بسم الله الرحمن الرحيم

Animal Health Research Institute
(AHRI)
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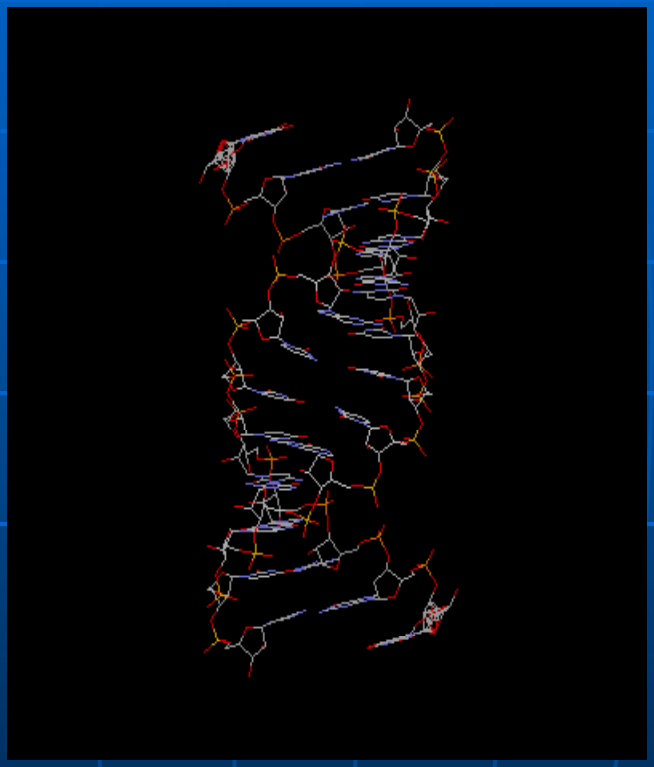


Rift Valley Fever
in Egypt

The Current Situation Of RVF In Animals In Egypt

RVF OVERVIEW

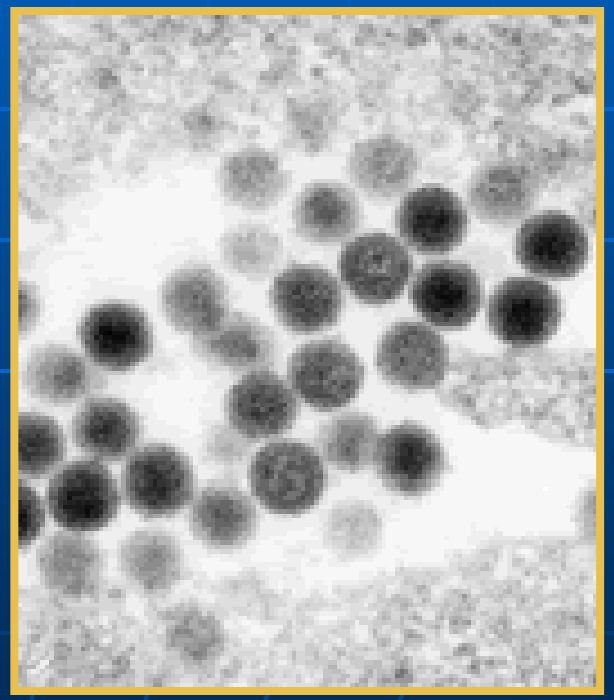
1-Definition
2- Etiology
3- Vector Transmission
4- Outbreaks in Egypt
5- Diagnosis
6- Cooperation
7- Future plan
8- Strategy control for RVF in Egypt
9- Prevention &Control

Definition:-

- Rift valley fever (RVF) is an acute febrile arthropod-borne zoonotic disease. It is characterized by high rates of abortion and neonatal mortality in sheep, goats, cattle and camel.
- It causes haemorrhagic fever, encephalitis, blindness and severe liver damage in human beings.

