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## EVOLUÇÃO DAS FLORESTAS PLANTADAS ENTRE 1986 E 2017: O CASO BRASILEIRO DE PEÇANHA, MINAS GERAIS

*THE EVOLUTION OF PLANTED FORESTS FROM 1986 TO 2017: THE BRAZILIAN CASE  
OF PEÇANHA, MINAS GERAIS*

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### ABSTRACT

The massif forest market has been gaining prominence in Brazil, due to its participation in the economy. In Brazil, Minas Gerais State represents the largest planted forest area in the country and Peçanha municipality stands out for its wood production as well as for the insertion of its rural producers in the cellulose industry productive chain. This research aimed at mapping the evolutions of the planted forests in Peçanha, MG, from 1986 to 2017, presenting the forests planted by the private companies as well as the ones planted by the rural producers, integrated or not to the cellulose industry. The methodology of the research assumes an exploratory and a documental character, meaning a study case in which primary data

were used obtained through interviews, and secondary data about the forest sector of the municipality, such as maps of the soil use and occupation, obtained from the MapBiomass Project of the IBGE and reports made by the cellulose industry. The results showed that there was an increase in the planted forest area and a decrease of grazing and agricultural areas, as well as an increase in wood production for cellulose industry and for the vegetal charcoal production, destined to the steelwork sector. It was concluded that the rural producer has been expanding the forestry areas, mainly over grazing and agricultural areas.



## INTRODUCTION

In Brazil, the commercial use of forest products has been gaining prominence since the 1960's decade when the federal government started to grant incentives to increase the forest sector aiming at meeting the needs of the cellulose and paper, steelwork and furniture industries that needed wood as their raw material.

The increasing demand for wood caused the industries to invest in buying huge territorial extensions to develop forestry. Besides their own planting, the enterprises started to look for new means to guarantee wood supply, such as leases and partnerships, therefore involving an ample net of rural producers stimulated by the enterprise's integration programs (Graça, Reydon, Postal, Bueno, & Moreira, 2017, Gonçalves, Ferraz, Rocha, Peressin, & Alvares, 2020).

In a scenario where there was an increment in the forestry development and in the industrial demand for forest products, eucalyptus stood out from the other species. Due to the edaphoclimatic conditions in Brazil and to investments in research, eucalyptus presented fast growth, good productivity and lower implementation and maintenance cost when compared to other species destined to the cellulose industry. Its cutting time is approximately seven years; but this can vary according to the region conditions and the forest purpose. These factors contributed for eucalyptus to become even more present in rural properties (Juvenal & Mattos, 2002).

Under this perspective, the rural producer seeks in forestry an alternative to put his product in the market, either by means of eucalyptus forest or by means of other species forest. In this insertion format two planting modalities stand out: (i) independent planting, where the producer is free to determine the purpose of his forest, and (ii) the partnership with cellulose and paper industries.

These partnerships enable that the enterprises guarantee their raw material supply since the wood is also provided by a rural producers' net which allows new actors to be incorporated to the industry productive chain (Canto *et al.*, 2015).

The integration process is linked to the enterprise's strategy that seeks to reduce costs and ensure the raw material supply and control over the productive chain (Paulilo, 1990, Farina, 1999). For the rural producers the integration means an insertion in the market with the assurance of a guaranteed sell. This guaranteed purchase is endorsed by the cellulose industries that establish contacts that standardize this relation (Erthal, 2006, Espíndola, 2008, Mengel & Aquino, 2011).

The integration process between the rural producer and the industry happens through a contract that guarantees the purchase of the wood by the industry, and the supply of the wood by the rural producer. It can be called by other names, but the main objective remains the same (Soares *et al.*, 2007, Fischer, 2009, Cordeiro, Silva, Jacovine, Valverde, & Soares, 2010).

In the forest fomentation program, forestry is developed inside the rural producer's property, using his resources, such as labor and land (IEF, 2018). In the case of the Brazilian paper and cellulose sector most of the raw material supply comes from the industries' own plantations,



being the other part obtained through a partnership with rural producers by means of the forest fomentation program of the enterprises (Aquino, 2013, Gonçalves *et al.*, 2020).

