

FOOD SAFETY AND FOOD SECURITY AS A COMMON: A NEW ANALYSIS PROPOSAL

JULIANO MARTINS RAMALHO MARQUES
UNIVERSIDADE FEDERAL DE LAVRAS (UFLA)

LUIZ HENRIQUE DE BARROS VILAS BOAS
UNIVERSIDADE FEDERAL DE LAVRAS (UFLA)

FOOD SAFETY AND FOOD SECURITY AS A COMMON: A NEW ANALYSIS PROPOSAL

Introduction

Whenever we think about food in ample sphere many subjects and disciplines come to our mind, and almost instantly these thoughts get interchangeable due to the complex, vital and essential importance food develop in our human life. Food is clearly one of the basic human need, since our body demands food energy to keep its fundamental and vital action, and additionally no one can refuse the relevance of food as a central pillar of cultures and civilizations (Fraser & Rimas, 2011). Food is always an imperative economical factor, a crucial resource in terms of stability, socio political balance (Shiva, 2015), and it is considered from opposite sides, a commodity and a common good (Vivero-Pol, 2017).

Food as a commodity contributes to the growth of all economies. The food production system has been practically entirely turned as a commodity and market food production system, with globalization exacerbating the widening of food chains (Vivero-Pol, 2013). The logic of food production nowadays is based on a highly commoditized matters and its production, harvest, manufacturing and distribution are deliberately concentrated in not many private consortia, which together control a large part of the total food produced in the world (Ramos & Borges, 2017). This process to have food as a commodity, are built on a strong and intense relationship among the food chemical industry and the food production industry (Thomaz, 2018). The food commodity process serves the whole market food chain purposes and also attends the economical private purposes (Perpetua, 2020). According to some authors, this logic uses to violate labor agreements and contracts, labor legislation, regulatory norms and imposes itself as a protagonist in the systematic degradation of human health and food sustainability (Barreto, 2018; Azzurra, Massimiliano, & Angela, 2019; Alam, Bell, & Biswas, 2019; Haritha, Navina, & Prakash, 2020).

From other perspective food is also treated as a common. The commons refer to “the set of conditions that facilitate social living by which persons or groups are enabled to more fully and readily achieve their goals and perfection” (Ostrom, 1990, Wildes, 2002; Hollenbach, 1977). Food as a common in this study is mostly treated following Ostrom (1990), Poteete, Janssen, and Ostrom (2010), and Dardot and Laval (2017) principles of understanding. Specially, the understanding of common as principles leading to political struggle in the beginning of the 21st century, based on different food production and consumption systems. And yet an understand about different food production logic through democratic struggles over the neoliberalism. They discussed the commons approach following the common pool resources (CPR) principles, which the common can be well managed based in 1. well-defined borders; 2. consistency among the rules of appropriation and provision attending local conditions; 3. collective decision arrangements; 4. monitoring; 5. gradual sanctions; 6. conflict resolution mechanisms; 7. minimal recognition of organizational rights; and 8. alignment and district coordination management (Poteete et al., 2010).

Based on this principal of commons, we are brought to the historical context among human being and nature interaction. This interaction started through available use of natural resources, for personal own subsistence (Dalmoro, Medeiros, Pauli, & Amarante, 2017). Then, it has started the period of great transformations caused by the industrial revolution and the contemporary capitalism growth, which people began to exceed food produce primarily for profit aiming (Press, Arnould, Murray, & Strand, 2014). Thereupon, the way population has

treated the nature to satisfy society needs has brought a series of disastrous direct and indirect consequences, for the nature and the society itself (Rodrigues, Dias, Carvalho, Fenzl, & do Canto Lopes, 2019). This complex concern over the consequences of food indiscriminate usage, as well as food production manner, leads to universal arguments for generalized and transversal actions (Cortese & Murdock, 2020). The literature has developed increasing researches contemplating and proposing a sustainable social development (Cortese & Murdock, 2020; Berthet, Segrestin, & Hickey, 2016; Arunachalam & Lawrence, 2010). Investigations comes to minimizing harmful effects to environment and yet contributing to food safety and food security.

Food safety in this study is understood as the opposite of suffering any food risk due to food consumption [World Health Organization (WHO), 2009], especially related to chemical contamination that can induce or be related to disease contraction. Food safety is also understood as the access to nutritious food and the possibility to have the health food benefits through food variety. On the same hand, food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life (WHO, 2001).

