

A Survey Economic evaluation of pomegranate cultivation in the rural to improve the economy (Case study: Abolabbas Village - Baghmalek township)

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ABSTRACT

Due to the rural geography in general and agricultural geography and agricultural economy specifically in solving problems can not be ineffective, and since the rural and agriculture as the basic industry and metropolitan as ecotourism. Iran is a vast country, with diverse climatic conditions and natural capacities, a fertile field for economic development on the other hand, Khuzestan Province, one of the country's agricultural poles and industrial the count, Because of the appropriate conditions, all activities in the agricultural, infrastructural and industrial is possible. In addition, there rivers of water (dase-Karun-Karkheh) and many dams, water resources an opening for development projects and Agriculture has provided. There several gardens pomegranate in the Baghmalek township to especially Abolabbas village represents adaptation and proper of this valuable plant to climatic conditions of the area, considering Science and investments proper in growth and development employment in the help region.

Study method is descriptive survey. Statistical society size have been estimated using Cochran Formula 555. Data collection tool was researcher made questionnaire. Software has been used in this research Spss.

By considering climate, study results show that because of similarity of climate condition of Baghmalek township in terms of temperature, rainfall and climate patterns table, With Semi-Mediterranean conditions, this city is suitable to cultivate and develop Pomegranate gardens.

KEYWORD: Development, Rural Economy, Agricultural Economics, Geography of Agriculture, Pomegranate, Baghmalek township, Village Abolabbas.

1-INTRODUCTION

The Pomegranate tree is one of the first and oldest trees. The appearance of the tree is very old times, and they believe that the tree is dedicated to the Mediterranean and some Asian countries are compared to it. Date Pomegranate is not quite clear in the course of its history of use, dating back to the Sassanids. In addition, this can be seen very well in the ancient city of Nishapur. Plant of Pomegranate cultivation in Iran over 6000 years, but the existing documents 900 years ago. Because of the high durability of the Pomegranate tree in rehabilitation is the undisputed power. This means that the natural antipathy, resistant tree known so that no human intervention during and after any mishaps appeals court has continued to grow. However, the situation is more traditional as traditional Pomegranate orchards covered a wide area, Hedge have been marginalized and have little economic return. Now no longer limited to the traditional work methods and priorities to Pomegranate Garden Modern conceded.

2-STUDY METHOD

According to the theory Chaturvedi: since the main purpose of Pomegranate cultivation is preparing suitable and non competitive price ,the maintaining and making usable the traditional Pomegranate cultivation and change them into modern and today cultivating system , like other fruit gardens and vineyards ,are applied in such a way that Pomegranate planting orchardists are able to harvest, from each hectare of Pomegranate gardens , up to 5 times than 1 hectare vineyards, at the same condition(Chaturvedi,1988:121).

Tombesi (2000) in the study about Pomegranate trees requirements resulted that this plant conforms with various soils and shows more tolerance against salinity of soil rather than other fruit trees(Tombesi,2000:118). York George (1979) about suitable place to cultivate Pomegranate , believes that this plant normally is cultivated in Mediterranean and tropical areas and various parts of Africa(York George,1979:211). Healthy Pomegranate trees usually produce firstling fruit from third year and in 6-7th year will produce economic fruiting and therefore,

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production is strictly rely on environmental conditions of plant growth , sapling quality and agricultural management (Sadeghi, 2002:54).

