

STATISTICAL VIEW OF THE CURRENT SITUATION OF BEEKEEPING IN THE CZECH REPUBLIC

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Abstract

The aim of this study is in its first part especially implementation of the basic demographic analysis of the beekeepers in the Czech Republic using the latest available data. It is well known, that the Czech population of beekeepers is getting older and new beekeepers are not born. The most important output from the first part is likely to be current demographic structure of Czech beekeepers and its confrontation with the demographic structure 10 years old. In the second part, it will also be prepared an analysis of development of honey prices in the Czech Republic and prepared a confrontation with the development of sugar prices on the basis of all the latest available data. Sugar is the basic raw material for feeding bees during the winter months, when bees are not able to obtain a livelihood for themselves and just hibernate. Based on this, the question will be answered, e.g. why the honey business in the Czech Republic is not popular so much, why young entrepreneurs do not want to start a honey business and why beekeeping in the Czech Republic declines. The honey price has its own development, which does not depend from market behaviour.

Key words: beekeeping, demographic structure, honey and sugar prices, Box-Jenkins

JEL Code: C32, C53, Q26

Introduction

Beekeeping in the Czech Republic has always had an outstanding record and even at today's hard competition from abroad is trying to maintain an excellent level. More than 98 % of the beekeepers of the Czech Republic are associated in the Czech Beekeepers Union, which tries to resist to the competitive market due to its policy, not to lose a step in development of new technologies but also respect traditional practices and laws of nature, to cooperate with legislative and executive state authorities, government institutions and non-governmental organizations for the purpose of securing legislative actions and other activities aimed to support the beekeeping field. Although it is not a hard work, which could not be performed by women, we will not find them too much in this field (see e.g. Veselý et al., 1985). This is due

to the trend of the past, when most of the agricultural and economic work in household was performed by men, the women work mostly inside the house and caring for children. One of the initial study outputs will display the current demographic structure of Czech beekeepers and its confrontation with the demographic structure of the Czech beekeepers 10 years ago. (Creating of demographic structures of specific population is very difficult, for more see recommendations e.g. in Kačerová, Henzler, 2011).

The next part of the study deals with the development of the number of beekeepers in the Czech Republic and the development of the number of hives. Czech Beekeepers Union claims that for annual optimal pollination of all plants in the Czech Republic is necessary hundreds of thousands of these hives. Bees are productive, unfortunately only from spring to autumn. Hibernate in the winter months and need to be fed. To do this, the beekeepers buy sugar, which is the basic raw material for feeding bees. What is the connection between sugar price and honey price will be shown in synoptic charts.

The Czech Republic both exports and imports the honey. Development of the situation in our country in the past and development today, show the outputs in next part of the study. It can be expected that due to rising of domestic prices of quality honey, the Czech consumers will be more prudent in buying them and they will tend to buy cheaper honey from abroad, under the depressive price impact.

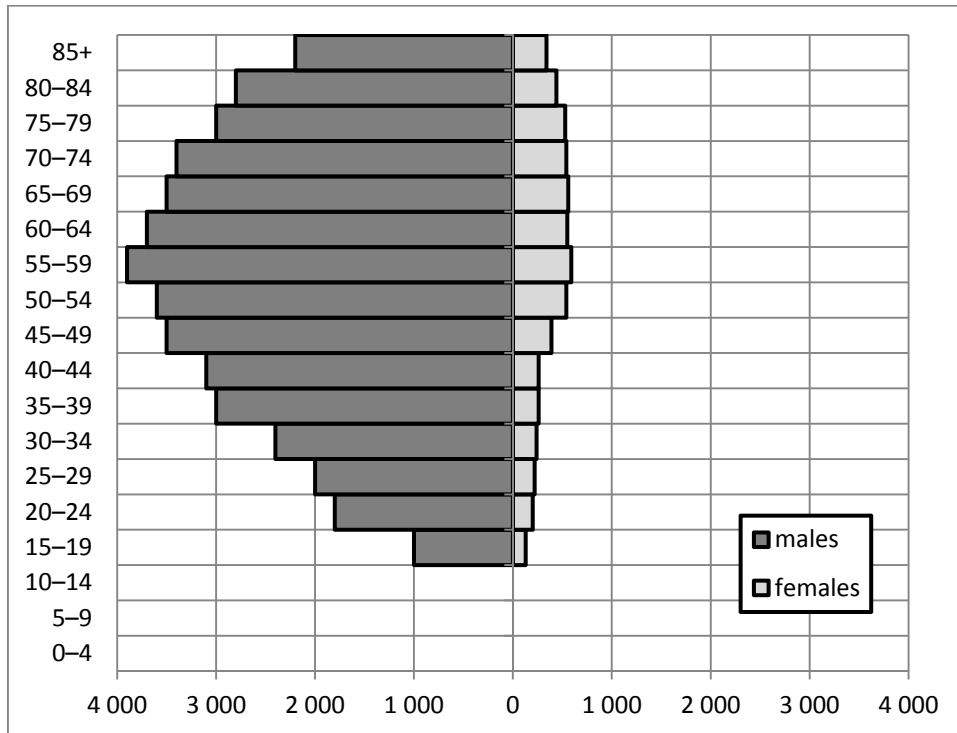
Acquisition of data for this study was very demanding. Given that most available data ends in 2010, with using of methodology approach of Box and Jenkins (1970) time series modelling, there will be constructed the predictions for the years 2011 and 2012 at the end of the study. These predictions will be constructed by sophisticated technique due to outline the development in the last two years (see e.g. Arlt, Arltová, 2007).

