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Research article

RECOGNIZING STRATEGIES IN CANOLA SUSTAINABLE PRODUCTION IN THE QAZVIN PROVINCE

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ABSTRACT: In this study, we address to determine sustainability strategies for production of Canola in Qazvin province using SWOT. The present study aims to determine the most important strengths, weaknesses, opportunities and threats of sustainability in production of Canola in Qazvin province and recommends appropriate strategies. At first, according to surveys were carried out on internal and external environment of production sustainability of Canola in Qazvin Province, a list of strengths, weaknesses, opportunities and threats were identified, and after asking opinions of those involved in this area by questionnaires, one-variable t-test was used to confirm or disapprove the strengths, weaknesses, opportunities and threats. Then by weighting to each of these confirmed factors based on a Likert scale and calculation of total weights, average of weights, and finally, after calculating relative weight, priorities were identified and ultimately appropriate strategies were presented using analytical method of SWOT in order to overcome or minimize weaknesses and threats and to strengthen and improve strengths and opportunities of production sustainability in regard to canola production in Qazvin Province.

Key words: Strengths, Weaknesses, Threats, Opportunities, Strategies

INTRODUCTION

Canola is an important source of protein and oil for human and animal consumption. Most vegetative oils are edible and have been used in food preparation to make it more palatable and nutritious Production status of each region depends on the economic function of the land (agriculture, industry, mining, and service) [2]. The function is formed by optimum combining of land productivity power. It is possible that each region, in special land, benefits from suitable and potent productivity. Therefore, paying attention to production and its functionality will create appropriate conditions for economic productivity [4] The agricultural sector provides the capability for economic growth in different regions, so that it usually leads to job-creating opportunities, export and food industry boom. Today, economic growth of any nation is not possible without agricultural growth and since each of crops require specific environmental and climatic conditions, therefore, researchers and experts have paid special attention to land-use and they identify and evaluate land resources with appropriate methods, based on ecological - agricultural models, and measure their capabilities for particular purposes. Considering the present problems in the agricultural sector, sustainability debate is fundamentally important. Because regional differences require this matter in order to provide appropriate planning with regard to the existing potentials and this creates a demand for expert evaluation. [8].

Each region has special capabilities and problems in agriculture. For this reason, their identification and analysis can be useful for sustainable agricultural production and optimal use of available resources [10].Therefore, using of models in connect to identification of agricultural capabilities of each region are helpful to prevent many problems because models are practical tools that can help to understand reality, not the whole truth, but it's beneficial and understandable part. Qazvin Province as the study area has bottlenecks and potentials in agriculture sector, in terms of environment and human conditions, that identification of these bottlenecks and potentials can lead to decrease in deprivations especially in rural areas, poverty alleviation, job distribution, and most importantly, resource management [7]. The subject province has capability of agribusiness with high rate of production. Among them, the most important crop is canola which is known in the country and throughout the world.[9]. If we want agricultural growth in the region to be proportional to its positive trend, all principles regarding the use of resources should be matched with their capacity and this concept has been proposed in the development of sustainable agriculture [11].Therefore focus on and consideration of this issue through development models can be effective in presenting plans and strengthening social and economic dimensions for farmers of the region in future[2]. The purpose is that the matter is pursued in Qazvin Province by adopting suitable model for agricultural sector, so that in this way, capabilities of this area towards sustainability of agricultural production are identified and then strategies are presented to resolve existing problems [3].According to what has been said, our basic question is that what are Qazvin Province advantages and disadvantages in the context of sustainable agricultural production which can be effective to eliminate the threats and opportunities? Answer to this question can help to identify capabilities of the region and use potentials to remove bottlenecks [12].Few studies have been done in the field of sustainability some of which are referred here. [4) did a research titled "environmental wastes as factors of degradation of production resources" by SWOT method. In this study, factors and issues in relation to sustainability of production are identified and then these problems are classified. In other words, major and minor variables that are effective in reducing or increasing sustainability of production are identified and then prioritized. Finally, according to the collected data, some solutions for the problems and developing sustainable production are offered.[5]did his research titled "principles of organic agriculture" by SWOT Method as well. In this paper, according to the principles of organic agriculture and using SWOT method, he reviewed major principles of organic agriculture with regard to purely environmental indicators. And on the other hand, strengths, weaknesses, opportunities and threats of the study area are discussed along with examination of economic, environmental and social indices. [6].performed his research titled "Entrepreneurship Views in Realization of Sustainability Objectives" by SWOT Method. In this research, entrepreneurship perspectives on achievement of sustainability goals, using SWOT, are merely focused on social indicators such as capacity building, empowerment of farmers, and mobility of production process. In addition to social indicators, other indicators of sustainability, with regard to internal and external conditions of the subject areas are studied. Using SWOT, [1].in a study titled "Necessity of Paying Attention to Environmental Challenges due to lack of sustainability in production, merely considers environmental challenges. Using SWOT,[2]in his study titled "Investigation of Sustainable Agriculture Theories" merely studies development theory with sustainability approach, and in addition, pays special attention to the efficient use of natural resources for future generations [3].

