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## **A LOOK AT WORK SAFETY AND HEALTH IN WORK IN THE AGRICULTURAL SECTOR IN COLOMBIA AND BRAZIL**

**UNA MIRADA DE LA SEGURIDAD Y SALUD EN EL  
TRABAJO EN SECTOR AGRICOLA  
COLOMBIA Y BRASIL**

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## **A Look at Work Safety and Health in Work in the Agricultural Sector in Colombia and Brazil**

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## ABSTRACT

**Introduction:** The purpose of investigating this documentary review is focused on making a comparison between the agricultural industry of Colombia and Brazil on all topics that cover matters related to safety issues and that promote safe work environments. In this context, we want to understand the political regulations, guidelines, and practices that govern each country, that they execute and that are directly related to creating safe environments and taking care of the health of workers involved in the field of agriculture. For which we seek to know and analyze how these guidelines that take care of the safety of workers and promote health at work in these two countries are implemented. Additionally, the effectiveness will be studied as a result of the measures taken in these two countries, where it will be determined if they fulfill the desired function, which is to provide protection and security to these workers who carry out their work tasks in the agricultural sector. The aim is to be able to provide and obtain a clearer and more detailed vision of the implementation of these two countries on the safety that is carried out in the workplace and how they prevent occupational diseases, where it seeks to contribute to improving working conditions and generating environments. healthy for these workers in the sector, in the agricultural industry in Colombia and Brazil. **Objective:** This review seeks to identify the main parameters that are fundamental and that have been previously established in Colombia and Brazil in the field of safety of this sector and health of workers in the agricultural sector. These parameters must be established to take care of the health of these workers, and thus be able to create safer and healthier environments. **Methodology:** This documentary review is carried out by examining documents at an international, national and local level taking into account a period of 5 years ago. This process is constituted by carrying out a bibliographic review, where the information from different documentary sources is analyzed and interpreted. **Results:** it was determined that Colombia and Brazil implement standards and regulations to guarantee the safety of workers, in Colombia and Brazil there are laws to care for the worker who performs their tasks in the field or known as rural worker, and these standards were determined They shelter all workers in general. It was also established that Brazil has a higher incidence of diseases related to chemical risk, unlike Colombia, which has an incidence of musculoskeletal disorders, and both countries face challenges with the informality of the agricultural sector and the low literacy of the agricultural sector in Colombia and Brazil.

**Keywords:** *agriculture, occupational health, agricultural sector, safety, health, work*

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# Una Mirada de la Seguridad y Salud en el Trabajo en Sector Agrícola Colombia y Brasil

## RESUMEN

**Introducción:** La finalidad de inquirir esta revisión documental, se centra en realizar una comparación en la industria agrícola de Colombia Vs Brasil en todos los temas que abarquen lo relacionado con temas de seguridad y que promuevan ambientes de trabajo seguro. En este contexto, se desea comprender las regulaciones políticas, directrices, y prácticas que rigen en cada país, que ejecutan y que están directamente relacionadas con crear entornos seguros y cuidar la salud de los trabajadores enlazados en el ámbito de la agricultura. Para lo cual se busca conocer y analizar cómo se implementan estas directrices que cuidan la seguridad de los trabajadores y promueven la salud en el trabajo de estos dos países. Adicionalmente, se estudiará la eficacia, como resultado de las medidas tomadas en estos dos países, donde se determinará si cumplen con la función deseada, la cual es busca brindar protección y seguridad a estos trabajadores que ejercen sus tareas laborales en el sector agrícola. Se quiere poder proporcionar y obtener una visión más clara y detallada de la implementación de estos dos países sobre la seguridad que se ejecuta en los lugares de trabajo y de cómo previenen enfermedades laborales, donde se busca contribuir par mejorara las condiciones de trabajo y generar entornos saludables para dichos trabajadores del sector, de la industria agrícola en Colombia y Brasil. **Objetivo:** Se busca con esta revisión, identificar los principales parámetros que son fundamentales y que se encuentran previamente establecidos en Colombia y Brasil en el ámbito de la seguridad de este sector y salud de los trabajadores del sector agrícola. Estos parámetros deben estar establecidos para cuidar la salud de estos trabajadores, y así poder crear entornos más seguros y saludables. **Metodología:** Esta revisión documental se lleva a cabo examinando documentos a nivel internacional, nacional y local teniendo en cuenta un periodo de 5 años atrás. Se constituye este proceso llevando a cabo una revisión bibliográfica, donde se analiza e interpreta la información proveniente de diferentes fuentes documentales. **Resultados:** se pudo determinar que Colombia y Brasil, implementan normas y regulaciones para garantizar la seguridad de los trabajadores, en Colombia y Brasil existen leyes para cuidar al trabajador que desempeña sus tareas en el campo o conocido como trabajador rural, y se determinó estas normas acobijan a todos los trabajadores en general. También se estableció que Brasil tiene más incidencia en enfermedades relacionados con riesgo químico a diferencia de Colombia que tiene incidencia en trastornos musculoesqueléticos, y ambos países enfrentan desafíos con la informalidad del sector agrícola y la poca alfabetización del sector agrícola en Colombia y Brasil.

