



GLOBAL FOOD SECURITY POST-PANDEMIC COVID-19: PROSPECTS AND STRATEGIES FOR SUSTAINABLE LIVESTOCK PRODUCTION

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Received Date: 05.06.2023 **Revision Date:** 04.08.2023 **Accept Date:** 11.09.2023

Abstract

Covid-19 was spread from China to all over the world. Some protective measures against the Covid-19 have been taken; 1) Restrictions on travel, transportation, 2) Measures to reduce mass mobility, 3) Measures for work life, 4) Measures at health institutions, health-care system, 5) Evacuation operations, international solidarity, 6) Economic measures, and 7) Social assistance by different countries. These measures were affected more on the livestock production. During the Covid-19 pandemic, small farms were affected more because they did not have sufficient resources. Small farmers need a local and government collaboration to solve their problems during and after the pandemic. Livestock production requires heavy labor and it continues 24h a day over a year. Local or foreign labor is employed by most of the farms. Labor problems can be reduced with technology. Livestock producing countries need to reduce imported feed ingredient using alternative feed ingredients with local breeds which should be used first for production because their maintenance is lower than the others. There were many events (festivals, celebrations, etc.) canceled during the Covid-19. Some of the events were bringing millions of people together who consumed a good amount of local foods mostly from animal sources. Covid-19 pandemic is not the first challenge for mankind. There should be new strategies to develop sustainable livestock farming during the disaster time.

Keywords: Covid-19, sustainable farming, livestock production, food security

1. INTRODUCTION

The world becomes more crowded and reachable from one location to another location. The economic situation pushes people to go abroad as a laborer, businessman or/and tourist. In this situation, more likely that new pandemics would occur [1]. Covid-19 was spread from China to all over the world. It is affecting every person especially elderly and those who have chronic illnesses. Some protective measures against the Covid-19 have been taken; 1) Restrictions on travel, transportation, 2) Measures to reduce mass mobility, 3) Measures for work life, 4) Measures at health institutions, health-care system, 5) Evacuation operations, international solidarity, 6) Economic measures, and 7) Social assistance by different countries [2]. These protective measures have been affected agriculture, especially animal productions. Many agricultural commodities are produced locally and sold locally or abroad. Agricultural products (foods) are one of the strategic commodities for every country [3]. There are many sectors that affecting each other but agriculture is the most important one. There are many countries that depending on exports and imports of agricultural products [3]. Sustainable agriculture and animal production are becoming more difficult for animal producers under the Covid-19 pandemic [4]. Every country needs to decide its future strategies for sustainable livestock

production for post-pandemic period [5,6]. These strategies will have domino effect on each other globally. Attention should be paid to many areas in livestock farming after the Covid-19 periods.

2. FOOD SECURITY

Food security refers to secure access to sufficient amounts of nutritious food for normal human growth, development, and an active healthy life [7]. Each country should ask the question of self-sufficiency in agriculture [8]. If agricultural production in a country does not meet the needs of the population, the negative effects of the pandemic may become more serious [9]. Most of the countries are dependent on foreign food which was forced to import and export from other countries. FAO [10] has developed an undernourishment projection tool that gives the projection up to 2030 for each country. It shows that there are many countries that have undernourished people. With the Covid-19, people will suffer more from hunger especially women and children. UNICEF [11] reported that “Nearly half of all deaths in children under 5 are attributable to under-nutrition; under-nutrition puts children at greater risk of dying from common infections, increases the frequency and severity of such infections, and delays recovery”. In 2020, 199.5 million under 5 years old children had stunting and increased 55.5 million compared to the previous year [11]. In Indonesia, 30.5% of children under 5 years old were stunted and 28.8% of women had anemia in 2018. Most children require healthy food which comes from animal sources (milk, meat, egg, etc.). Animal food production is too important to be left to people's decisions or the conscience of other countries. There is a need to give importance to animal producers and to emphasize sustainable agriculture and sustainable production [8]. Every country should take a step to increase production aiming to solve their problems. Each country should calculate their annual needs and sell the surplus ones for the export [8]. Otherwise, there will be a shortage and increased price in the local markets.

