



ISSN: 2278 – 0211 (Online)

Challenges To The Agricultural Development In Iran

Ummar Ahad

Department Of Geography, Amar Singh College, Srinagar, Kashmir, India

Meer Inayatullah

Department Of Geography, Amar Singh College, Srinagar, Kashmir, India

Abstract:

Agriculture has been a popular theme of geographic studies in Iran. It is not only because most of the people depend for food and several raw materials on it, but also because the largest fraction of land under human occupation is used for agricultural purposes. Therefore, the geographers are primarily concerned with man's varied impact upon the earth's surface. It is still largely dependent on environmental conditions and represents wide spatial variations. Growth in agricultural productivity has been the ultimate goal of agricultural planning. The present paper attempts to illustrate the challenges to the agricultural development in Iran. Agriculture is certainly a major contributor to rural development in many countries. It is one of the most important economic sectors in Iran. But, there are a significant number of challenges to effectively using agricultural industry as a tool for rural development. The findings may prove beneficial to the local agricultural organizations for removing the problems faced by the agricultural sector for advanced rural development.

Key words: agricultural development, rural development, challenges

1.Introduction

Iran is located in southwest Asia and borders the Gulf of Oman, the Persian Gulf, and the Caspian Sea between Iraq and Pakistan. Iran ranks sixteenth in size among the countries of the world.

Iran lies between $25^{\circ} 15'$ and $40^{\circ} 20'$ N latitude and between $44^{\circ} 5'$ and $63^{\circ} 6'$ E longitude. With an area of 16, 48,000 square kilometres, the country comprises of 99.27% of land and 0.73% of water (Fast, A 1968). Only 12 % of the total land is under cultivation. The non-agricultural surface represents 53% of the total area of Iran.



Figure 1: Iran Location
Source: Googlemaps

Iran shares its northern borders with three post-soviet states; Armenia, Azerbaijan, and Turkmenistan. Iran's western borders are with Turkey in the north and Iraq in the south. The Persian Gulf and Gulf of Oman form the southern border. To the east lies Afghanistan on the north and Pakistan on the south.

Most of Iran, however, is dry mountainous. Iran has a variable climate. In the northwest, winters are cold with heavy snowfall and subfreezing temperatures during December and January. Spring is relatively mild, while summers are dry and hot. In the south, winters are mild and the summers are very hot, having average daily temperatures in July exceeding 38 °C (100 °F). In most of the country, yearly precipitation averages 25 centimetres or less.

2. Methodology

In this study the general purpose is to investigate the challenges to the agricultural development in Iran. Iranian agriculture is thousands of years old and this reflects the length of time during which soil and water resources of the country have been utilized for crop production. This study is based on quantitative methodology to investigate the challenges to the agricultural development. Hence to achieve the objectives of this study, the quantitative methods have been utilized. Some major villages of major agricultural regions of Iran were selected as target areas because it provided many opportunities to develop agriculture. Focus group discussion (FGD) was performed to collect data from local farmers. Focus group discussion is probably the most widely used technique of gathering qualitative data (Aref, 2010; Grover & Vriens, 2006). According to Rafipoor (2005) FGD technique is an appropriate technique in scientific research in terms of Iranian culture. FGD was conducted in a group setting and was used for obtaining a better understanding of participants' attitude towards the challenges to the agricultural development. There is no consensus among qualitative researchers on the optimal number of participants in FGD. Some researchers suggest the number of studied argued four to twelve people (Mendis-Millard & Reed 2007). But the ideal number of participants in each FGD is six to ten. All respondents were male. They ranged in age from 27 to 73 years.

3. Results And Discussion

Agriculture has been a popular theme of geographic studies in Iran. It is not only because most of the people depend for food and several raw materials on it, but also because the largest fraction of land under human occupation is used for agricultural purposes. Therefore, the geographers are primarily concerned with man's varied impact upon the earth's surface. It is still largely dependent on environmental conditions and represents wide spatial variations. Growth in agricultural productivity has been the ultimate goal of agricultural planning. The chief objective of the present study concentrates mainly on a detailed study of challenges to the development of agriculture in the Islamic Republic of Iran. A balanced development of a region or a country is one of the major aims of planned economy. With vast differences in soils, topography, water supply along with differences in agricultural inputs, the regional imbalances are striking clearly.

The food sector accounts for about 40 percent of Iran's Gross National Product (GNP) and 40 percent of the "added value" in the national economy. The farming subsector contributes 57 percent of the added value of the food sector. Food security has a high priority in the country.

