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THE WAY TOWARDS GLOBAL CONTROL

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The need for the application of vaccination in different species – small ruminants

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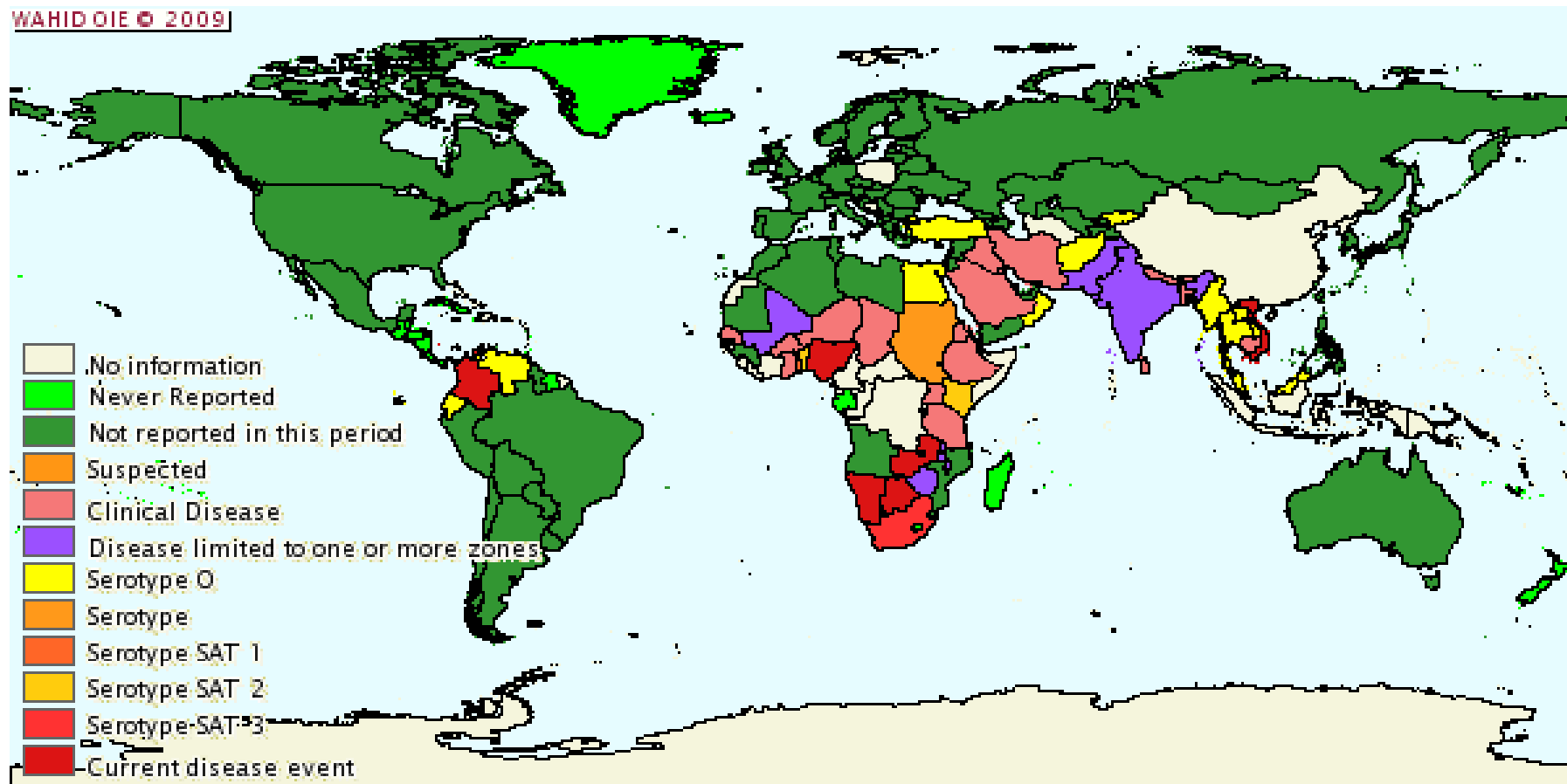
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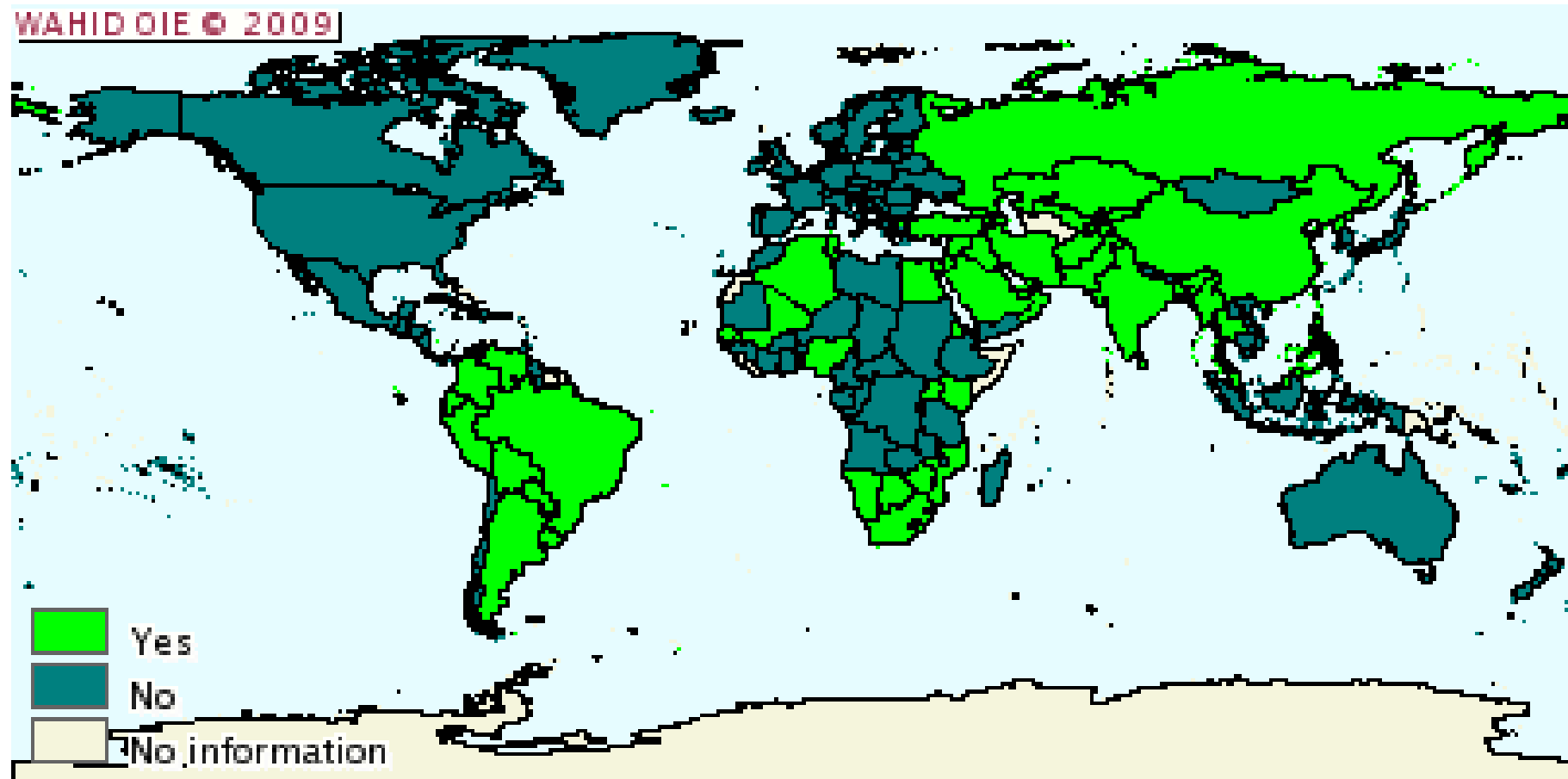
FMD – current status of reporting to OIE



