




EVALUATION OF A RURAL PROPERTY IN THE MUNICIPALITY OF TOMÉ-AÇU: SÍTIO SILVA

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ABSTRACT

The evaluation of rural properties is a fundamental process for determining the market value of agricultural properties and is essential to subsidize commercial negotiations, credit granting, land regularization, and economic planning. This study aims to evaluate the Silva Site, located in the municipality of Tomé-Açu, Pará, considering environmental, structural, and economic aspects that influence its valuation. For this, the direct market comparative method was adopted, as established by NBR 14653-3 (ABNT, 2004), ensuring technical precision and alignment with current standards. The analysis revealed that the property has favorable characteristics for agricultural production, such as clay soils of high fertility, a humid equatorial climate, and basic infrastructure for cultivation and animal husbandry. In addition, the diversification of production activities, combined with sustainable management practices, contributes to the economic viability of the property and its appreciation in the market. The results demonstrate that Sítio Silva has a high productive and economic potential, becoming a strategic property for investments in the rural sector.

Keywords: Evaluation of rural properties. Tomé-Açu.

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INTRODUCTION

The valuation of rural properties is an essential practice for determining the market value of properties, contributing to economic and legal decisions, such as granting credit, commercial negotiations, and compliance with environmental obligations (NBR 14653-3, 2004). The rural sector plays a significant role in the Brazilian economy, accounting for 27% of the Gross Domestic Product (GDP) of national agribusiness in 2022, which reinforces the importance of a technical and careful evaluation (CEPEA, 2023).

According to Breder (2013), the rural property does not take this name only because it is far from the urban center, or because it has a weekend property away from the city rush. The rural property has this name because those who live in this property live from what they produce, either for their consumption or for trade, regardless of the size of their production, they live specifically from the exploitation of the land.

In the present study, the Silva Site, located in the municipality of Tomé-Açu, Pará, will be evaluated, focusing on its environmental, structural, and economic characteristics. The municipality, recognized for its agricultural vocation and productive diversity, has favorable climatic conditions and suitable soil for various crops, such as black pepper and cocoa, as well as pastures (EMBRAPA, 2023). The municipality of Tomé-Açu, known for its relevance in Pará agribusiness, stands out for the production of black pepper, cocoa, and other tropical crops, in addition to having significant livestock activity, which makes the region a reference in sustainable practices and economic diversification (EMATER-PA, 2023).

Thus, the analysis of properties in this locality must consider not only the commercial value but also the environmental and productive conditions that influence its economic viability. Sítio Silva, the object of this evaluation, represents a typical example of the multifunctionality of family farming in Pará, integrating environmental preservation and family farming, with a total area of 62.4 hectares, the property has improvements that facilitate its economic use, such as sustainable management systems and basic infrastructure. The present work uses the direct market comparative method and is based on ABNT standards, aiming to offer a detailed view of the fair value of the property and its potential (NBR 14653-3, 2004; EMBRAPA, 2023).

Since, as Breder (2013) establishes, the earth is a natural element, it was not created in a laboratory, then we must evaluate the land, study its composition and evaluate its natural fertility, the region in which it is inserted, relate the type of soil to more appropriate cultivation. Land is the most precious asset for those who live from its production. We must then know how to value the land separately from its production.

RESULTADOS DAS AMOSTRAS DE SOLO: SÍTIO SILVA

PARÂMETROS	AMT 01	AMT 02	AMT 03
Ph (H ₂ O)	5,6	6,1	7,0
Ph (CaCl ₂)	4,7	5,2	6,7
Fósforo (P) (mg/dm ³)	5,9	5,2	23,2
Sódio (Na) (mg/dm ³)	53,3	55,7	49,2
Potássio (K) (mg/dm ³)	3,2	3,4	6,9
Cálcio (Ca) (cmol/dm ³)	2,13	3,99	6,79
Magnésio (Mg) (cmol/d ³)	0,47	0,77	0,58
Matéria Orgânica	27	32	27,5

INTERPRETAÇÃO PRÁTICA

pH do Solo:

A amostra 1 apresenta um pH ácido, a amostra 2 levemente ácida e a amostra 3 neutra. O pH ideal varia conforme a cultura, mas geralmente, solos com pH entre 6 e 7 são adequados para a maioria das plantas.

DISPONIBILIDADE DE NUTRIENTES

Fóforo (P): As amostras 1 e 2 apresentam baixos teores de fósforo, enquanto a amostra 3 possui um teor alto, o que é favorável para o crescimento das plantas.

Potássio (K): As três amostras possuem níveis diferentes, com a amostra 3 tendo o maior teor de potássio, importante para a resistência das plantas e qualidade dos frutos.

Cálcio (Ca) e Magnésio (Mg): As amostras variam significativamente, com a amostra 3 apresentando os níveis mais altos. Esses nutrientes são essenciais para a estrutura das plantas e processos bioquímicos.

Matéria Orgânica (M.O.): As amostras têm níveis moderados a altos de matéria orgânica, o que é benéfico para a retenção de água e nutrientes no solo.

INTERVENÇÕES RECOMENDADAS:

pH correction: For samples with an acidic pH, the application of limestone can be considered to raise the pH.

