

STATISTICAL ANALYSIS OF SOME VARIABLES OF THE CROCUS VELUCHENSIS HERBERT SHARR MOUNTAINS VERTICAL PROFILE

1. Enver Sherifi, 2. Blerta Gashi, 3. Kasum Letaj 4. Naser Shabani

1. Faculty of Natural Science of Pristina, Kosovo email: e_sherifi@yahoo.com
2. Department of Biology, University of Pristina, email: blertagashi2501@hotmail.com
3. Department of Biology, University of Pristina, email: kletaj2003@yahoo.com
4. Institute of Environment and Health, SEEU Tetovo, Macedonia: shaban.naser@hotmail.com

ABSTRACT

Sharr Mountains represent the main area for botanical value, fauna, ecological tourism, recreation, sports, education and culture in Kosovo. Flora and vegetation is rich in various types. Gender Crocus is representative of the Iridaceae family as an underground organ has bulb. Bulb of crocus always remains in places where the flowers have dropped their first year. Crocus flowers are separately or in some cases together. In our rural large number of species of this genus are self sprout. Crocus veluchensis is herbaceous perennial plant up to 10 cm high. Increase in the alpine zone countries where melting snow. An important condition for their growth is the soil drained. In Kosovo is widespread in the Sharr Mountain. Is Balkan, endemic plant.

Are researched and analyzed 9 morphological variables: Height of plant, length duct of perianth, length of pistils, the length of the stalk, leaf length, leaf width, length of bract, length of bracteoles and anthers length.

Key words: Crocus veluchensis, flower color, plant height, Sharr Mountains, Variables

INTRODUCTION

Sharr Mountains represent the main area for botanical value, fauna, ecological tourism, recreation, sports, education and culture in Kosovo. Sharr Mountains have very significant biological diversity. Flora and vegetation is rich in species. Among these 86 species of them are declared international importance, 26 species are included in the "Red List" European animals and plants as endangered and 32 are in the "Red List" of threatened plants by IUCN - it. Based on these facts can be considered as species living center diversities the Balkans and Europe.

Crocus veluchensis, is herbaceous perennial plant up to 10cm high. Cover truffle-onion thin, nested, and more or less hairy. The leaves appear along with flower 3 - 4, without a central ridge of white and moist lied side, leaves up to 4mm without basalt space. Flowers solitary, orange-yellow, usually purple toward the base. Yellow anther. Orange bars as or longer than the fringe, divided into three branches short. Increase in the alpine zone countries where melting snow. In Kosovo is widespread in Sharr Mountains, as the name suggests the type. Balkan endemic plants.

MATERIAL AND METHODS

Crocus veluchensis, *gender* research in Sharr Mountains have started in early spring of 2012 and have continued until the late autumn of this year. Specimens are herbal and determined by making comparisons herbarium Department, as well as using appropriate contemporary literature. Samples are determined by systematic basic unit (type).

Are researched and analyzed 9 parameters as follows:

1. *Height of plant*
2. *Duct length perianth*
3. *Length of pistil*
4. *The length of the stalk*
5. *Length of leaves*
6. *Width of leaves*
7. *Length of bract*
8. *Length of bracteoles*

9. Anthers length

Determination material (samples) taken at six different locations in the vertical profile of the Sharr Mountains. Were obtained from 20 individuals in each locality. Locality I (Lokvica, 1126m), Locality II (Struzh, 1163m), Locality III (Prevalla, 1610m), Locality IV Prevalla first region -10 samples (1557m), locality V Prevalla second region - 10 samples (1570m) and Locality VI Prevalla in the region of the third - 10 samples (1670m).

For all investigated morphological parameters were calculated: 1. Arithmetic average, 2. Standard deviation, 3. Standard error 4. Variability, LSD (Limited Significant Distance).

Types of *Crocus veluchensis* have high significant difference between their mapped locations, as a result of various heights above sea level, ecological factors (light, temperature, relative air humidity), pedology, etc.

Sea level height measurement was made with the GPS device, for which purpose are obtained the following results: Locality I (1126m), Locality II (1163m), Locality III (1610m), Locality IV (1557m), Location V (1570m), Location VI (1670m).

Morphological parameters of genus *Crocus veluchensis* are researched in the field and in the laboratory of the Department of Biology .

RESULTS

Gender *Crocus veluchensis* in various locations in the profile vertical Sharr Mountain (Lokvica, Struzha and Prevalla) has different morphological differences.

