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REGIONAL SPREAD AND GROSS MARGIN IN THE PRODUCTION OF TOBACCO IN THE REPUBLIC OF MACEDONIA

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Abstract

Based on the statistical data (2005-2009) the first part of the paper analyses the areas under tobacco production and the tobacco production by regions in the Republic of Macedonia. Accordingly it was found that 86,7% of the total area, i.e. 85,3% of the total tobacco quantity is produced in the Pelagonia and South-east region.

Total of 24 producers were surveyed in all 8 regions. The aim of the survey is to determine the scope and structure of the total income and variable costs, and than the gross margin and price. The authors find that the value of production ranges between 3.538,3 EUR/ha in the Skopje region and 9.034,3 EUR/ha in the Polog region. The same relationship is found in the variable costs, or on average 3.982,3 EUR/ha, and individually range from 2591.8 EUR/ha in Skopje region to 5.199,0 EUR/ha in Polog region. Tobacco producers in the northeast region realize the lowest gross margin (1.130,6 EUR/ha) while the highest (5.780,7 EUR/ha) is found Polog region. At the same time, producers in the northeast region, produce tobacco at the lowest price (1,70 EUR/kg) and highest (2,65 EUR/kg) priced tobacco is produced in the easte region.

Key words: *region, total income, variable costs, productivity, gross margin, price.*

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Introduction

The territory of the Republic of Macedonia has a total land area of 2.571.300 hectares. In 2007, the agricultural land covered 41.89% or 1.007 million hectares whereas the cultivated area was less than a half (48,84 %) of the agricultural land. In December 2007, the Government of the Republic of Macedonia adopted the Nomenclature of Territorial units for Statistics – NTES (Official gazette of the Republic of Macedonia No.158/07).

The basic goal of the nomenclature was to provide statistical data at regional level and to comply with the new regulation for NUTS⁴ No. 1059/03 adopted by the European Parliament in 2003 which regulates the establishment of a common statistical nomenclature of territorial units. With this nomenclature, the Republic of Macedonia is divided into 5 levels. The third level (NUTS-3) refers to statistical regions. The main criterion for the third level of NUTS is the population in the statistical regions which should not be less than 150.000 inhabitants. According to this criterion, the Republic of Macedonia is divided into 8 statistical regions (Fig. 1).

Fig. 1 – Statistical regions in the Republic of Macedonia



The aforementioned principle i.e. criterion is observed (see table 1). Other indicators for regions show that the highest concentration of the total and working age population is in the region of Skopje with relative participation of 29,1%. On the other hand, the region of Vardar is with the smallest concentration. The Southeast

4 NUTS- Nomenclature of Territorial Units for Statistics

region has the highest employment rate. The region of Skopje is a region where most products are finalized whereas the Northeast region is a region with the lowest gross value added on new products. Agriculture (along with hunting, forestry and fishing) is the most developed in the Southeast, while the Southwest region has the lowest level of development (according to the level of value gross added). Judging by the level of GDP, Skopje region has the most productive population, and Polog the lowest.

Table 1. – Some important general indicators for the regions in 2008

Indicators	Republic of Macedonia	Region							
		Vardar	East	Southwest	Southeast	Pelagonia	Polog	Northeast	Skopje
Total population	2046898	153902	180260	222142	172362	234902	312607	174276	596447
Working age population	1633341	122138	152504	176191	141859	195363	234365	137773	473148
Employment rate	37,3	32,7	47,4	33,7	62,3	41,6	32,3	25	33,3
Gross value added in mil. EUR (total RM, in 2007 year)	4948,5	386,5	320,5	343,8	483,2	554,5	349,7	210,2	2401,1
Agriculture, hunting, forestry, fishing in mil. EUR (in 2007 year)	542,3	57,6	46,5	27,7	160,1	118,7	59,1	34,7	38
Gross domestic product in EUR/capita (in 2007 year)	2834	2936,3	2076,3	1810,6	2604,6	2755,1	1313,6	1412,8	4733,9

Source: Regions of the Republic of Macedonia, 2009.

The region of Pelagonia has the greatest possibility for development (based on the volume of land facilities) while Skopje region has the lowest (see table 2). Pelagonia also has the largest amount of plot area for the production of tobacco while the regions of Skopje and Polog have small amount of it.

