Crop Productivity and Irrigation Water-Use efficiency of Rice Cropping Systems in Sri Lanka

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Rice (*Oryza sativa* L.) is the staple food for Sri Lankans as well as for more than two-fifths of the world's population. Rice is grown in all the districts in Sri Lanka with varying productivity and cultivation extents. Even though, rice crop productivity and the cultivation extent over the years have changed, the degree of change in the recent past has not been studied. Therefore, this study was conducted with the objectives of (i) examining the trends of rice crop productivity and harvested extent over the years in different districts of Sri Lanka, and (ii) estimating the irrigation water-use efficiency of rice cropping systems in *Mahaweli* areas in Sri Lanka. Crop productivity and harvested extend data from different districts, seasons, and water management schemes in Sri Lanka during the period from 1979-2021 were used. Irrigation water-use efficiency of rice was calculated for *Mahaweli* systems B, C, H, and *Udawalawa* for *Yala* and *Maha* seasons for the period from 2014-2020. Results revealed that, rice crop productivity has increased significantly with time. Productivity increment ranged from 10.2-50.5, 13.6-56.2, 11.1-54.9 kg ha^{-1} $year^{-1}$ for *Maha* season, and -104.3-65.2, 22.1-57.4, 10.5-63.1 kg ha^{-1} $year^{-1}$ for *Yala* season, respectively for major, minor and rainfed water management systems. Harvested extend increased in the range of (-10.7)-798.6, (-113.1)-606.3, (-285.1)-369.3 ha $year^{-1}$ for *Maha* season and (-7.7)-818.5, (-88.7)-367.2, (-359.4)-19.8 ha $year^{-1}$ for *Yala* season, respectively for major, minor and rainfed water management systems. Irrigation water-use efficiency in *Maha* season resulted higher value (0.45 kg m^{-3}) than that in *Yala* season (0.32 kg m^{-3}). *Mahaweli* system 'H' had the highest (0.38 kg m^{-3}) irrigation water-use efficiency during *Yala* season. This information would be useful when making administrative decisions when improving rice farming and Agriculture sector in Sri Lanka.

Keywords: Efficiency, Extent, Harvested, Productivity, Rice

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