

EVALUATION OF THE CORRELATIONS BETWEEN THE MAIN QUANTITATIVE CHARACTERISTICS IN THE VINEYARD VARIETIES ALIGOTÉ AND FETEASCA REGALA

EVALUAREA CORELAȚIILOR DINTRE PRINCIPALELE CARACTERE CANTITATIVE LA SOIURILE DE VIȚĂ DE VIE ALIGOTÉ ȘI FETEASCĂ REGALĂ

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Abstract: *In order to start some clonal selection works, the Aligoté and Fetească regală vine varieties from the Research and Development Station for Viticulture Iași have been subjected for several consecutive years, to works to evaluate the variability of the main quantitative characters, namely : number of shoots per stem, number of fertile shoots per stem, percentage of fertile shoots per stem, number of grapes per stem and shoot, weight of grapes per stem and shoot, number of berries per grape, weight of berries per stem and grape, as well as the mass of 100 berries. The present study aimed to determine the existing links between different quantitative characters, by calculating the regression and correlation coefficients.*

Key words: Aligoté, clonal selection, correlations, Feteasca regala, plant breeding

Rezumat: *În vederea demarării unor lucrări de selecție clonală, soiurile de viță de vie Aligoté și Fetească regală din cadrul Stațiunii de Cercetare-Dezvoltare pentru Viticultură Iași au fost supuse timp de mai mulți ani consecutivi, unor lucrări de evaluare a variabilității principalelor caractere cantitative, și anume: numărul de lăstari pe butuc, numărul de lăstari fertili pe butuc, procentul de lăstari fertili pe butuc, numărul de struguri pe butuc și pe lăstar, Greutatea strugurilor pe butuc și pe lăstar, numărul de boabe pe strugure, greutatea boabelor pe butuc și pe strugure, precum și masa a 100 de boabe. Studiul de față a avut în vedere determinarea legăturilor existente între diferite caractere cantitative, prin calcularea coeficienților de regresie și de corelație.*

Cuvinte cheie Aligoté ameliorarea plantelor, corelații, Fetească regală, selecție clonală

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INTRODUCTION

Clonal selection is one of the methods currently used both in the vine breeding process and to maintain the purity and biological potential of a production plantation (Pérez *et al.*, 2004).

In addition to the real chances of homologation of valuable new clones from established grapevine varieties, units producing certified planting material for commercialization routinely practice clonal selection (Forneck *et al.*, 2009) for the establishment of basic mother plantations. In this sense, the periodic evaluation of the quantitative characters of the vine varieties in a certain area is justified.

MATERIAL AND METHOD

The biological material was represented by two vine varieties, Aligoté and Feteasca regala, famous for their use in obtaining quality wines.

For each variety, an audit of the plants was carried out, after which 25 plants were randomly chosen and marked, for three consecutive years.

In these elite plants, biometric determinations were made during the vegetation period for the following characters: total number of shoots per stem, number and percentage of fertile shoots per stem, number of grapes per stem and per shoot, weight of grapes per stem and per shoot, number and weight of berries per grape, weight of berries per grape and weight of 100 berries. The data obtained were used to calculate indicators specific to the analysis of phenotypic variability of quantitative characters, as well as regression and correlation coefficients (Falconer, 1989, Pélabon *et al.*, 2020).

RESULTS AND DISCUSSIONS

In the Aligoté variety (tab. 1) there were negative, distinctly significant correlation between the number of shoots/plant and the weight of grapes/shoot, between the number of fertile shoots/plant and the weight of grapes/shoot and between the number of grapes/plant and the number of berries/grape. Between the number of shoots/plant and the number of berries/grape, as well as between the number of grapes/shoot and the weight of grapes/shoot, the correlation coefficient have significant negative values. Between the other pairs of characters, the values of the correlation coefficients were not statistically assured.

In the Feteasca regala variety (tab. 2), distinctly significant positive correlations resulted between the following pairs of characters: the number of shoots/plant and the number of fertile shoots/plant, the number of shoots/plant and the number of grapes/plant, the number of fertile shoots/plant and % shoots fertile shoots/plant, % fertile shoots/plant and weight of grapes/plant, % fertile shoots/plant and weight of berries/plant, weight of grapes/plant and number of berries/plant, weight of grapes/plant and weight of berries/plant, as well as between the number berries/grape and weight of berries/plant.

