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Report of the Asia and Pacific Plant Protection Commission (APPPC) and Update on Fall Armyworm in Asia and the Pacific

Executive summary

The Asia and Pacific Plant Protection Commission (APPPC) coordinates and supports plant protection activities in the region with a strong information exchange programme, a regional standard development programme, regional pesticide programmes, and input into setting international standards. It also takes a leadership role in integrated pest management (IPM) programmes and builds local capacities in member countries. This reports reviews activities of APPPC over the last biennium and recaps projects in the area of plant protection in the region. It addresses challenges and gives special emphasis to the recent incursion of Fall Armyworm (FAW) in the region.

Suggested action by the Regional Conference

The FAO Regional Conference for Asia and the Pacific (APRC) is invited to consider this information paper and to provide comments under “Any other matters”. In particular APRC may wish to:

- Recognize the importance of plant health and the key role of FAO and the IPPC in protecting plant health.
- Take note of the actions that FAO has taken in the lead-up to the International Year of Plant Health (IYPH) and the actions planned for the year.
- Encourage relevant institutions in member countries to actively participate in the activities planned on the occasion of the IYPH.
- Provide guidance on mechanisms whereby FAO can work with all countries to respond sustainably to FAW incursions and to plan ahead for addressing subsequent transboundary pest and disease attacks.
- Provide guidance to FAO on working with the private sector to incorporate new and innovative technologies for sustainable pest and disease management.

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Introduction

The Asia and Pacific Plant Protection Commission (APPPC)¹ convened for the first time in 1956. It administers the Regional Plant Protection Agreement for Asia and the Pacific and reviews the plant protection situation at the national level in its 25 member countries and at the regional level. Among its key objectives are coordinating and promoting development of regional plant protection systems, assisting member countries to develop effective plant protection regimes, setting Regional Sanitary and Phytosanitary Measures (RSPMs), and facilitating information sharing. APPPC meets at least once every two years.

Key activities

Plant quarantine

1. APPPC helps member countries, particularly the national plant protection organizations (NPPOs), to analyse risks to their national plant resources and use science-based measures to safeguard their cultivated and wild plants. It also helps member countries improve their capacity for pest surveillance, pest risk analysis, pest risk management through systems approaches, and implementation of regional and international standards for phytosanitary measures. It helps with the management of outbreaks of invasive species to promote safe agricultural trade. APPPC facilitates information exchange networks among member countries through the APPPC website, which allows countries to share import and export requirements, pest reports, updated pest control programmes, and early warnings of risks. APPPC helps countries develop plant health policies and regulations, systems and practices to minimize the potential risk of the introduction and spread of regulated pests. It also facilitates cooperation of International Plant Protection Convention (IPPC) contracting parties in the development and implementation of International Standards for Phytosanitary Measures (ISPMs), particularly by organizing regular IPPC regional workshops.

Integrated pest management

2. From small family farms to large-scale farms, the use of chemical pesticides is widespread throughout the Asia-Pacific region. These chemical pesticides can negatively impact soil, water and biodiversity, pose health risks to farmers and possibly lead to resurgence of chemical-resistant pests. APPPC plays an important role in promoting integrated pest management, which is an ecologically based, environmentally safe method for farmers to protect their crops against pest and disease incursions without resorting to potentially dangerous chemicals. APPPC advances the increasing use and effectiveness of integrated pest management (IPM) across the region through farmer field schools, FAO regional IPM programmes, collaborative research and capacity-building programmes for farmers, trainers and plant protection workers. It coordinates regional information sharing and agreements so that member countries can adopt IPM technologies that are appropriate for their situations.

Pesticide management

3. The abusive use of chemical pesticides carries potentially serious risks for the environment and human health. APPPC works to ensure that production, trade and use of chemical pesticides are properly and effectively regulated in line with the FAO International Code of Conduct on

¹ <http://www.fao.org/asiapacific/apppc/en/>

Pesticide Management and other international treaties, as well as to reduce the pesticide risks as much as possible.

