ASSESSMENT OF THE COMPETITIVENESS OF THE MAIN EXPORTING COUNTRIES IN THE INTERNATIONAL HONEY MARKET

Karen Tonantzi Ramírez-Mijangos[1], María Isabel Palacios-Rangel[2], Jorge Gustavo Ocampo-Ledesma[3]

[1]Estudiante de Doctorado en Ciencias en Problemas Económico Agroindustriales, Universidad Autónoma Chapingo.
[2]Profesora investigadora en el Centro de Investigaciones Económicas, Sociales y Tecnologicas de la Agroindustria y la Agricultura Muneidal (CIESTAAM) de la Universidad Autónoma Chapingo.
[3]Profesor investigador en el Centro de Investigaciones Económicas, Sociales y Tecnologicas de la Agroindustria y la Agricultura Muneidal (CIESTAAM) de la Universidad Autónoma Chapingo. en Universidad Autónoma Chapingo.
***Autor de correspondencia: ocampochapingo@yahoo.com.mx**

Citation: Ramírez-Mijangos KT, Palacios-Rangel MI, Ocampo-Ledesma JG. 2025. Assessment of the competitiveness of the main exporting countries in the international honey market. **REMEVAL** 1(1): 70-89. https://doi.org/10.63121/ytp06131

Received: 9 October, 2024
Accepted: 10 November, 2024
Published: 12 February, 2025

Abstract

In this paper, we review the honey global market using statistics FAO repositories from 2009 to 2018. We analyze the macro competitiveness in the honey international commerce, which is related with the trade practices of main exporter countries and how Mexico is compared with them. This paper shows a growth in honey production and commercialization. We also show the emerging of new countries as important producers, which increases commercial dynamism.

Keywords: Beekeeping; Relative balance; International trade; Competitive advantage.

Introduction

Beekeeping is a productive activity that is developed throughout the world due to the multiple benefits it offers both for the consumption of honey and for the pollination of crops, as well as the obtaining of other products. This profession can be complemented with other agricultural and livestock practices; however, the main objective of beekeepers is the production of honey for self-consumption or for marketing, being an activity with strong local roots.

Half of the honey produced in Mexico is destined for bulk export, the second destination is the national agroindustry, and a smaller amount is sold to the final consumer. The Mexican honey that is exported competes in price with honey from China and Argentina; however, the quality of Mexican honey has allowed it to position

itself in the German market. However, the honey market is experiencing important changes such as the incorporation of new honey producing powers.

In the current scenario that involves the production, marketing and consumption of honey in the world, Mexico seems to place as its best positioning strategy the over-enjoyment of comparative advantages, without considering the new market signals that make visible the importance of meeting the achievement of greater competitiveness.

Honey production is inserted in the national rural sector in structural terms as an economic activity that has certain comparative advantages for its better development, which allow it to improve its productivity in a commercial environment that has been internationalized for several decades.

Comparative advantages are not enough to build a more competitive productive sector in the international market. First, productive trajectories of continuous change must be established, which in addition to improving productivity seek to obtain greater quality and safety of the product. Secondly, you must know and understand the market in which you are participating, as well as your competitors.

To contribute to the study and characterization of the international honey market, the objective of this work is to measure the market share of the main honey exporting countries and analyze the performance of some of their honey marketing practices. that result in an increase in its competitiveness in international trade, through the formulation and measurement of participation indicators in the international market to determine the international context in which Mexico is inserted. The study period covered the period from 2009 to 2018.

Theoretical Framework

Honey production worldwide

In 2018, global honey production was 1,851,541 tons, half of this was concentrated in five countries: China, Turkey, the United States of America (USA), Ukraine and Argentina. The honey market is highly open since the main consumers have inefficient production to satisfy their internal demand and the main producers have low per capita consumption, therefore, there is an interrelation between exporting countries and consumers. Countries such as Spain, the USA and Russia have what is necessary to produce honey, however, they have more imports because they decide to allocate their resources to other activities, for example, grains, cereals, fruits and vegetables, as is the case. from the USA (Macías, 2010).

In this regard, it is important to note that the production of honey is a direct function of the quantity and quality of the natural resources of the producing region and according to the theory of comparative advantage proposed by David Ricardo

(1817), a nation will allocate its resources towards that activity in which it turns out to be more efficient and productive, and will choose to import goods whose opportunity cost is higher than its import cost (Krugman *et al.*, 2013). These advantages, with the support of advanced technology, new consumption patterns, and greater awareness of the use of natural resources, tend to exceed the limit imposed by the natural attributes they possess, thus evolving towards the stage of competitive advantages (Inter-American Institute for Cooperation on Agriculture [IICA], 1999).

Competitiveness as a factor of change

Krugman (1994) points out that it is incorrect to define competitiveness in the same way for a nation as for a company. Thus, when addressing the topic, he explains that a company is not competitive when its position in the market is unsustainable, and that unless it improves in generating value, it will go bankrupt. While countries may or may not be satisfied with their economic management, but they do not go bankrupt. In this framework, Chesnais (1986) and Rodríguez (1999) point out that competitiveness is "the ability of a country (or group of countries) to face competition at a global level: considering both its capacity to export and sell in external markets and to defend the domestic market from excessive import penetration." The latter also adds that international competitiveness is a sharing term, since one cannot speak of the competitiveness of a nation if it is not in relation to the behavior of its rivals.

Porter (1991a) in his publication the competitive advantage of nations explains that the competitiveness of a nation is based on its productivity, and that competitive advantage arises fundamentally from improvement, innovation and change, and indicates that as regards There are two basic types of competitive advantage that the company can possess: low costs and differentiation. In this regard, he explains that cost leadership is obtained when economies of scale are achieved, proprietary technology is developed and preferential access to suitable raw materials is obtained. For its part, differentiation is achieved through the product itself, the management of a continuous delivery system and the application of an ingenious and persistent marketing approach, among other strategies.

