The Market for Natural Honey in Mexico 2004-2016

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ABSTRACT

Abstract: World production of honey shows significant increases that alter the market conditions also increased exports by 33 percent. The pressure on the international price, coupled with changing climate conditions in the past three years, has deteriorated significantly the production of honey for export in Mexico. The prices recorded have been unable to resolve the economic problem of beekeepers that inflation exceeds the relative value of the prices paid to the producer. So the statistics show projected from a variety of sources statistics in a series of graphs that were trying to prove the real situation of the world market and the National Honey Board.

[In Spanish]…

Resumen: La producción mundial de miel muestra incrementos significativos que alteran las condiciones de mercado al incrementarse también las exportaciones en un 33 por ciento. La presión sobre el precio internacional, aunado a las condiciones cambiantes del clima en los últimos tres años, ha deteriorado de manera significativa la producción de miel para exportación en México. Los precios registrados han sido incapaces de resolver el problema económico de los apicultores ya que la inflación registrada supera el valor relativo de los precios pagados al productor. Así lo demuestran las estadísticas proyectadas de diversas fuentes estadísticas en una serie de gráficas que intentan demostrar la situación real del mercado mundial y nacional de la miel.

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1. Introduction:

In 2015, the Secretariat of Agriculture, Livestock, Rural Development, Fisheries and Food (SAGARPA), record that the beekeeping activity in Mexico is based on an inventory of 1.9 million hives belonging to little more than 45 thousand producers throughout the country, whose average annual production of honey from 2010 to 2015 ranged around 57 200 thousand tonnes. The states with the highest record of honey production in that year were: Yucatan with 9.654, 7.074 tonnes; Campeche; Jalisco; Chiapas; 7.076, 5.117, and 4.124 tonnes, Veracruz. This, with a value of production estimated at 2.168 million pesos, according to the Information Service of the Agri-food industry and fisheries (SIAP, 2016). With regard to the organic honey, has registered an average annual production of 4 thousand tons, which is sent almost in its entirety to the markets of the European Union.

In the heading of the export of this sweetener, it is reported an average of 32 354 thousand tonnes of honey in the last five years, Mexico has consolidated its position as the exporting third country, after China and Argentina. The main destination countries in 2014 were Germany with 16.739 tonnes; the United States with 5.029 7.278; Belgium; Saudi Arabia with 4.109, 3.233, and the United Kingdom (ITC, 2017).

The world market for honey brand price levels that generate expectations for producers in local or regional markets. The ban on Chinese honey and their strategies to adulterate the honey, anti-dumping measures, the requirement for greater quality and safety in honey are some of the factors that are seen in the international market of honey, which is attributed to the current price level, however, the conditions that seem to explain these phenomena can also be seen in the behavior of the statistics of production and of the national market.

This document provides information on the behavior of national statistics on the production and marketing of honey as the result of the market research carried out during the period 2004-2016, although in some cases is updated until the figures available in 2017.

The information comes primarily from national and international sources with the support of the review of secondary data from other sources.

The main objective of this paper is to present information on available data of the market trends and honey production in the world and Mexico over a period of 2004 to 2017, this in order to understand the present and to point out the threats and opportunities offered by the honey production in the near future.

2. Methodology:

This document provides information on the behavior of national statistics on the production and marketing of honey as the result of the market research carried out during the period 2004-2016, although in some cases is updated until the figures available in 2017. The information comes primarily from national and international sources with the support of the review of secondary data from other sources.

Apply some statistical tools such as regression, correlation, and analysis of fluctuations in time series data, for a better interpretation of the data that are commonly found in a variety of information sources. The analyses of the seasonal and cyclical variations of prices are essential.

3. Results:

3.1. World production of honey 1975-2002

According to the FAO (FAOSTAT, 2017), the world production of honey for the year 2002 was estimated at more than 1 million 270 thousand tons, with an overall increase of 9.9% compared to 1997. In the previous period 1989-1997 the growth of production remained more or less stable at around 3% per annum.

