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VAKGROEP VOORTPLANTING, VERLOSKUNDE EN BEDRIJFSDIERGENEESKUNDE
VETERINAIRE EPIDEMIOLOGIE UNIT

PATHOGENESIS, DIAGNOSIS AND PREVENTION OF DYSBIOSIS IN BROILERS

Drs. Nele Caekebeke

20 februari 2020

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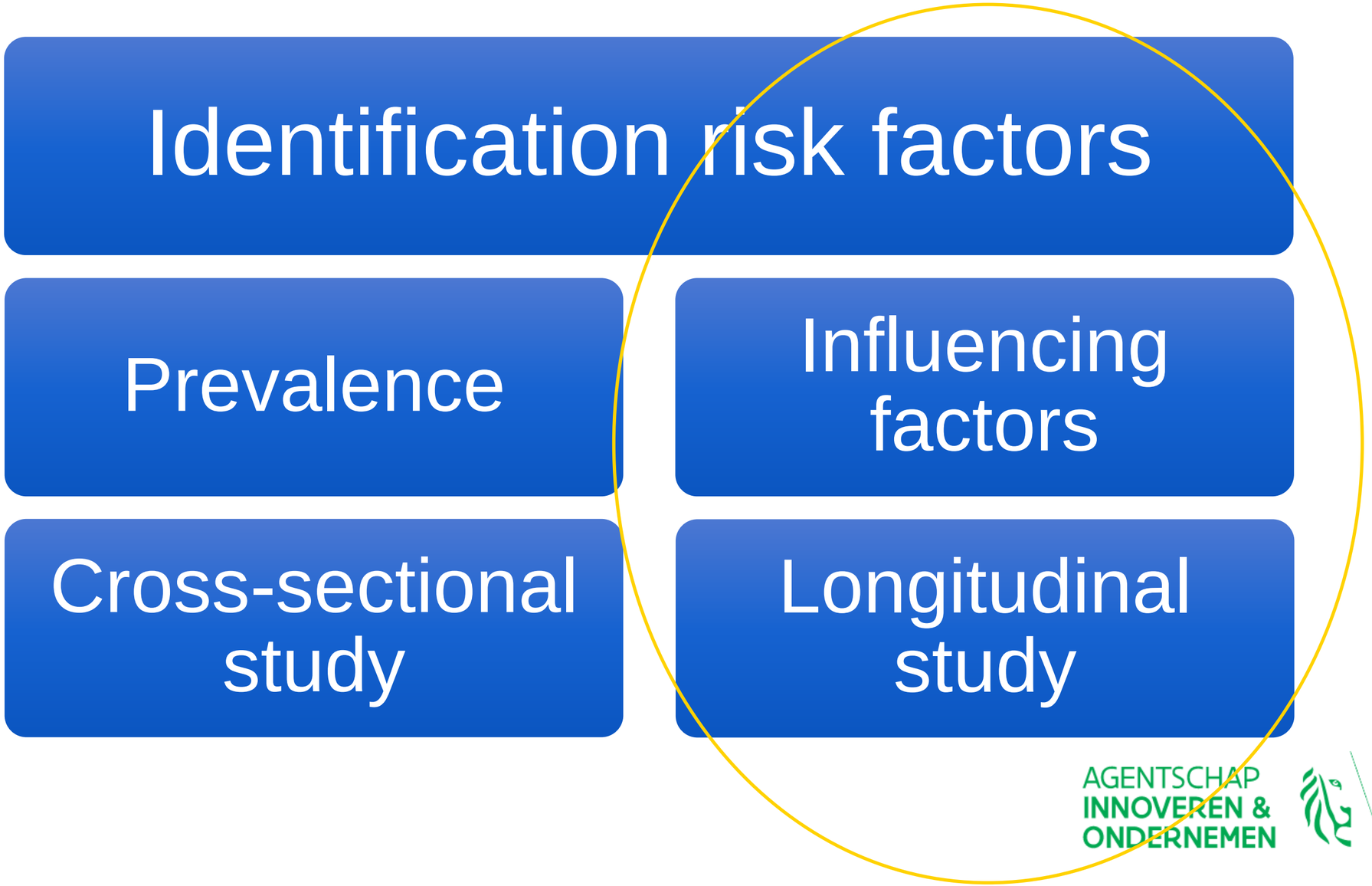
AGENTSCHAP INNOVEREN & ONDERNEMEN
Vlaanderen is ondernemen