3. LIVESTOCK PRODUCTION

There are small and large animal production enterprises in the world and the number of small enterprises has higher percentage of animal production [13]. During the Covid-19 pandemic, small enterprises were affected more because they did not have sufficient resources. These enterprises had a problem reaching the local animal markets, labors, feeds, and equipment [3]. Small farms have a limited source of money. They cannot effort to buy their farm needs (feed, labor, equipment, and power (electricity, gasoline, gas, etc.) [4]. Financing is mostly impossible for small farms during economic or health crises. Banks usually do not take risk in this situation as seen in the outbreak, however, government funding was available during the Covid-19 pandemic [4]. State administrators should develop a system to provide financial support in individual and national crises for the strategic areas. Small enterprises could not sell their products because some of the countries require permits to increase food tracing ability [8]. Small farmers need a local and government collaboration to solve their problems during and after the pandemic [5], and also small farms should get together to form cooperatives. Cooperatives could ease solving common problems and seeking help from the state.

4. SUSTAINABILITY

Sustainability of animal production was at risk before the Covid-19. Because 40% of the farmers are over 50 years old [5]. Older people should hand over the farm production to young people; however, most young generation is not interested in working in animal production.

Even-though those who are interested in opening their business, the younger generation cannot afford to start a new farm and when the animal farm is inherited, mostly it is too late for them to start new business. Livestock farming was used to be abandoned gradually by the small farmers, in addition to this, during and after the Covid-19 it will increase dramatically [6]. People use to inherit their culture to the next generation. Animal production is one of the cultures that it was inherited until now; but, it will be difficult for the new generation to keep this culture. To solve this problem young people should be supported by the government to have their farms. Education should be one of the criteria to own a livestock farm. Departments related to animal husbandry should give priority to farmers' children. Decision-makers should make positive discrimination to support animal production based on education (agriculture, animal science, and veterinary).

5. LABOR

Livestock production requires heavy labor and it continues 24h a day over a year. Local or foreign labor is employed by most of the farms [8]. Covid-19 restrictions on travel caused problems for people to work especially those who have to travel [3]. Most countries thought to eliminate foreign labor beginning of the pandemic. The animal farm and related business owners had a difficult time to find workers [14]. This was a challenging situation for most of the farmers. Another problem was accessing the necessary information about this process, and the conditions for cleaning and social distance were very inadequate for employees [5]. Labor problems can be reduced with technology. There is some automation in the animal farming system. Farmers need to use farm machines. Unmanned livestock production can be done with the fully automatic system which can be programmed to take care of the animal needs. These systems are costly but it can be a solution to finding cheaper labor in the near future.

6. LIVESTOCK PROCESSING AND DISTRIBUTION

Livestock farms produced continuously during Covid-19. These may not have affected the production, but processing and distribution of the product were not possible early Covid-19 [4]. Most states banned people from transporting their products locally. Especially dairy farmers had a bigger problem because milk should be transported to processing companies daily. The dairy farmers could not sell the milk and had to pour their milk to the land [14]. Beef producers could not send their animals to the local market or slaughter house for processing. Poultry production also had similar problems. Livestock related sectors decreased slaughtering and processing capacity [8]. Because processing companies could not sell their products because the markets were closed. Costumers could not buy because of the curfew and decreased income [3]. Livestock producers may lose their routine customers. Poor will get poorer and could not afford animal products after the pandemic [9]. Domino effect was seen in many areas during the Covid-19 pandemic. To break this cycle the states should subsidize small farmers to reduce cost and ensure the animal products to reach poor families with less price [6]. Government and municipals can open shops which could allow to sell costumers with lower price to regulate increased food prices [5].

