

## AGRICULTURAL LAND USE IN CRAIOVA METROPOLITAN AREA

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### ABSTRACT

*This study aims to present the structure of the land use categories and the capitalization of the agricultural land in Craiova metropolitan area. Craiova metropolitan area was formed through the voluntary association of 40 municipalities circumscribed to a distance of up to 30 km from the polarizing centre of Oltenia, and has a surface of approx. 226 thousands ha. In terms of land use categories this area is structured as follows: agricultural land (77.4%), forests (about 13%), water bodies and ponds, settlements, communication networks and unproductive surfaces (9.6%). In terms of cultivated areas and the average yields in 2011, the capitalization degree of the agricultural land is different, being determined by the percentage of the arable land, by the agricultural specialization, or by the proximity of the market for selling the products.*

### INTRODUCTION

As defined in Law no. 351/2001 the metropolitan area is an area formed by the association based on voluntary partnership between Romania's major urban centres and rural and urban localities situated in their proximity, at distances up to 30 km, among which cooperative relationships at multiple levels have developed.

The strategic framework for the development of the Romanian territory during 2007 - 2030 identifies 9 potential metropolitan areas: Bucharest, Bacău, Braşov, Brăila, Galaţi, Cluj-Napoca, Constanţa, Craiova, Iaşi and Timișoara. The aim of this formation is to eliminate disparities regarding the transportation infrastructure and public utilities between the urban and rural areas and respectively the sustainable development at regional level. One of the objectives of the metropolitan areas formation was the integration of land use.

The Intercommunity Development Association "Craiova metropolitan area" has started its activity since 2008, currently reaching a total of 40 administrative- territorial units: Craiova, Filași, Segarcea, Almăj, Braloștița, Bratovoiești, Brădești, Breasta, Bucovăț, Calopăr, Cârcea, Coșoveni, Coțofenii din Deal, Coțofenii din Față, Drănic, Ghercești, Ghindeni, Goiești, Ișalnita, Leu, Malu Mare, Melinesti, Mischii, Murgași, Pielești, Pleșoi, Podari, Predești, Radovan, Robănești, Rojiște, Scaești, Șimnicu de Sus, Teasc, Terpezița, Țuglui, Vârvoru the Jos (Dolj county), Balș, Baldovinești and Vulpeni (Olt county).

### MATERIAL AND METHOD

In order to conduct this study, we used as starting materials the statistics from Dolj and Olt Department of Agriculture and Rural Development. This data related to 2011 refer to the structure of the land use, the land cultivated with wheat, corn, sunflower, rapeseed, potatoes, vegetables and vines, and the average yields per hectare.

To identify the level of agricultural land capitalization we used the general land use index, obtained as a mean of the standardized values for both cultivated areas and the yields obtained (Iacob, Tălângă, 1997, p.80). The general index was calculated based on the mean of specific indices as in the following formula:

$$G_i = (I_1 + I_2 + \dots)/n$$

For the values of the specific indices, the following formula was used:

$$I = (V_n - V_{\min}) / (V_{\max} - V_{\min}), \text{ where } I = \text{index, } V_n = \text{nominal value, } V_{\min} = \text{minimum value, } V_{\max} = \text{maximum value.}$$

The study represents a quantitative analysis and has been mostly based on the statistical data processing and interpretation of the land use distribution map and of the general index of agricultural land use.