The common nature of food can be seen in its many public-good components. As agricultural production has adopted worldwide standards, guided by a productivity logic through large-scale production, nutritious foods and healthy diets can be rival and exclusive, derived from private logic interests (Press et al., 2014). The food nutritious aspect when falling into highly processed food, as well as chemical usage for production and also bacterial problems on the food chain can create significant adverse consequences for public health, which is a public problem. This private-public dilemma, leaded through private performance improvements for profit maximization, boost social and economic costs of malnutrition, diet-related illnesses such as diabetes, heart disease (Caraher & Coveney, 2004; Haddad, 2003), and even cancer (Mohammad, Chowdhury, Biswas, & Absar, 2018). From the perspective of healthy food as a pillar for our physical life, we intend to consider food safety as a common. Food safety is a key determinant to our health, and yet it also drives the humans' psychological well-being (Blanchflower, Oswald, & Stewart-Brown, 2012). On the same hand food safety is one of the key areas of focus in public health, as it shakes people of every gender, age, race, and income level around the world (Gizaw, 2019).

Same sense, in the last 60 years, renewable and non-renewable natural resources have been highly and extensively exploited with a non-comparable intensity of any other history period (Cintrão, 2017). As a result, the ecosystems are being disturbed, altered or destroyed at a pace never reached (Rather, Koh, Paek, & Lim, 2017). These natural resources handling has mostly been done to satisfy the great demand of the world population, forced by private companies, also to maximize business prosperity (Baptista, 2010). Haritha et al. (2020) informed the water usage increase and deforestation for agriculture purposes occurred in an inverse proportion to safeguarding and creation of forest areas at a global level. Worldwide soil degradation due to human induced activities during the last 6-7 decades, pressure on land has mounted manifold. Research suggested since 1950, over 35 percent of agricultural land has been degraded in varied degrees. It is also followed by an increase in CO₂ in the atmosphere (Gupta, 2019). The humanity food security has been seriously impaired with the population increase, the growing of food wastage, and soil fertility diminish [Food and Agriculture Organization (FAO), 2018]. Having the food security essential for the human being existence, we aim considering food security as a common.

According to this presentation over food safety and food security issues related to the human being actions on food production and consumption it is imperative to think food safety and food security as a way to avoid food health problems, food shortages and famine in the future. We set the following question to be answered: Can food safety and food security be understood as a common? We believe and present some facts that answer this question and inform how the commons based on the food safety and food security values can be achieved. As far as we know, this is the first attempt to correlate food safety and food security to be understood as a common good. To reach this objective we discussed over the need to think food safety and food security issues through the logic of food production and consumption sustainability and the intersection with the common theory

This study is structured as an understanding on how we adopted the common analysis, followed by the considerations about food safety and food security, and a discussion over the possibility to analyze food safety and food security as a common. Final considerations are provided to achieve the common through food safety and food security. We adopted a dialectical approach, through a critical and transdisciplinary analysis which based on the common theory, researchers contrasted the food safety and food security prevision among food production. For example, one of the dialectical issues over food matters can be seen in Brazil, a highly food producer country (Calixtre, Biancarelli, & Cintra, 2014) and a considerable part of the population starve (de Carvalho, de Gaspi, da Silva, & da Silva, 2018).

We present the association among food safety and food security to the understanding of the common, followed by an analysis of small producers in Brazil and the relationship and advices to have a better food safety and food security scenario. For this theoretical rehearsal, we used the bibliographic analysis as a procedure, following records development, reviews and summaries.

Theoretical Framework

The commons are expressly defined as against the proprietary and mercantile logic expansion, usually identified in the neoliberalism (Scholte, 2005). The neoliberalism logic, in this study exemplified through the large food production system, is destroying life conditions on planet and leading persons themselves destruction (Stengers, 2013; Azzurra et al., 2019). Overall well-being and the environment are sacrificed for the financial profits of a few persons. The consequences of this logic are disastrous, and are visible and notorious. For example, people are suffering and dying with no access to healthy food, no entry to patented treatments, and even are neglected by commercial profit researches. More specifically, the new liberalism logic is compromising the food security need through environmental damage, biodiversity reduction, climate change, food dependency of poor countries (Dardot and Laval, 2017).