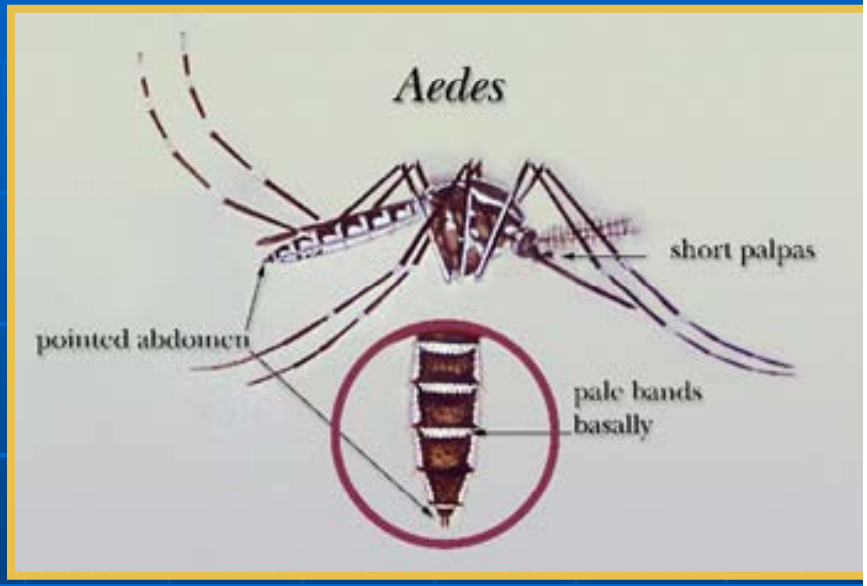
Virus

- Family Bunyaviridae, genus Phlebovirus, group Arbovirus
- Stable at
  - -60ºC to 23°C
  - 50-85% relative humidity
- Inactivated
  - Lipid solvents
  - Detergents
  - Low pH



Vector transmission

- Arthropod vector
  - Mosquitoes
    - *Aedes*
    - *Anopheles*
    - *Culex*



- Biting flies possible vectors

Other Modes of Transmission

- Direct contact
  - Tissue or body fluids of infected animals
    - Aborted fetuses, slaughter, necropsy
  - High levels of virus in blood
- No person-to-person transmission

Animal population in Egypt 2008

Bovine	3.190.043
Buffaloes	2.495.409
Sheep	2.693.104
Goat	1.195.311
Camel	61.340
Total :	**9.635.207**

Ref. : GOVS

Outbreaks in Egypt

- **First outbreak:- (1977-1980)**
- **It started in Aswan Governorate (southern border of Egypt) , then spread in most of governorates .**
- **The disease affected**

  - Humans

  18,000 cases

  598 deaths

  Encephalitis and hemorrhagic fever

  - Ruminants

  Abortions and deaths

  - **Sheep, cattle, goats**
  - **Water buffalo, and camels**

Outbreaks in Egypt

- **Second outbreak :- June-1993**
- Started in Aswan govern then spread to 15 governorates .
- Human & Animal cases were detected

Limited Foci of RVF in Egypt

- In **2003** : Limited foci appeared in Dammitta governorate
- In **2004** : Limited foci appeared in Seedy Salem Area -Kafer El sheikh governorate


Mediterranean Sea
Sallum
Matruh
Resseta
Alexandria
Port Said
Tanta
Suez Canal
Ismailia
Cairo
Al Jizah
Suez
Helwan
Taba
Siwa
El Faiyum
Gulf of Suez
Beni Suef
Bawiti
Ras Gharib
El Tur
El Minya
Sharm el-Sheikh
Nile R.
Hurghada
Asyut
Egypt
Bur Safaga
Sohag
Qena
Quseir
Red Sea
El Kharaga
Luxor
Mut
Esna
Edfu
Ancient
Lower Egypt
Upper Egypt
Lower Nubia
Baris
Aswan
Aswan High Dam
Berenice
Lake Nasser
0
200 km
0
150 mi

