



Research Paper

**PHYSICAL AND TECHNOLOGICAL CHARACTERISTICS OF THE GENE
POOL OF BURLEY TOBACCO**

Stefka Kirkova and Yovko Dulgerski

Tobacco and Tobacco Products Institute, Markovo.

Abstract

The aim of our research is a comparative analysis of the physical and technological characteristics of the existing Tobacco and Tobacco Products Institute /TTPI / gene pool of indigenous , introduced varieties of Burley tobacco and our perspective consolidated lines. Based on the results to performed the selection of genotypes for the appropriate starting material for hybridization when creating a new varieties of Burley tobacco.Were totally seventy genotypes, including seven indigenous Bulgarian varieties of Burley tobacco, thirty three selected varieties introduced and thirty created in TTPI consolidated perspective lines. Physical and technological characteristics of the investigated variants meet the standards for Burley tobacco. There is a significant superiority of indigenous varieties and lines over the introduced. Genotypes appropriate starting material for hybridization for creating new varieties of Burley tobacco. Best values parameters stand out Burley 1344 variety. Almost all new lines significantly exceed the introduced and indigenous varieties. All of these can be used as genetic material to improve the physical and technological parameters of local forms Burley tobacco.

Key words: burley tobacco, local and introduced varieties, physical parameters.

INTRODUCTION

In the last few years in Bulgaria, the share of manufactured tobacco by Virginia and Burley variety group increase[1].There is a steady trend of weak growth in consumption of American blend cigarettes not only in our country but also worldwide [3, 4]. Despite continued restrictions to the crop tobacco, tobacco products and their consumption registered an increase in production of Burley tobacco. There are several reasons. One of them is economic, because production is associated with spending considerably less work in real opportunities for mechanization of processes [6].

As yield and quality Bulgarian Burley tobacco grown significantly inferior to traditional producing countries [1, 4, 7, 11].Research technology, and chemical properties of local smoking and Burley tobacco indicate that there is too much variation in the values of parameters by region and year[3, 4].This variability is an essential drawback. Imported Burley tobacco superiors to this produced in Bulgaria [5]. The results of several studies suggest that overall Bulgarian tobacco of variety group Burley cannot be equivalent substitutes for imported [3, 4, 5]. The achievement of competitiveness of this type would entail a reduction its imports. This necessitates optimization of the main production and quality parameters of our tobacco by creating new genetic material, meeting chuckled about his consumption[7, 8, 9, 12, 13].

The aim of our research is a comparative analysis of the physical and technological characteristics of the existing Tobacco and Tobacco Products Institute /TTPI / gene pool of local, introduced varieties of Burley tobacco and our perspective consolidated lines. Based on the results to performed the selection of genotypes for the appropriate starting material for hybridization when creating a new varieties of Burley tobacco.

MATERIAL AND METHOD

The experimental work was performed in TTPI in the period from 2002 to 2013. Were totally seventy genotypes, including seven local Bulgarian varieties of Burley tobacco, thirty three introduced varieties and thirty created in TTPI consolidated perspective lines. The choice of variants is based on proven good business qualities /yield, percentage of classes/ and typical of the varietal chemical composition.

Applied identical technology of cultivation. Collection of tobacco is of whole plants in late August. Drying is air.

Analysis and data processing are used standardized methods.

RESULTS

The results of the biometric measurements are presented in figures №№ 1, 2 and 3.

The results for the number of leaves in 1 kg of dry tobacco and established conditions yield / number of cigarettes in tobacco 1 kg/ are displayed on figures №№ 4, 5 and 6.

The results for the mass per unit area g/cm², density of tobacco g/cm³ and the density of the cut tobacco are shown in figures №№ 7, 8 and 9.

Results for burning surveyed options are displayed on figures №№ 10, 11 and 12.