A person acting to build the common do not allow themselves to be previously caged in an identifiable psychological type, neither in a defined social category. This kind of person belongs from their practices (Marx, 1846). Marx went deeper when he postulated that a person's practice reflects what the person really are. Dardot & Laval (2017) postulated through this example that based on the persons' practice the societies can be explained, and yet according Marx the society is a product of person's reciprocal action. As we are facing the common turned to be private and been treated as a commodity, next we discuss the food safety and food security issues through the common and the market lens. The common argument in this study is analyzed or exemplified in compliance with the small food producers practices. On the other hand, the

market and private venues are interpreted and evaluated through the big food producers and companies.

Food safety as a common

Most of food safety studies in the literature deals with food borne illness related to food handling, preparation and storage (Hoffman, Macculloch, & Batz, 2015; Fung, Wang, & Menon, 2018). It means perceived problems on the food chain system that impair population health. Even these problems being considered very important to be studied, our focus on food safety issues are related to food-borne diseases as obesity (Walls, Kadiyala, & Smith, 2016), diabetes (Schmidhuber & Shetty, 2005), and even cancers (Wu & Rodricks, 2020) that can occur due ingestion of highly processed food (Bonciu, 2018), chemicals used in food crops (Rather et al., 2017) and even the unknown effects of genetically modified foods consumption (Ghoshray, 2013). These kinds of food-borne illness are increasing worldwide. We understand healthy nutrition and food safety accomplishment over nutritional and quality diets. Foodborne illnesses are one of the main causes of morbidity and mortality in the world, being a representative risk factor to population health and directly impacting the world socioeconomic development (WHO, 2015).

More than a half of the world eats through manners that impair their health (Tabish, 2017). The way food is mostly produced nowadays, besides the unsustainable manners, are leading people to become ill. There is an indiscriminate usage of genetic engineering in consumer food crops (Ghoshray, 2013). The crop seeds genetic composition is often tinkered to eliminate undesirable characteristics found in nature and sometimes to make them resistant to biopesticides. These bioengineered foods can cause unwanted, poisonous and disease-related impacts, as a result of unknown and uncertain chemical compositions, which are widely used and often unregulated in the food supply chain (Benbrook, 2004). Deforestation is being done in order to expand cultivars and food commodities, yet based on chemical abuse, highly transgenic seeds use, aiming companies' profits. In Brazil, between 2007 and 2013, the pesticides volume on arable areas has doubled (Thomaz, 2018).

This food safety problem is a result of pressures from large food producers and from genetically modified seeds manufacturer to increase production and consequently increase business profit. The source of this food safety problem likely in U. S. and Brazil can be explained through the links between the genetic resources ownership and the biogopoly of patented biotechnology. This biogopoly arose through a combination of patent law and regulatory framework (Charles, 2001). The way it was carried out fundamentally changed the original objective of biotechnology. It was previously designed to achieve food safety through increasing knowledge and research development. Although, the knowledge was appropriated by private companies. Allowing a very broad patent request for most biotechnology products, the patent process structure has allowed corporations to appropriate asymmetric property rights relative to other parties (Vivero-Pol, 2013). As the justice became the moderator of patentability, they continued to lower the patentability entrance for living organisms and biological products. This assuredly recognize companies to secure patents through an expanded conception of highly specific features. In the biotechnology seeds field, this indicates a food safety disaster (Robin, 2014). The extent of the damage of these measures to food safety is not yet known, although it must be recognized that law enforcement can be a possible method to avoid an anti-biotechnological-commons tragedy.

The comparison we are made in this study among the big food companies interests against the marginal importance of small producers which are embedded in the common philosophy (Cintrão, 2017), has shown big food companies holding the power of food production use to privilege their own interests (Cloke, 2013). Ten companies control more than 90% of agrochemical sales worldwide (ETC Group, 2008) and the top three seed firms currently control 70% of transgenic plant patents (Howard, 2009). It is clear this food production logic has failed to promote the basic or common deserved health, especially in terms of fighting food diseases. The high incidence of malnutrition, the dramatic rise to the incidence of overweight and obesity as well as heart disease and even cancer are examples how the conventional processed food systems are operating primarily to maximize food companies profit rather than maximize the healthy nutrition or healthy food access.