**Palabras Clave:** agricultura, salud ocupacional, sector agrícola, seguridad, salud, trabajo



## INTRODUCTION

The purpose for which this bibliographic research is carried out is to analyze and determine the conditions of the agricultural area in terms of safety and how they promote health in these work environments between Colombia vs Brazil in the agricultural industry, thus being able to establish a comparison between both countries. Colombia and Brazil are recognized and of utmost importance in the world due to their great agricultural production since agricultural activity has become one of the most important economic activities in each country. To carry out this analysis, we seek to cover different aspects that include everything associated with safety at work, protection and well-being of farmers who work in the agricultural sector. Where we will explore similarities, comparisons in the regulations of each country. How they implement security in this important sector, practices and the results obtained in both nations. The aim is to understand the measures that each country has adopted, the challenges they have faced, and identify the possible aspects of improvement that are required to guarantee safe work environments and take care of the health of workers in the agricultural industry of these two countries. This comparative approach will allow obtaining a clear and comprehensive vision of both regulations and practices and actions implemented in the sector.

The agricultural sector is emerging with greater strength, positioning itself as one of the fundamental and recognized pillars worldwide, experiencing exponential growth that consolidates its position as one of the most important and prominent sectors globally. The importance of the agricultural sector in these two countries not only lies in the production of food, but also in the economic engine that it represents and is the source of employment that supports approximately 563 thousand families of the rural population in Colombia. While, in Brazil, approximately 10 million families are dedicated to this activity, since, thanks to agriculture, these families can sustain themselves economically. The main objective of this documentary review is to know the strengths of Colombia and Brazil in how they protect the life and integrity of workers in the agricultural industry and how health is promoted in their work environments. In addition, the implementation of this area is studied. this sector of the agricultural part of said countries.



## BACKGROUND

Ministry of Labor of Colombia, Decree 1072 of 2015. Through which the Single Regulatory Decree of the Labor Sector is issued. It corresponds to the regulations regarding everything related to work in Colombia; this regulation establishes the regulatory requirements related to the country's labor environment. This decree establishes provisions in different areas including workplace safety and worker health, working conditions, important aspects of the employment contract, addresses various aspects related to workplace safety, as well as the health of each worker. Additionally, it establishes the employer's obligations and sets guidelines for implementation in all companies in Colombia, which must have a management system to guarantee personnel safety and safeguard worker health in all Colombian organizations. It also establishes guidelines for hazard identification, evaluation, and implementation of occupational risk control measures, promotes prevention programs to enhance work environments, and ensure the life and health of workers, and provides guidelines for training on safety issues. Decree 10722 of 2015 compiles all existing regulations in Colombia up to that date, implying that all regulations compiled in this decree are no longer in force in Colombian legislation.