The IICA (2000) points out that a nation favors the competitiveness of its products through production subsidies and activity protection, and through the collection of import tariffs. This type of competitiveness is known as "spurious" or passive competitiveness, defined as that based on the overexploitation of natural and human resources, subsidies on factor prices, depreciations at exchange rates, among others.

On competitiveness Campos *et al.* (2018) point out that this is understood as the capacity of an economic organization to maintain, conquer or expand its participation in the market. Hence, the degree to which a nation achieves the insertion

and permanence of its products in the international market will be a reflection of its competitiveness (Magaña *et al*., 2017). However, various aspects influence its realization, such as obtaining favorable productivity, expanding the level of product differentiation and having the capacity to satisfy national consumption.

Campos *et al*. (2018) state that Mexico stands out as a net exporter of honey not because it has a large productive capacity, but because of the availability of natural resources and exportable surpluses it has, which generates cost advantages and makes it more competitive compared to other countries. situation that is enhanced by the low internal demand for the product. However, these advantages are not necessarily sufficient factors to confront the competitive position maintained by other countries that function as producers or commercial intermediaries, since they are the ones who dimension the triad: technological innovation, value addition, multiple product offerings. finals, as determinants to maintain quality and obtain better prices in the marketing of the product.

The use of competitiveness indicators allows comparisons to be made between nations to observe and evaluate one economy compared to another (Bonales & Gallegos, 2014). Romo & Abdel (2005) propose that the analysis of competitiveness can be carried out at three levels: micro (the company), meso (the industry and the region) and macro (the country). It should be noted that in this approach, macro-level competitiveness is the mechanism that determines the competitiveness of lower levels.

Although it is true that the global supply of honey will continue to increase, the participation of producing countries is entering a phase of change and dynamism, at the same time new producing powers are joining in that compete strongly to gain market share from the current countries. leaders. Given this, the producing powers, and in the particular case of Mexico, must maintain a good level of competitiveness by improving their productivity and through product differentiation to maintain their position in the market. In this way, those countries with environmental advantages in production will also be competitive in terms of the product offered, and will be in a position to confront (at the level of commercial competition) countries with economic resources that base their offer on differentiation. of the product. They may even respond to market signals by holding their prices against the group of countries that seek competitiveness with aggressive strategies such as dumping or productive alteration of the sweetener.

Methodological section

Haguenauer (2012) explains that, in a simple notion, competitiveness is associated with export performance. For the author, it is an "ex post" concept, which evaluates competitiveness through its effects on foreign trade: industries that expand their participation in the international supply of certain products are competitive. This

broader concept of competitiveness encompasses not only production conditions but all factors that inhibit or expand exports of specific products and/or countries, such as exchange and trade policies, the efficiency of marketing channels and financing agreements. of systems, international agreements (between countries or companies), strategies of transnational companies, etc.

Chudnovsky & Porta (1991) state that according to the indicators of participation in world markets, the concept of competitiveness suggests that a country will be more competitive the greater the international market share it has managed to capture. Therefore, it is a macro-level application of the way competitiveness is generally measured at the microeconomic level. The competitiveness analysis was carried out at a macro level, that is, the market shares of the main honey exporting countries were identified, and the calculation of participation indicators in the international market was carried out.

For the analysis of competitiveness in honey marketing of the main exporting countries, repositories of the Food and Agriculture Organization of the United Nations (FAO) were used, related to the production and marketing of honey in the world. Based on the information obtained, five indicators of participation in the international market were incorporated: i) export coefficient, ii) tradability index, iii) degree of openness, IV) relative trade balance, and v) import penetration coefficient. This was done for a period of 10 years, which covers from 2009 to 2018. They were considered appropriate for the purpose of this contribution because they facilitate the comparison of variables between different countries and in different years. Each one points out the behavior in production, export and import in the international market, as well as the relationship that exists between the variables. The methodology proposed by IICA (1995) to measure competitiveness was used as a reference. The indicators used are described below.

Average export coefficient (EC) from 2009 to 2018. It is the relationship established between the volume of exports (E) and the volume of production (P) during a period. It measures the percentage of production that is exported (Velin & Paúl, 2011). The indicator expression is

$$CE_t^i = \frac{E_t^i}{P_t^i} \times 100 \quad (1)$$

Where E= Volume of exports; P= Production volume. This indicator represents the percentage of production that is destined for export.

Average tradability index from 2009 to 2018. It is the relationship between the volume of the trade balance and the volume of apparent consumption. It measures the capacity to generate net surpluses in relation to domestic consumption (Velin & Paúl, 2011). The indicator expression is:

$$IT_t^i = \frac{E_t^i - I_t^i}{P_t^i + I_t^i - E_t^i} \times 100 \quad (2)$$

Where E= Volume of exports; I= Volume of imports; P= Production volume. Under the assumption that apparent consumption is greater than zero, P+I-E>0, the following can be said: if the indicator is greater than zero, it is considered an exporter, given that there is an excess supply E-I>0. If the indicator is less than zero, it is an importable product given that there is excess demand E-I<0.

Average degree of openness from 2009 to 2018. It is the relationship between the volume of exports (E) and imports (I) and the volume of production (P).

$$GA_t^i = \frac{E_t^i - I_t^i}{P_t^i} \times 100 \quad (3)$$

Where E= Volume of exports; I= Volume of imports; P= Production volume. It is an indicator whose use allows evaluating the openness of a country to the outside world and measures the influence that the rest of the world has on a sector of the country's economy (Velin & Paúl, 2011).