During the research of the length of the plant, we have concluded that there are significant changes in the differences between localities, but higher (high significant) were observed between sites: 1 and 2; 2 and 3; 4 and 6.

Regarding the length of duct perianth for plants, we found higher differences significant changes between sites 1 and 2; 3 and 4; 5 and 6.

During the research the length of the stalk, higher significant difference between localities: 2 and 3; 2 and 5; 2 and 6; 3 and 5; 3 and 6.

During plant pistils length research, we found higher differences significant changes between localities: 1 and 2; 1 and 3; 1 and 4; 2 and 3; 3 and 6; 4 and 6.

During the research the length of the leaf, the highest differences significant changes were observed between sites: 1 and 2; 1 and 3; 1 and 6; 2 and 4; 4 and 6.

The width of the leaves, significant changes higher (2.22mm - 2.78mm) is between locality V Prevalla in the second region (1557m) and IV locality Prevalla in the first region (1570m), while significant changes lower (2mm - 2.05mm) between the locality II Struzha (1163m) and VI Prevalla in the third region (1670m).

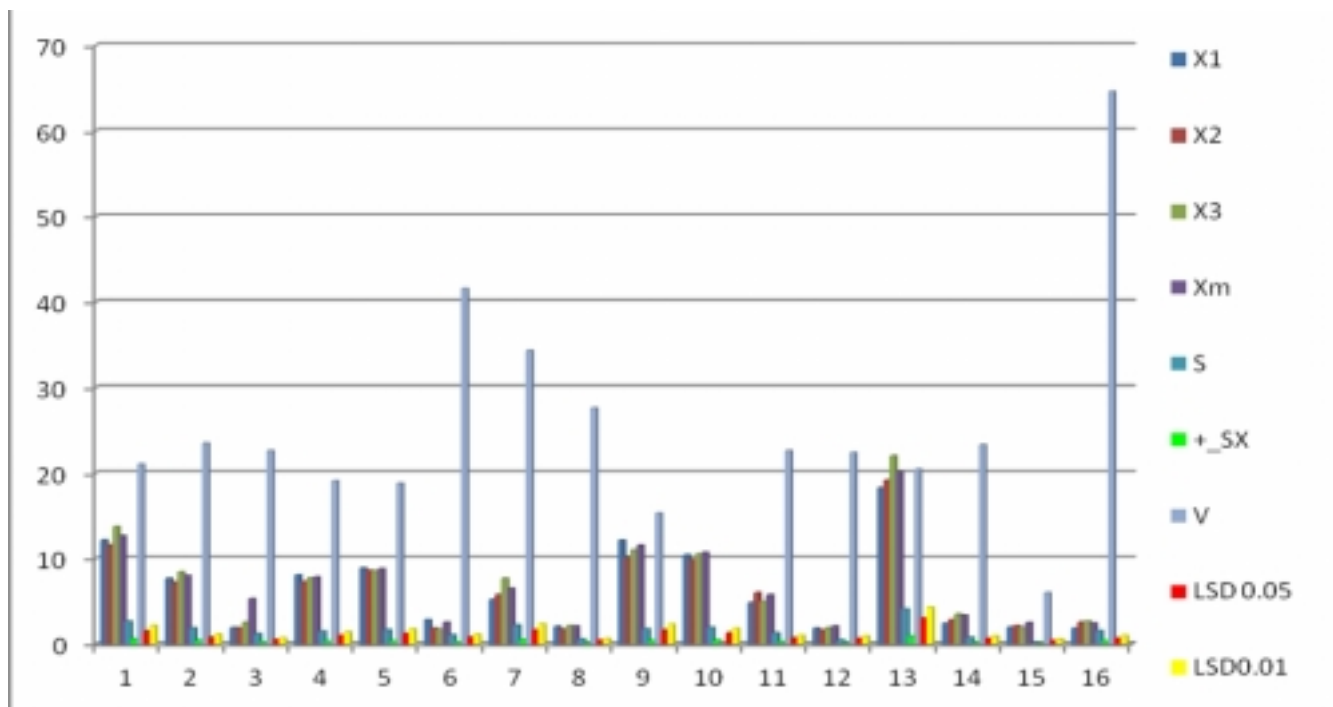
Regarding length of bract, significance higher (8.01cm - 8.23cm) between locality III Prevala (1610m), and the location II Struzha (1163m), while the lowest (5.86 cm) in the locality of V Prevala the second (1570m).

Length of bracteole, significance higher (1.97cm) is in the locality of I Lokvica (1126m) and lower (1.14cm) in the locality of V Prevala in the second region (1570m).

