Automatic Administration of the Improvements of Land Reclamation in Present Conditions of Property Structures on Agricultural Grounds

Ş.L.dr.ing. MANEA Raluca, Faculty of Land Reclamation and Environmental Engineering, University of Agricultural Sciences and Veterinary Medicine, Bucharest, ral05man05@yahoo.com

Abstract: In the paper are presented some aspects concerning the management of land reclamation systems using general cadastre. The suggested solutions are illustrated on a irrigation system: Calafat – Bailesti.

I propose a program for union the proprieties, leaving at option the users the settlement of norms thereto is shall done this. All through this program is can done the exploitation of the system through the determination of the size of surface irrigated as well as remanent surface anirrigated.

1. Introduction to paper

For the realization of the system of improvements administration system of land reclamation have been considered the next principles:

- Of a average developmental open utilization, carry to permit the modification and the update of the applications, depending on new requirements, of possible modifications ale the legislation and of the technological evolution;

- The line-up to the standards from area as much in what it concern the developmental how much average and the part regarding to dates;

- The interoperability with another existing systems, to level local administration and the central audience (the locales Councils, Regional Councils, Government, Governmental Agencies, etc.). This thing directs to bared in exploitation and bared equal-phase different from developmental, with condition as and these to respect the standards in surface of the informatics technologies.

Departing from the implementation of Law 18/1991 -law of the background funciar:,, What settle-down the destination of the grounds, the ownership private about the grounds, the grounds state property as well as judicial movements the grounds,, abaft which have the result on the average to 10 millions tchick lands, cca. 12 Millions Proprietary titles, he felt the necessity correlation present proprietary forms with existing arrangements, in case of girlish the meshes of irrigations.

For an exploitation an efficiency a meshes of to the owners of what grounds of the by-pathes wandered through thereon, it can change the juridical situation the grounds through fusion of surfaces as the results of sale purchase, successions or establishment of associate through fusion.

Through the study accomplished in System of irrigation Calafat-Bailesti proposed a series of applications:

- ► The realization of new farms through fusion of surfaces;
- ► The exploitation of the system correlated to these new surfaces.

2. Achievement mode

The succession of which phases underlay elaboration of the analysis, presenting as a matter of fact the scheme of this realization, is presented in fig. 1.



Figure 1 The block scheme

3. The location of work

The irrigation system Calafat-Bailesti has an area of 49640ha, it is placed fractionally the south of Romania, on the left terraces of river Danube and has following limits:

- To North the system Cetate-Galicea;

- To south the units Calafat-Ciuperceni, Ghidici-Rast, Bistret-Nedeia-Jiu;

- To west the river Danube;

- To the east the brook Desnatui.

Administrative, the system does the part from region Dolj were executed in the period 1967 1971.

The water supply of the system is done from Danube River to km 801+400, through the basic station SPA Basarabi what assures a flow of 47, 6mc/s with charge of 39m. From this flow, merely 38, 2mc/s is fated irrigation surfaces of the system Calafat-Bailesti, difference of 0, 8mc/s be fated of a irrigation surfaces from the systems Cetate-Galicea and Calafat-Ciuperceni.

The station Basarabi is pressing water in the channel of adduction CA, which has a total length of cca 42km and crossing whole the surface of the system from west to the east.



Figure 2 The station Basarabi



Figure 3 The irrigation system

4. Proposed applications

4.1 Thematic plans

The first application had as aim the realization of the cadastral plan and of thematic plans.

The main graphic layers build are: parcels; group of parcels; the administrative sectors; irrigation network.

Have been achieved 53 graphic layers, disposed as per the next figure:



Figure 4 Graphics layers and their legend



Figure 5 The cadastral plan

The study made essentialy the overlap of graphic layers with the corresponding attributes, for the creation of what themes define the areas of utility ale the system.

For each proprietary guy they achieved thematic plan and centralizers tabels. For instance, on the territory of Calafat they grouped the property in associate homely his individual sectors and this can be vizualized on plan as follows:



Figure 6 The plan of individual properties



Figure 7 Homely associations from Calafat

For each proprietary guy achieved tabels, such as: 1. The tabel on owners in the administrative territory the town Calafat

Owner	Number of pers	А	Rivers	Roads	Buildings	Np	Total noagric	Total improved
Family Ass.	65	79.24	0	0	0	0	0	79.24
Local council	0	0	0	5.82	0.8	1.23	7.85	7.85
Individual	191	142.35	0	0	0	0	0	142.35
R.A.I.F.	0	0	1.81	0	0	0	1.81	1.81
	256	221.59	1.81	5.82	0.8	1.23	9.66	231.25

Arran	gement through af	The surface with parcels			
SPP	Fixed APT	Movable APT	Parallel with antenna	Orthogonal on antenna	
0	79.24	0	0	79.24	
0	7.85	0	0	0	
0	142.35	0	0	142.35	
0	1.81	0	0	0	
0	231.25	0	0	221.59	

2. Structure of the irrigations system for each owners

3. The tables on owner

Homely partners

Number of parcel	Number of pers.	А	Rivers	Roads	Buildings	Np	Total noagric.	Total improved
21	20	4.85					0.00	4.85
22	45	74.39					0.00	74.39
TOTAL	65	79.24	0.00	0.00	0.00	0.00	0.00	79.24
1.0	1							

