Faw Global AcTion Technical Committee

FAO/IPPC Technical working group (TWG)

Quarantine and Phytosanitary in Relation to Trade

Briefing Paper

Overview

1. The spread of insect pests is becoming an increasing problem for agriculture globally (Tay et al. 2020). The fall armyworm (*Spodoptera frugiperda*, FAW) has become a pest of major economic and food security significance across many countries and regions, and is threatening to expand its range into the Near East and North-Africa, South Pacific and European regions to become a truly global threat. Global trade has emerged as a significant factor in the spread of FAW, highlighting the importance of globally harmonised phytosanitary measures and protocols to assist plant protection agencies implement prevention, preparedness and containment measures to reduce risks associated with the establishment and spread of this agriculturally significant insect pest.
2. Fall armyworm has had a devastating impact on the food production, food security and phytosanitary systems around the world, and the FAO/IPPC Technical Working Group (TWG) on *Phytosanitary and Quarantine in Relation to Trade* has been established to deliver the third objective of the *Global Action for Fall Armyworm Control*. This objective will focus on preventing the spread of FAW to new areas by supporting national and regional plant protection organisations within the Near East and North-Africa, South Pacific and Europe regions in strengthening their prevention, preparedness and response systems.
3. The FAO/IPPC TWG will draw upon technical expertise and professional networks with key plant protection, biosecurity and scientific specialists around the world. Given the current restrictions in travel associated with COVID-19, these professional and trusted relationships amongst plant protection, scientific, industry and international trade-related agencies will be essential in the ‘virtual’ coordination and implementation of regional and global initiatives.

FAW Prevention and Preparedness

1. Across the FAW invasive range, it is primarily a pest of maize, while in its native range in the Americas the pest but has a wide host range and larvae has been reported to feed on over 350 plant species, including sugarcane, rice, sorghum, cereal crops, fruit and vegetable crops (Montezano et al. 2018; Nagoshi et al. 2018). FAW is known for its ability to spread on both regulated and natural pathways and fly long distances (over 100 miles*, ca.* 160 km) with prevailing wind conditions and, with its potential to contaminate certain commodities in trade, can rapidly expand its distribution range.
2. The success of FAW prevention and preparedness measures relies on countries and regions having the ability to carry out activities for early warning and detection of FAW, and having the capability to assess the risk posed by the pest through pest risk and pathway assessments.
3. Identifying crucial drivers of species introductions such as specific human-assisted, regulated (trade) and natural pathways is critical to determining the level of risk. Pathway and importation risk assessment involves conducting a detailed pathway assessment that utilise pest interception data, coupled with pathway specific trade volumes, genetic data (Arnemann et al. 2019; Elfekih et al. 2018; Tay et al. 2017), and information about which countries the pest is known to have established in (Yemshanov et al. 2011).
4. Regulated (trade) pathways into countries and regions still free from FAW should be assessed for high risk commodities (such as cut flowers and vegetables) and phytosanitary measures such as pre-export treatment, inspection and phytosanitary certification should be applied to mitigate the risk of FAW larvae being transported. It is important that strict quarantine and biosecurity controls and inspection procedures are maintained to ensure any FAW interceptions are identified and treated, and details of the interceptions are formally recorded and reported back to the National Plant Protection Organisation (NPPO) in the country to investigate the non-compliance incident and rectify the phytosanitary breach.
5. FAW movement between countries and regions have been proposed to involve long-distance natural spread and/or seasonal migrations (Cock et al. 2017; Jeger et al 2017), and potentially involving FAW from the Western Hemisphere first entering through western Africa (Goergen et al. 2016; Nagoshi et al. 2018), although population genomic analyses (Tay et al. 2020; Yainna et al. 2020) provided evidence for independent introductions involving genetically diverse populations in Africa and Asia, suggesting human-assisted introductions as an important factor that underpinned the species’ rapid global spread, including an east-to-west directionality of pest spread. Whilst it is difficult to prevent the natural spread, as seen in the pest’s recent arrival to Australia, it is nevertheless important to establish and maintain preparedness measures to effectively detect and respond to the emerging threat from FAW, including increasing awareness and reducing the speed of spread due to human-assisted activities.
6. The key objectives of a regional and national FAW prevention and preparedness capability should be to ensure regulated pathways effectively manage the FAW risk, provide early warning of FAW in near neighbouring regions and countries, provide early detection in high risk or vulnerable locations, understand the biology, potential impact and distribution of the FAW at a country and regional level, strengthen surveillance, preparedness and response capability in high risk or vulnerable locations, raise industry and stakeholder awareness, and build national and regional capability to respond and manage FAW prior to its detection in major production areas.

FAW Pest Risk Assessment

1. The likelihood of entry of FAW is pathway dependant. Due to the polyphagy of FAW and the number of countries that it is now known to occur, there are many combinations of host plants and countries of origin that could potentially provide a pathway to facilitate entry into the un-infested regions and countries of Near East and North Africa, South Pacific and Europe.
2. Important factors that need to be taken into consideration when conducting a pest risk assessment for FAW include the likelihood of importation (FAW is regularly intercepted on cut flowers and fresh produce but rarely intercepted on hitchhiker pathways such as aircraft surfaces and shipping containers), the likelihood of distribution (through both natural and regulated pathways), the likelihood of establishment (host availability and distribution and climate suitability), and the likelihood of spread (adults of FAW are capable of travelling long distances across oceans and land masses).
3. It is therefore important to assess the overall likelihood (indicative) of entry, establishment and spread. The overall likelihood that FAW will enter the Near East and North-Africa, South Pacific and Europe regions on a plant import or natural pathway, naturally disperse (to a susceptible host), and establish remains high but will need to be continually assessed at a regional and country level.