Thus, the focus of this study is on planted forest, in Brazil, in Peçanha municipality and in the cellulose industry that has forestry activities in that municipality. This enterprise was founded in 1973, in Belo Horizonte municipality, MG, and started operating seven years later (Hilgemberg & Bacha, 2001). Like other companies in the cellulose sector, its raw material (wood) is entirely originated from planted forests. The forests of this cellulose industry are located in the state of Minas Gerais, either in areas owned by the cellulose industry, areas leased from third parties or in the lands of fomented rural producers who also have forests planted in partnership with the industry and independent plantations (Juvenal & Mattos, 2002).

Cordeiro *et al.* (2009) and Basso *et al.* (2012) highlight that the forest fomentation program had a very important role in developing the Brazilian forest sector. The program has been the entry point for forestry in determined regions. Studies carried out in Espírito Santo state show that some rural producers, even after leaving the forest fomentation program of the cellulose industry, still continued to develop forestry (Oliveira, Valverde, & Coelho, 2006).

Among the municipalities where the cellulose industry has its own forests and partnerships with rural producers, in Brazil, in Minas Gerais State, Peçanha municipality stands out. The municipality was chosen for this study, since it has the largest number of rural producer's contracts with a cellulose industry located in Minas Gerais, in the 2018 forest fomentation program.

Thus, the objective of this research was to map and analyze the evolution of planted forests in Peçanha municipality, MG, from 1986 to 2017, showing both planted forests in the private sector and of rural producers integrated or not with the cellulose industry through the forest fomentation program.

## 2. MATERIAL AND METHODS

### 2.1. STUDY AREAS

Peçanha municipality, located in the Mesoregion of the Rio Doce Valley, in Minas Gerais State, Brazil, occupies an area of 996,646 km<sup>2</sup>. In 2017, its population was 17,260 inhabitants, and 47.29% of these lived in rural areas (IBGE, 2017). The principal economic activities of the municipality are the forestry, livestock and agriculture. In forestry, the most important is eucalyptus cultivation for wood production for the cellulose industry and vegetal charcoal for the steelwork sector, firewood and lumbering (IBGE, 2017).

In the municipality, data on land use and occupation were considered, with emphasis on planted forest areas, evidencing the participation of the private sector and rural producers who develop silviculture independently or, in the forestry fomentation program of the cellulose industry that operates in the region.



## 2.2. DATA COLLECTION AND ANALYSES

For this study, primary data, which were collected through a letter sent to the cellulose industry, were used after the confidentiality term was signed with the company to release the data. Among these data are the amount of forest planted by the industry and the fomented ones, as well as the identification and contact of the fomented producers, which made this research possible. In addition, annual data on fomented rural producers at the municipality level were made available, such as volume of wood harvested, contracted area and annual amounts paid to producers in the municipality.

From May to July 2019, 61.22% of the rural producers of Peçanha municipality who take part in the forest fomentation program of the enterprise were interviewed. After transcribing and analyzing the interviews, three were selected, representing the speech of most producers, identified in this work as Producer A, Producer B and Producer C. Secondary data on the production of wood and charcoal were obtained from the Brazilian Institute of Geography and Statistics (IBGE), as well as the vector bases referring to municipal and state limits. Land use and occupation were obtained from satellite images provided by the MapBiomias Project.

## 2.3. CLASSIFICATION OF THE LAND USE AND COVERAGE

The maps of soil coverage for the years of 1986, 1996, 2006, 2016 and 2017 were extracted from the platform of the MapBiomias Project. MapBiomias consists of an annual mapping project of Brazilian soil coverage and use, in which a net of specialist employ processing and classification tools in order to generate a series of historical images (MapBiomias, 2020).

The used images belong to Collection 3 which covers the period from 1985 to 2017, published in August 2018 and collected from the Google Earth Engine platform. The methodology used by MapBiomias is divided in three steps, being all of them carried out on the Google Earth Engine platform (MapBiomias, 2020).

Step 1 consisted of selecting the images from three *Land Remote Sensing Satellite* (Landsat 5, 7 e 8) satellites, choosing the best images from each Landsat with a 30 meters resolution available for the selected period. More than 9 billion pixels every 30 meters were necessary to complete all Brazil, since *pixels* are the work unit of the project. (MapBiomias, 2020).

Step 2 is the calculation of the spectral indexes and fractions for each observation of the satellite, which resumes itself in the analysis and treatment of the pixels based on their behavior. The pixel behavior is related to the quality of the images in which interferences such as clouds, smoke and others, must be disregarded (MapBiomias, 2020).

