

STUDY OF THE MORPHOLOGICAL VARIABILITY OF INDIGENOUS VINE VARIETIES BY USING VARIATIONAL STATISTICS IN THE CLIMATIC CONDITIONS OF VINEYARDS DEALU BUJORULUI

STUDIUL VARIABILITĂȚII MORFOLOGICE A SOIURILOR AUTOHTONE DE VIȚĂ DE VIE PRIN UTILIZAREA STATISTICII VARIAȚIONALE ÎN CONDIȚIILE PEDOCLIMATICE A PODGORIEI DEALU BUJORULUI

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Abstract. Research has particularity targeted on existing local varieties of RDVVS Bujoru ampelography collection. Cluster analysis acknowledges the existence of similar groups, but not all characterization allows the division between varieties according to the existing degree of dissimilarity or similarity. In this case, groups are formed according to the linked affinity (kinship), and congestion or placing in the group was hierarchical. Distance (dissimilarity) and similarity complement each other, maximum similarity corresponds to short and vice versa and for every individual belonging to the group to the specified distance from its neighbors in the same group of neighbors to the superiors of the group.

Key word: Cluster analysis, vineyard, ampelometry,

Rezumat. Cercetările efectuate au vizat în mod deosebit soiurile autohtone existente în colecția ampelografică a SCDVV Bujoru. Analiza Cluster admite existența unor grupuri similare, dar nu pentru toate caracterele și permite, divizia între soiuri în funcție de gradul de disimilaritate existente sau similaritate. În cazul de față, grupurile formate sunt legate între ele în funcție de afinitate (înrudire), iar aglomerarea sau așezarea în cadrul grupului s-a făcut ierarhic. Distanța (disimilaritatea) și similitudinea se completează reciproc, adică distanță mică corespunde la similitudine maximă și invers și pentru fiecare individ care aparține grupului se precizează distanța față de vecinii săi din cadrul aceluiași grup și față de vecinii care aparțin grupului ierarhic superior.

Cuvinte cheie: metoda cluster, viță de vie, ampelometrie

INTRODUCTION

Cluster analysis classifies a set of observations into two or more unknown groups based on mutually exclusive combination of variables. The aim is to group classification of vine varieties depending on the similarities and differences between them, thus providing a summary of their description.

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The term cluster refers to a set of objects (elements) similar to each other and dissimilar from other clusters, while the term involves the application of cluster analysis algorithms, resulting classes as a result of a suite of operations performed recursively or repetitive. Cluster analysis, also known as segmentation analysis or taxonomy is to identify a set of homogeneous groups by grouping items so as to minimize variation within the group and maximize the variation between groups. It is therefore a unit or multivariate analysis technique that includes a number of algorithms for classification of objects or individuals into homogeneous groups (Babucea, 2003; Indreaş A., 2004; Rotaru L., 2000). The Cluster approach will be achieved in this work, created from hierarchical cluster analysis of the studied varieties.

MATERIAL AND METHOD

The ampelometry expressed some characters ampelographic by numerical expressions, considering that each variety can be defined by an eigen value, characteristic. Research conducted within the work focused particularly in the collection of indigenous varieties of RDVVS Bujoru ampelography (Astra, Azur, Babeasca neagră, Blasius, Brumăriu, Cetăţuia, Cioinic, Coarnă neagră selecţionată, Codană, Negru aromat, Selena, Silvania, Transilvania).

Cluster analysis was performed using the variables of the leaf ampelometryc adult characters. Were carried out a series of measurements taken from the following list of characters ampelometryc OIV descriptors. Were collected every 20 leaves from the middle third of the shoot, during the first fruits of the grape. Shoots showed the same stage of development and had the same level of insertion. There have been a number of 68 ampelometryc direct measurements and data obtained allowed the calculation of 53 ampelometryc values. Measurements ampelometryc analyzed the leaves of vines were: length of main ribs (N1, N2, N3, N4) distance between lateral petiole sine point (U, A), lateral sinus opening (SS, Si) and petiole sine (SP), length (ALT) and width (AN) languages, the outer leaf (ENS, ENM, ENI, NL), the inside of the leaf (DS1, DS2, DS), the angles between the main veins (A, B, C) angles that define the shape of median lobe (F, AP), median fins and the tip angle of the lower side lobe (EBA), the relationship between the length of ribs (21a, 31a, 41a), the ratio of the lateral sinus and veins that resting sinus (UN2, ON3), ratio of leaf length and width (LA).

RESULTS AND DISCUSSIONS

Appealing to the desired cluster analysis classification of vine varieties studied depending on the variables considered in the assumption that each of them have certain common characteristics. Cluster analysis enables the study of their phenotypic expressions of genotypes manifested through the leaves of the vine. Varieties studied as part of Proles pontica and orientalis. Hierarchical cluster analysis was performed - using the Hierarchical Cluster farthest neighbor with Squared Euclidean distance as a method of calculating distances with available software package SPSS for Windows. Was chosen to display the output of all combinations of each iteration, distances etc. option "Agglomeration schedule", showing distances or similarities between elements with „Proximity matrix „, and display in one or more iterations of „Cluster Membership„, - the Statistics module.

