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## A NEW AND MORE PRODUCTIVE VARIETY OF PRILEP TOBACCO

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### ABSTRACT

*The need to create and introduce new and more productive oriental varieties of tobacco with better quality than the existing ones permanently increases. As a result of scientific and research work on this problem during the last two decades, the Department of genetics and breeding in Tobacco Institute-Prilep created a great number new lines of Prilep tobacco with significantly better quality compared to the standard. Some of them were recognized as varieties, among which Prilep 66-9/7 should be especially emphasized for its productivity.*

**Keywords:** tobacco, Prilep, productivity

### Introduction

Along with commercialized aromatic tobaccos, quantitative increase of high-yielding varieties has been observed in the primary production of oriental tobacco of the type Prilep in R. Macedonia. Such heterogeneous assortment, however, dramatically affects the quality of Prilep tobacco and threatens to destroy its high reputation on the foreign market. These alarming predictions can be avoided only by creation and introduction of new varieties with higher productivity and better quality. With their biological potential and quality characteristics, these varieties should correspond not only to the interests of the primary production but also to the requirements of the market and manufacturers (2, 3, 8). Therefore, in breeding of new Prilep varieties, our aim was to obtain optimum yields and to improve the quality of tobacco raw. One of the most perspective new varieties created in Tobacco Institute was Prilep 66-9/7. It was officially recognized in 2004 and in 2010 crop it is expected to account for 70-80% of the primary production of the type Prilep.

It has higher productivity than the existing commercialized varieties and is suitable for obtaining an authentic, standard and high-quality tobacco raw.

The aim of the paper is to present the most important characteristics of this newly created aromatic variety of the type Prilep.

### Materials and Methods

Investigations related with creation of the new variety Prilep 66-9/7 were performed in the period 1992-2002. It was obtained by intervariety hybridization.

The breeding process started in 1992, by crossing the oriental line Pb 66-9, used as mother component, with oriental variety Prilep 7, used as father component. Selection of parents was based on previous investigations. Line Pb 66-9 has higher yield and more intensive aroma, and Prilep 7 is distinguished by its good quality and percentage of highest classes (I, II, IIIa), fine leaf tissue and strong aroma. In 1993 hybrid progeny from F1 generation was obtained (150 plants), and in 1994 several lines were selected from F2 progeny (400 plants). Up to 1999, selection and consolidation of selected lines from hybrid progenies were made according to their morpho-biological characters (leaf number, plant habitus and height, vegetation period, etc). Among all consolidated lines included in comparative investigations performed in 1998 and 1999, line P 66-9/7 was especially emphasized. In the following period (2000, 2001, 2002), investigations continued in the scope of micro-trials performed by the State Commission of the Ministry of Agriculture, Forestry and Water Economy of the Republic of Macedonia, and this line was recognized as variety under the same name (Prilep 66-9/7). Tobacco of the parental varieties, hybrid progenies and consolidated lines was transplanted at 45 cm spacing between rows and 15 cm within the row. Morphological measurements were made on a representative



sample of 20 individuals from one plot. Traditional agrotechnical measures were applied during the period of vegetation. Chemical and tasting analyses were made by application of standard methods in the laboratories of Tobacco Institute-Prilep. Limit values for certain parameters of the new variety Prilep 66-9/7 were based on the results obtained from several year-investigations carried out in the Experimental field of the Institute and in primary production.

### Results and Discussion

The Prilep 66-9/7 variety was included in the list of newly recognized domestic agricultural crops in 2004 (Official Gazette of R. Macedonia, 70/2004).

Plants are ellipsoid-conic in shape, with height average of 65-75 cm, depending on conditions of growing and applied cultural practices. The stalk is relatively thin and strong. Average leaf number of leaves is 52 and they are uniformly distributed on the stem. Average size is in the limits of 18 - 22 cm for the largest leaf, 16-18 cm for the middle and 8 - 10 for the top leaves. Inflorescence is relatively small, moderately to tightly condensed, semi-oval in shape (Fig. 1 and Fig. 2)



Fig. 1. P 66-9/7



Fig. 2. Seed plot of P66-9/7

Prilep 66-9/7 is suitable for growing at loose, light and drained soils, with poor supply of nutrient elements, showing especially good results under irrigation conditions. The variety also achieves good yields and quality in soils with medium supply of nutrients, where no possibilities for irrigation exist, yielding small-leaf aromatic and substantial tobacco typical for the type Prilep. Intensive raining during the growing period can lead to some increase of lower middle leaves, but it doesn't affect the quality of tobacco. Fertilization is made with 250 - 330 kg/ha NPK (8:22:20), depending on soil and previous culture. Transplanting is made at 40 - 45cm between rows and 12 - 15 cm between plants (in the row). Optimum period for transplanting is 10 - 30 May.

Length of the growing season from planting to the beginning of flowering is 70 - 75 days. The growth in the first 12 to 15 days is slower, but in this period a well branched root system is developed, which makes the variety adaptable and persistent in dry conditions. Leaves mature



consecutively and overmaturation is not observed. The first leaves ripe about 40 days after transplanting, and the total period to the end of maturation of top leaves is 115 - 120 days. Majority of leaves are ripening simultaneously. Tobacco is primed in 6 to 7 hands, picking 5-8 leaves together. The variety is resistant to blue mold and bassara disease, and tolerant to viruses. The Dry tobacco yield averages 2000 - 3600 kg/ha, depending on conditions of growing and applied cultural practices. Pelivanoska (7) reported that dry tobacco yield of Prilep 66-9/7 varied from 1794 kg/ha in the check variant (unfertilized, unirrigated) to 3988 kg/ha in variant fertilized and irrigated with  $N_{40}P_{80}K_{100}$  + 55% FWC (field water capacity).

Prilep 66-9/7 belongs to the group of small-leaf aromatic tobaccos with uniform raw typical for the type Prilep. It has fine, soft and substantial dry leaf tissue, with yellow-orange color of the middle leaves and orange to light red of the upper. It is distinguished by high percentage of high-graded tobacco.

Chemical composition of this tobacco is variable and depends greatly on conditions of growing and applied agrotechnical measures. The average values of major chemical compounds range within the following limits: nicotine 1.0 % (irrigated) - 2.30 % (non-irrigated), proteins 5 % - 8%, soluble sugars 18.50% - 29.00% and Shmuk's quality index 2.5 - 5.0.

During smoking, this tobacco is medium in strength, with full and sweetish taste and strongly expressed, intensive aroma (6)

### Conclusions

Based on the data obtained during the several-year selection work, the following statements can be drawn:

1. The creation of genotype Prilep 66-9/7 enriched the structure of tobacco type Prilep with a new oriental variety.
2. Prilep 66-9/7 achieves higher productivity than the existing commercialized varieties and it is suitable for obtaining a standard, authentic and high-quality raw of tobacco type Prilep, which was the aim of our investigations.
3. Due of its adaptability to various conditions of growing, the new variety has raised a great interest in primary production. The obtained tobacco raw satisfies the requirements of the market, which is confirmed by the fact that it accounts for 80% of Prilep tobacco production in R. Macedonia for 2010, as well as by the great interest for introduction of this variety shown by the neighboring countries.

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