

# THE DATA BASE, ORIENTED TO THE PECULIAR SOIL AND CLIMATE CONDITIONS OF VINE CULTURE AT REGIONAL LEVEL IN THE BUJORU VINEYARD

## BAZĂ DE DATE CLIMATICE ORIENTATĂ PE SPECIFICUL PEDO-CLIMATIC ȘI REGIONAL AL CULTURILOR VITICOLE DIN PODGORIA DEALU BUJORULUI

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**Abstract.** *The data base, oriented to the peculiar soil and climate conditions of vine culture at regional level allows to estimate the future production, water demand for irrigation, pests attack etc in the next year. These data are useful for predicting the budget of vine culture in the next year. All these are just estimates, the real costs being determined by the natural unverifiable realities but also breaking down by knowledge. The main information source of this data base is represented by the records of concerning the climate parameters and grape production carried out in the year 1980. They include information referring to the running phenophases (bud breaking, blooming, ripening and maturation), quantitative and qualitative grape production (juice sugar content, average weight of 100 berries, juice acidity) but also the main climate characteristics at Dealu Bujorului Vineyard (annual thermic balance, precipitations, average annual temperatures, maximum and minimum temperatures, specific indices etc.).*

**Key words:** phenophase, vine, production, temperature, rainfall

**Rezumat.** *Baza de date climatice orientată pe specificul pedo-climatic și regional al culturilor viticole, accesată permite ca pentru anul viitor să se poată face o estimare a producției, a necesarului de apă pentru irigare și eventualele atacuri a dăunătorilor. Aceste date sunt necesare pentru estimarea bugetului pentru cultura anului viitor. Toate acestea sunt doar estimări, costurile reale fiind determinate de realitățile naturale necontrolabile dar atenuabile prin cunoaștere. Principala sursă de informații a acestei baze de date o constituie înregistrările parametrilor climatici și a caracteristicilor producției de struguri, efectuate din anul 1980. Sunt centralizate informații privind desfășurarea fenofazelor (dezmugurit, înflorit, pângă și maturare), producțiile obținute și calitatea acestora (conținutul de zahăr din must, masa medie a 100 boabe, aciditatea mustului), dar și principalele elemente climatice caracteristice podgoriei Dealu Bujorului (bilanțuri termice anuale, precipitații, temperaturi medii anuale, maxime și minime termice, indici specifici etc.).*

**Cuvinte cheie:** fenofază, viță de vie, producție, temperatură, precipitații.

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## INTRODUCTION

Climate change has an impact on vine culture and thereby affect phenological spectrum. Climate changes have a direct impact and lead to disruption of the normal course of physiological and biochemical processes with implications for the quality and specificity of the wine-making products. Variety behavior analysis over a long period of time confirms the dependence of the vine climate resources; the relationship is substantiated by studies on a series of single and multicriterial climatic indices, duration and intensity of various climatic determinants of vegetation along phenophase (Viorica Enache et al., 2009). The existence of long-term data and the processing and use of phenological observations in relation to climate change, highlighted record of climatic parameters atypical values that have made their mark on culture in particular vine (Enache Viorica et al., 2010).

## MATERIAL AND METHOD

Observations and measurements were made at RDVVS Bujoru. The main source of information is the records climatic parameters and characteristics of grape production, conducted annually by at least 20 years. Are centralized information on the conduct phenophase (bud breaking, flourished, first fruits, ripening), yields and quality (sugar content of juice, the average weight of 100 grains, grape acidity) and the main climatic elements characteristic vineyard Dealu Bujorului (annual heat balances, precipitation, annual mean temperatures in the months critical thermal maximum and minimum.

