

Recent Challenge of Transboundary Plant Pests and the FAO Strategy

FAO Presentation at MACS-G20

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Food and Agriculture Organization
of the United Nations



International Plant
Protection Convention

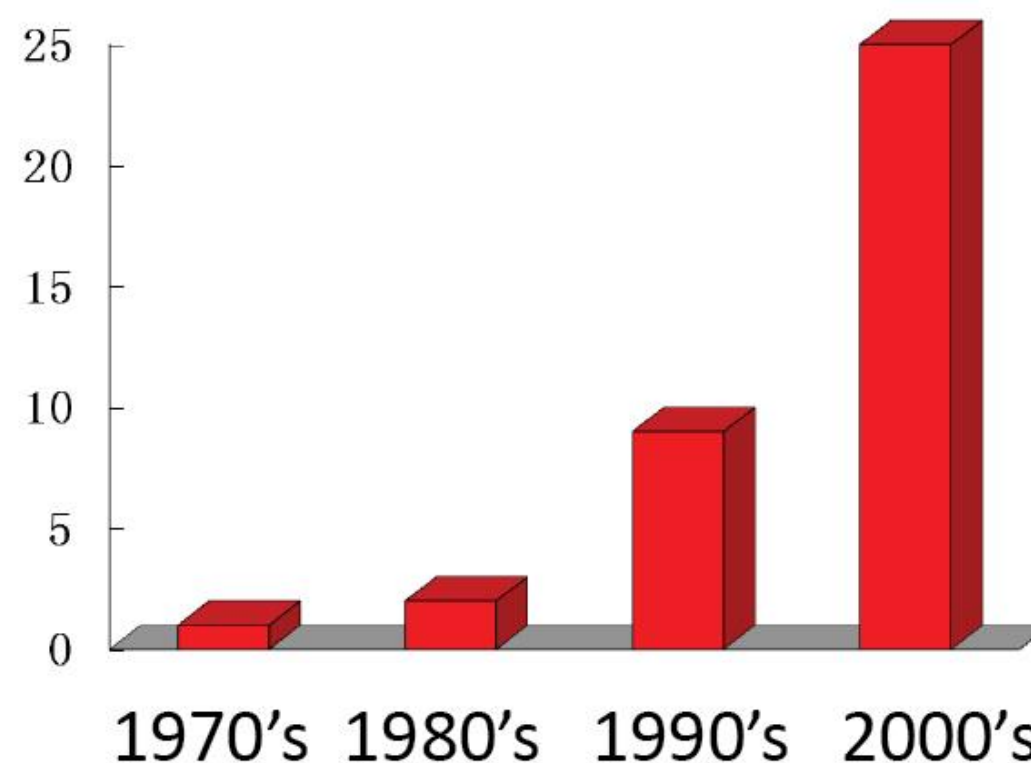
Transboundary Plant Pests (TPPs)

- **Definition of TPPs:** Transboundary plant pests (TPPs) are those migratory insects, plant diseases and weeds that can spread to several countries and reach epidemic proportions, cause significant losses to farmers, threaten food security, and damage the local biodiversity and environment
- **Pathway of spread**
 - Environmental forces (Desert locust, Fall armyworm and Wheat rusts)
 - International trade (Fruit flies and *Xylella fastidiosa*)
 - Tourists & migrations (Banana fusarium)

◆ Global Challenge of TPPs

- ***Increased risk of plant pest spread*** due to global movement of agriculture goods
- ***Increased risk of plant pest spread*** due to global movement of tourists and migration
- ***Increased incidences of plant pests*** due to global climate change

No. regulated pests increased exponentially in China



Outline

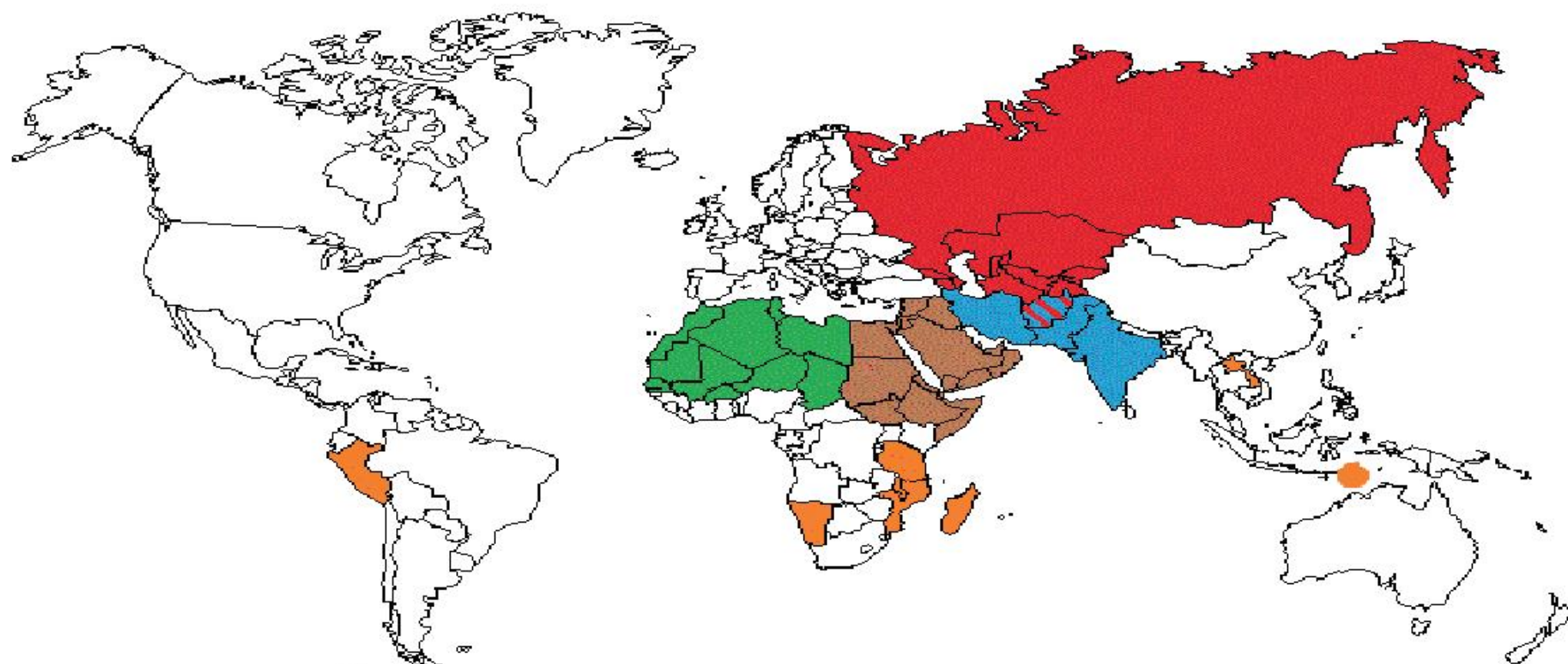
1. Recent Trend of TPPs
2. Major Impacts of TPPs
3. FAO Strategy of TPPs
4. Key Recommendations
5. Briefing on IYPH 2020