According to what was presented above, we realize an access imposition for the food brought to our table. On the other hand, the population must have the rights, and a regular and permanent access to quality, healthy food, in a sufficient quantity. We understand the consumers access to quality and healthy food does not necessarily need to come from a big food production enterprise. To the small food producers must be given the rights and the proper importance for their food production and distribution. In this case, the government or state must intervene, aligned to small producers organization in order to optimize this process over large food producers. Although, we actually witness exactly the opposite. In other words, the largest financial resources volumes and support for food production through incentive policies are designated to big food companies. This will be exemplified and more detailed below.

Food security as a common

In this section we present some of the Dardot and Laval understanding about land grabbing, which contributes to food security problems. Some examples are provided from Brazilian facts for the differences among the government financing treatment to small food producers and big food companies.

Land grabbing in our study means the control of foreign land and natural resources practiced by big food companies worldwide. Land grabbing aggravates the free trade, the agribusiness, and biotechnology destructive effects on peasant agriculture around the world (Dardot & Laval, 2017). According the same authors, big food companies from developed countries lease arable land to increase food and energy security, enabling these companies to profit by land speculation and agricultural prices. The land grabbing increases available land price, banning access to common lands. The fertile land ownership passes to international companies that can choose the type of crops to be planted, and export the food produced. Besides that, there is a spread of genetically modified organisms (GMOs), herbicides and pesticides in the land. It is valued to mention, even not being the focus of this study, the technological machinery used by these companies materialize small farmers expropriation and peasants exodus to megalopolises slums of underdeveloped countries, as well as foods-related price increase for the entire population (Aquino, Gazolla, & Schneider, 2018).

Coming out from the world context and focusing on Brazilian agricultural matters, we describe family farming (as cited in most Brazilian journals), as small food producers. Altogether, small food producers in Brazil are the predominantly rural segment. For example, this segment accounts the majority of rural properties, and produce most of the food consumed in Brazilian market [Del Grossi & Marques, 2010; França, Del Grossi, & Marques, 2009; Instituto Brasileiro de Geografia e Estatística (IBGE), 2009]. Even small food producers representing the majority

in agricultural rural areas, there is a dichotomy on Brazilian agrarian policy related to big food companies. The Brazilian credit policy, consciously or not, has contributed to maintain and even increase the productive gap between small and big food producers (Aquino et al., 2018). A better understanding over this situation can be strategic for sustainable food production advancing towards small food producers improvement, consequently increasing food security and access to "common" food.

In a study carried out by Aquino et al. (2018), results have shown that small food producers hold 4,366,267 farms representing 84.36% of the total. The big food producers own 809,369 farms, comprising 15.64% of existing farms. This is a considerable difference, but only 24.01% of arable land are kept by small food producers, that is, 18 hectares on average for each small rural producer. On the other hand, big food producing farmers occupy 75.99% of arable land with an average of 313 hectares per farm. It means, an average 20 times greater than small rural producers.

Based on Dardot and Laval (2017) principle, the task for a new society construction and a new environmental protection framework for food sustainability, comes essentially from political and ideological struggle. Therefore, it is fundamental knowing the agricultural scenario so that action strategies can be traced. For instance, Brazilian agricultural sector is compound by 16.6 million people (Gasques, Vieira Filho, & Navarro, 2010). Small food producers account for 12.3 million people in Brazil, corresponding to 74.38% of total employed food producers. On the other hand, big farmers food producers account for 4.2 million people, representing 25.62% of the total food producers in Brazil (Aquino et al., 2018). This data information illustrates the common logic for food security is wrongly treated. For example, the government financial resources for small food producers through rural credit has dropped from 17% in 2009 to 13% of the total amount in 2016. It means 87% of the total Brazilian government financial resources for agricultural food produce are destined to big food producers (Gasques et al., 2010).

This food system financial profile reflects the so-called "agribusiness", capturing rural credit growing resources portion. This system highlights unfairness engenders by government interests, demeriting small food producers. It is worthy mention small food producers are the ones who really contributes to the variety and quality nutritious food to the population with less environment damage (Costa, de Souza, & de Almeida, 2019). The Brazilian agricultural framework, which is an example of agricultural procedures existent in the world, especially in under-developed countries, supports the logic of favoring the large-scale agriculture business. It has been mostly done for economic purpose like GDP increase through selling raw food as commodities. This process is already known to be environmental unsustainable, aggravate social disparities, and yet a high workforce swindle.

