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EFFICIENT USE OF AGRICULTURAL LAND BY ORGANIZING AND DIMENSIONING CROP ROTATION

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Abstract

There are many discussions globally related to the efficient use of agricultural land. An important role in the valorization of these agricultural lands is represented by the size of the exploited plot of land. Through this work, the concentration of agricultural areas in units of optimal size was achieved to allow the application of modern agricultural methods and technologies. This paper presents a way of agricultural land consolidation of the plots of land in the category of arable use belonging to the cadastral plots T225-T226-T227, Izbiceni locality, Olt county, South-West Oltenia region of Romania. From the documents studied, the initial situation presented for the three cadastral plots a total area of 419.33 ha and a number of 517 individual lots, and for an individual lot there was an average area of 8110.83m^2, less than 1 ha, which determines the difficulty in the efficient exploitation of agricultural land. Through agricultural land consolidation, the individual plots were grouped into 9 fields of similar size, and the resulting average area for these fields being 46.48 ha, a corresponding area for optimal exploitation. At the same time as the analysis and sizing of the exploitation areas, the natural conditions (soil type, climate, vegetation) specific to the area were also analysed, in order to identify the crops suitable for the area and establish the crop rotation. Two field crop rotations were carried out: crop rotation C1 (185.61 ha), consisting of 4 fields and 4 crops (corn, barley, rapeseed, wheat) for a 4-year period, and crop rotation C2 (233.72 ha), consisting of 5 fields and 5 crop groups (sunflower, barley, soybeans, peas and wheat) for a 5-year period. The aim was for these crops to also meet the requirements of the agricultural products market.

Key words*: agricultural land, crop rotation, territory organization.*

INTRODUCTION

Territorial organization is clearly defined as the set of measures, actions and works that intervene in a given territory in order to efficiently use the existing potential and ensure a coordinated development of economic and social activities (Bold, 1994). Territorial organization and agricultural planning plans represent the only way in which the coordination of spatial elements and the adopted solutions are aimed at improving the technical and economic organization of space, in order to adapt it to the various purposes foreseen by society (Brumar, 2006).

According to Eurostat (2026) and according to the latest baseline data from 2023, the EU had 8.8 million farms, of which 2.9 million, or 32.6%, were located in Romania alone – more than twice as many as in the next Member State, Italy, which had 1.3 million farms, or 14.3% of the EU total, followed by Poland with 1.2 million (14.5%) and Spain with 0.8 million (9.1%). The size of farms across the EU is small: almost two-thirds of farms had less than 5 hectares (ha) in 2023, respectively 62.8%, while at the opposite pole only 7.6% of farms reached 50 ha or more, and these accounted for 68.3% of the EU's utilised agricultural area (UAA). The average size of agricultural holdings at EU level was 17.8 ha, a threshold reached or exceeded by about 17% of farms (Eurostat, 2026).

Political, economic and social changes have a direct influence on the use of agricultural land over time (Ovreiu et al., 2021).

In Romania, the way of using and exploiting agricultural land was influenced by the following events:

1) Between 1949 and 1990 the land passed into the administration of the state. The socialist agricultural system appeared, characterized by the exploitation of large and homogeneous agricultural areas by categories of use. This period had a significant influence on the measures of organization and exploitation of the territory that are still felt today. Each agricultural unit in that period was obliged to

carry out a Territorial Organization Project and to review it periodically. Through this project, the following were carried out: the sizing of the plots, the realization of the circulation network, the characterization of the soils, the establishment of soil improvement measures, the establishment of the categories of use according to the creditworthiness notes, the arrangement of the irrigation surfaces, the drainage and elimination of flooded areas, the sizing of the production units, the regularization of water courses, etc.

2) After 1990, the political evolution led to the elimination of the centralized exploitation of agricultural land, the elimination of those agricultural cooperatives. During this period, private property was reconstituted through massive expropriations, which led to transformations in the exploitation of agricultural land, determining a high degree of fragmentation of agricultural areas (Ovreiu et al., 2021). This aspect generated economic disadvantages, caused the degradation of agricultural land and influenced the way agricultural land was exploited. The fragmentation of agricultural land, after 1990, also had a negative effect on the surface arranged with a drainage system. The cultivation of the land without taking into account the position of the network of drainage canals and sometimes even impossible to take into account due to the small size of the plot, caused the reappearance of excess moisture, which led to low crop yields (Oprea, 2022).

