Dec 2020

Rift Valley Fever:

risk of introduction

impact

prevention & control

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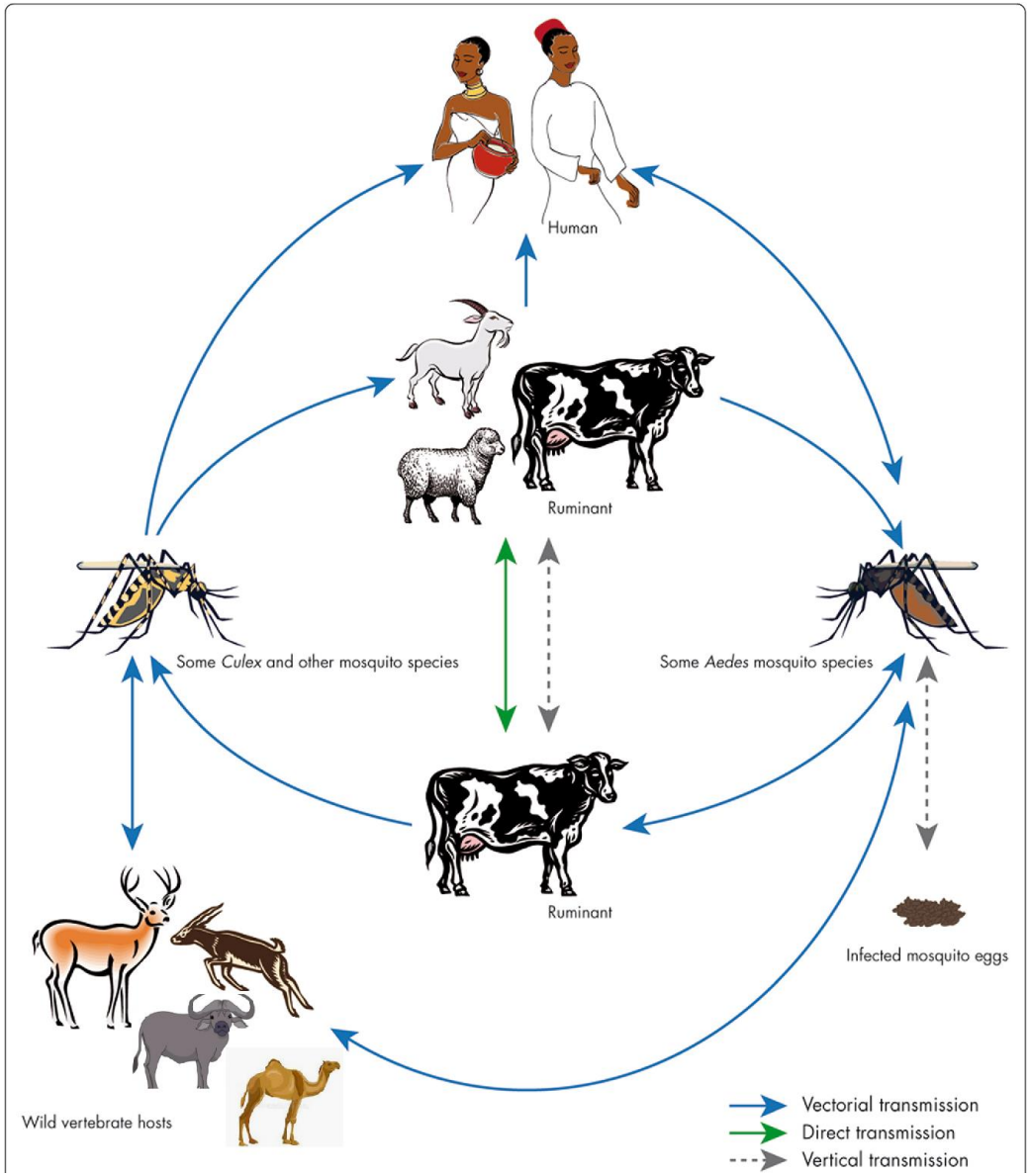
Rift Valley Fever