PATHOGENESIS, DIAGNOSIS AND PREVENTION OF DYSBIOSIS IN BROILERS



LONGITUDINAL STUDY

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OPZET VAN DE STUDIE

- Longitudinal study
- 15 broiler farms in Flanders
- 5 visits per farm (day 10, 17, 20, 24, 28)
- 750 data points

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x10

D0

D10

D17

D20

D24

D28

D42

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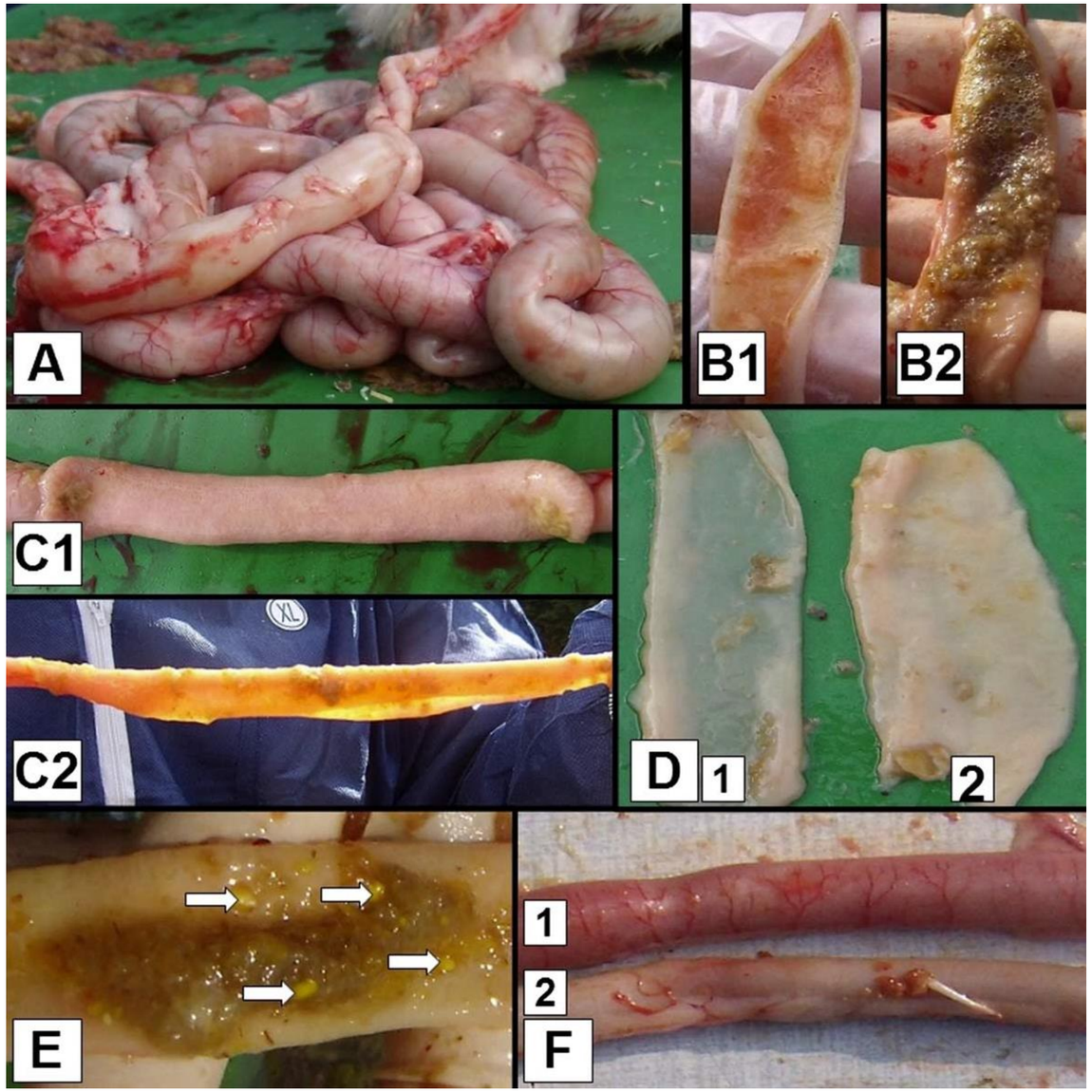
AGENTSCHAP INNOVEREN & ONDERNEMEN