Table 2 – Area by category of use in hectares (in 2008 year)

Indicators	Republic of Macedonia	Region							
		Vardar	East	Southwest	Southeast	Pelagonia	Polog	Northeast	Skopje
Agricultural area	1064389	108167	113625	103601	90973	268500	169526	145286	64711
Cultivated land (total)	521193	56464	79771	50893	57370	115314	44465	78749	38167
Arable land and gardens	423647	44232	66689	40599	48970	95879	31375	64540	31363

Source: Regions of the Republic of Macedonia, 2009.

The aim of this paper is to determine the regional distribution of area under tobacco. It also determines and compares the value of production and the structure of production costs only to the level of variable or direct costs. Furthermore, its aim is to

determine the gross margin and the cost of tobacco production in the family economies chosen by region.

Data source and method of work

We are using published statistic details from the State Statistical Office of the Republic of Macedonia for five-year period (2005-2009) in order to determine the scope of areas and the tobacco production by regions. During 2009, we conducted a survey of 24 producers who produced tobacco in 2008 which means 3 surveys in each region. The choice of the municipality or the village was based on the participation in the total area under tobacco in the region. Namely, the municipality which has highest participation in the total area is the location where tobacco producers were surveyed (see Table 3).

Table 3 – Municipalities that have a dominant participation in the total area and in the tobacco production by regions (average 2005-2009)

Region	Municipality	Area		Production		Yield (kg/ha)
		ha	Participation (%)	Tons	Participation (%)	
1. Skopje	Studenichani	157	68,2	222	74,75	1430
2. Northeast	Lipkovo	58	57,1	85	61,59	1703
3. East	Vinica	164	24,9	235	19,44	1401
4. Southeast	Radovish	2299	35,5	2852	33,24	1239
5. Vardar	Veles	534	43,1	765	47,19	1441
6. Pelagonia	Dolneni	2845	32,4	3958	36,35	1380
7. Southwest	M. Brod	32	30,1	14	17,28	356
8. Polog	Vrapchishte	8	85,2	4	80,00	848

Source: Our estimations based on the data from Statistical Review: Field Crops, Orchards and Vineyards, 2005-2009 year

The value of obtained production is based on the quantity of offered tobacco for companies which purchase and process tobacco, including the prices and classes of purchased tobacco. The costs of production are determined on the basis of natural data from the surveys and the actual market prices by regions. In the process of converting domestic currency in EUR, the ratio which was used is 1EUR:61,18MKD in 2007, and 1EUR:61,27MKD in 2008.

Results and discussion

1. Area and production of tobacco by regions

In June 2007, a census of agriculture was conducted in the Republic of Macedonia. According to the results, 192.675 subjects work in primary agricultural production. 99,8% of them are individual family farms and 0,2% or 297 are so-called, business entities. In the country, 33.000 households grew tobacco which is 6.4% of the total number of households (average 2005-2009). Unfortunately, we do not have any

accurate data about their dispersion by region. However, we do have accurate statistic data about the area, the production and the average yields of tobacco by region (see Table 4). In the Republic of Macedonia, there are 17.579 acres of land under tobacco which is almost 4% of the total area of arable land or 74% of the total area under industrial crops. Pelagonia and the Southeast region are the greatest producers of tobacco which cover 86,67% of the total area, or 85,29% of the total amount of tobacco.

Table 4 – Participation of regions in the total area and in the production of tobacco in the Republic of Macedonia (average 2005-2009)

Region	Area		Production		Yield (kg/ha)
	ha	Participation (%)	Tons	Participation (%)	
1. Skopje	230	1,31	297	1,30	1313
2. Northeast	102	0,58	138	0,64	1337
3. East	884	5,03	1209	5,30	1347
4. Southeast	6473	36,81	8579	37,59	1323
5. Vardar	1012	5,76	1621	7,10	1597
6. Pelagonia	8767	49,86	10890	47,70	1242
7. Southwest	106	0,61	81	0,35	785
8. Polog	5	0,04	5	0,02	890
Total, RM	17579	100,00	22820	100,00	1315

