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THE ANALYSIS OF THE INFRASTRUCTURE OF IRRIGATION AND LAND RECLAMATION AT CĂLĂRAŞI COUNTY LEVEL

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Abstract

The irrigation development in Romania, and also at Calarasi county level was in a phase when sufficiency was emphasized, allowing the consistent allocation of the subsidies for the expenses of the non viable systems use. Lange land stretches were developed and they did not have competitive characteristics in an open market economy. The Revolution and the measures taken subsequently for the re-distribution of lands to the former owners, as well the low perceived land taxes, led to a severe fragmentation of the lands, to the tendency of practicing the subsistence agriculture and to the complications in the water management and of the demand for irrigation water supply. One of the measures that should be taken for the rehabilitation of the irrigation system is to inform EU that it is needed a continuous support of the irrigation system in order to increase the viability of the rural areas, to stop the continuous depopulation in the rural areas and to prevent the fragmentation of the arable land, this support consisting of subsidies given for the irrigation water until the irrigation systems will be rehabilitated. At the level of year 2011 the surface of the land reclamation arrangement, in the public and private sector, existing in Calarasi county was of 181,523 ha of the net surface with irrigation works, 91,604 ha arrangement with drained works and 459 ha works for the fights against soil erosion. The present research analyses and proposes measures for the development of the infrastructure that contribute to the decrease of damage that appear following these extreme natural phenomena.

***Key words*:** *drainings, intensive development, infrastructure, land reclamation*

INTRODUCTION

The irrigation is a measure which intervenes to ensure the soil moisture regime, according to the plant requirements (agricultural crops and vineyards) in the periods in which deficits record from this point of view. The irrigation need is evidenced by decrease of soil water reserve below a certain threshold, known among experts as the "*minimum threshold of soil moisture*", which has as effect, significant reductions in production.

From the researches made in heaven ¬ (Grumezea N., Kleps C., 2005) both in our country and abroad, the size of this indicator is conditioned primarily by soil (textural type) and then, to a lesser extent also by other factors, including the culture specific. Based on these considerations, we can define also the concept that refers to the irrigation opportunity. Thus, there is insufficient appreciating that irrigation would be necessary only in dry areas characterized by long periods of low rainfall and high temperatures, accompanied by often and frequent winds. In certain areas of our country or Baragan Plain Dobrogea (known as the driest areas), plants can tolerate longer periods in which such phenomena manifest, compared to some situations in the areas where rainfall is more abundant, temperature is lower and winds frequency winds is lower, but soils with heavy texture or tending to it. In the second case, found especially in the piedmont areas where vertic soils are present and to some extent the reddish-brown, droughts, although low, have an effect many times equal or even more harmful to culture crops (Otiman, P.I., 2009).

MATERIALS AND METHODS

To study the land reclamation infrastructure of Călăraşi three specific research methods were used: dynamic, deductive and quantitative economic analysis, SWOT analysis, survey or participative research that involves collecting information on site using

the research techniques "observation" and "interview ".

The study on analysis of irrigation infrastructure in Călăraşi had as its starting point the information obtained from the following sources: Statistical Yearbook Călăraşi - Edition 2012 Socio - economic profile of Călăraşi county, Romania's pre-accession economic plan, the statistic data of Department for Agriculture and Rural Development; Călăraşi Development Strategy, elaborated by the county council, Publications of the National Institute of Statistics and data obtained from site observations.

RESULTS AND DISCUSSIONS

Starting from the natural specific, characteristic of our country, we must always consider that irrigation is not primarily a technological link to obtain a surplus production. Researches carried out on the long term periods showed that, in the last years characterized by precipitation occurring in relation to the plant requirements (both in terms of time and quantity), the productions obtained reach the level of those obtained under irrigation.

The production-related damage is recorded in years when water from a natural way (by precipitation) cover plant requirements both in terms of quantities as well moments when they occur.

