Food and Agriculture Organization of the United Nations

Regional strategy for sustainable management of transboundary plant pests and diseases

in the Near East and North Africa region

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INTRODUCTION

Near East and North Africa (NENA) region is challenged by the continuous threat of transboundary plant pests and diseases. Increased trade activities, movement of people, plants and animals, accentuated by conflicts and crises in the region and lack of effective control measures and coordination multiply the risk of transboundary pests. Heavy annual losses in crop production are triggered by pests and diseases, estimated at 25 to 30 percent of global production, representing a considerable negative economic impact. The effects of climate change on increasing the spread of transboundary pests and diseases cannot be ignored.

In addition, although agri-food exports from NENA countries are the second main non-oil export commodities, with potential to increase three to four times, the intraregional exports of goods among NENA countries are less than 8 percent of their total exports. However NENA countries have reduced significantly the tariffs in the last decade, but studies suggest that reforming the regulatory frameworks can lead to two to three times increase in intraregional trade than those attained through tariff reduction alone

The aim of this paper is to discuss the most appropriate solutions of transboundary plant pests and diseases in the NENA region; and to propose a regional strategy as a tool to strengthen regional cooperation in addressing transboundary pests and diseases. The strategy aims to improve the performance of national plant health services (i.e. National Plant Protection Organisations NPPOs) of the NENA countries to enable better monitoring, prevention, early detection, and effective and timely control of transboundary plant pests and diseases.

Plant pests and diseases threaten food security and nutrition around the world and seriously compromise food security in the NENA region, with severe economic and environmental consequences. Most of these transboundary diseases are transmitted by propagative plant material and have no curative measures. The lack of harmonized certified propagation materials and relative diagnostic protocols in NENA countries increased considerably the spread of transboundary plant pest and diseases. Furthermore, the deficiency of correct control measure and applied quarantine control strategies, together with the absence of surveillance and early warning systems are the main factors causing the fast spread and those destructive agents. Therefore, prevention remains the most efficient strategy. Some emergent plant pests and diseases with significant impacts in the NENA region are briefly described below; some are already reported in some countries while others pose an imminent threat in the region.

A. TRANSBOUNDARY PLANT INSECT PESTS

- **Fall armyworm (FAW) (*Spodoptera frugiperda*)** is an insect that seriously affects food security and nutrition in the NENA region. The FAW feeds on more than 80 plant species, and causes yield losses up to 100 percent. The pest has been spreading rapidly in the last years in the majority of Central and Southern African countries and has been introduced to the Sudan in late 2016. The pest have been reported in Sudan, Yemen and Egypt.
- **Red palm weevil (RPW) (*Rhynchophorus ferrugineus*)** caused the loss of tens of thousands of palm trees. The literature reports that palms worth up to €483 million have been destroyed or infested in the region.
- **Fruit flies (*Ceratitis capitata, Bactrocera zonata, Bactrocera dorsalis and Drosophila suzukii*)** remain at the top of the list of devastating insects in the NENA region, causing severe losses to fruit crops. For example, the damage due to Bactrocera dorsalis was estimated at EUR 320 million in the Near East. Moreover, the additional phytosanitary measures applied by importing countries reduce the market access and competitiveness of fruit crops from NENA.

B. TRANSBOUNDARY PLANT DISEASES

- The latest outbreak of ***Xylella fastidiosa*** in Italy highlighted the potential danger of transboundary plant diseases when they get introduced to new areas and turn into devastating epidemic. The disease caused by a pathogenic bacterium introduced to Europe from American continent, infected more than 230 000 hectares causing losses to Italy's economy estimated at EUR 1 billion in 2016.
- Citrus greening, known, as ***Huanglongbing (HLB)*** caused by the bacterium Candidatus Liberibacter is another example of transboundary plant diseases that may compromise citrus production in the NENA region. Economic losses caused by HLB in the United States in 2007-2008 season was estimated at USD 9.1 billion.
- Fungal transboundary pathogens like ***Fusarium oxysporum f. sp. cubense (Foc)***, the causal agent of Fusarium wilt of banana is considered as one of the most destructive of all plant diseases, responsible for losses estimated at USD 2 billion, at least.
- Another important Fusarium spp. is ***Fusarium oxysporum f. sp. Albedinis***, the causal agent of Fusarium wilt of date palm (or Bayoudh), which destroyed 3 million date palm trees in Algeria and 10 million in Morocco.

