RESEARCH REGARDING THE INFLUENCE OF THE VARIETY ON BIOMETRIC ATTRIBUTES AT MELISSA OFFICINALIS L

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Abstract. *Medicinal plants are cultivated or spontaneous plant species, and which, under various forms - serve health from the beginning of the world. As the chemical industry develops, some of the popular remedies were given another form, they were modernized. Most of the time the effect of using medicinal plants is slower, requiring longer treatment, but it is less - risky and cheaper. The effect of medicinal plants is more complex, acting on several organs or systems at the same time. Herbs produce fewer and much less side effects. The purpose of the research was to complete the biological material, because in our country since 1973, only the population of De Dobrotesti is zoned. In this respect, a comparative culture was organized in which in addition to the population of De Dobrotesti was used a local population in the area, which we named "De Brosteni" after the name of the village from which it was harvested and a population of the province of De Voivodina, Serbia – Montenegro. The results revealed a good behavior of the experienced populations, both in terms of the height of the plants (in the second year at the first harvest it was between 69 cm in the population of De Brosteni and 75 cm in the population of De Voivodina, and in harvest II between 47 cm (De Brosteni) and 55 cm (De Voivodina), and in the third year between 70 cm and 78 cm at the first harvest and between 42 cm and 51 cm at harvest II, the highest values belonging to the population of De Voivodina, and the smallest population of De Brosteni), the branching degree (oscillated in year II at the first harvest between 8 and 11, and in the second harvest between 5 and 6, and in year III at the first harvest between 6,6 and 7,5 at the first harvest and between 5,1 and 6,1 in the second harvest) and the number of leaves/plant (in year II at harvest I between 105 (De Brosteni) and 141 (De Voivodina), and at the second harvest between 55 and 67 in the same populations, and in the third year, at the first harvest between 111 (De Brosteni) and 137 (De Voivodina), and in the second harvest, in the same populations ranged from 45 to 54).*

Keywords*: population, volatile oil, branching grade*

INTRODUCTION

A herb business is at everyone's fingertips, and the pedoclimate conditions in our country favour the cultivation of medicinal and aromatic plants (IMBREA FL, 2014).

They can be planted easily because they do not require the care and work that other plant varieties involve. (TOMESCU ET AL., 2015)

The great advantage of cultivating medicinal plants is that they have a very high yield, and that means rapid profit. To start this business requires one hectare of land that must be prepared according to the specific requirements of each crop. (IMBREA ILINCA, 2009, ARSENE ET AL., 2015)

Roinita is one of the oldest medicinal plants to be grown on small areas since ancient times (PAUN, 1988).

The plant is important for its leaves harvested during flowering - Folium Melissae - or for obtaining volatile oil 0.05 – 0.30% (made up of citral, citronellol, citronel, geraniol, linalool, tannin, caffeic acid - a crystallized bitter principle, ursolic and oleanolic acid, stachiosis, etc.), when it can be used as raw material and the aerial part at the beginning of flowering -Herba Melissae (IMBREA ILINCA, 2016).

The plant is used for therapeutic uses as well as in perfumery and industry

MATERIAL AND METHODS

In order to verify the productive potential of the mentioned provenances, the comparative culture was organized on a uniformly fertilized background of phosphorus, potassium and manure and with varying doses of nitrogen, within the Experimental Didactic Station, on a soil of the cambic chernoziom type, with the following graduation:

a1 - De Dobrotesti;
a2 - De Brosteni;
a3 - De Voivodina.

The repetitions number was three.

One may notice that the forerunner plant was the autumn wheat crop.

After harvesting the wheat, 20 t/ha of very well fermented manure and phosphorus and potassium fertilizers were applied, after which the ploughing was carried out at 23 to 25 cm, which incorporated the fertilizers.

The multiplication was done by parting with the bushes.

In the spring, nitrogen fertilizers were applied, which were incorporated with discs harrow. The bushes separated by segmentation and were replanted in the gutters at a distance of 60 cm between rows and 30 cm between plants at a time.

