

## Research Article

### Analysis of the Agroindustrial Business Sector and its Perspective in the Academic-Laboral Field of Agroindustrial Engineering Program in Popular University of Aguachica

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**Abstract:** The objective of this study is to characterize agro-industrial business sector in southern Cesar in terms of chain, nature, type and size. Analyze the trends that have led to agro-industrial production in the towns of the South of Cesar and the influence it has on the academic and job in the agro-industrial engineering program's field of the popular University of Cesar sectional Aguachica. Agro-industrial potential from South Cesar-Colombia has been giving a turn in its agricultural production by substituting rice and corn crops instead African palm, being reflected this transformation in each one of the towns of study. Allowing to offer a pertinent and updated career with the area of influence. Similarly, the most representative competences for these professionals impulse the growth processes of the agro-chains, for this it applied a descriptive-analytical methodology with a statistical design that presented a representative sample of 33% among agro-industrial companies, within the results the towns that have the most agro industry are mainly Aguachica, La Gloria, Pailitas; they are framed more in the area of oilseeds, fishing, cereals and dairy. Agricultural supplies play an important role in the economy of this area because it supplies the south of Cesar, the possibility of hiring an Agro industrial Engineer has a favorability of 36-38%. In the competences that the agro-industrial companies of the zone require from the Agro industrial Engineers are skill and abilities to analyze situations and agro industrial phenomena and capacity to solve problems efficiently and being able to justify and sustaining what situation within the agro industrial context. Leadership and teamwork are also taken into account as their own competences for the selection of South-Cesarencia personnel.

**Keywords:** Agroindustrial engineering, agroindustrial sector, competences, research, science

## INTRODUCTION

In a research was done by Agro-chains Observatory where analyze the structure in 24 chains agro-productive doing emphasis in the field agricultural and agro-industry (Espinal *et al.*, 2005). However, due to the lack of discriminated statistical information and to specific studies in the sector, the characteristics of these chains and the impacts in the agricultural sector could not be fully appreciated. Other study by the National University of Colombia, Corpogen and Colciencias, highlights that Colombia has great opportunities in the agricultural and agro-industrial sectors for being a rich country in biodiversity and that growth in these sectors can support in biotechnological projects to maximize production of land and development of new products, improved processes and products (Peña *et al.*, 2008). According to this trend the agro-industrial potential of South Cesar has been giving a shift in production to replace rice and corn instead oil palm; these changes should be reflected in an

investigation finds to offer a relevant program at the forefront of this sector, it is for this reason that the research Group on Research Management, Agro-Industrial Production and Transformation (GIPTA) using a descriptive-analytical methodology presents the research proposal on the Analysis of the agro-industrial business sector and its perspective in the academic and labor field of the Agro industrial Engineering program of the Popular University of Cesar sectional Aguachica to support the planning of development programs and the monitoring agroindustrial activities and as a support material for future researchers.

The Department of Cesar continues being one of the towns with the most agroindustrial development and participates with 8.1% of the total Cesar portfolio (DANE, 2007). This information is valid to justify the sector, but the program of Agroindustrial Engineering of the Popular University of the Cesar Sectional Aguachica (UPCSA), lack a study that shows the real stage of the needs of the agro-industrial entrepreneurs in the region, in academic and job factors, to improve

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the technological processes within each institution, maintaining an updated information system and documentary in the agroindustrial sector of the department of Cesar. It's necessary to know the relevance of this program offered in the South sub region. Department. for this reason, the interest of this educational faculty to undertake this study with which the uncertainty of the real profile demanded in the region, the compilation of the information necessary to characterize the agro-industrial sub-sector in the region is awakened, that although It is true that it is traditionally agricultural and agro-industrial should be noted that there is no document with the necessary rigor to present the updated information required to support the relevance of the program in the area and its professional profile. However, there are studies that study the economic structure of the south of Cesar and their evolution in the nineties some companies that serve as a reference with the theme (Aguilera, 2004). Others analyze the statistics of the chamber of commerce, but with the necessary depth to analyze the dynamics of the urban area sector that allow to propose and carry out actions, is still not available and determine that public and private entities have provided resources to strengthen the activities of innovation and technological development in the field. It is for this reason that the research group (GIPTA) of the agroindustrial engineering program of the Popular University of Cesar makes this proposal to document the perspective of the area in the agro-food and non-agro-food agroindustrial field, taking into account the academic, agroindustrial, fully encompassing the progress of each geographic space that forms the Southern Sub region of Cesar.

