

Irrigation Performance: Iraq

The challenge

The West Gharraf Irrigation Scheme is crucial for Iraq's food security, supporting the cultivation of wheat and barley. However, recurring droughts, a dependence on transboundary water and reliance on gravity-fed irrigation systems have reduced water availability. Limited data on water productivity, consumption and farm-level water flows further complicate annual agricultural planning, hampering effective decision-making.

The solution

The Irrigation Performance Assessment Tool (IPAT) addresses these challenges by using Water Productivity through Open access of Remotely sensed derived data (WaPOR) to quantify water consumption of both reclaimed and unclaimed lands, analyze crop and water productivity, and enable impact assessments of soil salinity and water allocation on crop water consumption and productivity (Figure 1). The tool also delivers information on consumption uniformity, beneficial fraction, water deficit fraction, as well as net and gross water supply needs.

Key technical features

IPAT uses dekadal Level 1 and Level 3 WaPOR data at various spatial resolutions, including actual evapotranspiration and interception (AETI), net primary production (NPP) and transpiration (Tr) (Level 3, 20 m), as well as precipitation (P) and reference evapotranspiration (RET) (Level 1, 300 m).

The tool consists of two parts. The back-end processes WaPOR remote sensing data along with ground data on canal networks and farm boundaries. The analytical interface at the front-end shows irrigation performance indicators through maps, graphs and tables. The tool is accessible in Arabic.

Current use and main users

The tool is currently under development. It will be transferred to and hosted by the Ministry of Water Resources (MoWR) in 2025. Other users are the Ministry of Agriculture and the Ministry of Planning.

Key stakeholders and beneficiaries

The key stakeholders are the main users mentioned above. The main beneficiaries are irrigation scheme managers and farmers.

The co-creation process

The co-creation process began with the identification of key stakeholders, followed by a co-creation workshop to define the tool's features and required information. The tool was co-developed in an iterative process, with regular meetings and constant refining based on stakeholder feedback. On-the-job training was provided to a technical team from the stakeholder ministries for building capacity around the tool's back-end and irrigation performance assessment using remote sensing. Stakeholders tested the final version of the tool in April 2025 to ensure it met expectations.

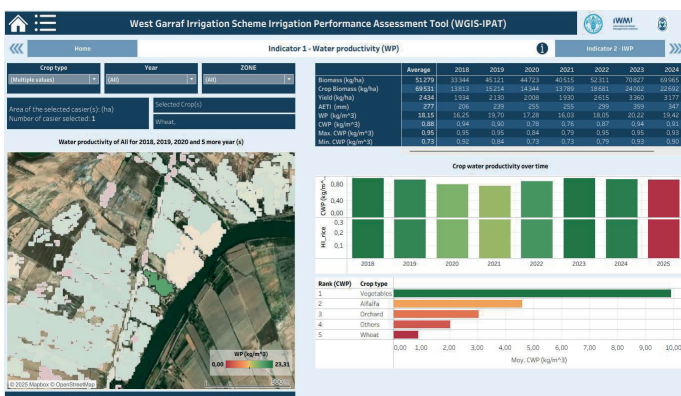


Figure 1: The dashboard of the Irrigation Performance Assessment Tool (IPAT) for Iraq.

Key outcomes and impacts

The tool provides crucial information to support decision-making for improved scheme performance and water productivity, as well as key data for enhanced annual agricultural planning. It helps scheme managers navigate growing water scarcity by quantifying actual water use within the West Gharraf scheme.

Sustainability and continuous updating

The tool was developed to meet stakeholder needs and ensure long-term sustainability. The co-creation process with regular reviews helped stakeholders take ownership of the tool. Comprehensive support was also provided via on-the-job training and continuous technical assistance. To further ensure sustainability, the tool is being integrated into the MoWR information system and supported by detailed operational manuals for both back-end and front-end components, as well as ongoing training on maintenance and use.

Scaling potential

The tool has significant scaling potential. With minor adaptations, it could be implemented elsewhere in Iraq and the Middle East, especially where irrigation performance assessment can improve water efficiency and productivity. The technical team has started using WaPOR data independently for water productivity assessments, underscoring the potential for wider adoption. Additionally, stakeholders requested a recap training in April 2025 with funding from the respective ministries, further enhancing the tool's adoption prospects.

The WaPOR portal

The publicly accessible Water Productivity through Open access of Remotely sensed derived data (WaPOR) portal of the Food and Agriculture Organization of the United Nations (FAO) supports agricultural water productivity monitoring at continental, national and basin scales. With new information produced every 10 days, the portal helps users make informed policy and investment decisions.

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