Vlaanderen is ondernemen

Farm	Experience (yr)	Employees	Capacity	Biocheck total
1	45	1	64000	53
2	20	1	120000	64
3	34	2	42000	56
4	25	2	42000	46
5	23	2	43000	67
6	11	2	18000	59
7	11	2	85000	60
8	7	2	75500	60
9	7	2	76000	62
10	20	2	72000	71
11	3	1	54000	65
12	5	2	85000	59
13	40	1	45000	59
14	31	2	35000	54
15	3	1	50000	64
Average	**19**	**2**	**60433**	**60**

DYSBACTERIOSIS



De Gussem, 2010

A) Ballooning
B) Abnormal content cran/caud

C) Tonus cran/caud
D) Fragility cran/caud

E) Undigested particles
F) Inflammation cran/caud

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Vlaanderen is ondernemen

DYSBIOSE SCORE OP DIERNIVEAU

Time (d)	Macroscopic dysbacteriosis score								
	0	1	2	3	4	5	6	7	Average
10	17	37	43	42	10	0	1	0	**2,0**
17	5	20	46	49	19	10	1	0	**2,6**
20	3	11	38	45	38	14	1	0	**3,0**
24	0	9	33	49	37	21	1	0	**3,2**
28	1	14	30	52	35	12	5	1	**3,1**

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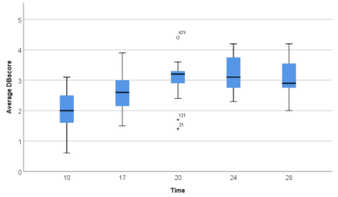
GEMIDDELDE DB SCORE - TIJD



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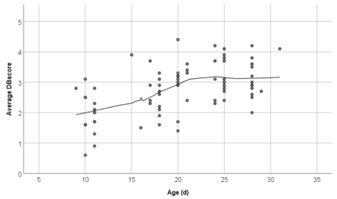
GEMIDDELDE DB SCORE - LEEFTIJD



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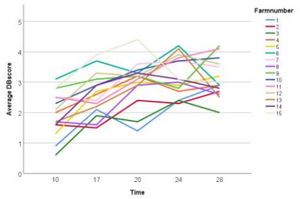
GEMIDDELDE DB SCORE PER BEDRIJF - TIJD



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DYSBIOSE OP VERSCHILLENDE TIJDSPUNTEN

Correlations

		AvDBs10	AvDBs17	AvDBs20	AvDBs24	AvDBs28
AvDBs10	Pearson Correlation	1	,666**	,800**	,598*	,620*
	Sig. (2-tailed)		,007	,000	,019	,014
AvDBs17	Pearson Correlation		1	,685**	,446	,383
	Sig. (2-tailed)			,005	,095	,159
AvDBs20	Pearson Correlation			1	,524*	,431
	Sig. (2-tailed)				,045	,108
AvDBs24	Pearson Correlation				1	,347
	Sig. (2-tailed)					,205
AvDBs28	Pearson Correlation					1
	Sig. (2-tailed)					

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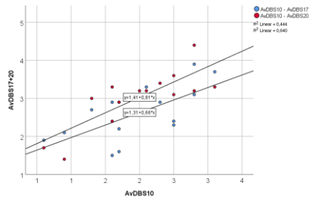
DB SCORE d10/d17/d20



