

## TECHNOLOGICAL STUDY ON BURLEY TOBACCO OF YAMBOL REGION

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### INTRODUCTION

The large-leaf tobaccos of Barley variety, grown in our country, compared to the famous and world popular tobaccos of the same variety (as grown in the USA, Zimbabwe and in some other countries) to some extent more or less by certain indicators, defer from them but they preserve the general features of the variety. It refers not only to our large-leaf tobaccos, but also to those grown in countries like France, Spain, Italy, Greece and other. It is mainly because of the influence of the ecological factors and the manufacturing agricultural technology applied.

Typical for this tobacco variety is the high content of nicotine, lack (traces) of sugars, good burning ability and large-cell composition of the structure, due to which they are bearers the flavour improving substances.

Such qualities are desired and demanded from the cigarette industry, because they render the qualities necessary for the cigarettes of the American Blend type, such as improved burning ability, better taste, less cost of tobacco (higher filling ability).

Researchers Petrov and Matrev (3) point out the contribution of the variety to the expression of the specifics of the variety of such tobaccos. Variety type formation has unidirectional importance both for the interests of the manufacturer and for the market and consumers.

In this connection Pophrstev and Staykov (5,6) treat introduction as a means to improve the biological factor, with the view of the market requirements to the corresponding ecotypes of tobaccos.

The evaluation of Burley tobacco, grown in our country, made by world leading consumers (7) of this variety shows that when using typical for Barley tobacco areas and with improvements in the agricultural technological activities it may be grown good tobacco for obtaining quality raw stuff.

The purpose of this study is to make a comparative technological evaluation of the Barley tobacco varieties grown in the Yambol Region.

### MATERIAL AND METHODS

A typical region with prevailing production of Barley variety large leaf tobaccos in our country is Yambol, where varieties B 1317 and B 1000 are produced. For 2004 crop GR variety was set up in experimental production. These varieties were also subject to this investigation.

Samples were taken from the drying facilities, which were formed by selection of material of harvest groups "C" and "B", containing the highest quality leaves, determining the entire quality description of this tobacco variety.

They were analyzed with respect of:

Chemical indicators: nicotine, % - by ISO 15152; reducing sugars, % - by ISO 15154; total nitrogen, % - by BDS 15836-88; mineral composition (ashes), % - by ISO 2817; ammonia, % - by the Method for determination of ammonia in tobacco powder (TTPI/1994); ethereal extraction, % - by "SOXTEC HT-6" (TTPI/1994).

The results for the chemical substances investigated per single sample are obtained on the basis of two analyses containing by two parallel samples n=4.

Composition of the tobacco smoke: nico-

tine, mg/cig and tars, mg/cig.

Determination took place by means of regressive dependencies taken out between the composition of tobacco and tobacco smoke (4).

Expert's evaluation - it was applied the method of indirect comparison at full combination of the pairs by external quality characteristics /components of quality/ (1).

Degustation - this evaluation was performed by the method of "profile description".

Spectrophotometrical evaluation ("image" taking) of tobacco - it was done for comparative estimation of difference or "equality" in the expression of the general characteristics of quality features of the different varieties. It is used for comparison between the different samples, rather than for their quality estimation.

In this way it was considered the extent of "similarity" or "difference" between the samples compared (2).

Complex evaluation. It was made on the basis of the major indicators determining the quality (tobacco chemical composition - characteristic indicators for the tobacco type; composition of tobacco smoke; expert's and degustation evaluation). Preliminary for these indicators it was determined the "coefficient of importance" (authority) by the commission. The final evaluation was formed by determination of a "quality index", characterizing the quality in a complex manner. The smaller value of the quality index corresponds to higher quality, i.e. the sample having the lowest value is the best etc.

## RESULTS

Table 1 presents data about the chemical composition of tobacco and smoke of the three varieties: B1317, B1000 and GR.