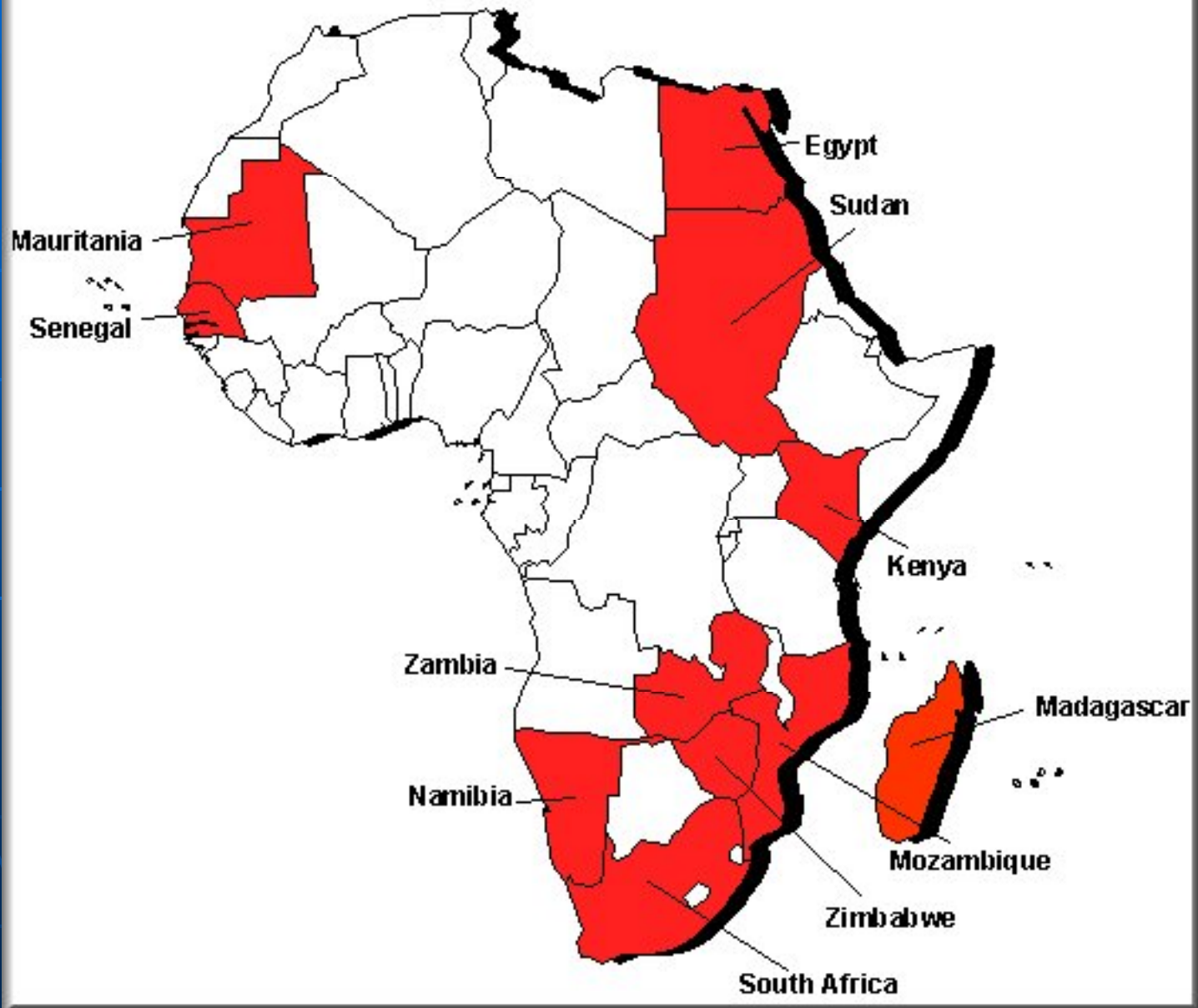
Outbreaks in Neighboring Countries

- **Saudi Arabia and Yemen : 2000-2001**

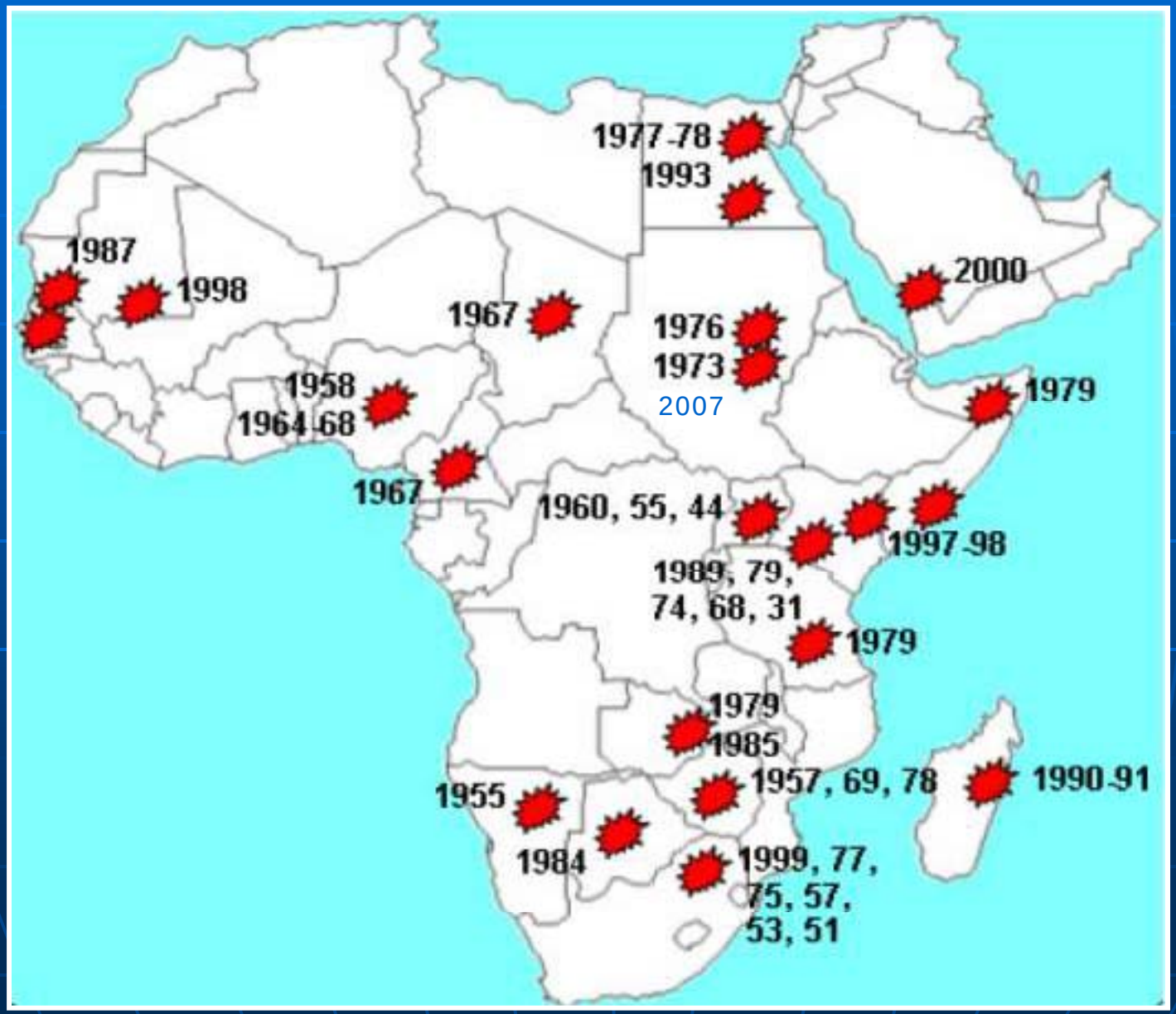
  First outbreak outside Africa

- **Sudan :2007**

African countries with prior and substantial outbreaks, in addition to endemic disease, of RVF.



RVF epidemic foci



Animal and Rift Valley Fever

Rift Valley Fever in Camels

- ***Camels are the best animal indicator host for RVF.***
- **RVF virus was isolated from camels during the 1977-78 Egyptian epidemic.**
- **Deaths and abortions were the main features of the disease (Imam 1981).**

Rift Valley Fever in Camels

- Detection of antibodies against RVF in Camel in Saudi Arabia during last outbreak year 2000-2001.
- Imported Camel are investigated for detection of RVF antibodies during quarantine period in Egypt

Diagnosis of RVF

1- Field diagnosis :-
-Epidemiological data
- clinical signs
-P. M

2- Laboratory diagnosis:-

Virological **- Samples collection**
- Isolation & Identification
- Serological investigation for determination of antibodies

Pathological : during outbreaks

Diagnosis

- Laboratory diagnosis:

  - Care should be taken during RVF outbreak to reduce risk of infection according to Biosafety regulations .

Specimens required

- Whole blood

  from animals during febrile stage.
- Serum samples during the acute and convalescent stage of the disease.
- Liver and spleen from recently dead animals.
- Freshly aborted foeti and placenta.

