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REGIONAL CHARASTERISTICS OF BULGARIAN APICULTURE

G. Aleksiev*

Department of Management, Trakia University, Stara Zagora, Bulgaria

ABSTRACT

The apiculture have a small share in the total agricultural product of Bulgaria, but its' role for the development of the sector is growing. This have been influenced by the two main characteristics of the branch – its' possibility to help for crop-dusting, and generating of additional incomes for the people from rural areas. During the last two decades the development of beekeeping in the main agrarian regions of the country is not evenly spread. The sustainable and competitive development of the apiculture is a result of a row of economical, sociological and institutional factors.

The main goal of the study is, based on an analysis of the common condition and regional characteristics of the apiculture, to prove that there are possibilities for creating an appropriate institutional environment for sustainable and competitive development of the sector on the integrated European market.

The investigation is implemented from May 2010 to April 2011 in the framework of the student research group of the department of economics at Agricultural university of Plovdiv and includes tree main stages.

During the first stage, common conditions of apiculture in the country have been analyzed. The main ingredients of the natural, economical and institutional environment influencing its productivity and competitiveness are examined. The regional characteristics of beekeeping are investigated in the second stage. The analysis is concentrated on the influence of the social changes during the period of transition. The third stage is connected with a study of the main factor, that forms the production potential of apiculture in each region. The need for institutional support in the framework of the European programs for rural development is explained.

Both, centralized and own sources of information are used. The results from the application of the National program of apiculture are used so different measures for institutional support can be offered, for each region.

Key words: apiculture, regional development, competitive advantages

INTRODUCTION

The apiculture plays a small part in forming Bulgaria's total agricultural product, but still it importance can't be denied. In recent years, especially after Bulgaria joined the European Union, the role that apiculture plays in the development of the agricultural sector is ever-growing. This is due to the two main characteristics of bee-keeping – its possibilities to help for crop-dusting, and generating additional incomes for the people live in the rural areas. The demand for natural honey on the international market during last decade is growing, which puts stress on the producers to play on their competitive advantages which is also true for regions and countries as a hole.

During the last two decades the development of apiculture in the main regions of the country is not evenly spread. This is not without its cause; the development of a competitive natural honey production is based on many factors, some of which are ecological, economical and institutional,. The quality and quantity of the produced natural honey, is highly dependent on the crops grown in the region.

The main goal of the study is, based on an analysis of the common condition and regional characteristics of the apiculture, to prove that there are possibilities for creating an appropriate institutional environment for

***Correspondence to:** *Georgi Aleksiev, Department of Management, Trakia University, Stara Zagora, Bulgaria, e-mail: georgi.alexiev@gmail.com*

sustainable and competitive development of the sector on the integrated European market.

The investigation is implemented from April 2011 to June 2011 in the framework of my Ph.D. dissertation on “Efficiency and compatibility of Bulgarian apiculture “ developing in the department of Management at Thracian University and include four stages.

During the first stage, common conditions of apiculture in Bulgaria have been analyzed. The main ingredients of the natural, economical and institutional environment influencing its productivity and competitiveness are examined. The regional characteristics of beekeeping are investigated in the second stage. The analysis is concentrated on the influence of the changes in agricultural sector regarding membership of Bulgaria in the European Union and the following increase of the role of food safety on the European market. The third stage is connected with a study of the main factors, which form the production potential and competitiveness of apiculture in each region. The possibilities for increase of the competiveness on the European market for Bulgarian natural honey are investigated in the fourth stage, as a hole and for each region separately. The need for institutional support in the framework of the European programs for rural development is explained.

The information sources used in the study are based on the MAF, NIS, EC and FAO centralized databases. A special attention is to be paid to the situation-perspective analyses of agro-statistics” Department of the Ministry of Agriculture and Food.

