

RESEARCH ARTICLE

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Statistical methods assessment of the relations between some features of the endogenous grape cultivars Shesh i Zi and Shesh i Bardhe

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Abstract

To clarify the factors and the Heritage genetic basis of both vine cultivar *Shesh I zi & Shesh I Bardhe*, reviewed several features in two eco zones (Gjokaj, Peze Helmes) reference origin (Kulle, Sukth). The experiment deals with variances and statistical testing variability between two grapevine cultivars. In general, the variables of the two cultivars have differences with each other within the environment of origin and between the two areas. Genotypes expressed deviations from the population average standard (X_{med}). Zone factor is responsible for 57.5% of average distribution $\mu \pm 1\delta$ border values of the average, while the limits $\mu \pm 2\delta \pm 3\delta$, 99.9% of the values. In productivity contributed not only hereditary but environmental factors. The number and weight of the bunch, the percentage of sugar, pH and leaf characteristics appear with genetic similarities, respectively 50-60%, while the rest of the variability influenced by environmental factors. Reducing the number of bunch is as sociated with increased weight of bunch (and vice versa), with a correlation coefficient, $r^2 = 0.838$. Higher value for the similarity (heritability), confirmed the pH and the percentage of sugar in three areas.

Key words: Genetic factors; heritability; *Shesh i Zi*; *Shesh i Bardhe*; correlation

1. Introduction

Description, standardization of endogenous grapevine cultivars in the Permet area and Leskovik, made for the first time 1968 [3]. For genetic improvement, grape cultivars *Kallmet*, *Shesh i Zi* and *Vlosh* through sexual hybridization run the cultivar Cabernet sovino, Alikant Boucher, hybrids created with different variations and correlations. Results of experiments, reached an acquisition of native cultivars improved in color, flavor and aroma where by Vinilificio received positive results. Clonally selections for cultivar *Vlosh*, area Fier have relater quality clones for productivity and technology requirements of the summer, while noted influence of the environment on the genotype [2]. Finally, Sobel and al. [9] concluded that substantially all of the mechanisms of biological evolution, are ecological in nature. The importance of ecology for Speciation recognized for many decades, perhaps since Darwin (4). Only in the last two decades, particular emphasis put importance eco clime in morphological changes in plants. Study cv. *Shesh i Zi* correlations and the U.S. in three different areas has been the aim of assessing the linkages and impacts on productivity and the percentage of sugar in order to in the future precise

recommendations for the application of the profitable correlations.

2. Material and Methods

Study features several varieties of grapevine cultivars *Shesh i Bardhe & Shesh i Zi* conducted in the years 2010 - 2011 in three countries: Sukth-Durres, Gjokaj-Tirana and Peza Helms-Tirana, *Image-1*. According to the following scheme:

- T1- Standard - Shesh i zi/Kulle.
- T2 - Standard - Shesh i bardhe/Kulle
- T3- Shesh i zi/Gjokaj
- T4- Shesh i bardhe/Gjokaj
- T5- Shesh i zi/P.Helmes
- T6- Shesh i bardhe/P.Helmes

Vineyard aged 8-10 years. Plants are prune in January, two works carried out of the earth associated with chemical manures (5 q / ha N / P / K) after pruning. Five chemical treatments for protection from Cane & Leaf Spot (*Phomopsis viticola*) and European Grapevine Moth (*lobesia botrana*). (2)

Indicators of research: For each parcel of cultivar relevant, observed 20 plants distributed at random in four repetitions. Observations made on each plant: (i) the number of bunch of plants, (ii) for each plant yield in kg. (iii) reins weight in kg. (iv) percentage of sugar g / lt. (v) and the percentage of acid tartaric. (Study

on quantitative indicators). The statistical analysis consists of standard deviation within repetition. Analysis of variance and variability, testing in two of varieties and areas.

Coefficient of correlations among regional and varieties traits. Standard deviation to express variability caused by genetic factors and associated environmental impacts, formula:

Analysis of the dispersion of values within and between varieties repetition calculated with the formula:

Most statistical explanation aims to explain the differences in observations, known as variance, represented by the coefficient of variance:

δ -standart deviation., \bar{x} - mean (average). Correlation between the observed values of the features conditional dependency between genetic values and environmental conditions that act on these traits

(6).

