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The expansion of Eucalyptus Farming on the Planalto da Conquista and the monoculture implementation models.

La expansión del cultivo de eucalipto en lo Planalto da Conquista y los modelos de implementación de monocultivos.

A expansão da eucaliptocultura no Planalto da Conquista e os modelos de implantação da monocultura.

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Abstract

The Planalto da Conquista, located in the Southeast of Bahia, Brazil, has a strong demand for wood for industrial and civil construction activities, leading to the consumption of part of the native forest leading to the adoption of containment policies through reforestation projects implemented in two models: fostered and independent. The article presents the models, evolution, expansion, current situation and future prospects. The methodology deals with old and recent plantations mapped by satellite images with the areas of the models. In spite of the environmental and social issues that involve eucalyptus farming, such as the concentration of land, the equalization of the landscape and the very short production chain, offering low employability, we seek to point out that the current situation is based on the current situation in the country.

Keywords: Planalto da Conquista; Eucalyptus; Forest promotion; Deployment models.

Resumen

El Planalto da Conquista, ubicado en el sudeste de Bahía, Brasil, tiene una fuerte demanda de madera para actividades industriales y de construcción civil, lo que lleva al consumo de parte del bosque nativo llevando a la adopción de políticas de contención a través de proyectos de reforestación implementados en dos modelos: fomentado e independiente. El artículo presenta los modelos, la evolución, la expansión, la situación actual y las perspectivas futuras. La metodología se ocupa de plantaciones antiguas y recientes mapeadas por imágenes satelitales con las áreas de los modelos. Pese a los problemas ambientales y sociales del cultivo del eucalipto, como la concentración de la tierra, la igualación del paisaje y la cadena productiva muy corta, con baja empleabilidad, señalamos que la situación actual se basa en la del país.

Palabras clave: Planalto da Conquista; Eucalipto; Desarrollo forestal; Modelos de implementación.

Resumo

O Planalto da Conquista, localizado no Sudeste da Bahia, Brasil, tem forte demanda por madeira para as atividades industriais e da construção civil, levando ao consumo de parte da floresta nativa levando a adoção de políticas de contenção por meio de projetos de reflorestamento implementados em dois modelos: fomentados e independentes. O artigo apresenta os modelos, evolução, expansão, situação atual e as perspectivas futuras. A metodologia trata dos plantios antigos e recentes mapeados por imagens de satélite com as áreas dos modelos. A despeito das questões ambientais e sociais que envolvem a eucaliptocultura, como a concentração de terras, a igualização da paisagem e a cadeia produtiva bastante curta, oferecendo baixa empregabilidade, busca-se, aqui, apontar que quadro atual analisando modelos adotados

Palavras-chave: Planalto da Conquista; Eucaliptocultura; Fomento florestal; Modelos.

Introduction

The agrarian problem has been the stage for discussions in the Brazilian countryside in recent decades, with different nuances. The evidence pointed to the countryside in Brazil shows that the situation tends to contradict what has been called the "expansion of the agricultural frontier". According to the Basic document of the REPENSA BRASIL Project, prepared by CNPQ (2009), for the expansion of Rural Research Networks, the estimate, provided that the current rates of expansion of demand and productivity are maintained, by 2050, is that more than 1 billion hectares of natural ecosystems will be destroyed for agricultural purposes. The document mentions that all over the world, and particularly in Brazil, the indication is of the evolution of predatory and degrading activities, beyond fertile lands, to so-called "marginal" lands or with climatic limitations, such as the Cerrado and the Caatinga.

The numbers for the future of the countryside are impressive, pointing to an expansion for arable land, considering the discourse that Brazil, by adopting innovative technologies, combined with the availability of land, and having diverse and favourable climates, becomes the largest park – *major player* – of the world's agribusiness. This framework includes, for the maintenance of the steel park, the production of pig iron to a greater degree, followed by the pulp and paper industry and, to a lesser extent, the furniture industry, the "forest plantations", of *pine* and eucalyptus. In this context, eucalyptus cultivation is part of this process, all over the world. Brazil, the seventh country in monocultures for wood production (FAO, 2010) and the first in eucalyptus production (GTY, 2012) has adopted the model of large projects, involving large companies in the pulp and paper sector and steel mills. It should be noted that for the pig iron industries, the insertion of blast furnaces with electricity has not yet reduced the consumption of charcoal, which, together with mineral coal, is responsible for the production of "*coke*" applied in oxidation reduction to produce steel.

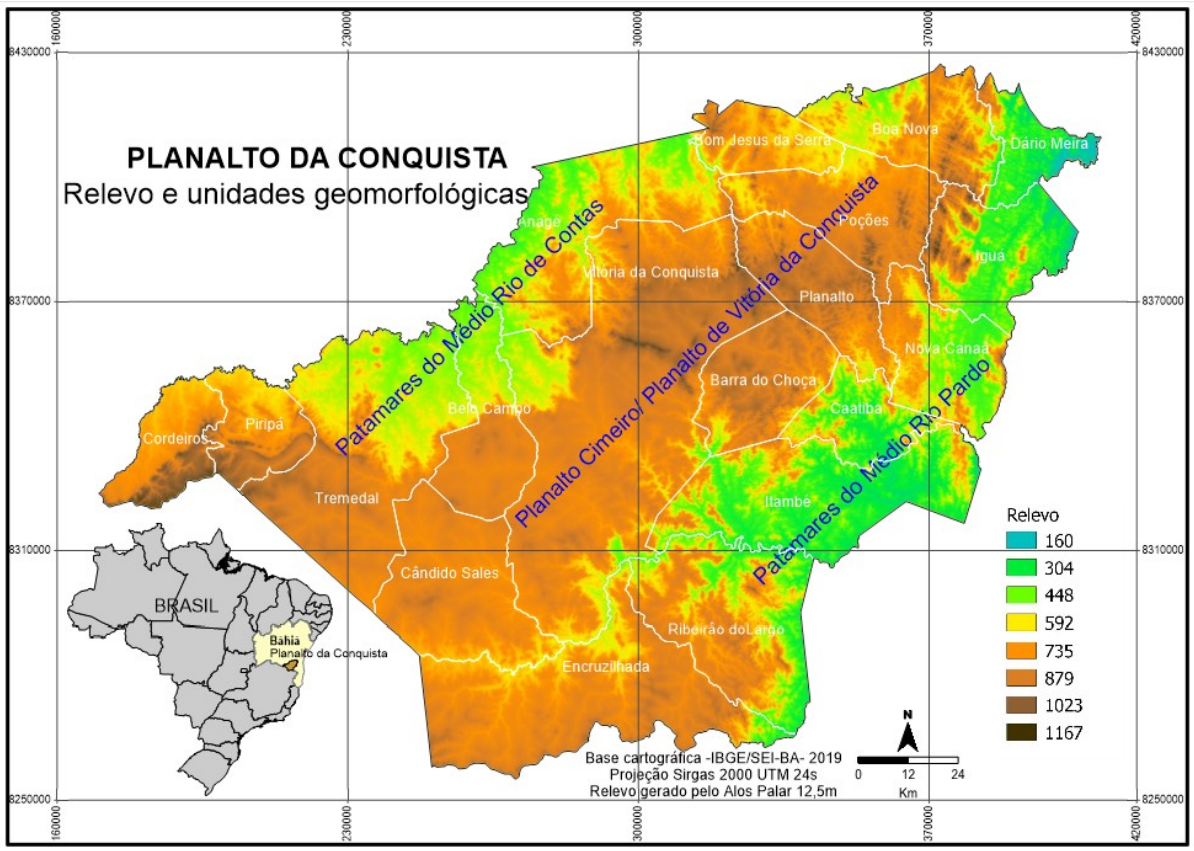
In Bahia, the arrival of eucalyptus cultivation in the 1970s marked the occupation of the territories of the Northeast and South of the state, resulting in the densification of plantations and land concentration. In the Planalto da Conquista, in the southeastern region of the state, eucalyptus arrived in the mid-1990s, in an agrarian structure of small and medium-sized properties, with an emphasis on family farming, with a model of implantation of cultivation in a differentiated way, adopting the model of forest promotion, evolving to independent planting. (OLIVEIRA, 2012) Thus, the article presents the models of implantation and implementation of eucalyptus cultivation in the Planalto da Conquista pointing out the evolution, the forest policies, and the current situation.