Average Relative Trade Balance from 2009 to 2018. This indicator measures the relationship between the trade balance of a product and its total trade for a country; If the result is positive, there is a competitive advantage; otherwise, if the result is negative, it indicates that the country is oriented toward importing the product (Pat *et al.*, 2016).

$$BCR_t^i = \frac{E_t^i - I_t^i}{E_t^i + I_t^i} \quad (4)$$

Where BCR = Relative Trade Balance of a country with respect to product i; E = Exports of product i by a country to the world market; I = Imports of a product i by a country to the world market or a specific market. The calculation is carried out in terms of constant prices.

Average import penetration coefficient from 2009 to 2018. It is the proportion of apparent consumption that is supplied with imports. The higher this coefficient, the greater the dependence on imports to satisfy domestic demand, and the lower it is, it will imply that the country has more capacity to satisfy its internal demand with national production (Fernández, 2012). The calculation was carried out in terms of volume.

$$CPI_t^i = \frac{I_t^i}{P_t^i + I_t^i - E_t^i} \times 100 \quad (5)$$

Where E= Volume of exports; I= Volume of imports; P= Production volume.

Average Annual Growth Rate (AGR) from 2009 to 2018. This indicator represents a measure of the average increase or decrease of a variable that went from an initial value (VI) to a final value (VF) in a certain period (t) at constant prices. The expression is:

$$TMCA = \left\{ \left[\left(\frac{Vf}{Vi} \right)^{\frac{1}{t}} \right] - 1 \right\} \times 100 \quad (6)$$

The method used to analyze the resulting data was comparative, with which participation in the international market was identified, that is, the level of competitiveness at a macro level. The total supply of honey with which a country can confront its competitors was identified, since according to Porter (1991b) a nation achieves competitiveness based on its productivity. In this work, the size of the production unit or the other income from beekeeping is not considered, since the basis of the analysis is the export capacity of each nation.

Results and Discussion

This section presents the main findings obtained in the analysis of the information. Firstly, the results of the international market participation indicators of the main honey exporting countries are shown. Secondly, an analysis of the practices carried out in their marketing by exporters to sustain and improve their market participation is presented.

Medición de la cuota de mercado de los principales exportadores de miel

The first indicator is the export coefficient, which makes it possible to measure the percentage of production that is exported (Fernández, 2012). In that sense, the estimates of the export coefficient showed that the highest coefficient in the defined period is in Vietnam with 168.1% and Germany with 106.7%; This indicates that its exported quantity is much greater than the quantity produced domestically. Regarding this, Magaña *et al.* (2017) point out that not all countries that appear as main exporters

are producers. The coefficient is greater than 100 because the exports made by this country are considered, coming from its production and its imports. In this case, Germany acts as a honey producing, concentrating and distributing country. The export of this product is not carried out as a commodity, but through a process to which value is added by including packaging and labeling, which makes it possible to differentiate the product and place it at a better market price.

In turn, Argentina has an export coefficient of 96.3%, while in the case of Mexico it is 58.7%. Both, in contrast to Germany, base their commercial positioning strategy on internal conditions conducive to the production of the sweetener. Another factor that strengthens their export coefficient is that both exhibit low per capita consumption.

In contrast to Argentina and China, Mexico exports its honey with a non-competitive sales price; The former export at prices lower than the average established from international prices. However, Mexico has the advantage of having Germany as a client, who prioritizes the quality of honey over price. China, despite being the main producer and exporter of honey in the world, only negotiates 25.3% of its production in the international market, this is because it does not meet the high quality standards of importing nations.

Türkiye, the second largest honey producer, has an export coefficient of only 3.7%; The same happens with the USA and Japan, which present export coefficients of 9.8% and 1.8% respectively, who allocate their production essentially to domestic consumption (Table 1). An outstanding fact for the US is that although it is the world's leading importer of honey, it also makes a significant volume of exports but adding value (packaging and labeling), with substantial improvements in price. Figure 1 shows that leading countries in production and export, such as China and Vietnam, acquire honey from the United States and some countries in the European Union, which implies that part of the honey trade they carry out is not produced in these countries, but rather who become intermediaries who only package and label it for sale.

The second is the tradability index, with which the capacity to generate net exportable surpluses in relation to domestic consumption can be measured (Fernández, 2012). According to the results shown in this index, Argentina is positioned as the main exporter of honey, above China, which handles the largest export volumes. As already mentioned, Argentina exports 96% of its production and its surplus availability is 62 times the volume of its apparent national consumption (ANC); Furthermore, the country has an index of 2533.4, and this value is 44% higher than what was found by Magaña *et al.* (2017) in the period 2000-2011 and by Campos *et al.* (2018) in 2001-2011. This difference is due to the fact that in 2011 and 2016 there were more exports registered than the sum of its production plus its imports.

For its part, Mexico is a competitive exporter with an index of 142.2%, in contrast to the results presented by Magaña *et al.* (2017) that show an index of 89.4%

Table 1. Foreign trade indicators 2009-2018.

País	Export coefficient	Tradability index	Opening degree	Import penetration coefficient	Relative trade balance
Germany	106.66	-75.11	-301.75	101.66	-0.40
Argentina	96.32	2533.40	96.20	3.13	1.00
Brazil	58.52	140.86	58.48	0.09	0.53
China	25.35	30.16	23.17	2.83	0.25
Spain	71.40	-2.49	-2.55	72.11	-0.90
EE. UU.	9.85	-67.52	-207.92	70.72	-0.99
Hungary	71.31	218.52	68.60	8.63	1.00
India	54.03	111.43	52.70	2.81	1.00
Japan	1.78	-93.56	-1453.81	93.68	0.99
México	58.75	142.25	58.72	0.06	1.00
New Zealand	54.84	119.40	54.42	0.91	0.95
Türkiye	3.72	3.86	3.72	0.00	0.94
Ukraine	43.12	75.62	43.06	0.12	0.94
Vietnam	168.14	-256.06	164.08	-6.34	99.38

Source: Own elaboration with data from FAO - FAOSTAT (2020) and Trade Map (2020).