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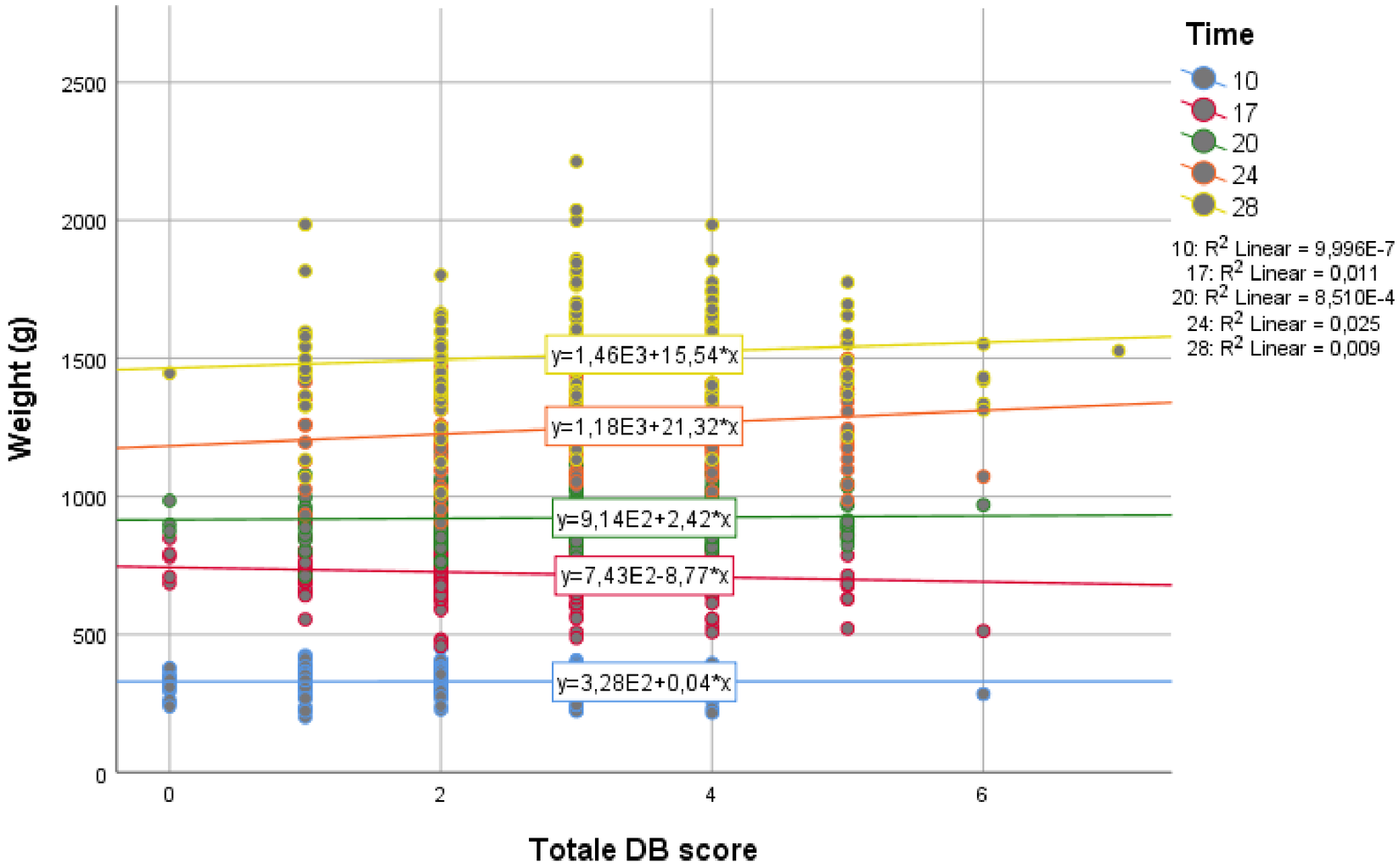
GEWICHT - DB SCORE DIERNIVEAU