Significant negative correlations resulted only between the percentage of fertile shoots per stem and the weight of grapes per shoot

Table 1

Phenotypic correlation coefficients (r) between the quantitative characters studied in the Aligoté variety

| The analyzed characters | Nr.of fertile shoots/plant | % of fertile shoots/plant | Nr.of grapes/plant | Nr.of grapes/shoot | Weight of grapes /plant | Weight of grapes/shoot | Nr.of berries/grape | Weight of berries/grape | Weight of berries/plant | Weight of 100 berries |
|----------------------------|----------------------------|---------------------------|--------------------|--------------------|-------------------------|------------------------|---------------------|-------------------------|-------------------------|-----------------------|
| Nr.of shoots/plant | 0.78** | 0.30 | 0.62** | 0.66** | 0.14 | -0.70 ⁰⁰ | -0.41 ⁰ | 0.04 | 0.20 | -0.30 |
| Nr.of fertile shoots/plant | | 0.80** | 0.66** | 0.41* | 0.57** | -0.54 ⁰⁰ | -0.08 | -0.16 | 0.59** | -0.20 |
| % of fertile shoots/plant | | | 0.56** | 0.04 | 0.70** | -0.26 | 0.11 | -0.27 | 0.68** | -0.06 |
| Nr.of grapes/plant | | | | 0.15 | 0.28 | -0.31 | -0.56 ⁰⁰ | -0.10 | 0.36 | -0.06 |
| Nr.of grapes/shoot | | | | | -0.03 | -0.46 ⁰ | -0.16 | 0.13 | 0.02 | -0.33 |
| Weight of grapes/plant | | | | | | 0.04 | 0.54** | -0.23 | 0.91** | -0.24 |
| Weight of grapes/shoot | | | | | | | 0.40* | -0.10 | 0.09 | 0.02 |
| Nr.of berries/grape | | | | | | | | 0.00 | 0.53 | -0.07 |
| Weight of berries/grape | | | | | | | | | -0.14 | 0.09 |
| Weight of berries/plant | | | | | | | | | | -0.29 |

Table 2

The phenotypic correlation coefficients (r) between the quantitative characters studied in the Feteasca regala variety

| The analyzed characters | Nr.of fertile shoots/plant | % of fertile shoots/plant | Nr.of grapes/plant | Nr.of grapes/shoot | Weight of grapes /plant | Weight of grapes/shoot | Nr.of berries/grape | Weight of berries/grape | Weight of berries/plant | Weight of 100 berries |
|----------------------------|----------------------------|---------------------------|--------------------|--------------------|-------------------------|------------------------|---------------------|-------------------------|-------------------------|-----------------------|
| Nr.of shoots/plant | 0.78** | 0.33 | 0.41** | 0.53** | 0.11 | -0.60 ⁰⁰ | -0.10 | 0.18 | 0.13 | 0.05 |
| Nr.of fertile shoots/plant | | 0.75** | 0.38 | 0.42* | 0.46* | -0.65 ⁰⁰ | 0.12 | 0.02 | 0.49** | 0.12 |
| % of fertile shoots/plant | | | 0.13 | 0.23 | 0.57** | -0.44 ⁰ | 0.26 | 0.16 | 0.64** | -0.01 |
| Nr.of grapes/plant | | | | -0.23 | 0.20 | -0.13 | -0.32 | 0.04 | 0.16 | -0.01 |
| Nr.of grapes/shoot | | | | | -0.15 | -0.60 ⁰⁰ | 0.19 | -0.27 | -0.13 | 0.08 |
| Weight of grapes/plant | | | | | | 0.04 | 0.54** | -0.23 | 0.91** | -0.24 |
| Weight of grapes/shoot | | | | | | | 0.40* | -0.10 | 0.09 | 0.02 |
| Nr.of berries/grape | | | | | | | | 0.00 | 0.53 | -0.07 |
| Weight of berries/grape | | | | | | | | | -0.14 | 0.09 |
| Weight of berries/plant | | | | | | | | | | -0.29 |

For the other pairs of characters of the Fetească regală variety, the values of the correlation coefficients were insignificant.

CONCLUSIONS

1. In both varieties studied, the closest links between the analyzed quantitative characters, expressed by positive, distinctly significant values of the correlation coefficients, accompanied 12 pairs of quantitative characters.

2. Very close negative correlations were identified for two pairs of characters, namely between the number of shoots per stem and the weight of grapes per shoot and between the number of grapes per shoot and the number of berries per grape.

3. For both analyzed varieties, the obtained results can help the effective application of clonal selection works, either for ameliorative purposes or for maintaining the biological value of the plantations.

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