



# GF-TADs

GLOBAL FRAMEWORK FOR THE  
PROGRESSIVE CONTROL OF  
TRANSBOUNDARY ANIMAL DISEASES



## Standing Group of Experts on Lumpy Skin Disease in Europe under the GF-TADs umbrella

**First meeting (LSD1)  
Brussels, Belgium, 4-5 July 2016**

**ISRAEL**

**Nadav Galon, CVO**

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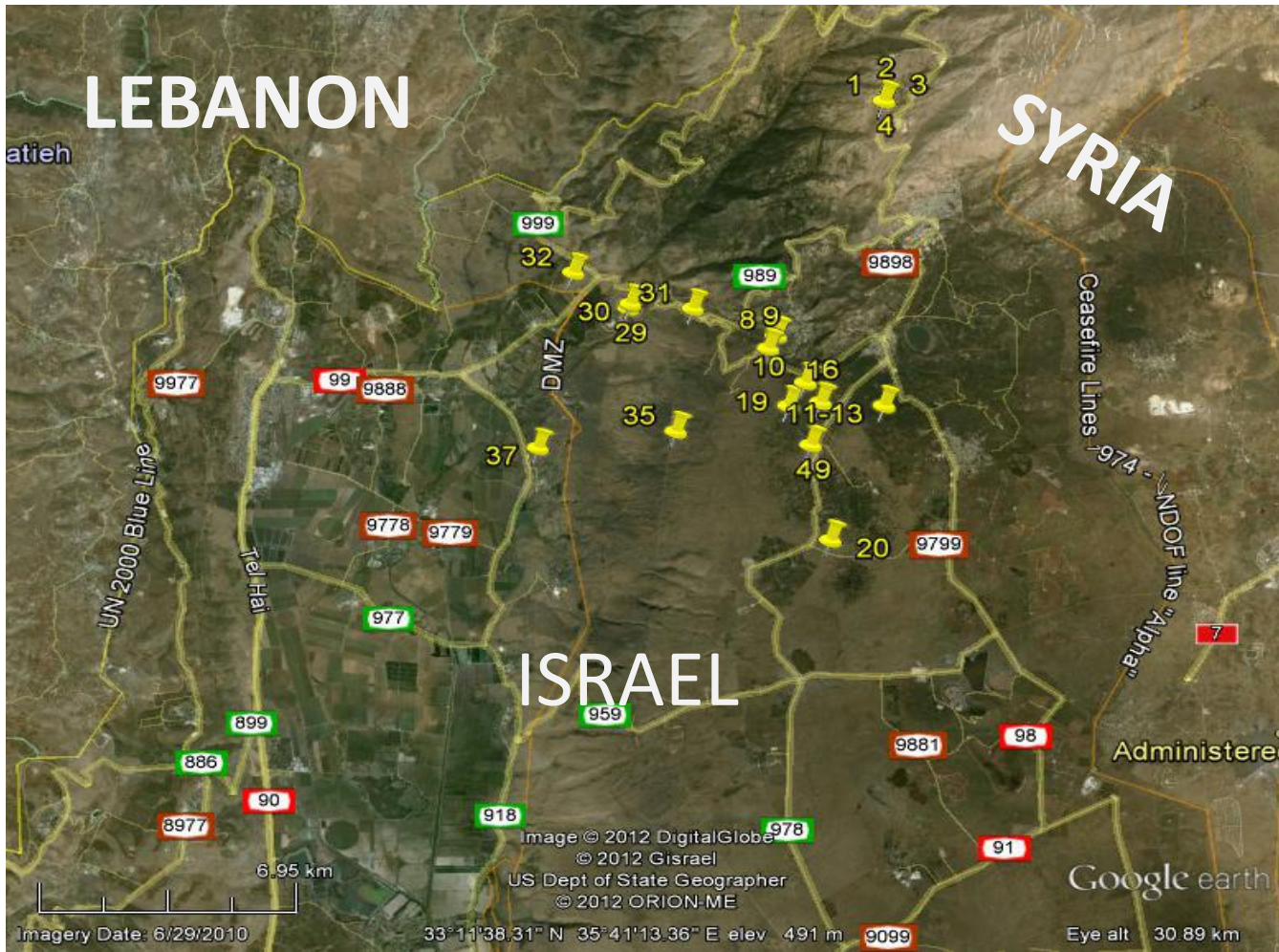
# contingency plan until 2012

