IRRIGATION EXTENSION DEVELOPMENT IN CENTRAL ASIA: EXPERIENCE FROM WATER PRODUCTIVITY IMPROVEMENT PROJECT OF FERGHANA VALLEY

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Abstract

Extension is vital to the development of irrigated agriculture especially in Central Asian countries, where countries transformed from planed to market economies after independence. These transitions also influenced to impose new institutions in agricultural sector in order to implement new water and land forms introduced by Central Asian countries. This paper examines how irrigation extension successfully implemented in Ferghana Valley in order to deliver hydro and agro knowledge to farmers through proposed new innovations system within SDC funded Water Productivity Improvement project and also provides information impact of project intervention to satisfy farmers needs and overall improving their livelihoods.

Keywords: Irrigation, extension, water productivity, innovation cycle

Introduction

Agricultural extension is vital to the development of irrigated agriculture. The extension service is responsible for simplifying research information and delivering it to farmers in an effective and easy to understand manner. The extension service is also a feedback mechanism to researchers on problems faced by farmers (Bhuiyan, 1978). The research-extension-farmer relationship should be viewed as an interdependent and inter-related continuum.

The challenge for researchers today is to develop economically viable technology that is easily adaptable to the rural society. Much of the developed world has traditionally followed the paradigm where research is conducted at universities and the resultant technology is transferred through various extension mechanisms to the producer (Tollefson, 1992). Watkins (1990) states that the United States land grant institutions follow a 'top-down' model of research and demonstration where farmers are the passive recipients of research results based on perceived needs identified by scientists with little input from the end-user. Here, scientists are the source of creative thinking. New technologies developed are passed to the extension staff who refine the technology and disseminate it to producers in an easily understandable manner.

According to FAO (1984), public agricultural research institutions often have poor relations with extension agencies. The World Bank (1985) states that bridging the gap between research and extension is the most serious institutional problem in developing research and extension programmes. Extension workers often see researchers as working in an ivory tower generating technologies not applicable to the farm, whereas researchers often question the ability of the extension agents to perform their jobs effectively (Quimsumbing, 1984).

Agriculture is at the forefront development objectives of Central Asian Republics – Kyrgyzstan, Tajikistan and Uzbekistan. Since independence these countries have undergone transition from centrally planned economies to market oriented economy. The needs of three central Asian countries for improved agricultural extension are not yet similar. There is clear need that formal agricultural extension services revitalized (Kazbekov et.al.)

Water is not only a key but a crucial resource in Central Asia. Inefficient managerial arrangements after the collapse of the Soviet Union have resulted unreliable,

inadequate and inequitable water distribution for irrigation, excessive water use, significant water losses and consequently water logging and high drainage volumes which all exacerbate the potential for conflict. At field level, irrigation methods applied are extremely wasteful, so that many fields suffer from over irrigation, water logging, and salinity. Inadequate irrigation practices are therefore often a major reason for the low crop yields observed in the region.

The project objective is to strengthen the capacity (in terms of knowledge, extension material and methods) of the different actors in the agricultural innovation system through strategic alliances for conveying solid and adapted extension messages relating to water productivity improvement at plot level to the farmers.

The WPI project focuses on the generation, transformation and dissemination of water-related knowledge to improve crop and water productivity at farm/plot level. It is acknowledged that for improving water productivity, both, agronomic management and water management have to be addressed. The project develops strategic alliances with national partners in the three countries that are disposed to generate, translate and disseminate agro-technical knowledge and provide them with hydro-technical knowledge and experience from the development projects in the region. The approach called "Innovation Cycle (Figure 1.) was applied in the WPI-PL project in the territory of Fergana valley separately for Uzbekistan, Kyrgyzstan and Tajikistan The goal of this cycle is to develop and disseminate technologies on water productivity with the participation of several actors. These are:

- Scientific Research Institutes
- Information Center
- Disseminators

The main task of all Innovation cycle were participants is to define needs of farmers and recommend solutions for the problems by demonstrating and implementing technologies to increase water productivity. "Technologies" can be either irrigation or agricultural practices or a combination of both.