Step 3 is responsible for building the representative mosaic of the 12 month period when each pixel carries 195 variables in order to form each year's layer (MapBiomias, 2020). The biomes integration as well as the classes of soil use are enclosed in the information layers of the pixels, therefore, the transition analysis is performed by means of statistical indexes according to the methodology proposed by Olofsson *et al.* (2014) (MapBioma, 2020).



### 3. RESULTS AND DISCUSSIONS

According to the cellulose industry data, in 2017, it had around 253,666.41 ha of area (belonging to the industry and leased ones). The areas owned by the cellulose industry are distributed in 54 municipalities of Minas Gerais State, located, in their majority, in the Rio Doce River Basin and in the sub basins of the rivers Piracicaba, Santo Antônio, Suaçuí Grande, Caratinga and Piranga (CENIBRA, 2018).

Regarding land use, the data provided by the cellulose industry indicate that in 2017 51.65% of the business area was for eucalyptus planting, 40.79% destined to a legal reserve and/ or permanent preservation area and 7.56% was occupied by roads, strips of deforested land and buildings. In the same year, 15,030 (80.33%) hectares were harvested in the area belonging to the enterprise and 3,250 (19.67%) hectares in forest development areas (CENIBRA, 2018, CENIBRA, 2019).

This shows that the cellulose industry complements its demand with the purchase of wood from rural producers through contracts previously established within its forest fomentation program, which is a strategy used by industries to ensure their raw material (Paulilo, 1990, Farina, 1999, Schmidt, 2003, Silva, 2003, Fischer, 2009, IEF, 2018).

Forestry fomentation is established by the cellulose industry within its Strategic Plan, drawn up for a period of 21 years. In this planning, the percentage of wood production in areas owned by the cellulose industry or in leased ones, and the wood that will be purchased from rural producers in the forest fomentation program that, guarantees the wood purchase from the rural producers through a contract are established (CENIBRA, 2018).

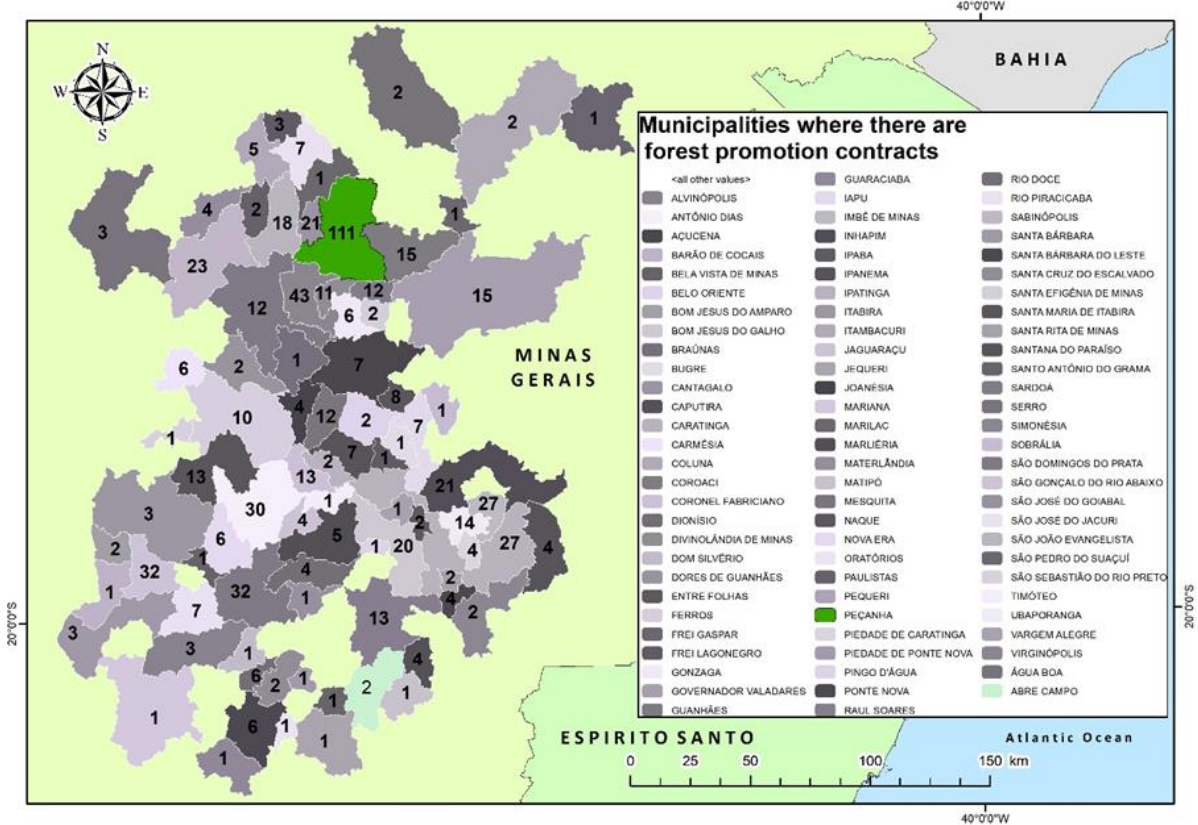
The forest fomentation contract establishes an integration of the rural producers with the productive chain of the cellulose industry which, in 2018, had 695 forest fomentation contracts, distributed in 87 municipalities of the Minas Gerais state (Figure 1). It is observed that Peçanha is the municipality with the greatest number of contracts within the forest fomentation program of the cellulose industry, with 111 contracts that represent 15.97%. The 111 forestry development contracts signed in the municipality of Peçanha are divided among 98 rural producers, with plantations in several stages, ranging from land preparation, planting, growth, to cutting and transporting wood to the patios of the company (CENIBRA, 2019).

