

THE CLUSTER ANALYSIS OF CLONES OBTAINED FROM ALIGOTÉ GRAPEVINE VARIETY

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ABSTRACT - *Using Cluster analysis in characterizing the grapevine varieties has determined the establishment of phenotypical similarity degree between the studied clones. The purpose of this paper was to characterize the clones obtained from Aligoté grapevine variety. Applying the Cluster analysis testified that the similitude of the clones from the Aligoté variety was high (the value of the chaining index was of 4419372). The highest phenotypical similitude in adult leaves was found in clones Aligoté -5 Iș and Aligoté-63 Șt (the value of the similitude index was of 1733656). The degree of phenotypical similitude of the Aligoté variety was low, compared to studied clones, the aggregation within the dendrogramme being done at a low similarity degree.*

Key words: Cluster analysis, grapevine variety, Aligoté, clone

INTRODUCTION

The use of Cluster analysis in characterizing grapevine varieties and selections determines the establishment of phenotypical similarity degree of analyzed genotypes. This was done according to the principle of variance or minimum loss of inertia (generalized WARD criterion). It tries to optimize at each stage, the best division by classes, resulted from the aggregation of two elements submitted to grouping, and, finally, resulting in the dendrogramme of varieties hierarchy, according to their similitude (Costacurta *et al*, 1966; Indreas *et al*, 2003).

The Aligoté variety was brought in Romania in the post-phylloxera period, and it settled down in the vineyards from Moldavia. Considering its agrobiological and technological value, valuable clones were obtained and better adapted to Romania's conditions. The phenotypical resemblance between the old variety and the new clones is very high.

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The aim of the paper is to point out the similitude degree between the clones of the Aligoté variety, obtained in Romania and the population of the variety (Rotaru, 2004; Vulpe, 1990).

MATERIALS AND METHODS

We have sampled from the clones of the Aligoté variety and from the variety population, 30 adult leaves, found in the third middle part of shoots, because, in that area, the variability of ampelographic traits was the lowest. 51 reference points were established in the leaf architecture and 68 direct ampelometrical measurements were done.

The data obtained allowed us to calculate 53 ampelometrical values: sums, ratios, product, etc. (Figure 1)

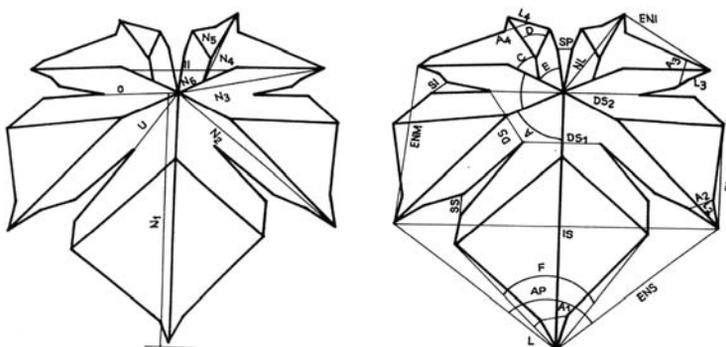


Figure 1 – Ampelometrical measurements on leaves of studied genotypes

In the case of symmetrical traits, both values have been measured and calculated. They allowed us to form a statistical population, made of simple series (variation ranges) of 30 values, for all the 121 studied traits and all the studied varieties. The studied genetic material is presented in Table 1.

Table 1

Studied genetic material

Genotype	Where it was obtained	Year of homologation
Aligoté – population	-	-
Aligoté – 5 Iş	Vine-Growing Research Station Iaşi	1978
Aligoté – 63 Şt	Vine-Growing Research Station Ştefăneşti	2000
Aligoté – 31 Iş	Vine-Growing Research Station Iaşi	2002

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RESULTS AND DISCUSSION

The analysis of the dendrogramme of varieties hierarchy from the four monotypic groups (genotypes) has resulted in an optimum division in three polytypic groups, with close phenotypical resemblance. Almost all the clones resembled morphologically, because the value of the level index, which determined the division of clones, was low, of 4419372 (*Table 2*).