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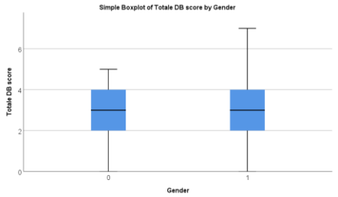
DB SCORE - GESLACHT DIERNIVEAU



Mean= 2,68

Mean = 2,87

♂

♀

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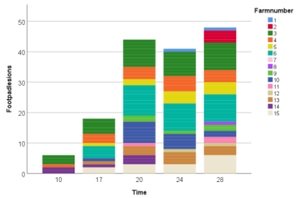
VOETZOOLLAESIES - TIJD DIERNIVEAU



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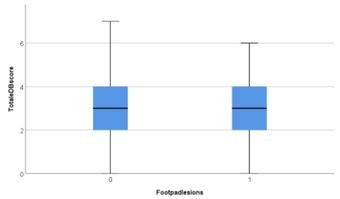
DB SCORE – VOETZOOLLAESIES DIERNIVEAU



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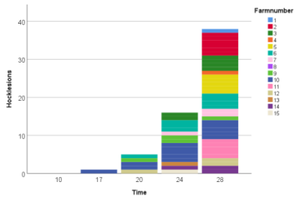
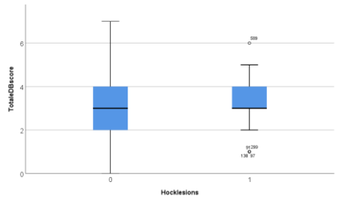
HAKLAESIES - TIJD DIERNIVEAU



DB SCORE – HAKLAESIES DIERNIVEAU



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COCCIDIOSIS

Score 0 → +4

E. acervulina

E. maxima

E. tenella

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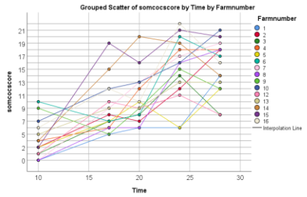
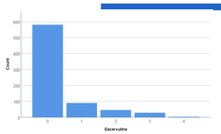
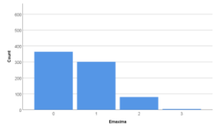
Vlaanderen is ondernemen

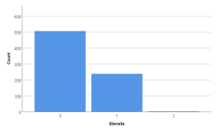
COCCIDIOSIS SCORE – TIJD BEDRIJFSNIVEAU



COCCIDIOSIS SCORES DIERNIVEAU







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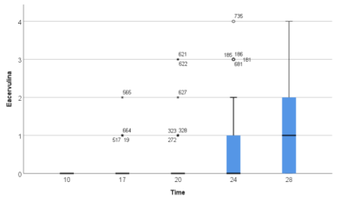
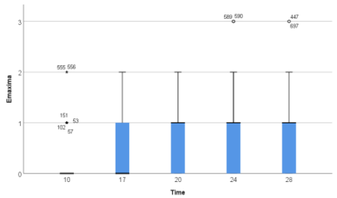
E. ACERVULINA SCORE – TIJD DIERNIVEAU



E. MAXIMA SCORE – TIJD DIERNIVEAU



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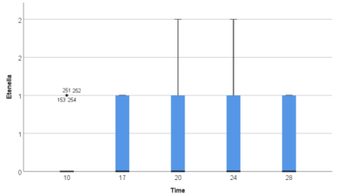
E. TENELLA SCORE – TIJD DIERNIVEAU