Table 1 - Chemical indicators of Burley tobacco  
Табела 1 - Хемиски показатели за тутунот берлеј

Indicators - Показатели	Burley 1317 Берлеј	Burley 1000 Берлеј	GR
Chemical composition of tobacco, % Хемиски состав на тутунот			
Nicotine - Никотин	3.20	2.77	2.00
Reducing sugars - Редуц. шеќери	1.47	1.32	0.91
Total nitrogen - Вкупно N	2.93	3.09	3.18
Ashes - Пепел	17.90	18.30	17.30
Ethereal extraction-Етерна етрак.	7.79	6.95	6.37
Ammonia - Амонијак	0.30	0.33	0.38
Chemical composition of smoke, mg/cig Хемиски состав на чадот			
Nicotine - Никотин	2.35	2.02	1.48
Tars - Катран	19.31	18.16	18.55

Burley 1317 has the highest content of nicotine, followed by B 1000 and GR.

With regard to the content of reducing sugars between B 1317 and B 1000 the differences are insignificant. A bit more favorable level has GR tobacco - 0.91%, but we can point out that by this indicator and the three varieties give advantage to the typical tobaccos.

The total nitrogen varies within a narrow range from 2.93 to 3.18 %, i.e. within limits close to the typical tobaccos.

Ashes also vary within narrow limits from 17.30 to 18.30 %. The differences in the content of ammonia are insignificant.

The nicotine in smoke corresponds to its content in tobacco, and the variation of tars is insignificant - 18.16 to 19.31 %.

The general conclusion is that by chemical composition the three varieties are similar (they do not differ significantly), except for the nicotine content of variety B 1317.

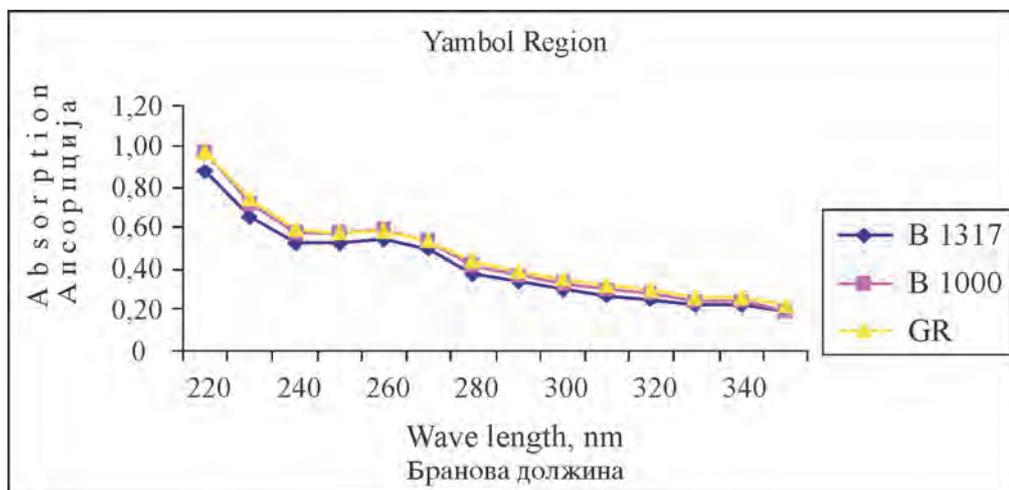
To make a complex description of the

quality of the tobacco varieties of Yambol region we applied the method of "image" taking, which could be used for comparison of "correspon-

dence" and/or "difference".

The spectrum curves for the three varieties are presented in Fig. 1.

Fig. 1 - Spectrum curves of the tobacco varieties B 1317, B 1000 and GR  
Графикон 1 - Спектарни криви на тутунските сорти B 1317, B 1000 и GR



It was established almost complete coincidence of the spectrum curve for the experimental sample - GR and B 1000, and deviation of the curve of variety B 1317, which to some extent also corresponds to the chemical composition (Table 1). In the range after 280 nm the three tobacco varieties are very close. We may think that there is a more significant difference between GR and B 1317.

The results from the expert's evaluation

of these varieties are presented in Table 2. The samples are compared by pairs and arranged, respectively, by general expression of the external quality features. The best of them are in possession of B 1317 compared to B 1000 and GR (CRN>1.96). The difference between B 1000 and GR (CRN<1.96) is not reliable, while the difference between B 1317 and GR is convincing in benefit to B 1317.