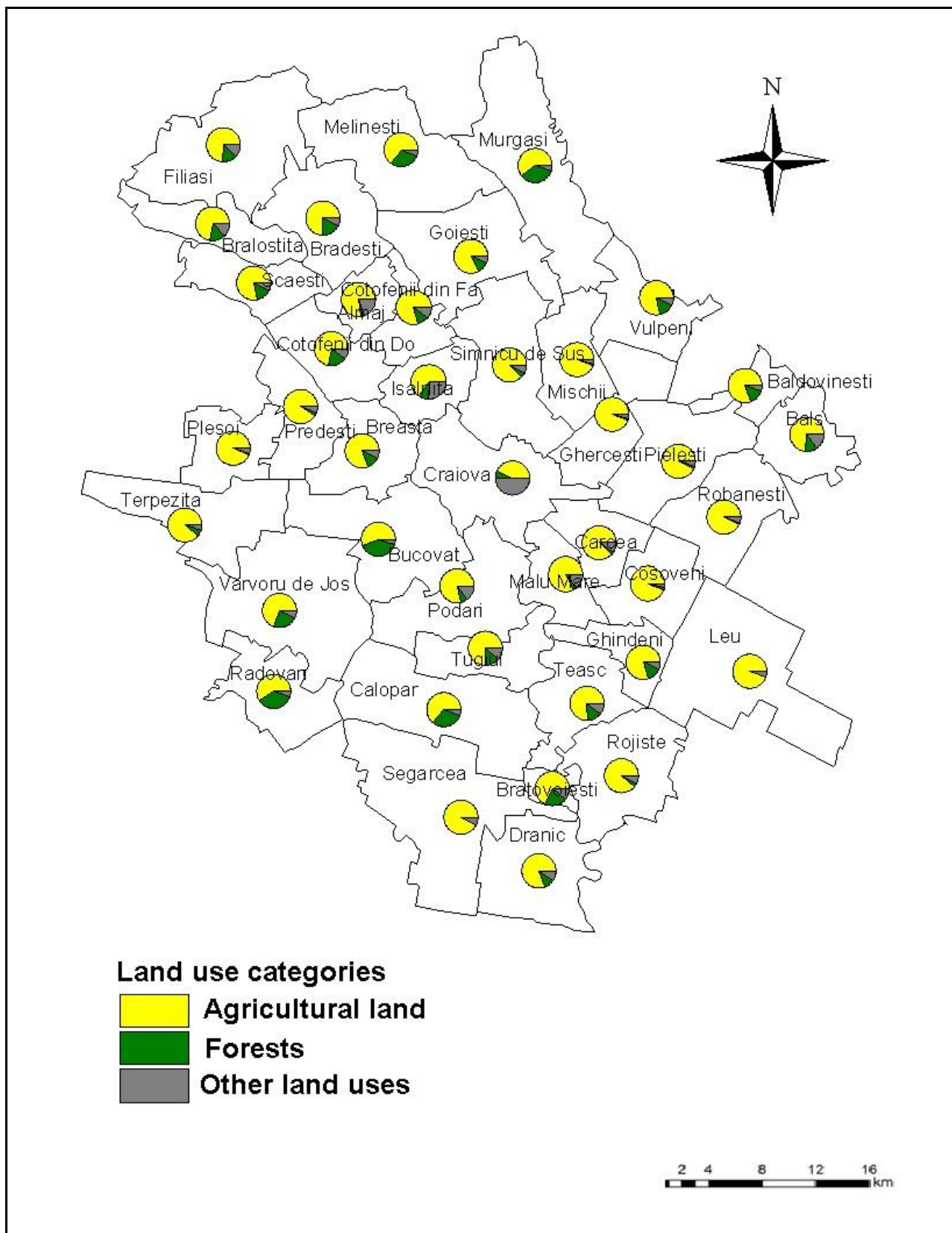
## RESULTS AND DISCUSSIONS

The land of Craiova metropolitan area has a value of 225,843 ha, consisting predominantly of agricultural land (77.4%), followed by forests and other areas with vegetation (about 13%) and the remaining of 9.6% represents other lands (water bodies and ponds, settlements, transport networks and unproductive areas) (fig. 1).

The land use structure is different in the two areas (urban-rural): the agricultural area represents 78.4% in the rural areas and 73.4% in the urban areas, the growing stock decreases from 14% in the rural areas to 6.5% in the urban areas; in contrast, the lands with other uses represent only 20.1% in the urban areas and 8.6% in villages.

The percentage of agricultural lands in the administrative- territorial units ranges between 43.9% in Craiova city and 94.5% in Leu commune. Pleșoi, Coșoveni, Ghercești, Mischii, Robănești, Pielești, Predești communes and Segarcea city recorded values above 90% of agricultural land, in comparison to Murgași, Radovan and Bucovăț where this land category is below 60 %.

The use of agricultural land is structured as follows: 79.2% arable land, 16.5 % pasture, 2.3% vineyards and vine nurseries, 1.7% orchards and orchard nurseries, 0.3% grasslands. The largest arable lands (above 5000 ha) were recorded in the following localities: Leu (10123 ha), Segarcea (9822 ha), Simnicu de Sus, Drănic, Filiași, Pielești, Vârvoru the Jos. The pastures and grasslands occupy significant areas in Melinești and Murgași communes (above 2000 ha), followed by Brădești, Goiești, Predesti, Podari, Șimnicul de Sus, Bucovăț and Breasta (above 1000 ha). The areas covered with vineyards show large discrepancies, their surfaces ranging between 3 ha (minimum value) in Teasc and 1015 ha (maximum value) in Segarcea. Cârcea, Leu, Calopăr, Vârvoru de Jos, Goiești, Brădești, Terpezița and Țuglui have each above 120 ha of vineyards. The territorial distribution of orchards is more heterogeneous, meaning that they were not recorded in 14 administrative units, but occupy above 500 hectares in Vârvoru de Jos and Pleșoi.



