Food and Agriculture Organization of the United Nations

CIHEAM

REPORT OF

The Scientific Consultation and High-Level Meeting on Red Palm Weevil Management

Rome, Italy, 29–31 March 2017

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Abbreviations and acronyms

CIHEAM	International Center for Advanced Mediterranean Agronomic Studies
EPF	Entomopathogenic fungi
EPPO	European Plant Protection Organization
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
GIS	Geographic Information System
IoT	Internet of Things
IPM	Integrated Pest Management
IPPC	International Plant Protection Convention
ISPM	International Standard for Phytosanitary Measures
NENA	Near East and North Africa
NEPPO	Near East Plant Protection Organization
NGO	Non-Governmental Organization
NPPO	National Plant Protection Organization
RNAi	Ribonucleic Acid-Interference
RPW	Red palm weevil
TCP	Technical Cooperation Programme
TF	Trust Fund
UAV	Unmanned Aerial Vehicle/Drone
UV	Ultraviolet

Contents

Final Report of the Scientific Consultation and High-Level Meeting on Red Palm Weevil Management

Summary

The Scientific Consultation was held during the first two days of the event (29–30 March). It brought together all stakeholders involved in the management of red palm weevil (RPW)), *Rhynchophorus ferrugineus*. National authorities, international experts and scientists, private sector representatives and non-governmental organizations held comprehensive technical discussions on the current global situation, challenges facing the effective management of the pest and options for improving management programmes. In addition to the state of the art on current global RPW research programmes, the consultation covered advances in combating RPW by employing different integrated pest management (IPM) tactics.

The consultation also discussed the Framework Strategy for Eradication of the Red Palm Weevil that had been drafted by a team of international experts, the Food and Agriculture Organization of the United Nations (FAO), the International Center for Advanced Mediterranean Agronomic Studies (CIHEAM), the International Plant Protection Convention (IPPC) and the Near East Plant Protection Organization (NEPPO). The participants reviewed and agreed to implement the national, regional and global components of the framework strategy, as outlined below.

National programmes to contain the spread of red palm weevil and eventually eradicate this pest will be supported by the framework strategy. A charter will be drafted for cooperation and coordination of efforts at regional and interregional levels to support the integrated and sustainable management programmes to control RPW, reduce its devastating effects on the environment and food security, and alleviate the socio-economic impact on rural communities.

The Regional Programme for Red Palm Weevil Management will be established to create an enabling environment for cooperation and coordination, and to assist member countries of the NENA Region in improving their management strategies and RPW management programmes. The regional programme will be hosted by the FAO Regional Office for Near East and North Africa with the support of CIHEAM, NEPPO and member countries.

The Global Platform for Red Palm Weevil Management will be established to strengthen coordination, information, experience and knowledge sharing at global level. The global platform will be established with the support of FAO, CIHEAM, IPPC and other partners and member countries, and will be hosted at FAO headquarters.

The High-Level Meeting held on the last day of the event (31 March) was opened by the Director-General of FAO and the Secretary General of CIHEAM in the presence of H.E. Saudi Minister of Environment, Water and Agriculture and H.E. Minister of Agriculture of Mauritania.

The ministers, government representatives and other participants were briefed on the outcomes of the Scientific Consultation and the proposed strategy that had been reviewed and agreed.

The FAO Director-General pointed out that red palm weevil has become a global threat and demands a global strategy to eradicate it. The RPW problem requires all governments to be active participants and pledge their commitment and cooperation to stop its spread and eradicate it in the affected countries. He added that the message from the consultation is positive, in that RPW can be controlled and defeated by joint efforts at global and regional levels. FAO will coordinate the global efforts to stop and eradicate the pest.

The High-Level Meeting concluded with an agreement on the new proposed strategy to fight the pest, which includes the three above-mentioned components.

Introduction

FAO, in collaboration with CIHEAM, organized a Scientific Consultation and High-Level Meeting on Red Palm Weevil Management at FAO headquarters in Rome, from 29 to 31 March 2017. The consultation brought together representatives of the regulatory authorities (National Plant Protection Organizations – NPPOs) and experts from countries affected by the red palm weevil, international scientists, developers of technologies involved in RPW management, farmers and other stakeholders. A total of 168 participants attended the event, including:

- 88 representatives of 32 countries from the NENA Region, Asia, Europe and Africa;
- 8 representatives of regional and international organizations;
- 10 representatives of farmers and date palm producers' associations;
- 25 international experts and speakers of the plenary sessions and side events;
- 15 experts and interested participants from different countries;
- 18 representatives of private companies (technology developers) of management of RPW;
- technical staff from FAO regional offices and headquarters and from CIHEAM.

1. Scientific Consultation

The Scientific Consultation was held during the first two days of the event (29–30 March). It brought together all stakeholders involved in the management of RPW (national authorities, international experts and scientists, private sector, non-governmental organizations) for comprehensive technical discussions on the challenges facing the effective management of the pest and options for improving management programmes.

The consultation was opened by Mr Abdessalam OuldAhmed, FAO Assistant Director-General and Regional Representative for Near East and North Africa; Mr Cosimo Lacirignola, Secretary General of CIHEAM; and Mr Shoki Al-Dobai, Regional Crop Protection Officer for the Near East and North Africa Region and secretary of the event.

Mr OuldAhmed highlighted the importance of the date palm as the cultural heritage of many nations around the world and a basic food staple for a large swathe of the population in arid zones of the Middle East and North Africa. He added that the date palm is also the main element of the sustainable oasis systems in the arid zones to secure the livelihood and food of oasis inhabitants. He also pointed out that RPW represents the most dangerous threat to date palm and other ornamental palm trees in the region. Insufficient implementation of phytosanitary standards, lack of an effective preventive strategy and insufficient monitoring of response measures has led to the failure to contain the pest so far. Mr OuldAhmed also introduced participants to the FAO activities and projects that have been implemented to provide technical assistance to affected countries over the past seven years, and the goals and expectations of the present event.

Mr Cosimo Lacirignola, in his address, emphasized that the Mediterranean area harbours a vast biodiversity of plant species that must be protected for social, economic and environmental reasons, and mentioned that a sustainable protection strategy against RPW is more essential than ever before to protect the entire region from phytosanitary threats. He also reiterated the 40 years of long-standing cooperation between FAO and CIHEAM and stressed the need to strengthen international cooperation to tackle cross-border pests. Mr Lacirignola pointed out the increasing movement of quarantined pests through the globalization of trade and freedom of travel, and highlighted the ongoing technical cooperation programmes with FAO and IPPC to control them.