4. APPPC, in collaboration with the Rotterdam Convention Secretariat, is assisting Members with ratification and implementation of the Rotterdam Convention² on the prior informed consent procedure for certain hazardous chemicals and pesticides in international trade. Joining the Convention requires Members to develop regulations and infrastructure to implement the measures required to control the international trade of certain hazardous pesticides and to make pesticide use in member countries in the region as safe as possible.

The regional context

5. The Asia and the Pacific region, with its wide variations in climate, has an extremely high degree of plant diversity. The region is home to tens of thousands of plant species, many of which are endemic. However, habitat fragmentation, over-harvesting of natural resources, pollution, invasive species and climate change are resulting in species loss and threatening this diversity. Destruction caused by various pest species and overuse of pesticides is becoming increasingly serious. International trade in plant and plant products involves potential risks of reducing plant productivity and destroying natural ecosystems through the introduction and spread of invasive alien plant pests. Pest introductions and outbreaks cost governments, farmers and consumers billions of dollars every year.
6. APPPC is coordinating and supporting plant protection activities in the region with programmatic support for information exchange, development of RSPMs and contributions to ISPMs and pesticide risk reduction. It also takes a leadership role in IPM programmes and builds local capacities in member countries.

Brief biennial report of activities of APPPC (2018-2019)

7. Through 2018 and 2019, the following meetings and workshops were organized and/or facilitated by APPPC:
 - 3rd IPPC Global Symposium on ePhyto, 22-26 January 2018, Kuala Lumpur, Malaysia
 - APPPC training workshop on fruit fly management, 19-23 March 2018, Bangkok, Thailand
 - 3rd APPPC workshop on plant health surveillance information management systems, 28 May – 1 June 2018, Shanghai, China
 - 19th APPPC regional workshop on the review of draft ISPMs, 10-14 September 2018, Seoul, Republic of Korea
 - Workshop on training of trainers on protection against South American leaf blight of rubber in Asia and the Pacific region, 3-7 December 2018, Kota Kinabalu, Sabah, Malaysia
 - APPPC ePhyto working group meeting #2, 10-11 December 2018, Tokyo, Japan
 - APPPC phytosanitary irradiation treatment workshop, 25 February-1 March 2019, Hanoi, Viet Nam
 - APPPC working group meeting on preparation of APPPC's Work Plan for 2020-2021 and review of the draft RSPMs on mango and chilli seed, 19-23 August 2019, Bangkok, Thailand
 - 20th APPPC regional workshop on the review of draft ISPMs, 2-6 September 2019, Busan, Republic of Korea

² <http://www.pic.int/>

- 31st session of APPPC, 25-29 November 2019, Chiang Mai, Thailand
8. The RSPM on ‘International movement of fresh mango fruit’ that aims to manage risks of introduction of specific pests associated with this commodity was finalized and adopted by the Commission at its 31st session. It is the first ever commodity standard to be accepted and will be sent to the next session of the Commission of Phytosanitary Measures (CPM) for final approval. Besides facilitating trade in a high volume commodity in the region, it provides a template for more commodity standards to be developed in the future.
 9. The following plant protection and IPM projects have been or are being implemented in the current biennium in countries in the Asia and the Pacific region:
 - Strengthening capacity in managing the incursion of cassava mosaic virus (CMV) infestation in Cambodia
 - Pesticide risk reduction in Southeast Asia (regional)
 - Technical assistance to establish a solar energy e-pest surveillance system in Bangladesh (ongoing)
 - Emergency response to enhance technical capacity for monitoring and management of Fall Armyworm (FAW) in Bangladesh (ongoing)
 - Emergency response to enhance technical capacity for early warning, monitoring and management of FAW in Sri Lanka (ongoing)
 - Support for developing and implementing management strategies in response to FAW incursion in Cambodia, Indonesia, the Lao People’s Democratic Republic, Nepal and the Philippines (ongoing)
 - Time-critical measures to support the sustainable management of the FAW in India (ongoing)
 - Emergency response to enhance technical capacity, early warning, monitoring and management of FAW in Myanmar (ongoing)
 - Integrated detection and management of the southern rice black-streaked dwarf virus in Guizhou Province (People’s Republic of China)
 - Promotion of capacity in biocontrol for sustainable greenhouse vegetable production in the Democratic People’s Republic of Korea (ongoing)
 - Development of the Timor-Leste regulation on pesticides and the use of chemicals
 - Tackling emerging diseases of Viet Nam’s cassava crops, with emphasis on CMV – applied plant health research to participatory technology validation
 - Capacity development on diagnostic and surveillance system of banana Fusarium wilt disease
 - Improving capacities of phytosanitary inspection and integrated measures for international movement of seeds (regional; ongoing)