Therefore, the important aspect on which reference was previously made is that our country under irrigation is, in fact, a correction that is applied to a natural factor, namely rainfall, when they are not present in the periods in quantities required by the plant requirements. In such cases, irrigation is really a factor to increase production and this of course starting from a certain level (PND 2007-2013).

As a result, we have developed solutions and some were even applied, but there are still large areas of agricultural land affected by excess moisture, which obviously leads to lower crops due to mainly impediments frequently occurring, in performing maintenance of agricultural crops. The Danube use as a source of water, also corroborates with its presence in the vicinity of the driest areas of the country, both in terms of number and frequency of periods of moisture deficiency (RDA South Muntenia, 2011).

Integrating agriculture of Calarasi county in the market system is ensured by strengthening the private system and a type of economic organization in which natural processes mix with economic mechanisms in a manner that creates an organic balance – offer –demand. For this purpose, open development strategies are needed that exploit the benefits created by the dominant share of private ownership in agriculture and provide intensive development to achieve competitive supply of agricultural products and an expanded market for all types of farms, with wide access to market products and production factors (CJCalarasi, 2012).

The hydrographical network consists of two river basins of the river Danube basin and a sub basin at Mostiştea.

The Danube River, which demarcates the county in the South and South - East from km 450 (Gostinu) at km 300 (Cernavodă) splits into two branches: Borcea on the left and The Old Danube on the right - that shut between them: Ialomita Pond or Big Island of lalomita. The hydrographical network of the county is entirely dependent on the Danube River. Besides Dâmboviţa and Arges rivers, which by their lower sectors drains the SW part of the county, other less important rivers belong to the local network. On the territory of Călăraşi county, the Danube has a length of 150 km. Multiannual average flow of the Danube is 5890 m / s entering the county and about 5970 m / s leaving the county (DARD Calarasi, 2012).

The lakes in Călăraşi county are generally anthropogenic nature, represented by ponds spread mostly on Mostiştea valley and its tributaries on Rasa, Luica, Zboiul, Berza and Pasărea.

In the year 2011 (CJCalarasi, 2012) the surface of land improvement, in public and private sector, existing in Călăraşi county was of 168,987 ha net surface with irrigation works, 86,694 ha drained works and 339 a works against soil erosion (Table 1).

Table 1.Situation of land improvement works in Calarasi county in 2011

Specification	U.M.	Of which:	
		gross	net
Irrigation	Ha	172.629	168.987
Draining	Ha	93.776	86.694
Fight against soil erosion	Ha	339	339

The structure of land reclamation works carried out in 2011 in Calarasi county reflects that 67.2% of the total facilities of land improvements is represented by irrigation works and almost 32% of irrigation and drainage works, fight against erosion being under 1% (Fig. 1)

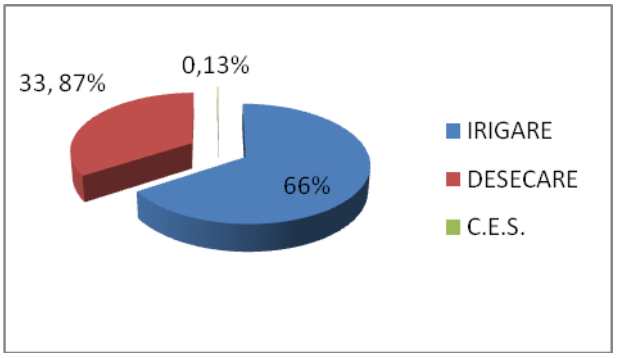

Fig. 1. Structure of land improvement works in Calarasi county in 2011

Photo 1. Floating pump station - Irrigation system Gălăţui-Călăraşi

In 2012, at the level of Calarasi county, two investment objectives developed: Rehabilitation of drain pump SPE Dunărica Boianu Sticleanu precincts with a plan of 1,200,000 lei in the second semester of the year, achieving on 31.12.2010 a value of 1,107,791 lei, meaning dismantling works of old installations and purchase of technological equipment SPE from Dunărica station (Photo 1); Rehabilitation of channel CA I from arrangement Pietroiu Stefan cel Mare - stage I foreseen in the investment plan in 2010 with a value of 1,500,000 lei and the state budget rectification, the budget allocation was suspended, being postponed for 2013.

