

VITICULTURAL BIOLOGICAL TIME - A NEW VITICULTURAL ECOLOGICAL INDEX FOR THE DISTRIBUTION OF VINE VARIETIES BY GEOGRAPHICAL AREA

UN NOU INDICE ECOLOGIC ÎN VITICULTURĂ INTITULAT *TIMPUL BIOLOGIC VITICOL* PENTRU ZONAREA SOIURILOR DE VIȚĂ DE VIE

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Abstract. *Vine is characterized by biological rhythm, or the biorhythms/phenophases inscribed in the genome of each variety. The biological time of each variety must correspond to the ecological potential of the vineyard. Based on these, a new ecological index has been proposed in viticulture, namely viticultural biological time. The paper presents the calculation formula and the interpretation of the new index.*

Key words: ecological potential, biological time, vineyard

Rezumat. *Vița de vie se caracterizează printr-un timp biologic în care își desfășoară bioritmurile/fenofazele de vegetație înscrise în genomul fiecărui soi. Timpul biologic al soiurilor trebuie să se încadreze în oferta ecologică a podgoriei. Plecând de la aceste considerente, a fost formulat un nou indice ecologic în viticultură, intitulat timpul biologic viticol. Relația de calcul a indicelui și interpretarea lui este redată în lucrare.*

Cuvinte cheie: potențial ecologic, timp biologic, podgorie.

INTRODUCTION

Vine, which is a multiannual plant, is characterized by a biological time, or the biorhythms/phenophases inscribed in the genome of each variety.

The biological time of each variety must correspond to the ecological potential of the vineyard, so that it can reach its maximal biological production potential (Țârdea C., Dejeu I., 1995).

Awareness of the viticultural biological time of vine varieties is a must for every professional and a prerequisite for the selection and geographical distribution of varieties.

In order to correlate viticultural biological time with the ecological potential, a new ecological index for viticulture has been proposed, namely viticultural biological time ($I_{e_{btv}}$).

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MATERIAL AND METHOD

The ecological potential of a vineyard is represented by the number of days with temperatures above 8°C during the active phenophases of vine (April 1 to September 30).

The biological time of vine is given by the number of days between bud opening (phenophase D) and the end of grape maturation (phenophase N).

Subtracting the biological time of vine from the ecological potential of the vineyard yields the unused ecological supply of a vine variety expressed as a number of days.

For its interpretation as a viticultural ecological index, the following formula has been used:

$$I_{ebtv} = \frac{Pe \times Cv}{Pe} \times 10$$

where :

I_{ebtv} - an ecological index, viticultural biological time;

Pe - the ecological potential of the vineyard;

Cv - the vegetation cycle/viticultural biological time of the variety;

10 - coefficient for the conversion of the subunitary values of the index into units.

The materials used were climate and phenological data from the varieties of the Murfatlar and Tarnave vineyards in the Jidvei viticultural centre (table 1).

RESULTS AND DISCUSSIONS

For the Tarnave vineyard in the Transylvanian Plateau, the ecological potential of the vine is limited between 174 and 181 days. The unused ecological supply of vine varieties ranges between 18 and 27 days, with an average temperature of > 8°C during the vegetation period of vine. Consequently, *I_{ebtv}* values are low, between 1,00-1,50, and the variety best suited to the ecological potential here is the Feteasca regala (topmost on the geographical distribution of the varieties).

For the Murfatlar vineyard in Dobrogea, the ecological potential is larger, between 184 and 193 days, while the unused ecological supply is higher, between 22 and 48 days, depending on the biological time of each variety. *I_{ebtv}* values are higher as well, between 1,2 and 2,84.

Best suited to the ecological potential are the white wine varieties Pinot gris and Chardonnay, followed by the red wine varieties Merlot and Cabernet Sauvignon.

The suitability ranking is as follows:

1-Pinot gris;

2-Chardonnay;

3-Merlot;

4-Cabernet Sauvignon.

Table 1

The values of the ecological index le_{btv} in the Tarnave vineyard (Jidvei wine growing centre) and Murfatlar vineyard

Varieties	Ecological potential of the vineyard/ecological offer (days))		Vegetative cycle of the varieties / viticultural biological time (days)		Ecological reserve (days)		le _{btv} values		The rank of varieties in viticultural biological time
A. Târnave vineyard- Jidvei wine-growing centre (1)									
Periods	2000-2005	2006-2010	2000-2005	2006-2010	2000-2005	2006-2010	2000-2005	2006-2010	
Fetească regală	174-179	176-181	156	154	18-23	22-27	1,03-1,28	1,30-1,50	1
Riesling italian	174-179	176-181	156	156	18-23	20-25	1,00-1.30	1,16-1,40	2
B. Murfatlar vineyard (2)									
Periods	1996-2000	2001-2005	1996-2000	2001-2005	1996-2000	2001-2005	1996-2000	2001-2005	
Pinot gris	184-193	191-193	149	145	35-44	46-48	1,88-2,27	2,40-2,84	1
Chardonnay	184-193	191-193	154	150	30-37	41-43	1,60-1,86	2,14-2,23	2
Merlot	184-193	184-193	159	156	25-37	28-37	1,36-1,90	1,50-1,90	3
Cabernet Sauvignon	184-143	184-193	162	160	22-31	24-33	1,20-1,60	1,41-1,70	4

(1)-Horşia C., 2009

(2)-Ciarni Tănase, 2008

CONCLUSIONS

The ecological index called the viticultural biological time, proposed by the author, and representing a novelty in viticulture, ought to be used alongside the other ecological indices in the literature, for the geographical distribution of vine varieties.

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