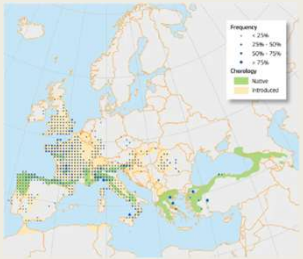
COMPARATIVE STUDY OF VARIABILITY IN *Castanea sativa* MILL. FROM THE BAIA MARE, GORJ AND VÂLCEA REGIONS

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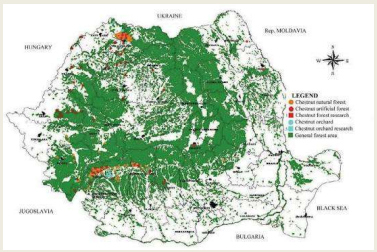
AIM AND IMPORTANCE

Castanea sativa Mill. is a perennial woody species belonging to the Fagaceae family, with significant ecological, economic, nutritional, and cultural importance. Its fruits represent a valuable food resource, consumed fresh or used to produce flour and purées. In Romania, the species is mainly distributed in Maramureș and Oltenia, where local populations represent important biological resources.

The aim of this study is to comparatively assess the morphometric variability of fruits collected from three populations: Baia Mare, Tismana (Gorj region), and Vâlcea, using biometric measurements and descriptive statistical analysis.



Distribution in Europe



Distribution in Romania

MATERIALS AND METHODS

The biological material consisted of 75 sweet chestnut fruits, with 25 fruits collected from each population (Baia Mare, Tismana and Vâlcea). Four biometric traits were measured: fruit weight, height, major diameter and minor diameter. Weight was determined using an analytical balance, while linear dimensions were measured with a digital caliper.

The shape index was calculated as the ratio between major and minor diameters. Data were analysed using the arithmetic average, standard deviation and coefficient of variation (CV%).



Population of Baia Mare



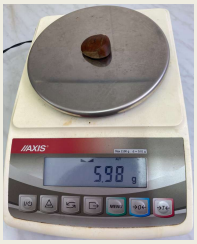
Population of Tismana



Population of Vâlcea



Measuring the weight of fruits

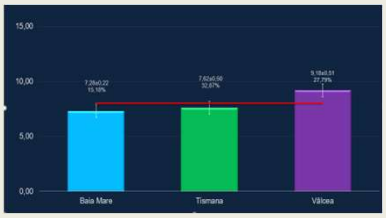


Analytical balance

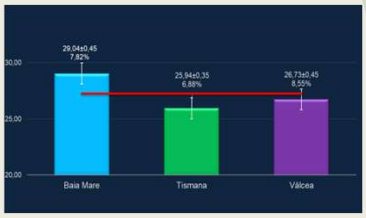


Digital caliper

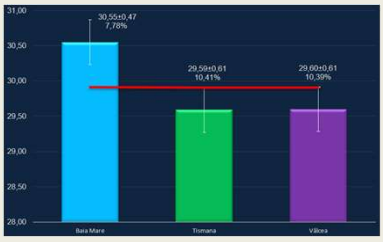
RESULTS AND DISCUSSION



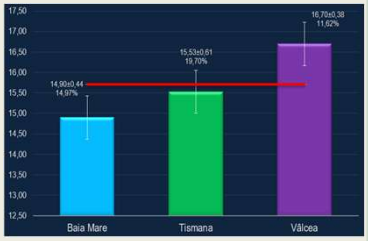
Average fruit weight compared to control value



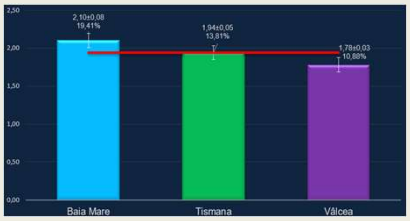
Average fruit height compared to control value



Average fruit major diameter compared to control value



Average fruit minor diameter compared to control value



Average fruit major diameter compared to control value

CONCLUSIONS

1. The comparative analysis of 75 fruits from three Castanea sativa populations revealed differences in the main biometric traits, highlighting the morphological variability of the studied material.

2. Vâlcea recorded the highest average fruit weight (9.18 g) and minor diameter (16.70 mm), while Baia Mare showed the highest fruit height (29.04 mm), major diameter (30.55 mm) and shape index (2.10).

3. Tismana presented the highest coefficients of variation for fruit weight (32.87%) and minor diameter (19.70%), indicating greater variability in these characteristics.

4. Fruit height showed relatively low variability across all three populations, with coefficients of variation ranging from 6.88% to 8.55%.

5. The results highlight differences in fruit size and shape among the studied populations and demonstrate the importance of using several biometric parameters for their characterization.

FUTURE OBJECTIVES AND AFFILIATIONS

FUTURE OBJECTIVES

Future research will focus on the molecular characterization of the studied Castanea sativa populations using specific molecular markers to assess their genetic diversity and relationships. Further investigations will include the development of in vitro culture protocols, the establishment of a dendrogram to evaluate genetic similarities among populations, and phytochemical analyses to determine the composition and content of bioactive compounds in the fruits. These complementary approaches will provide a more comprehensive understanding of the genetic and biochemical variability of the species and support the conservation and valorization of its genetic resources.

AFFILIATIONS

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