Table 2 - Expert's evaluation of Burley tobacco  
Табела 2 - Експертска проценка на тутунот берлеј

Expert - i Експерт	B 1317	B 1000	B 1317	GR	B 1000	GR
1	+	-	+	-	-	+
2	+	-	+	-	+	-
3	+	-	+	-	+	-
4	+	-	+	-	+	-
5	+	-	+	-	-	+
6	+	-	+	-	+	-
Critical Ratio Number (CRN) Број за критичен однос	2.45		2.45		1.47	

It was made also a degustation evaluation to determine the smoking properties. The reliability of the results by the degustation commission was checked up by CRN (Table 3).

Far better by smoking properties are the varieties local of the region - B 1317 and B 1000 compared to GR (CRN=2.24>1.96).

The results from the degustation evaluation of the tobaccos of Yambol region correspond to the results of the expert's conclusion. No difference was established in the smoking properties between the local varieties B 1317 and B 1000.

Table 3 - Degustation Evaluation of Burley Tobacco  
Табела 3 - Дегустациона проценка на тутунот берлеј

Degustator - i Дегустатор	GR	Burley 1000	GR	Burley 1317	Burley 1317	Burley 1000
1	-	+	-	+	+	-
2	-	+	-	+	+	-
3	-	+	-	+	=	=
4	-	+	-	+	+	-
5	-	+	-	+	-	+
Critical Ratio Number (CRN) Број за критичен однос	<b>2.24</b>		<b>2.24</b>		<b>0.45</b>	

The results obtained give a reason to make a complex estimation of the tobacco of the three varieties for the region (Table 4).

The quality indexes for the three varieties are, as follows: Burley 1317 - 1.73; Burley 1000 - 1.98 and GR - 2.30.

Therefore, by complex evaluation of the quality of the local for the region varieties Burley 1317 and Burley 1000 have better indicators than GR. When compared both test varieties the having better indicators is Burley 1317 variety.

Table 4 - Complex evaluation of Burley tobacco  
Табела 4 - Комплексна евалуација на тутунот берлеј

Indicators Показатели	Arrangement of Samples Распоред на мустрите			Coefficient of Importance Коефициент на важност	Quality Index of the Variety Индекс на квалитет на сортата		
	B1317	B1000	GR		B1317	B1000	GR
	Nicotine Никотин	1	2		3	0.25	0.25
Reducing sugars Редуцирани шеќери	3	2	1	0.15	0.45	0.30	0.15
Tars Катран	3	2	1	0.15	0.45	0.30	0.15
Expert's evaluation Експертска проценка	1	2.5	2.5	0.20	0.20	0.50	0.50
Degustation Дегустација	1.5	1.5	3	0.25	0.375	0.375	0.75
					1.73	1.98	2.30
					1	2	3

## CONCLUSION

On the basis of the analysis of the experimental results we could make the following conclusions:

1. The evaluation of the three tobacco varieties B 1317, B 1000 and GR, grown in Yambol region, on the basis of objective chemical indicators does not show any significant differences between them. Exception is established with respect of the nicotine content only.

2. The spectrophotometric evaluation of the three varieties demonstrates almost complete coincidence of the spectrum curves of the varieties B1000 and GR, and some deviation of B 1317, i.e. GR is closer to B 1000 and differs more significantly from B 1317.

3. By complex evaluation of the quality the local varieties B 1317 and B 1000 have better indicators compared to GR.

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## ТЕХНОЛОШКИ ПРОУЧУВАЊА НА ТУТУНОТ БЕРЛЕЈ ВО РЕОНОТ НА ЈАМБОЛ

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## РЕЗИМЕ

Високата содржина на никотин, недостигот на шеќер (во трагови), добрата способност за горење и клеточната структура на тутунот сушен на воздух (аир-цуред) се квалитетни одлики поделни и барани од страна на производителите на оваа сорта тутун. Тие ги даваат неопходните квалитетни својства како што е подобрата способност за горење, подобар вкус, помали трошоци за тутунот (полнечка способност) и претставуваат препознатлива состојка на американските бленд цигари.

Со ова проучување се има за цел да се направи компаративна евалуација на тутунските брендови одгледувани во реонот на Јамбол, Република Бугарија. Одредени се основните показатели на квалитетот, а извршена е стручна и дегустативна проценка. За комплексна оценка на квалитетот користени се и статистички показатели. Добиените резултати покадуваат дека нашироко одгледуваните сорти во овој регион Б 1317 и Б 1000 имаат подобри показатели во однос на општиот квалитет на сортата.

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