Stebbins Robert (1981) describes that Pomegranate is a Mediterranean plant and it will be hurt if the temperature decreases up to -7°C during winter. Materials which are absorbed by Pomegranate tree are nitrogen, phosphorus, potash and ferrum (Stebbins,1981:212). Pomegranate roots release materials which analyze soil and absorb its materials (potash and phosphorus), but, nitrogen is more necessary. In gardens where trees were planted with distance of 8×8 m, the amount of 70 kg pure nitrogen , 60-80 Kg phosphorus ,60-80 Kg potash is necessary (Bifer,1994:303). Study results of Klein Maggie Blyth (1994) shows that Pomegranate can adjust with various soils and can grow even in salt soils. Pomegranate is resistant to dehydration and the amount of required water depends on the type of Pomegranate , soil , climate of area and the amount of rainfall. In gravel and clay soils and the soil which has lower organic matter and also in areas which constantly faced with warm and dry climate , more amount of water is necessary(Klein,1994:101). Annual consumed water is about 5000-6000 m³ per hectare (Ha) , but , it should be consider that in early years of cultivation , the need to water for plant is more and during irrigation , water should percolate about 1 m in soil(Mohamadi,2005:23). Yunsa (2003) resulted that Pomegranate plant has no sensitivity to the amount of evaporation and transpiration lower than 5 mm, but, if the evaporation and transpiration achieve more than this degree ,the plant will need dehydration. Water management plays important role in plant growth(Yunsa,2003:345).

In research of Ewaidah (1987:165), it is mentioned that Pomegranate plant can grow in soils which drained completely and PH is about 8.5 and have little salt and in warm and dry summers need more irrigation. Pomegranate is high resistance against high temperatures because it has very active roots which exploring the soil deeply and laterally to achieve water(Bianchini,1976:97). In addition existence of thick cuticle on leaves , resists plant against the heat of air and strong and torrid winds. However , the growth of plant root stops at the temperature higher than 35°C (Mir Mansoori,1999:119).

The speed of Pomegranate plant growth depends on the formed fruits, available water and temperature of environment. Pomegranate is a yearly tree. Therefore, the amount of formed fruit differs from one year to another(Pietro,1994:238).The amount of water to irrigate one hectare of Pomegranate garden changes in terms of soil type and the amount of annual rainfall and in different soils from 6000-7500 m³ is sufficient for 1 hectare Pomegranate cultivation. In areas which the annual amount of rainfall is 400 mm , irrigation in dry months will be need only in summer(Al-gab,1998:249). Mist and hail also affect on Pomegranate significantly. Existence of mist during bloom leads to abortion and dropping of flowers. Hail storms wounds the branches and top of branches and also spreading the node disease in Pomegranate by bacteria during harvesting products leads to fruit corruption and premature dropping(Stomayar,1994:141).

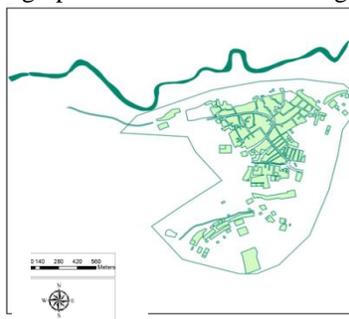
Pomegranate cannot bear non drained or poor drained soils, because it leads to imbalance in 2 elements of nitrogen and potassium, particularly in commercial gardens (Nejad Sahebi,2006:97). Existence of old Pomegranate trees in Khoozestan province shows suitable environmental condition to cultivate this plant. In most areas of province , can produce qualitative products by proper optimized operation. For example, local type of Bagh Malek and Ize shows higher resistance against dryness than other types(Sadr Zade,2005:118).

If in cultivating Pomegranate, all agricultural operations and conditions will be considered and perform in mechanized and wide area, increase amount of products higher than 6 ton is not unexpected. In addition, because Pomegranate tree shows high persistence in terms of age ,it affects on increasing production(El nemr,2006:165).

3-STUDY RESULTS

Since any geographical research was not performed in philosophic space, will be considered based on philosophic theory, the main approach of present research, is based on realism theory or orientation to review current situation. Abolabbas village has been shown in Figure (1) geographical location.