COMPARATIVE ADVANTAGES AND ADAPTIVE CAPACITY

The principle of comparative advantages in its original form tries to answer the question whether if it is possible, a nation having no absolute advantage in no one commodity produced in the country, to take participation in the international trade. Its economic substantiation is connected with David Rikardo and his study published in 1817 titled "About the principles of political economy and taxation". The general formulation of this principle is found to be considerably more universal and is widely used when determine the potential for developing a competitive power in the conditions of market economy. The law for comparative advantages is among the fundamental laws in the economic theory and has a number of applications. It follows from the law formulation that there is a single case only when the states will not trade between themselves. That is the case, when one state's absolute advantages in the production of a pair of commodities quite exactly coincide with ones of another country. Then the relative prices of the commodities in both countries equalize and the trade between them becomes meaningless.

The comparative advantages owned by the individual producers or agricultural regions are established on the basis of the unified parameters of inputs in the home market, as well as of their concretization in the different firm or production. In spite of their comparatively lower dynamics, their level can change in a short-term period if it is attended by restructuring of economy. In the conditions of rapidly changing economic environment, the adaptive capacity of the established production structure is that is determinative for preserving the comparative advantages.

Adaptation is a process of adjustment of the natural or social systems to present or future changes in the parameters of environment in which they operate. It involves activities minimizing the risks and creating preconditions for better using of the new possibilities, the changes in environment can provide. The adaptive capacity determines the potential of an individual or a given system (productions, branches, municipalities, institutions, etc.) to more quickly and effectively adjust to the changes and give an adequate answer to the risk they generate. In the agricultural sector, these changes are related to the variations in meteorological conditions, as well as to the global climatic changes.

MATERIALS AND METHODS

This study employs a set of indicators, which include the Efficiency Advantage Index (EAI), Scale Advantage Index (SAI), and Aggregate Advantage Index (AAI) to measure the relative yield and scale advantage of natural honey production in Bulgaria. The methodology and indicators are suggested by A. Aleksiev (Aleksiev, 2010) in he’s paper “Regional dimensions of the comparative advantages and adaptive capacity of sunflower production”. The study is focused on natural honey, because that is the main product of apiculture. The information for quantity of production, average

yield and number of bee families are used in calculation of the indicators. The primary source of data used in the study is from the "Agro-statistics" department at Ministry of Agriculture and Food and National Statistical Institute which include data for the natural honey production in the country and regions' data. EAI is a relative indication for the efficiently in resources used by honey production is in one specific region. It is calculated by using the level of the honey yield in one region related to the average yield in the country. EAI can be expressed following:

$$EAI_{ij} = \frac{Y_{ij}}{Y_{nj}} \quad (1)$$

where, EAI represents the Efficiency Advantage Index of the *j*-th production growing in the *i*-th region; Y_{ij} is the yield of the *j*-th production in the *i*-th region; Y_{nj} represents the average yield of the *j*-the production in the nation. If $EAI_{ij} > 1$, then the yield of the *j*-th production in the *i*th region is higher than the national average. It can be interpreted as in the *i*-th region; there is a yield or an efficiency advantage in the *j*-th production. If $EAI_{ij} < 1$, then the yield of the *j*-th production in the *i*-th region, is lower than the national average. It can be interpreted as in the *i*-th region; there is no yield or efficiency advantage in the *j*-th production. By assuming a competitive market structure and no significant barriers for technology diffusion and adoption in agricultural production in the country, the EAI_{ij} can be taken as an indicator of relative efficiency due to natural resource endowments and other local economic, social and cultural factors. The SAI indicates the extent of concentration of a certain production in a region, relative to that ratio of same production in the nation. It can be expressed as following.

$$SAI_{ij} = \frac{S_{ij}/S_i}{S_{nj}/S_n} \quad (2)$$

where, SAI_{ij} is the Scale Advantage Index of the *j*-th apian production in the *i-th* region; S_{ij} represents the main production factor of the *j*-th production in the *i*-th region; S_i is the total agricultural production area in the *i*-th region; S*nj* is the nation's total for the *j*-th main production factor ; and S*n* represents the total agricultural production area in the nation. If $SAI_{ij} > 1$, it implies the degree of concentration of the *j*-th production in the *i*-th region is higher than average concentration ratio in the nation. It also indicates that producers in the *i*-th region prefer the *j*-th production, compared to other producers in the nation. If $SAI_{ij} < 1$, the degree of concentration of the *j*-th production in the *i*-th region is lower than that average ratio in the nation. It indicates that producers in the *j*-th region are less likely to prefer the *j*-th production, compared to other producers in the nation.

