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Introduction

Banana Bunchy Top Disease (BBTD) caused by the Banana Bunchy Top Virus (BBTV) is the most destructive virus disease that causes dwarfing of infected plants and complete cessation of flower and fruit production leading to 80 to 100% production loss within 1 to 2 seasons (Fig. 1). The virus is transmitted by the banana aphid (*Pentalonia nigronervosa*) and vegetative propagation. Host resistance is not available to BBTV, and its control requires the eradication and replanting with clean planting materials.

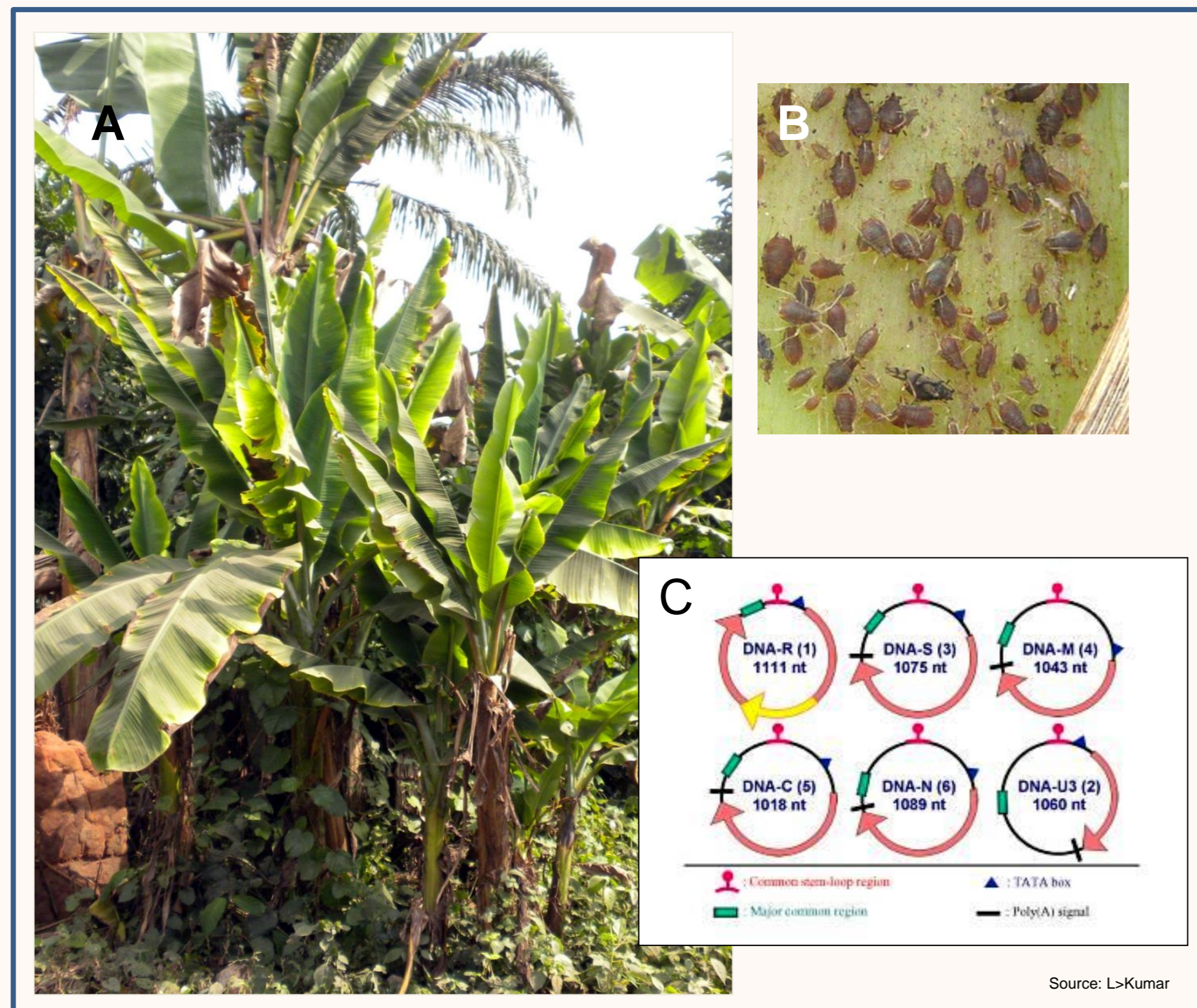


Fig 1 (A) BBTV (genus, *Babuvirus*) infected banana mat with typical 'bunchy top' symptoms; (B) banana aphids, *Pentalonia nigronervosa*, on pseudostem of banana; (C) six single stranded DNAs of BBTV;

BBTV Outbreak in East Africa

BBTV, first reported in sub-Saharan Africa (SSA) in the 1960s, has spread to 14 countries in Central, Southern, and Western African sub-regions, but not in East Africa. In the 2020s, BBTV occurrence was simultaneously reported in Tanzania (Shimwela et al., 2022) and Uganda (Ocimati et al., 2021) has emerged as a major threat to banana production in the Great Lakes Region in East Africa.

Jointly with the national program partners, conducted surveillance surveys in Aug-Oct 2022. An ODK-based BBTV surveillance app and isothermal diagnostic method, Recombinase Polymerase Amplification (RPA), for rapid detection of BBTV in the field was used for real-time surveillance and mapping disease spread. BBTV occurrence was confirmed in several regions in Tanzania (Kigoma, Kilimanjaro, Mwanza, Pwani, and Rukwa) and Uganda (West Nile) (Fig. 2).