Given the proportions of the number of forest fomentation contracts in Peçanha in relation to the other municipalities, it is important to understand the participation of forestry in it. For this purpose, the evolution of the planted forests in the municipality from 1986 to 2017 is spatially presented. This increase in the planted forest area demonstrates the importance of this market in supplying the cellulose industry, as well as for the rural producers that develop silviculture, both in partnership with the cellulose industry, or in an independent way, producing wood for other purposes.



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**Figure 1 - Operational area of the cellulose industry in Minas Gerais State (Brazil)**



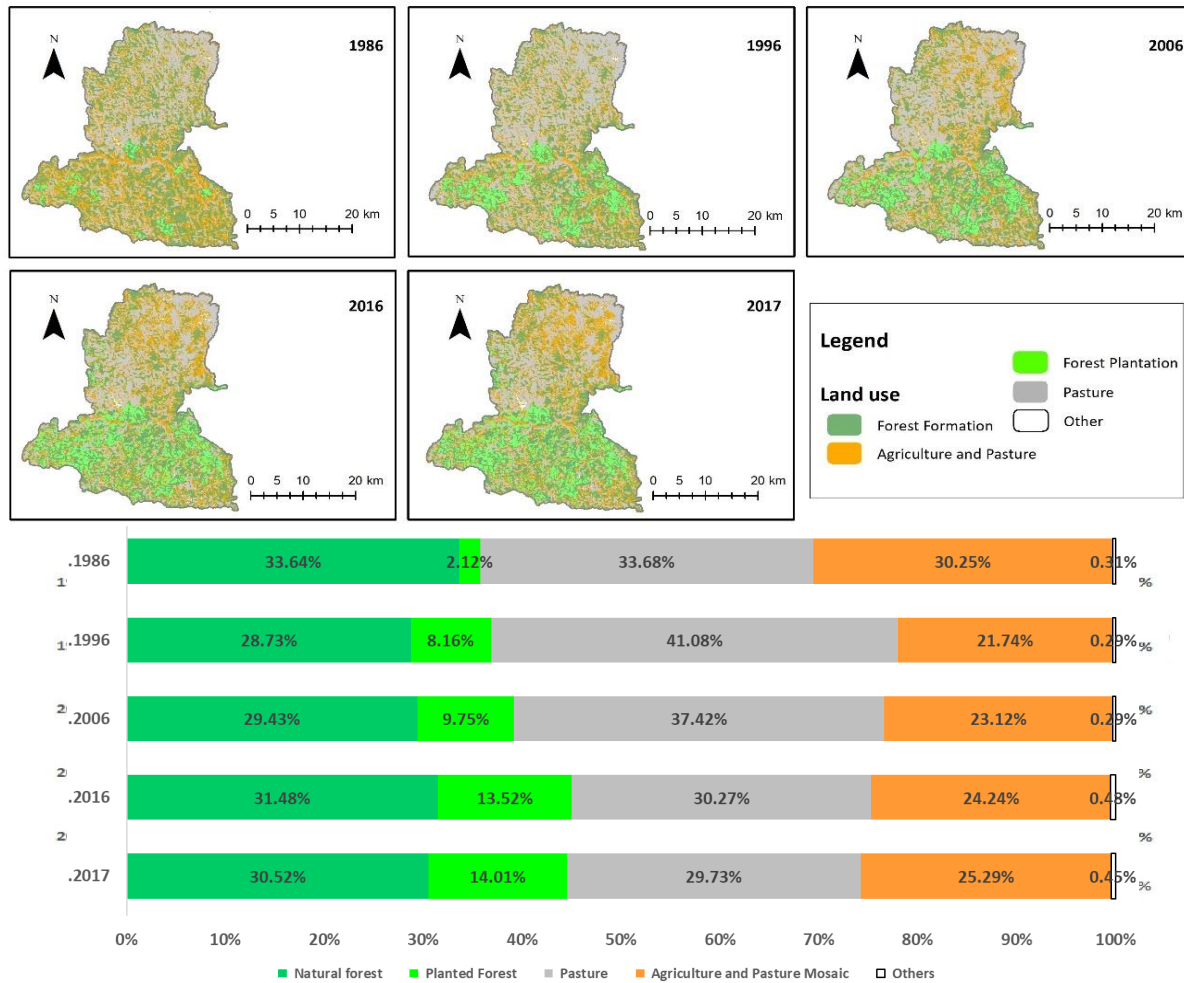
Source: Developed by the author on data provided by CENIBRA (2018).