Phosphate Fertilization: For samples with low phosphorus contents, the application of phosphate fertilizers is recommended.

Potassium fertilization: May be necessary to balance potassium levels, especially in samples 1 and 2.

Organic Matter Management: Maintaining or increasing organic matter through composting and mulching to improve soil health.

PURPOSE

Economic Planning

According to Rodrigues (2001), the Municipality of Tomé-Açu is located in the central part of the mesoregion of the northeast of Pará, in the micro-region of the same name, considered one of the most important centers of development of commercial agriculture in the State of Pará, which uses modern cultivation systems. With a strategic location 187.5 km from Belém, the municipality stands out as a producer of crops such as black pepper, cocoa, and banana, in addition to having relevant livestock activity. These activities are supported by favorable climatic and edaphic characteristics, with a predominance of clay soils and a humid equatorial climate, marked by high temperatures and regular rainfall throughout the year (EMBRAPA, 2023).

The infrastructure of Tomé-Açu is another highlight, with access roads that connect rural areas to the urban center, enabling the flow of production to regional and national markets. The Municipality of Tomé-Açu was created from the installation of an agricultural colony to house Japanese immigrants, who, supported by capital, as well as, by millennial tradition in agriculture, stood out in agricultural practices that are based on the cultivation of crops of commercial value, managed to develop the culture of black pepper, to the point of making the State of Pará the largest producer of this piperaceae in the country (PINHEIRO et al., 1999).

CHARACTERIZATION OF THE REGION

According to Rodrigues (2001), the Municipality of Tomé-Açu is located in the central part of the mesoregion of the northeast of Pará, in the micro-region of the same name, considered one of the most important centers of development of commercial agriculture in the State of Pará, which uses modern cultivation systems. With a strategic location 187.5 km from Belém, the municipality stands out as a producer of crops such as black pepper, cocoa, and banana, in addition to having relevant livestock activity. These activities are supported by favorable climatic and edaphic characteristics, with a predominance of clay soils and a humid equatorial climate, marked by high temperatures and regular rainfall throughout the year (EMBRAPA, 2023).

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GEOGRAPHIC LOCATION AND INFRASTRUCTURE

The municipality of Tomé-Açu is located in the central part of the northeast of Pará, in the microregion of Tomé-Açu, between the geographic coordinates of 020°54'45" and 03°16'36" south latitude and 47°55'38" and 48°26'44" longitude west of Greenwich, with an area of approximately 5,179 km². It is bordered to the north by the municipalities of Concórdia do Pará and São Domingos do Capim, to the south and east by the municipality of Aurora do Pará, and to the west by the municipalities of Tailândia and Acará (RODRIGUES et al., 2001).

The main means of transport and communication are: by land, the PA-140 and PA-255 highways, from the BR-316 (Belém-São Luís), BR-010 (Belém-Brasília), and the PA-150 (Belém-Marabá); by the river, through passenger and cargo vessels, along the Acará-Miri/Acará/Guamá Rivers; by air, in small planes, maintaining a regular line to the city of Belém/PA (DE SOUZA BELATO, 2019; SERRÃO, 2019). Thus, EMATER-PA (2023) highlights that the region's road infrastructure has been one of the pillars for the development of the agricultural sector, allowing the improvement of production flow and transport conditions.

CLIMATIC CHARACTERISTICS

According to Pinheiro et al., (2019), the climatic conditions observed in the Municipality are of the AWI type, according to the Koppen classification, that is, tropical rainy with a well-defined dry season, from 3 to 4 months with less than 60 mm of monthly rainfall. In addition, the Tomé-Açu region has a humid equatorial climate, with average annual temperatures ranging between 24°C and 30°C, being suitable for the cultivation of various tropical crops. Rainfall is distributed throughout the year, with annual rainfall of around 2,500 mm, which favors agricultural production. The constant rainfall regime contributes to the abundance of water available for irrigation and agricultural activities, a factor that guarantees crop productivity and the sustainability of agricultural practices (PINHEIRO et al., 2001).

EDUCATIONAL ASPECTS

As evidenced by Pinheiro et al., (2001) the predominant relief in the area is the flattened surfaces in the form of extensive tablelands with altitudes around 50 meters. The classes of flat relief (0% to 3% slope) and smooth undulating (3% to 8% slope) predominate, with undulation (8% to 25% slope) occurring.

In addition, the soil of the region is predominantly clayey, which provides good retention of nutrients and water, essential characteristics for the cultivation of products such as cocoa, black pepper, and bananas, which are grown expressively in the municipality. According to EMBRAPA (2023), Pará has a great diversity of soils, and the soils of Tomé-Açu are highly fertile and suitable for the cultivation of high-value-added crops. The relief is, for the most part, flat, facilitating the use of agricultural machinery and intensive land management, which enhances production and reduces operating costs.

PRODUCTIVE ACTIVITIES

As established by Floherschütz (1983), agriculture is the main economic sector of Tomé-Açu, with emphasis on the production of black pepper, cocoa, and banana, in addition to beef cattle. Thus, the region is an important producer of black pepper, being one of the largest producers in Brazil, with the crop occupying a significant area of land. EMATER-PA (2023) points out that the integration of agricultural activities with livestock in the municipality allows economic diversification, promoting sustainable production systems that reconcile environmental preservation with productivity.

