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EVALUATION OF THE IMPACT OF PLANTING STRUCTURE ON WATER RESOURCES

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Abstract

Many regions are facing formidable freshwater management challenges. In this research, the Water Evaluation and Planning System (WEAP) was used to simulate water demand and supply under planting structure adjustment scenario in Laohahe River Basin (LRB), China. The effects of planting structure adjustment on alleviating the water resources vulnerability were simulated by defining scenario for changes in crops sown area inputs to WEAP model. The results show that compared with the Reference, planting structure adjustment can decrease unmet demand of all demand sites obviously, can slow the depletion of groundwater which can increase water shortage $70\text{-}350 \times 10^6 \text{m}^3$, as well as can increase all demand sites' coverage effectively. There is substantial reduction in water resources vulnerability when the strategy was used. The planting structure adjustment strategy is effective overall in improving water resources vulnerability, especially during dry flow conditions. In brief, the evaluation approach based on the WEAP model can help decision makers assess alternative policy and management options in mitigating water resources vulnerability.

Key words: agriculture, irrigation, modeling planting structure, unmet demand

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