Discussion and conclusion

This study main idea was presenting how food safety and food security can be treated through the common perspective. To reach this purpose, it was shown scenarios food safety and food security were not considered, resulting in an unhealthy and unsustainable conditions for persons and resources. Through these scenarios, we could deduce it is illusory believe the Brazilian governments would protect the population from financial markets, from land expropriation, and from climate impairments. Generally, it is clear only government action is insufficient and inadequate to face environmental and public health problems. Specifically in Brazil, governments management contributes to harm the social system. On the same hand we could notice governments change rulers and governance as world capitalist competition intensifies.

These government control manners less contribute to population wellbeing, and contrary impose the harsh globalization law and market interests to society.

The literature showed, an urgent need for governance restructure over the food system related to food safety and food security. This can be achieved through power sharing from the state to the commons, and rebranding privately-owned food goods and food producing resources (Vivero Pol, 2013). Governments and food producers cooperatives, must prevail healthy and quality food access without compromising access to other essential needs. Governments and food decision makers must promote healthy eating practices respecting cultural diversity, the environment, which also contributes to economy and social sustainability.

There are initiatives in different parts of the world, demonstrating a balanced combination of collective action produces interesting results (de Moraes, Siqueira, & Silva, 2020). New government incentives thoughts aligned to private sector initiative can generate good results for small food producers, consumers health and the environment based on the food safety and food security perspective. The initial idea would be treating the environment and societies relationship on a smaller scale and then extend from local level to a national one. The commons are expanding as a third force of governance and management for the natural and financial resources to meet market, sustainability and health needs. Differently from the market logic, the commons are conquered through cooperation, management, sustainability, social equity and direct democracy from regional to universal. In fact, commons matters are so important today because it brutally nullifies progressive beliefs and hopes placed in the State.

Based on this proposed reality, there is a need of popular actions to undertake their own manners to change the productive system. Otherwise, the land will continue be used as in the past, not to small farmers interests, the ones who treats the land well and care, but to financial markets interests (Prado Jr, 2014.). For instance, Ostrom (2009) informed that singular actions taken at global scale, do not generate plentiful trust among citizens and cooperative sectors. Actions must be carried out in a way population understand, in a proper and transparent manner the purpose for contributing to food safety and food security. Solutions for food safety and food security issues will not arrive in a blueprint agreement or a silver-bullet panacea, but will require experiences at various levels (local, national, international) and various governance forms, managed by collective interests and not only for the market ones (Ostrom, 2012).

Based on Ostrom (2009), and Dardot and Laval (2017) assumptions we believe food safety and food security can be a "common" when the small producers unite with consumers, forming a network of cooperation independently from states or markets. We see the society changing its values, and associated to environmental issues arises a new way of thinking. It can be called "new environmental awareness" in various sectors of society. The new environmental awareness makes the population willing for sustainability, demanding a new posture from organizations participating on the food chain. This new posture is based on ethics standards, environmental responsible social actions, lower food risks lined with health and subsistence perspective. This new society thinking of sustainable development proposes the association of economic issues, with the environmentally sustainable use aligned to social matters.

Ostrom, through the common logic, advances the assumptions of the dominant neo-classic economic view. Even Ostrom postulating the common can be achieved through dense social connections links, she had not managed the common as a general principle for society organization. Ostrom postulated a pragmatic logic to the diversified forms of activities, right of properties and economic rules. Generally, the world is ruled for competitiveness and for

globalized market requirements. From the sustainable perspective, along with the sustainable environment logic, which we believe it can diminish food safety and food security risks, has surge the concepts of social responsibilities, business cooperation, socio-environmental activities. We then face a shift on the productive logic, emerging the responsibilities for food safety and food security compliances. The productive systems take new thoughts of procedures and strategies with less social, health, environmental risks.

