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Veterinary epidemiology and economics down under in leaps and bounds

Detecting Livestock Diseases Early: insights from a Syndromic Surveillance workshop to inform Scotland's national strategy

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Background

Syndromic surveillance (SS), tracking nonspecific disease indicators, is invaluable for early livestock disease detection.

We present **findings from a workshop engaging Scottish Government (SG) advisors, British surveillance experts, and academics to devise a syndromic surveillance strategy for livestock diseases** in Scotland.

Methods

- In person workshop
- In Edinburgh, Scotland
- On September 7th, 2023
- Recruiting: SG's and EPIC's networks
- Inclusion criteria:

  ⟶ Specialists in livestock health and disease control across the UK

Workshop structure

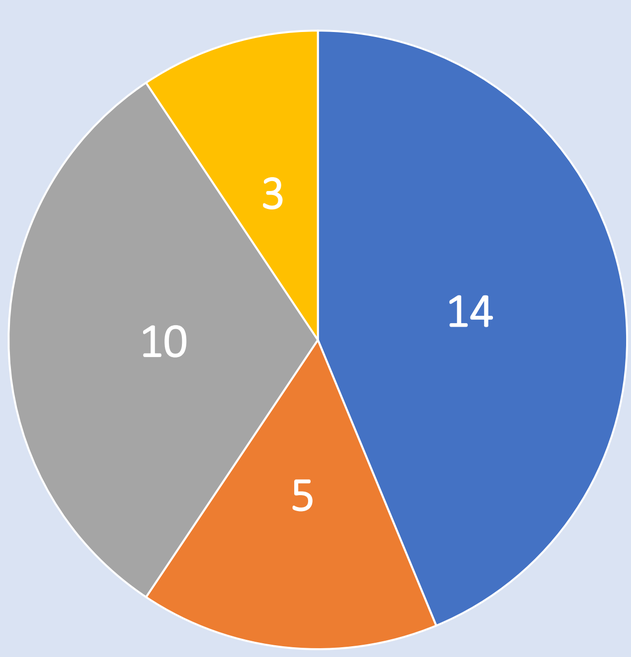
Brief introduction, followed ② main **tasks**:

1. Prioritising diseases by class, with a choice of 6 classes.
2. Selecting diseases within the top 2 classes per species (cattle, sheep, pigs).

Groups prioritised disease classes, offered justifications, and presented results.
Participants voted on final disease priorities for each species.

Participants' expertise

Participants' affiliation



- UK's Animal and Plant Health Agency (APHA)
- SRUC* Centre for Epidemiology and Planetary Health (CEPH)
- SRUC* Veterinary Services
- Academia

* Scotland's Rural College

Affiliations

University of Glasgow
The James Hutton Institute
① SRUC
BioSS
Moredun Research Institute
② ROSLIN
The University of Edinburgh Global Academy of Agriculture and Food Security

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Results

Disease classes prioritised for Syndromic Surveillance (SS)