The Cesar Government seeks agro-industrial prosperity by focusing on migrating from its primary sector to the next level of the economy based on productive transformation. It recognizes that Cesar faces a delay in this transition and the irrepressible determination to promote competitive productive spaces based on greater linkages and generation of added value for production (Governance of Cesar, 2012-2015)

This action that falls within the Faculties of Engineering has the challenge of training the human capital that drives the growth and modernization of the sector, through its basic functions of teaching, research and social projection, in line with the dynamics of the world economy. One of these programs in Agroindustrial Engineering conceived by the Colombian Association of Engineering of Faculties "ACOFI", as a branch of engineering whose study object are the production, conservation, transformation and commercialization of raw materials of biological origin, with alimentary applications and non-food (ACOFI, 1999). In order to achieve the objectives proposed by this program, it is committed to the formation of human capital, with a focus on labor

competencies for the strengthening of human development and the promotion of productivity, oriented to the development of the locomotive sectors and the strategic areas defined in the Sectors based on innovation, we worked following the policy established by the CONPES 3674 (2010) "Guidelines for Strengthening the Human Capital Training System". These guidelines will in some cases have short-term results (four-year 2010-2014); and in others, due to a high level of complexity, in the medium and long-term.

## MATERIALS AND METHODS

The research was descriptive-analytical type; which allowed to know the characteristics of the agro-business sector, the supply and demand for graduates of the Agroindustrial Engineering program from the Popular University of Cesar sectional Aguachica, their labor competences with the program.

The sample was determined by using the statistical formula for this variable to obtain a representative portion of the population studied, considering a confidence 95%, an error rate of 5% and the maximum variability absence history of relevant studies the region of influence of the Popular University of Cesar sectional Aguachica.

The statistical design showed a population of 733 and a representative sample of 33% of agro-industrial companies as (associations, foundations and businesses area) which they were selected from the database of the Chamber of commerce of Aguachica to March 2014 having account commerce activity registered in this institution and in the CIU (Chamber of Commerce of Aguachica, 2014).

## RESULTS AND DISCUSSION

**Characterization of agro-business companies in the area:** Agriculture is a vital activity for the survival of mankind and, therefore, is a factor that affects the economies of regions and countries, to the point of establishing definitive guidelines in the progress of them (Cardona *et al.*, 2010). South of Cesar is characterized as a purely agricultural and agro-industrial zone as see in Fig. 1 whose potential is in food area such as the fish sector, dairy, grain, oil palm, among others and in non-food area such as agricultural supplies, biofuels, cotton and tobacco, the last one is relatively new and growing in the rural area of Aguachica. The proximity to the river Magdalena makes the fishing sector with 20% is predominate in the region by the number of associations and organizations dedicated to the production and marketing of this product. In relation to the oil palm has a 10% of participation and should be the first one of South Cesar if we look at the number of hectares planted in this area of the country, but in this research is measuring the number of agro-business companies that are in the subregion from South Cesar.