Risk Factors in Workers in the Agricultural Sector, a

Bibliographic review. Lina María Lumbaqué Melo. (2021). This study carried out as a methodology a bibliographic exploration using as a database the information provided by the University of Applied and Environmental Sciences U.D.C.A to which the researcher belonged, in which a total of 48 review and research articles were selected. For this analysis, some Health Sciences Descriptors (DeCS) related to the Risks present in their work environments, Occupational Health, Agricultural Crops, Worker Safety and Populations at Risk were used. The objective of carrying out this study is to detail and understand the possible factors that these farmers in Colombia face every day. As results, two main categories could be identified: The first category indicates the risk factors, making it clear that the most important exposure occurs through chemical substances present in pesticides, as well as biomechanical factors related to prolonged postures and the use of tools. In the second category, work tasks are mentioned, where a high exposure to fumigation stands out, which causes a negative impact on the correct functioning of various body systems, in addition to this it can be an important long term factor that can produce manifestation of cancer and various diseases related to this exposure.



Brazilian Ministry of Labor, Regulatory Standards. (2019). (2019 last modification) These regulatory standards establish additional regulations to Chapter V (Safety and Medicine at Work) of Title II where the Consolidation of Labor Laws (CLT) is established, they are modified by Law No. 6,514, published on December 22, 1977. The Regulatory standards are issued by the Ministry of Labor. They consist of commitments, prerogatives, responsibilities, obligations, rights and duties that all employers and employees must comply with in order to guarantee, ensure safer and much healthier work environments, preventing manifestations on occupational diseases and accidents. There are 38 current regulatory standards and each of them addresses a specific issue, associated with the creation of safe environments and care for the health of workers. In Brazil, the Ministry of Labor is mainly responsible for supervising that labor standards are fully complied with and if the provisions are not met, the relevant sanctions are generated.

Occupational risks in agricultural work and negotiation for the health of workers.

rural worker. Leticia Silveira Cardoso<sup>I</sup>, Clarice Alves Bonow<sup>II</sup>, Daiani Modernel Xavier<sup>III</sup>, Marta Regina cezar-vaz<sup>IV</sup>. (2021). The methodology used in this study was mixed concurrent animated, carrying out this mixed approach both quantitative and qualitative provides an integration through an equitable fusion (QUAN + QUAL). During the period 2014-2015, this study was carried out with the participation of 3,511 participants, for which surveys and interviews were used. This study was carried out with the objective of understanding the connection between occupational risks in the agricultural sector of Brazil and conversations about the health and well-being of people who work in rural areas. The results found in this study showed that, throughout the quantitative stage, it was evident that the average age of 50-58 years has a prevalence of disease in the muscles, in addition to the endocrine system and the urinary system. Likewise, in the qualitative phase, it was established that, as the consumption of agricultural products increased, there was an increase in diseases, mainly in physical, chemical and ergonomic risks.

Occupational risks in Latin American workers in the agricultural sector: A systematic review. Matabanchoy-Salazar, J. M., & Díaz-Bambula, F. (2021). According to this systematic review that was carried out in a period from 2010-2020. With the aim of analyzing the dangers faced by workers who work every day in the fields, in Latin América. As a methodology, this systematic research was



carried out based on the PRISMA-P guide, and was composed of three main sources: scielo, EBSCO and LILACS. The search was conducted in three main languages: English, Spanish and Portuguese. Keywords such as "health", "agricultural", and "agriculture". In addition, criteria such as the inclusion and exclusion of information were established to guide the conduct of this systematic review. As results obtained from the review of the articles, which were 65 in total, in which occupational risk (OR), chemical risk, then biological risk and finally biomechanical risk can be identified as predominant. It is important to highlight that Colombia and Brazil stand out on this topic by having the largest number of publications on this topic.