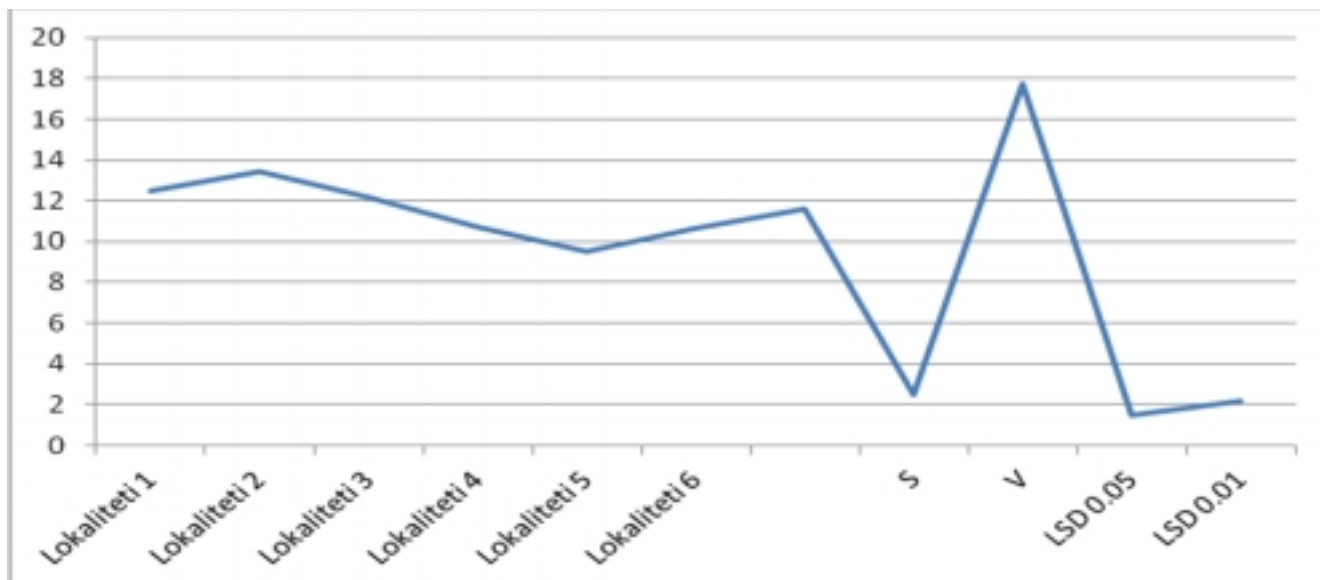
Regarding length of anthers, higher differences (11.09mm - 11.69mm) are among locality Lokvica (1126m) and IV locality Prevala in the first region (1557m), while the lowest differences (9.22mm - 10.42mm) between locality VI Prevala in the third region (1670m) and the locality V Prevala in the second region (1570m).

Tab.1.Morphological parameters to *Crocus veluchensis* in Lokvica locality (1126m)

Number of Plants	Length of Plant	Length of duct Perianth	Length of the Stalk	Length of Pistils	Length of Leaf	Width of Leaf	Length of Brac	Length of Bracteole	Length of Anthers
X1	12.15	7.68	1.9	8.07	8.88	2.85	5.21	2.04	12.14
X2	11.6	7.24	1.88	7.27	8.6	1.85	5.78	1.74	10.14
X3	13.7	8.41	2.56	7.7	8.56	1.75	7.66	2.13	11
\bar{X}	12.65	8	5.30	7.85	8.8	2.55	6.5	2.1	11.55
S	2.66	1.88	1.20	1.5	1.66	1.06	2.23	0.58	1.77
$\pm Sx$	0.59	0.42	0.26	0.33	0.37	0.23	0.49	0.129	0.39
V	21.02	23.5	22.62	19.10	18.8	41.56	34.30	27.61	15.32
LSD 0.05	1.51	0.80	0.51	1.0026	1.22	0.80	1.64	0.44	1.62
LSD 0.01	2.15	1.14	0.72	1.42	1.74	1.14	2.34	0.63	2.31



Graf.1 Histogram of results to Lokvica locality (1126 m)



Graf.2.Normal distributive curve of results to Lokvica locality(1126m)

CONCLUSION

In this paper are given morphological parameters research results *Crocus veluchensis* gender, in vertical profile Lokvica, Struzha and Prevalla (Prevalla in three regions). In this paper explored and analyzed these morphological parameters: Height of plant, length of duct perianth, length of pistil, the length of the stalk, leaf length, leaf width, length of bract ,length of bracteoles and anther length. On the basis of obtained results it can be concluded:

The length of the plant, in six localities surveyed was higher (12.48cm) in the locality of I (Lokvica LMB 1126m) to individuals *Crocus veluchensis*, while smaller (9.51 cm) in the locality of V (Prevalla region second LMB 1570m) *Crocus veluchensis* individuals.

