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Workshop of the EU-RL for equine diseases for EIA
November 9th, 2022
Anses laboratory for Animal Health in Normandy- PhEED unit

EQUINE INFECTIOUS ANEMIA IN EUROPE

Data from European NRL

Analyzed by

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José Carlos Valle-Casuso, Pharm.D Ph.D

Anses laboratory for Animal Health in Normandy PhEED Unit

1. NRL Network

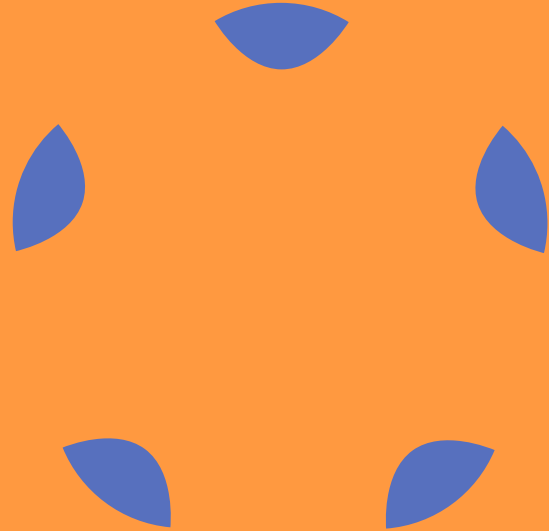
2. AIE epidemiological survey 2018-2021

a. EIA Cases & Outbreaks

b. Diagnostic Techniques

3. Conclusion

1. NRL Network



EIA Survey 2018-2021

https://survey.anses.fr/SurveyServer/s/Dozule/EIA_survey_2022_VF/questionnaire.htm

Overview of EIAV cases and outbreaks from 2016 to 2021

 EURL
European Union Reference Laboratory for
EQUINE DISEASES



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Help us to collect the LR-UE network data that later will be analyzed in our lab and presented during the Workshop.

NEXT

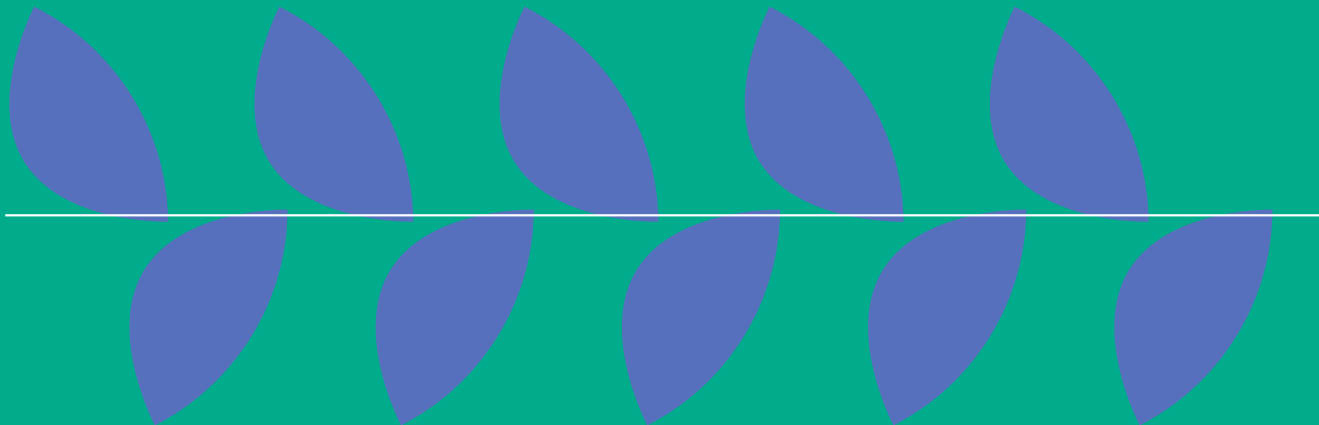
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The survey was
submitted to
the NRLs
28/09/2022

The survey was
re-submitted to
the NRLs
25/10/2022

	Country	Institution	
1	Austria	AGES IVET	
2	Ireland	CVRL	
3	Cyprus	Veterinary Services	
4	Czech Republic	State Veterinary Institute in Prague	
5	Sweden	SVA, National Veterinary Institute	
6	Poland	National Veterinary Research Institute	
7	Spain	Central Veterinary Laboratory - Animal Health. Ministerio de Agricultura, Pesca y Alimentación	
8	Romania	Institute for Diagnosis and Animal Health	
9	Germany	Friedrich-Loeffler-Institut	
10	Greece	Department of molecular diagnostics, FMD, Virological, Risketsial and Exotic Diseases, Veterinary Center of Athens	
11	Italy	Istituto Zooprofilattico Sperimentale del Lazio e della Toscana	
12	Lithuania	National Food and Veterinary Risk Assessment Institute	
13	Belgium	Sciensano	
14	Latvia	Institute of Food Safety, Animal Health and Environment "BIOR"	
15	The Netherlands	Wageningen Bioveterinary Research	
16	France	ANSES	