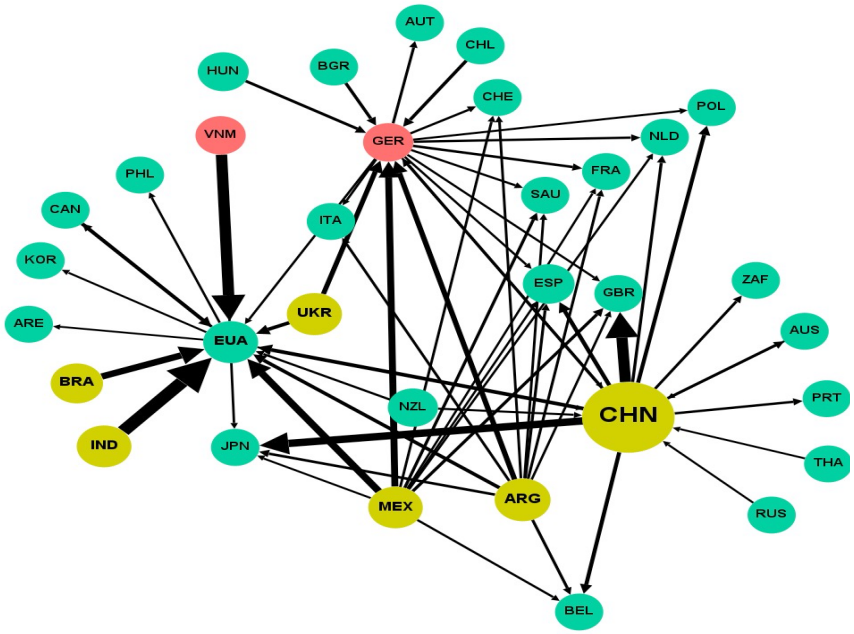

Figure 1. Destination of honey exports in volume in 2018

Note: The thickness of the arrow indicates exported volume. The size of the node indicates volume produced.

Source: Own elaboration with data from Trade Map (2020).

and by Campos *et al.* (2018) with 87.6%. In turn, Germany, the USA, Japan and Spain show a deficit to supply their domestic demand, so they resort to importing large volumes of honey. On the other hand, Vietnam has a negative tradability index of -256.1 (see Table 1).

The third indicator used in this work is related to the degree of openness, which makes it possible to measure the level of openness that a country has towards the outside world (Velin & Paul, 2011). In this sense, Germany, the US and Japan recorded negative values of -301.7%, -207.9% and -1453.8%, which indicates that the amount of their imports is much greater than their exports. These countries are characterized by being dependent on international production to satisfy their internal demand. The opposite happens in Argentina, China and Mexico, which present a positive degree of openness, with rates of 96.2%, 23.2% and 58.7%, respectively, to which is added their low internal consumption. It is confirmed that most of their production is destined for international trade. In addition, in the case of Argentina and Mexico, a greater dependence on exports is also revealed, therefore, they turn out to be more sensitive to changes in the curve of the demand. Vietnam registers a degree of openness of 164.1, which shows that it is sending more volume to the international market than it produces. The result of this indicator and the tradability index may indicate that Vietnam re-exports from China.

The fourth indicator is the import coefficient, which indicates the proportion of apparent consumption that is supplied with imports. In this case, Germany shows a CI of 101.7%, because in addition to satisfying its internal demand it re-exports. For its part, Japan has an CI of 93.7%, which means that it depends completely on imports to cover its domestic demand. In the case of Brazil, Mexico, Turkey and Ukraine, they have a CI close to 0%, which indicates that they do not need to import to satisfy their domestic demand. Regarding Vietnam, a negative CI of -6.34% is observed because the value of exports is greater than the sum of registered production and imports.

The fifth indicator represented by the relative trade balance measures the relationship between the trade balance of a product and its total trade. Regarding this, Germany, the United States and Japan register negative values of -0.40, -0.90 and -0.99, respectively. These values are consistent with those found by Campos *et al.* (2018) (calculated as a percentage); In the case of the United States, it shows values of -90.57% and Germany of -60.63%, which indicates that they are oriented towards the import of honey. On the contrary, Argentina, Mexico and Turkey register positive values of one, which indicates that they are countries with products destined for export, according to what was found by Campos *et al.* (2018) of 99.73%, 98.44% and 88.76%, respectively.

On the other hand, in the disadvantage in the trade balance that Spain and the US show:

> *"…their ability to allocate greater resources such as capital to increase their production and thus reduce their trade deficit is greatly influenced. But depending on the availability of these resources or the valuation of the opportunity costs that they make of them, of their use in other activities (comparative advantage) they will decide whether to allocate them to the production of honey or if they continue to depend on the international market for satisfy their internal demand" (Campos et al., 2018: 116-117).*

Companies decide what to produce and how to improve production; However, its productive capacity is encouraged by monetary, fiscal, exchange and commercial policies, which are implemented by the government and the central bank of each country. For a nation like Mexico, which allocates most of its honey production for export, competitiveness in the market is an incentive to continue production.

Analysis of the performance of practices in honey marketing of the main exporting countries

The volume of world exports during 2018 was 651,299 tons. 72% of exports are carried out by 10 countries. China exported 19% of the world total at an average price of 2,000 USD/t, and Argentina 10% at an average price of 2,400 USD/t (Table 2). As for Mexico, the price paid was 2,160 USD/t, while Spain received 4,500

Table 2. Average Annual Growth Rates of the main honey exporting countries (2009-2018).