As can be seen, Figure 2 illustrates land use and occupation in Peçanha municipality from 1986 to 2017. It is observed that in 1986 the areas of agriculture and livestock prevailed, which included the areas of pasture and the mosaic of agriculture or pasture, which together accounted for 63.93% of the municipality, followed by the natural forest area, which corresponded to 33.64% and the planted forest area that represented only 2.12% of the municipality. The remainder 0.31% of others include areas of natural non-forest formation and non-vegetated area.

In 1996, 2006, 2016 and 2017, the mosaic area of agriculture and pasture decreased, reaching 25.29% of the municipality's extension in 2017. The pasture area, in turn, increased from 1986 to 1996, but it decreased in the following years, reaching 29.73% of the municipality's extension in 2017. These two classes of areas together still represent 55.02% of Peçanha municipality. The area of natural forest decreased from 1986 to 1996, showing an increase until 2016 and a small reduction in the following year, occupying 30.52% of the municipality's area in 2017 (Figure 2).



**Figure 2 – Land use and occupation in Peçanha, Minas Gerais (Brazil)**



Source: Developed by the author on data provided by MapBiomas (2019).

Thus, the growth of the planted forest from 1986 to 2017 stands out (Figure 2), although this represents only 14.01% of the municipality's extension. This dynamic of land use and occupation in Peçanha municipality reinforces the need to know in which classes (areas) the planted forest advanced in 1996, 2006, 2016 and 2017. The analysis of progress (Table 1) has as its reference the area of forest planted in the municipality in 1986.

**Table 1 – Planted Forest growth over other areas in Peçanha municipality**

Period	1986-1996	1986-2006	1986-2016	1986-2017
<b>Natural Forest</b>	33.99%	36.63%	35.47%	35.45%
<b>Planted Forest</b>	23.80%	18.67%	13.04%	12.86%
<b>Pasture</b>	13.28%	15.60%	21.20%	21.34%
<b>Pasture and Agriculture Mosaic</b>	28.92%	29.10%	30.28%	30.34%
<b>Total</b>	100%	100%	100%	100%

Source: Developed by the author on data provided by MapBiomas (2019).

It can be seen (Table 1) that the increase in the planted forest in Peçanha municipality from 1986 to 1996 had the following dynamics: an increase of 33.99% over the area of natural forest, 13.28% over pasture and 28.92% on the mosaic of agriculture and pasture. The area of planted



forest in 1986, on the other hand, accounted for 23.80% of the area of planted forest in 1996. In summary, it was found that the planted forest showed a greater advance over the pasture areas and the mosaic of agriculture and pasture, which together represent 42.2% of the growth.

