

## THE IMPACT OF MARKET ANALYSIS IN DETERMINING THE MARKET VALUE OF AGRICULTURAL LAND IN ROMANIA

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### Abstract

*The purpose of this paper is to estimate the market value for the agricultural properties - agricultural lands located within the Casimcea Administrative Territorial Unit (UAT), Tulcea county, Romania. What was analyzed is the fact that a well-executed market analysis can help a lot in the evaluation process. Thus, after choosing the case study, the exact identification of the agricultural land was made. The next stage was the realization of the market analysis. Thus, the current state of agricultural land transactions was analyzed at the European, national and local level. The actual evaluation of the land was done through the market approach and all the adjustments were explained in the content of this paper. The results revealed the fact that the final market value falls within the range found following the market analysis. The analysis is carried out also at the processing level, the results indicating also a quite high coefficient of variation. This paper has achieved its goal, that is to see the impact that the market analysis has in determining the market value of an agricultural land.*

**Key words:** market value, agricultural lands, valuation analysis, market analysis

### INTRODUCTION

From the authors' experience, one of the most challenging parts of real estate valuation it can be the land valuation. Thus, the evaluation of a plot of land requires several stages to follow, according to the evaluation standards in Romania. Therefore, the evaluation of an agricultural land will require the following of certain steps, mandatory for the evaluation process.

This sector in Romania is less exploited and is characterized by a higher risk or a higher degree of uncertainty in the evaluation, due to the lack of information related to the transactions carried out. As a result, market value volatility is extremely high.

Currently, the evaluation activity in Romania is regulated by the National Association of Appraisers from Romania (ANEVAR). The market approach is the process of obtaining an indication of the value of the subject real

estate by comparing it to similar properties that have recently been sold or are being offered for sale [1].

The market approach, one of the three evaluation approaches, mentions very clearly the fact that the first element of purchase that must be established in the market grid is the ownership right over the subject property [3].

The evolution of the market value has been investigated in many studies worldwide. As one would anticipate, the significance of agricultural land value is pivotal in driving economic development.[7].

The character of agricultural pursuits dictates that perpetual challenges in agriculture value chains are the presence of risks and uncertainties. It is essential for decision support models in farming to integrate metrics and strategies for risk management [11].

According to the latter, agricultural land belongs to the land plots of the market

segment of the “Agricultural Use” real estate [15].

Recent years in agriculture, there have been a lot of constraints such as climatic change, water scarcity, shrinking of lands due to human encroachment, labour shortage, soil nutrition, pests and diseases etc., which leads to decline in agricultural productivity [12].

Therefore, in order to estimate the market value for the analyzed land, the specific market was analyzed and the impact that this analysis has on the market value was determined.

## MATERIALS AND METHODS

In this paper, the authors analyzed the evaluation process of an agricultural land. The stages are in accordance with the assessment standards in Romania.

More precisely, the stages of determining the market value for a real estate property are shown in Figure 1.

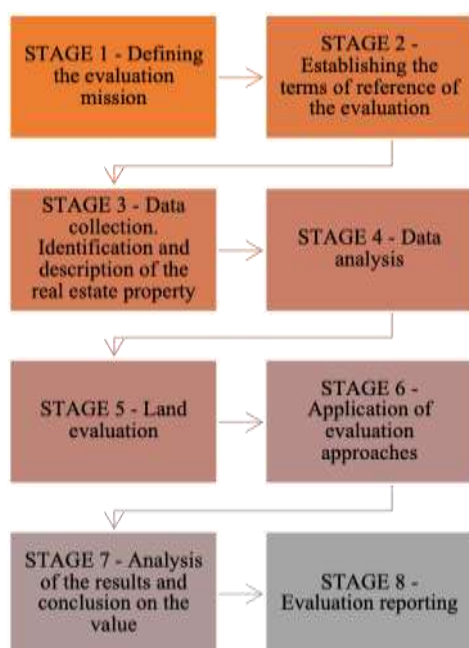


Fig.1. The evaluation process of a real estate property  
 Source: Own design on the basis of data from ANEVAR [1].

