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The Necessity of Production, International Marketing, Export And Financing of Agricultural Projects in Iran (Case Study: Variety of Edible and Medicinal Mushrooms)

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ABSTRACT: Falling oil prices and the need to increase no- oil export and exchange earnings, Exposing post-embargo and need to compensation of past economic losses and financing, the water crisis and the need to produce and export of high value-added and low- Consumption water products has challenged exports and production planning. purpose of descriptive analytical study, using research literature and interviews with experts and published statistics from Iran Statistical centre and Iranian mushroom Association and World Bank, is evaluated necessity of international marketing , export and financing of Mushrooms due to the comparative advantages of this industry in Iran. Existence of comparative advantage: cheaper labour and energy resources, climate variability (compared with regional countries), lower distance with neighbouring countries (compared with major producers), producing all- domestic production and No import raw materials, the frequent demand due to food security, compliance with the green agriculture principles, justifies the necessity of due to mushroom industry. Using of all mentioned comparative advantage, reduces the cost product and earns competitive price as a competitive advantage that makes it possible to attract export markets. According to the mushroom processing facilities (increase in value-added and with little water) is solution to non-oil exports and the water crisis.

KEYWORDS: International Marketing, Export, Finance, Agriculture Projects in Iran, Edible and Medicinal Mushrooms.

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1. INTRODUCTION

Now the time of post-embargo has arrived, the Iranian industry and manufacturing sector facing many opportunities Iran. Dependence on oil revenues and impact of political and economic issues in has led to vulnerability of the Iran's economy. Any fluctuations in the price of oil can affect the country's short and long term economic policies, its impact is perceptible for a long time. One way to deal with this challenge, developing the products that improve the domestic economy as increase non-oil exports. You can pay more attention to export those products with export capabilities and access to new markets, in the future (Amirnezhad et al, 2015, 75-81). Agricultural sector is one of the most important economic sector in Iran. In comparison with industrial sector, could have a greater role in non-oil export and attract foreign markets. Mushroom cultivation industry as an important part of agriculture in the world, has become important increasingly, and has created many developments in its cultivation methods. Cultivation of this product in some countries has been common for thousands of years. So, the history of culture in countries like China and Japan is nearly 2000 year. In recent years, mushrooms growing in Iran has been a dramatic expansion and has been conducted significant investment in this area. There are areas for its further development. Investment activities in this field can have an important role in job creation and non-oil export. Issues such as globalization and increasing competition and the need to have the financial power and high technology to attend in global markets, Falling oil prices and the need to increase no- oil export and exchange earnings, exposureing post-embargo and need to compensation of past economic losses and financing, the water crisis and the need to produce and export of high value-added and low-Consumption water products has challenged exports and production planning. Since, the moving to accelerate the economic growth require the enough time and expense, therefore is essential be stressed the parts that besides having a comparative advantage to achieve this goal accelerate it. So, Identifying these sectors, along with their analysis based on their advantages is essential through comprehensive and complementary research. According to the advantages of the sector is necessary why existence of problem in importing some sectors in the global markets due to strong brands, restrictions on providing municipal services in the industrial sector, costly compared to other agricultural sectors, highly skilled and educated workforce in agriculture. On the other hand, oil price in the world market decreased, to achieve development goals, Iran should lead the growth in non-oil sector.

2. LITERATURE REVIEW

In research, production and marketing of mushroom industry, Wakchaure(2011) says Marketing is getting the right product, to the right people, at the right price, at the right time and in the right way. Marketing of fresh mushrooms all over the world is not very organised except the auction system in Netherlands. Producers make direct efforts to bring the produce to the super markets and 'wholesale distributor' element is mostly missing. However, trade in the processed (canned and dried) is sizeable and organised. About the mushroom marketing, Stan Hughes said "Mushroom growers have mystified me for years. They put so much effort into growing and so little into selling". For effective and efficient marketing, especially export, it is necessary to understand the global trade vis-à-vis the sources of supply, potential regions of demand and consumption patterns. Considering that 95% of mushroom production in China is consumed locally, the consumption per capita is likely to be over 10 kg/person/year. This is drastically higher than in US and many European countries where it is around 3 kg/person/year. In India the consumption is miserably low. Considering that we produce over 1 lakh tons and export about 60-70% of it, our per capita consumption is around 30-40 g/person/year.

Valverde (2015) said: Approximately 14,000 described species of the 1.5 million fungi estimated in the world produce fruiting bodies that are large enough to be considered as mushrooms (Chang, 2006.297).

