ABSTRACT

Key words: grapevine, grape varieties, degree of attack, ELISA method.

Romania's geographical position and diverse relief configuration provides favorable natural conditions for growing grapevines. As a result, over time, wine has grown continuously, becoming an important branch of agricultural production and its main products, particularly grapes and wines have enjoyed a valuable appreciation in the country and abroad.

Because of the increasing damage caused by principal pathogen agents, and the high degree of expansion on plants from different botanical families, were given more importance. The most common themes lately in the work refer to plant genetic resistance to these pathogens and biological control on their way. Also use serological methods to identify viruses and grapevine mycoplasmosis, laboratory work is easier and limits the time for more complex analysis. The content of the thesis may increase productivity in vineyards by updating, improving and providing to farmers, information with the latest practical results obtained in the field. The thesis is structured in two parts, first part containing three chapters, abstract and introduction, and part 2 has four chapters and bibliography.

Chapter I entitled "***The requirements of vines to environmental conditions***" contains climatic, geographic and edaphic factors which grapevine culture need. Also a brief description of the situation of grapevine culture in the world and in Romania.

Chapter II, "***Current status of research carried on vines viruses and mycoplasmosis*** ", contains a comprehensive description of the research to date on viruses and mycoplasmosis of grapevine. Contains information on:

- Viruses transmitted mechanically from plant to plant and through herbaceous plants
- Viruses transmitted from vine to vine
- Current status of researches on *Grapevine fan leaf virus*
- Current status of researches on the vine mycoplasmosis
- Current status of researches on *Grapevine flavescence Dorée phytoplasma*

Chapter III, " ***Current status of research carried on vines bacterioses and mycoses***", which contains a comprehensive description of the main pathogens studied, *Plasmopara viticola, Uncinula*

necator and *Botryotinia fuckeliana* and others, describe the current state and identified the fungi and bacteriosis of grapevines. Chapter contains:

- The current state of research on mycoses of grapevine
- Current status of researches on the grapevine bacteriosis

Chapter IV entitled "***The maine purpose and research objectives of doctoral thesis***". Considering the main directions of research worldwide, the thesis aims at filling the existing database with new results that relate to:

- Determination and evolution of the attack of pathogens;
- Study regarding the manifestation of the disease;
- Study of disease progression during the vegetation;
- Checking the behavior of vine varieties to pathogens attack;
- Serological identification (ELISA) of this parasite;

Experiences were made in the laboratory of discipline and field observations were made mainly in ampelographic collection at the University of Agricultural Sciences and Veterinary Medicine Iasi. Achieving this thesis has led to knowledge of the behavior of vine varieties regarding their resistance to attack of the main pathogens from ampelographic collection, identifying the presence of *Grapevine fan leaf virus* and *Grapevine flavescence Dorée phytoplasma* plantation, hence the presence insect vector *Scaphoideus titanus*, vector that do serious damage in Europe and America.

Chapter V, entitled " ***The characterization of the natural environment of the area considered for the study, material and method of research***" provide information on the geographical location of the station, located in the northwestern city of Iasi, is framed between the coordinates 47º10' and 47°15' north respectively, 27°30' east longitude.

Also, the chapter describes the organizational frame, topography, soil, hydrographic network, vegetation and climatic conditions of the area. The climate is temperate continental with excessive, therefore the position of interference between the moderate climate of Central Moldavian Plateau continental and excessive in Plain Moldova, about the interference that occurs at 200-250 m in the inclined plane of Moldovan Coast. The farm is part of the forest steppe, and the place they occupy in the Moldavian Plateau and the location between the meadows dry steppe and forests of tall units in the west and south, gives more quality landscape than the phyto - pedoclimatic .

Although natural biotope has been modified by anthropogenic factor intervention, spontaneous vegetation currently found on isolated areas, unsuitable for agriculture, is a prominent

feature of the landscape; plant morph-climatic correlations are highlighted. Contains also the characterization of amplelografical collection, material and research methods. Currently the collection comprises 170 species and varieties belonging to the genus Vitis. The collection is recorded in 1994 in the International Catalogue of ampelographic edited collections under the European Bank of genus Vitis genetic resources under the sign code "ROM 14" and has the international exchange of genetic material in the form of rooted cuttings and seeds, with subject to legislation. Of the 170 genetic forms included in the collection, 35 are varieties of table 4 seedless varieties, 22 varieties for white table wines, 22 varieties of quality white wine, 4 wine flavored varieties, 16 varieties for red table wines, 9 varieties for quality red wines, 29 interspecific hybrid direct producers, 29 species and varieties of rootstock vines.

Material and research method used for determining the degree of attack of downy mildew, powdery mildew and gray mold

In this study the biological material was represented by 18 varieties of table grapes and 18 varieties of grapes for wine. Observations and measurements were the scoring attack for the grapes and the leaves for downy mildew, powdery mildew and gray mold. Depending on the degree of attack recorded for each variety of grape, was established varieties analyzed the expression of character and strength (after OIV 1983). Varieties studied showed different reactions to the same environmental conditions, resulting in the degree of attack on gray mold, downy mildew and powdery mildew that range from fairly large limits. Results on the prevalence and evolution of the main pathogens were recorded during 2007-2010 in the collection of Veterinary Medicine Iasi. Observations were made in ampelographic collection of Veterinary Medicine Iasi, aiming frequency (F %), intensity (I %) and degree of attack (GA %), of the existing varieties.

Material and research method used to identify viruses and mycoplasmosis

Visual observations were made in the field, grapevine varieties showed symptoms of infection with *Grapevine fan leaf virus* and *Flavescence Dorée mycoplasma*. Were collected samples from 36 varieties of the ampelographic collection university, were studied in the laboratory using the ELISA method to diagnose the pathogen in the plant.

Chapter VI, entitled "***Results and discussion***" contains the results of observations in the three years and their statistical analysis. Due to climatic conditions existing in the three years of observations, the agents met paatogeni therefore have favorable conditions for development.

Plasmopara viticola presented a stronger attack in 2008 and 2010, *Uncinula necator* presented values of large clusters degree assault in 2008 and 2010 average values of the degree of

attack. *Botryotinia fuckeliana* presented a strong attack in 2008, is a favorable weather conditions with pathogen development.

Evaluation of resistance of varieties was the method described above. To highlight the varietal resistance to the method of grading used: **FR** = highly resistant (no attack or note 9), **R** = resistant (G% = 1 to 10 or grades 7, 8), **MR** = medium resistant (G% = 10 - 25 and notes 5, 6), **S** = sensitive (G% = 25 - 50 or grades 3, 4), **FS** = very sensitive (G%> 50 or grades 1, 2). To identify the presence of *Grapevine fan leaf virus* and *Flavescence Dorée mycoplasma* in ampelographic collection of Veterinary Medicine Iasi, test material used (36 species) was achieved in 2009 and 2010 by ELISA serological technique and has revealed the presence of infection with pathogens in some varieties analyzed. For better results in this technique, testing each sample was performed in duplicate, the principle of the method consists in forming an immune complex, the antigen is bound antibodies and conjugated as a "sandwich" and by adding the enzyme substrate staining yellow whose intensity is directly proportional to the concentration of antigen.

Chapter VII entitled "***Conclusions and Recommendations***" contains the main conclusions and recommendations from the previous chapter.

The thesis contains 206 bibliographic titles, 11 documents downloaded from the internet and used as a bibliographical reference and 3 scientific papers as first author papers containing results of the thesis.