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Preventing, anticipating and responding to high-impact animal and plant diseases and pests

Executive Summary

This paper outlines the current and emerging challenges of Animal and Plant Pests and Diseases (APPDs) and FAO's current actions to support its Members to prevent and manage these threats. There is a need for FAO to redouble its efforts for concerted collaboration, coordination and application of approaches that harness the latest science and technology to address these threats. Key areas of intervention and activities of FAO are presented both in the animal and plant health sectors. Critical areas of ongoing and future actions include: international collaboration, monitoring, information exchange, prevention, readiness, capacity building and long-term pest and disease management and control, with the ultimate goal of enhancing resilience of agricultural production systems against the threats of APPDs.

The paper seeks the guidance of FAO Members on the Organization's recommendations to boost its capacities to support its Members in their efforts to address the challenges of high impact APPDs.

Suggested action by the Committee

The Committee is invited to:

- Recognize the critical importance of prevention and management of APPDs for food security and support FAO's approach and work to address these challenges as stated in paragraph 33;
- Endorse the key areas and actions that FAO should focus on in providing the required services to reduce the burden of APPDs as outlined in paragraph 34;
- Endorse the draft resolution (in annex) for consolidating the implementation of the Peste des Petits Ruminants Global Eradication Programme (PPR GEP) to achieve the goal of a PPR free world by 2030.

Queries on the substantive content of the document may be addressed to:

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I. The challenges

1. Efforts to improve livelihoods and food security are often challenged by the continuous impacts of socio economically important Animal and Plant Pests and Diseases (APPDs) worldwide. These threats cause heavy annual losses; averaging 25 percent globally in animal production, and estimated at 20 to 40 percent in crop production. This affects the income and wellbeing of people depending on both livestock and crop production. The ease at which APPDs can move across borders has compounded their devastating impact and resulted in global threats to agricultural and food systems, including trade at all levels.
2. The increased and rapid movement of people and animals, plants and their products in a globalized world, coupled with degrading biodiversity and changing agro-ecological conditions, as well as inappropriate management practices all contribute to escalation of APPDs. As a result, these threats spread farther and faster than ever before, particularly affecting the poorest countries with vulnerable sanitary and phytosanitary regulations and infrastructure. In addition, climate change, extreme weather events and seasonal variability drive the emergence, spread and severity of plant pests and diseases and animal vector-borne diseases, which all significantly affect crop and livestock production systems, the environment and human health.
3. High impact animal diseases including Peste des Petits Ruminants (PPR), Foot and Mouth Disease (FMD), African Swine Fever (ASF), Contagious Bovine Pleuro-Pneumonia (CBPP), and Newcastle disease (NCD) directly affect livelihoods, food security and nutrition of farming households and have negative effects along national and international livestock value chains, such as through trade restrictions. ASF, for example, is spreading at an alarming pace in Asia, Europe and Africa with severe impacts on swine production. With the exception of ASF, these diseases are preventable through vaccination, but the poor-quality vaccines and lack of accessibility seriously constrains risk prevention and management.
4. PPR is a highly contagious and devastating disease, affecting sheep and goats in around 70 countries across Africa, Asia, the Near East, and Eastern Europe since its first appearance in 1942. More than 80 percent of the global 2.5 billion small ruminant population is at risk of PPR in infected and at-risk countries. It also affects wildlife with high impact on biodiversity. PPR is not only affecting livelihoods of small ruminant keepers, thereby exacerbating poverty, food insecurity and malnutrition, but is also reducing the overall contribution of the small ruminant subsector to global attainment of SDG2 and incomes of small holder producers and international trade.
5. Most of the emerging or re-emerging epidemic and pandemic diseases of humans have their origins in animals (wild or domestic), such as highly pathogenic avian influenza (HPAI), Ebola and the Severe Acute Respiratory Syndrome group of coronaviruses that includes SARS-CoV-2, involved in the current COVID-19 pandemic. These diseases are highly infectious in nature and can spread across large distances very rapidly, causing sickness and death in humans, putting global food security at risk and preventing the poor from benefiting from the lucrative trade opportunities offered by increasing global and regional demand for livestock and livestock products. In addition to these epidemic threats, endemic zoonotic diseases (e.g. anthrax, rabies and brucellosis) and vector borne diseases such as Rift Valley fever, continue to inflict an enormous disease burden particularly in developing countries.
6. Among the major plant pests, desert locusts are the most devastating because of their sudden emergence triggered by changing ecological and climatic conditions, which lead to explosive increases of the populations and rapid spread over borders. The largest Desert Locust upsurge in decades is currently ravaging tens of thousands of hectares of cropland and pasture in Eastern Africa. There are also severe outbreaks in Southwest Asia, the Arabian Peninsula, Iran and the Red Sea coast area. This is the worst desert locust outbreak in over 25 years in Ethiopia and Somalia and the worst observed in over 70 years in Kenya. The current upsurge in Eastern Africa and Yemen was triggered by two cyclones that allowed three generations of breeding in the Empty Quarter of the Arabian Peninsula, giving rise to an 8 000-fold increase in locust numbers between June 2018 and March 2019. The situation has been

