



# Current research status and strategic challenges on the black coffee twig borer, *Xylosandrus compactus* in Uganda

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# Introduction

- It is a small black beetle oval in shape
- Female beetle makes an entry hole in host plant causing it to wilt and dry
- Introduces ambrosia fungi for feeding its brood – might be pathogenic
- Female can produce 20 offsprings
- Female can fly for >200m in a single flight to infest other hosts
- Attacks >240 plant species worldwide





# Introduction

- It is a highly invasive and damaging pest that spreads rapidly over a short period of time
- Probably from South Asia but now worldwide distributed particularly in coffee growing regions
- Reported in West, Central and Southern Africa
- In the Great Lakes region, it is an emerging problem in Burundi, DRC, Kenya, TZ and Uganda
- Impact on the >5m smallholder farmers growing coffee, as well as the economy of the region







# BCTB research in Uganda

- Research in Uganda has mainly concentrated on: -
  - ✓ Mapping out its distribution and impact so as to limit its spread and damage to other non-infested areas
  - ✓ Identifying the bio-ecological factors driving its population and damage
  - ✓ Developing an integrated pest management (IPM) strategy for the pest





# Spread and impact of BCTB

- First observed in 1993 in western Uganda near the DRC border but has now rapidly spread within coffee fields and to new infestation areas
- In Uganda, BCTB prefers Robusta to Arabica coffee and it is present in all Robusta coffee growing regions
- National infestation (percentage of infested twigs) stands at 9.6% (2016 survey)
- This could be translated into 9.6% loss of coffee export volume valued at US\$42.9 million annually





# Bio-ecological drivers of BCTB in Uganda



- BCTB population and damage are higher
  - ✓ In dry than wet season
  - ✓ On coffee located down-slope than up-slope
  - ✓ Primary branches located in lower 3<sup>rd</sup> than upper portions of coffee canopy
  - ✓ Basal 3<sup>rd</sup> than tip parts of infested primary branches
  - ✓ Coffee plants grown under a lot of shade
  - ✓ Closely planted, un-pruned or inadequately de-suckered coffee
  - ✓ Most infested coffee twigs located at 2.02 m along coffee tree



# Bio-ecological drivers of BCTB.....



- ✓ BCTB prefers coffee twigs with mean diameter of 2.4 mm
- ✓ BCTB-associated *Fusarium* sp. caused wilting in cocoa but not coffee
- >50 plant species are confirmed as alternate hosts of BCTB in Uganda
  - ✓ Cocoa, *Measopsis eminii*, *Albizia chinensis*, *Markhamia lutea* and avocado





# Bio-ecological drivers of BCTB.....

## ■ Major gaps

- ✓ Molecular identification of species of BCTB and associated fungi
- ✓ Pathogenicity of BCTB-associated fungi on various hosts
- ✓ Role of BCTB in coffee wilt disease (CWD) transmission
- ✓ Role of alternate hosts in BCTB infestation
- ✓ Chemical ecology studies – pull and push strategies???



# Approaches to managing BCTB in Uganda



- Mainly relying on cultural practices – trimming-off and burning infested plant materials
- Sometimes combined with chemical control
- Developed a trapping technology using locally available materials
- Limited attempts to develop resistant varieties
- Identified a few potential biological control agents



Formicid ant, *Plagiolepis* sp.



*Beauveria bassiana*



# Current IPM package BCTB management in Uganda



- Farmers should
  - ✓ Avoid using BCTB-infested planting
  - ✓ Inspect fields regularly & trim-off & burn infested materials
  - ✓ Avoid bushiness by planting coffee and shade trees at recommended spacing, coupled with proper and adequate de-suckering and pruning
  - ✓ Eliminate alternate hosts for BCTB within & around coffee fields
  - ✓ Enhance plant nutrition by applying fertilizers/manures, conserving moisture and minimizing soil loss/erosion



# Conclusion

- *Xylosandrus compactus* is a **global** problem
- Therefore it requires **regional and global** approach involving sharing of the existing strategies





# Challenges

- Limited sharing of research experience and competence within the region and globally
- Limited communication and replication of research findings at regional and worldwide level







# Recommendation



- Stronger collaboration, linkages and partnerships between stakeholders at country, region and global level
  - ✓ Lead to stronger and more coordinated surveillance and information exchange
  - ✓ Replication, up- and out-scaling of research findings
  - ✓ Improve monitoring and evaluation
  - ✓ Better utilization of resources



# Way forward

- Formation of a regional network
  - ✓ Who spearheads?
  - ✓ Who finances?
  - ✓ Roles of each member state
- Establishment of the status and impact of BCTB in each member country
- Fast tracking BCTB literature in each member state and sharing with other member states
- Paving the way forward





# Acknowledgment



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# THANK YOU FOR LISTENING

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