Mosquito-borne viral disease of ruminants and humans

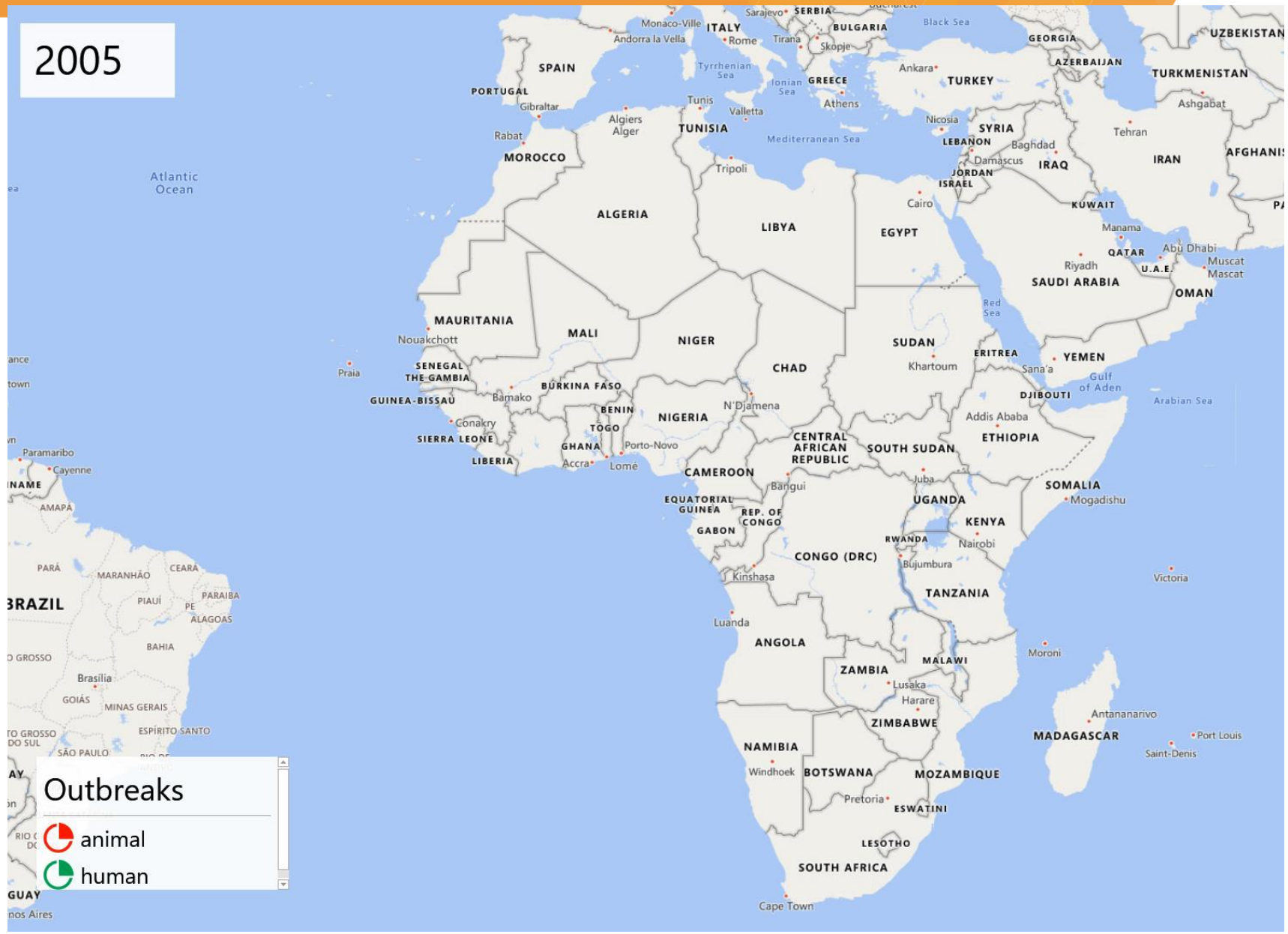
>> serious zoonosis



Rift Valley Fever

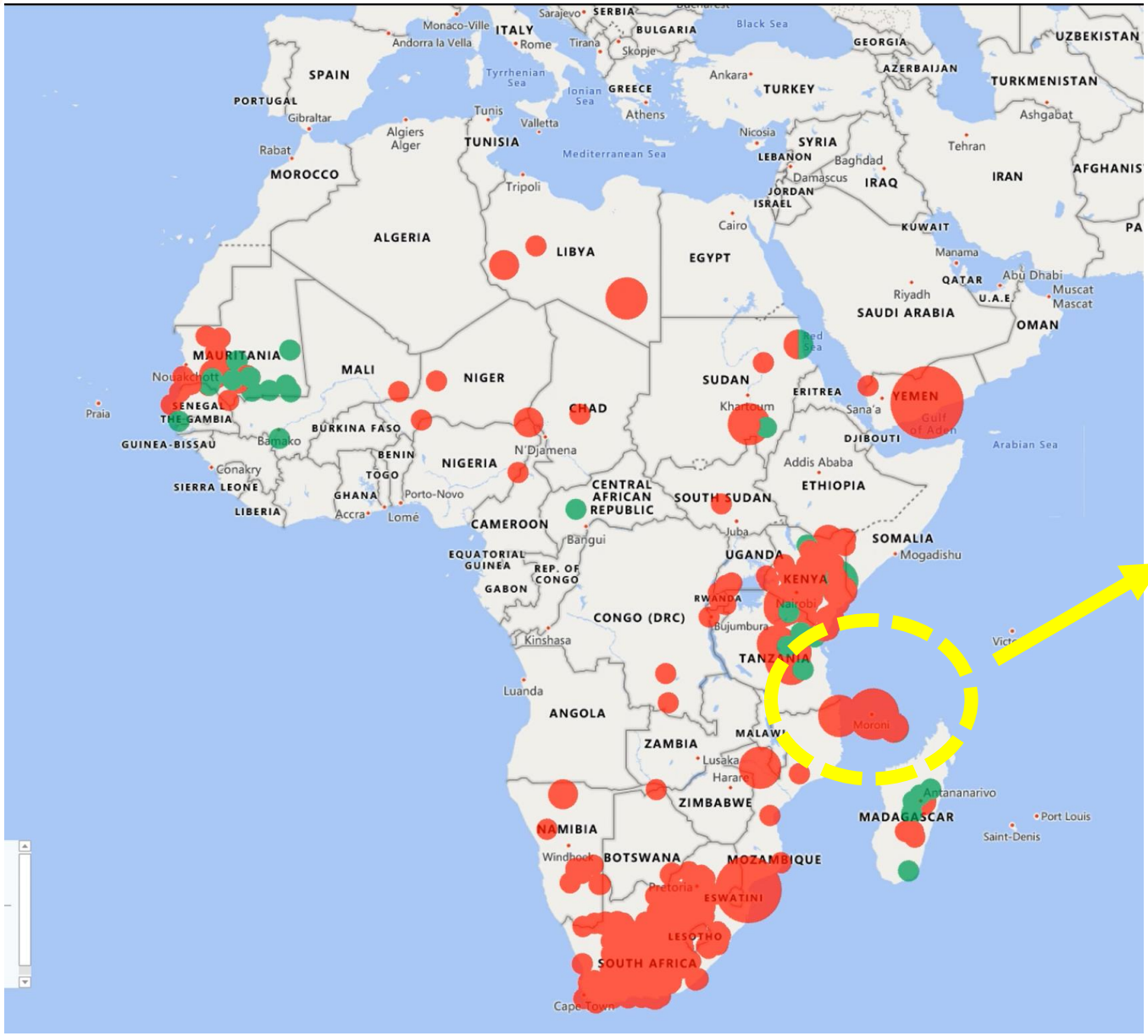
- ✓ Aedes and Culex mosquitoes (main vector species)
- ✓ transovarian (vertical) transmission
- ✓ inter epidemics period (5-15 years)
- ✓ Death or abortion of ruminants, high impact in young animals
- ✓ Humans infected with animals and animal products
- ✓ Expanding from Africa

