Examining the Impact of Extension Activities on Water Resources Management by Wheat Producers in Iran

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Abstract: Wheat farmers in the Township of Gamsar in Iran were surveyed in order to explore their perception about the role of extension activities in water resources management. Understanding the impact of extension activities which would help the management of water resources by wheat producers in the township of Garmsar in Semnan Province was investigated in this research. The methodology used in this study involved a combination of descriptive and quantitative research. The sample population was 190 wheat farmers in the Garmsar Township. Based on the results of the study, 69% of variance in perceptions of respondents can be explained by the knowledge level about water management, capability of lecturer and relevance of educational contents with needs of beneficiaries. The results demonstrated that opinions and attitudes of farmers to a great extent depend upon the relevance of educational contents with needs of farmers. The extension/education activities fulfill the needs of target population. However, in many instances extension activities implemented without considering whether the target audience is effectively reached or are interested in the educational contents.

Key words: Extension - Agriculture Sector - Water Resources - Garmsar Iran

INTRODUCTION

Today, there are several major issues in connection with the water sector in developing and developed countries which include: water cycle, quality of life, equality of water, sustainability and human rights [1]. In Iran, the policy has been to increase agricultural production for various reasons, such as price stability, improved per capita income and increased need for non-oil foreign exchange resources and this trend has become an unavoidable reality for agricultural sector. Increasing agricultural production has resulted in consumption of more water and there is no other way to change the amount of water used which is the equivalent of 130 billion cubic meters a year unless to use water more efficiently and to adopt new methods of irrigation.

Consumption of water by agriculture sector in Iran has always been an issue of concerns which caused by high water losses in farm fields, farms inappropriate shape and size, lack of knowledge of farmers about making optimum use of water, rapid destruction of water infrastructure, loss in quality of irrigation networks, inappropriate methods of irrigation, irrigation efficiency and loss of water in irrigation systems [2].

Ommani et al. [3] citing Keshavarz, Heydari and Ashrafi [4] pointed out that the overall irrigation efficiency in Iran ranges from 33 to 37%, which is lower than the average for both developing countries (45%) and developed countries (60%).

Unfortunately, inefficient use of water in the past decades has nearly reduced more than 40 meter in underground water level. Currently, the total water consumption is approximately 88.5 bm3, out of which more than 93% is used in agriculture, while less than 7% is allocated to urban and industrial consumption. Under the present situation 82.5 bm3 of water is utilized for irrigation on 7.5 million hectares of land under irrigated agriculture [5].

In order to combat this problem, there is need for new technologies and methods to manage water more efficiently especially in agricultural sector [6]. On one hand a more comprehensive water management is needed...
to achieve sustainable development and participatory mechanism could accelerate this process [7]. On the other hand, the principle of sustainable development is an essential imperative for the water industry which should be seen as an opportunity not a limitation [8].

Garmsar in the Province of Semnan is among regions in Iran with low rainfall. The average amount of rainfall for this township is about 165 mm annually, but the optimum utilization of the water resources is about 33 percent. Based on the latest statistics, more than 13000 ha of farming lands in this region are allocated for producing irrigated wheat and the average amount produced per hectare is about 5 tons which is the highest in Semnan Province.

The traditional methods of water management have many problems and the best option currently to use for irrigating farms is sprinkler irrigation systems. The results of Study show that implementation of this irrigation method resulted in decreasing rate of water consumption from 12,000 cubic meters in hectare to 6,200 cubic meters [9]. Despite, financial facilities which are allocated each year for farmers, the participation of farmers has not reached to a satisfactory level.

Agricultural extension by its nature has an important role in promoting the adoption of new technologies and innovations. Extension organizations have a key role in brokering between providers of technologies and farmers. However, adopting is rarely instantaneous; the technology has to be taught and learned, adapted to experience and integrated into production. As is often the case with technological innovation, potential and expectations can outpace reality [10].

The importance of agricultural extension should not be neglected because it plays an important role in capacity building, raising awareness and providing farmers with modern knowledge aiming at enhancing their performance [11].

Ommani et al. [3] citing Evenson [12] pointed out to this fact that agricultural extension and education as achieving its highest economic impact and sustainability in agriculture by providing information to increase farmers awareness, knowledge, adoption and productivity.

Therefore, understanding the impact of extension activities which would help the management of water resources by wheat producers in the township of Garmsar in Semnan Province was investigated in this research.

The purpose of this study is twofold. First, it determines the perception of respondents about impact of extension activities in water resources management in Garmsar Township. Secondly, it provides suggestions for policy recommendations.

MATERIAL AND METHODS

The methodology used in this study involved a combination of descriptive and quantitative research. The research population included wheat producers in the Garmsar township (N = 7800). Using random sampling and the results of the pilot test, a sample of 190 was constituted.

A series of in-depth interviews were conducted with some experts in the Department of Agriculture in the Garmsar Township to examine the validity of questionnaire. A questionnaire was developed based on these interviews and relevant literature.