## **METHODOLOGY**

To carry out this systematic evaluation, an exhaustive review of documents from Colombia and Brazil was carried out, through which a variety of different documentary sources were used. In the execution of this process, various documentary sources from Brazil were examined in detail, such as Scielo Brasil, university repository, official pages of the Brazil government, among others, as well as sources from Colombia, such as Scielo and Google Academic, repository of universities, official pages of the Colombian government among others. To carry out this research more effectively, related keywords were selected according to the established topic to investigate, such as: "agriculture", "security", "health", "work", "agricultural sector", among others. These keywords were essential during the search for information in both Portuguese and Spanish, with the aim of covering a broader and more complete range of information available in both languages. In addition to this, it is important to highlight that the scientific documents that were found in languages other than Portuguese and Spanish were submitted to a translator, to guarantee the inclusion of all relevant information on the topic.

## **RESULTS AND DISCUSSION**

It was determined that Brazil implements measures to ensure the life and health of workers, in the NR (Regulatory Norms), so we found 38 existing regulatory standards, in force and each of them addresses a specific topic, governing everything. what is associated with safety issues in work environments, as well as the health of each worker. Specifically in Regulatory Standard N.31 of 2019: Occupational Safety and Health in agriculture, livestock, forestry and aquaculture. In Brazil, the





Ministry of Labor is the main person in charge of verifying compliance with the provisions of these labor standards and the sanctions applicable in case of non-compliance. Additionally, Brazil implemented specific standards for the agricultural sector, which were approved in ordinance No. 3,067 of April 12, 1998, which established the NRR (Rural Regulatory Standards) that establishes 5 general provisions: NRR1: Specialized service for the prevention of accidents in rural work. NRR 2: Internal commission for the prevention of accidents in rural work. NRR 3: which establishes the mandatory use of personal protection elements (PPE). NRR 4: Safe use of chemicals. NRR 5: all workers in the rural sector must be effectively reached by measures related to the SST. Brazil demonstrates its efforts towards implementing measures aimed at protecting the lives and integrity of every worker, as well as creating safe environments for workers in the agricultural sector. In this regard, Cooxupe, the largest coffee cooperative in Brazil, has agronomical engineers who, besides educating on coffee cultivation-related topics, also provide guidelines for workers to ensure their safety, health, and wellbeing in their workplaces. Likewise, in Colombia, the safety system is implemented for workers in organizations and health is promoted in the workplace on a mandatory basis, since it is essential and is based and established through Decree 1072 of 2015. This decree compiles and updates all the laws that are in force that are related to the labor sector, which was issued by the National Government. It establishes the guidelines that organizations must follow to implement Management Systems aimed at protecting workers' safety and ensuring the health and lives of workers in Colombia. This framework is fundamental and must be strictly adhered to by all organizations in Colombia, both public and private. It establishes a regulatory framework aimed at promoting and fostering safer work environments for all Colombians. This decree is of utmost importance for all Colombians since it represents a solid and structured basis to guarantee fundamental labor rights, and is the guarantee of safe and healthy conditions in the workplace. In this sense, the National Federation of Coffee Growers (FNC) has followed the norm and has sought a way to implement safe practices in coffee growers, for which it designed strategies such as the use of media and educational programs among farmers. which we found: "The Adventures of the Professor Yarumo", "Excelso" y "Yarumadas". In this way, the National Federation of Coffee Growers shows its commitment to safety and seeks to reach coffee growers and the agricultural sector in general,



since these programs can become an effective platform to inform farmers who are exposed to various dangers in their workplaces and risks as a consequence of day-to-day exposure in their workplaces. For this purpose, radio, TV and other means of communication are used in order to reach the largest number of users in the agricultural sector throughout the country. The commitment to the safety and integrity of the population and the promotion of health at work in the coffee sector and the sustainability of the coffee industry in Colombia can be evidenced. the awareness and education about the consequences of the risks to which they are exposed. As well as the promotion of safe practices in the places where work activities are carried out, these aspects are essential for the safety of all workers and the general health of farmers.