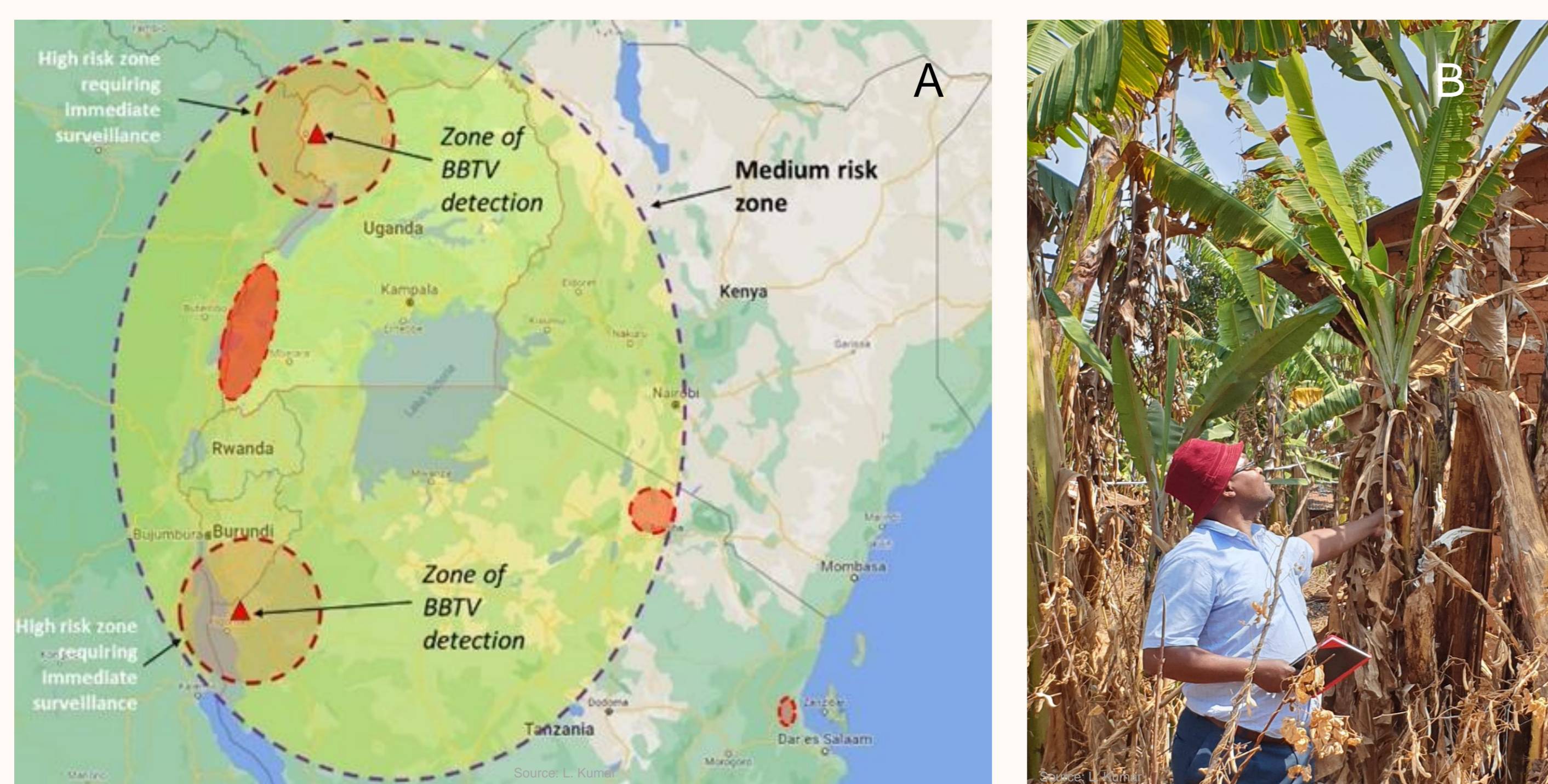


Fig. 2. (A) BBTV affected areas in East Africa; (B) BBTV infected plant in a field.

Causes for BBTV spread

- The first occurrence of the virus was recorded in the regions bordering the BBTV-affected DRC and Burundi, which implied likely virus spread by aphid vectors. Human movement of planting materials and aphids seems to have contributed to the further spread within the countries.
- Due to lack of awareness among farmers and extension officials, the disease spread into new areas was not noticed until very late.
- Farmers' practice of reusing the planting materials and the unavailability of clean planting materials have further contributed to the BBTV spread within the countries.



Fig 3. Training national program partners in BBTV surveillance and eradication

Conclusions

Control measures have been initiated through awareness creating and training partners in disease surveillance and eradication (Fig. 3) and disease diagnostics (Fig. 4). Additional actions are necessary, including:

- Establish a national task force on BBTD control and perform delimitation surveys to establish the extent of BBD spread in Tanzania and Uganda and pre-emptive surveillance in Kenya.
- Develop capacity in BBTD diagnosis, surveillance, and containment measures, and develop a strategy for the production and supply of clean planting material to the BBTD-affected areas.
- Conduct awareness-raising on BBTD risk to banana and plantain production and prevention measures.



Fig 4. Training partners on application of RPA diagnostics for BBTV detection.

Acknowledgements

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