



# EFFECT OF COVID-19 ON AGRICULTURE: A STUDY

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## Abstract

The numerous pandemics that human beings have encountered, including the Hong Kong Flu, HIV / AIDS, Spanish Flu, Asian Flu, SARS, Ebola and Swine Flu, have had a huge impact on the marketplace, the environment and all human doings, such as farming, agriculture, tourism, transportation, teaching and learning or education, health, fisheries, manufacturing, business, trade, etc. Humans are now facing another pandemic, the introduction of the new coronary artery virus (2019-nCoV) that causes the illness known as COVID-19. The purpose of this paper is to examine and address the consequences of COVID-19 disease associated events in agriculture. Data from the Food Agriculture Organization (FAO), the World Health Organization (WHO), and empirical and technological reports were used for this study. There is ample evidence to claim that the COVID-19 pandemic has a serious impact on agriculture and the food supply chain, mainly affecting food requirement and consequently food protection, with a significant impact on one of the most vulnerable group of the society.

**Keywords:** Agriculture, COVID-19, Corona virus, food security, food supply chain.

## Introduction

The first instances of infection with a new corona virus (2019-nCoV) was confirmed in Wuhan, China, on 31 December 2019 (WHO, 2020a), which causes the disease that has now been recognized as COVID-19 (Wang, 2020), distinguished from SARS CoV and MERS-CoV. After then, the study of internationally reported cases of infection with this latest virus has seen an unprecedented rise (Figure 1), and is already the biggest public health issue impacting the regular growth of civilization and all its components. There is still a chance of contracting a new contagious illness (Burnet and White, 1972), from the 1918 Spanish flu to AIDS and also may not have a conclusive solution (Table 1). At present, Covid-19 is a infectious illness that affects and disturbs humankind. Through previous pandemics faced by the world, it has been seen that prohibition and uncertainty have had an effect

on human activity and economic development (Hanashima and Tomobe, 2012; Bermejo, 2004; Arndt and Lewis, 2001); however this also has an influence on agriculture sector. When an epidemic of infectious disease happens, there is also an rise in poverty and deprivation (Burgui, 2020; Sar et al., 2010). As the infection spreads, the situation worsens, rendering movement restrictions more and more restrictive, creating labor shortages for the crop, or difficulties for farmers in marketing their products. Agricultural sector is among the most integral domains of human growth and associated with food production (Abdelhedi and Zouari, 2020; Kogo et al., 2020; Lopez-Ridaura et al., 2019); thus the, the goal of this work is to explore the relationship among agricultural sector, food security and nutrition security and that these relationships are influenced by COVID-19 disease-related events.



Time Period	Name	Type	Total Death	Reference
1918-1919	Spanish Flu	H1N1	More than 50M	Farmer (2019)
1957-1958	Asian Flu	H2N2 virus	1.15M	Du et al. (2009)
1968-1970	Hong Kong Flu	H3N2 virus	700,000 and 1M	Wang-Shick (2017)
1981-present	HIV/AIDS	Virus	32M (estimate, March 2020)	WHO (2020b)
2019-Present	COVID-19	Coronavirus	751 154 deaths (14 August 2020)	WHO (2020c)

Table 1: Main pandemics from the 20th century

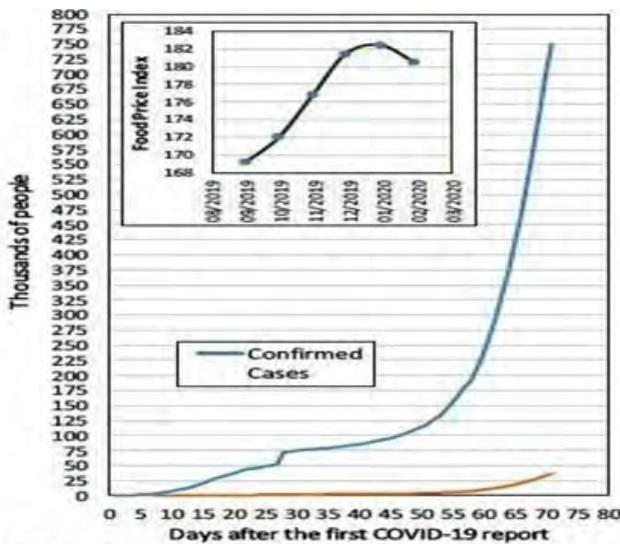


Figure 1. Globally confirmed cases, deaths and Food Price Index by the effect of COVID-19.

### Impact of COVID-19 on agriculture

The Food and Agriculture Organization (FAO, 2020a) claims that COVID-2019 affects agricultural practices in two key areas: food supply and demand. These two components are strongly essential for food security, so food safety is at risk. The relationship between these components, as well as the effect of COVID-19, is shown in Fig.2.

#### A. Food supply

The food supply chain is a system connecting the agriculture sector (farm) to the consumer's table, that included procedures such as processing, manufacturing, packaging, delivery and storage (Chen et al. , 2020). Initially, the declaration of social exclusion forced citizens go to procurement centers and establish a lack of some goods, Even then, food availability has regulated, because it is one of the

processes that must be managed to ensure food stability. One of FAO's functions is to facilitate the un-interruption and continuous activity of food supply chains (FAO, 2020b). Therefore, due to the limitations which administration has placed on labour migration in agricultural practices, the supply of basic necessities is normally assured, though with some difficulties. The scenario is different compared to goods that are imported or exported; international trade was interrupted due to the closing of borders, while exchange resumed after setting up safety measures to stop the spread of the virus. It could be short term; this focuses on what nations do to avoid the epidemic from spreading. Component of the food supply network is the welfare services that certain nations are using to serve thousands of households and kids with so little financial means, mainly Latin America. The production and distribution process is serviced in different ways:

- a) Delivery of essential needs nutritional rations (such as Indonesia and Taiwa)
- b) Financial distribution equal to the expense of essential need food rations (for example, Peru, Japan and Singapore).