3) Romania's accession to the European Union (2007) was characterized by the existence of funds and subsidies for agriculture. New farms were developed that gradually increased the areas. New high-performance machinery was purchased that offers high yields on large areas. Farmers are starting to apply long-term sustainable technologies.

Fragmented use of agricultural land leads to high operating expenses but also low productivity, resulting in inefficient use and poor agricultural performance, but property fragmentation increases the trading value (Isenhardt et al., 2025). Land fragmentation plays an important role in determining the productivity of a farm, and the higher the weighted average of the plots worked, the higher the productivity of the farm (Looga et al., 2018).

The analysis of agricultural land fragmentation is multidimensional, encompassing several aspects: the number of plots that a farm operates, the size of these plots, how regular their shape is, the distance from the farm premises, and how dispersed the plots are from each other. Greater fragmentation tends to increase production costs while reducing yields, income, profitability and overall efficiency (Latruffe & Piet 2014).

A study by Valtiala et al. (2023) in Finland reviewed previous results on the relationship between plot size and exploitation efficiency. They found that there is an increase in labour efficiency in larger plots, and once a plot exceeds around 20 ha, any further increase in size brings few additional technical benefits.

Spatial planning is a way of exploiting agricultural land according to specific rules, determining the necessary measures for the conservation and improvement of land quality, a way of managing property rights and a solution for the development of agricultural businesses (Moteva & Marinova, 2020).

When there are good quality soils, characterized by high fertility, which have a favourable structure, texture and porosity, they can only provide high crop yields by applying appropriate technologies to normal environmental conditions (Balan et al., 2024).

Agricultural Land Use Planning involves the spatial organization of agricultural land for the purpose of rational exploitation, it involves the rational use of agricultural machinery, it involves the preservation of the natural properties of soils, it determines the economic efficiency of farms and the prosperity of rural areas (Moteva & Spalevic, 2016).

From the research carried out by Dorosh et al., 2020, on spatial planning and organization of agricultural land use in Ukraine, it follows that the rational use of land to ensure ecological and economic sustainability must be achieved by analysing the following indicators: territory – landscape – plot of land – soil (Dorosh et al., 2020).

The diversity of the relief, the intensity of anthropogenic productive activities and climate change favour the extension of soil degradation processes, with significant effects on agricultural productivity, and agricultural performance is directly influenced by the way

the territory is organized (Balan & Nitu, 2025).
The spatial organization of the territory aims at the most efficient use of agricultural land, by maintaining their balance, achieving a stable environment within the agroecosystems and at the same time the main goal being to obtain a maximum yield (Shkuratov et al., 2020).
Agricultural land is efficiently exploited by achieving high yields, these are influenced by the biological material used and the technology applied, as well as by environmental factors, climate, soil type, relief, etc. Soil fertility can be limited to varying degrees of limitations caused by human or industrial actions, which can sometimes act negatively (Oprea & Curea, 2022).
Within this work, the aim was to organize and arrange arable land for an arable area in Izbicéni, Olt County, Romania. This work offers a partial solution for the exploitation of agricultural land. It should be noted that the work refers to the identification of an optimal solution in terms of the size of a plot of land as a production unit, not in terms of the general size of the agricultural farm.
Through the works of organizing the arable territory, the amalgamation of agricultural land is also carried out. Romania is the country with the most fragmented agricultural territory in Europe (Eurostat, 2026), there has been an attenuation of this phenomenon in recent years, but progress is still needed to this end. The amalgamation of agricultural land can be influenced by legislative actions (mandatory) and by the free will of the land owner (optional actions). Currently, in Romania, private initiative is the only option that determines the amalgamation or grouping of arable areas, through sale-purchase contracts, association, lease, rental, but not according to a specific law, but according to the legislation regulating civil law. All these laws do not impose mandatory rules for the organization and location of parcels, which is why these actions result in random areas in size and with minimal effects on agricultural performance. Another problem that has arisen is the reduction of crop diversity at farm level, or the practice of a short rotation, farms have emerged that cultivate one, two or maximum three species of wheat, rapeseed, corn or sunflower. To this end, the European Parliament has tried to condition those direct payments to farmers (subsidies) on compliance with crop rotation and the minimum area.
This study aims to reduce the level of fragmentation of agricultural land in the analysed area, to create plots of optimal size and to draw up a crop rotation over a period of four years, in accordance with economic requirements and agrotechnical criteria. Such an approach ensures an economic development of the farm as well as the possibility of using irrigation in the future (Cioboată et al., 2023). In that area there is an irrigation system that requires small repairs.

