

Rift Valley Fever in Saudi Arabia

Current Status



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History of the 2000 outbreak

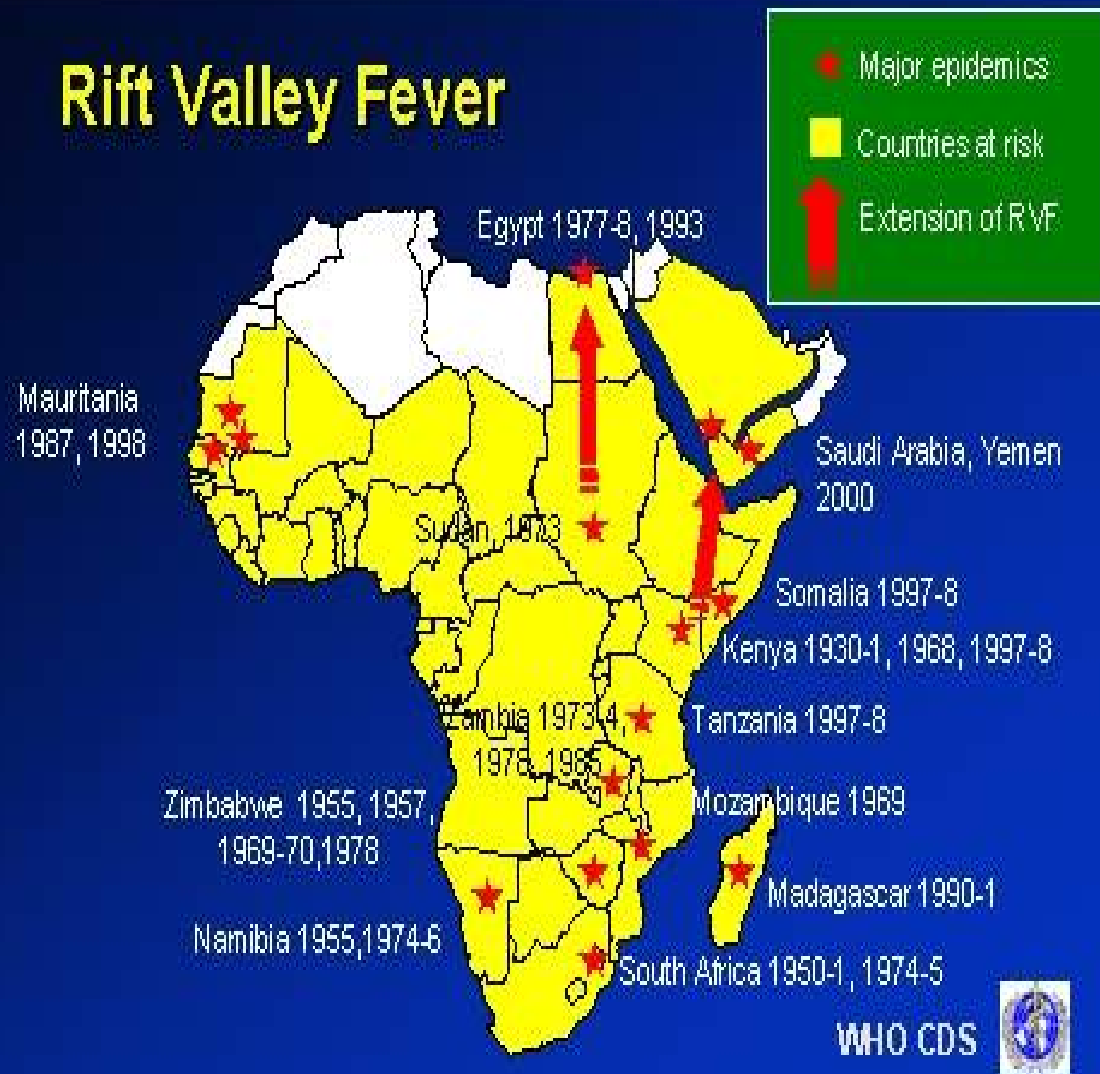


- In September, 2000 an epizootic of **RVF** was identified in southwest Saudi Arabia following the confirmation of cases in humans. These were accompanied by abortions in the livestock in the affected area.
- 683 human patients were hospitalized 95 of them deceased (13.9%).
- 76% of the human patients had close contact with animals.