In addition, the municipality has invested in agroecological practices and in strengthening family farming, which contributes to the diversification of production and the increase in the income of rural communities. The region has also stood out in the adoption of sustainable practices, encouraging the rational use of natural resources, such as water and soil, and adopting technologies that minimize environmental impacts (DOS SANTOS POMPEU et al., 2018).

SOCIOECONOMIC ASPECTS

Simas and De Faria (2022) state that Tomé-Açu has a predominantly rural economy, with a significant part of the population dedicated to family farming and extensive cattle raising. The local economy is supported by small and medium-sized rural properties, many of them focused on commercial crops of black pepper, cocoa and banana. In confluence, EMATER-PA (2023) emphasizes the importance of technical assistance offered to farmers,

aiming to increase productivity, adopt good agricultural practices, and strengthen the sustainability of rural properties.

In addition, the social and cultural diversity of the region, with a strong presence of migrants from different parts of Brazil, contributes to the dynamism of agricultural practices and the enrichment of local cultural practices (DA SILVA NETO, 2003). Thus, the region has benefited from public policies aimed at strengthening family farming and encouraging environmental preservation, such as the actions of the State Secretariat for the Environment and Sustainability (SEMAS-PA) and EMATER-PA, which promote the adoption of techniques that balance production with the conservation of natural resources.

LITERATURE REVIEW

The literature on rural real estate in Brazil covers several factors that influence land tenure dynamics, including economic, social, environmental, and legal aspects. The rural land market in the country is largely influenced by the productive vocation of the regions, the available infrastructure and the public policies to encourage agriculture.

DETERMINANTS OF THE VALUE OF RURAL PROPERTIES

Several studies point out that the value of rural properties in Brazil is determined by variables such as location, access to infrastructure (highways, electricity, water availability), soil quality, topography, and productive potential. Regions with a strong presence of agribusiness, such as the Midwest and Matopiba (Maranhão, Tocantins, Piauí, and Bahia), show greater appreciation, driven by the expansion of the agricultural frontier and the increase in demand for commodities.

LAND REGULARIZATION AND LEGAL CERTAINTY

Land regularization is one of the main challenges in the sector, especially in the Legal Amazon and in areas of agricultural expansion. Legal uncertainty about land tenure impacts the rural real estate market, making transactions and investments difficult. Policies such as the Legal Land Program and the Rural Environmental Registry (CAR) were created to mitigate these problems, promoting greater transparency in the land market.

RURAL CREDIT AND PUBLIC POLICIES

Access to rural credit is essential for the appreciation of real estate, as it allows investments in infrastructure and technology. Programs such as the Crop Plan and the



National Program for the Strengthening of Family Agriculture (PRONAF) play an essential role in the modernization of properties, making them more productive and valued.

SUSTAINABILITY AND LAND USE

The concern with sustainability and environmental conservation has influenced the management of rural properties in Brazil. Environmental legislation, such as the Forest Code (Law No. 12,651/2012), imposes restrictions on land use, determining permanent preservation areas (APPs) and legal reserves, which impacts the pricing of properties and their economic use. In addition, initiatives such as Payment for Environmental Services (PES) have been encouraging sustainable land use practices.

TRENDS AND PERSPECTIVES

The rural real estate market in Brazil has diversified, with the growth of investments in sectors such as rural tourism, regenerative agriculture, and organic food production. In addition, the advancement of technology in the field, such as precision agriculture, has boosted the appreciation of the most productive lands. The expectation is that, in the coming years, the market will continue to be influenced by factors such as the demand for commodities, climate change, and territorial planning policies. The literature on rural real estate in Brazil reveals a dynamic sector, influenced by economic, environmental, and institutional factors. Land valuation depends on productive and infrastructural aspects, but also on land and environmental issues. The future of the market will depend on the balance between agricultural expansion, sustainability, and the legal security of properties.

DIRECT COMPARATIVE METHOD OF DATA FROM MERDADO

It is based on identifying the value of the asset through technical treatment of comparable attributes, thus using market data that are close to the data of the asset evaluation, thus, to achieve the maximum representativeness of the sample, the characteristics of the properties that make up the surveyed population must be specified, taking as reference the characteristics of the property being evaluated.

CHARACTERISTICS OF THE PROPERTY EVALUATED

Location and Access

Sítio Silva, located in the municipality of Tomé-Açu, Pará, is a rural property with a total area of 62.4 hectares, accessible by unpaved roads (Figure 1), but with branches in

good traffic conditions, which facilitates the flow of production and the connection with regional and national markets.

Figure 1- Dirt road to access Sítio Silva



Source: Authors of the evaluation, in 2024

Natural Conditions

The property has predominantly flat relief and soils of good agricultural suitability (Figure 2), being suitable for tropical crops with high commercial demand. According to analyses by EMBRAPA (2023), the soils in the region have a clayey texture and a humid equatorial climate, marked by high temperatures and regular rainfall, ideal characteristics for the development of diversified agricultural practices.