1. Recent Trend of TPPs: Desert locust (1)

- **Description:** Locust is one of three major natural disasters in history (Drought, Flood and Locust). Among all kinds of locusts, desert locust (*Schistocerca gregaria*) is most destructive with a wide range of host plants
- **Distribution:** Desert locust is distributed in over 50 countries mainly in Africa and Central Asia
- **Outbreaks:** Frequent outbreaks can be better anticipated and controlled; but failure in regular monitoring and implementation of the preventive strategy can result in upsurges and plagues

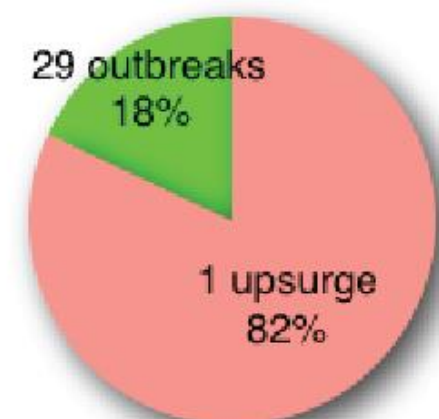
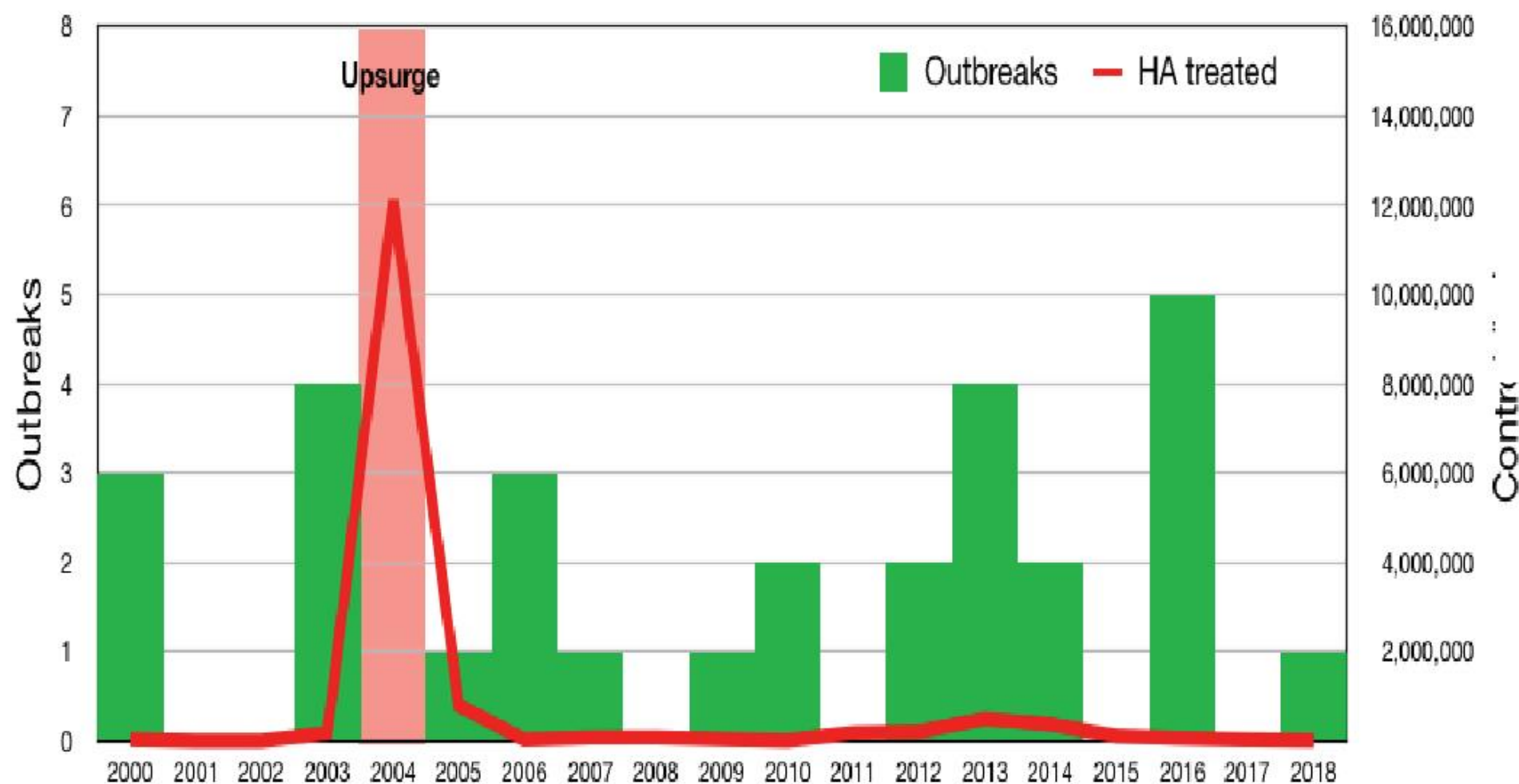


