

The challenges of the Current CBPP vaccine

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Outline

- ❖ **CBPP Vaccine Strains and Protection level**
- ❖ **CBPP Vaccination efficacy**
- ❖ **Challenges related to the use of CBPP vaccines**
 - ✓ Post-vaccination adverse reactions
 - ✓ Problems in the production of CBPP vaccines
 - ✓ Diluents-Vial doses-Vaccination instructions
 - ✓ Cold chain control
- ❖ **Quality control of Vaccines at UA-PANVAC**



CBPP Vaccination Efficacy

Case study carried out in Namibia (Bamhare C., 2001).

Surveillance of CBPP in vaccinated areas: Namibia experience with CBPP vaccines prepared from the T1/44 and T1sr strains. Report of the second meeting of the FAO/OIE/OAU/IAEA advisory group on contagious bovine pleuropneumonia (CBPP). Rome, Italy, 24-26 October 2000, FAO, Rome. pp. 79-87.

- ✓ Possibility of controlling CBPP with T1/44 vaccine
- ✓ Declared outbreaks reduced by more than 99% in 2 years of vaccination (2794 in 1997 and 87 in 1999).
- ✓ Vaccination coverage level (80-90%)



6.1.3 Result 3: Rinderpest Eradicated from Africa; Greater Control of Other Epizootic Diseases, Especially Contagious Bovine Pleuropneumonia

The major achievement of PACE is that with almost complete certainty, rinderpest has been eradicated from its two last strongholds in Africa, Southern Sudan and the Somali Ecosystem.

Less success has been achieved with regard to control of CBPP. Few countries have taken up systematically the CBPP control programme recommended by the PEU. Exceptions in West Africa are Senegal, where vaccination stopped in 2005 and the country is undertaking the OIE Pathway for declaration of freedom from CBPP; Guinea, where the country has been divided into epidemiological zones with regard to CBPP and is taking control measures in line with OIE guidelines; Benin, where a national workshop held in March 2006 initiated a 5 year compulsory CBPP vaccination campaign covering the whole country.

In East Africa, Tanzania is pursuing annual vaccination against CBPP on a zonal basis; Kenya has also adopted a zonal policy for CBPP control and has infected zones where vaccination is biannual, and disease free zones.

Rwanda implemented a highly successful CBPP control programme in which the entire cattle population was vaccinated five times in three years with T₁₄₄ vaccine.



CBPP Vaccine strains

- ❖ **Two vaccine strains currently used for control of CBPP**
- ❖ **Strain T1/44:** from a naturally mild strain isolated in 1951 in Tanzania (*Sheriff & Piercy, 1952*) and followed by 44 passages on eggs.

Sufficiently attenuated to protect cattle without severe post-vaccinal reactions, however such reactions may still occur in the field although rarely. Their frequency is unpredictable

- ❖ **Strain T1sr:** Streptomycin-resistant mutant T1/44 (*Developped by laboratoire IEMVT, Maisons-Alfort*). (*Wesonga & Thiaucourt, 2000; Yaya et al., 1999*).



Level and Duration of Protection CBPP vaccines

- ❑ **Level of Protection CBPP Vaccines:** experimental studies (*Wesonga and Thiaucourt, 2000*)

	T1/44	T1sr
3 months after primary vaccination	60%	68%
Vaccination booster after 12 months	95,5%	80,5

- ❑ **Duration of protection for T1 vaccine strains for:**

- T1/44 : At least 12 Months (**Annual vaccination**)
- T1/SR: 6 months (**Six-months vaccination**)



Post-vaccination Adverse Reactions

- ❖ **CBPP T1sr Strain:** mild to no reaction
- ❖ **CBPP T1/44 Strain:**
 - ✓ Local inflammatory reactions - injection site
 - ✓ Unpredictable frequency - breed-dependent?
 - ✓ Post-vaccination reactions can generate resistance from farmers

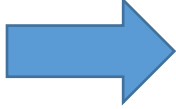


Diluents-Vial doses-Vaccination instructions

- ❖ **Diluents for CBPP vaccine: 0.9% NaCl or PBS**
 - ✓ Quality of diluent has an impact on vaccination efficacy
 - ✓ Lack of quality control of diluents
 - ✓ Diluent **MUST BE SUPPLIED** with the vaccine
- ❖ **Vial doses (100) NOT suitable for use on small farms**
- ❖ **Vaccine use instructions**
 - ✓ Instructions for use **SHOULD** accompany the vaccines
 - ✓ Time limit for use (TLU) after reconstitution **SHOULD** be indicated