According to reports of the FAO, data is calculated from 2003, that approximately 35% of the honey was the subject of exchange on a global scale through exports. This meant an increase of 11% in export volumes in relation to the year 2000, marking an escalation in the world market for the product.

Despite its variability in previous years, starting in the year 2000 the world production of honey showed a tendency toward more stable to grow exponentially, as shown in Figure 1.

In the field of beekeeping, in September 2002, only Mexico reported the loss of 200.000 hives for effects of Hurricane Isidore, which hit the Yucatan Peninsula, the main region producing honey export, marking a watershed for the activity (SAGARPA-SIAP, 2003). Australia lost as a result of the floods almost the 42% of its production this year (Australian Bureau of Statistics, 2003). Italy reported low production due to problems of frost and drought (Malossini, 2003). Germany reported in that year death of bees by causes have not yet been identified and low production due to frost and drought (Pascal *et al.*, 2009). Finally, Spain also reported the death of bees, drought, frost, and a substantial decline in yields per hive (Montagud, 2003).

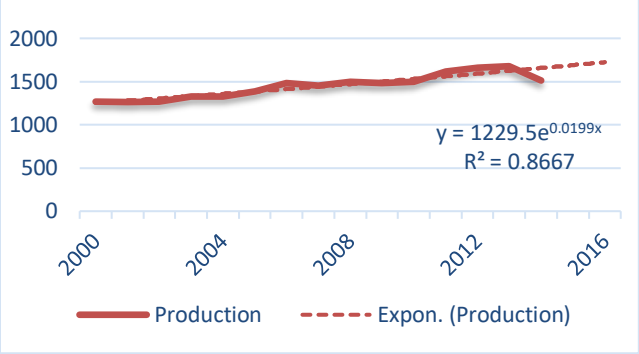

Figure 1. Global production of honey 2000- 2015 (thousands of tons). Source: own elaboration with data from FAO-FAOSTAT (2017); Apiservices (2003) and Braunstein (2001).

Under 2003 as a period of the home of alleged recovery of the world beekeeping activity for the following years. However, despite the fact that the world production of honey shows a tendency to increase in the years subsequent to 2015 (Figure 1), this is related to the increase of the world production to join Brazil, Vietnam, and Ukraine, but especially New Zealand has also evolved significantly in prices of up to USD $18 dollars per kilogram (FOB) (ODEPA, 2015). Also significant is the increase in the participation of China in the global production and marketing of honey, representing 13% of the total exported, causing a fall in the international price.

For its part, the ministries of Germany, France and Spain reported reduced its production to the end of the period 2013-2015 due to a loss of a 40 and up to 80 percent of their bees and/or production for various reasons, among them the so-called "unexplained" syndrome of extinction, the extreme heat wave, floods, increased imports of low-quality honey and nearly a thousand beekeepers per year who leave the activity in France, among others (Agrimundo, 2014).

3.2. Cyclical variations in world production of honey

The behavior of the world production of honey shows a marked cyclical variation. If we draw a trend line (Figure 1) from 2000 to 2015 the honey production is rising exponentially, but to evaluate its performance year-on-year we observe very well marked cycles of five years, at the end of the five years of the end of each cycle tends to slow down slightly its evolution by reducing the total volume of what is produced, to restart your climbing up gradually until a new cycle. The world production of honey has had a clear cyclical behavior, with a variation each time less toward the end of the period, this softens

the trend line that allows you to predict an expected behavior for the following year.

These cyclical variations tend to be reduced in terms of the number of years that includes each cycle during the period 2003-2015, as between the year 1975 and the year 2003 reached records between 5 and 6 years. In the same way, the cyclic variation in the volume of world production has been reduced or "smoothing", which may be associated with the technological advance of the means of communication and data logging.

In accordance with the projection of the cyclical behavior for the year 2015 onwards, it was expected that the global production would tend to decrease (Figure 1). The production figures recorded for the 2015 show that this behavior has been the same as projected in that year, as at the end of the year the progress reports of the agricultural ministries in various countries such as Mexico, France, Italy, Germany, Spain, Australia, among others, for various reasons, major losses in 2014 and 2015, although with a rebound in 2016 before the actions directed to the rescue in the fields of production, thus confirming the beginning of a new cycle.

