DOI: 10.48113/496_2020_138-141

PHYSICAL COMPOSITIONS OF TOBACCO OF THE VARIETY PRILEP 66 9 PRODUCED BY APPLYING THE MEASURES OF INTEGRATED PRODUCTION IN COMPARISON WITH THE TRADITIONAL PRODUCTION OF TOBACCO

Zdraveska N., Ass.professor, Research associate, Dimitrieski M., full professor, Senior research fellow, Miceska G., full professor, Senior research fellow, Gveroska B., full professor, Senior research fellow

"St. Kliment Ohridski" University- Bitola, Scientific tobacco institute- Prilep, Kicevska bb, Prilep, Republic of North Macedonia

Abstract. Physical characteristics of tobacco leaves are the basic indicator which enables the assessment of tobacco quality in practice. They reflect the structure and chemical composition of leaf and are closely related to the smoking and taste properties of tobacco. Having in mind the previous knowledge, in 2019 a field experiment by standard metodology was conducted on the surfaces of the experiment field of the one pilot farm , located in village Berovci (municipality Prilep) with oriental tobacco variety Prilep 66 9. Two variants were included in the experiment – Integral tobacco production in the comparison to Traditional tobacco production. Considering their great importance in the industrial processing of tobacco, we decided to analyze the following major physical properties: leaf substantiality, thickness and midrib content.

Keywords. Oriental, tobacco, variety Prilep 66 9, physical properties, Integral production.

Introduction

Some of the visible characteristics of the tobacco leafs (dimension, form, colour etc.) as their physical properties in most cases are the result of the anatomic structure of the leafs and their chemical composition. So this is mostly used in determining the tobacco quality, ie the internal content is determined according to the visible characteristics of the tobacco leafs, and according to that an opinion for the technologic-smoking properties of the tobacco is formed.

When it comes to oriental aromatic tobaccos the small leafs (up to 20cm in length) are more aromatic than the large ones (Gornik, 1973). Among the most important physical properties in the oriental aromatic tobaccos are: Substantiality of leaf tissue measured in g/m2, leaf thickness measured in microns and midrib content measured in %. Nuneski (1986) have come to the conclusion that Prilep type tobaccos have the best quality when the substantiality of the leaf tissue is between 57,7 to 81,9 g/m2. According to Timov et al. (1974) the midrib content at oriental tobaccos is usually between 14 to 18%.

Having in mind the previous knowledge we decided to study some major physical properties (leaf substantiality, thickness and midrib content) of the standard variety Prilep 66 9.

Material and methods

In 2019 a field experiment by standard metodology was conducted on the surfaces of the experiment field of the one pilot farm, located in village Berovci (municipality Prilep) with oriental tobacco variety Prilep 66 9. Two variants were included in the experiment – Integral tobacco production in the comparison to Traditional tobacco production. On the transplanted tobacco in field were applied optimal and timely modern agrotechnical and plant protection measures according to Integrated tobacco production. The necessary morphological measurements and phenological observations were also carried out. For analysis of physical properties, 20 leaves from II hand (middle leaves) and undertop (uchalti) were taken (Photo 1). There were samples from the trial for Integral tobacco production and also, from the traditional production, for comparation of these two production ways.

From the physical properties of the tobacco, substantiality of leaf tissue g/m2, leaf thickness μ and midrib content % were studied. The analysis of the physical properties is conducted with recognized standard methods in an accredited laboratory of the Scientific Tobacco Institute – Prilep.

Results and discussion

The study of the dependence between the quality of tobacco and its physical properties is of particular importance, since they first determine the so-called technological-commercial quality of tobacco leaf (Uzunoski, 1985). Physical properties vary depending on the variety, insertion, agro-ecological conditions and the applied agronomic measures (Dimitrieski et al., 2019). In most cases there is a consistent relationship between chemical composition, anatomical structure, numerous external organoleptic properties and physical traits of tobacco leaf, which are widely used in determination of tobacco quality (Timov et al., 1974).

Materiality as a physical indicator of quality is of particular importance to the fabrication, because it indicates the total dry matter content of the leaf, it depends on the volume weight, which determines how many cigarettes you will get from one kg of tobacco in leaf (Dimitrieski 1990). In the analyzed insertion undertips, the tobacco leaves have less materiality grown in traditionall way (83 g / m2), and higher in Integral tobacco production (98 g / m2), while in the straight middle leaf, both productional ways have nearly similar values (73.52 and 70.27 g / m2, respectively).

