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RESEARCH ON GRAPE VINE BEHAVIOUR TO THE THERMIC STRESS
(abstract)

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Key words: *grape vine, negative thermic stress, vulnerability, biochemical compounds.*

ABSTRACT

Modern viticulture, which is characterised by intense specialization of the regional viticulture, is the result of the complex, steady relations with the climate peculiarity of the different wine-growing areas.

The climate modification, more or less casual, that appears in the wine-growing agricultural ecosystem, may disturb the homogeneity of the biocenosis conditions. These leads to disturbance in the normal development of the plant's physiological and biochemical processes with great implications in the productivity, quality and specificity of the wine-growing and wine-making products.

Among the abiotic stress agents (elements) with negative ascendancy over the grape vine can be counted also the (negative or positive) low temperatures. Depending on the moment of recording, level, length and installing-mode, these agents may bring about more or less damages, varying with the endurance potential of each and every species, organs or tissue.

With a view to the impact of certain parameters of negative thermic stress during the vegetative repose and also in order to slate precisely the biological potential of adjustment and endurance of the grape vine to the action, I've accomplished a series research to S.D.Banu Maracine.

My observation and research aim at the following targets:

- The evaluation of the pedoclimatic resources in proportion to ecological and biological needs at the grape vine at the wine-growing centre Banu Maracine;

- To monitor the parameters of negative thermic stress the grape vine; to quantize and establish the temporal sequence of the occurrence of critical minimal temperature;
- The adjustment reactions and response of the grape vine to different thermic rest conditions. These targets are to be attained through the research on the biochemical compounds involved in these mechanisms.

The complex evaluation on the heliothermic resources, through synthetic climatic indexes, clearly expresses the very generous heliothermic offer of the wine-growing centre Banu Maracine, thus being ensured the quality and specificity of the wine-growing and wine-making products obtained in this area.

Based on studied climatological data (1962-1996) I've found that the autumnal early hoarfrost and hard-frost occur in a probability of 91,44% in between 25th and 31st of October, while the late vernal hoarfrost and hard-frost occur in a probability of 85,7% in between 1st and 10th of April.

During the 35 studied years, the earliest autumnal hard-frost happened on the 30th of September 1970 (probability of 2,85%) while the latest vernal hard-frost happened on the 28th of May 1983 and 1984 (probability of 5,71%). From this point of view I estimate that the risk of frosting is limited for the wine-growing centre Banu-Maracine.

The study on the occurrence of the critical minimal extreme temperature in a 42 years period (1962-2003) for the wine-growing centre Banu Maracine emphasizes the occurrence of the minimal thermic threshold between –15º…-18ºC in 24 years (57,71%).

With an average of 26,19% the absolute minimal temperatures in a month were between –18,1…-22,0ºC and with an average of 14,28%, the

minimal temperatures went down below the resistance threshold of the grape varieties for wine (-22,0…-26,0ºC).

The absolute minimal thermic pick is –35,5ºC, recorded on 25th January 1963.

The adaptation of the grape vine to the critical thermic conditions in the frosty winters implies a series of compensatory changes of its metabolism to ensure the maintenance of the metabolic reactions to certain level in order to unfold the main vital functions.

The resistance of the grape vine to the negative thermic stress is a complex feature, which is genetic conditioned, in connection with the metabolic peculiarity of the varieties, by the environmental conditions during the active vegetation period, and also by the thermic feature during the repose vegetation period.

Relying on endurance potential to the critical minimal temperature of –23,7…-16,5ºC, the analysed varieties were arranged as follows:

Resistant: Feteasca neagra, Cabernet Sauvignon;

Medium resistance: Muscat Ottonel, Feteasca regala, Riesling italian;

Weak resistance: Sauvignon;

Very weak resistance: Merlot and Tamâioasa românească.