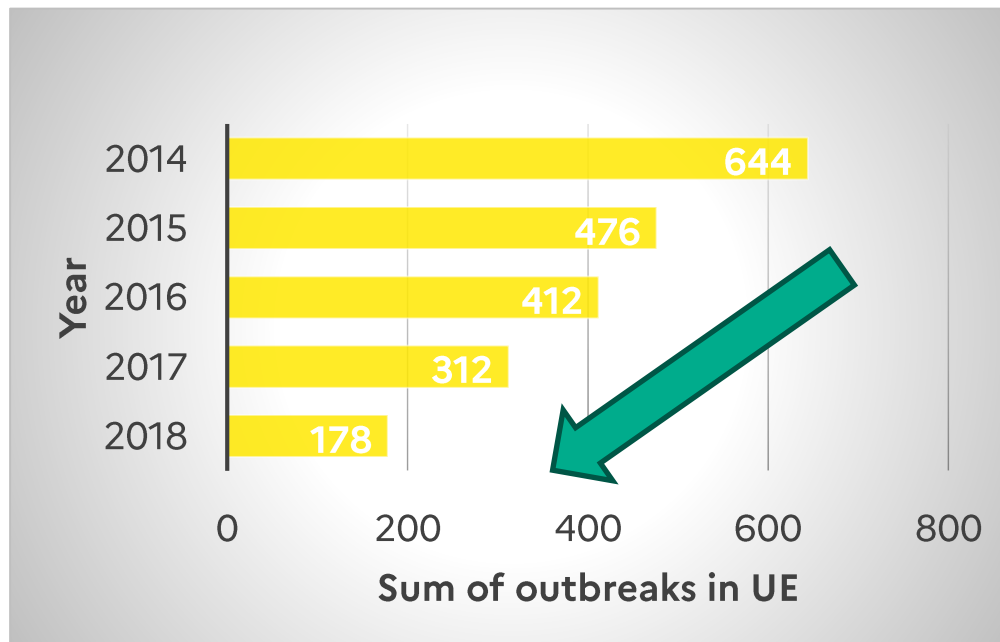
2. EIA epidemiological survey 2018-2021



Focus on EIAV cases and outbreaks from 2014 to 2018

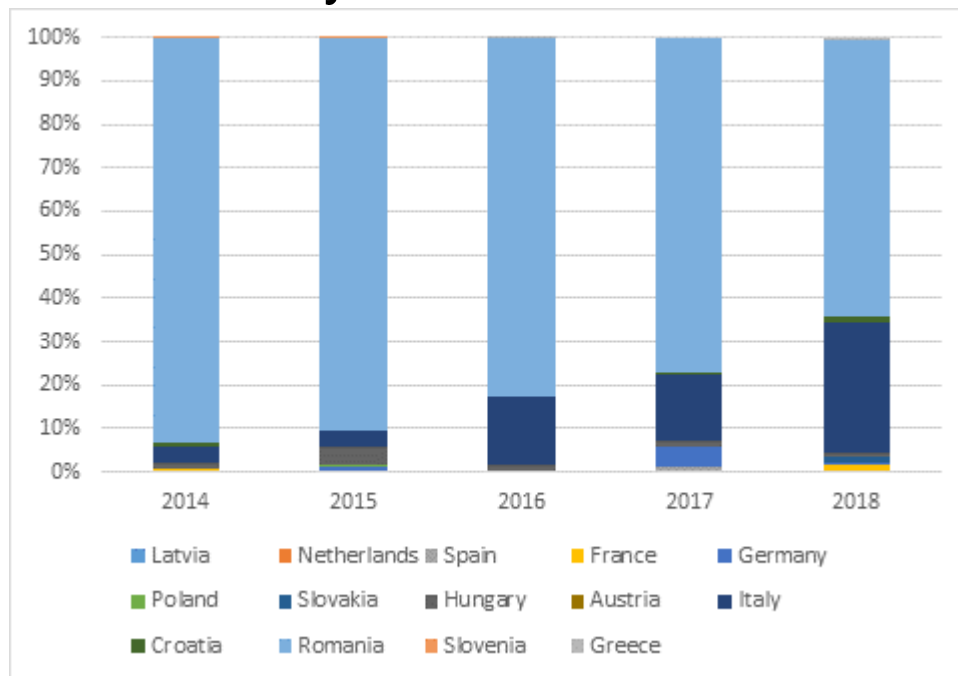


- EIA outbreaks were reported in 14/27 EU countries
- Decrease of the number of EIA outbreaks between 2014 and 2018
- Among 2384 equids with EIAV, 26 presented clinical signs ($\approx 1.1\%$)



