

Rectification of current erroneous biological and technical conceptions to succeed the control of the red palm weevil in urban environment

Michel Ferry, Susi Gomez

INRA/Estación Phoenix

email: ferry.palm@gmail.com



Suppression, containment and long term eradication strategy adopted in Europe are doomed to fail

Why?

What is at stake is the preservation of a patrimony not of a crop that can be renewed



Palms are the main ornamental species of the Mediterranean coast urban landscape



These palms constitute a public and private patrimony that is often irreplaceable. It is threatened to disappear definitively if the RPW is not controlled very quickly



The famous “Promenade des anglais” in Nice



RPW kills rapidly its more attractive host, the Phoenix canariensis after multiplying quickly in it (4 generations per year. Each female lays 200 to 300 eggs)



Palm killed in less than one year



Time to save this patrimony is counted
Already a disaster in many places



The battle takes place in a peculiar environment: in cities

- The urban environment creates serious constraints:
- - public health
- - labour (high trees)
- - great number of palm owners and great dispersal



In such environment, to maintain for a long time or definitively efficient measures to control the pest (suppression) is not realistic:

- monitoring
- or frequent preventive treatments are especially difficult to implement and very costly.



Where there is no biological barrier, containment close to an infested place where the pest is present is doomed to fail



Total failure of the official suppression and containment strategy in all the European countries for the last 4 years

If we want to save the palms patrimony, there is not other solution than to eradicate the RPW and to eradicate it quickly. Planning to eradicate it on the long term is an illusion as the RPW is a rapid killer with a high propagation capacity. Trying to suppress and contain the pest is wasting money uselessly (same assessment as USDA, 1998 on *Anaplophora chinensis*).



To eradicate the red palm weevil quickly, various and very frequent misconceptions must be urgently rectified



Contrary to what is so frequently repeated, early detection of infested palms is quite possible

- The cliché that it is impossible to detect early infestation is false
- It is linked to a wrong conception of infestation modalities of tall palms and species without offshoots. These modalities have been described for the first time in 2008 (1):
- Previous wounds are not necessary. Females lay their eggs after digging a small hole with their snout at alive leaf bases where they can hide.
- Infestation does not start at the trunk level neither in the older leaves but at the base of the youngest ones



The conception that larvae live in the trunk is erroneous (excepted for young palms, palms with offshoots or injured palms). RPW larvae are not xylophagous: they chew the palms fiber to suck the sap; they can't survive in dead palms (2).

Cutting, transporting and gridding (or burning!) of palms trunks that have been obligatory in many countries during many years have represented the main measure to fight the RPW. This measure has been totally useless.



Cutting and gridding the leaves bases and sometimes the upper part of the trunk allow to eliminate all the larvae at low cost and very easily.



- Larvae live inside the bases of the central leaves and at the ultimate stage of infestation in the upper part of the trunk
- Larvae bite the young leaves and make galleries at their bases. Visible consequences of these damages will be detectable inevitably and rapidly (2).



Debilitated at their base, some leaves can bend and later dry



Bites of the leaflets by larvae can appear as the terminal part of the leaves start to be visible



Whole crown can bend creating an abnormal asymmetry



- Everybody can be trained easily to detect infestations visible from ground.
- For earlier detection, inspection windows (3) must be opened in the crown.

Inspection window opening



- Inspection windows allow to discover the earliest symptoms visible at the level of the inner and first damaged leaves.



Infestation in palms of less than 2-3 meters or palms with offshoots takes often place at the trunk level (2)




- Flying females tend near the young palms, walk and climb along the trunk, hide behind a still alive leaf base where they dig a hole to lay their eggs.
- Offshoots are the entrance door for date palms and similar species



Pruning is not a danger but an indispensable tool for early detection and consequently for the success of RPW control (4)

- Most of the time, the trimmers have been the first to detect infested palms
- Pruning has been prohibited or allowed only during winter in many countries.
- This catastrophic measure is based on a serious misconception regarding female RPW behaviour: preferential ovoposition sites are hidden leaves bases (2).
- Pruning does not facilitate or increase infestation. It just creates, during a short time, a preferential attraction to the pruned palms but, if these palms had not been pruned, they would have infested anyway (2).