Bina & parsa (2001), In a study that examined factors affecting the production and consumption of edible mushroom in Iran is conducted to investigate the factors influencing the production of mushrooms consists of two parts: internal or controllable factors (human resources management, capital, technology, research and development, technical knowledge) , or uncontrollable external factors (regulatory factors, technological, social and cultural factors, economic factors, political structure)and As well as influencing factors including personal factors (perception, motivation, education, values and beliefs, personality, lifestyle) and social (social culture, subcultures, reference groups, leaders, family, social class) and desires and attitudes of actual and potential customers', marketing mix (product, price, distribution, sales promotion),effectiveness of all these factors have been approved.

3. THEORETICAL FRAMEWORK

3.1. The place of agriculture in economic development

The main objective of developing countries, is quick access to growth and economic development. Accomplishing this goal is possible by using the facilities, capabilities and material and spiritual talents in line with internal and external needs of society. Therefore, interacting with international markets is a measure of development. Finally the desire for rapid economic growth is achieved by trade. International trade as one of economy sectors plays an important role in determining the destiny of developing countries, So, classical and neoclassical economists such as Adam Smith and David Ricardo, Alfred Marshall argued that international trade is a major source of economic growth and emphasized on its existence as a means to expand the domestic market, division of labor, efficiency and productivity increase. Thus, foreign trade could provide the need to industrialization, knowledge and experience required for economic development and make available the access tools to it to developing countries. In addition to meet the domestic needs, the agricultural sector by agricultural exports involved in foreign trade and its products exports is more stable than other sectors. So relying on this sector and expanding its exports can provides the grounds for Iran's presence in international markets and use of its benefits. For this reason, due to the agricultural sector as a precondition is essential for the trade and economic development.

agricultural sector, with about 13.7 percent of GDP, 20 percent of employment, 23 per cent of exports, 82 percent of the 90 percent needed food and agricultural raw material processing industry, has a special place in the national economy. However, this section contains only a tiny proportion of total exports, but the main share of the country's main non-oil exports is of agricultural sector and its products. The share of non-oil export sector during 1981-1986 was about 50% that had the fluctuations over the country's economic development programs, So, during the war of 7/49 percent to 33 percent in the first program, 7/26 per cent in the second, 23.7 percent in the third, 20% in the fourth and in the first two years of the program fifth was 18/21. On the table 1, the export average for the period 1981-2010 expressed in separate economic development programs (Azizi et al., 2015).

Table 1. The export average for the period 1981-2010

Share of main non-oil exports	Share of sum	Share of agricultural	main non-oil exports	-oil exports	All exports	Term
49/77	1/37	306	615	13600	22281	War
33/2	4/36	775	2348	15451	17799	first program
26/7	4/47	833	3121	15373	18658	2

23/79	3/82	1209	5083	25998	31689	3
20/01	3/52	3006	15023	71382	85397	4
21/18	4/50	5214	24619	104211	128831	5

By observing the results in Table 1 and the necessity of developing non-oil exports and take advantage of the benefits of agricultural sector, to attract foreign markets and capture export markets, due to the international marketing and its role is essential. International aspects of marketing and public procedures are standard and are applicable in all markets and countries. Distinguishing in Domestic marketing and international marketing is in the field of their activity (Babaei Zokliki, 2013).

3.2. Challenges of the industrial sector in the export and because of due to the agricultural sector in after embargo

- Being costly
- Lack of fast elasticity of the domestic market in the event of problems in export
- The lack of local knowledge in the industry and the necessity of skilled labor
- Competitive limitations on entry to global markets
- The need to providing municipal services in the industrial sector
- Lack of fitness of industry sector with the rural
- Lack of export significant background in the industrial sector (Zahedi mazandarani, 2004).

3.3. The mushroom position in agriculture and economy

Generally, In terms of food, mushrooms are divided into three categories: edible mushrooms, edible - Pharmaceutical mushrooms and medicinal mushrooms. Edible mushrooms, to be consumed as raw or cooked or dried. In Iran, the button mushrooms are consumed mostly. Of these mushrooms pointed out button mushroom (*AGARICUS*) and *volvaria Iranica*, however, recently some medicinal properties is observed in button mushrooms. While, mushrooms of oral -drug taken also have medicinal properties. As oyster mushrooms (*PLEUROTUS*) and Maitake mushroom and Shiitake mushroom, only in Iran, are grown oyster mushrooms and more in Mazandaran and Isfahan and just as edible. Medicinal mushrooms as extract or capsule or liquid form, such as Reishi mushroom (scientific name: *Ganoderma lucidum*) and Cordyceps mushroom, these mushrooms are not place in iran and the no attention in the pharmaceutical industry yet. In competitive market, the competitive advantage meaning the firm in product manufacturing, use the new technologies to improving product quality, packaging, reducing final price, effective advertising, identifying target markets and make a distinction to products than competitors. In other words, production based on comparative advantage is only necessary condition for production: Sufficient condition to produce having a competitive advantage (Iran village Cooperation Centre, 2014).

