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## THE FORMATION OF VALUE IN THE LOCAL PRODUCTIVE ARRANGEMENT (APL) OF GARMENTS AND ARTIFACTS MADE OF COLOURED COTTON FROM PARAÍBA-BRAZIL

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### ABSTRACT

Companies in the textile sector have shown great concern with environmental issues, using raw materials that are produced by systems that are less aggressive to the environment. In this context, naturally coloured cotton (ANC) becomes an alternative to reduce the negative environmental impact, since the products do not need to be bleached or dyed, and is attracting the attention of industries and consumers. In Brazil, naturally coloured cotton (ANC) is mainly produced in Paraíba, where there is a Local Productive Arrangement (APL) for clothing and artifacts made of ANC. In this sense, this study aims to verify whether the interorganizational relationships of this APL have contributed to the arrangement's formation of value and growth. To achieve the proposed aim, data were collected in the State of Paraíba, in the municipalities of Campina Grande, Juarez Távora, São Bento and João Pessoa through interviews, questionnaire and observation. The data, which was collected and analysed using the Content Analysis methodology, indicated that the APL has important groups that are formed with the purpose of adding value. The group formation was observed in almost all links of the agro-industrial productive chain: processing, certification, acquisition of raw material, production, commercialization and export. In addition, it was possible to conclude that these groups are formed from different perceptions about the market for naturally coloured cotton, resulting in the formation of the value of their products and, consequently, in the growth of the APL.

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## INTRODUCTION

The companies in the textile sector, in their quest to serve the consumer that is sensitive to environmental issues, started to demand raw materials that are produced in systems that are less aggressive to the environment. One of the main environmental problems in the textile chain is in the finishing stage, due to the use of toxic substances used to bleach and dye the products (Souza, 2000). The textile processing industry (IPT) uses water as the main way of removing impurities, applying dyes and finishing agents. For each ton of fabric produced, 20 to 350 m<sup>3</sup> of water are consumed, which reflects the variety of processes and process sequences (Schoeberl et al., 2004). The problem of water scarcity and pollution caused by industrial manufacturing is becoming increasingly serious, and industrial manufacturers are forced to adopt water conservation and pollution control technologies, especially in the textile industry, which is one of the world's most water consuming and polluting industries (Chen et al., 2017). Technological innovations have been developed, such as the dye clean process, which reuses water of

dyeing baths (Valldeperas & Ramos, 2020), but is still far from an ideal solution. Thus, minimizing water consumption and effluent generation is an important goal of this industry to reduce the negative environmental impact and costs of water collection and effluent treatment. Textile factories constitute an important part of the Brazilian economy and are grouped into three main fibre categories: cotton, wool and synthetic fabrics (Souza et al., 2010). In this context, factors such as environmental awareness, market potential and commercial benefits derived from more sustainable production have led many industries to consider their way of operating (Vilha & Carvalho, 2005). In Brazil, naturally coloured cotton (ANC) comes from conventional genetic improvement implemented by the Brazilian Agricultural Research Corporation (Embrapa). Since 1990, Embrapa Cotton has been carrying out genetic improvement work in order to select naturally coloured, productive fibre cultivars with good characteristics. So far, six cultivars have been launched commercially, and the first Brazilian cultivar was registered in 1999. This innovation aims to make cotton fibre suitable for weaving as, in its natural state, naturally coloured cotton has a very short fibre and may break easily in the process.