Both inserts have lower thickness in tobacco leaves traditionally grown (84.0 and 73.0 μ), respectively, and bigger leaves thickness in Integrated tobacco production (86.5 and 80.0 μ, respectively). According to Miceska (2020), the leaf thickness of the tested dihaploid lines and tobacco oriental varieties ranges from 76.00 μ (Hibrid 301/n DH) to 134,50 μ ((Hibrid 301/23 Ø). Bogdancheski et al. (1988), examining the technological properties of tobacco in several varieties of the Prilep type in the region of Delchevo, found an average thickness of the undertips of the leaves from 78 to 95 μ.

The leaves of both insects have slightly lower content of the midrib in the tobacco cultivated in the Integral production (13.50 and 14.64 %, respectively) and slightly higher in the traditional way (16,39 and 16,96 %).

The water retaining ability, irrespective of the productional way, varies within the narrow range of 22.25 and 23.09% for straight medium leaf to 24.57 and 24.61% in undertips, respectively. Application of Integrated production and irrigation measures have a positive impact on the content of individual physical components. They reduce the content of the midrib, and increase the values of Substantiality of leaf tissue and leaf thickness compared to the traditional way of production under irrigation conditions.

According to the obtained values, tobacco is of very good quality, since the analized physical parameters are within the optimal limits. The substantiality, thickness and water retaining ability increase from the straight middle leaf to the undertips, and the content of the midrib is generally reduced.

Table 1. Physical properties of the tobacco, in the v. Berovci – 2019

Variey/Variant	Substantiality Leaf of leaf tissue thickness			Midrib contet	Water retaining ability
	Inserti-on	g/m²	µ	%	%
Prilep 66 9 Ø (Traditional tobacco production)	Undertips leaves	83,61	84,0	16,39	24,57
	Middle leaves	73,52	73,0	16,96	23,09
Prilep 66 9 Ø (Integral tobacco production)	Undertips leaves	98,27	86,5	13,50	24,61
	Middle leaves	70,27	80,0	14,64	22,25

Figure 1. Prepared tobacco samples for analysis of physical properties Insertion: 1. II hand (middle leaves) and 2. Undertop (uchalti) – Integrated Tobacco Production 3. II hand (middle leaves) and 4. Undertop (uchalti) –Traditional Production

Conclusion

Based on the values obtained from the analyzed physical properties of tobacco variety Prilep 66 9 depending on the method and conditions of cultivation, in this pilot farm we can conclude the following:

Application of Integrated production and irrigation measures have a positive impact on the content of individual physical components.

They reduce the content of the midrib, and increase the values of Substantiality of leaf tissue and leaf thickness compared to the traditional way of production under irrigation conditions.

According to the obtained values, tobacco is of very good quality, since the analized physical parameters are within the optimal limits.

The substantiality, thickness and water retaining ability increase from the straight middle leaf to the undertips, and the content of the midrib is generally reduced.

References

1. Горник Р. Облагородување на тутунот. Прилеп, 1973.
2. Богданчески М., Мицеска Г., Чавкароски Д., Димитриески М., 1988. Резултати од компаративните испитувања на некои ориенталски сорти тутун во реонот на Делчево во 1987. Зборник на трудови 14 Меѓународен симпозиум по тутун, стр. 21-30.
3. Dimitrieski M., Miceska G. Physical characteristics of the leaf in some oriental varieties and lines of yaka tobacco// World conference on sustainable life sciences30 june-07 july 2019. Budapest, Hungary, 2019.
4. Димитриески М. Биолошки производни и квалитетни својства на некои нови сорти тутун од ароматичен тип. Магистерска тема. Скопје, 1990.
5. Мицеска Г., Димитриески М. Физички својства на некои дихаплоидни линии тутун од типот Прилеп. Списание на трудови на ДНУ, 2020. Том 30-31, стр. 69-80.
6. Нунески И. Придонес кон запознавањето на полнечката способност на тутунот во зависност од типот, потеклото, инсерцијата и некои технолошки својства. Докторска дисертација. Земјоделски факултет. Скопје, 1986.
7. Тимов А., Веселинов М., Атанасов К., Димитров Ц. Ориенталският тютюн в България. Софија: Издателство на Бъгарската академиъя на науките, 1974.
8. Узуноски М. Производство на тутун. Скопје, 1985.