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NEW PROSPECTIVE VARIETY OF THE ORIENTAL YAKA TOBACCO

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ABSTRACT

Yv 125/3 has been used in the production of Yaka tobacco for over 25 years, as a dominant commercial oriental variety grown in eastern and southeastern regions of Macedonia. So far, the variety has been well adapted to agro-ecological conditions of the above regions and it meets the market requirements. However, the increasing needs of traditional market for this type of tobacco make it necessary to introduce new, more productive oriental varieties with superior quality compared to the standard. The research work of Tobacco Institute was also headed in this direction, resulting in creation of many lines and varieties of this tobacco type in the last decade, with considerably higher quality. The most prospective among them by its productivity and quality characteristics is the recognised variety Yaka b 65 - 82/1. In terms of morpho-biological, productional and technological traits, this variety is typical representative of Yaka tobacco, which can meet the requirements of the modern market and find application in the primary tobacco production.

Keywords: oriental tobacco, Yaka variety, Yaka 65 b - 82/1

НОВА ПЕРСПЕКТИВНА СОРТА ТУТУН ОД ОРИЕНТАЛСКИОТ АРОМАТИЧЕН ТИП ЈАКА

Ориенталската сорта Јв 125/3 е најзастапена во производството на тутун од типот јака повеќе од 25 години, како доминантна комерцијализирана сорта која се одгледува во тутунопроизводните реони на источна и југоисточна Македонија. Оваа сорта досега беше добро прилагодена за одгледување во агроеколошките услови на наведените реони и во голема мера ги задоволуваше потребите на пазарот. Во согласност со зголемените сегашни потреби на традиционалниот пазар од ваков вид на тутунска суровина се јави потреба од воведување на нови попродуктивни ориенталски сорти со подобри квалитетни својства во споредба со стандардната сорта Јв 125/3. Според тоа и научноистражувачката работа во Одделението за генетика и селекција при Научниот институт за тутун - Прилеп беше насочена во овој правец. Така, во последнива деценија беа создадени голем број на линии тутун од типот јака, со поквалитетни својства во однос на стандардот. Од нив по продуктивноста и квалитетните својства посебно се истакнува како мошне перспективна новосоздадената и призната сорта Јака б 65 – 82/1. Сметаме дека оваа сорта по однос на морфо-биолошките, производните и технолошките својства е типичен претставник за типот јака, која ќе може да ги задоволи современите тековни барања на пазарот и да најде примена во примарното производство на тутун.

Клучни зборови: ориенталски тутун, тип јака, сорта, Јака б 65 – 82/1

INTRODUCTION

In primary production of tobacco, the variety is a basic and very important factor which has a direct impact on yield increase and improvement of quality and effectiveness of tobacco production. Therefore, it is very important in selection of tobacco mixtures to include varieties with appropriate morphobiological,productional, technological and smoking properties typical of the given tobacco type. In recent years, however, there is high heterogeneity of varietal structure in areas where Yaka tobacco is grown, with uncontrolled presence of other varieties, especially of the type Prilep. This heterogeneity negatively affects the quality of Yaka tobacco in terms of authenticity and uniformity of the raw material, which has been also suggested by the experts and international buyers of this tobacco type. The problem can be resolved only by introducing new more productive and high quality tobacco varieties. The variety with its biological potential and quality characteristics should satisfy not only the interests of primary producers but of the market and manufacturers as well (Gelemerov 2005, Gornik 1973, Timov et al. 1974). For all this, strictly controlled assortment in the production of this tobacco type is an imperative. The introduction of new and more productive varieties will allow larger, continuous and planned production with high valued, uniform and authentic Yaka tobacco raw, intended in a first rate for the international and then for the local market, which will increase the foreign exchange inflow in the country. In the selection of new Yaka varieties, our attention was directed toward the increase of yield (to certain optimal limits) and quality improvement of raw tobacco. Of all the new lines and varieties investigated, the variety Yaka b 65 - 82/1 showed to be the most perspective. It was created in the Scientific Tobacco Institute - Prilep and registered in 2014. It is characterized by higher throughput than the standard variety Yv 125/3 and is suitable for obtaining uniform high quality standard and authentic tobacco raw of the type Yaka. The aim of this paper is to present the basic characteristics of this newly created aromatic variety.