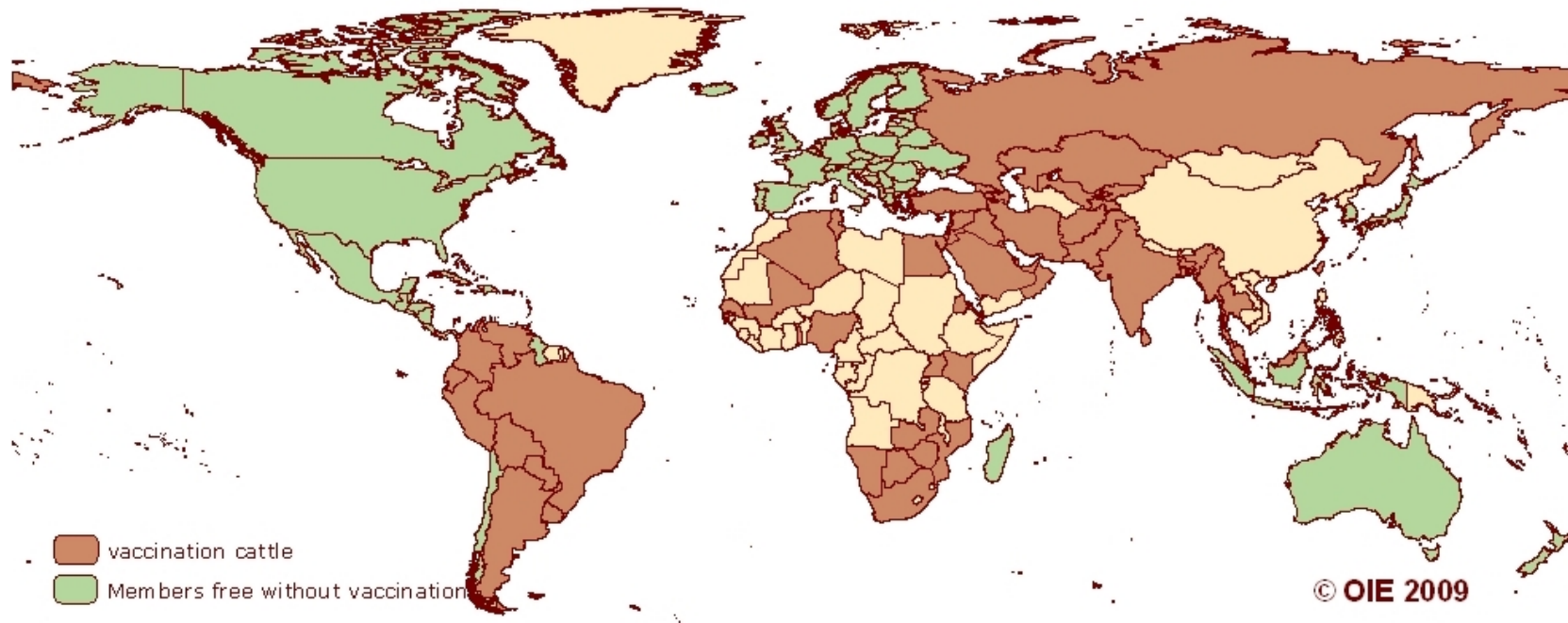
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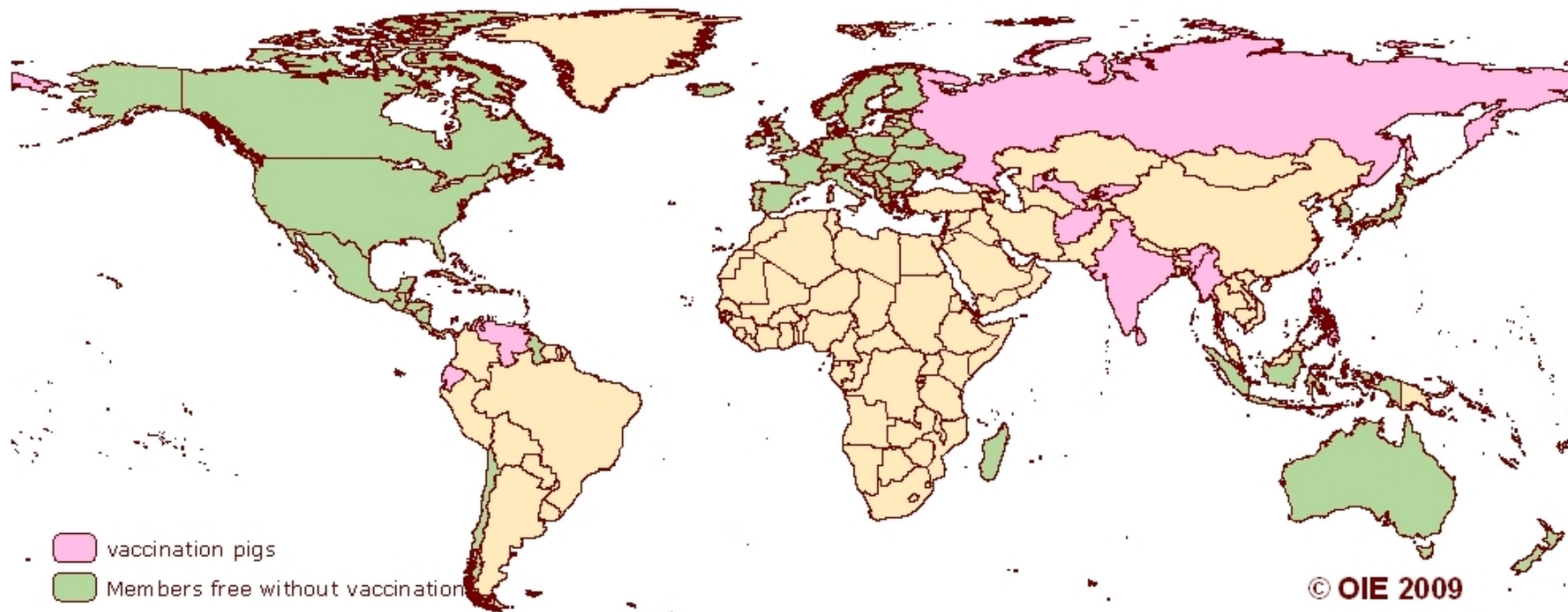
FMD – vaccination as reported to OIE