Task 1

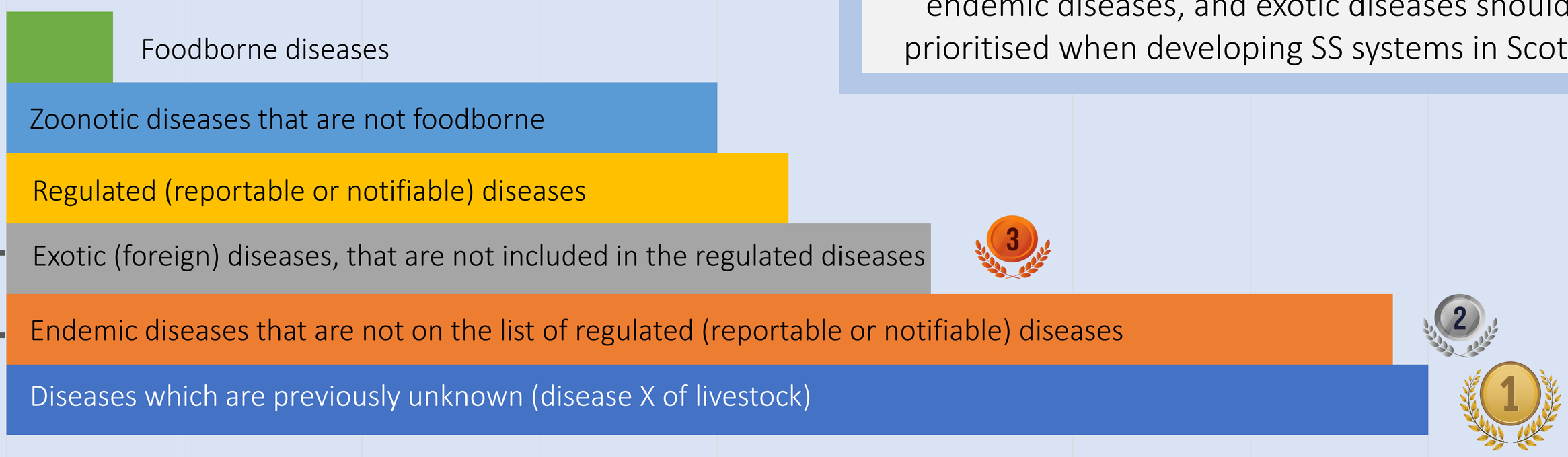

Figure 1. Disease classes prioritised for SS by workshop participants.

Participants considered that Disease X, non-reportable endemic diseases, and exotic diseases should be prioritised when developing SS systems in Scotland.

Task 2

Because disease X cannot be defined, participants were asked to select, for each species, the most important diseases within non-regulated endemic diseases and exotic diseases.

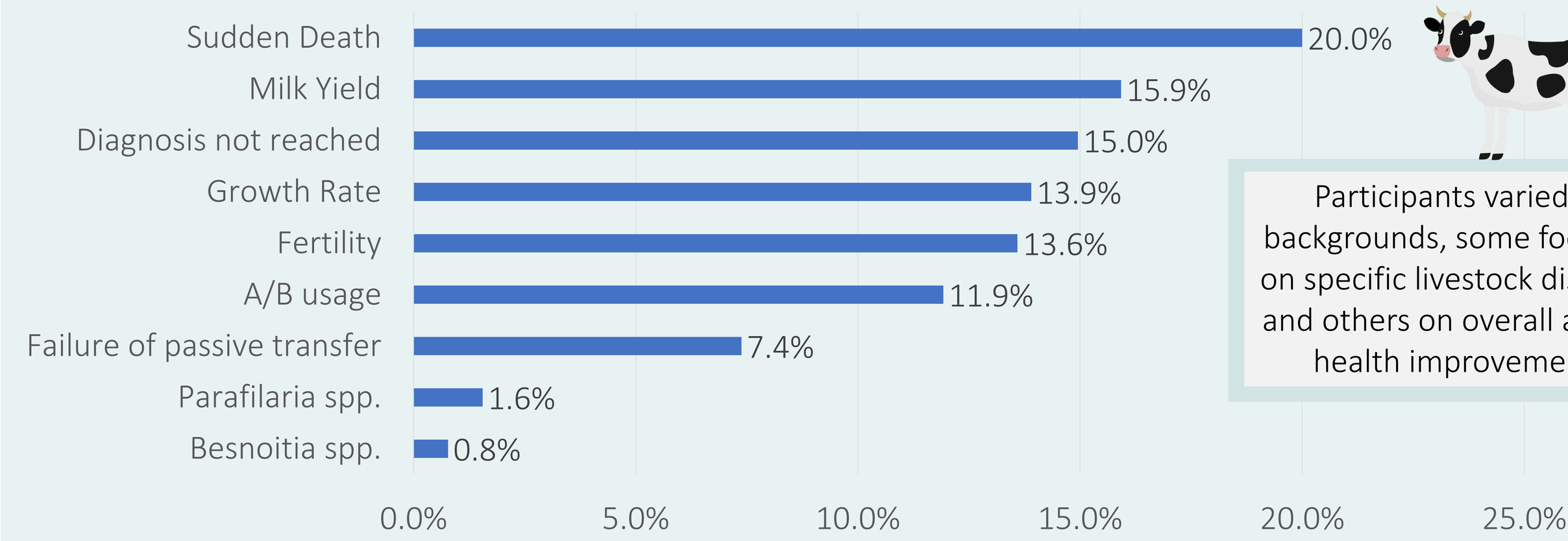

Figure 2. Cattle diseases or syndromes prioritised for SS, according to workshop participants.

Participants varied in backgrounds, some focusing on specific livestock diseases and others on overall animal health improvement.