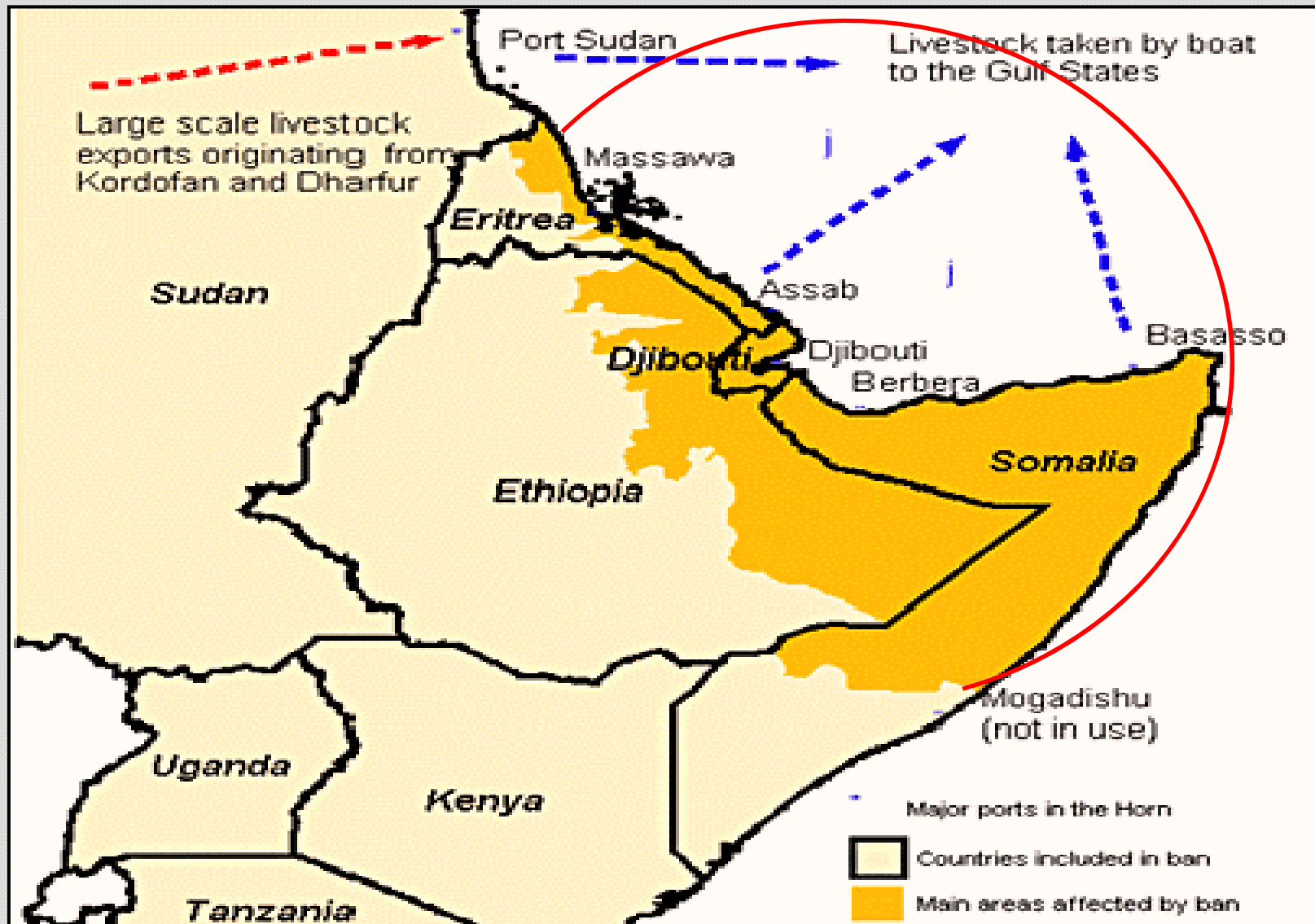
Epidemiology of the 2000 outbreak

- The 2000 outbreak was the first to be recorded outside the African Continent.
- After virus isolation and sequencing, epidemiological Data obtained from the CDC revealed that the KSA virus had close antigenic relation with the 1998 virus in Kenyan and African Horn.
- Since there were activities of importing live animals from the African Horn Countries to the region, it was suggested that virus was introduced to KSA via these animals.

Rift Valley Fever



Out break counter act



In response to the Rift Valley Fever "RVF" out break, restriction of animal importation from the African Endemic Area was implemented.

Out break counter act



In response to the RVF out break,, restriction of animal movement was implemented in the affected area which include Gazan, Aseer & Tohamet Mekkah as well as the surveillence Zone in Najran and Albaha Provinces.

Massive vaccination of all livestock in the infected area as well as intensive screening and stamping out procedures were practiced.

Out break counter act Vector Control

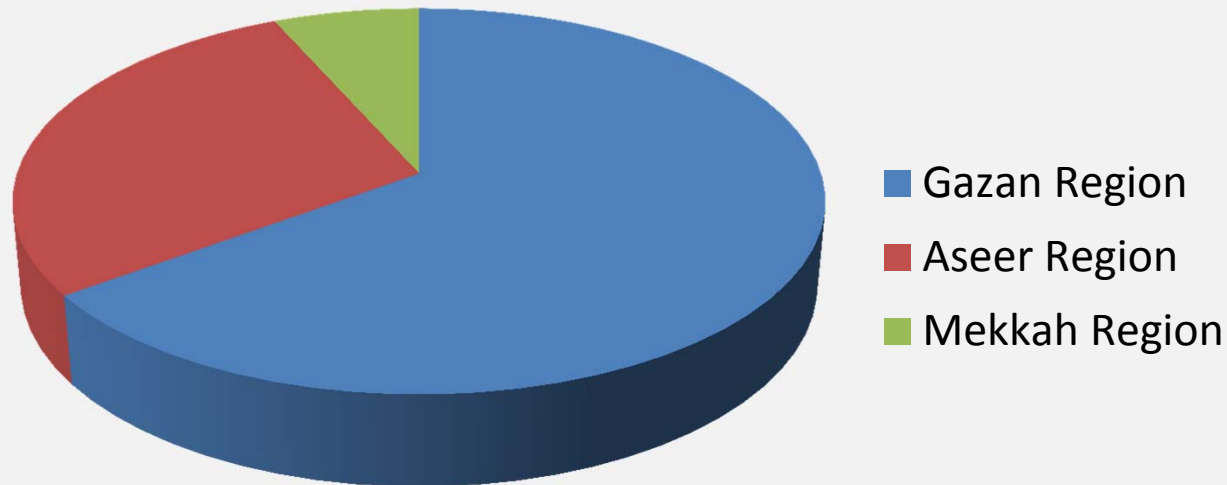


Massive campaign of vector control had been started immediately using planes, fog and sprinkle sprayers in the rural, farms, cities and villages in the infected area. Moreover, activities of draining and filling of water swamps were initiated.

