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A Survey on the Level of Agricultural Development and its Effective Indicators in Hirmand

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Introduction

From geopolitic point of view, the underdevelopment of the border regions which creates basic challenges for country has a large amount of effects on the developing process of the country. Solving the problems of the border regions specially providing stable security in these regions is not merely a security and military issue but it is political, economical, social and cultural in nature. In this regard, the strategy for organizing and developing the rural areas in these regions becomes highly important. In fact, agriculture and its various activities have a special role in different economical, social and environmental dimensions of rural areas (Whelan, 2003:7).

Lack of attention for assessing the magnitude of their effect decreases the agricultural potentials of the rural areas and if this process continues, the agricultural sector and therefore the social and economical stability of the rural areas will be destroyed. The scope of the activities in the agricultural sector in the country's rural areas in one side and the occupational and income dependence of villagers on this sector on the other side, requires the planners to pay more attention to this issue because the national development and the real economical independence of every region is contingent upon the agricultural sector.

Many studies have been done by researchers about the factors affecting on the growth and the development of agriculture and each of these studies have pointed to particular causes and factors such as adverse geographical conditions like water shortage, lack of fertile lands and hot weather (Meijerink, 2007:47); focusing on all of the production factors and promoting productivity (Nin-pratt et al., 2009:101); technological development and local production, tax cuts, government investments on researches and infrastructures and the mechanization of agricultural sector (Chen et al., 2008: 581). Some researchers state that the public infrastructures have an important role in the development of agricultural sector (Mamtzakis, 2003:169), and some believes that the productivity of labor force in promoting the agriculture level (Baylis, 2008:75), and the integration of farmlands in order to increase

utilizing mechanization and the deep development of agriculture by increasing the function and the intensity of cultivation are considered to be among the most important strategies for agricultural development by other researchers (Melor, Gavi, 1999:25).

Others cite that the essential training for effective access to modern technologies and the farmers' awareness about the market conditions and their literacy level are the major factors in agricultural development and these researchers believe that those strategies which do not focus on human force are not successful (Stiglitz, 2000:552). Some researchers approve that the close relationship and interaction between researchers, county agents, farmers and policy-makers is of high importance in agricultural development (Coleman, 2000:311). Physical infrastructures and technologies for achieving high rate of agricultural growth are considered to be essential by some other researchers (Ravallion & Datt, 2002: 383).

On this basis and with respect to the performed studies and the spatial differences and various environmental factors and also for achieving a unit development pattern in each region and a comprehensive knowledge of effective and exclusive factors, in this research it is tried to study a special area (Hirmand township), in this regard, the current study seeks answers for the following questions:

Do the effective factors in agricultural sector of this region have different impacts?

What effective factors should be prioritized for promoting the agricultural level of this region?

To answer the above questions, the following hypothesis can be presented:

The various and effective factors on the agricultural sector of the region are of different level of importance.

Among the different effective dimensions, production dimension and its indices affect mostly on the development of agriculture.

Research Methodology

The current study is an applied research and analytic-descriptive research methods and statistical methods have been used for analyzing the data. The data have been collected from the sample villages through methods and field studies and the major amount of data from the sample population have been gathered through questionnaire which have been finalized after it was approved by experts and also after doing a pre-test. The collected data have been analyzed by EXCEL and SPSS software and the reliability of items has been calculated by Cronbach's Alpha test statistic with a range of 0-1 and its value is 0.819.

Regarding special conditions of agricultural activity in this region and also some basic features such as pragmatism, dependence upon the environmental capabilities and an all-directional trend in agriculture planning (Noori, 1379:10), the explanatory components of agricultural development have been analyzed in four administrative, social, structural and producing dimensions (Figure 1 and Table 1). It is worth saying that the above-mentioned dimensions have been offered by The Committee of The International Geographical Association for identifying agricultural types in different parts of the world (Grick, 1375:7).

The indices of different dimensions of the level of agricultural development have been examined in 40 sample villages. The qualitative scores of different dimensions are the average of scores of every different dimension's indices for every village (Figure 1). To have symmetric non-Likert indices, they were scored according to Likert scale (1-5) and range, therefore the average number of each index shows the score or value of village in that index and the sum of all averages of indices in each dimension shows the village score in that dimension. Considering the range of the average of dimensions' scores and the dependant variable, villages were clustered into three groups (by the cluster analysis option in SPSS software).