In view of this situation, the state of Paraíba became a reference in the production, improvement, manufacture and commercialization of products made from ANC, starting in 2000 (year in which the first cultivar of the product was transferred to the productive sector), the Local Productive Arrangement of Coloured Cotton Clothing and Artifacts of the State of Paraíba. This can be considered a sustainable business model that aligns the interests of all participants and explicitly considers the environment and society as the main stakeholders (Cassiolo & Lastres, 2000; Bocken et al., 2014). Its raw material is naturally coloured cotton and enables the textile industry to eliminate the bleaching and colouring phase of fabrics. The APL covers the entire state of Paraíba, since in all regions some of the inherent activities are carried out such as: planting and ginning (in the backcountry and Agreste), spinning (in João Pessoa-PB and Campina Grande-PB), production of knitwear and fabric (in João Pessoa, Campina Grande-PB and São Bento-PB), handicrafts and lace (in several regions of Paraíba) and apparel (in Campina Grande-PB and João Pessoa-PB). The commercialisation of products derived from this fibre has a strong ecological appeal due to the reduction of the negative environmental impact both in the agricultural production without agrochemicals and also in the elimination of the bleaching and dyeing stage. This innovation, created in 1989 by researcher Sally Fox, in the United States of America, shows favourable development potential due to society's increasing concern with the environment on a global level. Considering the importance of the production of naturally coloured cotton for the reduction of environmental impact, there is an interest on improving this market and the production of sustainable textile products. Therefore, due to the environmental importance of the agro-industrial production chain of naturally coloured cotton, the present study aims to verify whether APL's interorganizational relationships have contributed to its value formation and growth.

## METODOLOGY

For this paper, a case study was selected, as it is a recommended method for researches in which one works with a specific case that is considered typical or ideal to explain a certain situation. In this case, the Local Productive Arrangement of Coloured Cotton Clothing and Artifacts of the State of Paraíba is the focus of the present study. First, a bibliographical research was carried out with the purpose of providing a theoretical basis (literature review), as well as collecting historical information on naturally coloured cotton. For this purpose, research was conducted in the Web of Science and Scopus databases. Data were also collected in electronic media, more precisely in the websites of Embrapa Cotton and the main APL companies, with the aim of collecting information about the aggregation of values, exports and other data, as indicated by the owners of these enterprises. The study was conducted in the cities of Campina Grande, São Bento, Juarez Távora and João Pessoa in the state of Paraíba (Figure 1). The field research was conducted through observation, questionnaires, interviews with the parties involved in the situation and guided by semi-structured scripts, as well as in-depth interviews with entrepreneurs and "experts". Interviews were also conducted with entrepreneurs via e-mail and telephone. The questionnaires and in-depth interviews, applied to the different categories of APL participants of naturally coloured cotton, were focused on the relationships between them for the formation of value of products made from this type of cotton. The group of participants was composed by entrepreneurs belonging to APL (artisans, entrepreneurs and micro-entrepreneurs), employees of these micro-enterprises, technicians of Embrapa Cotton and representatives of naturally coloured cotton producers. The convenience type of sample was used in this research, where the members of the agro-industrial production chain were invited to participate in the study on a voluntary basis. From the interviews and questionnaires, the data were tabulated in Excel® and Word® spreadsheets and then transformed into charts. Considering the goal of the research and the format of data collection, the content analysis was performed in three phases: pre-analysis, material exploration and results treatment (Bardin, 1977).

The pre-analysis phase consisted of a categorization of the respondents to the questionnaire: six technicians from Embrapa Cotton, seven micro-entrepreneurs (five artisans from Vila do Artesão and two establishment owners with employees or service providers), one rural producer, five entrepreneurs and one salesperson (from D'Cotton). In the material exploration stage, the phases of the agro-industrial production chain were verified and, finally, in the results treatment phase, it was possible to characterize the interorganizational relationships for the formation of value at APL and to ascertain their importance for the development of the local productive arrangement.

## RESULTS

In this section the results are presented in a systematized way according to the steps of the content analysis.

**Pre-Analysis:** Based on the interviews, eight categories of respondents were established (Table 1) and only two of them had more than one respondent.

**Table 1. Categorization of respondents**

Category	Establishment	Occupation
Rural producer	Settlement Alves	Representative of producers
Micro entrepreneur/artisan	Margarida Via Terra Natural Chalé 62 Mundo Natural Arte Junto	Owner
Micro entrepreneur	D'Cotton - Comitê Gestor Casulo NCC CoopNatural/Natural Fashion	Owner/Coordinator of the Management Committee Owner Stylist/owner Owner/President of the cooperative
Artisan	Yuri sandálias	Owner
Technician	Embrapa	Technician
Employee	Redes Santa Luzia	Manager
Entrepreneur	FibreFox (USA) Redes Santa Luzia	Owner/researcher/ inventor Owner
Salesperson	D'Cotton	Salesperson