MATERIALS AND METHODS

The documentation for the organization and arrangement of agricultural land for agricultural farms aims to highlight the main factors that ensure the optimal framework for development in agricultural production. From a technical point of view, this is achieved through two stages: 1. Identification/ knowledge of the land fund (owner, category of use, conditions and natural resources) and grouping the neighbouring plots or lots in compact areas of larger size, establishing the boundaries and maintaining the obligatory limits; 2. Grouping the land by quality classes, establishing the crops and their rotation within fields adapted to the natural conditions and the economic criteria specific to the competitive market. All these should be achieved by observing the scientific criteria of territorial organization (Order no. 212, 2002)
In order to achieve the objectives of the work, the stages were followed according to the technical norms for the preparation of projects for the organization of the territory of agricultural holdings, as well as the indications in the specialized literature.
The present documentation is expressed by the cadastral plans scale 1:10000, 1:5000, the material base in digital and analogue format existing at the Olt Cadastre and Real Estate Advertising Office and at the Izbiceni Local Council.
Based on these, the cartographic documents (analogue and digital) that were made available by the Olt OCPI and the Izbiceni Local Council for the plots T225, T226, T227 were examined,

in question: orthophoto plan; cadastral plans 1:5000-1:10000; property titles; cadastral documentation resulting from the registration process; database resulting from the PAD conversion; other graphic and textual data possessed by OCPI and the Izbiceni Local Council, for the plots T225, T226, T227.

The identification of the site was achieved by locating it in the field.

Then the limits of the plots were established through direct measurements on the ground. The target of this action was to precisely determine the limits of the plots from T225 to T227, through measurements on the ground in order to be able to determine the location, respectively the surface. Topographic measurements were carried out in the coordinate system of the state geodetic network.

The accuracy of determining the points was determined according to ODG no. 634 and Decision no. 1 regarding the performance of kinematic GNSS measurements, issued by the director of the Directorate of Geodesy and Cartography within the ANCPI.

The measurements were performed with a GPS receiver, type Leica GS08 CS 10, of the dual-frequency geodetic accuracy class, the method used was RTK.

The processing of GPS measurements was carried out using the specialized Leica GeoOffice program, for the calculation of the coordinates at the determined points, observations from the permanent stations CORA (CORABIA) and SLA (SLATINA) were used.

The conversion of coordinates from the WGS 84 system to the STEREO 1970 projection system was carried out using the TransDat RO program.

Following the measurements with the GPS device, stereographic coordinates were obtained on the WGS 84 ellipsoid, these coordinates being transformed in the official reference system of Romania, using the coordinates of the existing geodetic points.

The plans were drawn up at a scale of 1:5000, 1:10000, using the BricsCAD V13 program.

The determination of the areas for each individual owner and on each plot was carried out through multiple detachments according to the parcel tables, using the TopoLt automatic program. Also in this program, simulations were made to identify the optimal option for organizing the agricultural territory, respectively for sizing the plots (soles/fields) for crop rotation. Several variants of dividing the total area into approximately equal plots were analyzed, but only 2 variants are presented in the paper that are exposed in the chapter results and discussions.

In order to establish the crop rotation, it is necessary to carry out the evaluation of agricultural land and its grouping in Homogeneous Ecological Territory (TEO), this is done on the basis of the creditworthiness grades calculated with the help of data from soil studies (Order no. 212, 2002). The following indicators are used: temperature, precipitation, texture at 20 cm depth, gleying, pseudogleying, salinization/alkalinization, pollution, slope, landslides, groundwater depth, flood susceptibility, subsidence, carbonate content, soil reaction, degree of saturation, edaphic volume, humus content, and excess moisture. The homogeneous ecological territory (TEO) for T225-T226-T227 in Izbiceni, Olt County, have been determined.