FAW Pathway Assessment

1. Pathway assessment tools may also be used to assess the areas of vulnerability (where and what) in a FAW pathway, and the actions that may be taken to address or mitigate the identified vulnerabilities. Pathway assessments are generally comprised of six key components. These include pest biology (pest family, scientific name, common name, commodity/host, spread mechanism, control mechanism), pest distribution (pest status in country and regions where the pest is present), pre-border (offshore surveillance programs, offshore pest management programs), border (relevant commodity import conditions, border detection records), post border (industry/community priority, diagnostic protocols and resources, diagnostic capability, onshore surveillance programs, surveillance protocols and resources, notifiable pest, onshore detection records, establishment and spread potential, contingency plan, availability of measures), and export (phytosanitary certification, assessment of export trade).

FAW Response and Contingency Planning

1. The success of FAW preparedness and response measures relies on countries and regions having contingency and response plans developed, endorsed and resourced well in advance of a FAW detection. FAW contingency plans should provide guidance for steps to be undertaken and considered when developing a response plan. Regional and National FAW contingency plans should include an assessment on pest biology, establishment risks, dispersal capacity (including native plant host range, suitable climatic conditions), potential plant industry impacts, available control measures, management options, awareness and extension products, risk reduction options (to reduce the risk of an incursion), and surveillance and monitoring protocols. The contingency plan should also define the composition of the crisis management unit that will be responsible for undertaking specified activities in the event of FAW being found.

FAW Domestic Trade Considerations

1. When FAW is detected in a country, it is initially likely to be restricted to a particular area (in the case of a natural spread, it is generally the point of entry). National quarantine measures would need to be enforced to control the infestation and spread, and if technically feasible, eradicate the pest. Nationally, countries should have internal or domestic quarantine and phytosanitary restrictions for pests of concern for their jurisdictions. It is recommended that a national ‘intergovernmental’ body be established between these jurisdictional authorities to ensure that the development of domestic market access conditions for FAW host plants and plant products within that country are technically justified, coordinated and harmonised, and consistent. When FAW is introduced to an area the outbreak is restricted to the detection area, the other jurisdictions where the FAW has not been found may restrict intra- and inter- province movement of infested commodities to prevent the pest’s spread.

Proposed Priorities for the Technical Working Group

1. The overall aim of the TWG on *Phytosanitary and Quarantine in Relation to Trade* will be to provide phytosanitary and quarantine related technical advice on FAW prevention, preparedness and containment to countries within the Near East and North-Africa, South Pacific and Europe Regions, with a particular focus on FAW pathway and importation risk analysis and prioritisation, FAW early warning detection survey surveillance, FAW response contingency planning, and domestic FAW phytosanitary measures.
2. The TWG will also seek to review and assess the plant quarantine and FAW preparedness and response capabilities of the RPPO’s and national quarantine and plant protection agencies. These reviews and assessments will seek to provide a suite of recommendations and actions to further strengthen the scientific and technical preparedness and capability of regional biosecurity agencies to respond and manage FAW, and in doing so, contribute to the regional harmonisation of biosecurity preparedness and emergency response measures across the Near East and North-Africa, South West Pacific and European Region countries and support regional networks of biosecurity and plant protection specialists and stakeholders.

Proposed Outputs from the Technical Working Group (Short Term)

* Convening an inaugural teleconference to create awareness and deliver FAW prevention action plan to national plant health actors in the 3 regions
* The TWG on *Phytosanitary and Quarantine in Relation to Trade* will provide technical advice (specific to FAW prevention, preparedness and emergency response operations) to the *FAW Global Action Technical Committee* and RPPO leads of the Near East and North-Africa, South Pacific and Europe regions.
* The TWG will establish and maintain linkages and collaboration with other relevant areas within FAO, IPPC, RPPO’s, International Trade Organisations and other agencies as required.
* The TWG will develop a brief project plan (including timings and budget) of proposed TWG outcomes, objectives, milestones and deliverables.
* The TWG will conduct and compile a scoping study for a review and evaluation of current FAW prevention, preparedness and response readiness of the RPPO’s of the Near East and North-Africa, South Pacific and Europe. This scoping study may then be expanded to include countries and NPPO’s within these regions.
* The TWG will conduct ‘remote/ virtual’ review and assessment activities with key plant biosecurity and scientific stakeholders (interviews, meetings, surveys, desktop analysis, literature reviews) relating to the scientific and technical preparedness and response capacity and capabilities of the Near East and North-Africa, South Pacific and Europe regions.
* The TWG will actively participate in regular quarantine and phytosanitary preparedness and response meetings and teleconferences (pest task force meetings, regional and country response coordination meetings, and technical working group meetings) with **key regional FAW and plant protection stakeholders** of the Near East and North-Africa, South Pacific and Europe regions.

Proposed Outputs from the Technical Working Group (Medium/Long Term)

* The TWG will provide technical advice for the development and implementation of technical training materials and courses for regional and national trainers:
  + on the use and implementation of early warning systems such as FAMEWS in the Near East and North-Africa, South Pacific and Europe regions.
  + to deliver and promote ‘best practice’ guidance on the prevention of FAW (including quarantine border controls, import inspections and phytosanitary measures).
  + to deliver and promote ‘best practice’ guidance on the national preparedness, contingency planning and rapid response of FAW.
  + on pest risk assessment for FAW and support/facilitate the formal inclusion of FAW as a regulated quarantine pest in the countries with PSE and IPPC support.
  + on FAW biosecurity and phytosanitary surveillance, inspection, and treatment.
  + on pest outbreak and alert system for FAW.
  + for FAW pathway vulnerability assessments, and pest risk assessment for priority FAW commodities and pathways.

*List of references cited in the text is missing – (to be updated)*