Methodology

For the research purposes, this study combines survey and analytic-descriptive methods. According to surveys carried out on the indoor and outdoor environments affecting sustainability of Canola production, list of strengths (7 cases), weakness (11 cases), opportunities (17 cases) and threats (23 cases) were identified. SWOT method was used to analyze the data collected and the data were analyzed using SPSS software.

RESULTS

The mean age of the studied experts was 34.5 years with SD = 6.23 years. The youngest expert was 26 years old and the oldest one was 52 years old. Results showed that 70 percent of the respondents were male and 30% of them were female. The experts' education was as follows: 63.4 percent of them had Bachelor's Degree, 31.2 % of them had Master's Degree and 5.4% of them had Doctorate's Degree. The average years of service in this Research Center was 14 years. 86.4% of the experts stated that they have been familiar with canola as a strategic product for more than 10 years and the rest of the respondents (13.6%) stated that they have recently (less than 5 years) become familiar with this product and its importance in the agricultural economy. Among the experts, 69.2% were involved in canola crop and 27.3 percent of them were involved in providing training programs, 17.6 percent of them were involved in promotional programs, and the remaining (24.3 percent) were involved in research. 30.8% of the experts were involved in canola production.

In Table (1) which represents strengths of sustainable canola production from the perspective of experts, the most important strength is positive and logical view of authorities and planners towards agriculture especially production of canola as a strategic product in the region that has high potential in sustainability of canola production. This factor obtained the highest score of 0.1918 wt among 7 strengths. Sustainability of production in the province, specialized experts in diagnosis and diseases and pests control in canola production in Research Center of Qazvin province (0.2018), interest of farmers in Canola production in the province (0.2040) were classified as the second and third strengths. In addition, neighboring of Qazvin province with populated provinces (Tehran, Karaj) and high capacity of human resources for production in the last ranks, i.e. they are considered as the most unimportant and weakest points.

Table- 1: Evaluation and prioritization of strengths

Strengths Analysis	*C.Vord	Priority
High capacity of human resources for production	0.2155	7
positive and logical view of authorities and planners towards agriculture especially production of canola as a strategic product	0.1918	1
several higher education institutions to develop experts	0.2103	5
specialized experts in diagnosis and control of diseases and pests in canola production in Research Center of Qazvin province	0.2018	2
interest of farmers in Canola production activities in the province	0.2040	3
knowledge and experience of local producers in the production of canola	0.2095	4
Qazvin province neighboring with populated provinces (Tehran, Karaj)	0.2153	6

Source: the research findings

With regard to analysis of table 2, all factors and weaknesses of sustainability of canola production in the region were included in 11 factors. The lack of an appropriate mechanism for comprehensive planning for annual cultivation of canola in Iran, with a score of 0.1830 wt, is considered as the most important disadvantage in sustainability of canola production which demands a variety of studies. Two other components, i.e. lack of enough information about market demands inside and outside of the country with a score of 0.1939 wt and low participation of beneficiaries in assessment and planning and top-down decision governance with a score of 0.2009 wt were placed in the second and third ranks. Also, land fragmentation and low level of mechanization in the province and low irrigation efficiency and productivity respectively obtained scores of 0.2345 and 0.2415wt. In fact, they were recognized as the most unimportant weaknesses in the region and less attention is paid to them in comparison with other factors.