País	Production volume (t) 2018	TMCA Production (%)	Hives in 2018	TMCA Hives	Exportation volume 2018	TMCA Exp. Vol. (%)	Exportation value in 2018	TMCA Export value (%)
Germany	20,333	2.38%	677,014	-0.29%	22,778	0.38%	$141,172	1.43%
Argentina	79,468	2.80%	3,020,370	0.19%	68,692	1.90%	$169,748	-22.14%
Brazil	42,346	0.91%	1,017,506	-0.08%	28,524	1.04%	$95,420	-2.50%
China	457,203	1.29%	9,048,546	0.28%	123,477	5.16%	$249,251	3.88%
Spain	36,394	1.32%	2,965,557	2.43%	23,111	3.98%	$105,737	5.42%
EE. UU.	69,104	0.44%	2,803,000	1.29%	7,863	5.71%	$25,469	3.88%
Hungary	27,963	2.44%	844,000	8.03%	22,018	4.96%	$90,622	1.70%
India	67,442	2.29%	13,048,275	2.34%	58,231	17.82%	$102,408	8.49%
Japan	2,886	0.93%	193,198	0.48%	18	-10.12%	$292	0.89%
México	64,253	1.52%	2,172,107	2.27%	55,674	8.38%	$120,405	0.01%
New Zeeland	20,000	5.30%	879,758	9.46%	8,033	-0.24%	$245,491	14.78%
Türkiye	114,113	3.74%	7,947,687	4.52%	6,413	24.38%	$25,669	11.53%
Ukraine	71,279	-0.43%	2,642	-2.28%	49,366	23.55%	$97,985	4.36%
Vietnam	20,415	6.53%	283,786	1.42%	14,210	1.90%	$65,866	5.96%

Source: Own elaboration with data from FAO - FAOSTAT (2020) and Trade Map (2020).

USD/t. Regarding world honey production, it was 1,851,541 tons. China's production corresponds to 25% of the world total; It is observed that its growth has been more accelerated in the volume of honey produced (AMCA of 1.29%) than in the number of hives it has (AMCA of 1.29%) (Table 2).

China exports a quarter of its production, while the rest of its production is consumed in the domestic market. Chinese consumers with higher incomes opt for better quality imported honeys. The dynamism in the production and export of honey in this country is due to various factors that have positioned it in the international market, among which three aspects stand out:

Preferential policies of opening to foreign trade. Because honey is a primary product, it is susceptible to receiving government support aimed at improving its competitiveness in the international market (Rodríguez, 2008).

The oversupply of labor with low salaries. This is an advantage that allows you to reduce costs and generates greater profitability in production, which makes this activity highly attractive (Ignjatijević *et al*., 2018).

The addition of other components to honey such as syrups and natural and artificial sweeteners. They do this in order to increase stocks or supplies of their inventories, thereby maintaining an increased and sustained supply of the product (Johnson, 2014).

The competitiveness of Chinese honey as a product of lower quality or "doubtful quality" creates a problem for countries, both producers and simple suppliers of sweetener, because it absorbs (at a very low price) a significant part of global demand. , being a "spurious" merchandise that is promoted and sold as pure honey (when only a minimum percentage of its components are), contravening international standards of genuineness, quality and labeling. There is evidence that some of this honey may contain antibiotics not approved by international organizations that analyze food additives that may be harmful to health. According to Strayer *et al.* (2014) Economically motivated adulteration (EMA) is the fraudulent alteration of food to obtain financial advantage. In this regard, the Food Protection and Defense Institute of the University of Minnesota (2020) defines it as:

> *"Economically motivated adulteration (EMA) is the intentional sale of substandard food or food products for economic purposes. Common types of EMA include intentional substitution of an authentic ingredient with a cheaper product, dilution with water or other substances, enhancing flavor or color with illicit or unapproved substances, and substitution of one species for another".*

These strategies to reduce costs allow the price offered by China to be lower than those of the international market and even below its production cost, that is, dumping, which causes distorting effects on the balance of the world honey market.

Some countries have implemented tariff measures to level the prices of honey from China. In response, this country has implemented a defensive trade strategy to continue introducing its product into the market.

This consists of triangulating the product by selling it to one or other Asian countries (among which Vietnam stands out), intermediaries who in turn re-export it, which results in its origin being disguised or masked through a process known as " honey washing", which has made it possible to avoid the payment of additional tariffs and the punishments applied to its imports at anti-dumping customs. It also uses the so-called "pollen filtering", a procedure used by China to mask the origin of honey. This entire procedure of dumping measures implemented by China has been widely documented in the works published by Strayer *et al.* (2014).

In this regard, it should be noted that pollen filtering is a procedure used to condition honey for the market, whether packaged or in bulk. Its purpose is to eliminate particles considered as insoluble solids that are incorporated into the honey during the extraction process, which can be legally limited to 0.1% of the total weight, being a very common practice among countries that re-export the product to to make the appearance of the product more attractive. However, the appearance of technologies that allow finer filtrations of the product has generated the opportunity for fraud, since if all the pollens are completely eliminated from the honey, its origin is masked, which makes it possible for it to be mixed, starting from certain proportions, with other honeys or substitute chemicals and labeling it with a false geographical origin. To avoid this fraudulent practice, new standards for honey have been generated (Directive 2014/63/EU), which has made it possible, based on expert analysis, to determine the minimum pollen content in filtered honey.

On the other hand, Argentina, the second honey exporting country, sends 98% of its production to the international market, as it has low domestic consumption of the sweetener (50 to 250 grams per capita annually) (Sánchez *et al.*, 2018). Likewise, it registered a negative CAGR in the value of its exports of -22.14%, which is due to a less favored price evolution compared to the rest of Latin America and the world (Berrettoni & Polonsky, 2011), a situation that is joint (and more problematic) with the Argentine government's policy of imposing the collection of export tariffs and with the competition represented by the introduction of organic honeys from Brazil. This can be observed particularly in the volume exported to the United States, the main consumer country of its product (Secretaría de Política Económica de Argentina, 2018). In the same way, it is affected by the loss of sales in the European Union market, as a result of the low prices offered by Ukraine and China. Given this, Argentina has deployed a recovery strategy for the European market by taking advantage of the loss of confidence that consumers show towards Chinese honey, which has allowed it to recover ground in that area (Secretariat of Economic Policy of Argentina, 2018).