Pruning allows also to detect galleries holes 

An infested palm can be saved when detected in time (5)

- The cliché that infested palms cannot be saved is totally false: it is based on misconception on RPW infestation modalities and of the palms anatomy and growth.
- It has led to disastrous, costly and counterproductive measure that has obliged the palms owners to eliminate systematically the infested palms.



Larvae live generally during at least two cycles at the bases of the central leaves (in brown). The terminal bud (in green) is generally the last place to be infested. By eliminating the infested leaves bases, RPW is eradicated and, if infestation has been detected in time, palm will recover quickly.

- Mechanical sanitation is much less expensive than palm destruction.
- It contributes to promote early detection (owner benefit) and so to stop rapidly pest dispersal.
- It allows to save a high value patrimony.



Rescue of an irreplaceable patrimony and elimination of pest dispersal risk after infestation detection.



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For health and environment reasons, endotherapy constitutes the best method to implement the preventive treatment component of an integrated eradication strategy

- Against endotherapy, a frequent misconception has been spread that assures that palms can not cure their wounds
- In reality, palms are giant herbs and they cure their wounds differently from trees.
- They cure better than trees wounds produced by endotherapy technique (6).
- We have established that preventive treatments based on Thiametoxam and Emamectine Benzoate injections are very efficient with a long persistency (5,6)



It is fundamental to get the collaboration of the palms owners and professionals and to give a central role to the municipalities (9)

- Phytosanitary authorities that have tried to perform all the activities alone have been obliged after few years to recognize their failure.
- Inspections of numerous and scattered palms for early detection requires the collaboration of a maximum of palms owners.
- Maintenance of efficient mass trapping requires the collaboration of numerous garden owners.
- Specially trained and authorized trimmers must be involved for inspection, windows opening, sanitation and preventive treatments.
- Municipalities must play a central role for awareness, coordination and GIS implementation.



Trimmers training



Detection training



Mass trapping



Conclusions

- Contrary to what is so often repeated and sometimes spread by scientists that defend the myth of a miraculous solution based on their own specific discipline, we already dispose of efficient methods for:
 - - early detection
 - - curative treatments
 - - preventive treatments
- These methods must be used together inside an integrated strategy not for suppression or containment but for quick eradication. We have demonstrated the efficiency of this strategy in various places (3).



Bibliography

- (1) Ferry M., Gómez S., 2008. A new strategy against the red palm weevil. *Phytoma*, no 620, pp 24-28
- (2) Ferry M., Gomez S., (in press). Some biological aspects regarding palms infestation by *Rhynchophorus ferrugineus*
- (3) Paz S, Vidal J, Ferry M, Gómez S, 2010. Application of an integrated strategy for eradication of the red palm weevil in the framework of a city. *Phytoma*, 221, 49-54
- (4) Ferry M. 2011. The pruning, indispensable tool in the fight against the red palm weevil. <http://pabloesparza.blogspot.com/>
- (5) Ferry M., Gómez S., 2008. The mechanical sanitation: a technique for a new strategy for the control of the red palm weevil. *Phytoma*, no 204, pp. 36-46
- (6) Ferry M. 2009. State of art regarding endotherapy in Palms. 1st International Conference on Phoenix Canariensis. San Lucia. 18-21/11/2009.
- (7) Estévez A., Ferry M., Gómez S., 2011. Endotherapy in palms. Study of the efficiency and persistency of thiametoxam in preventive treatments against the red palm weevil. *Phytoma*, 226, 42-48
- (8)) Gómez S., Estévez A., Olmos M., Ferry M., 2011. Development of a new method to evaluate efficiency and persistency of active substances used by endotherapy in adult palms for the control of *Rhynchophorus ferrugineus* Olivier. VII National Congress of Applied Entomology. Baeza 24-28/10/2011. Book of Abstracts.
- (9) Ferry M., Gomez S., 2007. The red palm weevil: seriousness of the pest in Spain and necessity of a radical and urgent transformation of the present control strategy. *Phytoma*, no 185, pp 42-46





A palm recovering after mechanical sanitation

Thank you