The Planalto de Conquista has as its nodal centre the city of Vitória da Conquista, which is positioned as an area of direct influence. Initially with twelve municipalities, it was expanded due to studies and planning, moving to 19 municipalities that make up the regional cut, totalling the study area of the order of 21,315 km^2.

The research took into account the continuation of the Geraízinhos Plateau, the geomorphological name of the continuation of the Brazilian plateau (plateaus and mountains of the east-southeast Atlantic), bifurcating in the formation to the Chapada Diamantina, which comes from the Center of Minas Gerais to the Southeast of Bahia formed by the

Summit Plateaus, according to the IBGE map (2002), and runs along the entire length of the interfluves of the Jequitinhonha and Pardo rivers. In Bahia, the portion of the Geraizinhos Plateau demarcates the geomorphological division at the interface of the Inhumed or Summit Plateaus. Soares-Filho (2000) characterized it as a region of interfluves between the basins of the upper and middle Rio Pardo, whose tributaries bathe its southern portion, called by the RadamBrasil Project Patamares do médio Rio Pardo; the basins of the middle Contas River, whose tributaries bathe its northern portion, bordering the Maracás-Jaguaquara Plateau that forms the Patamares of the middle Contas River and the basin of the upper Colônia River to the northwest. In environmental terms, the Planalto da Conquista (map 1) presents itself as an ecotone, an area of climatic transition that goes from humid to the south, subhumid in the centre and semi-arid to the north, which requires different crops and cultivars that adapt to the climatic contours.

Map 1- Location and geomorphological characterization of the Conquista Plateau References



Source: Oliveira (2023)

It is in this spatial context that studies outside those established by official regionalization are focused, as it brings peculiar economic characteristics that, in the primary

sector, focus on the production of coffee, livestock and short-cycle crops, and in the secondary and tertiary sector the advances in the supply of health and education services with a wide expansion and an evolving industrial dynamic increases the demand for wood products in addition to the supply for other areas. Map 1 shows the location of the Conquista Plateau, the geomorphological identification, and its respective municipalities.

Theoretical Approaches

The process of implementing eucalyptus requires long-term research, since it is a medium to long cycle crop. In the Planalto da Conquista, there is a lack of a more general view on the subject. In this article, academic production was privileged in three segments: What involves research in the more technical area, the critique of the ways of implanting culture, and the idea of implantation models.

In the more technical field, to seek technological validations, research such as that of Magalhães (2013) evaluated the performance of seven hybrid clones *of Eucalyptus* sp. in the edaphoclimatic conditions of the municipality of Vitória da Conquista – BA. Sales (2018) also evaluated the silvicultural practices used in eucalyptus in the municipality of Cândido Sales – BA to identify soil preparation, the use of conservation practices, seedling production, species used, planting time, planting method, spacing, maintenance treatments, special silvicultural treatments, harvest time, occurrence of pests and diseases. Rocha (2016) developed research to survey the entomofauna in *Eucalyptus* spp. plantations in the region and identified the main orders and families occurring, testing three different collection methods for the orders of importance for eucalyptus. Novaes et al. (2005) worked with the survival rates of *Eucalyptus citriodora* Hook species.*; Eucalyptus tereticornis* Sm.*; Eucalyptus urophylla* S. T. Blake*; Eucalyptus camaldulensis* Dehnh.*; Eucalyptus robusta* Sm.*; Eucalyptus urograndis and Eucalyptus cloeziana* F. Muell, three months after planting.

In the most critical field of the process of implementing eucalyptus cultivation in the Planalto da Conquista region, studies by Viana (2021) stand out, in which he analyses class and environmental conflicts of interest in the Pardo River Basin, with a focus on eucalyptus monoculture. Santos (2020), analyses the territorialization of capital and the expansion of eucalyptus in what he called the process of peasant expropriation. Andrade (2015) discusses the process that results in the socio-environmental conflicts related to the eucalyptus

monoculture in the Planalto da Conquista region and points out the strategies of resistance and confrontation of groups and social movements to the process of expansion of eucalyptus cultivation. Oliveira, (2012) defended the thesis on the implementation of eucalyptus cultivation, in a broader way, approaching from the global, national and regional market to the context of the Planalto da Conquista, discussing the difference between silviculture and the criticism of "planted forests" pointing to the particularity of the implementation, in the market, through forest promotion compared to the south of the State of Bahia, that implemented large-scale monoculture, and with broad support from capital and public authorities.

The implementation of eucalyptus farming refers to the issue of economic models. In this sense, Lacerda (2022, p. 47) addresses the topic by highlighting that the "energy production of eucalyptus biomass is a model to be expanded and intensified, since its use also contributes to reducing the use of wood from native forests". Oliveira and Pinto Junior, after addressing statistical and climatic models and the use of modelling software applied to eucalyptus farming, bring the model as a form of implementation for small producers. It expands to the models of forest recovery by proposing the model of local productive arrangements. Some models pointed out for eucalyptus cultivation bring the form of plantations in a detailed way, while others in a more comprehensive way, such as Venturin et al. (2010), who present several models of crop implementation, more specifically for agrosilvopastoral systems.