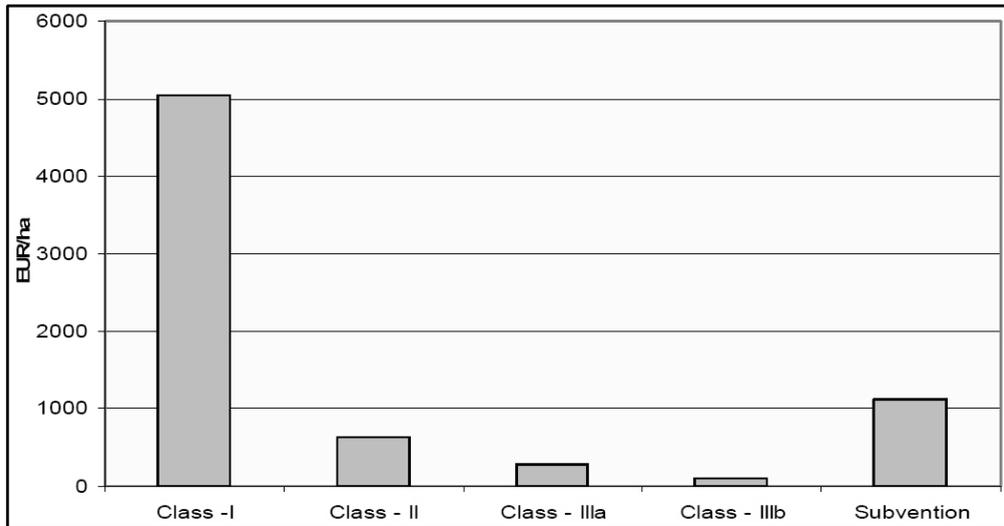
Source: Our estimations based on the data from Statistical Review: Field Crops, Orchards and Vineyards, 2005-2009 year

2. Gross margin and price of tobacco costs by regions

Gross margin expresses the difference between the total income of production and the total number of variable costs. This method for measuring the efficiency of invested inputs has been used in the developed countries since the sixties. By using this method, the constant costs such as amortization are ignored because the usage of machinery is relatively the same for all producers.

The value of tobacco production is formed by several quality groups of production which are economically different in the process of valorization, i.e. have a different purchase price. Due to this fact, in striving to be achieved maximum average purchase price as well as higher income of classed tobacco, the producers are trying to produce tobacco of high class (I and II) and then realistically evaluate and classify the offered tobacco in the process of purchasing it.

The quantity and quality of the produced tobacco per unit area (hectare) depends on several groups of factors including: type, sort and their originality, soil and climate conditions, the applied technology of production, the intensity of investments, the organization of labor, the conditions and the way its kept until the purchase.

Fig. 2 - Structure (average) of the total income

Source: Our estimations

The average amount of tobacco of the producers who were surveyed is 1.580,5 kg/ha with the following structure of quality: class I 73,7%, class II 12,8%, class IIIa 8,3% and class IIIb 5,2%. The best results of production had the producers of the region of Polog (average 9.034,3 EUR/ha), while the producers of the region of Skopje had the worst results of production (average 3.538 EUR/ha, see figure 2). The analysis of the total income (the value of production and subventions) shows that there is a relatively huge difference in the total amount of produced tobacco regardless of its quality. In the 2008, the subvention for tobacco was 0,73 EUR/kg per purchased tobacco.

There are many types of costs in the process of production but for this purpose, we classified them in three groups: salaries, materials and mechanization. The highest participation has the salary costs, i.e. the costs of human labor (see figure 3). This group of costs covers 84% of the average total direct costs (3.982, 3EUR/ha). The costs of materials, i.e. costs spent on protective equipment such as fertilizers, irrigation water, PVC foil, tobacco threads and suchlike cost 479,2 EUR/ha or 12,0% of the total costs.

The mechanization costs are the lowest which are spent on fuel and oil for lubrication of machinery. The average amount of these expenses is 157.3 EUR/ha or only 4.0% of the total costs. This is understandable because the tobacco is known for its labor intensity i.e. relatively high usage of human labor and on the other hand, slight involvement of mechanization in the process of production.