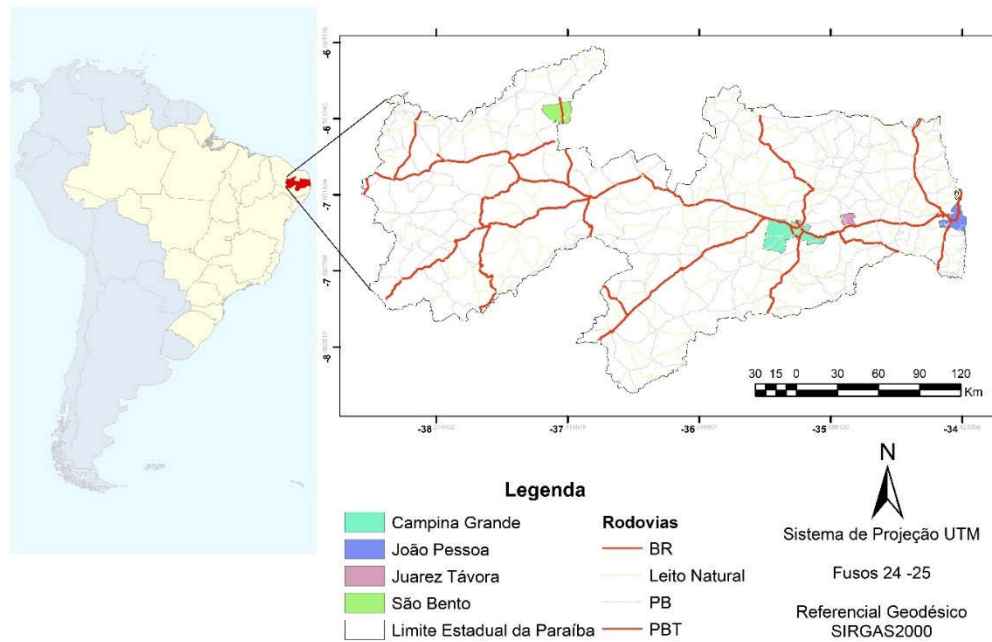
### Material exploration

Three phases were identified in the agro-industrial production chain of naturally coloured cotton (Table 2).

**Table 2. Stages in the agro-industrial production chain of naturally coloured cotton**

Stages of the Production Chain	Identification
1. Agricultural Production	(a) Embrapa Cotton (b) Rural Settlement "Margarida Maria Alves" (c) Paraíba Cotton Project, from the Government of the State of Paraíba
2. Processing	(a) Ginning (b) Baling (c) Wiring (d) Weaving
3. Production and Commercialisation (Main Entrepreneurs)	(a) Vila do Artesão (Artisans) (b) <i>Natural Cotton Colour</i> (Micro-enterprise) (c) Casulo Arte Natural (Micro-enterprise) (d) Redes Santa Luzia (Micro-enterprise) (e) Coopnatural - Cotton Textile Production Cooperative of the State of Paraíba/ owner of the brand Natural Fashion

**Agricultural Production Phase:** This phase begins with the creation, by Embrapa Cotton, of six cultivars of naturally coloured cotton, suitable for the textile industry.



Source: SIRGAS, 2000.

**Fig. 1. Locations visited during field research**

Among these cultivars, the public company maintains the intellectual property of five of them (genetic seeds), and the first cultivar (BRS 200 - Brown) is already in the public domain. As explained by Silva, one of Embrapa Cotton's experts, the genetically improved seeds are distributed through the State Government to two rural settlements ("Queimadas" and "Margarida Maria Alves") and also to small farmers. The seeds that are sent to rural settlements and to small farmers are distributed through the Technical Assistance and Rural Extension Company (EMATER) which has a register of farmers who are interested in producing this type of cotton. The settlement "Margarida Maria Alves" (MMA) is located in Juarez Távora, in the Paraíba Agreste, 100 km from João Pessoa. It was created in 1998, to shelter families who already lived on the property where the rural settlement is located and also families that came from surrounding properties. It has an area of 735 ha, 40% of which is a reserve area, and currently has 37 families, of which 21 cultivate naturally coloured cotton in a dry, agro-ecological system, that is, without soil fertilization or treatment of pests and plant diseases with chemical-synthetic inputs; only the producers and their dependents work on the farm. The MMA Rural Settlement is one of the naturally coloured cotton producers in the state of Paraíba, with 14 hectares of planted area. The planting takes place in May and the harvest in December. The rural settlement began with the planting of white cotton (traditional), between 1999 and 2000, starting to plant naturally coloured cotton in 2006.