The evaluation mission's definition encompasses identifying the purpose and subject real estate property for assessment. The terms of reference, found in every real estate evaluation report and specified in the evaluation contract, encompass pertinent

details about the client, evaluation recipient, reference date, evaluated property, and other relevant information. These aspects are addressed in alignment with evaluation standards. The analysis, collection and selection of information includes the market analysis carried out by the specialist, more precisely the analysis of demand, supply and the balance between demand and supply, but also the description of the subject real estate from the point of view of location, but also from the legal and technical point of view. The analysis of the best use is the premise of the evaluation itself. The application of approaches in the evaluation includes the decision or better said, the judgment of the specialist who decides to apply one or more approaches for the evaluation of a real estate property.

This study employs a systematic approach to estimate land value, relying on the market—specifically, the market approach.

## RESULTS AND DISCUSSIONS

The components of the institutional framework are:

- legal framework;
- transferability of properties, transaction costs;
- financial markets, in particular, access to loans as options for mortgaging land and real property;
- land register.

These elements of the institutional framework constitute the system that ensures the functioning of the market, its impact on the maturity of land relations and the importance of economic results in the sector for creating a value chain in the national economy [13].

As shown, an important role is played by knowing the transaction prices for agricultural land in Romania. And in what follows we will present the stages of determining the market value for an agricultural land.

The results are structured in several stages, as presented in Figure 2.

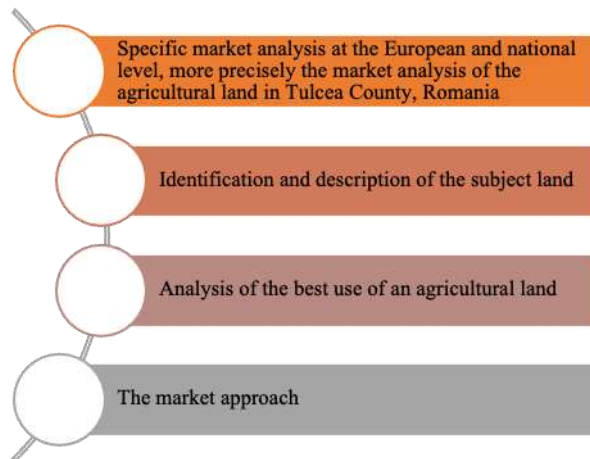


Fig.2. The stages of a real estate property valuation - the agricultural land in this study case  
 Source: Own design.

### Specific market analysis

For the real estate in question, the specific market is that of "extra-village-agricultural land" type properties, the market whose geographic area extends to the level of Casimcea territorial administrative units, Tulcea county.

In the analysis of the specific real estate market, various aspects related to the economic situation of the mentioned areas, the trends of recent years, the specific demand, and the competitive offer for the delimited type of property were taken into account. Moreover, in the analysis of the demand on the agricultural land market, the following factors are important: the soil, irrigation and adduction systems, the climate, the potential harvest, environmental regulations, as well as other regulations.

The predominant land-use transformation in Europe is the abandonment of agricultural land, a process that has evolved over time with shifting causes, particularly in the most developed European countries [4].

In 2021, the cost of one hectare of arable land varied widely across the twenty EU Member States with available data. On average, it ranged from €3,661 in Croatia to €77,583 in the Netherlands. Notably, the price of arable land in all regions of the Netherlands surpassed the averages of other EU nations in 2021 [6].

At the regional level, Flevoland in the Netherlands recorded the highest prices, averaging €141,094 per hectare, while Övre

Norrland in Sweden had the lowest, averaging €1,882 [6].

Farmers do not always own the land they cultivate; many opt to lease it, making it a short- or long-term business choice. The expense of land rental is an additional factor that farmers must factor into their operations. Similar to the fluctuations in arable land prices, the annual rental costs for one hectare of agricultural land (averaging arable land and permanent grassland) also exhibit significant variations among countries and regions within countries.

In 2021, among the EU regions, the highest cost for renting one hectare of agricultural land was observed in the Dutch region of Flevoland (€1,721 per ha), followed by Canarias in Spain (€1,119 per ha) and Attiki in Greece (€927 per ha). Considering data from 2020, Venezia Giulia in Italy (€1,714 per ha) would also be among the regions with the highest rental prices. In contrast, the most affordable rental prices were found in Mellersta Norrland and Övre Norrland (both €25 per ha) in Sweden, followed by Východné Slovensko (€42) in Slovakia [6].

### Current status at the national level

The price of arable land in Romania increased from the value of 1,666 euros/ha in 2012 to 7,601 euros in 2021, according to data from Eurostat, the European statistical office [5].

