

Technical innovations in irrigation in the context of restructuring irrigated agriculture

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With restructuring of irrigated areas of former large farms in Uzbekistan into small-scale farms and conversion of on-farm irrigation network into inter-farm one, the need arises to create an intermediate self-administration chain — Water Users Associations (WUAs) – as agents representing the interests of water users in the state water management bodies and implementing, with participation of water users, water distribution, operation and maintenance of irrigation systems from laterals to WUA contour and to farm and dekhkan plots.

Farms and dekhkan farms constitute the largest part of water management system in irrigated agriculture of the Republic of Uzbekistan. The efficiency of water management system depends on the efficiency and productivity of water use and economic feasibility of crop production by them. At present, sustainable development focuses on increasing water productivity, improving the environment with involvement of a wide range of water users/water consumers.

In this context, it is important to apply water-saving techniques focused on capabilities of farmers and dekhkan farmers to improve irrigation performance by available means and without significant capital investments in the irrigation network, i.e. mainly by improving water management and quality of irrigation, while maintaining the balance of: capacity of the irrigation network to carry the required discharge in due time; crops irrigation requirements with minimization of crop losses from insufficient or over-irrigation; irrigation techniques minimizing the losses in surface runoff and infiltration beyond root zone at a relatively high uniformity of crop root zone moistening.

Basic water-saving techniques not requiring substantial capital investments and practically implemented in the pilot irrigated areas of Andijan and Fergana oblasts of Uzbekistan (*IWRM-Fergana project*):

- improvement of water accounting (calibration and certification of gauging stations, increasing frequency of measurements);
- re-use of surface runoff of irrigation water within the contour;
- improvement of tillage quality (increasing the number of cultivations, deep tillage);
- watering with alternation of wet and dry rows;
- multi-tier irrigation in short furrows;
- discrete adjustment of water delivery to furrows.

Along with this, Uzbekistan is planning and gradually shifts to the advanced water-saving technology - drip irrigation of high-value crops (orchards, vineyards) in areas with persistently low water availability, highly permeable soils and compound relief.