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Original scientific paper

PHYSICAL, TECHNOLOGICAL, CHEMICAL AND SMOKING PROPERTIES OF NEW LINES AND HYBRIDS BURLEY TOBACCO

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ABSTRACT

The aim of the research is a comparative analysis of the physical, technological, chemical and the smoking properties of our new lines Burley tobacco. Investigated are eight new lines of Burley tobacco varieties created at Tobacco and Tobacco Products Institute -TTPI in Plovdiv. Results of the research show that the best performance values differs Line 1458, followed by Line 1354 and Hybrid1470. In the smoking properties as near taste- aromatic complex is observed with Line 1458, Line 1472, Line 1416, followed Hybrid 1470. With the best utility value is Line 1458, followed by Hybrid 1470. There is connection between the smoking properties and chemical composition of investigated tobacco lines. Not found such as between physical and technological indicators and the smoking properties. Based on the results it can be concluded that it is possible in Republic of Bulgaria to create new, promising and competitive lines Burley tobacco comparable with imported ones.

Keywords: tobacco, Burley , physical, technological, chemical indicators, smoking properties

ФИЗИЧКИ, ТЕХНОЛОШКИ, ХЕМИСКИ И ПУШАЧКИ СВОЈСТВА НА НОВИТЕ ЛИНИИ И ХИБРИДИ ТУТУН ОД ТИПОТ БЕРЛЕЈ

Целта на ова истражување е компаративна анализа на физичките, технолошките, хемиските и пушачките својства на нашите нови линии тутун од типот Берлеј. Испитувани се осум нови линии тутун од сортите од типот Берлеј создадени во Институтот за тутун и тутунски производи од Пловдив. Резултатите од истражувањето покажуваат дека најдобри карактеристики покажуваат линијата 1458, проследено со линијата 1354 и хибридот 1470. Според пушачките својства со најароматични комплекс се одликуваат линијата 1458, линијата 1472, линијата 1416, проследено со хибридот 1470. Со најдобра употребна вредност е линијата 1458, проследено со хибридот 1470. Постои поврзаност помеѓу пушачките својства и хемискиот состав на испитуваните линии тутун. Не е пронајдена поврзаност меѓу физичките и технолошките индикатори и пушачките својства. Врз основа на резултатите може да се заклучи дека во Бугарија е можно да се создадат нови, ветувачки и перспективни линии тутун од типот Берлеј кои ќе бидат конкурентни на увезени тутуни.

Клучни зборови: тутун, Берлеј, физички, технолошки, хемиски индикатори, пушачки својства

INTRODUCTION

In recent years, firmly holds the trend of increasing consumption of American blend cigarettes, both globally and in our country (Bozukov, 2012). Burley tobacco is a major component of this type of cigarettes. In Bulgaria the production of Burley tobacco is a relatively „new“. Due to the increased share of production increases more attracted

to utility qualities (Resnik, 1974; Lewyn, 1979; Tso, 1988; Spears and Tones, 1981).
In a number of studies listed evidence of impaired typicality of the produced in our Burley tobacco (Tomov and Minev, 1996). With its high nicotine content and specific smoking and properties imported Burley tobaccos superior Bulgarian samples. Local tobacco could hardly be equivalent substitutes imported in cigarette blends. (Popova et al., 2003; Kirkova, 2005; Kirkova and Taskova, 2005; Kirkova et al., 2006; Nicolova et al., 2006; Popova et al., 2006).
The aim of our research is a comparative analysis of the physical, technological indicators, and chemical properties of smoking and our new lines Burley tobacco.

MATERIAL AND METHODS

The experimental work is carried out in Tobacco and Tobacco Products Institute –TTPI Markovo-Plovdiv. Studies covering the period from 2008 to 2010. Studied are eight lines Burley tobacco created in TTPI. The selection of lines is based on economic performance yield and percentage of first class. For all variants is applied uniform technology of cultivation. Harvesting of tobacco is performed whole plants and air dried plants.
Of each line is allocated a representative sample. Analysis and data processing are used standardized methods /ISO 15152, ISO 15154, ISO 2817, БДС 15836, БДС 16255, БДС 8389 and e.t..

RESULTS AND DISCUSSION

1. Physical and technological indicators

Regarding the number of leaves per kilogram of tobacco, the result meets the standards of Burley tobacco, the most favorable is the index in Hybrid 1470. The highest conditional cigarette yield differs Line 1458 followed by Line 1354. These options give 1800 tobacco cigarettes per kilogram . Overall, the results are within the limits of Burley tobacco and are visualized in Figure № 1.