CLIMATE CHANGE INFLUENCE ON PLANT PESTS AND DISEASES

Different climatic regions likely harbour distinctive plant pests and pathogens, with future change in temperatures and precipitation caused by the global warming, pests and pathogens are expected to change their behaviour including spreading pattern and population fluctuation. For example, wheat leaf rust would develop earlier due to an increase of temperatures earlier in the season. Wheat yellow rust is now developing heat-tolerant strains that can facilitate their epidemic spread in the region.

Moreover, climate change would also affect host-plant physiology, plant-pest interactions, plant pest enemy populations and management strategies of plant pests. It has been also shown that rising temperature will reduce the length of life cycle and enhances the rapid multiplication of certain insects.

FAO INTERVENTIONS TO ADDRESS TRANSBOUNDARY PLANT PESTS AND DISEASES

The Food and Agriculture Organization of the United Nations (FAO) established the Food Chain Crisis Management Framework (FCC), an integrated approach combining prevention, early warning, preparedness, and response to emergencies affecting the food chain to address the challenge of increasing outbreaks of transboundary plant and animal pests and diseases, including forest pests and aquatic diseases, food safety and radiation events.

One of these important plant disease control programmes is the ongoing programme against wheat rusts. The programme has been coordinated by FAO through its Wheat Rust Disease Global programme (WRDGP) since 2008. This programme provides policy and technical support to the concerned countries, in the context of the Borlaug Global Rust Initiative (BGRI). It can be considered as a good example to follow for combating many diseases threatening the NENA region.

Historically, one of the most important cases of successful transboundary plant pest combat is that against the Desert Locust (DL), which is well managed by FAO and member countries. The cost of the campaigns amounted to just USD 7 million compared with over USD 400 million in Northwest Africa in case of absence of prevention systems, which show the economic feasibility of preventive measures against transboundary plant pests and diseases.

FAO-CIHEAM COLLABORATION TO ADDRESS TRANSBOUNDARY PLANT PESTS AND DISEASES

International Center for Advanced Mediterranean Agronomic Studies (CIHEAM) has an internationally recognized scientific expertise in the field of plant health (more than 30 years of experience in plant protection at national and international level).

CIHEAM Bari promotes several actions concerning important issues such as food security and control of invasive pests. Within a long-standing collaboration with FAO, CIHEAM Bari implemented different technical programmes related to the above issues, including the development of national strategic plans and local initiatives across the Mediterranean region, the organization of technical training and the conduct of policy related international meetings.

CIHEAM and the International Plant Protection Convention (IPPC) Secretariat work to the review of the “Draft IPPC Strategic Framework for 2020-2030”, promoted by the IPPC Secretariat.

CIHEAM Bari and FAO co-organized several scientific consultations and meetings on Red Palm Weevil (RPW) management that brought together representatives of the regulatory authorities (National Plant Protection Organization, NPPO) and experts from countries affected by this pest, developers of technologies involved in RPW management; a multi-disciplinary and multi-regional strategy document on RPW management was prepared.

In the last decade, CIHEAM Bari has developed systems for the early monitoring of harmful pathogens (Citrus tristeza virus and Xylella fastidiosa) with the application of several technologies (e.g. remote sensing, Information Technologies, modelling, biotechnologies). Several applications for field data acquisition have been developed in the monitoring of Xylella fastidiosa (XylAppApulia, XylAppEU, XylAppNENA) matching needs of countries and providing training for the surveillance of this pest.

Following the establishment of Xylella fastidiosa in Euro-Mediterranean area, CIHEAM-Bari and FAO have promoted the use of 'healthy' propagating material, the establishment of pest surveillance programmes and application of eco-sustainable control methods. CIHEAM Bari and FAO have developed Preventive Measures for the Introduction and Spread of Xylella fastidiosa - Olive Quick Decline Syndrome in NENA Countries.

