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PHYSICAL INDICATORS OF INDIGENOUS AND INTRODUCED VARIETIES AND LINES BURLEY TOBACCO

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Abstract

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There were studied basic physical and technological characteristics of the ten indigenous varieties and lines and ten introduced American varieties. The results obtained on the physical performance and technological definitions of almost all researches options conform to standards of Burley tobacco. There is a significant superiority of the performance of local varieties and lines to the introduced varieties. Only in variety Banquet 102 observed results indicators satisfied for the level of quality tobaccos that variety group. Introduced varieties do not satisfy the requirements for the production of cigarettes. For this purpose, appropriate use of indigenous varieties and lines Burley tobacco. The complex according to the evaluation of the results of the test variants, they can be divided into four groups. First in quality level is Line 1354, followed by the variety Burley 1344. All indigenous lines and new variety Burley 1344, severely outmatched, as introduced varieties and local varieties Burley 1000 and Burley 1317, which is the success of the Bulgarian selection of Burley tobacco.

Key words: Burley tobacco, physical indikators, indigenous and introduced varieties

Introduction

The main requirements to be met Burley tobacco as raw material for the manufacture of tobacco products are: high quality dried tobacco - color, flavor, elasticity, gloss and structure, density of cut tobacco in g/cm², number of cigarettes/pound of tobacco, containing a high percentage of nicotine and low in sugars, chlorine content less than 1%, high total nitrogen, total balance of the composition, excellent burn well (Gyuzelev and Peeva, 1984; Bridges et all., 1994). The Percent of main stems have a certain share to assess the consumer value of Burley tobacco. In this type of tobacco percentage nerves should not be lower than 23% - 24%, but not exceeding 30% (Drachev, 1994).

Studies of Burley tobacco in these conditions show: medium large sized leaves - medium length limit 30 cm - 50 cm, with width - 12 cm - 21 cm, length to width ratio 2.3 to 2.9, the percentage of nerves 26% - 30%, number of leaves per kilogram - 120 pcs to 190 pcs. The variation in performance is determined mainly by harvesting belt (biological factor) and harvest (climatic factor). To a lesser extent affected area and sub-area of cultivation, ie soil - climatic and agro-biological factors (Tabakova et all., 1987).

Made in recent years, research on technological, and chemical properties of indigenous smoking and tobacco Burley type show that each of the production areas, local varieties of Burley tobacco strict form specific profile. It has been shown that imported varieties Burley tobacco outperform our samples by nicotine, typicality in aroma and taste. Research results show that overall indigenous tobacco can hardly be equivalent substitutes of imports in the already established cigarette blends. (Kirkova, 2005; Kirkova and Taskova, 2005; Popova et all, 2003; Nicolova and Drachev, 2006; Popova, 2006)

The aim of our research is two accents. First - Comparative Analysis on physical and technological characteristics of indigenous and introduced varieties, and

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consolidated lines tobacco Burley. And second - on this basis team for desired genotypes with optimal parameters for adoption in the production or as a source material for future breeding programs for new varieties and hybrids.

Materials and Methods

Experimental work was carried out in educational and experimental field of TTPI - Markovo the period 2007 - 2010 are under investigation three indigenous varieties and seven created by us consolidated lines - Burley 1317, Burley 1000, Burley 1344, Line 1334, Line 1349, Line 1354, Line 1400, Line 1421 and Line 1458, and ten introduced varieties - Tennessee 86, Tennessee 90, Kentucky 907, Kentucky 908, Kentucky 8959, Kentucky 17 Cocker 46, Banquet 102 and 3 North Carolina (NC 3). All i introduced varieties are American and represent a large part of the production of Burley tobacco in the U.S.

For all options is attached uniform growing technology. Harvesting of tobacco as whole plants in late August and air dried in the dryer base TTPI.

In Chemical Technology Laboratory of TTPI are given samples of harvested and air dried tobacco leaf for analysis of basic physical and technological indicators, as follows: Physical indicators – a methodology TTPI (BDS 16255-85).

Results and Discussion

The number of leaves/pound of tobacco of dry tobacco affects its typicality. Results conform to standards of Burley tobacco, and only the varieties Burley 1000 and Ky 17 exceed the norms.

