GREEN MASS PRODUCTION OF POPULATIONS AND VARIETIES OF *MELISSA OFFICINALIS* L.

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Abstract. *Melissa officinalis* L. species belongs to the family *Lamiaceae*, subfamily *Nepetoideae, Mentheae* tribe. The object of research was to the determine the production for four populations and two varieties of *Melissa officinalis* L. Analyzing production varieties and populations taken into culture in the three experimental years, it can be seen that the variety Citronella showed significant differences compared to the population of Cluj witness.

Keywords: nucu fruits, citronella variety, lemona variety

INTRODUCTION

The root system consists of a horizontal rhizomes, yellowish brown, long (about 30 cm), lignified, which is based on numerous adventitious roots. Linear little leaves on white rhizomes are formed from armpit to which shoots start ascending, that give rise to strains. The stem is herbaceous, 60-120 cm tall, 3-5 mm thick, based glabrata and towards the top with hairs; it is annual. On the same rhizome appear several strains, forming a compact bush. [Muntean Stamp, 1990]. The leaves are opposite, with long petiole 2-4 cm. Limbe leaf is long and 3-6 cm wide by 2-5 cm, ovate shape with the tip obtuse, margins crenate. The leaves are covered with hairs and oil glands typical to this family.

Flowers are placed at short pedicel bracts armpit. Flower calyx is hairy, 6-8 mm long, and has 13 ribs prominent; labia majora is finished with 3 teeth short and broad, and the lower with 2 teeth aristata. Corolla is white to yellowish white or lilac, 8-12 mm long. Stamens are of 4, 2 upper longer. Superior ovary is based on oleifera gland. Blooms in June - July - august. Nucu fruits are grouped by 4 in the persistent calyx. Weight of 1000 seeds varies between 0.52 and 0.68 g.

MATERIAL AND METHOD

The research was conducted in the experimental field set up in the village Pâglişa, Dăbâca village, Cluj county.

The biological material used was:

- Populations of Melissa officinalis:
  - Population of Cluj,
  - Germany 2 population,
  - Population Timis
  - Population Poland.
- EU approved varieties:
  - Citronella variety,
  - Lemona variety.

Melissa officinalis L. varieties are both approved in the European Union, being of German origin. Experimental plots were randomized in three repetitions. Each plot had dimensions of 1.65 m x 2.25 m resulting in an area of 3.71 m^2 per plot.

Establishment of experimental field was done by planting. Seedling production has been achieved in the greenhouse. Melissa officinalis L. seedlings were planted at a distance of 27.5 cm row and 75 cm between rows. Planting seedlings took place in spring 2006 and total production was determined in firsr, second and third year of vegetation.

RESULTS AND DISCUSSION

Research on crop production for varieties and populations taken during the experimental years are presented in Table 1 and 2. Differences in production are shown in Figure 1.

Table 1

Green herba production by variety / population in Melissa officinalis L., in the three years of cultivation (2006, 2007, 2008), Pâglisa, Cluj County

Variety/ Population	Yield t/ha	Meaning	Duncan test
Populația de Cluj (Mt)	28,86	-	AB
Germania 2	30,00	-	AB
Timisoara	30,21	-	AB
Polonia	28,39	-	A
Lemona	31,10	*	B
Citronella	33,48	***	C
DL 5% - 2,23	DL 1% - 3,17	DL 0,1% - 4,59	

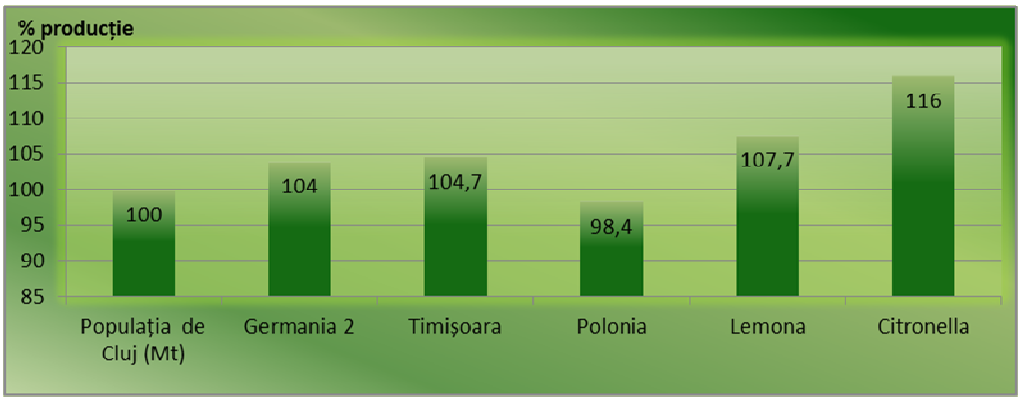

Fig. 1. Percentage yield differences between varieties and populations of *Melissa officinalis* L., in three years of cultivation (2006,2007,2008), Pâglisa, Cluj County