In Brazil, it was evident that rural workers are exposed to all types of dangers such as: physical, chemical, biological, biomechanical, psychosocial, safety conditions and natural phenomena. Due to all these factors, they are more prone to suffer workplace accidents. In Brazil, the Ministry of Labor is in charge of monitoring, supervising that everything established is fully complied with, what is governed by the regulatory standards and in the CLT (Consolidated Labor Laws), and in case of not complying with what is established, they will be carried out the corresponding sanctions. But, despite this, Brazil has an incidence of diseases due to poisoning. This is because, in the 1960s, agricultural practices changed in the country, which they called the "Green Revolution". The agricultural sector is more prone to chemical risk, because since 2008, Brazil has become and has positioned itself as the largest consumer of chemicals worldwide, the record consumption of pesticides and the current food production scenario that are dependent on chemicals, are reflections of the modernization of the field adopted by the Brazilian government. Unlike Colombia, the agricultural sector also faces various types of hazards that cover different categories, including hazards: chemical, biological, physical, psychosocial, safety conditions, biomechanical and natural phenomena. These dangers pose significant challenges to the safety of agricultural workers in the country. Among the most important risks are musculoskeletal disorders (MSDs), which have a significant incidence in the Colombian agricultural sector. These musculoskeletal disorders cause problems for workers to carry out their activities since their health is affected, and harms the well-being of the Colombian countryside, limiting their ability to perform physical tasks and increasing the number of occupational diseases in



the agricultural sector. Exposure to adverse physical conditions, such as prolonged postures and repetitive movements, notably contribute to the prevalence of MSDs among agricultural workers. The arduous labor and demanding nature of agricultural work, which often involves lifting heavy loads, working on uneven, slippery terrain, and performing physically demanding activities, increases the risk of musculoskeletal injuries.

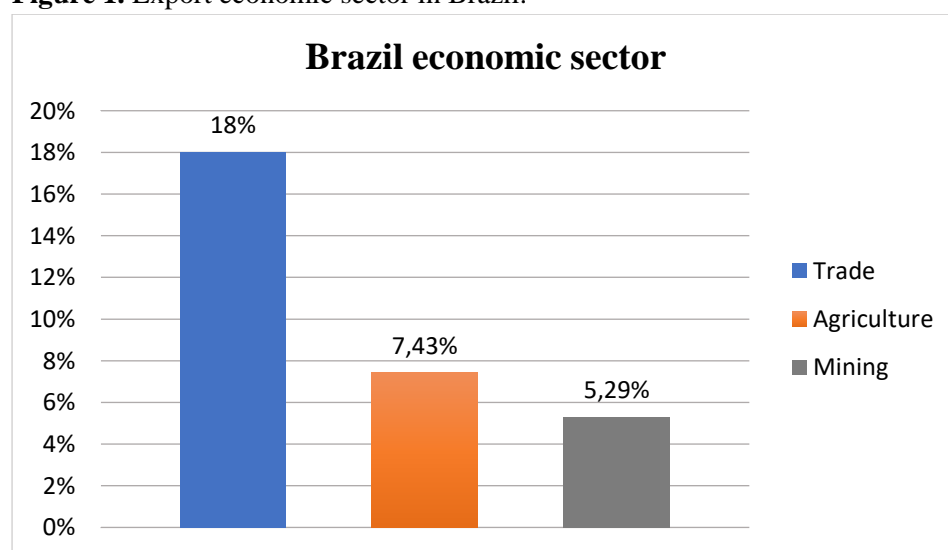
In Brazil, Decree 4074 of 2002 details hazard signaling, including the standard model for chemical product labels. Where three columns were specified: phrases related to human health, environmental precautions and the environment, for product identification. For the consumer to be able to recognize the product, it must have a strip along the entire length of the product, adapted to the classifications: red the most dangerous, yellow medium danger, blue requires attention, green least dangerous. He decrees 4072 of 2002 in its article I. Section IV: This law implied the prohibition of new pesticides, if the toxic effect was greater than that of the existing product for the same purpose. The Ministry of Labor and Employment introduced the mandatory adoption of the GHS (Globally Harmonized System) in 2011, modifying its NR (Regulatory Standard) No. 26 that contains safety signs, including classification, and that seeks the correct labeling of substances. chemicals and safety data sheets. Likewise, in Colombia, the GHS (Globally Harmonized System) aims to standardize the classification, as well as the labeling, as well as the safety data sheets that chemical products must carry, this happens worldwide. It is an international initiative, its implementation in Colombia, through decree 1846 of 2018, established a significant commitment of the country to improve everything associated with the safe management of all chemical substances. In addition, it also introduced specific provisions regarding chemical safety, all of this is established in order to protect and safeguard the health of human beings and the care of the environment. These provisions carry and cover different aspects that are related to the safe storage of chemicals, as well as the correct management of hazardous waste, in addition to the training of workers who perform tasks related to chemicals.