◆ Wide Distribution of Desert Locust



-  CLCPRO (10 countries)
 -  CRC (17 countries)
 -  SWAC (4 countries)
 -  Caucasus and Central Asia (10 countries) – Italian, Migratory and Moroccan Locust
 - Other countries and species (Brown, Migratory, Red, Yellow-spined Bamboo, ... Locust)
- } Desert Locust

◆ Outbreaks and Losses of Desert Locust



Control undertaken 2000–2018



More outbreaks are being detected and successfully controlled, *leading to a reduction in upsurges that are expensive to stop*

2003–2005 upsurge control = 170 years of preventive control

1. Recent Trend of TPPs: Fall armyworm (2)

- **Description:** FAW is the most recent emerging TPP
- **Distribution:** FAW is native to the Americas but now spreads to 52 countries in Africa, Nearest and Asia
- **Host plants:** FAW feeds on more than 80 crop species, but mostly prefers maize



◆ Rapid Spread of Fall Armyworm



2016



2017



2018



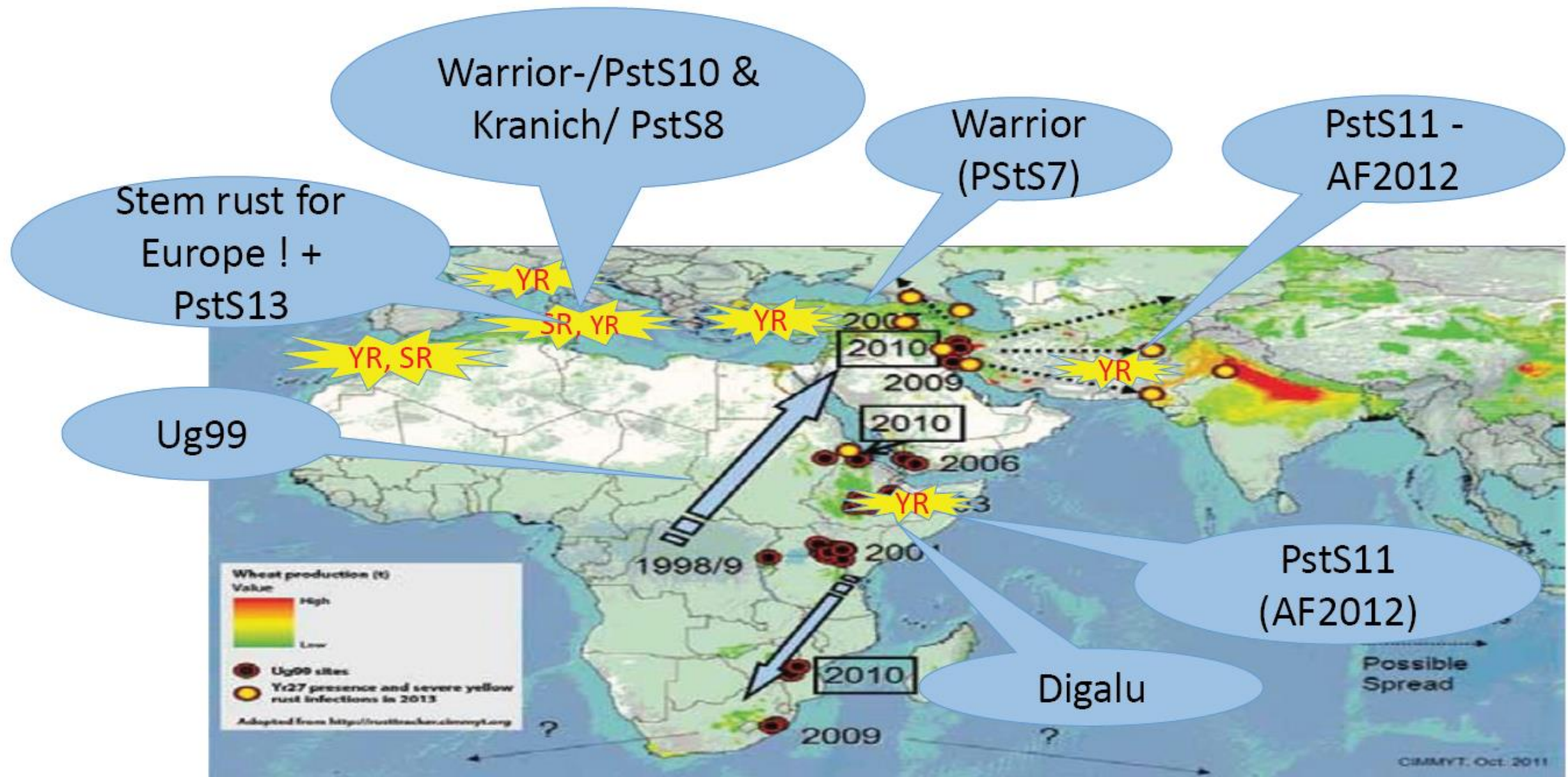
current

1. Recent Trend of TPPs: Wheat rust (3)

- **Description:** Wheat rust is a recurrent problem with its epidemics amplify with increased rains, seriously threatening wheat in all regions
