



*Enhancing Phytosanitary Systems for Healthy
Plants, Safe & Sustainable Trade”*



INTERNATIONAL YEAR OF
PLANT HEALTH
2020

Sub-theme:

Import control and quarantine regulations

**Mitigation Measures for Invasive Insect Pests on
Eucalyptus spp. in East Africa: A Review**

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Introduction

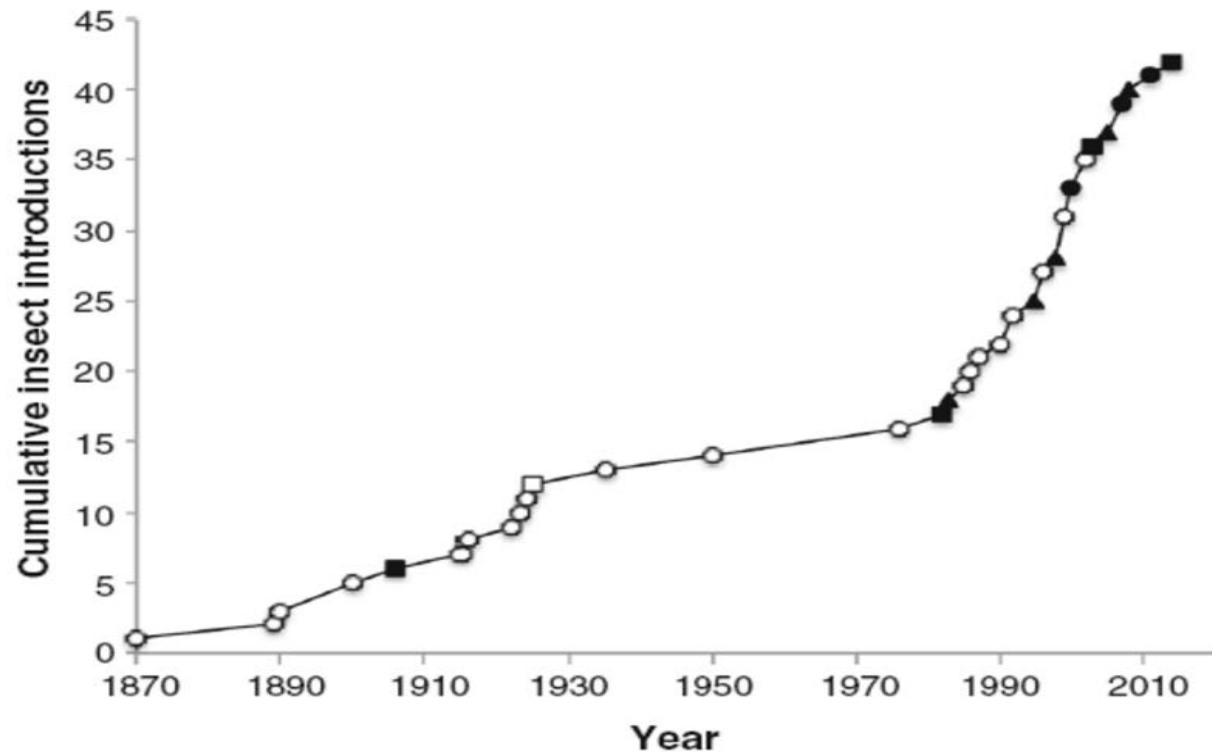
Status of *Eucalyptus* growing in areas of introduction

- ❏ ***Eucalyptus* plantation forestry is expanding rapidly in areas of introduction such as in eastern Africa,**
- ❏ **This expansion is also coupled with increased invasive insect pests both in Africa and globally,**
- ❏ **High selection for genotypes of fast growth, high productivity and species-site matching.**



