



Land-Use/Cover Alterations in Coconut Plantations in Western and Southern Coasts of Sri Lanka from 1996 to 2017

S.K. Madarasinghe ^a, K.K.A.S. Yapa ^{a*}, L.P. Jayatissa ^b

^a *Department of Physics, Faculty of Science, University of Ruhuna, Matara.*

^b *Department of Botany, Faculty of Science, University of Ruhuna, Matara.*

*Corresponding author: *kanthi@phy.ruh.ac.lk*

ABSTRACT

Bearing a large economic importance, coconut is mainly cultivated in the coastal zone of Sri Lanka due to the availability of optimum conditions for coconut growth. However, conversion of coconut plantations into other land-uses could be observed all along the coast during the past few decades. Therefore, this study aims at investigating the land-use changes that occurred in coconut plantations in the western and southern coasts of Sri Lanka over two decades (1996-2017). Two digital land-use/cover (LULC) maps of a 2km belt of the western and southern coastal belts were obtained for the two years, 1996 and 2017, and area statistics were calculated followed by an overlay analysis using ArcMap software. Two sample proportion test was applied using R statistical software to test the significance of the area changes that occurred from 1996 to 2017. The study area had 29,798 ha of coconut plantations in 1996 which has significantly reduced down to 14,183 ha by 2017 (-52.4%, $p < 0.05$). Moreover, overlay analysis revealed that coconut plantations that existed in 1996 had been replaced with many other LULC types by 2017, in particular, aquaculture, bare lands, grassland and marsh, homesteads, settlements, rubber plantations, minor crops (e.g. oil-palm), sandy areas, scrubland and chena. Replacement of 14,446 ha, 1,434 ha and 82 ha of coconut plantations with homesteads, settlements and bare lands, respectively provides evidence of the reduction of economically important crop plantations, mainly for coastal urbanization. Although several government authorities and institutions are responsible for the production, quality improvement, support development, and conduct research on coconut, continuous decrease of coconut plantations shows their poor monitoring and non-interference towards protecting these areas. Therefore, this paper emphasizes the urgent need of preserving the coconut plantations on the coastal belt of Sri Lanka, which significantly contributes to the country's economy. In that respect, proper enforcement of policies to prevent unnecessary conversion of economically important land-uses must be done by authorities to minimize such drastic changes.

Keywords: *coastal coconut plantations, economic importance, proper monitoring*