Mr Al-Dobai outlined the preparations that had been made for this event, including setting up an organizing committee consisting of representatives of relevant divisions at FAO headquarters, FAO regional and subregional offices in Cairo and Tunis, the IPPC, CIHEAM and NEPPO. The committee had held 11 coordination meetings since its inception in November 2016 to facilitate arrangements for the event.

He further informed participants that the consultation would discuss the entire framework of RPW-IPM as in the agenda (Annex 1), including the challenges facing the successful management and containment of the spread of RPW, and share their experience, knowledge, innovative technologies surveillance, sustainable pest management and eradication practices. The event would culminate in a High-Level Meeting on Friday (31 March 2017) where government representatives were expected to discuss and adopt a multidisciplinary and multiregional strategy that includes effective implementation of cross-border phytosanitary standards.

The opening session was followed by technical sessions for expert presentations, thematic group discussions and side events. The main topics of the Scientific Consultation were:

- the current global situation and challenges to RPW management programmes worldwide as well as in the NENA, Asia and the Pacific, and Europe regions;
- success stories and lessons learned on RPW management;
- state of the art on current RPW research programmes globally, as well as advances in combating RPW by employing different IPM tactics, including early detection, biological control, remote sensing and georeferencing, semiochemical technologies and socio-economic studies, to enhance farmer and other stakeholder participation in RPW control programmes.

1.1 First day – morning session

During this session of the first day (29 March 2017) of the Scientific Consultation, expert presentations were made on the current global situation and challenges to RPW management programmes; and management programmes and challenges to RPW control in different regions, including NENA, Asia and the Pacific, and Europe.

In the two presentations on the global situation, the speakers gave an overview of the biology, host range, geographical distribution, early detection techniques, and the IPM strategy currently adopted, including the use of pheromone traps and serviceless trapping options, preventive and curative chemical treatments, phytosanitary procedures, good agronomic practices relating to the management of RPW, biological control, a novel method of microencapsulation technology developed for increasing the shelf life and tolerance to ultraviolet (UV) light of the entomopathogenic fungus *Beauveria bassiana*, and the challenges facing management practices.

The presentations highlighted success stories in the management of RPW in some countries, including Saudi Arabia, and the common challenges to RPW control in different countries, as follows:

- lack of efficient early detection methods;
- weak enforcement of quarantine measures and uncontrolled movement of the infested trees as key elements in the spread of RPW infestations;
- inability of biocontrol agents to be efficiently delivered and sustained in field conditions.
- insufficient understanding of the field behaviour of RPW.
- Shortcomings in ongoing management programmes resulting from insufficient human and financial resources, labour-intensive control and high cost, lack of farmer and stakeholder cooperation, and other challenges facing management practices.

In the expert presentations on the management programmes and challenges to RPW control in different regions, emphasis was placed on RPW management on date palm for the NENA Region, coconut for Asia and the Pacific, and the Canary Islands date palm for Europe (Spain). Early detection of the pest was the main challenge in combating it in all three regions. Looking at

RPW control experience in Europe, it seems reasonable that an effective RPW control strategy should originate from preventive and protective actions. Pest control should engage all stakeholders by integrating effective control means into a shared IPM. The strategy should target PRW by strengthening phytosanitary measures, considering the key-point analysis in its life cycle, evaluating its population density and dynamic, the host-plant density and its ability to create a protective environment.

- **Near East and North Africa (NENA) Region**

The presentation on the NENA Region described the RPW management situation, key challenges and options for improving current programmes, which may be summarized as follows:

- better involvement of farmers/stakeholders, private sector and NGOs in management programmes, through efficient awareness and training;
- enhance research efforts, particularly with regard to biological control, behaviour of RPW and early detection;
- better enforcement of quarantine measures and review of regulations on the import and export of trees and offshoots, for all types of palm;
- evaluate preventive, curative and eradication treatments;
- assess role of agricultural practices in RPW control;
- learn from successful country programmes in RPW management.

- **Asia and the Pacific Region**

The presentation on the situation in South-East Asia described the spread and evolution of RPW on coconut palm that has been reported in many countries of the region, including India (1891), China (1998), Malaysia (2005), Indonesia, Japan, the Philippines, Thailand and Viet Nam. Strict pre- and post-entry quarantine regimes are essential to make sure that only pest-free and certified planting material can be transported, but there are still some challenges to the enforcement of regulations and legislations. Good public awareness programmes have been implemented in Malaysia and the Philippines to share information about the pest, within the country and with other countries of the region.

The presentation recommended that the IPM programme should be strengthened by intensifying research on effective natural enemies, breeding palm varieties tolerant or resistant to the pest, and applying multidisciplinary and multistakeholder management processes.

- **Europe**

The presentation on the situation in Europe highlighted serious difficulties in controlling RPW, especially because of the scattered nature of *Phoenix canariensis* palm plantations (as ornamental trees) in Europe, despite European Union legislation for preventing the introduction of the plants. Although preventive and curative control actions have been carried out in infested

European countries based on traditional and innovative technologies; none of these has been found to be fully effective.

Despite all the efforts and resources provided by national and EU plant protection organizations, the ability of RPW to spread and its lethal interactions with host plants, make the weevil a serious pest for economically relevant palms in southern European countries. Lack of early detection tools, weak quarantine procedures, and inefficient awareness programmes have contributed to the rapid spread of RPW on *P. canariensis* in Europe. The Canary Islands has been the only success story in Europe, as RPW was eradicated in 2013 and the islands declared free of the pest in May 2016.

Main points of the panel discussion

- Participants emphasized the role of civil society in management programmes and the need to strengthen public awareness of the risk of RPW and measures to limit its spread.
- Some points were made about appropriate trapping systems, such as the optimum density and siting of pheromone traps.
- Emphasis was also placed on more research on host plant resistance, RNAi (ribonucleic acid interference, a type of gene silencing) and RPW behaviour in relation to the temperature and other environmental factors.

1.2 First day – afternoon session

There were five presentations in this session, the highlights of which are summarized below:

(i) Draft multidisciplinary and multiregional strategy for RPW management

The proposed strategy was developed by a team of FAO, CIHEAM, IPPC, NEPPO and other international experts. The draft was based on the analysis of current RPW management programmes in different countries and identified challenges and weaknesses. The strategy aims to support efforts and programmes of countries (national component) to contain the spread of the pest and eradicate it. It will also create a charter for cooperation and coordination of efforts at regional and interregional levels to support integrated and sustainable management programmes to control RPW, reduce its devastating effects on the environment and food security, and alleviate the socio-economic impact on rural communities.

(ii) Current state-of-the-art research and technology on RPW management

This presentation revealed that, generally, more work on the control of RPW was carried out post-1996 on insecticides, pheromone traps and biological control measures. However, some aspects have been given less attention, such as early detection and molecular studies of this pest. It was also recommended that research priorities should be focused on early detection and

forecasting, insecticide delivery techniques, systemic insecticides, the insect/plant tritrophic relationship, and applied molecular cell studies.