Disturbances in food deliveries are limited, therefore food supply remains constant; but considering China's experience throughout this disease outbreak, the influence on the livestock production is stronger due to the difficulties in acquiring livestock feed and, from the other edge, labor shortages (Zhang, 2020). While it relies mostly on nation and the steps that each one has implemented, prices generally stayed constant throughout the world, so no change in the prices of basic commodities is anticipated, while high-value items, particularly meat and food stuffs, are more likely to occur. Some of the metrics that calculate market fluctuations globally is the FAO Food Price Index (FFPI), a calculation of the monthly variability in the foreign prices of food baskets. As per the FAO (2020c), the February 2020 FFPI had an average of 180.5 points , i.e. 1.9 points (1.0 percent) lower than in January, which was the first month-to - month decrease following four

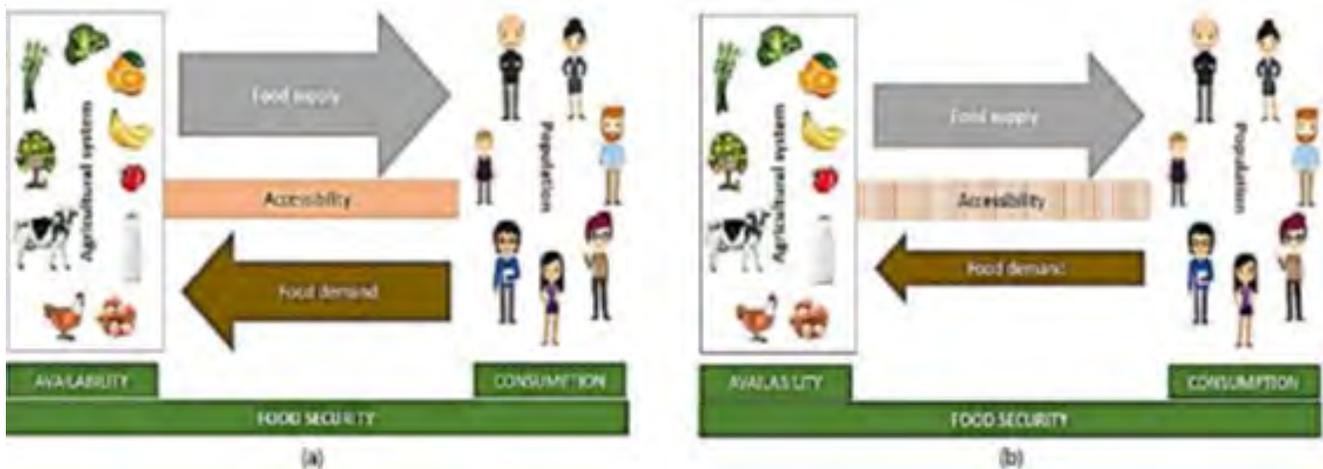


Fig.2. Food security system (a) without COVID-19 and (b) with COVID-19.

This was attributed to a significant decline in the export prices of vegetable oils and, to a lesser degree, in the prices of meat and cereals, which balanced the continued increase in the prices of dairy products and sugar.

### B. Food demand

Demand means the desire and capacity of customers to pay for a specific product or service over some specified period of time (Gottheil, 2013). Food demand has declined due to insecurity and a decrease in people's purchasing power, but this decline is still small; the problem could escalate if the disease outbreak lasts for a long time due to decreased income and employment losses (FAO, 2020b). Although China constitutes a significant world trading market and where the COVID-19 virus originated, its history suggests significant rise in online competition in the food and beverage industry, leading to quarantine policies (FAO, 2020a). For cases such as these, in which the disease passes through contact, contactless distribution systems are chosen by customers. For example, using drones for delivery of the product (Fig.3).



Fig.3. Drone-based system for non-contact food delivery

### C. Food security

Food protection ensures everybody has unconditional access to food which enables them to meet their basic needs (Rosales and Mercado, 2020). Failure to respond effectively indicates an imminent food crisis, with a larger effect on the neediest community (Fig. 4). Initiatives must concentrate on maintaining effective food supply chains and preventing the virus outbreak's impact across the agriculture industry. Social services serve as a mechanism that significantly reduces the effects of short-term crises.



Fig. 4. Groups vulnerable to a food crisis.

First marginalized community: people suffer from severe starvation and not consume sufficiently dietary resources to lead a regular existence, which reportedly has around 820 million inhabitants (FAO, 2020a). This community of citizens can't risk the possible disruption to their livelihoods or access to food that a COVID-19 scenario might offer. When the virus occurs in areas where these persons reside with minimal capability in health services, the effects may be severe.

A second marginalized group: small farmers who may be stopped from continuing to work on their land as well as from entering markets to sell their goods or buy seeds or other necessary inputs.



The third marginalized group: children from low-income households, who are primarily fed food delivered by government services; the termination of these programs due to a pandemic puts food security and safety at risk, and as such, consequences of the life of children with insufficient ability to deal with diseases (FAO, 2020d).

### Conclusions

The occurrence known as the COVID-19 disease has a significant effect on human civilization's actions and behaviors, and food development is not beyond the control. Food intake and thus food

security has been adversely affected by migration constraints, decreased buying power and a greater effect on one of the most vulnerable groups in the nation. When epidemic outbreaks escalate, governments are taking more proactive measures to deter the transmission of the virus, which often impacts the food supply chain. Every steps taken will seek to protect people's health and nutritional security, despite the downside of economic prosperity, while some lawmakers were heading in the opposite direction.



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