As for Mexico, it is positioned as the fourth largest exporter in the world and ranks ninth as a producer of the sweetener. This position is lower than the sixth place identified by Soto-Muciño *et al.* (2017) in the period 2000-2015. In 2018, in addition to marketing to its main customer Germany (18,847 t), it sent a greater amount of the sweetener to the United States (22,962 t) (Trade Map, 2020). However, the price of honey produced in this country has fallen considerably. This differs from what was found by Campos *et al.* (2018) in the period 2001 to 2011, in which they show that both the volume of production and the volume and value of exports increased. It is worth mentioning that due to its quality, Mexican honey has wide recognition worldwide (Soto-Muciño *et al.*, 2017).

Regarding market distribution, it is observed that Mexico competes with Argentina and Ukraine for the German market; Likewise, its main competitors to supply the US market are Asian countries and Brazil (Figure 1). It is evident that the consumers that demand the largest quantity of the product are European countries and other nations with high per capita income, while the suppliers are Asian and Latin American countries, who in turn acquire small volumes of packaged honey.

Mexico has more production than some countries with a greater number of hives, this is due to the environmental conditions (water, floristic diversity and climate) that benefit it compared to other producing countries and that favor the development of the activity (Campos *et al.* , 2018). On the other hand, it maintains a low internal consumption of honey (200 grams per capita annually), which allows the strongest producers and national intermediaries to market almost the entire volume produced (Soto-Muciño *et al.*, 2017). Some aspects that limit the improvement in honey production are related to the fact that Mexican beekeeping is carried out as a complementary activity in most cases (Caro *et al.*, 2012), and to the lack of technological innovations aimed at modernizing its production (and therefore its commercialization). Difficult access to management programs and the costs associated with technological improvements condition the implementation of innovations by beekeepers. Martínez *et al.* (2018) explain that, to cover the high costs of quality compliance certifications, small beekeepers depend on external agents in the supply chain (governmental and non-governmental), otherwise small producers will not be able to access exports.

In the case of Germany, like the United States, it is a honey producing country that shows a deficit in its trade balance to satisfy its internal demand, which is why it is an important honey importer. Its imports represent 12% of the operations carried out in the world. In 2018, its traded volume was 85,968 tons of honey with a value of 307 million dollars. This country distinguishes itself from other exporters by purchasing honey in bulk to process and package it, in order to re-export it to other European countries, where the consumer's income allows them to pay for the added value (Magaña *et al.*, 2017).

It should be noted that for the European market, honey quality is a decisive factor for its acquisition, and within that concept, they give more weight to safety over other characteristics. The Chilean Commercial Office in Hamburg-Pochile (2018), in its analysis of honey consumption in Germany, indicates that German consumers consider environmental, labor, political and sustainability aspects when making their purchases. They also consider the price-quality ratio of the honey (they lean towards discount stores). The Consulate General of the Republic of Argentina (2016) adds that by law since 2004, German marketers are obliged to report the origin of their honey, which allows them to base their marketing strategy on a traceability system for each producer.

Honey importing companies make mixtures to homogenize the quality of the product and to stabilize prices within the market. The honey blend also allows them to offer a blend that does not exist on the market. The sale is made online under its own brand and other brands in conventional supermarkets; In several cases the sale is carried out under the "fairtrade" seal (Commercial Office of Chile in Hamburg-Prochile, 2018). Germany's main customers are France, Saudi Arabia and the Netherlands, and the honey it imports comes mainly from Mexico, Argentina and Ukraine (Figure 1).

For its part, New Zealand turns out to be an example in terms of value addition and its effect on the price, without showing a substantial increase in the volume of honey produced, since it registered exports in 2018 of 8,033 tons, equivalent to 1.2% of those made. throughout the world, with a value of 245 million USD, equivalent to 10.9% of what was paid to other exporting countries (Table 2). In that sense, it is the second country with the highest value of its honey exports only below China, but unlike China, the price of the product is what increases total income. This is explained by the degree of differentiation of the exported product.

An example of the above is shown by the Mānuka type honey exported by New Zealand to the United States, valued mainly for its beneficial health properties, which is not sold in bulk and has one of the highest values in the world. In this way, the negative AMR recorded in the exported volume is -0.24% and in the exported value it presents a AMR of 14.78%. The above is due to the innovation developed by New Zealand producers and marketers, who have massively ventured into online marketing networks, and to the packaging and labeling format that their product exported to the United States acquires, thereby making its consumer price increased by 62% from 2013 to 2017 (New Zealand Trade and Enterprise, 2018).

By locating the situation in New Zealand and Germany, it is clear that highlighting the intrinsic characteristics of the origin and production of honey is the simplest way to differentiate the product, then moving on to packaging and labeling processes. As a positioning strategy, at first producing nations such as Mexico can highlight the quality, origin, identity of the producer and the type of company (family), in such a way that these attributes allow it to obtain greater recognition worldwide. but it also makes it possible to be more competitive and improve the honey trade balance. In addition

to this, Magaña *et al.* (2017) proposes that Mexico can improve its competitiveness by obtaining greater productivity from the hive, for which it is necessary to make investments. In that sense, Martínez *et al.* (2018) point out that the implementation of good practices in honey production (BPPM), standards, quality certification, as well as the efficient use of inputs and better hygiene and health conditions favor the quality, health and productivity of the honey, which will allow small and medium producers greater access to national and international markets.

