# CONILON Coffee

**3<sup>rd</sup> Edition** Updated and expanded

The Coffea canephora produced in Brazil

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# Economic and Social Importance of Conilon Coffee in the State of Espírito Santo

Antonio Elias Souza da Silva, Ludovico José Maso, Enio Bergoli da Costa, Luiz Antonio Bassani and Edileuza Aparecida Vital Galeano

## **1 INTRODUCTION**

The beginning of the formation of the historical, economic, social and political identity of Espírito Santo had as main pillar of the coffee farming structure from the middle of the nineteenth century on. This activity also integrated the state into the national economy and international market, in addition to helping to build its sociocultural base (CALIMAN, 2012).

In 1850, the importance of coffee cultivation in the economy of Espírito Santo was already remarkable, and until the 1950s, the state was always dependent on coffee. Although the economic base has diversified, coffee production continues being the most important activity in the state's agricultural sector due to the economic and social density present in all municipalities in the state of Espírito Santo, with the exception of the capital Vitória.

With a coffee planted area where 22.57% of its production is arabica and 77.43% is conilon (CONAB, 2015), the activity is the main source of employment and income generation for more than half of the municipalities of the State. The capillarity of its production is, indeed, impressive.

For this reason, coffee is the great expression of the state agricultural economy, generating, according to the Gerência de Informações e Análises - GIA (Information and Analysis Menagement), of the Secretaria de Estado da Agricultura, Abastecimento, Aquicultura e Pesca - Seag (Agriculture, Supply, Aquaculture and Fisheries State Department), 37.48% of the Valor Bruto da Produção Agrícola - VBPA (Gross Value of Agricultural Production) in 2014. This amount refers to the income generated in the sector, in other words, that it actually remains in the ownership of coffee growers. In the same year, the coffee complex (green, soluble, roasted and ground) occupied the second position in the ranking of exports of the Espírito Santo agribusiness, only behind cellulose. Foreign exchange reached US\$772.20 million, which represented 36.71% of the total generated in the sector (BRASIL, 2014).

From the social point of view, it is responsible for more than 400,00 jobs at all levels of the production chain, and is a great form of wealth in the countryside and cities (VARGAS, 2012).

Espírito Santo occupies a prominent position in the production of the two coffee species:

*Coffea arabica* and *Coffea canephora*, being the second place in the national ranking with 28.24% of the total produced in the country, behind Minas Gerais with a share of 49.94 % (CONAB, 2015). It is worth mentioning that it is the only Brazilian state with significant production in these two coffee species (MERLO, 2012).

Due to the historic trajectory of coffee, which is confused with the history of the State of Espírito Santo, and because it has been and still is relevant in the economic and cultural political formation of the Espírito Santo society, we will seek in this chapter to highlight the significant conilon's contribution to the socioeconomic development of this state, where this activity became the main component of Espírito Santo's agribusiness (FASSIO; SILVA, 2007).

Initially, a brief retrospective of the conilon coffee production trajectory will be made in the State. The evolution of this important activity will be presented and analyzed in a historical series of 15 years evidencing the participation of Espírito Santo in the harvested area, in the production and productivity of conilon in the Brazilian scenario and its extraordinary development in the State. Some factors that justify the advances achieved as a way of valuing the actions of generation, diffusion and transfer of technologies in the last 21 years of technological innovation and socialization will still be evidenced.

Supporting this evolution, the spatial distribution of the conilon coffee planted area will be presented, emphasizing the concentration of state production and the evolution of the area, production and income of the main producing municipalities as local drivers of the State's productive dynamics.

The participation of conilon coffee in the state VBPA will also be presented and discussed, highlighting also the main municipalities where the product is fundamental and decisive in the composition of its revenues.

Finally, some references will be made to the production of conilon coffee made by the family farmer of the State, due to the expression that this category of farmers represents for Espírito Santo.

# 2 BRIEF HISTORICAL PROFILE OF CONILON COFFEE GROWING IN ESPÍRITO SANTO

The centennial trajectory of conilon coffee began in lands in the southern part of the state, precisely in Cachoeiro de Itapemirim. It was introduced by the hands of the then Governor of the State, Jerônimo Monteiro, in 1912, when he reports that he purchased the first 2,000 seedlings and 50 liters of conilon coffee seeds in Rio de Janeiro (EXPOSIÇÃO SOBRE OS NEGÓCIOS..., 1913).