According to the results of Table 3, the most important opportunities that the agricultural sector in Qazvin province faces are presented in 17 items. Suitable climatic conditions (being plain) for Canola production in Qazvin province with a score of 0.1434 wt is prioritized at first rank and it is considered as the most important opportunity in the agricultural sector. The second and third factors are fertile lands prone to development of canola production in the province, suitability of the province soil in terms of cultivation. Also establishment of airport, border markets and customs for canola exports in Iran, international organizations (FAO) attention to food security, particularly strategic crops, especially canola, were respectively, and they are considered as the most unimportant opportunities for sustainability of canola production in the region.

Table- 2: Evaluation and Prioritization of Weaknesses

Weaknesses Analysis	*C.Vord	Priority
Lack of coordination between departments in charge of production (Ministry of Commerce, Ministry of Agriculture)	0.2011	4
Lackofappropriate mechanismfor omprehensive planningforannual cultivation of canola in Iran	0.1830	1
Lack of enough information about market demand (in terms of requirements) inside and outside of the country	0.1939	2
Lack of training courses to raise awareness of the province producers by related organizations	0.2130	5
Traditional cultivation of canola and lack of cropping pattern in the province	0.2163	6
Land fragmentation and low levels of mechanization in the province	0.2345	10
Lack of accurate and consistent and timely statistics and information about basic resources of the province	0.2214	7
Weak management structure in shortening the Hidden Economic Hands	0.2225	8
Weaknesses inthe management of production costs by producers in Iran	0.2262	9
Low level of irrigation efficiency and productivity	0.2415	11
low articipationof beneficiaries in assessment and planning and top-down decision governance	0.2009	3

Source: the research findings

Table- 3: Evaluation of Prioritization of opportunities

Analysis of Opportunities	*C.Vord	Priority
fertile lands for cultivation of canola in the province	0.1689	2
Access to water resources for cultivation	0.1836	4
Appropriate funding by the government to develop canola culture in the province	0.2563	8
Numerous cooperative companies for selling canola product in Qazvin Province	0.2598	9
Consumption Market in the province and other neighboring provinces	0.2613	10
Capacity for canola processing and complementary industries (industrial towns in the surrounding of Qazvin province)	0.2819	12
Climatic conditions (being plain) suitable for Canola production in Qazvin	0.1434	1

The suitability of the province soil due to cultivation	0.1745	3
Possibility of using non-conventional water in the agricultural sector of the province	0.2227	5
Actual and potential production capacity of canola processing	0.3005	14
Good roads to transport canola crop to domestic markets	0.2903	13
High demand of global and regional markets for canola	0.3125	15
Supportive government policy in recent years in developing canola cultivation	0.2389	6
High levels of domestic demand for canola consumption	0.2405	7
Possibility of increasing canola product value by improving the quality and properly processing	0.2716	11
airport, border markets and customs for canola exports in Iran	0.3245	16
international organizations (FAO) attention to food security, particularly strategic crops, especially canola	0.3289	17

Source: the research findings

Based on external factors in Table 4, in the context of threats in sustainable production of canola in the studied area, in order to achieve sustainable development, failure to devote adequate funds for production of canola by agricultural development planners in Iran is considered as the most important item among other threats which obtained score of 0.1603. Also, factors of uncontrolled increase in oil import license (legal and illegal) and the possibility of multilateral sanctions regarding lack of support in production, including fertilizers, seeds, etc. were classified as the second and third threats with scores of 0.1918and 0.2031. In addition, with score of 0.2916, the option of controlling canola price throughout the world by related organizations was recognized as the most unimportant factor among threats of sustainability of canola production. It is important to note that total examined threats were investigated in 23 cases.

