POLICY BRIEF

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Mechanization Solutions for Improved Livestock Management and Prevention and Control of Zoonotic Diseases

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POLICY BRIEF

ON

MECHANIZATION SOLUTIONS FOR IMPROVED LIVESTOCK MANAGEMENT AND PREVENTION AND CONTROL OF ZOONOTIC DISEASES

I. Background

Animal husbandry plays an important role in the agricultural industry. However, since the outbreak of the Coronavirus disease (COVID-19) pandemic which has become a global crisis affecting human health and economic and social development, increased attention has been devoted to zoonotic diseases and measures for their prevention and control. Due to various factors such as weaknesses in anti-epidemic measures and social and cultural contexts, the Asia-Pacific region has always been an area with a high incidence of zoonotic diseases, causing significant losses to the livestock farming industry, threatening human health and safety, and people's livelihood and food security.

About 60% of human infectious diseases originate from animals. The mechanization of livestock farming can play an important role in the prevention and control of zoonosis. Owing to its outstanding characteristics on procedural and standardized operation, mechanical equipment has better execution functionality in biological prevention and control, which can avoid failure of prevention and control caused by human factors to a great extent. Mechanized equipment kills pathogens more reliably and is more effective in blocking transmission routes. Mechanized prevention and control solutions thus offer key advantages. At the same time, many mechanical equipment used in production chains of large-scale livestock farming can improve the management of the livestock farming industry, improve labor productivity, increase farming efficiency, improve the quality of livestock products, and reduce the load on the environment. Its role is also vital to improve food and nutrition security and animal welfare. Overall, it has high relevance for various Sustainable Development Goals including Zero Hunger (SDG 2), Good Health and Well-being (SDG 3), and Sustainable Consumption and Production (SDG 12).

II. Role of Mechanization in Prevention and Control of Zoonotic Diseases

In the pig farming industry as an example, mechanical equipment has wide application such as in relation to fence, fecal leakage floor, feeding equipment, disinfection equipment, environmental control equipment, waste recycling equipment, and appropriate and safe

treatment equipment of dead pigs. The role of mechanization in improving livestock management is important for promoting the scale of livestock farming, improving the efficiency of pig farming, improving the welfare of human workers and pigs, and improving the human living environment. The application of mechanization provides solutions for the prevention and control of zoonotic diseases, including appropriate mechanization-oriented design, health protection and disinfection in livestock farms.

The main factors which constrain the application of mechanized solutions for prevention and control of zoonotic diseases include insufficient capacities across different dimensions, inadequate disease prevention and control in small-scale and individual smallholder farms, deficient research and application systems, and inadequate role of specialized service organizations in the livestock farming industry. Meanwhile, apart from challenges, mechanized prevention and control is also looking at a new range of opportunities. With the rapid development of the agricultural machinery industry and information technology, mechanization can play a greater role in prevention and control. In response to the African swine fever and COVID-19 outbreaks, lessons have been learned with regard to inadequate prevention and control measures, and a great deal of experience has been accumulated in the Asia-Pacific region. There is consensus on the need to improve both the software and hardware facilities for epidemic prevention and control in the livestock industry. Moreover, large-scale livestock farming and individual smallholder farming will continue to co-exist for the foreseeable future and therefore efforts need to be undertaken for the overall scale development of the livestock farming industry. In addition, attention needs to be accorded to the integration of mechanization with farming technologies and medical technologies in the process of disease prevention and control.

III. Recommendations

Countries in the Asia-Pacific region can draw lessons from each other's development experience while keeping in view their own national contexts. There is need to formulate development plans and practical action measures, and to improve the scale, mechanization and information utilization level of the livestock farming industry on an ongoing basis. The following six recommendations at the technical and policy levels are suggested for the further development and promotion of livestock farming mechanization in the Asia-Pacific region:

Firstly, it is necessary to strengthen scientific and technological innovation and new technology extension; improve the supply of green, safe and efficient animal husbandry machinery; and accelerate the application of new technologies such as automation, informatization, and intelligent equipment.

Secondly, it is important to encourage appropriate-scale of livestock farming and standardized construction of livestock farms, achieve sound development of livestock farming and planting industries in a harmonized way, and encourage the proper disposal of farming wastes locally or in nearby areas. It is critical to promote innovative modes, scientific planning, and mechanization-oriented design of livestock farming facilities, and strengthen technical guidance efforts on integrated large-scale as well as small scale farming facilities and equipment.

Thirdly, scientific prevention and control and the application of mechanization should be given more priority. Provisions for prevention and control of epidemic diseases should be enacted into laws and regulations in livestock farming management; guidelines on technical specifications for mechanized disinfection in livestock farms should be issued; and large scale farms (zones) as well as small scale farms should be equipped with facilities for resource utilization of livestock and poultry manure and appropriate and safe treatment of dead livestock and poultry.

Fourthly, greater importance should be attached to the role of market-oriented, socialized and specialized service organizations to promote the 'company plus smallholder farmer (family farm)' model and encourage social service organizations to carry out specialized services in the areas of resource utilization of manure, storage and transportation of livestock products, safety and decontamination, and epidemic prevention.

Fifthly, government support and financial insurance support should be upscaled. Governments should establish an incentive mechanism for the construction of large-scale farms, increase support for farms and farmers' households to purchase livestock machinery and equipment; encourage financial institutions to carry out mortgage loans for procurement of livestock machinery and equipment; offer temporary loan discounts for investors; and improve the coverage of policy-driven insurance schemes.

Finally, it is imperative to implement training and education programmes for practitioners to engage in extensive international exchanges and cooperation; increase training opportunities for farm employees and improve the competency of practitioners in the livestock farming industry; strengthen the cooperation with relevant sectors/departments such as animal health, epidemic control and environmental protection; and strengthen experience sharing and knowledge exchanges via close cooperation with the World Health Organization (WHO), World Organization for Animal Health (OIE), Food and Agriculture Organization of the United Nations (FAO) and other international organizations.

Reference

[1] Mechanization Solutions for Improved Livestock Management and Prevention & Control of Zoonotic Diseases, Centre for Sustainable Agricultural Mechanization, United Nations Economic and Social Commission for Asia and the Pacific, http://www.un-csam.org/Publication/2020/zoonoticpre_ENG.pdf

[2] WHO-Regional Office for South-East Asia. Asia–Pacific workshop on multisectoral collaboration for the prevention and control of zoonoses. https://apps.who.int/iris/bitstream/handle/10665/204792/B5110.pdf