

A STUDY OF BASIL TYPES IN THE COASTAL PLAINS OF ALBANIA

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Abstract

Basil is a plant of Lamiaceae family, with wide spectrum use in food industry, perfumery, as fresh spice, flavoring different environments, as well as in medicine. This is why basil is considered both a spice and a medical herb. These values are resulted from high content of ocimol in all plant organs (leaves, flowers, fruits, seed and roots. The fact that Dioscorides mentions that herb early in the first century, as a medicinal plants for the disinfection of premises, mouth and teeth, shows the values and its recognition since Antiquity. In Albania it is a known and cultivated plant, in families, gardens, and it has synonyms by area. For essence production, it begins to be cultivated in the 60s and, nowadays the demand is growing. Basil studies are limited in technology and comparisons of subspecies and varieties. A study of five subspecies in coastal plains of Albania (Toshkëz-Lushnja) is presented in this paper. The differences found are statistically necessary.

Keywords: essence, spice, the cultivation

Materials and methods

This study encompassed the five types of basil. The seeds have been brought from Italy and they are as follows:

Limonez

Napolitan

Red basil

Fino Verde

Genoves basil

The experiment was set up according to the randomized block scheme, with five variants and four repetitions with variant size of 28m² (2.4 m x 11.7 m).

The experiment was set up in Toshkez - Lushnja, according to randomized block scheme, as the methodology had provided. The chemical composition of the soil is: humus 0.7%, pH 7.55, nitrogen 0.18%, phosphorus 17.7 %, potassium 12.5 ppm and calcium 9.07 ppm.

Scheme No. 1. The experiment set up.

2	1	3	4	5
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4	5	3	2	1
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1	2	4	5	3
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1	3	4	5	2
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There was mowing in the full flowering phase by making the separation in accordance of the organ:

Fresh herbs (blooms and leaves)

Fresh stalks

Fresh mass

Drying was performed in the shade, separately for each body, up to 10% humidity and there have been identified the weighing for the three organs:

Dry herbs (blooms and leaves)

Dry stalks

Dry mass

These are done separately for the three scythes, and have become amounts to three scythes and the three organs, and the total, too (herbs + stalks + dry and fresh mass).

Results and discussion

Table 1. Inter-distances of saplings

No.	Types	Inter-distance	No. of plants	Area m ²
1	Limonez	60 x 50	88	28
2	Napolitan	60 x 45	105	28
3	Red basil	60 x 45	106	28
4	Temines (Fino verde)	60 x 55	85	28
5	Genoves	60 x 55	88	28

The preparation of saplings and planting in the field

The saplings are produced in greenhouses with central heating by sowing seeds in polystyrene seed pans, with 250 holes, placing two seeds for each hole. Before planting the seeds are placed in warm water, to provoke their uniform and completed germination. Seeds are planted at a depth 0.3 - 0.5 cm. In every 3-4 hours it is realized automatically irrigation, with the amount of water 10 mm. During vegetation there were made fertilization, for 52 days sapling was ready for planting in the field. The soil tillage is made in September 2010, at 31-35 cm depth. In the spring it is carried the soil milling in 12-15 cm depth. Planting in the field is realized with workforce. Planting is done with pins in the inter-distances provided in table 1.

Table 2. The weight of fresh herbs (g)

Nr	The types of basil		Mowings			Sum K (1-3)
			I	II	III	
1	Limonez		5712,5	15595	3106,25	24413,75
2	Napolitan		5407,5	12727,5	2488,75	20623,75
3	Red basil		2107,5	4755	878,75	7741,25
4	Fino verde		2790	6007	1385	10182
5	Genoves		2355	8972,5	1557,5	12885
	Dmv	0,05	349,2	680,3	286,85	786,8
		0,01	408,1	747,5	324,13	842,6

The herbs are all plant organs that are used for many purposes and they take the brunt of basil production. Among the types of basil in production there have been some changes observed that testify to the morphological characteristics and plant development. . The higher production of herbs is taken from Limonez basil, following by Napolitan basil. Between the mowing there are differences in production, where the second mowing gives the highest production for all types of basil. The herb of Fino-verde basil is in small amounts, but it is rich in essence and it finds wider use, especially in the production of tomato sauce. Just, for this reason it is introduced in the study field.

