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**TERRITORIAL AND NATURAL PRIORITIES OF MACEDONIA -
IMPORTANT FACTOR FOR TOBACCO PRODUCTION
DEVELOPMENT**

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TERRITORIAL AND NATURAL PRIORITIES OF MACEDONIA - IMPORTANT FACTOR FOR TOBACCO PRODUCTION DEVELOPMENT

Abstract

Territory and natural conditions in Macedonia are well known in the World market of high quality production of oriental type of tobacco. Production of oriental tobacco at such a small territory is insignificant towards other producers (Bulgaria, Turkey), but it is very important for Macedonian economy. The high value of exported tobacco and other tobacco products is regularly above 100 million USD (113 million USD for 2006 and 106 million USD for 2007). As a family production with low grade of mechanized labor processes, it provides survival of more than 100 000 residents of Macedonia. These reasons are enough to evaluate the importance of tobacco for a country with a gross national income per capita of around \$4,120 in 2008, (GNI, Atlas method) and high unemployment rate (over 35%).

Natural resources for oriental tobacco production are relatively adequate for the most of the countries from Mediterranean region as well as Balkan Peninsula. However, the specific climate and soil conditions in Macedonia have a high comparative value for oriental tobacco. They enabled the tobacco to have definite value above all other crops from Macedonia, especially in areas limited with water resources and soil with low percentage of humus.

High level of tobacco production in the previous period has resulted with building of many huge industrial capacities, warehouses for final processing as well as three factories for cigarette production. They have been all built for the great domestic market (for over twenty million people of Former Yugoslav Republic) and partly for export. Nowadays, these capacities insufficiently are used with annual production of over 5,500 t of cigarettes.

Because of inadequate agrarian policy, tobacco production stagnates in the period of long transition and shows a high instability through the years. Therefore, the advantages of Macedonian region remain inadequately used. Macedonian region is characterized with arid climate, because the annual rainfalls are 742 mm/m² (average of 25 years), and the average of the last 10 years is only 582 mm/m² (schedule of the rainfalls is quite unfavorable). The biggest part of the oriental tobacco production is designed for export to the most famous markets (EU, USA, Japan, etc.), because the unprocessed tobacco has a high quality. Specific physical-chemical characteristics make Macedonian tobacco a component of the blend used for large number of the World's famous tobacco brands of cigarettes. Considering as competitive product in the World market, many countries are interested in buying Macedonian tobacco (EU, SAD, Japan etc.).

Key words: oriental tobacco, production, natural conditions, quality, export, competitive product

Introduction

The Republic of Macedonia is situated in the central part of the Balkan Peninsula (Southeastern Europe) covering an area of 25.713 square kilometers. Serbia and Kosovo to the North, Bulgaria to the East, Greece to the South and Albania to the West border the country. It is a major transit way for shipment of goods from Greece, through the Balkans, towards Eastern, Western and Central Europe and through Bulgaria to the East. It is a small country not just by size, also according population (2022547 inhabitants; Census data of population, households and dwellings in the Republic of Macedonia, 2002), but has propitious conditions for agriculture and is nearly self-sufficient in food production. The great biodiversity, climate, soil and water resources enable growing broad assortment of crops in agriculture. About 40% of the population lives in rural areas. The country's agriculture dominated by small and highly fragmented family farms. Agricultural export is consisting mostly of tobacco and tobacco products and wine, grapes, fruit, early-market garden vegetables and lambs. The main trading partners are the EU, Serbia and Montenegro.

For Macedonia, production of tobacco is very important. Not only it is manage to be grown in relatively low productive soils with limited potential for other concurrent production, it also assure a large number of families (annual average 25.000¹) who have made contract with companies for purchase of tobacco. Existence of large number of capacities for processing tobacco, and three factories for cigarettes is buffer for the high rate of unemployment in the country (over 35 %). Furthermore, there are even more employees in other tobacco-related activities, like transportation, storage, trade and cigarette manufacturing (over 4000 employees).

Foreign direct investments of USD 6, 6 million have been made in the tobacco industry between 1996 and 2002. Within total industrial production of the country, tobacco participates by 3,9 %. It also participates with more than 1/3 of the total agricultural export, food and processing industry.

Because of significance of this crop, the state provides 16, 0 % from fiscal money for support of agriculture in Macedonia to tobacco production.

Macedonia produces 0,3 % of total tobacco production in the world and 3 % of oriental tobacco production in the world. Convenience of the territory enable production (average production over 20.000 tons) which is far more than domestic consumption; 90 % from the annual production is set to be exported.