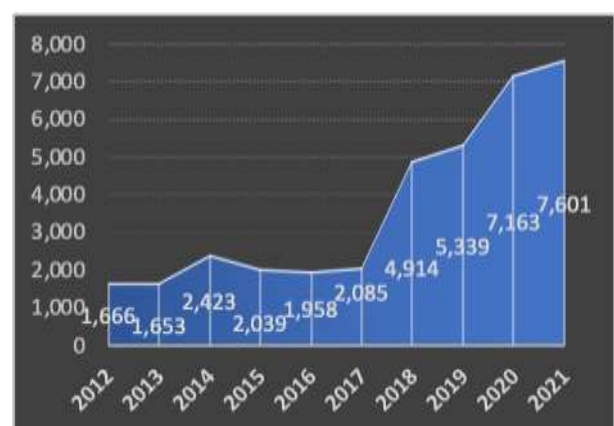


Fig. 3. The evolution of agricultural land prices in Romania (2012-2021)  
 Source: Own design on the basis of data from Eurostat [6].

Nonetheless, both experts in the field and the authors contend that its current value is modest in relation to its potential, and there's

potential for it to rise to 10,000 euros in the near future with substantial infrastructure investments.

The cost of arable land in Romania fluctuates across geographical regions. In 2021, the priciest land, averaging 10,707 euros/ha, was found in the Bucharest - Ilfov area, while the least expensive was in the northwest area at 6,206 euros/ha, as per Eurostat data [6].

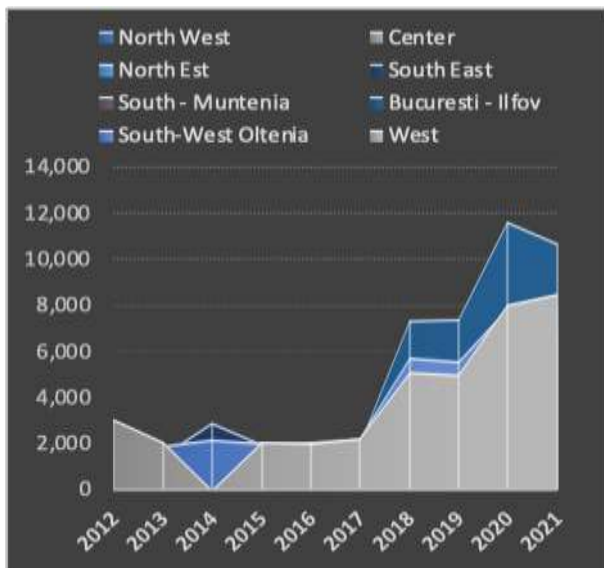


Fig. 4. The evolution of agricultural land prices in Romania by development region (2012-2021) Euro/ha  
 Source: Own design on the basis of data from Eurostat [6].

*Current status at the local level*

According to the records from the Tulcea County Council, the lands belonging to the territory of the Casimcea commune have the uses shown in Figure 5 and the surface presented in Table 1.

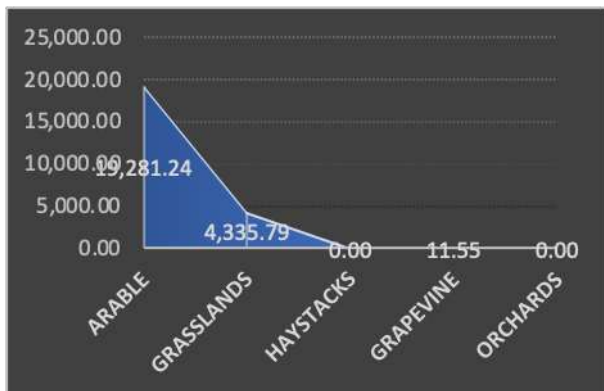


Fig. 5. The land use by type in Casimcea commune  
 Source: Own design on the basis of data from [5].

Table 1. Area by land type in Casimcea Commune (ha)

Type of land	Area (ha)
Arable	19,281.24
Grasslands	4,335.79
Haystacks	0.00
Grapevine	11.55
Orchards	0.00
Total agricultural land	23,628.58
Forests	2,180.20
Waters	38.55
Roads and railways	182.77
Unproductive lands	21.58
Construction lands	754.06
Total non-agricultural land	3,177.16
<b>Total administrative territory</b>	<b>26,805.70</b>

Source: Own design on the basis of data from [5].