(iii) Canary Islands success story in eradicating RPW

The main components of the Canary Islands strategy that resulted in the successful eradication of RPW involved creating visibility and awareness, legislation, training, risk evaluation and contingency plan, implementing IPM (trapping, chemical control, intensive inspections and removal of infested palms), efficient data collection, transmission and decision-making using a GIS system. RPW was reported in the Canary Islands during 2005 and an IPM strategy implemented a year later. No new infestation or captures have occurred since 2013 and the Canary Islands was declared RPW-free in May 2016.

(iv) Sustainability, application and delivery mechanism of biological control agents

This presentation indicated that although there are many references to RPW natural enemies, very few of them fulfill the requirements for further development to effectively control the pest, either by conservation or by augmentative (inoculative and inundative) biological control. Special attention was paid to entomopathogenic fungi (EPF), which are notably the most promising control agents for inclusion in RPW-IPM programmes. Several strains of EPF have been isolated from diverse naturally infected specimens of RPW in different countries throughout the Mediterranean Basin and elsewhere. Molecular studies on the diversity and relationship between some of these strains, with emphasis on *Beauveria* sp., have revealed a host-mediated spread of this EPF in the Mediterranean Basin. Most of these fungal strains have environmental competence, as revealed by their temperature, humidity and UV-B radiation requirements. Several tactics may be adopted to develop EPF for RPW control, including mycoinsecticide sprays targeting the base of the fronds and EPF-based lure and infect devices, which have shown great potential for effective control in laboratory, semi-field and field trials.

(v) Recent advances in insecticide treatments and application against RPW (chemical and natural pesticides, progress of injection technologies, new organic products)

Insecticide treatments against RPW have to be considered as an element of a global strategy focused on eradication of the pest.

It is essential to understand that the RPW does not need, as it is usually believed, the existence of previous wounds on the palm for the females to lay their eggs. The mode of oviposition as well as the specific sites for egg laying have been presented. Taking into consideration these sites, the conditions to operate efficient and targeted treatments have been described.

This presentation elaborated on the stem injection technique, chemical insecticides and natural products used against RPW.

Various aspects of the stem injection technique were described, including drilling, pressure, insecticides and healing of wounds. The need to develop protocols for stem injection to treat RPW-infested palms was also emphasized, with details of the application technique, type and concentration of the insecticide, number and placement of holes to be made in the stem, and frequency of application. Several chemicals of diverse groups are available for RPW control, and these were listed. In addition, research on new products (e.g. plant extracts, essential oils, special diatomaceous earth) is being carried out.

Main points of the panel discussion

Some points were discussed relating to the trapping system and the optimum radius of attraction of the pheromone traps, impact of chemical pesticides on biodiversity and pollination, development of resistance to chemical insecticides, inspection of palms prior to transport, certification of palm trees, importance of establishing tissue culture in the laboratory, requirement to declare a pest free area, and whether shredding of palm trunks is able to kill all stages of the weevil's life cycle?

The following recommendations were also made in the panel discussion:

- To include a specific objective on the research in the proposed RPW strategy.
- To develop a harmonized guide/manual on RPW management practices.
- To involve Asia and the Pacific and other regions in the proposed RPW strategy.
- To develop regulations for the registration of promising strains of EPF in the EU for biological control of RPW and to test natural products that could enhance palm resistance.
- To test cytomplasmic polyhedrosis virus and a tachanid parasitoid (*Lixophaga sphenophori*) of the sugar-cane weevil for RPW control.

1.3 Second day – morning session

The morning session of the second day (30 March 2017) of the Scientific Consultation was in four parts and covered advanced technologies and innovative solutions.

(i) Two presentations on advanced technologies for early detection of RPW covered a wide range of aspects relating to:

- chemical detection of infested trees by dogs or electronic nose;
- acoustic detection, which identifies the gnawing sounds of RPW larvae as they chew and move around within the infested palms;
- detection by thermal imaging based on physiological changes in infested palms, which can be sensed through inspection of the thermal spectrum of irradiation emitted from the tree canopy; and

– monitoring of RPW populations, which is often based on weevil captures in surveillance traps with a specific lure based on a mixture of RPW aggregation pheromone and plant kairomone.

These presentations emphasized that there are few externally visible signs of early infestation, and scouts trying to survey and target them must carefully inspect the palm bases or crowns to discover the symptoms of damage to individual trees. A brief comparison of the pros and cons of each available early detection technique was given. Acoustic methods were most promising in detecting larvae, but with current technology considerable skill is needed to identify where to insert the acoustic probes, followed by complex signal analysis to help distinguish RPW sounds from other insects and background noise. Examples were given of how combinations of microcontrollers with inexpensive microphone systems, or somewhat more expensive piezoelectric devices that are extremely sensitive to insect movement and feeding vibrations, can be used for auralization, storage and digital-signal processing of insect sounds in trees in field environments. Progress is also being made in the development of Matlab and other software to automate and optimize the discrimination of insect sounds from background noise on microcontroller platforms.

(ii) Two presentations on innovative solutions using modern technologies to facilitate the management of RPW were as follows:

Canary Islands experience of GIS for RPW data management and analysis
The presentation pointed out the importance of GIS to manage data (collection, transmission, management, analysis, outputs). This system included a database, mobile application, web application and web viewer. GIS was one of the essential tools and elements of planning and coordination of the RPW programme that successfully eradicated RPW in 2016 in the Canary Islands. The main roles of GIS in RPW management were:

– data and spatial analysis for optimal decision-making;
– efficient planning;
– efficient use of resources, a crucial factor for success when these are limited;
– assessment of the programme (results, achievement of objectives) from readily available quality information;
– assessment of workers;
– improvement of the programme's internal and external communications.

Innovative solutions using modern technologies for better management, control and analysis of RPW eradication
This presentation highlighted the need to set up a harmonized and standardized platform that covers not only national but also regional and global levels of management, focusing on the sharing of lessons learned, improved communications, best IPM strategies and national training

and support aspects. In addition to a RPW global platform, the use of innovative solutions would further help to improve RPW management. Integration of modern technologies such as Google Earth Engine, UAVs (unmanned aerial vehicles/drones), mobile devices, GIS, Internet of Things (IoTs), smart traps and sensors, within the local context and conditions would further assist in:

- effective planning, data collection, analysis and data management;
- spatial management and visualization of the managed sites, especially for optimal decision-making;
- efficient management and optimization of human and technological resources;
- improvement in communications at national, regional and global levels.