- Trans-boundary summer disease (June)
- Out of Africa - Egypt, Gaza Strip (South West)
- The vector is known (more or less)- Stomoxys
- Sheep Pox vaccine protects (2006-2012)
- Vaccination zone in the South- annually
- ID, test and cull the early cases- eradication

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# LSD situation 28-07-2012

Beef



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# Legal authority

- Animal Health Act (1985)
- LSD national notifiable disease
- Cull & compensate - CVO authority
- Mandatory vaccination - CVO order
- ID - RFID & visual mandatory, Nat'l data base
- Movement permit prior to transit
- No live markets

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# Immediate control measures

## July 2012

### Beef Herds

- Vaccination - Sheep Pox *JOVAC* (  $10^3$  1ml s.c.)
- Zoning & Movements restrictions
- Insects control – recommendations to farmers
- No stamping out – continuous incursions

### Dairy farms & Feedlots

- All the above +
- Partial stamping out – early & severe clinical cases

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Sheep-pox is a contagious disease caused by Capripox virus. It is characterized by skin and mucous membrane lesions, but the systemic reaction may lead to animal death. Vaccination is the only prevention method to control the high level of morbidity and mortality caused by this disease.

#### COMPOSITION:

Each dose of the vaccine contains:

Modified Sheep pox virus,  
RM/65 strain at least... ..  $10^{3.0}$  TCID<sub>50</sub>\*  
(\*Tissue culture infective dose 50%)

#### INDICATIONS

Prevention of sheep pox.

#### METHOD OF IMMUNIZATION

##### \*Primer vaccination.

-One injection above the age of 3 months.

-If vaccination is performed on less than 3 months old lamb, a second injection must be given 6 months later.

##### \*Yearly boosters.

If necessary sheep pox vaccine may be administered to pregnant ewes, which will transfer immunity for young lamb during the first 3 months of age.

#### METHOD OF USE AND DOSAGE

\*Cold and sterile normal saline (diluent) is used to reconstitute the pelleted freeze-dried vaccine. The reconstituted vaccine must be protected from light and heat and be utilized immediately (limit time is 2 hours).

\*Use 100 ml of diluent for vial of 100 doses, and 50 ml for 50 doses vial

\* Inject 1 ml subcutaneously per animal into the sternum area, where there is no wool, behind the elbow.

\*A small nodular reaction may appear at the point of inoculation (TAKES), which disappears later.

#### RECOMMENDATION

\*Never use a syringe and a needle sterilized with a chemical agent.

\*Use aseptic technique.

\*Reconstitute the vaccine immediately before use and destroy any unused portion.

#### STORAGE

The vaccine can be stored at: + 2°C to + 8°C for two years.

#### PRESENTATION

Vials of 50 doses and 100 doses.

# JOVAC Sheep Pox vaccine RM/65

$10^3$  TCID  
1 ml sc

# Awareness campaign

## مرض الجلد العقدي (LSD Lumpy Skin Disease)

خلال الأشهر الأخيرة تم تشخيص مرض الجلد العقدي في ابقار في المنطقة.  
مسبب المرض - فيروس الجلد العقدي، يقاوم الفيروس الحرارة والمؤثرات البيئية إلى حد ما ويمكنه البقاء حياً في القشور الجافة للأفات الجلدية وفي الجلود المملحة لفترة طويلة قد تصل إلى أشهر خاصة في نقص التعرض لأشعة الشمس.  
طرق نقل العدوى - ينتقل المرض عن طريق لدغ الحشرات مثل الذباب والناموس.  
أعراض المرض - هنالك عدة اعراض للمرض اهمها افراز اللعاب بشكل مفرط، وافرازات من العيون والأنف وارتفاع مفاجئ في درجة الحرارة 40-41م° وما يميز بشكل قاطع ظهور عقد جلدية على مساحات كبيرة بالجلد.  
العلاج - المرض ليس له علاج نوعي خاص به العلاج الاعراضى و الداعم.  
منع المرض - وسائل المنع الفعالة تطعيم، ورش مبيدات حشرية واستعمال طرق مختلفة للحد من تواجد الحشرات اللادغة. محبذ رش الحيوانات باحد المبيدات الحشرية المصادق استعمالها:  
الحد من حركة الحيوانات.  
اليقظة والاعلام الفوري مهم جداً. عند اي حالة شك في التعرف للمرض يجب على الفور اعلام الدائرة البيطرية.