further exacerbated by the lack of access to some areas due to insecurity and ongoing conflicts. This upsurge has a further threat of locust migration to West Africa and the Sahel. This locust emergency illustrates the colliding impacts of food chain crises with climate change and conflicts, especially in protracted situations.

7. Fall Armyworm (FAW), a native of the Americas was first detected in Africa in 2016, spread through Africa, Near East and Asia quickly, reaching Australia by the beginning of 2020. Once it is established, it cannot be eradicated and will follow reproductive and seasonal migration patterns on a wide range of crops. This makes the pest a huge threat to the food security and livelihoods of millions of farmers across many regions,

8. Many other crop pests and diseases are affecting international trade as well as food security and livelihoods of the poorest farmers globally. These include insects such as fruit flies, red palm weevil and tomato leaf miner; and diseases such as the new aggressive strains of wheat rusts, cassava viruses, coffee rust, rice blast, potato late blight, fruit tree fire blight, maize lethal necrosis, citrus greening and banana Fusarium wilt Tropical Race 4 (TR4). These all have intra-regional and, in some cases, trans-continental movement capacity.

9. In addition to direct impacts, plant pests also have indirect effects on livelihoods and ecosystems, due to increased use of pesticides, many of which are hazardous. Over the past two decades, FAO estimates that, globally the agriculture sector now applies around four million tonnes of pesticides each year. If not used responsibly, these chemicals can adversely impact the health of animals and humans as well as soil, water, air, biodiversity, pollinators and sustainability of agriculture in general.

10. APPD's transboundary nature, changing distribution patterns, evolving pathogens as a result of complex factors, and the increase in the number and scale of related food chain emergencies, make APPDs among the major challenges to national plant and animal health systems. FAO aims to address these threats through interventions in various domains at all levels as outlined in the following sections.

II. What FAO is doing to address the challenges

11. Recognizing the need to enhance world food security and nutrition, FAO works with international institutions and Member Nations to generate data, develop and implement strategies and policies for improved preparedness and resilience - building, prevention, early warning, rapid response and long-term management of high impact APPDs.

12. Within the Food Chain Crises Framework (FCC), the Emergency Prevention System (EMPRES) adopts and implements a system approach that enables characterizing farming systems in different agro-ecological zones, identifying the potential threats to value chains and markets and applying evidence-based mitigating measures. EMPRES fosters collaboration with different units and secretariats within FAO and with global and regional partners to promote coordinated strategies and cross-sectoral and integrated approaches to reduce the burden and socio-economic impact of APPDs.

A. Tackling disease threats at their animal source

13. FAO is engaged in building and maintaining countries capacities to tackle high impact animal and zoonotic diseases at their source. To support this work FAO established mechanisms and platforms in support of EMPRES Animal Health such as the Emergency Centre for Transboundary Animal Diseases (ECTAD) and the Emergency Management Centre for Animal Health (EMC-AH).

14. In parallel, FAO works closely with the World Health Organization (WHO) and the World Organization for Animal Health (OIE), to assist countries in building their health security capacities

and meet international obligations and standards towards a world safe and secure from global disease threats, through partnerships and coordination mechanisms such as the FAO/OIE Global framework for the Progressive Control of Transboundary Animal Diseases (GF-TADs), the FAO/OIE/WHO Global Early Warning System (GLEWS+) and the FAO/OIE/WHO Tripartite. All of these platforms work together to ensure effective implementation and coordination of efforts to prevent and control high impact animal diseases and human health related threats.

15. FAO global efforts to curb the impact of animal and zoonotic diseases are fostered at the regional, sub regional and country levels through decentralized offices and working with regional organizations and regional economic communities to ensure coherence and consistency with regional and country contexts. Furthermore, FAO collaborates closely with a broad network of reference centres and technical institutions in delivering its services in the area of animal health.