In Brazil, the agricultural sector is very important in the Brazilian economy, and a source of employment for 10 million families. According to statistics from the Brazil Ministry of Agriculture, it represents 42% of all farms in the country. Despite the efforts, Brazil faces challenges regarding



informal work issues in the agricultural sector, since the low educational level of rural workers interferes with the understanding of the information provided that allows workers' safety and health in their work environments. A study carried out in the community of Rio de Janeiro observed that 30% of this community belonging to the agricultural sector have alterations in the central nervous system, due to direct exposure to different chemical agents, the safety of pesticides contains this information so important they are contained in the safety data sheets, in booklets or manuals but due to poor literacy they have difficulty understanding them, added to this the informality. Similarly, the agricultural sector is one of the largest generators of employment in Colombia, where its working condition is informal. Colombia, in the coffee sector, represents a source of work and livelihood for 563 thousand families, where it has an area of approximately 853 thousand hectares of coffee surface. Basically, the hard daily work, the use of various tools in the activities carried out in this sector of agriculture, and the little interest on the part of our government entities, which translates into the work of agriculture becoming a high-risk job for workers. Despite this, the necessary attention is not being given to this sector, this activity is classified as risk three, there are no statistics and occupational health and safety are considerably neglected. In addition to this, the little literacy that exists in the agricultural industry and the little knowledge on issues associated with worker safety is a giant challenge to creating safe and healthy environments.

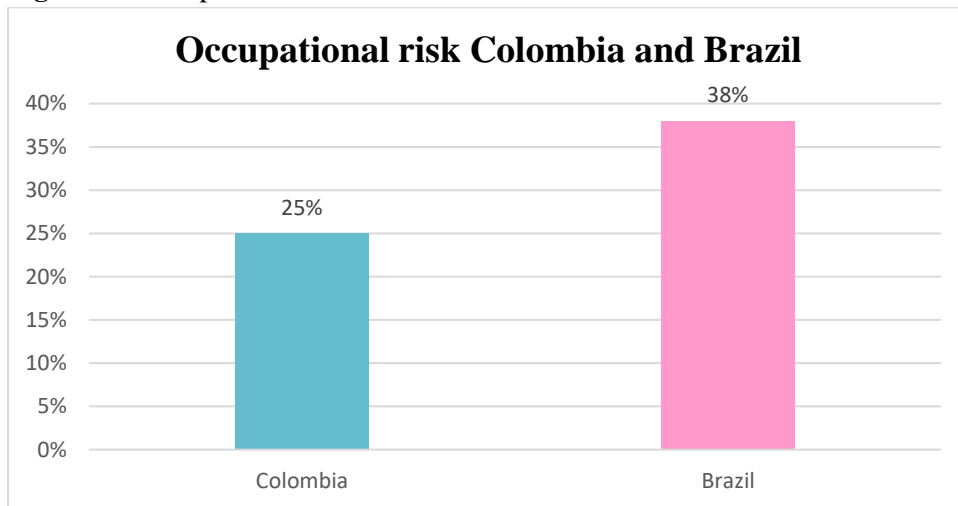
**Figure 1.** Export economic sector in Brazil.



