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**3FOOD PRODUCTION AND QUALITY IN AGRICULTURE IN 2018  
4AND 2019**

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9 ABSTRACT: Food is the basis of human survival, and one of the Brazilian  
10 sectors that stands out the most is the agricultural sector, which in 2019 fed about  
11 728,658 million people in the world. food, which has been taking care to produce  
12 quality and safe food. The objective of this work is to carry out a brief literature  
13 review on food production and quality in agriculture in 2018 and 2019, describing  
14 and characterizing the importance of agriculture in food production and food  
15 quality. The present study was developed based on the literature review and  
16 relevant research on the production and quality of food in agriculture in 2018 and  
17 2019, in order to characterize the importance of agriculture in food production and  
18 food quality. Many changes occur in the production of food in agriculture through  
19 the adopted technologies, enabling the large production of food that the country  
20 has, being one of the largest producers. However, it is still insufficient to supply  
21 food for the entire population, making agriculture an essential link for food, but it  
22 has been experiencing difficulties in increasing its production, due to  
23 environmental and management factors, impacting crop yields, and how the  
24 consumer started to demand a higher quality and safer food, care is needed in the  
25 production of quality and safe food. Agriculture is essential for feeding the  
26 population and due to the population scenario, the food sector depends on its  
27 production, which is also affected by consumer demand for production and sale,  
28 due to the search for quality and safe food.

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30 Key words: Food; Consumer; Food Insecurity; Productivity

31

**32INTRODUCTION**

33

34 Human beings depend completely on food for their survival, needing food during their  
35 development throughout life, which is important in the prevention of many health problems,  
36 in addition to ensuring the individual's well-being, due to the fact that food is linked to many  
37 nutritional issues and the search for healthy consumption habits, demonstrating the  
38 importance of food for human consumption (PAULA; OLIVEIRA; SILVA, 2017; ASCARI et  
39 al., 2019).

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41 Food consumption stems from eating, which is an activity that involves many other  
42 aspects, not just the act of eating and food availability, as it depends on a production chain,  
43 which starts in the field, or rather, in planning, in the preparation of seedlings, inputs, seeds,  
44 machines, practices, techniques and other processes, going through cycles, from sowing to  
45 harvesting, in which elements of nature and management play a crucial role in the food sector,  
whether in its quality and amount of production (RIBEIRO et al., 2017; SAATH;

46 FACHINELLO, 2018; OLIVEIRA; JAIME, 2016).

47 In the food sector, Brazil is a very important country, as in the last ten years its share of  
48 the world market jumped from 20.6 billion to 100 billion dollars, with emphasis on soy,  
49 cotton, corn, meat and forest products that are essential for food (CONTINI; ARAGÃO,  
50 2020; PAULA; OLIVEIRA; SILVA, 2017; ASCARI et al., 2019).

51 According to Contini and Aragão (2020), in addition to Brazil having a large share of  
52 the world market, it is worth noting that the country feeds its entire population of 212.235  
53 million people and is able to supply food to other countries, becoming an important supplier  
54 of food to the world.

55 Brazil is a country with great prominence in the agricultural sector, whether in relation  
56 to the food market and its participation in the food of its country and other countries, but it  
57 deserves to be highlighted in the growth of its production in the food sector to feed the people  
58 of world.

59 From the food production of all sectors in Brazil, the agricultural sector in 2018  
60 managed to feed approximately 688,007 million and in 2019 about 728,658 million people in  
61 the world, standing out with the increase of its agricultural production (CONTINI; ARAGÃO,  
62 2020; ASCARI et al., 2019).

63 However, even with this food production in the agricultural sector, the population  
64 scenario is worrying, it is estimated that in 2050 it will have a population of 9.8 billion, 29%  
65 more than the current figure in 2017, and this food production will have to monitoring and  
66 supplying the population's demand, and agriculture, as it is a major source of food, becomes  
67 essential for the food sector, requiring an increase in its production (FAO, 2017; RIBEIRO;  
68 JAIME; VENTURA, 2017; PAULA; OLIVEIRA; SILVA, 2017).