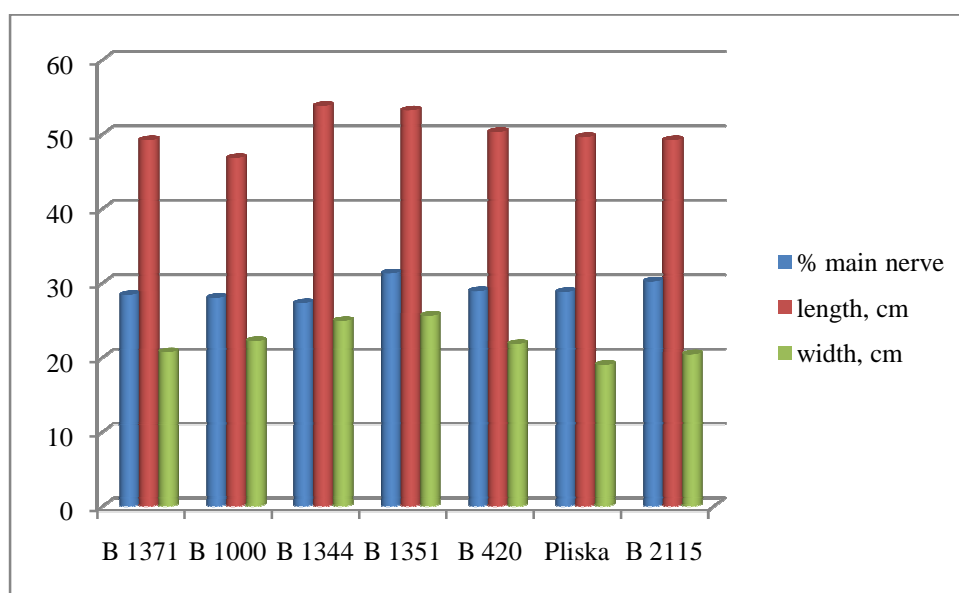


Figure 1. Indigenous varieties of Burley tobacco

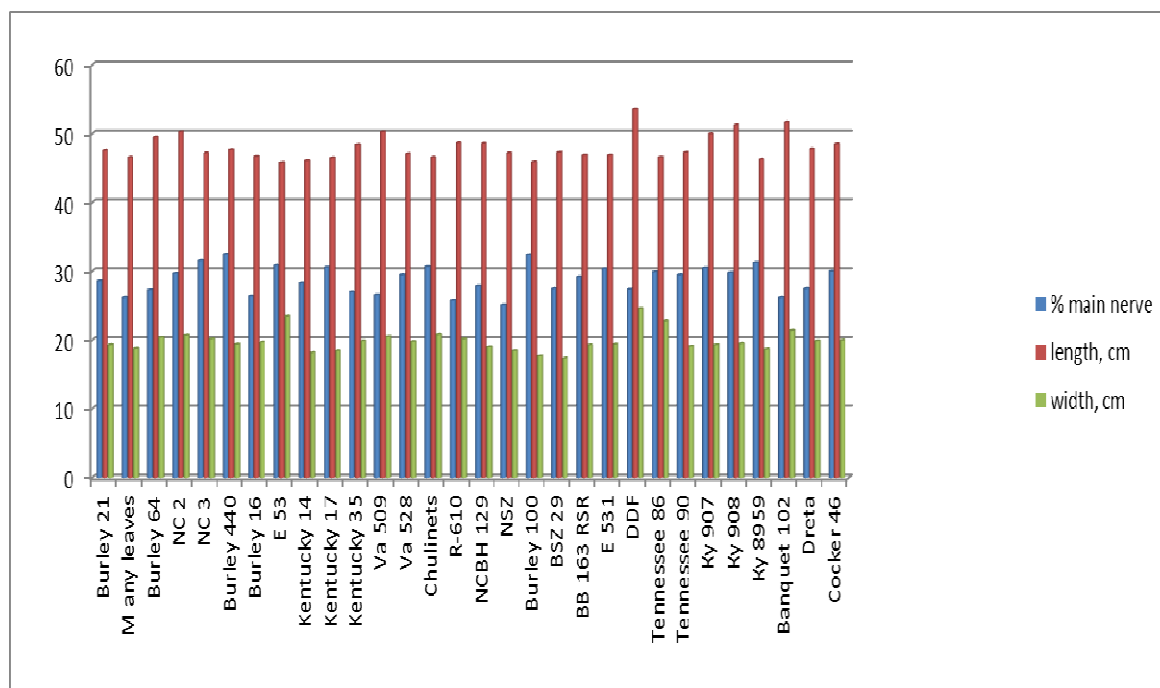


Figure 2. Introduced varieties of Burley tobacco

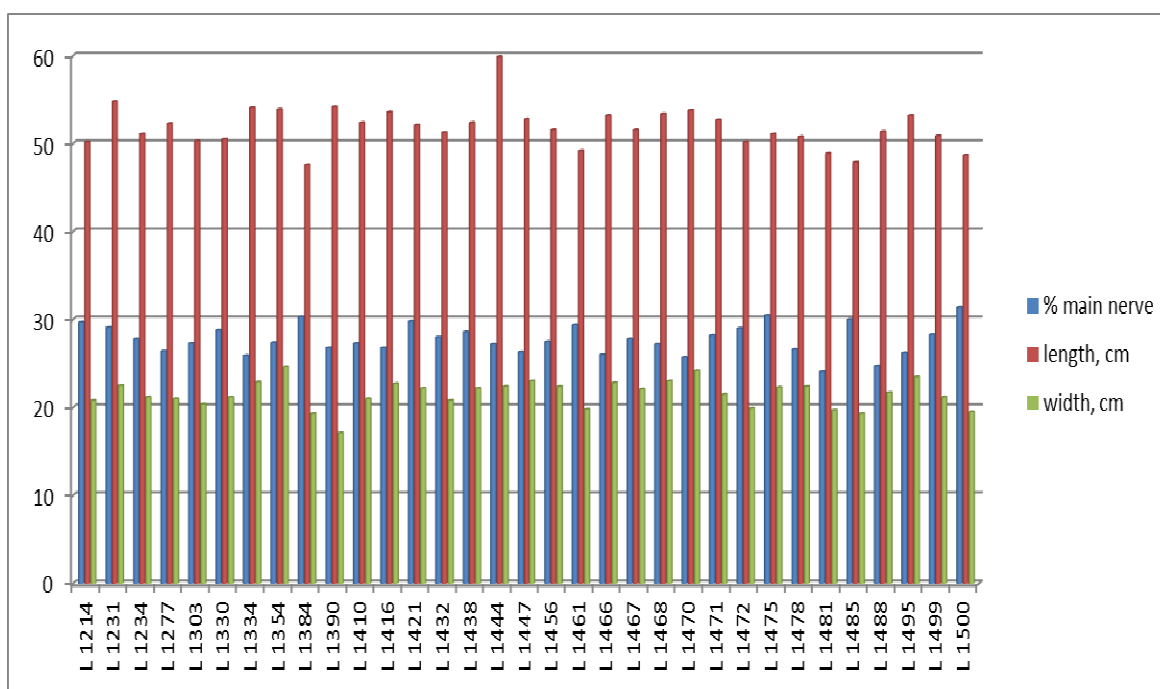


Figure 3. New lines of Burley tobacco

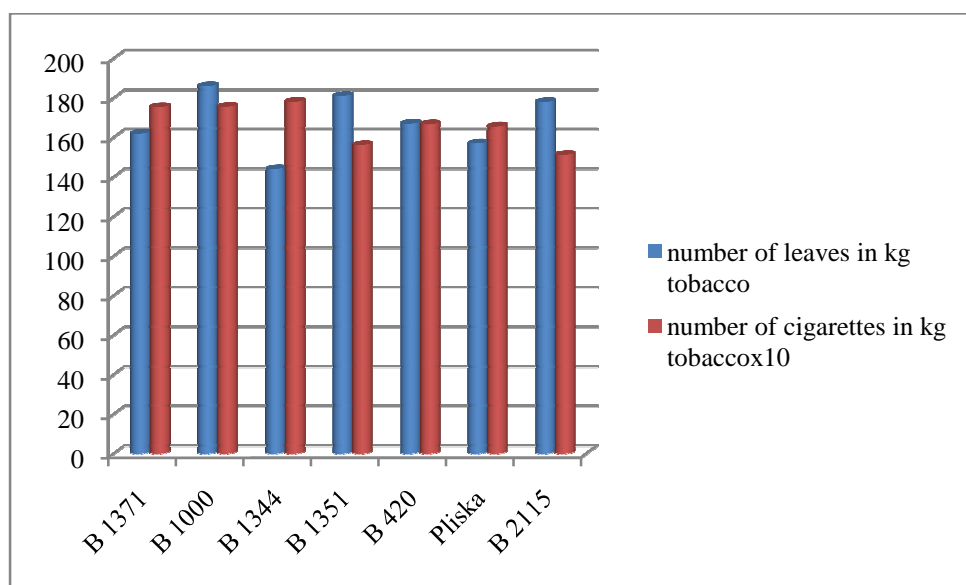


Figure 4. Indigenous varieties of Burley tobacco

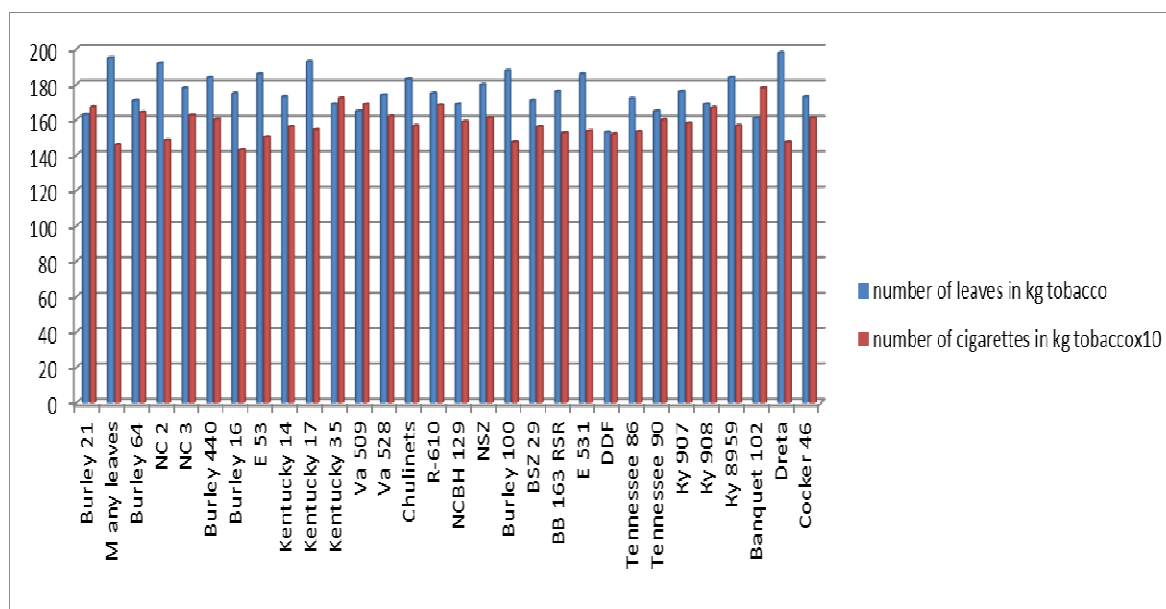


Figure 5. Introduced varieties of Burley tobacco

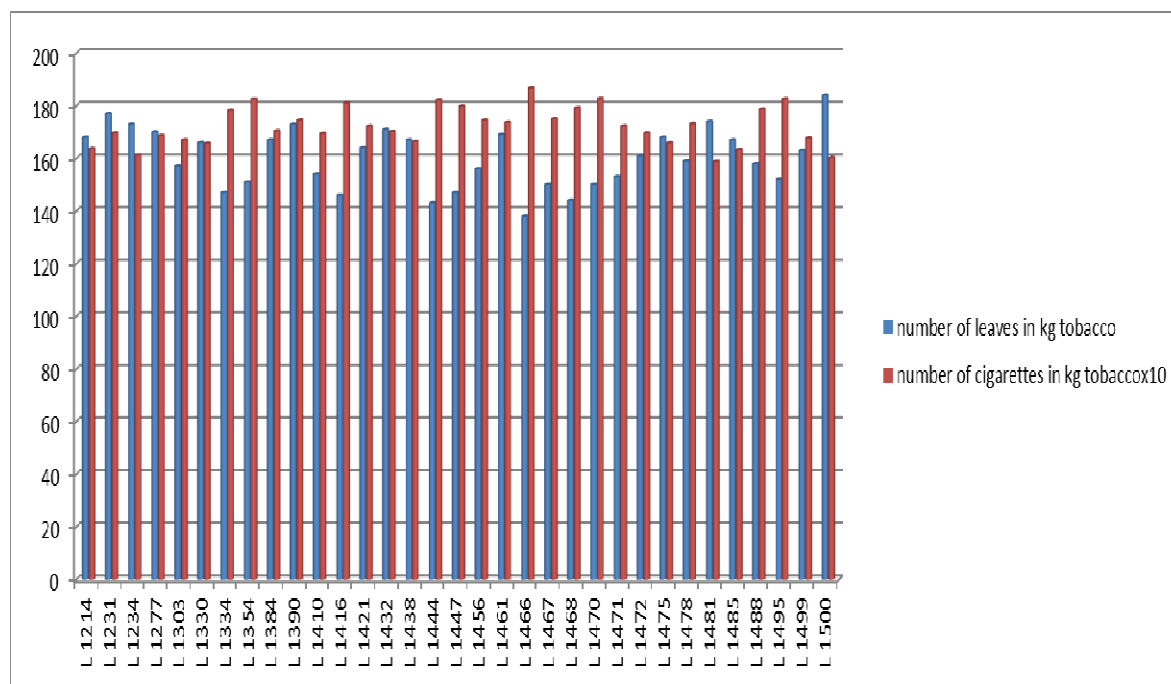


Figure 6. New lines of Burley tobacco