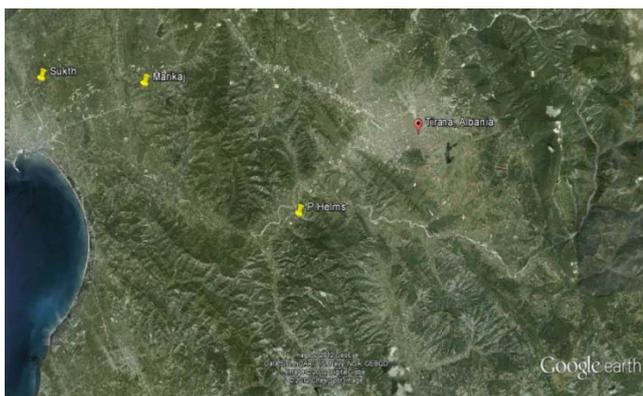


Figure 1: Image from Google earth for three experimental field Sukth, Marikaj and Peze Helmes

3. Results and Discussion

Data analysis of the behavior of the two cultivars in three different environments has proven the value of different phenotypic traits. Referring to the data table (Table 1), the value of genotypes in the towers and the two, and other facilities with nearly various environmental conditions have expressed deviations from the population average standard (X_{mes}). In diagram (Figure-3 ab) expressed various links between features, settings breeding and varieties genotypic values.

Degree of repeatability that phenotypic values was as the square of correlation coefficients between the three surveys (years) of each feature. Deviation from the average is he got from the environment and

has been the difference between the phenotypic and genotypic: $X-(m + G) = e$

Standard deviation: Causes variation quantitative traits; bunch weight (bw), the number of bunch (nb), percent sugar (ps), etc., were the relations between the two genotypes with any climate zone. Regardless of approximate values of the arithmetic features, the area factor is responsible for the distribution, 57.5% of the values found in the limit $\mu \pm 1\delta$ of average while the limits $\mu \pm 2\delta$ found 91.4% of the value and the limits $\pm 3\delta$, located 99.9 % values (Figure-1&2).

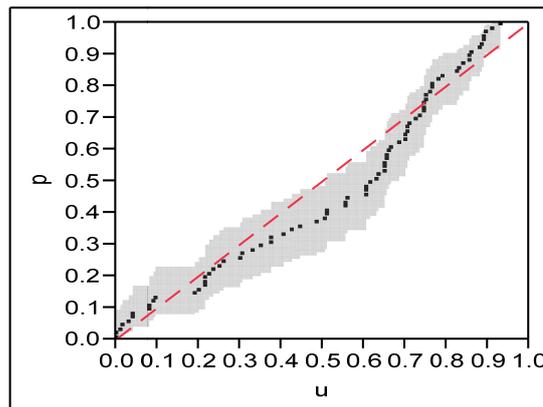


Figure 2: Standard deviation, variation

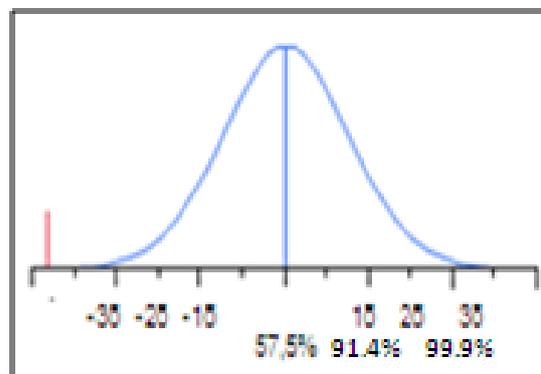


Figure 3: Dispersion of the values of attributes

Three zonal factors on each feature have given various diversions and follows the square to avoid defaults have expressed interesting variance with different characters. Phenotypic variance of each variety made up of two additional values, first (δG_2) that is due to genetic causes, and the other (δE_2) causes environment: (6)

The data under analysis Diagnostics Cox-Snell residual PP Plot ($\beta_0 = 33.84$, $\beta_1 = -0748$ and $\Sigma = 0413$), showed that the average variables have distribution features within standard line deviated representative ($r^2 = 0942$), and expressed about

positive sense between zones and cultivar. (1). Clearly stated the relative influence of genetic and environmental factors in the variability and succession to feature against the area of origin (Control), Figure-4ab.(5)

The amount of sugar gr / l e analyzed (statistical each pair student's p = 0.05, LSD. 2.10) has resulted in about three cultivation areas validated changes. Cv. Shesh i Zi with large variations compared with cv Shesh i Bardhe , in three areas.