According to FAO statistics, in 2010, the cultivated area amounted to 16.5 million hectares, of which 14.3 million hectares were planted to arable crops and fallow and 2.3 million hectares to permanent crops. The irrigated area in 2010 amounted to 7.5 million hectares (FAO 2011). Agricultural land availability is not a major constraint in the development of Iranian agriculture. The major constraint is the availability of water.

About 90 percent of the irrigated land is under annual crops (including fallow), the remaining 10 percent being used for the production of perennial crops "mostly orchards" (Encyclopaedia Iranica, 2005). In rain-fed areas, annual crops constitute about 98 percent of the total production. During dry years, about 8 to 12 percent of the total production comes from dry land areas. However, in wet years this figure can rise to 35 percent.

Approximately, 44 percent of the cultivated crops are rain-fed and they produce only 12 percent of the total crop production. However, rain-fed wheat accounts for about 35 percent of the total production and rain-fed barley for about 34 percent.

Until recently, Iran relied heavily on wheat imports to meet its growing domestic demand. Annual imports have ranged from 2.5 to 7.5 million tonnes per annum during the past two decades, making Iran a major world wheat importer. A record production in 2004, following an already excellent crop in 2003, reduced imports in 2004/05 to 0.2 million tonnes. Over the past two years, the Government has sharply increased spending on wheat farming by supplying higher quality seeds, improving machinery services, augmenting fertilizer usage and enhancing water systems and pest management practices. The guaranteed procurement prices have been raised significantly. Strong Government support for wheat production has played a major role in raising output but favourable weather during these seasons also has had a major impact. At least 40 percent of Iran's wheat is rain-fed with an average yield of only 0.8 tonnes/hectare. Even under irrigation, the average wheat yield rarely exceeds 3 tonnes/hectare, which is low by world standards.

Overall, Iran's soil is not well suited for large scale agriculture. About 12 percent of the country's total land area is cultivated. Still, 63% of the cultivable lands have not been used and 185,000 km² of the present farms are being used with 50 to 60% capacity.

After nearly achieving agricultural self-sufficiency in 1960s, Iran reached the point in 1979 where 65 percent of its food had to be imported. Declining productivity was blamed on the use of modern fertilizers, which had inadvertently scorched the thin Iranian soil (Soil Report, 2, 2003). Unresolved land reform issues, a lack of economic incentives to raise surplus crops, and low profit ratios combined to drive increasingly large segments of the farm population into urban areas.

Since, 1979 commercial farming has replaced subsistence farming as the dominant mode of agricultural production. Some northern and western areas support rain-fed agriculture, while other areas require irrigation for successful crop production. The 1979 Revolution sought self-sufficiency in foodstuffs as part of its overall goal of decreased economic dependence on the West. Higher Government subsidies for grain and other staples and expanded short-term credit and tax exemptions for farmers complying with Government quotas were intended by the new regime to promote self-sufficiency. But by early 1987, Iran was actually more dependent on agricultural imports than in the 1970s.

By 1997, the gross value of products in Iran's agricultural sector had reached \$25 billion. In 2000, the Construction Jihad Organization and the Ministry of Agriculture were merged by national legislation, to form the new Ministry of Agricultural Jihad.

In 2003, a quarter of Iran's non-oil exports were agricultural based. In 2004, the agricultural ministry started trading agricultural and related products in the country. Iran's agricultural sector contributed 11 percent of the GDP in 2004 and employed a third of the labour force.

Wheat, rice, and barley are the country's major crops. In 2005, Iran exported close to 6, 00,000 tonnes of wheat (out of a production of 15 million tonnes). Iran's total rice production stands at 2.2 million tonnes per annum. Whereas, annual consumption is about three million tonnes (2010). Iran has imported about 6, 30,000 tonnes of rice from UAE, Pakistan and Uruguay worth \$271 million in 2010 (Iran Statistical Yearbook, 2011). Iran ranks the world's largest pistachio producer and exporter followed by USA and Turkey. After oil and carpets, pistachios are Iran's biggest exports. About 200,000 tonnes were exported for \$840 million in 2010. More than 3, 50,000 people earn a living from the nut, most of them in vast groves of the desert oases in southeast. While, saffron is cultivated in many regions of the country, the provinces of North Khorasan, Khorasan Razavi and South Khorasan in the northeast have the highest production share. Iran's saffron is exported mostly to the United Arab Emirates, Spain, Japan, Turkmenistan, France, Italy and US. Tea production rose to 1,90,000 tonnes in 2005 from 1,30,000 tonnes in 2003. The structure of cereal production by crops is represented as below:

Sl. No	Cereal Production By Crops	% Age
1	Wheat	63.5
2	Barley	12.7
3	Rice	12.2
4	Maize	8.8
5	Chickpea	1.2
6	Beans	0.9
7	Lentil	0.5
8	others	0.2
Total		100

Table. 1: Structure Of Cereal Production By Crops, 2010
Source: Computed On The Basis Of F.A.O Database.2011

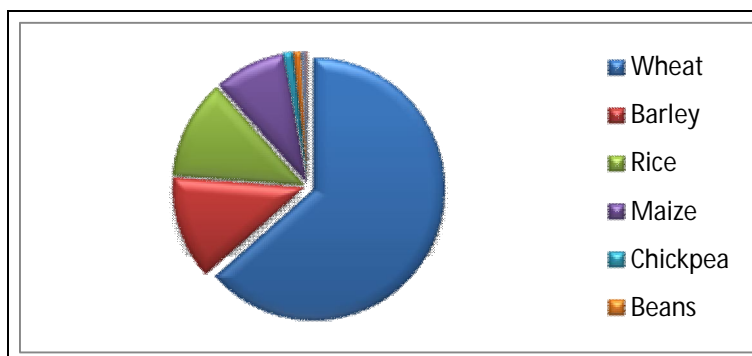


Figure 2: Structure Of Cereal Production By Crops, 2010
Source: Computed On The Basis Of F.A.O Database.2011

Agriculture has a long history and tradition in Iran. As early as 10,000 BC, the earliest known domestication of the goat had taken place in the Iranian plateau. By 5,000 BC, wine was being fermented in Iran, and by 1700 BC, the windmill had been invented in Persia for the first time in history (Dokhtar, 1989).

Fruits such as the peach first found their way into Europe from Persia, as indicated by their Latin name, *Persica*, from which (by way of the French) we have the English word "peach". As did Tulips, which were also first cultivated in ancient Persia and spinach, the word Spinach itself derived from the Persian word *Esfenaj*. The Chinese referred to it in 647BC as 'the herb of Persia'. In 400 BC, a form of ice cream was in use in Persia, and the ancestor of the cookie is said to have come from Persia (from the Persian *koolucheh*) in the 7th century. Fifth century BC Persia was even the source for introduction of the domesticated chicken into Europe (Dokhtar, 1989). Despite having such a rich and great history of agriculture, the country is facing many challenges regarding agricultural development. Some of the major challenges to the agricultural development in Iran are enumerated and cited as under:

4.Challenges

- Scarcity of agricultural land.
- Conversion of arable land into non-agricultural use.
- Large portion of land is occupied by Dasht's and the major area is under mountains.
- Less availability of irrigational water.
- Age old machinery and methods.
- Increasing salinity and water-logging.
- Shrinking of Caspian Sea.
- Reduction in humus content in soil.
- Excessive use of chemicals and artificial fertilisers.
- Excessive soil erosion.
- Change in overall climatic conditions.
- Disproportionate costs and prices.
- Institutional disproportions.
- Socio-economic conditions.
- Geo-strategic implications.
- Lack of advanced technological infrastructure.
- Unplanned land use system.
- Unawareness of common masses and apathy of the young.
- Shortage of skilled agriculturists.
- Less availability of agricultural inputs.
- Negligible foreign investment in the agrarian sector.
- Failing to achieve international contacts and active participation of the ministry of agriculture in the agricultural global market.
- Untrustworthiness of the agricultural sector for private individuals and companies to invest in it.
- Influence of political issues on decision making for agriculture.
- Shortage of competent employees in ministry of agriculture.
- Lack of power of the ministry of agriculture to control various mediators and dealers in the agriculture sector.

Out of the total land area 1,648,000 sq.kms (6,36,000 sq miles) of Iran, nearly 1,97,760sq.kms (76,320 sq miles) are suitable for agricultural practices and on the other hand the population growth is increasing continuously. With the result Iran's current and potential agriculture will reduce and shrink. It has been estimated that throughout the country, large amount of farmlands is being converted from agricultural land into settlement, roads, factories, and other non-agricultural practices.

Arable land is a basic major source for the production of human food. But it seems that the expansion of human population and human activities are reducing the availability of land suitable for crop production at an alarming rate.