After these analyzes, it was observed that in the periods of 1986-2006, 1986-2016 and 1986-2017, the advance of the planted forest over the natural forest presented few variations in relation to the 1986 area. The 1986 planted forest area started automatically to represent a smaller percentage in the following years because the area of planted forest in 1986 remained the same in the following years, thus contributing to identify the progress over the other areas. Therefore, it is said that in 2017, the planted forest advanced mainly over the pasture areas (21.34%) and the mosaic of agriculture and pasture (30.34%), and together they represent 51.68% of the forest area planted in 2017 (Table 1). To understand the increase in the area of planted forest in Peçanha municipality, we sought to analyze the production of agriculture, livestock and forestry in the period from 1986 to 2017 (Table 2).

**Table 2 – Forestry production in Peçanha municipality**

Activity	Product	Year				
		1986	1996	2006	2016	2017
<b>Cattle effective (headage)</b>	Bovine	<b>31,533</b>	35,200 (11.63%)	34,640 (9.85%)	33,398 (5.91%)	32,801 (4.02%)
	Buffalo	-	<b>150</b>	365 (143.33%)	381 (154.0%)	336 (124%)
	Equine	<b>917</b>	1,973 (115.16%)	862 (-6%)	1,450 (58.12%)	1,520 (65.76%)
	Suine	<b>3,859</b>	4,550 (17.91%)	3,248 (-15.83%)	2,450 (-36.51%)	2,100 (-45.58%)
	Goat	<b>43</b>	1 (-97.67%)	95 (120.93%)	65 (51.16%)	64 (48.84%)
	Sheep	<b>9</b>	80 (788.89%)	70 (677.78%)	48 (433.33%)	145 (1,511.11%)
	Poultry	<b>21,038</b>	67,260 (219.71%)	41,180 (95.74%)	30,500 (44.98%)	43,050 (104.63%)
<b>Animal origin production</b>	Milk (thousand liters)	<b>5,936</b>	9,563 (61.10%)	10,859 (82.93%)	9,800 (65.09%)	14,458 (143.56%)
	Chicken eggs (thousand dozens)	<b>93</b>	91 (-2.15%)	53 (-43.01%)	55 (-40.86%)	87 (-6.45%)
	Bee honey (Kg)	<b>1,118</b>	2,300 (105.72%)	3,990 (256.89%)	8,500 (660.29%)	11,300 (910.73%)
<b>Milked cows (headage)</b>	Milked cows (headage)	<b>8,043</b>	8,128 (1.06%)	11,080 (37.76%)	7,000 (-12.97%)	6,980 (-13.22%)
<b>Temporary crops products (tons)</b>	Peanuts (in shell)	<b>12</b>	8 (-33.33%)	5 (-58.33%)	-	6 (-50%)
	Rice (in shell)	<b>259</b>	220 (-15.06%)	26 (-89.96%)	72 (-72.20%)	10 (-96.14%)
	Sugar cane	<b>9,000</b>	7,600 (-15.56%)	28,800 (220%)	28,000 (211.11%)	3,900 (-56.67%)
	Beans (in grain)	<b>175</b>	798 (356%)	450 (157.14%)	54 (-69.14%)	159 (-9.14%)
	Mandioc	<b>2,916</b>	1,800 (-38.27%)	840 (-71.19%)	980 (-66.39%)	90 (-96.91%)
	Corn (in grain)	<b>8,474</b>	6,750 (-20.34%)	2,736 (-67.71%)	7,200 (-15.03%)	1,440 (-83.01%)
	<b>Permanent crops products (tons)</b>	Banana (bunch)	<b>150</b>	75 (-50.0%)	720 (380.0%)	1,170 (680%)
Coffee		<b>99</b>	206 (108.08%)	72 (-27.27%)	77 (-22.22%)	126 (27.27%)
Tangerine		<b>160</b>	320 (100%)	-	-	-
<b>Forestry quantity production</b>	Vegetal charcoal (tons)	<b>296</b>	1,365 (361.15%)	2,850 (862.84%)	5,200 (1,656.76%)	29,884 (9,995.95%)
	Eucalyptus firewood (cubic meters)	-	<b>2,615</b>	-	3,500 (33.84%)	5,980 (128.68%)
	Lumber Wood for paper and cellulose (cubic meters)	<b>189,160</b>	320,060 (69.20%)	554,072 (192.91%)	408,703 (116.06%)	211,825 (11.98%)
	Lumber Wood for other purposes (cubic meters)	-	<b>450</b>	-	22,600 (4,922.22%)	68,220 (15,060%)

Source: Developed by the author on data provided by IBGE (2017). The blue color represents the base year to calculate the percentage for the following years. (The percentages are calculated based on the value immediately prior to the first calculated percentage).

