Profit and Ecological scheduling of Agricultural Reservoir

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Objectives

Through the united scheduling of profit and ecological, this paper aims to explore how to reduce the impact of the rice production while ensuring the ecological environment of the river, and strive for the harmonious coexistence of human beings and the environment.

Methods

ecological flow calculated by frequency curve method, Qp method, Tennant method, etc.

In order to reduce the impact of the rice production while ensuring the ecological environment of the river, the emission principles of ecological water is to supplement the amount of ecological water replenishment when the amount of water discharged into the river channel (compensating for irrigation water supply and discarded water) does not meet the basic ecological water volume requirements.

Results

The calculation results by Qp method can better response out the hydrological characteristics and rhythm of the River. After added the ecological water supply, the efficiency of the reservoir will definitely decrease. The average annual power generation of Longfengshan Reservoir decreased from 9.45 million kWh to 9.12 million kWh. Annual utilization hours of hydropower stations decreased from 2954 to 2849 pro year. Irrigation water supply decreased from 12228×$10^4$$m^3$ pro year to 12176×$10^4$$m^3$.

Conclusions

The emission of ecological flow will reduce the water level of reservoir, thereby reducing the reservoir capacity. If the amount of water compensated for irrigation is first released into the river, and then the water is diverted into the channel after other tributaries merge so that the ecological base flow of the river can be guaranteed, the impact of emitted ecological flow can be appropriately attenuated.