

## THE AMELIORATION OF THE MUSCAT D'ADDA VARIETY THROUGH CLONE SELECTION

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### Abstract

*During the period 1983 – 1999, at INCDBH Stefanesti, the elite Mt. d'Adda 22 Şt. was selected and grown in contest plantations in order to be destined to the fresh grapevine consumption. The identification of the biotypes (clones) having superior quality and production characteristics which manifest constantly, has been achieved through the study of the elites chosen in comparative fields, using the method of repeated determinations in groups of years, under specific vineyard conditions. Through repeated verification of the elites in the contest plots the elite Mt. d'Adda 22 Şt. stood out by superior quality, constant and sustained production of grapevines and the maintenance of the quality characters. The elite was omologated in 2009. There had been identified and studied the clone elites which maintained their productivity and quality characteristics during 2-3 years, which subsequently had been put to vegetative propagation with a view to obtain the initial grafting material according to the intensive amelioration schemes.*

Keywords: clone selection, phyto-sanitary testing, plantation mother, comparative study

## 1. INTRODUCTION

Clone selection had been applied to the variety Mt.d'Adda for genetic institution and for the fixing of the characters and valuable quality-productivity features. The four stages covered by the selection Mt. d'Adda 22 Şt. had been analyzed, from the choice in the selection plot to the omologation and the capitalization in the productive plantations. Clones belonging to different categories of biotype had been selected for the varieties with marked variability, as a result of the interaction between the environmental factors and the genotype. There had been identified and studied the clone elites which maintained their productivity and quality characteristics during 2-3 years, which subsequently had been put to vegetative propagation with a view to obtain the initial grafting material according to the intensive amelioration schemes[1].

## 2. MATERIAL AND METHODS

The variety Mt. d'Adda and the experimental plots of the respective variety from INCDBH Ştefăneşti constituted the initial material for

the achievement of the clone selection activities.

The identification, the choice and the marking of the valuable elites from the above mentioned variety had been done in 20-25 years old plantations, having an appropriate phyto-sanitary status. Previously, a rigorous positive selection had been effectuated. With a view to observe the stability and the adaptability to the environmental conditions, the valuable clone elites had been planted in the test plot [2].

In 2009, at INCDBH. Ştefăneşti the clone elite Mt.d'Adda 22 Şt. had been registered in the Official Catalogue of Plant Varieties from Romania, an elite selected from another 40 clones grown in the comparative and test plots. The planting of the vines from the elite Mt. d'Adda 22Şt., in the comparative and test plot had been done according to the experimental technique norms elaborated by I.S.T.I.S. in linear rows (Lindhard method). In order to establish the correlation among the different elements which influence the production capacity and the total sugar and production, the results of the determinations had been interpreted in terms of climatic conditions of the Ştefăneşti vineyard, Argeş, over three years of study (2007-2009).

To compare the performances of the chosen elites, the population of the Mt. d'Adda had been used as witness. In the third year of the selection, the vines which did not maintain their characteristics had been eliminated.

Besides the study of the elites in contest plantations, the propagating of the best elites had been effectuated through grafting. The rootstock used for grafting was Kobber 5BB, and the planting distances were 2,5m /interval și 0,9 m/row (4000vines/ht). The vines were directed in Guyot on medium-tall, supported on 5 wire trellis. The clones had been planted on a brown colluvium clayey-sandy soil, with a medium supply of phosphorus and potassium, poorly carbonized, with an insufficiently acid pH (6,2-6,4).

### 3. RESULTS AND DISCUSSIONS

All the data registered following the observations and the determinations of the agrobiological and technological characteristics were effectuated under the climatic conditions in the viticultural years 2007-2009. (Table nr1). The climatic conditions of these studied viticultural years are mainly characterized by poorly water conditions, especially during the growing and maturing critical periods of the grapevine and by great differences between summer and winter temperatures.

The agrobiological and technological characteristics of the clone elite Mt. d'Adda 22 Șt as compared to the witness variety Mt. d'Adda are presented in the fig. 1,2,3,4. and represents the average rate of three years (2007-2009).

#### **Morphological characters:**

*The adult leaf* is large, having a pentagonal contour, slightly fibrous on the inferior side, pentalobated.

*The grapevine* has medium to large size (350-400g), with the form of a truncated cone, with short stem, herby, having the grapes moderately rare.

*The grape* has medium size (4,5 -5,5g), spherical, of dark violet red colour, covered with abundant bloom. *The pulp* is fleshy, crisp, having a slight muscatel flavour.

**Main phenophases:** Budless: 10-14.04; blooming: 30.05-03.06; mellow: 01.-04.08; full maturity: 10- 19.09.

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The agrobiological and technological characteristics of the clone elite Mt. d'Adda 22 Șt as compared to the witness variety Mt. d'Adda are presented in the fig. 1,2,3,4. and represents the average rate of three years (2007-2009)[3].

