

VITICULTURAL LANDSCAPE IN THE CONTEXT OF CLIMATE WARMING. STUDY OF CASE: COTNARI VINEYARD

PEISAJUL VITICOL ÎN CONTEXTUL ÎNCĂLZIRII CLIMATICE. STUDIU DE CAZ: PODGORIA COTNARI

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Abstract. *Viticultural landscape will be in a permanent changing, taking into account that climate warming is present both in global scale and in regional scale. In Cotnari Vineyard were recorded recently light trends of climate warming, trends which could lead to changes in the quality of the wine (low acidity level, high sugar accumulation, high alcohol concentration).*

Rezumat. *Peisajul viticol va fi într-o continuă schimbare având în vedere faptul că încălzirea climatică își face simțită prezența atât la nivel global, cât și la nivel regional. În Podgoria Cotnari au fost semnalate recent ușoare tendințe de încălzire climatică, tendințe care ar putea avea drept efect modificări în ceea ce privește calitatea vinului (scăderea acidității, creșterea concentrației de zahăr, acumularea mai mare de alcool).*

MATERIAL AND METHODS

For setting off the light climate warming that takes place in Cotnari Vineyard, we analysed four climatic parameters (the annual average temperature, the number of frost days, the number of tropical days and the number of summer days) from two meteorological stations (Cotnari and Botosani).

RESULTS AND DISCUSSIONS

Global warming could have a significant influence on the regions producing high-quality wine situated at the grape growing limit. The northern regions could become more suitable for viticulture from the climatic point of view, while the southern vineyards could become too hot for grape growing (J. G. Kenny, A. P. Harrison, 1992).

Among the potential implications of global warming on viticulture observed by the scientists we can mention: warmer and longer growing seasons, altered phenological timing, changed ripening profiles, modified disease and pest timing, altered water needs (G. V. Jones, 2005a).

Viticultural landscape is a sensitive one in the context of climate warming. This phenomenon could affect viticultural landscape not only in a positive manner, but also in a negative one. The faster ripening of the grapes and the accumulation of the higher quantity of sugar represent the positive influence of climate warming on the viticultural landscape. Regarding the negative influence, we can say that it could be possible to increase the frequency of pests and diseases because of reducing the frosts, the last being induced by the increasing of temperatures.

The scientists from the whole world are trying to preserve the viticultural landscape in a present form. They use different strategies for supplying the deficit of water, for removing the pests and the diseases and for maintaining the actual varieties of grapevine. In some vineyards (southern France, southern Portugal, Spain), it's already too late to fight against climate warming. The only thing that can be done is to move the actual varieties of grapevine from the old sites, affected by warming, in the new ones. In this way, researchers were thinking to move some less climate warming resistant varieties of grapevine from France in southern England (G. V. Jones, 2005b).

This problem could preoccupy us regarding Cotnari Vineyard in the near future. Some investments regarding new techniques of irrigation for supplying the deficit of water, applying the pesticides for eradicating the pests and the diseases, the cultivation of some resistant varieties can be done. Also, we suggest that in the near future it could be necessary northward moving of some less climate warming varieties as other vineyards act.

The increasing of global temperatures imposes some changes regarding the selecting of some resistant prolonged drought varieties. Also, the assuring of some supplementary quantities of water for preserving soil humidity is necessary. The introduction of some special techniques of soil must take into account in case of maintaining the observed warming tendencies.

Analyzing climatic data obtained from two meteorological stations (Cotnari and Botosani) for the period 1956-2006 or 1970-2002, we can remark a light local climate warming trend for all the climatic parameters that we are taking into account (the annual average temperature, the number of frost days, the number of tropical days and the number of summer days). This local climate warming could have potential implications on the quality of wine from this region in the near future. Thus, the annual average temperature increased with 1.4 °C in Cotnari and with 1.2 °C in Botosani, for the period 1956-2006.