Fountain: Urbina, B. (2024)

It can be seen in the graph that the agricultural sector represents 42% of the Brazilian country's exports, ranking above other important economic sectors, such as mining and the chemical products industry. Highlighting the importance of the agricultural sector to sustain the Brazilian economy.

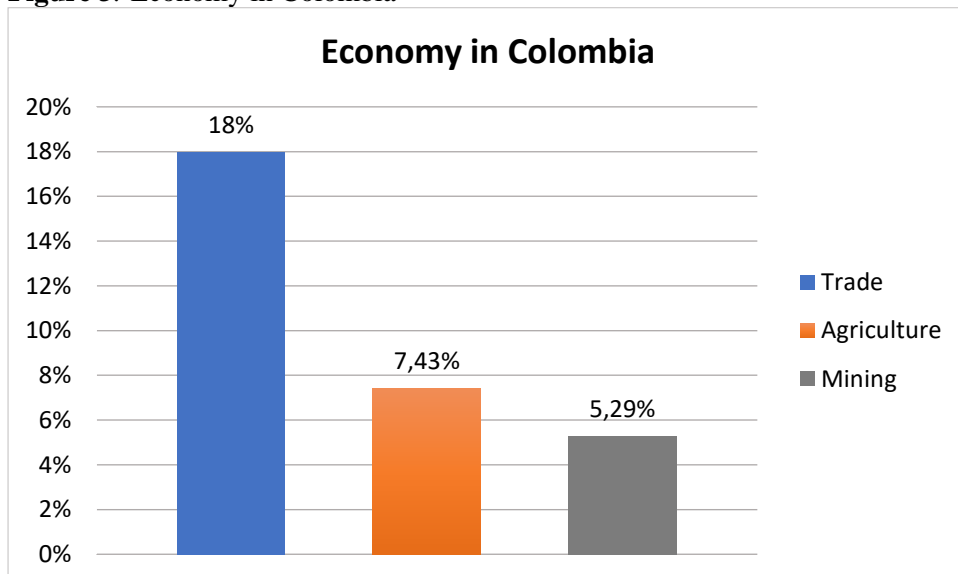
**Figure 2:** Occupational risk Colombia and Brazil



Fountain: Urbina, B. (2024)

As can be seen in Graph 2, we can see that Brazil presents an occupational risk index of 38%, while Colombia shows an index of 25% in the same aspect. Brazil, with a higher rate, shows a higher incidence in terms related to occupational risk, unlike Colombia with a lower incidence rate.

**Figure 3:** Economy in Colombia



Fountain: Urbina, B. (2024)

We can see in graph 3 that the agricultural sector in Colombia occupies 7.43% of our Colombian economy, it is a very important sector in Colombia, mining with 5.29% and commerce with 18%.

## **CONCLUSIONS**

Brazil established a regulatory framework that addresses different important aspects of the safety of its population. The Regulatory Standards and the Rural Regulatory Standards provide us with guidelines for the prevention of accidents, it can be seen that Brazil is committed to the safety of workers.

Colombia has current regulations where the guidelines related to safety issues in the workplaces of its population are found. Without a doubt, Colombia promotes safe and healthy environments.

Colombia and Brazil, despite their efforts, face challenges in the área of worker safety in the agricultural industry one of the most important challenges is the high informality that both nations present it also highlights the low literacy that workers have of the agricultural sector in both countries.

It was concluded that Brazil has more incidents related to chemical danger, since it has high rates of poisoning and diseases of the central nervous system. Unlike Colombia, it has more incidences of biomechanical danger, specifically musculoskeletal disorders in the agricultural sector.

Both countries are strong in safety issues and in promoting healthier and safer work environments, there are standards in both countries for the implementation of safe environments and care for health and life in their workplaces for the agricultural sector, but due to the great informality in the sector, the objective of the established laws is not met.

Farmers in both countries do not have a clear perception of issues related to safety in their work environments and health care in the workplace, so this leads to a greater risk of accidents in field workers or rural workers, the little knowledge they have has been acquired empirically.

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