For their part, Campos *et al.* (2018) agree with what Magaña et al points out. (2017) and add that if methods are applied that reduce production costs, a greater presence in the global honey market would be achieved. However, to reduce costs through economies of scale, producers would have to increase their production units, and this is achieved by designing new productive strategies, which implies repositioning it by improving support and financing for the zonal infrastructure in honey-producing regions, based on a government-business commitment. In this regard, Martínez *et al.* (2018) suggest that support should promote BPPM in the production process, since these have a direct impact on bee health, product quality and performance. Subsequently, they point out, government support should be directed towards apiaries with a better level of adoption of innovations, which is intended to make public spending more efficient.

Conclusions

Mexican honey exports face great and diverse challenges: on the one hand, the honey marketing practices of some exporters (China), with an inclination to carry out actions that alter and modify the intrinsic quality of honey through the implementation of illegitimate strategies that They favor the supply of honey at a lower price, which distorts the market; On the other hand, the growth in the total supply of honey in the last decade, coming from Asian countries such as China, Vietnam, India and Turkey, who have entered more aggressively into the market of the European Union, Japan and the United States, the main ones (and constant) honey importers worldwide

Mexico presents weak growth compared to that shown by Asian countries, so it could be displaced from the first places in honey exports during the next decade, unless they develop strategies not only to stay in the competition, but to position themselves in a more consolidated manner in the world market.

The indicators used to measure competitiveness at a macro level are considered performance indicators, because they show the result of the conditions that countries offer to their value chain to gain a share of the international market. From this approach, a country is competitive when increases its market share.

The results of the market participation indicators reveal that, although a country has advantages in terms of natural resources, it is not enough to position itself in

the international market and consider itself competitive, since its policy orientation also influences sectoral economic, especially the trade policy that each country has to encourage its exports.

Countries that excel in production do not necessarily have the greatest market share, perhaps because quality and price are not attractive to consuming countries, because the limit on available production factors is lower than in other countries, or because its production is barely enough to satisfy domestic demand. This leads us to reflect on the level of competitiveness of a nation in market terms, since, although a country is not competitive in the exports of a single product, it can be competitive in the sum of all its goods and services offered or in the satisfied demand for the product being analyzed.

Countries like Mexico, where production is destined for export, must aim to remain in the market and increase their participation. The income derived from exports is to sustain activity in the nation. Consequently, strategies must be proposed that contribute to achieving this goal.

These strategies have to be oriented in two ways: first, the supply of honey must be sought at a competitive price, this is achieved by increasing the productivity of the hive through the implementation of good practices in honey production. (specifically bee safety and health measures) to improve production processes and obtain higher quality honey while reducing unit cost. Secondly, the differentiation of honey must be sought by highlighting the intrinsic characteristics of the product and its origin, which will generate the distinction of Mexican honey in the European market.

The search for increased productivity and differentiation is not exclusively the responsibility of the individual producer: a decisive public policy is required aimed at investment in technology, as well as in training programs that seek to improve productivity in the field and that tend to develop product safety processes (BPPM). At the organizational level, it is necessary to generate greater associativity among producers, for which exchange networks between them must be strengthened. Policies must also contemplate constant actions to promote domestic consumption of honey, which will involve reactivating communication and information mechanisms that make possible the social valorization of its nutritional and biocultural attributes, as well as financing and certifications, which strengthen producers and the organizations.

Literature Cited

Alonso Rodríguez, J. A. (1999). Return to competitiveness: New developments. *Ekonomiaz: Revista Vasca de Economía, (44)*, 16–51. Retrieved from https://www.euskadi.eus/web01-a2reveko/es/k86aEkonomiazWar/ekonomiaz/abrirArticulo?idpubl=39&registro=535

Berrettoni, D., & Polonsky, M. (2011). Evolution of Argentina's foreign trade in the last decade: Origin, destination, and composition. *Revista Del CEI, (19)*, 81–99. Retrieved from http://www.cei.

gob.ar/userfiles/Evolución%20del%20comercio%20exterior%20argentino%20en%20la%20última%20década.pdf

Bonales Valencia, J., & Gallegos Ortiz, E. P. (2014). Competitiveness and international trade. *Inceptum, IX*(16), 49–58.

Campos García, M., Leyva Morales, C., & Ferráez Puc, Y. (2018). The international honey market and Mexico's competitiveness. *Revista de Economía, XXXV*(90), 87–123. https://doi.org/10.33937/reveco.2018.92

Caro Encalada, M. J., Leyva Morales, C. E., & Chi Tuz, M. (2012). Honey commercialization in the municipality of Espita, Yucatán. *Revista de Economía,* 9–35. https://doi.org/10.33937/reveco.2012.29

Chudnovsky, D., & Porta, F. (1991). International competitiveness: Main conceptual and methodological issues. Argentina.

Consulate General of the Republic of Argentina. (2016). *Market Profile: Natural Honey in Germany* (pp. 17–20). Retrieved from https://www.academia.edu/29368345/Mercado_de_miel_natural_en_Alemania_Consulado_General_de_la_República_Argentina_en_Hamburgo

FAO - FAOSTAT. (2020). United Nations Food and Agriculture Organization. Retrieved January 10, 2020, from http://www.fao.org/faostat/en/#data/QL/visualize

Fernández, D. G. (2012). Foreign trade indicators and commercial dynamism: Application for Uruguay from 1997 to 2012. Retrieved from http://www.ccee.edu.uy/jacad/2013/file/ECONOMIA/Indicadores%20CE_fernandez_2013.pdf

Food Protection and Defense Institute - University of Minnesota. (2020). *Adulteration of food.* Retrieved February 21, 2020, from https://foodprotection.umn.edu/research/adulteration-food

Haguenauer, L. (2012). Competitiveness: Concepts and measures: A review of recent literature with an emphasis on the Brazilian case. *Revista de Economia Contemporânea, 16*(1), 146–176. https://doi.org/10.1590/s1415-98482012000100008

Ignjatijević, S., Milojević, I., & Andžić, R. (2018). Economic analysis of exporting Serbian honey. *International Food and Agribusiness Management Review, 21*(7), 929–944. https://doi.org/10.22434/IFAMR2017.0050

