**Economic indicators for the sustainability of tobacco production in the Republic of North Macedonia**

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**Abstract**

Tobacco production in the Republic of North Macedonia has a long tradition and is a strategic crop in the industrial crops sector, occupying a significant place in the structure of Macedonian agriculture and implying significant economic and social effects in the national economy.

The overall goal of this research is to show the economic elements of sustainability of tobacco production as an indispensable industrial crop with equivalent economic benefits.

In Macedonia, tobacco production is organized on an average area of 16,260ha, that is, 78.8% of industrial areas. About 22,000 producers are engaged in tobacco production, or rather, tobacco is a source of basic and additional income for a population of about 80,000 people. Tobacco production has a strong social component due to its labor-intensive nature, but it should also be emphasized that all stages of the production process are contractually regulated by a separate legal solution.

Macedonia is among the top 30 tobacco producing countries in the world and among the 20 exporters of raw tobacco. Most of the tobacco produced in Macedonia, i.e. 90%, is exported. The fact is that Macedonia exported more than it imported in the analyzed seven-year period.

Today, when the areas under tobacco maintain a stable level, the state support for the income of agricultural holdings engaged in tobacco production must continue, by encouraging balanced and sustainable development in the tobacco-producing regions, as well as support in the formation of producer organizations in accordance with European experiences.

**Keywords:** tobacco, unprocessed tobacco, tobacco production, sustainability, economic indicators, agricultural policy

**INTRODUCTION**

Tobacco production as an industrial crop mostly depends on climatic and soil factors. It is especially important to note that tobacco is also grown in conditions where no other crop can replace it. In conditions where the soils are of poor quality, tobacco can give a high yield and quality, while providing additional income. Since the Republic of North Macedonia has favorable natural agro-ecological conditions for tobacco production, mostly oriental type of tobacco is grown. It should also be emphasized that the Republic of North Macedonia has appropriate soil and climatic characteristics that are suitable for the production of individual varieties that have a unique character with a pronounced specific aroma and high quality of the raw material that is recognizable all over the world.

The average production of tobacco in the last seven years is 24970 tons, that is, the average yield of tobacco for the analyzed period is 1536 kg/ha. There are real possibilities for the total production of tobacco to stabilize, so that a large number of producers who grow tobacco for the realization of additional income would turn to tobacco production as a primary activity and a new source of livelihood.

In the past decade, the tobacco economy has undergone drastic changes compared to previous years. It is a known fact that Macedonia exports more tobacco than it imports, but the tobacco that is imported is tobacco that is not produced in this territory. In recent years, of the total quantities of purchased and processed tobacco, it belongs to privately owned companies (about 90%), while the rest of the tobacco is purchased by the Prilep Tobacco Plant, which is predominantly state-owned. The Macedonian tobacco sector is at a highly stable level, which is ensured through previously concluded contracts for the purchase of the produced tobacco, which is then forwarded and provides more effects and benefits to all stakeholders.

It should also be emphasized that in accordance with Article 79 of the law on tobacco, tobacco products and related products ("Official Paper of RSM no. 98/19 and 27/20" on activities for financing tobacco production, the Government of R. S. M adopted a seven-year strategy in accordance with EU directives. The Strategy contains the annual programs for financial support in agriculture and rural development that refer to state aid to agricultural holdings engaged in tobacco production, income support for agricultural holdings, balanced and sustainable development in tobacco producing regions and supporting the establishment of producer organizations.

**MATERIAL AND METHODS**

Taking into account the problems that this paper deals with, data obtained from regular statistical surveys conducted by the State Statistics Office, annual accounts from the Central Registry, and data from the Ministry of Agriculture, Forestry and Water Management were used.

From the above data sources, relevant knowledge will be obtained about the areas under tobacco, the average yields, the total production of tobacco in the Republic of North Macedonia, as well as the value indicators for the exported and imported tobacco.

The studies will mainly be based on secondary sources of data, and the set goal is dictated by several methods: method of indices, comparative inductive, deductive and other mathematical-statistical methods characteristic of agro-economic research.

**RESULTS AND DISCUSSION**

Areas under industrial plants for the period 2015-2021

Starting from the data representing the areas under tobacco and sunflower, and for the period from 2015-2021, shown in Table No. 1, we will note that a total of 144478 ha were planted, or an average of 20639 ha. It can be seen from the table that during the period tobacco was planted on an average of 16260 ha, and sunflower on 4380 ha. So, almost 79% of the total areas are planted with tobacco. The remaining 21% is accounted for by sunflower.

