

SUSTAINABLE AGRICULTURE IN THE DANUBE VALLEY, CETATE-DABULENI SECTOR

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ABSTRACT

The climate change, environmental pollution and the increasing number of population in the last century have left their mark on the mentality, social and political orientation of the last decade. Agriculture has become a priority both globally and nationally, the ecologist currently leading the agricultural activities to the sustainability domain. The Danube Valley was in ancient times an inexhaustible resource for the area communities, agriculture and fishing being the main activities that support riparian population. The crops in the Danube Valley, on Cetate-Dăbuleni plain area are specific for the lowland area and are carefully selected in order to comply with sustainable agriculture, thus increasing the potential of the area in terms of providing food and ecosystem's protection.

INTRODUCTION

Sustainable agriculture is the traditional agriculture, that in most cases was given away and is characterized by a low productivity, but a larger durability than the conventional agriculture. The conventional agriculture, despite all its substantial contributions to the social progress, is still far from being a sustainable solution, which means not only a definite state in accordance with the nature, but also a dynamic development, according to the modern environmental principles, in which the use of the resources, the investment plan, the development of the technologies and the institutional changes are made keeping in mind the current and future requirements of the social progress. The conventional agriculture is associated with the following negative ecological phenomena: the soil damage, the depletion of groundwater, the pollution of the soil and water, affecting the biodiversity, destroying the habitats of the wildlife. The pollution of the agricultural soils is considerably diminishing the base of soil resources and is sometimes irreversibly degrading their quality. The biological properties of the soil are very affected by the numerous chemical products used as treatment for the crops. These properties that have been neglected until lately, are directly linked to the physical and chemical properties of the soil, and are influencing the health of the plants, the quality of foods and the health of people. The lower sector of the Danube was the only sector where the river can flood freely, but in the last decades it has been affected by the damming, the drainage of the flooding areas, the construction of dams and by pollution. All these actions have led to the decay of the natural resources, socio-economic imbalance and diminution of the biodiversity, of the ecosystem services, of the capacity of adaptation to the climatic changes and also to catastrophic floods.

1. Evaluation of the problem and objectives

The rehabilitation of the Danube Valley can generate, on a long and medium term, the premises of a model for sustainable development of the local communities. The ecological reconstruction has a huge potential for the socio-economical development of

the communities and can bring local benefits, not only for those who own agricultural lands, but also for the small entrepreneurs in fields such as tourism, fishing or small business based on local products.

1.1. Description of the area

The researched area (fig. 1.1.) for this paper is situated in the plain from the south of Dolj, between km 811 and km 664 of the Danube River. This area has about 35,000 ha, out of which 20,000 ha are cultivated or used for grazing. The rest of the area is represented by wetlands and lakes.

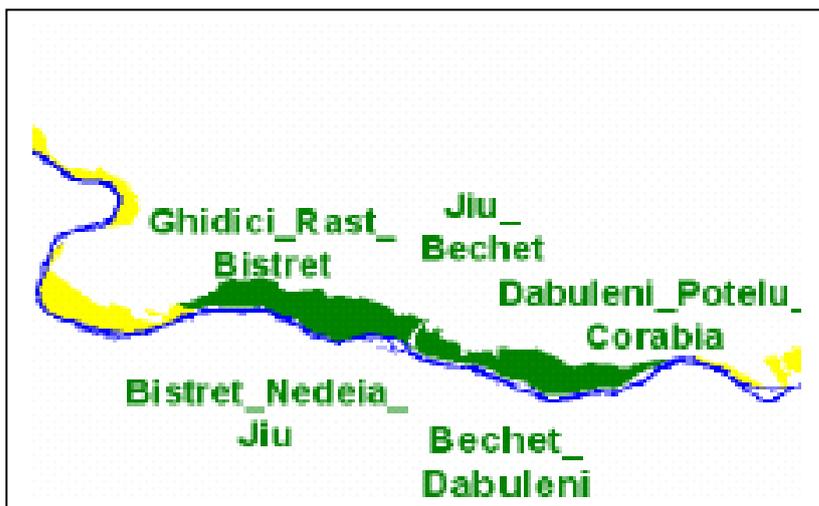


Fig. 1.1. The map of the researched area (ABA Jiu, 2014)

From the point of view of the morphology of the land, of the hydrological and physico-geographical characteristics of the researched area, we can notice the existence of two types of river sectors of the Danube River: on one side the sectors that are not dammed, such as the sector Basarabi-Rast and on the other side the dammed sectors, which have also developed polders (flooded areas) having a role in the development of the agriculture and defense against floods, beginning with Rast and ending with Dabuleni.