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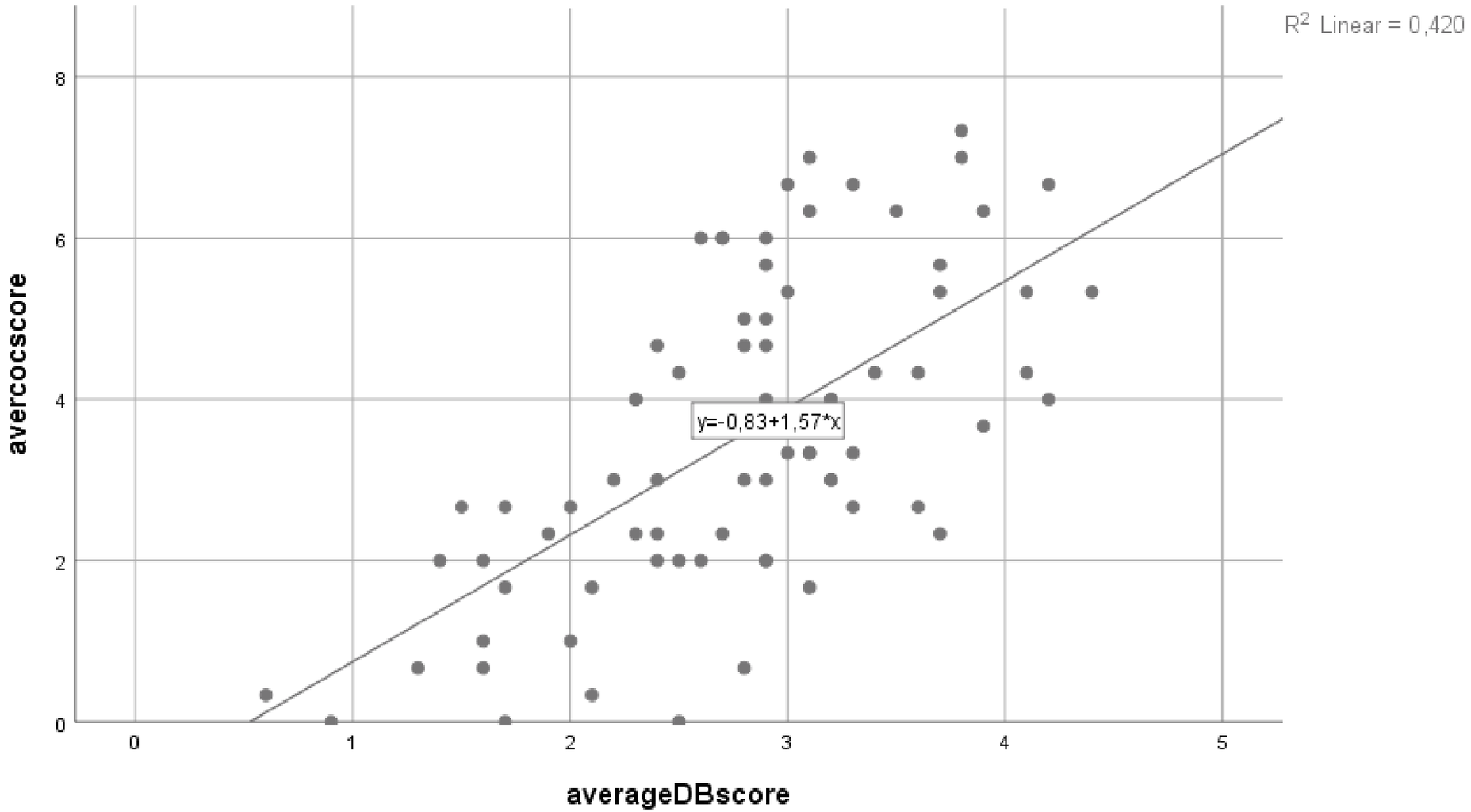
COCCIDIOSIS – GEMIDDELDE DB



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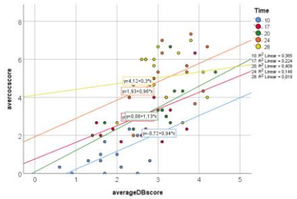
COCCIDIOSIS – GEMIDDELDE DB



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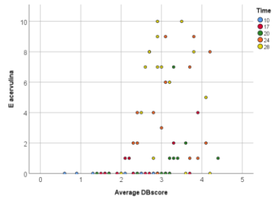
E. ACERVULINA SCORE - GEMIDDELDE DB



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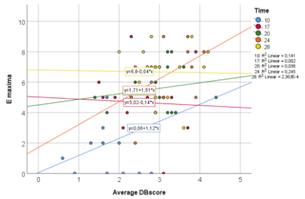
E. MAXIMA SCORE - GEMIDDELDE DB SCORE