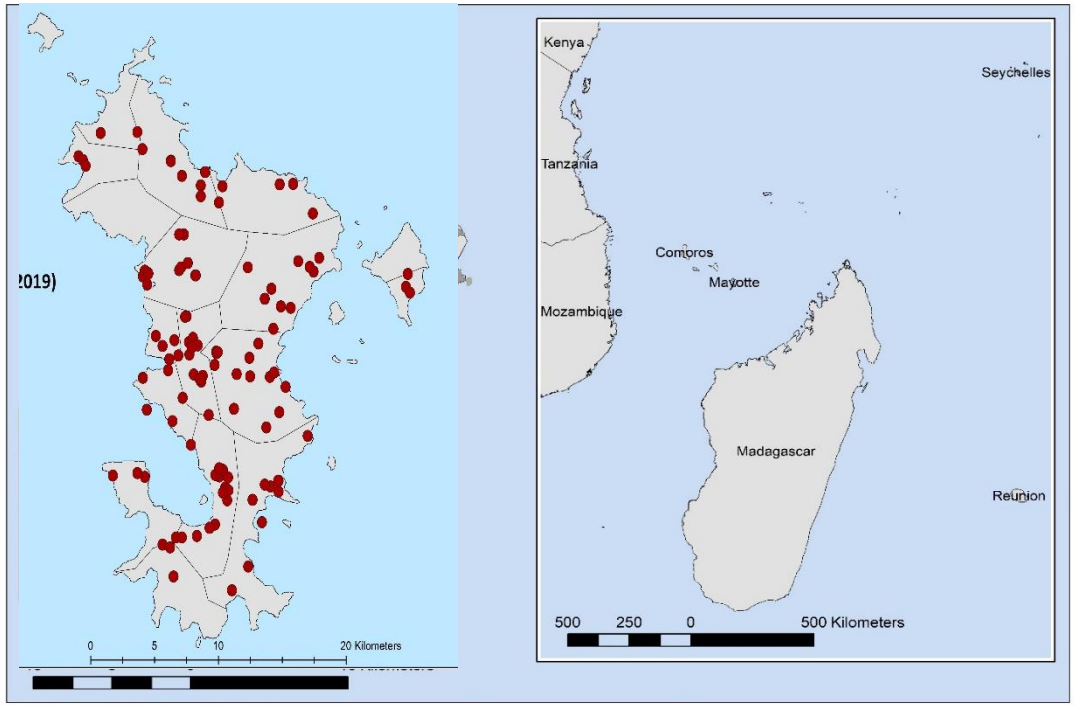
Rift Valley Fever – expanding



Rift Valley Fever – seropositivity

Rift Valley Fever – Mayotte epidemics





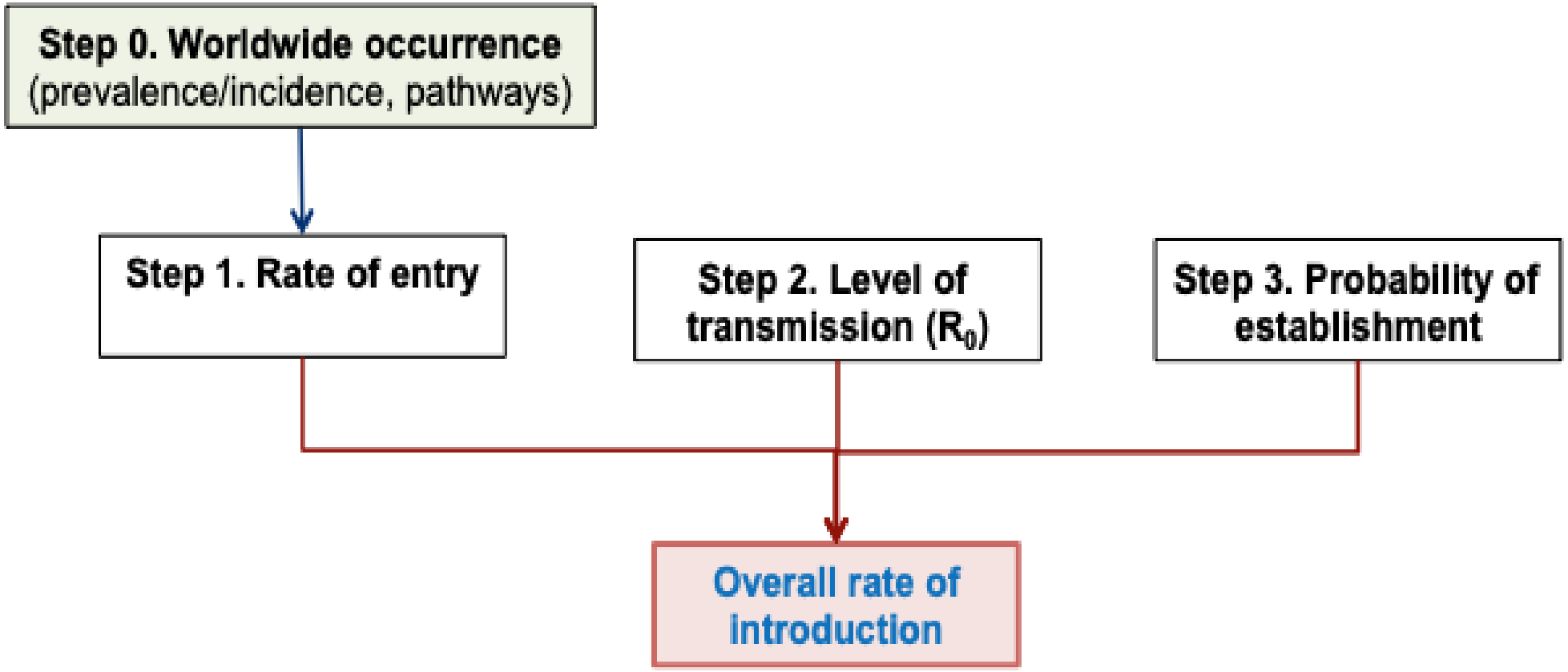
Rift Valley Fever

Adoption of 3 scientific opinions from EFSA in 2020:

1. Epidemiological update and Risk of introduction into EU
2. Impact of epidemics in Mayotte
3. Effectiveness of prevention and control measures in Mayotte and EU in case of incursion