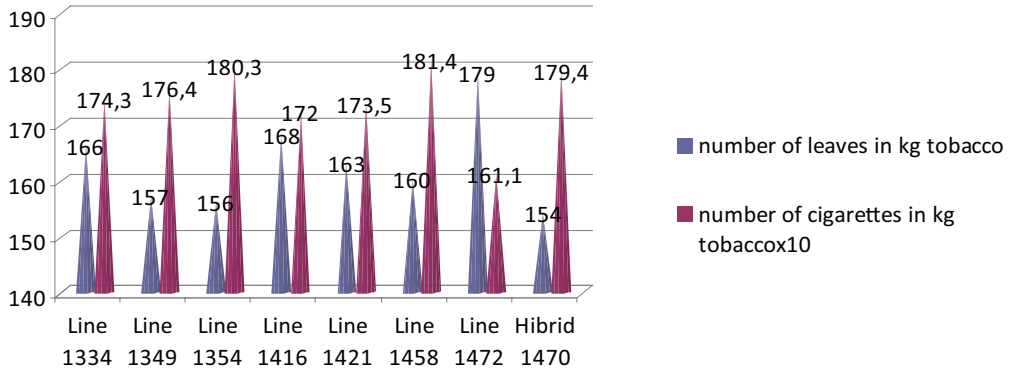

Figure 1. Number of leaves in kilogram tobacco and conditional yield

The data obtained for the width of the leaves are also within the requirements of the variety group in all variant. In this case the most favorable indicators are Line 1354, Line 1416, Line Hybrid 1458 and Hybrid 1470. With regard to the length of the leaves, the indicators in all variants are in norms for Burley tobacco. The highest values of the studies index are Line 1354, Line 1458 and Hybrid 1470. The percent of main steams is in standards of Burley tobacco in all researches tobacco samples. In the most favorable values is Hybrid 1470 - figure № 2.

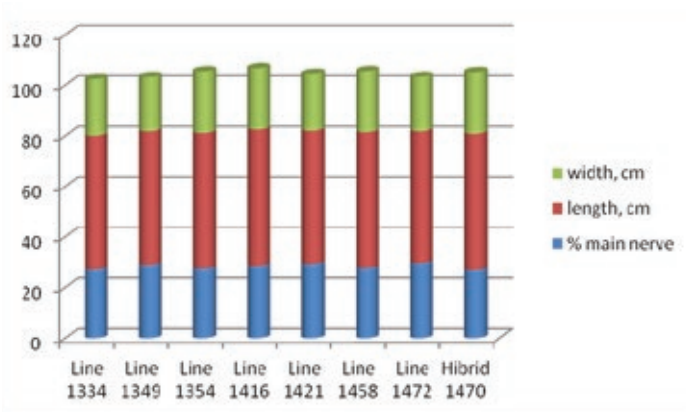

Figure 2. Characteristics of tobacco leaves

The results indicate that the largest size of the leaves, which is desirable in Burley tobacco are Hybrid 1470, Line 1354 and Line 1458. The proportion lengths to width in nearly all the variant is favorable, and is in the norms are varietal group.

The indicator weigh unit leaf area in g/sm2², in all variants is in the range of the standard on Burley tobacco. In the most favorable indicators are Line 1458 and Line 1354. At all variants observed values in the standards of Burley tobacco on the density of the leaves. The most favorable performance have Line 1354 and Line 1458. The results of the filling power of correspond to the results obtained in terms of the density of the leaves. In all variants they are within the standard of Burley tobacco. Best data differ Line 1354 and Line 1458. The results are displayed in Figure 3.