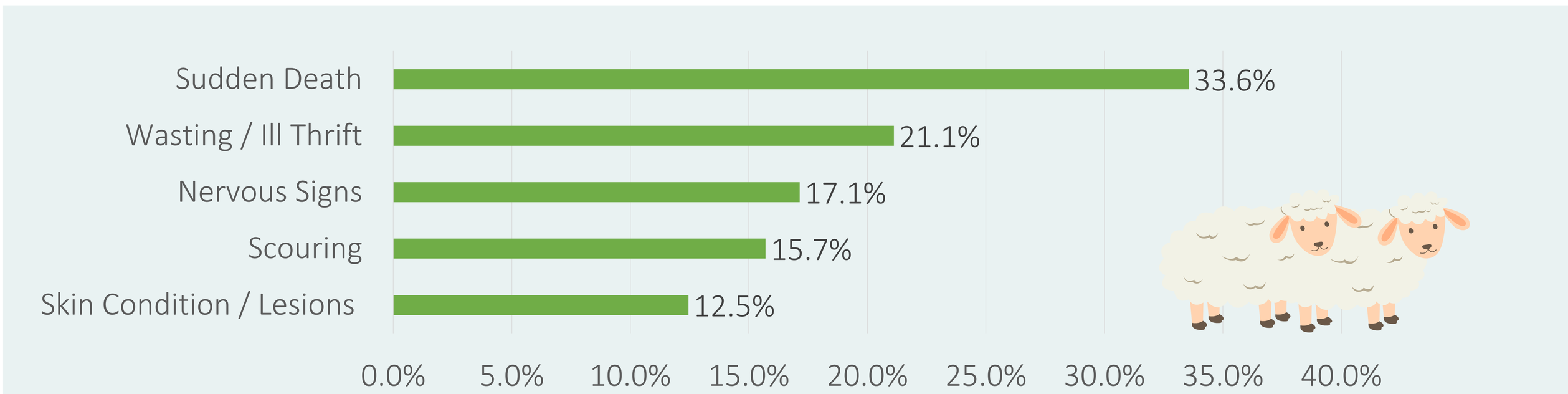

Figure 3. Sheep diseases or syndromes prioritised for SS, according to workshop participants.

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Prioritised diseases or syndromes for each species (continued)