Impact of the Outbreak

Total number of Cases

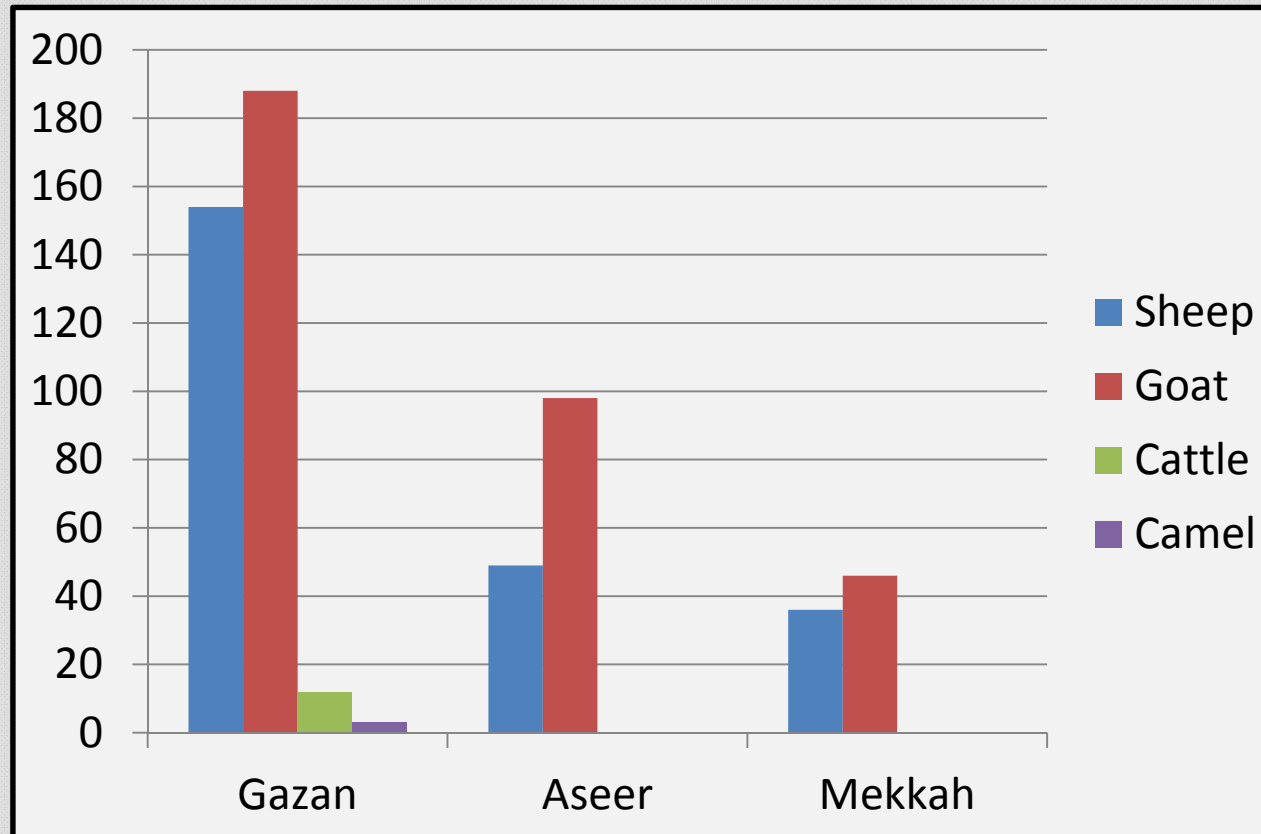
Total No. Of Positive Cases reported in the outbreak



- The outbreak started in september 2000 at Gazan Region while the last reported positive case was in April 2001 at the same region.
- Total number of animal positive cases were 398, 174 and 41 cases at Gazan, Aseer and Tohamet Mekkah regions respectively.