3.3. Global trade of Honey

In the period 2013-2016 (Figure 2), even when the global economic conditions have not always been the best, we find a growing trend in the statistics of trade in honey at the global level (FAO-FAOSTAT, 2017; TRADEMAP/ITC, 2017). Between the years 2013 to 2015 exports to the pair of imports maintained a growth rate of stable until the marking breakdown observed in 2016 in which exports exceed imports which create a gap in the market. This phenomenon can be explained in large measure by the reports relating to the adulteration of honey from China and the measures taken by some countries in Europe and the United States to measure the quality of the honey with the intention to curb this practice of the market, which in addition to its volume impacted definitely in the price in addition to the fall of the production of traditional exporters such as Argentina, Vietnam and Spain in 2015 and Mexico in 2016 (Figure 3). As previously observed in Figure 2, leads us to assume that there are large stocks of honey stored safely in the hands of intermediaries, associated with the re-exports carried out by countries such as Germany, Switzerland, among others.

3.4. Export of Mexican honey

In 2016, Mexico exported a little more than 29.109 tonnes of honey which meant a value of 93.7 million dollars. According to figures from the Bank of Mexico (Banxico, 2017), this figure was 40% less than the tons exported compared to the previous year, which was not the case since 2005.

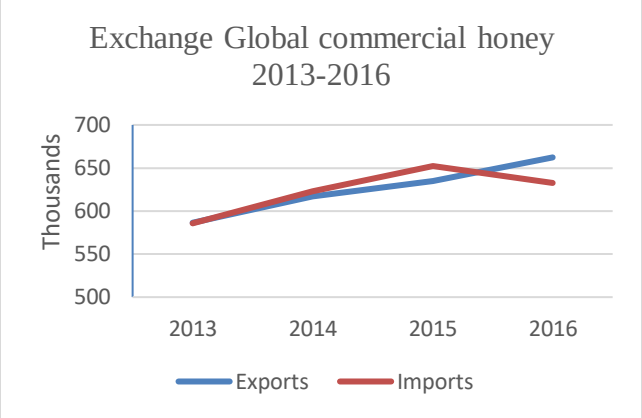

Figure 2. Global trade of honey 2013-2016 (Thousands of tons) Source: Based on data from FAO-FAOSTAT (2017), TRADEMAP/ITC, (2017).

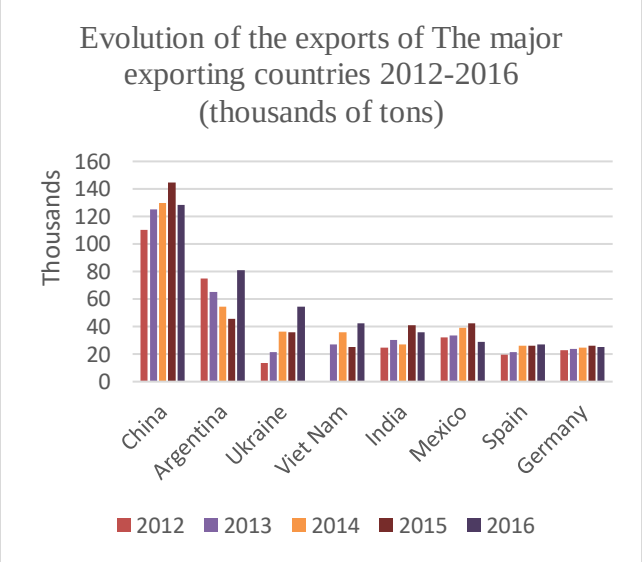

Figure 3. (2012-2016) Honey exports from the main exporting countries. Source: Prepared with data of TRADEMAP/ITC, (2017).

