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Full Length Research Paper

The Impact of Tobacco Production on Economic Size of Agricultural Holdings in Republic of Macedonia

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Republic of Macedonia is an independent country located within the Balkan Peninsula that stepped out of Socialist Federal Republic of Yugoslavia as a result of national referendum held in 1991. Tobacco growing in Macedonia has been a part of tradition for more than 400 years now. In country's more recent history (1991-2014) there are 36,257 tobacco growing family farms, or 6.5-10% of total population. Over an area of 18,537 ha (mainly in Pelagonia region), more than 25,000 tons of Oriental tobacco are produced. The total number of agricultural holdings is 170,885 (2013), out of which 24.8% grow tobacco on average land area of 0.44 ha. Using "face-to-face" method for our research we concluded that holdings which, among other cultures, grow tobacco have 68.8% stronger economy when compared to other non-tobacco growing farms. The average value of standard output generated by 82 agricultural holdings is 11,521.4 EUR, out of which 28.2% goes to tobacco.

Keywords: Tobacco Production, Economic Size, Agricultural

INTRODUCTION

Tobacco was brought in Macedonia during the reign of Ottoman Empire in the beginning of 16th century. In 1638, cities Bitola and Ohrid were already known as areas where tobacco is grown. Some two hundred years after (1874), Prilep, Veles and other Macedonian regions also made their way on the list of areas suitable for tobacco production. In Macedonia, similar as across the Europe, tobacco became prevalent growing crop over relatively

short time period. Interestingly, at the beginning, people thought tobacco is the "devil's crop". Administrative prohibition concerning tobacco was brought in 1622, during the reign of Osman II, and further supported by Murad IV in 1623. The prohibition had lasted until 1688 when Suleiman II decided to put an end to it, consequently ensuring tobacco growing (along with cotton growing) becoming the most profitable agricultural

crop in Macedonia. The first company in Macedonia that exported tobacco was founded in 1771 by the French owners. By the end of 18th century, some 20,000 families took up tobacco production to earn their living (Bitovski, 1960). The extraordinary quality of Macedonian Oriental tobacco is well known around the world, with which it poses a serious competition to Bulgarian, Turkish, Greek, Serbian and other tobaccos from Balkan region. The most recognised Macedonian tobacco sort comes from Prilep area and was created at the Scientific Tobacco Institute, Prilep (Pelagonia region). The Institute was founded more than 90 years ago, first as a station for buying and processing the tobacco.

Today, there are several companies in Macedonia that buy and process tobacco and have close collaboration with well - known international companies: "Phillip Morris", "RJ Reynolds", "BAT", "Reemtsma", Alliance One International, Inc.

Tobacco production has been a significant part of Macedonian economy. In country's more recent history (1991-2014) there have been 36,257 agricultural holdings whose income comes (not only, but mainly) from tobacco growing (Ministry for Agriculture, Forestry and Water Economy – MAFWE), or 6.5-10% of total population. In 2013, over 93% of tobacco production was exported in more than 25 countries across the world. The value of tobacco export from Macedonia is 115.7 million EUR (faostat.fao.org), which is 23% of total export value for agricultural food products. When observing the export of tobacco, there are seven countries that have particular significance: Belgium with 27.11% of total export value for non-processed tobacco, USA (20.19%), Greece (18.74%), Bulgaria (13.04%), Germany (7.13%) and Croatia (4.24%) (State Statistical Office – SSO, 2013). When compared to period between 2004 and 2008, significant changes can be seen concerning export of tobacco for some countries. Namely, during that period Belgium had 18.29% share in total export of tobacco (21,395 tons), Greece had 39.23% and Bulgaria 10.61% (Peshevski *et al*, 2010b). In the future, a variety of businesses can be developed based on tobacco production, such as production of: biofuel, coenzyme Q 10, Solanesol, vitamin E (Filiposki *et al*, 2008) and bioenergy (Peshevski *et al*, 2010a). Physical volume of an agricultural area is not measure for size of an agricultural economy due to the fact that agricultural land is used in different ways. In EU, for example, the value of 1 ha of greenhouse grown flowers is equal to the value of 250 ha of wheat, and the value of 1 ha of mushrooms is equal to the value of as much as 750 ha of wheat (Martinovska, 2007). This information reveal the relativity of the size of agricultural estates expressed in utilised agricultural area (UAA). Because of this, developed countries created term *economic size* (ES) long time ago. The calculation is made by using Standard Gross Margin (SGM), defined according to FADAN (Farm Accountancy