RESULTS AND DISCUSSIONS

Presentation of the studied area

The analysed territory belongs to the south-western Oltenia region of Romania, the category of use – arable. Official statistics show that, at the level of the entire region, the categories of land use have undergone significant changes after 1990 (Miluț et al., 2020). The increase in non-productive areas is interesting, another observation that must be taken into account is related to the accentuation of land degradation phenomena, so in this context it is necessary to identify sustainable land monitoring measures that balance agricultural productivity with environmental protection (Călina et al., 2025). In order to implement measures to mitigate land degradation, it is necessary to identify the spatial spread and intensity of these processes at a landscape level (Filipciuc et al., 2019).

The reconstitution of the right of ownership, after the application of Law 18/1991, determined the appearance of plots with small widths of 8-10-12 m, in the form of strips, in the N-S or E-W directions, and on different

lengths, this aspect determined the decrease of the yield per hectare (Popescu & Bălan, 2024).
The commune of Izbiceni consists of a single locality, bearing the same name, being placed on the right bank of the Olt River, in the Romanați Plain, a sub-branch of the Oltenia Plain, in the southern part of Olt County (Figure 1).
The commune is positioned on the northern latitude 43°49'; eastern longitude 24°39' and the maximum altitude 48.2 m on the mound in the northwest of the estate and the minimum 39.9 m at the water level of the Olt River, the north of the Danube river.

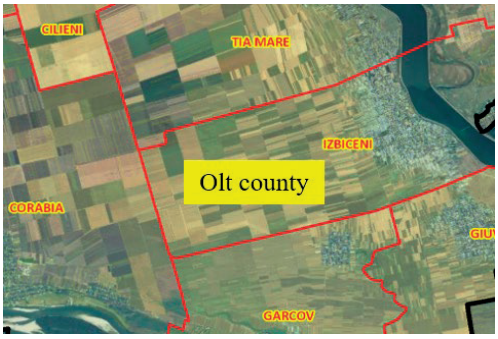


Figure 1. Location of Izbiceni (https://geoportal.ancpi.ro)

The area of Izbiceni commune is 5115 ha, of which 4130 ha are agricultural land and 985 ha are non-agricultural lands. The number of existing households in Izbiceni is 1320.
The climatic factors found in the commune of Izbiceni are:
- the average annual temperature oscillates between 10-12 degrees;
- precipitation is different from one year to the next and also from one season to another (the annual average being 450-570 mm/m^2);
- wind: the north wind blows intensely in winter, blowing snow, forming squalls (it reaches speeds of 60-70 km/h, in the northeast to southwest direction); the south wind, the second most important wind, blows more in spring, being humid and warm in the cold season and dry in the warm season (it reaches speeds of 20-30 km/hour, in the west-east); Bălțărețul, blows in the warm season from the southeast to the northwest; Zephyr blows from the south and brings heat. Austrul, Baltărețul and Zephyr are the winds with the main role in pollinating flowering plants.

The most common groups of soils in the locality are: chernozem; sandy soils; marshy soils, resulting from the rotting of plants, buried with the passage of time (Popescu, 2016).
The local flora is diversified, here we find the steppe combined with the flora of the lowlands (acacia, mulberry, apricot, chervil, sycamore, quince) which are combined with willow, poplar, mulberry, etc. and on the other hand, the places cultivated with cereals are often interspersed with places where meadow plants grow freely. Here we find numerous trees, vines, plants of all kind.
Characterization of soil types**.** According to the observations and determinations in the field and the results of the analyses obtained from the samples taken, we can state that the soils of the Izbiceni communal territory are part of soil unit 9 (US 9).
Soil unit 9 (US9), which is found on the territory of the plots T225-T226-T227, is the chernozem, cambic chernozem, very deep profile, with a loamy, loamy-sandy or loamy-clayey texture, the parent material is represented by loess, loess-like material, clays, marls, alluvial-proluvial deposits, etc., extremely rich in basic elements. The relief is a plain, which is characterized by flat or slightly undulating surfaces.
Chernozem properties (Popescu, 2017):
Am horizon: 40-60 cm; blackish colour (chromes and values less than or equal to 2); loamy, sandy loam or clayey loam texture; medium and large, well-formed glomerular structure; porous medium; compact medium; intense biological activity; gradual transition.
ACk horizon: 80-100 cm; brown-gray colour, with chromes and values <3.5 at least in the upper half; loamy texture, sometimes sandy loam or clayey loam depending on the nature of the parent material; less well-formed glomerular structure; porous medium; compact medium; frequent whitish stains and streaks of calcium carbonate; obvious effervescence; gradual transition.
Horizon Cca: 80-100 cm; lighter colour, different texture; unstructured; frequent spots and calcium carbonate concretions; strong effervescence.
For the evaluation of the agricultural land in plots T225-T226-T227 in Izbiceni, Olt county, only one TEO unit resulted, and the results obtained are presented in Tables 1-3.