The planting firstly took place on the Monte Líbano farm, in the Municipality of Cachoeiro de Itapemirim and on adjacent properties. Subsequently, its presence is reported in a collection of varieties established at the Escola Agrotécnica Federal de Santa Teresa (Federal Agrotechnical School of Santa Teresa-ES), now the Instituto Federal do Espírito Santo - Ifes (Federal Institute of Espírito Santo), Santa Teresa Campus, one of the institutions with the highest technical reference at the time, in the form of Genetic Bank.

From this collection and some properties, there are reports that the species spread even

more in the form of small crops for properties of the Colombi and Lorenzoni families, located in the Municipality of São Gabriel da Palha, northern region of the State. This reality remained until the 1960s, and therefore, for 60 years the conilon culture remained in a period of productive latency.

The process of planting expansion and development of the conilon crop is explained, on the one hand, by the effort and struggle to create alternative income for farmers in the face of the devastating action that was taken by the Federal Coffee Eradication Program, from 1963 to 1967, decimating 80% of the arabica coffee plantations in the hottest regions (SILVA, et al., 2007; MERLO, 2012). On the other, by the support, emergence and subsequent growth of the soluble coffee industry, besides the growth of the use of this species in *blends* with arabica coffee (TRISTÃO, 1995) and (FERRAO, 2004).

Thus, although introduced at the beginning of the last century, its cultivation in the State on commercial bases (more technologically advanced crops) began in São Gabriel da Palha in 1971, with initiatives to promote seedlings production and technical assistance.

The merit of this initiative was the local power in the municipality, in the form of collective and integrated work, represented by political, technical, religious, business and producer leaders, who followed the production and distribution of seedlings and the expansion of plantations, expanding them for all regions of the state of Espírito Santo (SCHMIDT, De MUNER; FORNAZIER, 2004, GLAZAR; 2005 apud FASSIO, SILVA, 2007).

In this way, conilon coffee has become an excellent alternative to coffee growers in the hottest and driest regions of the state, unfit for the cultivation of arabica coffee (DADALTO; BARBOSA, 1997; FONSECA et al., 2004), precisely those areas that were the object of the eradication policy, which deeply influenced the agriculture of Espírito Santo.

It is noteworthy that Espírito Santo was the state where more coffee crops were destroyed in the eradication period, generating a dramatic situation for producers, sharecroppers and rural workers.

It was a historic moment of great uncertainty and struggle in search of institutional support, but also of a lot of entrepreneurship and creativity.

Regarding that, Martinelli, cited by Vargas (2012), states that, at that time, government and market incentives were still lacking to buy the production, which was initially marketed mixed with arabica bags, at a lower than expected value.

The situation was managed by the incorporation of conilon financing into the Program for the Implementation of New Crops in the mid-1970s and the insertion of the product in the calendar of the Instituto Brasileiro do Café - IBC (Brazilian Coffee Institute). Added to this is the interest of growers in expanding planted areas, in view of the incidence of the arabica coffee rust disease (*Hemileia vastatrix*), when conilon expansion is observed by several municipalities in the north of the state in the second half of the decade 1970.

Another major boost for the conilon production occurred in 1971 with the installation of a soluble coffee industry, the Real Café, in the Municipality of Viana, located in the metropolitan region of Vitória. Soluble coffee industries use more than 85% of coffee from the Robusta group, of which the conilon is a part.

There was an intense articulation between the political representatives and the producers, with the owner of the factory, Jônice Tristão, who guaranteed, by word of mouth and without formalization, that he would buy all conilon production in the Municipality of São Gabriel da Palha, as he intended to expand the capacity of the factory and consume more and more conilon coffee (GLAZAR, 2005).

At that time, the market for soluble coffee in Europe and the United States, the main marketplaces, was growing, a fact that generated confidence for both the entrepreneur and the leaders of São Gabriel and also the coffee growers.

This expansion continued increasing to several other municipalities in the 1980s, as municipal public authorities and the State incorporated actions in their schedule for this culture in support of rural producers (LOSS, 2004).

In summary, since its introduction in the territory of the state of Espírito Santo to the present day, the trajectory of conilon coffee is especially linked to several factors, among them: the initiative of the governor of Espírito Santo at the time (1912), the saga of the pioneers in the activity and the entrepreneurship of rural leaders, the unconditional support of the industrial segment and commerce, the set of knowledge, technologies and innovations generated by private and especially public research, the integration of the existing institutional arrangement, technical assistance and public and private rural extension services and, above all, the talent, vocation and entrepreneurial profile of the coffee growers of Espírito Santo.