The main cause and only cited is climate change, which led to a drastic fall in production in the main producing states. Only in the Yucatan, the main producing state of honey for export, production fell from 11 629 thousand tonnes in 2015 to 7 000 490 in 2016. According To Maximum Paredes, director of rural development and marketing of the Secretariat of Rural Development in the state of Yucatan, cited in this report of Banxico (2017), referred to as the main causes of this reduction in production to atypical droughts, poor flowering and very low temperatures that withered the flowering (Figure 4).

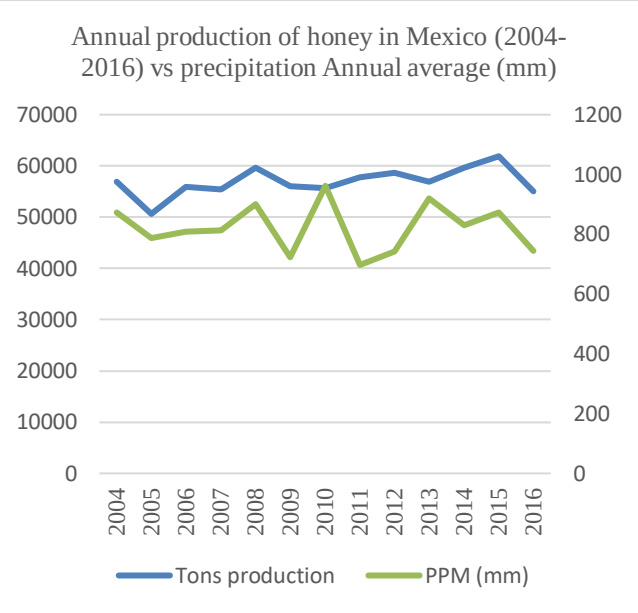

Figure 4. Evolution of the production of honey in Mexico in relation to the average annual rainfall recorded Source: Prepared with data from FAO-FAOSTAT (2017), and SMN (2017).

Germany continues to be the main importer of Mexican honey because in 2016 were exported to that country a total of 13,103.4 thousand tons with a value of 43 million dollars (Wiesbaden, 2017). Other countries that Mexico exports honey are Saudi Arabia, the United States, Belgium, United Kingdom, Japan, Switzerland, Spain, and Portugal among others (Figure 5).

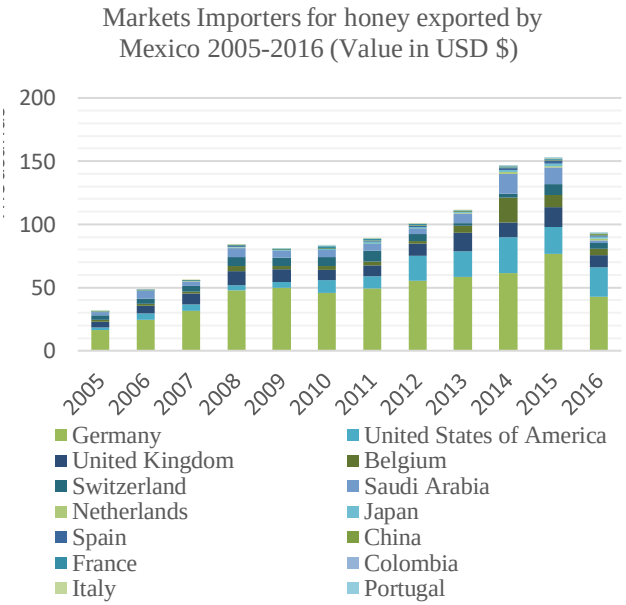

Figure 5. major importing countries of Mexican honey. Source. Own elaboration based on data from FAO-FAOSTAT, 2017 and TRADEMAP/ITC, 2017)

3.5. Entities with increased production of honey

In accordance with the figures recorded by the SIAP (2016), occupied the first place of honey production in Mexico with 7.490 tons, followed by Campeche with 5.438 and Chiapas with 5.213 tons, respectively. The fourth place Veracruz with 4.766 4.590 tons and Jalisco with ranked fifth. Oaxaca also reports an important production of the sweetener with 4.150 tonnes of honey produced by what occupies the sixth place (Figure 6).