Forest promotion models are linked to large companies producing pulp and paper or to the production of wood and charcoal, in many cases, by government agencies. Diesel et al. (2006) highlights the promotion as an interesting model for the "small producer" since it does not require economic compensation. In the same direction, Alves (2020) treats as a model the process of implementing silviculture used in the forestry promotion programs of industries.

A study on fostered and independent eucalyptus cultivation carried out by Oliveira (2012) shows the process of implementation and implementation, highlighting the Forest Promotion Program and the initiatives of independent producers. Alves (2020) makes a comparison between fostered and independent producers and points to the definition of independent eucalyptus growers as those who do not participate in the development models, with emphasis on indicators, especially the Silviculturist Producer Index (IDPS). In

this context, it points to the adoption of an implantation model, as the beginning of cultivation and implementation as a process.

In the field of the application of geotechnologies, satellite images for studies of silviculture and "planted forests" have been widely used for territory prospecting, planning and calculation of biomass, among others. Barros et al. (2021) developed research to calculate forest volume with multispectral images from the Landsat 5/TM series, with field support and statistical methods. Nonato and Abreu (2020) evaluated the accuracy, classification, and identification of eucalyptus areas using Landsat 5 images, with satisfactory results for planning and management.

In the institutional field, Buschinelli and Costa (2021) conducted studies in which they produced land use maps, with a focus on eucalyptus, as a biomass support for meatpacking plants in the Rio Verde region, based on Landsat8 OLI satellite images through the *Google Earth Engine* (GEE) platform, verifying the growth of the planted area.

Methodology

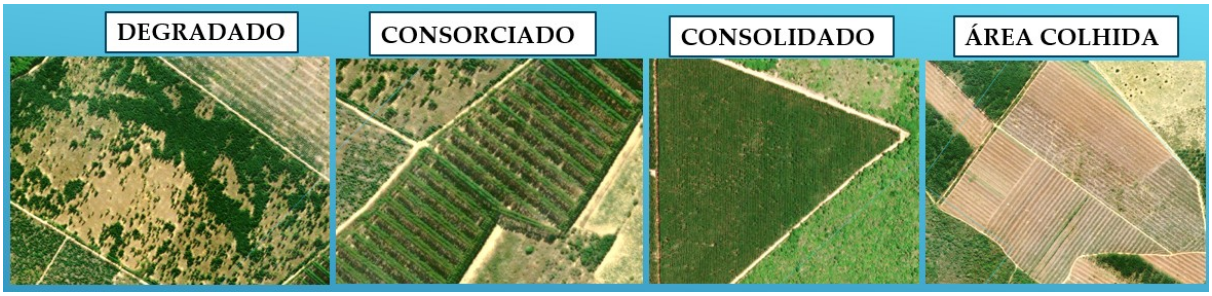
The methodology adopted is divided into two parts: The first surveys between 1997 and 2007, when Eucalyptus Farming was implemented in the forest promotion model followed by the so-called independent model and the update of the state of the crop based on the year 2021. Through the Geographic Information System for the research, it sought to insert the matrix data and vectors for the mapping in the municipal area of the Planalto da Conquista.

The first surveys for the promoted plantations were carried out based on the Reports of the Association of Steel Mills for Forest Development (ASIFLOR) and the Association of Forest Replacement of Southwest Bahia (AFLORE), which contain the criteria of the forest promotion contract, the geographical positioning in UTM coordinates with sketch and the monitoring criteria. The data extracted from the Reports resulted in the summary tables of the areas of the properties, by agricultural year, and of the eucalyptus plantations executed, by property, for each agricultural year (in ha). The independent plantations were identified by the Association of Foresters of Southwest Bahia (ASSOSIL), interviews in the field and the registration of licenses of the Secretariats of the Environment of the municipalities.

For the current mapping, it was used some *Google Earth Engine* (GEE) images from MapBiomas, Collection 7, ID 9, which identifies silviculture in the year 2021, used only to identify the planted areas, since the spatial resolution of 30m makes it difficult to calculate the areas. For the overview and future projects, scenes from the Landsat 8-OLI satellite bands 4, 3 and 2 were used in natural colours and bands 5, 4 and 3 to extract from the infra-red vegetation with supervised classification for forestry.

In view of the dualities of delimitation and calculation of the planting areas, it was decided to digitize them on satellite images of CBERS 4B, bands 4, 3 and 2, with 8 m of spatial resolution. For the primitive areas of the implementation of the fostered and independent models, the remaining plantations and the abandoned plantations were verified. The update maps were executed in four classes: consolidated, degraded, intercropped eucalyptus and harvested area, as shown (Card image 1).

Card image 1- Class of eucalyptus plantations according to their characteristics



Source: Geoprocessing data from Cbers satellite images (2007-2021)

The implantation and implementation of eucalyptus farming

The first eucalyptus plantations on the Conquista Plateau date back to the 1950s and 1960s, particularly in the urban area of the city of Vitória da Conquista, a time when it was common to plant the *citrus* species (commonly known as tame eucalyptus or tea eucalyptus) in several municipalities for medicinal purposes. According to Oliveira (2012), outside this period, there is no record of plantations for commercial purposes or for use on the properties, as well as for the consumption of firewood. Some seedlings were disseminated throughout the municipalities of the Planalto da Conquista, without, however, representing effective plantations. The energy base, directed to the consumption of wood, was maintained, even in the industrial area, based on the consumption of native wood,

particularly from the Cipó Forest, taken from the subhumid region of the Plateau, and wood for sawmills, taken from the forests of the eastern slope.

To this end, this article presents the models implemented for the Conquista Plateau in two modalities called "fostered" eucalyptus growers for the duration of the agreement between ASIFLOR in the form of forest development, which comprises between 1997 and 2007, and the independent eucalyptus growers, with data collected in the interviews and positioned in the 2009 satellite image.

With just over 700,000 seedlings**, the** first plantations involved traditional farmers in the region, linked to coffee production and livestock. The reports show that the first plantations were made with seedlings from the Northeast of Bahia, from the company COPENER, with initial areas of small lots. This phase marks the beginning of eucalyptus cultivation**,** with the approval of the State, without, however, being preceded by studies and technical assistance. According to one of the first producers, in 1984 the first planting of 20 hectares was carried out. In the new phase, they claim that the first plantings were carried out by "trial and error", in December 1996, under heavy rain. In 1997, he planted 9 hectares, with total loss, and in 1998, he planted again, already with some success. (OLIVEIRA, 2012)

The model of fostered plantations

The process of expansion of eucalyptus cultivation takes place, at first, from the Normative Instruction 001, of 1988 of the State of Minas Gerais, which obliged the Steel Mills to self-sufficiency in forest products, led to the implementation of the Forest Promotion Program, aimed at associated rural producers and the fulfilment of other demands for the formation of "planted forests" in the region. The associations operationalized the mechanism for the delivery of seedlings and inputs, at no cost to the interested party, via forest promotion in the form of Forest Replenishment. It is in this context that the crop emerged as agribusiness and presented itself as a new segment in the region, with forest promotion projects initiated between 1997 and 2007. The implementation in the field provided for planting in 3 x 3 spacing, totalling 1,111 seedlings per hectare. Subsequently, the culture advances with small and medium-sized farmers, in the independent model of the promoting associations.