Data Network). The SGM is the average value of output minus certain specific costs of each agricultural product for one hectare area. The classification of agricultural economies by economic size in EU began in 1985 and was based upon the number of ESU (European Standard Unit). The value of one ESU is equivalent to 1200 EUR of SGM value (Community typology for agricultural holdings, Reg. 85/377/EEC and Commission decision 1999/725/EC). Based on ESU, agricultural economies are classified in 10 categories: I category < 2 ESU, II from 2 to 4 ESU (Very small holding), III from 4 to 6 ESU, IV from 6 to 8 ESU (Small holding), V from 8 to 12 ESU, VI from 12 to 16 ESU (Medium-low holding), VII from 16 to 40 ESU (Medium-high holding), VIII from 40 to 100 ESU (Large holding), IX from 100 to 250 ESU, X >250 ESU (Very large holding) (Martinovska, 2007).

The economic size can also be measured according to the size of potential gross value added (GVA). However, because of some difficulties when calculating SGM to GVA, specifically the need to determine an average of specific costs for SGM and interphase costs for GVA for the period of three successive years, in Balkan countries these criteria came in use some time later than in EU. In the Republic of Macedonia, for example, it came in use in 2001 when Farm Monitoring System was established (Kamphuis and Dimitrov, 2002). The reason for delay was the fact that the available farmland is easiest to express. Besides, the region suffered from an evident disinterest of agricultural academic spheres (WAW, 2013).

Be that as it may, due to aforementioned problems, in 2008 (Reg. 1242/2008) EU implemented new method for measuring economic size using so called business size by determining standard output (SO). European SO differs from American gross sales and gross cash income, as it focuses basically on production and not on commercialization (i.e. you could produce a lot, but sell nothing). SO is concerned with the monetary value of the agricultural output at farm gate price. Coefficients are used for this purpose. Output from each crop and livestock is multiplied with a coefficient, which is individual to each output produced and differs from country to country. The sum of all SO per hectare of crop and per head of livestock in a farm is a measure of its overall ES, expressed in euro (WAW, 2013). The SO excludes direct payments, VAT and taxes on products (Kinsella, 2009).

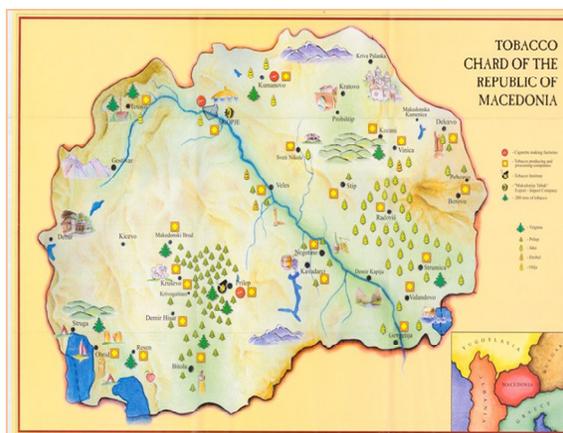
In the Republic of Macedonia, SO came in use in 2009 and changed position with ESU that was used previously. Standard output refers to the standard value of gross production. The total standard output of the agricultural holding corresponds to the sum of the values obtained for each characteristic by multiplying the SO per unit by the number of corresponding units.