Determining the fertility of the presented clone elite (80%) we can affirm that it represents an elite having a superior fertility. At the same time, the loss of buds had been reduced during the winter period.

The fertility coefficients (absolute and relative Fig.2) had been superior to the witness, classifying between 1,46/0,93 as compared to 1,43/0,95.

**Table nr. 1 Meteorological data registered during 2007-2009**

NR.	NAME	2007	2008	2009
1.	Minimal absolute temperature (° C)	-9,6	-13,8	-5
2.	Maximal absolute temperature (° C)	38,5	35,7	35,8
3.	Period of vegetation	01.04-13.10	04.04-23.10	29.03-14.10
4.	Number of days active vegetation	193	197	200



1. Clone elite Mt. d'Adda 22 Št

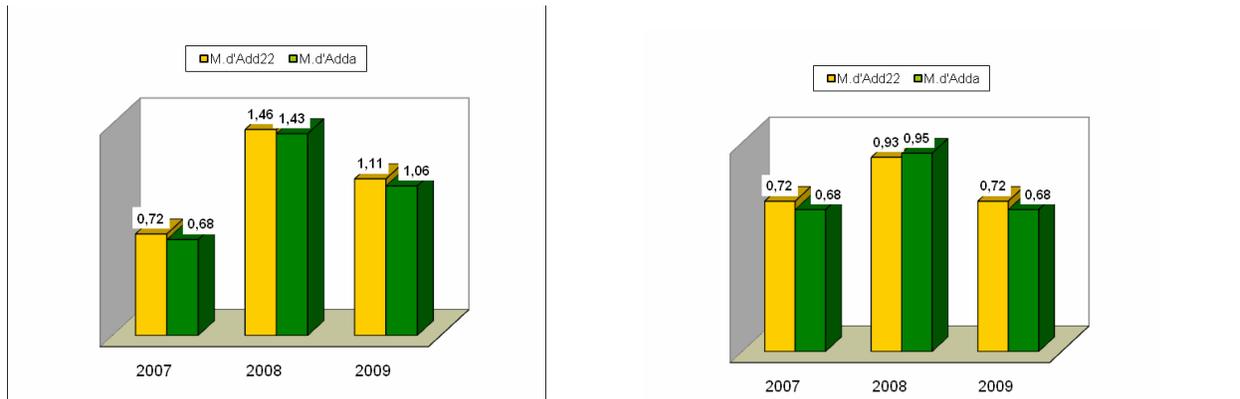


Fig.2 Fertility coefficients (absolute and relative)

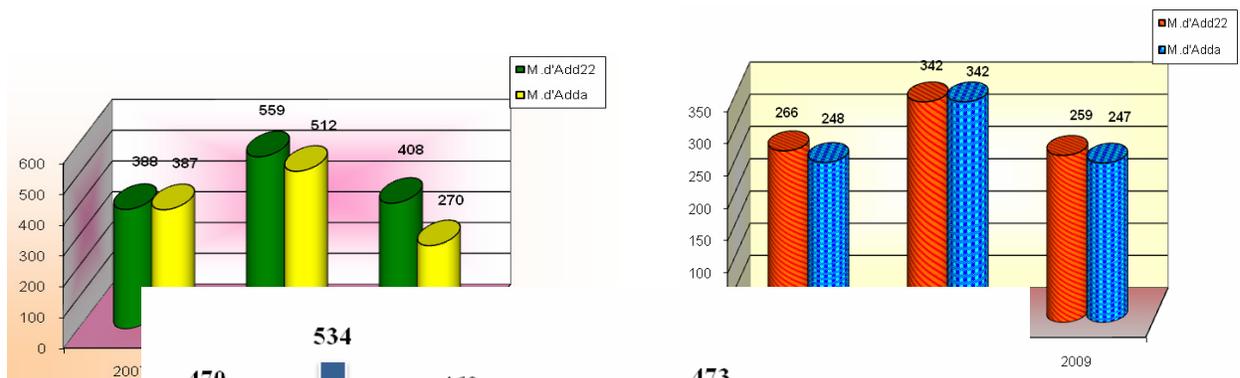
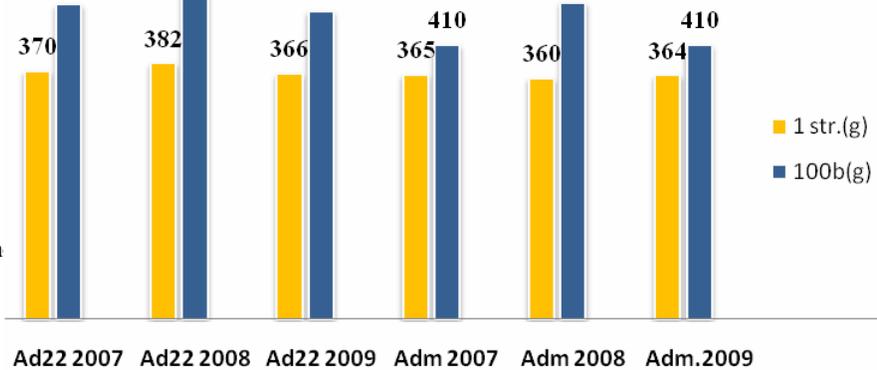