Tables 1A and 1B show the evolution of the planted area by agricultural year. It is observed that, of the area planned for planting of 9,339 hectares, only 0.26% was not executed. The decline in 2007 marks the beginning of the world economic crisis, culminating in 2008, when there was a reduction in world production of steel and pig iron, and China's entry into the world market for iron production. Table 1B shows 166 projects, so 1 more, as it was implemented later.

Frame 1A - Area of properties, according to Eucalyptus Forest Replacement Development Projects, by agricultural year (in ha)

1997/ 1998	1998/ 1999	1999/ 2000	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006 /2007
523	50	89	283	89	316	316	469	326	62
469	49	252	120	60	88	206	615	22	200
316	128	59.3	469	88	615	615	323	261	697
690	323	140	140	140	495	495	154	203	154
690	336	140	40	243	85	171	230	91	93
NI	130	60	52	40	243	52	325	40	224
	300	283	89	469	160	160	206	17	155
	50	469	60	283	120	283	422	75	90
	80		60	171	469	203	690	1.200	90
	89		59	230	325	469	283	700	155
	469			120		325	469	99	57
	6			150			40	128	483
	140			316			128	155	1.764
	685						90	50	1.913
	460						243	469	813
	57						74	40,9	118
	503						91	151	390
	80						203	813	882
							1.250	283	230
							171	263	325
							160	350	154
							882	38	45
							495	1.675	40
							1.675	338	74
								21	
								218	
								206	
								79	
								675	
								390	
								882	
								160	
								1.000	
								230	
								657	
								325	
								316	
								120	
								393	
								154	
								74	
								18	

1ª. Fase 5	2.a Fase 70 Projetos							3ª. Fase 90 Projetos
NI – Projeto com área não identificada								
6	18	8	10	13	10	11	24	42	24

Intervalos e quantitativos de projetos por classe segundo a propriedade (em ha)							
0 a < 10	10 a < 50	50 a < 100	100 a < 200	200 a < 500	500 a < 1000	> 1000	Total
1	16	32	31	59	19	7	165

Frame 1B – Eucalyptus plantations carried out, by property, for each agricultural year (in ha)

1997/ 1998	1998/ 1999	1999/ 2000	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007
25	5	25,7	4,08	5,92	6,71	22,67	19,66	39,47	4,36
15	6	15,74	19,68	30	5,05	33,17	218,99	4,7	9,22
42	7	12	14	8,13	42,66	90,43	21,96	45,3	23
15	25	8,4	17,74	17	19,51	27,66	13,48	2,33	28,9
25	7	19,3	4,30	6,4	12,62	17,78	7,2	5,5	74,38
25	23	18,44	9,79	11,35	14,49	10,01	106,85	21,6	68,47
147	1	12,3	8,36	8,48	13,57	27,84	101,7	3,9	15,42
	13	22,3	11,89	6,55	7,65	20,88	77,36	10	20,61
	7	134,18	11,7	14,63	8,06	41,82	90	530,9	21,79
	7		11,36	4,4	37,22	9,2	21,03	560,46	30,71
	12		112,9	8,07	167,54	109,89	17,12	11,1	35,32
	4			9,11		411,35	12	28,9	18,53
	4			10,34			21,15	20,15	1.000,00
	25			140,38			10,31	21	152,14
	12						22,24	23,7	323,5
	4						26,15	23,76	95,48
	15						13,26	121,48	125,81
	1						58,5	191,10	251,17
	178						58,5	30,53	104,23
							34	59,85	83,77
							14,32	42,32	34,58
							55,09	3	6,29
							33,93	1.000,00	25,16
							1.020,44	21,12	61,88
							2.075,24	8,53	2.614,72
								24,6	
								26,24	
								55,4	
								23,49	
								72,5	
								67,79	
								15,12	
								20,31	
								43,45	
								12,45	
								24,44	
								4,33	
								45,01	
								20,29	
								21,1	
								14,31	
								14,7	
								3.336,23	

1ª. Fase 6	2.a Fase 70 Projetos						3ª. Fase 90 Projetos		
6	18	8	10	13	10	11	24	42	24

Síntese das áreas plantadas segundo intervalos de classe em h. ST = 10.387 hectares									
Até 1	1 a < 10	10a >20	20a >50	50>100	100 a > 200	200> 500	500 a > 1.000	> 1.000	Total
2	41	44	48	15	8	3	2	3	166

Source: Project Monitoring Reports – ASIFLOR. Organized by the authors (2023)

Although some crops presented problems in the initial phase, due to lack of knowledge on the part of the producers, all the projects followed the technical indications to recompose the areas that presented crop problems, avoiding the non-compliance with the replacement bond with the regulatory agency and the company that requested the forest replacement.

The Table 2 shows the quality of eucalyptus, culminating in the improvements in the 2005/2006 and 2006/2007 growing seasons. The quality of the forest development plantations

made by ASIFLOR/AFLORE points out that the quality of the eucalyptus varies from excellent, with 38.55% to 50.60% good, which benefits the regional market in terms of quality. It is noteworthy that the year 2004/2005 was affected by drought in the region, although advances in technological validation pointed to an improvement in planting.

Table 2 - Progress in planting conditions according to technical evaluation

Planting Condition	1997/ 1998	1998/ 1999	1999/ 2000	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	Total
Very good	1	6	1	3	3	0	3	5	29	13	64
Good	4	8	4	6	10	7	6	17	11	11	84
Regular	1	4	3	1	0	3	1	2	2	0	17
Bad	0	0	0	0	0	0	1	0	0	0	1
Total	6	18	8	10	13	10	11	24	42	24	166
Location by climate class	Wetlands		Wetlands and sub-humid			Wetlands with Water deficit		Clonals and genetic improvement - wetlands and subhumid			

Fonte: Relatórios de Acompanhamento dos Projetos – ASIFLOR. (2021)

The quality of the projects improved from the 2004/2005 agricultural year, with the planting with clonal seedlings and with the improvements in management, observing planting time, Wetlands and sub-humid selected plants and gel planting.

The model of independent plantations

The category of independent eucalyptus growers reveals the main face of absenteeism, those who own the land, but do not have it as their main activity, who acquire the land for the eucalyptus**, formed by** owners and a few companies that, making available from surplus capital, carried out the plantation. (DINIZ, 1986) The data collected by the satellite image, from the field research and plotting of farms on the base map, indicate 208 plantations, **which does not mean the total number of properties**, **since some of them may have more than one plantation.**

The Table 3 shows the concentration in small farms, since 76% of independent crops are in the range of 1 to 100 hectares. This indicator points to the presence of small production, when compared to the south of the state and other regions, where the expansion of eucalyptus has been continuous and in large spaces.

