Ways for Improving Water Productivity in Demonstration Plots within the Framework of the Project RESP-2

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33 demonstration plots and 7 base farms were selected in seven project districts for monitoring of agricultural production. All agricultural activities on winter wheat and cotton demonstration sites are monitored and tracked during the growing season. Observations cover current agronomic operations and water management measures in these plots.

The indicators of irrigation water use productivity allow us to track how efficiently water is used in demonstration plots through physical values of gathered crops (kg) per each cubic meter of water used (m^3). On the basis of input information, one can assess initial conditions in each demonstration plot and, in subsequent years, track the project impact on dynamics of irrigation water productivity. In order to get reliable results, a single-type crop (cotton) should be sown in the demonstration plots during 2-3 years and annual crop rotation (cotton – grains) should not be applied.

As regards irrigation water productivity indicators, nine best farms among 24 sites under consideration can be selected: from the farm “Shokhjahon Bozorov” (where 0.94 kg of raw cotton was get per cubic meter of water) to the farm “Elnur Jonibek Jura” (0.73 kg/m^3). Relatively good results were achieved in the farm “Azizova Shokhida” (0.61kg/m^3) to the farm “Kuchkor Kholmuradov” (0.45 kg/m^3). Another eight farms refer to a group of farms showing lowest irrigation water productivity – from the farm “Far Meroj” (0.37 kg/m^3) to the farm “Fozil Khoji” (only 0.22 km/m^3).

Given ranking allows identifying sites, where the project staff and rayon executors must focus fist of all. By analyzing causes of low irrigation water productivity in each demonstration plot, we can develop and undertake individual set of soil-conservation and water-management interventions aimed at improvement of land and water use efficiency.

Material of monitoring on 24 demonstration plots was generalized in form of current physical and financial inputs – seeds, fertilizers, crop protection agents, water, vehicles, machine and manual labor. Based on this information, variable costs (prime cost), gross margin and net profit by item, and irrigation water use productivity were calculated.

The main causes of low crop yields are unfavorable weather conditions in spring (prolonged rains, hail in Buka district), small quantity of applied fertilizers, insufficient use of machine and manual labor, failure to comply with terms and technology, and pests and diseases.

According to the results of 2010 agricultural activity, a number of demonstration plots gained profits that varied from 336 024 soum/ha to 1 166 111 soum/ha. This is first related to crop yields (14.0 centner/ha to 43.0 centner/ha) and to quantity of used water during the growing season (3400 m^3/ha – 8430 m^3/ha).

The following cheap irrigation technologies are recommended to improve water productivity:

- Alternate furrow irrigation, variable stream irrigation, contradirectional stream irrigation in the fields with small slopes, tilling of crosscut beds in the end of field in order to catch irrigation runoff;
- Use of watering tubes for dosed application of water to furrows, laying of film on the furrow to reduce percolation and evaporation in sites with highly permeable soil.
- To increase yields of strategic crops – cotton and wheat – it is necessary to keep individual technological norms of cultivation, tillage, and protection from pests and diseases, fertilizer application norms, as well as irrigation regimes and dates.