In the Islamic Republic of Iran the annual rainfall varies from less than 150 to 200 mm in plains to more than 200 to 400 mm in the foothill and north-western mountains. Percolated irrigation water has raised the underground water level and subsequently has resulted in water-logging. Excessive salinity of the underground water has also harmful effects on the soil. Overall, Iran's soil is not well suited for large scale agriculture (Soil Report No.17, 2003). Still, 63% of the cultivable lands have not been used, and 185,000 km² of the present farms are being used with 50 to 60% capacity.

Unresolved land reform issues, a lack of economic incentives to raise surplus crops, and low profit ratios combined to drive increasingly large segments of the farm population into urban areas.

Roughly one-third of Iran's total surface area is suited for farmland, but because of poor soil and lack of adequate water distribution in many areas, most of it is not under cultivation. Less than one-third of the cultivated area is irrigated; the rest is devoted to dry-farming. The western and north-western portions of the country have the most fertile soils. One third of the total land area (35%) is used for grazing and small fodder production. Most of the grazing is done on mostly semi-dry rangeland in mountain areas and on areas surrounding the large deserts ("Dasht's") of Central Iran.

The non-agricultural surface represents 53% of the total area of Iran, About 35% of the country is covered by deserts, salt flats ("kavirs") and bare-rock Mountains, not suited for agricultural purposes. An additional 11% of Iran's total surface is covered by woodlands. And 7% is covered by cities, towns, villages, industrial areas and roads.

At the end of the 20th century, agricultural activities accounted for about one-fifth of Iran's Gross Domestic Product (GDP) and employed a comparable proportion of the workforce. Most farms are small, less than 25 acres (10 hectares), and thus are not economically viable, which has contributed to the wide-scale migration to cities. In addition to water scarcity and areas of poor soil, seed is of low quality and farming techniques are antiquated.

All these factors have contributed to low crop yields and poverty in rural areas. Further, after the 1979 revolution, many agricultural workers claimed ownership rights and forcibly occupied large, privately owned farms where they had been employed. The legal disputes that arose from this situation remained unresolved through the 1980s, and many owners put off making large capital investments that would have improved farm productivity, further deteriorating production. Progressive Government efforts and incentives during the 1990s, however, improved agricultural productivity marginally, helping Iran towards its goal of re-establishing national self-sufficiency in food production.

Soil erosion is another main problem of Iran's agriculture. Erosion removes topsoil and exposes sub-soil, thereby changing its characteristic productivity. Removal of soil by erosion and subsequent assimilation of underlying material by tillage reduces the organic matter. The physical properties such as moisture holding capacity and infiltration capacity gets also reduced due to soil erosion. Soil erosion is also responsible for the reduction in the humus content in soil (Karbasioun, M; Mulder, M., & Beomans, H 2008).

The territory of the Iran is located in an arid zone of west Asia, i.e., desert and semi-desert land. A significant characteristic of the country is water scarcity. And the same leads the main problem of agriculture of Iran. The area of irrigated land has grown by more than 3 million hectares during last 40 years in Iran. In order to support this massive increase in irrigable land, water withdrawals were made indiscriminately, reducing the overall river flow.

Salinity and drought are among the most important environmental stresses that limit crop production in Iran. Low rainfall, high air temperatures and high evaporation rates are the main factors that cause water stress and contribute to the development of a saline environment surrounding the plant roots. Natural soil salinity and high concentration of salts in irrigation waters aggravate the situation.

The insufficient level of mechanisation and the age old machinery is one of the major hurdles in the development of agriculture in Iran. Besides this, the general masses are not either aware of the recent techniques and technology or cannot afford it due to high costs. It is worth mentioning here that in this regard one of the major reasons is the international checks imposed on the Iran. Hence there is little room for the Iranians to share the latest technological advancement with rest of the world.

In addition to this the unplanned landuse system is another problem for the development of agriculture in Iran. As such the yields of main crops are much lower than their potential considering the productivity of irrigated land. Low efficiency of irrigated area is the result of long history of application of intensive methods of agricultural production. The main obstacles to the increase of the efficiency of agricultural production are the factors connected with legal issues, financing, land and water distribution and material supply.

The dumping and excessive use of chemicals is another serious problem in Iran. The excessive use and dumping of agricultural chemicals have seriously damaged water and soil quality. Huge quantities of agrochemicals are being used, herbicides and insecticides to combat pest and diseases (Karbasioun, M; Mulder, M., & Beomans, H 2008). The use of pesticides in agriculture is given much consideration in Iran. Their excessive use effects human life indirectly by causing water pollution, soil pollution, and air pollution.

