

Redefining of Agricultural Extension Objectives Toward Sustainability in Iran

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Abstract: This study was conducted to identify the most appropriate objectives for agricultural extension toward sustainability in Iran context. A sample of 87 respondents was selected through simple random sampling technique. A survey study was applied as a methodology of research work. Data were collected using a structured questionnaire that addressed to evaluate extension professionals' responses regarding the necessity of attention on each extension system objectives to accomplish sustainable agriculture in Iran. For determining the validity of questionnaire, the face and content validity was used. Cronbach's alpha was used to measure reliability of the instrument, which was 0.86 and showed the instrument reliability. Descriptive findings revealed that "Empowerment", "Improving food security" and "Enhancing adaptive management capacity" were the first objectives for extension system toward sustainability, respectively. According to factor analysis, the objectives of extension system toward sustainability were categorized into two groups consisting: the developmental objectives and improvement of social capital that those factors explained 54.33% of the total variance of the research variables.

Key words: Agricultural extension % Sustainability % Objectives of extension

INTRODUCTION

What are the most appropriate objectives for agricultural extension systems to accomplish sustainability? Which objectives should be selected by extension systems to effect on agricultural dynamism and to accomplish sustainability within agricultural sector? One of the most important tasks of an extension organization is to choose the objectives of the extension program [1]. Agricultural extension objectives in developing countries have been changing in recent years to reflect a new development paradigm that emphasizes sustainability [2]. Historically, the rhetoric of agricultural extension worldwide has shifted from an emphasis on production, at the beginning of the century, to productivity (or efficiency) based agriculture, to the most recent philosophy of sustainability [3-5]. Extension systems have been gradually shifting from a knowledge transfer to a knowledge-share concept and farmers are no longer assumed as the sole recipients of new technology and science; instead, they are now contributing to the learning and teaching processes. The role of agricultural extension agents is also changing from transferring knowledge and technology to consultants, advisors and facilitators of the farmer learning process [6, 7]. Probst and Hagmann [8], reported while participatory

extension approach as a suitable approach for sustainability is emerging, objectives of extension system is shifting toward enhancing adaptive management capacity, emancipation and social capital at local level, building of stakeholder platforms for negotiations and learning processes. Cho and Boland [9] wrote that extension objectives toward sustainability could range from the effective transfer of technology to the building up of strong rural organizations, which can exert influence over future research and policy agendas and also take and enforce collective decisions over natural resource management. A shift towards the latter will promote more sustainable agricultural development. Bartholomew and Bourdon [10], have utilized anthropological concepts to define extension toward sustainability. They state that the purpose of extension is to 'help people help themselves.' This idea is still the most appropriate for extension and sustainable development.

Agricultural extension in Iran such as many developing countries is mainly focused on common extension approach [11, 12]. Studies showed that traditional extension system have not been sufficiently effective in promoting adoption of sustainable agriculture practices [2, 13]. Studies indicated that Iran's sustainable agricultural extension objectives are not favorable and the extension system does not pay enough attention to them.

These conditions necessitate rethinking of extension objectives to accomplish sustainable agriculture.

The purpose of the present study was to identify the most appropriate objectives for agricultural extension toward sustainability in Iran context.

MATERIALS AND METHODS

The study was carried out in Iran. This investigation is quantitative and descriptive in its nature; applied in type and survey in design. The target population included a total of 170 faculty members of agricultural extension education, extension head in provinces and extension specialists of deputy of agricultural extension and farming system in the Ministry of Agriculture (Jihad-e-Keshavarzi) in Iran. The 87 of them were selected by random sample using the table for determining the sample from given population developed by Bartlett *et al.* [14]. The researcher verified the list before distribution of the survey to control for frame and selection threats to external validity. To collect information, a questionnaire with 17 questions was designed. Questions were generated from the literature review. The instrument consisted of two separate sections according to the purpose and objectives of the study. The first section was designed to gather data on personal characteristics of extension specialists. The second section was designed to gather data regarding the necessity of attention on each extension system objectives to accomplish sustainable agriculture in Iran. Extension professionals were asked to rate their viewpoints concerning this necessity on a five point Likert - type scale: 1 = very low, 2 = low, 3 = medium, 4 = much and 5 = very much. To ensure its content and face validity, the research instrument was reviewed several times by the research group and then implemented in a pilot test to measure its reliability. Questionnaire reliability was estimated by calculating Cronbach's alpha. Reliability of the overall instrument was estimated at 0.86. The data were collected between October 2006 and March 2007. After gathering and encoding information from the questionnaires, data was obtained for analysis. Data collected were analyzed using the Statistical Package for the Social Sciences (SPSS, 14). Beside descriptive statistics, Factor Analysis and Kruskal -Wallis test were employed for detailed analysis.

RESULTS AND DISCUSSION

The ages of the respondents ranged from 25 to 63. The mean age was 38 (SD=8.87, N =79). The majority (39.2%, n=31) of respondent were 31-40 years old. Most of the respondents in the study were male (93.7%) and only five persons (6.3%) were female. The years of experience of respondents ranged from 2 to 30. The mean years served in extension were 12.4 (SD = 8.75). Nearly one - third of agricultural extension professionals (29.1%) had served in extension for 1 to 5 years. 29.1% of extension specialists had a doctoral degree in agricultural extension and education discipline and sixty- tow percent (n = 49) of respondents were a masters degree holders. only 8.9% of extension specialists had a bachelor's degree (n = 7). 35.4% of respondents (n = 28) were faculty members and 15.25% (n = 12) had a managerial position. Remain were extension experts (49.35%). 35.4% of respondents worked at universities, 27.8% (n = 22) worked at agriculture ministry. 29.1% (n = 23) of extension specialists worked in agricultural extension services at province level and remain worked at county level (6.3%).