Figure 2- Satellite image of Sítio Silva



Source: Google Earth, 2024

Figure 3- Aerial Image of Sítio Silva



Source: Authors of the evaluation, in 2024.

The vegetation of Sítio Silva includes stretches of ombrophilous forest, preserved as Legal Reserve Areas (ARL) and Permanent Preservation Areas (APP), contributing to the maintenance of local biodiversity and the protection of water resources, with the property being crossed by small watercourses and streams, which guarantee the water supply for productive activities and promote the ecological balance of the region.

Infrastructure

Sítio Silva has a basic and functional infrastructure, including a sustainable water supply system, with artesian wells that meet the needs of productive activities (Figure 4).

Figure 4- Artesian Well



Source: Authors of the evaluation, in 2024

In addition, in terms of improvements, the property has a simple house, used for the accommodation of owners or workers, and is also a structure designed for handling and depositing tools (Figures 5 and 6).

Figure 5- Improvements



Source: Authors of the evaluation, in 2024

Figure 6 - Improvements



Source: Authors of the evaluation, in 2024.

The property also has a lake/dam used as a reservoir for irrigation and fish farming, reinforcing the economic diversification of the property (Figures 7 and 8).

Figure 7 - Property creek



Source: Authors of the evaluation, in 2024.

Figure 8- Fish tanks on the property



Source: Authors of the evaluation, in 2024.

POTENTIAL OF THE PROPERTY

Agricultural Productive Potential

The property stands out for the diversity of its agricultural and aquaculture production, incorporating sustainable and efficient practices for the cultivation of various species and animal husbandry. The soil of the region, classified as clayey, is highly fertile and suitable for the cultivation of a variety of tropical crops, as well as mango trees (*Mangifera indica* L.), since it has several mango trees that produce fruits that are highly valued in the market (Figure 9).

Figure 9 - Hoses (Mangifera indica L.)



Source: Authors of the evaluation, in 2024.

In addition to banana trees, which are cultivated on the site, being an important source of food, used a priori for fresh consumption (Figure 10). The cultivation of these plants also helps in soil fixation and can be a complementary crop for other production systems (GOMES et al., 2017).

Figure 10- Banana Trees on the Property



Source: Authors of the evaluation, in 2024.

Potential for Animal Husbandry Activities

The site has great potential for the raising of free-range chickens (*Gallus gallus domesticus*), an activity that integrates well with the agricultural system of the property (Figure 11).

Figure 11- Free-range chickens (*Gallus gallus domesticus*)



Source: Authors of the evaluation, in 2024.

Free-range chickens are raised freely, with natural food from grains, it can be taken into account that the production of eggs and free-range chicken meat is increasingly valued in the market, which represents an opportunity for economic diversification. In addition, the presence of weirs on the property allows the cultivation of fish, which is characterized as extensive fish farming (Figure 12)

Figure 12 - Fresh fish obtained by fishing on the property



Source: Authors of the evaluation, in 2024.

The management of fish farming is carried out in a controlled manner, using the waters of the dams to feed the fish and ensure their quality and growth.

The Lands according to their capacity of use

According to ABNT (2004, p. 03), lands can be classified according to the Land Use Capacity classification system, according to the Brazilian Manual for Surveying Land Use Capacity - III approximation, or whatever may replace it for the purpose of evaluating rural properties. The aforementioned manual establishes differences in land classes, relating their production potential for agricultural crops with the state of soil conservation. Basically, there are three types of land (arable, cultivable in special cases and unsuitable) divided into eight classes (ARANTES and SALDANHA, 2009, p. 28):

Class I – arable land apparently without special conservation problems; Class II – arable land with simple conservation problems;

Class III – arable land with complex conservation problems;

Class IV – arable land only occasionally with serious conservation problems;

Class V – arable land only in special cases of some permanent crops and generally adapted for pastures or reforestation, without the need for special conservation practices;

Class VI – arable land only in special cases of some permanent crops and generally adapted for pastures or reforestation, but with simple conservation problems;

Class VII – arable land only in special cases of some permanent crops and generally adapted for pasture or reforestation, but with complex conservation problems;

Class VIII – land unsuitable for cultivation, pasture or reforestation, which may serve only as a shelter for wild fauna, as a recreation environment or for water storage purposes.

Norton's Land Use Capacity model can also be used as a reference to frame the land of a rural property. As Aguiar (2012, p. 41) informs, "the North American researcher Norton presented a criterion capable of allowing the perfect characterization for rural evaluation". Norton was able to develop his own criteria to classify soils according to their capacity to generate yields, taking into account a series of characteristics related to the soil, such as color, texture, topography, stonyness, depth, erosion, fertility, among others; which could be summarized in the schematic table below (AGUIAR, 2012, p. 43):

Table I – Classification of Lands according to Norton's Classes

Classes	Fauna e Flora e Preservação	Silvicultura e ou Pastos	Pastos			Lavour			
			Limitado	Moderado	Intensivo	Limitado	Moderado	Intensivo	Muito Intensivo
I									
II									
III									
IV									
V									
VI									
VII									
VIII									

Source: Aguiar (2012).