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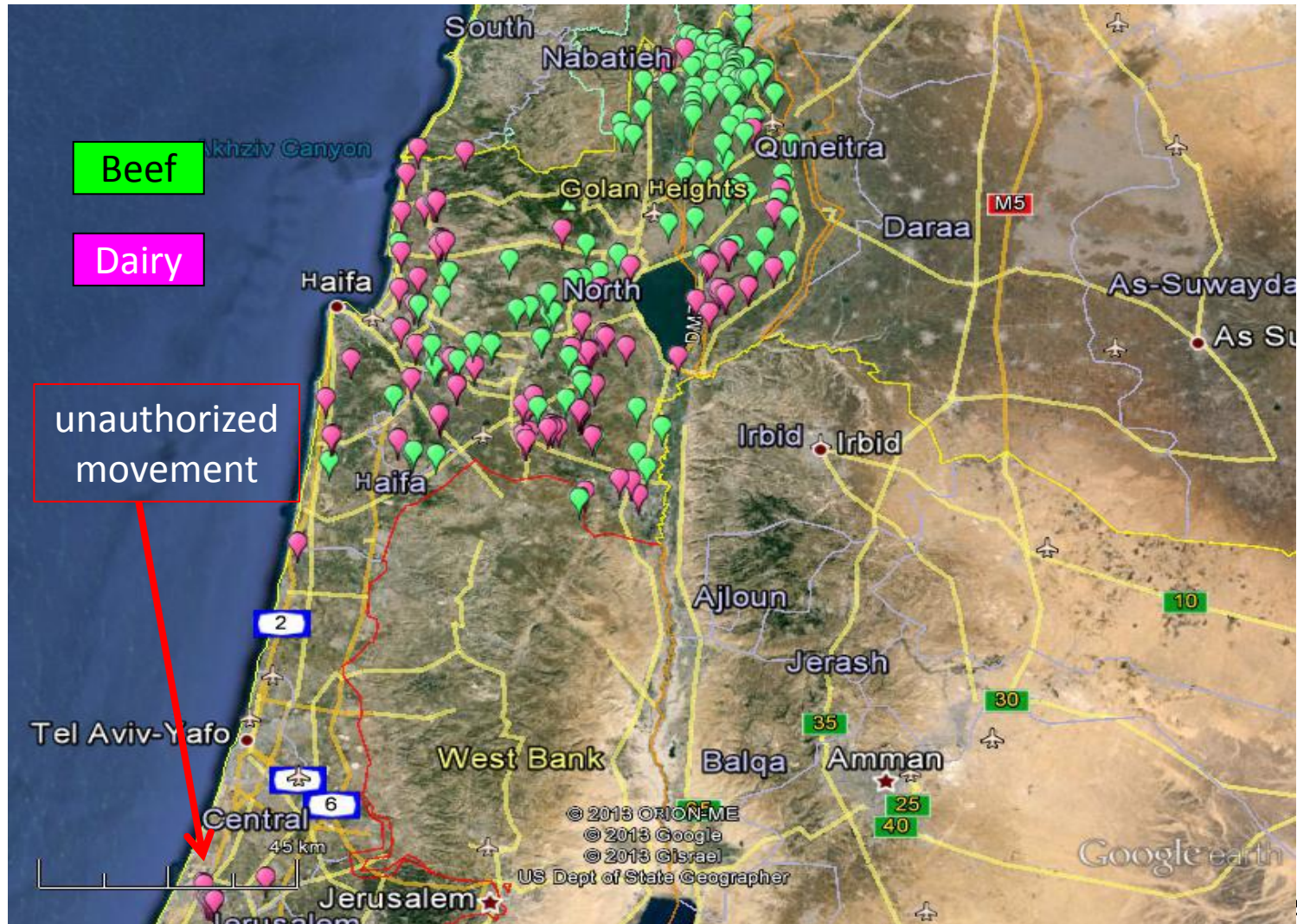
# Diagnostic techniques used at KVI