7. IMPORT AND EXPORT

Animal feed is one of the commodities which is traded internationally. It comprises the 70-80% cost of animal production. Feed ingredients (soybean, corn, colza, vitamins, minerals, etc.) are exported from large producing countries to importing countries which have livestock

production. The top five soybean exporting countries are Brazil (84 M ton), US (45.6 M ton), Argentina (8 M ton), Paraguay (5.9 M ton), and Canada (4.25 M ton) in 2019/20, and top five soybean importing countries were China (92 M ton), EU (15.1 M ton), Mexico (6 M ton), Argentina (3.8 M ton) and Egypt (3.7 M ton) in 2019/20 [15]. Some countries buy and process raw materials with technology and resell them to other countries. In 2018, the first five exporter countries of animal feed were listed as Netherlands (\$2.12B), United States (\$1.69B), Germany (\$1.3B), Belgium-Luxembourg (\$1.25B), and China (\$1.21B) [16] and the first five importers countries of animal feed were listed as Germany (\$1.03B), Netherlands (\$852M), Belgium-Luxembourg (\$759M), France (\$646M), and Vietnam (\$591M) [16]. These countries also have the higher number of animals. During the Covid-19, borders were closed and the animal feed ingredients could not transport to the other countries [3]. This increased the demand for the feed ingredients which were imported. The price of the feed increased and livestock products price did not increase as the feed price. Farmers started losing money and gradually increased the price of animal products. Livestock producing countries need to reduce imported feed ingredient using alternative feed ingredients. High producing animal breeds requires imported feed to have high production. Increasing livestock production usually increases the cost of the product and lowering the profit margin for producers. Local breeds should be used first for production because their maintenance is lower than the others. Live animal or processed animal products are also imported and exported. During the Covid-19 borders were closed local livestock producers could not sell their products to abroad [6]. Each country should have its strategies for importing livestock products with different import tariffs to regulate imports [16]. The Covid-19 pandemic has created a social awareness of agriculture and livestock production [17].

8. TOURISM

Covid-19 mostly affected travelers to go to other places for businesses or tourism. There are many countries getting good sources of income from local or international visitors [18]. There were many events (festivals, celebrations, etc.) canceled during the Covid-19 [8]. Some of the events were bringing millions of people together who consumed a good amount of local foods mostly from animal sources. Livestock farmers and related enterprises had good income with these activities [8]. Beginning of the pandemic, countries banned all the events [19]. Most countries started to open their borders to business people and the tourists. Some countries could not get much attention from the tourists. Local and international travelers are looking for safe travel, hotel, restaurant, and health services [18]. Some countries are fighting better against the Covid-19 [20] and their economy is recovering faster in many areas including tourism. This is promising livestock farmers to overcome the economic problem caused by Covid-19.

9. CONCLUSION

Food security is one of the challenging problems for most countries. Many people had lower access to healthy food and this increased even more with the Covid-19 pandemic. Each country should take a step to fight against world hunger. In history, there are many wars started based on the economy and food safety. Livestock products contain essential food ingredients that provides healthy body and mind. Decision-makers should understand that livestock production is at stake. It is up to decision-makers and scientists to find solutions to the problems that we encounter during the Covid-19 period and to consider measures in a way that it will not encounter again. Necessary initiatives for this need to be started as soon as possible. Awareness campaigns should also be organized. Covid-19 pandemic is not the first challenge for mankind.

The world should recover from the Covid-19 pandemic after getting with the vaccine; however, many lives were lost during this pandemic. We should expect new diseases which may affect us again and to be ready for them.