69 In addition to the problem of population growth, according to FAO (2015), there is also  
70 food insecurity on the part of the population and society, as one in nine people in the world  
71 (or about 805 million people) is unable to eat and have a healthy and active life,  
72 demonstrating the problems caused by the population increase.

73 Food insecurity originates from many factors, and according to Lima (2017), they are  
74 population growth and the growth in demand for food, competition for the use of water and  
75 conflicts caused due to the use of natural resources for food production, competition for  
76 territory and climate change.

77 However, to overcome food insecurity and meet the population's demand, it is necessary  
78 to use technologies and techniques to help increase crop production and productivity,  
79 choosing the best methods in the quest to increase food production in the agricultural sector  
80 (SAATH; FACHINELLO, 2018; FAO, 2015; OLIVEIRA; JAIME, 2016; RIBEIRO; JAIME;  
81 VENTURA, 2017).

82 In addition to the issue of the importance of agriculture in food production and food  
83 insecurity, agriculture is also affected by consumer demand, which is one of the factors that  
84 affect the food sector.

85 According to Morais et al. (2020) and Ferreira et al. (2019) consumers are not just  
86 prioritizing the price and quality of products or services, but considering the good institutional  
87 image and responsible social and environmental performance in the market.

88 Consumers are also affected by changes in eating habits, considering their cultural  
89 attributes and values, demonstrating the producer-consumer relationship, through historical  
90 aspects, way of life, tradition, concern with food safety and, in general, in the process of  
91 production (ESTEVAM et al., 2018).

92 Thus, it is necessary for producers to seek to meet what the market has been demanding,

93such as quality, differentiation and sanitary standards and environmental requirements, among  
94others (DUARTE et al., 2020; RANDUZ; RANDUZ, 2017).

95 Due to the aforementioned factors, it is important to study the production and quality of  
96food, in order to have knowledge of the agricultural market and the demand of the consumer,  
97highlighting agriculture in its development, its production in 2018 and 2019, its increased  
98productivity and quality of food, being essential to have a base of studies on the production  
99and quality of the agricultural food sector.

100 The objective of this work is to carry out a brief literature review on food production  
101and quality in agriculture in 2018 and 2019, describing and characterizing the importance of  
102agriculture in food production and food quality, highlighting its production in 2018 and 2019,  
103and seeking to show how agriculture is important for the production of food and to meet the  
104demand of the population, and the essentiality of food quality.

105

## 106 **MATERIAL AND METHODS**

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108 This study was developed based on the literature review and relevant research on the  
109production and quality of food in agriculture in 2018 and 2019, in order to characterize the  
110importance of agriculture in food production and food quality, aiming to highlight the its  
111production in the years 2018 and 2019, seeking to show how agriculture is important for the  
112production of food and to meet the demand of the population, and how the quality of food is  
113essential in the agricultural sector.

114 It is a work that is based on research, in a systematic way, covering foods, through  
115bibliographical consultations, and with a qualitative character, highlighting and characterizing  
116the mentioned aspects, in order to better dispose of the knowledge on the subject.

117

## 118 **RESULTS AND DISCUSSION**

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### 120 **CHANGES IN FOOD PRODUCTION IN AGRICULTURE**

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122 In agriculture, many changes have occurred through the process of modernization and  
123specialization of production systems, causing greater competitiveness in various sectors of the  
124world economy, such as agribusiness (ARTUZO et al., 2017; SANTOS; DIESEL, 2020).

125 According to Silva (2017) and Petry et al. (2019), with the modernization of agriculture  
126in Brazil, brought about changes in different aspects, such as labor relations in the  
127countryside, spatial distribution of production, technological standard of agricultural  
128production, formation of agro-industrial complexes and insertion of agriculture in the  
129international market, showing the added effects of modernization in agriculture.

130 Through the modernization of agriculture in Brazil over the past decades, it has enabled  
131the increase in food production, especially of some types of grains such as corn, soybeans,  
132wheat, and in soybean production, Brazil stands out as the second largest producer of this  
133grain, second only to the United States (BARONI et al., 2017; NASCIMENTO, 2018).

