



Security and Defense of Agriculture and Food Supplies

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Perspective

As the world's population continues to grow, agriculture is changing to meet food production needs. In 2017, FAO identified five key trends. Increase in population due to increase in agricultural production. The complexity of food production systems and the integration of small-scale producers will create larger and more complex industries. Increasing vulnerability of agriculture to climate change and natural and man-made disasters. Greater impact of agribusiness on the environment. Intensifying competition between industries for natural resources to continue food production. The report finds that some of the observed trends require agricultural changes to prevent endangering long-term food security [1]. In 2018, food insecurity is estimated to affect an estimated 820 million people worldwide and disrupt the political infrastructure of affected countries, threatening agriculture in countries and regions. It suggests that it can pose a significant risk to your safety. In addition, high levels of food insecurity lead to malnutrition, impeding the immune response to infection and increasing morbidity and mortality. It also moves people in an environment where the risk of infection is high.

Expanding BTRP's current efforts in bio monitoring of animal and plant pathogens enhances early warning and response to cross-border zoonotic diseases and has potential volatile impacts on government and population. Diseases of foreign animals that do not directly affect humans, such as foot-and-mouth disease (FMD) and African swine fever (ASF), and diseases that cause human diseases only sporadically, such as highly pathogenic avian influenza (HPAI), are devastating. It may cause serious damage. Large numbers of livestock can occur, causing economic and threatening catastrophes. For example, USDA estimates that an outbreak of foot-and-mouth disease in the United States can cost between \$ 15 billion and \$ 100 billion. H5N2HPAI invaded US poultry between 2014 and 2015, killing an estimated 50 million birds at a cost of over US \$ 2 billion [2].

The recent ASF explosion in Asia is an example of how these threats to animal and food security can quickly lead to difficulties. From the first detection in China in August 2018 to October 2019, ASF spread rapidly to Cambodia, the Democratic People's Republic of Korea, Laos, Mongolia, Myanmar, South Korea and Vietnam. This outbreak has become a major source of turmoil in the pig farming industry, rapidly transforming the pork economy in China and Vietnam, increasing pork costs by 30-40% and increasing orders for pork product imports into mainland China by 63%. These long-term economic and food security issues are unlikely to be directly transmitted to humans without genetic modification that allows pathogens to spread across species barriers to humans. Even in some cases, it can destabilize the country [3].

Some predominantly animal pathogens infect humans with varying degrees of efficiency. Since 2013, the HPAI H7N9 strain has infected millions of poultry and more than 1,500 people in China, with a case fatality rate of 39%, which may reflect only symptomatic cases. Food defense involves protecting food products from intentional contamination or adulteration intended to cause public health harm or economic disruption. Food safety considers only the accidental, as compared to intentional, adulteration of the food supply. Food defense is more complicated because it implies that an adversary is

knowledgeable in the process and methods of protection [4]. This knowledge is of concern because it presumes that an intelligent adversary wants to circumvent your food safety measures to cause harm.

Another very important distinction between food safety events and food defense is that in the case of a food defense event, a crime or act of terrorism may have occurred. In an intentional adulteration event, a criminal investigation would need to be conducted to determine the appropriate course of action to follow [5].

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