Method	Days from sampling to diagnosis	Mostly used for	Relative ease of performance
PCR	1day	Conformation, sequencing	Easy
qPCR – Real Time PCR	1 day	New suspicions	Easy
EM	2-3 days	Research / confirmation	low accessibility
Virus isolation	2 weeks	Conformation, sequencing and research	
Histological methods	1-2 days	Conformation	Challenging

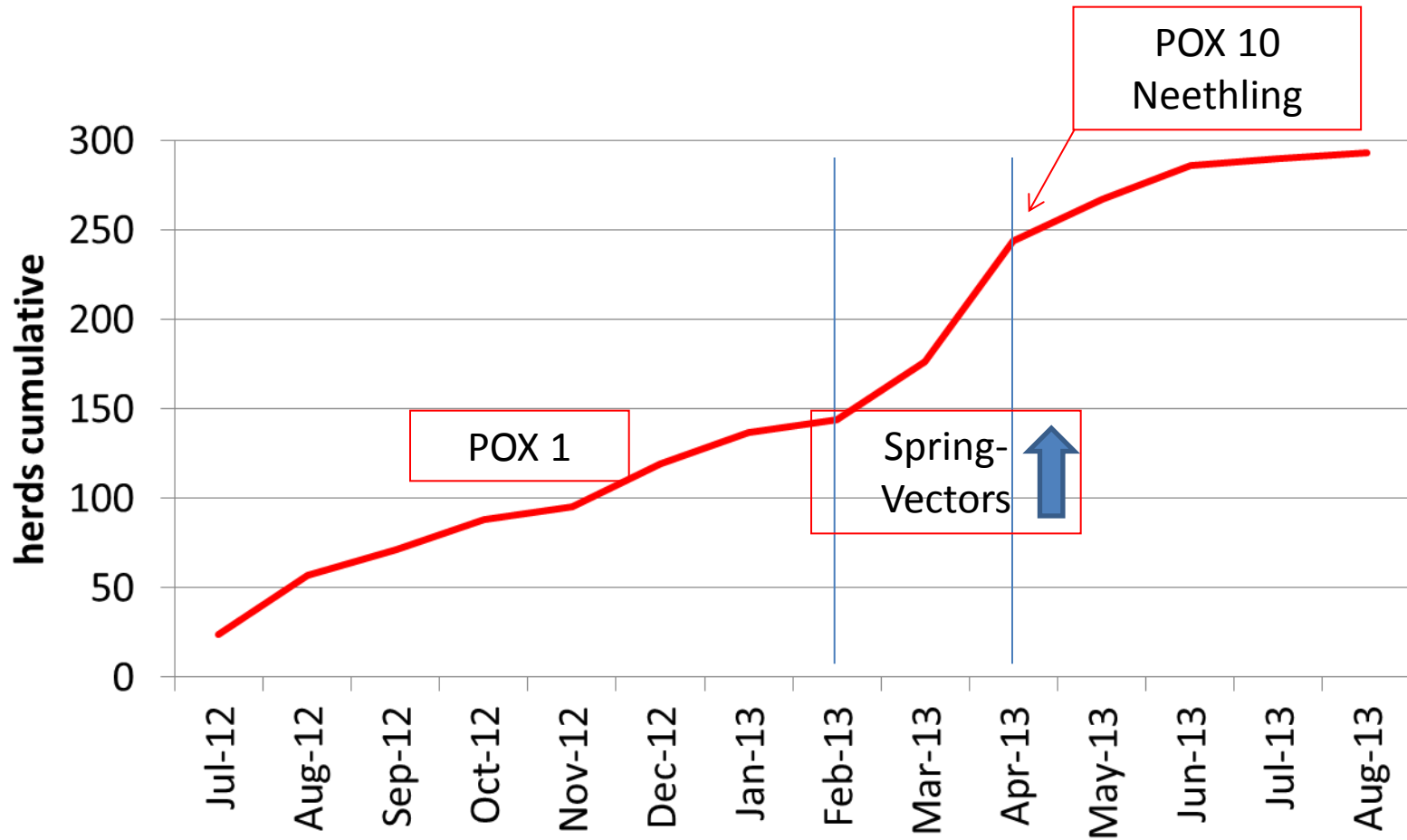
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# Outbreak map 03-2013



# Cumulative # of infected Herds



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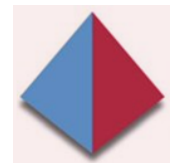
# Outbreak Epidemiology