## RESULTS AND DISCUSSIONS

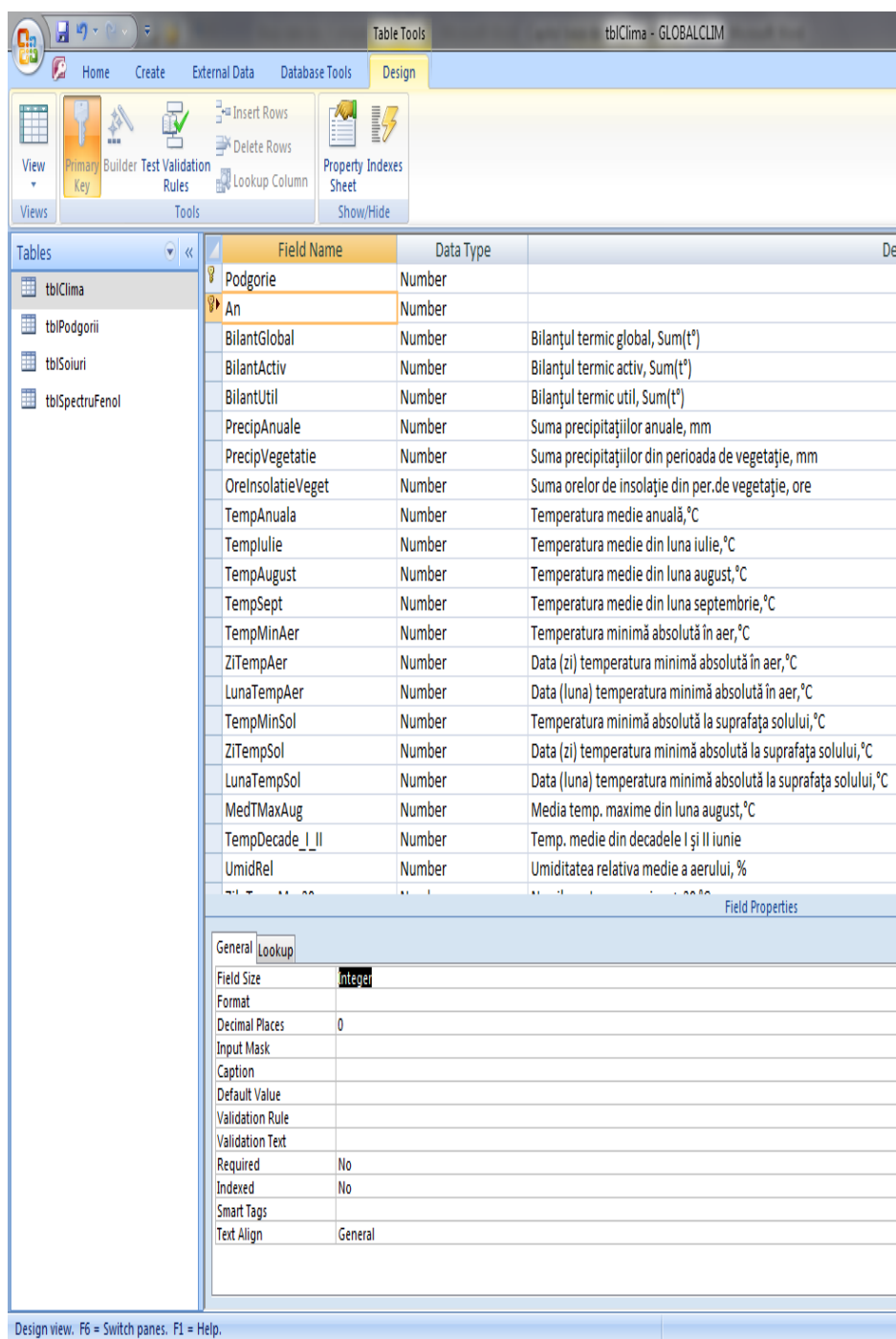
**Information Source:** Observations and experimental tests carried out in the firing RDVVS Bujoru. Due to superior facilities offered by relational databases in terms of functional consistency, was chosen to prepare the Microsoft Access database in Office 2007 package.