Therefore, conilon coffee, a simple component of technical collection and incipient presence in small farms of dispersed properties of the State, has become one of the most expressive economic and social activities of the State, being increasingly used in *blends* with arabica coffee, in soluble and espresso and other modern forms of coffee consumption, gaining spaces and attracting the attention of the main coffee segments in the world.

In more than 100 years of history and more than four decades of significant commercial performance, Espírito Santos's production increased from 200.000 bags in 1974 (GLAZAR, 2005) to almost 10 million bags in 2014 (CONAB, 2015). During this period, coffee conilon was the protagonist of a trajectory of struggles and conquests marked by stigma and success, leaving a position of simple adjunct to occupy a prominent place in the state, national and world economy.

Another relevant point to note is that coffee (conilon and arabica) is proportionally more important for Espírito Santo than for other states of the federation, since in the period from 2005 to 2013, on average, it represented 48.70% of the state VBPA, while for the State of Minas Gerais, for example, which is the largest national producer, the product represented only 22.01% (Figure 1).

All this boom of the coffee industry of Espírito Santo is based in one of the most imposing and competitive coffee zones of the world (FERRÃO et al., 2013), because it presents an expressive diversity of climate and soil. It includes a total coffee park of 1.28 billion arabica and conilon coffee pits, covering a total area of 474.69 thousand hectares, which produced 12.81 million processed bags in 2014 (CONAB, 2015).

Only these indicators would be enough to prove the competitiveness of the coffee industry

of Espírito Santo, but the parameters are further reinforced by the average productivity of 29.56 processed bags per hectare, reached in 2014, really above the national average, which is around 23.29 processed bags per hectare (CONAB, 2015).





Source: Elaborated by the authors based on BRASIL (2015); IBGE (2014a, 2015a, 2015b, 2015c); FGV (2015) data.

This performance comes from more than 60 thousand properties that grow the two coffee species in Espírito Santo, involving about 131 thousand families, of which more than 73% are family-based, with an average size of 8.2 hectares (FERRÃO et al., 2013).

In the conilon species, Espírito Santo leads Brazilian production with 78.0% of all that is produced in Brazil (CONAB, 2014). It is, therefore, an unquestionable leadership both in terms of volume and in the technological field, a very important factor for continuous governmental and private stimulus, for the generation of innovations and the necessary and orderly renewal of this coffee area.

A simple comparison shows the size of this importance, because if Espírito Santo were a country, it would be the second largest producer in the world, losing only to Vietnam, the world leader in the production of robusta coffee.

# **3 EVOLUTION OF CONILON COFFEE GROWING IN ESPÍRITO SANTO**

The State of Espírito Santo leads the national production of conilon with more than three out

of four bags produced in the country, which represents about 20% of the world production of the product. According to the Companhia Nacional de Abastecimento - Conab (National Supply Company), in 2014, Brazilian production of this species reached 13.04 million processed bags, and only the State, in this harvest, produced 9.95 million bags (CONAB, 2014).

This leadership is easily verified when compared to Rondônia, which is the second national producer of conilon with production of just over 1.48 million bags, or only 11.33% of the total (CONAB, 2015). An undeniable hegemony that Espírito Santo assumes in relation to the other states of the federation.

Over the last two decades, conilon coffee has passed through a series of transformations, the main one being the evolution in the technological level of crops. In general, the entrepreneurial profile of coffee growers, coupled with a public and private institutional arrangement, united and committed, allowed the development of a highly competitive coffee industry, especially in the northern region of the State. It is common in this region that producers achieve productivity above 100 processed bags per hectare, almost 3.0 times the state average.

The result of this combination of factors was the significant increase in average productivity of crops, the main factor responsible for the increase in conilon production verified in the period.

Table 1 shows the recent evolution of conilon coffee in Espírito Santo. State production increased from 4.50 million processed bags in 2000 to 9.95 million bags is 2014, which mean a growth of 121.09% in 15 years. Regarding productivity, it jumped from 15.39 to 35.14 bags per hectare in the same period, that means an increase of 128.33%.