Following the analysis, it was determined that the market values of an agricultural land in Romania are between 5,000 and 7,000 Euro/ha for land with areas larger than 3-5 ha and between 7,000-10,000 Euro/ha for land with areas between 0.5 -3 ha.

This interval varies depending on several characteristics, such as location, utilities, type of soil, degree of consolidation, the use, etc.

The geographical positioning in the South-East of Romania determines a high radiation potential (the average annual values of the global solar radiation increase from about 127.8 kcal/cm<sup>2</sup> in the Western extremity of the Dobrogea Plateau, to 132.5 kcal/cm<sup>2</sup> in the Eastern one) [5].

Due to the low precipitation and the presence of green shale over large areas, groundwater is poorly represented. They appear in the interfluves at the base of the loess at depths of about 30 m, in the form of a sheet or in intensively alluvial meadows, at only 3-5 m depth (Casimcea valley) [5]. The territory of Casimcea commune, Tulcea county, is part of the Central Dobrogei Plateau where the soils have specific characteristics determined by the transition from the continental climate of Eastern Europe to the temperate sub-Mediterranean climate of the Balkan Peninsula [5].

From a pedological point of view, the territory of Casimcea commune has a varied and well-developed group of soils on roughly parallel

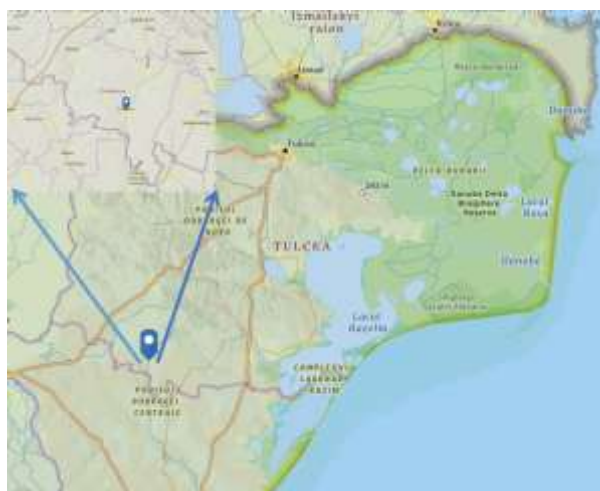
areas oriented North-West - South-East. These are favorable for agricultural crops and spontaneous vegetation, which led to the development of local agriculture and forestry. The predominant soil classes are mollisols (carbonate chernozem, chestnut chernozem, leached chernozem, balane soils) [5].

### Identification and the description of the land in the study case

The area of the studied agricultural land is 50,000 square meters. This precise area is an arable land and is situated outside the city. Casimcea commune is located on the edge of Tulcea county, in the South-West area, approximately 60 km South-West of the municipality of Tulcea, on the national road DN 22A that connects Tulcea to Hârșova (Map 1 and 2).



Map 1. The location of the Casimcea commune in Romania  
Source: ArcGIS online [2].



Map 2. Casimcea commune and the location within Tulcea county  
Source: ArcGIS online [2].

In the process of evaluating a real estate property, for example land, the inspection represents one of the main steps needed for the evaluating procedure. The evaluator should consider this stage as a mandatory one for a better and preciser overview on the location, neighborhood, surfaces, utilities, and other details considered relevant for the evaluation process.



Photo 1. The land from Casimcea Commune  
Source: Original (taken by authors).

In the analysis performed, the location of the subject lands was identified beforehand, in consequences of the stereographic coordinates presented in the analyzed documents. More precisely, for the land with cadastral number 37971, the identification was made by putting the coordinates in Google Maps and resulting in Map 3.



Map 3. Location of the subject land  
Source: Google maps [8].

The cadastral number is 37971 and it is listed in the Land Registry no. 37971 Casimcea. The shape of the land as seen in Fig. 6 is

rectangular. It represents an unfenced and flat land.

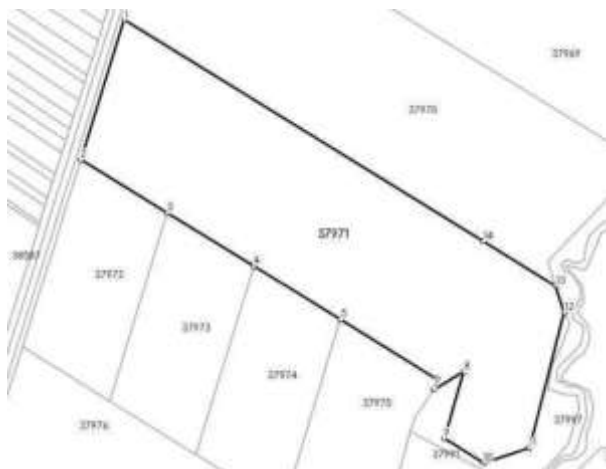


Fig. 6. Graphic representation of the subject land  
 Source: Extract from the Land Registry.