Fig. 3 - Structure (average) of the variable costs

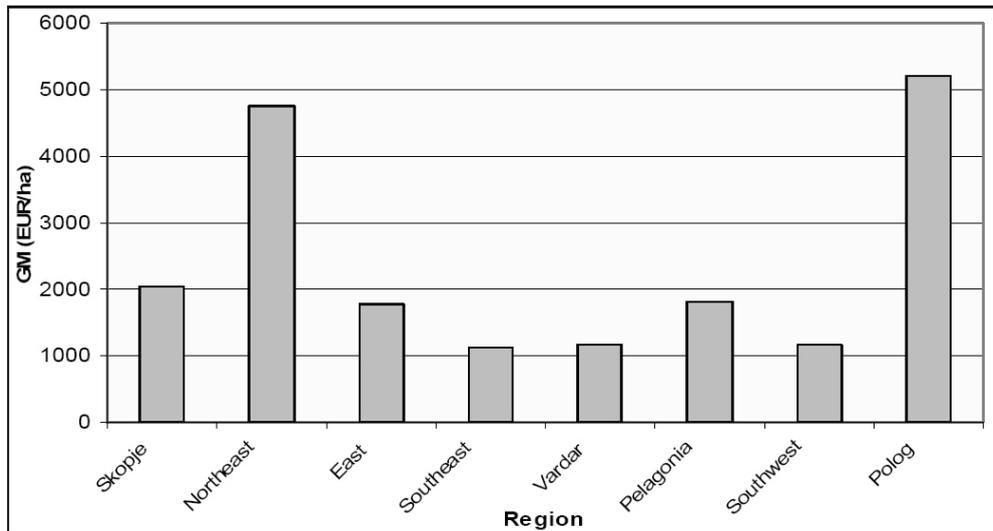
Source: Our estimations

The tobacco producers of the region of Skopje have the lowest variable costs (average 2.591,8 EUR/ha), primarily due to the relatively low usage of human labor. In this region, the cost of labor is averagely 2.095 hours per hectare which is 38,7% less than the average cost in the country. On the other hand, the region of Polog has the highest variable costs (more 30,6% than the average) due to the high share of salaries' costs. These cost are 28,1% higher than the average costs in the country. According to our research, the cost of labor is 3.243 hours/hectare, which is 2.6 times lower than the published results by Anakiev (1984) and 1.6 times less compared with the results by Ivanovski (1982).

In practice, the synthetic indicator for efficiency of the usage of human labor is measured by the level of labor productivity, i.e. by the ratio between the quantity of tobacco and the usage of human labor. The average productivity of labor is 0.60 kg/hour which is 4 times higher than the results of productivity published by Anakiev (1984) and 31% lower compared with the results by Ivanovski (1982).

As mentioned above, the efficiency of investment is measured by the amount of the costs of salaries, materials and machinery in terms of total income, i.e. according to the amount of gross margin. The lowest amount of gross margin (1.130,6 EUR/ha) is in the Northeast region which is 53,9% lower than the average total amount of gross margin. However, the producers of the region of Polog have the highest efficiency for investment. Averagely, they make 5.780,7 EUR/ha or 135,5% more than the average total amount of gross margin in the country.

Fig. 4 – Comparative review of the gross margin in the tobacco production in the Republic of Macedonia



Source: Our estimations

According to 24 producers of tobacco who were surveyed, the average amount of gross margin is 2.454 EUR/ha which is 48,2% of the average value of sold tobacco, or 38,1% of the average total income along with the subventions. Their amount of gross margin is 20,9 index units higher than the gross margin published by Pesevski (2001) and 27,8 index units higher than the published results by Usaleski (2002). The average amount of tobacco cost is 2,23 EUR/kg. Measured by regions, the cost varies from 1,70 EUR/kg in the Northeast region up to 2,65 EUR/kg in the Eastern region.

Conclusion

Yields and the total production of tobacco vary by regions due to various natural and organizational-economic conditions for the production of aromatic tobacco.

There is a different value of production by regions due to the relatively different quality of tobacco produced by classes which have different price in the process of purchase.

Regardless of its quality, the Government of the Republic of Macedonia always pays the same amount of subvention for the produced tobacco unit.

There is a huge difference in the variable costs due to the relatively different level of investment of productive inputs.

Due to the huge difference in value, i.e. total income and total variable costs, the gross margin varies by regions.

There is a relatively huge difference even in the price of costs by regions because of the differences in the realized production (yield) and the variable costs.

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