According to the representative of the Rural Settlement, fertilization and phytosanitary treatments comply with Agroecology and all the production is sold to Natural Cotton Colour. The prices in 2015 were R\$11.80 (US\$2.99) per kilogram of plume, certified as "organic", which in 2017 reached the value of R\$13.50/kg (US\$4.09)<sup>1</sup>. In addition, through the "Paraíba Cotton" Project, an initiative of the state government of Paraíba through EMATER and in partnership with Embrapa Cotton, 180 hectares of cotton were planted, 25% of which was coloured cotton, with the goal of benefiting 160 families. In the municipality of Ingá, in 2017, green coloured cotton was planted on 10 hectares (1,500 kg per hectare), with a total of 15,000 Kg. The main purpose of this project was "the participation of family farmers in the organic cotton production chain, improving production

rates and lowering costs, as well as the interaction with the cattle, goat and dairy production chains" (Government of the State of Paraíba, 2016).

**Processing Phase:** This second phase of the agro-industrial production chain consists of the ginning, baling, spinning and weaving of the harvested cotton. The cotton is processed in the rural settlement itself through a small ginning machine developed by Embrapa Cotton (and partners such as Banco do Nordeste do Brasil, the Brazilian Micro and Small Business Support Service (SEBRAE-PB) and the National Social Mobilization Network (COEP)) for small cotton businesses in Brazil. The machine separates the seed from the fibre, allowing the seed to remain in the possession of families that live in the settlement so they can be planted again and also for feeding animals; and the fibre is commercialised to textile entrepreneurs in the region, which serves as a basis for an incipient verticalization process of cotton production in Brazilian family farmers. According to Silva (2017), another expert at EmbrapaAlgodão, "the cotton bale produced weights 110 kg, the plant has the capacity to gin 360 kg/h of cotton, which facilitates the work of communities that plant up to 350 hectares of cotton, working four months/year, with five full-time workers and producing low-density bales". Today, the production model of the MMA Rural Settlement is able to be replicated in several municipalities in the Northeast, especially in agrarian reform settlements, where the logic of verticalized production nucleus should be conducted with the guarantee of early commercialization of family farmers' production. The NCC group, which acquires the production of the Rural Settlement, is linked to the Clothing Industry Association of the State of Paraíba (AIVEST-PB) and is formed by companies that produce clothing, bags and accessories exported to France, Italy, Germany, Japan, the United States of America and Scandinavian countries (EmbrapaAlgodão, 2016). The activities of the MMA Rural Settlement have drawn the attention of the United Nations Food and Agriculture Organization (FAO), which aims to disseminate the experience of producers in Paraíba to Mercosur. FAO, based on the production of naturally coloured cotton from the agreste in Paraíba, launched the publication "Colourful Organic Cotton: Generating Income and Citizenship in Family Agriculture in the Brazilian Semi-Arid", which integrates a series of actions of the project Más Algodón (Strengthening the Cotton Sector through South-South Cooperation), the result of trilateral partnerships between the Brazilian government, FAO and the governments of Argentina, Bolivia, Colombia, Ecuador,

<sup>1</sup>The US dollar rate was US\$1.00 = R\$3.94 on 12/30/2015; and US\$1.00 = R\$3.30 on 12/29/2017.

