

## Identifying Economic Factors Affecting Income Level of Gardeners Based on the Experts Viewpoints (North of Iran)

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### ABSTRACT

A study descriptive-correlation was conducted to evaluate the economic factors affecting farmers' income levels Guilan from the perspective of experts. The statistical population were all the specialists of agriculture Jihad in Guilan province (north of Iran) that 200 experts were sample size of this study. The main instrument was a questionnaire with 24 items in two parts (1 question related to the dependent variable and the 23 questions related to the independent variables). Validity was confirmed by obtaining specialists comments. After conducting a preliminary test to verify the reliability, Cronbach's alpha was obtained 0.856. In order to analyze the data were used from the test correlation and logistic regression. The results showed that a significant relationship was between dependent variable (level of income farmers) with variables of the lack of affordable of gardening, high difficulty against the small profit, despite of yeoman system in gardens, lack of proper marketing of garden products. According to the results of logistic regression that two variables of the lack of affordable of gardening and despite of yeoman system in gardens were explained 94.1 of changes in dependent variables.

**Keyword:** Economic situation, gardeners, experts, logistic regression

### INTRODUCTION

On the basis of developing sector plans, agriculture is a pivotal base of growth in Iran as a developing country. Support for the creation of new orchards and an increase in the number of trees planted and garden productions are the main objectives called for in national economic and agriculture sector plans (Hosseini et al., 2009). As gardens serve many functions in addition to food production, their role as sites for growing food may best be viewed through the lens of agriculture. the economy status up the value chain by increasing the productivity, competitiveness and value added and value creation of the increase in earnings of major commodities of the country, this is to enable the sector to retain its sustainability (Saldivar-

Tanaka and Krasny, 2004; Yacob and Le, 2012).

In general terms agricultural practices can be defined by two main components: the production systems and the economic scale. We define economic activities to include not only returns from production but consideration of the whole-farm management context, constraints on key resources such as labor and capital, risk and uncertainty, interactions between enterprises, and time-related factors, such as interest rates and the urgency of providing for the farm family (Pannell et al., 2014; Riverra-Ferre and Ortega-Cerda, 2011).

Guilan province despite of its least area in north due to been next to Caspian sea and having sufficient rain and humidity is the most important agricultural area of Iran that covers

many strategic garden and agricultural products. In recent years many economic problems have created to produce these products (Noorhosseini-Niyaki et al., 2012). To sustain the sacred in farming, it must be found harmony among things economic, social, and ecological among the personal, interpersonal, and spiritual. The current crisis in conventional, commercial agriculture arises from its lack of sustainability (Karami and Mansoorabadi, 2008).

In Iran, like the other developing countries, where the majority of farmers are smallholders and average land holding size is less than one hectare, farmers' immediate concern for agricultural development is how to increase crop yield, income, and food security and reduce the risk of crop failure. The overwhelming majority of farmers lack the capital required for the purchase of inputs, but normally have an adequate labor force (Hosseini et al., 2010). Thus, assessing economies indicators is the first step to success in agricultural activities.

In recent years, a number of studies have been conducted for assessing effective economic indicators at farm level; most of them focus on the same indicators like Net farm return, Input productivity and Land productivity. Net farm return indicates farm viability, which is a core aspect of agricultural sustainability. Input productivity refers to the output per unit of input used and is expressed as a benefit-and-cost ratio. Land productivity is measured by the physical yield of crops (Roy and chan, 2012). Recently, Asadi et al (2013) formulated a structural model to analyze the effect of ecological, social and economic factors on sustainable agriculture development in Qazvin Province of Iran. Income of farmers, the average of farming land size and cultivated lands and the average production were the selected economic indicators. Uratyan and Thalmann (2011) conducted a survey to understand the dominant factors that can assess sustainability at farm level using RISE tool.

Based on the results, economic stability and efficiency of farming (including adequate income) and its effect on local economy (e.g. employment generation) as well as social security and working conditions in the agricultural sector are covered by the tool.

In another study, Fakayode et al (2010) examined the nature and patterns of rice consumption with respect to economic factors, in Nigeria, using Kwara State as a case study. The multinomial Logit model revealed that household size, income of the household and the educational status of the head of household significantly influenced a household's preference for either a combination of local and imported rice or imported rice only to consuming the local Nigerian rice only. Also, based on the results, the price per unit kilograms of rice did not significantly influence. According to Mardiros and Borza (2010), in sustainable agriculture, the analysis of economic and financial indicators should be supplemented with the sustainability indicators analysis. Their research was based on the identification of the financial indicators which are applicable in agriculture. Gomes et al (2009) examined efficiency of farmers for different productions, using DEA models. Several variables were taken into account and the resulting efficiency was measured by comparison. The results indicated that the majority of the farmers increased their efficiency along the time. The main factors were total area of cultivation and lab our used. Bos et al. (2007) presented five indicators to quantify sustainable crop production within the "people-planet-profit" concept. In this research for assessing economic status of agricultural activities gross margin of crop production included two indicators (potential income of farmer and position of farmer with respect to market) was selected.