Focus on EIAV cases and outbreaks from 2014 to 2018

Evolution of the proportion of the EAI outbreaks according to the year and EU country between 2014 and 2018



EIA Survey 2018-2021

II. EIAV information

During the last 6 years, have you detected/confirmed EIA positive equids in your country?

- Yes
 No

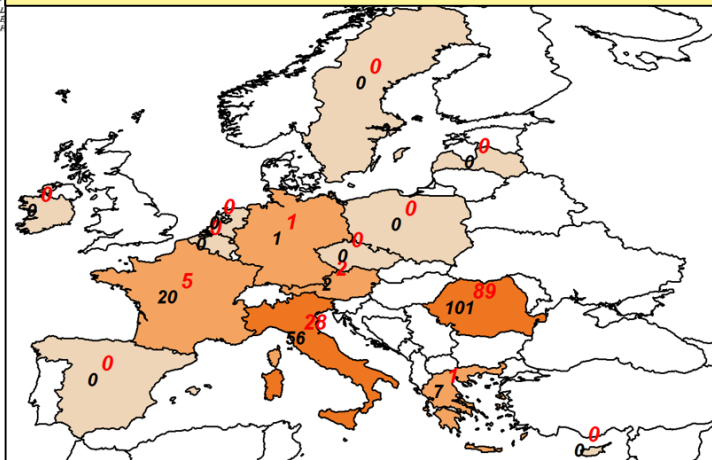
If "Yes", could you complete the table below:

	Number of EIAV equids	Number of EIAV outbreaks	Among EIAV seropositive equids, number of animals presenting clinical signs
2016	<input type="text"/>	<input type="text"/>	<input type="text"/>
2017	<input type="text"/>	<input type="text"/>	<input type="text"/>
2018	<input type="text"/>	<input type="text"/>	<input type="text"/>
2019	<input type="text"/>	<input type="text"/>	<input type="text"/>
2020	<input type="text"/>	<input type="text"/>	<input type="text"/>
2021	<input type="text"/>	<input type="text"/>	<input type="text"/>

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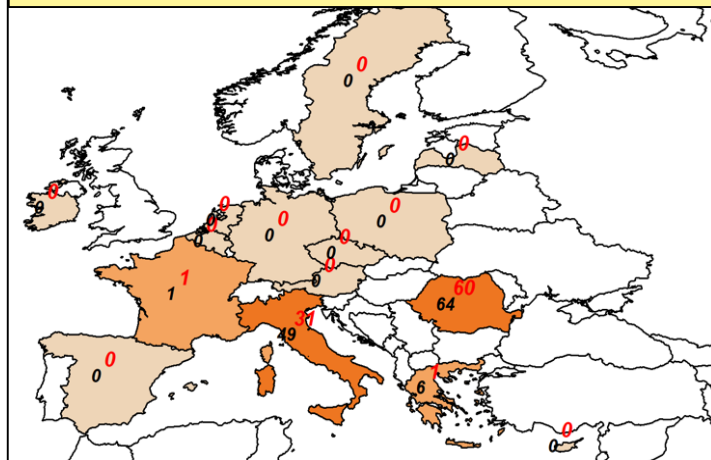
NEXT →

