PROBING DATA BASE INCLUDING VITICULTURAL AND OENOLOGICAL INFORMATION IN VALEA CALUGAREASCA VITICULTURAL CENTRE

BAZĂ DE DATE INTEROGATIVĂ CU INFORMAȚII DE ORDIN VITICOL ŞI OENOLOGIC ÎN CENTRUL VITICOL VALEA CĂLUGĂREASCĂ

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Abstract. *The probing data base was accomplished in ARCVIEW layout, and it allows to obtain pedogenetic, viticultural and enological information about the grapevine plantations in Valea Călugărească viticultural centre. The measurement of the detail tips of the grapevine plots of the viticultural area was performed by means of the Global Positioning System (GPS) whose basic system consists in using satellites as reference points for determining the positions on the Earth by triangulation. After identifying the coordinates obtained in STEREO 70 on the digital layer resulting from the digitalization of the surfaces on the orthophotogrammetric image, the identification of the coordinates in ARCVIEW program followed. All the information transposed under the form of maps concerning the cadastral layer at the level of the plot and of the maps including pedogenetic factors was superposed in GIS system, this allowing to obtain some quite useful information at the level of the vine growing area of Valea Călugărească. The background of the data base consisted in the information concerning the imagistic and cadastral support, as well as concerning the edaphic factors obtained during the studies carried out in the field.*

Rezumat. *Baza de date interogativă a fost realizată în format ARCVIEW şi permite obținerea de informații de ordin pedogenetic, viticol şi oenologic referitoare la plantațiile din centrul viticol Valea Călugărească. Măsurarea punctelor de detaliu al parcelelor de viță de vie din arealul viticol s-a realizat cu ajutorul sistemului GPS (Global Positioning System), al cărui principiu de bază constă în utilizarea sateliților ca puncte de referință pentru determinarea prin triangulație a pozițiilor de pe Pământ. După identificarea coordonatelor obținute în STEREO 70 pe stratul digital rezultat din digitizarea suprafețelor de pe imaginea ortofotogrametrică se trece la identificarea coordonatelor în programul ARCVIEW. Aceste informații transpuse sub forma hărților privind stratul cadastral la nivel de parcelă şi a hărților cu factorii pedogenetici au fost suprapuse în sistem GIS, fapt ce a permis obținerea unor informații deosebit de utile la nivelul arealul viticol Valea Călugărească. Fundamentul bazei de date l-a constituit informațiile privind suportul imagistic, cadastral şi factorii edafici obținuți în urma studiilor efectuate în teren.*

MATERIAL AND METHOD

The background of the database consists in the information regarding the imagistic and cadastral support as well as the edaphic factors obtained during the studies carried out in the field.

The correlation and supplementation of the information from the pedologic and agro-chemical studies necessary for the achievement of the soil-land monitoring system for viticulture should be created with the information from the fund monitoring (e.g. number of plantations concentrated in a certain moment on certain pieces of land, climate, mainly quantity of precipitations, their distribution during the vegetation period, agro-techniques features of the existing plantations) allowing the elaboration of the database.

All the information transposed under the form of maps concerning the land use method (the cadastral layer of the plot) and the maps with pedogenetic factors was superposed in the GIS system, obtaining very useful information.

RESULTS AND DISCUSSIONS

The GPS system basis principle consists in using the satellites as reference points in order to determine the positions on Earth by triangulation. These positions are determined using the distances to the reference satellites, given by the speed and time result.

Dynamic measuring implies the stationary of the antenna in points, for a short period of time, in order to take over data from the satellites, while data processing (vector determination) is performed in real time. After processing a vector can be practically determined from the reference receiver (known coordination point) for each stationed point by the mobile receiver.

The land phase includes the following steps:

- Establish the spatiality index: area coordinates related to the known objects.
- Setting the receiver on latitude – longitude system
- GPS reference system (Stereo 70)
- Activating the mapping application MAP SYS PDA (image 1).

Image 1-MapSys PDA

MapSys is a GIS system enabling the efficient generation of the digital plan and the preparation, use and interrogation of the spatial reference data, using some specialized functions included in the software, for the purpose of creating a relational data model loaded with topologically validated information. That enables their use in MapSys or GIS system or any alpha-numeric data management application.

Picking up field points - the area to be measures is established on the orthophotomap, the image is plotted with the coordinates marked on it for a better field orientation. This operation has a simple methodology and cannot be made randomly. The GPS is placed at the ends of the lot and in all its geometric split points in order to represent the lot size as precisely as possible.