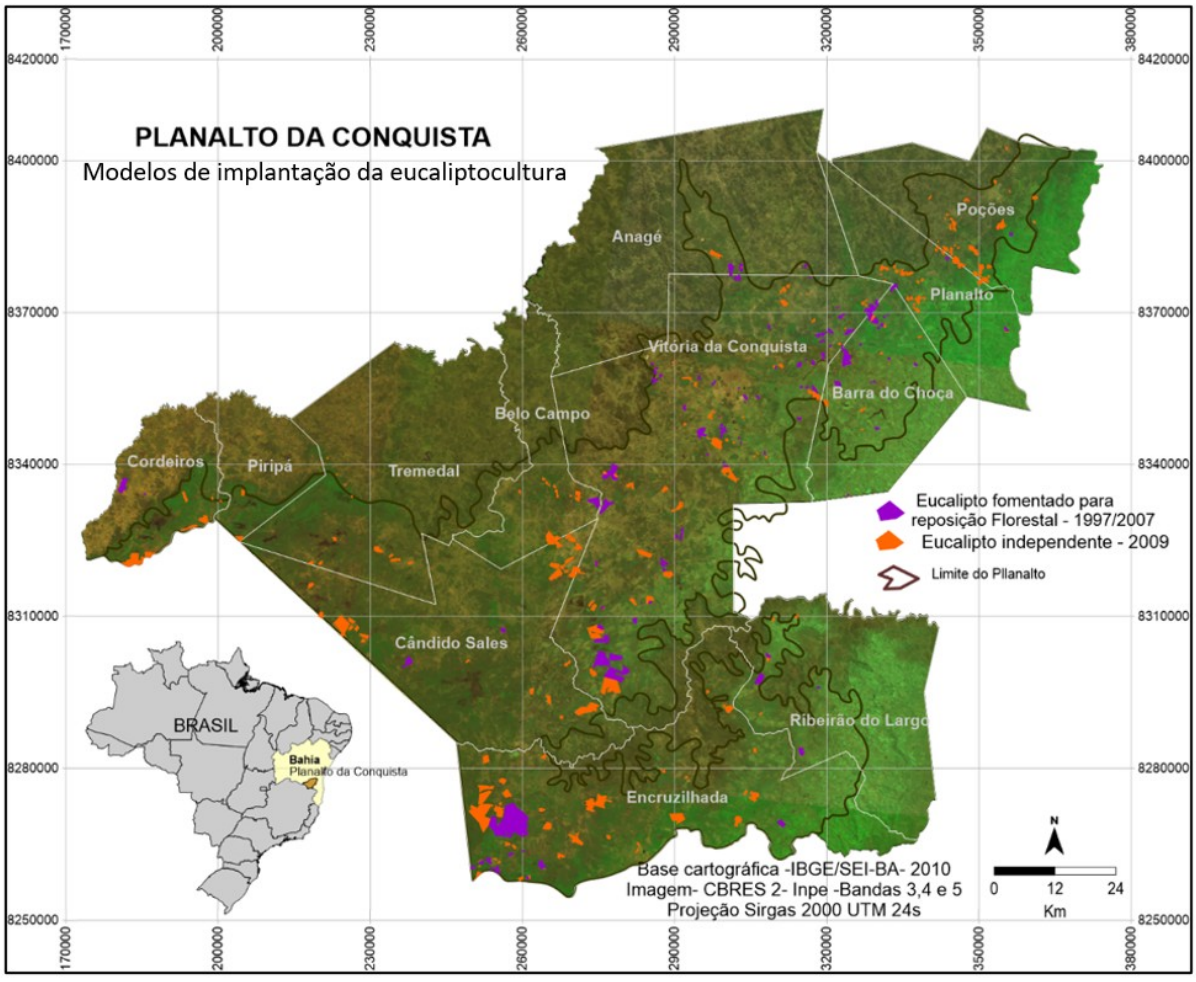
Table 3 - Planalto da Conquista: eucalyptus cultivation by independent producers according to class intervals in hectare and percentage.

ha.	1 to 10	10 to 20	20 to 50	50 to 100	100 to 200	200 to 500	500 to 800	Total
	32	32	59	36	28	13	8	208
%	76				13,46	6,2	3,8	100

Source: Identification in Satellite Image 2009/Fieldwork.

The independent plantations in relation to the development model followed the methodology of insertion of projects elaborated in digital media or identified in satellite images and later verified in the field. Like the model fostered, it did not follow a territorial order showing the dispersion in the region. The image chart (Image chart 2) presents the synthesis of the two models of eucalyptus cultivation implantation in the Conquista Plateau, with the plantations between 1997 and 2007 and the reality in 2009.