To maximize the agricultural development, best seeds and inputs such as fertilisers, pesticides, herbicides and irrigation facilities are most important factors. But at present these factors create serious problems in Iran. It is because the cost of these factors increased rapidly than the cost of agricultural products. This reduces the farmers, per capita income and their purchasing power of new inputs. Sometimes it so happens that the inputs are available, but farmers do not have sufficient resources to buy what they need. The structure of the country's agricultural landforms, to a lesser extent, agribusiness enterprises has begun to undergo a fundamental reform process. Different forms of ownerships are emerging and have to compete in an unstable environment. The agricultural sector is expected to experience contraction in the short term primarily reflecting input shortages and terms of trade deterioration. As input levels approach international levels greater efficiency in input use will become necessary. Output prices have begun to adjust to market conditions a Government intervention is reduced significantly, except in a few critical commodities. As a consequence, there will be major shifts in the structure and composition of both crop and livestock sectors. Iran's comparative advantages will most likely be in extensive rather than intensive livestock production, as well as in a range of high value technical crops in the irrigated areas. Livestock numbers will have to be further reduced to an ecologically and economically sustainable level.

Land privatisation has led to disputes, compelled with growing discontent over high input prices and shortages in input availability for private farmers resulted in growing opposition to the privatization programme is being reactivated with about one third of the remaining state and collective farms schedule for privatization before the crop season begins.

Finally the breakdown of prior trading and payment mechanisms has led to heavy reliance on inefficient barter exchanges.

Processing and distribution is the weakest link in the sector, the facilities remain highly centralized. And the low priority on improving the food processing and distribution industries has resulted in old out-dated or poorly maintained equipment and technologies, standards and quality control are not considered priorities. The retail of countries stores are small and poorly equipped with no effort devoted to promote sales and now with few goods to offer. Private markets are marginally better supplied but are also high and many

products are of good quality. The very limited capacity in food processing restricts the availability of many products to the growing season. It is evident that one of the fundamental requirements for the successful implementation of an agricultural reform programme will be a programme to restructure the existing administration towards a more regulating role. This will require a major effort by the Government to appropriately re-order and refocus its administrative structure and to redefine the role of various ministries and committees. It must also support staff training and allocate adequate financial resources, particularly during the transition period, when the implementation of reforms will depend heavily on a functioning public sector.

