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Use of remote sensing and geographic information systems in irrigation performance: A case study of Atabey irrigation scheme

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In this study, the irrigation performance of Atabey Irrigation Scheme was assessed by making use of Remote Sensing (RS) and the Geographic Information System (GIS). For this purpose, the crop pattern maps of the scheme were generated by the help of the supervised classification method with the RapidEye satellite data of 2012 concerning the study area by employing the RS techniques, whereas the channel maps of the scheme were generated by the help of the techniques of the Geographic Information System. By the help of these data, the monthly water supply ratios – one of the performance indicators – were computed. A total of 24 crop classes, 10 of which were in the irrigated area corresponding to about one-third (5,239.75 ha; 33.72%) of the total area but the remaining 14 of which were in the non-irrigated (rainfed agriculture) area corresponding to about two-thirds (10,299.74 ha; 66.28%) of the scheme area, were determined as a result of the crop pattern classification. The total irrigation water requirement for Atabey irrigation scheme was calculated as 42,618 m³ minimum and 5,647,246 m³ at the maximum between April and October. The water supply ratio in the months concerned ranged from 28.16 to 2.39 and the average water supply ratio in 2012 was calculated as 3.25. The assessment, collection, operating and maintenance expenses of the scheme and, by the help of these data, its fee collection and financial efficiency ratios were calculated. The fee collection ratio was found as 88.12% and the financial efficiency ratio as 1.42 at the scheme in 2012.

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