1 Current situation

The latest demographic structure of Czech beekeepers from 2010 can be seen in Figure 1. Figure 2 shows a comparison of the demographic structure in 1990. Persons under 18 are not considered in the statistics. At first glance it is evident almost total absence of women. Their proportion in the population of beekeepers is of the order of a few percent. The second point of interest is highly regressive form of demographic structure. The average age of the Czech beekeepers is currently little more than 58 years, while number of coming young beekeepers is smaller year by year. The old leave and new beekeepers are not born. The mortality in older

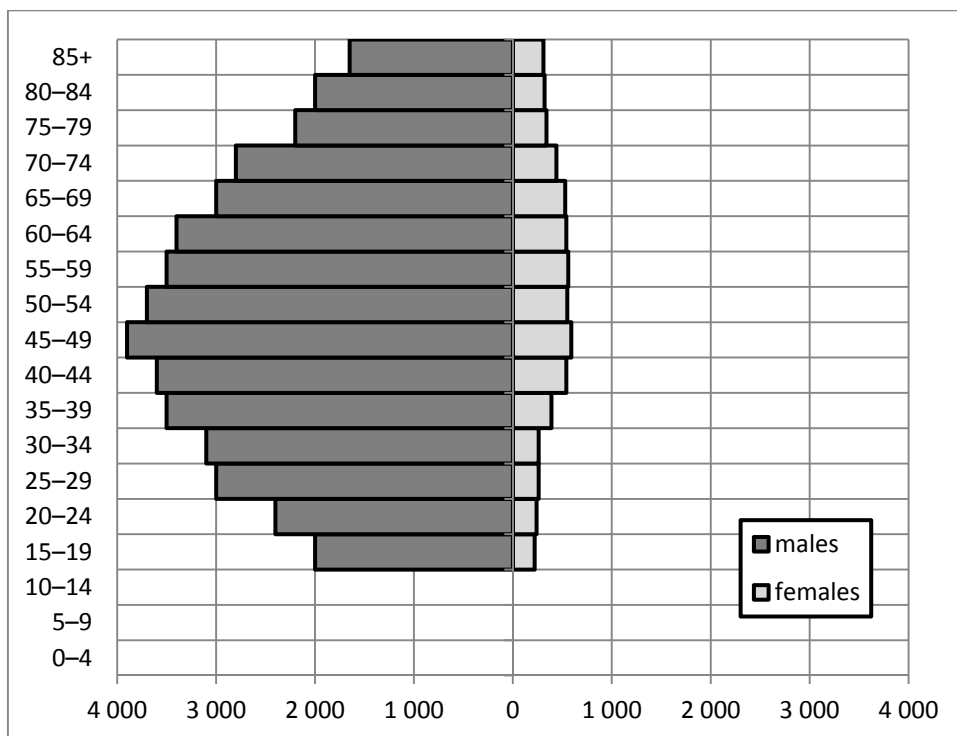
age has its own specific development (see e.g. Fiala, 1999). The aging is for one particular reason, agreed by most of beekeepers.