The amount of sugar expressed in g / l is an expression of the links between biological and

Table 1: Data for indicators of leaf (Xmes)

Indicators	Shesh i Bardhe				Shesh i Zi			
	Sukth		Gjokaj		Sukth		Gjokaj	
	2010	2011	2010	2011	2010	2011	2010	2011
Leaf width	18.29	16	19.89	16.49	17.80	19.48	15.71	15.44
Number of rib	5.43	5.57	9.78	5.44	6.96	5.11	5.86	4.88
Number of lobbies	3.61	3.72	3.57	3.78	3.41	3.78	3.83	3.86
Length of tail	10.57	12.50	11.46	12.78	10.83	11.78	8.71	11.67

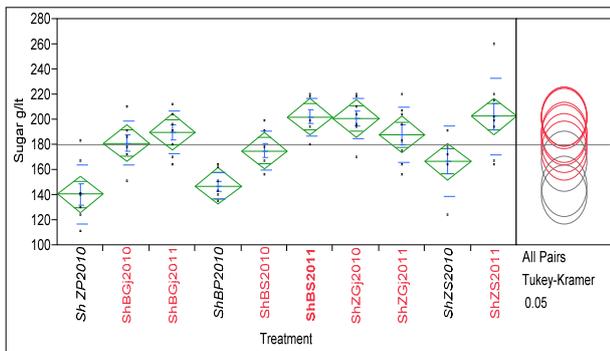
Correlative links and level of regression. Correlative links exist between features, different characteristics of the plant and the surrounding environmental conditions, mainly severity of bunch weight, production and bunch number. In productivity and production influenced not only hereditary but environmental factors that related and dependent on each other, these links functional character. All processes that occur in plants, for each feature related between them, on the other hand, each of which connected to the external environment and under the effects of the factors.

The correlation coefficient test based on (xy), has given the size and direction of the connections. The correlation coefficient values expressed strong negative or positive sense of connection between every pair of traits analyzed. Percentage of sugar varieties *Shesh i Bardhe* and *Shesh i Zi* in the three study areas have different linear correlations. From

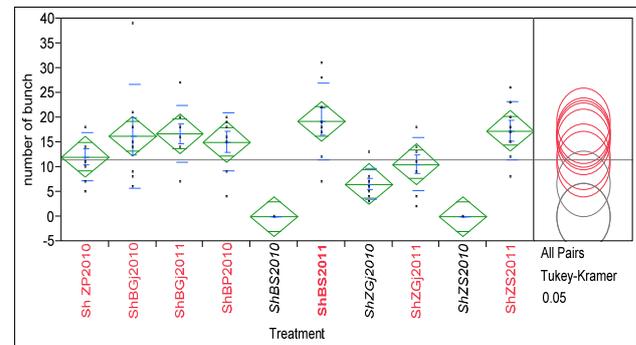
motivational factors zonal that have created, metabolically activity changes (4) . In addition, bunch features pronounced variation. There is a tendency in cv *Shesh i Bardhe*, which owns large-scale value. According to the mathematical model implemented two cultivar genetic values, have been deviations, which caused by the environment, as the difference between the average standard deviation (control) with real values of each zone. The amount of deviation within cv / zone: $k(n-1)$,

the study of the links between bunch weight and the weight of the reins, bunch weight of sugar content within variety show positive about almost insignificant. While a variety of other, changes seen in the emergence of these links, whatsoever to indicate that among them is variation [9].

In the analysis of regression coefficient bunch number (dependent variables), affects the independent variable (bunch weight) so increased production per plant. In dendrograms (*Figure-5 and 4a*) noticed; bunch number in each ecological environment has a positive impact in the independent variable in bunch weight. Distribution of the number of variables bunch by (Loglikelihood for the parameters β_0, β_1 and σ , $p = 0.05$), demonstrating that bunch numbers factor, positively affects bunch weight , the reduction of the number of bunch leads to a tendency to increase bunch weight and has a coefficient of $r^2 = 0.83$ shows a moderately strong positive connection.

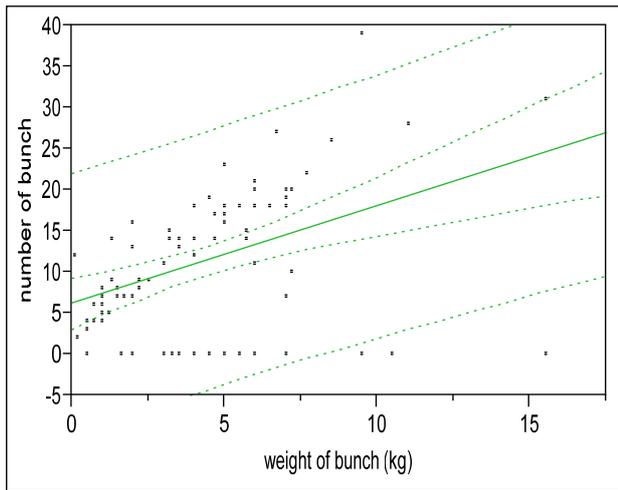


(a)