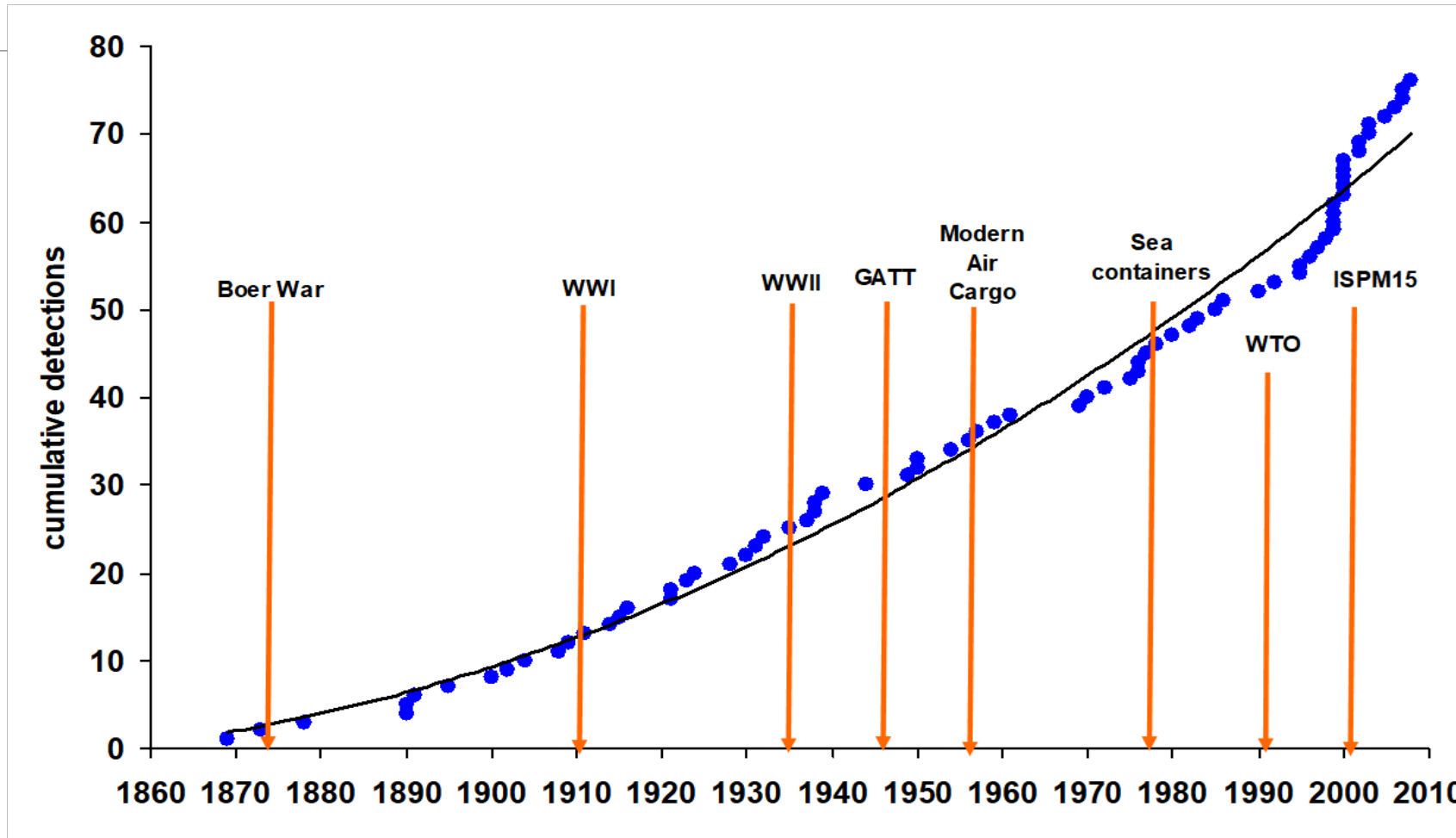
Invasive insect pests of Eucalyptus worldwide

Cumulative invasive insect pests of Eucalyptus sp. outside their endemic area in Austrasia (Hurley et al., (2016))



- **The rate of introduction of new pests has increased substantially since 1986**
- **This coincides with an increase of the area of Eucalypt forest plantations which increased by 90% since the fifties, and about 50% since 1990 (Turnbull 1999)**

Contributing factors to this invasion trend of Australian Eucalyptus pests (Source: BiCEP)



Eucalyptus spp. “big five” invaders



Blue gum chalcid
(*Leptocybe invasa*)



Bronze Bug
(*Thaumastocoris peregrinus*)



Eucalyptus snout beetle
(*Gonipterus* spp. complex)



Red gum lerp psyllid
(*Glycaspis brimblecombei*)



Eucalyptus gall wasp
(*Ophelimus maskelli*)

Invasion and spread of Bronze bug, *T. peregrinus* in Africa



Bronze Bug
(*Thaumastocoris
peregrinus*)