(iii) In two presentations on advances in semiochemical mediated technologies, various trapping protocols were described with respect to trap design, trap density in the field, periodic trap servicing (change of food bait and water), pheromone lures, etc. Pheromone trapping requires periodic servicing of each trap by the replacement of fresh food and water. Due to labour constraints, transport facilities and other logistics, periodic trap servicing has become a challenge for both users and service providers. In this context, experience of serviceless trapping options from Saudi Arabia based on "attract and kill" and "electro-magnetic radiation" were presented. RPW pheromone traps capture only part of the weevil population in the field and synthetic kairomone (ethyl acetate, ethyl alcohol, ethyl propionate), when added as a component to RPW food in a baited pheromone trap enhances weevil captures. In area-wide RPW-IPM programmes, systematic collection and processing of weevil capture data is essential and provides valuable information to decision-makers to assess and validate the RPW control programme. Incorporating RPW repellents (methyl salicylate, α-pinene, 1-octen-3-ol and geraniol) in a "push-pull" strategy with pheromone trapping needs to be explored for palm protection.

(iv) A presentation on socio-economic studies and approaches for farmer involvement in the RPW control programme proposed a participatory local diagnosis in order to gain better knowledge of the socio-economic context on the following main points: role of different stakeholders, typologies of oasis and farming systems, identification of organizational weaknesses, evaluation of economic consequences of RPW damage, assessment of farmers' knowledge regarding the pest and its control.
Furthermore, to efficiently manage RPW in date palms, the presentation highlighted the need to establish a sustainable development strategy for shared oasis governance by strengthening the political, institutional and legal framework, civil society capacity building, revising the status of farmer organizations in the oasis, improving the participation and involvement of the oasis population, and strengthening the operational capacities of oasis systems management services.

Main points of the panel discussion

- Trapping (density, distribution within area considering infested and free area).
- Treatment of infested palms, good agricultural practices and the opportunity to look for resistant varieties.

- Operational issues of new detection technologies: service and advantages (acoustic, thermal imaging, trapping), including the cost of these technologies.
- The involvement of farmers in controlling RPW as a key element was emphasized. The importance of devising a suitable mechanism for the involvement of farm workers in RPW control, especially where the farm owners are absent.
- Feasibility of using GIS to collect data directly from traps by introducing smart traps and thus replacing human intervention. Availability of GIS for users was also discussed.
- South American palm borer, *Paysandisia archon*. This moth has been detected in some southern European countries and therefore should also be considered for monitoring and surveillance along with RPW control programmes in the infested areas. Quarantine measures should be put in place in non-infested countries.

1.4 Second day – afternoon session

This session was dedicated to thematic working group discussions on the proposed multidisciplinary and multiregional strategy for RPW management, which had been shared with member countries prior to the Scientific Consultation for review and comments. Three themes for discussion were identified:

(i) regulatory and surveillance issues;
(ii) management; and
(iii) capacity building, extension, communication and coordination.

The participants were divided into three thematic groups based on their interests for further review of the elements of the strategy and produced their final comments and recommendations for RPW management, to be considered by the expert technical panel in charge of developing the strategy, as appropriate.

These thematic sessions were followed by a plenary session where the outcomes of the working groups were presented and discussed.

1.5 Key comments and recommendations of the thematic working groups

- More emphasis should be given to research on host-plant resistance in the RPW-IPM strategy, including manipulative methods that improve the chemical resistance of host palms to RPW attack.

- There are some obstacles to the use of innovative technologies for remote sensing and mapping of RPW, such as drones, which in some countries may need special authorization for use in RPW-IPM programmes.
- Pre- and post-entry quarantine periods for palms in relation to RPW need to be standardized.
- RPW surveillance programmes, establishment of pest-free areas and reporting obligation of new cases of infestation should be based on the relevant International Standard for Phytosanitary Measures (ISPM).
- Within the infested country, movement of palm trees or offshoots should be regulated from the infested area as a phytosanitary measure, besides creating a buffer zone.
- Certified palm nurseries and tissue culture production should be supported as one of the options for supplying RPW-free palms.
- Traceability (backwards and forwards) of palm/offshoots movements is important.
- Training and capacity building (farmers, NGOs and cooperatives) is an important component of RPW management programmes.
- Further research should be carried out to improve the longevity and tolerance of insect pathogens to high temperature and UV light in the field.
- The Canary Islands case should be considered as a model for other countries to achieve success in controlling RPW. This model involves all stakeholders in the management programme where creating awareness, capacity building and training, within municipalities and companies dealing with management of urban areas, are important.
- Emerging technologies, such as the newly developed seismic sensor detection for early detection of the pest, should be further tested and validated.
- The possibility of using the cytoplasmic polyhedrosis virus, *Baculovirus*, and the dipteran *Lixophaga sphenophori* (Villeneuve) (Diptera: Tachinidae), a parasite of *Rhabdoscelus obscurus*, for biological control of RPW may also be further investigated.
- Regulations should be developed for registering promising strains of entomopathogenic fungi (EPF) in the EU for biological control of RPW and to test natural products that could enhance palm resistance.
- GIS is already being used in some countries. FAO should develop this tool further to distribute to all agencies and stakeholders.

At the end of the plenary session Mr Al-Dobai, secretary of the event, summarized the discussions of the technical sessions and presented to the audience the proposed key changes relating to the title and components of the proposed multidisciplinary and multiregional strategy. These changes are as follows:

- The new title is the Framework Strategy for Eradication of the Red Palm Weevil
- Components of the strategy include:
  - National Component of the Framework Strategy
  - Regional Programme for Red Palm Weevil Management in the NENA Region

– Global Platform for Red Palm Weevil Management

The Scientific Consultation ended by reviewing the comments and recommendations of the technical sessions and finalizing the draft strategy for further endorsement by the High-Level Meeting.

2. High-Level Meeting

2.1 Opening of the meeting

The High-Level Meeting, held on the last day of the event (31 March 2017), was inaugurated by Mr José Graziano da Silva, Director-General of FAO; and Mr Cosimo Lacirignola, Secretary General of CIHEAM. The meeting was graced by the presence of H.E. Abdulrahman Al Fadley, Saudi Minister of Environment, Water and Agriculture; and H.E. Ms Lemina Mint Moma, Agriculture Minister of Mauritania.

The ministers, government representatives and other participants were briefed on the outcomes of the Scientific Consultation and the proposed strategy that had been reviewed and agreed.

Mr da Silva highlighted the urgency of combating red palm weevil in his opening remarks. He pointed out that RPW has become a global threat, which requires a global strategy to control and if possible eradicate it. This event had been convened in order to raise awareness, develop containment strategies and step up regional and global collaboration, building on several projects that FAO and partners had already been implementing to tackle RPW. The Director-General added that the message from the Scientific Consultation is a positive one, that red palm weevil can be controlled and defeated. There are specific examples such as the Canary Islands, where a strong programme with adequate resources, systematic planning, good coordination and the involvement of all stakeholders, has led to the control and eradication of RPW. In Mauritania, a swift reaction by the national authorities involving farmers and local communities, with the support of FAO, has also led to the rapid containment of the pest.