According to the reference to the production of 1986 and those highlighted (blue), it was verified that there was a reduction in almost all products of temporary and permanent crops, as





can be seen in the production of peanuts, rice, sugar cane, beans, cassava, corn and tangerine. Figure 2 shows a reduction in the area of the mosaic of agriculture and pasture of 4.96%, in the analyzed period.

Livestock production showed a decrease in the number of pigs, chicken eggs and milked cows. However, there was an increase of 4.02% in the number of cattle. Other activities showed better results, for example, the production of sheep, honey bee, milk, buffalo, chicken, horse and goat. However, the reduction of the pasture area, reduction of the agriculture and pasture mosaic, and the reduction of crop production as shown, offers evidence that the dynamics of use and occupation in Peçanha municipality has been interfering in the agricultural production of the municipality, even with livestock showing signs of growth (Table 2).

What draws attention in Table 2 is the increase in forestry products, such as the production of wood logs for other purposes, charcoal, eucalyptus firewood and wood logs for paper and cellulose, which proves the data in Table 1 and Figure 2.

As the wood production in the cellulose industry areas is not available in the IBGE database, it was necessary to analyze only the data provided by the cellulose industry present in Peçanha municipality, in order to better understand the dynamics of land use and occupation in the municipality.

Through these data it can be seen (Table 3) that the planted forest area in Peçanha municipality is divided into three groups: (i) forests planted by the cellulose industry in their own areas, (ii) forests planted by rural producers in partnership with cellulose industry through forestry fomentation, and (iii) forest planted by rural producers independently, with production destined for the production of charcoal and for other purposes.

**Table 3 - Panorama of land use and occupation by planted forests in Peçanha municipality**

Year	Planted forest area by the cellulose industry (*)		Planted forest area by the Forest Fomentation Program (*)		Planted forest area for other purposes		Total Planted Forest (**)	
	Hectares	%	Hectares	%	Hectares	%	Hectares	%
	2006	8,426.34	86.71%	538.22	5.54%	753.48	7.75%	9,718.04
2016	8,992.90	66.73%	892.42	6.62%	3,592.16	26.65%	13,477.48	100%
2017	8,988.24	64.37%	1,153.14	8.26%	3,821.69	27.37%	13,963.07	100%

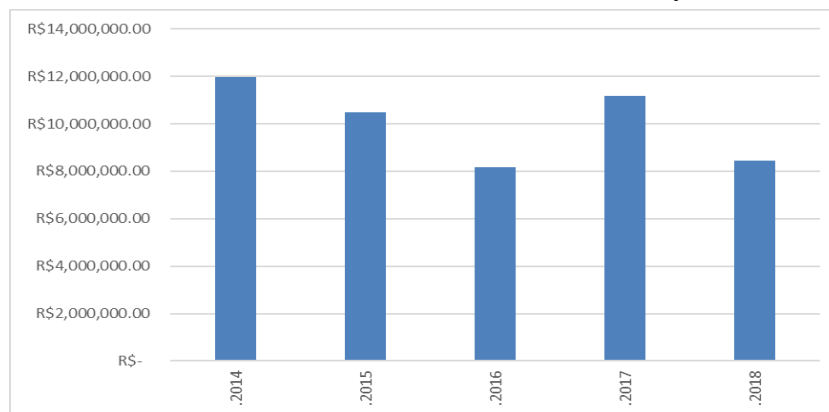
Source: Developed by the author on data provided by \*CENIBRA (2019) and \*\*MapBiomass (2019).

It can be observed (Table 3) that the planted forest area of the cellulose industry showed little change from 2006 to 2017, whereas the planted forest areas of rural producers have been increasing in the same period. Regarding the planted forest within the forestry fomentation, there was an increase of 114.25% in 11 years and the planted forest for other purposes increased 407.21%, which demonstrates the great interest of producers in forestry in Peçanha municipality. These data contribute to explain the increase in forestry products presented in Table 2, such as the increase in the production of wood for other purposes and the charcoal production.



The increasing interest of rural producers in forestry helps to understand the dynamics of land use and occupation in the municipality where areas of pasture and agriculture have been replaced by planted forest. One of the results of this interest can be seen in Figure 3, which shows the amounts paid to rural producers who promote forestry and who sold wood to the cellulose industry from 2014 to 2018. Note that, per year, more than R\$ 8 million are paid by the cellulose industry to Peçanha producers, which contributes to the development of the families of the fomented producers. The amounts paid for the sale of charcoal and other forestry items that have the potential to contribute to local development can be added to these values.

