REGISTER OF RESEARCH ON IRRIGATION AND DRAINAGE

QUESTIONNAIRE

A	**Project title:**	Test-production study of water-saving technologies for cotton furrow irrigation in Hanka and Hiva districts of Horezm province.

B	**Topic n^{o} : 1**	Sub-topic n^{o}: 4
1)	Category 01	Technical field n^{o}: 4

C	**Project location:** Horezm province, Hiva district, collective farm "Uzbekistan"	
	Country: Republic of Uzbekistan	Area: 140,5 ha (gross)
	Precise details if possible	
	Country(ies):	Locality(ies):
	City(ies):	Others(s):

D	**Duration of the project:**	
	Year in which the project was started: 1991	Project completed: 1993 Expected completion date: 1991, 1993

E	**Organizations and technical staff involved**	
1	Supervisor/project coordinator (SURNAME, First name): Djalilova Totikhon	100 %
	Organization: SANIIRI Address: 11, Karasy-4, Tashkent, telephone: 7 (3712) 65-16-56 E-mail: fax:	Staff resources
Other counterparts:	Organizations (full name or acronym)	Surname First name / 2)
1		%
2		%
3		%
4		%
Other collaborators:		man-years

F	**Funding agencies**	

	Full name or acronym	Percentage of project finance provided
1	Ministry for land Reclamation and Water Management	100 %
2		%
3		%

G	**Summary of research project (see instruction on page 1)**

1 Objective and technical fields:
Development of recommendations on unproductive water losses reduction under conditions of water scarcity, soil fertility improvement, introduction of new methods of irrigation , providing optimal moisture regime within root zone.

2 Scientific and technical approach:
Study of irrigation network parameters, technique elements and technologies providing land use efficiency increase, achievement of sustainable high yields.

3 Environment characteristics:
Climate is continental. Maximum temperature is 44 ^{0}C.
Geomorphology: Daudan alluvial plain.
Soils: Medow-alluvial.
Soil permeability is low - 0,1-0,6 mm/min;
porosity is 48,5-43,7 g/cu.cm: Field moisture capacity is 20-30 %; volume mass is 1,32-1,58 g/cu.cm.
Lithology: quaternary sediments. Topsoil is loam and sandy loam with thickness 3-5 m and permeability coefficient 0,3 m/day which is underlaid by sand 25 m thick with permeability coefficient 3,0m/day.
Groundwater level was 1,2-2,2 m within growing season and 2,5-3,0 m within the rest of year.
Groundwater salinity was 3,9-16,5 g/l.
Collector-drainage network extent is 98,5 km, specific extent is 38,5 m/ha.

4 Parameters of Pilot Projects and Technical Solutions
Irrigated area of experimental site is 129,7 ha (net). There are 16 drains made of corrugated polyethilen tubes with diameter 235 mm; depth is 1,6-1,8 m and spacing 100 m, 4,31 km length; flume - 0,8 km length concrete canal - 2,4 km length ; open drain - 10,4 km length; collector - 9,98 km length and canal - 2,4 km.

Leaching rate was 4300 cu.m/ha, drainage outflow - 1,5-3,2 l/sec. Drainage efficient salinity was 3,7-4,6 g/l. Pilot site is divided into 4 lots and equipped by flexible hoses, pipelines, observation wells, outlets, weirs, etc.

5 Methodology:
Field investigation of groundwater, drainage outflow and soil water salt balance dynamics, Site was equipped by all necessary devices for water and salt measuring and accounting.

Control sites with furrow irrigation were used.

Systems analysis for data processing was used.

6 Results:
Investigations of water-saving technologies of cotton furrow irrigation (discrete irrigation) show that under conditions of medow soils with shallow groundwater optimal water-air regime of soils can be kept by small irrigation depth: 40-67 % of FFMC (0-50 cm layer) and 83-96 % of FFMC (40-100 cm layer) and cotton normal development can be provided.
Under frequent irrigations by small depth soil desalinization was discvered only within 0-50 cm layer, within lower layers soil are salinizated 1,5-2,0 times more.

High yield was obtained in version 4-3,27 t/ha where irrigation depth was higher (180-390 cu.m/ha). In version 2 under high irrigation norm (3467 cu.m/ha) cotton yield was the least (2,73 t/ha).
The least norms were in version 1 (2809 cu.m/ha) and cotton yield was 3,06 t/ha, in version 3 they were respectively, 3240 cu.m/ha and 3,2 t/ha. In version 5 irrigation was performed by ordinary method and by high norms (4500-5600 cu.m/ha), cotton yield was 2,6 t/ha.
As a result of investigation was found:
- discrete irrigation of low depth is efficient under good field leveling;
- irrigation water productivity increase is provided due to decrease of unproductive water losses for surface release and filtration;
- irrigation technique efficiency is increased up to 0,87-0,90;
- irrigation norm is reduced from 5600-6100 to 2816-3457 cu.m/ha;
- expenses for fuel, fertilizers labour are cut down by 1,5-2,0 times;
- favorable water-air regime of soils is established;
- cotton yield growth is 0,6-0,8 t/ha.

H	**Suggested key-words**		
1		4	
2		5	
3		6	

I	**Most recent publications (maximum 3)**			
1	Author(s):			
	Title:			
	Publication details:			
	Year of publication:	free access [x]	restricted [ ]	confidential [ ]
2	Author(s):			
	Title:			
	Publication details:			
	Year of publication:	free access [x]	restricted [ ]	confidential [ ]
3	Author(s):			
	Title:			
	Publication details:			
	Year of publication:	free access [x]	restricted [ ]	confidential [ ]