

Evaluation of Water Use in a Rice Double Cropping System in Malaysia

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Irrigated rice all over Asia has been criticized for inefficient water use, but very little information is available to quantify its performance. The quantification or assessment of the inefficiency will give the farmers, managers or schemes and policy makers to come up with remedial measures. In this work, the Besut rice irrigation scheme, located in the Terengganu State of Malaysia was characterized, and its water use (WU) efficiency assessed. The daily rainfall for 48 years and river flows for 45 years were analyzed to identify water excess or shortage throughout the rice-growing season. During the November-January period, 45% of the total annual rains fall. The irrigation water supply could be reduced in the main season (November-April) because of higher rainfall occurrence. Low monthly river flows of 10.5 m³/s and 10.9 m³/s were observed for the Besut barrage and 2.3 m³/s and 2.4 m³/s for the Angga barrage in the months of July and August respectively, characterizing the driest months. The off-season (May-October) crop suffered from water problems during vegetative and reproductive stages because of water shortage in the river. The relative water supply values have been classified into five categories based on results on the indices on irrigation performance. The average water productivity was 0.31 kg/m³ and 0.25 kg/m³ during the main season and off-season respectively. Two WU indices, water productivity (WPI) and adequacy (AI), ranked the performance of the blocks and identified those having problems in water allocation and utilization. These indices revealed that the blocks using more water performed poorly in terms of water productivity. These indices could be used to rectify uneven distribution of water in the scheme.

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