October 2013

	<b>Beef- Pasture</b>	<b>Feedlot</b>	<b>Dairy</b>	<b>Total</b>
<b>Herds exposed</b>	<b>141</b>	<b>9</b>	<b>143</b>	<b>293</b>
<b>Heads exposed ~</b>	<b>40,000</b>	<b>10,000</b>	<b>100,000</b>	<b>150,000</b>
<b>Mortality #</b>	<b>561</b>	<b>46</b>	<b>25</b>	<b>632</b>
<b>Culled #</b>	<b>17</b>	<b>0</b>	<b>434</b>	<b>451</b>

- Beef Cow ~ 1,000 € / compensation
- Dairy Cow ~ 2,500 € / compensation
- Total Compensations paid ~ 1 million €
- Additional Farmers losses ~ 2-3 millions €

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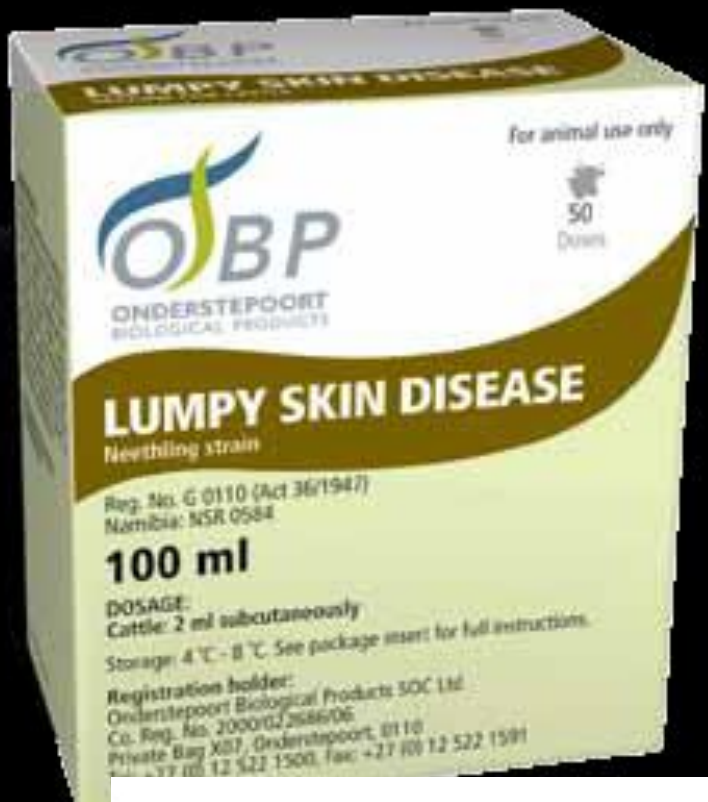
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# JOVAC Sheep Pox RM/65

“POX 10” =  
 $10^4$   
2ml dose

# Neethling Vaccine OBP



- Lumpy Skin Disease (LSD) vaccine contains the proven **Neethling strain**
- Protect bulls against virus excretion in the semen
- Ensures sufficient protection against field strains of Lumpy Skin viruses
- Stimulate immunity in 7 - 14 days
- The vaccine is safe to use in PREGNANT animals

## Recommendations

**Calves:** From 4 - 6 weeks of age

**Adults:** Yearly vaccinations ensure good



# Neethling Response (not disease) post vaccination response



1-10 d post vaccination  
Mild & transient - several days  
Clinically different - smaller