Planting took place in the second decade of March. After planting, watering was carried out.

During the growing season, three hoeing and folds were carried out at a time.

RESULTS AND DISCUSSIONS

Results of biometric measurements on plant height, degree of branching and number of leaves in biological material researched in year II of vegetation

Figure 1.1 shows the results of measurements, by harvest, of plant height (cm) of the three provenances studied.

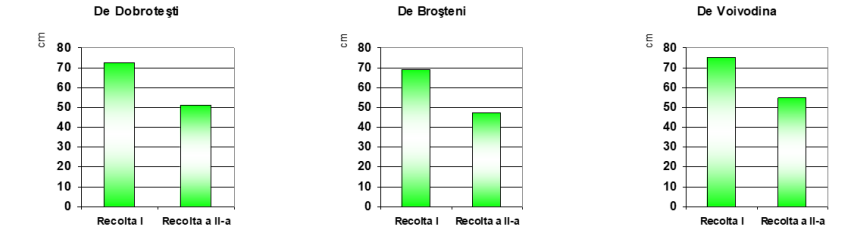
It should be noted that at the time of the first harvest the highest plants (75 cm) were determined in the population of De Voivodina, followed by the population of De Dobrotesti with 72 cm and the population of De Brosteni with 69 cm. At the time of the second harvest the height of the plants, at all three provenances was less than 20 cm.

Figure 1.2 shows the degree of branching according to provenance and harvest.

The highest branching level of more than 11 was noted in the De Voivodina population, followed by approx. 10 branches of the De Dobrotesti provenance and over 8 from the De Brosteni provenance. At the second harvest the degree of branching was reduced to approx. half compared to that determined at the first determination, in all three populations.

The number of leaves/plant determined in 2018 is shown in Figure 1.3. It follows that at the first harvest there were values of more than 140 leaves in the population of De Voivodina, followed by the population of De Dobrotesti with more than 130 leaves and the population of De Brosteni with more than 100.

In the second harvest the number of leaves was reduced to about half that recorded at the first harvest.

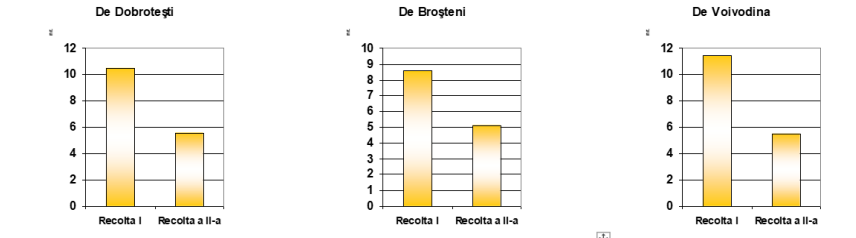


$\overline{X} \pm S\overline{X}$	72,30±1,22	51,05± 1,40
%	100	70,6
Difference		-21,25

$\overline{X} \pm S\overline{X}$	69,22±0,88	47± 1,49
%	100	67,8
Difference		22,22

$\overline{X} \pm S\overline{X}$	75,10±2,05	55± 0,90
%	100	73,2
Difference		20,10