Virus isolation

- Virus isolated from whole blood or serum during **acute stage**, liver, spleen, aborted foeti or placenta of aborted dams by inoculation into mice or tissue cultures.

Serology

- Serum neutralization
- ELISA (IgM,IgG)
  for sheep , goat and cattle
- ELISA inhibition Test
  used for all species

Cooperation

Internal cooperation

1- GOVS

2- VSVRI

3- Ministry of Health

4- Ministry of Environment

External cooperation

FAO , OIE , WHO and NAMRU 3

Future plan

1- Upgrade our lab. to BSL3
2- Capacity building
3- Risk assessment and analysis studies
4- Advanced Training and Extension programs
5- Early warning system

Prevention and Control

Prevention and Control

- Mass Vaccination of ruminants
- Annually national Sero- surveillance program.
- Control vectors
- Personal protective equipment (PPE)
- Sanitation of infected tissues and blood
- Precautions when traveling& Repellants
- Do not slaughter sick animals
  - Bury or burn carcasses during an outbreak

Strategy control of RVF in EGYPT

RVF in Egypt is controlled by :

- **Vaccination policy**
- **Surveillance**
- **Vectors control**

Vaccination

1- Inactivated tissue culture vaccine

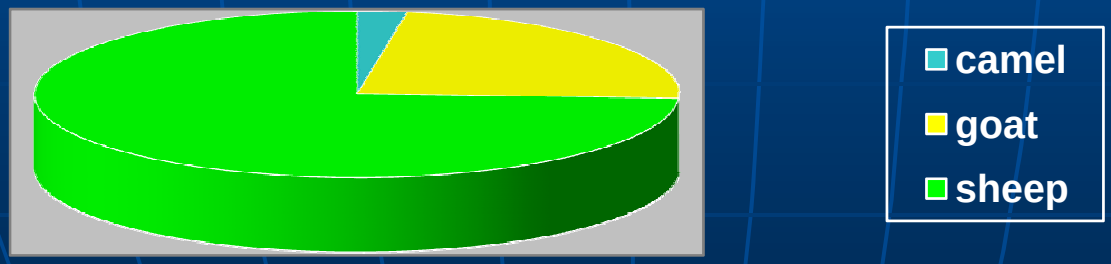
- (**ZH -501** and **Menia 258** RVF ,local isolates)
- Locally produced
- Obligatory free of charge
- Applied to newly born animals at 2 months age -repeated every six months
- Safe for pregnant animals

2-Attenuated live vaccine (Smith-burn RVF Virus)

- **Used from (1993 – 2005)**
- **Not used in pregnant animals .**

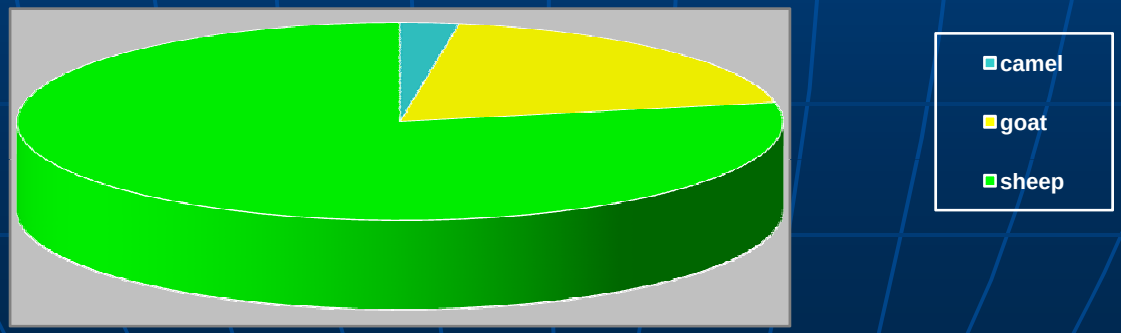
Number of vaccinated animal species by inactivated RVF vaccine Jan – Dec 2007

