Sub-theme:

Pest diagnostics in phytosanitary systems

Title:

Assessment of *Xylella fastidiosa* presence in flower cuttings and potential host plants of Uganda

Presented by:

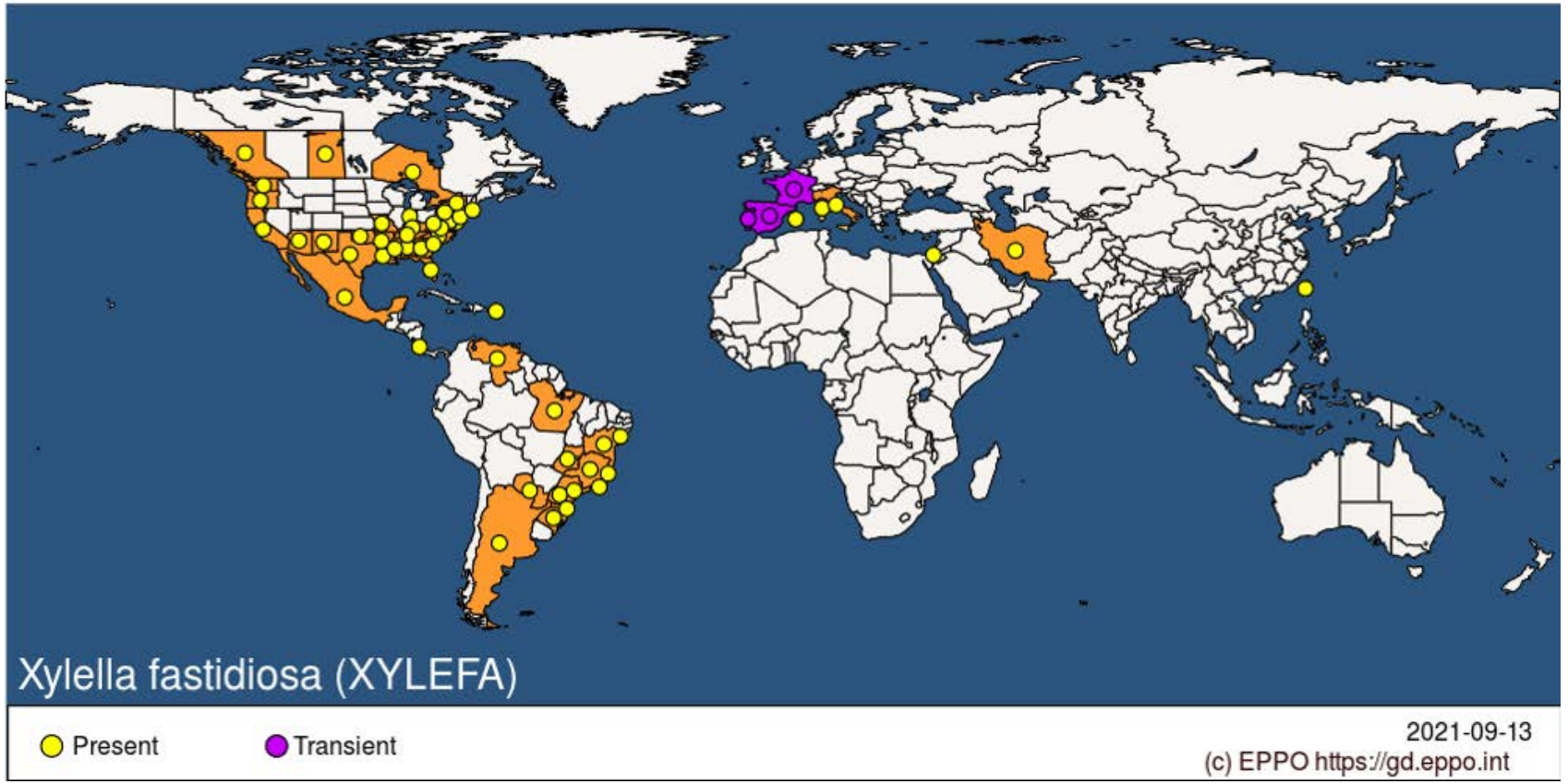
Stephen Buah

Introduction

- *Xylella fatidiosa* is a bacterium under quarantine in European countries where most of the Ugandan agricultural produce is exported.
- Zylella Spp. have a wide host range, affecting over 500 plant species
- Xylella infection causes scotching of leaf edges, leaf browning, stunted plant growth, reduced fruit size and dieback in many types of plants
- It spreads through importation of infected plant materials and local infection through insect vectors

Introduction cont’

In Africa:
only
Morocco is
declared free
from Xylella



Problem Statement

- Xylella infection causes serious crop losses, Eg,. In California it causes over $100 million losses to the grape industry annually.
- Currently there is no cure for the bacterial scotched leaf disease
- Inadequate capacity of the NPPO to conduct molecular detection and analysis

Justification

- The floriculture industry is a significant forex earner for Uganda, worth over $ 30 annually
- The growing, cutting, packaging and export of flower cutting employ more than 4000 Ugandans directly on a full time basis
- The tropical weather conditions, availability of raw materials and affordable labour make floriculture industry a lucrative and sustainable business enterprise in Uganda

Objectives

1. To detect the presence of *X. fastidiosa* in Uganda's flower green houses
2. To determine presence of the pathogen in potential host plants in areas where flower greenhouses are located

Methodology

- Sample collection was done by area (according to EU guidelines) in order to declare an area free from the pest or to confirm its presence.
- The primary target was to collect samples from the major flower greenhouses; Xclusive, Wagagai, JP Cuttings and Fiduga
- Secondary target was potential host plants in the areas hosting flower greenhouses. These areas include; Wakiso, Mukono, Luweero and Mpigi districts.
  - The target populations were agricultural/cultivated areas, forest areas, botanical gardens/ornamental places, urban areas i.e. roadside nurseries, and urban home gardens.

