

## Scientific works

№	Topic of the scientific work	Objectives and tasks of the work
1	The development of the theoretical foundations of flow distribution and management of water pressure, and the establishment of norms and modes of water consumption in rural water supply.	The purpose of research is to develop of a unified theoretical approach to fundamentally new hydraulic and technical-economic problems of designing for water flow distribution and management, water pressures, norms and dynamics of water use regime in rural water systems under multiple mode water flow in pipes and uncertainties.
2	Improvement of computer information system methods to carry out monitoring and identifying the soil degradation processes in vertical and horizontal zones	The purpose of research is: Improvement of computer information systems implementation methods to carry out monitoring and identifying of the soil degradation processes (including the reason of degradation) in vertical and horizontal zones
3	Study and forecast physical-chemical processes in the system of “ground-underground-collector-drainage waters” under intensive agricultural condition	Evaluation the quality of waters in the system of «ground-underground-collector» in Namangan, Jizzakh regions and in the Republic of Karakalpakstan; develop rational irrigation and leaching technology for rational use of water and improving the quality indicators.
4	Development of bio-ecologic and meliorative methods in agriculture under water-deficite and saline conditions.	The herbs with a long history like shirinmiya, dog-rose, tironogul and chamomiles are growing in experimental sites in Abu Ali Ibn Sino forestry farm in Namangan region, under low saline and in ‘Zamona Rano’ farm of Boyovut district in Syrdaryo region under medium and high saline lands without leaching the soils and in different water supply conditions. The experiments conducted are to evaluate the effect of the mentioned herbs/plants to water saving and improving ameliorative conditions of the soils.
5	Management and multipurpose use of Kizilkum underground water resources while protecting and improving their use.	Geological and hydrogeological data evaluation of underground water resources in the areas of central Qizilqum region for the last 40 years. Spatial analyses of anthropogenic impacts and extension, as well as study their gravity, technogenesis elements and characteristics of underground waters.

6	Development of scientific and methodological principles of water and land resources in Uzbekistan for the sustainable development of the region.	Studying of the principles of formation of the quality and quantity of water resources, including the drainage water, various factors to assess their role; developed scientific database on ecological justification of the use of scarce water resources in a growing deficiency, a better comparability and hydro-chemical information to facilitate the analysis of the processes within the water system.
7	Development of water conservation irrigation technology by the use of super swelling polymer hydrogels	The project objective is to develop advanced water conservation irrigation technology based on the use of superswelling polymer hydrogels and evaluation of a new species of polymer hydrogels synthesized Uzbek scientists as water-saving agent.
8	Modernization of water resource management using remote sensing and integrated modeling	<p>The main objective of this study is to improve the technology of water management at the field level with the objective of efficient irrigation scheduling. To achieve the objective of this study, the following tasks are considered:</p> <ol style="list-style-type: none"> <li>1. Assessment and analysis of water use of agricultural crops in the fields by using models and elements of remote sensing technology.</li> <li>2. Experimental study of remote sensing and sms technologies and integrating models for efficient irrigation scheduling and rationalization of irrigation water use.</li> <li>3. Evaluating the effectiveness of the improved technology in water management and irrigation scheduling.</li> </ol>
9	Development of leaching technology on the saline lands for winter wheat crops	Development of winter leaching technology on irrigated fields for winter wheat
10	Assessment of the impact of climate change on water resources potential and development of adaptation measures in the conditions of Uzbekistan	<p>The purpose of the research is to assess the impact of climate change on the potential of water resources and the development of adaptation measures in the conditions of Uzbekistan. Research objectives: to study the effects of climate change on agriculture; identification of agro-climatic zones within Uzbekistan with similar climatic changes; identification of the characteristics of the impact of climate change on the potential of water resources in Uzbekistan.</p>

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- 11 Development research bases of management quantity and quality of water resources
- Performed research work has five parts: The impact of climate change on agriculture and water resources as well as the development of scientific bases of adaptation; Development of scientific foundations for the biological treatment of municipal waste; Development of scientific and methodological foundations of cotton seed treatment with ozone gas to overcome the increasing humus and skin drowsiness as a result of climate change and reduce soil salinity by treating biomeliorate; Development of recommendations on the reuse of hydrocarbons in a changing climate and freshwater tanks for the production of non-destructive agrochemicals; The effect of the preparations of the hydrogel "Serhosil" and ozone gas on the growth, development and productivity of cotton plants.