

Comparative Technological Assessment of the Quality Formation of Local and Introduced Varieties of Virginia Flue-cured and Burley Tobaccos

Nikolay Nikolov, Violeta Nikolova, and Venelina Popova*

* University of Food Technologies, 4002 Plovdiv, Bulgaria; E-mail: vpopova2000@abv.bg

GOAL OF THE STUDY

The production of “marketable” raw material is decisive in the preferences of local farmers towards certain varieties of Virginia and Burley tobaccos. Given the change of climatic factors and their critical influence on the formation of tobacco quality, as well as the limited number of specific technological studies regarding the existing varietal structure, annual investigations of the quality level of the tobaccos produced in the various regions of Bulgaria with a view to their market realization are strongly justified.

The aim of the study was to complete a comparative technological evaluation of the quality potential of introduced and local varieties of Virginia flue-cured and Burley air-cured tobaccos in Bulgaria.

MATERIALS AND METHODS

Plant material

- Four varieties of Virginia flue-cured (FCV) and 2 varieties of Burley (BU) tobacco, grown in different regions of Southern and Northern Bulgaria, 2018 crop year.

Methodology

- Chemical composition of tobacco leaves:
 - nicotine, reducing sugars, total nitrogen, ash, and ammonia (%)
- Chemical composition of tobacco smoke (tar and nicotine, mg/cig)
- Expert assessment of tobacco leaf quality
- Expert assessment of tobacco smoking quality
 - five-member expert panels; coded samples; direct comparison and ranking; the unanimity of results validated at 95% probability level.
- Complex evaluation of tobacco quality:
 - based on the results achieved in the previous steps of the evaluation process;
 - included the most important quality-defining indicators;
 - each indicator was associated with a respective coefficient of importance (CI), further used to obtain the value of the quality index;
 - the final rating of the compared tobaccos reflected the achieved sum of the quality indices.

MAIN RESULTS FROM THE STUDY

Table 6. Complex rating of Virginia flue-cured tobacco

| Indicator | Variety rank | | | | | CI | Variety quality index | | | | |
|---------------------------------|-------------------|--------------------|-------------------------------------|------------------------|----------------|------|-----------------------|--------------------|-------------------------------------|------------------------|----------------|
| | PVH 19 Plovdiv | V 0454 Parvomay | PVH 19 Central Northern Bulgaria | V Northern Bulgaria | VS Bulgaria | | PVH 19 Plovdiv | V 0454 Parvomay | PVH 19 Central Northern Bulgaria | V Northern Bulgaria | VS Bulgaria |
| Nicotine (%) | 3.5 | 1 | 3.5 | 2 | 5 | 0.20 | 0.70 | 0.20 | 0.70 | 0.40 | 1.00 |
| Total nitrogen/ Nicotine | 3 | 1.5 | 4 | 1.5 | 5 | 0.18 | 0.54 | 0.27 | 0.72 | 0.27 | 0.90 |
| Reducing sugars/ Nicotine | 4 | 1 | 3 | 2 | 5 | 0.12 | 0.48 | 0.12 | 0.36 | 0.24 | 0.60 |
| Tar (mg/cig) | 3 | 3 | 3 | 3 | 3 | 0.10 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 |
| Leaf quality | 4.5 | 2 | 1 | 3 | 4.5 | 0.15 | 0.68 | 0.30 | 0.15 | 0.45 | 0.68 |
| Smoking quality | 2.5 | 1 | 2.5 | 5 | 4 | 0.25 | 0.63 | 0.25 | 0.63 | 1.25 | 1.00 |
| Sum of quality indices | | | | | | | 3.33 | 1.44 | 2.86 | 2.91 | 4.48 |
| Complex rating | | | | | | | 4 | 1 | 2 | 3 | 5 |

Table 7. Complex rating of Burley tobacco

| Indicator | Variety rank | | CI | Variety quality index | |
|------------------------|--------------|----------|------|-----------------------|-------------|
| | Burley 1317 | Burley N | | Burley 1317 | Burley N |
| Nicotine (%) | 2 | 1 | 0.20 | 0.40 | 0.20 |
| Reducing sugars (%) | 1.5 | 1.5 | 0.18 | 0.27 | 0.27 |
| Ash (%) | 2 | 1 | 0.12 | 0.24 | 0.12 |
| Ammonia (%) | 1 | 2 | 0.10 | 0.10 | 0.20 |
| Leaf quality | 2 | 1 | 0.15 | 0.30 | 0.15 |
| Smoking quality | 1 | 2 | 0.25 | 0.25 | 0.50 |
| Sum of quality indices | | | | 1.56 | 1.44 |
| Complex rating | | | | 2 | 1 |

Virginia flue-cured tobacco

- ✓ Markedly better chemical indicators – close to those characteristic of the “typical” FCV tobacco – were found in the local V 0454 variety from Parvomay region and the introduced V variety (Greece) from Central Northern Bulgaria region.
- ✓ The local varieties *V 0454 from Parvomay and PVH 19 from Central Northern Bulgaria* were rated better in terms of the overall perception of leaf and smoking quality.
- ✓ The same two varieties were pointed out as the best in the final grading.

Burley tobacco

- ✓ With regard to their chemical composition, the studied Burley varieties indicated very good overall quality – high nicotine (2.74-3.89%) and total nitrogen (3.72-4.29%) content, minimal reducing sugars (about 0.50%), and relatively high ash content (15.97-20.10%).
- ✓ The introduced Burley N variety (Spain) revealed better chemical parameters and external leaf quality features than the local Burley 1317, but was inferior to it in smoking properties.
- ✓ Thus, a better complex expression of quality was found in the *introduced Burley N variety*.

CONCLUSIONS

The complex quality level of local and introduced (trial) varieties of Virginia flue-cured and Burley tobaccos from different growing regions in Bulgaria was assessed, based on the analysis of leaf and smoke chemical indicators, the external leaf quality elements and the smoking performance of the studied tobaccos.