Figure 1 Plant height recorded in 2018

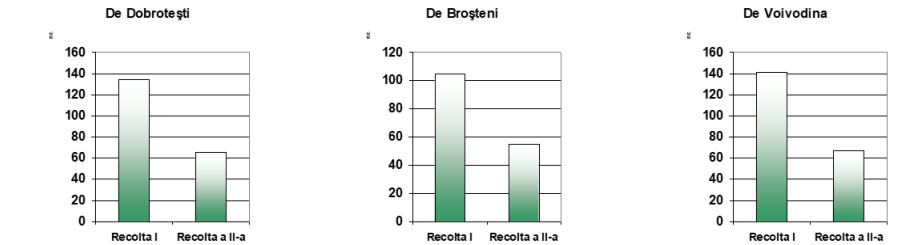


$\overline{X} \pm S\overline{X}$	10,5±1,4	5,6± 2,06
%	100	53,3
Difference		4,9

$\overline{X} \pm S\overline{X}$	8,6±1,4	5,1± 2,2
%	100	59,3
Difference		3,5

$\overline{X} \pm S\overline{X}$	11,4±2,3	5,5± 0,60
%	100	48,2
Difference		5,9

Figure 1.2 Branching degree recorded in 2018



$\overline{X} \pm S\overline{X}$	134±11,2	66± 8,2
%	100	49,2
Difference		-68

$\overline{X} \pm S\overline{X}$	105±9,6	55± 6,3
%	100	52
Difference		50

$\overline{X} \pm S\overline{X}$	141±10,3	67± 7,9
%	100	47,5
Difference		74

Figure 1.3 Number of leaves recorded in 2018

Results of biometric measurements on plant height, degree of branching and number of leaves in biological material researched in year III of vegetation

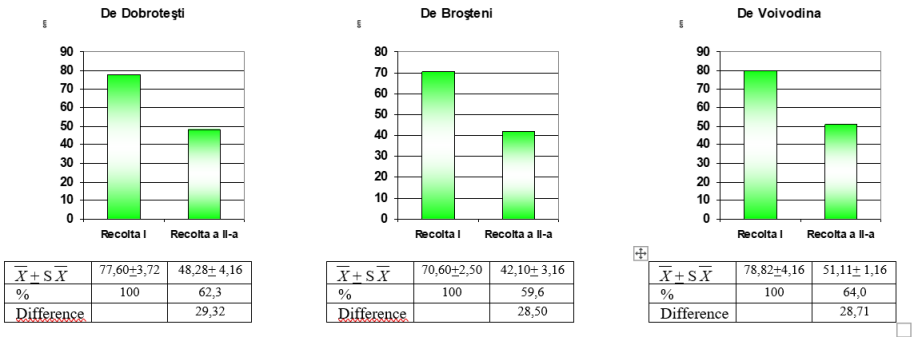
Figures 1.4, 1.5 and 1.6 show the results of the observations made in 2019 and in the third year of vegetation respectively.

Figure 1.4 showing the results of the measurements on the height of the plants shows that in harvest I the values were between 70 cm in the population of De Brosteni and 79 cm in the population of De Voivodina, and in harvest II between 42 cm in the population of De

Brosteni and 51 cm in the population of De Voivodina. At both harvests, the Population of De Dobrotesti was with intermediate values, 77 cm at harvest I and 48 cm at harvest II.

The degree of branching was lower in the third year of vegetation compared to that of the second year. The values of the determinations were between the limits 6,3 (the origin of the De Brosteni) and 7,5 (the origin of De Dobrotesti) at harvest I, and between 5,1 (De De Brosteni) and 6,1 (De Voivodina) at the second harvest.

Figure 1.6 shows the results of the determinations of the number of leaves/plants that was contained, at the first harvest, between 111 (De Brosteni) and 54 (De Voivodina) in harvest II. The results of the determined elements are positively correlated with the herba harvests obtained from the two harvests of the third year of vegetation.