Cold Chain Control

- ❖ **Live attenuated CBPP vaccines**  **Thermostability issue**
- ❖ **Maintaining the cold chain** to preserve vaccine quality, from production to the field,
 - ✓ Storage and transport within recommended temperature ranges
 - ✓ Use of a temperature monitoring system to ensure that temperatures do not exceed the prescribed range.
- ❖ **Raising awareness** among those involved in vaccination of the **importance of controlling the cold chain.**



Laboratories Producing CBPP vaccine in Africa



1. Northern Africa

- MOROCCO (MCI)

2. Western & Central Africa

- CAMEROUN (LANAVET)
- MALI (LCV)
- NIGERIA (NVRI)
- NIGER (LABOCEL)
- SENEGAL (ISRA-Production)

3. Eastern Africa

- ETHIOPIA (NVI)
- KENYA (KEVEVAPI)
- TANZANIA (TVI, HESTER)

4. Southern Africa

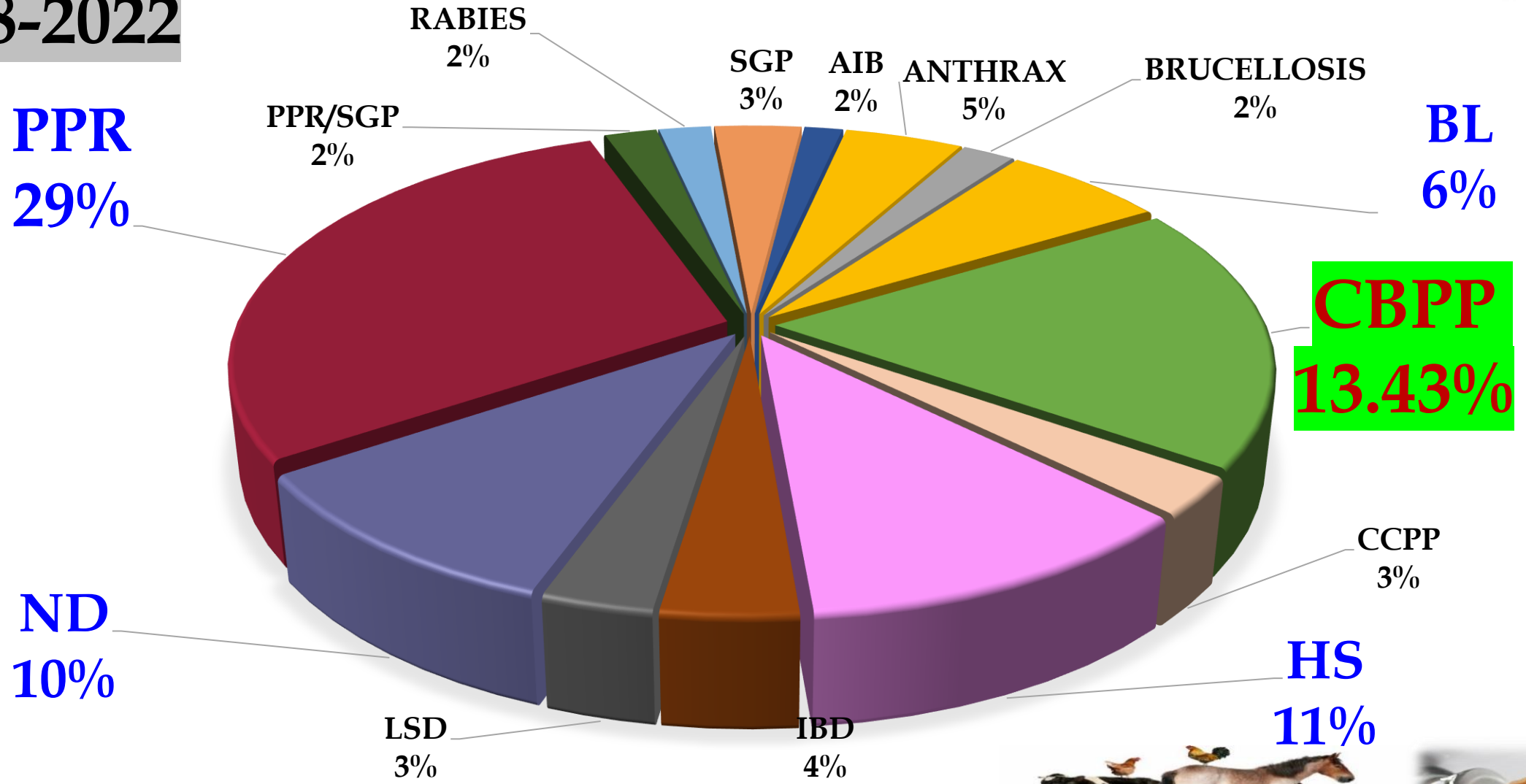
- BOTSWANA (BVI)