¹ Based on calculation made by number of producers contracts

Material and working methods

In this paper have been used the statistical data from the State Statistics Office of Macedonia, the analyses from the Ministry of Agriculture, Forestry and Water Economy in the Republic of Macedonia official data from the Hydro-meteorological Institute in Macedonia as well as published annual reports from the Economic Chamber of Macedonia.

Among data processing and making conclusions, general methods have been used for this kind of research. Thereat, mainly the comparative analytical method has been used (natural and financial parameters, searching the movement of official statistical data about production, processing, purchase prices and export).

Certain correlations between meteorological conditions have been made, as well as events in the tobacco production and utilization of natural resources that gives Macedonia (the last three years). The analyses of the assortment have been made to notice the structure of different types of oriental tobacco in the country and variation in tobacco production and the yield.

Geographical position:

Macedonia is located in Southern Europe, between 40° 50' and 42° 20' northern latitude and 20° 27' and 23° 0.5' eastern longitude. The relief structure is quite developed and diverse. It consists of mountains, hills, plateaus, ravines, river valleys and other smaller relief forms. The territory belongs to two geographical entities: the Rodopians and the Sara Mountain area. On the other hand, the Rodopian Mountains are divided into three geographical entities: East Vardar group of mountains and ravines, the low part of Macedonia (Povardarie) and Western Vardar group of mountains and valleys.

Climate conditions:

Due to the geographical position and relief, the territory of Macedonia is under the strong influence of several types of climate: the Mediterranean climate penetrates from the South and West, the western winds pervade from the West, while the continental climate enters from the North and Northeast. As a result, the territory of Republic of Macedonia has three different types of climate: altered Mediterranean, Mountain and moderate-continental climate. Macedonian climate features hot summers and cold winters. Fall tends to be dry in the country. In July, the average temperature is between 20 and 23° C. The average temperature in January is between -20 and 0° C. Snowfalls can be heavy in winter. As optimal temperatures for growing oriental tobacco it is believed that are 16, 8 C° (average in May) and the highest 23, 8 C° (average in August). According to Bailov, 1965, the optimal temperature for growing and maturation tobacco is from 20 C° to 23 C°. The period

between 2006 and 2008 shows that mean monthly air temperatures in Macedonia are adequate for oriental tobacco 18, 2 C° (average in May) 22, 7 C° (average in August).

Table - 1 Mean monthly air temperature, C°

Year	Months												Annual Value
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	
2006	1,0	1,4	7,6	13,5	17,9	21,4	23,7	23,6	19,3	14,0	6,1	2,5	12,5
2007	5,0	6,1	9,4	14,0	18,7	24,1	27,6	25,2	17,7	12,8	4,4	1,0	13,8
2008	1,7	5,2	9,2	13,5	17,8	22,6	24,0	25,9	17,5	14,1	7,6	3,4	13,5

Meteorological data for central part of Macedonia

Recent data indicates that in the last few years rainfalls have decreased, especially during growing period in the year 2007 (from May until October). As a result, there have been shortages of water (Table 2).

Table - 2 Monthly amounts of precipitations, mm

Year	Months												Annual Value
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	
2006	46,0	53,9	46,3	18,7	14,1	46,8	56,6	38,8	39,2	73,8	22,5	13,6	470,3
2007	35,7	31,4	38,8	13,2	75,7	48,8	0,0	45,0	24,5	141,4	59,5	26,7	540,7
2008	4,2	1,7	18,3	46,4	55,6	23,8	48,0	12,2	91,4	23,6	51,3	48,6	425,1

Meteorological data for central part of Macedonia

The low water level brings about droughts, which was the main reason why in the past three years (2006, 2007 and 2008) there was an inopportune period for tobacco growers in Macedonia. Also, irrational access of water resources contributes by decreasing the yield per hectare.

Irrigation of oriental tobacco depend on weather conditions through of the year, type of the soil, variety of tobacco and stage of the plant for the duration of growing period. Every water delay or overflow is for sure deterioration of the quality that has high impact on aromatic complex of oriental tobacco.

The opposite, rational irrigation, water interventions during extremely dry year is going to reduce growing period of the plant and will achieve positive rate in correlation: a higher yield on side and improved quality on the other side.

Soil Conditions:

The structure of Macedonian land is very heterogeneous taking into consideration the small space of territory where many different types of soils exist. Oriental

tobacco have been grown at soil with low quality (depend on different areas in the Macedonian territory). Regarding to types *Jaka*, *Prilep*, and *Basmak* they succeed on low solvency soil, such as dilluvial type of soil.