Local Council

Number of parce	l Numb	er s	A	River	s Roads		Buildings	Np	Total	Total
16+17+18+19+2	0	5.			5.42				5.42	5.42
21					0.04				0.04	0.04
22					0.36		0.80	1.23	2.39	2.39
TOTAL		0,0		0.00	5.82		0.80	1.23	7.85	7.85
Individually										
Number of parcel	Number	Δ		Rivers	Roads	7	Building	e Nn	Total	Total
Number of pareer	of pers.	Л		RIVEIS	Koaus	>	Dunung	s np	noagric	. improved
16+17+18+19+20	191	91 142.35							0.00	142.35
TOTAL	191	142.	.35	0.00	0.00		0.00	0.0	0.00	142.35
RAIF										
Number of percel	Number	٨	D	Divora	Donda	г	Duildinga	Nn	Total	Total
Number of parcer	of pers.	A		CIVEIS	Roaus	1	Bunungs	мр	noagric.	arrangemer
16+17+18+19+20				1.81					1.81	1.81
TOTAL	0	0.00)	1.81	0.00		0.00	0.00	1.81	1.81

4.2 The creation of farms through the parcels fusion after the criterion optimum surface

The organization of agricultural territory has the role of capitalization, primness, arrangement and equip the agricultural grounds. The forms of organize the territory am very different, concordantly with the techniques of improvement of the slope lands, the repartition of the water in soil, the modification of biologic conditions from soil, the systems of the culture, etc.

The projects for territory organization are made in concordance with the precautions of territory and localities improvements plans and the zoning of agricultural production.

It is clear the definition, contained in the precautions binds the Law funciar nr. 18 1991, in conditions of diversification of the property forms.

- The organization and improvement of agricultural territory have as the charge the creation of conditions for a good use of grounds in the aim agricultural production and is executed on the strength of studies and the requested projects by owners of the grounds.

In the Treaty of the Romania adherence to European Union are finished the protocol concerning the temporary additional measures of rural development through foundation of the semi subsistence farms.

Through semi subsistence farms are apprehended the farms which produce first of all for the oqn consumption, but which also commercialize a part from his own production.

In Romania the number of agricultural exploitations below 4ha is of 83,3% from total, what don't covers the needs of the family. In the system the analysis consisted as the average of a parcel from a group of parcels can get to 0, 35ha.

From these considerations have achieved a programs of surfaces fusion useful to the realization of the farms with optimum sizes of 40-50ha.



Figure 8 Load the software

After the shipment of the program is passed to this run with the next made to order succession:



Figure 9 Start the software

In the moment in which they ticked off all what surfaces want to cumulate, stop the run of the program and appears displayed the total surfaces.



Figure 10 Display the cumulated surfaces

Afterwards on these new support of property is done the analysis of the system of irigation, and new owners can command the wetting systems necessary to obtained the optimum parameters in exploitation.

4.3 The exploitation of the system of irrigation in new conditions

Abaft the analysis to ground shall define the parcels that will be fused and shall determine those areas:



Depending on lot's area proposed for agricultural exploatation an efficiency, is can passed to the next stage scilicet to the use net of existing irigations for fused surfaces.

Therefor is chosen a landmark of irrigation from the network and place an wing pluvial or a central pivot of the guy those wagons used today currently in irrigation.

The surface irrigated in this kind, calculated all with the help of the program presented hereinbefore, overlaped across the cumulated surface give us the output of effusion in new situation. If this isn't satisfactorily is can acted on two pathes:

- Through the modification of the outline exploatation;

- Through the modification location of the system of affusion

In this kind is can optimized for each the zone of the system of irigatii, the efficaciousness of irrigation, merely on plan, without no measure efectiva on ground, therefore with minimum afferent expenditures aplication and can delivered informations completely, objectives and quick as much the organs of decision organizations of farmers, those what exploit from viewpoint hidrotehnic the system but chiefly the which owners can estimate concrete the economic what advantages can them obtains abaft adhibition affusions.

An another what benefit is can obtained is one of potential proof the capacity of irrigate the surfaces, what breeds manifestly price for sale of these.

Utilizing the program elaborated can do same aplications and for another situations such as:

- fused surfaces after the quality of the soils;

- the determination optimum surfaces for the sowing some cults;

- the determination of low zones, carry have potential of he were flooded to a certain level of precipitations, and therefore the of a anticipation solutions of drain their;

- the location works of struggle the erosion of the soil in most good configuration.

In conclusion it can asserted that the effectuated analyse about exploitation of the irrigation system in report with actualize property using technologists GIS (personaliyed to a yone of Dolj county), through the description of principles and realization mode, through the presentation of reports and forms and through the methods of interactions with other systems, it accentuate some essential appearances bounded by automatic administration of the cadastral dates.

The application underlay the construction of the informational system of administration of land reclamation improvements in actual properties structure, realized with means whereat had access, in demonstrative aim, illustrate completely the utility of realization and use of such a system for complete information, objective and quick, without important costs and permits the solution of fundamental problem for the moment to rehabilitated the systems of land reclamation realized in period of the years 1970 - 1980.

The real importance of application consist in that of providing an ensemble of information's as much to the decision factors, in particular how much to the lands owners considering the concrete methods and the efficiency that it can obtained through the utilization of the land reclamation improvements in the present property conditions of the lands.

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