Identification of the causes that cause the backlog of the production volume of the strawberry in the municipality of Irapuato, Guanajuato

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Abstract

The city of Irapuato ubicated in the state of Guanajuato used to be recognized as a national pioneer in strawberry production, in recent years has faced according to indicators of economic growth a recess or stagnation, and passed to be the second producer in the world recognized as the "Strawberry World Capital" and the first national producer to move to a third place. Based on this problem, an analysis of the segment of the rural population that was dedicated to strawberry cultivation was carried out, analyzing a stratified random sample, performing structured interviews using validation tools (Isicawua and Pareto Diagram). This sector threw; that 48% sows in a traditional way, while 50% consider that the cost of fertilizers affects its usefulness, since this represents the most expensive part of the process. Throughout the present study, factors such as the deterioration of demand, low technification conditions, limited access to financial support and the growth of the automotive industry with presence in the state, and climate change factors were identified.

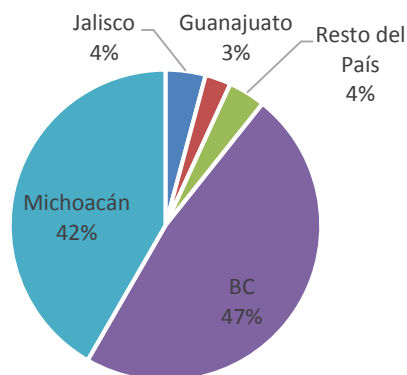**Comercialization, Tecnification Costs, Automotive, Climate Change**

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1. Introduction

Although the Bajío weather conditions are exceptionally favorable, this is particularly advantageous since it is possible to produce strawberries in winter without expensive technology and these have not been used. Among the main causes that affect the production of strawberries in the state of Guanajuato is the introduction of new and better technologies for periods that cover all annual production, more efficient and with resistance to pests and diseases. According to figures from SAGARPA / SIAP "in 2016 91% of all strawberries in the country were produced between Baja California and Michoacán, leaving Guanajuato in third place.

Nowadays the industries are in constant growth and situations of risk before the constant change in technology this could not stop affecting the agricultural sector specifically to the one of the strawberry to reach certification processes as strategies of competitive advantages and that add value . Currently the state of Guanajuato is ranked fourth in the national manufacturing industry, registering a growth rate of 11.9% in 2016 (INEGI 2016) this generates a large environmental impact in the municipality, Irapuato currently occupies the fourth place in pollution at the national level.

Graph 1 Distribution of Production by Entity in 2016

1.1 Justification

Impact of this situation in the short term

To continue with this downward trend in relation to production, as it has been presented in recent years, would affect the Irapuatense society in cultural identity, an icon that is even in its municipal coat of arms, in relation to social impact would be affected in the decrease of so many emerging jobs, as support of housewives who see in the collection an opportunity to generate resources, another factor to consider is that the historical production that I present gave rise to the title of "World Capital of the Strawberry", this product was a waters part in the world to boost the export of vegetables such as corn, asparagus and broccoli also locally produced.

1.2 Problem

Strawberry in our country is a crop that, although it does not stand out for the number of hectares sown, or for the currencies generated with its export, it gives rise to a large spill of sources of employment in the main producing areas, not only for being a highly occupational product but for the activities that it involves, from agricultural development to commercialization, according to Echanove 2001.

As a consequence of not attending to this decrease that is present and latent, the risk of facing losses of hectares enabled for agricultural production due to the growth of the manufacturing industry will be assumed.

1.3 Objectives
1.3.1 General Objective

Identify the causes that cause the lag and downward trend in the volume of strawberry production in the municipality.

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1.3.2 Specific Objectives

- Determination of a representative sample, stratified in a finite population for the realization of the study.
- Conduct a survey based on the design of an Ishikawa diagram
- Classification of the results obtained and provide the information to establish the causes.

2. Theoretical framework

Important characteristics of strawberry cultivation

The strawberry is a creeping plant that belongs to the Rosaceae family and the Fragaria genus, cultivated for its edible fruit. Commercially grown varieties are usually hybrid. The strawberry plant is perennial (short life) because by its growth system, it is constantly forming new stems, which keep it alive indefinitely. The fruit, which we know as "strawberry", is actually a thickening of the floral receptacle, with the little dots that are on it the real fruits. It is a red, sweet and aromatic eterio.

Scientific name: Fragaria.

Varieties grown in Mexico. In Mexico, different varieties are grown, each with specific characteristics; and with different yields due to: periods of production, resistance to pests and diseases, flavor, color, size, to name a few. Varieties can be expressed in different ways depending on the region where they are established. It is worth mentioning that the varieties used in Mexico have been developed by the University of California USA and the University of Florida USA.

There are characteristics in the different processes of production that are described below:

Traditional System Surface or gravity irrigation. In this case, protective covers are not used on the ground and in contact with irrigation water. It presents a performance of 26 Ton / ha its period of production is Variable November - May (figure 1).

Figure 1 Open field production units with basic irrigation systems

Medium technology this production system is distinguished by presenting irrigation by drip irrigation. Use or not padding (plastic covers), on the padding when there is production yield is 32 Ton * / ha. And its cycle is from November to May, generally used in local production. (Figure 2). While planting with high technology with a drip irrigation, padding requires the use of Macro tunnel technology, which uses groundwater (deep well) or clean surface water. Requirement of specialized technical assistance. Padded, protected 70, 90 Ton / ha Good - its development cycle is from November to August.