134 However, this modernization was necessary for agriculture, as the food supply depends  
135in part on its production, and it played a strategic role in distributing food to urban centers, in  
136addition to labor from rural to urban areas, in the sense of supplying industries, so that urban  
137centers and agriculture would gain from the increase in the agricultural production sector  
138(SILVA, 2017; PETRY et al., 2019).

139 With technological advances in agriculture, it has enabled a significant increase in

140 agricultural production, through innovations such as modifying the genetic code of  
141 seeds/crops making them more resistant and reducing production costs, technical advances  
142 and investments that allowed for increased production agriculture in certain countries, the use  
143 of improved seeds, fertilizers and pesticides, as well as the mechanization of the field  
144 (JESUS; OMMATI, 2017; CASTRO; CHELOTTI, 2018).

145 This increased production in agriculture through modernization is essential to meet the  
146 demand for food, however, in order to produce and be able to feed the world population in  
147 future times, technology must be used and correctly managed in favor of production, storage,  
148 distribution and transport. of food, expanding resources with greater use and with good results  
149 in their production levels, increasing productive gains (MACEDO; NISHIZAKI JÚNIOR,  
150 2017; PAIVA; DAMASCENO, 2020).

151 Thus, with the increase in earnings and greater production in agriculture, food  
152 production increased, ensuring the participation of Brazil as one of the main countries that  
153 supply the food sector, noting that through modernization, changes have occurred in  
154 agriculture, impacting food production in the agricultural sector.

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#### 157 **FOOD PRODUCTION IN AGRICULTURE IN 2018 AND 2019**

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159 Food production is very important in all aspects, whether economic or social, as food is  
160 a basic physiological need of human beings, of vital importance and is related to the fact that  
161 the individual can eat to survive, and a way of producing food and that is related to the  
162 agricultural sector is agriculture (MACEDO; NISHIZAKI JUNIOR, 2017).

163 Agriculture, which depends on many factors to produce, underwent several  
164 modernizations during the adoption of technology in the field, and since this technology and  
165 the evolution of agriculture came with the purpose of supplying food for the population,  
166 agriculture has been encompassing and improving, either in the way of cultivation and in  
167 what is used to cultivate, always looking for better ways to achieve higher yields and help  
168 increase the amount of food (ARTUZO et al., 2017; SANTOS; DIESEL, 2020; PETRY et al. ,  
169 2019).

170 Of the sectors that make up food, agriculture in Brazil has a great influence on the  
171 amount of food available for human consumption in the world, as it makes up a large part of  
172 the total food and in 2018 it managed to feed approximately 688,007 million and in 2019  
173 about of 728,658 million people in the world, highlighting the increase in their agricultural  
174 production (LIMA, 2017; CONTINI; ARAGÃO, 2020; ASCARI et al., 2019).

175 Regarding food production in the agricultural sector, Brazil stands out as one of the  
176 major producers of agricultural products and has been increasing its production, only in 2018  
177 it produced over 959.4 million tons of agricultural products, in an area of 76 .0 million  
178 hectares, and already in 2019 it produced over 968.7 million tons of agricultural products, in a  
179 harvested area of 77.9 million hectares, showing the increase in its production in the  
180 agricultural food sector (IBGE, 2020).

181 According to IBGE data (2020), when analyzing the years 2018 and 2019, there is a  
182 variation of 2.4% more in the area used for cultivation and only 0.96% increase in production  
183 in tons of agricultural products, showing a small growth in production, which is still little  
184 according to the estimate of the FAO (2017), which estimates a population scenario of 9.8  
185 billion people, in which it will have to increase its production by 70%.

186 These data demonstrate the importance of agriculture in the food sector, and how much

187it participates in feeding the population, but its production will still have to increase, for this,  
188it must use techniques, practices and means that help to leverage production, along with  
189adopting the technology when possible, to increase and enable greater chances of high  
190production.