Table 2

Levels of clone chaining in making of the dendrogramme

Making of the node	No. of nodes	No. of varieties from the node	Value of the index
Aligoté -5 Is ~ Aligoté-63 St	1	2	1733656
Aligoté -5 Is ~ Aligoté-63 St ~ Aligoté-31 Is	2	3	4419372
Aligoté –population ~ Aligoté -5 Is ~ Aligoté-63 St ~ Aligoté-31 Is	3	4	30950583

The A branch was made of clones Aligoté -5 Is and Aligoté-63 St, which present the closest morphological similitude, the value of chaining index being of 1733656 (*Figure 2*).

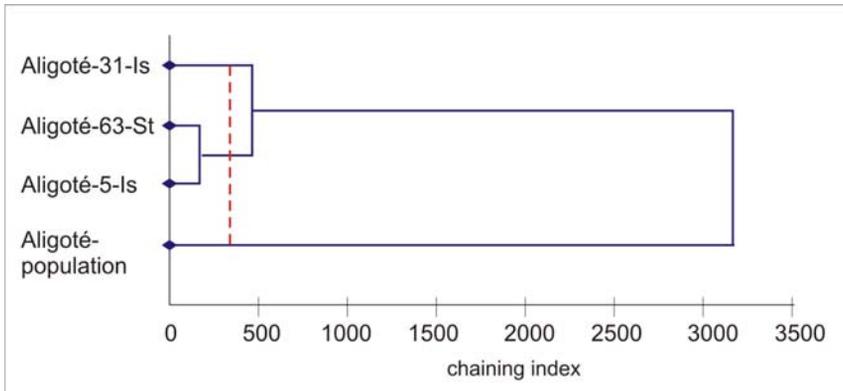


Figure 2 – Dendrogramme of the hierarchy of clones from the Aligoté variety

The B branch was made of the A branch, to which the Aligoté -31 Is was added, with a chaining index of 4419372.

According to the histogram of varieties hierarchy (*Figure 3*), the population of the Aligoté variety is joined at a higher chaining level, compared to clones, of 30950583. It has proved the phenotypical lack of homogeneousness of the variety population, compared to selected clones.

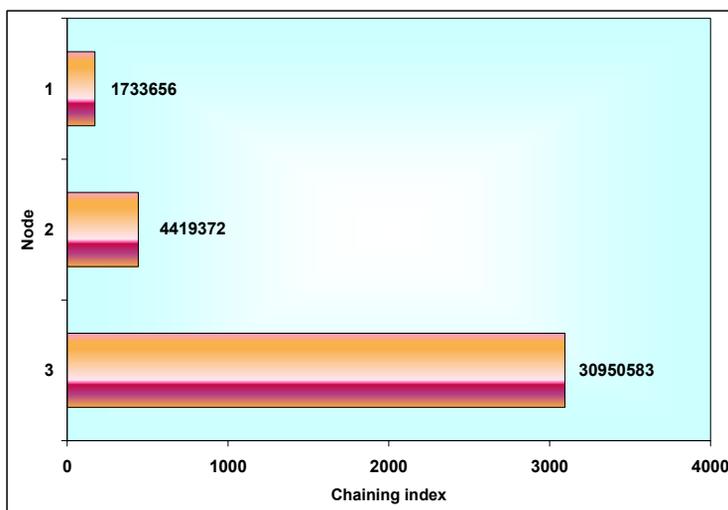


Figure 3 – Histogram of varieties chaining

CONCLUSIONS

Applying the Cluster analysis, which allows the presence of polytetic groups (similar genotypes groups), has shown that the similitude of clones of the Aligoté variety was high. The value of chaining index was of 4419372.

The greatest phenotypical resemblance of adult leaves is found in the Aligoté-5 Iş and Aligoté-63 Şt clones, the value of similitude index being of 1733656.

The degree of phenotypical resemblance of the Aligoté variety to the studied clones is low, the aggregation within the dendrogramme being done at a similitude level to clones, of 30950583.

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