The state of Quintana Roo, although reports 2.885 tonnes, which places it in the seventh position among the largest production, at the national and international level for its production of organic honey. Close to 350 Bee Maya of Quintana Roo exported 864 tonnes of organic honey to the United States and Europe, by which received an economic impact of more than 54 million pesos (SEDARU, 2016). Maya indigenous producers' organizations have received various awards at the global level by their beekeeping practices in areas of subtropical forests, some belonging to reserve areas. However, 2016 was a year in which it was reported a significant drop in the production of close to 40% due to the lack of rain.

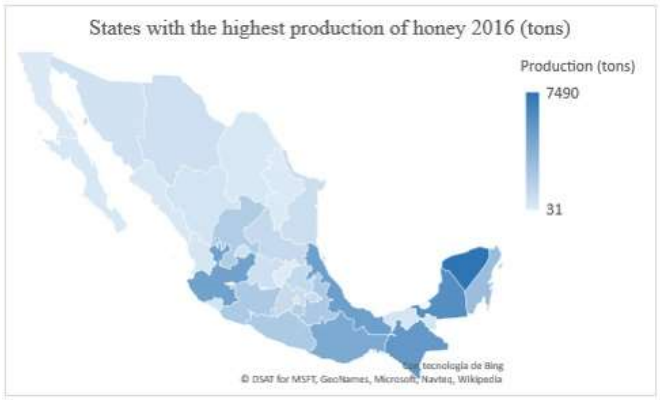

Figure 6. States that reported production of honey in 2016. Source: Prepared based on data of SIAP (2016).

3.6. Seasonality of the national production of honey

As shown in Figure 7, the seasonality of greater honey production in Mexico is concentrated between the months of spring (March-June) and the months of the autumnal season (September to December). In the same Figure 7 it is possible to observe, that in the year 2017, the production is atypical in terms of volume by the shortage rainy season.

3.7. Trend in the behavior of the market price

The prices of the national honey market paid to the producer shall be governed by the trends observed in international markets, which have varied depending on factors such as the volumes produced, quality, safety tests, the origin, the hoarding in storage, among others.

The trend observed in the prices paid to the producer in Mexico from 2004 to 2016, has been rather to

grow steadily, with cyclical variations in four to five years because of changes in the factors that determine the international market price. However, in 2017 there has been a substantial fall, similar to that of ten years ago in 2008, which has significantly affected the Mexican beekeepers in its economy, contrary to what was projected in the trend line (Figure 8). The above would be at the start of the behavior marked by the cyclical variations, that is to say, the beginning of a new cycle where the price tends to go down to start a new phase to the rise in the following years, to keep this cyclical behavior in the next three years, reach a maximum expected until 2020, to start in 2021 a new cycle.

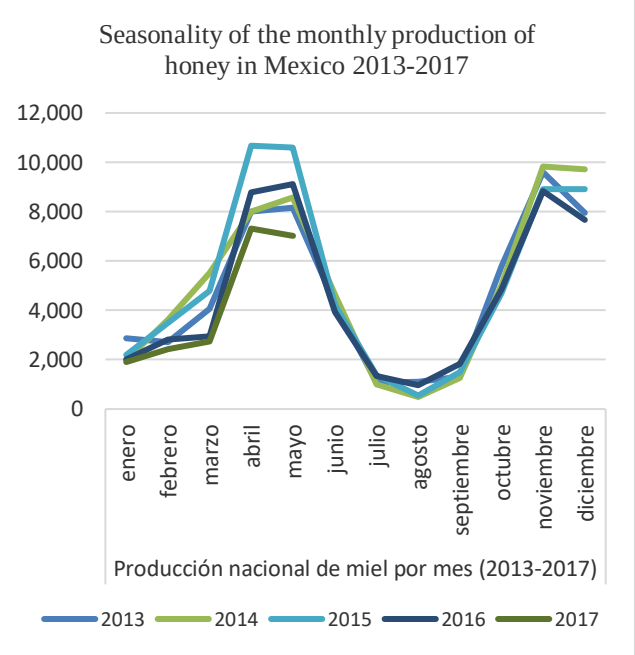

Figure 7. Seasonality of honey production in Mexico. Source: Prepared based on data of SIAP (2016).