The economic size of the agricultural holding is determined on the basis of the total standard output of



Source: SSO, Skopje

Picture 1. Regions in Republic of Macedonia



Source: documentation from Science Institute for Tobacco

Picture 2. Tobacco chard of the Republic of Macedonia

Table 1. Regional share in total tobacco - growing area in Republic of Macedonia

Year	Total area (ha)	Region							
		Skopje	Nort-East	East	South-East	Vardar	Pelagonia	South-West	Polog
Regional share in total tobacco-growing area (%)									
2005	18580	1.7	0.9	5.3	37.2	7.0	47.0	0.8	0.05
2006	17544	1.2	0.9	7.5	46.8	8.5	25.4	4.1	5.59
2007	17178	1.0	0.5	5.1	37.1	7.1	48.7	0.5	0.02
2008	17080	1.4	0.3	4.6	37.0	7.0	49.1	0.6	0.03
2009	17782	1.5	0.3	4.4	35.7	7.1	50.4	0.6	0.01
2010	20297	2.1	0.3	4.4	37.3	6.6	48.7	0.6	0.01
2011	19678	2.5	0.2	3.7	37.2	6.8	49.0	0.5	0.01
2012	19589	2.6	0.2	3.3	36.5	6.7	50.2	0.4	0.01
2013	19105	2.3	0.2	3.2	33.2	6.9	53.7	0.5	0.01
Average	18537	1.8	0.4	4.6	37.5	7.1	47.1	0.9	0.60

Sources: SSO and personal calculations

the holding. On the basis of the total standard output, the agricultural holdings are classified according to their economic potential in 14 economic size classes (ES14): I class up to 1,999 EUR, II from 2,000 to 3,999, III from 4,000 to 7,999, IV from 8,000 to 14,999, V from 15,000 to 24,999, VI from 25,000 to 49,999, VII from 50,000 to 99,999, VIII from 100,000 to 249,999, IX from 250,000 to 499,999, X from 500,000 to 749,999, XI from 750,000 to 999,999, XII from 1,000,000 to 1,499,999, XIII from 1,500,000 to 2,999,999 and XIV class over 3,000,000 EUR.

On the other side, economic strength can be classified by descriptive evaluation in correlation with SO (in €) in two groups: ES9 and ES6. For Republic of Macedonia in this moment, the second group is more appropriate

(ES6): very small ($4,000 \leq \text{€} < 8,000$), small ($8,000 \leq \text{€} < 25,000$), medium small ($25,000 \leq \text{€} < 50,000$), medium large ($50,000 \leq \text{€} < 100,000$), large ($100,000 \leq \text{€} < 500,000$), very large ($\text{€} \geq 500,000$) (Wasilewski and Felczak, 2013), mainly because rather small number of UAA (from 1.7 to 1.85 ha, SSO).

The goal of this research is to study the impact of economic value of tobacco on economic size of family farms in Pelagonia statistical region.

MATERIAL AND METHODS

The government of the Republic of Macedonia adopted the Nomenclature of Territorial Units for Statistics –

Table 2. Economic size of agricultural holdings in EU-28 and some countries from Western Balkans

Country	Standard Output (EUR million)		Economic size			
			EUR/holding (number)		EUR/UAA (ha)	
	2007	2010	2007	2010	2007	2010
Belgium	6638.0	7248.0	138291.7	168951.0	4829.7	5337.3
Bulgaria	2314.0	2537.0	4692.8	6847.5	758.5	566.9
Czech Republic	3593.0	3852.0	91192.9	168209.6	1021.3	1105.8
Denmark	6918.0	8431.0	155112.1	200261.3	2598.0	3185.2
Germany	44202.0	41494.0	119303.6	138729.5	2610.6	2484.1
Estonia	491.0	595.0	21073.0	30357.1	541.5	632.4
Ireland	4570.0	4298.0	35647.4	30721.9	1104.1	861.1
Greece	7677.0	6873.0	8925.7	9504.9	1883.4	1327.5
Spain	33363.0	34173.0	31960.0	34525.1	1340.3	1438.7
France	45978.0	50733.0	87178.6	98300.7	1673.3	1822.5
Croatia	1373.0	2115.0	7573.1	9065.6	1402.9	1607.1
Italy	40543.0	49460.0	24141.4	30513.9	3181.3	3847.2
Cyprus	604.0	459.0	15062.3	11799.5	4137.0	3876.7
Latvia	597.0	777.0	5543.2	9316.5	336.6	432.6
Lithuania	1322.0	1526.0	5740.3	7633.8	499.1	556.4
Luxemburg	227.0	269.0	98695.7	122272.7	1734.1	2051.9
Hungary	4655.0	5241.0	7432.5	9086.3	1100.8	1118.4
Malta	85.0	96.0	7727.3	7680.0	8252.4	8347.8
Netherlands	18071.0	18930.0	235606.3	261825.7	9440.0	10110.0
Austria	5199.0	5879.0	31432.9	39141.0	1630.2	2042.6
Poland	17035.0	18987.0	7124.6	12602.5	11006.7	1314.2
Portugal	3681.0	4640.0	13380.6	15198.1	1059.9	1264.9
Romania	10120.0	10420.0	2574.1	2700.2	735.8	783.1
Slovenia	885.0	913.0	11737.4	12222.2	1810.6	1891.4
Slovakia	1269.0	1731.0	18391.3	70653.1	655.3	913.2
Finland	2729.0	3098.0	40014.7	48482.0	1190.5	1352.2
Sweden	3736.0	3733.0	51460.1	52503.5	1198.2	1217.4
United Kingdom	17722.0	19555.0	78173.8	104684.1	1104.6	1158.4
EU-28	285597.0	308062.0	20682.7	25152.0	1647.3	1752.2
Montenegro	... ¹⁾	127.0	...	2574.5	...	573.9
Serbia	2970.0	3750.8	3812.6	5939.0 ²⁾	900.3	1099.8 ²⁾
Albania	1267.7	1246.8	2091.6	3555.8	1818.7	1792.7
Republic of Macedonia	1031.0	1150.0	5351.0	6822.7	3084.7	3691.2

