Challenges of coconut pests and diseases for the Caribbean region

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Contribution to the EU-ACP study

- To assess the impact of pests on development of the coconut industry in the Caribbean

The Crop Background

- Traditional “Atlantic Talls” formed a narrow genetic base throughout the Caribbean
- Populations ageing and highly susceptible to lethal yellowing disease (LYD)
- Replaced by less susceptible Malayan Dwarf and Pacific Tall (Maypan) hybrids in Jamaica and the northern Caribbean
- MD and Maypans succumbing to LYD in Jamaica since 1990s

Key pest issues

- The critical importance of Red Palm Mite (RPM), associated with production losses >75% in Trinidad and clearly causing widespread damage elsewhere.
- The continuing threat of LYD, but also possibilities for management, even in Jamaica where “resistant” MD and Maypan varieties have succumbed in large numbers.
- The need to bring red-ring, its palm weevil vector, and other stem- and flower-damaging insects under control, especially for replanting programmes
- The importance of bud rot disease in some countries, notably Dominican Republic
- The comparative obscurity of Hartrot/Cedros wilt (*Phytomonas*)
- Most other pests have limited or sporadic distribution but can cause serious local losses.

Red Palm Mite

(Raoiella indica)

- Introduced ~2004, now widespread
- Associated with dramatic decline in production in some countries
- Good knowledge base but lack of farmer awareness
- Augmentative biocontrol under investigation but exotic BCAs may be needed
- Varietal tolerance needs to assessed

Lethal Yellowing

(16sr group IV phytoplasmas)

- Very destructive in north western Caribbean (Jamaica, Cuba, Haiti, Belize, Bahamas, Florida, Mexico, Honduras); recent spread to St Kitts-Nevis and Antigua but not yet widespread in Dominican Republic
- Malayan Dwarf / Maypans now being affected in Jamaica
- Appears disease in less susceptible varieties can be managed by rigorous phytosanitation and intensive cultivation ("Black's method")
- Selections and hybrids with better resistance under development but require further testing and deployment
- Need to screen for alternative sources of resistance

Red ring, palm weevils and borers

(*Bursaphelenchus cocophilus*, *Rhynchophorus palmarum, R. ferrugineus, Strategus* spp., *Castnia daedalus*)

- Red ring and weevil vectors cause significant losses in southern Caribbean (Trinidad, Guyana, Suriname, Belize)
- Red ring a major treat to replanting where infestations are left uncontrolled and traditional phytosanitary practices are no longer practiced
- Need for area-wide control measures backed by research on alternatives to obsolete insecticides, semiochemicals and biocontrol
- Control of cockle beetles (American rhinoceros beetle) and moth borers could be improved by similar measures

Bud rot

(Phytophthora palmivora, P. katsurae)

- Occurs throughout the region, but usually sporadic and can be difficult to diagnose
- Outbreaks in Dominican Republic thought to be associated with introduction of hybrids from W Africa
- Chemical control available

The way forward – a three branched approach

- Enhance scientific capacity in coconuts at national level
- Support three important ongoing research initiatives (RPM, LYD RRD/borers)
- Improve productivity, production & competitiveness, by:
  - (a) Improving access to planting materials & widening the varietal gene pool
  - (b) Phased rehabilitation of existing coconut cultivation, including lethal yellowing infected fields in Jamaica

Caribbean Coconut Research and Development Project (CARICORD)

To revitalise, safeguard and support the coconut production base in the Caribbean region by:

- Enhancing regional and national scientific capacity in coconut R&D
- Improving biological control of red palm mite (RPM)
- Development of deployment of resistance to lethal yellowing disease (LYD)
- Widening the coconut gene pool
- Rehabilitation of coconut cultivations
- Management of red-ring disease and coconut stem borers

Component 1. Enhancing regional and national scientific capacity
(All participating countries)

1.1 Assign staff & facilities

1.2 Training attachments (fees and travel)

1.3 Knowledge sharing and collaboration

1.4 Upgrading equipment

1.5 Specialist technical services

Component 2. Biological control of red palm mite

(Lead countries: Trinidad & Tobago, Dominica, Dominican Republic & St Lucia)

2.1 Desk review (1 person)

2.2. Call for, evaluate and commission proposals

2.3 Likely activities will include:

- targeted search for natural enemies
- risk analyses, laboratory and screenhouse tests
- mass rearing and field evaluation

Component 3. Resistance to LYD

Lead countries: Jamaica, Belize, Dominican Republic, with Mexico, Honduras & Cuba)

3.1 Priorities likely to include:

- combined regional workshop and training course
- multilocational resistance screening trials
- introduction of exotic varieties
- strategic research
- transfer of in vitro propagation technology
- strengthening of regional networks

Component 4. Widening the coconut gene pool

All participating countries

4.1 Stocktake of local varieties, to include:

(a) Brief desk review

(b) Collect and analyse samples

(c) Select local materials to conserve

4.2 Procure local seednuts for nurseries

4.3 Establish / augment national “Nuclear” collections

(a) land clearance, preparation, maintenance

(b) tissue culture lab equpt & consumables

4.4 Import new germplasm

(a) select and import exotic cultivars from external sources

(b) Consider expanding nuclear collections to include hybrids

Component 5. Rehabilitation of coconut cultivations (linked to Component 6)

All participating countries

5.1 Improve productivity in selected existing younger plantings

(a) Identify support package, registration, and monitoring

(b) Call for expressions of interest in receiving support package,

(c) Implement and monitor support package.

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5.2 Rehabilitation of Existing Aged Plantations (operations similar to 5.1)

5.3 New Cultivations (operations similar to 5.1)

5.4 Rehabilitation of Lethal Yellowing-Infected Cultivations in Jamaica.

(a) Community mobilization to encourage group action

(b) Support package incl. clearing and replacing diseased palms

5.5 Design & promote economically viable and robust production models

Component 6. Management of red-ring and stem borers (linked to Component 5)

Lead countries: Trinidad & Tobago, Guyana, Dominican Republic, Belize)

6.1 Project definition review (2 persons plus regional travel)

6.2. Call for, evaluate and commission proposals

6.3 Likely follow-up activities:

- contribution to support for large-scale clean-up
- support for on-going treatment and prevention
- support for action research (mainly field-based)
- support for strategic research (field- and lab-based

Thank you