	Pro	oduction		Productivity (bags/ha)		
Harvests	One thousand bags	% on the total ES harvest	Production area (ha)			
2000	4.500	72,16	292.325	15,39		
2001	4.900	64,90	296.379	16,53		
2002	6.825	73,19	303.697	22,47		
2003	5.010	75,79	300.026	16,70		
2004	4.500	66,23	297.466	15,13		
2005	6.014	74,52	300.013	20,05		
2006	6.881	76,38	285.232	24,12		
2007	8.139	78,97	283.397	28,72		
2008	7.363	71,97	294.217	25,03		
2009	7.602	74,49	295.050	25,77		
2010	7.355	72,48	281.940	26,09		
2011	8.494	73,39	280.082	30,33		
2012	9.713	77,69	280.106	34,68		
2013	8.211	70,20	283.124	29,00		
2014	9.949	77,43	283.124	35,14		

**Table 1**. Evolution of area, production and productivity of conilon coffee in the State of Espírito Santo,from 2000 to 2014

Source: Elaborated by the authors form Conab, Historic Series data (Séries Históricas 2015).

Regarding the area under production, there was a decrease of 3.15% in this period due to the replacement of crops, mainly decrepit ones, for other coffee plantations conducted in new technological bases, or even the introduction of other agriculture and forests.

In 2014 the area in production was 283.12 thousand hectares. However, there was no change comparing to 2013, indicating a stabilization movement, with a slight tendency of area decrease between the period from 2000 to 2014 (Table 1).

Figure 2 shows the evolution of production, productivity and production area growth. The index of growth rates were constructed considering the period from 2000 to 2014. It is noteworthy that in recent years productivity growth rates were higher than the production growth ones.

Therefore, it can be verified, that the production of conilon coffee in Espírito Santo, as well as the productivity of the plantations have increased significantly in recent years. The 2004 harvest was damaged by a severe drought in northern part of the State between June and October 2003, which did not favor grain filling. In addition, there were excessive rainfall during the harvest period in 2004.

Many facts explain this magnitude, including the entrepreneurial capacity of rural leadership and coffee growers, the generation and incorporation of genuinely Capixaba<sup>1</sup> technologies and knowledge in which the Instituto Capixaba de Pesquisa, Assistência Técnica e Extensão Rural - Incaper (Capixaba Institute for Research, Technical Assistance and





**Source**: Elaborated by the authors based on Conab, Historic Series data (Séries Históricas – 2015).

Rural Extension) has a relevant role, in addition to the commerce and industry that gave the opportunity of acquiring of the product throughout all these years (COSTA, 2012).

The evolution of technological indicators can be attributed to at least five basic factors. The first one refers to the cultural issues, the talent, the vocation and the entrepreneurial profile of the Capixaba coffee growers, who have indeed made the difference.

The European colonization in Espírito Santo, especially the Italian, the German and the Pomeranian, has historical links with the conduction of a high technology agriculture. In addition, many coffee growers who migrated from arabica to conilon after the eradication period of coffee plantations realized that the cost of production had become lower, mainly because of rusticity. And, with the additional revenue, they started investing in the adoption of the technologies and knowledge generated and adopted by them, especially in the last 30 years.

There was also an internal migration, mainly of Italian descendants, from the south to the

<sup>&</sup>lt;sup>1</sup>Original from the State of Espírito Santo.

north of Espírito Santo. Entrepreneurship was already latent in these migrant families, since they were no longer satisfied with the restrictions in quantity of land and rugged terrain, to which they were subject in the original regions of immigration.

The second explanatory factor concerns the expansion of the technological base, developed and built in the State within this period, especially by Incaper, in all areas of knowledge, mainly those related to increasingly higher clonal varieties, more appropriate plants management, such as programmed cycle pruning, dense and in-line planting, the use of efficient irrigation and advanced nutrition techniques.

The third factor refers to the efforts of technology transfer through the training of technicians and producers, carried out by the Institute itself and by the set of partner institutions that compound the conilon production chain.

According to De Muner et al. (2003) and Espírito Santo (2003), the transfer and fast adoption of these technologies have made the State's coffee conilon plantations one of the most competitive in the world.

Confirming this premise, Ferrão et al. (2013, page 47) states that "the renewal of the coffee planted area in Espírito Santo is being done at an average annual rate of 7%". It is estimated that about 70% of conilon crops (190 thousand hectares) have already been renewed under new technology bases.

The fourth is related to the articulated and active institutional arrangement existing in the State, which formed a great network of guidance for knowledge and technological innovation.

This institutional network, which forms the conilon coffee production chain (representation of producers, associations, cooperatives, workers and employers unions, private planning and technical assistance companies, development and credit agencies, agricultural universities and schools, among others) had and has as a source or technical support to solve its technological problems and actions formulation, the results obtained continuously by the Research and Technology Transfer Program for coffee conilon, coordinated and executed by Incaper, started in 1985.

However, the history and breakdown of conilon coffee institutional arrangement in Espírito Santo is represented in chapter 28, in this publication.