The explanatory factors for agricultural development variable were introduced by using factor analysis and at the end the villages were categorized into two groups according to the scores of agricultural level and based on $(S_i) \pm 0/2\mu$ and for finding a suitable strategy indices which have significant differences between these two groups of villages will be introduced.

The sample population consists of 12207 households who live in 197 villages with more than 20 households. According to the Sharpe & Cochran's formula and the correction formula (Saraee, 1371:129 and 137), the volume of the sample villages was 40. Using proportional allocation method, the number of sample villages in Jahan Abad, Doost Mohamad, Ghergheri and Margan townships were respectively 10, 13, 9 and 8. The villages were selected randomly after codifying (them) by mini-tab software.

Discussion and Results

According to the nation-wide census of 1385(2006), the extent of Sistan region is 15197 square meters whose population is 400'000 who concentrated in 6 urban areas and 937 villages. 250'000 of this population live in villages. District of Miyankangi, among them, with an area of 1009 square meters and a population of ۷۳۲۰۴ is one of the important border regions in Sistan. This region has 100 kilometers common border with Afghanistan and consists of 300 habitable villages (The Statistical Center of Iran, The nation-wide census of 1385/2006).

During the history, because of flat and fertile plain lands and also Hirmand River, the main activity of the villages in district of Miyankangi has been based on agriculture. In current situation, because of high percentage of farmer families (67.85%), the economical base of this geographical region under the study is agriculture. Yet, agriculture in this region has always been facing eith different challenges such as water level fluctuations of Hirmand River and substantial decline in farming activities. For example, the average of cultivated lands with an area above 30'000 hectares in the 1383-1384 crop year was decreased to about 40'000 hectares. In these situations, of course, the existence of more than 2000 water holes can be a good contribution for stable agriculture. Although in the suitable water conditions still the water consumption is up to 9000 cubic meters per hectares for cultivating wheat, the productivity of 1900 kilograms per hectare cannot be achieved (The Crusade for Agriculture of Zabol, 1387).

It is worth noting that lack of real agriculture vitality in the region affected by traditional exploitation systems, lack of complementary cycles in the process of agriculture production for increasing added

value, the weakness of vocational training, lack of public organizations,... have caused the instability of the pillars of the economy there. The consequence of the above procedure along with the adjacency to Afghanistan have provoked a group of active forces to seek for jobs other than farming and producing occupations specially goods smuggling or working as an unskilled worker in cities like Rafsanjan or Yazd.

These factors have resulted in the prevalence of unemployment, increasing unofficial jobs, widespread poverty (20% of this region's population receives the services of The Imam Khomeini Relief Foundation), the exit of capital and human forces, the destruction of resources and leaving the major villages of the region. According to the above issues and by considering the previous researches and geographical differences and various environmental factors, and also for finding a unified developmental pattern for each region, a comprehensive understanding of effective and unique factors, in this research it has tried to study a specific region (Hirmand city). The results show that the villages under study have different levels of agricultural potential, for example Ghajar-e-Barani has maximum average of agricultural development level that is 3/26 and Galle Bache has minimum average of agricultural development level that is 1/36. The results of the regression analysis show that the production dimension and its indices have influenced the agricultural development of the region mostly.

Conclusion

Many strategies have been offered for achieving agricultural development. But they are not encompassing because of variety in situational conditions and as a result recognizing various and effective factors on the agriculture of the regions are highly important.

Regarding the results of correlation coefficients and the level of agricultural development of the rural areas, we should take action in terms of increasing the number of livestock and wheat productivity as the main cultivated crop in the region, increasing the literacy level and creating motivation and interest by supporting farmers in the process of production to distribution, family planning programs, and paying more attention to remote rural areas. Above all and by considering the results of factor analysis, quick expansion of greenhouse cultivated areas and providing suitable conditions for using farm machinery such as tractor in agricultural development programs should be prioritized. According to the results of t-test, the quality and quantity level of services offered by The Crusade for Agriculture in specialized issues (specially providing education and extension sessions, controlling the cultivated lands by experts, providing cultivation programs), farm machinery and constant management for fair distribution of inputs should be promoted.

Keywords: Agriculture, Agricultural Development, Sistan, Hirmand County.

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