Following CPR principles (Ostrom, 2009), unlike the economic centered on competitiveness, there are cooperatives, constituted by the association and free participation of people with common interests, economically organized, that respect the rights and duties of the members and can manage the food productive system through sustainable practices contributing to food safety and food security issues. For example, the society has realized the benefits of small-scale food produce. We understand cooperatives of small food producers are one of the pillar contributing to the common, against the big companies way of produce, hence contributing to food safety and food security. The cooperatives principles consider the social function development aligned to the environmental and economic balance. Yet, food produce cooperative seems to be committed to the local community aiming to consider sustainable practices, consequently contributing to food safety and food security (de Moraes et al., 2020). Cooperatives must consider the CPR principles and be guided by sustainable development, which indeed can guarantee the market competitiveness. Besides that, sustainable development and sustainability must be the path to be followed by organizations, and cooperatives, due to its peculiar characteristics of cooperation, development of members, education, democratic management, autonomy and independence, economic participation and community interest seems to be a potential strategy to achieve a better food safety and security.

Having the definition of the common, and the proposed scenarios and facts on how food producers, governments and societies deals with food production, consumers health, food market, we can relate food safety and food security as a common. Through food safety and food security, societies can more fully achieve a healthy and sustainable goals, which indeed are a fundamental condition for human existence. In this sense, governments and police makers must focus on food safety and food security issues carrying local communities at first and hence on a globalized management.

Reference

- Alam, M. K., Bell, R. W., & Biswas, W. K. (2019). Increases in soil sequestered carbon under conservation agriculture cropping decrease the estimated greenhouse gas emissions of wetland rice using life cycle assessment. *Journal of Cleaner Production*, 224, 72-87.
- Aquino, J. R. D., Gazolla, M., & Schneider, S. (2018). Dualismo no campo e desigualdades internas na agricultura familiar brasileira. *Revista de economia e sociologia rural*, 56, 123-142.
- Azzurra, A., Massimiliano, A., & Angela, M. (2019). Measuring sustainable food consumption: A case study on organic food. *Sustainable production and consumption*, 17, 95-107.
- Barreto, M. J. (2018) *Novas e velhas formas de degradação do trabalho no agrohidronegócio canavieiro nas regiões administrativas de Presidente Prudente e Ribeirão Preto (SP)* (Doctoral Thesis). Universidade Estadual Paulista, Presidente Prudente, SP, Brazil.

- Benbrook, C. M. (2004). Genetically engineered crops and pesticide use in the United States: The first nine years. *Leopold Center Pubs and Papers*, 137.
- Berthet, E. T., Segrestin, B., & Hickey, G. M. (2016). Considering agro-ecosystems as ecological funds for collective design: New perspectives for environmental policy. *Environmental science & policy*, 61, 108-115.
- Blanchflower, D. G., Oswald A. J. & Stewart-Brown S. (2012). Is Psychological well-being linked to the consumption of fruit and vegetables? *Social Indicators Research*, 114(3), 785-801.
- Bonciu, E. (2018). Food processing, a necessity for the modern world in the context of food safety: a Review. *Annals of the University of Craiova-Agriculture, Montanology, Cadastre Series*, 47(1), 391-398.
- Calixtre, A. B., Biancarelli, A. M., & Cintra, M. A. M. (2014). *Presente e futuro do desenvolvimento brasileiro*. Brasília: IPEA.
- Caraher, M. & Coveney J. (2004). Public health nutrition and food policy. *Public Health Nutrition*, 7(5), 591-598.
- Charles, D., 2001. *Lords of the harvest: Biotech, big money, and the future of food*. Persus Publishing, Cambridge, MA.
- Cintrão, R. P. (2017). Segurança alimentar, riscos, escalas de produção-Desafios para a regulação sanitária. *Vigilância Sanitária em Debate: Sociedade, Ciência & Tecnologia*, 5(3), 3-13.
- Cloke, J. (2013). Empires of waste and the food security meme. *Geography Compass*, 7(9), 622-636.
- Cortese, D. & Murdock, A. (2020). Asymmetric forks: dilemmas, paradoxes and moral imagination in food sustainability. *British Food Journal*, 122(5), 1693-1703.
- Costa, R. Z. D., de Souza, P. M., & de Almeida, L. F. (2019). Agricultura familiar e associativismo: a experiência dos agricultores do município de Brejetuba-ES. *Revista Desenvolvimento Social*, 22(3), 5-23.
- Dardot, P., & Laval, C. (2017). *Comum: Ensaio sobre a revolução no século XXI*. Boitempo Editorial.
- Dalmero, M., Medeiros, L., Pauli, J., & Amarante, M. V. D. (2017). As lógicas dos produtores invisíveis: Significados culturais na produção agrícola familiar. *Revista Eletrônica de Administração*, 23, 92-115.
- de Carvalho, M. S., de Gaspi, R. H., da Silva, J. M., & da Silva, A. M. J. F. (2018). The situation of labour and work in Brazil. *Revista do Fórum Internacional de Ideias*, 6(1), 18-18.
- Del Grossi, M. E., & de Azevedo Marques, V. P. (2010). Agricultura familiar no censo agropecuário 2006: O marco legal e as opções para sua identificação. *Estudos Sociedade e Agricultura*, 18(1), 127-157.