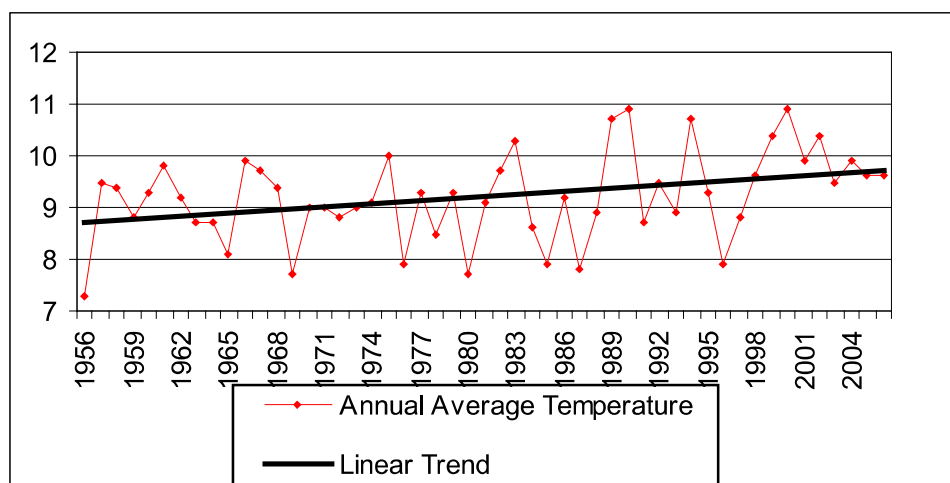


Fig.1 The evolution of the annual average temperature in Cotnari (1956-2006)

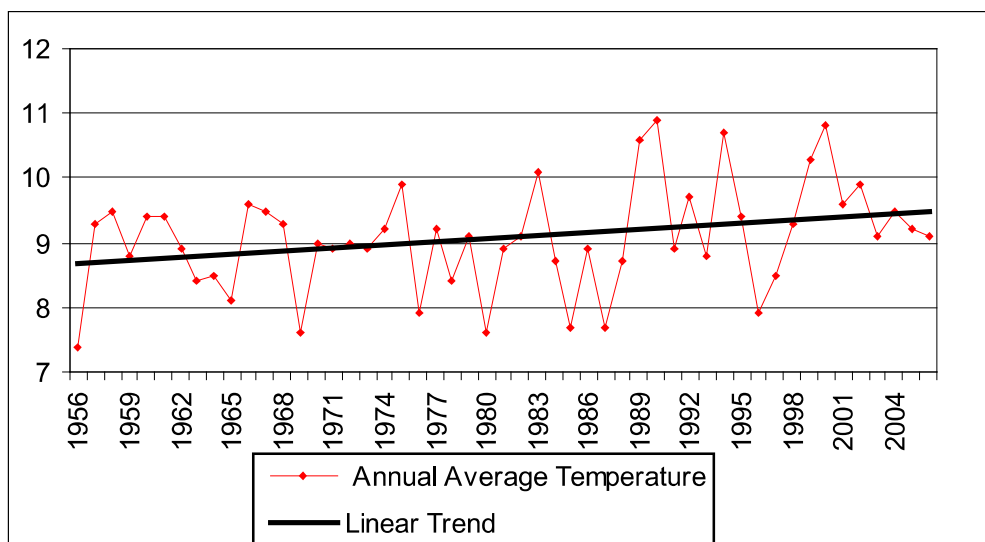


Fig.2 - The evolution of the annual average temperature in Botosani (1956-2006)

The second climatic parameter (the number of frost days) registered a decreasing trend with 16 days in Cotnari and with 10 days in Botosani, in the period 1970-2002. This decreasing of the number of frost days is due to local climate warming remarked in the last 33 years, in the two locations.

Due to global warming, many of the world's wine regions have experienced, over the last 50 years, a decline in frost frequency and warmer growing seasons with greater heat accumulation. The reduction in frost frequency is the most important in the dormant period and in spring. Also, it was noticed earlier last spring frosts, later first autumn frosts and longer frost free periods, due to the same phenomenon (G. V. Jones, 2006).