Mr da Silva reiterated that the Scientific Consultation has produced a well-defined Framework Strategy for Eradication of the Red Palm Weevil. He emphasized FAO commitment to supporting the implementation of the strategy to control and eradicate RPW and called for the required political commitment, collective action and solidarity. He further urged participants to make this meeting a turning point in the fight against RPW and the protection of the date palm.

In his address, Mr Lacirignola emphasized that the Mediterranean area harbours a vast biodiversity of plant species that must be protected for social, economic and environmental reasons, and mentioned that a sustainable strategy against RPW is more essential than ever before to protect the entire region from phytosanitary threats. The Secretary General of CIHEAM stated that a containment programme is no longer an option but a necessity in the fight against

RPW. Such a programme requires an early detection system, efficient warning systems and a research programme in line with territorial needs, as well as sustainable networking to enhance complementarities and synergies. He also pointed out that CIHEAM wishes to support joint activities with partners such as FAO to contribute to improving knowledge and identifying solutions. This would ensure better living conditions for the local populations that contribute to rural economic growth by integrating adaptation strategies to their environmental constraints.

2.2 Presentation of the outcomes of the Scientific Consultation

FAO Assistant Director-General and Regional Representative for Near East and North Africa, Mr Abdessalam OuldAhmed, presented the outcomes of the Scientific Consultation as mentioned below.

During the consultation, the participants had deliberated on:

- the current global situation and challenges to RPW management programmes, as well as in the NENA, Asia and the Pacific, and Europe regions;
- success stories and lessons learned in RPW management;
- state of the art on current RPW research programmes globally, as well as advances in combating RPW employing different IPM tactics including, early detection, biological control, remote sensing and georeferencing, semiochemical technologies and socio-economic studies to enhance farmer and other stakeholder participation in RPW control programmes.

The consultation had also discussed, revised and endorsed the proposed Framework Strategy for Eradication of the Red Palm Weevil that had been prepared by a team of international experts, FAO, CIHEAM, IPPC and NEPPO.

The framework strategy aims to support country efforts and programmes to contain the spread of this pest and eventually eradicate it.

It will also create a charter for cooperation and coordination of efforts at regional and interregional levels to support integrated and sustainable management programmes to control RPW, reduce its devastating effects on the environment and food security, and alleviate the socio-economic impact on rural communities.

The proposed framework strategy has three components, national, regional and global.

(i) National Component of the Framework Strategy

Although RPW is a challenging pest, a strategy supported with adequate human and financial resources, systematic planning, good coordination and the involvement of all stakeholders can

lead to its eradication. There have been various success stories on the eradication of this pest, such as in the Canary Islands.

Another example of good management and organization in our region is in Mauritania. Here the rapid action initiated by the government, with FAO support, to control RPW, together with the IPM strategy implemented with the active participation of farmers, farmer cooperatives and other stakeholders, resulted in the pest being contained in the original foci of infestation within a year of implementing the programme, with good potential for early eradication.

The National Component of the Framework Strategy aims at improving the ongoing programmes for the effective management of RPW at country level.

- Core components of the framework strategy

Phytosanitary (quarantine) measures
Import and movement of plant material within a country are the main pathways to the introduction and spread of RPW. Prevention of the introduction of plant material is the key measure that will stop the spread of RPW through strict enforcement of the International Standard for Phytosanitary Measures (ISPM) regulations.
The strategy will help member countries to develop specific phytosanitary measures and protocols for inspection.

Early detection
Early detection is the key to the success of RPW control and eradication. Currently, early detection relies mainly on pheromone trapping and visual inspection is the most effective widely used technique.

To increase the overall efficiency and speed of detection, there is a need for further testing and refinement of promising detection technologies, such as acoustic technologies or thermal imaging, to develop a quick, reliable, cost-effective and easy-to-handle early detection device for RPW.

Surveillance and monitoring
The proposed strategy will incorporate improved surveillance and monitoring techniques based on the ISPM, including a clear time-bound survey plan, guidance for surveyors, and the human and financial resources needed.

Preventive agronomic practices
Several agronomic practices influence the incidence and build-up of RPW in the field, as well as the efficiency of visual inspection and other treatments. In this context, protocols for adopting good agricultural practices that revolve around RPW management will be standardized.

Control practices

RPW management in the field depends on many tactics. The Framework Strategy will harmonize the protocols needed for management, including mechanical sanitation, insecticide applications (chemical/natural), mass trapping, biological control, and the removal and disposal of highly infested palms.

Data management/GIS/validation
Use of GIS for data collection, transmission and decision-making constitutes an important aspect of the framework strategy, and will have global implications for RPW control and strengthen regional cooperation and coordination.

GIS was a key component of the Canary Islands success story that helped and facilitated the management programme to eradicate RPW. The strategy will develop a system for mapping data collection and management based on GIS, supported by a mobile application that will be made available for use by member countries.

- Supportive elements of the framework strategy

Stakeholder participation and involvement in RPW control programmes
Participation and involvement is crucial for successful control and eradication of RPW. The advantage of involving farmers and other stakeholders in a RPW control programme is considerable, as they are present on the farm and can assist in detecting infested palms in the early stages of an attack.

The strategy will help countries to develop a clear-cut policy on farmer/stakeholder participation and engagement in RPW-IPM programmes. Pilot projects to experiment and demonstrate the feasibility of involving farmers/stakeholders would be implemented.

Role of cooperatives, NGOs and private sector
Government agencies working with RPW-IPM programmes should establish defined linkages and coordination mechanism with cooperatives, NGOs and the private sector to make the programme more meaningful and effective. Involvement of oasis programmes in the RPW programme in the countries concerned is also recommended.

Institutional cooperation and networking
The national strategies should include a mechanism for strengthening cooperation among institutions at country level. Strong engagement and involvement of the law enforcement authorities and other stakeholder organizations is crucial for effective implementation of phytosanitary measures and limiting the spread and risk of RPW.

Capacity building, communication and extension service
The RPW-IPM national strategies should include capacity-building programmes, tailor-made for different categories of stakeholder (farmers/workers and other stakeholders) involved in the implementation of IPM.

The Regional RPW Programme will assist countries in developing capacity-building programmes and user-friendly training materials that are authentic and enhanced by the introduction of a participatory approach (as in Farmer Field Schools).