Hidrography:

Waters are approximately 2% of the territory of Macedonia. There are about 35 rivers and 53 natural and artificial lakes. In relations to quantities of water resources, Macedonia belongs to areas that have sufficient water resources. However, their distribution is quite unequal. The average quantity of water is 6.63 billion m³, water that flows into the basins of the following rivers: Vardar (4.77 billion m³), Strumica (0.18 billion m³) and Crn Drim (1.68 billion m³). The water level of the rivers is high in spring, autumn, and low in summer.

Characteristics of Macedonian tobacco

Oriental type of tobacco for Macedonia means synonym for top quality, because of its physical, chemical and technological characteristics. It is competitive tobacco, famous and persistent component of the blend for a large number of the world's famous tobacco brands of cigarettes. The World buyers of Macedonian tobacco are Philip Morris, Beate, Japan Tobacco etc.

Speaking of quality means specific characteristics of specific type of tobacco. Oriental type of tobacco means specific physical characteristics (dimension up to 18 cm, colour, and texture of the leaves), specific chemical characteristics (percentage of nicotine, content of soluble sugar) aroma, taste, etc. Tobacco has to be material with specific quality according to the demands of tobacco industry and the final product has to satisfy the final consumers, the smokers. Oriental type of tobacco has special needs such as relatively high temperature all along the growing period and relatively low air humidity. They have been grown also at soil with low quality. In the structure of tobacco production in Macedonia, oriental types of tobacco are prevailing, from which *Prilep*; *Jaka* and *Basmak* are the most popular among producers and buyers.

As a result of the continuous changes provoked by the biggest world's tobacco industries that need less but the highest quality oriental tobacco for production different types of cigarettes, Macedonia is still, country number one in this region of production such a type of tobacco.

Dinamic of tobacco production and cultivated areas under tobacco

Growing tobacco in Macedonia is specific process with a long tradition in all tobacco productive regions in Macedonia. Although tobacco seedlings production, growing tobacco in the field, as well as drying and primary manipulation of tobacco make to be one of the most labor intensive plants, over than 25 000 households exist only producing tobacco.

While it is still in the nursery, tobacco starts with improvement of yield and quality. Because of that, a special attention is needed for implementing new technologies in tobacco seedlings production, using tobacco certificated seed from accredited institution (Tobacco Institute in Prilep), implementation of new varieties of tobacco which are already recognized and proved (indigenous or acclimated varieties) with high yield and high quality of tobacco. All these activities will ensure placement of Macedonian tobacco Worldwide.

Increasing the tobacco production does not mean to increase the total area of production, but to keep the present and get higher yield per hectare. This is possible only by using the best agricultural practice.

Table 3 - Dinamic of production of raw tobacco and cultivated areas under tobacco

Year	Planted area, hectares	Production of raw tobacco, tons	Yield kg/ha
2006	17 438	25 036	1 436
2007	17 132	22 056	1 287
2008	17 185	25 365	1 476

Source: State Statistical Office of Macedonia, Agriculture Bulletin - 2006, 2007, Economic Chamber of Macedonia, 2008.

The largest production is concentrated in Pelagonia region (7,150.00 ha), and Southeastern region (3,492.00 ha), where oriental tobacco with exceptional quality have been produced and controlled by the experts from tobacco companies in the country as well as the oldest institution: The Faculty of Agricultural Sciences and Food in Skopje, and the largest and famous Tobacco Institute in Prilep.

Nowadays, practically every single type of tobacco could grow in any region of the country (in the past there were strict restrictions). Largely, type *Prilep* is produced in Pelagonia region and Vardar Valley, down from Veles and type *Jaka* is mostly cultivated in the east part of the country. Type *Jebel* used to be grown in the area of Skopje, Kumanovo and Tetovo (these years it has been reduced).

The only type, which is cultivated in every region, is type *Basmak*. It is efficient even where type *Prilep* gives weak results and low quality.