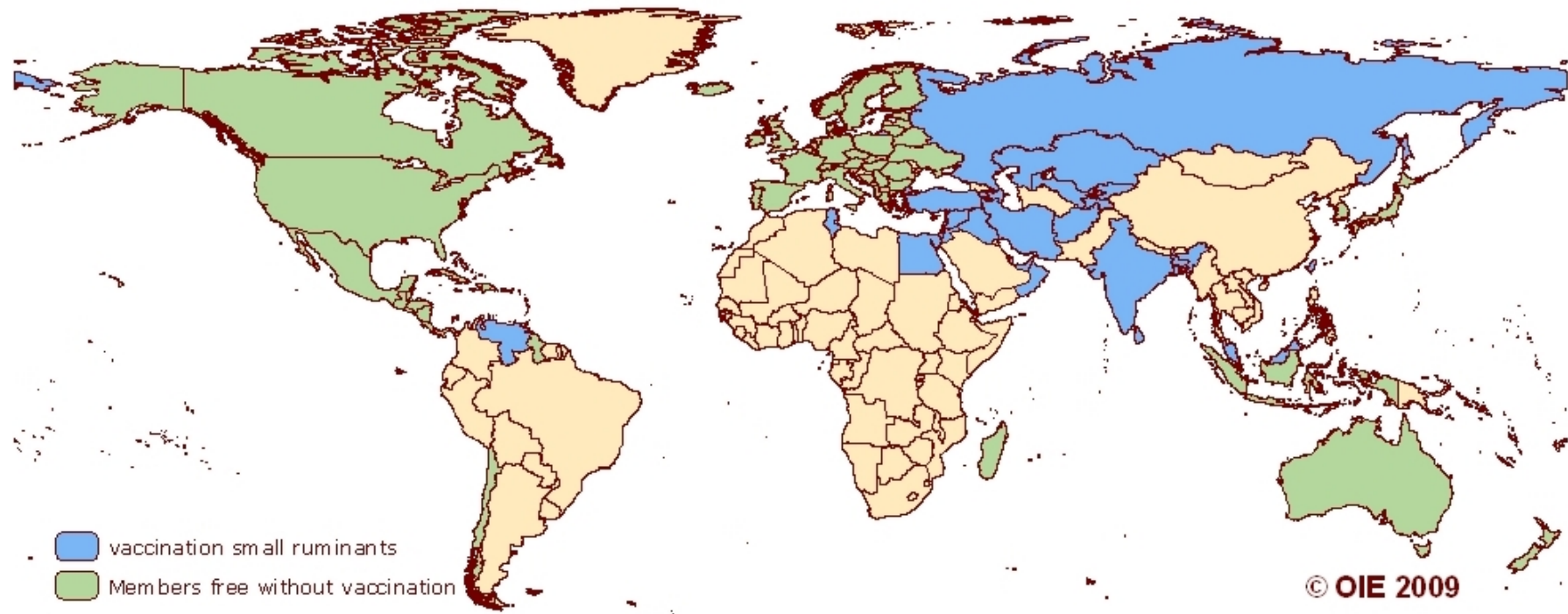
FMD - Vaccination of cattle



FMD – Vaccination of pigs



FMD - Vaccination of small ruminants



FMD - General application/strategies/perceptions for vaccination



- In countries/zones officially free with vaccination – applied annually/bi-annually
- Seldom/selectively applied in countries endemically infected
- Emergency vaccination in the event of disease threat/disease introduction
- Cattle species of choice – sheep and pigs selectively vaccinated and mostly to counteract threat or perceived risk
- High potency vaccines for emergency vaccination
- High purity vaccines when moving towards disease free status and for demonstration of DIVA
- Mostly bi-valent or poli-valent vaccines



FMD – perceptions on the role of small ruminants



- Do not play a role in the epidemiology/dissemination of the disease
- Can be used as sentinels in high risk areas
- Vaccination not cost effective
- Vaccination will not prevent spread of the disease
- Due to inapparent infections/sub-clinical infections or low virus shedding – role in disease dissemination insignificant



Research/experimental findings on the role of small ruminants and FMD (1)

- **Clinical signs of FMD in sheep are frequently mild or inapparent**
- **Sheep incriminated for spread of disease – in and in-between countries (Greece, Morocco, Canada, North Africa, Turkey, UK)**
- **High excretion of virus in first 5 days and before clinical signs**
- **Sharp decline of virus excretion on 4th to 5th day after onset of clinical disease**
- **Development of carrier state (>50% persistent infection for 9 weeks and carrier \pm 9 months)**
- **Carrier state develops irrespective of vaccination status but less in vaccinated animals**



Research/experimental findings on the role of small ruminants and FMD (2)

- Vaccination of sheep in buffer/protection area and to protect disease free area
- Rather increase vaccination coverage of cattle to lessen transmission from carrier sheep to cattle
- Infection in sheep is self limiting especially in mixed sheep/cattle populations where cattle are vaccinated (decrease R_0 rate to <1 – Donaldson)