4. RESEARCH METHODOLOGY

The purpose of descriptive analytical study, using research literature and interviews with experts and published statistics from Iran Statistical centre and Iranian mushroom Association and World Bank, is evaluate necessity of international marketing, export and financing of Mushrooms due to the comparative advantages of this industry in Iran. The data are 1990-2016 years. The results of this applied study can be used in production and sales and exports and attracting foreign markets planning by planners managers as well as in education and research to teachers and students interested in growth and development and global competitiveness.

5. ANALYSIS OF FINDINGS

5.1. process of production and consumption mushroom in the world

World production and consumption of mushrooms has increased at a rapid rate, especially since the mid-1990s. Not only has production and consumption increased as the world's population has increased, but per capita consumption of mushrooms has increased as well. World mushroom production has increased more than 25-fold during the last 35 years (from about 1 billion kg in 1978 to about 27 billion kg in 2012). This is a remarkable accomplishment, especially considering the human population has increased 1.7-fold during that same period (from about 4.2 billion in 1978 to about 7 billion in 2012). Over a 15-year period (1997 to 2012), per capita consumption of mushrooms increased from about 1 kg/year to over 4 kg/year. China is the main producer and consumer of mushrooms. The demand for mushrooms has been phenomenal – production to meet the growing demand is a performance seldom duplicated in agriculture today (J Royse. 2014).

Generally, 2 main factors can be considered due to the rapid growth of production and consumption mushrooms in the world: 1: Advances in technology and increased productivity in innovation and mushroom cultivation technology. 2: The willingness of developing countries such as China and India to the industry that was pervasive culture of mushrooms consumption in the world. In 2015, with the world population to seven billion and 300 million, the rate of mushroom production to 37 million tonnes in the world. In 2012, Iran ranked eighth in mushroom production in the world (Table 2), which is ranked seventh in the years 2014-2015. China and America and Italy had the highest rate of production. Also according to Figure 2, Asia and Europe, have been the world's largest mushroom production.

Figure 1. World population (billion) vs. total world mushroom production (billion kg)
(J Royse. 2014).

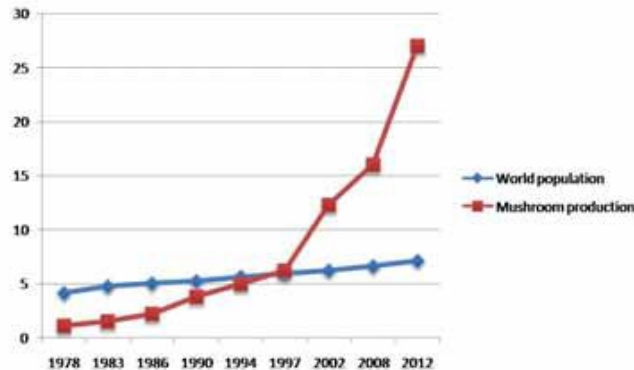
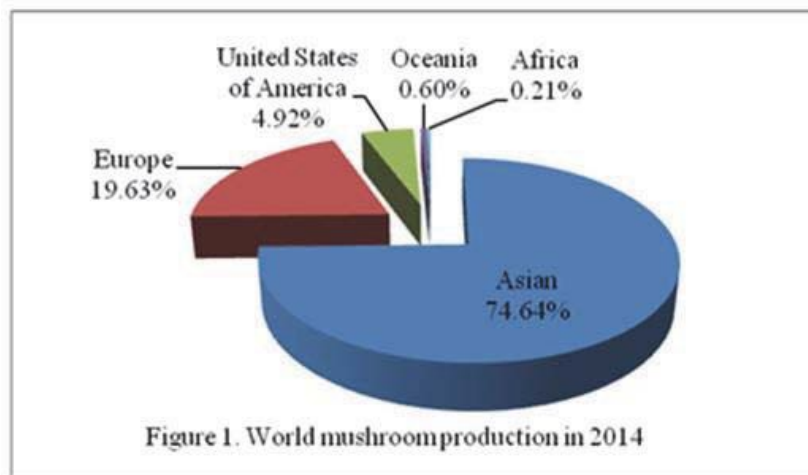


Table 2. Large producing countries of mushroom in the world (tonnes) in 2012 and 2010.

number	country	2010	2012
1	china	4.833.725	51.500.00
2	italya	399.997	761.858
3	America	359.469	388.450
4	New Zealand	266.000	304.000
5	Netherlands	230.000	220.000
6	Spain	133.000	148.000
7	France	119.346	115.669
8	Iran	74.000	82.500
9	Canada	72.930	78.930