Assuming a competitive market structure and that producer can quickly change the main production factor by responding to the market price and cost changes, the concentration level is determined by economic factors or the profit level of certain production in the region. For example, a low value of SAI implies producers do not want to increase the natural honey production in the region because it is less profitable or restricted by natural (or other) conditions, while a high value of SAI implies producers want to increase the natural honey production in the region.

The AAI is an aggregate indication of the overall comparative advantage of natural honey production in one region relative to the national average. It can be calculated as the geometric average of the EAI and SAI.

$$AAI_{ij} = \sqrt{EAI_{ij} * SAI_{ij}} \quad (3)$$

If $AAI_{ij} > 1$, then the *j*-th production in the *i*-th region is considered to have a overall comparative advantage over the national average while $AAI_{ij} < 1$ indicates *j*-th production in the *i*-th region does not have a overall comparative advantage over the national average.

ESTIMATION OF THE REGIONAL DIMENSIONS OF THE COMPARATIVE ADVANTAGES

In the conditions of preparation and accession to the EU, significant changes have come in the amount of circulating resources, their efficiency level and the sector's competitive advantages. These changes bring a direct influence on the competitive power and possibilities for development of Bulgarian agriculture in the new economic and institutional environment. The assessment of their level and dynamics in the time and space is good basis for development of effective strategies for improving the different sectors' and productions' market positions. The country

owned comparative advantages could be examined both, in the branches, and regional aspect and can be assessed also for different productions and agricultural regions. This allows explore their potential for efficient resources use and successful participation in the process of social labor division.

During the period 2004-2006 significant changes have occurred in the apicultural sector, based on which an assessment of the efficiency and competitive advantages of the sector is needed. These changes are due to the reaction of the natural honey producers to the new market conditions, as well as the increase in food quality and safety demands of EU consumers. These lead to a transformation of the production practices and an overall change of the rules at play in the sector.

The regional dimension of the changes in the apian family as a base for production of Bulgarian apiculture is presented in **table 1.** Some conclusions in the study can be drawn on the bases of the number of apian families in different regions of the country in those periods. A total increase in the base for production of Bulgarian apiculture can be seen in all of the regions after the accession to EU. This can be explained by the increase in food quality and safety requirements of EU consumers, which led to transformation of the production practices used in Bulgarian apiculture, in order to meet these requirements. That is the reason for the overall average yield drop, so in order to maintain the same level of production, the producers in the sector reacted by increasing the number of apian hives, as the extensive component of the production. Biggest increase can be noted in the North-West region of the country, which exceeds 80%, and the South-West region by 45% and thus alter the role these regions play in forming the overall production in the sector. The changes in the production, bases of the regions and also in the internal disposition of the sector call for a new assessment of the efficiency and competiveness of different parts of the country of the honey production.

Table 1. *The number of apian families in Bulgaria (2004-2009)*

Regions	2004-2006	2007-2009
North-West	50908	93317
North-Central	116133	134364
North-East	152965	162982
South-West	45741	56082
South-Central	88955	1073434
South-East	79639	114696

Source: Calculated on database of "Agro-statistics" Department at MAF

An evaluation of the regional comparative advantages for the period of membership in EU (2007-2009) is presented in table 2. The extensive potential for development of Bulgarian apiculture is studied based on the Scale Advantage Index, which allows the comparison of the density of apian hives in different regions– the extensive component of the apiculture production. The intensive potential for development is examined based on the Efficiency Advantage Index. The overall comparative advantages of the regions relative to the national average are assessed by calculating the geometric average of the EAI and SAI.

