Better lives through livestock

Contagious Bovine Pleuropneumonia

Musa Mulongo, PhD
TAHSSL Platform
ILRI

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TRANSFORMING ANIMAL HEALTH

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Introduction to TAHSSL

- The Transforming Animal Health Solutions and Services for Low-middle Income Countries (TAHSSL) is a tripartite product development and commercialization platform established in 2019 by ILRI, GALVmed and ClinGlobal

- The platform was established with 3 main goals:
  - to serve as a “one-stop-shop” to contribute to research, development and commercialization of animal health products for use in Africa
  - To facilitate and encourage the private sector to increase investments in research, development and commercialization of animal health products for the SSPs in Africa
  - To identify promising animal health products and help in their development, testing and commercialization in LMICs

- The Platform is currently funded (5M USD) by the BMGF in an initial “set-up” phase. We are negotiating another grant for TAHSSL Phase II

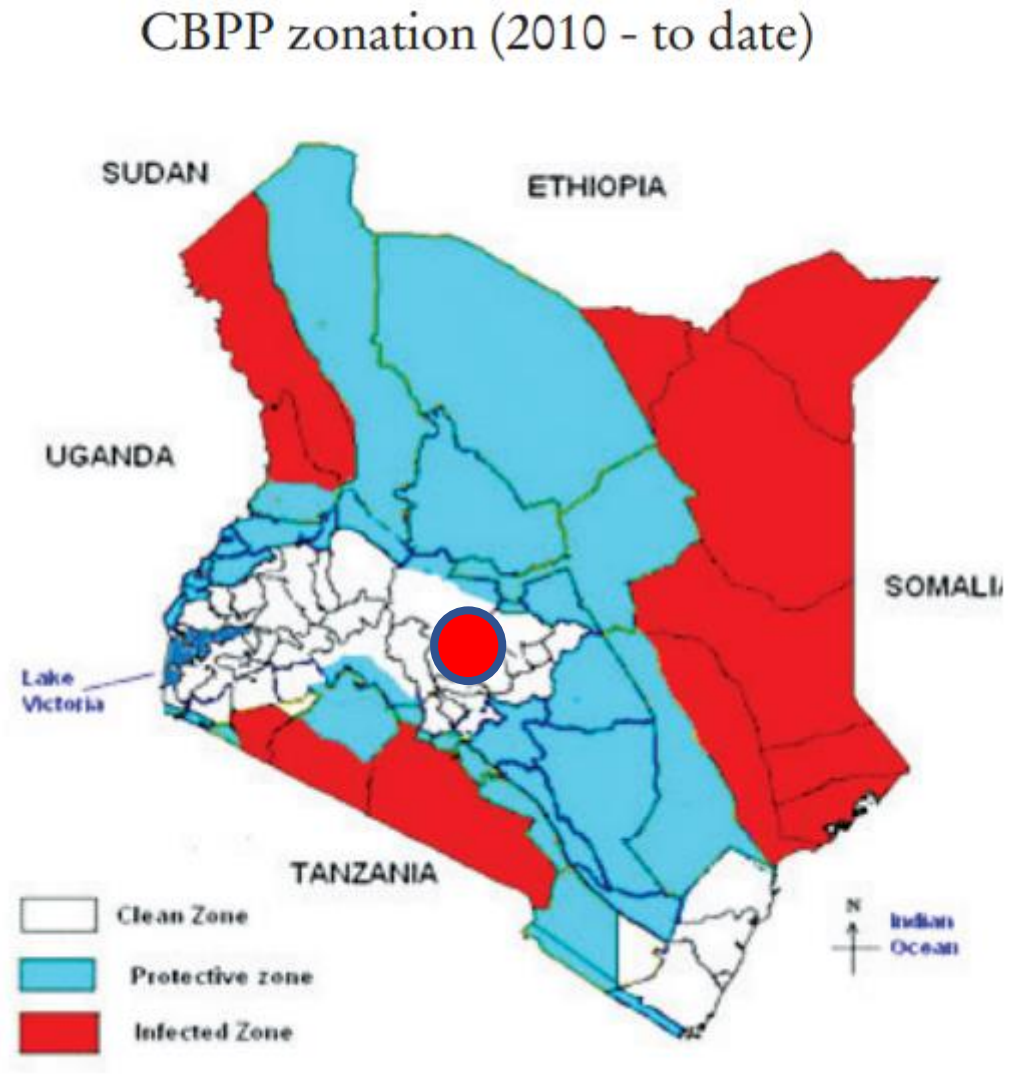
Contagious Bovine Pleuropneumonia: Zoning approach