**Tabular database structure** consists of four tables linked by relations of type 1 -  $\infty$ , where it was to be observed referential integrity (Fig. 1). The main table in which the main *tblClima* information on climatic factors and contains 29 fields (Fig. 2). He has a dual primary key fields consist of *Vineyard* and *Year* to ensure uniqueness of records and links to tables *tblPodgorii* and *tblSpectruFenol*.

*SpectruFenol* table contains 15 fields that include both information on the deployment phenophase and data on production and quality. Each entry details the annual data. Varieties that are recorded in Tables *tblPodgorii* and *tblSoiuri*. Primary key fields are numeric type *Autonumber* generated by automatic increments, indexed to speed up the search and has determined the property *No duplicates*.

Annex 1 shows the downloaded data in tables, except table *tblPodgorii*. Hollows occur especially if the original records, with data from the '80 and even '90s, when experimental measurements were hitting the road.

**Forms:** To make it possible to easily use the database was created a friendly interface consisting of a set of forms of data handling (entry, deletion, navigation) through which it operates directly on the tables above. They can be opened from an order form.



**Fig.1 - Relationship / related fields of database tables**

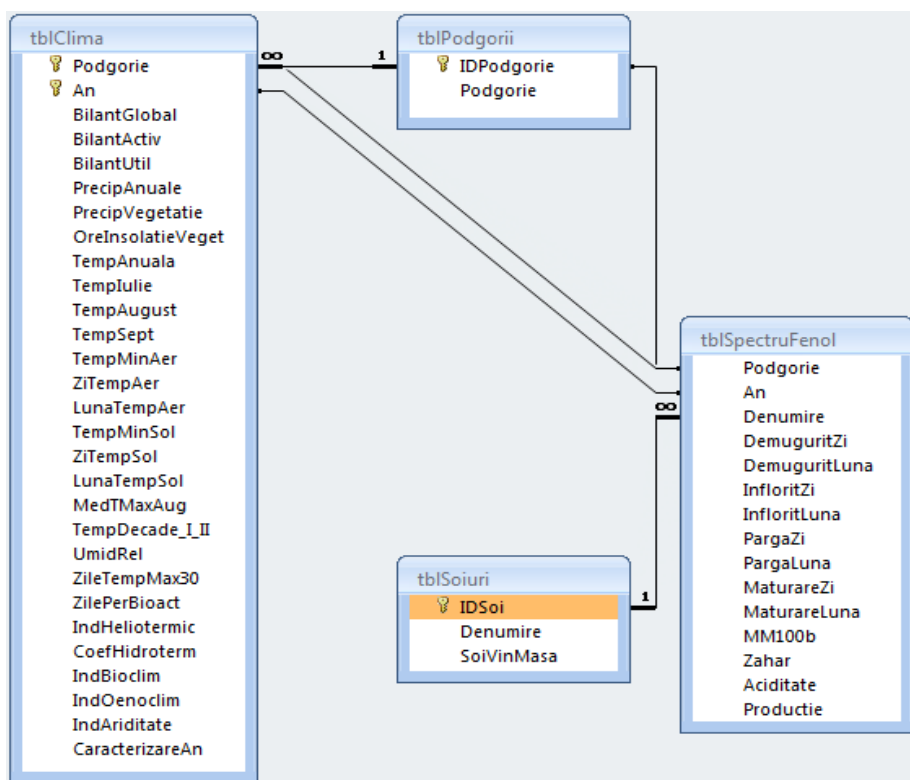


Fig. 2 – TblClima table structure

The same form also provides preview, print reports that data. The most complex form, through which data is entered directly into Table *tblClima* order to increase functionality, was filled with command buttons, one opens the form to handle the data stored in the table *tblPodgorii* (fig. 3). Also, there are forms used to manipulate data in tables and *tblSpectruFenol* *tblPodgorii*.