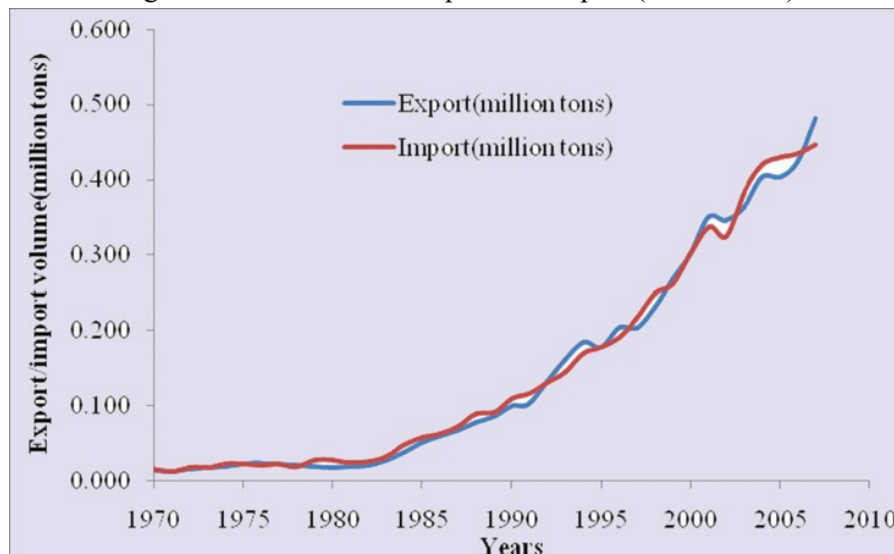
Source: (FAOstat, 2010-2012)



Source: Food and Agriculture Organization, 2015

From 1970 to 2007, import and export statistics of mushrooms in importing countries due to increased consumption of fresh mushrooms, and in exporting countries due to increased use of technology and increasing production per unit and increasing foreign demand, rate of exports and supply is increased with slope equal to the slope of the demand in the world (Figure 3).

Fig. 3. World mushroom export and import (million tons)



Source: Table 51a-World mushrooms and truffles: Export volume, 1970-2007, Table 54a-World mushrooms and truffles: Import volume, 1970-2007, United Nations, Food and Agriculture Organization, FAOStat (08/31/2009)

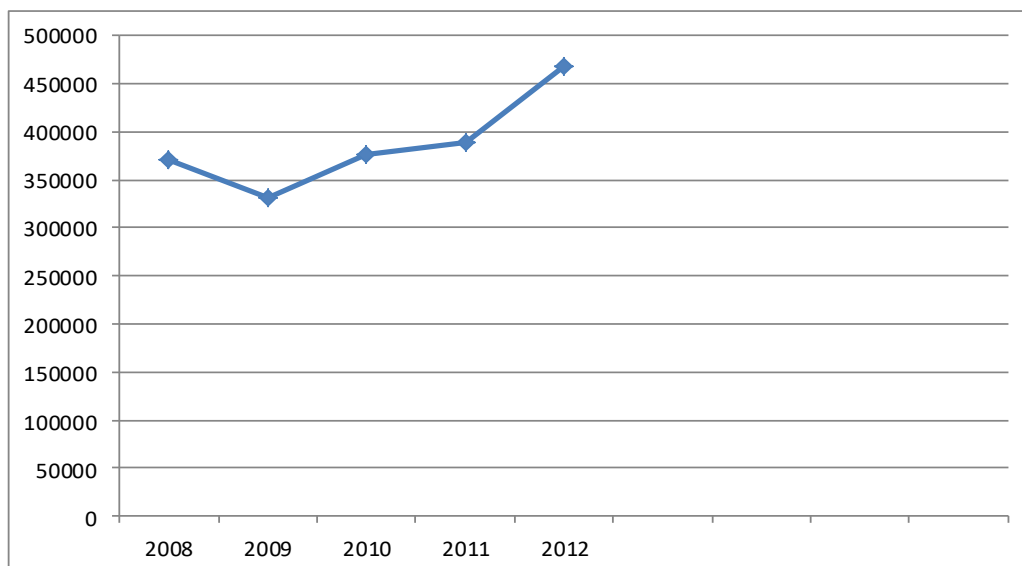
Since the domestic demand for mushrooms is different in different countries, only the largest producer, will not be the largest exporter. But also factors such as surplus domestic production, the ability to absorb export markets, competitiveness in foreign markets, and the competitive advantage is also involved in the export of this product. From 2008 to 2012, the Netherlands had the highest export of fresh mushrooms (Table 3). And the amount of export have also increased. (fig.4)