Methodology cont’

Flower cuttings were collected from plants grown in the greenhouses

Leaf and leaf petioles were processed by freeze-drying at -50°C under a vacuum of 0.1 mBar for 72 hours.

Genomic DNA was extracted from the fine powder of freeze-dried using the CTAB method.

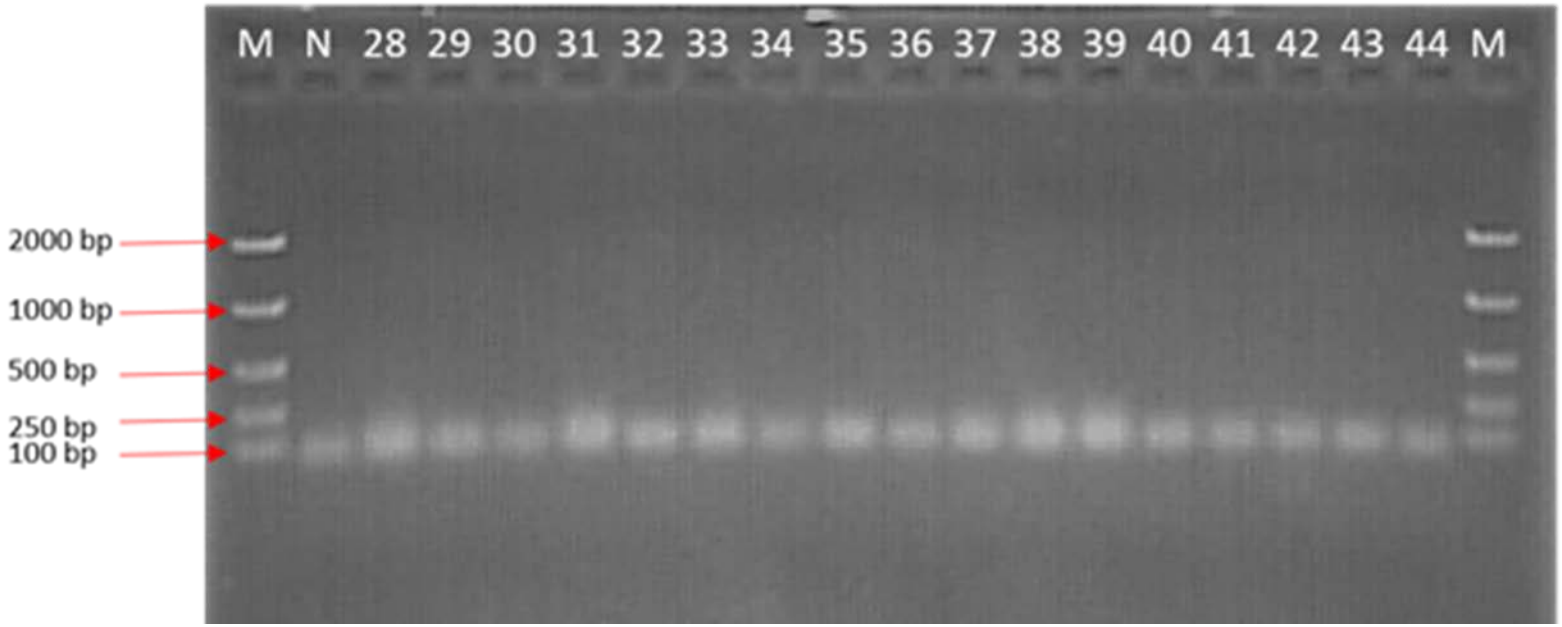
The concentration and purity of DNA, was determined using a NanoDropTM UV-Vis spectrophotometer concentrations

gDNA concentrations were adjusted to 100 ng/µL for use in PCR analysis.

Amplification of *X. fastidiosa* DNA was done according to the method described by (Minsavage et al. 1994) as recommended by the EU.

Results

- Sixty eight (68) were collected from the four major greenhouses representing 95% coverage of potential hosts
- A total of 248 samples were collected from over 40 different plant species in areas hosting flower greenhouses
- None of the tested samples was positive for *Xylella fastidiosa*



Conclusion

- There is no *Xylella fastidiosa* infection in Uganda flower greenhouses
- There is no Xylella infection in potential host plants in areas hosting flower greenhouses
- Flower cuttings from Uganda are free from Xylella infection and are therefore suitable for export to the EU and other countries where Xylella is a quarantine pathogen

Recommendations

- Acquire a reference sample of Xylella DNA for inclusion as positive controls in future PCR tests
- The NPPO should invest in rapid testing methods that can be applied at the field level. Commercial kits ae available that can complete a test within 30 mins and avoids the laborious and expensive DNA extraction and PCR expenses coupled with running gels and staining in dangerous ethidium bromide which can take several hours to days
- Operators of flower greenhouse should continue strict adherence to exclude insect vectors from their facilities. With changing climatic conditions, emergence and re-emergence of plant pests and diseases is a high possibility
- Regular monitoring and testing of target plants in floriculture facilities and hosting areas
- Conduct a nationwide survey, sample collection and testing
- Update national biosecurity rules and ensure strict implementation to avoid importation of the pathogen

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