Table 3. The weight of fresh stalks (g)

Nr	The types of basil		Mowings			Sum K (1-3)
			I	II	III	
1	Limonez		3242,5	8107,5	1630	12980
2	Napolitan		2927,5	8392,5	1306,25	12626,25
3	Red basil		892,5	1300	468,75	2661,25
4	Fino verde		787,5	1920	717,5	3425
5	Genoves		763,75	2822,5	815,7	4401,95
	Dmv	0,05	311,7	522,4	154,3	934,6
		0,01	384,5	578,5	176,8	1021,8

The stalk production represents differences between the basil types. Limonez basil and Napolitan basil give the highest production of the stalks. So, at Fino Verde it is observed that the stalk production is three times higher than the herb production.

Table 4. The weight of fresh mass

No	The types of basil		Mowing			Sum K (1-3)
			I	II	III	
1	Limonez		8955	23702,5	4736,25	37393,75
2	Napolitan		8335	21120	3795	33250
3	Red basil		3000	6055	1347,5	10402,5
4	Fino verde		3577,5	7972	2102,5	13607
5	Genoves		3118,75	11795	2373,2	17286,95
	Dmv	0,05	642,4	1326,41	456,4	1567,7
		0,01	695,6	1418,52	528,7	1634,8

Even the fresh mass production presents the verified differences between the basil types. Limonez and Napolitan basil achieve the highest production.

Table 5. The weight of dry herbs (g) (leaves and herbs).

No	The basil type		Mowing			Sum K (1-3)
			I	II	III	
1	Limonez		1054,5	3106,25	515,75	4676,5
2	Napolitan		1270	2488,75	436,25	4195
3	Red basil		545	883,75	166,75	1595,5
4	Fino verde		698,5	1385	240,75	2324,25
5	Genoves		507	1558,75	269,5	2335,2
	Dmv	0,05	118,2	226,7	48,75	382,8
		0,01	136,4	298,4	62,36	416,4

The performance of the dried leaf mass presents the same nomocracy as to fresh leaf, but Fino-verde basil gives a small proportion to the fresh and dry mass, which goes up to 3-4:1.

Table 6. The weight of dry stalks (g)

No	The basil type		Mowing			Sum K (1-3)
			I	II	III	
1	Limonez		762,5	2868,75	527,5	4176,75
2	Napolitan		880	1836,25	417,5	3133,75
3	Red basil		255	527,5	155	937,5
4	Fino verde		256,25	901,25	181,5	1339
5	Genoves		215	1257,5	255	1727,5
	Dmv	0,05	64,7	189,7	442,4	328,92
		0,01	95,8	226,4	60,75	408,74

The weight of dry stalks presents differences between the basil types, where the highest production is achieved by Limonez basil, following by Napolitan basil, but with a great difference with three other types of basil.

Table 7. The weight of dry mass (g)

No	Te basil types	Mowing			Sum K (1-3)	
		I	II	III		
1	Limonez	1817	5975	1044,75	8836,75	
2	Napolitan	2150	4325	853,75	7328,75	
3	Red basil	800	1411,25	321,75	3065	
4	Fino verde	954,75	2286,25	2407,5	5848,5	
5	Genoves	722	2816,25	524,5	4062,75	
	Dmv	0,05	127,6	411,3	129,7	326,4
		0,01	164,3	486,4	193,82	409,53

The production of dry mass follows the same nomocracy as to the fresh mass. The highest production is achieved by Limonez basil, the second is Napolitan basil, with a great difference with the three other types.