Finally, the fifth and last explanatory factor and not least important, was the planning actions for coffee cultivation, discussed and implemented since 2003, contained in the Strategic Plan for the Development of Capixaba Agriculture (Pedeag - Plano Estratégico de Desenvolvimento da Agricultura Capixaba), which was reviewed in 2007, with a horizon up to 2025. This plan, coordinated by Seag, has generated three specific programs for the coffee industry of Espírito Santo, with strong components of plantations renewal and quality improvement through the incorporation of technologies generated and recommended by the research service.

This program has been the most important reference of generation and technological contribution and construction of knowledge in the conilon species and also of socialization of solutions and innovations to the Capixaba coffee growers, besides fomenting investments in the sector. It is around this profitable source of knowledge that many companies and public and private agents of the whole productive chain align their technological bases and renew

their action programs.

# 4 SPACE DISTRIBUTION AND EVOLUTION OF CONILON COFFEE PRODUCTION IN THE CAPIXABA MUNICIPALITIES

In 2014, the conilon coffee planted area in Espírito Santo had 702.79 million plants, computing the areas in production and formation, extending to 64 municipalities located in the hot regions and with altitudes below 500m. There are approximately 40 thousand properties and 308.22 thousand hectares of cultivated land, of which 283.12 thousand hectares are in production and 25.10 thousand hectares are in development (CONAB, 2015). It is estimated that 78 thousand families are involved only in the rural production sector (EMBRAPA, 2015).

This coffee area is concentrated in the north region, but is distributed till the border with Rio de Janeiro (Figure 3).



**Figure 3**. Spatial distribution of the conilon coffee area in the State of Espírito Santo in 2014. **Source**: Elaborated by the Authors from IBGE-LSPA (2014) data.

Based on the assumption that the productive performance of conilon coffee production is due to the level of technologies incorporation by coffee growers in the producing municipalities, the analysis of its evolution must be made from local production.

In this aspect, Figure 4 highlights the 15 main producing municipalities, highlighting Jaguaré, Vila Valério, Sooretama, Nova Venécia and Rio Bananal.





Source: Elaborated by the Authors from IBGE-LSPA (2014) data.

Also worthy of mention is the Municipality of São Gabriel da Palha, which represents the pioneering of conilon coffee cultivation and commercial production. It also has an important commercial center through the Cooperativa Agrária dos Cafeicultores de São Gabriel - Cooabriel (Agrarian Cooperative of Coffee Growers of São Gabriel da Palha), an institution that congregates 3.6 thousand members and currently receives more than 1 million bags of coffee.

Table 2 and Figure 5 show the evolution of production, harvested area and productivity of conilon coffee plantations in Espírito Santo main producing municipalities, in the years 2001, 2005, 2009 and 2014. The municipalities that presented the highest average production growth were Governador Lindenberg (246.60%), Vila Valério (234.22%) and Pinheiros (192.31%). For all municipalities observed, the variation was positive for the production growth, even for those in which there was stabilization or reduction of the harvested area, cases of Nova Venécia, Sooretama and Vila Pavão.

**Table 2.** Evolution of production, harvested area and productivity of conilon coffee plantations in themain producing municipalities of Espírito Santo, in the years 2001, 2005, 2009 and 2014