**Fig. 1 The land use categories in Craiova metropolitan area (2011)**

The growing stock represents 29,296 ha, which represents 12.97% of the total studied area surface. The most extensive forests are in Murgăși 3520 ha ((12.0% of the total growing stock of the metropolitan area and 35.3% of the commune), Bucovăț 3229 ha (39.1%), Calopăr 2749 ha (29.9%), Melinești 2611 ha (29.2%), Vârvoru de Jos 2475 ha

(22.9%), Radovan 1773 ha (35.9%). The most reduced growing stocks (below 50 ha) were recorded in Leu (0.3%), and Pleșoi (1.2%) localities.

The water bodies and ponds, settlements, communication network and the unproductive lands represent an area of approx. 21,000 ha, with higher percentages in Craiova (49.9%), Ișalnița (26.5%), Balș (15.9%), Almăj (18.9%), Podari (13.2%), Malu Mare (13.1%) etc. This land category has low values in the following communes: Coșoveni (3.1%), Pleșoi (4.4%), Ghercești (4.5%), Bucovăț, Mischii and Pielești (4.7% each).

The high frequency of arable lands allows in good condition the plant cultivation and livestock breeding. The cultivation of cereals occupies the largest areas. The wheat is cultivated on 34 544 ha, with high areas in Leu (with a maximum of 3300 ha), Simnicu de Sus, Robănești, Ghercești, Pielești, Vârvoru de Jos, Bratovoiești communes. The obtained yields was on average of 2425 kg/ha, higher values were obtained in Teasc, Pielești, Segarcea (above 3500kg/ha). The maize is cultivated on an area of 26,012 ha, with a higher frequency in the half eastern part of the area (Leu, Pielești, Bratovoiești, Melinesti). In comparison to the average yield of 3538 kg/ha there was recorded a maximum value of 5500kg/ha in Vârvoru de Jos and a minimum values of 1110kg/ha in Braloștița. The natural conditions are favourable for the industrial plants. Thus, the sunflower is grown on 5103 ha, with a percentage of 63% in Podari, Calopăr, Leu, Terpezița, Robanesti, Goiești and Radovan communes. The average yield is 1628kg/ha, and in six administrative units higher yields were obtained (Brădești-2250kg/ha, Segarcea, Șimnicu de Sus, Cârcea, Leu, Breasta).

The rapeseed is cultivated in limited areas, on surfaces ranging between 10 ha in Pielești and 250 ha in Simnicu de Sus and with average yields per hectare of 1382kg. The potatoes and vegetables are cultivated on an area of 5112 ha with an average yield of 13,315 kg/ha. In the administrative- territorial units, the culture of vegetables occupies surfaces which range between 12 ha in Drănic and 850 ha in Simnicu de Sus. High percentages of this culture are recorded in Teasc, Craiova, Bratovoiești, Goiești localities where the surfaces exceed 200 ha. Quantitatively, the most important area with yields above the average one, are in Almăj (18,560 kg / ha), Cârcea, Leu, Teasc and Craiova.

In terms of the general index of agricultural land use, Craiova metropolitan area can be divided into three categories:

- a small area of approx. 10 000 ha, in Breasta and Ghercești, which is characterized by a low capitalization of agricultural land; this is due to the large share of pastures, which reach 29.4% in Breasta;
- the most administrative units (75 %) have an average level of agricultural use (0.30 - 0.50), of which stands out two compact areas located in the south (Bratovoiești, Calopăr, Radovan, Vârvoru de Jos, Teasc, Leu, Țuglui, Malu Mare, Podari) and in the north-eastern part of the metropolitan area ( Brădești, Melinesti, Murgăși, Goiești, Simnicu de Sus and Mischii) ;
- a high degree of capitalization (above 0.50) was recorded in eight administrative units, due to different causes: large share of arable land (Drănic, Cotofenii din Față), the proximity of Craiova city, as market for selling the agricultural products ( Almăj, Ișalnița, Bucovăț, Cârcea), or the agricultural function of Segarcea and Balș cities (fig. 2).