The management programmes should employ a communication and extension strategy to facilitate the dissemination of information among stakeholders through the mass media. Extension agencies in each country or region can adopt a village or group of farmers and implement the RPW control programme in its totality, showcasing the benefits to other farmers. Journalists, social scientists and economists familiar with the RPW problem can contribute to raising awareness of RPW management programmes.

(ii) Regional Programme for Red Palm Weevil Management in the NENA Region

For the purpose of supporting the implementation of the framework strategy, a Regional Programme for Red Palm Weevil Management will be established to create an enabling environment for cooperation and coordination, and help the member countries of the NENA Region to improve their strategies and programmes for RPW management.

The regional programme will be established and hosted by the FAO Regional Office for Near East and North Africa with the support of CIHEAM, NEPPO and member countries.

The secretariat of the regional programme will be established and hosted by FAO.

The key roles of the programme will be to:

- strengthen cooperation and coordination between member countries in early warning, information and knowledge sharing for effective management of RPW;
- assist in developing programmes, guidelines and protocols for prevention, early detection, rapid intervention and management of RPW and to support member countries in their implementation;
- provide ad hoc capacity-building programmes and technical assistance to the national RPW management programmes;
- support countries in developing harmonized phytosanitary measures and contingency planning approaches to eradicate RPW or contain its spread;
- assist in building the human and institutional capacity of the national programmes of member countries;
- support research and development programmes for promotion and validation of innovative, safe and cost-effective technologies.

Member countries should identify a national focal point for coordination, communication and representation in the regional programme.

A trust fund account will be created by FAO for the financial contributions of member countries and organizations to support the establishment, operation and activities of the regional programme.

The regional programme will conduct an annual meeting of member countries to:

– assess the annual development of the RPW situation and the efficiency of programmes at regional level;
– develop an annual plan for the region based on national and regional priorities.

The programme will be open for partnership and cooperation with other stakeholders, including farmer cooperatives, NGOs, private companies and research institutions, for promoting the national RPW-IPM strategies, developing and validating advanced management technologies. The gender issue will be considered in this context.

(iii) Global Platform for Red Palm Weevil Management

A Global Platform for Red Palm Weevil Management will be established for the purpose of strengthening worldwide coordination, information, experience and knowledge sharing.

The global platform will:

– strengthen coordination between member countries in early warning, information and knowledge sharing for effective management of RPW;
– promote environmentally safer RPW management tactics to minimize the risks of control operations on human health and the environment;
– establish a repository of experts on RPW;
– facilitate the exchange of research results and innovative technologies on RPW monitoring, detection and management.

The global platform will be established with the support of FAO, CIHEAM, IPPC and other partners and member countries, and hosted by FAO. It will be open for partnership and cooperation with other stakeholders, including regional and international organizations, research institutions, NGOs and private companies.

A proposal for the establishment, operational scheme and contribution of members of the global platform would be prepared by FAO and CIHEAM and shared with all countries and organizations for their interest and contributions.

The High-Level Meeting concluded with the endorsement of the new framework strategy to control RPW, which includes the three components above. The endorsement came after agriculture ministers and other government representatives, scientists, pest-control experts, farmer representatives and others had taken part in the Scientific Consultation and High-Level Meeting on Red Palm Weevil Management, hosted by FAO and CIHEAM. The strategy includes national interventions such as improved pest monitoring and greater involvement of farmers, as well as international efforts such as rigorous phytosanitary measures against the import of palms from infested countries.

2.3 Ministerial statements

Their Excellencies the Minister of Environment, Water and Agriculture of the Kingdom of Saudi Arabia, and the Minister of Agriculture of the Islamic Republic of Mauritania, appreciated the efforts of FAO and CIHEAM in organizing the meeting. The ministers briefed the audience on ongoing RPW control programmes and the efforts made by their governments in combating the pest, and the cooperation and assistance received from FAO. In their addresses the ministers expressed the support of their respective countries for the outcomes of the meeting.

2.4 Meeting declarations

The highlight of the High-Level Meeting was the adoption of the Rome Declaration (Annex 2) to control and eradicate RPW, which recognized its devastating impact on palm trees with serious consequences for national economies, food security and rural community livelihood, as well as adverse effects on the environment; reaffirmed the importance of collaborative efforts and commitments at national, regional and global levels to stop the spread of this devastating pest; agreed with the proposed Framework Strategy for Eradication of the Red Palm Weevil; and sought the political will and necessary commitments to implement the strategy.

Furthermore, the farming community also expressed its commitment to the participatory approach and raising awareness of for successful control and containment of RPW (Annex 3). Global leaders and representatives of private business and companies developing tools and solutions to manage, suppress, control and eradicate RPW also expressed their readiness for cooperation and partnerships to provide the tools and solutions necessary to support the implementation of the recommendations and outcomes of this event (Annex 4).

2.5 Closing remarks

The FAO Director-General, in his closing remarks, appreciated the deliberations of the two-day Scientific Consultation that paved the way for the Framework Strategy for Eradication of the Red Palm Weevil. urging the organizing committee to compile, edit and publish the proceedings of the event, and to arrange a second meeting in one of the affected countries. He informed participants that FAO would set up a Trust Fund approved by a steering committee to facilitate

project-based funding for eradication of RPW. The Secretary General of CIHEAM called for regional and global cooperation to stop the spread of RPW and work towards its eventual eradication to mitigate the devastating impacts of this deadly pest on palm ecosystems worldwide.

2.6 Follow-up actions

The follow-up actions elaborated below are based on agreed next steps for the implementation of the framework strategy:

- Establishment of the Global Platform and Regional Programme for NENA
  - An official letter from the FAO Director-General will be sent to member countries to share with them the outcomes of the Scientific Consultation and High-Level Meeting, and to solicit their support for the establishment of the Global Platform and Regional Programme for NENA.
  - FAO will establish the global platform with the support of CIHEAM and other interested partners. FAO will create a secretariat and allocate funds for the immediate operation of the global platform.
  - FAO will organize a coordination meeting for the establishment of the Regional Programme for Red Palm Weevil Management in the NENA Region, to be held in Cairo by the end of 2017.

- **Proceedings of the Scientific Consultation and High-Level Meeting**

FAO will prepare proceedings on the outcomes of the event and share them with all stakeholders. The deadline for participants to prepare the full papers of their presentations is the end of April 2017, after which FAO will edit and print the proceedings.

- **Research and development**

FAO will work with researchers on preparing a plan for filling the gaps in research relating to RPW management and make a proposal for filling these gaps. Research should play a major role in guiding FAO, technology developers and countries on the way forward. Private-sector technology developers should be working closely with scientists to transfer their science and research results and cost-effective technologies to be applied by farmers and professional working in the field. The plan should be presented at the 2nd Global Meeting to be organized for next year.

Action

Proposal to organize a meeting with researchers by the end of March 2018, to be hosted by CIHEAM in one of their institutes.