Impact of the Outbreak

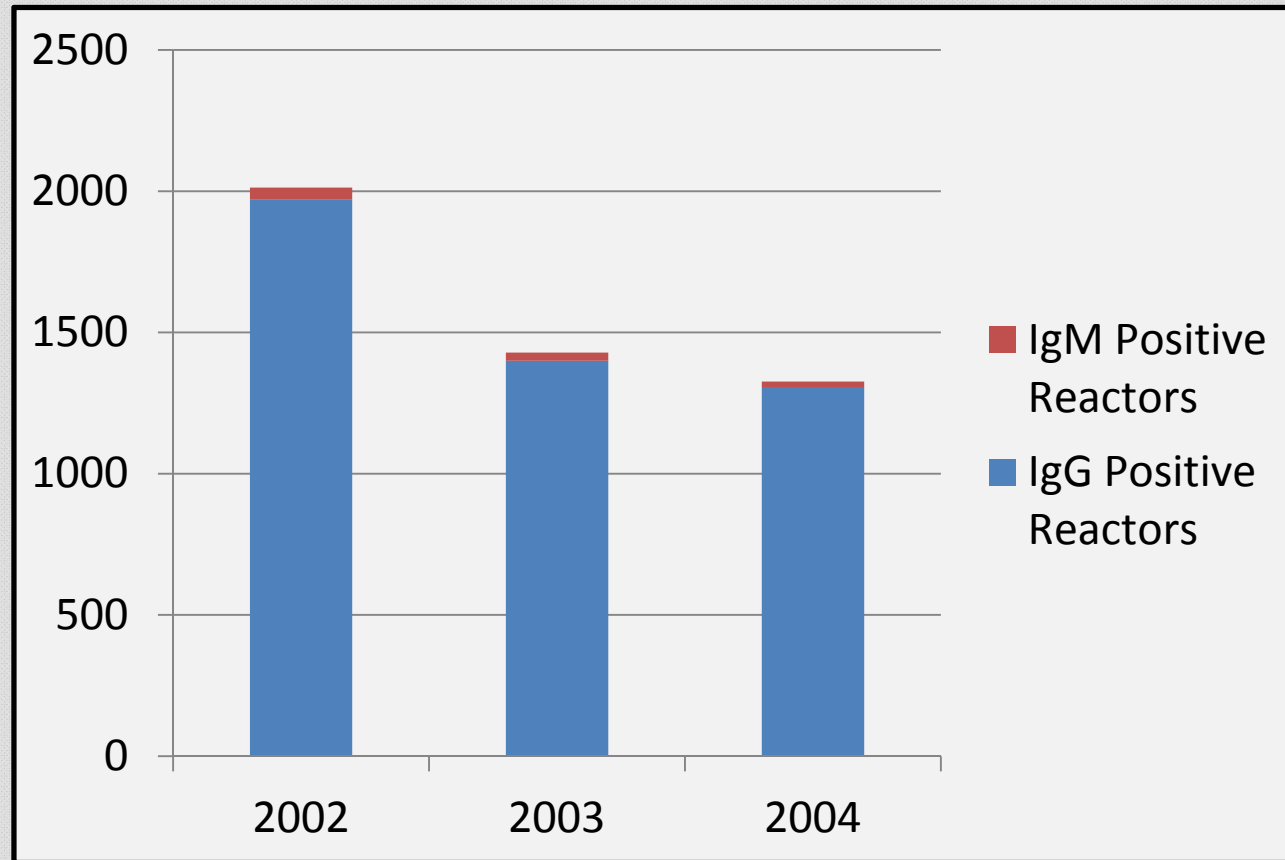
Number of cases by animal species



- by the end of the outbreak, there were 154, 188, 12 and 3 cases of sheep, goat, cattle and camel respectively at Gazan region. While there were 49 and 98 cases of sheep and goat respectively in Aseer region and 36 and 46 cases of sheep and goat respectively at Mekkah region. It is noticeable that Goat had the highest infection rate in all regions

After the Outbreak

IgM and IgG Sero-Positive Reactors



- In the following three years (2002 - 2004), numbers and percentages of positive reactor animals were studied critically. Total numbers of IgM and IgG positive reactors decreased drastically as a result to the aggressive control program implemented.

Current Situation

CURRENT PROGRAM

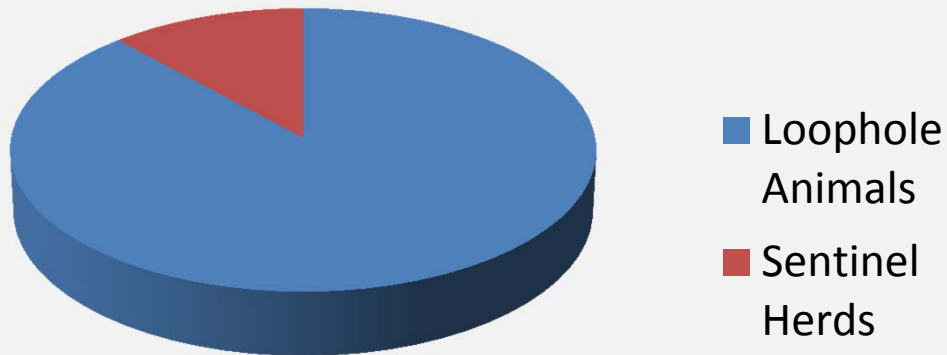
After the end of 2000 epidemic, the program continued as follow:

- **Monitoring and Active Surveillance Activities includes:**
 - ✓ Vaccination of newborn animals under 6 months.
 - ✓ Active disease surveillance among local herds
 - ✓ Clinical and serological examination of smuggled animals at Al-Twal quarantine station at the border with Yemen Republic.
 - ✓ regular examination and serological testing of sentinel herds distributed in different localities of the infection zoon.
 - ✓ random collection of serum samples from susceptible animals.
 - ✓ RVF virus detection in periodically collected mosquitoes using molecular techniques.
 - ✓ Monitoring of immune status of the vaccinated animals.
- **Continuous Vector Control Activities includes:**
 - ✓ **Fog spray:** to control vectors in the cities and villages.
 - ✓ **Sprinkling spray:** to control vectors in farms barns and water swamps.
 - ✓ **Plane Spray:** to control vectors outside the cities and villages (forests and rural)
 - ✓ **Light Traps:** capturing mosquitoes for classification and virus detection.
 - ✓ **Control of Larvae stages:** using larvaecidals.