The percentage of the main stems is desired standards in all researches tobacco samples, except variety Ky 17, where it is too high. In indigenous varieties and lines in the figure are much lower and therefore more favorable values than that of the introduced varieties. Only in variety Banquet 102 is a lower percentage nerves.

Regarding the length of the leaves as a whole, the indicators are in standards for Burley tobacco. With the exception of a variety Banquet 102, all other American varieties have lower values, which is unfavorable. Best indicators are Line 1354, followed by the variety Burley 1344. The same is observed in relation to the width of the leaves. In most variants, the indicators are in the standards of Burley tobacco. Again the most favorable indicators are Line 1354 and variety Burley. By the introduced varieties values are negative, i.e. considerably lower. Especially emphasized this negative trend recorded in variety Ky 17.

The indicator weight unit leaf area g/cm², giving somewhat view of the density of the leaves. In all variants it is within the desired limits. In American varieties observed higher values, which is undesirable for Burley tobacco.

The density of tobacco leaves expressed by g/cm³ at Burley tobacco is a negative correlation with its quality. The more low values for this parameter, so loose structure is greater, respectively, the ability to absorb and essences is larger, i.e. fulfilled one of the basic properties of tobacco from this varietals group - to absorb essences. The filling capacity of tobacco is expressed by the specific volume of the leaves in cm³/g and is in positive correlation with it. This is another very important indicator of Burley tobacco. Much greater filling power, the less amount of tobacco is filled cigarettes. On one hand this leads to ensure economic efficiency of the process and the other to the lower values of observed harmful substances in the smoke - nicotine, tar and carbon monoxide. At all variants observed values typical tobacco group Burley. Again, however, in indigenous varieties and lines are with a significant more favorable compared with American varieties. This applies mostly to Line 1354. Only when the introduced variety Banquet 102, these values can be considered like optimal.

Conditional yield is derived from the index values for the tobacco density and shows the cigarette can be prepared by kilogram. In this context, it is an important indicator of production and brings economic benefits in assessing the overall level of quality tobacco. There was a significant superiority of the indicators of local varieties and lines than those of American varieties with the exception of a variety Banquet 102. In the most favorable position with very low values are varieties of Kentucky 17 and Kentucky 8959. Best values for the indicator Line 1400 and Line 1354, with a slight superiority of the latter.

Based on the results of the studied tobacco presented in Table 1, in the first place stands out Line 1354, followed by a small indentation of the variety Burley 1344. With the most unfavorable indicators stand American cultivars Kentucky 17 and Kentucky 8959. As a whole physical and technological characteristics of the options conform to standards of Burley tobacco. There was a significant superiority of indigenous varieties and lines over the introduced American varieties. The introduced varieties do not meet the requirements for the production of cigarettes. Only in variety Banquet 102 are found fairly satisfactory results. As a result of the studies is the need to use the local genetic material from Burley tobacco.

According to the complex evaluation of the results studied variants could be divided into four groups. Like the

Table 1
Physical indicators and technological definitions of varieties and lines Burley tobacco

Variety/ Lines	Number leaves/ pound of tobacco	Percent of main stems	Length, cm	Width, cm	Weight unit leaf area, g/cm^2	Density of tobacco leaves, g/cm^3	Density of the cut tobacco, cm^3/g	Conditional yield number of cigarettes/ pound of tobacco
Б 1317	166	28.6	49.7	20.2	0.0056	0.426	0.175	1744
Б 1000	191	28.2	46.6	21.5	0.0054	0.422	0.177	1750
Б 1344	147	27.8	53	24.4	0.0045	0.413	0.162	1772
Л 1322	160	30	51.1	20.8	0.0052	0.441	0.173	1741
Л 1334	149	25.9	54.1	22.9	0.0051	0.436	0.175	1777
Л 1349	158	29.5	51.8	20.5	0.005	0.388	0.167	1770
Л 1354	151	27.4	53.9	24.6	0.0044	0.376	0.16	1825
Л 1400	176	27.7	52.3	23.6	0.0049	0.402	0.167	1797
Л 1421	164	29.8	52.1	22.2	0.0051	0.43	0.18	1723
Л 1458	172	29.1	52.6	22.4	0.0048	0.407	0.174	1766
Б 21	163	28.6	47.6	19.3	0.0055	0.437	0.183	1672
Тен. 86	172	29.9	46.6	17.8	0.0062	0.458	0.19	1534
Тен. 90	165	29.5	47.3	19.1	0.0059	0.439	0.186	1601
Ку 907	176	30.5	50	19.3	0.0058	0.47	0.182	1581
Ку 908	169	29.8	51.3	19.5	0.0061	0.444	0.184	1670
Ку 8959	184	31.3	46.3	18.7	0.006	0.472	0.19	1568
Ку 17	193	32.6	46.5	18.5	0.0064	0.479	0.189	1544
Банкет 102	161	26.2	51.7	21.4	0.0047	0.399	0.171	1780
Кокер 46	173	30	48.5	20	0.0057	0.445	0.178	1611
NC 3	178	31.6	47.2	20.2	0.0067	0.448	0.191	1626