SOME PHENOTYPIC, MORPHO-BIOLOGICAL AND PRODUCTIONAL TRAITS OF YAKA TOBACCO VARIETY Yk b 65-82 /1

The newly created variety Yaka b 65-82/1 was registered in the list of new varieties of domestic agricultural crops in 2014, by the Ministry of Agriculture, Forestry and Water Economy of R. Macedonia. This variety was obtained by generative interspecies (intervarietal) hybridization. Plants have cylindrical habitus, lightly ellipsoid in the lower belt and with regular leaf arrangement. The stalk is very strong, with medium thickness and resistant to damping of. The internode length is typical of the Yaka tobacco. The height of the stalk with inflorescence is usually 110-140 cm, depending on the conditions of breeding and applied cultural practices. The number of leaves per plant averaged 53-55 and more, depending on the conditions of breeding. The largest leaf size varies from 18 to 23 cm, the size of the middle leaf is 16-18cm and that of the top leaves is about 10 cm. Inflorescence is semi-oval, loose, with pink flowers. The above morphological traits were confirmed with the results obtained in the two-years investigation performed in unirrigated conditions (Table 1). It can be seen from the results that variety Yaka b 65-82/1 is somewhat higher, it also has a higher leaf number compared to the standard Yv 125/3 and the leaf size is typical of the Yaka tobacco.

Table 1. Morphological characteristics of investigated varieties (average 2009-2010)

Varieties	Plant with inflorescence height cm	Leaf number per plant	Largest leaf size	
			Length	Width
Yv. 125/3 ∅	98,5	43	20,1	10,5
Yaka b 65-82/1	110,2	55	21,3	11,2

Yaka b 65-82 / 1 is suitable for growing in loose, light soils poorly supplied with nutrients and it gives especially good results under irrigated conditions. This variety also gives satisfactory yield and high quality in soils with medium nutrient supply and in conditions where irrigation is not possible. In such soils a small-leaf, aromatic, substantial tobacco is obtained, with typical characteristics of the type Yaka. More intensive rainfalls during the growing season can cause an increase in the size of the lower middle leaf, but the quality of the raw material remains the same. Fertilization is carried out with NPK 250 - 330 kg/ha (8 : 22 : 20), depending on the soil and previous crop. The plant spacing is 40 cm between rows and 12 cm in the row (from plant to plant). The optimal period for planting is May 5 -25.

Length of the growing season from planting to the beginning of flowering was 65-70 days. The variety is characterized by somewhat slower growth in the first 12 to 15 days, but therefore a well developed root system was formed, making it more adjustable and tolerant to drought. The leaves mature consecutively and are not inclined to over-maturation. It takes about 40 days from transplanting to ripening of the first leaves and the total period to the end of ripening lasts about 115 - 120 days. Higher number of leaves mature simultaneously. Tobacco was harvested in 6-7 primings, picking 5-8 leaves together.

The new variety shows resistance to TMV and gives satisfactory results in resistance to blue mold, black shank and green spot or “bassara” diseases. Resistance to TMV was confirmed in the two-year investigations (2009-2010) with the standard variety Yv 125/3 and Yaka b 65-82/1 (Table 2). Two estimations were made on disease occurrence and spread in top leaves and suckers in all investigated plants and no symptoms of TMV disease were recorded during the field trial. Under the same conditions, standard variety Yv 125/3 appeared to be susceptible to TMV. In both investigation years it showed visible symptoms of TMV disease, having high percentage of infestation (70.90% and 66.66%). Dimitrieski et al. (2005) reported the highest intensity of TMV attack among the seven varieties and lines investigated in the standard variety Yv 125/3, which is in accordance with our investigations.