The proper framing of the land of a rural property is a fundamental step in evaluation, because once the class of land present in the property is established, it should be noted that in a property there may be the classification in more than one different class; This information will serve as a basis for possible future mathematical and statistical applications, depending on the choice of methodological procedures for the evaluation of rural properties adopted by the professional appraiser.

The Silva Site classification I and II

40 hectares with class I and 24 hectares with class II

The Lands according to their current stage of exploitation

It is important not to confuse the current stage of exploitation of the land of a rural property with the classification that is given to the property (example: agriculture, livestock, leisure and tourism, among others), already dealt with in previous items. The classification of the lands according to their current stage of exploitation refers to the mode of cover present in the soil at the time of evaluation; that is, how the lands of the rural property are located. There are three possibilities for framing the lands, according to ABNT (2004, p. 03):

- a) raw land;
- b) bare earth;
- c) cultivated land.

Raw land, according to one of the items defined by the technical standard NBR 14.653-3, means unworked land, with or without natural vegetation (ABNT, 2004, p. 02). According to Arantes and Saldanha (2009, p. 22), these are lands that "do not have work or services performed by human hand".

In relation to the definition of bare land, established by NBR 14.653-3, it corresponds to land without plant production or natural vegetation (ABNT, 2004, p. 02). In the understanding of Arantes and Saldanha (2009, p. 22), bare land is "land already cultivated, however, at that exact moment of the evaluation, vegetation is discovered".

And finally, when dealing with the conceptualization of cultivated land, the regulatory norm 14.653, part 3, as being a land with agricultural cultivation (ABNT, 2004, p. 02). According to Arantes and Saldanha (2009, p. 22), "it is that prepared for cultivation or covered with some type of crop (reforestation, ploughing or pastures)".

Table 01 – Land use capacity and its value relative to each class, as a function of the percentage of net income

SOIL CLASSES	VALUE SCALE (% of net income)
I	100,00
II	95,00
III	75,00
IV	55,00
V	50,00
SAW	40,00
VII	30,00
VIII	20,00

Source: Mendes Sobrinho (1983).

During the homogenization process, the corresponding indices are defined, both for the paradigm property and for the rest of the researched samples. Therefore, the class factor of land use capacity will be obtained from the ratio between the paradigm index and the index of each market data (ABNT, 2004, p. 26).

Situation factor

According to the understanding of the technical evaluation standard NBR 14.653, part 3, the situation factor is defined as a homogenization factor that simultaneously determines the influence on the value of the rural property resulting from its location and the conditions of the access roads (ABNT, 2004, p. 02). As recommended by the aforementioned standard, the scale developed by Mendes Sobrinho (1983 apud Arantes and Saldanha, 2009) highlighted below or other specific tables can be used.

Table 02 – Value of the land according to its situation and viability of circulation.

Situation	FEATURES			
	Type of road	Importance of Distances	Practicable during the year	Value Scale (%)
Great	Paved	Limited	Permanent	100
Very good	1st Class on asphalt	On	Permanent	95
Good	Unpaved	Significant	Permanent	90
Adverse	Roads and easements Es	Distances routes Equivalent	Without Satisfactory conditions s	80
Bad	Easement closures	Distance s and classes if Equivalent	Serious problems with rainfall	75
Bad	Zippers and intercept. p/ Streams without bridges		Serious problems even with drought	70

Source: Mendes Sobrinho (1983).

For the homogenization process, the corresponding indices are defined, both for the paradigm property and for the rest of the researched samples. Therefore, the situation

factor will be obtained from the ratio between the paradigm index and the index of each market data (ABNT, 2004, p. 26).

Some evaluators, seeking to improve the evaluation procedures, decided to combine homogenization factors in a single informative table. This is the case of Pellegrino (1983 apud Arantes and Saldanha, 2009), who interacted Mendes Sobrinho's tables of land use capacity with the situation table, the result is shown below:

Table 03 – Value of land according to its situation and capacity for use¹³.

	Classes	I	II	III	IV	V	SAW	VII	VIII
	Situation	100%	95%	75%	55%	50%	40%	30%	20%
Great	100%	1,000	0,950	0,750	0,550	0,500	0,400	0,300	0,200
Very good	95%	0,950	0,903	0,713	0,523	0,475	0,380	0,285	0,190
Good	90%	0,900	0,855	0,675	0,495	0,450	0,360	0,270	0,180
Adverse	80%	0,800	0,760	0,600	0,440	0,400	0,320	0,240	0,160
Bad	75%	0,750	0,713	0,563	0,413	0,375	0,300	0,225	0,150
Bad	70%	0,700	0,665	0,525	0,385	0,350	0,280	0,210	0,140

Source: Pellegrino (1983).

Access Factor

Many authors treat the situation factor as simply a factor of access. According to Aguiar (2012, p. 47) the access factor may or may not increase the value of a rural property, since this factor expresses how distances, types of roads, natural or perennial obstacles end up influencing the flow of the property's production. The access values can be obtained in the table below (DESLANDES 2002 apud AGUIAR, 2012):

Table 04 – Land value according to its accessions.