- **Distribution:** Wheat rust is worldwide distributed wherever wheat is grown (America, Africa, Europe, Asia, Australia)
- **Host plants and damage:** Annual global average yield loss of bread wheat and durum wheat is 6.2%, or 20-40% in rainy seasons



◆ Wide Spread of Wheat Rust Diseases



1. Recent Trend of TPPs: Banana fusarium wilt (4)

- **Description:** Banana Fusarium wilt, caused by *Fusarium oxysporum*, is an important disease of banana in almost all banana-producing countries of the world. Currently, a new strain of the fungus, Tropical Race 4 (TR4), is posing the most serious threat to banana production in Asia, Africa, Near East, Latin America and the Caribbean
- **Damage:** The disease could cause 100% loss, with 100,000 ha abandoned for production. By 2040, TR4 has the potential to spread to 17% of current banana area producing fruits worth \$10 billion

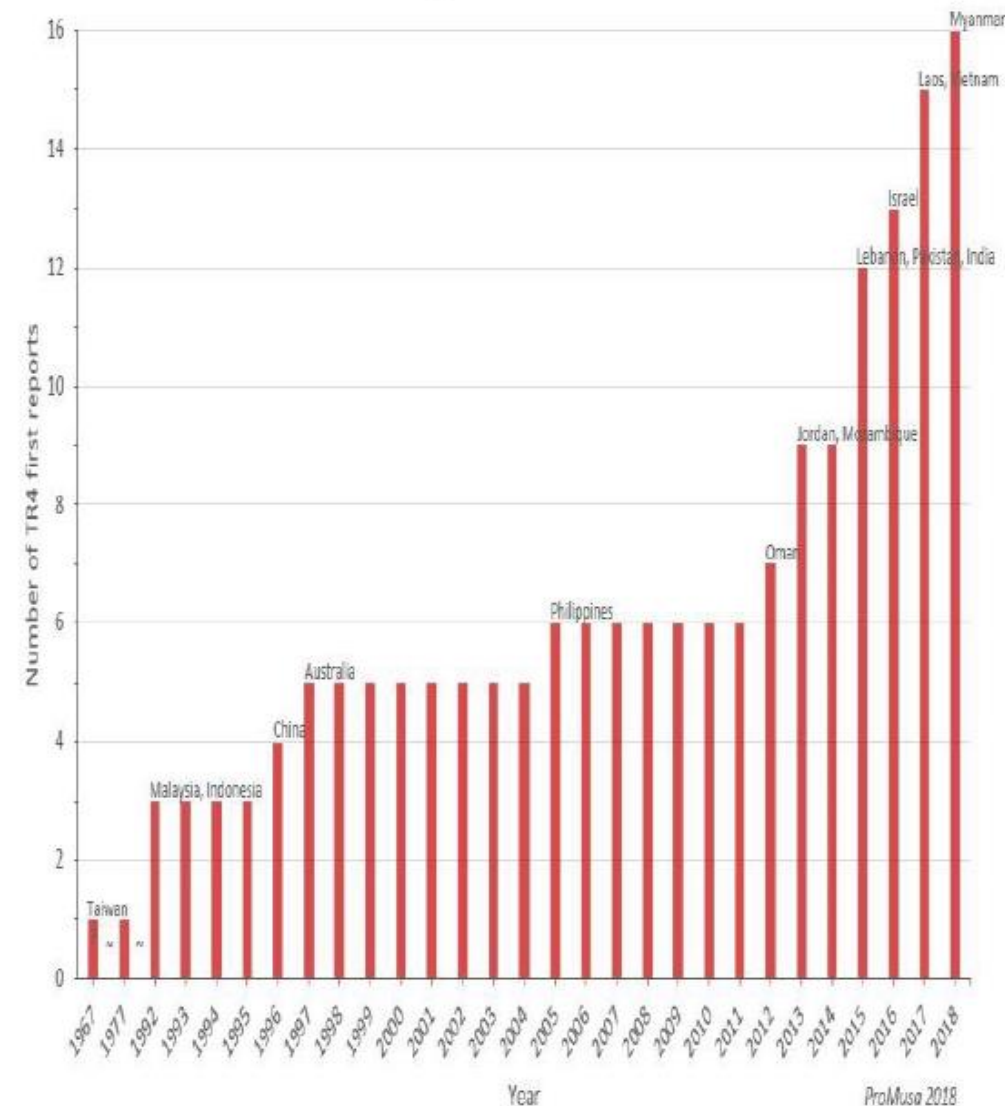


◆ Wide Distribution of Banana Fusarium Wilt



- ! Problem Area (Race 1)**
This area is under attack by Race 1 of Panama disease.
- ! Problem Area (Tropical Race 4)**
This area is under severe attack of the new Tropical Race 4 (TR4) strain of Fusarium.
- + Banana daily diet area**
This area is on risk. The farmers here made the banana their living.