Sheep	Goat	Camel	Total
2835793	894055	94745	3824593



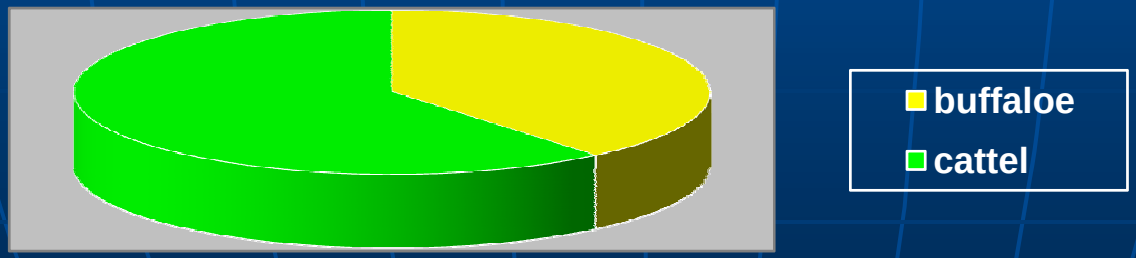
Number of vaccinated animal species by inactivated RVF vaccine Jan – Dec 2008

sheep	Goat	camel	total
3316731	825097	104880	4246708



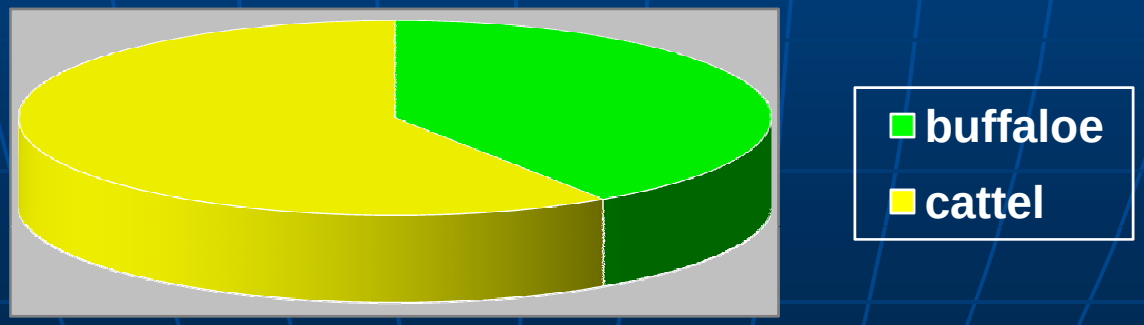
Number of vaccinated animal species by inactivated RVF vaccine Jan – Dec 2007

Cattle	Buffalo	Total
1181406	741915	1923321



Number of vaccinated animal species by inactivated RVF vaccine Jan – Dec 2008

cattle	buffalo	total
3619706	2483913	6103619



Sero surveillance

1- **Evaluation of vaccination program :**

Serum samples are collected twice per year from the vaccinated animals to determine the protective level of antibodies and evaluate the immune - status of animal populations by using :

SNT & / or ELISA

2- Detection of IgM antibodies

- When the disease appear in neighboring countries , it used as an early warning for detection of recently infected foci :
  - Saudi Arabia and Yemen 2000-2001
  - Sudan. 2007
- Animals from border governorates were subjected to sero- surveillance during these outbreaks

Actions taken

During 2000-2001

A sero- surveillance for detection of IgM was done for 3000 serum samples from southern and northern Sinai, southern borders of Egypt

During 2007

Stopped importation of animals from Sudan particularly camels and sero-surveillance for detection of IgM was done

Sero - surveillance

In the last five years sero surveillance was applied annually to evaluate the immune status of animal population in Egypt with cooperation of GOVS

- **2004 : 8915 sera**
- **2005 : 6321 sera**
- **2006 : 3440 sera**
- **2007 : 8338 sera**
- **2008 : 2240 sera**

Gaps in surveillance and management

1. **Lack of Identification Registration System for all animals (IRS)**

2. **Vaccination not cover all animal population**

3. **Number of serum samples collected not representative of animal population for correct surveillance**

4. **lab. Facilities**

Gaps in surveillance and management

5-Vector control

- **selection of insecticide (safe and nontoxic for human)**
- **effective on most insects**
- **Easley used**
- **Medical entomologist experts**

6.Training and Extension programs

7. Risk assessment and risk analysis studies

8-Improvement of research

Conclusion

Although the disease is endemic in Egypt, no cases were detected since 2004 according to the national reports

THANK YOU