At the level of Calarasi county, Est Giurgiu Management Unit manages areas with land reclamation works as follows: Costinu Greaca Arges - 11,371 ha Olteniţa Surlani Dorobanţu - 9788 ha (Photo 2); Mostiştea I - 20,000 ha Mostiştea VI - 38,672 ha Terrace Mihai Bravu - Chirnogi - 6724 ha.

86,555 ha of the total area equipped for irrigation, only 19,195 ha are declared of public use in the following facilities: Gostinu Greaca Arges - 11,371 ha and Mostiştea I - 7824 ha.

Photo 2. Olteniţa Surlari Dorobanţu Precincts, CĂLĂRAŞI county

In the drainage activities that developed in 2012 (County Statistics Department, 2012) in Calarasi county operations were performed to remove excess moisture resulting from the sudden melting of snow in spring and of rainfall in spring or during the year.

Regarding the investment plan for 2012, in Calarasi county the program was elaborated of “Rehabilitation of land drainage works from Olteniţa Surlani Dorobanţu facility" for spaces in SPE Cochira, SPE Surlari, SPE 422 and SPE Port, which involved replacing the technological equipment from the pump stations wit new pumps, hydro-mechanic and electric installations.

All these issues imply taking some measures for infrastructure development to contribute to the damage diminishing that appear following these extreme natural phenomena.

CONCLUSIONS

In order to rehabilitate land improvement in Calarasi county, it is proposed the rehabilitation of irrigation infrastructure; public funding for rehabilitation projects, modernization/re-technology and extension of land improvement that are viable technically, economically and socially in compliance with the environmental standards; funding a multidisciplinary study - water management, energy, transport and irrigation identifying long-term solutions and optimize supply gravitational energy needed for the water supply of the irrigation system; funding a study to identify land in land improvement that agricultural uses with reduced viability or non-viable and proposals for sustainable use of these lands; the introduction of cadastre in land improvement.

For the long term sustainable development, it is proposed to pass to conservation facilities and infrastructure in areas that do not meet minimum operating conditions which could not be sent freely on application to the organisations of water users for irrigations or have not been used by law, but it represents from technical-economic point of view potentially viable areas or areas tat could be connected in the future to gravity supply (or with reduced pumping) from other water sources; strengthening the protection capacity against floods, by providing operating parameters of the defence line on the Danube, bringing its section to projected rates and making some defence works on the shore in the critical areas identified; rehabilitation/ modernisation of drainage pump stations by equipping them with advanced pump units which will improve the operating efficiency and will reduce electricity costs and restoring drain transmission capacity of the channel network; preventing and eliminating the effects of landslides, torrential correction and stop depth and surface soil erosion; creating a modern system of permanent monitoring of infrastructure to fight against floods.

REFERENCES

[1]Grumezea N., Kleps C., Irrigation arrangement in Romania, Ed. Ceres, 2005
[2]Otiman, P. I.: Rural development in agriculture: opportunity to diminish the economic-financial crisis and to enhance economic growth, Ed. Academiei Romane, Bucuresti, 2009
[3]Regional Development Agency, MUNTENIA REGION DEVELOPMENT PLAN,
[4]http://www.adrmuntenia.ro/documente/1195475713_1.pdf
[5]Analysis of current situation PND 2007-2013, General Department of Rural Development, Management Authority for PNDR, www.madr.ro/dezvoltare rurala, raportulanual-de-progrese-PNDR_2010_consolidat-mart.2011.pdf
[6]Department for Agriculture and Rural Development Călăraşi 2003 -2012
[7]INS, statistic researches, The County Direction of Statistics, Statistic Yearbook of Călăraşi county.1990 la 2012
[8]Călăraşi County Council –Statistic situations, 2012