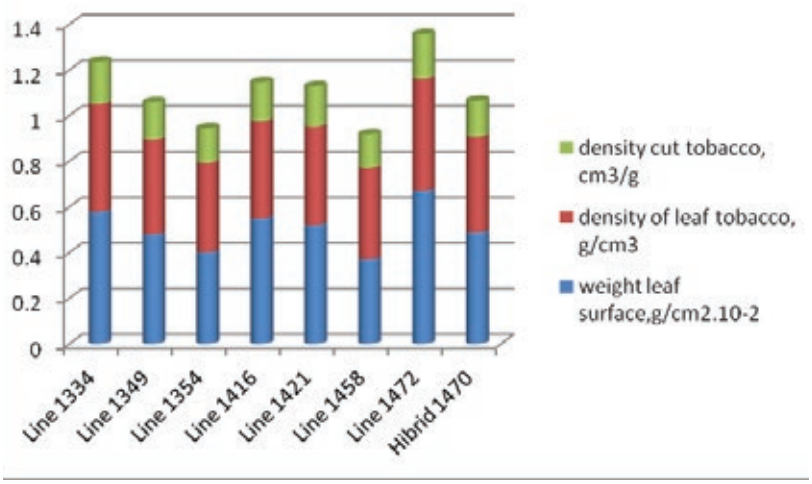

Figure 3. Technological characteristics

The indicator free burning in minutes is most favorable values in Line 1458 and Hybrid 1470. In Line 1472 the result is unsatisfactory for Burley tobacco - Figure 4.

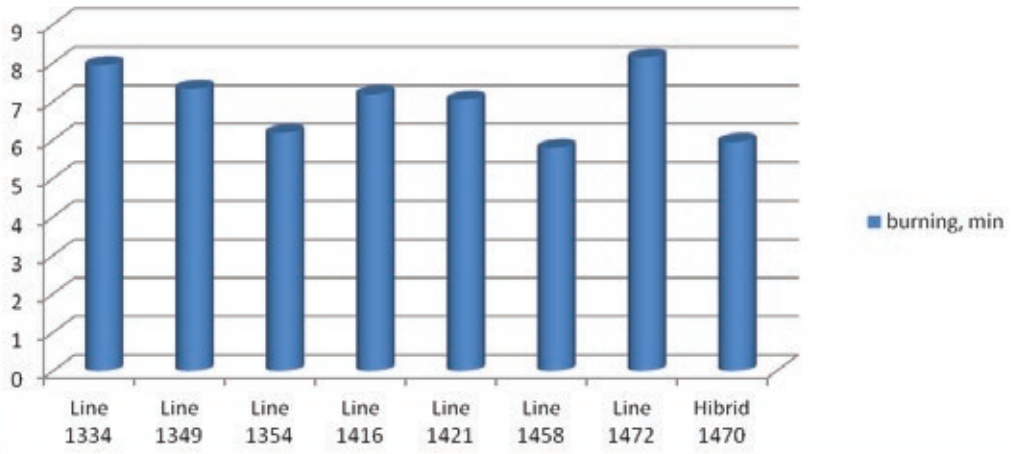

Figure 4. Free burning in minutes

From the results it is clear that all options are explored with performance corresponding to the accepted standard in Burley tobacco. Most of them are responsible for average quality.

In the most favorable data regarding the physical and technological parameters differs Line 1458. With very good results stand also Line 1354 and Hybrid 1470.

2. Chemical indicators

As regards the content of nicotine with the best results is Line 1458. Good results and Line 1472, Line 1354 and Hybrid 1470, which revealed more than 3% of the same content. Other options show satisfactory values. Values for sugars are lower in Line 1458. The results of the other options are satisfactory and in Line 1421 the sugar content is high standards in Burley tobacco. The content of total nitrogen for all variants is generally accepted standards for the type of tobacco. The highest values realized Line 1458. The ash content in all variant is optimal values for Burley tobacco. The lowest content of ammonia and chlorine, which are highly undesirable in Burley tobacco, is Line 1458. For Line 1472 values are good. All variant give protein content in the standards of Burley tobacco. The results of the chemical composition of the tested lines are presented in Figure 5.

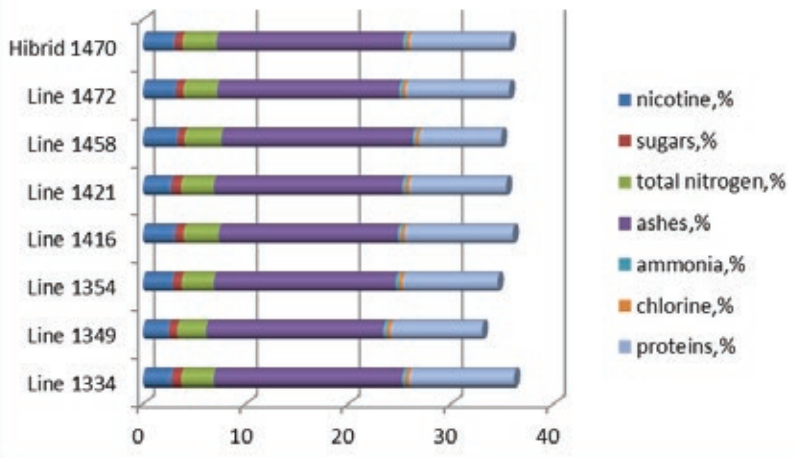

Figure 5. Chemical composition of the investigated variants Burley tobacco (%)