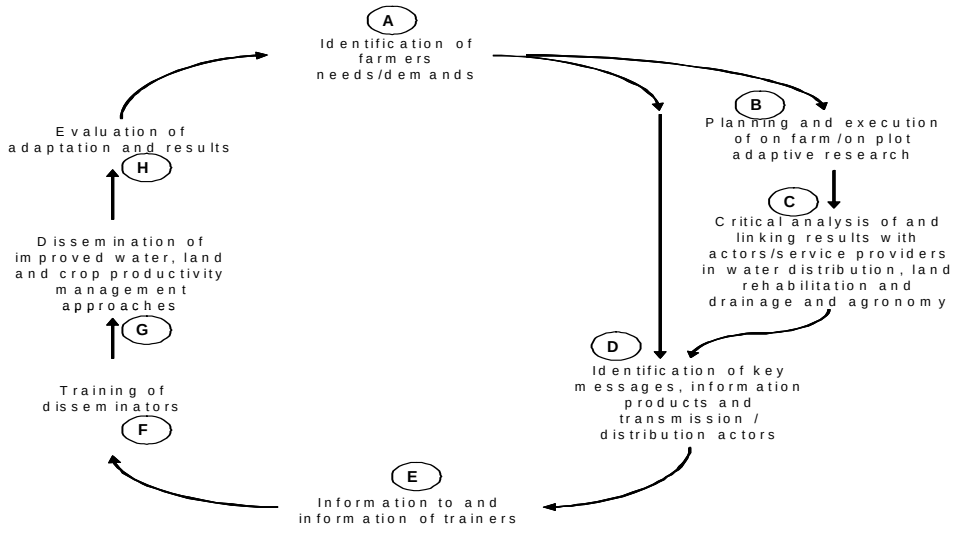

Figure 1 - Proposed Innovation cycle

In general all involved actors understand their role in the innovation cycle well. All activities are targeted at facilitation of solving farmers' problems. All recommendation and proposed technologies were prepared based on problems indicated by farmers. In order to

test innovation cycle project institutional structures have been developed in Kyrgyzstan, Tajikistan and Uzbekistan (Figure 2) including

