QUALITY OF MAHAWELI RIVER IN THE UPPER MAHAWELI CATCHMENT AREA

A dissertation submitted to the

Faculty of Animal Science and Export Agriculture

Uva Wellassa University

In partial fulfillment of the requirements for the award of

Bachelor of Science in Export Agriculture

By

HEWAHAWARI KANKANAMALAGE ISHARA JAYANI THILAKARATHNE

Export Agriculture Degree Programme

Faculty of Animal Science and Export Agriculture

Uva Wellassa University of Sri Lanka

2015

ABSTRACT

Mahaweli River provides water for drinking and other multiple uses of the country to a great extent and thus Upper Mahaweli Catchment Area is of great importance in supplying good quality water in sufficient quantities continuously. The water quality of a flowing river is a matter of prevailing land use conditions in its catchment area. Hence, the aim of this study was to assess the water quality along the Mahaweli river in Upper Mahaweli catchment area with respect to available land use types and to investigate the suitability of its water basically for drinking and other uses. Thus, water quality parameters *viz*, turbidity, pH, electrical conductivity, K^+ and Na^+ at 25°C were assessed at 11 different locations along the main river and 16 selected tributaries within Upper Mahaweli Catchment Area. The results revealed that the turbidity levels of 19 out of 27 studied locations were above the maximum permissible level as per Sri Lanka Standard Institute. The identified land use activities with more disturbed areas gave enough evidences for the increased turbidity levels of the studied locations of Mahaweli River within the Upper Mahaweli Catchment Area. The EC, pH, K+ and Na+ levels of all studies locations were below the relevant maximum permissible levels for those parameters as per Sri Lanka Standard Institute. However, the recorded higher EC levels were from paddy and vegetable growing areas and the lower pH levels were from tea growing areas. The recorded higher K^+ and Na^+ levels were from urban areas. Therefore, it was alarmed that, although the tested EC, pH, K^+ and Na^+ levels were still within the safe limits for drinking as per Sri Lanka Standards Institution, there is a threat of degrading water quality in the study area of Mahaweli River, especially in terms of turbidity, even in the most important upper catchment area.

Keywords: Land use, Mainriver and tributaries, Upper Mahaweli Catchment Area, Sri Lanka Standards Institute, Water quality parameters