It is well known that the smoking properties of tobacco is determined by complex chemical indicators. In the case stands out Line 1458, followed by Line 1472. Hybrid 1470 also reveals a balanced chemical composition. The chemical composition of the distinguished options is displayed in Figure 6.

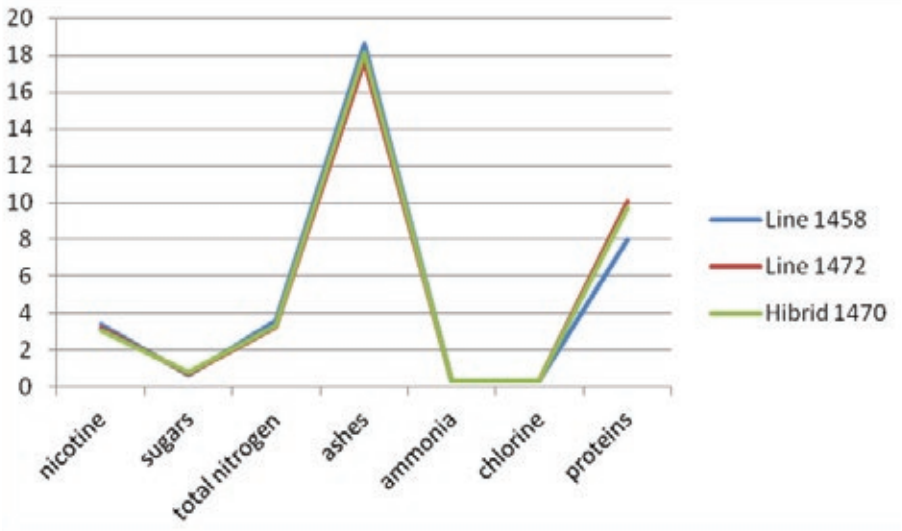

Figure 6. Chemical composition of the standout studied tobacco

3. Smoking properties

Tasting evaluation is performed on mono cigarettes the investigated lines under equal conditions, without a filter segment. Results in basic perceptions aroma, flavor and physiological force are displayed in Figure 7 and 8. With good smoking and properties distinguish Line 1458, Line 1472, Line 1416, followed by Hybrid 1470.

Can be reported link between the smoking properties and chemical composition of tobacco researches. Not found correlation between physical and technological indicators and the smoking properties.