Fig.3  
(absolute

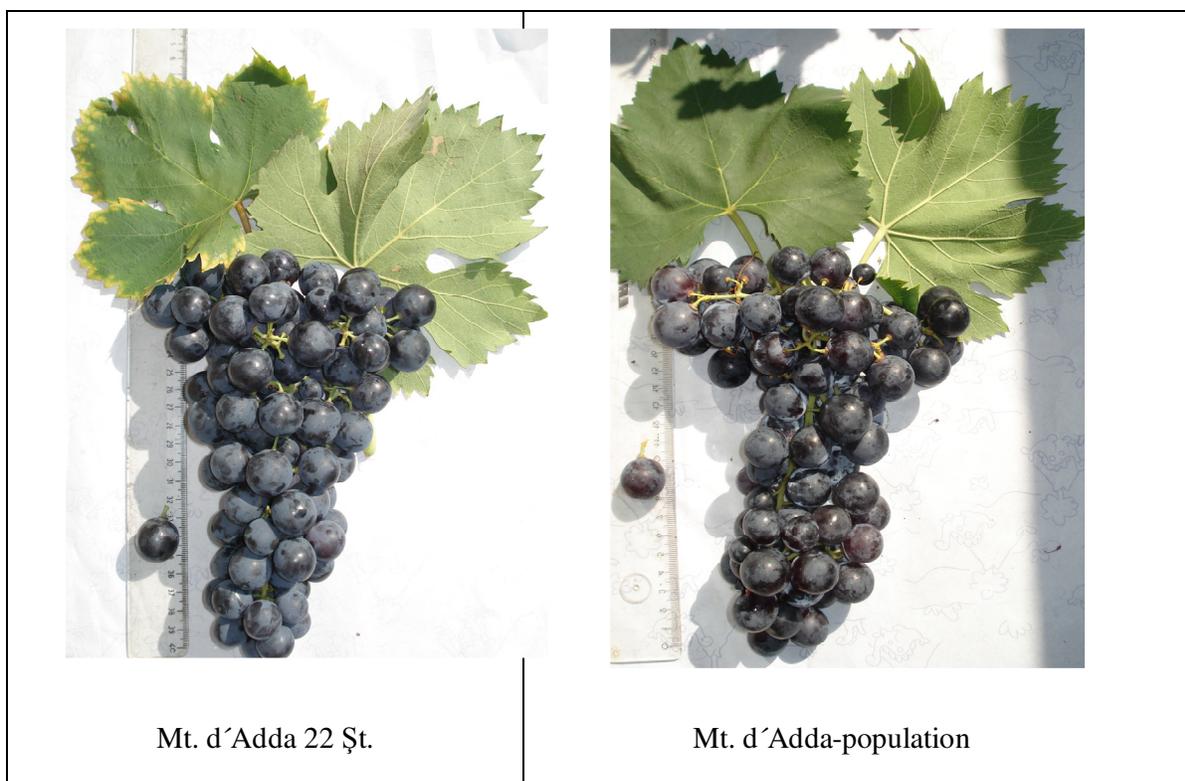
Indices of  
productivity  
and relative)

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Fig. 4 Quantitative elements of elite clonal Mt. d'Adda 22 Şt compared with population (control) in years 2007-2009



The grape production on a vine and on a hectare is also superior to the witness, the elite 22 Şt. registers a medium of 7,5 kg/vine și 34,0 t/ht as compared to the reference variety, with

5,1 kg/vine and 23,1 t/ht, a medium of 6,63 kg/vine in the three years of study [3]

The indices of productivity

(Fig.3) had medium values of 559 (absolute) și 342 (relative). One of the selection criteria of this clone was its superior production capacity. The superior productivity characteristics of this clone was also determined by the technological elements (average rate /3 years): the weight of the grapevine (382 g) and of the grape (5,3 g) which outgrew the witness with 22 g and respectively 0,6 g. (Fig.4). The clone Mt. d'Adda 22 Șt. distinguishes by the size of the grape and notably by the weight of the grape. [3]

#### 4. CONCLUSIONS

- ▶ The clone selection Mt. d'Adda 22 Șt. obtained from the variety Mt. d'Adda proved to be qualitatively and quantitatively superior to the reference variety.
- ▶ By homologating the clone elite Mt. d'Adda 22 Șt, we have tried to introduce in cultivation the most valuable selection of old varieties which have lost a part of their qualitative properties in time .
- ▶ Correlating the production elements to the quantitative ones in the comparative plot, we

have observed that the selection maintained the characteristics of the variety, mainly the size of the grape and the uniformity but also the strong muscatel flavour.

- ▶ It is recommended that the clone elite Mt. d'Adda 22 Șt. should be extended in production.

#### 5. REFERENCES

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