EIAV cases and outbreaks in EU in 2019



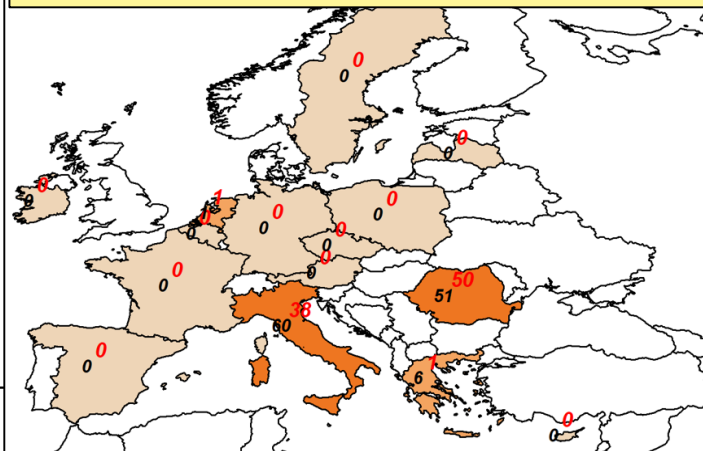
126 EIA outbreaks
187 equids with EIAV

EIAV cases and outbreaks in EU in 2020



93 EIA outbreaks
120 equids with EIAV

EIAV cases and outbreaks in EU in 2021



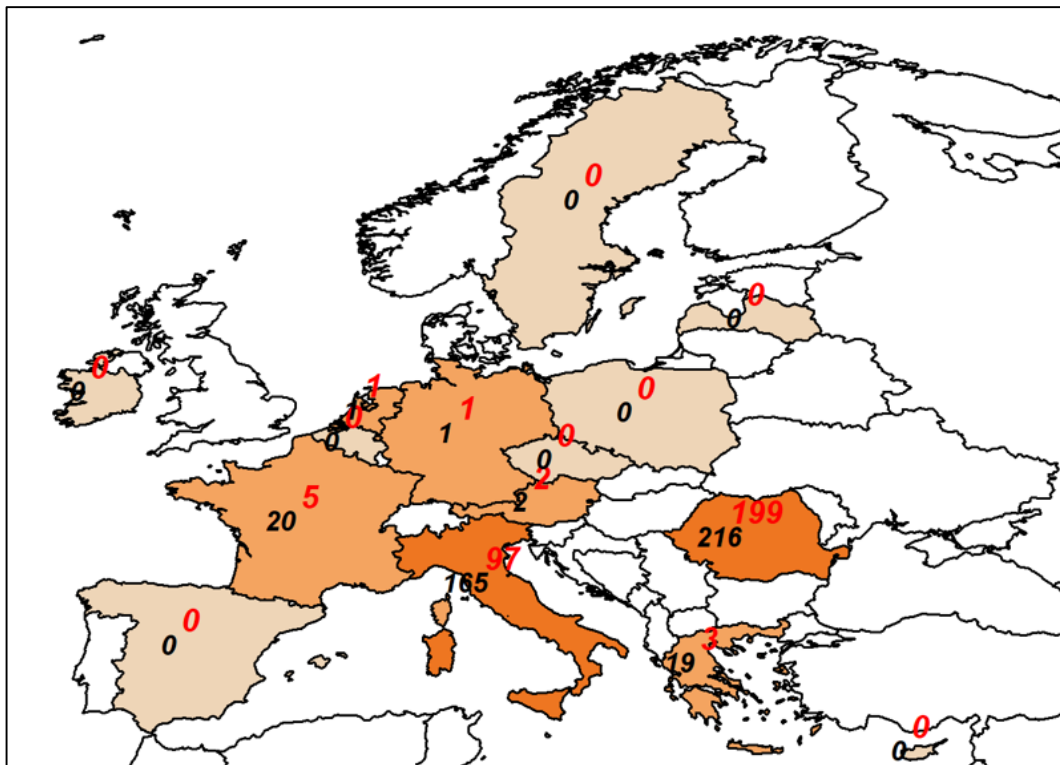
90 EIA outbreaks
118 equids with EIAV

Text in red: Total number of EIA outbreaks