- **Organization of the 2nd Global Meeting**

The next meeting should be held in 2018 in one of the RPW-affected countries of the NENA Region. FAO will contact the countries concerned to establish their interest in volunteering to host this meeting.

Action
FAO to contact countries to establish their interest in hosting the meeting. The proposed date is the end of March 2018.

- **RPW trust fund account**

– FAO proposes setting up a trust fund (TF) account for eradication of RPW and to share this account with member countries, partner organizations and private companies for their contributions. The TF account will provide financial support for technical assistance to member countries, such as exchange visits of experts between countries, training activities, promotion of farmer participatory approaches to knowledge sharing and farmer involvement in management programmes, as well as supporting research activities.
– TF will be owned and coordinated by member countries, which will make decisions on expenditure. The fund will be based on a project approach with a steering committee to ensure transparency in its management.
– FAO will act only as secretary to operate this TF.

Action
FAO will set up the TF account immediately after this event and approach the different countries and organizations for their contribution.

3. Side events

During the Scientific Consultation, two side events were organized as outlined in the Agenda (Annex 1).

The first side event, Stop the Red Palm Weevil, was an IPPC contribution to prevent the spread of this pest. The session included three presentations:

– Lessons learned from the management of red palm weevil.
– How implementing the IPPC standards contributes to the effective management of red palm weevil.
– National and regional perspectives of red palm weevil management in the Maghreb countries.

Lessons learned on the control of RPW, successful eradication in the Canary Islands and containment in Tunisia in its original foci were highlighted.

The second side event, Bionomics-Based RPW-IPM, was organized by CIHEAM and comprised the following presentations:

- RPW as vector of bacteria, fungi and acari.
- RPW infestation eliciting a control-factor repressive environment.
- Host-plant species and management consequences over infestation, damage and control.
- Weevil larvae diet: histophagy vs plasmophagy.
- Putative glandular territories associated with RPW.

CIHEAM's role in controlling some emerging pests in the Mediterranean and Middle East countries was also highlighted during this session.

Annex 1

Agenda

The Scientific Consultation and High-Level Meeting on Red Palm Weevil Management
Rome, Italy, 29–31 March 2017

1- Scientific Consultation (29–30 March 2017) **Venue: Green Room (Building A-122)**		
Day 1		
	Morning session (9:00–12:00)	
	Opening session	– Opening statement of FAO Assistant Director-General and Regional Representative for NENA Region – Opening statement of CIHEAM Secretary General – Introductory remarks the chair of the organizing committee/introduce agenda items (*Time:20 minutes)*
	Chairperson / Rapporteurs:	
	1	**The current global situation and challenges of RPW management programmes** Speakers: Romeno Faleiro and Polana Vidyasagar *(Time: Presentation-20 minutes, Discussion 20 minutes)*
	2	**Management programmes and challenges in RPW control in different regions** – **Near East and North Africa Region** – Speaker: Abdulrahman Al Dawood – **Asia and the Pacific** – Speaker: Faridah Muhamad – **Europe** – Speaker: Khaled Djelouah *(Time: 25 minutes/presentation)*
	Panel discussion (45 minutes)	
	Afternoon session (14:00–17:00) Venue: Green Room (Building A-122)	
	Chairperson/Rapporteurs	
	3	**Draft multidisciplinary and multiregional strategy for red palm weevil management** ***Presentation of the RPW-IPM strategy for the Near East and North Africa*** Speakers: Shoki Al-Dobai and Michel Ferry *(Time: Presentation 30 minutes, Discussion 40 minutes)*
	4	**Current state-of-the-art research and technologies on RPW management**

		Presentation of the RPW expert group on assessment of recent research and technologies Speaker: Hassan Al-Ayedh *(Time: Presentation 30 minutes)*
	5	**Sustainability, application and delivery mechanism of biological control agents** (overview of available biocontrol agents, delivery methods, efficacy, cost effectiveness, case studies) Speaker: Josep-Anton Jaques-Miret and Enrique Quesada Moraga *(Time: Presentation 20 minutes)*
	6	**Recent advances in insecticide treatments and application against RPW** (chemical and natural pesticides, progress of injection technologies, new organic products) Speaker : Michel Ferry *(Time: Presentation 20 minutes)*
		Panel discussion (40 minutes)

Day 2		
	Morning session (9:00–12:00) - Venue: Green Room (Building A-122)	
	Chairperson/Rapporteurs	
	7	**Overview of the early detection techniques and tools against RPW** Speakers: Richard Mankin and Victoria Soroker *(Time: Presentation 40 minutes)*
	8	**Use of remote sensing for palm tree georeferencing and GIS for RPW data management and analysis** Speakers: FAO-CIO, Rome and Moises Fajardo *(Time: Presentation 40 minutes)*
	9	**Advances in semiochemical mediated technologies against RPW** (smart traps, pheromones, kairomones, dry traps, attract and kill, repellents) Speakers: Romeno Faleiro and Polana Vidyasagar *(Time: Presentation 20 minutes)*
	10	**Socio-economic studies and approaches for farmer involvement in the RPW control programme** Speakers: Slaheddine Abdedaiem, Noureddine Nasr and Michel

		Ferry *(Time: Presentation 30 minutes)*
		Panel discussion (50 minutes)
	Afternoon session (14:00–17:00) **Venue: Green Room (Building A-122), Iraq Room (Building A-235) and Lebanon Room (Building D-209)**	
	11	**Thematic working group discussions on the proposed multidisciplinary and multiregional strategy for red palm weevil management** *Themes* • Regulatory and surveillance issues • Management • Capacity building, extension, communication and coordination (Moderators/Rapporteurs) *(Time: 60 minutes – plenary and two other rooms)*
	Chairperson/Rapporteurs	
	Venue: Green Room (Building A-122)	
	12	**Plenary session to present outcome of the working (thematic) groups** *(Time: 90 minutes)*

High-Level Meeting on Red Palm Weevil (31 March 2017) 10:00–12:00		
	Venue: Green Room (Building A-122)	
	1	Opening Ceremony – Opening remarks of FAO – Opening remarks of CIHEAM Secretary General
	2	Presentation on the outcome of the Scientific Consultation (Assistant Director-General, FAO RNE)
	3	Ministerial Statements

		– Saudi Arabia – Mauritania
	4	Declaration of Farmer Organizations (Representative)
	5	Private Companies' Declaration
	6	Meeting Declaration (Rome Delegation)
	7	Adoption of Meeting Declaration (Assistant Director-General, FAO RNE)
	8	Closing remarks by FAO Director-General