Current Situation

Active Surveillance Activities 2010

Active Surveillance Activities 2010

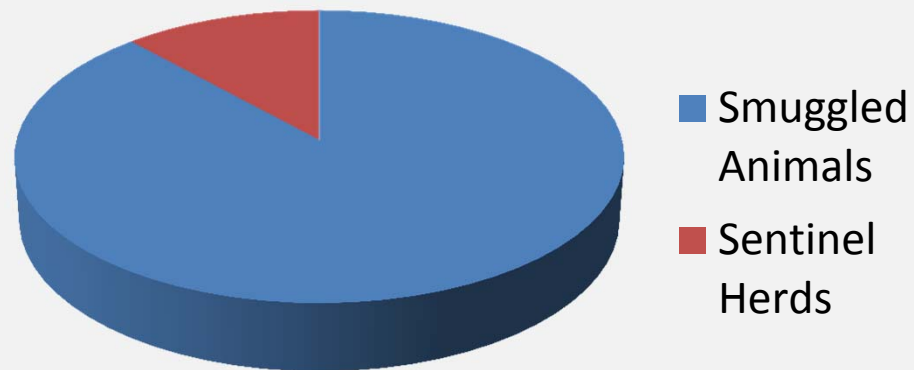


Active surveillance results in loophole animals for the year 2010 revealed that there are still positive cases (both IgG and IgM were detected). Loophole animals are suggested to be brought from Horn of Africa and Republic of Yemen. Concerning the active surveillance results in sentinel herds, there was still an active circulating virus in the endemic area (both IgG and IgM were detected).

Current Situation

Active Surveillance Activities 2011

Active Surveillance Activities
2011

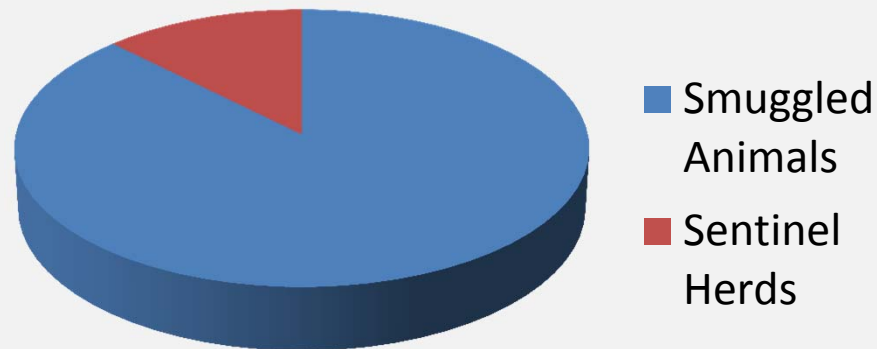


Active surveillance results in loophole animals for the year 2011 revealed that there were still positive sera reactors in them but much more less than previous year (both IgG and IgM were detected). While the active surveillance results in sentinel herds revealed that there was still positive sera reactors and circulating virus in the infected area (both IgG and IgM were detected).