Table No. 1 Areas under industrial plants

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Areas under industrial plants in ha.** | **2015** | **2016** | **2017** | **2018** | **2019** | **2020** | **2021** | **Total** | **Average** | **%** |
| **tobacco** | 16128 | 16379 | 15961 | 16582 | 16719 | 16592 | 15457 | 113818 | 16259,7 | 78,78 |
| **sunflower** | 5562 | 3974 | 4073 | 2386 | 4677 | 4859 | 5129 | 30660 | 4380 | 21,22 |
| **Total** | **21690** | **20353** | **20034** | **18968** | **21396** | **21451** | **20586** | **144478** | **20639,7** | **100,00** |

Source: Statistical Yearbook of the Republic of North Macedonia,2022

Acreage and Tobacco Growers

Analyzing the planted areas with tobacco and the number of producers for the mentioned period (2015-2021), the first thing that is noticeable is that there are visible oscillations in the planted areas and that they have been decreasing in the last three years. At the same time, it is noticed that the number of producers is also decreasing. In the analyzed period, the average planted area is 13469 ha, which is the closest to the area planted in 2019.

On average, 21,989 producers were engaged in tobacco production, regardless of the fact that the continuous decrease in the number of producers from year to year is visible.

If we look at the producers, the average planted area per producer is 0.61 ha, which is identical to the average area per producer in 2020.

Table no. 2 Areas and producers of tobacco

|  |  |  |  |
| --- | --- | --- | --- |
| **Harvest** | **planted area in ha** | **Number of manufacturers** | **Average area per producer, ha** |
| 2015 | 14171 | 24234 | 0,58 |
| 2016 | 13958 | 23438 | 0,6 |
| 2017 | 14412 | 23373 | 0,62 |
| 2018 | 14505 | 23426 | 0,62 |
| 2019 | 13342 | 20997 | 0,64 |
| 2020 | 12114 | 19702 | 0,61 |
| 2021 | 11784 | 18752 | 0,63 |
| **Average** | 13469 | 21989 | 0,61 |

Source: Ministry of Agriculture, Forestry and Water Management of Republic of North Macedonia

Sown and harvested areas in hectares

From the table showing the planted and harvested areas with tobacco, it is evident that the largest area (16719ha) planted with tobacco is in 2019, when it is also harvested and the largest area (16679ha). The average planted area is 16260ha, and the average harvested area is 16253ha. So, with very small deviations, the planted areas were harvested.

Table No. 3 Sown and harvested areas in hectares

|  |  |  |
| --- | --- | --- |
| **Year** | **Area in hectares** | |
| **Sown** | **Harvested** |
| 2015 | 16128 | 16128 |
| 2016 | 16379 | 16376 |
| 2017 | 15961 | 15959 |
| 2018 | 16582 | 16582 |
| 2019 | 16719 | 16679 |
| 2020 | 16592 | 16591 |
| 2021 | 15457 | 15457 |
| **Total** | **16260** | **16253** |

Source: Statistical Yearbook of the Republic of North Macedonia,2022

Tobacco production and yield

In the production and yield of tobacco in the analyzed period, oscillations are visible both in the total production and in the obtained kg/ha. The highest production was recorded in 2019 of 26234 tons, and the lowest two years earlier when it was 22885 tons. In the same year (2017) is the lowest yield in kg/ha (1434 kg.), and the highest in 2020 and 2021. The average production is 24970 tons, and the average yield was 1536 kg/ha.

The comparison of tobacco production (in tons) with the planted areas (in ha., shown in Table No. 3) shows that the total production depends on the volume of harvested areas. So if in 2019 26234 tons were obtained from planted 16719 ha, and in the previous year 25547 tons were obtained from planted 16582 ha, we will conclude that in 2019 the planted areas increased by 0.83% compared to the previous year, and the production increased by 0.97%.

Table no. 4 Production and yield of tobacco

|  |  |  |
| --- | --- | --- |
| **Year** | **Tobacco production and yield** | |
| **total, in tonnes** | **kg, per hectare** |
| 2015 | 24237 | 1503 |
| 2016 | 25443 | 1554 |
| 2017 | 22885 | 1434 |
| 2018 | 25547 | 1541 |
| 2019 | 26234 | 1573 |
| 2020 | 26112 | 1574 |
| 2021 | 24329 | 1574 |
| **Average** | **24970** | **1536** |

Source: Statistical Yearbook of the Republic of North Macedonia,2022

Purchase and average purchase price of tobacco

As a result of the production, the purchase of tobacco was also carried out. From the attached data in Table No. 5, there are oscillations in the purchased quantities and therefore the average quantity of purchased tobacco is 24167 tons. The average purchase price in the analyzed period moves with a slight increase, so that in 2020 it will come to a noticeable drop and in the following year to come again to a slight increase. In 2019, when the largest amount of tobacco was purchased (26234 tons), the highest average purchase price per kg was reached (219.89 den. mkd). The average purchase price for the seven-year analyzed period is approximately 199 den. mkd per kg of tobacco, which is closest to the average purchase price in the last year. In table no. 5 we also have the values of the purchased tobacco, where it is noted that the average value of the purchased tobacco is 4811810.41 den.mkd or 77999.84 euros.