Paraguay, Peru and Haiti, with resources from the Brazilian Cotton Institute (IBA). The publication considers the production of the Rural Settlement "Margarida Maria Alves" a reference for producers in Brazil and several Latin American and Caribbean countries. The material reports the experience of retaking cotton cultivation and conversion to organic production system by family farmers.<sup>2</sup> This pioneering initiative in the Brazilian semi-arid has provided positive answers to the challenges of production, income and associativism faced by these farming families. These activities are reflected in the organization and management of the community association, in environmental awareness, in the adoption of practices that enable the coexistence and biological control of pests of the cotton tree and the best use of water and soil, such as organic fertilizers, crop rotation and integrated pest management (EmbrapaAlgodão, 2017). In the spinning process, the plume harvested was transported, already ginned, to Limoeiro-PE, where a company that spun coloured cotton is located - Coopanhia dos Retalhos Ltda.

This situation was deeply discussed by the APL Management Committee, which established that the spinning process must be carried out by the National Service for Industrial Training of Paraíba (SENAI-PB). In the opinion of Napoleão Nunes, coordinator of the Management Committee of APL for Coloured Cotton Garments and Artifacts, the greatest difficulty of the APL is in the spinning phase. The issue is that the spinning textile companies that perform this service with the traditional white plume, besides not having a large production scale for this type of cotton, as the production of plume is annual and in a small quantity, would have to face the issue of contamination of white fibres with the naturally coloured, and vice versa, every time they are introduced into the machinery (work area). In this way, after the spinning process of the naturally coloured cotton, before starting the work with white, traditional cotton, it is necessary to clean the equipment in order to avoid contaminating the fabric and/or the yarn, which takes time and makes the textile operation more expensive. In the weaving process, a company of great importance within APL is Unitextil - Textile Industry, which manufactures knitwear and supplies the garment and artifacts companies of naturally coloured cotton in Paraíba, and all of the interviewees acquire the knitwear of that company.

3. Casulo Arte Natural®.
4. Santa Luzia.
5. Coopnatural.

Vila do Artesãos located in the city of Campina Grande and has 77 bungalows that exhibit works made of naturally coloured cotton, besides leather, clay, threads, wood, stone, brick, fabrics and other self-sustainable items. For this paper, artisans were interviewed, who produce shoes, bags, artifacts, toys, jewellery and clothes of this type of cotton. From the interviews it was verified that most of the craftswomen buy the Unitêxtil fabrics through the Association of Artisans (ARTEB), some buy in consortium with their colleagues and others individually. This is due to the fact that Unitêxtil requires a minimum amount to be purchased and often the handmade work does not require a large amount of naturally coloured cotton. Natural Cotton Colour®: Natural Cotton Colour (NCC) is a consortium of micro-entrepreneurs formed with the objective of developing products made solely from naturally coloured cotton and trying to insert these products into the international market. The group has already exhibited at fashion fairs in Paris and London and based on this experience, started to develop its products with a specific design to meet the demand of foreign buyers for ecological and sustainable products. From 2007 to 2011, the NCC presented its collections in France, at the So Ethic trade show of Prêt-à-Porter Paris. In recent years, it has participated in several fashion events such as PURE London, International Fashion Show in Madrid (SIMM) (currently Momad Metropolis), Project, in Las Vegas, Ethical Fashion Show, in Berlin, and Première Vision, in Paris. With the organic product certification, the brand has also participated in *Biofach* in Nuremberg, Germany and in Tokyo, Japan, and also at Expo West in California, USA, where it got its first international representation through the company *Tentation Bio*. Today, *Natural Cotton Colour*® exports to more than ten countries, including Japan, USA, Canada, Germany, France and Saudi Arabia, and it is starting new businesses with Scandinavian countries and Australia. In Brazil, the brand has already participated of Fashion Business - São Paulo Fashion Week (2010). In 2016, *Natural Cotton Colour*® was at *Maison d'Exceptions*, as the first Brazilian brand selected by the curators of the show and exhibited its innovations presenting the local craftwork.