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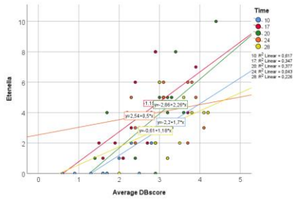
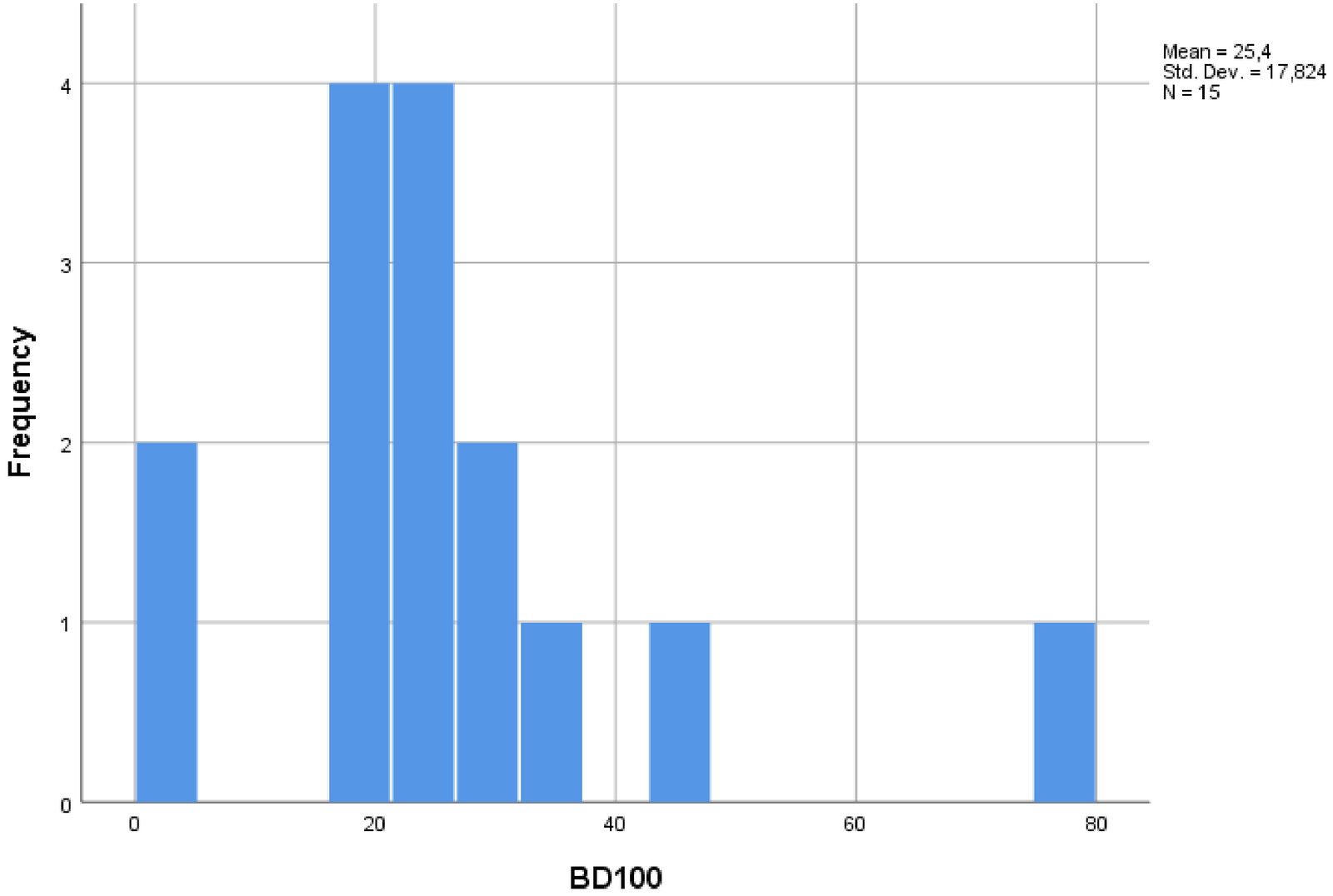
E. TENELLA SCORE - GEMIDDELDE DB SCORE