Rift Valley Fever – risk of introduction

Methodology: Mint RISK model

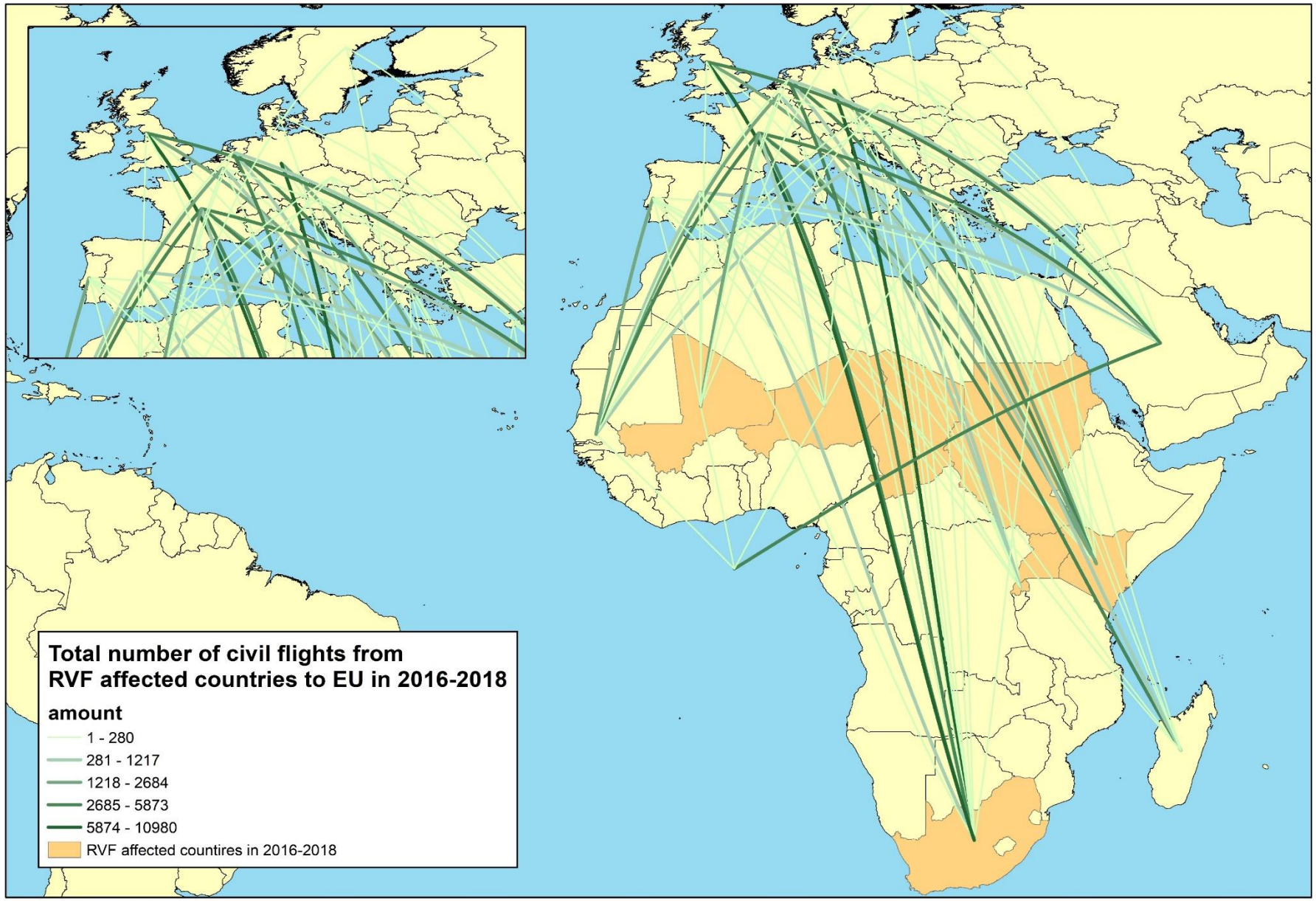


Rift Valley Fever – risk of introduction

Possible pathways of introduction to EU:

- ✓infected animals: uncontrolled movements
- ✓infected vectors: imported or active movement
- ✓contaminated products : fresh products
- ✓infected humans : dead-end hosts

