



PARAMETRA

A parameter database for livestock disease modelling

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Objective

Animal health parameter values are dispersed across heterogeneous sources, making them difficult to find and reuse. PARAMETRA is an open-source, curated database for animal disease modelling that aims to make these parameters more accessible to modellers.

Current status

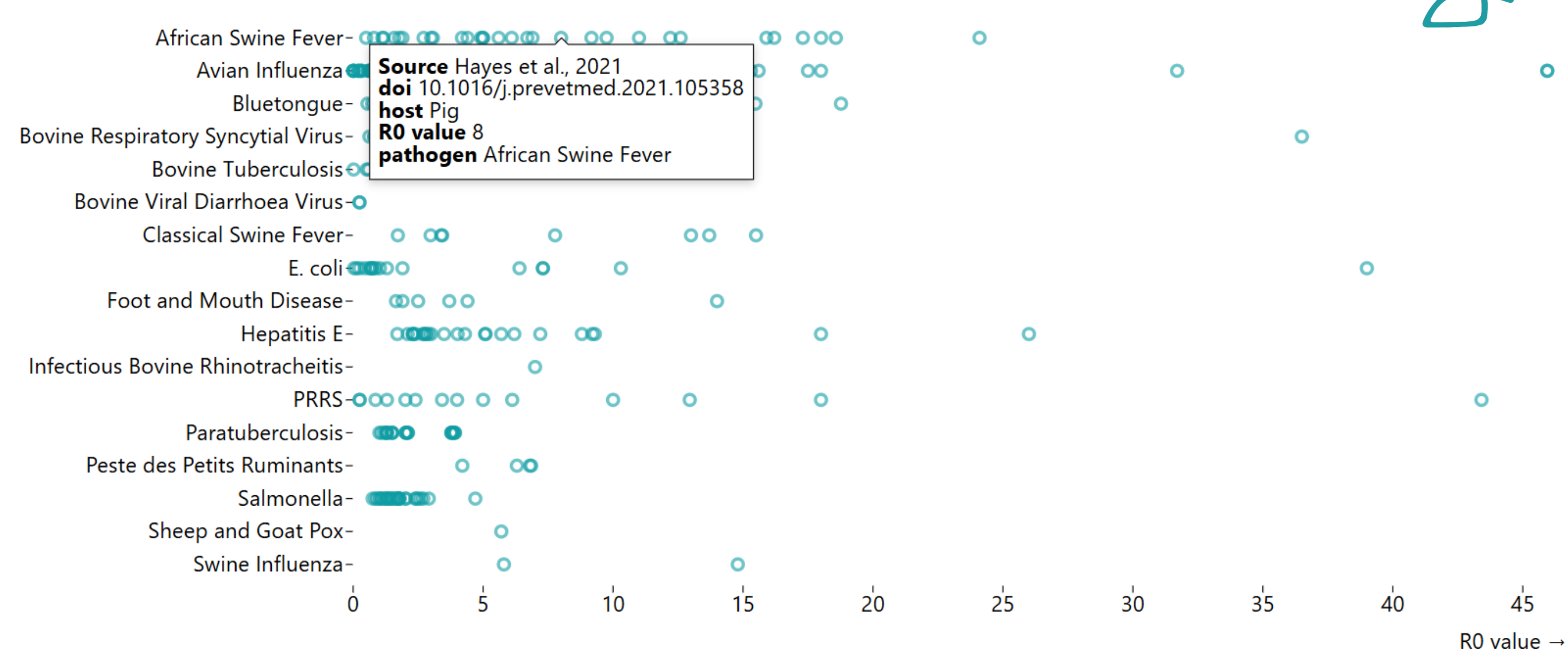
The initial release¹ was developed by the BIOSECURE consortium through a semi-systematic literature review. It included over 2,000 parameter values for 20 livestock diseases (Table 1). The project now aims to continue growing by adding new parameters thanks to community contributions. Last additions include over 300 entries on biosecurity measures costs.

¹Antonopoulos, A. et al. (2025). PARAMETRA: A transmission modelling database for livestock diseases. Preventive Veterinary Medicine.

Database content

Each entry links a parameter, pathogen, and reference, with additional details such as host species, study type and uncertainty bounds. The DOIs are verified, so the parameter can be traced back to its source.

Exploring parameter values (v1.1.0)



PARAMETRA has some entries for this disease! I can start by reading these studies.



I have to model this disease. Which parameters are available in the literature?