Table no. 5 Purchase and average purchase price of tobacco

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Year** | **Purchase and average purchase price of tobacco** | | **Total value (000)** | |
| **Realized purchase of tobacco in total, in tons** | **Average purchase price (den.mkd/kg)** | **den.mkd** | **EUR** |
| 2015 | 18910 | 184,5 | 3488895 | 56555,28 |
| 2016 | 25152 | 196,82 | 4950416,64 | 80246,66 |
| 2017 | 22885 | 217,6 | 4979776 | 80722,58 |
| 2018 | 25547 | 214,21 | 5472422,87 | 88708,43 |
| 2019 | 26234 | 219,89 | 5768594,26 | 93509,39 |
| 2020 | 26112 | 158,78 | 4146063,36 | 67208,03 |
| 2021 | 24329 | 200,44 | 4876504,76 | 79048,55 |
| **Average** | **24167** | **198,89** | **4811810,41** | **77999,84** |

Source: Ministry of Agriculture, Forestry and Water Management of Republic of North Macedonia

Export and import of raw unprocessed tobacco of tariff number 2401

Most of the tobacco production, our country exports as raw, unprocessed tobacco. In the analyzed period, the smallest export of tobacco was in 2015 (22775 tons) so that in 2021 the export amounted to 27431 tons, which means that the export grew by 20.4% despite the drastic drop in 2020 when it amounted to 22511 tons. In any case, the average export of tobacco is 25179 tons each.

From the tabular display, the lowest export price was recorded in 2015 from 4209 US$ per ton to reach 6053 US$ per ton in 2020. So the export price grew by 43.8%, and the average export price was 5234 US$ per ton.

For the needs of the tobacco industry, our country also imports certain types of tobacco. And in that case, oscillations of the imported quantities are visible. In the analyzed period, a total of 26,283 tons of tobacco were imported, or an average of 3,755 tons. Although fluctuations in import prices are visible, the required quantities of tobacco are imported at an average price of US$ 4383 per ton.

Comparatively, the export is higher than the import as well as the average export price per ton is higher than the average import price.

Table No. 6 Export and import of raw unprocessed tobacco from tariff number 2401

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **e x p o r t** | | | | **I m p o r t** | | |
| **Year** | **Quantity in tons** | **Export price in US$ per ton** | **value in US $** | **Quantity in tons** | **Import price in US$ per ton** | **value in US $** |
| 2015 | 22775 | 4209 | 95.855.989 | 2998 | 4154 | 12.453.689 |
| 2016 | 27692 | 4265 | 118.119.734 | 5945 | 3863 | 22.963.886 |
| 2017 | 27622 | 5160 | 142.531.331 | 4803 | 3942 | 18.934.611 |
| 2018 | 23327 | 5908 | 137.816.042 | 4703 | 4594 | 21.606.459 |
| 2019 | 24898 | 5758 | 143.366.634 | 3663 | 4193 | 15.359.772 |
| 2020 | 22511 | 6053 | 136.252.966 | 1872 | 4804 | 8.993.395 |
| 2021 | 27431 | 5283 | 144.919.653 | 2299 | 5133 | 11.800.081 |
| **Total** | **176256** |  | **918.862.349** | **26283** |  | **112.111.893** |
| **Average** | **25179** | **5234** | **131.266.050** | **3755** | **4383** | **16.015.985** |

Source: https://comtradeplus.un.org/

**CONCLUSION**

Based on the analysis of the economic indicators of tobacco production in Macedonia, several conclusions can be drawn:

* tobacco production is organized on an average area of 16,260 ha, that is, 78.8% of industrially planted areas. It shows that tobacco is still considered an attractive culture. In that context, a specific mapping of tobacco producers who will work professionally and farmers who periodically approach tobacco production should be done. In that direction, efforts should be made to raise the awareness of tobacco producers regarding the opportunities offered by tobacco production,
* Although there is a noticeable decrease in planted areas, it is necessary to take appropriate measures related to maintaining and increasing the level of planted areas of tobacco,
* In the Republic of North Macedonia there are real possibilities for the stabilization of the total production of tobacco, which would increase the efficiency and quality of produced tobacco. In that direction, the liberalization of the negotiation system when concluding contracts for tobacco production is needed,
* If the purchase price of tobacco increases in real terms, then the motivation of producers to produce quality tobacco would also increase, and thus the value indicators would improve.
* The increase in the purchase price will create conditions for the production of higher quality tobacco, which is the main factor for a higher export price.
* The amount of imported tobacco that is necessary for the needs of tobacco manufacturing and tobacco processing maintains a level of reduction,
* The quantity of exported tobacco is only a confirmation of the demand in the international market
* North Macedonia, as a candidate country for EU membership, will have to adhere to the EU's Common Agricultural Practice (CAP) and full compliance with EU regulations.

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