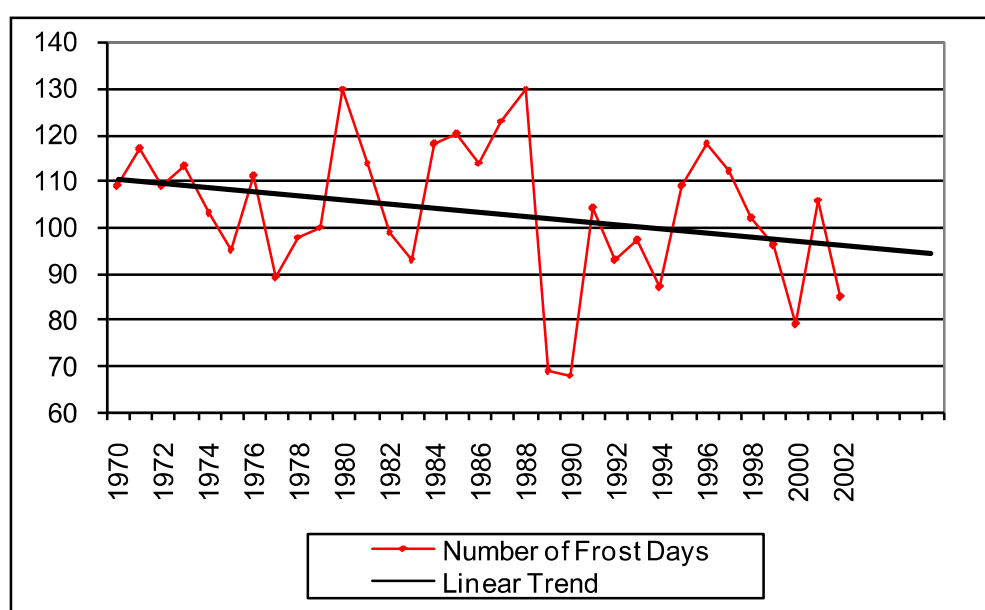


Fig.3 - The evolution of the number of frost days in Cotnari (1970-2002)

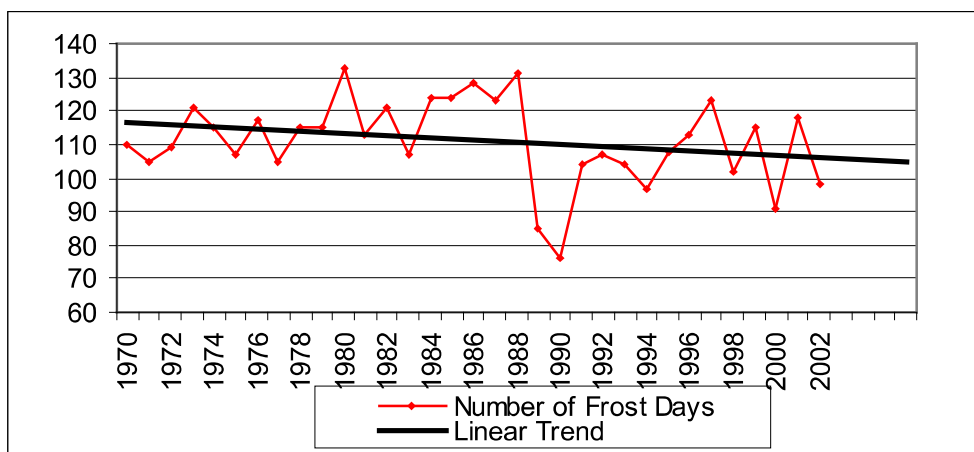


Fig.4 - The evolution of the number of frost days in Botosani (1970-2002)

An increasing trend was observed for the third climatic parameter, the number of tropical days. The two graphics represented below indicate an increasing trend with 32 days in Cotnari and with 46 days in Botosani, between 1970 and 2002.