Examining the values of the Efficiency Advantage Index, a number of conclusions can be drown for the intensive component of the comparative potential for natural honey production in the different regions and its ability to increase the production in the sector. The above average yield in the North-West and South-East regions is a result of the good climatic conditions in the latter and the fast developing production in the first one. The vast increase in the number of apian families in the North-West region is due to new productions developing, which implement new techniques and are adequate to the EU consumers' demands on food safety and quality. In the South-East region the biological diversity as well as the favorable climatic conditions allow for a longer period of crop dusting, which is important for the natural honey production. The average values for the Efficiency Advantage Index in both these regions is 20% higher than the national average and in some years of the examined period exceeds it by 50 %.

The lowest values of the Efficiency Advantage Index can be noted in the South-West region, where the productivity of the apian hives is more than 30 % lower than the national average. The reason for this can be found in the unfavorable climatic conditions as well as the smaller active period of the bees, and thus the environment in the region does not allow a comparative apiculture production to be developed.

The assessment of the Scale Advantage Index for each region allows for a comparison of the density of apian hives in different regions. By doing this, the potential for development of the sector can truly be examined. The lowest values of the index are presently for the South-West region, which is due to the lowest number of bee hives in this region and the unfavorable climatic conditions already mentioned. The higher concentration of apian hives in the South-East and South-Central regions is not without a reason. The biological diversity as well as the favorable natural conditions in both regions allows for the development of larger production systems, and corresponds to the higher number of producers.

Table 2. *Assessment of the comparative advantages after accession to EU (2007-2009)*

Regions	Apian hives	Yield	EAI	SAI	AAI
North-West	93317	17,8	1,21	0,87	0,98
North-Central	134364	14,4	1,04	1,22	1,11
North-East	162982	13,6	1,05	1,29	1,16
South-West	56082	9,9	0,71	0,57	0,64
South-Central	107344	11,2	0,93	1,12	1,01
South-East	114696	16,7	1,22	1,00	1,08

Source: Calculated on database of "Agro-statistics" Department at MAF

Here should be noted that the changes of the density of bee-hives in the North-West region are noticeably different than those in the rest of the country. The stable increase of the Scale Advantage Index in this region led it to exceed the values of the index for the North-East region by 20 % in 2009.

The integrated index of the comparative advantages assesses the overall potential for development of the sector. It combines the extensive and intensive capacity for development in each of the regions, and allows for a better examination of the overall comparative advantages and efficiency of the sector. The average values of the integrated index allows for a number of conclusions to be drown: the highest potential for development is noticed in the South-East and South-Central regions, which is due to the higher concentration of bee hives in those regions, as well as the higher yield values; the South-West region represents the lowest potential for development, based on the overall negative influence of the extensive and intensive potential for development assessments.
Generally the best conditions for comparative and efficient apiculture production are noticed in the North-West and North-Central regions of the country, but fast development can be expected in the North-West region, in which a considerable increase in both extensive and extensive factor is unveiling.

Conclusion

The estimation of regional characteristics related to the comparative advantages of the agricultural regions and their farming systems' adaptive capacity in apicultural production makes it possible to determine the main factors for increasing its competitive power. The increasing demand on the quality and safety of the food products on European market is forcing the producers to modernize their practices as well as the methods they are using against different parasites and diseases and the monitoring of the bee-hives in order to counteract CCD (Colony Collapse Disorder). The concentration of the production by increasing the number of professionally involved producers in the sector is expected to increase their income and thus attract more young people in the sector. The successful integration and implication of the National Apicultural Development Program (2011-2013) in cooperation with the Rural

Development Program will help the development of an efficient and competitive apicultural sector in Bulgaria.

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