### **Purpose and Objectives**

The main purpose of this study was to follow the opinion of the experts and identify effective

indicators in gardeners' economic status. Therefore, the following objectives are considered:

- Identify effective economic factors on gardeners' income level, based on literature review
- assess the relation between gardeners' income level and 23 selected independent variables
- Identify key effective factors on gardeners' income level, out of 23 proposed indicators based on Logistic regression

### METHODOLOGY

The province of Guilan, in the northern part of Iran covers an area of 14711 km<sup>2</sup> and has a population of 2403716 residents. This province has 400000 ha agricultural land, of which 60% is allocated to garden products. In this study, based on literature review, a conceptual model for determining effective factors on economic status of gardeners was designed. This model consists of 23 indicators. The study was carried out in Guilan Province, Iran. The research in terms of nature is a kind of quantitative research and in terms of goal is applied research, in terms of controlling the variables is descriptive and correlation kind, which has been carried out in a survey way. The target population was the agricultural experts in different areas of garden productions cultivation in Guilan Province. The sample population according to the table for determining sample from a given population, developed by Bartlett et al (2001) has been 200

respondents. They were selected, using the multistage cluster sampling Method. A self-made questionnaire was used as a main tool of study. The validity of the questionnaire was confirmed by a panel of experts and the reliability was approved by calculating the Cronbach's alpha which has been 0.856. Respondents' opinions on 23 statements of effective factors on economic status of gardeners, were investigated using a Likert five point scale (5=strongly agree through 1=strongly disagree). Dependent variable was investigated as a Likert five point scale (5=very high through 1=very low). Data collected were analyzed using the Statistical Package for the Social Sciences (SPSS19).

### RESULTS

As the results of distribution of respondents' personal characteristics indicate, the majority of the experts were male, within the age range of 30–39. Respondents with experience of 20 years and above and bachelor degree had the highest value.

We used Spearman correlation coefficient in order to assess the relation between economic status of gardeners and 23 selected indicators. Results showed that there was undirected and significant relation between gardeners' economic status and four indicators out of 23 proposed indicators at the 1% and 5% level (Table 1).

**Table 1:** Relationship between income level of gardeners and 23 independent variables

	indicators	r	Sig.
E <sub>1</sub>	The lack of affordable of gardening	-0.781 <sup>**</sup>	0.000
E <sub>2</sub>	The lack of gardeners' financial ability to more investment	-0.464 <sup>ns</sup>	0.060
E <sub>3</sub>	High cost of inputs and unavailability of gardeners	-0.300 <sup>ns</sup>	0.243
E <sub>4</sub>	Not receive sufficient subsidies to buy inputs	-0.478 <sup>ns</sup>	0.052
E <sub>5</sub>	High difficulty against the small profit	-0.502 <sup>*</sup>	0.040
E <sub>6</sub>	The lack of suitable markets for garden products	-0.339 <sup>ns</sup>	0.183
E <sub>7</sub>	High rate of consumption of garden products	-0.470 <sup>ns</sup>	0.057
E <sub>8</sub>	Far distance between the gardens and markets	-0.379 <sup>ns</sup>	0.134

E <sub>9</sub>	Gardeners' economic dependence on one or two products	-0.368 <sup>ns</sup>	0.146
E <sub>10</sub>	Despite of yeoman system in gardens	-0.575 <sup>*</sup>	0.016
E <sub>11</sub>	Lack of proper transportation of garden products to markets	-0.176 <sup>ns</sup>	0.500
E <sub>12</sub>	Lack of skilled labor and use of household labor in gardens	-0.387 <sup>ns</sup>	0.124
E <sub>13</sub>	Pre-sales of garden products	-0.301 <sup>ns</sup>	0.240
E <sub>14</sub>	Lack of adequate support of garden products insurance	-0.264 <sup>ns</sup>	0.306
E <sub>15</sub>	Disproportion between gardening cost and price of products	-0.435 <sup>ns</sup>	0.081
E <sub>16</sub>	gardens tenure in some cases	-0.191 <sup>ns</sup>	0.464
E <sub>17</sub>	Lack of proper marketing of garden products	-0.550 <sup>*</sup>	0.022
E <sub>18</sub>	The Lack of cooperatives and unions for garden productions	0.024 <sup>ns</sup>	0.926
E <sub>19</sub>	Inaccessibility of gardeners to finance and credit resources	0.088 <sup>ns</sup>	0.738
E <sub>20</sub>	The lack of affordable of buy expensive equipment for small gardens	-0.044 <sup>ns</sup>	0.867
E <sub>21</sub>	High product cost of garden productions	-0.438 <sup>ns</sup>	0.078
E <sub>22</sub>	Existence of dealers in market of garden productions	-0.226 <sup>ns</sup>	0.384
E <sub>23</sub>	Inconstancy of demand market and price of garden productions	-0.051 <sup>ns</sup>	0.845