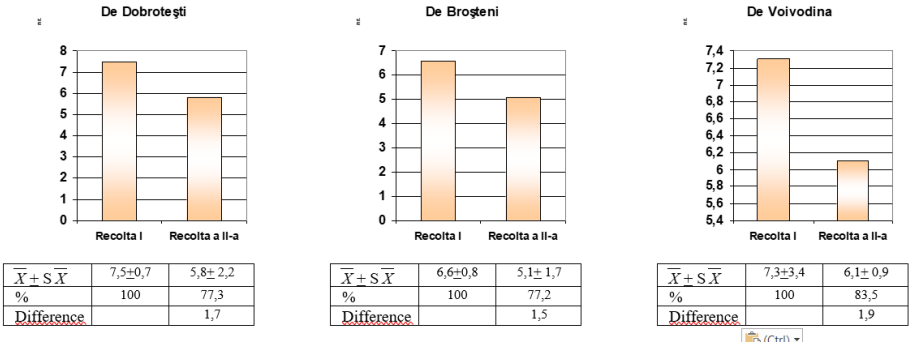


$\bar{X} \pm S_{\bar{X}}$	77,60±3,72	48,28± 4,16
%	100	62,3
Difference		29,32

$\bar{X} \pm S_{\bar{X}}$	70,60±2,50	42,10± 3,16
%	100	59,6
Difference		28,50

$\bar{X} \pm S_{\bar{X}}$	78,82±4,16	51,11± 1,16
%	100	64,0
Difference		28,71

Figure 1.4 Plant height recorded in 2019

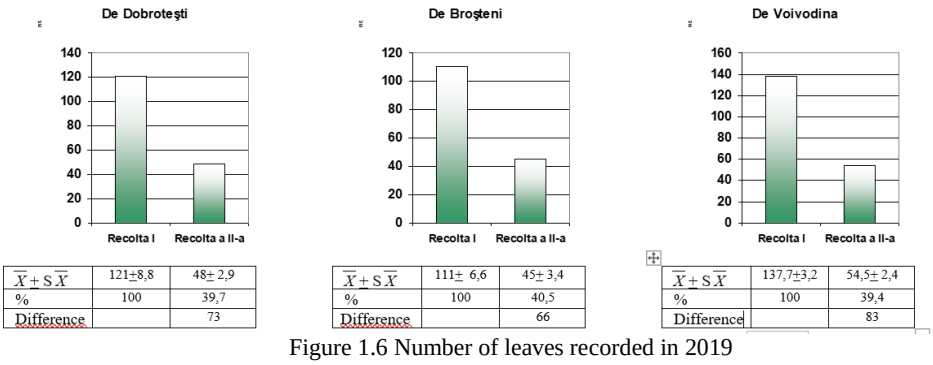


$\bar{X} \pm S_{\bar{X}}$	7,5±0,7	5,8± 2,2
%	100	77,3
Difference		1,7

$\bar{X} \pm S_{\bar{X}}$	6,6±0,8	5,1± 1,7
%	100	77,2
Difference		1,5

$\bar{X} \pm S_{\bar{X}}$	7,3±3,4	6,1± 0,9
%	100	83,5
Difference		1,9

Figure 1.5 Degree of branching recorded in 2019



$\bar{X} \pm S_{\bar{X}}$	121±8,8	48± 2,9
%	100	39,7
Difference		73

$\bar{X} \pm S_{\bar{X}}$	111± 6,6	45± 3,4
%	100	40,5
Difference		66

$\bar{X} \pm S_{\bar{X}}$	137,7±3,2	54,5± 2,4
%	100	39,4
Difference		83

Figure 1.6 Number of leaves recorded in 2019

CONCLUSIONS

The height of the plants in the second year at the first harvest was between 69 cm in the population of De Brosteni and 75 cm in the population of De Voivodina, and in the second harvest between 47 cm (De Brosteni) and 55 cm (De Voivodina), and in the third year between 70 cm and 78 cm at the first harvest and between 42 cm and 51 cm at harvest II , the highest values belonging to the population of De Voivodina, and the lowest population of De Brosteni. The degree of branching, depending on genotype and harvest, oscillated in year II at the first harvest between 8 and 11, and in the second harvest between 5 and 6, and in the third year at the first harvest between 6,6 and 7,5 on the first harvest and between 5,1 and 6,1 at the second harvest.

Number of leaves/plant in year II at harvest I between 105 (De Brosteni) and 141 (De Voivodina), and in the second harvest between 55 and 67 in the same populations, and in year III, at the first harvest between 111 (De Brosteni) and 137 (De Voivodina), and in the second harvest, in the same populations ranged from 45 to 54.

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