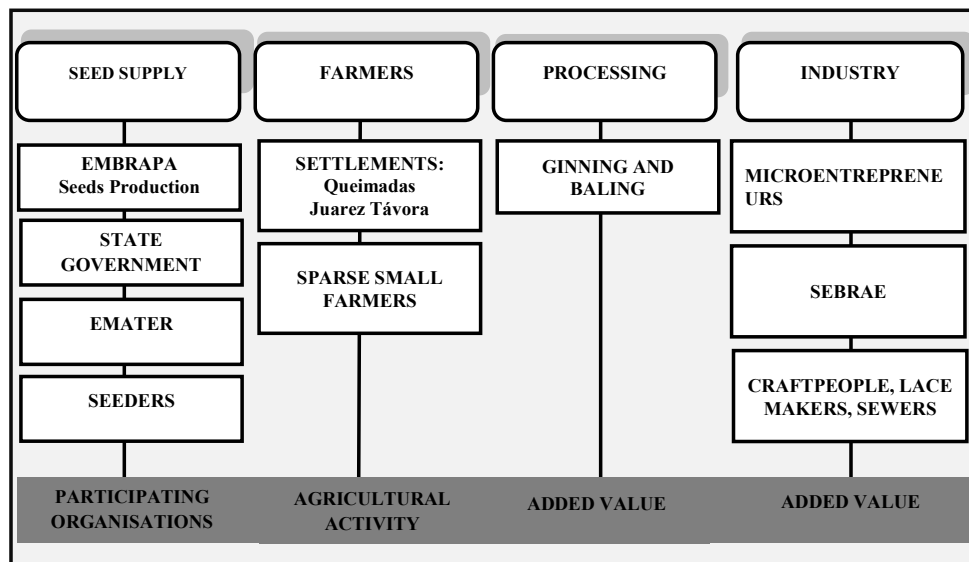


Fig. 2. APL of Coloured Cotton Manufacturing and Artifacts of the State of Paraíba

**Production and Commercialisation Phase:** In the third phase of the productive chain is the production and commercialization of clothing and artifacts that, in the case of naturally coloured cotton, are of a handmade or industrial nature (micro-companies). The main businesses that are part of the APL are presented below:

1. Vila do Artesão.
2. Natural ColourCotton®.

In 2017, the International Trade Center (ITC), a joint agency of the World Trade Organization (WTO) and the United Nations (UN), selected Natural Cotton Colour for the PURE London fashion fair at the Olympia Exhibition Center in London. This group produces luxury fashion, with the appeal of ecological and socially fair activities. Natural Cotton Colour® uses trimmings and accessories made by artisans from the Northeast region of Brazil, especially from the state of Paraíba.<sup>3</sup> CasuloArte Natural®, a bag and accessory

<sup>2</sup><http://www.fao.org/3/a-i6958o.pdf>

<sup>3</sup>Available at: [www.naturalcottoncolour.com.br](http://www.naturalcottoncolour.com.br). Retrieved on: 22/06/2020, at

company, based in Campina Grande, which manufactures an average of five thousand bags for exporting, as well as for the domestic market, according to raw material availability. According to the owner, Marcelo Lacerda, the company works with two types of clients "the tourists, in search of souvenirs and little willing to spend, and the foreign market, for which we hired a designer from a consultancy of the Brazilian Textile and Apparel Industry Association and Sebrae-PB, who developed collections for this public". The factory of hammocks and decoration products in general, Santa Luzia - Redes e Decoração Ltda, started in 1987, in the hinterland of Paraíba. In the beginning its production was directed only to hammocks, but today the company has a great variety of products and has international recognition. The company invests in sustainable production and, besides the naturally coloured cotton, it works with cotton made of recycled fabric patches, committing itself to contribute to the preservation of the environment. It is the first company in its field to work with naturally coloured cotton. It is also a pioneer in the export of hammocks to countries such as Portugal, Spain, France, Norway, Switzerland, South Africa, New Zealand, Germany, USA, Canada, Chile and the Netherlands. Additionally, the company holds the "International Quality" award. Coopnatural - Cotton Textile Production Cooperative of the State of Paraíba - and its brand Natural Fashion: In a written interview, the director of Natural Fashion informed that the enterprise exists, in the form of a cooperative since 2003; it was the first company to use technology from Embrapa Cotton for the manufacture of clothing and handicrafts, contributing to the beginning of the structuring and organization of the APL. Regarding the value of naturally coloured cotton, the entrepreneur said it is a handmade product and it "represents Paraíba". The company exports to Japan, Italy, Switzerland and Spain. The exported products are naturally coloured cotton plume and children's clothing. Based on the interviews, questionnaire and observation by the researcher, it was possible to determine the dynamics of the APL, as shown in Figure 2. Based on field research, it was found that Embrapa Cotton produces the genetically improved seed, which is multiplied by the hired seeders or, in some cases, is multiplied by itself (when the company needs seed for its own genetic experiments or to give it to other agricultural research institutes). These seeds are usually commercialized in the market to interested entrepreneurs, or acquired by the Government of the State of Paraíba to distribute to family farmers, through EMATER (or Project "Paraíba Cotton"). The distribution is also done to the rural settlements "Margarida Maria Alves" and "Queimadas". In the MMA Rural Settlement, the ginning and baling of the plume of the rural settlers themselves or of the plume that was negotiated with textile entrepreneurs (entrepreneurs and/or artisans) is conducted. After that, the bales are sent to the spinning mill and then to the weaving or knitting machines.