Table 4 - Purchased oriental tobacco / 000 kg; Crop 2006

Share of classes	TYPE				
	<i>Prilep</i>	<i>Jaka</i>	<i>Jebel</i>	<i>Basmak</i>	Total
I	727,0	540,6	-	122,3	1.389,9
II	4.166,2	1.751,8	-	639,6	6.557,6
Ila	4.409,6	1.720,9	-	553,9	6.684,4
IIIb	1.588,2	732,9	-	241,3	2.562,4
IV	705,5	277,2	-	85,2	1.067,9
V	135,1	22,7	-	9,3	167,1
Oriental Total	11.731,6	5.046,1	-	1.651,6	18.429,0
Total 100%	63,7 %	27,3 %	0,0 %	9,0 %	100 %
Average purchase price den/kg	113	120	-	156	

- *Jebel* not purchased in 2006

Table 5 - Purchased oriental tobacco / 000 kg; Crop 2007

Share of classes	TYPE				
	<i>Prilep</i>	<i>Jaka</i>	<i>Jebel</i>	<i>Basmak</i>	Total
I	535,7	473,1	7,2	196,8	1.212,8
II	5.997,0	2.228,4	50,4	1.020,9	9.296,7
Ila	3.238,9	1.305,4	25,9	571,7	5.141,9
IIIb	285,9	165,3	2,4	116,8	570,4
IV	15,7	12,5	184,5	13,4	226,1
V	2,6	1,1	0,0	0,8	4,5
Oriental Total	10.075,8	4.185,8	270,4	1.920,0	16.452,0
Total 100%	61,3 %	25,4 %	1,5 %	11,8 %	100 %
Average purchase price den/kg	132	145	144	178	

Table 6 - Purchased oriental tobacco / 000 kg; Crop 2008

Share of classes	TYPE				
	<i>Prilep</i>	<i>Jaka</i>	<i>Jebel</i>	<i>Basmak</i>	Total
I	2.931,6	1.638,0	9,1	380,6	4.959,2
II	4.710,8	1.957,8	27,9	1.504,1	8.200,6
Ila	1.349,2	800,0	9,2	585,0	2.743,4
IIIb	63,1	64,4	0,5	73,5	201,5
IV	5,6	4,6	0,0	5,9	16,1
V	0,9	0,9	0,0	0,4	2,2
Oriental Total	9.061,2	4.465,7	46,7	2.549,5	16.123,0
Total 100%	56,2 %	27,7 %	0,3 %	15,8 %	100 %
Average purchase price den/kg	159	169	166	193	

It is obviously that the prominent type *Prilep* participate in total production of oriental tobacco (over 60%), type *Jaka* follows (about 30%). The recent years, type *Basmak* replaced some of cultivated areas, because of a high demand for this type from foreign tobacco buyers. The production has been almost double in the past tree years (from 9% in 2006 up to 15% in 2008). Type *Basmak* has a tendency to become eminent type in tobacco production in Macedonia as well as type *Prilep*.

Oriental type of tobacco is with high rate of cigarettes produced of a kilogram of tobacco, which also depend on variety, agro-technical measures through the growing period, where the moment of technological ripeness of tobacco and process after picking up tobacco leaves from the field is very important.

Conclusion

- The influence of geographic position, climate and all other natural conditions enable Macedonia to have rich assortment of agricultural crops. One of them is the most famous tobacco with special meaning for Macedonian economy in development.
- The tradition of growing oriental tobacco, as well as built infrastructure, as well as the support from the Government, could contribute the production of about 30 000 tons per year. The World market has a need from such a type of tobacco with specific chemical characteristic and significant flavor, as complement of the World famous brands of cigarettes.
- Nowadays, the production of tobacco do not shows sufficient exploitation of all above-mentioned possibilities, so it is very unstable through the past years.
- Although the Government made efforts and supported the tobacco production with higher subvention, there is instability in tobacco production. Major reason

is continuous drought in the last years that reduce the yield per hectare as well as total production of tobacco.

- Different regional characteristics in Macedonia manage production of the following types of oriental tobacco: Type *Prilep* in the biggest Pelagonia region; type *Jaka*, in particular in the Southeastern region; both types consist over 90% from total production of oriental tobacco in the country.
- Type *Basmak* has tendency to spread up in the near future because of the high demand from foreign buyers.
- The value of produced tobacco and its potentiality for export, (it is 90% from total production) depend on high rate of cigarettes produced of a kilogram of tobacco by classes, which has been established from the specific valuation when it is trade. The participation of upper classes and purchase price is high and their participation in export is 100%.
- The influence of meteorological conditions on high rate of cigarettes produced of a kilogram of tobacco is significant, so in 2007 it was relatively promising with higher participation of I, II and II A class in contrast with the year 2006 and 2008.
- The territory of Macedonia is favorable for production of tobacco, especially oriental type. Nevertheless, eventual campaign against smoking could possibly reduce the world's demand for oriental tobacco. Therefore, the same tobacco could be grown for fuel (the seed of tobacco consist over 40% of oil). Because of that, the production of tobacco in Macedonia cannot be threatened for a long time.

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