From the studied documents, the owners of the lands in the T225-T226-T227 plots were identified as follows: T225 = 171 owners and a measured area of 1377559 m^2; T226 = 183 owners and a measured area of 1438009 m^2; T227 = 163 owners and a measured area of 1380317 m^2 (Figure 2). In order not to upload the document, the data referring to the parcel tables were not included.

Table 1. Eco pedological indicators of soil quality

No. TEO	US 9
Temperature	10-12
Precipitation	400-500
Gleying	Umed
Pseudogleying	0
Salinization/alkalinization	0/0
Texture at 20 cm depth	Loamy
Pollution	0
Slope	1
Landslides	0
Groundwater depth	Small
Flood susceptibility	0
Subsidence	unsettled
Carbonate Content	Medium
Soil Reaction	Weakly Alkaline
Degree of Saturation	High
Edaphic Volume	Very high
Humus Content	Very high
Excess Moisture	Permeable

Table 2. Ratings and quality classes of TEO

No. TEO US9 arable land (surface = 419.33 ha)	Ratings	Quality classes
Wheat	70	II
Barley	71	II
Corn	81	I
Beans	75	II
Potato	59	III
Sugar beet	76	II
Soybean	80	II
Peas	70	II
Flax	77	II
Rape	90	I
Hemp	70	II
Alfalfa	77	II
Clover	56	III
Vegetables	62	III
Arable	81	I

Table 3. Classification of TEO into suitability classes

No. TEO		US9
Surface		419.33 ha
Area by suitability classes	I	0
	II	419.33
	III	0
	IV	0
	V	0
	VI	0
Indicative requirements for improvement work		Irrigation

The initial situation of the land areas within the three plots before the organization of the territory was presented: in T225 the average area of a plot was 8,055.90 m^2; in T226 the resulting average area was 7,857.90 m^2, and in T227 the average area was 8,468.20 m^2.

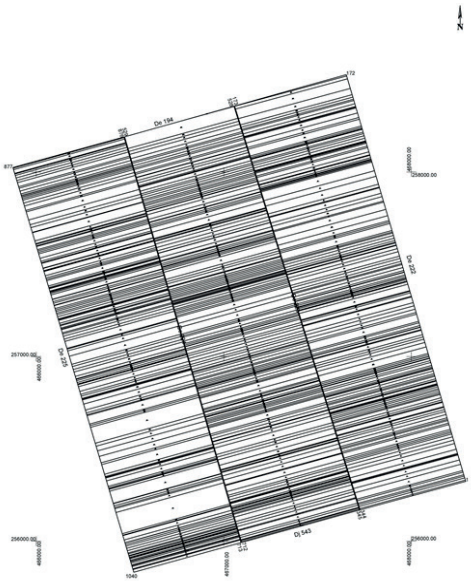


Figure 2. Summary presentation of the land fund

Using the automatic TopoLt program, the detachment of each area was carried out, simulations were carried out in order to achieve areas that correspond to the criteria for crop rotation, respectively for their sizing according to the arable land organization plans.

Organization and arrangement of arable land

The territory proposed for the organization is identified as part of the arable use category, belonging to the Izbiceni commune, Olt County and is recognized by the parcels from T225 to T227, and the demarcation in the field was carried out by the measurement sheet and by the exploitation roads.

Legally, these areas are privately owned. Currently, the studied area is entirely leased by an agricultural company. For the most efficient exploitation of the land, according to the principles of arable land organization (Brumar, 2006), two variants of dividing the

topographically raised land into approximately equal plots have been proposed.