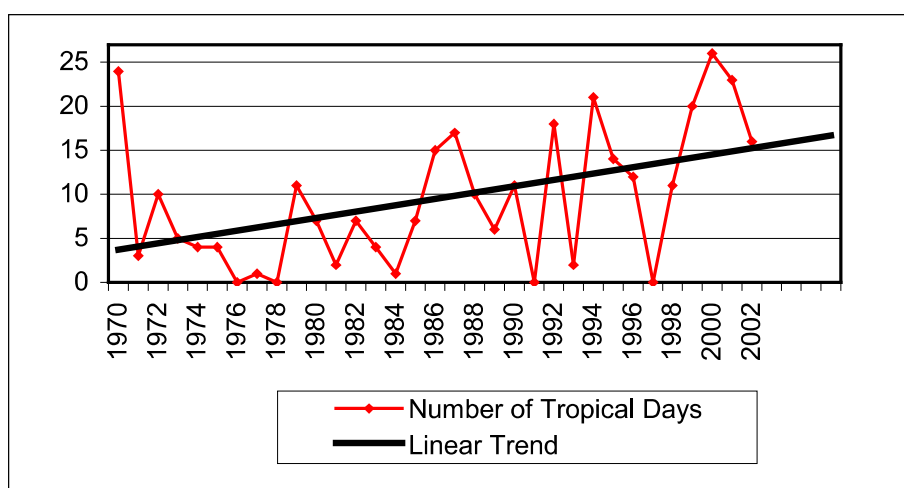


Fig.5 - The evolution of the number of tropical days in Cotnari (1970-2002)

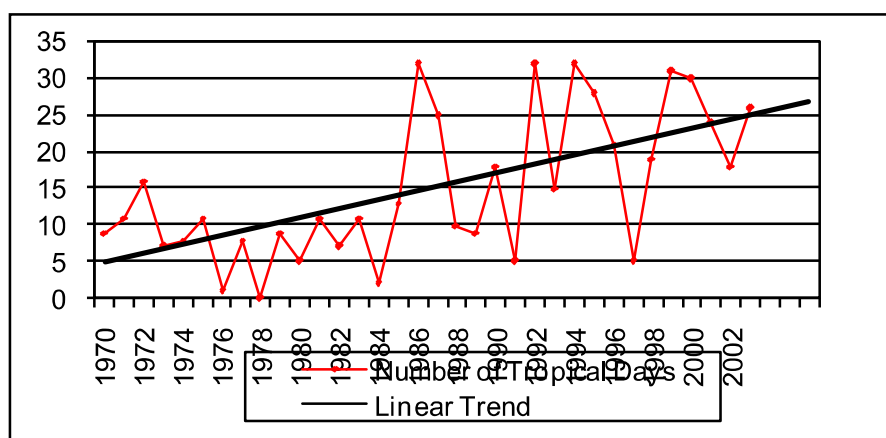


Fig.6 - The evolution of the number of tropical days in Botosani (1970-2002)

The last climatic parameter is the number of summer days. This parameter increased in the period studied with 18 days in Cotnari and with 22 days in Botosani.