Length of duct perianth for plants, differences higher (8.74 cm) are in the locality of II Stuzha (1163m), while smaller (5.62 cm) in the locality of V Prevalla in the second region (1570m).

The length of the stalk, the highest value (3.38 cm) in the locality of II Stuzha (1163m), while the lowest (2.01cm - 2.11cm) between locality V Prevalla in the second region (1570m) and locality I Lokvica (1126m).

Length of pistil, higher significance(7.68cm - 7.87cm) between locality I Lokvica (1126m) and locality III Prevalla (1610m) and lower (5.58cm - 6.16cm) between locality V Prevalla region The second (1570m) and location VI Prevalla in the third region (1670m).

The length of the leaves, significant changes if other parameters values are higher (8.68cm - 9.91cm) between locality I Lokvica (1126m) and IV locality Prevalla in the first region (1557m) while the lowest (6.63 cm) location V Prevalla in the second region (1570m).

The width of the leaves, significant changes higher (2.22mm - 2.78mm) is between locality V Prevalla in the second region (1557m) and IV locality Prevalla in the first region (1570m), while significant changes lower (2mm - 2.05mm) between the locality II Struzha (1163m) and VI Prevalla in the third region (1670m).

Regarding length of bracts, higher significance (8.01cm - 8.23cm) between locality III Prevalla (1610m), and the location II Struzha (1163m), while the lowest (5.86 cm) in the locality of V Prevalla region the second (1570m).

Length of bracteoles, higher significance (1.97cm) is in the locality of I Lokvica (1126m) and lower (1.14cm) in the locality of V Prevalla in the second region (1570m).

Regarding length of anthers, higher differences (11.09mm - 11.69mm) are among locality Lokvica (1126m) and IV locality Prevalla in the first region (1557m), while the lowest differences (9.22mm - 10.42mm) between locality VI Prevalla in the third region (1670m) and the locality V Prevalla in the second region (1570m).

REFERENCE

Karimi, Ehsan; Oskoueian, Ehsan; Hendra, Rudi; Jaafar, Hawa Z.E. 2010. "Evaluation of *Crocus sativus* L. Stigma Phenolic and Flavonoid Compounds and Its Antioxidant Activity." *Molecules* 15, no. 9: 6244-6256.

Seberg O & Petersen G (2009). *How many loci does it take to DNA a barcode a Crocus?* PLoS ONE 4(2): e 4598. 1-6.

Martin E, Dinç M & Duran A (2009). *Karyomorphological Study of Eight Centaurea L. Taxa (Asteraceae) from Turkey.* Turk J Bot 33: 97-104.

Tomović, G. 2007: *(The phytogeographic position, distribution and center of diversity in the endemic flora of Serbian).* – Ph.D.thesis, Bioloski fakultet, Univerzitet u Beogradu. (In Serbian).

Uzundzalieva, K. S. 2005: *Biosystematic study of the genus Crocus L. in Bulgaria.* – Avtoreferat na disertacia, Agaren Univerzitet, Plovdiv. (In Bulgarian with English summary).

Abdullaev, F.I., 2002. *Cancer chemopreventive and tumoricidal properties of saffron (Crocus sativus).* Exp. Biol. Med. 227, 20–25.

Zougagh, M., Rios, A., Valcarcel, M., 2005a. *An automated screening method for the fast, simple discrimination between natural and artificial colorants in commercial saffron products*. Anal. Chim. Acta 535, 133–138.

Zougagh, M., Simonet, B.M., Rios, A., Valcarcel, M., 2005b. *Use of nonaqueous capillary electrophoresis for the quality control of commercial saffron samples*. J. Chromatogr. A 1085, 293–298.

Uzundzhaljeva, S., Marta. T: *Polen Morphology of Crocus L. (Iridacea) in Bulgaria*, ICEA, 2012; 13 (2) 361 – 368.

Novica, R. *Crocus jablanicench (Iridacea), a new species from the Republic of Macedonia*. 2012. Ann. Bot. Fermmici. 49: 99 – 102.