The first variant of the territorial arrangement (Figure 3) includes 3 soles/fields/plots that have the areas of: Sola 227 = 1380317 m^2; Sola 226 = 1438009 m^2; Sola 225 = 1377559 m^2.

The roads cover the area of: De 223 – 9072 m^2; De 224 – 9500 m^2.



Figure 3. First variant of organizing and arranging agricultural land through crop rotations

The existing exploitation roads were preserved: De 223 and De 224 and the existing plots of land were divided into 3, resulting in 3 plots with an area almost to 140.00 ha, (137.75 ha; 138.03 ha; 143.80 ha). This variant is difficult to exploit, because it leads to the opening of very large plots, but also a crop rotation of only 3 years, and the shape of the resulting plots offers a very large gap between length and width.

The second variant proposed and recommendation for the exploitation of the territory (Figure 4) is characterized by the construction of a road De 194/1 with an area of 2484 m^2 and the maintenance of the existing ones (De 223 and De 224), as well as the division into nine soles, represented as follows:

- Sola I C1 (T 227) = 46.26 ha;
- Sola II C1 (T 227) = 46.22 ha;
- Sola III C1 (T 226) = 46.40 ha;
- Sola IV C1 (T 225) = 46.73 ha;
- Sola I C2 (T 226) = 48.04 ha;
- Sola II C2 (T 225) = 46.05 ha;
- Sola III C2 (T 225) = 44.97 ha;
- Sola IV C2 (T 226) = 49.11 ha;
- Sola V C2 (T 227) = 45.55 ha.

It is worth mentioning that the entire area subject to development is surrounded by existing exploitation roads that were not taken into analysis, but which can serve the surface.

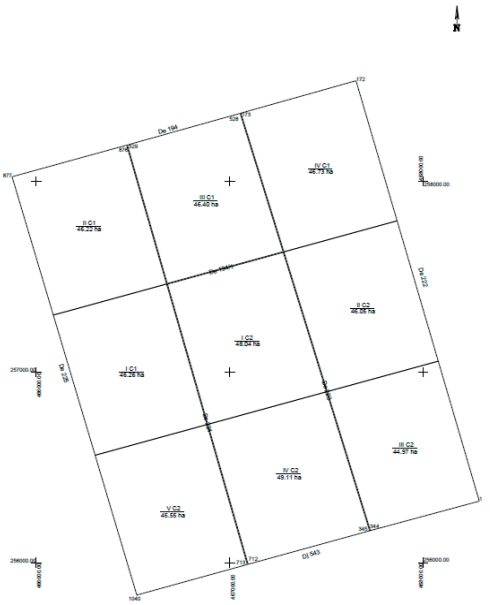


Figure 4. Second variant of organizing and arranging agricultural land through crop rotations

The roads cover the following areas: plot 223 – 9,072 m²; plot 224 – 9,500 m²; and plot 194/1 – 2,484 m².

In order to obtain the best possible results and to comply with the rules of arable land organization, the most suitable option is the second option (Figure 4), which helps to rotate the crops as well as possible, grouping the entire area in a crop rotation with 9 fields distributed in approximately equal areas, between 44.97 ha and 49.11 ha (Tables 4 and 5). These areas are very close to the size of 50 ha, a size recommended by the specialized literature and by many studies. The shape of the 9 fields resulting from the second variant is a shape close to the square, but due to the obligatory limits existing in the area (irrigation

canals, exploitation roads) parallelograms with 4 sides resulted, and the ratio between length and width (L:W) being a maximum of 1:0.8.

In order to ensure the most efficient circulation and flow throughout the exploitation of arable land, it was considered to keep the already existing exploitation roads, as well as the establishment of a new De 194/1 road, so that access on at least 3 sides for monitoring and exploitation is possible for each field. The result was a set of fields with at least two parallel sides.

Due to market trends, the organization of crops for the next period is influenced by the large share held by cereals (corn, wheat, barley) and oilseeds (rapeseed, sunflowers), but the introduction of plants that play a role in nitrogen fixation (peas and soybeans) was also taken into account. In selecting the crops to be introduced into rotation, their suitability for the analyzed area was also taken into account according to the data in Table 2.