Table -4: Evaluation and Prioritization of Threats

Threats Analysis	*C.Vord	Priority
Uncontrolled increase in oil import license (legal and illegal)	0.1918	2
Multilateral sanctions regarding lack of support of production including fertilizers, seeds and	0.2031	3
failure to devote adequate funds for production of canola by agricultural development planners in Iran	0.1603	1
Lack of awareness of environmental variables affecting canola production in Iran	0.2549	19
Non-use of canola wastes in various stages of production in Iran	0.2738	22
Weakness in domestic and foreign investment on canola production in Iran	0.2648	20
High cost price of production in comparison with the world prices	0.2709	21
Lack of guild organizations in the canola production sector in the province	0.2354	11
Failure to use modern technology fore continually culture in the province	0.2367	12
Lack of appropriate pricing for production and sale by the government for producers	0.2398	13
Risk of plant and animal pests and diseases across borders	0.2407	14

False and real jobs with regard to agriculture	0.2436	15
Quantitative and qualitative degradation of soil and water	0.2469	16
Light soil texture and instability of soil structure in agricultural lands	0.2493	17
Lack of private active sector in supporting production of canola in the province	0.2537	18
High production costs and lack of government support for the production of canola	0.2090	4
Low financial strength and capital of people in the province	0.2191	5
Not specialized production of canola in the province	0.2286	7
Storage deficiency of canola in the province	0.2206	8
Inappropriate and Inadequate infrastructure facilities and equipment for transport in the province	0.2229	9
Absence of trade unions in the sector and the problems of pricing and agribusiness	0.2343	10
The lack of mechanisms leading comprehensive plan of annual cropping (cropping pattern)	0.2269	6
Control of canola prices globally by related organizations	0.2916	23

Source: the research findings

Four strategies have been used to determine framework strategies of the present model including competitive – aggressive, diversification, revision and defensive strategies. To provide any type of strategy, two or more components of present factors are considered which cover each other or are interrelated. In implementation of SO strategy, external opportunities can be used as much as possible by using internal strengths. Any planner wishes to be in this situation so that he will be able to take advantage of internal strengths to derive maximum benefit from the opportunities and external events. To reach such a situation, planners usually try to turn their basic assets, in the assets value chain, into key competencies and competitive advantages. In implementation of ST strategies, planners try to adopt mechanisms or counter the threats using their internal strengths in order to avoid negative impacts of external threats on the organization. The aim of WO strategies is that planners can use the advantages lied in the opportunities in order to compensate for weaknesses. Sometimes there are very good opportunities outside the subject area, but planners can not exploit these opportunities due to internal weakness. In implementation of WT strategies, planners aim at decreasing internal weaknesses and refraining from the threat posed by the external environment.

DISCUSSION AND CONCLUSION

Considering the quantitative responses of the experts and developed strategies in order to develop a strategic planning consistent with the need to achieve sustainable canola production in Qazvin province among the discussed strategies, defensive strategy is the first priority for taking action, because every year invasion of pests and frequent occurrence of natural disasters increase vulnerability of production, reduce their power and cause frustration among farmers. And, consequently, poverty is exacerbated and these factors, in combination, will lead to inappropriate use of agricultural lands and production sources, consequences of which are short and long-term environmental serious injuries in the region. Revision strategy will be the second priority because reducing the weaknesses, adopting vision of empowerment and capacity building and participatory approaches by using of local knowledge and experience besides modern knowledge are today necessities for sustainability of production and agriculture in the region. In fact, a review of relationship between state and producers, from policy making, planning and decision-making aspects and achieving a regional consensus about production sustainability for reduction of economic and social poverty and to prevent environmental degradation is one of requirements that cannot be easily ignored.

Table: 5 Shows development of the framework strategies (SWOT).