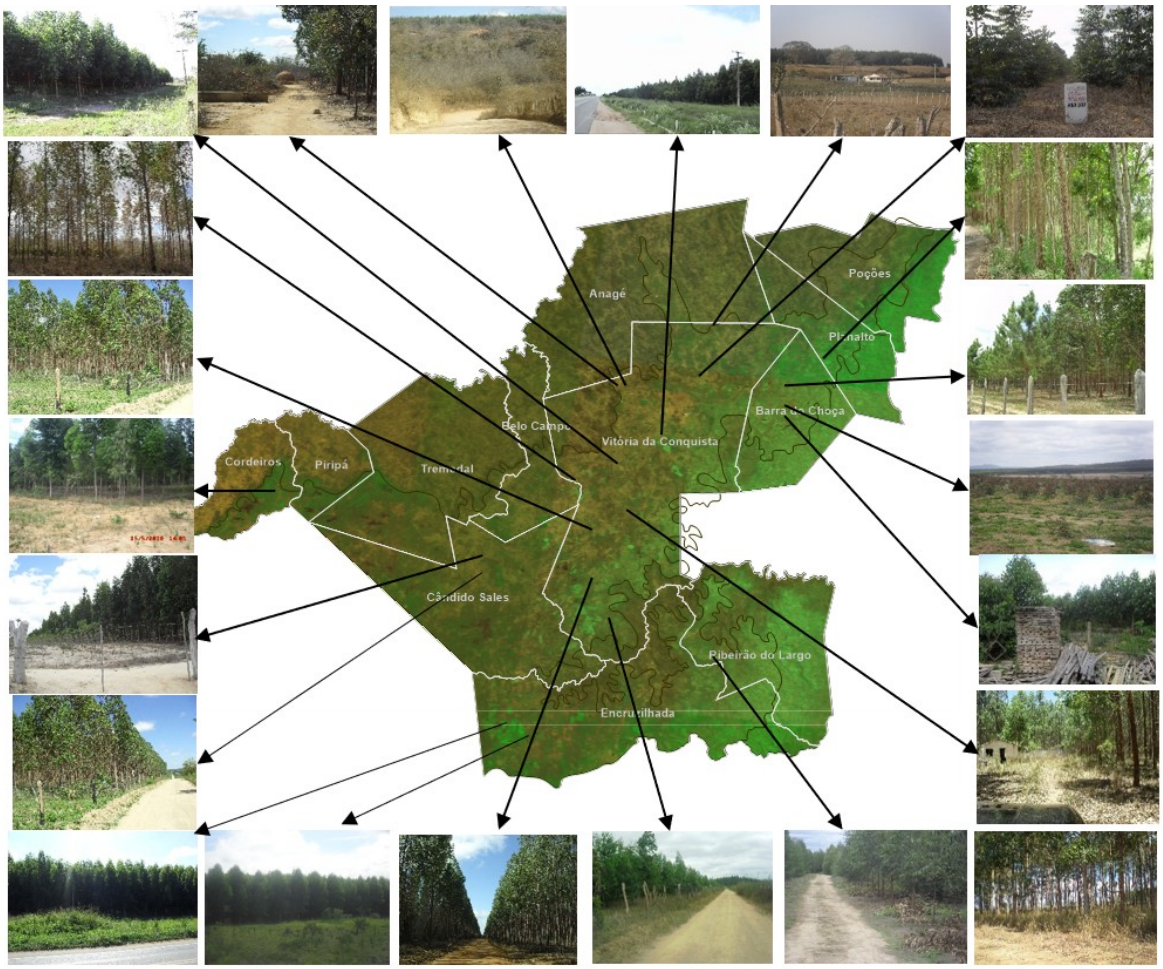
Image chart 2- with evolution between 1997 and 2007 for the fostered model and 2009 for the model and independent implementation



Source: Cbres Image (2007-2011) org. Oliveira (2023)

The visualization of the landscape and the results of the fieldwork, presented in Image chart 3, which shows the quality of the plantations with different results considering the typical environmental changes of the transition region between the humid environment and the edge of the semi-arid.

Image chart 3 - Survey of properties in the three climatic regions



Source: Cbres Image (2011 to 2021) Field work, 2011-2021 photos org. Oliveira (2023):

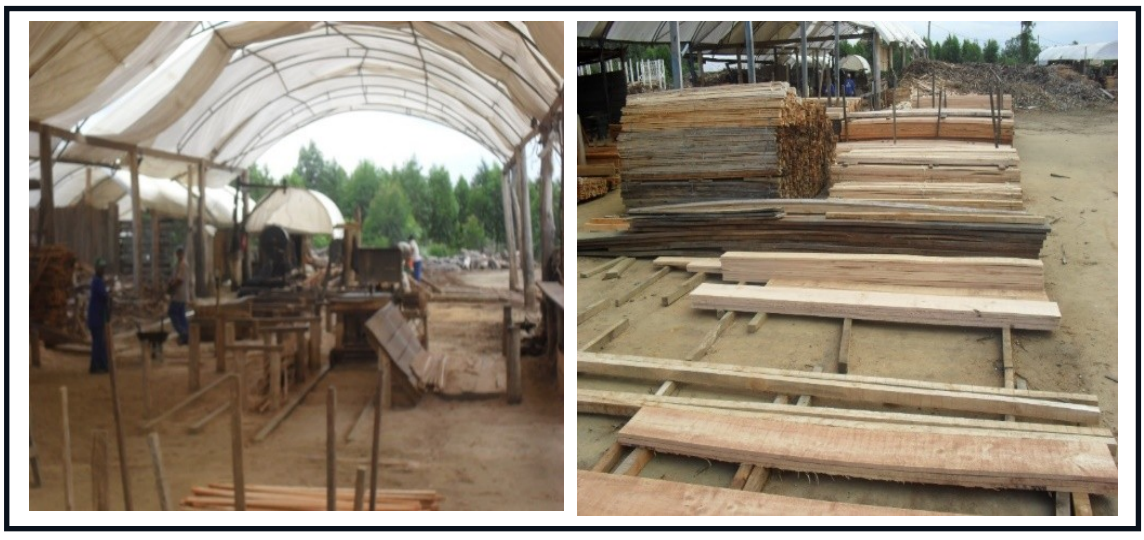
In the marketing plan, the implementation process, verified in the field, did not show the extension of the production chain, often reduced to *commoditization*, with the sale in logs, except for the production of charcoal as shown in **Panel 1**

Panel 1 - Charcoal process – Playpen – In the background, the Vine Forest.

Source: Fieldwork. 2011- Photo: Oliveira (September 2011)

In addition to the production of charcoal for the pig iron producing industries in Minas Gerais, the local demand in the face of the regional economic evolution with the civil construction industry, the expanding furniture industry, and the consumption of firewood for various kilns advanced the implementation of sawmills to meet the demand (panel 2).

Panel 2 - Sawmills established in Vitória da Conquista.



Source: Fieldwork. 2011- Photo: Oliveira (September 2011)