The control strategy was based on vaccination and animal movement control in three zones:

- **CBPP clean areas "zone I":** surveillance was carried out in all slaughter facilities accompanied by zoosanitary measures at livestock markets, borders check points and stock routes.

- **Recently infected areas "zone II":** disease surveillance and vaccination in the event of a confirmed outbreak. enforced zoosanitary measures.

- **Endemic areas "zone III":** the strategy was intensive vaccination and zoo-sanitary control measures.



Contagious Bovine Pleuropneumonia: Reality

- **Diagnosis:** took up to 3 months for a section of herd
- **Livestock death:** 400
- **Movement control**: None
- **Control policy**: Unclear

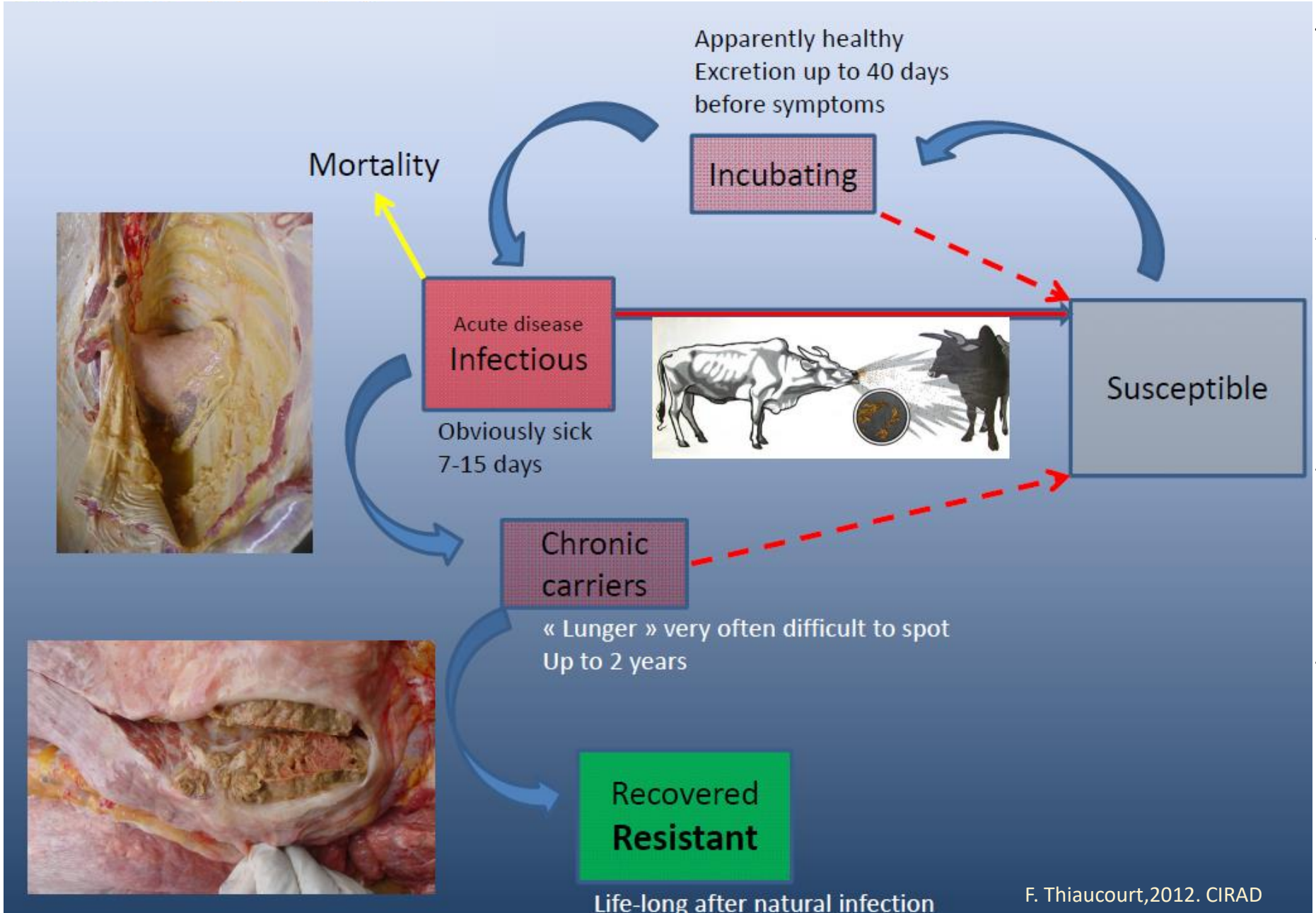
Africa: 10-yr Incidence of CBPP outbreaks