## RESULTS TREATMENT

The data was organized for discussion in two topics: (a) Value formation factors in APL and (b) Interorganizational relationships for value formation.

**Value formation factors in APL:** The first factor of value formation to the product, in the case of the Local Productive Arrangement of Coloured Cotton Artifacts of Paraíba, is the production of the genetically improved seed, which allows the emergence of the naturally coloured cotton lint with intrinsic properties suitable for processing in the textile industry. This means the creation of an innovative product with a differential: the ecologically correct product, as it can eliminate the chemical-synthetic dyeing and can be washed without water. In this sense, it is important to mention the statement of the director of Santa Luzia - Redes e Decorações Ltda when he makes reference to the importance of naturally coloured cotton for his business; for him, the "sustainable" product is currently a showcase for the company that keeps it in its production line, as it facilitates business agreements in France and the Netherlands due to the use of the word "sustainable". The naturally coloured "organic" or

"non-organic" cotton is an innovative product that attracts a lot of attention, and this has given the company great visibility". The second factor of value formation is certification, which is currently being conducted by Group Ecocert - Inspection and Certification Body. It is also being implemented in Campina Grande-PB and region the installation of a certification modality that is supported by a public policy implemented by the Ministry of Agriculture, Livestock and Supply (MAPA): the Brazilian Organic Conformity Assessment System (SisOrg) (created by Art. 29 of Decree N° 6.323/07). In this system there is a Participative Conformity Assessment Body (OPAC) that is formed by producers and other people interested in organizing its basic structure.

The third factor is the processing carried out at the "Margarida Maria Alves" Rural Settlement through the small ginning machine established in that location. The processing consists of the ginning and baling of the plume. The naturally coloured "organic" cotton, called "feathered cotton", was sold by the Rural Settlers Association "Margarida Maria Alves" for the price of R\$ 13.50/kg, as agreed in the last meeting of 2017 of the APL Management Committee. The value of coloured cotton from the Project "Cotton Paraíba" has the price of R\$ 7.00/kg (US\$ 2.12). This difference is due to the fact that it is agro-ecological cotton, which cannot be called "organic" because it is not certified yet. Regarding naturally coloured cotton (non-organic management), it has the same price as white cotton which is quoted at R\$ 6.57/kg (US\$1.99) (Ramos, 2017). As for cotton that was harvested but not ginned (called "seed cotton"), according to a survey conducted by Ramos (2017), the price in 2017 (of the "Paraíba Cotton" Project) was R\$2.40/kg (US\$0.72) (in this case it is still coloured agro-ecological cotton, without certification) and R\$5.40/kg (US\$1.63) for the seed cotton certified as "organic" by Ecocert Group. Value formation has its most important role in the final product and an example of this is the fact that the NCC consortium of companies adds in their collections lace and handicraft work. According to the person responsible for Natural Cotton Colour®, the consumer profile of naturally coloured cotton pieces is a conscientious public with a high purchasing power, which is concerned with the origin of the product they consume: "Our consumers want to know if I pay a fair price to the producer, to the lace makers, embroiderers, seamstresses... They want a product with a good story to tell". Entrepreneurs reported that the incorporation of manual labour, in addition to addressing social concerns by including low-income artisans, increases added value. The pieces are well accepted in the international market and recognized as products in the "Sustainable Luxury" category.