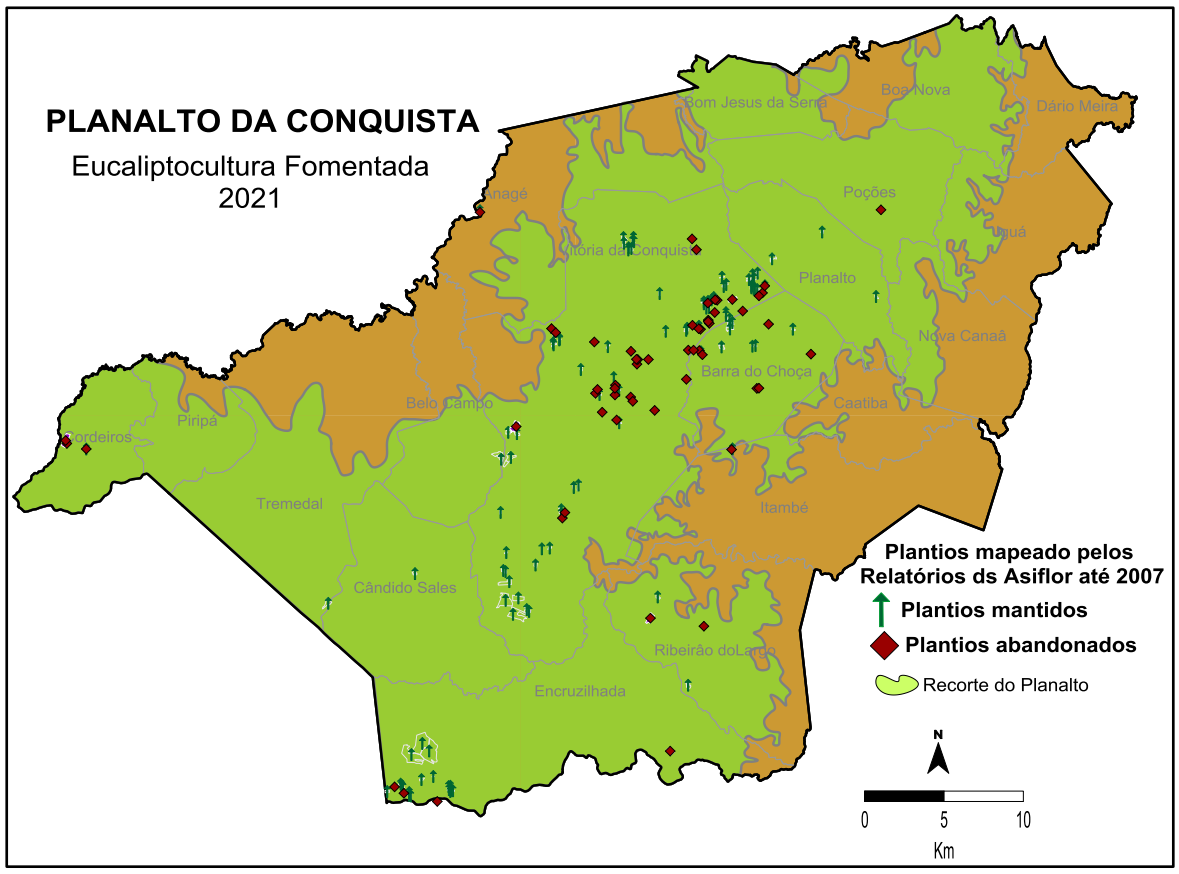
The current framework and perspectives of regional Eucalyptus Farming.

Agriculture in Planalto da Conquista is based on four pillars: family farming with a focus on short-cycle crops: livestock, which dates to colonization; "cassava" farming, especially with the heating up of biscuit production; coffee, implanted in the 1970s, and Eucalyptus Farming, expanding. The search for the Geographical Indication (GI) for

specialty coffees and the production of biscuits that demand cassava plantations led to a change in the research space, expanding the area of operation. Thus, it goes from 15 to 19 municipalities that includes the complete set of the Summit Plateau that forms the Conquista Plateau.

By revisiting the models of implantation and implementation of eucalyptus farming, it was identified in the digital processing of satellite images the current plantations for comparison of the initial models through the supervised classification of the images as well as the direct digitization for the safe calculation of the areas. The forestry development model finalized in 2007 points to the maintenance framework only on large properties. Map 3 shows the status of the original projects that have been maintained or abandoned.

Map 3 – Situation of eucalyptus cultivation fostered and 2021



Source: Oliveira (2021)

Of the 166 projects implemented by the forest promotion model, 56 did not go ahead, especially in areas close to the edge of the semi-arid region. According to Oliveira (2012), many entered the development project without the market perspective and without knowledge of the plantations, which led to the situation of giving up. Table 4 shows the

number of plantations promoted in 2021. The data on the current situation with a considerable reduction of 66.27% in primary plantations and the number of plantations promoted in 2021.

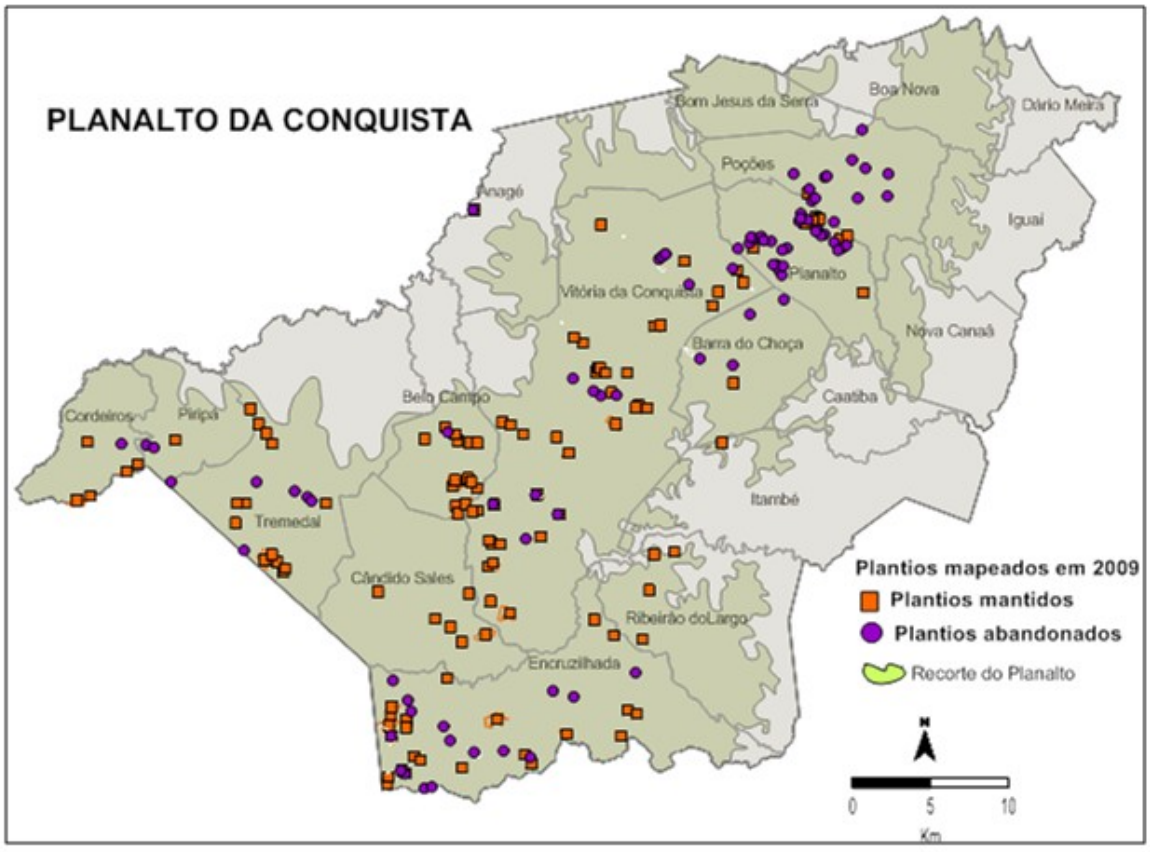
Table 4 - Model of Fostered Plantations between 2007 and 2021

Item	**Area in ha**	%	**Initial Projects**	%
Initial Encouraged	10.387	100	166	100,00
Fostered Maintained	8.546	82,3	110	33,73
Reduction	1.842	17,7	56	66,27

Source: Prepared by the author (2021)

The model of planting independent of forest development, of farmers called absentees, without a direct link to the land, tends to be maintained due to the model of investment in plantations. Map 4 shows the spatialization of maintained and abandoned plantations for the year 2021.