Table.3 The total amount of global exports of fresh mushrooms in the largest exporting countries. (2008-2012) (tons)

2012	2011	2010	2009	2008	country
172959	158070	157844	123195	122984	Netherlands
115789	104835	95661	80021	85777	New Zealand
41529	1318	136	317	67	China
37522	37267	41305	43764	72388	Ireland
31456	27109	28424	19851	20603	Canada
30534	28603	25790	25814	32613	Belgium
27657	24955	21585	32876	32621	Lithuania
9821	7018	5042	4897	4125	Germany
467267	389175	376090	330735	370794	Total

Source: comtrade⁶ 2008-2012

Chart4. The total amount of global exports of fresh mushrooms in the largest exporting countries. (2012-2008) (tons)



According to Table 4 and Figure 5, the import of mushrooms in the world from 2009 to 2012 still had growth. Great Britain continues have the largest import country in the world. Russia is one of Iran's neighbours, is the world's third largest importer of mushrooms. Note, the Figure 3 and Figure 5 shows in the mushroom industry, in the consumption function, demand and supply been proportional to each other has always in in the world, so that the decline in exports in 2009, suggesting a decline in imports of mushrooms in the world.

Table. The total amount of global import of fresh mushrooms in the largest importing countries. (2008-2012) (tons)

2012	2011	2010	2009	2008	Country
84101	78017	79249	77655	99207	Great Britain
76136	63257	65451	52797	54048	Germany
60361	49968	49713	46616	39381	Russia
44570	47714	25151	26058	27559	France
43354	33181	35551	27343	25684	America
37313	29905	35778	23771	47378	New Zealand

⁶ www.comtrade.un.org

28535	28145	26340	15233	9219	Ireland
24408	23729	34646	27660	33213	Belgium
19042	4732	4751	2414	3067	Italy
13969	11035	10678	19429	23078	Lithuania
431789	369683	367308	318976	361834	Total

Source: Mat Amin et al, 2014

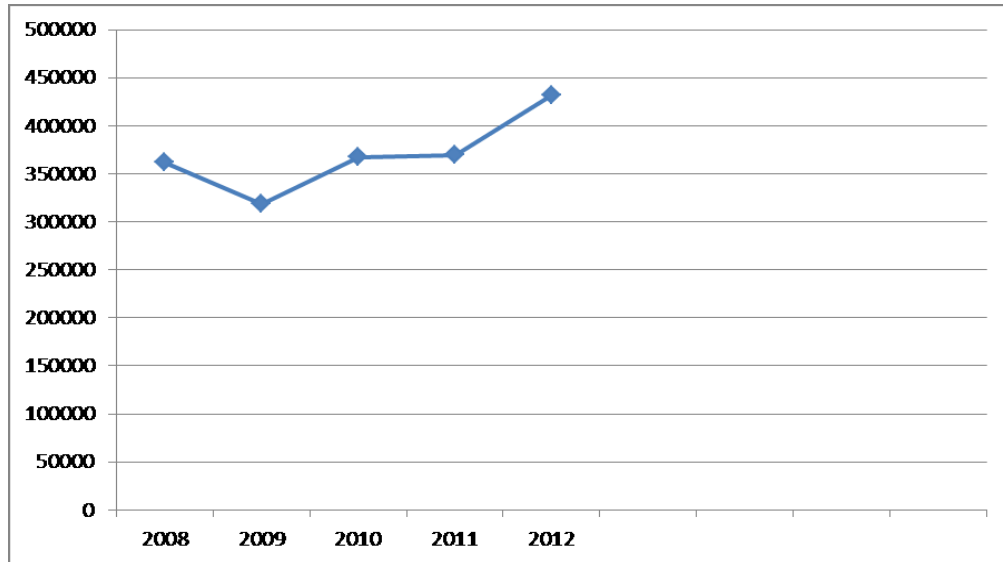


Figure 5. The total amount of global import of fresh mushrooms in the largest importing countries. (2008-2012) (tons)

5.2. Process of production and consumption of mushroom in Iran

According to census sampling of the country's mushroom farms in 1391, 1033 production units in 1391, there have been in the country. By increasing in domestic consumption in the country has increased the number of the unit, in 2015 reached 1166 units. (fig5).