**Figure 3** – Values collected by the fomented rural producers in Peçanha municipality from the sale of wood to the cellulose industry



Source: Developed by the author based on data from CENIBRA (2019).

It is worth highlighting that these values (Figure 3) were paid only to producers who delivered wood to the cellulose industry in the years from 2014 to 2018. This shows the economic importance of the wood traded by the fomented producers and how it can reflect on the social and economic issues of the producers and the municipality.

The relevance of the partnership between rural producers and the cellulose industry for the production of wood can be evidenced in the interviews carried out with the fomented producers, which can be confirmed in the report of a producer who represents the speech of the majority of the interviewees: “If it weren’t for the eucalyptus, the rural producers of this municipality would already be broke or would have sold their lands” (Interview with Producer A). Producer A's testimony is reinforced by the report of other producers, who highlight the importance of planting eucalyptus for the production of wood for the cellulose industry as well as for charcoal production.

Among the interviewed rural producers who are part of the cellulose industry forest fomentation program, 63% also plant eucalyptus for vegetal charcoal and 3% plant eucalyptus for wooden fence posts or wood for sawmills, but with plantations still in the experimental stage.

Therefore, it can be verified that the principal destinations of wood produced by the rural producers are for cellulose industry or steel plants. But, independent of the wood destination, it can be observed in the report of all interviewed producers the desire to broaden the planted forest area, especially in areas in the forest fomentation program of the cellulose industry. This



desire is perceived in the testimony of Producer B, which includes the report of the other interviewees: "The good thing about charcoal is that we can have money all year around, but the problem is that the price oscillates a lot and sometimes it is not worth making it. Now the good thing about wood from the fomentation program is that we already have a guaranteed buyer and receive the money all at once at the end of the contract, therefore we can program and invest the money better, [...] the problem is that the enterprise does not buy the wood that we plant outside the forest fomentation program and we have difficulties to make new contracts, [...] I wish the enterprise made an annual contract with me" (Interview with Producer B).

The statement of Producer B and the guaranteed wood purchase established by the forest fomentation contract, reinforced by the values in Figure 3, can be reaffirmed by Erthal (2006), Espíndola (2008) and Mengel and Aquino (2011), emphasizing that the guarantee of the sale of their products has been one of the main advantages pointed out by the rural producers who participate in the forest fomentation program.

The majority of the fomented rural producers also have eucalyptus forests destined to vegetal charcoal production. There is an enthusiasm for rural activities with regard to forestry. However, we note his discouragement regarding agriculture: "I don't know what would become of us if it weren't for the eucalyptus, for there is no rain to cultivate. The situation is so complicated that in many places there isn't even water for drinking. What has kept the money for expenses is the money from charcoal and cattle, but what really is a life saver is the money from the forest fomentation program, with it we can even dream". And he complements saying: "Everybody here is afraid of losing the forest fomentation contract" (Interview with Producer C).

Through the data analyzed (testimonies and data from IBGE and the cellulose industry), it is possible to understand the apprehension of the producers regarding the loss of the forest fomentation contract, not only by guaranteeing the sale of the wood, but by having in eucalyptus a great business opportunity, both for the market and for the water issue which hinders the development of other agricultural activities and can lead to poverty in rural areas.

This situation calls attention because the dynamics of land use and occupation is accompanied by a change in agricultural production in the municipality, showing the participation of rural producers in the increase of planted forests in it.

#### 4. CONCLUSIONS

The increase in the areas destined to forestry to supply the cellulose and steel industries in Peçanha municipality- Minas Gerais, is directed to the occupation of pasture and agricultural areas. There are possible impacts on the agriculture, such as the reduction of crops in the municipality.

The growth of planted forests occurs in the areas of the private enterprises as well as in the rural producers ones. However, the municipality presents few rural producers with plantations destined to the productions of logs and wood for the sawmills.



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The municipality presents a forest culture in expansion indicating that the rural producers recognize the benefits provided by forestry and manifest interest in increasing plantations and participating in the forest fomentation programs.

The research offers important arguments for the debate in the public and private sectors concerning the increase of the rural producers' participations in the wood production for the forest sector. There is also the opportunity of further deepening in the questions related to the socioeconomic influences of the forest production and developing programs in the rural communities.

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