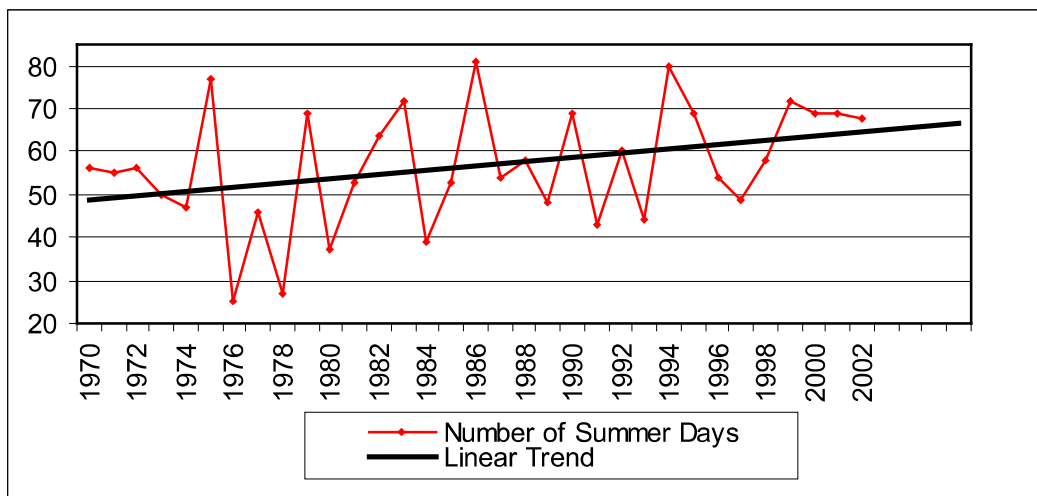


Fig.7 - The evolution of the number of summer days in Cotnari (1970-2002)

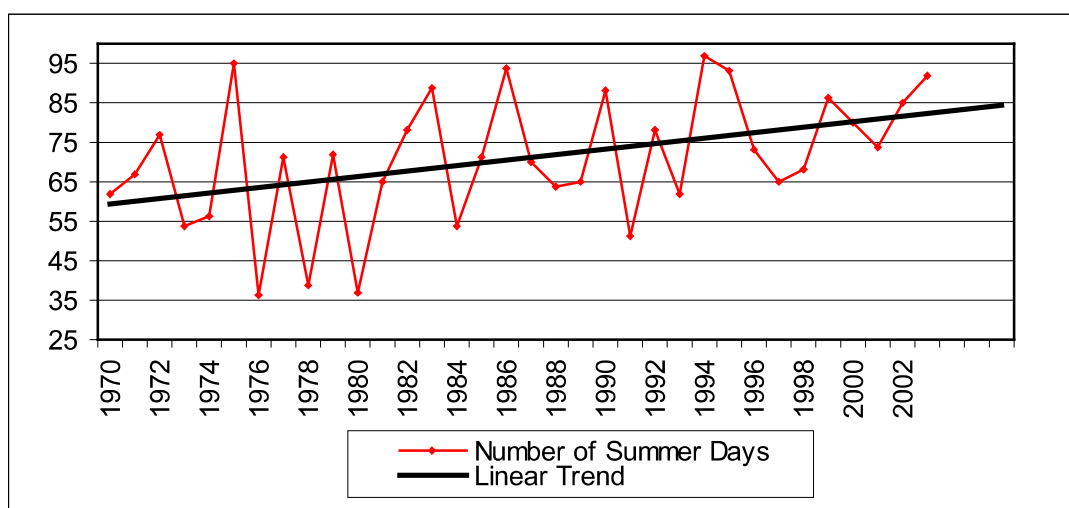


Fig.8 - The evolution of the number of summer days in Botosani (1970-2002)

CONCLUSIONS

Trends of climatic parameters studied (the annual average temperature, the number of frost days, the number of tropical days and the number of summer days) reveal a light local climate warming in the two locations (Cotnari and Botosani) for the period 1956-2006 or 1970-2002. When we analyzed the data, we observed the following aspects: the annual average temperature increased with 1.0 °C in Cotnari and with 0.8 °C in Botoșani, for the period 1956-2006; the number of frost days registered an decreasing trend with 16 days in Cotnari and with 10 days in Botosani, in the period 1970-2002; the number of tropical days indicated an increasing trend with 32 days in Cotnari and with 46 days in Botosani, between 1970 and 2002; the number of summer days showed the same increasing trend

with 18 days in Cotnari and with 22 days in Botosani, between the period mentioned above. We noticed that the number of characteristic temperatures days was higher in Botosani than that registered in Cotnari. We can explain this uncommon situation from Cotnari only by way of foehn phenomenon.

REFERENCES

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