3. Methodology
Procedure in identifying the causes

To carry out the present analysis, it was first identified through reading and circumstantial talks with peasants of this municipality, a decrease in production in the municipality of Irapuato.

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This motivated to seek information related to the subject, in official sources and work done previously, and as a primary source of collection a questionnaire was designed, and the farmers were interviewed with a stratified random sampling in a frame defined as a finite population, in a personal way and which yielded quantitative results that served for the evaluation and analysis of the circumstances, as well as to detect patterns of change in the perception of causes.

Once obtained, it was processed and analyzed to evaluate results and present the corresponding report. Detection of the problem, documentary research, determination of the sample in a finite population, collection of information in the field and direct communication, classification and determination of results in circular diagrams and with percentage setting.

3.1 Kind of investigation

Descriptive, documentary, direct and indirect, historical and explanatory. The sources used for the project were based on:

– Primary- (Direct). Interviews with small farmers and specialized personnel in the agro-commercial sector and direct communication.
– Secondary- (Indirect). It was carried out through documentary consultation in official pages, due to its importance the main source was SAGARPA, (Secretary of Agriculture, Livestock, Rural Development and Fisheries). It is a Unit of the Federal Executive Power, which has among its objectives to promote the exercise of a policy of support that allows to produce better, take better advantage of the comparative advantages of our agricultural sector), articles related to the subject.
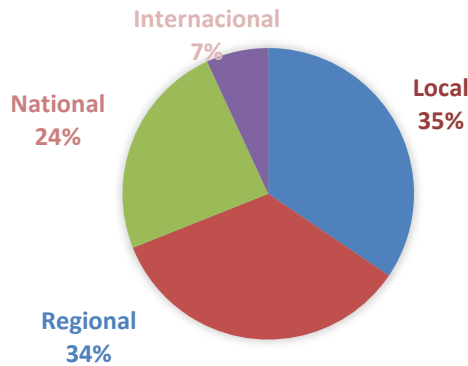

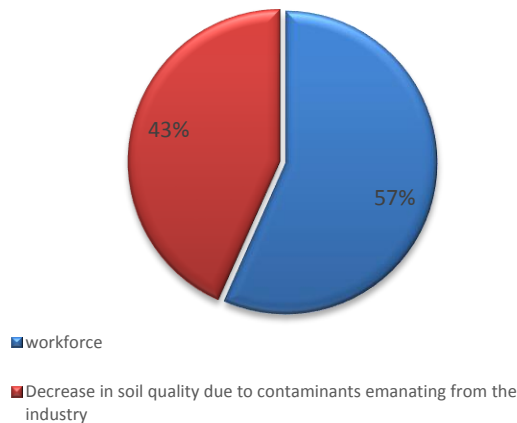**Figure 2** Production unit not certified for export, only local and regional market

4. Results

The exposition of the statistical results obtained from a custionnaire was carried out by means of numerical and graphic tables (of frequency, circular, among others) with the variables and indicators expressed in percentages or weighted index. Which throw:

That the consumption of the production is carried out in the local market by 35%, while at the regional level it represents 34%, and international consumption by 7% (Graph 2). An area of interest in this research is that local producers consider 53% that their product is competitive, today sowing is still carried out traditionally by 48%, which causes high costs as they are in accordance to farmers the purchase of agrochemicals. Besides that it is detected that the access of finance is a complicated part in relation to the procedures consider a 67%.

The most important finding that was determined is that the growth of the automotive industry was pointed out as the main cause of the decrease in production, since it causes shortages in the labor force due to the preference to work in the Industry and that combined according to their experience, 43% agree that there is a decrease in the quality of the soil due to the pollution that the industry emanates (graph 3).

Graph 2 Consumption trend of strawberry production by geographical market.

■workforce

■Decrease in soil quality due to contaminants emanating from the industry

Graph 3 Impact of automotive growth on strawberry cultivation.

5. Conclusions

Based on the results obtained, it is determined as an area of opportunity, the increase in competitiveness in 48% of the production that is still done in a traditional way by means of agricultural technification strategies, likewise the causes in the decrease of the production in the municipality, according to the information obtained are:

Lower production area, due to the growth of urbanization and industries, the lack of implementation of quality and safety standards and policies for commercialization in both national and international markets and the lack of information to small and medium producers about government support and financial institutions.

It is of vital importance to turn around and deal with the situation in an integral way, authorities, entrepreneurs and farmers, to design strategies that generate competitiveness and profitability in the sector, without missing out on all the advantages offered by the land for the process, as well as the geographical location of the municipality. Support is not synonymous with granting resources to people whose lands are inactive, if not to people who find their only income and means of living in this activity, to be aware that the field needs us and for many years has not been properly attended.

The situation is complex, remember that for years, strawberry has been a pillar of the economy and main activity in the Municipality of Irapuato, not why it was called the "World Capital of Strawberries".

Strawberry production is constant, but also the demands for quality in the market, which is why only those producers that have certified production units can remain valid in the regional, national and international markets, while small and medium producers producers consider stop producing strawberry and focus on the production of vegetables.

Figure 3 Strawberry from the municipality of Irapuato

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