- de Moraes, L. A., Siqueira, E. S., & Silva, R. A. (2020). Gestão e responsabilidade ambiental nas práticas de uma cooperativa de agricultura familiar: a percepção de cooperados. *Research, Society and Development*, 9(6), e145963552-e145963552.
- ETC Group. 2008. *Who owns nature?* Winnipeg, MB: ETC Group.
- Food and Agriculture Organization. (2018). Land and water. Retrieved from: <http://www.fao.org/land-water/land/httpwwwfaoorgsoils-portalen/en/>
- França, C. G., Del Grossi, M. E. E, Marques, V. P. M. A. (2009). *O Censo Agropecuário 2006 e a agricultura familiar no Brasil*. Brasília: MDA.
- Fraser E. D. G. & Rimas A. (2010). *Empires of food*. New York, NY: Simon & Schuster.
- Fung, F., Wang, H. S., & Menon, S. (2018). Food safety in the 21st century. *Biomedical Journal*, 41, 88-95.
- Gasques, J. G., Vieira Filho, J. E. E Navarro, Z. (2010). *A agricultura brasileira: desempenho, desafios e perspectivas*. Brasília: IPEA, 45-64.
- Ghoshray, S. (2013). Food safety and security in the Monsanto era: Peering through the lens of a rights paradigm against an onslaught of corporate domination. *Maine Law Review*, 65, 491.
- Gizaw, Z. (2019). Public health risks related to food safety issues in the food market: A systematic literature review. *Environmental health and preventive medicine*, 24(1), 68.
- Gupta, G. S. (2019). Land degradation and challenges of food security. *Review of European Studies*; 11(1).
- Haddad, L. (2003). Redirecting the diet transition: What can food policy do? *Development Policy Review*, 21 (5-6) 599-614.
- Haritha, J., Navina, B., & Prakash, K. (2020). Water flow controller for precision agriculture. In IOP Conference Series: Materials Science and Engineering 764(1), 12-14. IOP Publishing.
- Hoffman, S., Macculloch, B., & Batz, M. (2015). Economic burden of major foodborne illnesses acquired in the United States. USDA. United States Department of Agriculture Available at: www.ers.usda.gov/publications/eib-economic-information-bulletin/eib140
- Hollenbach D (1977). Modern catholic teaching concerning justice. In *The faith that does justice: examining the Christian sources for social change*. Edited by Haughey JC. New York N.Y./Ramsey, N.J: Paulist Press. 207–231.
- Instituto Brasileiro de Geografia e Estatística (2009). Censo Agropecuário 2006.. Agricultura Familiar. Primeiros resultados. Brasil, Grandes Regiões e Unidades da Federação. Brasília/Rio de Janeiro: MDA/MPOG.
- Mohammad, A. M., Chowdhury, T., Biswas, B., & Absar, N. (2018). Food poisoning and intoxication: a global leading concern for human health. In *Food Safety and Preservation*, 307-352. Academic Press.