IICA. (1995). *Elements for an approach to competitiveness in the agricultural sector.* Serie Competitividad. Retrieved from https://repositorio.iica.int/handle/11324/7262

IICA. (1999). *What is competitiveness?* Retrieved from http://repositorio.iica.int/handle/11324/7343

IICA. (2000). *Indicators in the context of competitiveness agreements for production chains.* Retrieved from http://repiica.iica.int/docs/B0118e/B0118e.pdf

Johnson, R. (2014). *Food fraud and "Economically Motivated Adulteration" of food and food ingredients.* Congressional Research Service, pp. 1–45. Retrieved from https://www.researchgate.net/publication/312453789_Food_fraud_and_Economically_motivated_adulteration_of_food_and_food_ingredients

Krugman, P. (1994). Competitiveness: A dangerous obsession. *Foreign Affairs, 73*(2), 28–44. https://doi.org/10.2307/20045917

Krugman, P., Wells, R., & Graddy, K. (2013). *Fundamentals of Economics* (2nd ed.). Worth Publishers.

Macías Macías, A. (2010). Mexico's competitiveness in the U.S. fruits and vegetables market, 1989–2009. *Revista Venezolana de Análisis de Coyuntura, 16*(31), 31–48. Retrieved from http://ve.scielo.org/scielo.php?script=sci_arttext&pid=S1316-03542010000200003

Magaña Magaña, M. Á., Sanginés García, J. R., Lara y Lara, P. E., Salazar Barrientos, L. D. L., & Leyva Morales, C. E. (2017). Competitiveness and participation of Mexican honey in the world market. *Revista Mexicana de Ciencias Pecuarias, 8*(1), 43–52. https://doi.org/10.22319/rmcp.v8i1.4304

Martínez González, E. G., Arroyo Pozos, H., Aguilar Gallegos, N., Álvarez-Coque, J. M. G., Santoyo Cortés, V. H., & Aguilar Ávila, J. (2018). Adoption dynamics of good honey production practices in the Yucatán Peninsula, Mexico. *Revista Mexicana de Ciencias Pecuarias, 9*(1), 48–67. Retrieved from http://www.scielo.org.mx/scielo.php?script=sci_arttext&pid=S2007-11242018000100048

New Zealand Trade and Enterprise. (2018). *Manuka honey in the United States*. Retrieved from https://www.readkong.com/page/m-nuka-honey-in-the-united-states-know-how-3094318

Office of Trade in Hamburg, ProChile. (2018). *Honey market study in Germany* (pp. 21–26). Retrieved from https://www.prochile.gob.cl/wp-content/uploads/2019/02/PMP_miel_alemania_2018.pdf

Pat Fernández, V. G., Caamal Cauich, I., Caamal Pat, Z. H., & Jerónimo Ascencio, F. (2016). Analysis of Mexico's strawberry crop competitiveness indicators in the world market. *Textual, (68)*, 45–63. https://doi.org/10.5154/r.textual.2016.68.004

Porter, M. E. (1991). The competitive advantage of nations. *Revista Facetas, (91)*, 5–12. https://doi.org/10.1016/j.ejr.1991

Ricardo, D. (1817). *Principles of Political Economy and Taxation* (3rd ed.). https://doi.org/10.2307/2593726

Rodríguez, M. T. (2008). China: Policies to support the external sector. *Economía UNAM, 5*(13), 42–68. Retrieved from http://www.scielo.org.mx/scielo.php?script=sci_arttext&pid=S1665-952X2008000100003

Romo Murillo, D., & Abdel Musik, G. (2005). On the concept of competitiveness. *Comercio Exterior, 55*(3), 200–214. https://doi.org/10.2174/138620703771826892

Sanchez, C., Castignani, H., & Rabaglio, M. (2018). *The International Beekeeping Market*. Instituto Nacional de Tecnología Agropecuaria. Retrieved from https://inta.gob.ar/sites/default/files/inta_cicpes_instdeeconomia_sanchez_mercado_apicola_internacional.pdf

Secretaría de Política Económica de Argentina. (2018). *Value Chain Reports*. Retrieved from https://www.argentina.gob.ar/sites/default/files/sspmicro_cadenas_de_valor_fruta_de_carozo.pdf

Soto-Muciño, L. E., Elizarras-Baena, R., & Soto-Muciño, I. (2017). Beekeeping in Mexico and the perspective of honey production in the State of Veracruz. *Revista de Estrategias del Desarrollo Empresarial, 3*(7), 40–64. Retrieved from https://www.ecorfan.org/spain/researchjournals/Estrategias_del_Desarrollo_Empresarial/vol3num7/Revista_de_Estrategias_del_Desarrollo_Empresarial_V3_N7_5.pdf

Strayer, S. E., Everstine, K., & Kennedy, S. (2014). Economically motivated adulteration of honey: Quality control vulnerabilities in the international honey market. *Food Protection Trends, 34*(1), 8–14. Retrieved from http://www.foodprotection.org/files/food-protection-trends/Jan-Feb-14-everstine.pdf

Trade Map. (2020). *List of natural honey exporters and importers*. Retrieved February 16, 2020, from https://www.trademap.org/Country_SelProduct_TS.aspx?nvpm=3%7C%7C%7C%7C%7C0409%7C%7C%7C4%7C1%7C1%7C2%7C2%7C1%7C2%7C2%7C1

Velin, M., & Paúl, M. (2011). Calculation and analysis of sectoral foreign trade indicators: The Ecuadorian case. *Revista de Análisis Estadístico, 2*(2), 7–33. Retrieved from file:///C:/Users/PORTATIL/Downloads/Dialnet-LaContabilidadPublicaEnAmericaLatinaYElDevengoEnEc-4646473.pdf