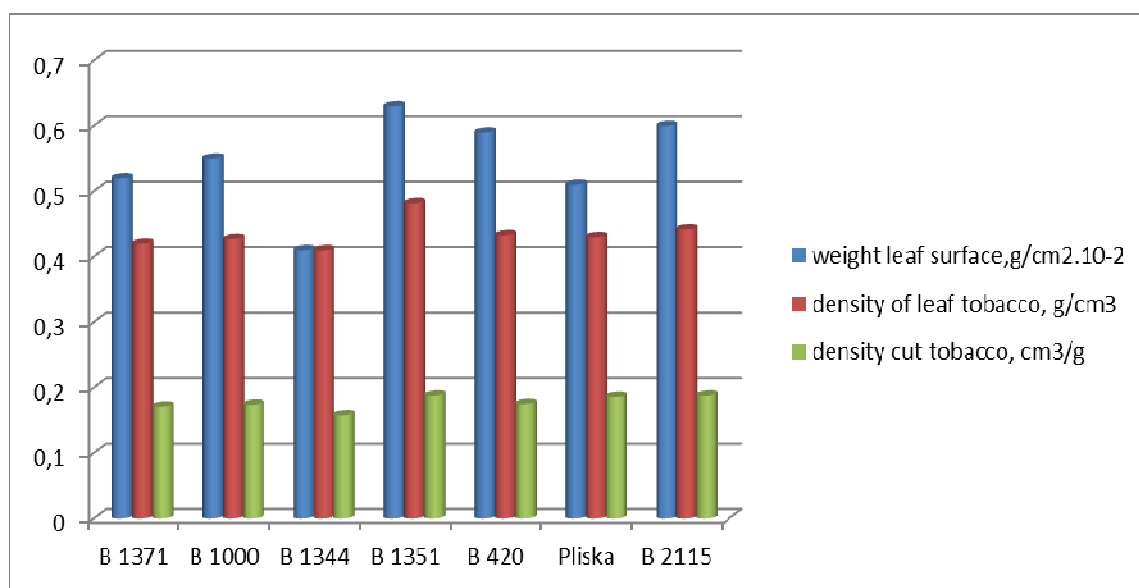


Figure 7. Indigenous varieties of Burley tobacco

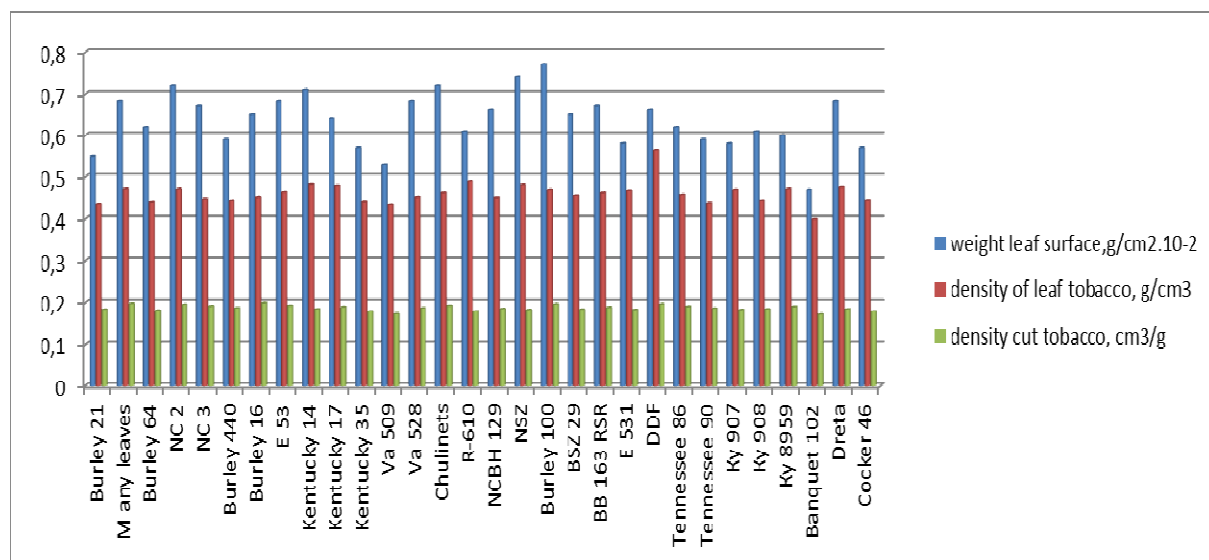


Figure 8. Introduced varieties of Burley tobacco

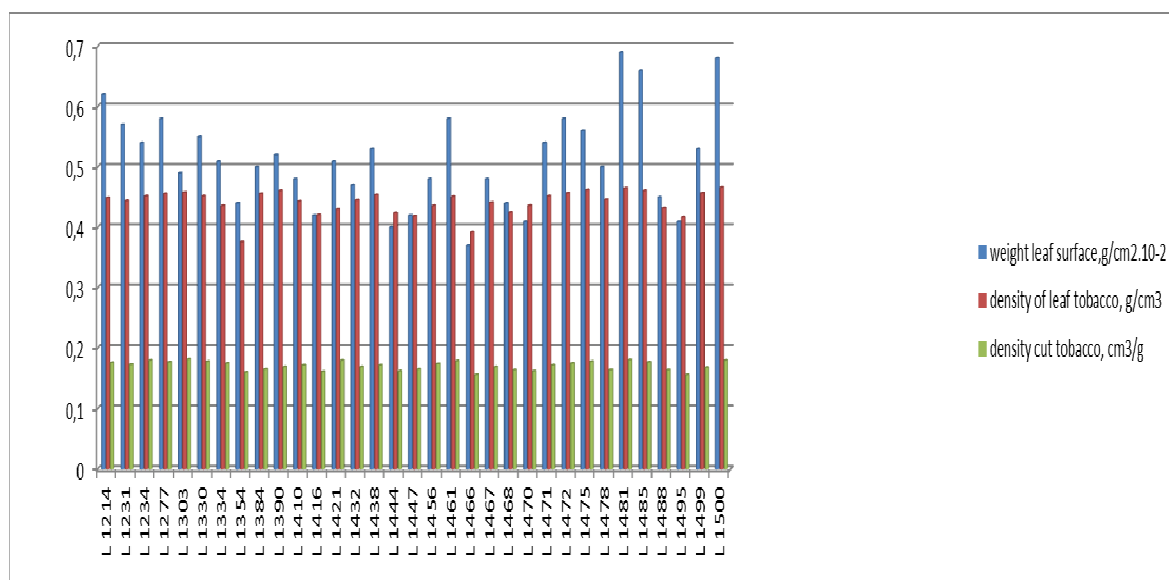


Figure 9. New lines of Burley tobacco

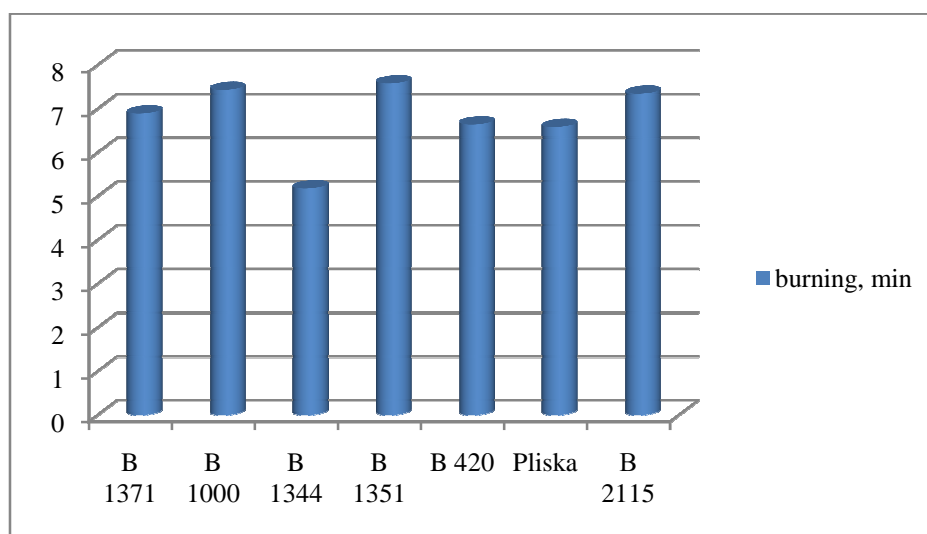


Figure 10. Indigenous varieties of Burley tobacco

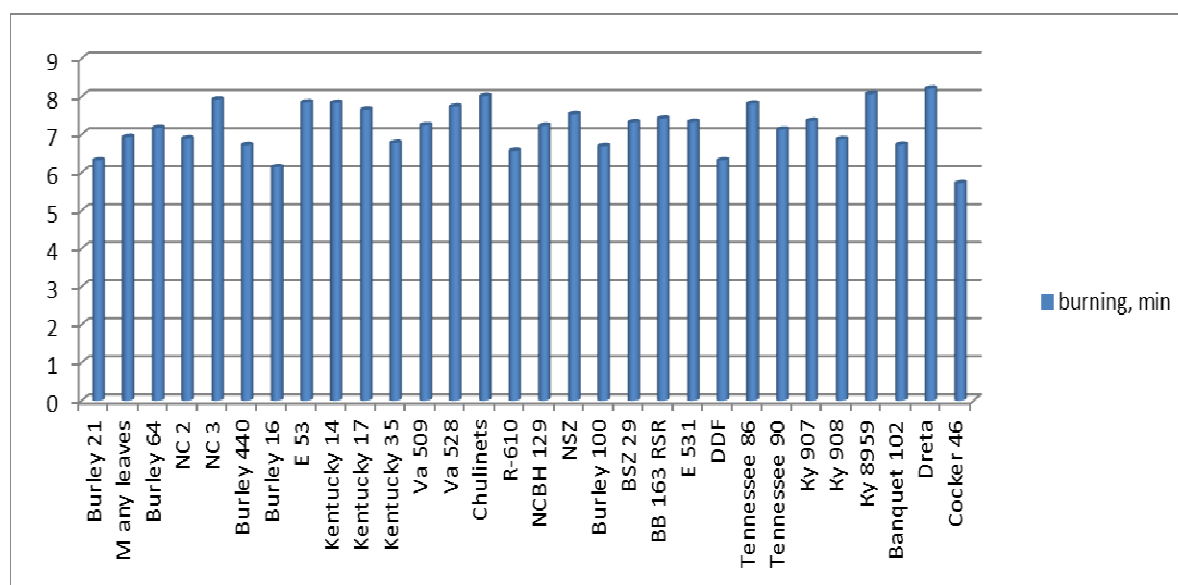


Figure 11. Introduced varieties of Burley tobacco

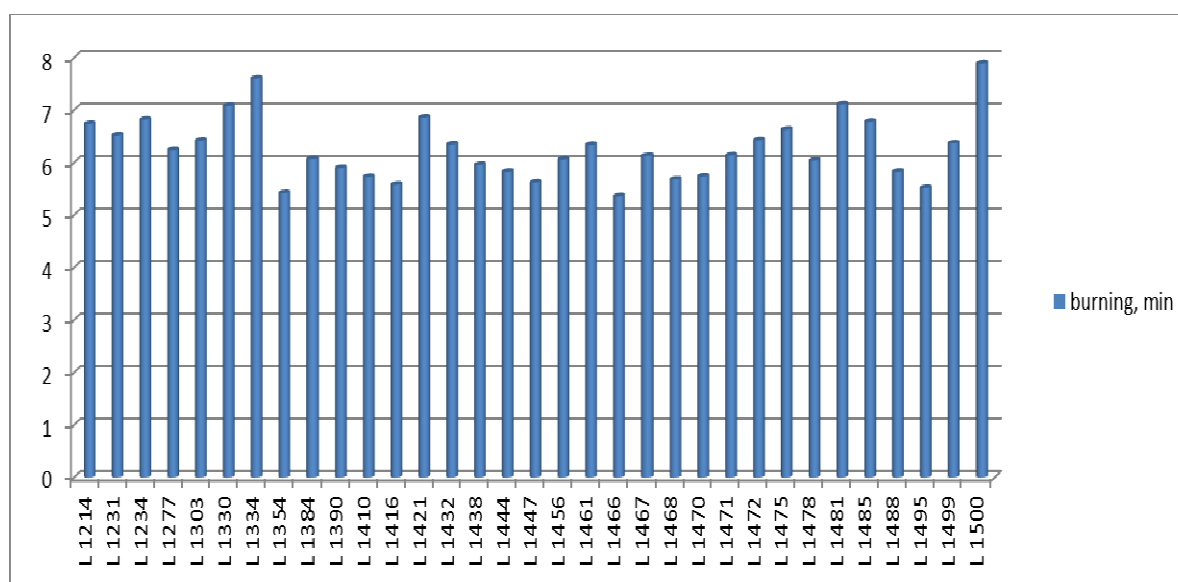


Figure 12. New lines of Burley tobacco