REFERENCES

- [1]LePan, N.: Visualizing the History of Pandemics. <https://www.visualcapitalist.com/history-of-pandemics-deadliest/>. 2020
- [2]Alhas, A. M. and Bayar, G.: Steps taken by countries in fighting COVID-19 pandemic. Anadolu Agencies. <https://www.aa.com.tr/en/health/steps-taken-by-countries-in-fighting-covid-19-pandemic/1812009>. 2020.
- [3]Mercy Corps: Covid-19 Rapid Market Impact Report. <https://www.mercycorps.org/sites/default/files/2020-05/COVID-19-Global-Rapid-Market-Impact-Report.pdf>. 2020.
- [4]FAO: COVID-19: Channels of transmission to food and agriculture. <http://www.fao.org/3/ca8430en/CA8430EN.pdf>. 2020.
- [5]TARDES: Koronavirüsün (Covid 19) Tarım ve Gıda Sektörüne Etkileri. https://www.kkb.com.tr/Resources/ContentFile/KKB%20Koronavir%C3%BCs%C3%BCn%20Tar%C4%B1m%20ve%20G%C4%B1da%20Sekt%C3%B6r%C3%BCne%20Etkisi%20Raporu_Nisan2020%20%281%29.pdf. 2020.
- [6]TOÇ BİR-SEN: Koronavirüsün Türkiye Tarımına Olası Etkileri Ve Çözüm Önerileri. <https://www.memursen.org.tr/toc-bir-senden-koronavirusun-turkiye-tarimina-olasi-etkileri-ve-cozum-onerileri-baslikli-odak-analizi>. 2020.
- [7]WFP: *Global Report on Food Crisis*. Food Security Information Network. https://docs.wfp.org/api/documents/WFP-0000114546/download/?_ga=2.2698416.1681865239.1589968966-60098291.1589356657. 2020.
- [8]Keyder, Ç., Bilgiç, D. N., and Yenal, Z. et al.: COVID-19, Tarım ve Gıda: Dünyada ve Türkiye’de neler yaşandı, neler yaşanacak? <https://sarkac.org/2020/07/covid-19-tarim-ve-gida-dunyada-ve-turkiyede-neler-yasandi-neler-yasacak/>. 2020.
- [9]Akanbi, O. M., Ogunshola, O.J., Shivar Kumar, H.D., Olagunju, K.S. and Adebukola, O.A. et al.: Economical Impact Of Coronavirus Disease-19(Covid-19) on Animal Production: Its Effects On Animal Products And Producers. https://www.researchgate.net/publication/341447661_ECONOMIC_IMPACT_OF_CORONAVIRUS_DISEASE_2019_COVID_9_ON_ANIMAL_PRODUCTION_ITS_EFFECTS_ON_ANIMAL_PRODUCTS_AND_PRODUCERS/link/5ec1995e458515626cb09abe/download. 2020.
- [10]FAO: Prevalence of Undernourishment (PoU) projection tool. SOFI 2020 digital resources. <http://www.fao.org/publications/sofi/en/>. 2020.
- [11]UNICEF: Malnutrition. UNICEF Data: Monitoring the situation of children and women. <https://data.unicef.org/topic/nutrition/malnutrition/>. 2020.
- [12]WHO: Global targets tracking tool. <https://www.who.int/nutrition/trackingtool/en/>. 2020.
- [13]van der Lee, J., van 't Hooft, K., Cornelissen, J., Wouters, B. et al.: Livestock, the World, and the Dutch. Wageningen UR Livestock Research. <https://edepot.wur.nl/257004>. 2020.
- [14]FAO: Guidelines to mitigate the impact of the COVID-19 pandemic on livestock production and animal health. <http://www.fao.org/3/ca9177en/CA9177EN.pdf>. 2020.
- [15]Lysenko, Y.: TOP 10 Soybean Producing Countries in 2019. <https://latifundist.com/en/rating/top-10-proizvoditelej-soi-v-mire-v-2019-godu>. 2020.
- [16]OEC: Product Trade. <https://oec.world/en/profile/hs92/animal-feed-preparations-nes#trade>. 2020.
- [17]Yavuz, F.: Tarıma Koronavirüs Etkisi. Ekonomi. <https://kriterdergi.com/ekonomi/tarima-koronavirus-etkisi>. 2020.
- [18]UNWTO: Impact Assessment of The Covid-19 Outbreak On International Tourism. <https://www.unwto.org/impact-assessment-of-the-covid-19-outbreak-on-international-tourism>. 2020.
- [19]Sherzad, S.: Impacts of COVID-19 on the Food Systems in the Pacific Small Island Developing States (PSIDS1) and A Look into the PSIDS Responses. http://www.fao.org/uploads/pics/COVID-19_impacts_on_food_systems_in_PICs_CRFS_.pdf. 2020.
- [20]TÜBA: Covid-19 Pandemi Değerlendirme Raporu. <http://www.tuba.gov.tr/files/images/2020/kovidraporu/Covid-19%20Raporu-Final+.pdf>. 2020.