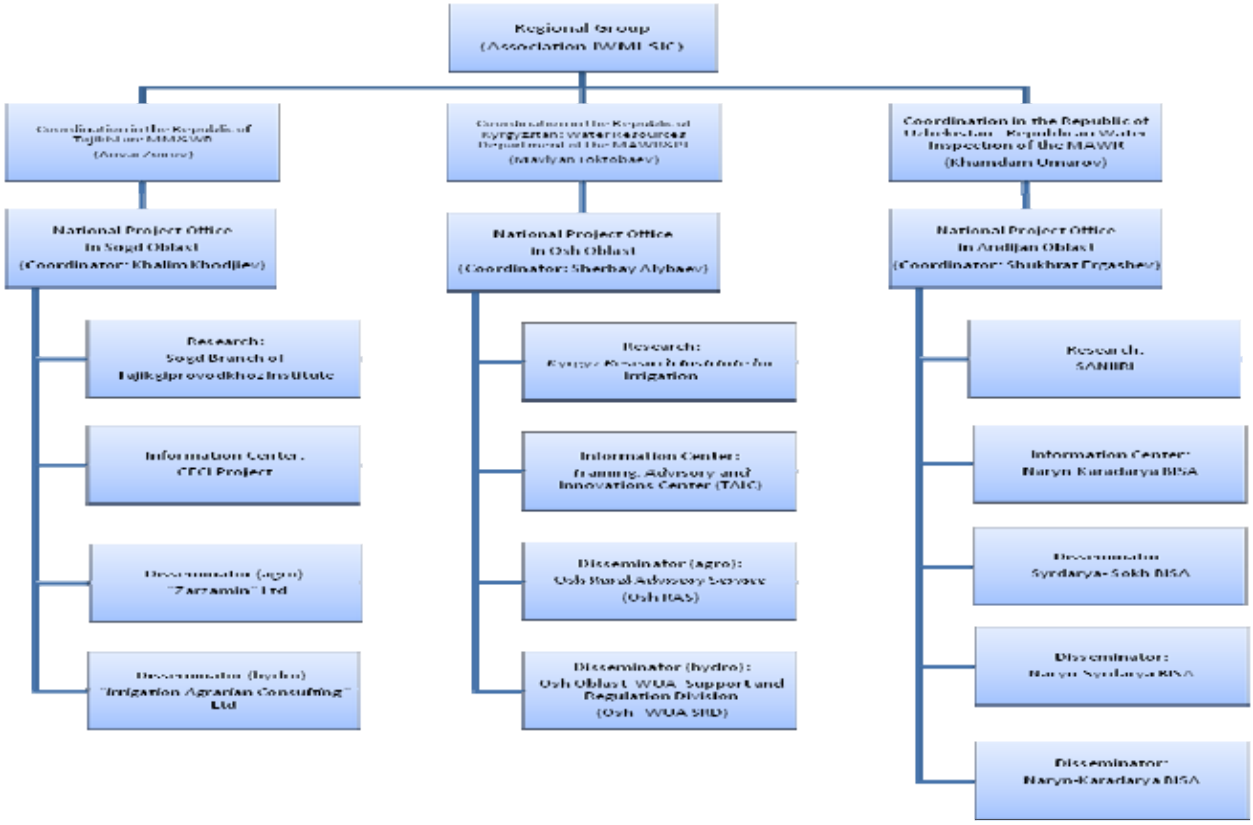

Figure 2 - Institutional structure of Water Productivity Improvement Project

Research institutes, information centers, disseminators and selected 26 farmers field and to show effectiveness of delivery of information and finally improving water productivity within and outside of the area.

Project implemented in Ferghana Valley. Ferghana Valley is located southeast part of Central Asian region and eastern part of Aral Sea basin. It is almost entirely surrounded with mountains (Ala-Tau range in the North, Tian Shan Mountains in the East and Alay Mountains in the South), with the narrow mountains western opening through Syrdarya river drains into the lower basin of Aral Sea. Large part of Ferghana Valley lies in the Republic of Uzbekistan, northern and eastern fringes located in Kyrgyz Republic and west and southwestern part lies in the Tajikistan.

The living standards of the rural population in Fergana Valley are largely dependent on irrigated agriculture and improvements of agricultural practices. Investments in appropriate irrigation infrastructures and drainage are required to support the promising sectors of rice and silk cocoon production. While cotton cultivation is predominant, fruits and vegetables are also grown by individual farmers on a smaller scale.

This paper examines how irrigation extension successfully implemented in Ferghana Valley part of Central Asia through SDC funded Water Productivity Improvement at Plot Level project, which covers some parts of South part of Kyrgyzstan, Northern part of Tajikistan and Eastern part of Uzbekistan. And how project met farmers needs in terms of delivering irrigation and agronomic knowledge for improving crop yields and water productivity in selected areas of Ferghana Valley. Also how farmers linked to national research institutes through introduction of innovation cycle and moreover how

project could be model for other Central Asian countries to fill up gap between farmer and researcher in order to introduce irrigation technologies on farm level to achieve potential water productivity and improving livelihoods of farmers in the region.

Materials and research methods

Impact Assessment Survey was conducted in the frame of the project in order to assess performance of partners involved in innovation cycle (Figure 3), number of technologies including farmers innovations, which are disseminated and adopted by farmers, to what extend technologies adopted and applied by farmers at plot level. And also assessment of satisfaction of farmers with the given knowledge and training and overall how project contributing in increasing farmers income.