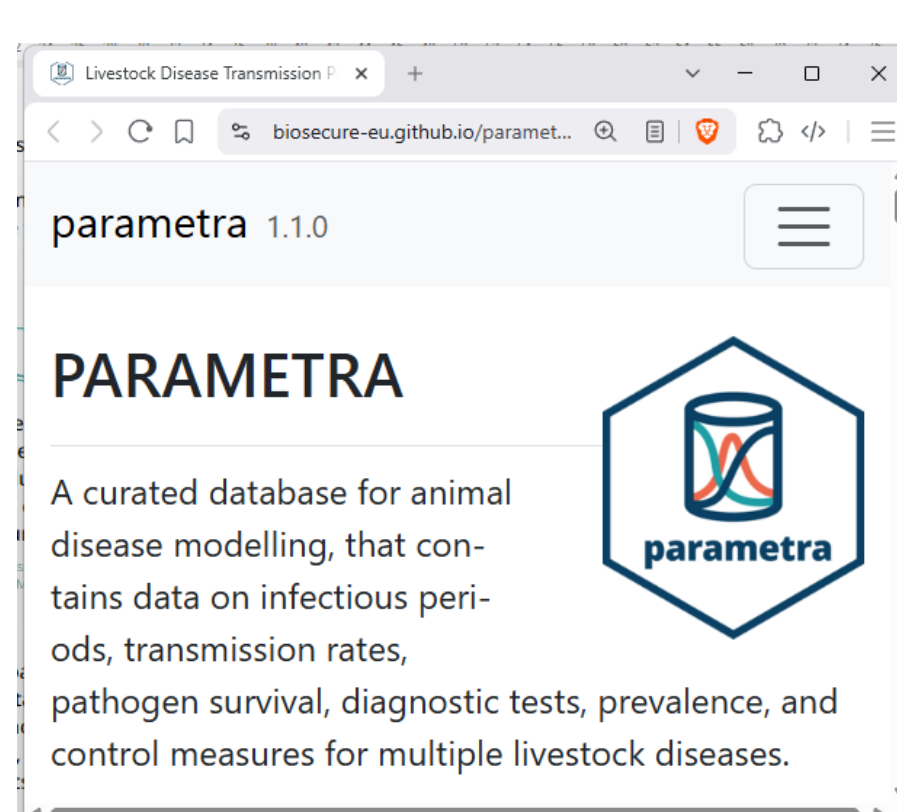


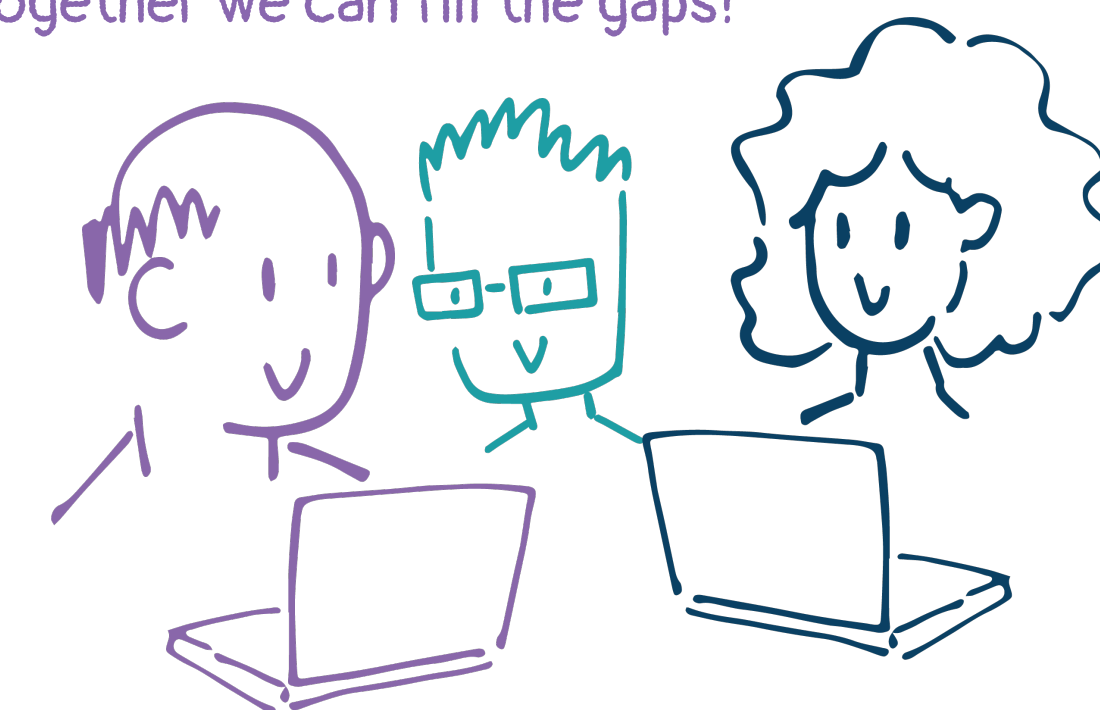
Table 1. Number of PARAMETRA (v1.1.0) entries by pathogen and parameter. The numbers in parentheses indicate the count of studies where these entries were collected. Total number of studies: 411.