Santa Luzia - Hammocks and Decorations®, in the same way, looks for artisan work to add value to its products. According to its partner-director, the company uses the labour of 350 craftsmen to make the fringed trim along both sides of the hammock (varanda) and "mamucabos" (cuffs and strings) of the hammocks (in this case not only hammocks produced with naturally coloured cotton, but also with recycled materials). He also informed that 80% of the production is sold in their own stores in the states of Paraíba, Rio Grande do Norte, Ceará and the Federal District, in addition to international and national fairs. They sell their products in decoration stores in several states of the country, and export to the United States of America, France, Finland, Spain and Hungary.

**Groups for value formation:** Regarding interorganizational relationships for the formation of value, it was possible to observe in the APL the existence of four groups who organize themselves for this purpose.

The first group for value formation is formed in rural production: in the MMA Rural Settlement the entire plume produced by family farmers is processed. The certification is a very important factor for adding value, since it greatly increases the price of fibre, which benefits the rural producer. In addition, it causes a chain process that will have an effect on export relations. According to the leader of the NCC business group and the founding partner of Santa Luzia - Redes

e Decoração®, the European consumer is willing to pay a higher price for a sustainable product.

Second group is formed by the craftswomen who conduct their commercial activities in Vila do Artesão. According to the information obtained in the field research, these entrepreneurs get together to buy the raw material of their products, more precisely the fabrics used for the manufacture of clothing and artifacts, since the quantity they need to normally purchase is less than the minimum required by the industry to make the purchase order. They often also organize themselves to transport the fabrics in order to facilitate these activities for those who are not able to pick up the materials. Sometimes the artisans use the association of artisans (ARTEB) for the purchase of the fabrics.

The third group is formed by Coopnatural® - Cotton Textile Production Cooperative of the State of Paraíba, a cooperative formed by small manufacturers that work in the handmade product segment. According to the administrative director of Coopnatural, the naturally coloured cotton from Paraíba is a handmade product.

The fourth group is the NCC®, formed by eight companies. This group was created with the purpose of cooperation for the export of its products. The NCC® group, together with Santa Luzia - Redes e Decoração®, own the entire cotton production of the rural settlement "Margarida Maria Alves". They also work together in the transportation of the fabric used in the manufacture of their products.

## DISCUSSION AND CONCLUDING

Regarding the value formation, it was possible to map it from the production of the seed to the export of the finished products. It was observed that the products exported by the NCC group, due to organic management in rural production, organic product certification, and handicraft work that are part of the confections, are classified as sustainable luxury products, which means, of high added value. It is important to point out the statement of the leader of the NCC group about the consumer profile of the coloured cotton pieces, informing that this is a conscious public with high purchasing power, who is concerned about the origin of the product they consume: "Our consumer wants to know if I pay a fair price to the producer, to the lace makers, embroiderers, seamstresses... He wants a product with a good story to tell". The NCC group, as already seen, has exhibited their products at *Maison d'Exceptions* in France and *PURE* in London, besides other events of great importance in the fashion world. It was also possible to conclude that some groups are formed within the APL with the purpose of collaborating to add value: starting with (a) producers, (b) artisans from Vila do Artesão, (c) CoopNatural, and (d) business group NCC + Santa Luzia Redes and Decorações. The creation of business groups for value formation takes place because of common interests: for the NCC group, products made from cotton can be classified as a sustainable luxury product, with great acceptance in Europe, i.e. the niche market of this group is a product for export. In another sense we have the owner of Natural Fashion and President of Coopnatural, who classifies products made from coloured cotton as a handmade product, the "representation of Paraíba", was responsible for starting the process of geographical indication. Given the common interests of APL participants, from the emergence of groups in all phases of the production process, it is possible to state that APL's interorganizational relationships have strongly contributed to the formation of value of products from naturally coloured cotton and consequently to the growth of the local productive arrangement, which is the object of this study.

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