



1	Ministry for Land Reclamation and Water Management	100 %
2		%
3		%

<b>G</b>	<b>Summary of research project (see instruction on page 1)</b>
<p><i>1 Objective and technical fields:</i> Elaboration of irrigation technique elements, cultivation technology, cotton irrigation regime under drip irrigation. Irrigation impact on cotton growth, development and yield.</p>	
<p><i>2 Scientific and technical approach:</i> Climate is sharply continental. Average temperature is 15,8 °C, summer is hot and winter is cold. Precipitation is 229 mm, 75 % of it occurs in winter-spring period. Evaporativity is 1200 mm. Humidity deficit within the growing season is 1245 mm, 1380 mm per year.</p>	
<p><i>3 Environment characteristics:</i> Geomorphology: quaternary sediments of alluvial plain of Kashkadarya delta. Hydrogeological conditions: main source of groundwater is underground inflow, infiltration from fields, rainfall. Groundwater is wasted for evaporation, transpiration, underground and drainage outflow. Level depth is 0,6-3,5 m, salinity is 3-4 g/l. Soils: grey-brown-meadow, represented by sandy loam, light and middle loam with gipsum content 14,5-40,6 % Content of phosphorus is 5-8 mg/kg, potassium - 108-135,84 mg/kg, humus - 0,289-0,366 %, nitrogen - 0,023-0,031 % Soils are middle salinized (solid residue is 1-2 5), chloride-sulphate. Soil volume weight is 1,34 g/cu. m, specific weight - 2,62 g/cu. cm, total porosity 48,8 % and unsaturated zone porosity is 36,5 %. Permeability is 22 mm/hour. Maximum molecular water volume is 30,0 %.</p>	
<p><i>4 Parameters of Pilot Projects and Technical Solutions:</i> Experimental site area is 12 ha, land use efficiency is 0,89. Main crop is cotton. Water supply is performed from Talimarjan reservoir via Karshy canal and its distributors. Fertilization was executed during growing season.</p>	
<p><i>5 Methodology:</i> Four versions of drip irrigation were tested. Then one version of DIS (80x80x60) and one version of furrow irrigation (80x80x60) were selected. Experiment was repeated 4 times. Within each version 4 experimental sites were selected. Soil moisture content was determined by thermostat-weight method and tensiometers. Drippers discharge was measured by volumetric method. Phenological observations included main stem weight measurements, stem thickness, number of branches, boxes; average weight of one box, biological calculation of yield. Irrigation water turbidity was determined by photo-electro-calorimeter. Salinity survey was implemented in separate points before and after growing season. Water salinity was determined in laboratory.</p>	
<p><i>6 Results:</i> Irrigation regime has been developed on base of observations on moisture within moistening stripe, irrigation technique elements, watering and irrigation rate determination. Moistening contents built on base of observation showed that distance between pipelines 1,8 m, between drippers 0,9 m provides regular moistening along a furrow. Actual moisture before irrigation under drip irrigation was 75=78 %, under furrow irrigation-75 %. After irrigation moisture was 97 % (DIS) and 100-102 % (furrow). Cotton water requirement coefficient was: at the 1<sup>st</sup> ten day of Yuly - 1,89; 2<sup>nd</sup> ten day - 1,92; 3<sup>rd</sup> ten day - 1,81; at the 1<sup>st</sup> ten day of August - 1,17, 2<sup>nd</sup> ten day - 1,62; 3<sup>rd</sup> ten day - 1,60; at the 1<sup>st</sup> ten</p>	

day of September - 1,52; 2<sup>nd</sup> ten day - 1,46.

In 1992 irrigation norm in version 1 was 4000 cu. m/ha; in version 2 - 7500 cu. m/ha; water saving was 3500 cu. m/ha (47 %); number of irrigations was in version 1-6; in version 2-3.

In 1993 irrigation norm in version 1 was 3400 cu. m/ha; in version 2-7900 cu. m/ha; water saving was 4500 cu. m/ha (56,9 %); number of irrigations was in version 1-5, in version 2-3.

In 1994 irrigation norm in version 1 was 2082 cu. m/ha. in version 2 - 9300 cu. m/ha, water saving was 7218 cu. m/ha (77,6 %); number of irrigations was in version 1-7, in version 2-5.

In 1995 irrigation norm in version 1 was 3040 cu. m/ha, in version 2-8500 cu. m/ha; water saving was 5460 cu. m/ha (64,2 %); number of irrigations was in version 1-12, in version 2-4.

Irrigation average duration was in version 1-19-24 hours, in version 2-72-84 hours.

Irrigation interval was in version 1-4-7 days, in version 2-21-28 days.

Phenological observations:

Phases of budding, blooming and ripening coincided with difference of 1-4 days in both versions. Main stem height, number of branches, buds, flowers and boxes were bigger in version 1 (DIS).

Cotton yield was as follows:

1992: version 1-3,0 t/ha. in version 2-2,0 t/ha, yield growth - 1,0 t/ha (34 %);

1993: version 1-31 t/ha, in version 2-2,1 t/ha, yield growth - 1,0 t/ha (31,2 %);

1994: version 1-1,83 t/ha, in version 2-162 t/ha, yield growth - 0,52 t/ha (26,7 %).

From above is evident that DIS positively influences on cotton growth, development and yield under irrigation water saving 47-77,6 %.

Reclamation state dynamics. Stable reclamation situation was kept within 1992-1996 under DIS.

Salt stock change within 1 m -layer is negligible.

As a result of investigations "Recommendations on design, construction and maintenance of DIS for cotton cultivation under different soil-climatic conditions in Uzbekistan" were developed.

<b>H Suggested key-words</b>			
1	Drip irrigation system	4	moistening contour
2	dripper's discharge	5	salinity survey
3	irrigation regime	6	bioclimatic coefficient

<b>I Most recent publications (maximum 3)</b>				
1	Author(s): A.Novikova, O.Muradova			
	Title: Cotton drip irrigation			
	Publication details: Development of irrigation technique elements, irrigation regime, cotton cultivation technology, DIS efficiency is considered.			
	Year of publication: 1996	free access	<input checked="" type="checkbox"/>	restricted <input type="checkbox"/> confidential <input type="checkbox"/>
2	Author(s):			
	Title:			
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3	Author(s):			

Title:						
Publication details:						
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