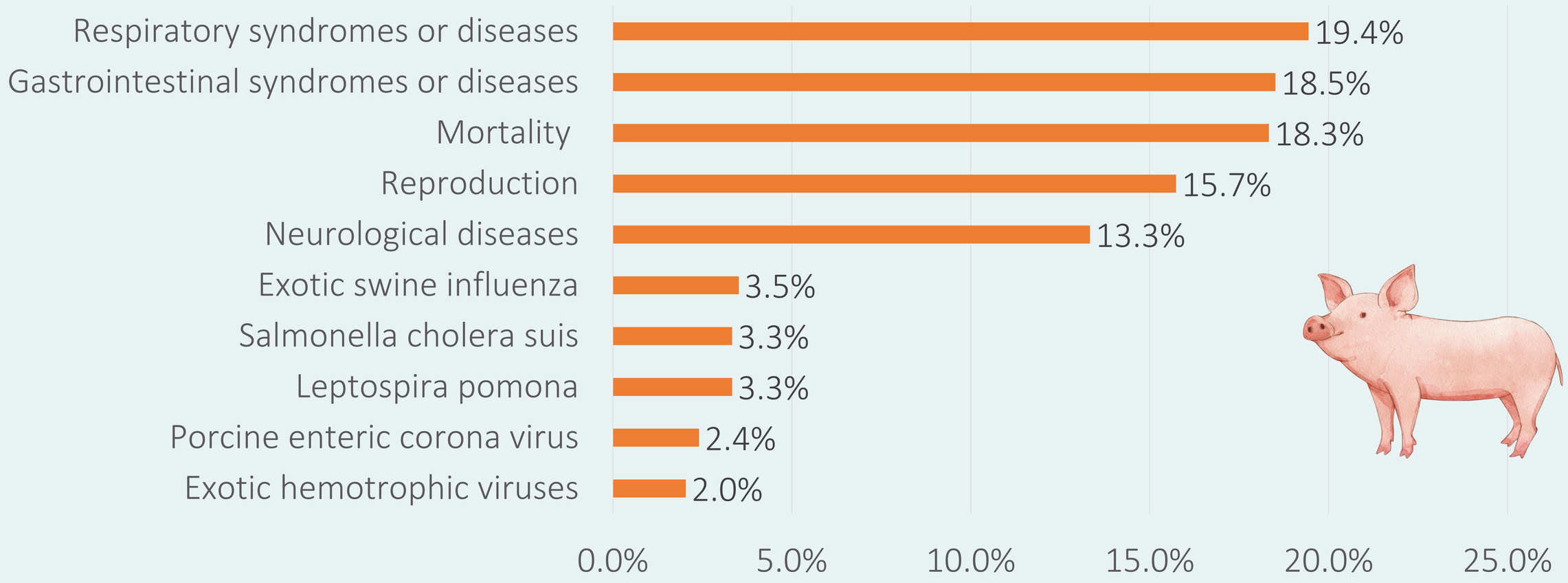
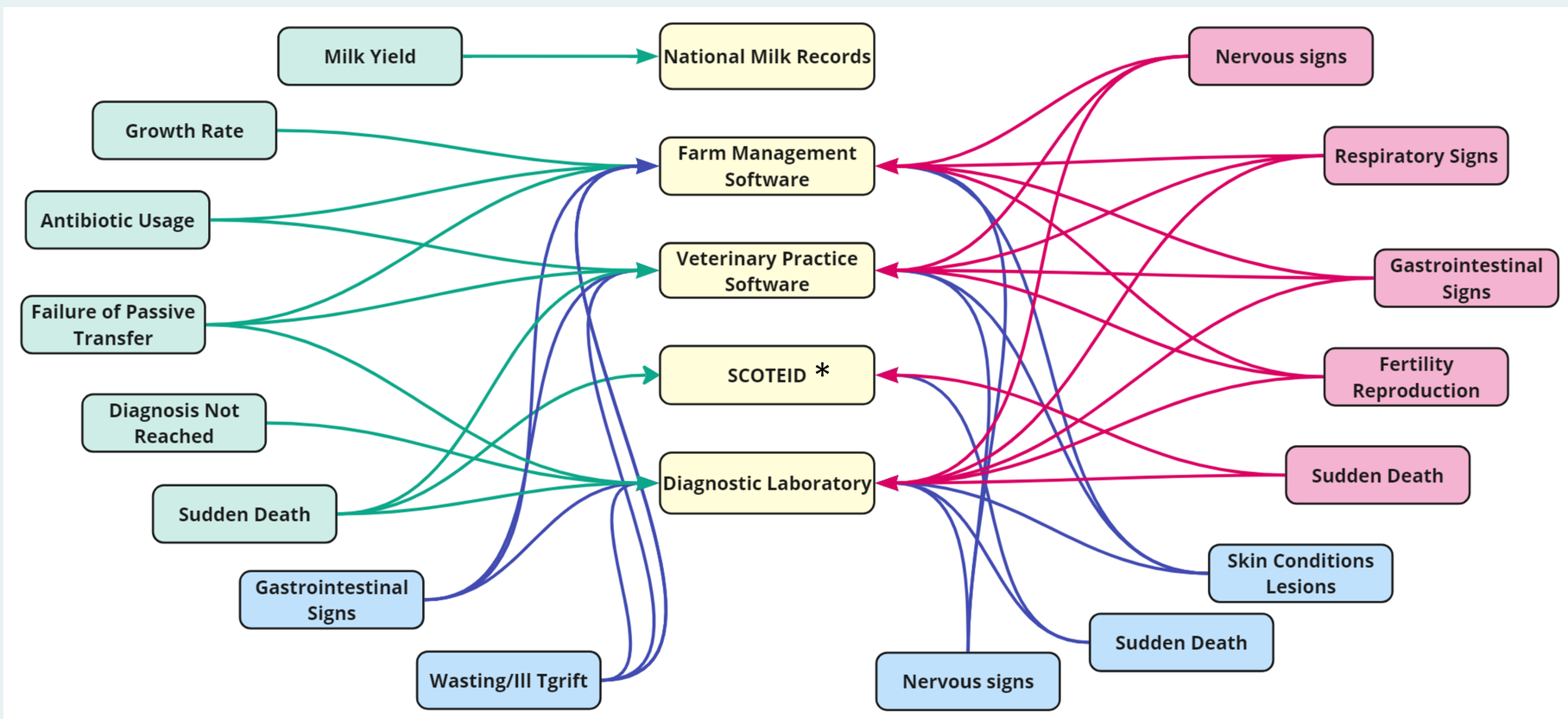


Figure 4. Pig diseases or syndromes prioritised for SS, according to workshop participants.

- Participants prioritised disease syndromes detectable through laboratories, animal health schemes, and farms' datasets to address nonregulated endemic and exotic diseases.
- These diseases, lack effective monitoring and quick control protocols and have- significant day-to-day impacts.



Cattle syndromes are green, sheep syndromes are blue, and pig syndromes are pink.

Data sources are in **yellow** and are sorted according to where they occur in the progression of a disease epidemic from the earliest at the top to the last at the bottom.

* ScotEID – Scottish livestock movements data

Figure 5. Mapping of syndromes to sources of data that could be used to monitor them for SS.

Conclusion

Participants considered disease X an important threat, which should benefit the most from syndromic surveillance.

Non-regulated endemic and exotic diseases followed as most important to monitor.

Participants prioritised syndromes detectable in existing datasets, recognising the **need for effective monitoring** and **rapid control measures to mitigate the day-to-day impacts of endemic diseases** and prevent **potential risks from emerging and exotic diseases**.

The results of this workshop were used to inform the design of a SS strategy for Scottish livestock (cattle, sheep, & pigs).

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