Diversification Strategies (ST) - Strategy for optimization of production and cost reduction and cost price of Canola - Empowering Manpower - Increase in implementation of technical recommendations of experts and advocates through education and collaboration among researchers, promoters and promoting prevention of damages caused by natural disasters - Diversification of production in combination with providing services and resources, especially internal resources to enhance farmers motivation and individual creativity - Conventional use of water resources of the province, considering high rate of rural population and fertile lands for agricultural development - Establishing appropriate mechanisms with scientific and technical criteria to allocate sufficient funds to agricultural sector by using the expansion of agricultural activities of the province and present potentials - Strengthening democratic and specialized institutions in providing technical services for control of agricultural pests and diseases - Construction of necessary infrastructure for production of canola and its transfer to other foreign and domestic areas	Competitive / Aggressive Strategies (SO) - Encouraging planners to seriously focus on strategic products - Strengthening management of appropriate use of natural resources - Focus on reduction of extra cost in all areas - Strengthening organized human resource management in order to make good use of natural resources - New scientific research on disease and pest control - Development of agricultural mechanization considering the extensive cooperative networks – establishment of agricultural association to facilitate providing productive services - Sustainability of production considering multiple water sources of the province - Allocation of funds by the government to establish a professional training ground for producers for cultivation - Taking advantage of new technologies with the use of indigenous knowledge of agricultural sector
Defensive Strategies (WT) - Public and private sector investment to develop a model for sustainable canola production - Establishment of agricultural trade organizations, given the problems of pricing of canola product - Increasing efficiency of water resources and development of cropping patterns with respect to the traditional cultivation - Coordinating cooperative sectors of the province considering small owners and low efficiency of agricultural organizations - Strengthening the spirit of cooperation and consultation of producers to use new methods of sustainable production	Revision Strategies (WO) - Reform of exploitation system and organization of petty peasant system with regard to cooperative companies - Empowerment and increasing technical knowledge and training of the province farmers with regard to numerous research, educational and advocacy centers of the organization - Increase in efficiency of irrigation and productivity of soil and water considering educational, research centers and also positive view of authorities towards agricultural sector - Development of a comprehensive plan of mechanization and correction of cropping patterns - Emphasis on development of production units and decrease in wastes of agricultural products from production to consumption - Development of agricultural products storage and large refrigerators with regard to increasing demand in the country - Making demand-driven agricultural research and education by educational and research centers as well as public interest in the production of canola - Development of organized plans considering environmental factors affecting sustainable production

Source: the research findings

Diversification strategy to strengthen the sustainability of agricultural production in the region is the third priority and finally, the fourth priority is aggressive strategy because it seems that in this area, due to imperfections in various fields, canola growers are not provided with suitable conditions for being taught about important principles of production sustainability and conditions of benefiting from potential human and environmental abilities and like that.
According to the results, due to the relative advantages to achieve sustainability of canola production in the subject region, the study recommends: Strengths: - Taking advantage of modern technologies with the use of indigenous knowledge in production sector throughout the area. Increasing productivity in the production of canola. - Strengthening research structure of canola crop to identify problems and offer solutions to reduce production problems. - Using of expert and experienced people to form Cooperative public institutions and also promotion and training of sustainability of production through meetings and various sessions with the province producers. Weaknesses: - Improving operation systems and formation of guild units in canola production sector throughout the province. - Preservation, restoration, remediation and sustainable production of soil, water and natural resources of the province. - Implementation of comprehensive plan of mechanization and reduction in agricultural products waste. - Specializing training in the field of sustainable use of production resources for producers throughout the province. Opportunities: - Increasing quantity and quality of canola crop. - Organizing storage and transportation systems. - The use of production capacity throughout the province to achieve production sustainability goals.
Threats: - Improving cropping patterns according to specific environmental conditions of the region. - Prevention management and decrease in production risk by increasing crop insurance coverage, guaranteed purchase, etc. - Development of strong rules and regulations to preserve natural resources of the province.

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