Challenges and opportunities

10. The Commission recognized that expanding inter and intraregional trade, the increasing role of technology across the food chain and the changing climate are driving changes in the way agriculture and food produce is produced, distributed and consumed. These factors will influence the work of the APPPC and the NPPOs and provide new entry points for expansion of technical activities. These include:
 - Demand for fresh, pesticide-free fruits and vegetables is increasing at a much faster pace than the sector’s ability to develop new pesticide-free solutions.

- The impact of pesticides on natural resources – including soil, water and vital natural populations such as pollinators – is being increasingly understood, and alternatives to chemicals are being emphasized.
- Domestic producers and the public expect increasingly higher levels of protection, while they also have less tolerance for some critical phytosanitary measures, including some very effective pesticides and fumigants such as methyl bromide.
- Scientific advances have improved the ability to detect pests at much lower levels and faster than new management options can be developed.
- “Big data” and new analytical tools are providing opportunities to detect patterns in trade, pests and border non-compliance, allowing more effective targeting of border inspections and pest surveillance.
- The volume and speed of passenger and cargo movements continue to increase, all with the potential to move pests further and faster.
- Direct delivery of food products to consumers, especially through online retail, is expanding rapidly, leading to the potential to shift risky products from traditional cargo pathways to courier mail.
- Climate change will not only alter locations and methods of food production around the world, but also will affect epidemiology and the global distribution and range of pests.
- Stocks of persistent organic pollutants as defined by the Stockholm Convention³ continue to be stored in unsuitable conditions in the region and need to be safely disposed of.
- There is a strong need to transform agriculture and transition from using permitted highly hazardous pesticides to using IPM measures in a sustainable way

11. The key recommendations of the 31st session of APPPC were as follows:

- To continue building capacities on preparedness, early warning, monitoring, surveillance and response to specific threats as identified by the member countries.
- To continue technical development of the RSPM on treatment of chilli seed as an annex to ISPM-38 and develop other commodity standards under the IPPC framework.
- To develop a normative strategy on combating emerging pests and diseases and transboundary threats in the context of increased movement of commodities through trade and climate change-linked occurrences.
- To work in close collaboration with the IPPC and develop a five-year strategic plan of the APPPC.
- To ensure the success of the International Year of Plant Health by providing higher visibility through all the events and workshops organized in 2020.

Transboundary pests and diseases

12. APPPC’s activities and deliberations demonstrate an increased focus on transboundary threats and actions needed for sustainable pest management. Diseases such as banana *Fusarium* wilt caused by Foc TR4⁴ and the rapid spread of FAW across maize fields in Asia are signs that trade, climate change and reduced biodiversity are driving the rapid movements and occurrence of pests and diseases across continents. The response to these attacks has to be balanced and include a range of sustainable alternative solutions to the use of chemicals. In the current biennium, FAW has emerged as one of the biggest challenges being faced by NPPOs.

13. In most cases, once a transboundary plant pest or disease enters a country and establishes itself,

³ <http://www.pops.int/>

⁴ <http://www.fao.org/world-banana-forum/fusariumtr4/en/>

response and management actions require enormous resources. Thus, measures must be emphasized to prevent spread of these pests and diseases, as well as preparedness for addressing potential outbreaks and more long-term integrated management options.

The Fall Armyworm incursion⁵

14. FAW, or *Spodoptera frugiperda* Smith, is an insect that is native to tropical and subtropical regions of the Americas. In the absence of natural control or good management, it can cause significant damage to crops. It prefers maize but can feed on more than 80 species of crops, including rice, sorghum, millet, sugar cane, vegetable crops and cotton. FAW was first detected in Africa in late 2017 or early 2018 and quickly spread across virtually all of sub-Saharan Africa in the span of six months.