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# KVI

## Methods to differentiate between Field strain & Neethling Vaccine

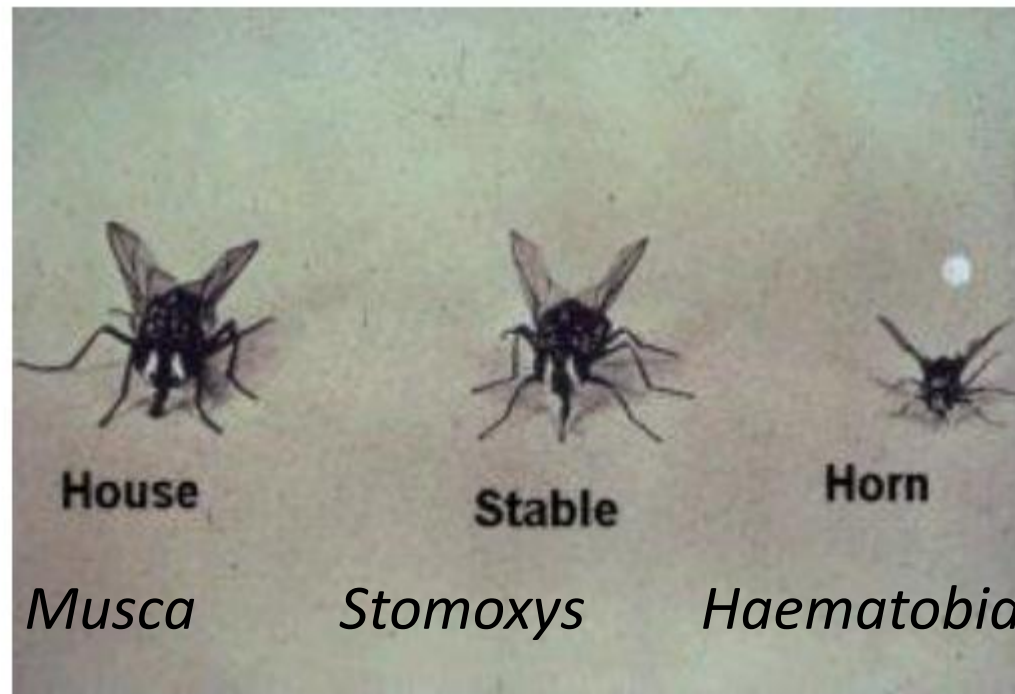
Method	Duration	Relative ease of performance
Sequencing and alignment	3-4 days	Multiple steps
Restriction Fragment Length Polymorphism (RFLP) – Mbol digest	1 day	Multiple steps
PCR annealing gradient temperature	1 day	Multiple steps
High resolution melting (HRM)	2h.	One easy step

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# Transmission - Vectors ?



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# Transmission- know & don't know

- More than 1 species - non specific
- Differs with region, season, housing
- Slow spreading (vs BEF, EHD)
- Overwintering ?? “Spring burst” !
  
- No effective vector control - no mandatory steps
- Negative environmental effects
  
- Cattle movement: legal (un dx) & illegal

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# National collaboration

- During outbreak- Risk Analysis forum (2-3 wks)
  - VS, MoA, Vet school, milk board
  - Clinicians, farmers org'
- KVI – as part of VS
- Koret Vet School - Hebrew Univ.
  - Epidemiology - E. Klement
  - Entomology - Y. Gottlieb

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# International collaboration

- Eeva Tuppurainen – field visit 09-2012
- OIE - Cyprus meeting 02-2013
- FAO web-seminar 2015
- OIE working group 01-2016
- EFSA – Klement, workshop 05-2016
- Regional comm.- PA, Jordan, TR, CY, GR, BU
  
- KVI lab techniques training – planned for 07-2016

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# Current situation

- Last case 08-2013 neighborhood ???
- Few sampled clinical suspicions – all negative
- Mandatory annual vaccination - 2013-2016
  - Est. Coverage- dairy- 90% Beef -70%
- From June 2016 – not mandatory to vaccinate
- -vaccines available
  - OBP SA Neethling (~ 1.5 €/ dose + 0.5 € /injection)
  - Intervet SA (MSD) *Lampyvox* (ordered)

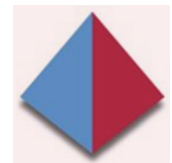
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# Current measures & Contingency plan

- Imported calves from infected countries (Serbia) must vaccinate 30 d prior to shipment
- Surveillance by Field VS vets (regular FMD visits)
- Vaccine bank - VS (20,000 doses)
- Regional mandatory vaccination if necessary
- No stamping out

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# Future Challenges

- Regional communication & collaboration
- Active surveillance – borders
- Awareness campaign
- Research: KVI+ Vet School+ International
  - Epidemiology
  - Entomology
  - Vaccine – efficient, safe, durable, affordable

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# Summary

- Effective control = effective vaccine & vaccination
- Don't cull - unless salvage / welfare
- Vectors control - ineffective with current means
- Support farmers- livelihood , fears, awareness

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*“challenges bring opportunities”*



*thank you*

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