

Efficiency of Sustainable Technologies in Viticulture

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Abstract

The sustainable development of viticulture means practicing agricultural technologies which eliminate pollution sources in the viticultural environment, guarantee the non toxicity of the vine products, and lead to a high economic efficiency. In the last decades, an increasing number of winegrowers have practiced alternative technologies for vine cultivation, as an outcome of food safety and environment protection principles adopted by the consumers. These technologies are represented by biodynamic viticulture, biological (organic) viticulture, and ecological viticulture.

The paper describes the alternative technologies briefly and it presents an experiment carried out in the Târnavă Vineyard in Romania in order to highlight the economic efficiency of an ecological technology as compared to a conventional wine-growing technology. Alternative technologies will only be the first choice if they prove their superiority on an economic efficiency level, and that is because the wine-growing producers' interest is to make a profit.

Biodynamic viticulture is based on traditional farming practices, adding new methods for stimulating and balancing the biological processes by using only natural mixtures that are able to accumulate energy and information (earthly and cosmic) that it then distributes to the biotic environment to accelerate growth and development. It uses a series of natural substances which play the role of growth factors. Disease and pest control is achieved by using resistant grape varieties, natural mixtures (macerated nettle, for example), and favoring the development of some insects and animals which can destroy the parasites.

Biological (organic) viticulture focuses on biological balance and soil fertility that is achieved naturally. The soil works have to maintain the soil quality. Such works are soil grassing and fertilization, which can be realized by using green or organic fertilizers (or wood waste compost). Pest control in the case of vineyards involves using living organisms or their products in order to prevent or reduce pest damage (for example, acarid control is achieved by colonizing their natural predators). Mildew and grey rot biological control are achieved as proposed by RDSGWP Blaj through the use of compost extract (farmyard manure).

Ecological viticulture does not rely on organic synthesis substances normally used to fight diseases and pests. It relies on fewer treatments, promoting biological control and management methods, reinstating traditional control substances (Bordeaux mixture and wettable sulphur) in nonpolluting normal dosages.

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The results obtained via sustainable technologies in the Târnavă Vineyard (Romania) prove that these are far better not only because their major objective is to protect the environment and with it, human health, but also on the level of economic efficiency. The cost-benefit analysis for ecological technology as compared with the classical wine-growing technology indicates a gross profit increase by € 197/ha of grapes, and if wine is produced, the additional profit will be much higher.

Alternative technologies (biodynamic, biological, ecological viticulture) represent a topical solution for the sustainable development of wine growing.