16. Historically, global disease outbreaks such as HPAI H5N1 have highlighted the weaknesses of veterinary systems in many affected countries. Attention was drawn to the need to strengthen the capacity of affected and at-risk countries on a larger scale. This has enabled FAO to raise and invest significant resources in support of animal health systems and progressively build a large programme with the support of resource partners. Initial investments in the global response to HPAI H5N1 constituted a foundation, embedding FAO capacities to address other emerging and re-emerging threats. Today this is essential for supporting beneficiary governments as these threats have intensified and diversified.

17. The PPR Global Eradication Programme (PPR GEP) jointly coordinated by FAO and OIE aims to achieve global freedom from PPR by 2030. Since the inception of the programme in 2016, FAO assisted in the development of PPR regional strategies, supported affected countries to develop their PPR National Strategic Plans and put in place effective surveillance and vaccination programmes. The proposed draft resolution in the annex advocates for consolidating international and national efforts to progress in the control of PPR this disease and achieve its eradication by 2030.

18. FAO is also committed to other global initiatives such as the implementation of the Global FMD Control Strategy, the post rinderpest eradication programme and the Global Initiative on Control of African swine fever. These programmes are jointly coordinated with OIE with significant achievements including progress towards control of FMD using the Progressive Control Pathway, and maintaining global freedom from rinderpest by securing virus-containing material in designated rinderpest holding facilities for limited and controlled use. Coordination efforts are also deployed through the Programme against African *Trypanosomiasis* (PAAT), an inter-agency collaboration to support African countries in relieving the huge burden of tsetse-transmitted *trypanosomiasis*.

19. The European Commission for the Control of Foot-and-Mouth Disease (EuFMD), hosted in FAO, aims to counter the threat of FMD and Similar Transboundary animal diseases (FAST). It provides a capacity building programme for its member nations to support preparedness and works with European neighbours to put in place sustainable control programmes to progressively control FMD in all regions.

20. In addition, FAO issues regular global disease alerts and risk assessments, collects and analyses data in the Global Animal Disease Information System (EMPRES-i) and deploys a number of capacity development tools that support disease information systems, detection, surveillance, preparedness and response. These include Good Emergency Management Practice, the Surveillance Evaluation Tool, the Laboratory Mapping Tool, the Early Warning/Forecasting and Decision Support Tool, and the Event Mobile application (EMA-i) to report disease events in real time.

B. Prevention and integrated management of plant pests and diseases

21. FAO has been playing an important role in supporting Member Nations in their efforts to adopt the preventive and integrated pest management approaches, as well as the application of principles of agroecology, to minimize the impacts of plant pests and diseases on food security and

livelihoods. Specific areas of support include management of pests and pesticides through their lifecycle to reduce their risks, use of innovative tools such as digital monitoring and knowledge platforms, early detection and adopting preventive approaches and agro-ecosystem based integrated pest management (IPM).

22. The International Plant Protection Convention (IPPC) secretariat, hosted by FAO, provides an intergovernmental platform for international cooperation between countries to secure safe trade of plants and plant products. It operates through enhancing global awareness on plant health issues, developing International Standards for Phytosanitary Measures (ISPMs) and protocols for pest identification and management as well as supporting national capacities for the implementation of the ISPMs and recommendations of the Commission on Phytosanitary Measures (CPM). The new IPPC Strategic Framework for 2020-2030, which is in the process of being adopted contains a development agenda on “Strengthening Pest Outbreak Alert and Response Systems”.

23. The International Year of Plant Health (IYPH) 2020 provides a good opportunity to raise awareness at all levels on the importance of plant health for the safe and sustainable plant production for the global community and its role in contributing to achieving the goals of the United Nations 2030 agenda.

24. FAO and IPPC implement numerous regional programmes and projects on prevention, containment and integrated management of plant pests and diseases through regular and extra budgetary resources, some of which focus on specific pests and diseases. The Farmer Field Schools (FFS), developed over 30 years ago primarily in Asia and then used in more than 100 countries worldwide, are used as the main vehicle to enhance capacities of farmers in adopting the best practices for implementation of the principles of ecosystem based IPM, the “*save and grow*” concept and agroecology for effective management of plant pests and diseases.

25. Desert Locust prevention and control has been so far the largest programme of EMPRES-Plant Protection. It has been highly successful in operating the Desert Locust Information Service (DLIS) which operates as a global early warning system that monitors the situation of desert locust and alerts in FAO Member Nations. This is also supported by coordination mechanisms such as the Desert Locust Control Committee and the Desert Locust regional commissions. These structures have been crucial in addressing the current desert locust outbreak challenges in East Africa, Yemen and beyond. The combined efforts of FAO and the commissions have reduced the duration, intensity and frequency of plagues that historically lasted for up to 15 years and affected 50 countries or more. The lessons learned from the desert locust programme are being applied effectively in the prevention and management of other locusts in the Caucasus and Central Asia.