Sources: faostat.fao.org, personal calculation based on SSO database

¹⁾ Data not available. ²⁾ 2012

NTES (Official Gazette of the Republic of Macedonia, No. 158/2007) in December, 2007. NUTS (French for *Nomenclature des Unités Territoriales Statistiques*) from 2007 has 5 levels: NUTS level 1 and NUTS level 2 represent the whole territory of the Republic of Macedonia as an administrative unit, NUTS level 3

The results from Census of Agriculture, 2007 (Book III, p-p 42-44), as well as our previous researches (Peshevski *et al*, 2010) had shown that over 50% of total tobacco production in Republic of Macedonia is produced in Pelagonia region (Picture 2). Because of that, this research was conducted in that specific region – municipality Krivogashtani, populated place with code MK0050409. This place is traditional producer of aromatic tobacco, type called *Prilep*. For the purpose of

consists of 8 non-administrative units – statistical regions (Picture 1) that are formed by grouping the municipalities as administrative units of lower level, NUTS level 4 consists of 84 municipalities as administrative units and NUTS level 5 consists of 1,776 settlements.

this research, we conducted interviews with 82 family farms (holdings) using “face-to-face” method during 2008, 2009 and 2010. The number of holdings in the sample (n=82) was determined using Neumann method, i.e. following formula (equation):

$$n = \frac{N x s^2 x t^2}{(N - 1)d^2 + s^2 x t^2}$$

Table 3. Economic size of tobacco growing holdings, according with SO/holding

Indicator	Average (2008-2010)			
	Size of farm in terms of standard output in EUR			
	From 4,000 to 7,999	From 8,000 to 14,999	From 15,000 to 24,999	Total
	Number of farms			
	n=18	n=49	n=15	n=82
Average	6,290.5	11,245.9	18,698.2	11.521.4
Min	4,131.9	8,117.2	15,029.5	4.131.9
Max	7,962.2	14,958.7	24,664.0	24.664.0
Iv	3,830.3	6,841.5	9,634.5	20.532.07
Stdev	1,136.145	1,599.927	3,164.169	4.372.414
CV	18.061	14.227	16.922	37.950

Sources: Personal calculations based on own research

Table 4. Economic size of tobacco growing holdings, according to SO/ha

Indicator	Average (2008-2010)				
	Size of holding considering Standard Output in EUR/ha				
	From 0 to 1,999	From 2,000 to 3,999	From 4,000 to 7,999	From 8,000 to 14,999	Total
	Number of holdings				
	n=4	n=27	n=47	n=4	n=82
Average	1,832.0	3,208.0	5,795.5	10,064.3	6,355.9
Min	1,625.7	2,099.5	4,011.2	8,003.5	4,704.7
Max	1,958.1	3,976.8	7,999.0	13,125.8	8,367.2
Iv	332.3	1,877.4	3,987.8	5,122.3	3,662.5
Stdev	115.283	508.541	1,086.709	1,881.118	1,158.789
CV	6.293	15.852	18.751	18.691	17.765

Sources: Personal calculations based on own research

In the formula, n is the required sample size, s is the standard deviation, t is the t value at 95% confidence limit (1.96), N is number of holding in target village and d is the acceptable error. The acceptable error in sample size was determined at 5% for 95% confidence.