The laboratory phase, points identification in ARCVIEW software

In the land phase, a partial identification of the property has been performed on the printed draft and now the area is placed on the screen following up the points coordinates with the cursor. The coordinates downloaded from the GPS identify on the digital layer resulted from the digitalization of the surfaces on the orthophotogrammetric image.

Identifying the points measured in the land, it results a control layer that shall be placed over the land polygons one.

The orhtophoto image (image 2) is displayed; the orthophoto image and the GPS points (image 3); orthophoto image, GPS points and the polygons layer (image 4).

Image 2 – Orthophotogrammetric image of Valea Călugărească viticultural centre

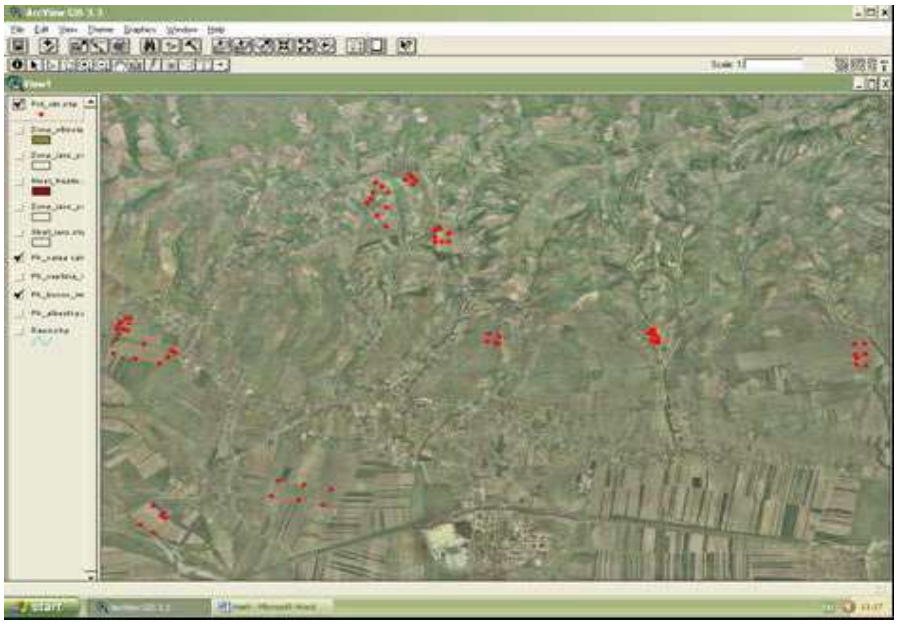


Image 3 – Orthophoto image, GPS points

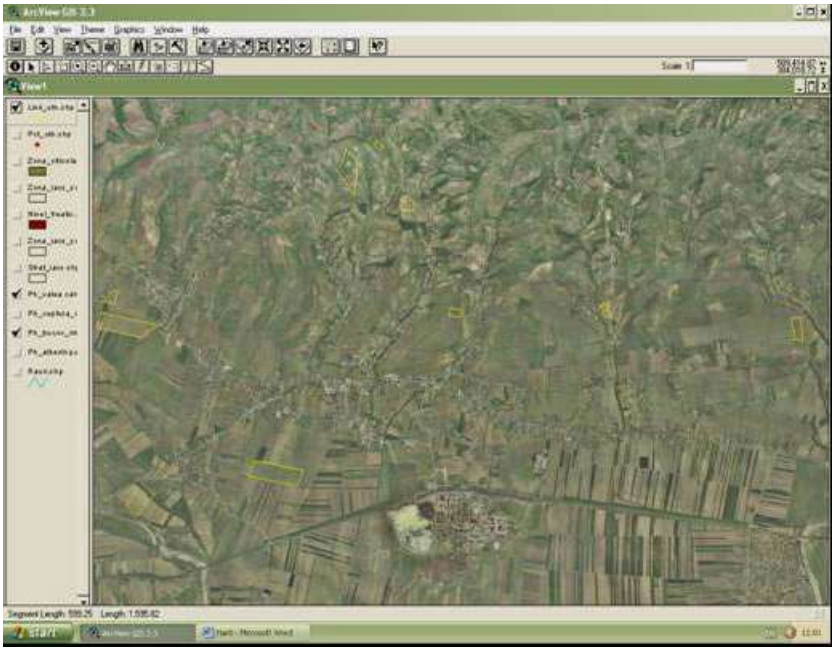
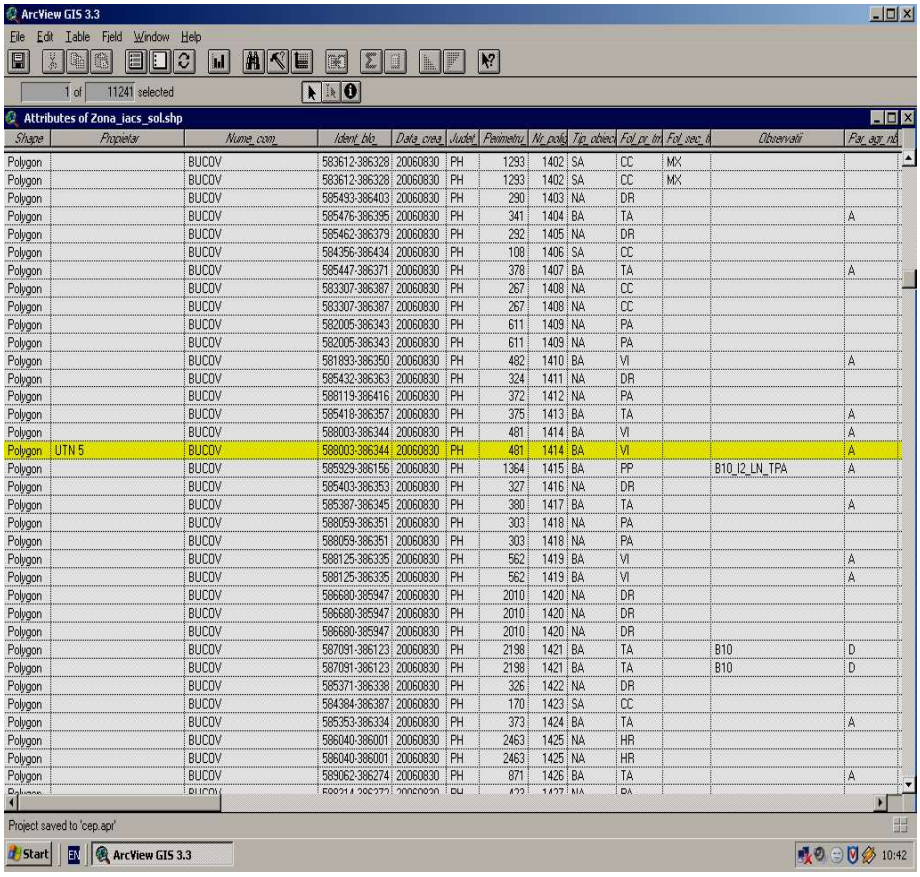


Image 4 - Orthophotogrammetric image, GPS points and polygons layer

The attributes table is elaborated including data regarding the topographic lot, the surface measured, all soil and plant specific characteristics and attributes of the viticultural plantations (Image 5).