Text in black: Total number of EIAV equids

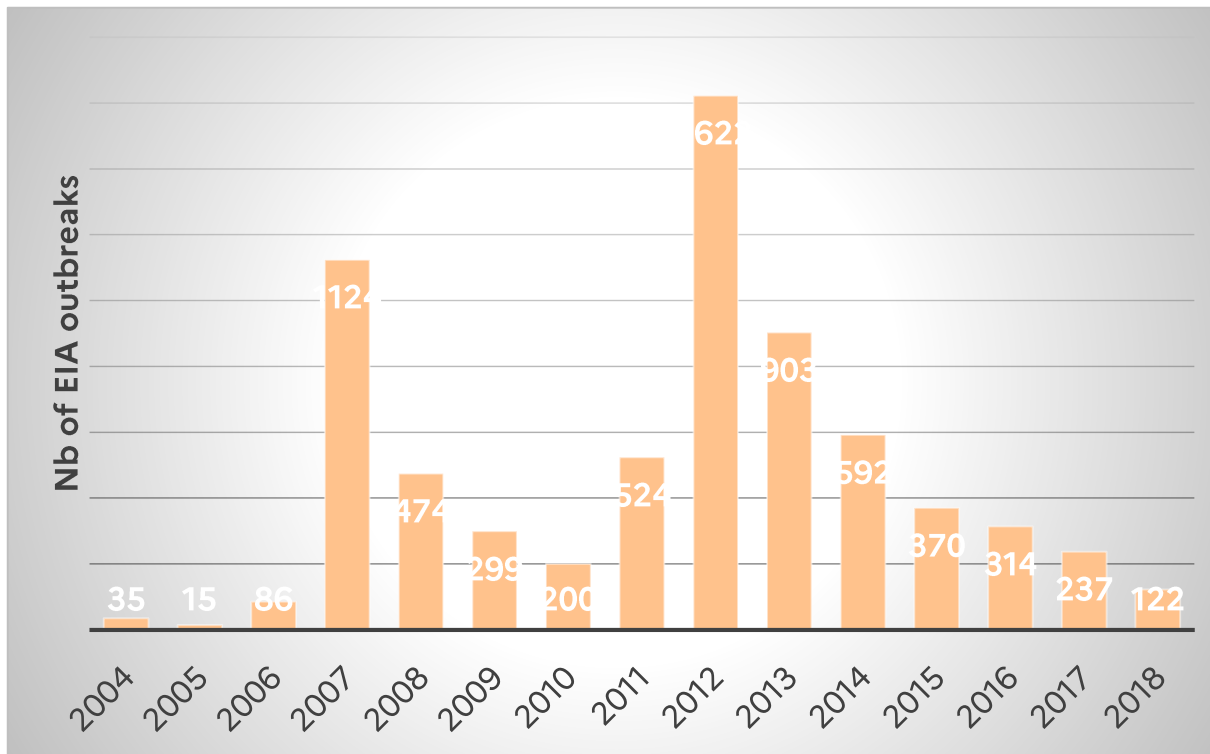
EIA Survey 2018-2021

- 7 countries with EIAV cases
- 308 EIA outbreaks
- 424 equids with EIAV
- 1% of equids presenting clinical signs



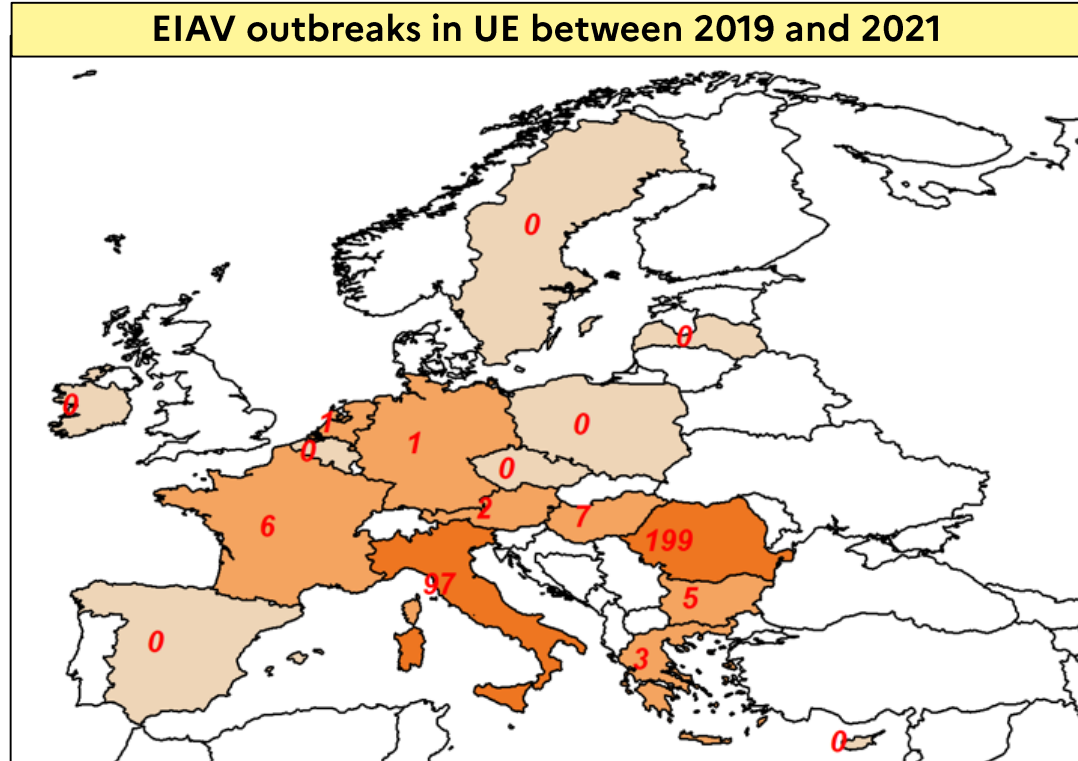
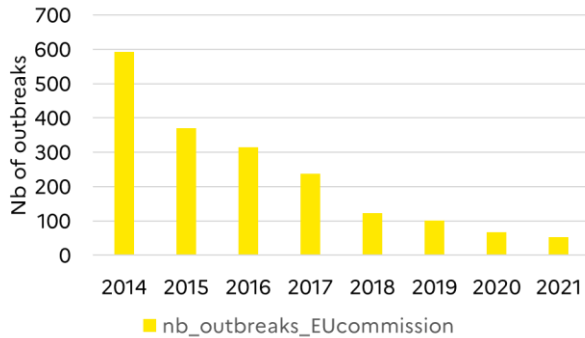
Text in red: Total number of EIA outbreaks
Text in black: Total number of EIAV equids