Analyzing production varieties and populations taken into culture in the three experimental years, it can be seen that the variety Citronella showed significant differences compared to the population of Cluj witness. Thus the average yields in the three

experimental years is 33.48 t / ha with 4.61 t / ha more than the production of witness (28.86 t/ha). Lemon variety yields a mean of 31.10 t / ha in the three years and the difference compared to the control (2.23 t / ha) was significant.

For Germany 2 and Timisoara populations is found that yields exceed witness production (30 t / ha respectively 30.21 t / ha). Population Poland achieved an average production of only 28.39 t / ha in three experimental years which is 98.4% of witness production.

Cultivation age and its influence for varieties and populations studied for crop yield is presented in Table 3.

Species *Melissa officinalis* L., is a perennial plant, its production increases over the first year. All varieties and populations have been studied over the first year, yields very significant.

Production from *Melissa officinalis* L. species, under the influence of variety or population and age in culture is shown in Table 4.

In the first year of vegetation varieties Lemon and Citronella exceeded witness (population of Cluj). If variety Lemon distinct difference was significant (6.73 t / ha) for Citronella variety, difference recorded (6.39 t / ha) was significant.

Table 2

Influence of crop age for sorts and populations of *Melissa officinalis* L. on the yield, Pâglisa, Cluj County

Variety/ Population	Year	Yield t/ha	Difference %	Difference t/ha	Meaning
Populația De Cluj	I	4,04	100	0,00	Mt
	II	28,49	704,4	24,44	***
	III	54,05	1336,5	50,01	***
Germania 2	I	6,86	100	0,00	Mt
	II	26,58	387,2	19,71	***
	III	56,57	824,2	49,71	***
Timisoara	I	6,32	100	0,00	Mt
	II	31,53	498,6	25,21	***
	III	52,79	834,8	46,46	***
Polonia	I	5,23	100	0,00	Mt
	II	21,62	413,8	16,40	***
	III	58,33	1116,3	53,10	***
Lemona	I	10,77	100	0,00	Mt
	II	27,48	255,0	16,7	***
	III	55,04	510,8	44,26	***
Citronella	I	10,43	100	0,00	Mt
	II	28,86	276,6	18,42	***
	III	61,14	586,1	50,71	***
DL 5% - 5,12 DL 1% - 6,96 DL 0,1% - 9,32					

Table 4

Green mass yield according to varieties and populations of *Melissa officinalis* L., Pâglisa, Cluj County

Variety/ Population	Year	Yield t/ha	Difference t/ha	Meaning
Cluj Population	I	4,04	0	Mt
Germania 2		6,86	2,82	-
Timisoara		6,32	2,28	-
Polonia		5,23	1,18	-
Lemona		10,77	6,73	**
Citronella		10,43	6,39	*
Cluj Population	II	28,49	0	Mt
Germania 2		26,58	-1,91	-
Timisoara		31,53	3,04	-
Polonia		21,62	-6,87	oo
Lemona		27,48	-1,01	-
Citronella		28,86	0,37	-
Cluj Population	III	54,05	0	Mt
Germania 2		56,57	2,52	-
Timisoara		52,79	-1,27	-
Polonia		58,33	4,28	-
Lemona		55,04	0,98	-
Citronella		61,14	7,09	**
DL 5% - 4,74 DL 1% - 6,50 DL 0,1% - 8,86				

In the case of variety Lemon there wer distinct difference (6.73 t / ha) recorded; for Citronella variety, difference recorded (6.39 t / ha) was significant.

In the second year of vegetation, population Poland showed distinct negative differences to witness (population Cluj). The rest did not exceed witness, the differences are insignificant.

In the third year of vegetation all populations had a high green herba production. Citronella variety oversized the witness with 7.09 t / ha, the difference being significant distinct.

CONCLUSIONS

In the first year of vegetation (year of experience establishement), production ranged from 4.04 t / ha for Cluj population (Mt) and 10.77 t / ha for Lemon variety. In the second year none of populations or varieties has significantly exceeded population of Cluj. In the third year the crop production for varieties and populations ranged from 52.79 t / ha and 61.14 t / ha. The production of Cluj population was exceeded only by the variety Citronella production.

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