Table 1 present the descriptive statistics (Mean and standard deviation) for the necessity of attention on each extension system objectives to accomplish sustainable agriculture in Iran. As shown Table 1, "Empowerment" (M= 4.77, SD= 0.48) was believed to have the first priority to accomplish sustainable agriculture, followed by "Improving food security" (M= 4.63, SD= 0.63) and "Enhancing adaptive management capacity" (M= 4.62, SD= 0.59), while "Improvement of citizenship life quality" (M= 4.03, SD=1.105) and "Creating/reinforcement of local level organizations/associations" (M = 4.44, SD = 0.49) received the lowest importance rating. In addition, the relative low standard deviations for these responses indicate a relatively high level of agreement among the respondents.

Based on the descriptive findings empowerment is the first objective for the extension system toward sustainability in Iran context. Empowerment as an attribute for social dimension of sustainability [15] is defined as a process through which people become strong enough to participate within, share in the control of and influence, events and institutions affecting their lives [16, 17]. In several approaches of extension toward sustainability (such as FFS, PRA and PEA), empowerment is the cornerstone and it should be addressed as a guiding principle of development [10].

Table 1: Results of Factor Analysis for objectives of agricultural extension systems toward sustainability (N = 79)

Objectives of Extension System toward sustainability	Factor		Mean	SD
	1	2		
Developmental objectives:				
1 Improvement citizenship life quality	0.798		4.03	1.105
2 Encouraging farmers to participate at local level development	0.742		4.50	0.800
3 Improving food security	0.738		4.63	0.630
4 Placing emphasize on social justice along with economic growth	0.649		4.59	0.730
5 Increasing farmer households productivity	0.588		4.57	0.650
6 Enhancing adaptive management capacity	0.467		4.62	0.590
Improvement of social capital:				
1 Human resource development		0.872	4.55	0.640
2 Empowerment		0.838	4.77	0.480
3 Creating/reinforcement of local level organizations/ associations		0.540	4.44	0.490
4 Building of stakeholder platforms for negotiations		0.538	4.54	0.600
Eigenvalue	3.13	2.850		
Percent variance	28.45	25.880		
Cumulative percentage	28.45	54.330		
Alpha coefficient	0.83	0.782		

Loading < 0.4 are not reported

Food security remains one of the main issues in the discussion on the sustainability [18, 19] and agriculture has a major role to play in improving food security [20,21]. Extension systems play key role to achieve it but poor quality training of agricultural professionals, technicians and producers has been identified as part of the global food security problem. Unfortunately, the training of human resources (the development of human capital) in agriculture is often not a high priority in the overall development plans of countries. As a result, curricula and teaching programs are not necessarily relevant to the production needs and employment demands of the agricultural sector [22]. However, according to findings of this study, improving food security is one of the most objectives for agricultural extension in Iran but Swanson [23] believed that extension needs to shift from food security to increasing farm income and rural employment. Instead, Budak *et al.* [24] and Michailidis [25] reported that farmers' access to extension services would enhance household food security.

To categorize objectives of extension systems toward sustainability, an exploratory factor analysis was conducted for the data presented in Table1. The factor analysis used was a principal components analysis with factor extraction and VARIMAX rotation. The four commonly used decision rules were applied to identify the factors [26]:1) minimum eigenvalue of 1; 2) minimum factor loading of 0.4 for each indicator item; 3) simplicity of factor structure; and 4) exclusion of single item factors. By using Bartlett's test and KMO test determined whether research variable are appropriate for factor analysis (KMO = 0.83, Bartlett = 309.693, Sig =0.000). It revealed that the internal coherence of the data is appropriate. The

objectives for sustainable agriculture are categorized into two main components. Together, these components explain 54.33% of variance. Items that did not load in the identified components (Transfer of Technology) were deleted. The first group, which is labeled Developmental objectives, consists of six items and Cronbach's alpha for this group is 0.83, which is more than sufficient. This factor had the most Eigen value (3.13). Also, this factor explained 28.45% of the total variances of the variables. The second group, labeled Improvement of social capital, is comprised of four items. This component has a Cronbach's alpha of 0.782, which can be regarded as sufficient. In addition, this component that its Eigen value was 2.85 explained 25.88% of the total variances of the variables (Table 1).

In addition, based on the Kruskal-Wallis test there were not any significant differences between overall means of extensionists' perceptions with respect to the necessity of attention on each extension system objectives to accomplish sustainable agriculture in Iran and their age, years of experience, organizational position and educational level in any objective area. In addition, no significant differences for these responses indicate a high level of agreement among the respondents.

COCLUSIONS

Iran's agriculture is facing serious environmental pollution and degradation problems [21] and extension has a key role to improve it [1, 11], but current extension system in Iran does not has a sufficient competency for the achievement of sustainability and it needs to shift toward new approaches with new objectives. According

to the present study it be concluded that Iran's extension system should be considered developmental objectives as important as improvement of social capital. Among objectives, empowerment and improving food security have the highest priority for extension system toward sustainability. It is notable that other objectives must be considered at high level, too. It indicates that having multi-objectives is imperative for successful extension systems toward sustainability.

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