Figure1: The geographical location of the village of Abol Abbas



Reference: Abbas Maroof Nezhad, field study , 2013

4-Inferential results of study

4-1-Economic Evaluation of the current situation (income and expenses) Pomegranate trees are cultivated in the region:

According to collected data and statistics from 5th country general population and housing census in 1996, from whole population of Baghmalek township which were estimated 90106persons,74025 persons live in villages(82/1%) in which from this population , 45495 persons are in age group of 0-14 years old and 41169 persons are between 15-64 years old and 3433 persons are at the age higher than 65 years old. Therefore according to dependence coefficient index , per every 100 persons of active population in villages of this city, 119 persons are inactive. Since among 10 province of country which had highest unemployment rate according to 6th country general population and housing census in 2006 , Khoozestan province ranked in 8th place(19/30%) and therefore unemployment rate in rural areas is higher than urban areas. Baghmalek township which among cities of Khoozestan province has higher unemployment rate and so its villages, too, which this number was 27/8% in 1385. Totally, 14534 unemployed persons exist in villages of this city.

So if Pomegranate orchards in the area, according to the principles of good care and needs of particular crops and water supply...To observe the life of the plant is several hundred years old, said to be one of the most lucrative crops would dare.

It is noteworthy in this regard that (make it into Pomegranate groves Industries, drawing oils, canned food preparation, soap making, etc.), employment levels in rural areas of the city, apart from avoiding massive rural to urban migration, and political benefits monitoring the rising standard of living of the people will have to like it.

According to field observation and performed estimation, every investment on Pomegranate cultivation is justifiable and would involve economic efficiency. About harvesting and revenue for Pomegranate planting orchardists in village of this area, following information were acquired: Accordingly, the Pomegranate harvest and income for farmers in the village of the Abolabbas Village Baghmalek township which (years 2013-2014) Table 1 is as follows:

Table1:Pomegranate harvest status based on income and spending in the study area (year2013-2014)

Minimum harvest from each tree. (Kg)	Maximum harvest per tree (Kg)	Number of trees per hectare	Minimum harvest per hectare (Kg)	Maximum Harvested per hectare (Kg)	Cost for 1Kg (tomans)	Sale 1Kg (tomans)	Net profit for the 1Kg (toman)	Minimum net profit per hectare (tomans)	Maximum net profit per hectare (tomans)
20	25	300	7000	15000	300	1000	700	4900000	10500000

Reference: Abbas Maroof Nezhad,field study , 2013

4-2-Studying and measuring investment on developing Pomegranate cultivation in the village of Abol abbas:

Of Pomegranate orchards in the village of the region to invest in the construction of the Baghmalek township which the 2013-2014 crop year were obtained as described in Table 2 the following information:

Table2: Costs for the construction of a 10-acre Pomegranate orchard

Initial start-up equipment costs per acre For10hectares (Billion Tomans)	The annualcost ofharvestingand transport For10hectares (Billion Tomans)	Annual personnel costs for 2 people For10hectares (Billion Tomans)	Fuel costs for pumping water with a diameter of 6 inches per year For10hectares (Billion Tomans)
35	20	14/4	3/78

Reference: Abbas Maroof Nezhad, field study, 2013

4-2-1-Costs for the construction of a 10 hectar Pomegranate orchard:

So the total cost figure is equivalent to 73180000 Tomans. Need to remember that for every acre orchard of Pomegranate in between 5,000 to 6,000 cubic meters (5 to 6 million liters) of water just is. The initial cost of the equipment and set up the first column are listed in Table 2. According to the survey area and experience with water projects and the administrative costs and adjustments to the estimated price, they can only be interpreted. The water supply in the region, the cost of constructing and equipping wells or pumping hectares of Pomegranate groves, the establishment of pipelines, water distribution networks in the garden of the ballast tanks (pressurized irrigation systems -drip) and construction Pomegranate garden include initial costs of land leveling (leveling partial non-strict) Pitting, buy seedlings and saplings will be planted and inputs. Buying 10 hectar land: each hectar :20000000 tomans. Regarding field study in some village in region, farming land is announced between 1500-2500 tomans in m² which we consider 2000 tomans per m², averagely. Investment to build Pomegranate garden in 10 hectar (according to information from farmers of region per each ha in year). Annual personnel costs (for every 2 persons)=14400000 tomans. Total costs of annual fuels to pump water with 6 inch diameter = 3780000 tomans. About irrigation and decreasing its costs, above mentioned estimation were considered without government grants and bank loan. For example, in order to mobilize and install under pressure irrigation in gardens in 2013, the government approved to provide 85% of costs in the form of grants for farmers and the 15% of rest will be offered in the form of loan by introducing them to agent banks with interest rate of 14%. Therefore total number of costs is estimated 73180000 tomans.