The interviews were conducted every year during the second half of December, and for tobacco growers in the middle of April. The assortment of cultures during 2008 was composed of following cultures: wheat, barley, corn, alfalfa, paprika, onion, potato and tobacco. Along with crop production, these households also engaged in livestock breeding: dairy cows and pigs. Before the research started, each of the households was asked the same request: to keep the number of cultures and livestock the same for following two years. They accepted our request for the sake of the research and further cooperation.

When determining economic value of production we used local prices that were most often used as sale prices during the year. The value of crop production is a function of the amount of main and secondary products and their sale prices for the whole area.

For dairy cows, the economic value was taken only for the milk and manure while the number of calves was ignored because each of them was intended for further reproduction. As opposed to dairy cows, when pigs were considered, we first determined their weight and then calculated their value according to average local prices for pigs' body mass. The total value of production expressed in national currency (MKD) was converted to EUR for easier comparison with literature data, using average annual rate published by National Bank of Republic of Macedonia that was as following: in 2008 - 61.1655 MKD/EUR, in 2009 - 61.4028 MKD/EUR and in

2010 – 61.1659 MKD/EUR.

RESULTS AND DISCUSSION

Tobacco production in Republic of Macedonia per region

The global tobacco production between 2004 and 2012 was on average 6,647,087.1 tons. Most dominant country according to production was China with 42.6% share, while Republic of Macedonia had only 0.4% share (faostat.fao.org). The rank of Republic of Macedonia in total global production of Oriental tobacco increased (in 2000 – 3.8%, and in 2010 – 12.2%) because the production in Turkey, Greece and Bulgaria decreased. In Greece and Bulgaria it was due to dismantling of government subsidies, and in Turkey because increased areas for olive cultivation and development of rural tourism in areas previously used for tobacco production (Filiposki et al, 2011). In global production of Oriental tobacco in 2013, the Republic of Macedonia had 2.3% share (faostat.fao.org).

Republic of Macedonia is traditional producer of Oriental tobacco since the beginning of 16th century. Maximum amount of produced tobacco was achieved in 1986 when total amount of dry tobacco was 35,650 tons, while minimum amount was brought in 1996 – only 14,958 tons (SSO, 2014). Almost one quarter of total number of agricultural holdings grows tobacco crops (MAFWE, 2014). The average area used for growing tobacco (1991-2014) was 0.53 ha per farmer. This information shows that Macedonian tobacco growers belong to group of very small farmers. They are slightly bigger than Chinese farmers (0.3 – 0.4 ha/farmer) while in comparison to Indian (2.0 ha/farmer) and Brazilian (2.6 ha/farmer) we can see they are 4 to 5 times smaller

Conferring to the results from Census of Agriculture – 2007, agricultural holdings in Republic of Macedonia were divided in seven groups in accordance with UAA: I group - up to 0.50 ha, II from 0.51 to 1.0 ha, III from 1.01 to 3.00 ha, IV from 3.01 to 5.00 ha, V from 5.01 to 8.00 ha, VI from 8.01 to 10.00 ha and VII group – more than 10 hectares.

Based on the results from the Census and in accordance with European Regulation No. 1242/08 the typology of agricultural holdings was executed and they were divided into 9 groups. According to News Release: Typology agricultural holdings, No 5.1.11.06 (SSO, 2011), the largest number of holdings (21.9%) specialized in agricultural products. After them, with 19.0% there are holdings with mixed crop-livestock production. The least number is of holdings with specialized granivores (7,760 or 4.0%) and non-classified holdings (555 or 0.3%). Although holdings specialized for agricultural products predominate (21.9%) in total

number, their participation in total standard value of production is relatively minimal (only 6.7%). As opposed to these holdings, the significance of holding specialized in grazing livestock and holdings with mixed crop-livestock is increasing. Relative increase of holdings specialized in grazing livestock at 12.6% of total number resulted in their larger participation in total standard value – 20.9%. Holdings with mixed crop-livestock production raised their participation (in total number) from 19.0% to 21.4% in creating standard value. This means that holdings specialized in grazing livestock and holdings with mixed crop-livestock produce products with relatively higher economic value.