**Queries:** To select and sort the data presented in the reports were prepared queries.

Query *qryDate fenologice tblSoiuri* retrieve information from tables *tblPodgorii* and *tblSpectruFenol*.

*QryClima* query and retrieve information from tables *tblClima* *tblPodgorii*.

*QryProductii* query retrieve information about the annual grape yields in Tables *tblSoiuri*, and *tblPodgorii* *tblSpectruFenol*. Years are automatically removed for which no records exist in database production.

GLOBALCLIM - Elemente climatice

## Elemente climatice

Podgorie	Iasi	Podgorie noua	Medie temp.maxime August (°C)	26.5
An	1998		Medie temp. decada I, II iunie (°C)	21.3
Bilanț termic global (Suma t°C)	3279.1		Umiditatea relativa medie (%)	
Bilanț termic activ (Suma t°C)	3255.5		Nr. zile cu temp.maxime >30 °C	20
Bilanț termic util (Suma t°C)	1455.9		Durata perioada bioactiva (zile)	177
Suma precipitatii anuale (mm)	653.5		Indice helioteuristic real	2.1
Suma precipitatii vegetatie (mm)	358.8		Coefficient hidrotermic	1.1
Suma ore insolare in per. vegetatie	1458.7		Indice bioclimatic vita de vie	7.2
Temperatura medie anuală (°C)	10.2		Indice aptitudine oenoclimatica	4605.4
Temperatura medie iulie (°C)	21.6		Indice anual de ariditate	
Temperatura medie august (°C)	26.5		Caracterizare generala an	foarte ploios
Temperatura medie sept. (°C)	15.5			

Temp. minimă absolută în aer (°C) Data temp.min.abs.in aer

-19 Zi 3 Luna 12

Temp.min.abs. la supraf.solului (°C) Data temp.min.abs.sol

-24 Zi 24 Luna 12

Prima inregistrare Inapoi Inainte Ultima inregistrare

Inregistrare noua Salveaza inregistrarea Undo Sterge inregistrare

Inchide formularul

Record: 1 of 23 No Filter Search

**Fig. 3 - For handling data in table form tblClima**

Selecting and centralization of data on quality grape production is made by *qryCalitateProd* query. It is based on *tblSoiuri* tables, *tblPodgorii* and *tblSpectruFenol* and extract only the years for which data in the database records are kept of production quality indexes.

### Reports

Selecting Reports and results are displayed using reports. These can be previewed or printed.

*RepClima* report shows the main elements of climate change while at the base of the query being *qryClima*. Data are presented chronologically, grouped by vineyards.

*RepFenologie* report is *qryDateFenologie* query data source. It centralizes

and provides information on phenological spectrum of varieties of vines, arranged chronologically.

The report is intended for printing and viewing *repCalitate* related parameters of the quality grape production. They are grouped into two levels so that, within each vineyard, and the items are displayed chronologically, the average weight of 100 grains, the quantity of grape sugar and acidity equivalent.

Centralization of grape production is done using *repProducții* report, the vineyards and years (chronologically), is presented each year in quantities of grapes harvested per ha for each variety. Years are excluded for which no records in the database on the vineyard yields. When the report is *qryProductii* query quality

## CONCLUSIONS

At present, more often when faced with climatic events, building a database focused on specific regional pedo-climatic and cultivation of vines in the vineyard Dealu Peony is a first step in knowing the trend and how weather history behaves vine culture.

Analysis of ecosystem conditions and productive capacity of the vineyard Dealu Bujorului highlighted trends in the evolution of climatic factors (air temperature rise, reduced precipitation, increased aggressiveness and unevenness in the distribution of rain during their growing season, increased drought and soil air, increase in frequency and intensity of extreme events of hail, heavy rains, frost early / late, storms, etc..) direct impact on vegetative and productive potential of vineyards and the inheritance and physiological perfection phenophase vegetation.

Database to be completed periodically and will be an important starting point for future research.

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