Overview of EIA outbreaks from 2004 to 2018



7 / 9 countries with
EIAV cases

308 / 321 EIA
outbreaks



EIA Survey 2018-2021

II. EIAV information

Do you know the country of origin of the EIA positive cases reported in your country?

- Yes
 No

What are the 3 main countries of origin of the EIA positive cases?

If you have this information, what is the main age group of the EIA positive cases?

<5 years old

[10-20] years old

[5-10[years old

>20 years old

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NEXT →

EIA Survey 2018-2021

II. EIAV information

Do you know the country of origin of the EIA positive cases reported in your country?

- Yes
 No

What are the 3 main countries of origin of the EIA positive cases?

<input type="text"/>	▼
<input type="text"/>	▼
<input type="text"/>	▼

If you have this information, what is the main age group of the EIA positive cases?

<5 years old

[10-20] years old

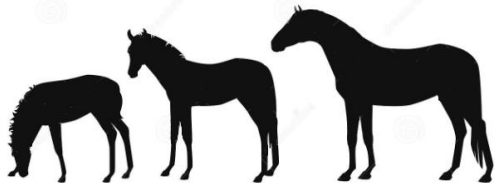
[5-10[years old

>20 years old

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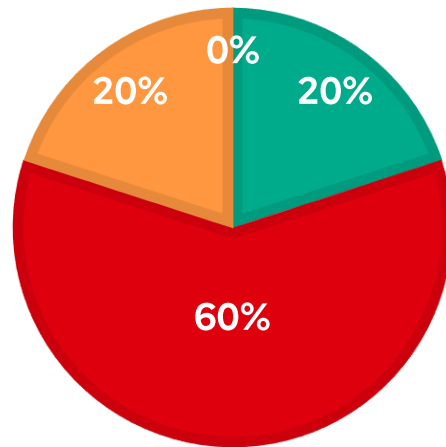
NEXT →

Survey on EIAV cases and outbreaks from 2019 to 2021



MAIN AGE GROUP OF THE EIAV POSITIVE CASES

- <5 years old
- [5-10[years old
- [10-20] years old
- >20 years old



EIA Survey 2018-2021

II. EIAV information

If you have this information, what are the 3 main group of breeds of the EIA positive cases? *(from most to least frequent)*

- Saddle horse
- Pony
- Draft horse
- Trotter
- Thoroughbred
- Donkey

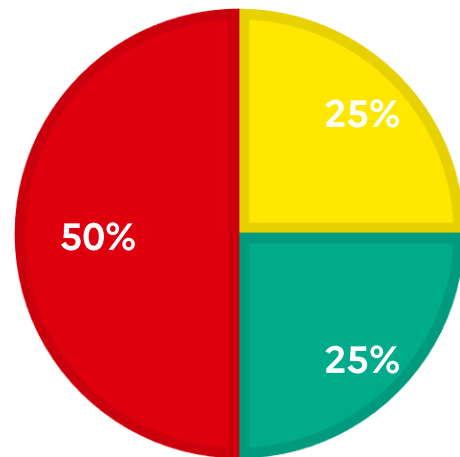
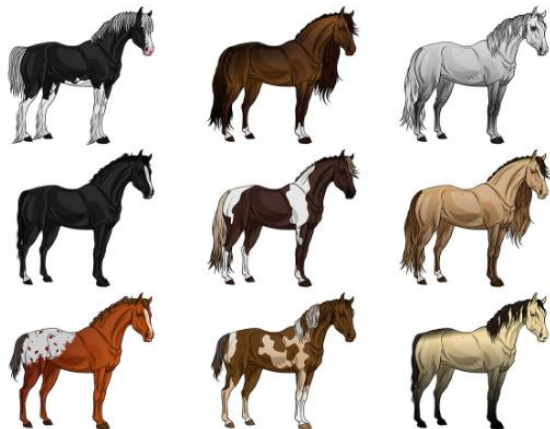
Glissez-déposez vos réponses ici