Programme of side events

Day 1		**IPPC seminar – Stop the Red Palm Weevil, an IPCC contribution to prevent the spread of this pest** **Venue: Sheikh Zayed Centre**
29 March 2017	**Afternoon session: 12:30–13:30**	
		1. *Introductory remarks, by Dr Jingyuan Xia, IPPC Secretary* 2. *Opening remarks, by H.E. Mohammed Ahmed M. Alghamdi, Ambassador of Saudi Arabia to FAO* 3. *Lessons learned from the management of the red palm weevil, by Dr Michel Ferry, Scientific Director of the Phoenix Research Station, French National Institute for Agricultural Research* 4. *How implementing the IPPC standards contributes to the effective management of the red palm weevil, by Ms Sarah Brunel, Capacity Development Officer, IPPC* 5. *National and regional perspectives of red palm weevil management in the Maghreb countries, by Dr Fethia Hellali, NPPO of Tunisia and Dr Mekki Chouibani, Executive Director of NEPPO*

Day 2	**Session**	**CIHEAM side event – Bionomics-based RPW-IPM** **Venue: Iraq Room (Building A-235)**
30 March	**Afternoon session: 12:30–13:30** ***Moderator: Ibraheem Al-Juboori (Emeritus Professor, University of Baghdad)***	

2017		*1. RPW as a vector of bacteria, fungi and acari (speaker Porcelli F. DiSSPA UNIBA Aldo Moro)* *2. RPW infestation eliciting a control-factor repressive environment (speaker Scrascia M. Dept. Biology UNIBA Aldo Moro)* *3. Host-plant species and management consequence over infestation, damage and control (speaker Al-Shalchi H.Y. State of agriculture research, Ministry of Agriculture, Iraq)* *4. Weevil larvae diet: histophagy vs plasmophagy (speaker Suma P. Di3A UNICT)*

Annex 2

ROME DECLARATION ON RED PALM WEEVIL

We, the participants in the Scientific Consultation and High-Level Meeting on Red Palm Weevil Management, organized by FAO and CIHEAM at FAO headquarters in Rome, Italy, during 29–31 March 2017:

Recognize the devastating impacts of the red palm weevil on palm trees with serious consequences on the national economies, food security and rural community livelihood, as well as the adverse effects on the environment;

Recognize that despite all efforts to eradicate or effectively manage the pest, it remains a severe challenge in most of the countries due to limitations in the national programmes and the absence of interregional collaboration;

Recognize that a strategy supported by adequate human and financial resources with systematic planning, good coordination and involvement of all stakeholders, supplemented by the sensible use of new technologies, can lead to eradicating red palm weevil;

Value the efforts of FAO, CIHEAM and other partners for the initiative of organizing this first global event that brought together different stakeholders to thoroughly deliberate on the challenges, exchange the success stories and lessons learned from different regions, and come up with the Framework Strategy for Eradication of the Red Palm Weevil;

Reaffirm the importance of collaborative efforts and commitments at the country, regional and global levels to stop the spread of this devastating pest;

Agree with the proposed Framework Strategy for Eradication of the Red Palm Weevil and seek the political will and necessary commitments to implement the Framework strategy.

Annex 3

FARMERS' DECLARATION

We farmers, representatives of date-palm producer associations and professional organizations from the Near East and North Africa region participating in the Scientific Consultation and High-Level Meeting on Red Palm Weevil Management, organized by FAO and CIHEAM at FAO headquarters in Rome:

Would like to congratulate FAO and CIHEAM for their excellent and unique initiative to organize this important event that gathered all stakeholders concerned in red palm weevil management from different regions.

Express our great thanks to the organizers of the event for their kind invitation to this very import event and giving us such opportunity to be exposed to such knowledge and experience from different regions and to be abreast with new technologies presented in the event.

Affirm that the date palm is a key crop sustaining the life of farmer communities in the oases of the Near East and North Africa Region. And the loss of date palm constitutes the loss of income of farmers and threatens their livelihood and future of the new generations in these areas.

Emphasize the negative impact of red palm weevil on the date production and well-being and income of farmers and oasis communities.

Recognize the importance of the active involvement and participation of farmers and farmer associations in management programmes and express our commitment to promoting the participatory approach and raising awareness among farmer communities for successful control and containment of red palm weevil.

Express our readiness for cooperation and partnership to support the implementation of the recommendations and outcomes of this event.

Annex 4

DECLARATION BY THE PRIVATE SECTOR

We, the global leaders and representatives of private business and companies developing tools and solutions to manage, suppress, control and eradicate the red palm weevil, who have met in Rome at this High-Level Meeting on Red Palm Weevil Management convened by the Food and Agriculture Organization of the United Nations (FAO) together with the International Center for Advanced Mediterranean Agronomic Studies (CIHEAM), to seek ways of achieving world food security and, in this context, to discuss the challenges and successes leading to the effective management, containment of the spread, and ultimate eradication of this pest from specific geographies:

Would like to applaud FAO and CIHEAM for their initiative in providing all stakeholders from around the globe that are concerned or involved in red palm weevil management with an excellent venue where they can openly discuss their challenges and successes in executing integrated pest management programmes directed at this pest.

Express our gratitude to the event organizers for inviting the private sector to this High-Level Meeting, and for their thoughtful preparation for the meeting, providing a clear shared platform of knowledge from whereon which to base our discussions, in a well-designed programme following a series of events that involved briefs, discussions and working sessions, in an outstanding venue that fostered the energetic and undefended sharing of technology, knowledge and experience by stakeholders from different fields of knowledge and geographical regions.

Affirm the commitment of the pest control industry to providing safer, more effective, efficient and economical tools and solutions to manage the red palm weevil, renewing the ability of the global palm industry to protect its trees and crops from this devastating pest. The loss of any single palm tree to the red palm weevil constitutes the loss of a valuable asset that impinges on the reduction of income, food security and quality of life, not only of its owner, but also of the members of that community. Compounding changes due to the evolution of red palm weevil infestations create an enduring negative effect on future generations in the affected areas.

Emphasize that cooperation in science, technology and innovation, together with uninterrupted funding of the market, are key drivers for the pest control industry to invest in research and development to provide ever safer, effective tools and solutions to control the red palm weevil. These are constantly evolving to provide easier to use, less expensive and more efficient management solutions that are relevant to every stakeholder. It is important for the success of local red palm weevil management programmes that the legislation and regulatory agencies in the geographical regions support the rapid and unobstructed registration of new tools and solutions, so that they can be available in the market.

Recognize the importance of the active involvement and participation of the pest management industry in management programmes and we express our commitment to the research and

development of more effective and efficient tools and solutions that are sustainable, operationally viable and easy to use for the successful control and containment of red palm weevil.

Express our readiness for cooperation and partnership to provide the tools and solutions necessary to support the implementation of the recommendations and outcomes of this event.

Annex 5

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