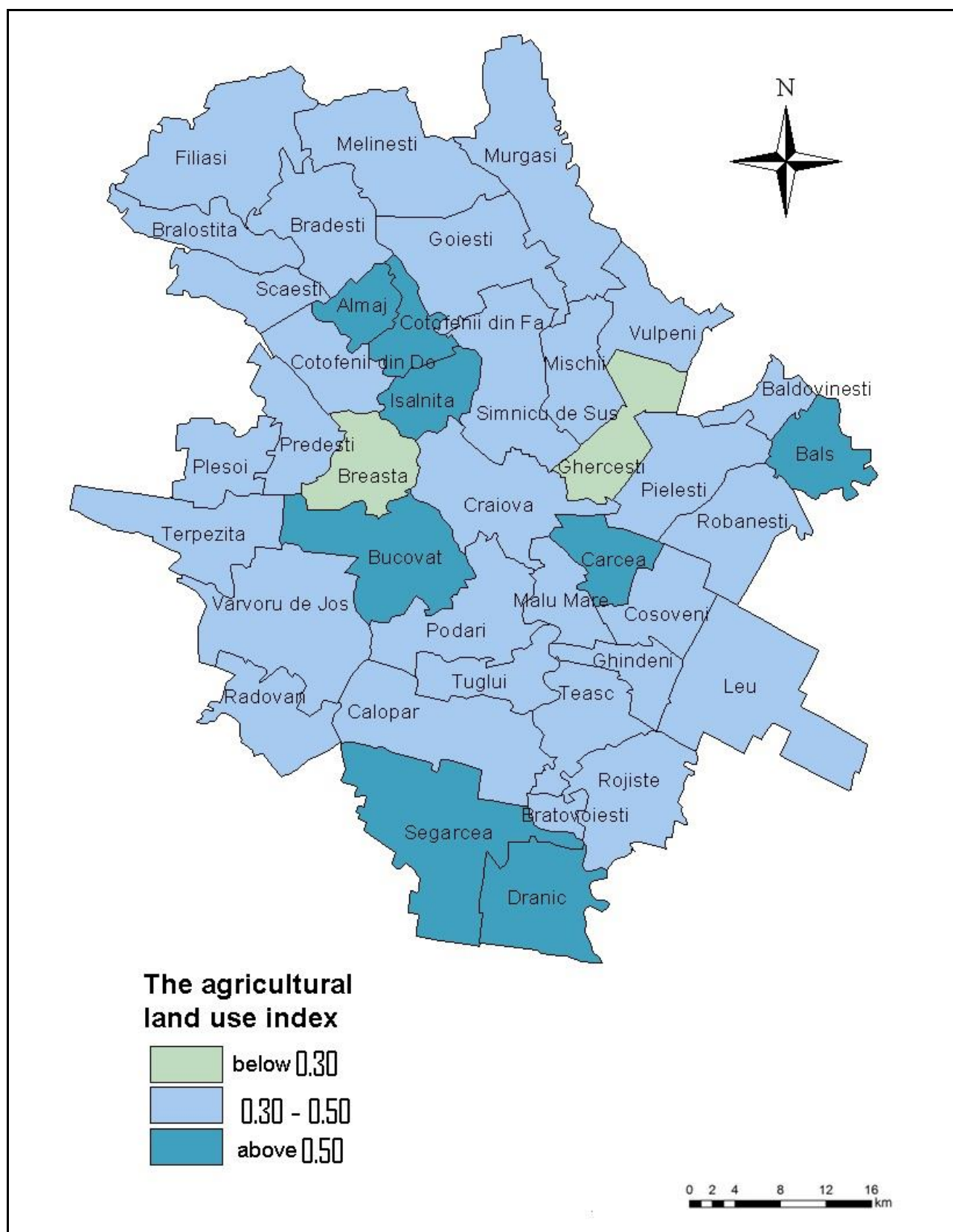


Fig. 2 The general index of agricultural land use in Craiova metropolitan area (2011)

### CONCLUSIONS

Craiova metropolitan area is an administrative area of zonal interest, which was formed in 2008 and has gradually expanded, currently reaching 4 cities and 36 communes in Dolj and Olt counties, located in the polarizing area of Craiova city. This intercommunity development association aims at developing the social, economic, cultural aspects, the

spatial planning and the environmental protection. The studied area occupies within the two counties a surface representing 29% of Dolj County and 2.6% of Olt County.

The favourability of the natural conditions influences the expansion of *agricultural areas*. In terms of land use structure, excepting Craiova, the agricultural lands represent the majority in all the administrative-territorial units. From this category, the *arable land* represents above 90% in 6 administrative units. Significant discrepancies recorded the *pastures*, with 16.5% of the total agricultural land in the metropolitan area, but ranges between a maximum of 41.1% in Brădești and 0.3% in Ghindeni. The *grasslands* recorded only 50% in localities, due to the less favourable natural conditions for this land use category. The orchards including nurseries are present in 65% of the the study area components, but their area ranges between 1 ha (Filiași) and 574ha (Pleșoi).

*The forests and other areas planted with forests/shrubs* have a small percentage due to their location in the plain area. The forests hold more than 10% of the total surface in the half of the administrative units.

The third category of land use, *other lands*, records differences concerning the percentage of settlements and unproductive areas due to the population size and administrative aspects of cities and communes.

Regarding the agricultural land use index, it reflects a capitalization under the potential due to the reduced investments in the field and the modest financial resources of the owners.

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