Table5. Number of mushroom production unit (2001-2015)

Oyster mushroom	Button mushroom	Number of Producer	year
118	73	194	2001
351	163	534	2006
279	704	1033	2011
290	879	1166	2015

Source: Results

Table6. The amount of fresh mushroom production in Iran (1990-2015) (tons)

(tones Weight)	Year
10000	1990
7108	1995
6997	2000
18863	2005
57932	2010
82500	2011
100000	2015

Source: FAO Stat & Association of Iranian mushrooms

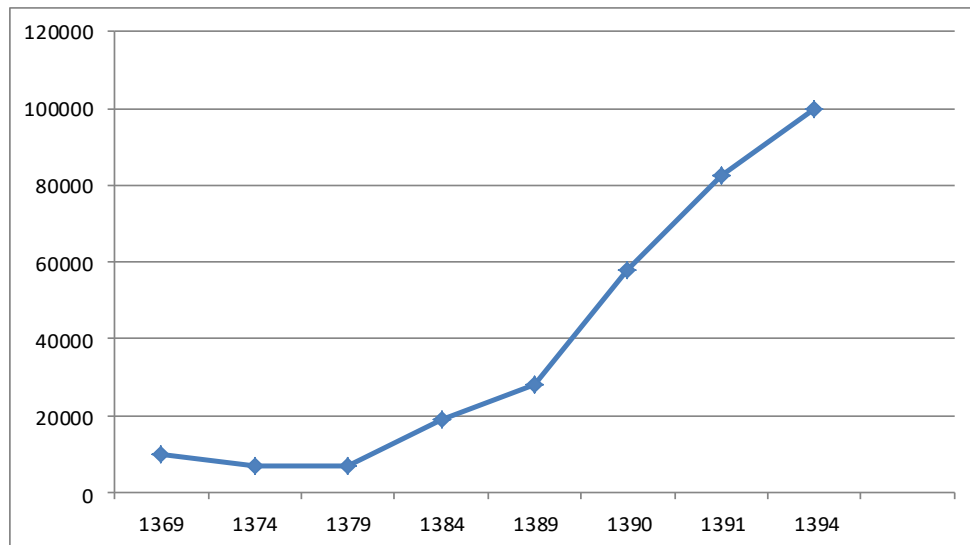


Chart.6. Fresh mushroom production in Iran (1990-2015) (tons)

Mushroom industry, like other agricultural sectors, requires a range of physical labour. The number of employees in the industry, are manufacturers and suppliers of raw materials, production staff, sales staff and personnel transport. Table 7 is the number average of employees in the manufacturing sector from 2011 to 2015.

Table. The number of persons employed in the manufacturing sector of mushrooms (the culture)
(p)

Number	year
5900	2011
9222	2015

Chart7, in years 2014 and 2015, the amount of export sales in the domestic market due to increased domestic consumption, preferring to internal sale instead sales in foreign markets and spending and also because of the inability to attract demand from foreign markets has decreased.

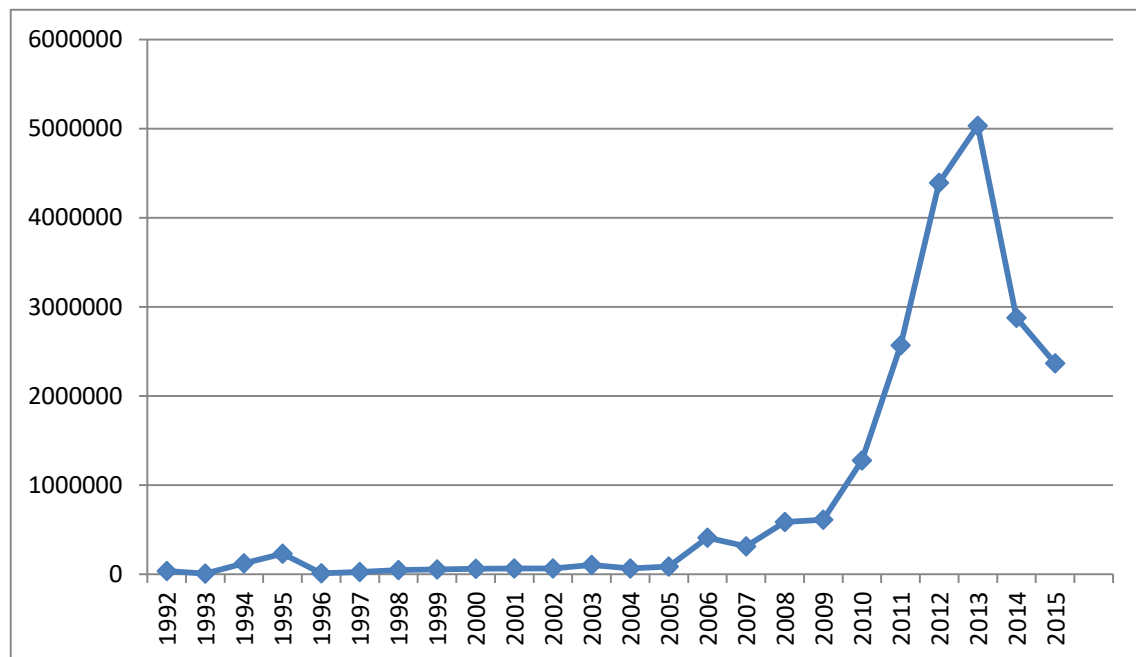


Chart7. The the amount of and value of total exports of fresh mushrooms (1992-2015)

