

KAJIAN WADUK UNTUK KEBUTUHAN IRIGASI DI WADUK SERMO KABUPATEN KULON PROGO DAERAH ISTIMEWA YOGYAKARTA

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INTISARI

Keberadaan waduk menjadi hal penting di Kabupaten Kulon Progo. Hal ini dikarenakan pertanian di Kabupaten Kulon Progo didominasi oleh jenis pengairan irigasi yang mencapai lebih dari 94%. Namun, permasalahan sedimentasi di Waduk Sermo mengakibatkan penurunan volume daerah tangkapan air waduk. Penurunan kapasitas waduk diiringi dengan penurunan umur layanan waduk akibat sedimentasi yang awalnya diestimasikan 50 tahun menjadi 27 tahun. Oleh karena dilakukan penelitian guna mengetahui kebutuhan dan ketersediaan air dalam bidang irigasi di sistem irigasi waduk sermo. Selain itu, guna mengetahui optimalisasi tata tanam dengan memperhatikan ketersediaan air sistem irigasi waduk.

Perhitungan mengenai ketersediaan air dilakukan dengan menggunakan debit andalan. Debit andalan 80% digunakan untuk tanaman padi dan 50% untuk tanaman palawija. Perhitungan kebutuhan air memerlukan input data iklim, jenis tanaman, dan luas D.I. yang kemudian diolah menggunakan aplikasi CROPWAT. Sementara evaluasi pola tanam dilakukan dengan menghitung imbalan air dan Indeks Penggunaan Air (IPA).

Penelitian menunjukkan ketersediaan air terendah pada sistem irigasi waduk sermo terdapat pada D.I. Pengasih Timur Bagian Utara sebesar $6,678 \text{ m}^3/\text{s}$ dalam setahun. Sementara kebutuhan irigasi tertinggi mencapai $14,413 \text{ m}^3/\text{s}$ dalam satu tahun di D.I. Pekik Jamal. Berdasarkan ketersediaan dan kebutuhan irigasi, neraca dan IPA pada daerah irigasi di sistem irigasi waduk sermo menunjukkan perlunya kajian ulang. Hal ini ditunjukkan dengan nilai defisit neraca air pada beberapa bulan serta IPA yang bernilai kurang dan tidak aman pada 3 D.I. dari total 4 D.I. Rencana alternatif tata tanam disajikan dengan merubah jenis tanaman dan waktu penanaman.

Kata Kunci: CROPWAT, Kebutuhan irigasi, Pertanian, Waduk

RESERVOIR STUDY FOR IRRIGATION REQUIREMENT IN SERMO RESERVOIR, KULON PROGO REGENCY, SPECIAL REGION OF YOGYAKARTA

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ABSTRACT

The existence of reservoirs is important in Kulon Progo Regency. This is because agriculture in Kulon Progo Regency is dominated by irrigated irrigation which reaches more than 94%. However, sedimentation problems in Sermo Reservoir resulted in a decrease in the volume of the reservoir catchment area. The decrease in reservoir capacity is endangered by a decrease in the service life of the reservoir due to sedimentation which was initially estimated at 50 years to 27 years. Therefore, a study was conducted to determine the need and availability of water in the field of irrigation in the Sermo Reservoir irrigation system. In addition, optimization of cropping patterns needs to be done by considering the availability of water in the reservoir irrigation system.

Calculations regarding the availability of water are carried out using a reliable discharge. The mainstay debit is 70% used for rice plants and 50% for secondary crops. Calculation of water needs requires the input of climate data, types of plants, and area of irrigation area which are then processed using the CROPWAT application. While the evaluation of cropping patterns is done by calculating the balance of water and water use index.

Research shows that the lowest water availability in the Sermo reservoir irrigation system is found in the Northern Part of the Eastern Pengasih Irrigation Area about 6,678 m³/s in a year. While the highest irrigation demand reached 14,431 m³/s in one year in Pekik Jamal Irrigation Area. Based on the availability and need for irrigation, the balance and science in the irrigation area in the Sermo reservoir irrigation system indicate the need for a review. This is shown by the value of the water balance deficit in several months and the less and unsafe water use index in 3 irrigation areas. out of a total of 4 irrigation areas. Alternative planting plans are presented by changing the type of crop and planting time.

Keywords: CROPWAT, Irrigation requirement, Agriculture, reservoir