WATER CLEANING TEST IN ARAL SEA REGION WITH THE PURPOSE OF OBTAINING **DRINKING AND IRRIGATION WATERS**

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TROPENTAG 2008

International Conference on Research for Development in Agriculture and Forestry, Food and Natural Resource Management

Competition for Resources in a Changing World: New Drive for Rural Development

University of Hohenheim, October 7-9, 2008 in Stuttgart - Hohenheim

Abstract

The problem of the fresh water, and especially, drinking water has been a major concern in the Aral Sea region, where desiccation of the Aral Sea has become an ecological catastrophe. Deficiency of quality in drinking water is not only due to the fact of inaccessibility and poor quality of water from the natural sources, but also due to the poor water treatment technologies in the majority of the cities in the Aral Region.

Project Background

> The main aims of the project are the development of small water treatment facilities infrastructure, improvement of water management, environmental protection, and safe water supply to the Aral Sea Region.

> Within the framework of the project testing, various types of water treatment technologies have been conducted in order to find the most advantageous method to treat water, taking into account the quality of the water and also considering the maintenance costs of the equipment. > In order to take into account the various seasonal changes in preliminary characteristics of the water, the testing of the water treatment equipment has been conducted during the winter and summer times of 2006.

Research Methodology

- > Collection of water samples from some of the chosen sample places in Khorezm and Aral Sea Region.
- > Laboratory analyses of these samples in Mobile Experimental Station, definition of water chemical composition and its pollution level.
- > A water sample was treated by every water cleaning device, and then the already treated water was re-analyzed.
- > At the end, an evaluation of water cleaning devices' efficiency was made.

Places of Samples Collection

 Muvnak town, Karakalpakstan – water well: Nukus town, the capital of Karakalpakstan – irrigational canal, the water supply of the Republican Children Anti-TB Sanatorium; Urgench town, Khorezm Region – water well, water pipes, irrigation canal



- temperature

- - conductivity

Testing Water Treatment Equipment • FLEKC

- EGGIS
- Envirolyte ECO 120
- AQUEL 400
- IVK-filter (Uzbek product)
- eSpring

Results of Testing

Research results are based on the main characteristic of water - the content of dissolved substances (DS)



Recommendation

Taking into account the specific conditions (high water pollution, inefficient process of municipal water treatment, and bad technical condition of water supply) in the Aral Sea Region in order to reach the best treatment parameters it is recommended to use the following technological sequence

- 1) Remove suspended solids by different types of mechanical filters
- 2) Decrease of total water hardness, in our case this was achieved by IVK filter
- 3) Decrease of dissolved substances including salt by Reverse Osmosis system



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