Chart8, The main reason for the increase in the amount of imports in the period (2003 to 2011) has been an increase in domestic consumption and domestic market demand elasticity.

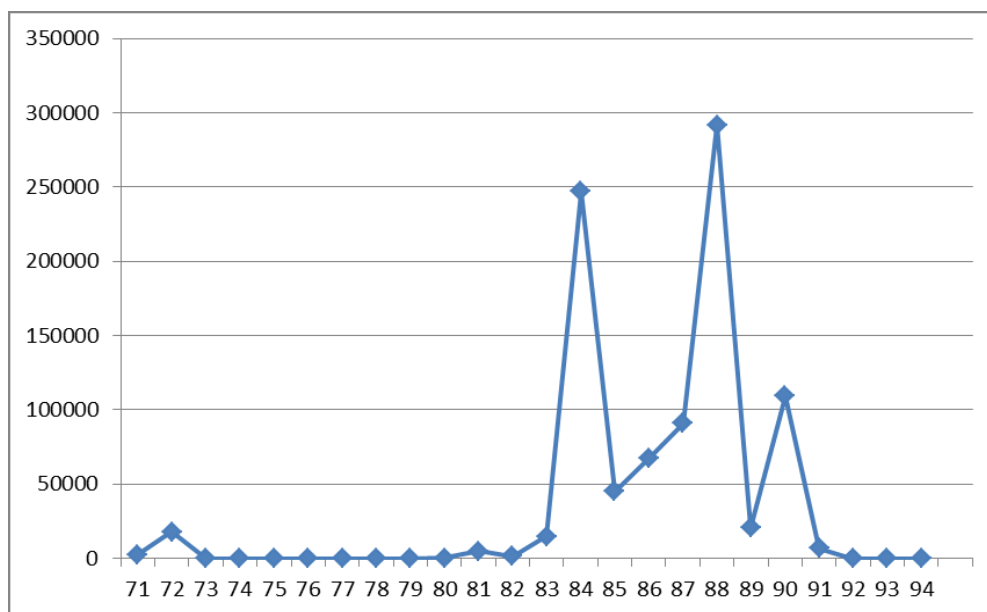


Chart8. Total imports of fresh mushrooms (1992-2015)

5.3. Comparative advantage compared to other parts of the production-economic production and export of mushrooms in Iran

- The lowest risk in the event of increased production and any disruption in exports

So, if for any reason be discontinued the business relationship with the country of destination and export markets, can use by domestic market. (Used in the pharmaceutical sector and feed consumption)

- Fully domestic product manufacturing and lack of need to import of raw materials

For the preparation of its raw materials (waste products), unlike many other products that are required import raw materials and sufficient foreign exchange, are required to import any raw material and providing the currency.

-Existence a permanent consumer market for the product at the same time from the public sector and the governmental sector due attention to the issue of food security (In terms of health and medicinal value and ensuring food sources).

-Environmentally-friendly

One of the benefits of mushroom cultivation is their potential contribution to a more sustainable and environmentally-friendly way of farming. Mushroom cultivation using an agricultural waste as a growing medium, and the subsequent use of spent substrate (MZ et al, 2016).

-Possibility of processing and increasing value added

The mushroom are sold as fresh or canned, the fresh mushroom being preferable. Cut off the root system (approximately 4 cm) and wash briefly before use. They are traditionally used for soups, but can also be used for salads and other dishes. They have a fruity flavor and a crisp texture. The mushroom can be refrigerated for about one week (Kumar, 2015).

5.4. Relative advantages mushroom production in Iran in comparison with some countries

-Compatible with the problem of water crisis in the country

The water consumption between 20 to 30 liters of water for 1 kg and is on average about 5% of other products. While, for example, to produce 1 kg of tomatoes is required 400 to 500 liters per kilo of product.

- The climatic variations, Compared with neighboring and regional countries

Due to climatic variations there is Possibility of production in all weather for foreign markets that are able to produce only in certain seasons.

-Cheap labor compared to neighboring countries and big producers in mushroom industry

The production of mushrooms is user activity. Iran's wage level is lower than many countries, and this factor is determining the final price a lot (Table 10).