DISCUSSION

The percentage main nerve occupies a certain share in assessing consumer value of Burley tobacco. The material with a greater percentage of the main nerves has a low consumer value. A larger percentage of nerves is a criterion for loose structure of the tobacco leaf, respectively, for better absorbability. Except for the the hybrid Burley 1351 variety, all other Bulgarian varieties are observed values for the main nerve in the standards of Burley tobacco. This also applies for most of introduced varieties. Burley 440, Burley 1000, Kentucky 8959 and North Carolina 3 (NC 3) are distinguished by a large percentage of the main nerve. Except for the Line 1500, all new lines of Burley tobacco have optimum values for the parameter the type of tobacco. The size of the leaves have a direct relationship with the percentage of classes. In relation to length of the leaves, the parameters in all local varieties with the exception of a Burley 1000 variety are norms of Burley tobacco. The highest values of research indicator Burley 1344 variety. The leaves Burley 1000 variety are less in length. The length of the leaves of most introduced varieties meet desired for Burley tobacco. This applies to the newly local lines. Similar results and width of the leaves. All local varieties cover the criteria for Burley tobacco. Again, the best indicators are Burley 1344 variety and Burley 1351 variety. They are variants with the large

leaves. In the introduced varieties are also observed sufficient values for the indicator. Best results is a male sterile DDF variety. As smaller leaves stand Burley Manyleavesvarietie, Kentucky 8959, NSZ, Kentucky 14 and Kentucky 17. From the results it follows that the size of the leaves of local varieties are larger than the introduced. With the exception of Line 1390, which is too narrow for atypical varietal leaves at local lines results are very good. Distinctly better values for size of leaves in Line 1334, Line 1354, Line 1416, Line 1466. Line 1468 and Line 1495. With the exception of Line 1390, length/width ratio in the studied variants is good.