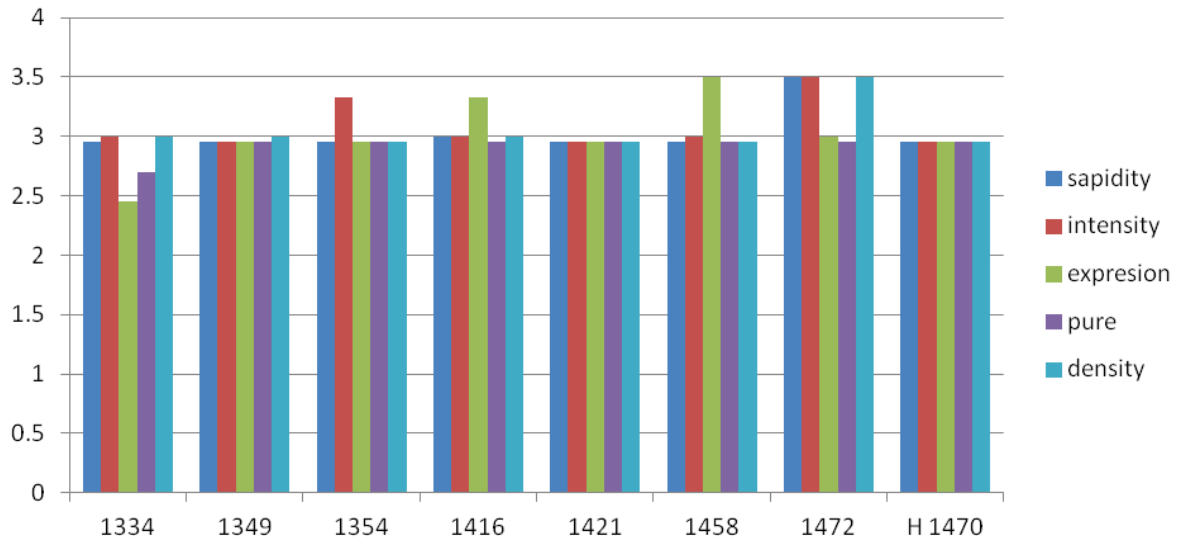

Figure 7. Aroma

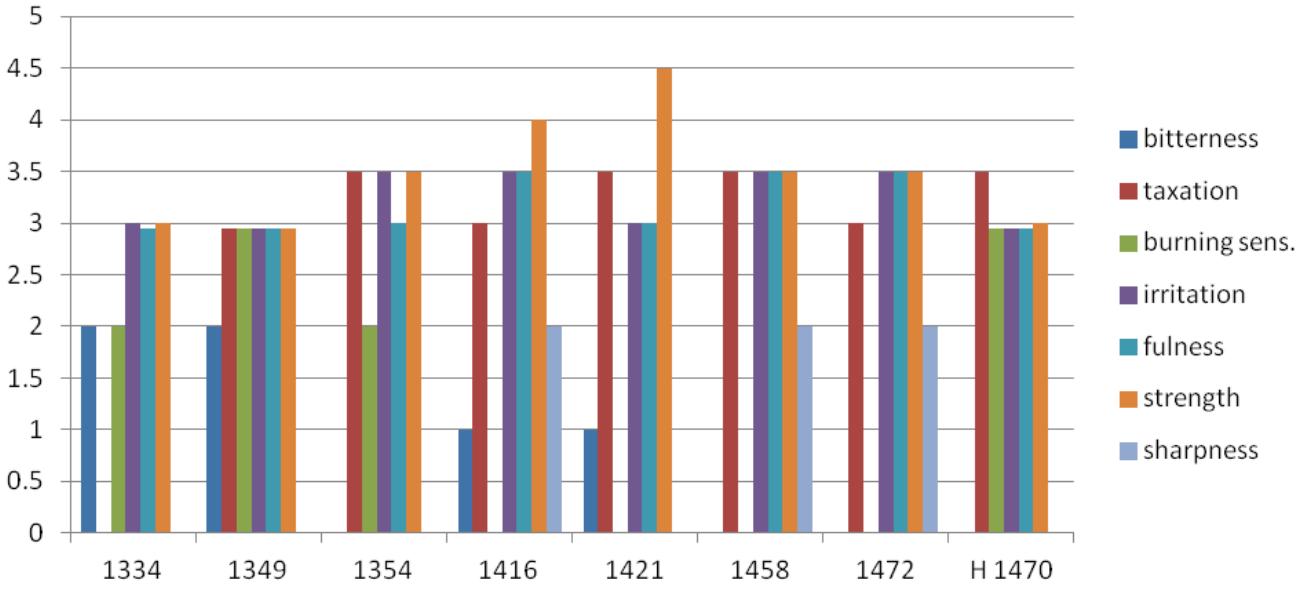

Figure 8. Taste and physiological strength

rom the results it can be generalized conclusion that the desired characteristics and properties of tobacco Burley type, in most approaches Line 1458. Hybrid 1470 also reveals good comprehensive indicators. These two options have markedly high utility value. Line 1458 may be used as genetic material for improvement of the production characteristics of the indigenous varieties of Burley tobacco.

The other options have results largely which satisfy the conditions of the varietal group. They are classified with moderate to good level of quality.

The newly created selection materials Burley tobacco favorable physical-technological, chemical indicators and smoking properties are success for selection work in Bulgaria.

CONCLUSION

With best values in physical and technological parameters differs Line 1458, followed by Line 1354 and Hybrid 1470. With best formed chemical complex also features Line 1458, followed by Line 1472. For Hybrid 1470 it can be argued that has a balanced chemical composition.

In the smoking properties are distinguished Line 1458, Line 1472 and Line 1416, followed by 1470 Hybrid.

Observe connection between the smoking properties and chemical composition of tobacco researches. Not found such as between physical and technological and the smoking properties.

It can be concluded that it is possible in Bulgaria to create new, promising and competitive lines Burley tobacco relentless imported ones.

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