From the analysis of the natural conditions specific to the area, it was found that for the entire area there is the same soil category. This aspect does not impose restrictions in terms of crop rotation. A very important aspect that was taken into account in designing the crop rotation, as presented below, was the compliance with agrotechnical principles. Thus, the alternation of cereals with row crops, the alternation of plants with different resistance to diseases and pests, the observance of the restrictive conditions of rotation (rapeseed-sunflower, barley-wheat, the recovery time of a crop), the time between harvest and sowing of the next plant, the required interval before returning the same crop to a field, the alternation of the root system, etc.

In terms of field size-of the surfaces, nine fields were delineated, meeting the technical requirements for agricultural land organization, thus it is proposed to divide the studied area into two crop rotations: C1 (crop rotation 1) with 4 fields and C2 (crop rotation 2) with 5 fields. The C1 crop rotation includes the fields (plots): I C1(T 227), II C1(T 227), III C1(T 226), IV C1(T 225), and the C2 crop rotation is made up of the fields (plots): I C2(T 226), II C2(T 225), III C2(T 225), IV C2(T 226), V C2(T 227).

The C1 and C2 crop rotations have in their configuration crops of wheat, corn, rapeseed, sunflower, barley, peas and soybeans, they are developed for a period of 4 years for the C1 rotation and for 5 years for the C2 rotation, or even 9 years.

The rotation for both rotations, C1 and C2, as well as the location and composition of the crops is described in Table 4 and Table 5.

Table 4. C1 organization and crop rotation

Crop organization and rotation C1 (185.61 ha)					
Sola		1	2	3	4
Field		227	227	226	225
Surface (ha)		46.26	46.22	46.40	46.73
Year	1	Corn	Barley	Rape	Wheat
	2	Barley	Rape	Wheat	Corn
	3	Rape	Wheat	Corn	Barley
	4	Wheat	Corn	Barley	Rape

Table 5. C2 organization and crop rotation

Crop organization and rotation C2 (233.72 ha)						
Sola		1	2	3	4	5
Field		226	225	225	226	227
Surface (ha)		48,04	46,05	44,97	49,11	45,55
Year	1	Sunflower	Barley	Soybeans and peas	Wheat	Wheat
	2	Barley	Soybeans and peas	Wheat	Wheat	Sunflower
	3	Soybeans and peas	Wheat	Wheat	Sunflower	Barley
	4	Wheat	Wheat	Sunflower	Barley	Soybeans and peas
	5	Wheat	Sunflower	Barley	Soybeans and peas	Wheat

Territorial organization plans comprise a set of measures aimed at managing agricultural land efficiently, making effective use of its existing potential, and further improving it (Cioboată & Brumar, 2022).

CONCLUSIONS

Through this work, the land area of approximately 419.33 ha, in the Izbiceni locality, Olt County, located in the southwestern part of the locality, was arranged and organized, being identified as part of the arable use category.

The researched area is located in a excessively continental climate zone, characterized by a temperate climate, with frosty winters and slushy snows and warm and generally dry

summers with sufficient precipitation but not being distributed everywhere throughout the year, being deficient in moisture in the months of March, April, August, September and October.

Following the identification on the ground and subject to the organization of the territory, the soils are part of the class of chernisols, more precisely chernozem and cambic chernozem.

Due to the high fertility and favourable climate, cereals and legumes can be grown in the studied area. Thus, wheat, rapeseed, sunflower, barley, soybeans and peas and, last but not least, corn were included in the rotation.

In the first proposed variant, a three-year field rotation was established with three approximately equal soils close to 140 ha (Figure 3), being inadequate.

In the second proposed variant, two land rotations were established, one for four years and one for five years, with approximately equal plot areas, close to 50 ha (Figure 4).

Through crop rotation, a combination of territorial conditions and the production potential of the land has been determined, the efficient use of agricultural machinery and equipment has been ensured, and hydro-ameliorative systems (irrigation) can be put into practice.

Carrying out such work at the level of an agricultural holding provides numerous advantages from an administrative and economic point of view:

- clear record of the areas and owners in each plot;
- the possibility of ordering and monitoring lease or sale-purchase transactions with agricultural land;
- identification of the type of soil present within the studied plot;
- the possible use of agricultural machinery equipped with satellite guidance infrastructure, resulting from the identification of coordinates;
- the advantage of easily creating a business plan in the following periods;
- the ratio of crops and also the cost over a period convenient for the rotation.

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