	Global Prevalence (1)	Herd Prevalence (73)	Within Herd Prevalence (39)	Pathogen Survival/Disinfection (39)	Probability Fomite Testing Positive (1)	Transmission On Fomites (4)	Sensitivity (57)	Specificity (46)	Incubation Period (18)	Infectious Period (74)	Latent Period (56)	Shape (4)	Basic Reproduction Number (79)	Probability Of Reactivation Of Latent Infection (2)	Probability Of Transmission Between Farms (1)	Probability Of Transmission Via Direct Contact (11)	Probability Of Transmission Via Indirect Contact (14)	Reproduction Number (17)	Transmission Parameter (124)	Other (65)
	Prevalence (101)	Survival (44)	Tests (62)	Time Intervals (92)	Transmission (175)															
African Swine Fever (36)	0	0	0	6	0	0	15	8	0	23	7	29	32	0	0	2	7	0	36	21
Avian Influenza (68)	0	0	0	3	0	0	15	15	32	91	58	0	190	0	1	6	6	0	160	0
Bluetongue (4)	0	0	1	0	0	0	3	3	0	0	0	0	15	0	0	0	0	0	0	4
Bovine Respiratory Syncytial Virus (20)	0	9	1	2	0	0	3	2	2	0	0	0	11	0	0	0	0	0	9	2
Bovine Tuberculosis (26)	1	9	7	2	0	0	65	39	0	0	6	0	12	0	0	0	0	6	15	15
Bovine Viral Diarrhoea Virus (23)	0	8	7	0	3	0	7	7	0	3	0	0	3	0	0	0	1	0	7	1
Campylobacter (26)	0	5	5	2	0	0	18	17	0	3	2	0	0	0	0	0	0	0	12	7
Classical Swine Fever (7)	0	0	0	0	0	0	2	2	0	2	1	2	10	0	0	2	2	5	13	0
Contagious agalactia (7)	0	5	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Coxiella burnetii (21)	0	11	12	2	0	0	4	3	0	5	0	0	0	0	0	0	0	1	15	0
E. coli (23)	0	0	0	1	0	0	99	90	0	3	3	0	18	0	0	4	8	1	51	22
Foot and Mouth Disease (14)	0	0	0	3	0	0	13	11	0	13	3	0	6	0	0	0	0	19	8	3
Hepatitis E (25)	0	17	94	2	0	0	2	2	0	36	29	1	25	0	0	0	0	7	32	1
Infectious Bovine Rhinotracheitis (14)	0	2	3	4	0	0	3	2	0	1	0	0	1	1	0	1	0	0	0	1
Paratuberculosis (28)	0	8	0	4	0	0	111	101	0	2	3	0	22	1	0	2	1	0	47	11
Peste des Petits Ruminants (9)	0	0	0	1	0	0	10	3	2	1	0	0	4	0	0	0	0	2	3	1
PRRS (26)	0	2	10	1	0	4	11	8	0	2	3	0	20	0	0	11	16	13	4	15
S. aureus (1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Salmonella (23)	0	5	27	4	0	0	11	8	0	2	2	0	30	0	0	0	0	0	7	6
Swine Influenza (19)	0	4	8	2	0	0	6	2	0	16	10	0	2	0	0	0	0	16	43	0



However, some other parameters are missing....

But together we can fill the gaps!



How to contribute

PARAMETRA is a community project:

- Submit new parameters via the contribution form
- Explore it and provide feedback (answer the survey or contact us)
- Join the ModAH PARAMETRA Working Group
- Spread the word and let others know about the project

Next steps

We are working to improve the usability and sustainability of the database:

- Developing a curation protocol for new submissions
- Periodically updating the database
- Designing an online platform for browsing the database based on feedback from modellers



Access



PARAMETRA is currently available as



Excel



R package



CSV files

<https://biosecure-eu.github.io/parametra/>

Answer the survey



<https://forms.cloud.microsoft/e/cDjskVYTuP>

Suggestions are welcome! Thanks!

Contact
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