Map 4 - Intendant plantations in 2021



Source: Oliveira (2021)

Thet table 5 shows the number of original projects of the independent model, noting that of the 208 plantations, 124 were maintained, with a reduction of 25.2% of the original projects.

Table 5 - Number of independent plantations in 2009

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Item	Projects	%	Area in ha	%
Initial Projects	208	100	17.933	100
Plantations Maintained	124	74,77	13.408	74,8
Reduction	84	59,62	4.525	25,2

Source: Prepared by the authors(2021)

The summary of the models implemented between 2007 and 1997 and those surveyed in 2019, as shown in Table 6, shows the maintenance of plantations is of the order of 77.5% with a reduction of 6,365 hectares.

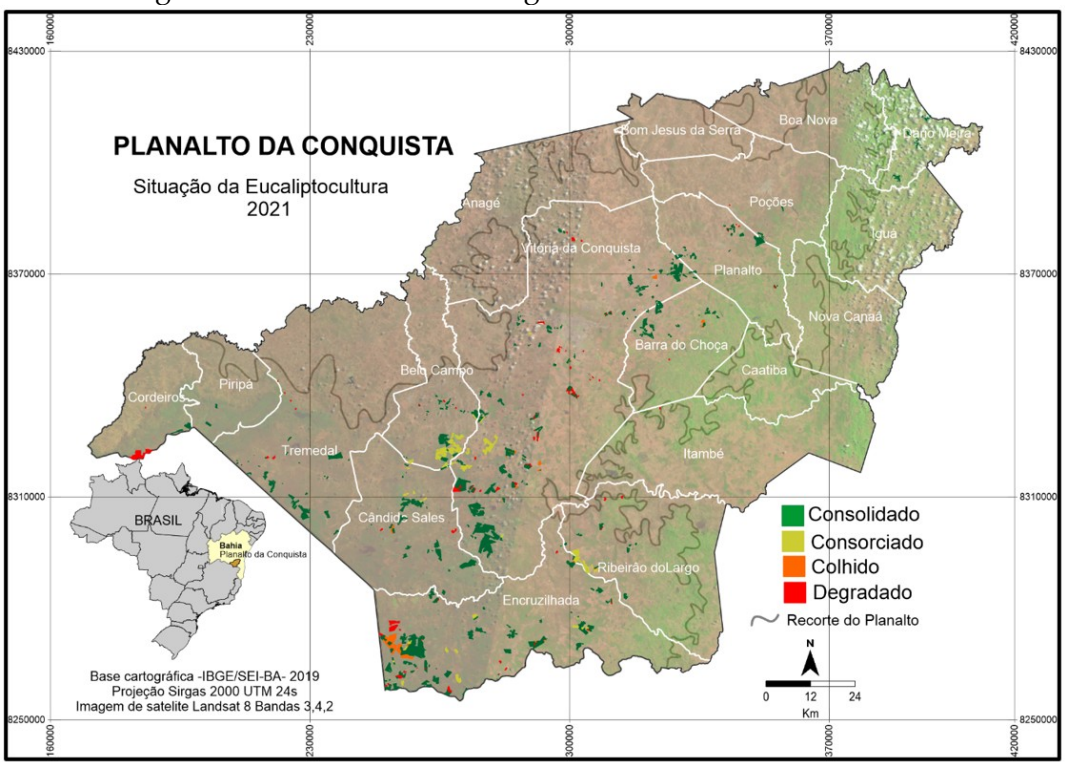
Table 6. Summary of the areas of eucalyptus plantations of the fostered and independent models

Item	Area in ha	%
Total fostered and independent original	28.319,72	100
Total area maintained in relation to 2001	21.953,87	77,5
Total Reduction	6.365,85	22,5

Source: Prepared by the authors(2021)

The spatialization of plantations, in the current framework, can be seen in the image chart (Image chart 3) that shows the situation of plantations in 2021 through the categories of intercropped, harvested, degraded, and consolidated plantations.

Image chart 3- with the categories of plantations obtained in the classification and digitization of the satellite image.



Source: Image LandSat 8 (2007-2021) org. Oliveira (2023)

Considering that even degraded plantations allow the supply of wood and can and are recovered and that the harvested areas are susceptible to new plantations, Table 7 shows a total of 514 plantations with 35,623 ha. of potential production. Although there was a reduction of 2.25% in the planted areas of the initial models, there was an increase in the planted areas considering the categories presented, in the order of 21.9%. The current situation of eucalyptus cultivation in Planalto da Conquista, since the implementation of the models, has had a favourable increase with the increases in plantations beyond the areas of the fostered and independent models, in the order of 45.53%.

Table 7 – Summary of plantation areas in their respective categories in 2021.

Item	Area in ha	Plantations	%
Harvested area	2.063	34	5,8
Consorted	4.447	47	12,5
Degraded	3.944	84	11,1
Consolidated Plantations	25.169	349	70,7
Total	**35.623**	**514**	**100**

Source: Prepared by the authors (202)

The change in wood production in the Planalto da Conquista region advances in the face of the demand for products for the various branches that consume. In this sense, research and technological validations for the regional context have advanced, as well as projects and research that refer to the good use of the soil, observing the regional agrarian structure and its strong base, family farming in order to avoid the purchase and concentration of land, common in monocultures and which, although there have been purchases of land, in the region, it was as in the cases of the south and northeast of Bahia.

Final considerations

The article presented the evolution of eucalyptus cultivation in the Planalto da Conquista, a regional area that is characterized as a region of influence marked by strong commerce, implementation of health and university centres, growing industrialization, and urban growth, which attracts the surrounding population to the nodal centre, the city of Vitoria da Conquista. This situation requires the consumption of wood for various purposes, including burning in industry and civil construction. The models pointed out had a reduction in the type fostered due to their extinction, with an increase in what was called independent. A model of plantations is established, whose expansion was demonstrated in

the updating of the models, which requires other developments such as agricultural zoning and the recovery or use of degraded lands and the production of statistical models leads towards research scientificity on eucalyptus silviculture in the region.

The future perspective indicates the need for studies that moves toward the characterization of land use, a management model based on geographic information that contemplate statistical principles based on agroecological and agri-environmental zoning, and specific studies such as fires and indices that indicate production capacity in the territory. Despite the decisions and contradictions regarding eucalyptus plantations, the models pointed out aim to reduce the pressure on native forests in an advanced state of degradation. However, it must be considered that the land structure, based on small property, should not be an instrument for the expansion of monoculture under penalty of reproducing the advances of big capital in the region, already proposed by large pulp companies that undermine the local culture and expand spaces and poverty.

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