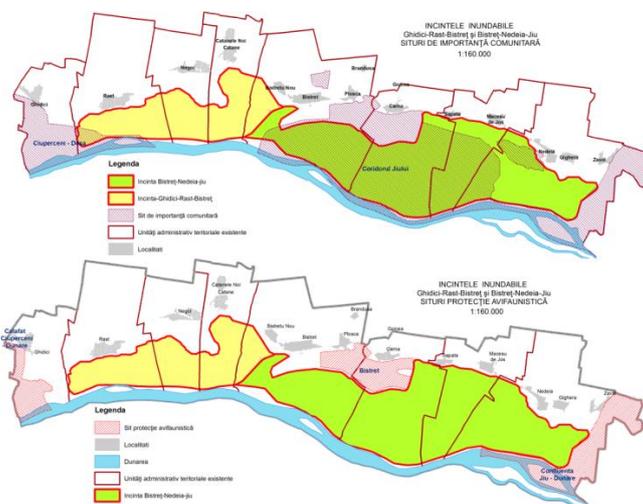


Fig. 1.2. Areas and habitats protected in the pilot zones – SCI and SPA

The sector Basarabi-Rast is a natural zone, without dams, where the unspoiled wetlands are connected to the European network Natura 2000 (Fig. 1.2.). this sector has never had great problems during the floods, because the towns are in an area with a low risk for this phenomenon, and a great part of the territory is a zone with a special regime: ROSCI0039 Ciuperцени-Desa and ROSPA0013 Calafat-Ciuperцени-Danube.

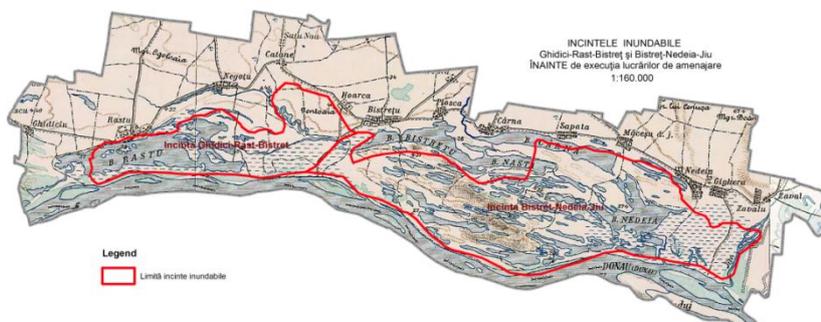


Fig 1.3. Flooded area before the dam

On the researched sector there are 24 natural lakes and swamps, which are forming the flooding valley of the Danube and which create unique ecosystems, similar to the wetlands. Although the lake Bistret is the biggest reservoir lake from the area (2200ha), the wetlands have a small surface compared to that in the period before the damming (Fig 1.3.).

Relatively larger areas from the zone are either in the Natura 2000 network, either covered by the Birds Directive or EU Habitats Directive. Before the damming of the Danube (in 1960), in the project there was the flooded valley of the Danube. The wetlands, the lakes and channels were covering only a small part of the area. The area recovered from the valley was used for agriculture.

In the area there was projected and built a mixed system for draining and irrigating with the purpose of ensuring the hydrological balance in the area. The pilot zone of the project is controlled through two structures of financial improvement, including dams, that is the area Ghidici-Rast-Bistret in the West and the system from Bistret-Nedeia-Jiu in the East side. The dam along the Danube has a length of 58 km and is designed to withstand a degree of flood insurance of 1/100 (primary dam).

A subdivision dam goes down from north to south, from the terrace and divides into two chambers the pilot area. The area can be divided into three geographical unities:

- an area in the East, used for intensive agriculture, irrigation and grazing ($\pm 15\%$);
- the second area in the middle, mostly undeveloped, with wetlands, swamps and lakes ($\pm 50\%$);
- the third area, in the West, with forests and wetlands and partially used for agriculture and grazing ($\pm 35\%$). The lake Bistret is surrounded by a dam, in order to ensure protection against floods. Part of the lake is used for fishing, and the lake is included in the European network Natura 2000 Birds Directive. The level of water is lower than the level of the nearby areas.

The human settlements are situated outside the flooded areas, along the northern border of the valley, along the main road 55A. Each village has a church, post office,

pharmacy, police office and primary school. The national road 55A is situated in the highest area outside the flooded valley and makes the connection between the villages from the valley.

The floods from 2006 have shown that the road follows more or less the limit of flooding (insurance from 1 to 100 years) and, therefore, marks more or less the natural boundary of the valley. Inside the flooded valley there is a limited number of roads, which are unpaved. There are no other important roads in the pilot area, except the one oriented towards the ferryboat Bechet and the one towards the touristic harbor Rast.

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