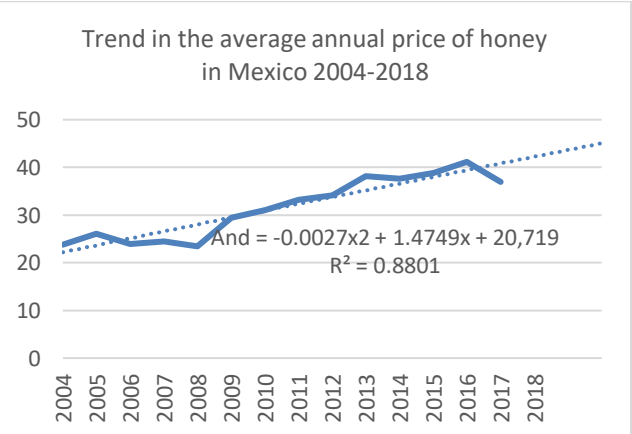

Figure 8. The trend in the prices paid to beekeepers Mexican 2004-2018. Source: Prepared based on data of SIAP (2016).

3.8. Relationship of prices paid to the producer by entity

The prices paid to the producer of honey by state/region can vary depending on the volume of honey produced and the final destination of the market for which it is intended. The honey produced for export purposes usually receive a lower price than the kilogram of honey for the retail market. The states with the highest production of honey observe lower prices per kilogram paid to the producer as the case of Yucatan and Campeche, Quintana Roo and Veracruz. In the United States or regions of Mexico where the popular consumption is frequent, that is to say with the greatest demand but low production the price tends to be higher, as the law of supply and demand markets (Figure 9).

The variety of packaging of the honey, quality and labeling of the same and in particular the floral origin tend to be determining factors in the price. The honey in the state of Jalisco, and destined for the domestic market, is a clear example of this, which is why there is a high price despite the volume of production (Figure 9). It has identified that in the domestic market there are honey prized for its floral source as in the case of honey of Eucalypto that occurs in temperate regions and the honey of tajonal Dzi-Zil ChE and xtabentun, peculiar to the region of the Peninsula of Yucatan and Chiapas. Also reported the flower of avocado, the guava or the Naranjo (Mexico Desconocido, 2017).

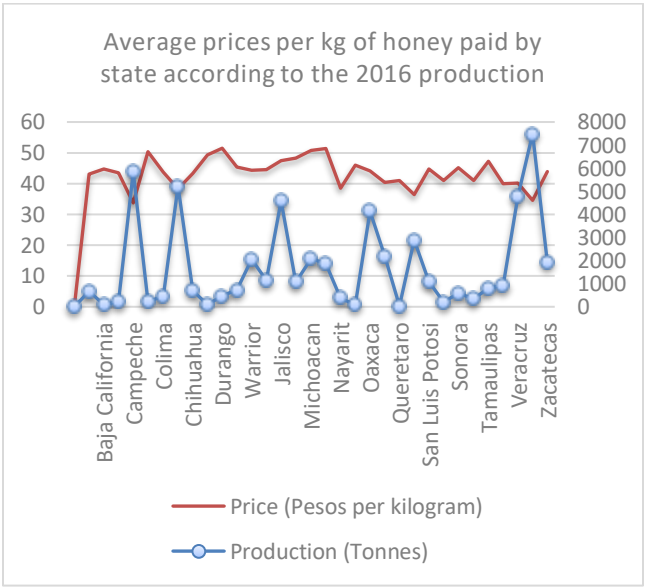

Figure 9. The difference of prices paid to the producer according to the region. Source: Prepared based on data of SIAP (2017).