Fig. 1: The demographic structure of the beekeepers of the Czech Republic in 2010



Source: Czech Beekeeping Union, The Ministry of Agriculture. Own construction.

Fig. 2: The demographic structure of the beekeepers of the Czech Republic in 2000

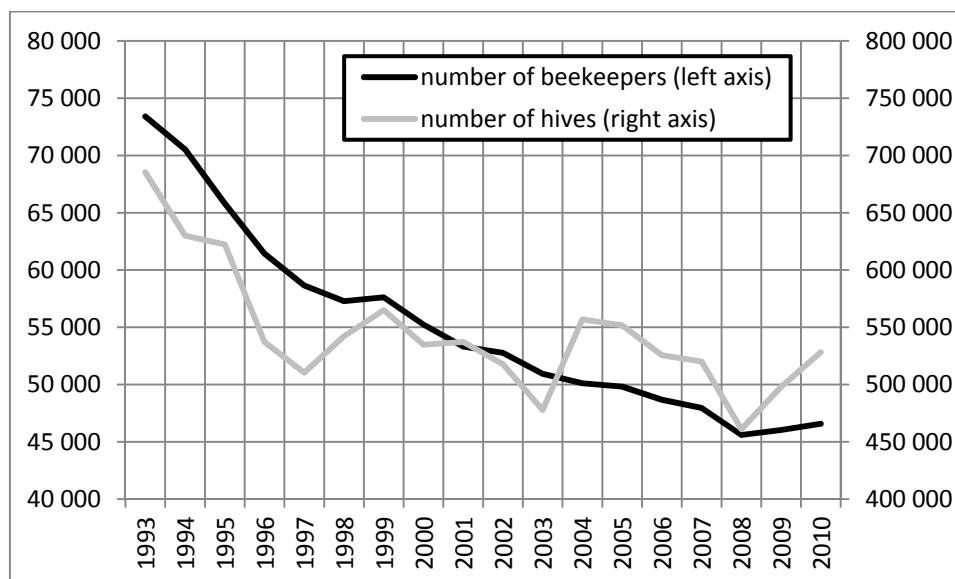


Source: Czech Beekeeping Union, The Ministry of Agriculture. Own construction.

Beekeeping is a hobby. Carried out with love and mostly because entertains the soul. Beekeeping can make money to businessmen, but it cannot make a living. Production of high quality natural honey cannot be cheated, and therefore this sector is not attractive to young businessman today.

The number of beekeepers in the Czech Republic is gradually decreasing. While in 1993 there were registered more than 68 000, the latest available data from 2010 shows that in the Czech Republic is registered only 46 573 beekeepers. In the introduction was stated, that for the optimal annual pollination of plants in the Czech Republic is necessary hundreds of thousands of hives. Development of the number of beekeepers and number of hives in the Czech Republic shows Figure 3. Number of beekeepers is related to demographic trends and economic attraction of the field. Number of hives often depends on other grounds – on the development of bee diseases, the availability of drugs for hives, the length of winter and length of spring and other important factors affecting the life of hives. At the end of 2010, the Czech Republic registered 528 186 hives. Statistics of 1993 recorded a value of 685 321 hives.

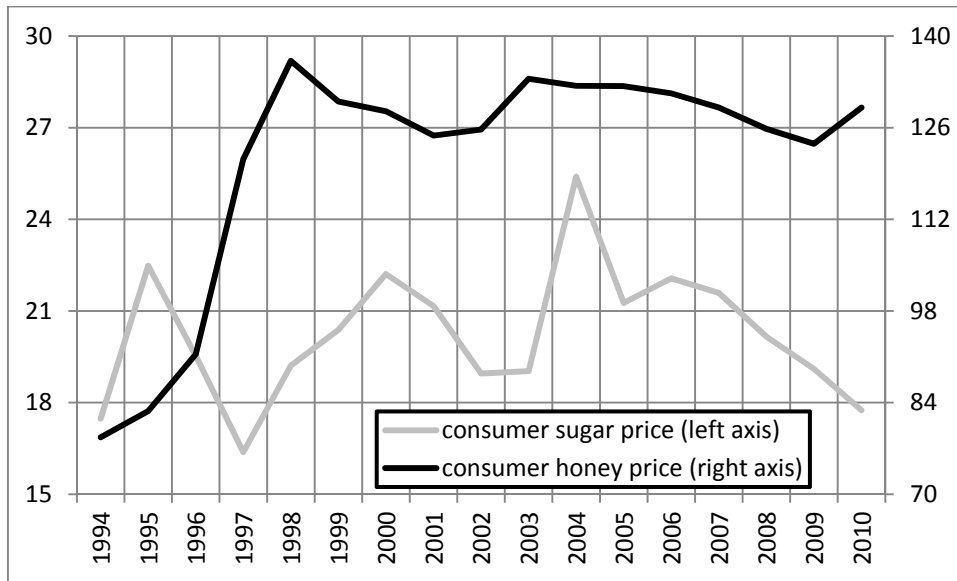
Fig. 3: The number of beekeepers and number of hives in Czech Republic