Table 10. Comparison the minimum wage between 16 countries (Mehr News Agency, 2014).

The minimum wages in R	The minimum wages \$	Country
6089000	194.5	Iran
9390000	300	Iraq
8388400	268	Jordan
6760800	216	Kuwait
9202200	294	Malaysia
25040000	800	Arabia
16995900	543	Turkey
8200000	227	India



10548000	293	China
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-Cheap energy resources than many countries

Cost of producing for 1 kg of button mushroom in Iran in 2011, almost calculated equal 1 dollar (Table 11).

Table 11. The cost of producing a kilo of button mushroom (2009-2011) Source: Association of Iran mushroom

The average sale price in farm	Cost Material	Finan cial costs	cost	Net assets and operation al costs	share of the cost of packaging materials	share of general adminis trative expense s and sales	share of overhead costs	share of direct labor	The share of consuma ble materials (Rial)	year
25508	2017	23491	1056	25508	3628	3244	3642	6751	5170	2009
27190	1958	25232	1198	27190	3815	3506	3925	7256	5532	2010
31196	2125	29071	1413	31196	4502	4067	4632	7983	6474	2011

Table 12. The prices of energy and fuel in Iran compared with other countries (Source: Results)

The price per kilowatt of electricity	Price per cubic meter of water (Rial)	The price per liter of fuel (gasoline)	Country
560	2970	3000	Iran
2040	12000	65000	Turkey
1120	8500	20460	Iraq
840	7000	26000	Afghanistan
4760	2500	29000	Pakistan
3640	35000	30600	China
6160	6700	31280	India

Electricity consumption for production of 1 kg of mushrooms: 4.1 kW

Fuel consumption for production of 1 kg of mushrooms: 0/8 liters

Water to produce 1 kg of mushrooms: 28 liters

5.5. Competitive advantage of mushroom production in Iran over top producers in the industry

-Close with neighbouring countries and savings in transport costs

The distance border of Iran to neighbouring countries (table13), is one of our competitive advantages compared to other major producers in the industry as one of the effective measures in transport costs is the final price of mushrooms.

Table 13. The distance of Iran border with neighbouring countries and the population of these countries in 2016.

Population (people)	The distance the Iranian border (km)	Country	N
2 976 691	35	Armenia	1
9 619 436	432	Azerbaijan	2
77 776 638	499	Turkey	3
190 997 671	909	Pakistan	4
33 328 766	936	Afghanistan	5
5 416 247	992	Turkmenistan	6
35 869 093	1458	Iraq	7
146 377 464	2370	Russia	8
1 474 878	45	Bahrain	9
3 594 594	200	Oman	10
9,533,910	80	Emirates	11
30 095 515	222	Arabia	12
3 537 500	90	Kuwait	13
2 118 920	210	Diameter	14
6 897 179	-	Jordan	15
42 530 364	-	Ukraine	16
10,813,573.	-	Georgia	17
30 927 933	-	Uzbekistan	18
23 241 718	-	Syria	19
8 626 133	-	Tajikistan	20
17 066 031	-	Kazakhstan	21

Source: Results

6. DISCUSSION AND CONCLUSION

Existence of comparative advantage: cheaper labour and energy resources, climate variability (compared with regional countries), lower distance with neighbouring countries (compared with major producers), producing all- domestic production and No import raw materials, the frequent demand due to food security, compliance with the green agriculture principles, justifies the necessity of due to mushroom industry. Using of all mentioned comparative advantage, reduces the cost product and earns competitive price as a competitive advantage that makes it possible to attract export markets. According to the mushroom processing facilities (increase in value-added and with little water) is solution to non-oil exports and the water crisis.

- Creating incentive programs of the government for the development of export markets by block grants to specialized units to exporting and marketing to spread the culture of consumption of mushroom produced in Iran is in the region, by creating representatives with the Iranian indigenous people in these countries, to attract consumer markets and public consumption of mushrooms using ICT as a tasty food with nutritional and medicinal value
- Creating refrigerated transport facilities using the Customs facilities and air transport to prevent reduce waste and solve issues in reduced quality and timely delivery of orders.
- Creating Processing facilities and supporting the processing industries in order to become a strong industrial brand to attract and consumer markets
- Ongoing assistance to producers in order to reduce the finished price and maintaining competitive price as a competitive advantage.



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ETHICAL CONSIDERATION

Authenticity of the texts, honesty and fidelity has been observed.

AUTHOR CONTRIBUTIONS

Planning and writing of the manuscript was done by the authors.

CONFLICT OF INTEREST

Author/s confirmed no conflict of interest.

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