NB: JOVAC (Jordan) from Outside of Africa

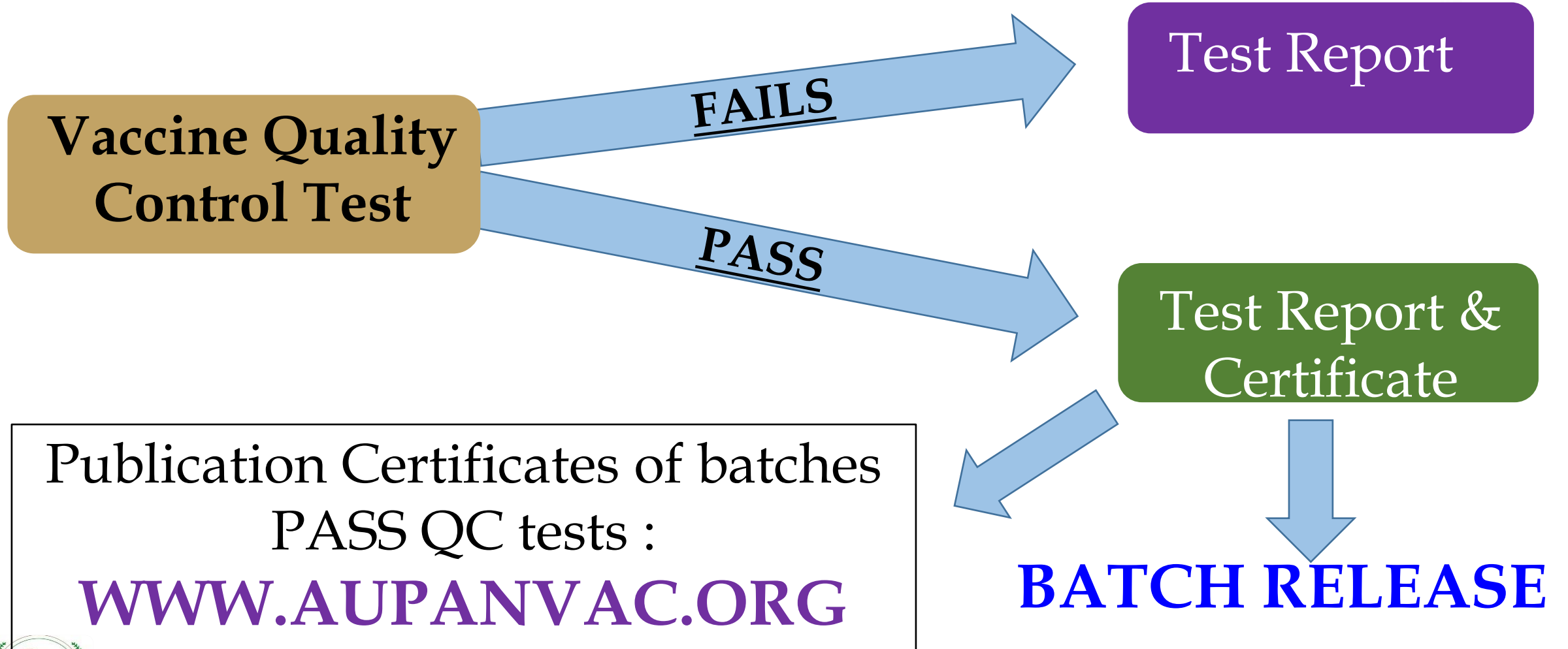


Major Veterinary Vaccines Received for QC

2018-2022



Quality Control Test Report & Certificate



Conclusion

- ❑ Controlling CBPP in Africa need a continental strategy for vaccination
- ❑ Use of the T1/44 or T1sr vaccine strain
- ❑ Improved vaccine production: viability of mycoplasmas and vaccine stability
- ❑ Maintaining of cold chain: live vaccine
- ❑ Encourage laboratories to submit their vaccines (including the diluent) to the AU-PANVAC for quality control before use.



Synergies and Partnerships



AU-MSD

**AU-MS Vaccine
Producing Labs**

**Regional Animal
Health Centre in
the RECs**



World Organisation
for Animal Health
Founded as OIE



US-DTRA



Sandia
National
Laboratories



BLACK &
VEATCH



Food and Agriculture
Organization of the
United Nations

BILL & MELINDA
GATES foundation



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Thank you

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