Recently, CIHEAM Bari has also conducted with FAO an assessment of Xylella fastidiosa impacts in the main crops (olive, grapes, citrus, stone fruit and ornamental plants) in selected NENA countries.

Moreover, CIHEAM Bari provides capacity building on innovative methods in early detection, monitoring and surveillance of plant pest and multiplication of certified propagating materials, through Letters of Agreement with FAO for some NENA Countries (Lebanon, Oman, Palestine, etc.).

TOWARDS EFFECTIVE REGIONAL COOPERATION STRATEGY TO ADDRESS TRANSBOUNDARY PESTS AND DISEASES IN NENA

Countries in the NENA region are facing significant challenges in implementing the wide range of diversified measures to address transboundary plant pests and diseases. Insufficient national capacities and the lack of proper regional cooperation programmes are contributing to these challenges and limiting surveillance, border controls and inspections, risk assessments, proper diagnosis and effective timely response.

The transboundary nature of some plant pests and diseases makes it impossible for a single country to adequately address them alone. Therefore, a regional cooperation strategy among NENA countries becomes vital to create synergy in order to analyze threats, exchange useful knowledge and information, and coordinate response actions with established harmonised standards.

The following pillars and effective actions need to be promoted as a regional programme :

A. IMPROVING THE COORDINATION AND KNOWLEDGE SHARING AMONG NENA COUNTRIES

1. Establishment of **Regional Committee for Sustainable Management of Transboundary plant Pests and Diseases (RCTPD);**
2. Assessment of risks of emerging pests and diseases, and their potential socioeconomic impacts in NENA countries on the main crops;
3. Development of regional strategic plan for managing the risk of transboundary pests and diseases;
4. Establishment of an action plan (approved by the RCTPD) that is activated as a response to any increasing threat or recent introduction of a transboundary pest or disease into any NENA country; Organisation of regional training workshops, technical meetings and conferences to bring together researchers, NPPOs, phytosanitary inspectors and laboratory specialists from NENA countries to exchange technical opinions and expertise.
5. Improving information sharing and communication by producing regional newsletter, reports, training materials and awareness campaigns;
6. Encouraging the implementation of regional projects instead of national projects to tackle the risk of transboundary pests and diseases.
7. Favouring the exchange of personnel between research institutes of different countries in order to facilitate the transfer of knowledge and know-how on transboundary pests and diseases.

B. IMPROVING SURVEILLANCE, MONITORING AND EARLY WARNING SYSTEMS FOR TRANSBOUNDARY PEST AND DISEASES

1. The construction of an effective **regional network of surveillance system**, under the supervision of **RCTPD**, that combines national data into a regional database;
2. Development of harmonized and coordinated **regional strategy and protocols** to support existing national surveillance programmes;
3. Supporting **modelling and mapping** of areas threatened by transboundary pests and diseases;
4. Supporting the use of innovative tools for the early identification and detection of transboundary pests and diseases;
5. Conducting studies to develop measures of appropriate early response to prevent negative consequences on food security strategic crops;
6. Implementing capacity building related to plant health services, including extension services, diagnostic laboratories and research institutions for better prediction, prevention, and management of pests and diseases.

C. DEVELOPING APPROPRIATE QUARANTINE MEASURES

1. Establish a **regional committee to facilitate the application of quarantine standards** to control transboundary pests and diseases in accordance with the IPPC requirements and ISPMs;
2. Harmonization of phytosanitary regulations at regional level to improve cooperation and coordinate the regional and national efforts, thus encouraging intraregional trade of agriculture commodities;
3. Development and harmonisation of quarantine pest lists depending on national requirements and ISPMs principles for Pest Risk Analysis (PRA);
4. Standardisation of and training on the diagnostic and pest identification protocols and methods;
5. Developing inspection and sampling standardised protocols;
6. Development of capacity building programme on phytosanitary and quarantine measures.

D. HARMONIZING THE SYSTEM FOR PRODUCTION OF CERTIFIED PLANT PROPAGATION MATERIALS

1. Establishment of **regional commission for certified plant propagation materials**, to work under the supervision of **RCTPD**;
2. Harmonizing legislations and regulations to optimize the quality of the control systems and improving intraregional trade of plant propagation materials;
3. Establishment of reference laboratories and standard protocols for verification of phytosanitary status of plant for planting;
4. Foundation of regional agreement on certified plant propagation materials allowing for regional mutual recognition of nationally produced planting materials;
5. Organisation of training workshops on the innovative production system of plant propagation materials.