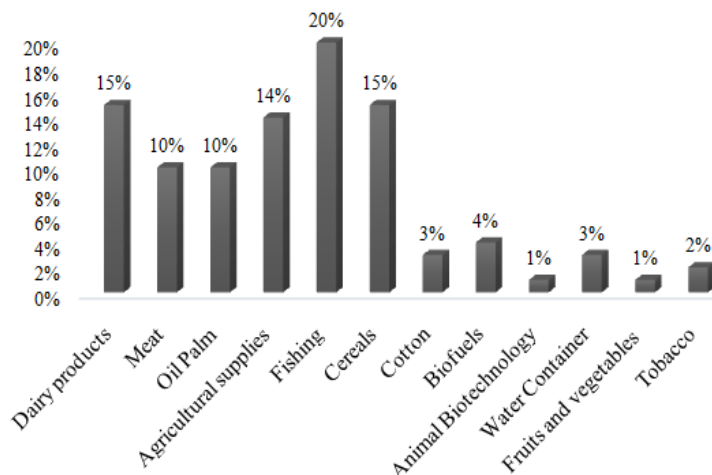


Fig. 1: Agro-industrial chains from south of Cesar

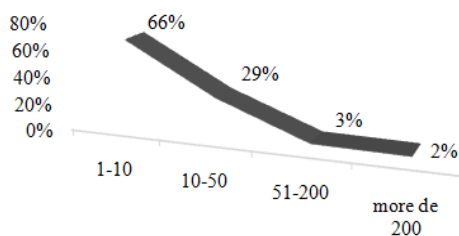


Fig. 2: Number of employees by area businesses

Table 1: Ability to analyze, understand and identify the variables that define a problem or process

Measurement level of performance				
1	2	3	4	5
10%	14%	15%	33%	28%
The importance of competence				
1	2	3	4	5
8%	13%	20%	30%	29%
Author				

Aguachica being the second city of the Cesar Department has the largest companies in agro-businesses, followed in this order Pailitas and La Gloria for the development of cotton, rice, corn, oil palm, tobacco, pineapple, dairy, among others. It is also evident that from all the companies surveyed showed that the private sector with 85% is dominant companies in the study area; followed by public sector companies with 13% and mixed with the remaining 2%.

According to the information provided in Fig. 2, it can see that most of the agro-industrial companies have a low number of employees, between 1 and 10 employees are 66%, followed by 11 to 50 years with 29%, while between 51 and 200 they are 5%, according to the research is due to the fact that they are family and micro companies and the agro-industrial complexes are few in the south of Cesar in relation to other parts of the country.

Among the companies surveyed may show that there is no significant difference between the percentage of participation of professionals and non-

professionals in the local area businesses, this is because most of the companies are associative labor, the cooperatives with people have learned through experience a determined art. From 49% who are professionals, the research showed that 23% are public accountants, 21% business managers, 9% agroindustrial engineers, 4% agronomists and agricultural technologists, 3% veterinarians and food engineers and 1% chemical engineers environmental, fisheries, industrial, mechanical, electromagnetics, animal scientists, social worker, graphic designer. Among the non-professionals, we have technicians in the maintenance of computer equipment, hotel and tourism, surveyors, a technician in textiles, agroindustrial technician, technology administrative management, technical agricultural management, teachers in biscuit and baking, food technologist.

From the percentage of professionals working in the company 63% are not native to the region, the 37% belongs to the zone of influence.

**Agroindustrial engineer competences:** In Table 1, it is observed the opinion of the entrepreneurs was analyzed regarding the relevance of agroindustrial competencies of professionals.

The level of awareness of companies on the ability to analyze, understand and identify the variables that define a problem or process for graduates of agro-industrial engineering, they considered it high with a value of 4 for the level of performance and the same value for the importance competition with percentages of 33 and 30%.

The ability to formulate, solve and find solutions to problems related to agroindustrial chains is considered the most representative competition for companies' area as shown in Table 2, with a performance level of 50% in the high category (5) and 32% in the same category for the importance of competition. This is due to agroindustrial professional engineering must respond

Table 2: Ability to propose, solve and find solutions to problems related to agroindustrial chains

Measurement level of performance				
1	2	3	4	5
7%	8%	23%	32%	50%
The importance of competence				
1	2	3	4	5
9%	9%	20%	30%	32%

Author

Table 3: Ability to operate, transform and design to produce, manage projects, companies and agro-industrial products

Measurement level of performance				
1	2	3	4	5
11%	5%	14%	33%	36%
The importance of competence				
1	2	3	4	5
10%	6%	13%	31%	40%

Author

Table 4: Ability to explain, demonstrate, test, support why, how and for what of phenomena related to agro-industrial context

Measurement level of performance				
1	2	3	4	5
11%	8%	10%	32%	39%
The importance of competence				
1	2	3	4	5
10%	7%	11%	36%	37%

Author

Table 5: Among the following competences that must manage company employees to take a charge, conceptualized as follows

Competence	(%)
a. Leadership	29
b. Teamwork	26
c. Communication and interpersonal relations	13
d. Negotiation and mediation	17
e. Initiative	16

Author

effectively to the obstacles or problems that may have on their job.

