



CMD for more than a century

CMD resistant CVs: CMD1: 1930-1970s

CMD2: 1990-present

CMD3: 2012

**Transgenic plants: proof of concept CMD,
first products 2016-2020**

**Opening the possibility to FIX cassava
landraces readily adopted by farmers**

TME 30572



TME 204



TME7

**REP 1
UI**



Cassava Brown Streak Disease



Veinal chlorosis of leaves



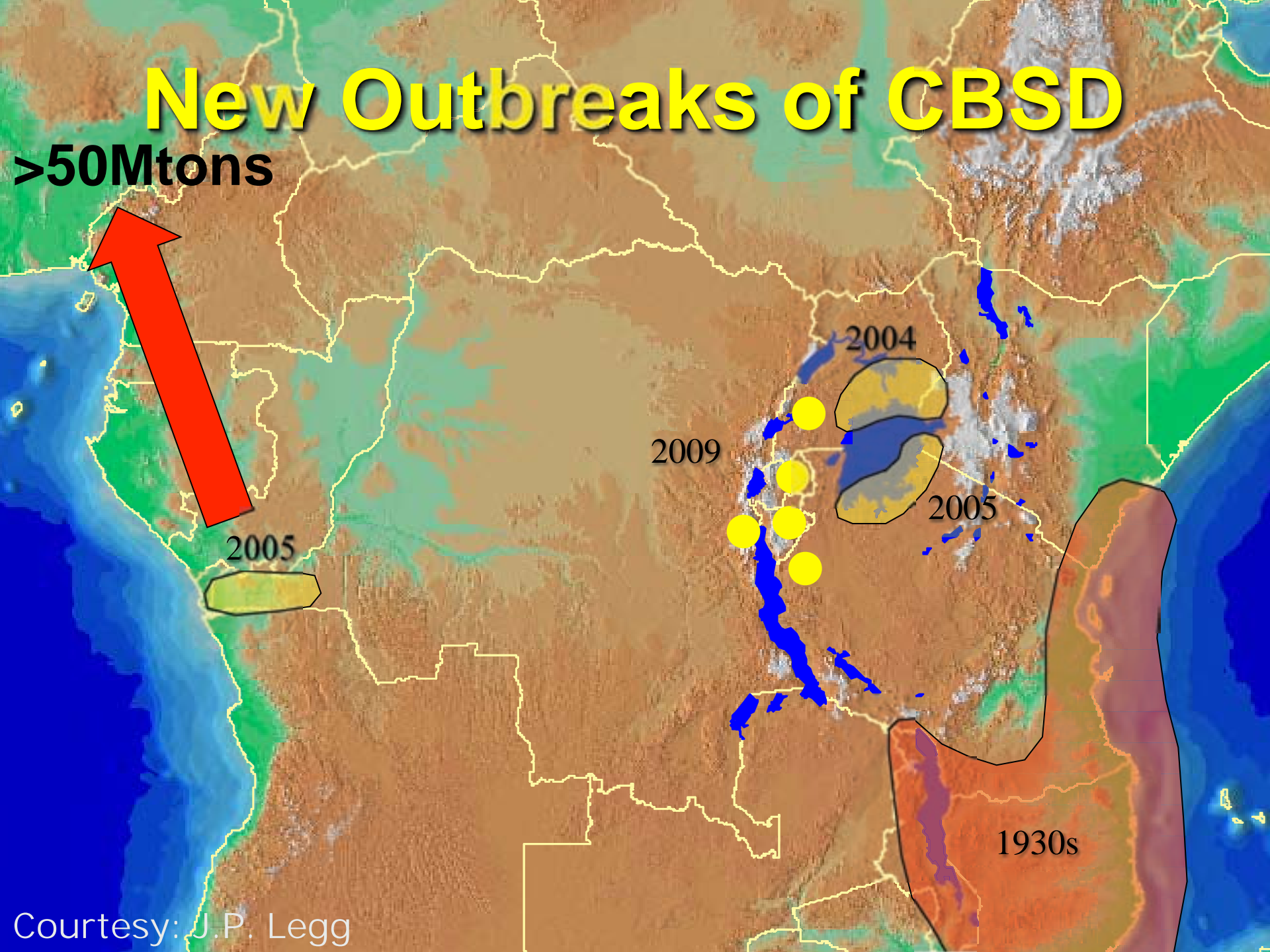
Necrotic rot of roots

- First discovered in 1935 in East Africa
- Re-emerged in 2003
- Caused by 2 species of ssRNA ipomoviruses
- CBSV and UCBSV