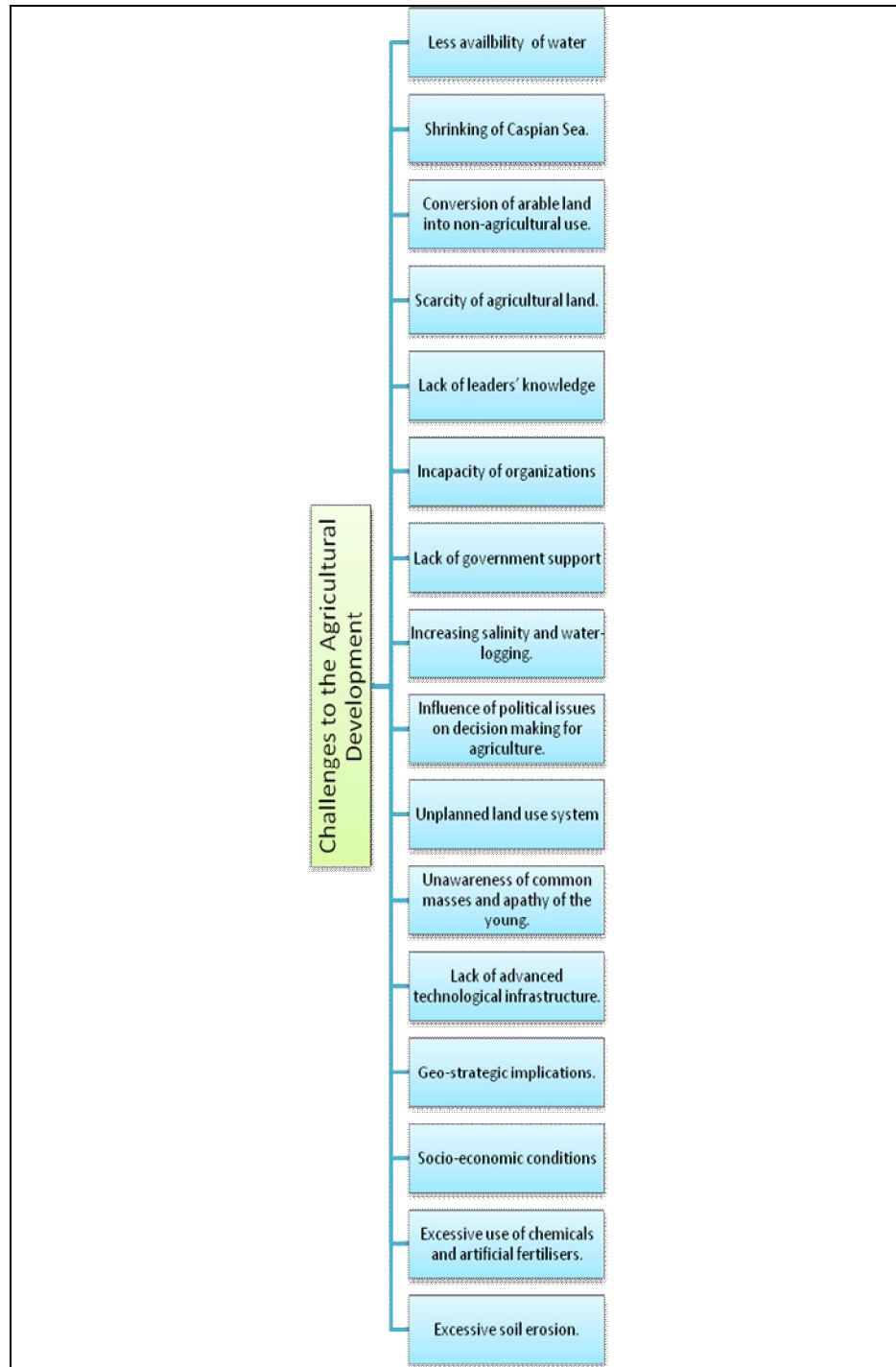


Figure 3: Challenges To The Agricultural Development In Iran

5. Conclusion

This paper has identified the challenges to the agricultural development in Iran. Lack of capable organizations and community resources were an important element contributing to limited agricultural development. They referred to government policy and lack of local organizational capacity as main challenges related agricultural development. Clearly, the described challenges may not be only specific to Iran; some of them may also be considered as common general problems of agricultural development in other regions. Based on the findings, it can be suggested that rural empowerment can be a tool for agricultural development in Iran. The findings of this study can be useful for academicians, researchers and all stakeholders involved in designing, assessing or promoting agricultural projects which are in any way associated with general development goals. An understanding of the existing challenges to the agriculture provides basic information for setting a policy agenda to enhance agriculture for a better rural life.

6. References

1. Ahmad, A.J (1990). Agriculture, Poverty and Reform in Iran. London: Routledge.
2. Aresvik, O. (1976). The Agricultural Development of Iran. New York: Praeger.
3. Allen, G. (1972). Landuse. London: Ruskin House Publication.
4. Azam, S.F. (1998). Irrigation and Agricultural Development. Delhi: BR Publishing Corporation.
5. Alireza, Koucheki. (1982). Traditional Agriculture in Iran and Developmental challenges for organic Agriculture.
6. Carl, K. E. & John, M. S. (1979). International Agricultural Development. University Press: Johns Hopkins.
7. Christer, D. (1969). The World Agriculture Situation. Washington.
8. Clark, C. and Kaswell, M. (1970). The Economics of subsistence Agriculture. London.
9. Dokhtar. M.(1989). History of Iran. Tehran: Sana Publishing Company.
10. Ezatollah, K. (1999). Agricultural Extensions: The question of sustainable development in Iran.
11. Fast, A. (1968). Iran: The Land. United states: Crabtree publishing Company.
12. Fatemah, E.M. (1996). Land reforms to Revolution: The political Economy of Agricultural Development in Iran. I.B.Tauris.
13. Floor .W. (2003). Agriculture in Qajjar Iran. United Kingdom: Mage Publishers.
14. Hussain, M. (1981). Agriculture Geography. New Delhi : Concept Publication Co.
15. Helga, W., and Yussefi, M. (2008). The World of Organic Agriculture, Statistics and Emerging Trends.
16. Jehangir, A. (1977). Iran- An Economic profile. Iran: sana publishing Co.
17. Mara, W. (2007). Iran, New York : Marshal Cavendish Corporation.
18. McLachlan, K. (1988). The Neglected Garden. The Politics and Ecology of Agriculture in Iran. London: L.B. Tauris & Co. Publishers.