4-2-2-Revenues(in million tomans)

In conditions which water is provided in sufficient amount and with under pressure irrigation system and regarding favorable climate conditions and natural location of region and also, observance of agricultural principles, it will be expected that in most ideal condition it can be possible to increase Pomegranate production at least to 6 ton or more per hectare. But, now after performed studies about crop harvesting and acquired revenues, following information were achieved: Regarding the price of 2013 of this crop in current studied regions which were at least 1000 tomans per 1 kilo, by whole sale, the revenue of 1 hectare Pomegranate cultivating is : $1000 \times 6000 = 6000000$ tomans. If we consider the costs of cultivating, preserving and harvesting, 36/5%, constantly, the net income per hectare Pomegranate cultivating will be : $6000000 \times 63/5\% = 3810000$ tomans. And the net income of 10 hectare will be: $3810000 \times 10 = 38100000$ tomans. According to this economic estimation, it is observed that Pomegranate development plan is very effective and regarding to mentioned condition, the acquired interest of this plan is completely apparent and certain.

In addition, there are other factors which result in more profitability which consist of :

1-To expect increase in product up to 6 ton and more, because all developed agricultural operation and conditions were considered. In addition, by increasing the age of tree which continues several years, the product will increase (El nemer, 2006: 165).

2- Increase in product costs in future years is imminent according to the process of similar products or global rates

3- As it was said, Pomegranate gardens have life time more than what is expected and their value increases by passing time. But, normally, the effective life time of garden and irrigation installation and... which generally called amortization life is averagely 40 years in whole garden, because, it is obvious that the life time of tree in garden is more than several centuries, but, since infrastructure installation such as installation for irrigation, pipelines, tanks and building have limited life time which is lower than garden itself. In order to show estimated results, the effective life time of complex was considered 40 years (Shahbazi, 2002: 10).

4- Social and economic impacts of this plan for this region because this issue resulted in improvement and employment and increasing people life level.

4-3-Calculating the amortized cost of fixed and current assets to establish Pomegranate Garden's 10 acres in area:

Due to the time of planting Pomegranate on the ground until harvest a tree full period of 5 to 7 years is required (depending on the variety of Pomegranate so that the figures are imported, usually 7 years and local cultivars between 5 to 6 years, we have considered the local cultivars) As well as the scientific and commercial culture conditions should be expected to be fully met in the sixth year 6 tons per hectare of harvested Pomegranate Table 3 and 4 thus:

Table3: Profits(net income) expense(the first year of the project) for gardening mechanization of 10 hectares of pomegranate in the village of Abul Abbas

Annual net income (Tomans)	The share of annual costs (Tomans)	The benefit-cost ratio (Tomans)
127000000	73180000	1/7

Reference: Abbas Maroof Nezhad, field study, 2013

Table4: Profits (net income) expense (in the second year onwards) to gardening mechanization of 10 hectares of pomegranate in the village of Abul Abbas

Annualnet income (Tomans)	The share o fannual costs (Tomans)	The benefit-cost ratio (Tomans)
153050000	46950000	3/2

Reference: Abbas Maroof Nezhad, field study, 2013

From these calculations it can be concluded that each of the 10 hectares of Pomegranate groves, after 11 years of .construction, all costs and fixed capital will depreciate

4-4-Using SPSS software to evaluate the relationship between rural economy and Pomegranate cultivation in studied region;