3.9. Loss of real value from the price paid to the Mexican beekeeper

The evolution of the nominal prices (in current pesos) that is received by the beekeeper in Mexico has been in constant growth for the period of

2010 to 2016, unlike what is observed in the prices paid to beekeepers, located in the region of the Yucatan Peninsula on which is recorded certain contractions between 2011 and 2013. Between 2014 and 2015, there was a major recovery in nominal price; however, for the year 2016 was again a setback in the states of Yucatan, Quintana Roo and Campeche was maintained at the same level as in the previous year (Figure 10). This can be explained in large measure by the drop-in price in the international market which is destined to the production of these three aforementioned states.

The percentage of the national average price paid per kilogram of honey in 2016 has increased by 32 percent compared to the price of 2010 in nominal terms. The price increase of $31 to $41 pesos per kilogram of honey without subtracting inflation and/or the possible loss of purchasing power of the beekeeper by the effect of the same. The price received by the beekeepers in Quintana Roo was 42 percent higher than that received in 2010, while in Yucatan and Campeche the percentage increase was 34 and 26, respectively (Table 1 and Figure 10).

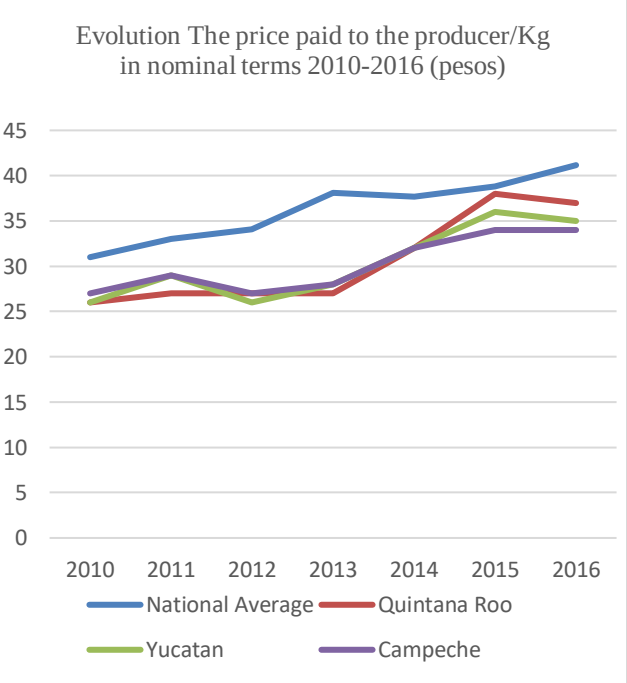

Figure 10. Comparative analysis of producer prices in nominal terms 2010-2016. Source: Prepared based on data of SIAP (2016).

Table 1. *Relationship of price/kg paid to the producer (pesos)*

	National Average	United honey exporters		
		Quintana Roo	Yucatan	Campeche
Increase in nominal terms (%)	32	42	34	26
Increase in real terms (%)	7.7	15	9.2	2.2

Source: Prepared based on data of SIAP (2016) and Banxico (2017).

It would seem to indicate that the purchasing power of the beekeepers has been on the increase and of course for the benefit of the same, however, to calculate the effect of inflation since 2010 as the base year and using the Consumer Price Index (CPI) provided by Banxico (2017), is obtained by means of deflation which, in real terms, the increases in the price per kilogram of honey between 2010 and 2016 have been only 7.7 percent for the national average of 15 percent for Quintana Roo, from 9.2 per cent to Yucatan and only 2.2 percent for the state of Campeche (Table 1, Figure 11). To better understand it is enough to mention that according to *"official" figures* provided by Banxico (2017), estimated inflation between 2010 and 2016 was 23.2 percent, higher than any of the increases in average prices per kilogram of honey in real terms.