Table 2. The X,Y coordinates of the land boundary

Point number	X	Y
1	768,471.262	365,344.324
2	768,436.628	365,231.914
3	768,505.794	365,189.119
4	768,575.228	365,146.158
5	768,644.662	365,103.198
6	768,721.817	365,055.460
7	768,718.939	365,046.867
8	768,743.195	365,061.085
9	768,727.529	365,007.562
10	768,758.957	364,988.117
11	768,795.653	364,999.798
12	768,823.615	365,108.990
13	768,816.693	365,130.596
14	768,758.945	365,166.326

Source: Own design on the basis of data from Land Registry.

### The best use analysis

According to SEV 100 - General framework - parag. 32 from de Evaluation Standards in Romania, the market value of an asset will reflect its best use, which is defined as "the use of an asset that maximizes its full potential and is possible, legally permitted and financially feasible". The best use may be the continuation of the current use of the asset, or it may be another use. This is determined by the use that a market participant would intend to give to an asset, when setting the price he would be willing to offer [9].

#### The best use of land

- Test of the legal permissibility of the land considered to be free. Determines which uses are allowed by the current zoning, which uses

could be allowed if a zoning change is obtained and which uses are limited by the private restrictions on the land.

- The test for the physical possibility of the land considered free. Analyze the physical characteristics of the site that can affect its best use: size, shape, soil, accessibility, degree of risk in the event of natural disasters.

- Financial feasibility test of the land considered to be vacant. As long as a potential use has value compared to its costs and respects the first two criteria, the use is financially feasible.

- Test of the maximum productivity of the land considered to be free. Among the financially feasible uses, the best use is the use that produces the highest residual value of the land, in accordance with the risk accepted by the market and the rate of return claimed by the market for it.

Considering the type of assessed property - real estate - agricultural land located in Casimcea commune, Tulcea county, as well as the location of the assessed real estate - in the suburbs, it is appreciated that the best use of the evaluated property is the current one, that is, the agricultural one.

### The market approach

In the market approach:

- an assessment of comparable property prices is conducted based on comparison criteria relevant to the specifics of the subject property.

- the analysis involves evaluating similarities and differences between the characteristics of comparable properties and the subject property. Adjustments are then made according to the comparison elements, as illustrated in Fig. 7.

- suggested comparison elements encompass, but are not restricted to: transferred property rights, financing conditions, sales terms, immediate post-purchase expenses, market conditions, location, physical attributes, economic attributes, property utilization, and non-real estate components, as depicted in Fig. 7;

- the selection of the conclusion on the value is determined by the comparable real estate which it is the closest from a physical, legal and economic point of view to the real estate

property subject and on the price on which the smallest adjustments were made;

- all adjustments applied to the prices of comparable properties are argued in the report evaluation, with their estimation method being presented.

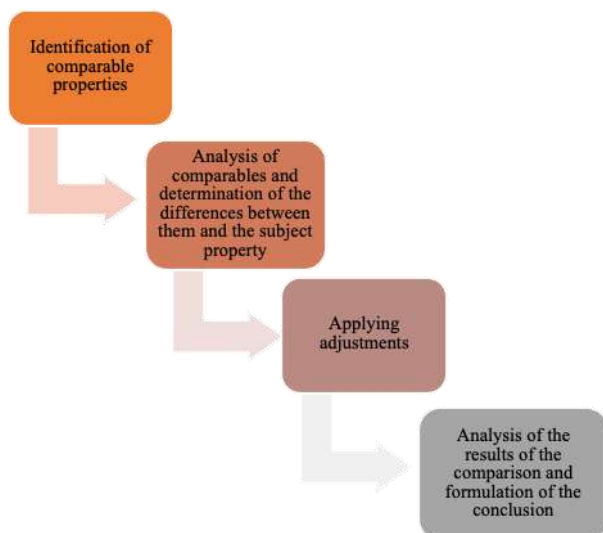


Fig. 7. The process of implementing the market approach

Source: Own design on the basis of data from ANEVAR [9].