- Marx K. (1846). Letter to Annenkov, December 28th, 1846, Correspondance (Paris, Éditions Sociales, 1964), tomo I, from November 1835 to December 1848, 448.
- Ostrom, E. (1990). *Governing the commons: The evolution of institutions for collective action*. Cambridge university press.
- Ostrom, E. (2012). Nested externalities and polycentric institutions: must we wait for global solutions to climate change before taking actions at other scales?. *Economic theory*, 49(2), 353-369.
- Perpetua, G. M. (2020). Produção de commodities e pilhagem territorial no brasil: os riscos para a sociobiodiversidade e a saúde coletiva e dos trabalhadores. *Revista Okara: Geografia em debate*, 14(1), 169-182.
- Poteete, A. R., Janssen, M. A., & Ostrom, E. (2010). Working together: collective action, the commons, and multiple methods in practice. Princeton University Press.
- Prado Jr, C. (2014). A revolução brasileira e a questão agrária no Brasil. Editora Companhia das Letras.
- Press, M., Arnould, E., Murray, J. E. B., & Strand, K. (2014). Ideological challenges to changing strategic orientation in commodity agriculture. *Journal of Marketing*, 78(6) 103-119.
- Ramos, E. A., & Borges, A. C. G. (2017) A expansão territorial por commodities agrícolas e a questão agrária na microrregião de Ituiutaba, MG. *Enanpege*, 1-12.
- Rather, I. A., Koh, W. Y., Paek W. K., & Lim, J. (2017). The sources of chemical contaminants in food and their health implications. *Front Pharmacol.* 8, 830.
- Robin, M. M. (2014). The world according to Monsanto: pollution, corruption, and the control of our food supply. The New Press.
- Rodrigues, S. C. M., Dias, L. A. L., Carvalho, A. C., Fenzl, N., & do Canto Lopes, L. O. (2019). Os recursos naturais no processo de desenvolvimento econômico capitalista. *Semioses*, 13(4), 50-68.
- Shiva, V. (2015). Soil not oil: environmental justice in an age of climate crisis. North Atlantic Books, Berkeley.
- Schmidhuber J, Shetty P. (2005). The nutrition transition to 2030. Why developing countries are likely to bear the major burden. *Acta Agric Scand*, 2, 150-166.
- Scholte, J. A. (2005). The Sources of Neoliberal Globalization. UNRISD Overarching Concerns Programme Paper 8, Geneve. United Nations Research Institute for Social Development. [http://www.unrisd.org/80256B3C005BCCF9/%28httpAuxPages%29/9E1C54CEEB19A314C12570B4004D0881/\\$file/scholte.pdf](http://www.unrisd.org/80256B3C005BCCF9/%28httpAuxPages%29/9E1C54CEEB19A314C12570B4004D0881/$file/scholte.pdf)
- Stengers, I. (2013). *Au temps des catastrophes: résister à la barbarie qui vient*. La découverte.
- Thomaz, A. (2018). Degradação sistêmica do trabalho no agrohidronegócio. *Mercator (Fortaleza)*, 16.

- Tabish, S. A. (2017). Lifestyle diseases: consequences, characteristics, causes and control. *J Cardiol Curr Res*, 9(3), 00326.
- Tomaz Junior, A. (2014). Trabalho e saúde no ambiente destrutivo do agrohidronegócio canavieiro no Pontal do Paranapanema (SP)-Brasil. *PEGADA-A Revista da Geografia do Trabalho*, 15(2).
- Vivero-Pol, J. L. (2017). The idea of food as commons or commodity in academia: a systematic review of English scholarly texts. *Journal of Rural Studies*, 53(1), 182-201.
- Vivero-Pol, J. L. (2013). Food as a commons: Reframing the narrative of the food system. *Social Science Research Network*, 2255447.
- Walls, H. L., Kadiyala, S., & Smith, R. D. (2016). Research and policy for addressing malnutrition in all its forms. *Obesity*, 24(10), 2032.
- World Health Organization. Who estimates of the global burden of foodborne diseases. Available at: http://apps.who.int/iris/bitstream/10665/199350/1/9789241565165_eng.pdf?ua=1. Retrieved from July 14th 2021.
- World Health Organization (2009). “Food safety”. <<http://www.who.int/foodsafety/en/>>. Retrieved from June 27th 2021.
- Wildes K (2002). Creating critical care resources: implications for distributive justice. In *Allocating medical resources. Roman catholic perspectives*. Edited by Engelhardt HT, Cherry M. Washington DC: Georgetown University Press, 200–211.
- World Health Organization. (2001). *The World Health Report 2001: Mental health: new understanding, new hope*. World Health Organization.
- Wu, F., & Rodricks, J. V. (2020). Forty years of food safety risk assessment: a history and analysis. *Risk Analysis*, 40(1), 2218-2230.