191

## 192NEED AND DIFFICULTY IN INCREASING FOOD PRODUCTION

193

194 In the scenario of population growth, new challenges in food production and  
195consumption have emerged, and for this, efficient means of production that enable the  
196production of a considerable volume of food biomass for the population were adopted (LIMA,  
1972017; CAIVANO et al., 2017; MAGALHÃES, 2017).

198 To feed the population and meet this population demand, the process of agricultural  
199modernization has helped to increase food productivity, being essential to meet population  
200growth, in which 2050 has a population of 9.8 billion, 29% more than current number 2017  
201(FAO, 2017; JESUS; OMMATI, 2017; HOYOS; AGOSTINI, 2017).

202 However, even with technological advances and increased production, many problems  
203affected crops in the last century, usually caused by climate change, in which climatic factors  
204affected crops and harmed their production, and are still the ones that can most affect the  
205development and adaptability of agricultural crops, temperature and water availability are the  
206main factors responsible for the drop in production (FERREIRA et al., 2018; COSTA et al.,  
2072018; SORATTO et al., 2010).

208 According to Félix et al. (2020), agriculture is directly affected by these climate  
209changes, impacting many economic sectors, causing, for example, the increase in the cost of  
210agricultural and livestock production, the increase in input costs for the food sector and for the  
211purchase of food products, changing economic activity in various sectors, spreading its impact  
212on the economic system (Félix et al., 2020).

213 Climate change, which alters climatic factors such as temperature, soil moisture, rainfall  
214and solar radiation, affect agriculture directly affecting production, productivity and crop  
215management, pest and disease control, among others, and systems social and economic  
216aspects of society (SORATTO et al., 2010; FÉLIX et al., 2020).

217 In addition to the effects caused by climate change, the management involving  
218agricultural practices is also related to the productivity of a crop, and linked to modernization,  
219it has enabled a large agricultural production, and these effects of environmental factors and  
220plant management are factors that they lead to changes in plant production over time and  
221contribute to different plant organs, affecting final productivity, being important for  
222agriculture and food production (SANTOS et al., 2015; BERNARDI et al., 2015).

223 Thus, according to Santos et al. (2015) and Silva and Silva (2020) to enable a crop to  
224have greater agricultural productivity, it is essential to pay attention to environmental factors  
225and crop management, as it will cause changes in plant production during the crop cycle and  
226will contribute in the different organs of the plants, favoring the increase of the final  
227productivity.

228

## 229FOOD QUALITY AND CODEX

230

231 The search for quality and safe food has become essential for consumers due to  
232concerns in the food field, thus the consumer began to want to have knowledge about the  
233product, in relation to the origin and the way it was produced, inserting it in the their food

234consumption in the context of food security (LUZ; OLIVEIRA, 2019; NASCIMENTO et al.,  
2352019).

236 According to Soares et al. (2018) and Garcia et al. (2018) food safety is described as the  
237right of everyone to regular and permanent access to quality food, in the quantity necessary  
238for survival and without compromising other essential needs, with the adoption of health-  
239promoting food practices that respect the various aspects, as culturally, environmentally,  
240economically and socially sustainable.

241 Food safety (absence of contaminants) along with other aspects, such as freshness,  
242nutritional value, texture, taste, color, aroma and flavor, make up the quality of food, and in  
243addition to knowledge of the production process, the brand, the shopping environment, price  
244and origin guarantee quality and safe food (VIEIRA et al., 2020; FUHR; TRICHES, 2017).

245 To obtain safe and quality food, it is necessary to go through the context of food safety,  
246which is a set of rules that govern all processes involved in the production, transport and  
247storage of food, in order to guarantee certain characteristics of the products, adapting to  
248biological and physicochemical standards so that these foods are fit for consumption (LUZ;  
249OLIVEIRA, 2019).

250 This set of standards and guidelines is followed worldwide, with the objective that the  
251food meets sanitary and commercial needs to satisfy any customer anywhere in the world,  
252ensuring the quality and safety of food (LUZ; OLIVEIRA, 2019).