Source: Czech Beekeeping Union, The Ministry of Agriculture. Own construction.

Price of honey dramatically increased between 1994 and 1998. This caused that Czech consumers began to buy more honey from abroad, which however was not so good. But this has contributed to the creation of market equilibrium. From 1998 to the present, the honey price is already fixed in the equilibrium, culminating in the limits of 125–135 CZK / kg of honey. A slight decrease in the price of honey is seen in 2009 when the economy hit a wave of economic crisis. Consumer honey prices at constant prices of 2005 can be seen in Figure 4.

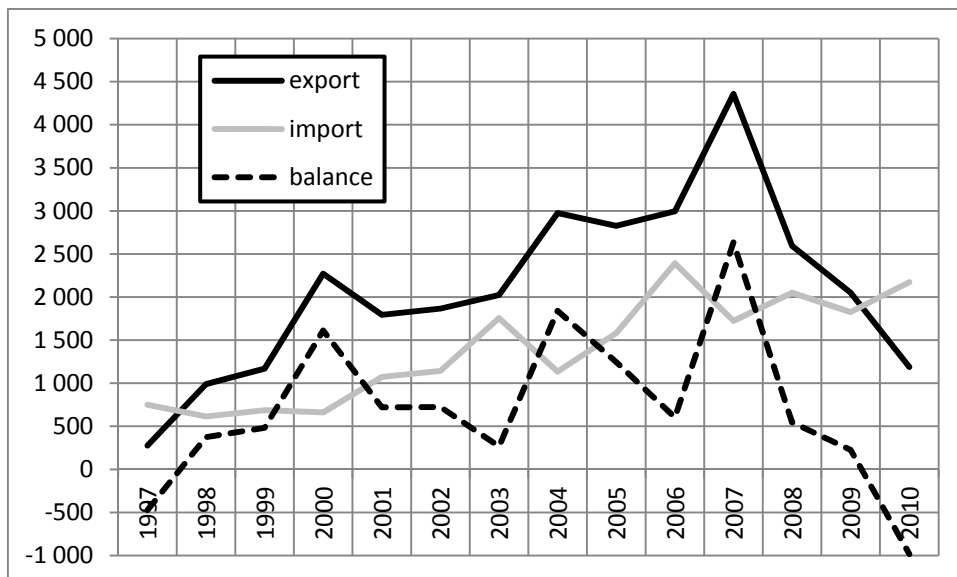
Fig. 4: The consumer sugar prices and consumer honey prices in Czech Republic (constant prices of 2005)



Source: Czech Beekeeping Union, Czech Statistical Office. Own construction.

As well as is shown here the development of consumer sugar prices at constant prices of 2005, which beekeepers buy to their hives for feeding during the winter. There are visible indications that in some years the honey prices and sugar prices have developed in a similar trend. Change in sugar price (if developed in the same trend as the change in the honey price), has a slight delay.

Fig. 5: Export and import of honey in Czech Republic (x 1000 Kg)



Source: Czech Beekeeping Union, The Ministry of Agriculture. Own construction.