Between 2010-2019, CBBP outbreaks were located :

- 61.8 % in West Africa
- 24.9% in East Africa

(OIE data)

CBPP epidemiology as a basis for control strategies



Transmitted by direct or close contact between infected cattle and susceptible animals

Acute phase = 6-12 weeks between six and ten weeks. Coughing could contain up to 10^8 viable organisms per ml

In epidemics, acute cases tend to predominate initially

Chronically infected animals are 50 times less infectious than those in the acute phase

75% of cases recovery

CBPP Control options – no perfect single approach

Control Method	Challenge
Vaccination (T1/44; T1SR)	▪ Post vaccinal reactions ▪ Poor coverage ▪ Poor quality control ▪ Short DOI ▪ 2 shots/year for good efficacy
Stamping out	▪ Too expensive and culturally sensitive
Treatment with antimicrobials	▪ Establishment of chronic carriers ▪ Potential for future outbreaks
Test and slaughter	▪ No reliable diagnostic test ▪ Too expensive and culturally sensitive
Quarantine	▪ Depends on good diagnostics and surveillance ▪ Requires effective enforcement

CBPP Vaccines in the context of National and Regional control

CBPP vaccination as a "stand-alone" intervention

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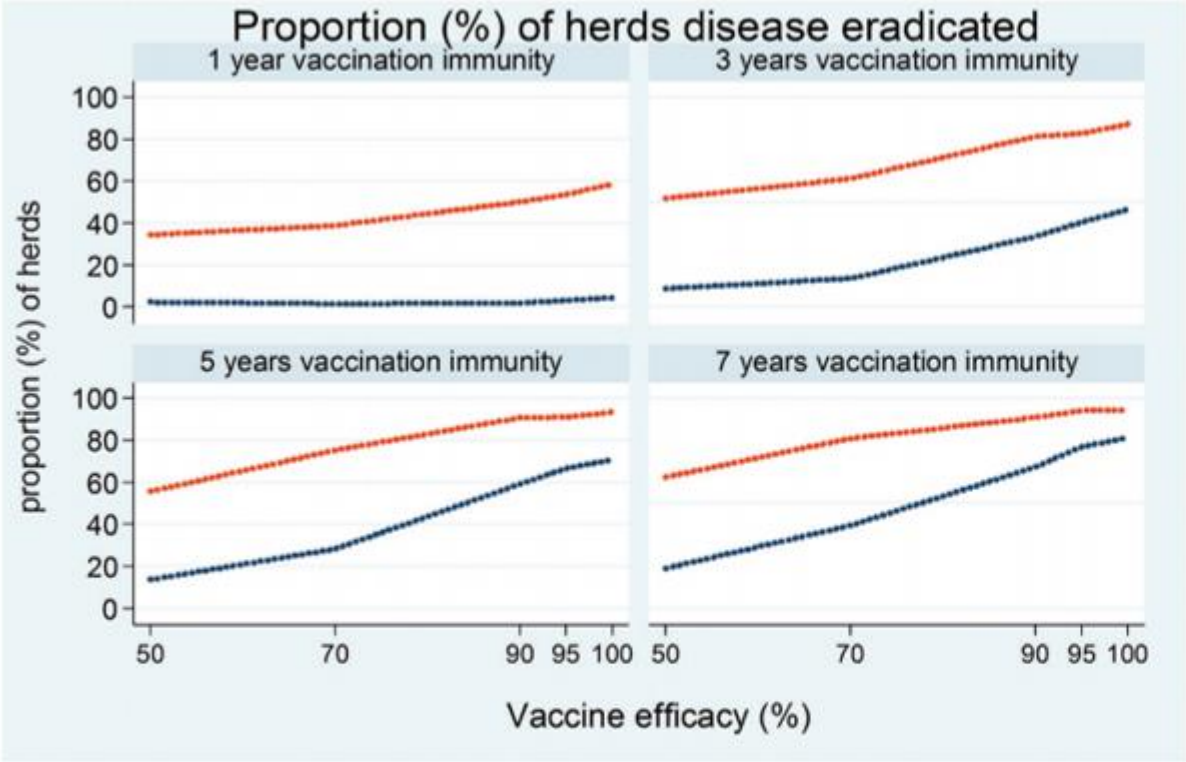