SITUATION	ROAD TYPE	PRACTICABILITY	Value Scale
Very good	Asphalt	All year round	1.11 to 1.20
Good	Asphalt + little dirt	All year round	1.01 to 1.10
Normal	Asphalt + lots of dirt	All year round	1,00
Regular	Earth	All year round	1,00
Bad	A lot of land	Part of the year	0.90 to 0.99
Very bad	Obstacles	Part of the year	0.80 to 0.89

Source: Deslandes (2002).

¹³ In view of the relationship elaborated by Pellegrino (1983), establishing the interaction between land use classes and situation, his table is used as a reference for another homogenization factor, called the Agronomic Note, which is the result of the weighted arithmetic averages of the indices of the land of the property, either in relation to the evaluator or market samples (ARANTES and SALDANHA, 2009, p. 84).

Water resources factor

Through the water resources factor, it is possible to attribute comparison values in relation to the presence of water in the rural properties surveyed. This factor corrects the difference or discrepancy by means of comparative indexes, homogenizing its elements, in relation to the diversity of the hydrographic network, considering the quantity, quality and distribution of water present in rural properties. The values of water resources can be obtained according to the table below (DESLANDES 2002 apud AGUIAR, 2012):

Table 05 – Land value as a function of the presence of water resources.

No.	KIND	QUALIFICATIONS	VALUE SCALE
01	Very good	Natural resources: banks of secondary rivers, or of large rivers with several perennial and intermittent springs, streams or paths, lagoons, etc. Artificial resources: public supply services, cisterns, artesian wells, weirs, dams, water tanks, drinking fountains, etc.	Between 1.30 and 1.50, when related to "the quality, quantity and distribution of resources water".
02	Good	Natural resources: secondary river banks, or perennial and intermittent springs, streams or paths, lagoons, etc. Artificial resources: cisterns, artesian wells, weirs, dams, water tanks, drinking fountains, etc.	Between 1.15 and 1.29, when related to the quantity, quality and distribution of water resources.
03	Normal	Natural resources: secondary river banks, or perennial and intermittent springs, streams or paths, lagoons, etc. Artificial resources: cisterns, artesian wells, weirs, dams, water tanks, drinking fountains, etc.	Between 1.01 and 1.14, when related to the quantity, quality and distribution of water resources.
04	Regular	Natural resources: perennial and intermittent springs, streams or paths, lagoons, etc. Artificial resources: cisterns, artesian wells, weirs, dams, water tanks, drinking fountains, etc.	Fixed at 1.00, when the quantity, quality and distribution of water resources do not contribute to improving conditions of the rural property. "Continued"
05	Bad	Natural and artificial resources that do not allow the full use of the property, within its regional and natural vocation.	Between 0.80 and 0.99, when related to quantity, quality and distribution of water resources.
06	Very bad	Lack of natural and artificial resources, which makes it impossible to use the property, within its regional and natural vocation.	Between 0.50 and 0.79, depending on the regional and natural vocation of the property.

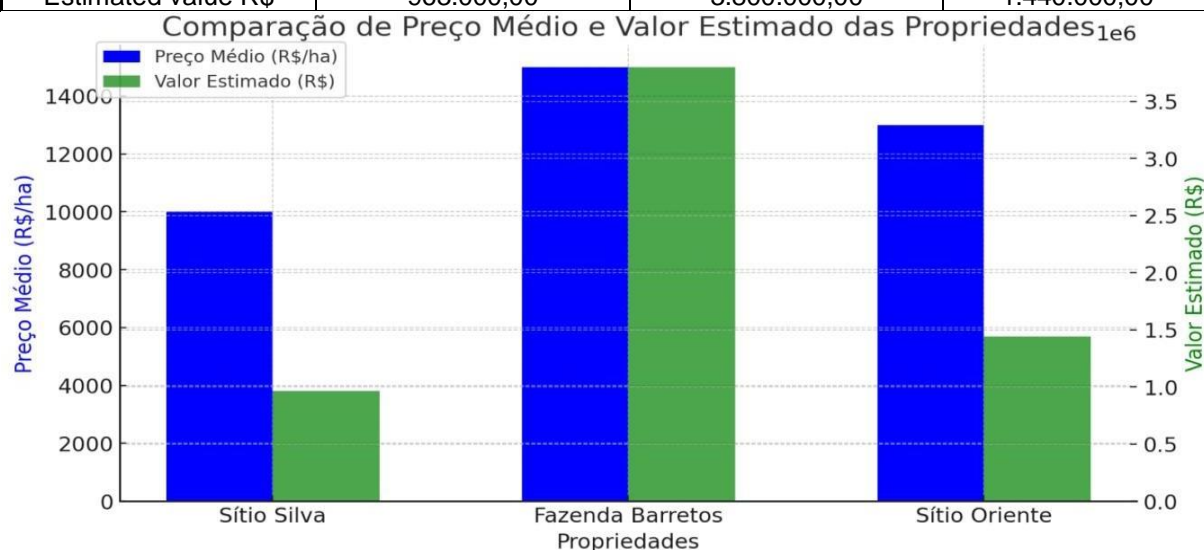
Source: Deslandes (2002).