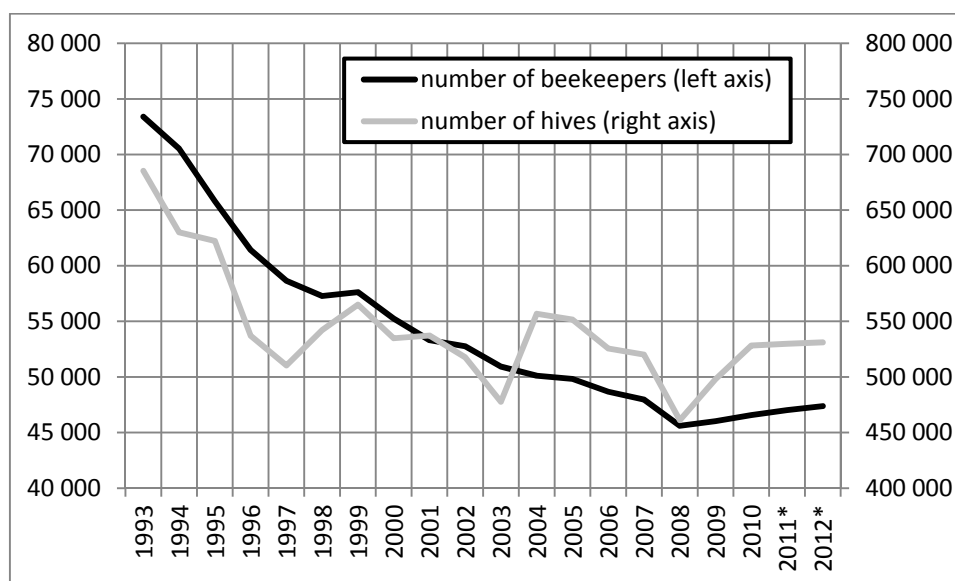
Since 1997, the Czech Beekeepers Union collects the statistics of development of export and import of honey. By the end of 2007 the Czech Republic exported honey more than imported, and had such a positive balance. Since 2007 the export began dramatically decline. This was probably due to the fact, that the price of the Czech honey was constant and the foreign producers were subsidized by their governments to maintain lower prices.

Czech honey was expensive for the foreign countries, so it did not export. Cheap subsidized honey from abroad began to penetrate more easily into the Czech market and so the trade balance is negative now. Development of import and export of honey in the Czech Republic (in tons) shows the Figure 5.

2 Forecast and vision

Given that the latest statistics are available from 2010 and in time of preparation of this study the year 2012 is already underway, there were created the estimates of number of beekeepers and number of hives in Czech Republic, estimates of consumer sugar prices and consumer honey prices in Czech Republic and estimates of export and import of honey in Czech Republic in 2011 and 2012. The estimates were made using by methodological approach of modelling of time series by Box and Jenkins (1970). Using appropriately assembled and diagnostically tested ARIMA models (see e.g. Hušek, 2007) were constructed these predictions. Graphical results are presented in Figures 6–8.

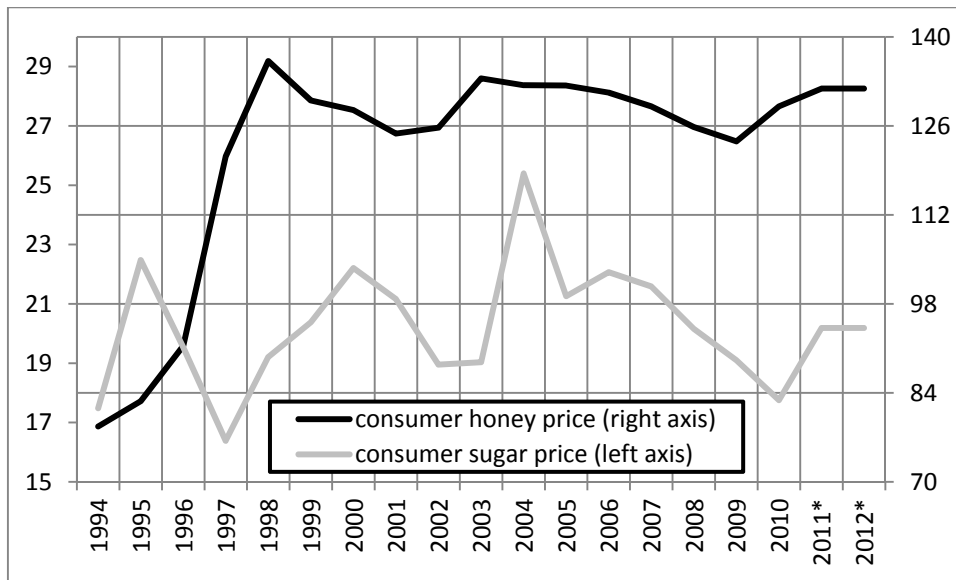
Fig. 6: The forecast of number of beekeepers and number of hives in Czech Republic in 2011 and 2012 (signed by *)



Source: Czech Beekeeping Union, The Ministry of Agriculture. Own construction.