Measuring respondents’ attitudes towards the impact of extension activities in water resources management has been achieved largely through structured questionnaire surveys. The usual questionnaire approach to measure attitude is to include a range of semantic-differential (with good/bad options for example) and Likert items (ranging from 1 as strongly disagree to 5 as strongly agree) to operationalize the attitude construct.

The final questionnaire was divided into several sections. The first section was designed to gather information about personal characteristics of respondents. The second section was designed to measure the attitudes of respondents about information sources about water management by farmers. The respondents were asked to indicate their agreements with statements by marking their response on a five point Likert-type scale. The next section explored the effectiveness of extension activities on water resources management and 7 items were presented in a 5-point Likert format with responses from 1-completely disagree to 5-completely agree. The variables and their measurement scale are presented in Table 1.

Content and face validity were established by a panel of experts consisting of faculty members at Science and Research Branch, Islamic Azad University and some specialists in the department of Agriculture. Minor wording and structuring of the instrument were made based on the recommendation of the panel of experts.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Measurement Scale</th>
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<td>Attitudes about sources information about water resources management</td>
<td>Five-point Likert</td>
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<tr>
<td>Effectiveness of extension activities</td>
<td>Five-point Likert</td>
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<td>Age</td>
<td>Categorical</td>
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<td>Farming experience</td>
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<td>Educational Level</td>
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A pilot study was conducted with 30 respondents, interviewed before the earlier exercise of determining the reliability of the questionnaire for the study. Computed Cronbach's Alpha score was 80.0%, which indicated that the questionnaire was highly reliable.

For measurement of correlation between the independent variables and the dependent variables correlation coefficients have been utilized and include spearman test of independence.

**RESULTS**

The results of descriptive statistics indicated that the average age of respondents was 32 years, thirty three were illiterate and about thirty percent had earned a degree above diploma. Average experience in producing wheat was more than 23 years.

In order to find the perception of respondents about the most important sources of information about water resources management, they were asked to express their views. Table 2 displays the respondents' means about fourteen items. As can be seen the highest mean number refers to the contact with experienced farmers and local leaders (mean=4.21) and lowest mean number refers to researchers (mean=2.10). The results show that researchers are not directly involved with the farmers in their research activities and there is lack of trust from farmers about the ability of researchers to solve their problems.

The perception of respondents about effectiveness of extension activities in water resources management is displayed in Table 3. In relation to the perception of respondents, the highest mean refers to increasing skills of farmers to better manage the water resources (mean=3.12) and the lowest mean refers to increasing production (mean=2.75). This implies the farmers believed that extension have increased their skills in management of water resources (Table 3).

Spearman coefficient was employed for measurement of relationships between perceptions of farmers about the role of independent variables in management of water resources in wheat production. Table 4 displays the results which show that there was relationship between perception of respondents about the water resources management and age, educational level, knowledge level, using mass media, relevance of educational contents, place and time of classes, new and updated educational contents, interest about agricultural activities and amount of financial facilities received.

Table 5 shows the result for regression analysis by stepwise method. Independent variables that were significantly related to perception of respondents about water resources management as dependent variable were entered. The result indicates that 69% of the variance in the perception of respondents could be explained...
by the knowledge level about water management, capability of lecturer and relevance of educational contents with needs of beneficiaries. Among all variables, "relevance of educational contents with needs of beneficiaries" (Beta coefficient: 0.313, sig.: 0.000) was the most important factors which affect the water resources management.

**DISCUSSION AND CONCLUSION**

Based on the results of the mean score, respondents indicated that extension activities could influence them to increase the knowledge and skills of managing the water resources more efficiently and effectively. In this regard, extension agents should be equipped to transfer the knowledge and skills to farmers. The knowledge gap is compounded by the lack of essential skills that extension workers must have if they are to effectively transfer technologies to farmers in a manner that leads to sustainability. It is important to realize that the information that extension workers need includes not only technical knowledge but also knowledge and skills that increase the effectiveness of delivery. Improving access to these vital extension skills will lead to better designed, delivered and supported technologies (Bell, 2004).

As the results of the study showed, the relevance of educational contents with needs of beneficiaries, knowledge level about water management and capability of lecturer caused 69% of variance on the perception of the wheat farmers regarding the water resources management. The findings highlight the need for providing additional training and information, which in turn may lead to their adopting indigenous knowledge.

The majority of respondents in this study indicated that contact with experienced farmers and local leaders are the most important method in informing farmers about water resources management. Based on the results of the study by Chizari et al, the majority of extension agents believed the result demonstration were the most effective method for teaching their clientele. Result demonstrations are the processes of showing farmers the impact of using a particular practice [13].

The results demonstrated that opinions and attitudes of farmers to a great extent depend upon the relevance of educational contents with needs of farmers. Developing countries have to ensure that extension/education activities fulfill the needs of target population. However, in many instances extension activities implemented without considering whether the target audience is effectively reached or are interested in the educational contents.

**REFERENCES**