From this item, we will have a proposal for the practical application of the procedures that must be adopted in an appraisal of rural properties. It should be noted that the basic activities that will be described in this evaluation work will be in accordance with what is recommended by the standards for the evaluation of assets, prepared by the Brazilian Association of Technical Standards – ABNT. The greater the degree of detail that can be obtained through a practical example of an asset valuation, the more grounded,

understandable and conclusive the results obtained by those who propose to carry out any type of valuation work will be.

Direct comparative method of market data

Characteristic	Silva Site	Barretos Farm	Sítio Oriente
Area (ha)	62,4	152	80
Location	Extension 30 lot	Extension 30 lot	Extension 30 lot
Infrastructure	Fertile soil, complete road, electric power, fish and country chicken farms fruit trees etc..	Fertile soil, full road, electricity, fish farms and pastures.	Fertile soil, full road, electricity, breeding sites of fish.
Average price of (ha) R\$	10.000	15.000	13.000
Market comparison	R\$12,000 to R\$15,000	20,000 to 25,000	15,000 to 18,000
Estimated value R\$	963.000,00	3.800.000,00	1.440.000,00



Objective of the Evaluation

The main objective of the evaluation was to determine the market value of Sítio Silva, considering the agricultural and livestock suitability of the property, the environmental quality, the existing infrastructures and the market demand for the activities developed on the property. The evaluation also sought to provide data for commercial and financial

decision-making, such as granting rural credit, buying and selling or leasing land, and land regularization.

Characteristics analyzed

Initially, the characteristics of the soil, climate and hydrography were analyzed in detail to identify the potential for cultivation and animal husbandry. The climate of Tomé-Açu is humid, with a high average temperature and significant annual rainfall, which favors the cultivation of several tropical crops, such as mangoes, bananas, peppers, and cocoa (SANTOS et al., 2021). In addition, the soils of the site are predominantly clayey, classified as dystrophic yellow oxisols, which have good drainage capacity and moderate fertility. These soils are suitable for growing plants, in addition to supporting pastures for cattle raising (EMBRAPA, 2020).

Furthermore, the presence of streams and weirs in Sítio Silva ensures adequate water supply for agricultural and animal husbandry activities, in addition to allowing the implementation of irrigation and aquaculture systems (SILVA et al., 2020). In addition to analyzing the infrastructure of Sítio Silva, which was designed to meet the needs of the various agricultural and livestock activities carried out. Finally, the property features a diverse range of productive activities that include fruit growing, palm cultivation, animal husbandry, and aquaculture. Thus, the economic analysis of Sítio Silva highlights its potential for generating revenue through its various productive activities.

EVALUATION RESULTS

After applying the direct market comparative method, the estimated values for Sítio Silva of R\$ 963,000.00 thousand reais were adjusted to reflect both the market value of the comparative properties and the unique characteristics of the property, including its productive potential and sustainability. The final value of the property can be determined by taking into account the value of agricultural areas, agricultural areas, which have adequate infrastructure for planting other crops, and the value of preservation areas, which increase the attractiveness of the property due to environmental requirements.

As a result, Sítio Silva has a high productive potential due to the combination of favorable natural and infrastructural factors, with an infrastructure evaluated as adequate to support the ongoing productive activities. In addition, the property maintains legal reserve and permanent preservation (APP) areas, which contribute to the protection of water resources and the preservation of local biodiversity, which constitute important areas for the

implementation of agroforestry systems that integrate agricultural practices with environmental conservation.

In addition, the property's natural pond and streams are used in a sustainable way for fish farming and irrigation, without compromising water resources, in addition to the use of an artesian well for drinking water supply, which is also adequate and guarantees the property's water autonomy. Therefore, the market analysis for Sítio Silva's products indicates good prospects for profitability, consumption trends at the national level, such as the search for organic and sustainable food, favor the production of products from the property. In summary, the combination of favorable natural conditions, adequate infrastructure, and sustainable practices provides a solid foundation for the property's growth and expansion.

FINAL CONSIDERATIONS

The results of this research show that Sítio Silva has a high productive and economic potential, being valued for its diversity of crops, water infrastructure and strategic location. The use of the direct market comparative method, aligned with the guidelines of NBR 14653-3 (ABNT, 2004), allowed to estimate a market value consistent with the conditions of the Tomé-Açu region.

The diversification of production, combined with sustainable practices, represents a competitive advantage for the property, making it attractive to both small producers and investors in the agricultural sector. However, in order to maximize its appreciation, it is recommended to make structural investments and obtain environmental certifications, which can expand access to markets with higher added value.