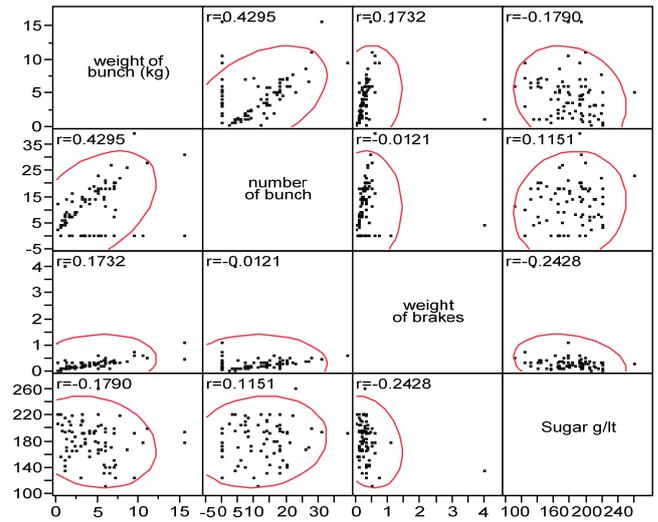


(b)

Figure 4: (a) Statistical Oneway Analysis of Sugar g/lit and (b) weight of bunch By Treatment.



(a)



(b)

Figure 5: a- Orthogonal Regression analysis of number of bunch By weight of bunch (kg) and (b).

Correlation of patterns of compared bunch number, weight bunch, brakes of bunch, sugar content

Therefore, in this case, the factors group average number of bunch, affect, bunch weight values 83.8% in the three study areas [5, 7].

Constant of inheritance: phenotypic variance and the percentage of the variability of features have expressed differences between individuals. Referring to the following tables, it seen, that these two varieties represent variability for all indicators is a reflection of its genetic variation of these ecotypes, *Figure-3ab*.

The study of genetic phenomena heritability out interesting data, which require careful interpretation. Seen that, the features of the leaf but, especially bunch characterized heritability low. So reins indicators, genetic similarities determined by 50-60% while the rest of the variability determined by environmental factors. [8]

This means that changing factors such as temperature, humidity and other agro measures affect the appearance of these features factors. In particular, production is an important feature greatly influenced by environmental factors.

pH results in a high coefficient of similarity. Evaluation of two cultivars in three cultivation facilities has shown variability between the studied traits. For some features there are not link strong that can be found and used in remedial work.

While, for some quantitative traits, observed correlative strong connection. Heritability lower about 50-60%, represent such features associated with the production, like reins weight in kg. Heritability presents, high enough, pH and percentage of sugar, Figure 4 a & 5.

4. Conclusions

- Through research failed to prove the improvement of the population of both varieties without underestimated genetic variability, conducted on the principles of evaluation of a broad genetic base. In this context, genetic factors in relation to the environment created variation in the successor ship to the features to the new populations of each variety.
- Statistical analysis confirms the average variables in each zone features / cultivar, with distribution within the representative line standard, and strong positive relation between the area and cultivar variations in features, cv and zones and evaluation

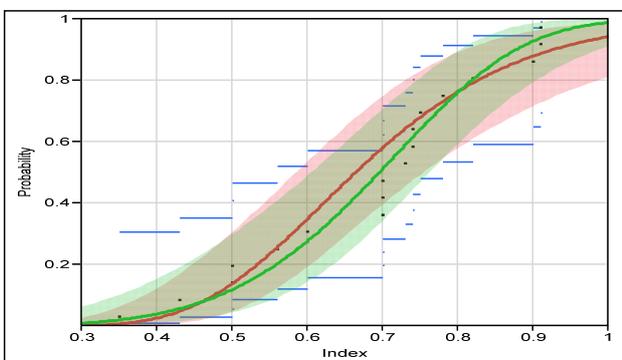


Figure 6: Orthogonal regression for Distribution Profiler of the similarity level features studied in three areas

of these components confirmed genetic similarities limits 50-60% while the rest of the variability has been in charge of environmental factors.

- Overall selection grapevine in two new facilities have been cultivation traits variability compared with the control environment, which matched anything that testified for the plasticity of genotypes.
- These variation ale reasons arising from the relationship between the two genotypes internal factors should be test in the future and used in remedial work

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