Spread of TR4

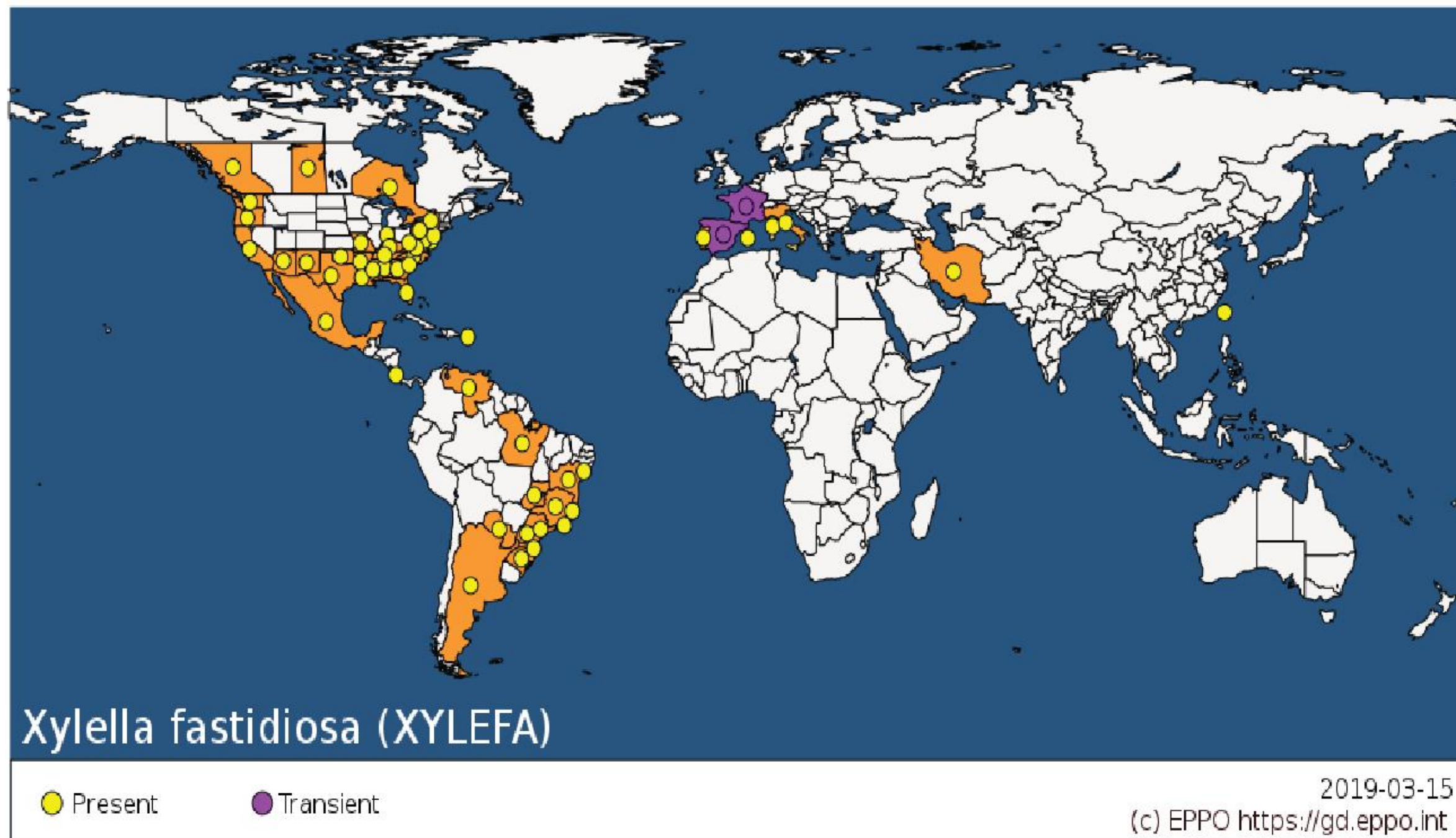


1. Recent Trend of TPPs: *Xylella fastidiosa* (5)

- **Description:** Bacterium *Xylella fastidiosa* is a vector-borne pest which can lead to the death of the infected plants and threat to agriculture, the environment and the economy
- **Distribution:** *Xylella* occurs primarily in America, while recently appears in many countries such as Italy, France, Spain, Iran and China
- **Host plants and damage:** *Xylella* has over 500 host plants, mainly on olive, grapevine, citrus and coffee; and 40 million hectares of olive trees in Mediterranean basin would be destroyed by this potential disease



◆ Wide Distribution of *Xylella fastidiosa*



2. Major Impacts of TPPs: *Food security (1)*

- **General situation:** Globally annual crop losses due to plant pests and diseases is estimated to be 20–40%; and those due to the TPPs are frequently even worse
- **Desert Locust outbreak (2003–2005) in West Africa:** 80–100% of losses for cereal, 85–90% for legume, 33–85% for pasture
- **FAW:** National averaged loss of maize for 2017 was 45% in Ghana, and 40% in Zambia
- **Wheat rust:** Annual averaged yield loss is around 50 million tons worth USD 12 billion



10 Feeding by young caterpillars results in semi-transparent patches on the leaves called windows.



11 Young caterpillars can spin silken threads which catch the wind and transport the caterpillars to a new plant.



12 Feeding through the whorl can cause a line of identical "shot" holes, when the leaf unfurls.



13 As they develop, Fall armyworm move permanently into the whorl. This means that it is difficult to detect early infestations.