Current Situation

Active Surveillance Activities 2012

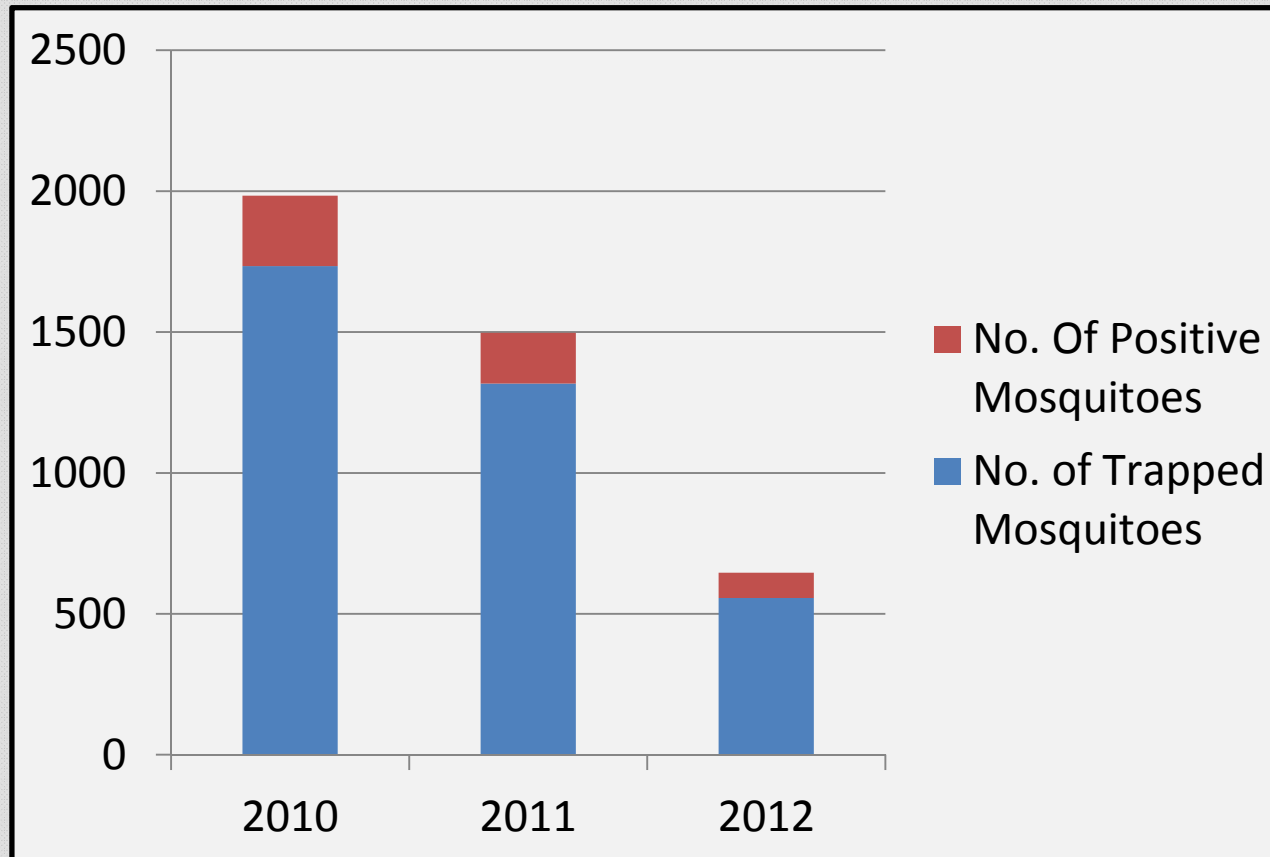
Active Surveillance Activities 2012



Active surveillance results in loophole animals for the year 2012 revealed that there were positive sera reactors (only IgG was detected and no IgM positive reactors). While the active surveillance results in sentinel herds revealed that there was still circulating virus in the area (IgM was detected). No positive cases (**clinically**) were noticed in all IgM positive reactors.

Current Situation

Vector Control Activities



Vector Control Program revealed that there is a decrease in the numbers of trapped mosquitoes in the last three years. Moreover, there is a decrease in the PCR positive mosquitoes.

Current Situation

EMERGENCY PROTOCOL

POSITIVE REACTOR CASES

(Positive sera reactors without clinical signs)

If positive sera reactor is an (*IgG*) reactor:
no implementation of Emergency Protocol

MONITORING ACTIVITIES WILL BE INTENSIFIED.

If positive sera reactor is an (*IgM*) reactor:
Herd will be quarantined for **30** days with daily clinical examination as well as monitoring and screening activities which will be intensified around the infected herd.

if **NO CLINICAL SIGNS** appeared within the quarantine period, **NO ACTION** will be taken.

if **ANY CLINICAL SIGN APPEARED:**

EMERGENCY PROTOCOL WILL BE IMPLEMENTED IMMEDIATELY

Current Situation

EMERGENCY PROTOCOL

CLINICAL CASES

In case of clinical case
(animal with one or more of the RVF clinical signs)

1. **Spontaneous notification** of the central emergency committee.
2. **Quarantine** of the herd for **30 days** with daily clinical examination.
3. Complete restrictions on animal movements from and to the endemic area.
4. prohibit of animal markets in the endemic area.
5. Implementation of ring vaccination process.
6. Intensify vector control activities in the endemic area.
7. Intensify active animal surveillance activities in the endemic area.
8. Area will be declared free of disease after **6 months** of last positive case report.
9. Intensify of the whole control program in the three endemic areas (Gizan, Aseer and Tohammat Mekkah).

Current Situation

CONCLUSIONS

ACTIVE SURVEILLANCE ACTIVITIES

- Sentinel herds screening reveals that there is still active virus in the area but the situation is under control due to the control activities applied (Vector Control and Vaccination).
- Vaccination of young animals (less than 6 months) must continue because of the active virus in the area.
- Clinical examination at livestock markets and farms is to be continued and intensify in case of positive reactor animals in sentinel herds or loophole animals
- Loophole Animals are a major hazard for the control program notably that 70% of the positive reactors in the last 3 years were loophole animals.

VECTOR CONTROL ACTIVITIES

- In spite of the environmental impact of the insecticides, the continuation of the programs is a must on the basis of the increase of rain density these years.
- Draining and filling of water swamps is vital in vector control activities.
- Other alternative control activities are under study.