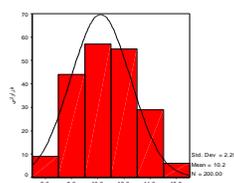
In order to review the relationship between rural economy and Pomegranate cultivation development in studied region, descriptive – analytical study was done and a questionnaire consists of 22 items and SPSS software were used. Sample size was selected according to simple random sampling method among village of region which were 20 persons from residents of the same village. To select village, situational sampling was used, in other word, village were selected that were suitable in terms of potentials (human) to cultivate Pomegranate. In each village, snowball sampling method was used to select Pomegranate planting farmers. Therefore, followings were extracted which finally approved the direct relationship between rural economy and cultivation and development of Pomegranate in village of region. In order to approve this relationship, Parametric Pearson coefficient test was used. On this basis, in table 5 and histogram 1,2 , it can be observed that there is significant relationship between Pomegranate cultivation and rural economy at the level of $\alpha=0.05$ ($\text{sig}<0.05$). Therefore, there is direct relationship between improvement in rural economy condition by cultivating Pomegranate plant in village of region. Also, regarding the positive amount of significance level, it can be resulted that there is positive significant relationship between Pomegranate cultivation and rural economy, i.e, by increasing the amount of Pomegranate cultivation, rural economy will improve and by decreasing the amount of Pomegranate cultivation rural economy will decrease.

Table 5: Pearson correlation coefficient test table to study the relationship between Pomegranate cultivation and rural economy in region

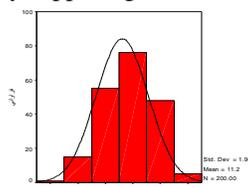
variable	Pearson correlation Coefficient	Significance level
The relationship between Pomegranate cultivation and rural economy	0/146	0/006

Reference: Abbas Maroof nezhad, field study , 2013

Histogram1: correlation coefficient by supposing that variable of rural economy is normal



Histogram2: correlation coefficient by supposing that variable of Pomegranate planting is normal



About the problems of Pomegranate planting farmers in village Abolabba - Baghmalek township, and regarding the study population, whole issues are mentioned in table 6. The most issue with 24% (48 persons) is related to the lack of transformational and complementary industries in region (24%) and the lowest issue with 6.5% (13 persons) is related to the lack of allocating long term loans with low interest to farmers in order to develop this product.

Table6: the frequency of problems of Pomegranate planting farmers in village of studied region

The problems of Pomegranate planting farmers	frequency	percentage
Lack of government guaranteed buying of this product	30	15
Lack of transformational and complementary industries in region	48	24
Lack of farmers knowledge about scientific and commercial cultivation of this product	43	21/5
Lack of allocating long term loans with low interest for farmers to develop this product	13	6/5
Lack of allocating on time and necessary agricultural requirements(poison , fertilizer , seed ...) to Pomegranate planting farmers	14	7
Lack of enough water in region	27	13/5
Lack of providing insurance for Pomegranate product by related authorities during one cultivation term	25	12/5
sum	200	100

Reference: Abbas Maroofnezhad, field study , 2013

5-Conclusion and recommendation

Regarding the issues mentioned about the conditions and features of Pomegranate and its adjustment with human features of village in Abolabbas - Baghmalek township, it is revealed that conditions of region is suitable to cultivate this product in terms of condition. Economically, by considering performed estimation and field study of statistical population , economic justification to cultivate and develop this product, was confirmed. So, according to achieved results, following recommendations were presented:

1- Marketing and public relation: the most important issue in marketing and public relations in the field of global economy is the issue of mutual relationship with other countries. There is a theory in economy which says: advertizing is half of business and merchandize. So, our country should have representative in all fields of agriculture, internationally and our agriculture products will advertise all over the world and motivation to buy should be created in buyers and their orders will be received and collected. Even, when we cannot produce one product, we should promise for purchase order with producer countries and perform as dealer , like the job was done by UEA, china, turkey,..

2- In order to make active and dynamic urban and rural economy of every country, the most important factor is the attention of country government and governors to economy because any work cannot be done without pay attention to economy.

3- Performing research projects and finding location plans rely on precise climate studies, agrology... in order to find suitable places to develop Pomegranate gardens.

4- Preparing experimental and exhibitve farms to complement performed studies and encouraging farmers to cultivate Pomegranate under the supervision of investigative centers.

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