15. In July 2018, its presence was confirmed in India. By December 2018, it had been reported in Bangladesh, Sri Lanka and Thailand. Its presence has subsequently been reported in China, Indonesia, Japan, the Lao People's Democratic Republic, Malaysia, Myanmar, the Republic of Korea and Viet Nam. The damage has been mostly on the maize crop with little damage reported on other crops, including rice. Because of trade and the moth's strong flying ability, it has the potential to spread further including to the Pacific Island countries. Farmers will need great support through IPM to sustainably manage FAW in their cropping systems.

FAO's response to the Fall Armyworm

16. FAO country offices and the Regional Office for Asia and the Pacific have been the first point of contact for governments in the region. In response to requests, the Organization has activated emergency projects in Bangladesh, India, Myanmar and Sri Lanka and a regional technical cooperation project serving Cambodia, the Lao People's Democratic Republic, Indonesia, Nepal and the Philippines. These projects are delivering activities that were discussed and prioritized through a consultative meeting that was organized in Bangkok from 20 to 22 March 2019.⁶ This meeting brought together government representatives from 20 countries in the Asia region, resource persons from Asia, Africa and other regions, and specialists from FAO's Plant Production and Protection Division to exchange information and develop best strategies and action plans for sustainable management of FAW which is likely to spread further in the region. The key messages from the meeting are summarized below.

Sustainable management

17. Once FAW has arrived in a country, it will be there to stay. Eradication is not an option given the biology and ecology of the insect. Sound and sustainable management practices need to be fine-tuned for farmers and other actors to manage FAW in the short and long term. Awareness about the insect, monitoring, surveillance and capacity building to integrate management of FAW are important pillars for an informed response. A panic response, such as immediate and high use of broad-spectrum chemical pesticides, can actually delay the buildup of natural biological control agents that will help reduce populations of FAW. Responses need to be adapted locally and built on lessons learned elsewhere. In the longer term, research can provide additional information and insights on sustainable management.

Monitoring and surveillance

18. Systematic monitoring for FAW provides information on whether FAW is possibly present (in

⁵ <http://www.fao.org/fall-armyworm/en/>

⁶ <http://www.fao.org/3/ca4603en/ca4603en.pdf>

case there is no infestation yet) and on the spread of FAW in a country once infestation is confirmed. This information forms the basis for prioritizing actions based on need. In case of new infestation, morphological confirmation of the species is very important. FAO has developed a smartphone application (currently available only for Android devices) called FAMEWS. The app has a feature to enable facial recognition of FAW. It can also collect and share information from field scouting and provide national and regional data on infestation. The app can be translated into any local language.

IPM as preferred strategy

19. Once FAW infestation is confirmed, it is important to promote conditions under which populations of natural enemies can increase. Further research needs to be encouraged on the range of natural enemies including predators, parasites and entomo-pathogenic microbes already present in local (maize) ecosystems. Agro-ecological approaches need to be adopted, including cultural practices such as the use of ash and sand to kill FAW inside maize whorls, the use of biopesticides or botanicals, good soil health management and diversified cropping systems.

Farmer-anchored response

20. Awareness and capacity-building is very important for developing adequate responses and sustainable FAW management. Farmer field schools with well-adapted curricula are the preferred medium to educate and reach large numbers of farmers. Topics include raising awareness and providing simple training on monitoring, scouting, trapping, conserving natural enemies, increasing crop diversity and disseminating effective cultural practices.

Global action 2020-2022

21. On the occasion of the 163rd Session of the FAO Council in December 2019, the Global Action for FAW Control was launched by the FAO Director-General during a side event on 4 December 2019. The key objectives of the Global Action over the next three years are a) to establish a global coordination and regional collaboration on monitoring, early warning, and IPM of FAW; b) to reduce crop yield losses caused by FAW; and c) to lower the risk of further spread of FAW to new areas. The Global Action will be supervised by a Global Steering Committee, chaired by the FAO Director-General, and a Technical Committee.