26. FAO has been working also to support countries in their efforts to minimize the impact of FAW together with its international development and resource partners. In December 2019, FAO launched the FAO Global Action (2020-2022) for FAW Control with a view to provide a framework to engage international and resource partners as well as various governments to mitigate FAW’s risks on food security and farmers’ livelihoods.

27. Similarly, numerous programmes and projects are being implemented on facilitating regional collaborations and on developing national capacities in prevention and management of specific plant pests and diseases, such as red palm weevil in Near East, cassava virus diseases in Southeast Asia, wheat rust diseases in Central Asia and Caucasus, banana Fusarium wilt disease Tropical Race 4 (TR4) in Latin America and the Caribbean and Southeast Asia, and multiple pests and diseases in Africa.

28. FAO also aims to ensure safe and reduced use of pesticides through collaborations with various international partners. It collaborates with WHO in developing technical guidelines for implementation of the Code of Conduct on Pesticide Management, and in setting international standards on pesticide quality and residues in food, and with UNEP in addressing issues related to highly hazardous pesticides through the framework of Strategic Approach to International Chemical

Management. FAO also hosts the Secretariat of the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade.

29. FAO and the IPPC collaborate closely with its international and national resource and technical partners in delivering its services in the area of plant health. The technical partners include, among others, the Regional and National Plant Protection Organizations, CGIAR, Regional Economic Communities and international institutions/entities such as the Centre for Agriculture and Bioscience International (CABI), the French Agricultural Research Centre for International Development (CIRAD), the World Banana Forum (WBF, hosted in FAO) and the Borlaug Global Rust Initiative (BGRI).

30. Regarding the agricultural innovations, the FAO/IAEA Joint Division of Nuclear Techniques in Food and Agriculture implements a strategic programme to foster use of advanced nuclear technologies to control major insect pests of crops and those of veterinary importance. Principal techniques include use of Sterile Insect Technique (SIT) for insect management and development of resistant varieties against certain diseases. Furthermore, strong collaborations have been developed on specific topics with various CGIAR centres, international research institutions and academia.

III. Priority actions to increase effectiveness for addressing high impact APPDs

31. The movement and spread of animal and plant pests and diseases have underlined the need to address such threats with a comprehensive and integrated approach, taking account of the entire food chain and diverse ecosystems. This requires investigation of the interplay between environmental, socio economic and climatic factors, and the health of animals, plants and humans. There is growing evidence of the need for multidisciplinary and holistic systems approaches to tackling global APPD threats, and for the adoption and implementation of the One Health approach, extending to social and ecological resilience.

32. Prevention and control of APPDs should remain a top priority of FAO's work through increased investments and capacity development programmes. The focus should be on the key measures necessary to prevent, monitor and respond to these threats, with appropriate policies and interventions at global, regional, national and local levels as well as pursuing capacity development efforts at all levels. This will improve access of farmers to the services, knowledge and tools that enable them to prevent and effectively manage animal and plant health risks as they arise.

33. The work of FAO in addressing the threats posed by the high impact APPDs at global and local levels is recognized particularly for:

- a) the support provided for promotion and adoption of the One Health approach, as well as the principles of the agro-ecosystem-based IPM approach, Save and Grow and agroecology in long-term management of APPDs;
- b) the value of the EMPRES programmes for animal and plant health and associated platforms and networks in monitoring APPDs and provision of support to countries in addressing the threats;
- c) the role played by the National and Regional Plant Protection Organizations, which are mandated under the International Plant Protection Convention (IPPC) for the prevention and containment of quarantine plant pests and diseases while facilitating safe trade through the development and implementation of International Standards for Phytosanitary Measures (ISPMs).

34. In order to further strengthen the efforts of the international community and national institutions to fight high impact APPDs, FAO should:

- a) Significantly strengthen its animal and plant health related capacities to support national and international efforts in addressing increasing threats from APPDs;
- b) Enhance its proactive coordination role in fostering sustainable global and regional cooperation and in leading capacity development for the improvement of animal and plant health systems to deliver prevention, surveillance and emergency preparedness and response services for management of APPDs;
- c) Strengthen its role in multi-stakeholder engagement in support of global vaccine quality and security for high impact animal diseases, and in the policy change processes that will improve the access and use of vaccines and other means by which livestock producers can prevent and manage disease risks;
- d) Play a stronger role in multi sectoral coordination and capacity development for assessing and reducing the risks associated with emerging zoonotic diseases in animal reservoirs and development/support of evidence-based risk management policies and practices meeting the specific needs of FAO Members;
- e) Further invest in the capacity to monitor pest and disease spread, generate relevant information on the changes in pest/disease dynamics, develop adequate tools, guidance and methodologies to assess the pest and disease risks resulting from interrelated factors including socio-economic stressors and climate change;
- f) Strengthen collaboration with research and development partners in promoting the use of innovative approaches, particularly digital communication technologies, to help countries avert the risks of APPDs by facilitating information exchange and scaling up preparedness and response;
- g) Adopt upstream approaches for understanding the common drivers triggering APPDs and further integrate and synergise activities in animal and plant health to increase the effectiveness of the Organization's support at every level;
- h) Step-up efforts on farmer and community education through participatory approaches such as Farmer Field Schools, eLearning platforms and on innovation and utilisation of technologies related to agro-ecosystem based IPM approaches and agroecology, including bio control techniques;
- i) Strengthen capacity building assistance provided to FAO Members, together with partners, to build the resilience of agriculture and food systems to multiple risks from APPDs connected with aggravating factors such as climate change, natural-induced disasters and insecurity.

Annex

Draft Conference Resolution

Eradication of Peste des Petits Ruminants (PPR) by 2030

THE CONFERENCE:

Recognizing that sheep and goats are the primary livestock resource of about 300 million poor rural families in developing and emerging countries; and in most of these countries, women and children are highly involved in sheep and goats production, they can obtain animal-sourced proteins, while also benefitting from additional income generated by the sale of livestock products;

Recognizing that Peste des Petits Ruminants (PPR) or small ruminant plague is a highly contagious viral disease of both domestic and wild small ruminants with around 70 countries in Africa, Asia and the Middle East having reported the disease, countries that are home to more than 80 percent of the global 2.5 billion small ruminants;

Taking into consideration that a) the annual global economic impacts of PPR have been estimated between USD 1.4 billion to USD 2.1 billion losses; b) the current scientific knowledge and tools (vaccines and diagnostics) are fit for purpose for the global eradication of PPR, while the disease is still confined to relatively defined parts of the world; and c) these make global action essential not only to stimulate sustained socio-economic development in low income infected countries, but also to protect the global sheep and goat industries.

Recalling that learning from the successful eradication of rinderpest in 2011, FAO, the World Organisation for Animal Health (OIE) and partners launched the PPR Global Eradication programme (PPR GEP) in Côte d'Ivoire (where the disease was first reported in 1942), with the vision for global freedom by 2030;

Noting the strategic partnership with OIE and several other global and regional institutions, as well as resource partners, research institutions, Civil Society Organisations and with special role of the **International Atomic Energy Agency (IAEA)** for technology transfer and laboratory network;

Confirming the growing evidence which suggests that multiple wildlife small ruminant species can be infected with peste des petits ruminants virus (PPRV), leading to significant consequences regarding the potential maintenance of PPRV in communities of susceptible hosts, and the threat that PPRV may pose to the conservation of wildlife populations, including endangered species, and resilience of ecosystems;

Calling the attention of FAO Members that PPR global eradication by 2030 will contribute to the achievement of the Sustainable Development Goals (SDGs), in particular SDG1; SDG2; SDG3; SDG5; SDG8; SDG 12; SDG 15; and SDG 17;

Reaffirming the support of the FAO Conference at its 39th Session in June 2015 to the PPR Global Eradication Programme (PPR GEP);

Noting that similarly the 84th General Session of the World Assembly of the OIE Delegates in May 2016 endorsed Resolution 25 supporting the PPR GEP;

THE CONFERENCE:

1. **Reaffirms its supports** to the ongoing work of FAO in order to eradicate PPR by 2030, including through the partnership with the OIE, and in close coordination with FAO Members, Farmers' Representatives, including women's associations, global/regional institutions, research institutions, civil society organizations, the private sector and other partners;
2. **Requests** FAO to work with relevant partners to establish a dedicated trust fund in order to a) coordinate vaccination campaigns wherever needed; b) increase surveillance and enhance data analysis; and c) facilitate research and innovation;
3. **Encourages** FAO, in close cooperation with the OIE and other partners to establish a mechanism to ensure broad global coordination for the implementation of PPR GEP;
4. **Urges** resource partners and the development community in general to join the efforts of PPR-infected and at risk countries to fill the critical funding gaps to allow the implementation of the PPR GEP, and eventually, the achievement of a PPR free world by 2030.