first groups with the highest level of quality are Line 1354 and variety Burley 1344, followed by Line 1400.

The second group covered all other indigenous genotypes, except for varieties Burley 1000 and Burley 1317, which are very close. This group should be added and the American variety Banquet 102 who characterized by a relatively satisfactory results meeting the criteria for raw material in the manufacture of cigarettes.

Thirdly, most are introduced varieties and local varieties of Burley 1317 and Burley 1000. They can be defined as a group of intermediate quality.

The last group that should be considered inexpensive and departing from standards Burley tobacco, covered variety Kentucky 17, variety Kentucky 8959 and partly variety Tennessee 86.

All indigenous lines and new variety Burley 1344, far superior, as introduced varieties and local varieties Burley 1000 and Burley 1317. This is an indication of the success of selection activity in this direction.

Conclusion

The results obtained on the physical performance and technological definitions of almost all researches variants meet the standard of Burley tobacco. There is a significant superiority of the performance of indigenous varieties and lines over the introduced varieties. Just variety Banquet 102 provides performance, satisfying the criteria for level of quality tobaccos that variety groups. Introduced varieties do not comply with the criteria identified by the tobacco industry. For this purpose it is necessary to use indigenous varieties and lines Burley tobacco.

As a result of research and based on complex assessment, the options can be graded, as in the first place stands Line

1354, followed by a bit of variety Burley 1344. All indigenous lines, and the new variety Burley 1344, severely outmatched, as introduced varieties and older indigenous varieties Burley 1000 and Burley 1317, which was a success for the Bulgarian selection of Burley tobacco.

References

BDS 16255-85, 1994. Methods for Determining the Density of Cut Tobacco Densitometer "DMO Borgvaldt".

Bridges, C., R. Walton and H. Casada, 1994. Assessing the quality of Burley tobacco, Part 2: Environmental and timeless factors. *Tob. Sci.*, **38**: 42-48.

Gyuzelev, L. and S. Peeva, 1984, Physical characteristics of tobacco. *Bulgarian Tobacco*, **11**: 24-27.

Drachev, D., 1994. Physical and technological characteristics of burley tobacco. *Bulgarian Tobacco*, (5): 22-25.

Kirkova, S., 2005. Investigation of domestic and imported tobacco Burley type and interchangeability in cigarette blends. In: Scientific Session Equipment and Technology, and Natural Sciences, and the Humanities, HT-IV, USB, pp. 169-172.

Kirkova, S. and L. Taskova, 2005. Experimental tobacco blend consisting of Bulgarian tobacco grown under controlled cultivation conditions. In: Scientific Conference with International Participation, Food Science, Engineering and Technology, 2005, UHT, HT-LII, lss. 2 211.

Nicolova, V. and D. Drachev, 2006. Technologikal study on Burley tobacco of Yambol region. *Tobacco*, **56**: (3-4): 68-72.

Popova, V., D. Drachev and K. Omar, 2003, Basic chemical and technological characteristics of burley tobacco, *N. Tr. UFT*, **50** (3): 370-373.

Popova, V., D. Drachev and V. Nicolova, 2006, Investigation on the burning properties of Burley tobacco grown in different regions of Bulgaria. *Tobacco*, **56** (7-8): 159-164.

Risteski, I., K. K. Kososka and Z. Hristoski, 2007. Results of the investatigation of some introduced and newly created domestic varieties ob Burley tobacco in CMS and fertile form. *Tobacco*, **57** (9-10): 200-208.

Tabakova, E., E. Arsenyan, A. Rancheva and N. Elkova, 1987. Physical and technological parameters of large leaf Bulgarian. *Bulgarian Tobacco*, (1): 38-42.