CONCLUSIONS

Food security and safety in NENA region is still threatened by transboundary pest and diseases; **prevention is the only method to reduce the spread of those pest and disease**. Production of healthy plants together with smart and sustainable food production in the NENA region requires specific solutions. In the same time, we consider adopting correct policies, legislations and clever investments as the first step to prevent the entrance of destructive pest and disease of agriculture sector. Ensuring higher levels of efficiency, early warning and reaction to threats to food systems requires regional collaboration and planning. Up to date, NENA countries are not adequately prepared to effectively respond to new and emerging transboundary plant pests and diseases. Activities of prevention, early warning, control, eradication and containment are not conducted to the fullest extent possible. Human resources and logistical capabilities of NENA countries are generally not at a level sufficient to face large and urgent plant health issues.

In this occasion, we invite NENA countries and plant protection experts to support the **establishment of regional programme to face transboundary plant pest and diseases** in the region.

E. PROGRAMME MANAGEMENT

Overall supervision will be carried out by FAO-RNE as the main implementing party, with the lead of the Regional Plant Protection Officer FAO-RNE. Coordination meetings with the partner institutes will be carried out quarterly either in person or by Videocon, at both technical and management levels. On-site regular visits, support and supervision missions will be performed at least once a year and as needed based on the partners' performance. Within the targeted countries, named points of contact from each partner organization will be responsible for the implementation of the work plans and timely delivery of activities and output.

They also will be responsible for supporting the compilation and preparation of the quarterly reports and other special submissions to the project funders.

The management structures and mechanisms of the project will comprise three levels:

a. Programme Steering Committee, composed of stakeholder representatives and chaired by a senior official, will meet annually to provide overall guidance for the project activities and play a crucial role in ensuring government commitment.

b. The Project Technical Committee, composed of technical staff from FAO-RNE, CIHEAM-Bari and other country partners will meet bi-annually to review the project progress versus the agreed work plan and propose remedial actions when necessary. Project Technical Committee have the role to coordinate and supervise the work and implementations of four regional committees:

i. Sustainable Management of Transboundary plant Pests and Diseases;

ii. Regional network for Transboundary plant Pests and Diseases surveillance;

iii. Facilitate the application of quarantine standards;

iv. Certified plant propagation materials.

c. The Programme Implementation Unit (PIU), established within FAO-RNE, will coordinate all day-to-day project activities. It will be managed by the Programme Leader and supported by other country partners and experts. Regular field visits to project sites will be undertaken by PIU staff to supervise and support programme activities. During field visits, the participation of relevant partners will be ensured.

F. MONITORING, EVALUATION, AND REPORTING ARRANGEMENTS

A monitoring, evaluation and reporting system established for the programme will ensure: regular and systematic recording and reporting of progress and fund usage; capture the rate of implementation against planned targets and objectives; and assess the impact of project activities. A comprehensive workplan detailing milestones and deliverables per activity will be prepared in collaboration with partners at the beginning of the programme, and activities and outputs will be tracked accordingly. Standard formats for data collection will be developed, so that programme data could be easily collected from implementing partners, stored in a database and used for analysis, reporting and management. Data collected through monitoring will feed into the bi-monthly and annual progress reports produced by the programme manager and distributed to all programme partners. FAO financial system, which allows real time monitoring of expenses, will generate financial reports according to the frequency and format requested by the programme funders.

G. RISKS AND MITIGATION MEASURES

FAO will work closely with the governments in the targeted countries in the formulation and appraisal of this project to ensure that it meets national objectives and priorities.

H. FUND LIAISING AND RESOURCE MOBILIZATION

Food security and safety in NENA region is A permanent trust fund will be established under FAO with annual continuation form partners countries, voluntary donors and other resources are highly encouraged.

A detailed budget will be provided once the scope of work has been agreed upon with regional and national stakeholders.

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