253 In order to guarantee the consumer that the food has quality and is safe, there is the  
254Codex Alimentarius (from the Latin Law or Food Code) which is the most important corpus  
255juris in the aspect of the world trade in food products (RIBEIRO; JAIME; VENTURA, 2017).

256 Codex Alimentarius was created in 1963, and started at a conference promoted by the  
257Food and Agriculture Organization – FAO and the World Health Organization – WHO,  
258seeking to establish sanitary measures for food safety and safety, to protect the health of  
259consumers and promote fair trade practices between countries (LUZ; OLIVEIRA, 2019).

260 This code has a collection of food standards adopted internationally, presented in a  
261uniform manner, comprising guidelines, codes of practice and recommendations (LUZ;  
262OLIVEIRA, 2019; RIBEIRO; JAIME; VENTURA, 2017).

263 In this way, the codex is linked to the issue of product quality, in the production and  
264commercial parts, highlighting the relationship between food quality and marketing norms  
265and standards, in order to seek quality and safe food.

266

## 267**THE PRODUCTION AND QUALITY OF FOOD IN AGRICULTURE**

268

269 Food production in agriculture is very important for the food sector, in 2018 it fed  
270approximately 688,007 million and in 2019 about 728,658 million people in the world,  
271demonstrating the impact of food production on the population's diet (CONTINI; ARAGÃO,  
2722020; ASCARI et al., 2019).

273 However, despite the high food production in the agricultural sector, it is still  
274insufficient for the entire population, causing food insecurity, to reduce this insecurity, food  
275production must accompany and meet the demand of the population, requiring an increase in  
276their productions (FAO, 2017; RIBEIRO; JAIME; VENTURA, 2017; PAULA; OLIVEIRA;  
277SILVA, 2017).

278 It is worth noting that not only the issue of food production is important, but the sale of  
279the product and the demand of the consumer, as consumers are not only prioritizing the price  
280and quality of products or services, but also the institutional image and socio-environmental

281performance responsible in the market (MORAIS et al., 2020; FERREIRA et al., 2019).

282 In terms of food production, Brazil stands out as one of the major producers of  
283agricultural products and has been increasing its production, and comparing the two years,  
2842018 (959.4 million tons) and 2019 (968.7 million tons) there is an increase in its  
285production in the agricultural food sector (IBGE, 2020).

286 Linked to the importance of agriculture in the food sector, in food production and its  
287participation, and also the demands of the consumer, it is clear that there is a search for  
288quality and safe food by consumers due to concerns in the food field, thus, one starts to want  
289to have knowledge about the product, in relation to the origin and the way it was produced,  
290inserting in its food consumption the context of food safety (LUZ; OLIVEIRA, 2019;  
291NASCIMENTO et al., 2019).

292 In addition to food safety relating the food and quality part, when it comes to safe and  
293quality food, it is necessary to go through the context of food safety, which is a set of rules  
294that govern all processes involved in production, transport and food storage, in order to ensure  
295certain characteristics of the products, adapting to biological and physical-chemical standards  
296so that these foods are fit for consumption, ensuring healthy, quality and safe food (LUZ;  
297OLIVEIRA, 2019; POSSANI et al. al., 2018).

298 Food safety is governed by the codex guidelines and is linked to the issue of product  
299quality, being essential in the acquisition of quality and safe food, but for that, it is necessary  
300to have agricultural production as it is responsible for feeding a large part of the population of  
301Brazil, becoming a crucial factor in overcoming food insecurity and in the production of  
302quality and safe food.

303

#### 304**CONCLUSIONS**

305

306 Agriculture is essential for feeding the population and due to the population scenario,  
307the food sector depends on its production, but even with the growth presented between 2018  
308and 2019, the quantity is still insufficient in the population estimate for the coming years,  
309being essential the adoption of other methods and practices, together with the adequate use of  
310technology in agriculture, to increase crop productivity.

311 In addition to food production, consumer demand affects agriculture in terms of  
312production and sale, as the consumer started to seek quality and safe food, which ensure that  
313the food is healthy and can be consumed, but for that, it is necessary for food production  
314to occur, thus demonstrating the relationship of agriculture with food quality.

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