	Production (in thousand of 60 kg bags)				Harvested area (in ha)				Average income (bags/ha)						
Municipalities	2001	2005	2009	2014	Variation (%)	2001	2005	2009	2014	Variation (%)	2001	2005	2009	2014	Variation (%)
Governador Lindenberg	103	137	174	357	246,6%	10.300	10.500	6.800	10.400	1,0%	10,00	13,00	25,50	34,40	244,0%
Vila Valério	225	349	642	752	234,2%	15.000	22.500	21.000	18.800	25,3%	15,00	15,50	30,60	40,00	166,7%
Pinheiros	130	292	405	380	192,3%	5.000	7.300	10.840	10.470	109,4%	26,00	40,00	54,20	36,30	39,6%
Linhares	148	257	304	421	184,5%	12.000	14.300	15.000	12.500	4,2%	20,70	18,00	20,30	33,70	62,8%
São Mateus	180	311	328	450	150,0%	12.000	13.510	12.550	12.500	4,2%	15,00	23,00	26,20	36,00	140,0%
Marilândia	128	131	208	317	147,7%	8.500	8.700	6.800	7.900	-7,1%	15,00	15,00	30,60	40,10	167,3%
Boa Esperança	144	162	179	335	132,6%	9.000	6.000	8.800	9.300	3,3%	16,00	27,00	31,70	36,00	125,0%
Pancas	121	142	162	280	131,4%	12.100	11.800	7.900	8.000	-33,9%	10,00	12,00	20,50	35,00	250,0%
Colatina	132	156	198	301	128,0%	13.200	13.000	12.100	7.900	-40,2%	10,00	12,00	16,30	38,10	281,0%
São Gabriel da Palha	188	150	269	423	125,0%	12.500	12.500	11.000	11.300	-9,6%	15,00	12,00	24,50	37,40	149,3%
Jaguaré	414	540	570	789	90,6%	18.000	18.000	18.600	20.050	11,4%	23,00	30,00	30,60	39,40	71,3%
Rio Bananal	319	294	406	515	61,4%	15.950	16.350	13.800	13.800	-13,5%	20,00	18,00	29,40	37,40	87,0%
Vila Pavão	190	202	220	298	56,8%	9.500	10.100	9.600	8.120	-14,5%	20,00	20,00	22,90	36,70	83,5%
Sooretama	368	360	439	567	54,1%	16.000	20.000	15.400	16.600	3,8%	23,00	18,00	28,50	34,10	48,3%
Nova Venécia	420	260	400	538	28,1%	21.000	20.000	19.600	15.250	-27,4%	20,00	13,00	20,40	35,30	76,5%

Source: Elaborated by the authors from IBGE (2014, 2015a) data.





Source: Elaborated by the authors from IBGE (2014, 2015a) data.

The variation of the harvested area with conilon coffee was negative for 7 of the 15 municipalities, especially Colatina (-40.15%), Pancas (-33.88%) and Nova Venécia (-27.38%). This fact explains the lower need for cultivated area, in view of the growing increase in the use of technologies, with an enlargement in the average productivity and production. Governador Lindenberg, Boa Esperança, Sooretama, Linhares and São Mateus showed a tendency to stabilize the area, with a variation of less than 5% in the period. The two largest conilon coffee producers, Jaguaré and Vila Valério, increased their harvested area by 11.39% and 25.33%, respectively. Pinheiros was the municipality that presented the largest increase in the harvested area (109.40%), from 5 thousand hectares in 2001 to 10.47 thousand hectares in 2014.

Regarding productivity, all municipalities presented a high performance, with variations that oscillated to the level of 281%, Municipality of Colatina case. This is explained both by

the greater reduction of decrepit plantations and by the high degree of substitution of the municipal coffee area in new technological bases, mainly with the use of superior clonal varieties and irrigation.

In 2014, the average productivity of these municipalities ranged from 33.70 to 40.10 bags per hectare. This result indicates that the largest coffee producing municipalities of Espírito Santo have an equivalence of technologies incorporated in the productive process, over the last years. It should be noted that Pinheiros suffered a drought and achieved very high temperatures in 2014, which interfered negatively in the productivity of conilon coffee. The municipality led the ranking of productivity in the State, reaching levels above 54 processed bags per hectare.

Thus, conilon coffee is the most important activity of the agricultural sector in the state of Espírito Santo, being responsible in average, in the last 14 years, for 25.36% of the state VBPA, according to GIA/Seag. In 2014, the conilon accounted for 28.44% of the VBPA, generating R\$2.31 billion (Table 3 and Figure 6).

Activity Groups	Production price (R\$ 1000)	Participation (%)
Coffee growing	3.048.909	37,48
Arabica coffee	735.842	9,05
Conilon coffee	2.313.067	28,44
Animal Production	2.127.127	26,15
Fruit farming	1.061.366	13,05
Silviculture	670.470	8,24
Olericulture	814.692	10,02
Other activities	318.036	3,91
Food products	93.799	1,15
TOTAL	8.134.399	100,00

Table 3. Gross Value of Agricultural Production (VBPA) of Espírito Santo in 2014

Source: Elaborated by the authors from IBGE-LSPA (2014); PPM (2015c); PEVS (2015b); Conab; AnulPec; Incaper (2005, 2014, 2015) data.

If conilon coffee is important to the state economy, moving a third of the rural income to the municipalities, the product becomes crucial and determinant.

Figure 7 shows that, for five municipalities, conilon represents, in the average of 2012 and 2013, more than 90% of VBPA, except meat. They are: Vila Pavão (94%), Vila Valério (92%), Rio Bananal (91%), Governador Lindenberg (91%), Marilândia (90%). In the same way, for the other three municipalities, VBPA of conilon coffee participated with more than 80% of total VBPA, such as João Neiva (88%), Águia Branca (86%) and São Gabriel da Palha (85%).