Rift Valley Fever – risk of introduction



civil flights in 2016-2018 from countries that have reported RVF

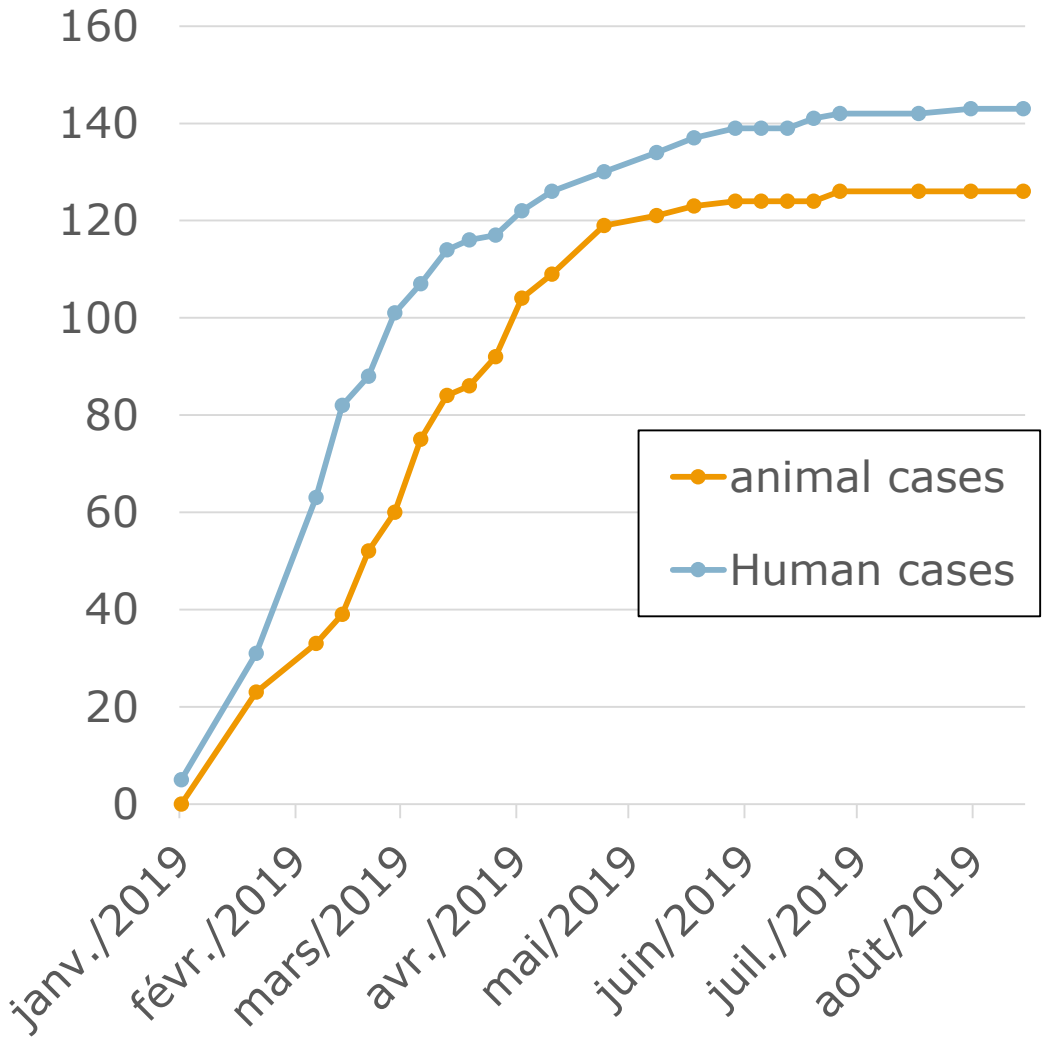
Rift Valley Fever – risk of introduction

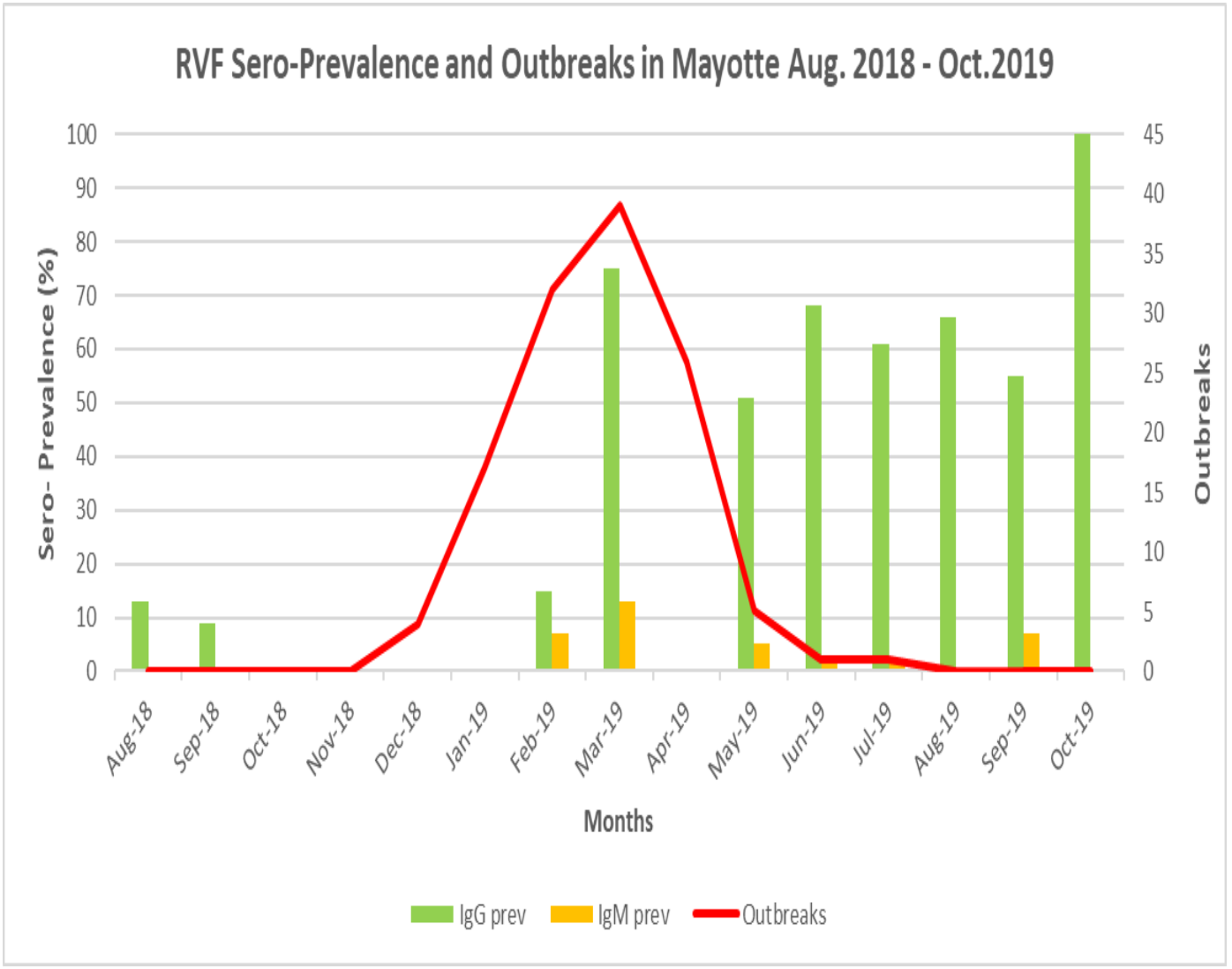
By animal pathway: less than 0.002 epidemics/year (1 epidemic every 500 years, worst case scenario)