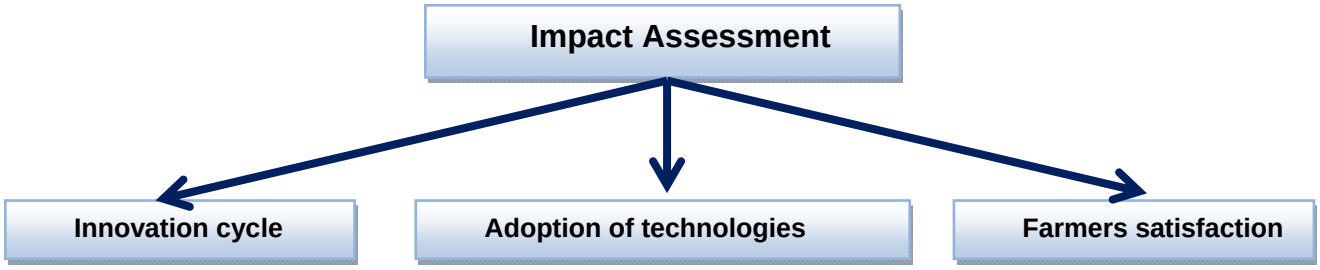

Figure 3 - Impact Assessment

It consisted of three main activities:

- survey among farmers trained and non-trained farmers
- Interviews with disseminators
- Discussion with representatives from the information centers and research institutes.

To conduct the survey among farmers and disseminators 2 types of questionnaires were developed and agreed with WPI_PL project staff. The questionnaire for farmers consisted of 24 questions and the questionnaire for disseminators of 9 questions. For the farmer survey 6 trained farmers and 6 not trained farmers from each country were interviewed. In total 36 farmers (18 trained and 18 not trained) were involved. In Tajikistan the monitoring covered 3 districts, in Uzbekistan 6 districts and in Kyrgyzstan 2 districts. In total 11 districts from all three countries were covered. Trained farmers for the interviews were chosen randomly from the lists provided by the disseminators. The non-trained farmers were chosen in the neighborhood of the trained farmers. The interviews were conducted between 9th and 21st of April. Representatives of the disseminators were accompanying interviewers to identify the farmers. Interviews with representatives of disseminators, information centers and research institutes were conducted as discussions in the form of semi-structured interviews.

Results and discussions

The innovation cycle seem to work successfully in Ferghana Valley. Innovation cycle created platform between farm level and research institute through information center and disseminators to transfer water knowledge, proposed recommendations to farmers. The impact survey results clear indicated that productivity increased about 6-20% in their field and farmers who got training saved 10-30% of water. All partners of the innovation cycle underlined that they receive full support from each other in case of problems and that there is a close interaction between all links nowadays. According to respondents from time to time representatives from all actors participate in trainings and demonstrations at farm level. This helps particularly research and information centers to meet with farmers, to

better understand farmers' needs and to identify the most appropriate reaction for these needs. Farmers adopted proposed recommendations such as short furrow irrigation, drip irrigation, irrigating according to irrigation norms, technological scheme for irrigation, organizing water accounting system on farm level and etc. Due to use of technologies of the project, stakeholders reported a reduction of conflicts in the project area within the last years and water savings of more than 20 %. Farmers satisfied with the project and following project recommendations in their respective areas. Actors in innovation cycle working closely to each other and Research institute working directly with the farmers and researchers seeking solutions from farmers perspective. Trainers reported that they receive package of instruments and technologies from information centers in farmer friendly language and disseminating among famers. Due to project conducted trainings farmers now able to measure water on farm level. In general Innovation cycle successfully implemented in Ferghana Valley and farmers acknowledged that they benefited from the project. Proposed innovation cycle could be model for other countries if potential actors exist to establish links such as research institute, information center, trainers to bridge gap between research and farm level.

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