With respect to the competition included in Table 3, entrepreneurs believe that the graduate in agro-industrial engineering should have the ability to manipulate the raw material, process it, market it and administer it. They must give a value of perception both variables in the highest rank with 36 and 40% respectively. This wants to express that entrepreneur wish to have a professional with skills and knowledge in the agro-industrial sector.

According to the information in Table 4, employers state that the ability to explain and sustain the phenomenon that occurs in the workplace is between the ranges of 4-5 for the two variables and their high level of importance. Justify the verbal and documentary evidence is very representative of employers and it is necessary when choosing a professional in agro-industrial engineering because the professional can transmit in an easy way the process that can be improved.

Finally according to Table 5, for entrepreneurs are considered very important the professional leadership area; followed by team work and lastly, consider communications and interpersonal relationships.

## CONCLUSION

The towns that have more agroindustry from South of Cesar taking into account cooperatives, associations, foundations, family businesses and individuals, among others are Aguachica, La Gloria, Pailitas. These companies are framed more in the area of oilseeds, fish, cereals and dairy products. Agricultural supplies play an important role in the economics of this area in order to supply South of Cesar.

Although the population of professionals that work in agro-industrial companies in the area are accountants and business administrator are not native to the area or the Popular University of Cesar sectional Aguachica, therefore it should strengthen the promotion and the advertising program of Agroindustrial Engineering and other academic offerings of the University.

The university must be in contact with the companies of this zone through internships, research projects, consults, extension projects that increase the visibility due to companies studied didn't have knowledge about this career.

The entrepreneurs required an agro-industrial engineer whit the competences necessities to solve efficient way whatever situation in the agro-industrial process area. In the same way, the professional has the facility of express about situation presented in the companies and will be a guide working in team to a better performance.

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## REFERENCES

- ACOFI, 1999. Colombian Association of Faculties of Engineering Bogotá, 1999.
- Aguilera, M., 2004. Agro-industrial Development of Aguachica, Agroindustrial Center, Working Papers on Regional and Urban Economics, Center for Regional Economic Studies. Editorial Republic Bank, Cartagena. Retrieved form: <http://www.banrep.gov.co/sites/default/files/publicaciones/archivos/DTSER-42.pdf>.
- Cardona, C.A., C.E. Orrego and J.A. Tamayo, 2010. Analysis of the Caldense agroindustry and its Perspectives of Manzales Development. Editorial Nacional University of Colombia, Caldas, Colombia, December, 2010, pp: 17.

- Chamber of Commerce of Aguachica, 2014. Database of Companies Registered in the South of Cesar. Aguachica-Cesar, Document Digital in Excel, March, 2014, pp: 1-20.
- CONPES 3674, 2010. Policy Guidelines for Strengthening the Human Capital Training System SFCH, Bogota. National Advice of Economic and Social Politics. Republic of Colombia, Planeación's National Department, pp: 4.
- DANE, 2007. Regional Economic Situation Report Department of Cesar. pp: 20. Retrieved form: html Version File  
[https://www.dane.gov.co/files/icer/2007/cesar\\_icer\\_07.pdf](https://www.dane.gov.co/files/icer/2007/cesar_icer_07.pdf).
- Espinal, C.F., H.J. Martinez and X. Acevedo, 2005. Agroindustry and Competitiveness, Structure and Dynamics in Colombia, 1992-2005, Ministry of Agriculture and Rural Development. 3rd Edn., Agrocadenas Observatory Colombia, 2005, Bogota, pp: 13.
- Governance of Cesar, 2012-2015. Development Plan for the Department of Cesar "Prosperidad a Salvo". pp: 75.
- Peña, M.D., O. Castellanos, S. Carrizosa, C. Jimenez and P. Del Protillo, 2008. Biotechnology, Development Engine for Colombia of Colciencias 2015. Bogota, pp: 21.