The number of leaves in 1 kg of dry tobacco affects the typicality of tobacco. This indicator gives a objective idea of size of the leaves and the cost of labor at harvest, stiletos manipulation and the manufacturing of tobacco. In local varieties of Burley tobacco best result on this indicator was achieved in variety Burley 1344. In Burley 2115 variety, Burley 1351 variety and especially Burley 1000 variety is well rounded to the type of tobacco. In the introduced varieties this indicator is significantly higher than local varieties, some of them out of the common for varietal. These are particularly high values Kentucky 17, Burley Manyleaves and especially Dretta variety. The lowest values are DDF variety former standard Burley 21 variety. Results in superior new lines achieved in the introduced and local varieties of Burley tobacco. With optimal results stand out Line 1468 and Line 1444. Conditional rate of yield is directly related to the density of tobacco, respectively, its level of quality. It shows the number of cigarettes can be prepared by per kilogram of tobacco. In local varieties the highest values for this indicator are in 1344 variety Burley, followed by Burley 1317 and Burley 1000 variety /past are very close/. Burley 2115 variety significantly inferior. The introduced varieties also significantly retreat to the indigenous varieties. In Manyleaves variety, North Carolina 2 (NC 2), Burley 16 and Dreta, the number of cigarettes in one kilogram of tobacco is below 1500 - too low result. Only in Kentucky 35 variety is above 1700 the number of cigarettes per kilogram of tobacco. In the newly created line results for this indicator are very good. Not found value in 1600 the number of cigarettes. This fact is a success for breeding work. Best values differ Line 1466. The remaining options are with a yield of over 1800 units. cigarette tobacco in kg. - Line 1354, Line 1416, Line 1444, Line 1470 and Line 1495.

Indicator mass per unit area g/cm^2 , brings the information density of the leaves. In all Bulgarian varieties in the desired standards. Distinguished Burley 1344 variety the lowest, ie best results. The values in the introduced varieties are too high. In Burley tobacco this is a disadvantage. With the exception of Line 1481, the results for newly lines are good. Are clearly good at Line 1444, Line 1416, Line 1495, Line 1470 and Line 1447. Density g/cm^3 at Burley tobacco is in negative correlation with its quality. As lower values for this indicator, so rehavostta sheet is greater, respectively, better fulfilled the purpose of tobacco from this varietal, as a carrier of sauces. Density of leaf tobacco is expressed by the specific volume of leaves (cm^3/g) and is in correlation with it. The studied variants these two indicators are related. In Bulgarian varieties only Burley 1351 variety has values in contravention of generally accepted for Burley tobacco. Again, with the best results is Burley 1344 variety, followed by the Burley 1317 variety. In the introduced varieties show a great variation. Overall their results retreat to those of local varieties. Best values differs Banquet 102 variety. Fairly good achievement is found in Burley 21 variety, Va 509, Cocker 46 and Kentucky 908 readings NSZ variety outside the norms of varietal group. New lines significantly exceed to indigenou and introduced varieties of these two indicators. The best results were seen in Line 1466. With very good values for the varietal group are Line 1495, Line 1416, Line 1444, Line 1447, Line 1468 and Line 1488.

The "burning" expresses the ability of tobacco to smolder evenly. Good burning provide the necessary conditions for the proper performance of redox processes, reflecting the composition of the smoke, respectively, on the smoking properties. From the results of the Bulgarian varieties Burley tobacco follows that best burning features Burley 1344 variety. Good results in Burley 1351 variety, Burley 2115 variety and Burley 1000 variety. Introduced varieties greatly inferior to the locals as a particularly weak burning distinguished varieties Chulinets, Kentucky 8958 and Dreta. Cocker 46 variety is optimal values for varietal. With the exception of Line 1500 and Line 1334, studied all indigenous lines satisfy the requirements of Burley varietal group. Particularly good results have Line 1354, Line 1416, Line 1466 1 and Line 1495.

CONCLUSIONS

Research can be summarized that the physical and technological characteristics of the studied variants meet the standards for Burley tobacco. A significant superiority of local varieties and lines over the introduced. Banquet 102 variety, Cocker 46 variety, Va509 variety and Burley 21 variety could be used in certain directions. Suitable genotypes as starting material for hybridization in creating new varieties of Burley tobacco are local forms. By Bulgarian varieties stands Burley 1344 variety. This variety can be used in breeding programs to improve the physical and technological indicators of start lines Burley tobacco. Burley 1317 variety excels Burley 1000 variety studied indicators. The rejected already as standard Burley 21 variety and new standard variety Pliska have close values of indicators with slight superiority of the former. Almost all new lines significantly superior to both the introduced and the local varieties. This is a success for our breeding work. The comparative analysis follows that the best results in physical and technological characteristics differ Line 1354, Line 1416, Line 1444, Line 1468, Line 1470 and Line 1495. Line 1466 is characterized by optimal values indicators. All tested lines can be used as genetic material to improve the physical and technological indicators of local Burley tobacco.

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