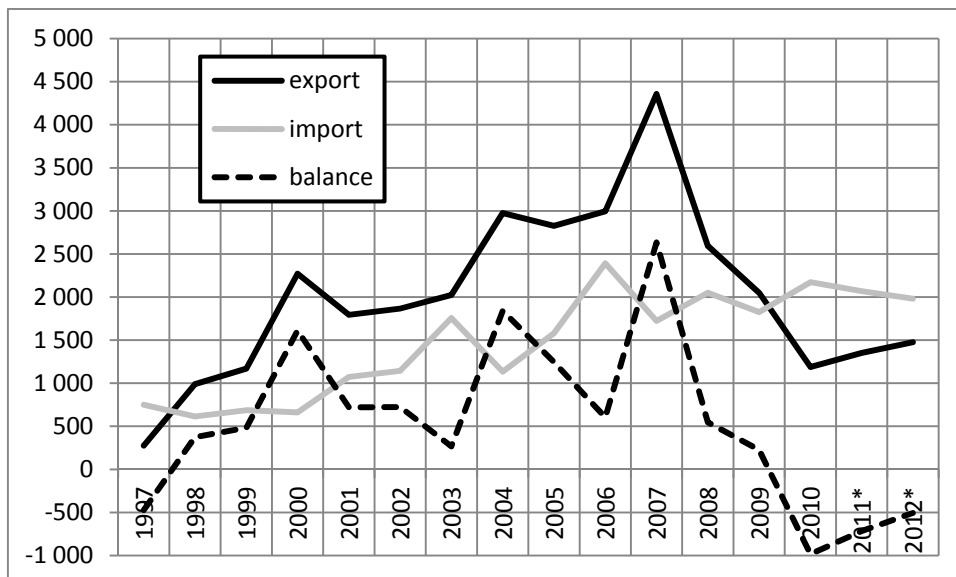
Ceteris paribus we can assume that in 2011 or 2012 the number of beekeepers in the Czech Republic will not decrease, perhaps slightly increase. It may rise up to 47 013, or 47 373 beekeepers. As for the number of hives can be expected stagnation. In 2011 we can expect approximately 529 730 and in 2012 approximately 531 026 hives.

Fig. 7: The forecast of consumer sugar prices and consumer honey prices in Czech Republic in 2011 and 2012 (constant prices of 2005, signed by *)



Source: Czech Beekeeping Union, The Ministry of Agriculture. Own construction.

Fig. 8: The forecast of export and import of honey in Czech Republic in 2011 and 2012 (x 1000 Kg), forecasts signed by *



Source: Czech Beekeeping Union, The Ministry of Agriculture. Own construction.

During the years 2011 and 2012 can be (*ceteris paribus*) assumed, the approximate stagnation in consumer prices of honey and consumer prices of sugar. The value will be approximately at 20 CZK / kg of sugar and 132 CZK / kg of honey. In 2011, or 2012, it will be exported 1 351 tons, or 1 476 tons of honey. There will be imported 2 067 tons, or 1 982 tons of honey in 2011 or 2012. The balance deficit will therefore possibly decrease gradually from the value of 984 tons in 2010 to 716 tons in 2011 and then to 506 tons in 2012.

Conclusion

Beekeepers in the Czech Republic is getting older, while number of coming young beekeepers is smaller year by year. This is evidenced by published age structure. Although the beekeeping in the Czech Republic is still at a high quality level, with a trend that is currently underway the situation is not sustainable. Subsidy policy especially of the European Union causes, that the foreign honey price is disproportionately reduced and this leads to the destruction of the competitiveness of Czech honey in foreign markets. At the same time begin to increase of purchases of foreign honey by Czech consumers. Subsidize honey from the public budgets is not efficient in the trade economy and governments would not support this policy. There can be found the relationship between consumer honey price and the consumer sugar price at certain times, but the honey price often depends on other circumstances. Honey has a constant value and the economy in the ever-increasing price level cannot be reduced. Reducing the quality of honey in order to reduce price would be very wrong idea.

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