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SCHEDULE OF ACTIVITIES

Schedule of activities

Activities		Fortnights						
		1	2	3	4	5	6	7
1	INITIAL PLANNING	X						
2	DATA COLLECTION IN THE FIELD		X					
3	BIBLIOGRAPHIC DATA RESEARCH AND THEORETICAL WRITING		X	X				
4	DATA ORGANIZATION			X				
5	DATA PROCESSING			X	X			
6	RESULT OF THE DATA AND FINAL WRITING					X	X	

ATTACHMENT

RECIBO DE INSCRIÇÃO DO IMÓVEL RURAL NO CAR

Registro no CAR: PA-150801-7440.89F.7A13.4EE9.5A99.547C.8151.4F94 Data de Cadastro: 20/12/2018 07:38:15

RECIBO DE INSCRIÇÃO DO IMÓVEL RURAL NO CAR

Nome do Imóvel Rural: SÍTIO SILVA
Município: Tomé-Açu UF: Pará
Coordenadas Geográficas do Centro do Imóvel Rural: Latitude: 02°23'19" S Longitude: 48°17'38" O
Área Total (ha) do Imóvel Rural: 67,2830 Módulos Fiscais: 1,3457
Código do Protocolo: PA-150801-559E.4E7B.6095.6992.04D8.DAD7.20F5.3FFE

INFORMAÇÕES GERAIS

- Este documento gera o cumprimento do disposto nos § 2º do art. 14 e § 3º do art. 29 da Lei nº 12.551, de 2012, e se constitui em instrumento suficiente para atender ao disposto no art. 79-A da referida lei.
- O presente documento representa a confirmação de que foi realizada a declaração do imóvel rural no Cadastro Ambiental Rural-CAR e que está sujeito à validação pelo órgão competente.
- As informações prestadas no CAR são de caráter declaratório.
- Os documentos, especialmente os de caráter pessoal ou domínial, são de responsabilidade do proprietário ou possuidor rural declarante, que ficará sujeito às penas previstas no art. 299, do Código Penal (Decreto-Lei nº 2.848, de 7 de setembro de 1940) e no art. 69-A da Lei nº 9.805, de 12 de fevereiro de 1999.
- O demonstrativo da situação das informações declaradas no CAR, relativas às áreas de Preservação Permanente, de uso restrito e de Reserva Legal, poderá ser acompanhado no sítio eletrônico www.car.gov.br.
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- O declarante assume plena responsabilidade ambiental sobre o imóvel rural declarado em seu nome, sem prejuízo da responsabilização por danos ambientais em área contígua, posteriormente comprovada como de sua propriedade ou posse.

CAR - Cadastro Ambiental Rural

Página 1/3

Ministério da Fazenda Imposto sobre a Propriedade Territorial Rural
Secretaria da Receita Federal do Brasil Exercício 2018

RECIBO DE ENTREGA DA DECLARAÇÃO DO ITR DO EXERCÍCIO DE 2018

DADOS DO IMÓVEL RURAL

Número do Imóvel na Receita Federal (NRF): 8.708.851-7 Área Total: 67,2 ha
Nome: SÍTIO SILVA
Endereço: RODOVIA PA-451, RAMAL 30 LOTES KM 05 UF: PA CEP: 68660-000
Município: TOMÉ-ACU

IDENTIFICAÇÃO DO CONTRIBUINTE

Nome: CASSILDO DE JESUS SILVA
CPF: 798.715.422-91
Endereço: RUA COSTA E SILVA Complemento: SNTRAF
Número: 238 Bairro: QUATRO BOCAS
Município: TOMÉ-ACU UF: PA
CEP: 68660-000 Telefone:

OUTRAS INFORMAÇÕES DA DECLARAÇÃO (Valores em R\$)

Declaração Retificadora:	Não	Valor da Terra Nua Tributável:	1.455,97
Imposto Calculado:	20,38	Imposto Devido:	20,38
Quantidade de Quotas:	1	Valor da Quota:	20,38

AVISOS:

- Para imóveis rurais obrigados ao procedimento de vinculação entre o Sistema Nacional de Cadastro Rural (SNCR) e o Cadastro de Imóveis Rurais (Cair), conforme previsto contida na Instrução Normativa Conjunta RFB/Incr nº 1.581, de 17 de agosto de 2015, e para os imóveis rurais em que, mesmo desobrigados, já tenha sido realizado esse procedimento, não haverá atualização cadastral no Cair a partir dos dados informados no Documento de Informação e Atualização Cadastral (Diac) da Declaração do Imposto sobre a Propriedade Territorial Rural (DITR).
- Apartar de obrigado, ainda não foi efetuado o procedimento de vinculação entre o SNCR e o Cair para esse imóvel rural. Acesso o serviço de vinculação por meio do sítio Cadastro Rural, no endereço <www.cadastrorural.gov.br>, onde poderão ser obtidas mais informações sobre o procedimento. A falta de vinculação sujeita o imóvel rural à situação de pendência cadastral no Cair e à seleção no SNCR para fins de início da emissão do Certificado de Cadastro de Imóvel Rural (CCIR), conforme previsto no art. 8º da IN Conjunta RFB/Incr nº 1.581, de 2015.

Declaração recebida via Internet JV
pelo Agente Receptor Serpro
em 28/09/2018 às 14:48:02
0278762298

RECIBO DE ENTREGA DA DECLARAÇÃO DO ITR DO EXERCÍCIO DE 2018

Sr (a) CASSILDO DE JESUS SILVA, inscrito(a) no CPF sob o nº 798.715.422-91.
O NÚMERO DO RECIBO da DITR do exercício de 2018 apresentada em 28/09/2018, às 14:48:02, referente ao NRF 8.708.851-7, é:

37.28.75.36.11.01

Este número é de uso pessoal e NÃO deve ser fornecido a terceiros. Guardá-lo, pois ele será necessário caso deseje retificar esta declaração.