By vector pathway:

- Netherlands: 0.0044 epidemics/year >> 1 every 200 years
- Malta : 0.0025 epidemics/year >> 1 every 400 years
- Belgium and Greece: 0.0014 epidemics/year >> 1 every 700 years
- Much lower for other MSs

Rift Valley Fever – impact in Mayotte



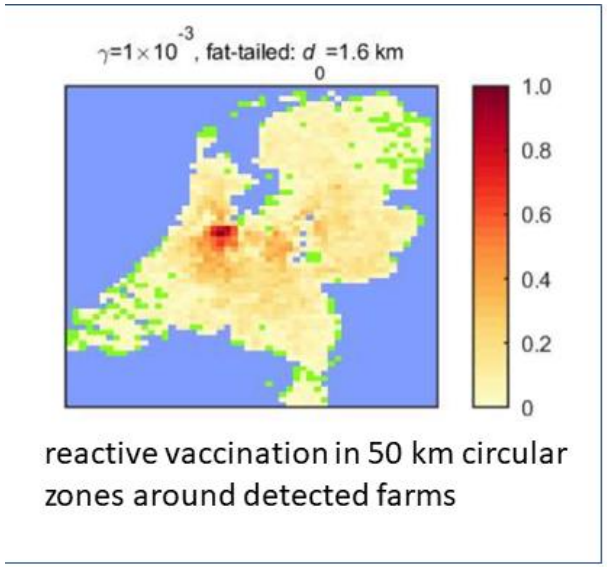


Rift Valley Fever – control measures

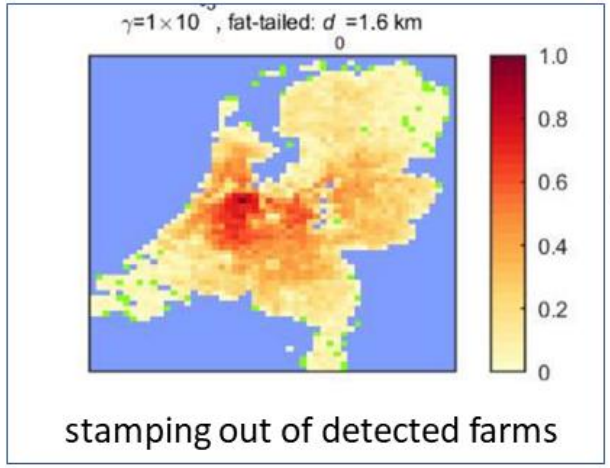
- Diagnostic tests: RT PCR and ELISA
- Vaccines: live and inactivated
- Spread model to explore effectiveness of control measures
- Example of NL

Rift Valley Fever - control measures

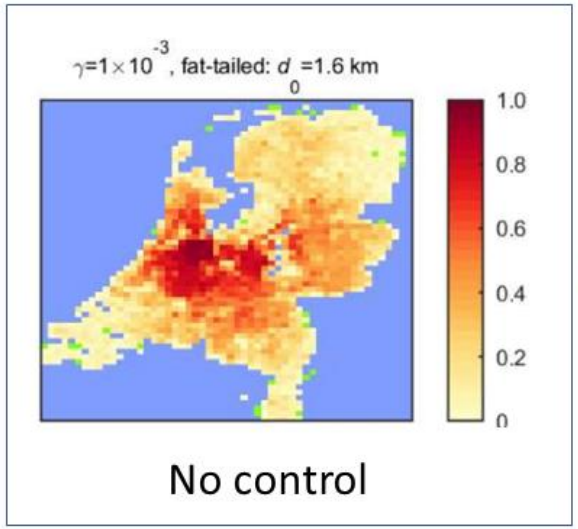
Comparison of some control strategies considering one possible spread scenario