14 Feeding can cause the whorl and upper leaves to be a mass of holes, ragged edges, and caterpillar poo (called "lass").



15 The caterpillars usually burrow into the side of the cob.



16 Fall armyworm infestation causes stunting and destruction of developing tassels and kernels, which reduces grain quality and yield.



17 When the caterpillars burrow into the side of the cob, damage to grains can lead to rot.



18 Holding a maize plant damaged by Fall armyworm.

2. Major Impacts of TPPs: *Biodiversity (2)*

- **General situation:** All TPPs, in particular for invasive alien species, are very destructive to the biodiversity
- **Xylella:** It is a major threat to forest biodiversity in many regions of Europe
- **Water hyacinth:** Water hyacinth (*Eichhornia crassipes*), is one of the most destructive invasive alien aquatic plant pests in the world, is a strong killer of aquatic biodiversity



2. Major Impacts of TPPs: *Farmers' livelihood (3)*

- **General situation:** All TPPs often cause significant reduction crop yield and quality, thus imposing great effect on farmers' livelihood
- **Desert locust in West Africa (2003–2005):** 8.4 million people affected with 60% of indebted households in Mauritania and 45% in Mali, as well as 90% of food aid received in Mauritania, and 75% in Mali
- **Banana Fusarium wilt:** 400 million people in the world depending on Banana for staple food, jobs and livelihoods are under threat of this disease. A single outbreak of this disease in Mozambique has put livelihoods of 2,000 local jobs at risk



2. Major Impacts of TPPs: *Safe trade (4)*

- **General situation:** Transboundary plant quarantine pests are the major barriers for safe trade, often causing in closing of trade borders, such as fruit-flies and Cassava virus diseases
- **Implementation of the ISMPs** increased agro-trade by over 40% in Kenya, and 26% in Australia
- **In case of sea containers and e-Commerce:** Phytosanitary risk accounts for over 70%

Taxon	Exterior	Interior (empty or full)	Refrige-ration unit	Unknown location (in or on container)	Total	
Plants	113	102	515	466	1304	71%
Insects and arachnids	41	106	1	122	366	20%
Molluscs	70	4		20	100	6%
Other	12	8	2	19	58	3%
Grand Total	236	220	518	627	1828	

3. FAO Strategy of TPPs: *Coordination (1)*

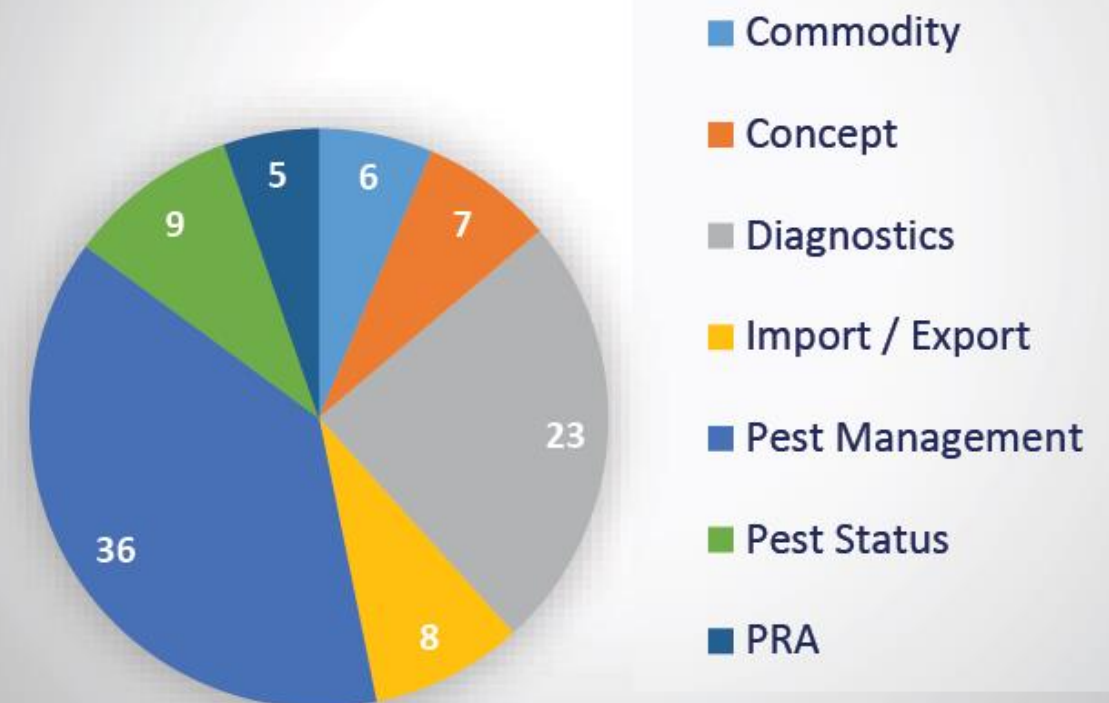
- **Legislation and policy advice:** On phytosanitary issues by IPPC; on pesticide and IPM issues by AGP; and on emerging TPP issues by EMPRES
- **Coordination mechanism:** Scientific committees, technical work groups, task forces, and networks, such as 3 FAO Desert Locust Commissions and several technical networks
- **Project development and management:** Organizing relevant stakeholders to apply projects at global, regional and national levels
- **Resource mobilization:** FAO-TCI, AGP, IPPC and EMPRES, such as US\$ 19.5 million for FAW
- **Information sharing:** Essential to improve monitoring, early warning and timely response



