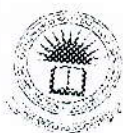


**PERFORMANCE ASSESSMENT OF IRRIGATED AGRICULTURAL
SYSTEMS ACCORDING TO COMPARATIVE INDICATORS: A CASE
STUDY OF MAPAKADA DIVISION IN MAHIYANGANA, SRI LANKA**



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2019

ABSTRACT

There is an increasing concern about the performance of an irrigated agricultural system as pressure grows on water resources and as concerns increase regarding the food security and sustainability of irrigated agricultural systems. Proper management of land, water, and agricultural inputs along with efficient operation and maintenance of irrigation systems are prerequisites for achieving optimum yield. Performance assessment of irrigated agricultural systems helps to determine problems and identify ways and means of improving system performance. Performance of irrigated agricultural systems can be assessed using comparative indicators, include irrigation efficiency, adequacy of water supply, as well as land and water productivity. Mapakada irrigation division is one of the major irrigation division in Badulla district. Frequent crop failure, abandoning of cultivation and reduced crop yields are the common issues in this division. In the above context, present study was aimed to assess the performance of irrigated agricultural systems in Mapakada irrigation division using comparative indicators. In addition, water demand and supply deficit of different systems along with socio-economic status of farming community were studied.

Farmers in Sorabora irrigation system show highest socio-economic status in Mapakada irrigation system. Annual income of the farmers varies from Rs.100, 000 to Rs.400, 000. Compared to other systems, Demodara and Nagadeepa systems have high young labour force. Farmers in all systems except Demodara have land extent less than 3.5 acres. More than 70% of the farmers in Mapakada and Sorabora systems get loan for cultivation. Corresponding for Demodara and Sorabora systems is 50%.

Total water demand of Mapakada system is about 15.95 MCM in *Maha* season. Corresponding figures for Demodara, Sorabora and Nagadeepa are 4.78 MCM, 21.27 MCM and 40.66 MCM respectively. Water demand in *Yala* season are 19.29 MCM, 4.25 MCM, 25.72 MCM and 52.22 MCM in Mapakada, Demodara, Sorabora and Nagadeepa, respectively. Excess water supply was observed in some systems in *Maha* season whilst severe water shortage was observed in all systems in *Yala* season.

Paddy yield varies from 4.37 t/ha to 6.39 t/ha in *Maha* season, which is above the national average. However, yield is slightly lower in *Yala* season (3.36 t/ha - 6.39 t/ha) mainly due to water stress. Sorabora system shows highest production per unit cropped (\$1765/ha) in *Yala* and Mapakada system shows highest production per unit cropped (\$1740/ha) in *Maha*. Demodara system showed lowest production ranges from \$739/ha-\$1354/ha in *Maha* from \$339/ha-\$1234/ha in *Yala*. Output per unit irrigation supply varies from \$0.04/m³-\$0.23/m³ in *Maha* and from \$0.05/m³-\$0.15/m³ in *Yala* season. Sorabora system shows better performance, followed by Mapakada system.

In overall, irrigation systems in the study area are facing severe water shortage in *Yala* season. Sorabora system shows highest performance among other systems. Mapakada system also shows good performance which is followed by Nagadeepa system. However, Demodara system shows lowest performance in all aspects. Therefore, appropriate measures should be taken to improve the performance of irrigation systems particularly Demodara and Nagadeepa systems.

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