← PREVIOUS NEXT →

Survey on EIAV cases and outbreaks from 2019 to 2021

MAIN GROUP OF BREEDS OF THE EIA POSITIVE CASES

■ Draft horse ■ Donkey ■ Saddle horse



EIA Survey 2018-2021

II. EIAV information

If you have this information, what are the 3 main activities of the EIA positive cases? *(from most to least frequent)*

Leisure	+
Breeding	+
Racing + Sport	+
Retirement	+
Production	+
Work	+
Trade	+
Other	+

Glissez-déposez vos réponses ici

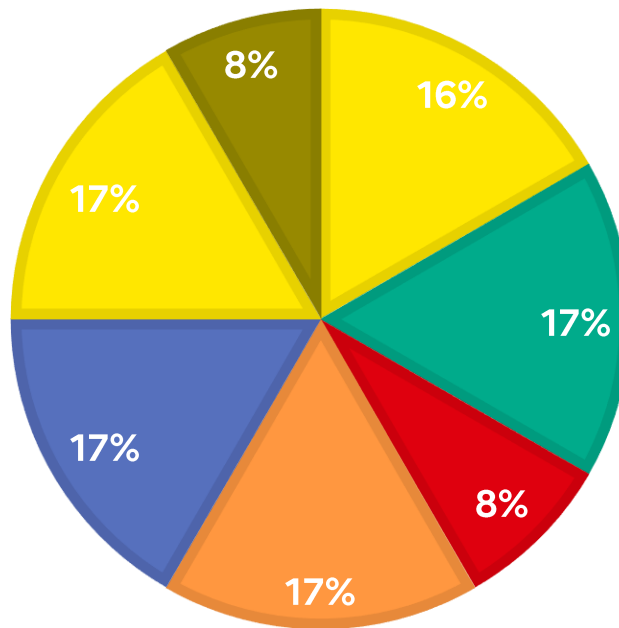
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Survey on EIAV cases and outbreaks from 2016 to 2021

MAIN ACTIVITIES OF THE EIA POSITIVE CASES

■ Breeding ■ Production ■ Retirement ■ Work ■ Leisure ■ Racing + Sport ■ Trade



3. EIAV Diagnostics Techniques



EIAV Diagnostics Techniques Survey

III. EIAV diagnostic techniques

Which are the techniques used in your laboratory to screen EIAV infected horses?

- ✓ AGID test
- ✓ ELISA test
- ✓ RT-qPCR test/qPCR test
- ✓ Next-Generation Sequencing RNA/DNA techniques

16 NRL

AGID	ELISA	RT-qPCR	NGS
15	10	4	2

Which AGID kit(s) do you use in your laboratory?

	Brand	Reference ID	Comments
Kit 1	Tapez votre texte ici	Tapez votre texte ici	Tapez votre texte ici

IDEXX / 10

IDVet / 6

VMRD / 4

ROMVAC / 1

III. EIAV diagnostic techniques

What are the main criteria that made you choose the AGID kit(s)?

The sensibility

The specificity

The cost

The time to get the results

Other

Glissez-déposez vos réponses ici

Sensibility	8	0	0
Specificity	4	8	0
Cost	1	1	4
Other	0	1	2

Which ELISA kit(s) do you use in your laboratory?

	Brand	Reference ID	Comments
Kit 1	<input type="text" value="Tapez votre texte ici"/>	<input type="text" value="Tapez votre texte ici"/>	<input type="text" value="Tapez votre texte ici"/>

IDEXX / 4

IDVet / 9

VMRD / 2

IN HOUSE / 1

III. EIAV diagnostic techniques

What are the main criteria that made you choose the ELISA kit(s)?

The sensibility

The specificity

The cost

The time to get the results

Other

Glissez-déposez vos réponses ici

Sensibility	7	0	0
Specificity	1	6	0
Cost	1	0	1
Other	0	0	0
Time to get Results	0	1	3

RT-qPCR Non-Commercial kits

4 / 16

III. EIAV diagnostic techniques

If you (also) work with no commercial PCR tests, which primers and probes do you use in your laboratory?