3. FAO Strategy of TPPs: *Prevention (2)*

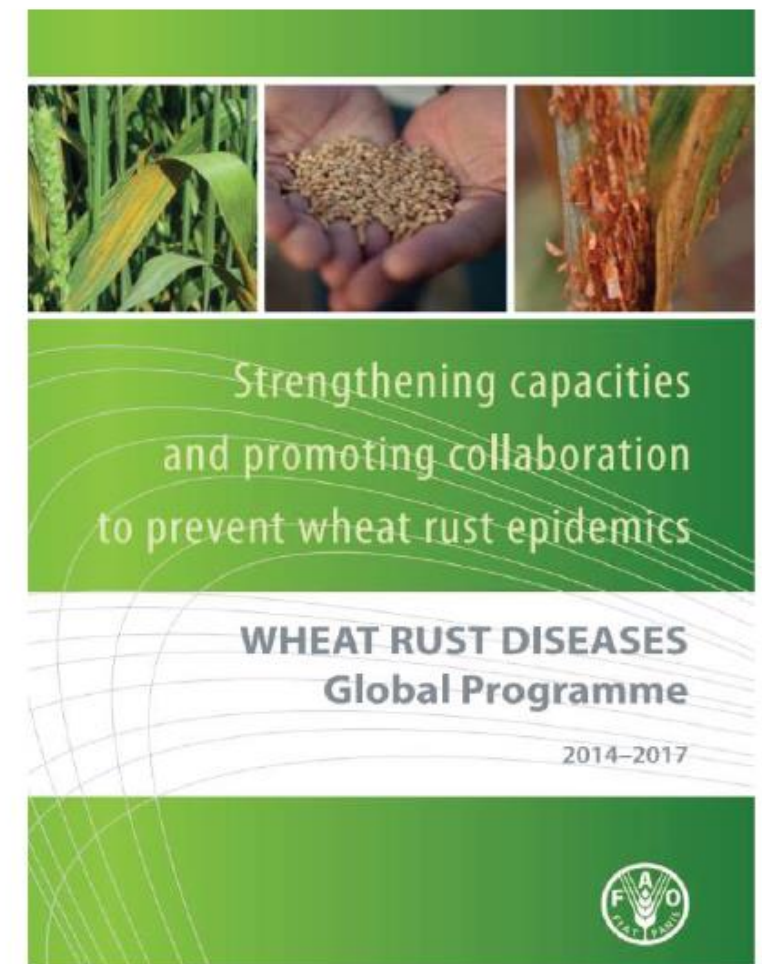
- ***Prevention of introduction:*** Take the Phytosanitary Measures on Import Regulation based on the pest risk analysis (PRA), and ISPMs
- ***Prevention of spread:*** Take the Phytosanitary Measures on Quarantine Areas for the infected region (containment) and of Pest-free Area for the non-infected region
- ***Prevention of damage:*** Take IPM Measures on Host Plant Resistance and GMOs

IPPC Adopted standards grouped by categories (1993-2017)



3. FAO Strategy of TPPs: *Early warning and response (3)*

- **Early warning:** the capacity to predict the occurrence or spread of a pest and propose and reactive responses
- **Emerging response:** the capacity to implement reactive responses to contain or eliminate the risk
- **Showcase:** A recent regional project on wheat rust monitoring and management in Central Asia and Near East has been funded by FAO-Turkey Partnership Programme (5 years, 1.067 m USD) with collaboration of Turkey, ICARDA & CIMMYT



3. FAO Strategy of TPPs:

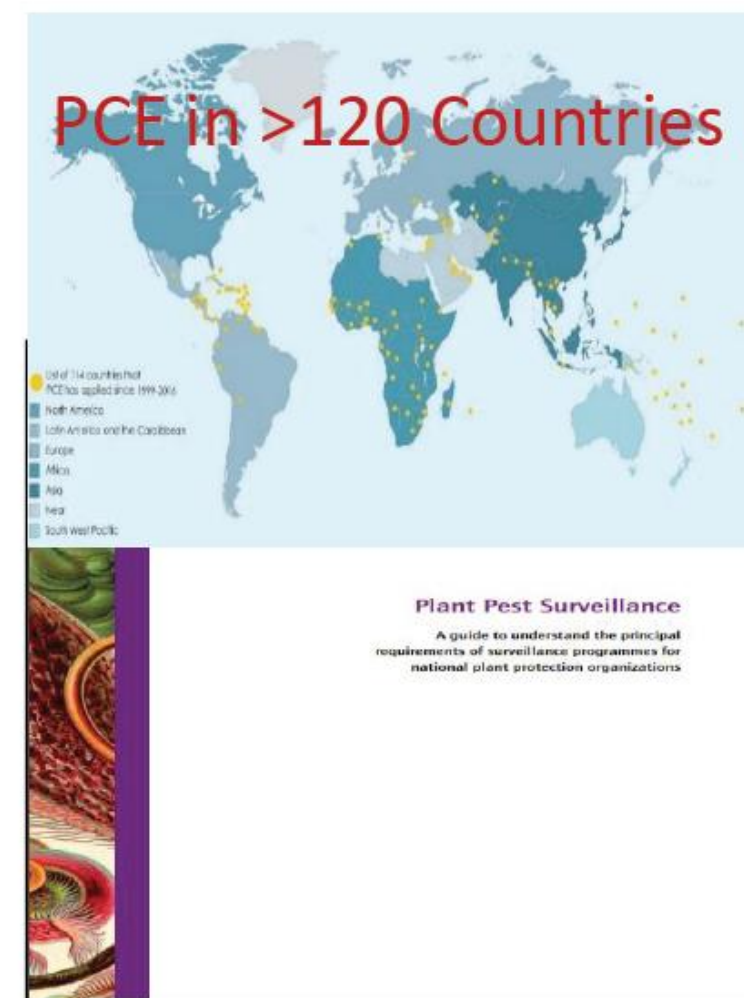
Monitoring and sustainable management (4)