Proportion of herds where CBPP will be eradicated as a function of:

- Vaccine efficacy (50% to 100%)
- In 4 scenarios with DOI ranging from 1 to 7 years

For vaccines to be a truly "stand-alone" intervention, high levels of efficacy >90% and longer duration of immunity will be required.

Single vaccination with T1/44 induced approx. 67% protection. Although, in one study, boost vaccination with T1/44 at 12 months post-primary vaccination rate results in 95% protection.

FAO meeting (2015). The Predicted Impact of CBPP Control Strategies. Jeffrey C. Mariner

CBPP Vaccines in the context of National and Regional control

- In the past, the suppression of CBPP in West and Central Africa occurred when regular annual campaigns were carried out using the bivalent RP-CBPP vaccine

- The current resurgence of CBPP, is due to irregular and low vaccine coverage

- Some regional differences:
  - Lack of CBPP vaccination programs in east Africa
  - Higher vaccination rate in West Africa
  - Important differences between countries in the same region (→ Main challenge for a transboundary disease)

- For vaccines to be a truly "stand-alone" intervention, high levels of efficacy >90 percent and duration of immunity are required. This is a level of immunity equivalent to that believed to result in animals that recover from natural infection

- Alternatively, strategies that combine novel vaccines with other interventions might be needed

Potential for integrated approaches combining treatment & Vaccination

Some Questions for CBPP Vaccines

- Claims on CBPP candidates and vaccine, quality and performance are not easily verifiable-what should be done to change this? (efficacy 30-85%!)
- How can we develop integrate vaccination in effective models for different regions in Africa?
- Is the current 1 shot for CBPP enough? Is it practical?
- Do we need a new diagnostic test?

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CBPP policy issues

- Public good vs free market CBPP control? - if a better product (T1/44 or otherwise) came to market who would produce and distribute?
- What do we do we do with antibiotic use?
- What models might be effective in delivering better quality and quantity of CBPP vaccines to small scale livestock producers?
- Do we have clarity on CBPP zoning and policies for each?
- Any progress in harmonizing registration of CBPP vaccines in Africa?

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TAHSSL CBPP Agenda & Projects

- Improving quality control of CBPP vaccines
- **Establishment and standardization of CBPP challenge models for harmonized safety and efficacy studies**
- **Assisting VIDO/ILRI/KALRO to assess market potential for the new CBPP sub-unit vaccine candidate**
- Assisting the CBPP C-Elisa test to remain on the market
- **Modelling CBPP control options in country specific farming systems**
- Helping Companies to develop strong business cases to justify investment in CBPP