<sup>ns</sup> non significant, <sup>\*</sup> significant at  $P < 0.05$  and <sup>\*\*</sup> significant at  $P < 0.01$

Because of few numbers of answers to high and very high for dependent variable (economic status of gardeners) by respondents, this variable was dichotomized with a value of 1 for more than average economies status and 0 for less than average. Then, a forward stepwise Logistic regression analysis (Wald) was done in order to understand the most effective independent variables on two groups of dependent variable. Regression was done in two steps, the results of the logistic regression model indicated that only; two of the 23 independent variables had a meaningful effect. The overall predictive power of the model (94.1%) was quite high, while the significant Chi square ( $P < 0.01$ ) was indicative of the strength of the joint effect of the covariates on probability of economic status of gardeners. These independent variables were E<sub>1</sub> and E<sub>10</sub> (Table 2-5).

**Table 2: Omnibus Tests of Model Coefficients**

		Chi-square	df	Sig.
Step 1	Step	12.851	1	0.000
	Block	12.851	1	0.000
	Mode 1	12.851	1	0.000
Step 2	Step	7.884	1	0.005
	Block	20.736	2	0.000
	Mode 1	20.736	2	0.000

**Table 3: Model Summary**

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	10.657 <sup>a</sup>	0.530	0.708
2	2.773 <sup>b</sup>	0.705	0.941

a. Estimation terminated at iteration number 6 because parameter estimates

changed by less than .001.

b. Estimation terminated at iteration number 20 because maximum iterations has been reached. Final solution cannot be found.

**Table 4: Classification Table<sup>a</sup>**

		Observed	Predicted		Percentage Correct
			Economics		
			0	1	
Step 1	Economics	0	82	12	87.5
		1	12	94	88.9
	Overall Percentage				88.2
Step 2	Economics	0	94	0	100.0
		1	12	82	88.9
	Overall Percentage				94.1

a. The cut value is 0.500

**Table 5: Variables in the Equation<sup>c</sup>**

	Variables	B	S.E.	Wald	Sig.
Step 1 <sup>a</sup>	E1	-3.259	1.410	5.340	0.021
	Constant	14.287	6.387	5.003	0.025
Step 2 <sup>b</sup>	E1	-36.388	9.657E3	4.101	0.047
	E10	-53.873	1.452E4	3.020	0.057
	Constant	397.436	1.049E5	4.000	0.047

a. Variable(s) entered on step 1: E1.

b. Variable(s) entered on step 2: E10.

c. Stepwise procedure stopped because removing the least significant variable result in a previously fitted model.

## DISCUSSION

Garden productions are an important annual crop in Iran. Recent years have seen decreasing average gardeners' income and increasing concerns about the impacts of gardeners' income on quality and quantity of garden productions. This paper provided an extensive review of literature on economic indicator selection and validation for

agricultural activities. A large number of arable lands are devoted to garden production cultivation in Guilan, hence, attention to economic status of agriculture and farmers is necessary and strategic. The present study is a preliminary effort to identify effective economic indicators on garden activities in Guilan Province, Iran. In this article, popular studies on economic indicators in agriculture were examined and classified, after that the

primary framework based on 23 indicators as dependent variables for gardener's income level as dependent variable was proposed.

The results of the Pearson correlation test showed that there is the indirect and significant relation between income level of gardeners and four indicators out of 23 selected. These indicators are the lack of affordable of gardening at the 0.01 level, high difficulty against the small profit at the 0.05 level, despite of yeoman system in gardens at the 0.05 level and lack of proper marketing of garden products at the 0.05 level. In general, our Logistic regression analysis results suggest that The lack of affordable of gardening and Despite of yeoman system in gardens were the most important economic factors for gardeners' income level. The study therefore recommends that efforts should be geared towards the increase of gardening benefit and removal of yeoman system in gardens.

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