Rift Valley Fever in Saudi Arabia

Vector control program



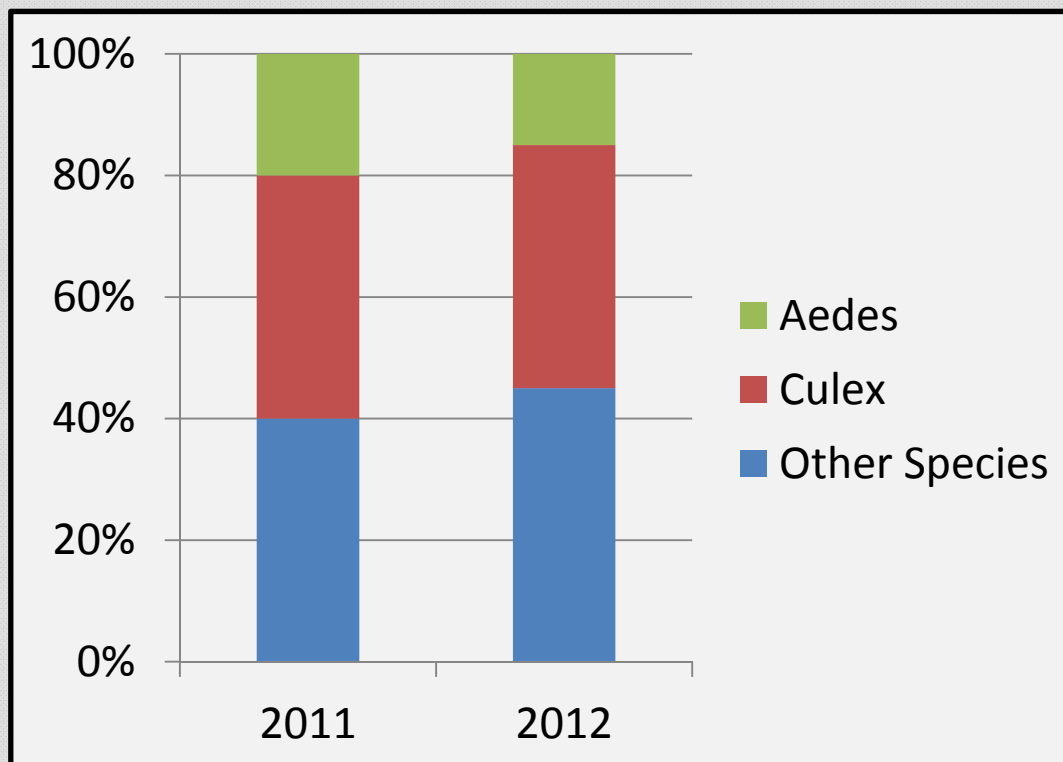
Vector Control Program depends on the following methods:

1. Draining and filling of water swamps to prevent mosquitoes from reproduce new generations.
2. Spraying of insecticides in cities, villages, farms and rural areas to kill adult insects.
3. Control of the larvae stages of the mosquitoes using larvaecidals.