In the 70% range, there are the municipalities of Pancas (79%), São Domingos do Norte (79%) Nova Venécia (77%), Boa Esperança (76%) and Jaguaré (73%).

If on the one hand, for these and many other municipalities, coffee has been fundamental in the generation of income and productive occupation of the interior of the Espírito Santo state, on the other, the table shows that the agriculture of these municipalities is excessively specialized and very dependent on this product, what suggests that, especially to the local leaders, a reflection on the development of programs, projects and actions that promote the productive diversification of municipal agriculture from coffee plantations.



- **Figure 6**. Conilon coffee participation in the Gross Value of Agricultural Production (VBPA) of Espírito Santo in 2014.
- Source: Elaborated by the authors from IBGE-LSPA (2014); PPM (2015c); PEVS (2015b); Conab; AnulPec; Incaper (2005, 2014, 2015) data.



Figure 7. Conilon coffee participation in the Value of Municipal Agricultural Production - Average 2012/2013 - Espírito Santo.

Source: Elaborated by the authors from IBGE (2015a) data.

#### **5 THE FAMILY AGRICULTURE IN CONILON COFFEE PRODUCTION**

Family agriculture in Brazil produces arabica and conilon coffee in almost 200 thousand establishments, in 1.468 different municipalities in the country, generating income for more than 650 thousand farmers. It is responsible for 38% of coffee production in Brazil, which in the vast majority (95%) is concentrated in the six largest producing states: Minas Gerais, Espírito Santo, Paraná, São Paulo, Rondônia and Bahia. This segment generates in Brazil approximately 30% of the revenues produced by coffee (Brasil, 2015).

Espírito Santo owns a total of 84,356 rural establishments, of which 80% (67.403) are familybased, according to the criteria of Law 11.326, dated July 24th, 2006. There are 202,169 farmers occupying these establishments, that number means 64% of the people contingent who live in the rural area of Espírito Santo. Of these family establishments, 48,617 (72%) work with coffee and are responsible for 54% of their total production. Specifically regarding conilon, there are 28,188 establishments (58%) that have this activity as a source of income, accounting for 53% of the state coffee production (FRANÇA; DEL GROSSI; MARQUES, 2009).

In about 40 thousand production units where the conilon coffee crop is present, its exploitation involves 209.4 thousand workers directly in the fields, which are predominantly conducted in a family economy system, including the participation of sharecroppers, a very common system in Espírito Santo. The data indicate that coffee growing has high employment rates.

In this context, it is evident that the workforce used in the activity is comprised of 47% of owners, 47% of rural partners and only 6% of employees (TEIXEIRA 1998, De MUNER et al., 2003, ESPÍRITO SANTO, 2003; FONSECA et al., 2004) cited by Fassio and Silva (2007).

It should also be pointed out that the average size of conilon coffee plantations in the State is 9.85 ha. Another factor that deserves attention is the stratification of coffee farms, with about 74% of the planted area being located in strata of less than 50 ha, with 28% of the properties presenting less than 10 ha (De MUNER et al. 2003), cited by Fassio and Silva (2007).

In Espírito Santo, the participation of family farms in conilon coffee production is very significant, considering that the VBPA of this productive segment is 52.74%, according to Figure 8.

Obviously, the producing municipalities contribute directly to this indicator. In this aspect, the municipalities of Iconha (84.61%), Barra de São Francisco (73.36%), São Mateus (63.53) and Cachoeiro de Itapemirim (56.69%) are significantly noteworthy (IBGE, 2006).

Although these inferences are based on data from 2006, it is still important to note that in these last ten years the availability and application of loans with more affordable interest rates really increased, especially those related to federal programs, such as: Programa de Fortalecimento da Agricultura Familiar - Pronaf (Family Agriculture Strengthening Program), Programa de Garantia de Preços para a Agricultura Familiar - PGPAF (Price Support Program for Family Agriculture), Programa de Aquisição de Alimentos - PAA (Food Acquisition Program), Seguro da Agricultura Familiar - SEAF (Family Agriculture Insurance), Selo de Identificação da Participação da Agricultura Familiar - Sipaf (Identification Seal of Family Agriculture Participation) and the Programa de Apoio aos Serviços de Assistência Técnica e Extensão Rural - Ater (Support Program for Technical Assistance and Rural Extension Services). This credit was mainly used by family farmers to renew their crops in new technological bases or even to join the activity, especially in the case of conilon coffee production, attracted by these production incentive and product commercialization policies. Facing the difficulty of providing more recent official data on the decrease of conilon production by the Espírito Santo's family farming, and in order to value Incaper's technical assistance work for this culture, it was decided to present and analyze some of its results recorded in the period of 2005, 2010 and 2014, based on internal reports of this institution.