Also, we opted for the graphical representation of cluster-type chart in the dendrogram. The dendrogram representation, the distances between the elements that unite are processed on a scale of 0-25 (fig. 1), while maintaining the ratio of distances. Given the set of indicators considered to characterize the varieties were found three clusters as shown in tables 1 and 2. *Cluster 1*: 1- Astra;3-Selene; 4- Băbească neagră; 9 - Coarna albă; 14- Blasius; *Cluster 2*: 2- Brumăriu; 5- Azur; 7- Sylvania; 10- Negru aromat; 11- Coarnă neagră selecționată; *Cluster 3*: 6- Transilvania; 12- Codană; 13- Cetățuia, Cioinic.

Table 1

Cluster Membership		
Case	Varieties	Cluster
1	Astra	1
2	Brumăriu	2
3	Selene	1
4	Băbească neagră	1
5	Azur	2
6	Transilvania	3
7	Sylvania	2
8	Cioinic	3
9	Coarnă albă	1
10	Negru aromat	2
11	Coarnă neagră s.	2
12	Codană	3
13	Cetățuia	3
14	Blasius	1

Table 2

Agglomeration Schedule

Stage	Cluster Combined		Coefficients	Stage Cluster First Appears		Next Stage
	Cluster 1	Cluster 2		Cluster 1	Cluster 2	
1	4	9	135,286	0	0	8
2	6	12	272,311	0	0	6
3	1	3	279,647	0	0	5
4	7	11	343,682	0	0	7
5	1	14	493,638	3	0	8
6	6	13	518,168	2	0	11
7	2	7	665,162	0	4	9
8	1	4	1187,502	5	1	11
9	2	10	1192,040	7	0	10
10	2	5	1542,693	9	0	12
11	1	6	3321,838	8	6	12
12	1	2	6845,630	11	10	0

As a result of the algorithm is obtained classification tree (dendrogram) which is actually a summary of classification. Dendrogram cluster agglomeration schedule shows: the amount for which classes were merged. Analyzing the dendrogram in fig. 1, that the iterative process starts with 7 groups of somewhat homogeneous classes. At a level of aggregation under 5, restricted to three groups which are represented by the three clusters. In the clusters formed, they comprise varieties are similar sizes ampelometryc after some consideration, and segregation is quite small. Varieties have similar leaf shape (orbicular, orbicular-cuneiform). Differentiation is given by the size and length of leaves. Cluster 3 is somewhat different from the other two clusters structure. Cluster 2 cluster 3 adheres to the degree of aggregation between 10 and 15. In light of the indicators considered, differs from the structure considered, it fits in a homogeneous class only in the last step of the algorithm.

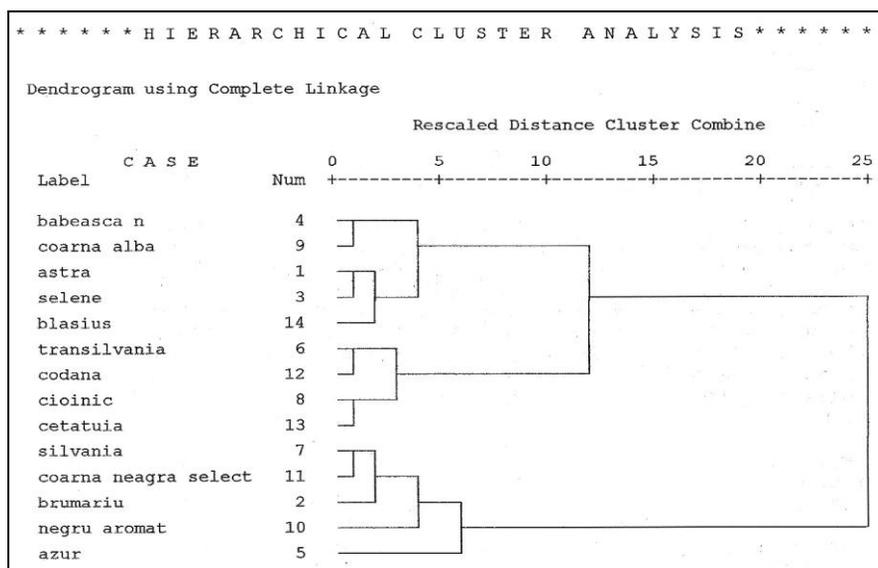


Fig. 1 - Dendrogram for the classification of indigenous vine varieties

CONCLUSIONS

1. Analysis multivariate, descriptive classification (cluster analysis) divided the varieties under study in a lot shared three clusters: - cluster 1: 1- Astra;3-Selene; 4- Băbească neagră; 9 - Coarna albă; 14- Blasius; cluster 2: 2-Brumăriu; 5- Azur; 7- Silvania; 10- Negru aromat; 11- Coarnă neagră selecționată; cluster 3: 6- Transilvania; 12- Codană; 13- Cetățuia, Cioinic.

2. The distances at which unite the three clusters show similarity between varieties. Variants that compose it are similar sizes ampelometrycs after some consideration.

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