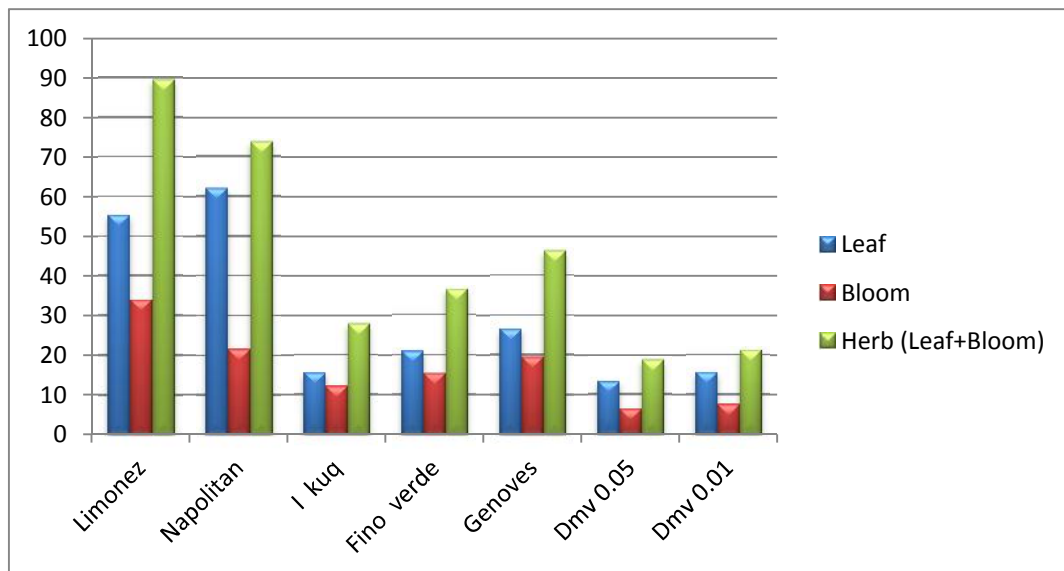


Chart 1. The fresh mass yield (q/ha)

Analysis of the performance of the fresh mass highlights that Neapolitan and Limonez basil provide higher production and are included in the same group for Dmv 0:05 and Dmv0:01 are differentiated. So, Limonez basil gives the greatest amount of fresh herb.

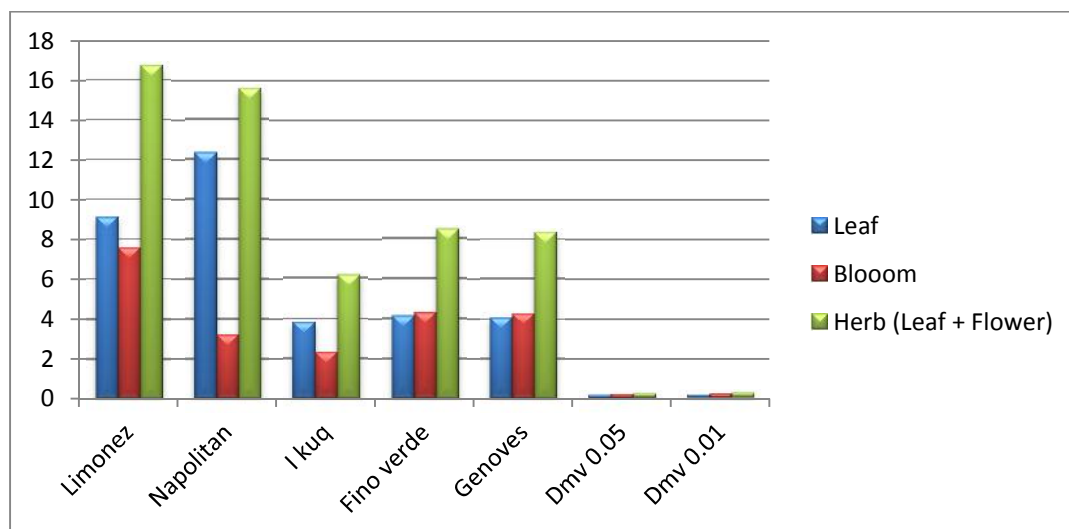


Chart 2. The yield of dry mass (q/ha)

The performance of the dry herb presents differentiations, drawing in the first place only Limonez subspecies. This is because the leaf of Napolitan basil is pulp and it has the highest content of moisture, increasing the dry mass/ fresh mass ratio.

Conclusions

From the second year of the study can derive some conclusions:

Among the subspecies are been marked differences in the yield of fresh mass and the plant organs.

The dry mass of plant organs presents the major differences that affected by the ratio between the fresh mass and dry mass, which is different for subspecies of basil.

The fresh mass and dry mass ratio is between 3.4 : 1 at Fino Verde basil, till 4.4 : 1 at Limonez basil

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