	Forward	Reverse	Probe	Bibliographic reference (if possible)
Kit 1	<input type="text" value="Tapez votre texte ici"/>	<input type="text" value="Tapez votre texte ici"/>	<input type="text" value="Tapez votre texte ici"/>	<input type="text" value="Tapez votre texte ici"/>
Kit 2	<input type="text" value="Tapez votre texte ici"/>	<input type="text" value="Tapez votre texte ici"/>	<input type="text" value="Tapez votre texte ici"/>	<input type="text" value="Tapez votre texte ici"/>
Kit 3	<input type="text" value="Tapez votre texte ici"/>	<input type="text" value="Tapez votre texte ici"/>	<input type="text" value="Tapez votre texte ici"/>	<input type="text" value="Tapez votre texte ici"/>

Could you attach the scientific articles associated with the Next-Generation Sequencing RNA/DNA techniques that you use in your laboratory? *To join your articles, please click on "Ajouter un document"*

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► Dong et al., 2012 (LTR-tat) **3/16**

AIE-ltr-1F: GACAGTTGGGCACTCAGATT

AIE-ltr-2F: ATTCTGCGGTCTGAGTCCCT

► Nagarajan and Simard, 2001 (gag) **2/16**

EIAV-P1-F: GTAATTGGGCGCTAAGTCTAG

AIE-ltr-2F: ATTCTGCGGTCTGAGTCCCT

► Gaudaire et al, 2018 **2/16**

RT-qPCR Commercial kits

III. EIAV diagnostic techniques

Do you use any commercial PCR test?

- Yes
 No

0 / 16

Which commercial PCR test(s) do you use in your laboratory?

	Brand	Reference ID	Comments
Kit 1	<input type="text" value="Tapez votre texte ici"/>	<input type="text" value="Tapez votre texte ici"/>	<input type="text" value="Tapez votre texte ici"/>
Kit 2	<input type="text" value="Tapez votre texte ici"/>	<input type="text" value="Tapez votre texte ici"/>	<input type="text" value="Tapez votre texte ici"/>
Kit 3	<input type="text" value="Tapez votre texte ici"/>	<input type="text" value="Tapez votre texte ici"/>	<input type="text" value="Tapez votre texte ici"/>

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EIAV Diagnostics Techniques Survey

III. EIAV diagnostic techniques

Do you want to share any protocol or publication from your laboratory related with the EIA diagnostics with us?

- Yes
 No

2 / 16

Are you interested to give a talk about this subject during the Workshop?

- Yes
 No

2 / 16

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EIAV Diagnostics Techniques Survey

Thank you very much for your participation

Before leaving, please click on the "save" button



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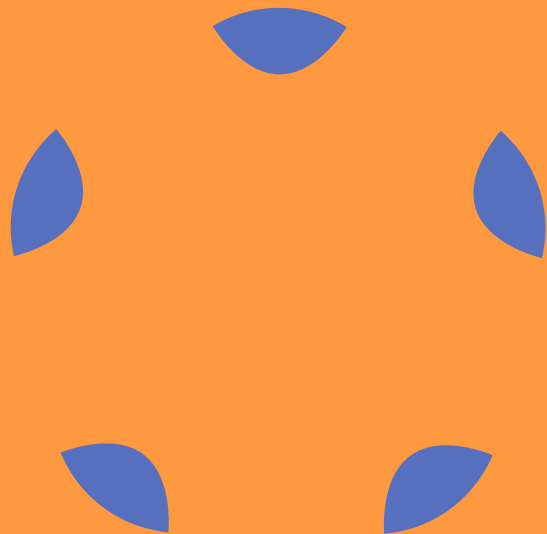
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✓ SAVE

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3. Conclusion



EIA Cases & Outbreaks

- The decreases of EIA cases and outbreaks is a maintained tendency during the last 10 years
- This tendency shows that the measures applied by the EU countries are efficient
- Still some cases of EIA are traveling thought EU countries and we have to be aware in our in our NRL Laboratories

Diagnosics Techniques

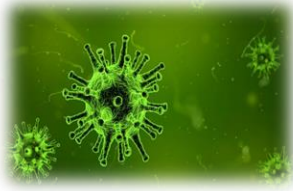
- AGID is used by the majority of the countries of the EU responding to the survey and they use a variety of commercial kits to identify EIAV seropositive samples.
 - ELISA assays is used by > half of the countries responding to the survey and they use a variety of commercial kits to identify EIAV seropositive samples.
 - RT-qPCR techniques are used by 4 countries and they are using the same scientific references.
 - Two countries are integrated NGS activities in their EIA NRL activities
 - Sensibility, Specificity, Cost and Time to get results, in this order are the main criteria to choose the AGID & ELISA Kits
-



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EQUINE DISEASES



RÉGION
NORMANDIE



Anthony



Cécile



Fanny



Gabrielle



José-Carlos

Thank you for your collaboration
and for your attention

