

Assessing Carrying Capacity and Overall Stocking Rates of Grazing Resources in Addalachchenai DS Division, Ampara District, Sri Lanka

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Abstract

The sustainable management of rangeland ecosystems is crucial for ensuring the health and productivity of grazing resources. This present study investigated the annual production potential, carrying capacity and stocking rates of the grazing resources in Addalachchenai DS division using free cloud satellite images downloaded from Google Earth Engine and processed and obtained the grazing and browsing land use and cover map. Field estimation of above ground biomass (AGB) production was done with quadrant method. The study found varying levels of AGB in Oluvil, Deegawaapiya, Palamunai and Addalachchenai as 1,908.8 (ton DM/ha/year), 11,494.1 (ton DM/ha/year), 1,460.9 (ton DM/ha/year) and 1448.2 (ton DM/ha/year) respectively. The grazing resource levels in the four subdivisions are influenced by the seasonal variations between rainy and dry season. The findings revealed the carrying capacity for each subdivision of Oluvil, Deegawaapiya, Palamunai and Addalachchenai as 41.34 TLU/ha/year, 733.13 TLU/ha/year, 45.79 TLU/ha/year and 11.41 TLU/ha/year respectively. Similarly, the stocking rates were identified for Oluvil, Deegawaapiya, Palamunai and Addalachchenai as 20.93 ha/TLU/year, 5.6 ha/TLU/year, 23.84 ha/TLU/year and 32.78 ha/TLU/year respectively. The stocking rate at Addalachchenai subdivision indicated the overstocking of livestock compared to the other subdivisions. The land area with high “growth grazing resources” were significantly higher ($p < 0.05$) in Deegawaapiya than the other subdivisions. The study found the grazing resources in the Addalachchenai DS division to support the livestock population, which will be useful for the authorities and the farmers to take necessary measures for the sustainable management of grazing resources and livestock.

Keywords: Range lands, Sustainable livestock management, Tropical livestock unit