For example, in Croatia the situation is reversed. The holdings with mixed crop-livestock products have 22.6% share in total number, and their participation in generating SO is 14.9% (Eurostat EC, 2013).

Nevertheless, agricultural holdings in Republic of Macedonia according to the value of SO belong to the group of very small (micro) and small holdings. Out of total number of holdings, 58.2% are classified as class I, 18.7% as class II, 13.3% as class III and 6.3% as class IV; or altogether 96.5%. The least number (only 0.2%) belong to groups between class VII and XIV. Across EU countries there aren't vast differences, except for Germany. On average (in EU-28) the share of economic classes from I to IV is 80.9%. Respectively, the most of them are in Romania (98.7%), then holdings in Bulgaria with 95.4%, Croatia with 88.7%, Greece with 84.7%, Slovenia with 83.2%, Poland with 82.6%, Italy with 73.8% and the least of them is in Germany – only 24.0%. As opposed, Germany has the largest number of holdings that belong to class XIV (4.4%), while the least number of such holdings (0.03%) is located in Greece and Romania (Eurostat EC, 2013). In Serbia, according to Cvijanovic et al. (2014), the share of economic classes between I and IV is 94.3%, and those between VII and XIV is 1.1%. According to the results from Agricultural Census 2010 (MONSTAT, 2011) economic classes from I to IV in Montenegro participate with 98.8%.

In Republic of Macedonia, economic area of holdings specialize (FAO, 2003).

However, the tobacco production in Republic of Macedonia is mainly concentrated in two regions: 47.1% is in Pelagonia and 37.5% is in South-East region (Table 1 and Picture 2). According to data from Census of Agriculture – 2007 (SSO, 2008), the most tobacco (41.18%), on state level, is grown at agricultural estates large between 1.0 and 3.0 ha. Same goes to estates in Pelagonia region (37.2%) and South-East region (49.7%).

According to information from SSO, the land area for tobacco production in the researched period (2005-2013) had interval variation in size of 3,217 ha (Table 1) with Stdev = 1,191 kg and Cv = 6.4%. The best yield (1,644 kg/ha) was achieved in Vardar region and the worst in

Polog region (957 kg/ha). The accomplished yield in Pelagonia region was 1,234 kg/ha.

Type and economic size of agricultural holdings

The number of agricultural holdings, according to Census of Agriculture – 2007 (SSO, 2008) was in total 192,675 out of which 99.8% were individual holdings and the rest were business subjects. Seven years later (2013), the number of agricultural holdings was 170,885 (SSO, 2014), or 11.3% less than in 2007. Almost 96% of total number of individual holdings in 2007 exploited land area smaller than 5 ha, while in EU-28 there was 69.3% of such holdings. According to size of land area, the most similar to Macedonian are agricultural economies from Malta (97.8%), Romania (93.1%) and Bulgaria (91.4%). Each farmer from Republic of Macedonia in 2013 exploited on average 1.86 ha and in 2007 – 1.37 ha. During 2010, farmers from EU-29 countries exploited on average 14.4 ha, the least in Malta (0.9 ha) and the most in Czech Republic (152.4 ha). Farmers from neighboring countries also have different land capacities: Albania – 1.2 ha, Bulgaria – 12.1 ha, Greece – 7.2 ha, Serbia – 5.4 ha (2012), Montenegro – 4.5 ha and Croatia – 5.6 ha (ec.europa.eu/Eurostat), India – 1.2 ha (Chand et al, 2011), Canada – 314.8 ha or 778 acres (Census of Agriculture, 2011), Russia – 62.2 ha (Sagaydak and Lukyanchikova, 2012), USA – 94.7 ha or 234 acres (USDA, 2009), Brazil – 63.7 ha (Bolliger and de Oliveira, 2010), Argentina – 587.7 ha, Chile 106.9 ha (Berdegué and Fuentealba, 2011). Land for agriculture products and for mixed crop-livestock products is also small. The number of holdings specialized in agricultural products from economic class I to IV, in total number of holdings, participate with 99.7% share, and holdings with mixed crop-livestock products with 98.0%. Holdings with mixed crop-livestock products in EU-28 participate on average with 12.8%. This type of holdings has the least participation in Greece (0.7%) and the largest in Croatia (22.6%). On EU-28 level, the average share of holdings specialized for agricultural products is 24.9% - the smallest share in Bulgaria and Slovenia (17.1%) and the largest in Poland (40.4%). The first type of holdings in Serbia (Cvijanovic et al, 2014) has 20.4% share, while the second type (mixed crop-livestock products) has 31.4% share. The households specialized in agricultural products, according to MONSTAT (2011) in Montenegro, in total number, have 25.3% share, and holdings with countries as well as countries from Western Balkans.