Shape	Propietar	Nume_com	Ident_bio	Data_crea	Judet	Perimetru	Nr_poli	Tip_obiect	Fol_pr_tm	Fol_sec_tl	Observatii	Pac_agr_nd
Polygon		BUCOV	583612-386328	20060830	PH	1293	1402	SA	CC	MX		
Polygon		BUCOV	583612-386328	20060830	PH	1293	1402	SA	CC	MX		
Polygon		BUCOV	585493-386403	20060830	PH	290	1403	NA	DR			
Polygon		BUCOV	585476-386395	20060830	PH	341	1404	BA	TA			A
Polygon		BUCOV	585462-386379	20060830	PH	292	1405	NA	DR			
Polygon		BUCOV	584356-386434	20060830	PH	108	1406	SA	CC			
Polygon		BUCOV	585447-386371	20060830	PH	378	1407	BA	TA			A
Polygon		BUCOV	583307-386387	20060830	PH	267	1408	NA	CC			
Polygon		BUCOV	583307-386387	20060830	PH	267	1408	NA	CC			
Polygon		BUCOV	582005-386343	20060830	PH	611	1409	NA	PA			
Polygon		BUCOV	582005-386343	20060830	PH	611	1409	NA	PA			
Polygon		BUCOV	581893-386350	20060830	PH	482	1410	BA	VI			A
Polygon		BUCOV	585432-386363	20060830	PH	324	1411	NA	DR			
Polygon		BUCOV	588119-386416	20060830	PH	372	1412	NA	PA			
Polygon		BUCOV	585418-386357	20060830	PH	375	1413	BA	TA			A
Polygon		BUCOV	588003-386344	20060830	PH	481	1414	BA	VI			A
Polygon	UTN 5	BUCOV	588003-386344	20060830	PH	481	1414	BA	VI			A
Polygon		BUCOV	585929-386156	20060830	PH	1364	1415	BA	PP		B10_I2_LN_TPA	A
Polygon		BUCOV	585403-386353	20060830	PH	327	1416	NA	DR			
Polygon		BUCOV	585387-386345	20060830	PH	380	1417	BA	TA			A
Polygon		BUCOV	588059-386351	20060830	PH	303	1418	NA	PA			
Polygon		BUCOV	588059-386351	20060830	PH	303	1418	NA	PA			
Polygon		BUCOV	588125-386335	20060830	PH	562	1419	BA	VI			A
Polygon		BUCOV	588125-386335	20060830	PH	562	1419	BA	VI			A
Polygon		BUCOV	586680-385947	20060830	PH	2010	1420	NA	DR			
Polygon		BUCOV	586680-385947	20060830	PH	2010	1420	NA	DR			
Polygon		BUCOV	586680-385947	20060830	PH	2010	1420	NA	DR			
Polygon		BUCOV	587091-386123	20060830	PH	2198	1421	BA	TA		B10	D
Polygon		BUCOV	587091-386123	20060830	PH	2198	1421	BA	TA		B10	D
Polygon		BUCOV	585371-386338	20060830	PH	326	1422	NA	DR			
Polygon		BUCOV	584384-386387	20060830	PH	170	1423	SA	CC			
Polygon		BUCOV	585353-386334	20060830	PH	373	1424	BA	TA			A
Polygon		BUCOV	586040-386001	20060830	PH	2463	1425	NA	HR			
Polygon		BUCOV	586040-386001	20060830	PH	2463	1425	NA	HR			
Polygon		BUCOV	589062-386274	20060830	PH	871	1426	BA	TA			A

Image 5 – Attributes table

A GIS system data access is performed by superposing the layers, following the information interest order, checking the layers from the main menu.

The information is used through the **Identify results** identifier that will open the attributes table from the selected layer (*Image 6*).

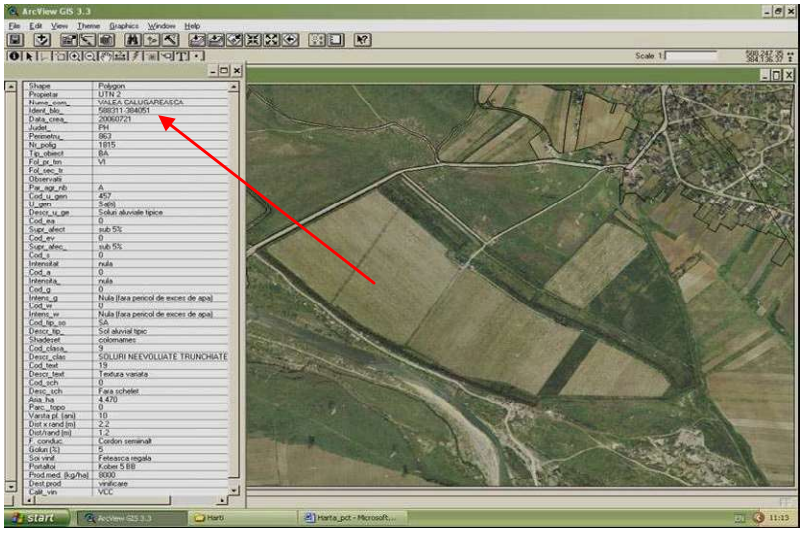


Image 6 –"Identify results" identifier and the attributes table

Thus, we will be able to follow up all information regarding the use and the soil specific characteristics of the ***selected polygon***.

CONCLUSIONS

The ARCVIEW database created as an interrogative database enables the obtaining of pedologic, viticultural and oenological information regarding the terroir units delimited within Valea Călugărească viticultural centre.

The development of GIS databases is deemed to select, organize and store viticultural and oenological, CFTE (telluric – edaphic) and viticultural environment information

Consulting the ARCVIEW database enables us to obtain the data about the delimited terroir units directly and also to see data about cadastral lots, soils, vine varieties, plantation age, plantation density, production destination

The *ArcView* database is interactive by definition with the possibility of bringing in permanent modifications and supplementations according to the interest benchmarks.

REFERENCES

1. Aronoff S., 1993 – *Geographic information systems - a management perspective*. WDL Publications, Ottawa