Rift Valley Fever Out break in Saudi Arabia 2000

Vector control program

Species Percentage of the Trapped Mosquitoes

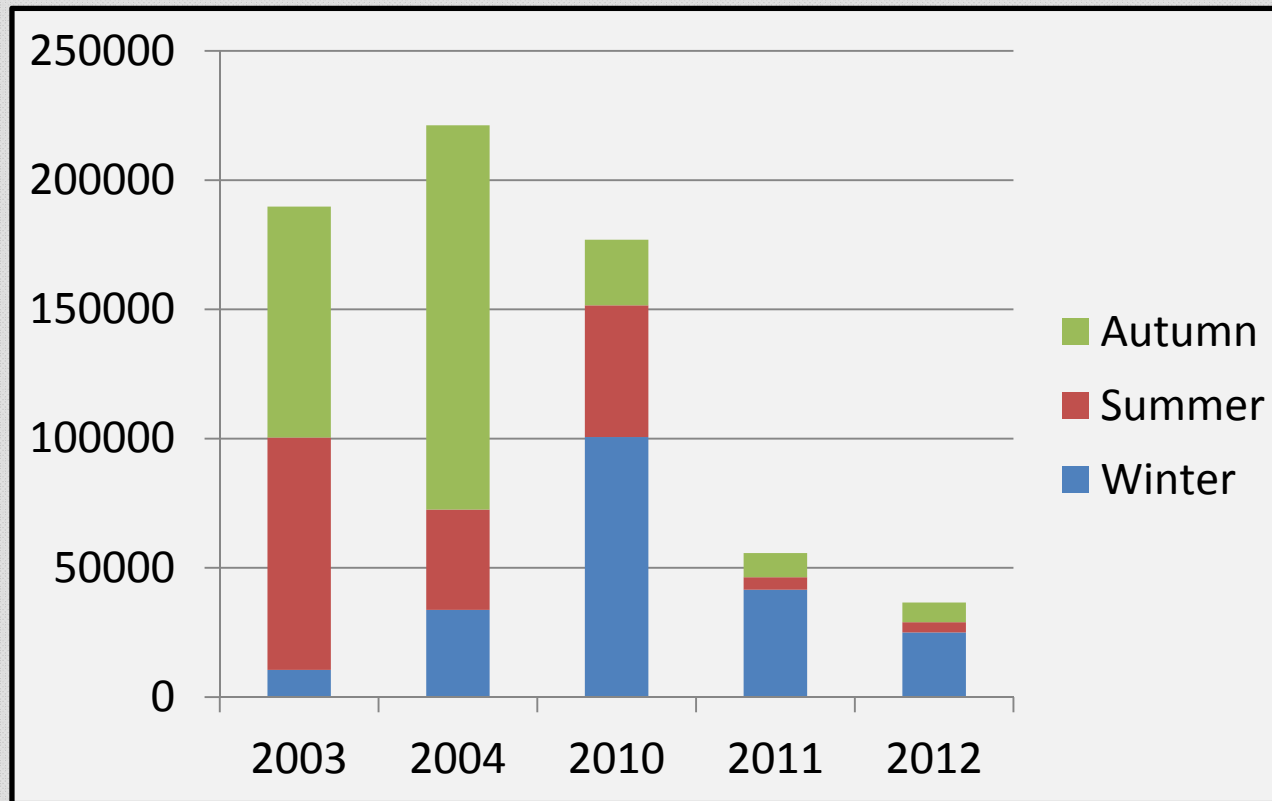


Mosquito vector studies done in the outbreak period revealed that *Culex* species is the pre-dominant in the region where as *Aedes* species is low. This is significant in virus maintaining in the environment as trans ovarian transmission is a characteristic feature of *Aedes* mosquitoes only.

Rift Valley Fever in Saudi Arabia

Vector control program

No. of Trapped mosquitoes by season

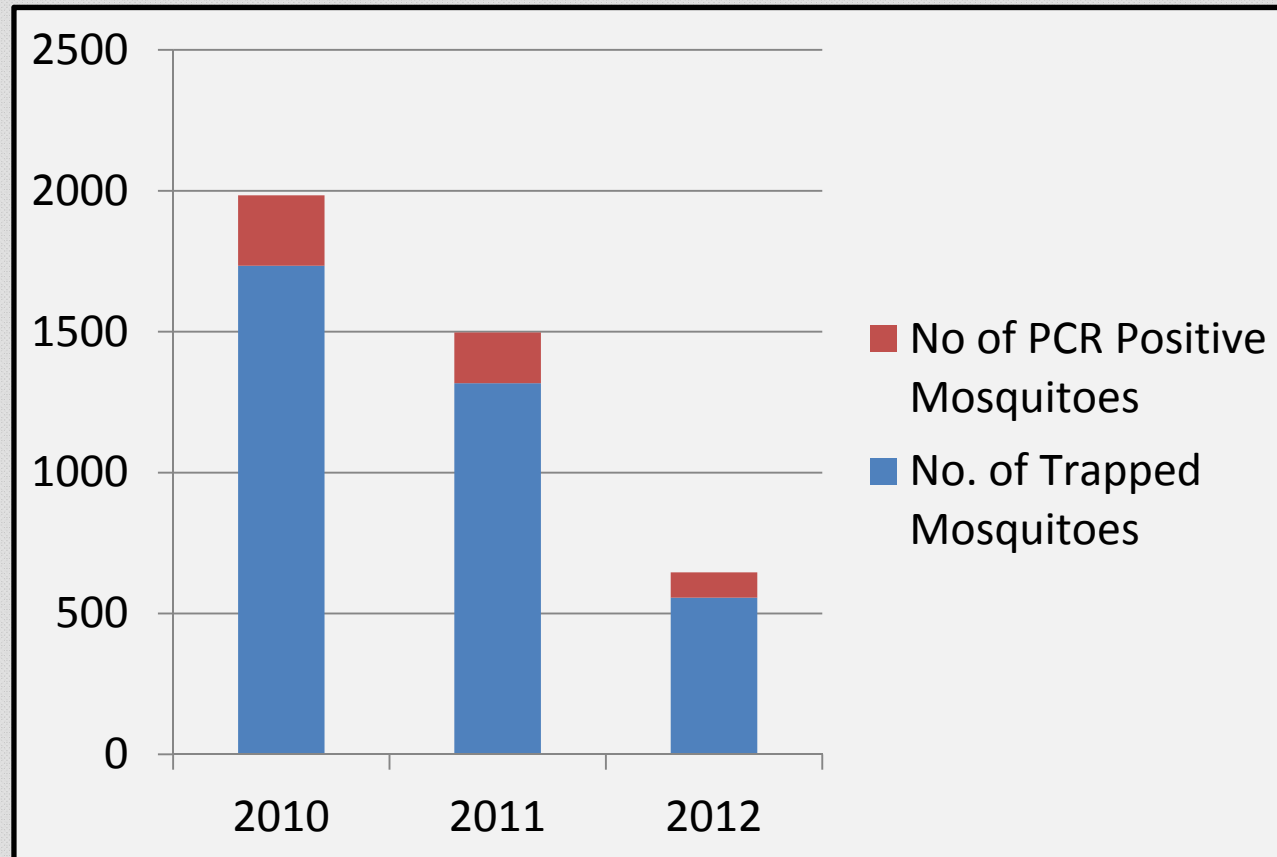


Peak of the rainy season in KSA is from the last of August to the Last of November, number of trapped mosquitoes in this period is of great importance. Statistics of Vector Control Program revealed that there is a decrease in the numbers of trapped mosquitoes in 2011 and 2012 comparing to numbers of 2003 and 2004 (just after the outbreak).

Rift Valley Fever Out break in Saudi Arabia 2000

Vector control program

No. of Trapped mosquitoes and percentage of PCR positive of them



Vector Control Program revealed that there is a decrease in the PCR positive mosquitoes among trapped mosquitoes in 2011 and 2012. this is of high significant in virus maintaining cycle

THANK YOU
FOR
LISTENING