Harvest can be completely lost for CBSD

New Outbreaks of CBSD

>50Mtons



Courtesy: J.P. Legg



**CBSD re-emergence since 2003
after disappearance for 70 years**

Control methods

CBSD resistant CVs: 1935 (Namikonga)

New release of 6 CBSD resistant CVs 2012

**Transgenic plants: proof of concept CBSD,
first products 2016-2020**

**Possibility to FIX adopted cassava
landraces**

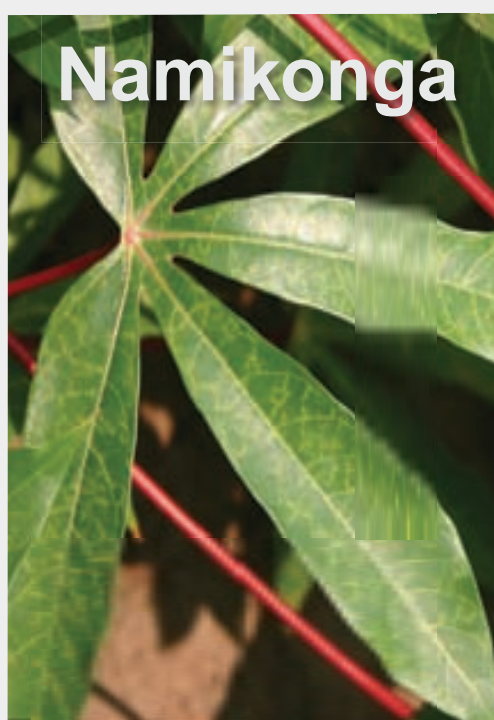
Namikonga



Kiroba



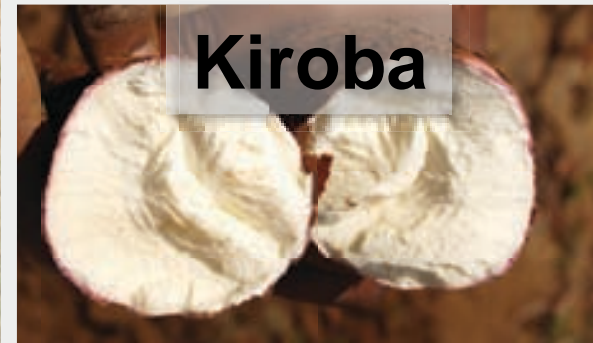
Namikonga



Namikonga



Kiroba

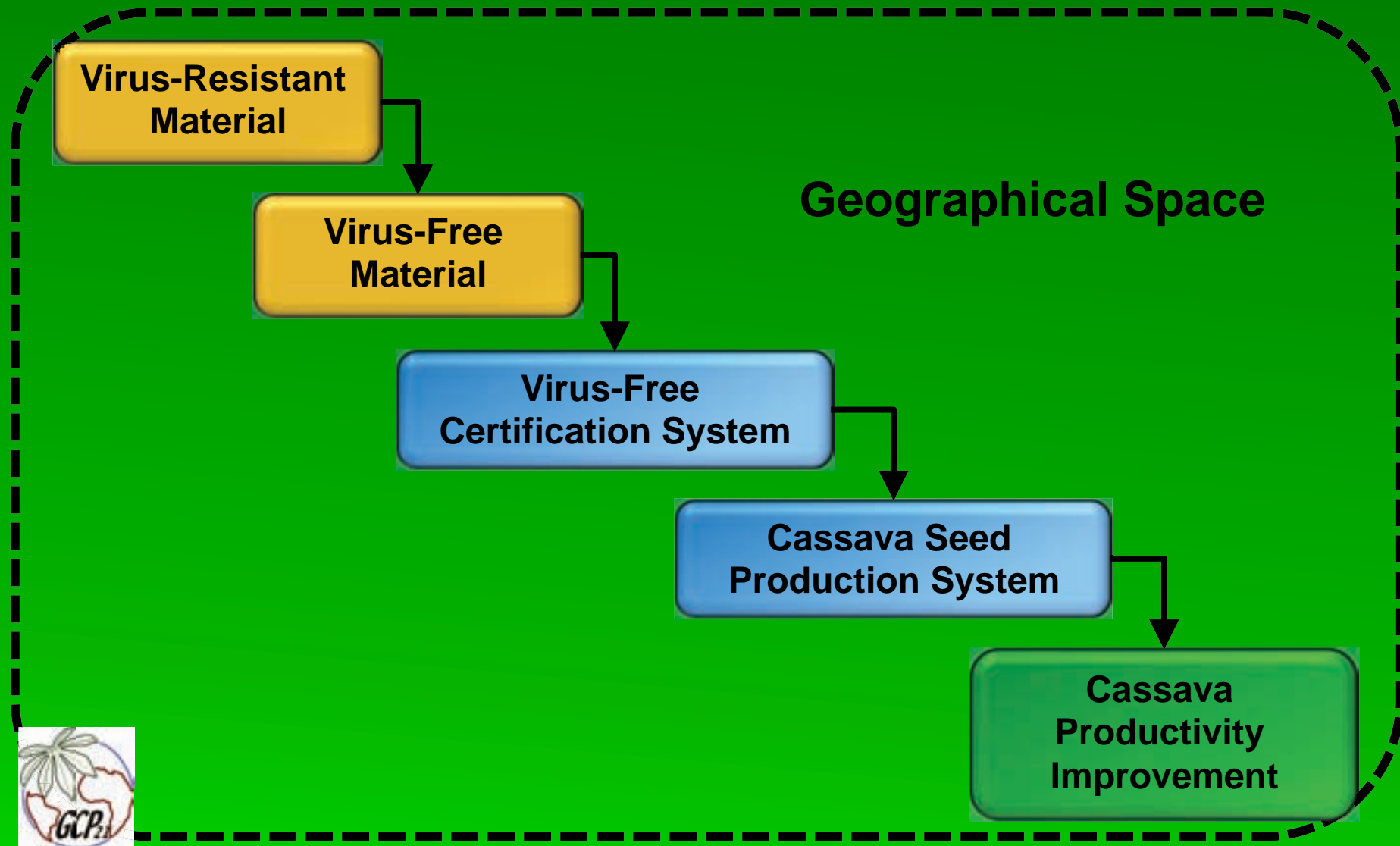


A War on Cassava Viruses

- Need to integrate different technologies for better control
 - Natural resistance for inbred lines
 - Transgenesis for cassava landraces
 - Virus-free cuttings for other landraces
- The goal is to deplete the virus load from THE reservoir:
The Cassava Crop itself
- Need a better monitoring system to watch for new viruses
- Need to investigate new sources of resistance to the virus
- Need to investigate possibilities to control whiteflies
through genetic resistance/ transgenesis and IPM
- Need to use cheap propagation methods for virus-free
certified material
- Need a strong integrated strategy to control viruses



A War on Cassava Viruses



A Collection of Cassava Landraces in East Africa

- ✓ 93% of the cassava landraces in East Africa are NOT in international collections
- ✓ They are under threat to disappear with virus diseases such as CBSD, after CMD
- ✓ Modern molecular breeding can make use of important traits present in these landraces that are appreciated by most farmers.
- ✓ Opportunity to know more about the farmer and consumer needs to improve cassava

Tanzania, June 2013