Figure 8 presents the adjustments recommended to be applied. Regarding the determination of the market value for the subject land, a comparison grid was drawn up in which the similarities and differences between the comparable properties and the subject property were presented.



Fig. 8. The adjustments applied in the market approach  
 Source: Own design on the basis of data from ANEVAR [9].

The selected comparables were sourced from <http://www.extravilanagricol.ro> application [14], which features transactions involving agricultural land situated outside villages. Essentially, this application serves as an electronic registry for documenting offers for the sale of agricultural land located in rural areas.

We did not apply any adjustment to the first comparison elements. To be more specific, the ownership rights for both the subject property and comparable properties were absolute. Financing conditions were standard, sales conditions were impartial, and there were no adjustments required for immediate post-purchase expenses. Regarding the comparison element of location, no adjustments were made as both the subject property and comparable properties are situated in Casimcea commune, Tulcea county. Adjustments for the surface comparison element were made in line with the differences in surface area between the subject property and comparable properties. We also studied other elements of comparison related to the physical characteristics of the agricultural lands (for example, the degree of merging, the category of use), but it was not necessary to apply adjustments.

Thus, in the end we obtained a market value of 5,600 Euro/ha for the studied agricultural land. This market value aligns with the range of values derived from the market analysis.

## CONCLUSIONS

The research shows that for every owner of agricultural land is important to be aware of its land market value and to be able to use this information in his advantage. As indicated by certain studies, the primary gaps in innovation for the 'social and institutional' dimension stem from insufficient knowledge and limited entrepreneurial skills among local stakeholders [9].

Furthermore, there is a recognized requirement for innovation catalysts to serve as long-term innovation brokers at the local level. The authors also highlighted concerns related to population aging and the demand

for a specialized workforce, primarily driven by net migration toward urban areas [9].

Over the past decade, various works and assessments have been regarded as benchmarks from a European perspective [0, 11, 12], despite significant differences in their methods, assumptions, the nature of the work, and the outcomes.

The implementation of valuation methods to decision making in most reviewed studies were quite limited. The overwhelming majority of articles included only short, general recommendations for stakeholders, and only a few studies address implementation in decision making, these implementations included awareness raising and communication, strategic planning, and the development of tools and toolkits [16].

In agriculture, each factor of production typically garners a specific type of income: labor receives wages, entrepreneurs earn profit, capital accrues interest, and land produces rental income. Grasping the dynamics of land prices and rents is crucial for gaining insights into the future prospects of agriculture.

Land prices are contingent on several factors, encompassing national elements like laws, regional aspects such as climate and proximity to networks, and localized productivity factors like soil quality, slope, or drainage. Additionally, market forces of supply and demand, along with the impact of foreign ownership regulations, can exert influence on the price of agricultural land. Competition for land arises not only among farmers but also from individuals with intentions to utilize the land for non-agricultural purposes. Consequently, examining prices at a specific point in time and observing the variations in prices across different regions over the years proves to be intriguing [6].

Thus, the main idea that emerges from the research carried out is that the market analysis is essential in determining the market value for an agricultural land. Therefore, from the research carried out it follows that the essential stages to be followed in the evaluation of an agricultural land must be followed rigorously.

From the market analysis at the European and national level, it appears that the price for arable land varies depending on the location and other criteria, as was presented. Therefore, by analyzing a real estate market, an interval with an upper limit and a lower limit for the market value was established. This interval is very important in substantiating the market value obtained. Also, with the help of this interval, the obtained market value can be verified. This verification is very important and must be done at every valuation for a real estate property.

At the local level, the authors analyzed the existing land types at the level of Casimcea commune, Tulcea county, as well as other important details of global solar radiation and climate.

In order to properly identify the land in question, the authors analyzed the property documents and performed an on-site inspection. Following this analysis, the exact land was identified and demarcated, as can be seen in Map 3.

Regarding the analysis of the best use, the authors concluded that the best use is the current one, i.e. that of agricultural land. In this stage, several factors were analyzed such as the location and type of the property in question.

The evaluation of the land was carried out by the authors through the market approach, respecting the implementation stages recommended by the standards in use in the present.

The impact that the market analysis has on determining the economical value of an agricultural land is clearly very decisive. Without this market analysis carried out in a rigorous way, a market value cannot be issued.

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