Table 2. Resistance of Yaka tobacco varieties to TMV

Varieties	Years	I estimation				I I estimation			
		Total number of observed plants	Total number of infested plants	Intensity of attack %	Response to TMV	Total number of observed plants	Total number of infested plants	Intensity of attack %	Response to TMV
Yv 125/3∅	2009	165	82	49,69	+	165	117	70,90	+
	2010	171	91	53,21	+	171	114	66,66	+
Yaka b 65-82/1	2009	181	0	0,00	-	181	0	0,00	-
	2010	168	0	0,00	-	168	0	0,00	-

(+)= susceptible65-82/1
(-) = resistant

The dry tobacco yield usually ranges from 2300 to 3500 kg/ha, depending on environmental conditions, mode of cultivation and applied cultural practices (Dimitrieski et al.2009, Dimitrieski et al.2010). Data on productional characteristics of the newly created variety under unirrigated conditions (Table 3), compared to the standard Yv 125/3, confirm the above-mentioned values of the new variety. Higher average yield was recorded in Yaka b 65-82/1 (2343 kg/ha), which in relative amount is 51.16% above the standard variety Yv 125/3 (2531 kg/ha). Higher average purchase price was achieved with variety Yaka b 65-82/1 (2.34 €/kg), which is 14,20 % higher than the standard Yv 125/3 (1.76 €/kg). Also, variety Yaka b 65-82/1 achieved higher gross income (4.772,00 €/ha), which is 74.42% increase compared to the standard variety Yv 125/3 (2.735,80 €/ha).

Yaka b 65-82/1 is a small-leaf aromatic variety with uniform raw material typical for Yaka tobacco. The dry leaves tissue is fine, substantial, with yellow-orange color of the middle leaves and orange to light red upper leaves. It is characterized by exceptionally high grade mixture and favorable chemical composition of tobacco. It is a well-formed medium strong tobacco, with sweetish and pleasant taste and intensive aroma.

Table 3. Productional characteristics of investigated varieties

Varieties	Yield kg/ha			Average purchase price			Average economiceffect	
	2009	2010	Average	%	€/kg	%	€/ha	%
Yv. 125/3 ∅	110,2	1628	1550	100,00	1,76	100,00	2.735,80	100,00
Yaka b 65-82/1	110,2	2502	2343	151,16	2,34	114,20	4.772,00	174,42

Foto 1. Yv 125/3

Foto 2. Yk b 65-82/1

CONCLUSION

The results of investigations lead to the following conclusions:

- According to its morphological traits, the new variety is typical representative of Yaka tobacco. It is characterized by higher plants and higher leaf number per plant (53-55) compared to the standard variety Yv 125/3.
- Yaka b 65-82/1 shows complete resistance to TMV in field conditions, unlike the standard variety which is susceptible to the disease.
- The new variety achieved higher average yield per hectare, which in relative amounts is an increase of 51.16% compared to the standard variety.
- The newly created perspective variety

Yaka b 65-82/1 achieved higher average purchase price per 1 kg, as well as higher economic effect expressed in €/ha, which is 74.42% up compared to the standard variety Yv 125/3.

REFERENCES

1. Гелемеров С., 2005. Cъздаване на ориенталски тютюневи линии и сортове устойчиви на болести: тютюнева мозайка (Tobacco mosaic virus, Allard (TMV), и чернилка (Phytophtora parasitica var. nicotianae.) Бългрия, 60 год. ИТТИ Пловдив, Юбилейна научна конференция с международно участие, стр. 56-61.
2. Горник Р., 1973. Облагородување на тутунот. Прилеп.
3. Димитриески М., Мицеска Г., 2005. Отпорност на некои новосоздадени перспективни линии од типот Јака на обичниот мозаик вирус (TMV). Зборник на трудови, I Конгрес за заштита на растенијата, стр. 113-116.
4. Димитриески М., Мицеска Г. 2009. Генотипот и начинот на одгледување неопходни фактори за добивање на ориенталска тутунска суровина карактеристична за типот прилеп по однос на хемиските својства. Тутун/ Tobacco Vol. 59 No 9-10, стр. 207-212.
5. Dimitrieski M., Miceska G. 2010. New lines of aromatic Yaka tobacco resistant to TMV. 45th Hrvatski i 5th Međunarodni simpozij agronoma 15-19 veljače, 2010, Opatija, Hrvatska. ZBORNIK RADOVA, str. 390-393.
6. Тимов А., Веселинов М., Атанасов К., Димитров Ц. 1974. Ориенталският тютюн в Бългрия. Издателство на Българската Академия на науките - София.