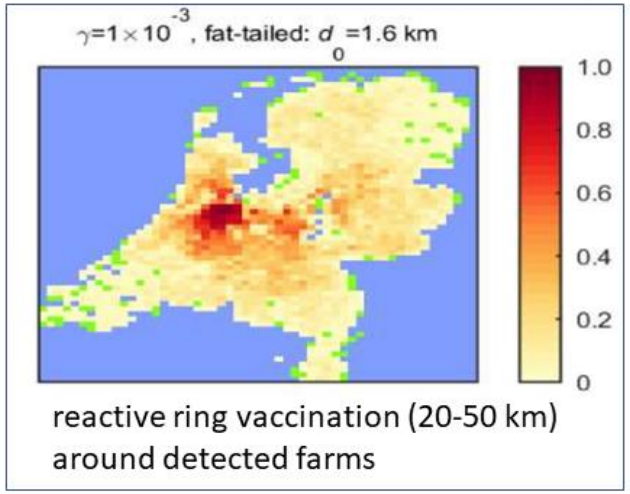
reactive vaccination in 50 km circular zones around detected farms



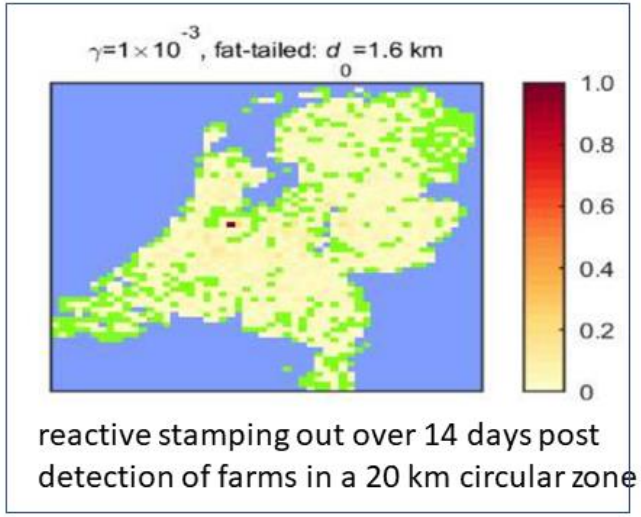
stamping out of detected farms



No control



reactive ring vaccination (20-50 km) around detected farms



reactive stamping out over 14 days post detection of farms in a 20 km circular zone

Rift Valley Fever - control measures

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Probability of spread beyond a certain radius : surveillance zone size

Restriction zone		20 km		50 km		100 km	
Mean vector dispersal	numbers of infected farms detected within the zone when implemented	R0=2	R0=6	R0=2	R0=6	R0=2	R0=6
5 km	1	0.17	0.42	0.001	0.003	8.6×10^{-8}	2.6×10^{-7}
	10	0.84	1.0	0.01	0.03	8.6×10^{-7}	2.6×10^{-6}
10 km	1	0.56	0.91	0.08	0.22	0.001	0.003
	10	1.0	1.0	**0.55**	0.91	**0.099**	0.03

Rift Valley Fever - control measures

efsa
European Food Safety Authority

COMMISSION DELEGATED REGULATION (EU) 2020/687

ANNEX V

MINIMUM RADIUS OF PROTECTION AND SURVEILLANCE ZONES

(as referred to in Article 21 of this Regulation)

Indicated as radius of a circle centred on the establishment

Category A diseases	Protection Zone	Surveillance Zone
Foot and mouth disease	3 km	10 km
Infection with rinderpest virus	3 km	10 km
Infection with Rift Valley fever virus	20 km	50 km
Infection with lumpy skin disease virus	20 km	50 km
Infection with *Mycoplasma mycoides subsp. mycoides SC* (Contagious bovine pleuropneumonia)	Establishment	3 km
Sheep pox and goat pox	3 km	10 km
Infection with peste des petits ruminants virus	3 km	10 km
Contagious caprine pleuropneumonia	Establishment	3 km
African horse sickness	100 km	150 km

Rift Valley Fever - control measures

Key points:

- In endemic areas control can be through vaccination
- In free areas: passive surveillance during vector season in risk areas of introduction
- Vaccines: need of DIVA
- Consider size of surveillance zone

Thanks for the attention!

Acknowledgements:

- EFSA Panel on animal health and welfare
- EFSA Working group on RVF
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- Ministry of Agriculture, Jordan
- CIRAD, France
- Coopadem Mayotte, France
- IRD-MIVEGEC, France
- GD Animal Health, NL
- Mayotte airport, France