Source: Elaborated by the authors from Agriculture Census-IBGE (2014b).

According to the Incaper data (Table 4), in 2014, the institution assisted approximately 18.7 thousand conilon coffee growers, an increase of 46.49% compared to 12.78 thousand in 2005. Since 90 % of the public assisted by this Institute is composed of family farmers, according to data from the Relatório Bimestral de Atividades - RBA (Bimonthly Activity Report) from 2005 to 2010 and the Sistema de Informações de Assistência Técnica e Extensão Rural - SIATER (Information System of Technical Assistance and Rural Extension) in the years 2005 and 2014, it is estimated that around 16.9 thousand assisted coffee growers fall into this category of farmers.

In the same period, Incaper's total coffee area increased by 10.72%, from 68.87 thousand to 76,25 thousand hectares, while assisted coffee production grew 75.37%, reaching a volume of 2.97 million processed bags of conilon coffee. The productivity followed the same trend, with growth of 58.38%, from 24.53 to 38.85 processed bags per hectare in the average of the coffee growers assisted by Incaper.

The annual average area per conilon coffee property assisted by the Institute was 4.07 ha in 2014, a decrease of 24.49% if compared to 2005, which clearly shows the evolution, contribution and prioritization of public and free technical assistance for family-based coffee growers.

Discrimination	I Institut		Years	<b>Production</b> %	
Discrimination	Unity	2005	2010	2014	(2005/2014)
Assisted public	Person	12.789	16.452	18.735	46,49
Assisted Area	ha	68.871	73.085	76.251	10,72
Assisted production	60 kg bag	1.689.241	2.109.333	2.962.351	75,37
Assisted productivity	bag/ha	24,53	28,86	38,85	58,38
Assisted average area by producer	ha	5,39	4,44	4,07	-24,49

#### Table 4. Conilon producers assisted by Incaper in the years 2005, 2010 and 2014

Source: Elaborated by the authors based on data of Incaper, RBA, Siaster (2014).

#### **6 FINAL CONSIDERATIONS**

AThe coffee industry leads the group of agricultural activities of Espírito Santo and, in this sector, it occupies a prominent position as being the second in the national ranking in terms of production. Espírito Santo is the only Brazilian state that has representative production in both species, arabica and conilon. The State specialized in the production of conilon, and is the leader with 76% of the national production.

Conilon coffee cultivation is important for the generation of jobs and income and, mainly, contributes to keep the family farmer in the country area. Due to its dynamism, the activity generates about 30% of all rural income, being present in 64 of the 78 Capixaba municipalities. And yet, along all the links of the production chain, which includes production, agro-industrialization, inputs, distribution and logistics, approximately 400 thousand workers are totally or partially busy, which indicates, even more, the social and economic importance of the product.

In the last 15 years (2000 to 2015), production and productivity grew 121.09% and 128.33%, respectively. A real technological revolution, unprecedented in agriculture, with rates never reached in any other activity, in such a short time.

However, the production of conilon did not always "sail in calm waters" and, not by far, was an activity that prospered right after its introduction in the State. For this reason, the history of a cultivation that was previously inexpressive and which has become the main economic activity of Espírito Santo is full of challenges.

Research and technical assistance to producers began to be officially implemented by state institutions beginning in 1985, without the support and transfer of federal resources. This is the framework for the generation, diffusion and transfer of technology, stimulated by Incaper, the main responsible for the generation of the largest technological base for this species in the world, which has been developed and incorporated for culture and that has crossed the borders of the State.

This technological apparatus has been the mainstay for the impressive evolution of the main generator of municipal revenue, for the coffee area renovation that, although is concentrated in the north region, is well distributed along the State, as well as for the productive and social

dynamics of this activity.

Therefore, the data presented and analyzed in this chapter shows that the conilon coffee production chain is very important in the context of the Brazilian economy, particularly the Capixaba, bringing not only economic but also social benefits. This statement is even more important when it is observed that the small property, especially the family one, plays an important role in the production and dynamics of conilon coffee cultivation, since it strongly participates in the generation of jobs, distribution of income and in the creation of opportunities, in rural areas.

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