- **Monitoring:** Is the cornerstone of early warning and essential but not sufficient for sustainable management; this requires an institutional framework, regional cooperation, strengthening/refreshing of technical capacities, preparedness, attention to human health and the environ. as well as regular financial support
- **Sustainable management:** System approach and agro-ecology
- **Showcase:** Several Desert Locust outbreaks successfully contained in the Western Region between 2012 and 2018



3. FAO Strategy of TPPs: *Capacity Development (5)*

- **Global tools:** Improvement of national capacities to deal with TPPs through PCE (IPPC) and FFS (AGP)
- **National capacity building:** Personnel capacity by organizing workshops and trainings; Institutional capacity by providing equipment; and System capacity by establishing monitoring network
- **Showcase of the upcoming event:** The IPPC International Symposium for Pest Free Areas and Surveillance will be organized in Japan from 28 October to 1 November 2019, for capacity development and awareness raising of international framework on Pest Free Areas and Pest Surveillance



4. Key Recommendations: **01-06**

1. ***Challenge*** of TPPs is becoming more and more important than ever before
2. ***Prevention and preparedness*** pay positive dividends
3. ***Risk assessment, risk management and risk communication*** are equally important
4. **Sustainable funding** is badly needed at global, regional, national levels
5. **Awareness raising** is vital including private sector and the broader public (global mobility)
6. ***Research priorities*** are requested to address gaps in prevention and management of TPPs

4. Key Recommendations: **07-10**

- 7. *New technologies*** in monitoring & early warning and management should be innovated, e.g., AI, ICT, detection toolkits
- 8. *International collaboration*** is key for combating against TPPs, e.g., EUPHRESKO, Fall Armyworm, R4D Consortium
- 9. *FAO*** should play more roles in developing global standards and providing technical support to regions and countries
- 10. *International Year of Plant Health (IYPH)*** in 2020 will provide a unique opportunity for advocacy of importance of plant health at global, regional and national levels

5 Briefing on IYPH in 2020: *General goal (1)*

“The International Year of Plant Health (IYPH) will raise awareness of the importance and impacts of plant health in addressing issues of global importance, including hunger, poverty, threats to the environment and economic development.”



5 Briefing on IYPH in 2020:

Core activities at global level (2)

- **Establish:** ISC on IYPH in April 2019
- **Launch:** Global programme on IYPH events in New York and in Rome in December 2019
- **Organize:** Ministerial-level CPM in Rome 30 March - 3 April 2020
- **Hold:** International Plant Health Conference in Helsinki in September 2020
- **Celebrate:** the World Food Day with focus on Plant Health on 16 October 2020
- **Conduct:** IYPH photo contest throughout 2020
- **Close:** IYPH celebration in Rome in Jan. 2021



INTERNATIONAL YEAR OF
PLANT HEALTH

2020



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5 Briefing on IYPH in 2020: *Core activities at regional and national level (3)*

- ***IYPH Steering Committee:*** At regional and national levels with RPPOs/NPPOs leading the process
- ***IYPH coordination:*** Both regional and national IYPH activities are encouraged under the FAO/IPPC
- ***IYPH visual identity:*** Both regions and nations are encouraged to report on their activities using the IYPH visual identity
- ***IYPH specified activities:*** Both regions and nations are encouraged to organize specifies activities, such as IYPH booths/side events during the FAO Regional Conferences in 2020, and national IYPH Stamp, Coin and Field Day



5 Briefing on IYPH in 2020: *Expected outcomes (4)*

1. ***Awareness*** of the importance of plant health towards UN SDGs and major topics in the international agenda is raised.
2. ***importance of plant health*** is realized by citizens in relation to their daily lives and their behavior
3. ***Knowledge, research and partnerships*** on plant health are encouraged and coordinated
4. ***Good practices*** are promoted to enhance plant health
5. ***National, regional and global plant health efforts and their resources*** are strengthened in light of increasing trade and reducing new pest risks due to climate change

5 Briefing on IYPH in 2020: *Recommendations for G20 countries (5)*

1. **Support** plant health awareness campaign in your countries by setting up national committee for celebrating IYPH
2. **Promote** national committee to organize relevant activities for for celebrating IYPH
3. **Participate** national and regional activities for celebrating IYPH
4. **Attend** Ministerial-level section of CPM-15 in Rome (30 March-3 April 2020)
5. **Contribute** finance and human resources to supporting celebration of IYPH

◆ Visual Identity on IYPH 2020



INTERNATIONAL YEAR OF
PLANT HEALTH

2020



ANNÉE INTERNATIONALE DE LA
SANTÉ DES VÉGÉTAUX

2020



AÑO INTERNACIONAL DE LA
SANIDAD VEGETAL

2020



السنة الدولية
للصحة النباتية

2020



国际植物健康年

2020



МЕЖДУНАРОДНЫЙ ГОД ОХРАНЫ
ЗДОРОВЬЯ РАСТЕНИЙ

2020

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*Thanks for your kind
attention*