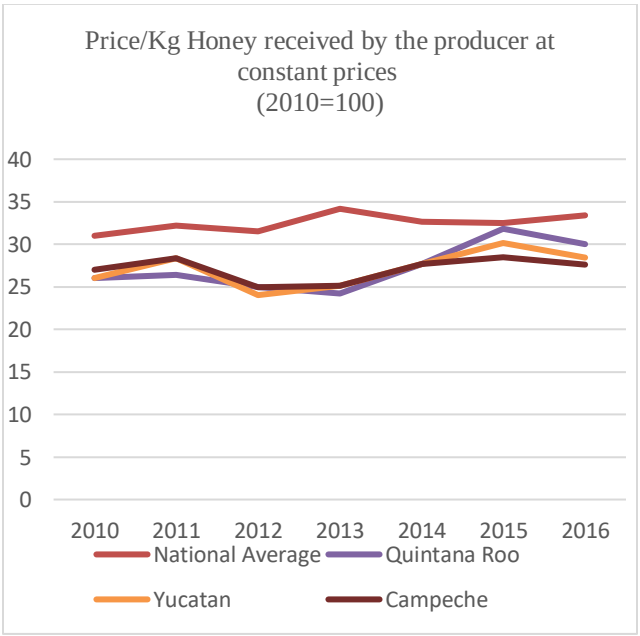

Figure 11. Comparative analysis of producer prices in real terms 2010-2016. Source: Prepared based on data of SIAP (2016), and Banxico (2017).

4. Discussion:

From the beginning of the new millennium, the world honey production increased by 33.3%, multiplied in close to 400 thousand tons in the last 17 years. This increase resulted in average prices grow in the same way in the face of increased global demand, stabilizing at the end of the period. Between 2014 and 2017, the situation of the production and prices shows a trend rather irregular with a drastic drop in the price before the arrival of unusual volumes of honey of dubious quality from China according to estimated data from FAO-FAOSTAT (2017).

In the period of analysis 2000-2017, world imports have also been increasing in about one third due to the increase in the consumption of natural products and special diet menus, to the search for a healthy food free of pesticides, and to the largest industrial use of this product in certain countries.

The indicators of the world production (FAO-FAOSTAT, 2017), show that the increases in recent years are due mainly to the increase in the number of hives and beekeeping professional in the world and are not related to the increase in productivity.

In the last 17 years, it can be observed which have been incorporated into the production and exports significantly countries such as Ukraine, Vietnam and Brazil, among others that have increased their production and market share in best conditions as in the case of New Zealand whose prices have quadrupled by the particular demand for the quality of their honey.

The low average yields per hive is a phenomenon that is repeated in almost all parts of the world between 2014 and 2017, Germany, Austria, Spain, France, and Mexico reported losses in their average productivity per hive in averages ranging from 3 to 10 kilograms and even the lack of production. The reasons which have given rise to this phenomenon is explained separately by the governmental institutions that support the beekeepers.

In Europe, there is talk of drought and health problems (Ministry of Economy of Germany, 2003;The German Ministry of Economics, 2003), In Australia there is talk of the devastation forestry and environmental issues, in Mexico it is believed in addition to the Africanization and problems related to the varroa mite, are now associated the problems of climate change to the unusual rainfall and seasonal droughts that have been registered (SAGARPA-SIAP, 2003).

5. Conclusion:

From the results of this study, it can be said that the trends in international market prices from 2011 to 2017, determined that in certain entities that recorded significant levels of export production in the southeast of Mexico, beekeeping has lagged even more toward a marginal activity of subsistence, secondary, without being able to find a profitability, affected by environmental problems, the presence of varroa and the problem of Africanization (Güemes, Ricalde, & Villanueva, 2002; Cashier, 1999). The loss of purchasing power of beekeepers in this region is a reality.

The production of organic honey has not been significant in order to resolve the problem, all while increasing the demands on food safety practices of the honey demanding more time to the activity for which the export volume and the price received are relative (Güemes, Ricalde, & Villanueva, 2004).

The domestic market represents an excellent option under the price reached according to the region of the country, particularly related to the floral origin, although the volume consumed per capita is still very low at the national level that does not exceed 200 grams per year as cited by Mr. Gurría Treviño (2016).

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