- If FMDV strain exotic to country – high attack rate but less transmission from sheep to cattle if vaccinated
- Severity of disease in sheep dependent on FMDV strain – SAT2, O



Research/experimental findings on the role of small ruminants and FMD (3)

- If FMDV strain endemic then low virulence in small ruminants -> low dissemination to cattle
- In high density cattle/small ruminant populations – higher probability of cross-species transmission
- Vaccination does not reduce the chance for the development of a carrier state
- Vaccine applied in small ruminants must especially be effective against ruling field strain to lessen the transmission to other species



Research/experimental recommendations for the application of vaccines in small ruminants



- Oil adjuvant vaccines give better antibody response than aluminium hydroxide gel saponin vaccines
- Vaccination indicated when disease is endemic; an eradication program is underway and with high livestock density
- Alternative for mass culling of small stock
- Decrease virus excretion, development of a carrier state and local virus replication
- In the event of disease threat – use high potency, high antigen mass vaccines with longer vaccine-to-challenge intervals



OIE recommendations for the application of vaccines in small ruminants

- In a protection zone where source of disease is not apparent –
vaccinate small ruminants and pigs
– to protect free zone – until disease situation is stabilised
- In the event of disease threat or threat of introduction of new strain – use high potency vaccines
- In high small stock/cattle density areas – vaccinate small ruminants
- Export from endemic area – advisable to vaccinate – reduce viral shedding from carrier state
- Irrespective of vaccine – must be effective against ruling field strain
- If small stock are vaccinated only in emergency – ensure sustainable high vaccine coverage in cattle



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Thank you for your attention !

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