The economic size of tobacco growing households

The holdings altogether, during the researched period, were exploiting from 210.8 to 215.4 ha of agricultural land, or 215.7 ha on average. The average physical size

of a holding was 5.14 ha, out of which 23% was for wheat, 19% for barley, 13% for corn, 11% for alfalfa, 10% for paprika, 7% for potato, 6% for onion and 11% for tobacco (or 0.55 ha). Over 61% of researched holdings had dairy cows and 29% of them pigs. The average number of LSU, determined in compliance with EU

methodology, is 4.4 per holding. The researched farms had mixed crop-livestock production. Having in mind the classification consistent with Census of Agriculture – 2007, the researched holdings belong to group V.

The group of holdings that was the subject of this research, grew tobacco on total land area of 44.7 ha, or 0.55 ha/holding. The average yield was 2,413 kg/ha and varied between 1,875 kg/ha and 3,633 kg/ha with Stdev = 246 and CV = 10%. The average value of SO was 11,521.4 EUR/holding (Table 3). Consistently, the tobacco growing holdings in Republic of Macedonia belong to class IV economic size. Which means they have one class higher economic power than the average holdings on state level (6,822.7 EUR/holding). The value of SO varied inside relatively wide thresholds (CV=38%) and added up to the range from 4,132 EUR to 24,664 EUR/holding.

In forming SO for tobacco growing holdings, the tobacco has average share of 28.2% and ranges between 9.3% (Farm (F) 22) and 75.2% (Farm (F) 6). The absolute value of tobacco for F22 was 2,053.8 EUR/farm and for F6 was 6,461.2 EUR/farm. During this research, F22 used 3.2 ha of land, out of which 12.5% (or 0.4 ha) was for tobacco, 31.2% for wheat, 31.2% for barley and 25.1% for paprika. Along with crop products, holding (farm) F22 held 6 dairy cows (6 LSU). Farm F6 exploited 2.8 ha of agricultural land, out of which 39.3% (or 1.1 ha) for tobacco, 22.5% for wheat, 22.9% for barley and 15.3% for corn. Here, the number of livestock (pigs) was on average 2.7 or 1.35 SLU. The average yield of tobacco for holding F22 was 2,339 kg/ha, and for F6 was 2,587 kg/ha.

CONCLUSION

In regard to the Republic of Macedonia, tobacco had and still has relatively great importance. It stands as a significant part of UAA (6% in 2013). Out of total population number, 6.5% to 10% are tobacco growers. Over 93% of total tobacco production is exported to 25 countries. The value of produced tobacco in 2013 was 115.7 million EUR, which amounts to over 23% of total export of agricultural products.

The economic size of Macedonian agricultural holdings is relatively small, because the value of SO in comparison with EU-28 is lesser, even by 73%. But, a positive thing lies in the information that they are larger than holdings from 22 EU countries and other countries in Western Balkans.

Agricultural holdings that produce tobacco, on the other hand, have almost 69% higher value of SO than the average SO value on the country level. In the researched group of holdings, the holdings from class IV economic size are predominant (with 60%).

Tobacco has respective significance in achieving SO in holdings that, amongst other cultures, grow tobacco. The share of value of tobacco in total value varies in range from 9.3% to 75.2%, or 28.2% on average.

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