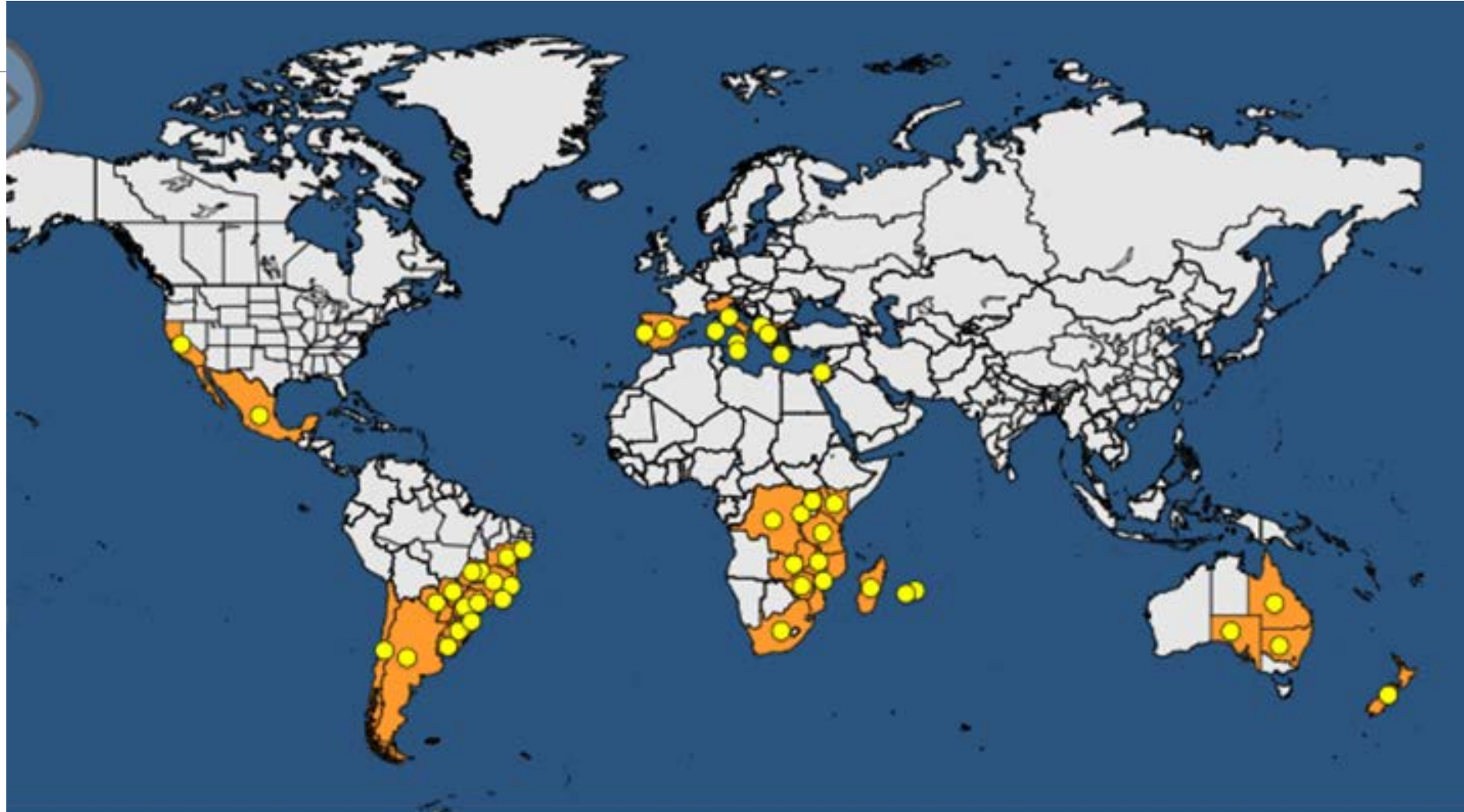




Current worldwide distribution of Bronze bug, *Thaumastocoris peregrinus*







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Key driving forces on expansion of Eucalypts growing in introduced areas

-  **Selection for high tolerance varieties across a wide range of climatic and edaphic conditions,**
-  **Genotypes with short rotation times (10 years or less depending on the location),**
-  **Increased demand for wood fuel for the tea and tobacco processing industries,**
-  **Increased use in the expanding construction and telecommunication infrastructure**

Factors influencing causes of increased invasion and spread

- Intensive planting of *Eucalyptus spp.* and associated hybrid clones over large areas,
- Increased human trade and transport,
- Growing pool of established exotic pests in neighbouring regions,
- Natural dispersal across borders

Thus, there is need to develop rapid, cost-effective and efficient mitigation and management measures to counter the economic losses associated with both the rapid rates introduction and spread of invasive pests



Strategies to mitigation and manage invasive insect pests

- **Strengthening phytosanitary and quarantine measures at ports of entry**
 - **Establishment of insect pests databases,**
 - **Training of relevant staff at ports of entry,**
 - **Implementing and improve FAO International Standards for Phytosanitary Measures (ISPM's) Eg. ISPM 02, 03, 09, 11, 14, 15**





Selection and growing of resistant/tolerant host tree species genotypes



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- 📌 **Current breeding program emphasis on fast growing, species/genotypes for site matching, increased productivity,**
 - 📌 **Selection has minimum consideration for pests and diseases resistance**

Limitations:

- 📌 **Difficult to keep up with resistant to arriving invasive insect pest species,**
- 📌 **It is expansive and takes long time to develop and implement,**
- 📌 **Developed clones might not be adopted to the wide ecological range,**
- 📌 **Old invasive pest species may adapt and overcome resistance.**



International and regional collaboration to mitigate and manage exotic pests



Benefits of international and regional collaborations

- **Reduced cost due to sharing of research facilities,**
- **Sharing of generated knowledge through various relevant research networks,**
- **Utilization of the limited numbers of professionals in relevant fields to provide the best results within the shortest possible time frames,**
- **Sharing of biocontrol agents obtained from different countries/regions where there are similar pest species,**
- **Availability of large areas to conduct field research and release biological control agents for local adaptation and impact assessment,**
- **Timely intervention measures reduces spread and economic loss.**



Conclusion

- ❖ **Strengthen phytosanitary and quarantine measures at points of entry in the region.**
- ❖ **Implementation and improving on the International Standards Phytosanitary Measures (ISPMs).**
- ❖ **Share information on invasives worldwide through strengthening of pests/diseases databases.**
- ❖ **Genetic selection of species to consider pests and diseases resistance/tolerance.**
- ❖ **International and regional collaboration to prevent entry of invasives.**
- ❖ **Establish policy that strengthen regional phytosanitary measures.**
- ❖ **Diversify commercial tree species for various products.**



Acknowledgements



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Thank you all