ANTIBIOTICAGEBRUIK



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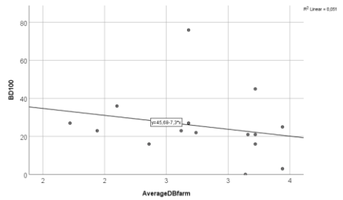
GEMIDDELDE DB SCORE – BD100 BEDRIJFSNIVEAU



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DB PARAMETERS

Nr.	Parameter	Sample size	Absent	Present
1	Ballooning	750	729	21
2	Inflammation cranial	750	340	410
3	Fragility cranial	750	742	8
4	Tonus cranial	750	697	53
5	Abnormal content cranial	750	257	493
6	Inflammation caudal	750	544	206
7	Fragility caudal	750	741	9
8	Tonus caudal	750	727	23
9	Abnormal content caudal	750	436	314
10	Undigested particles	750	203	547

DB PARAMETERS

Nr.	Parameter	Sample size	Absent	Present
1	**Ballooning**	**750**	**729 (97,2%)**	**21**
2	Inflammation cranial	750	340	410
3	**Fragility cranial**	750	**742 (98,9%)**	**8**
4	Tonus cranial	750	697	53
5	Abnormal content cranial	750	257	493
6	Inflammation caudal	750	544	206
7	**Fragility caudal**	750	**741 (98,8%)**	**9**
8	**Tonus caudal**	750	**727 (96,9%)**	**23**
9	Abnormal content caudal	750	436	314
10	Undigested particles	750	203	547

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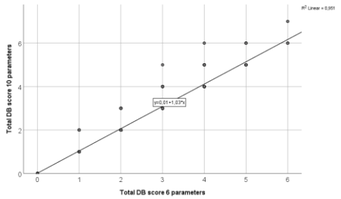
DB SCORE MET VERMINDERDE PARAMETERS



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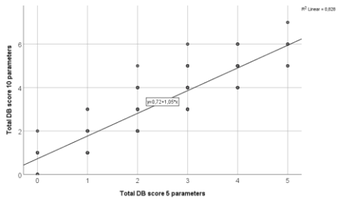

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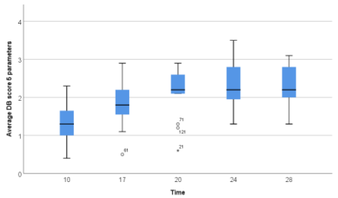
GEMIDDELDE DB SCORE - TIJD



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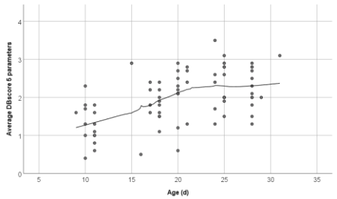
GEMIDDELDE DB SCORE - LEEFTIJD



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CONCLUSIES

- DB scores increase between day 10 to 20
- DB scores stabilize between day 20 and 28
- Good correlation between DB score of 10 parameters and DB score of 5 parameters

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MODEL

Hoger aantal dysbiose laesies bij:

-oudere dieren

-hennen

-(vermoeden van een) E. tenella infectie

-hoge interne bioveiligheid

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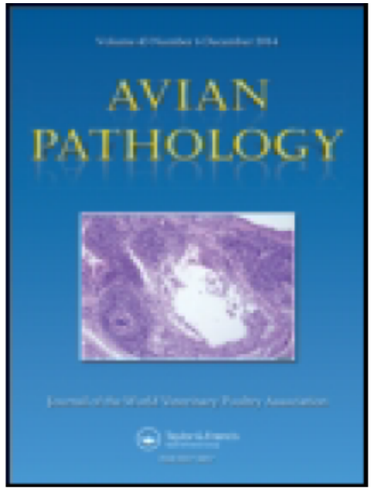

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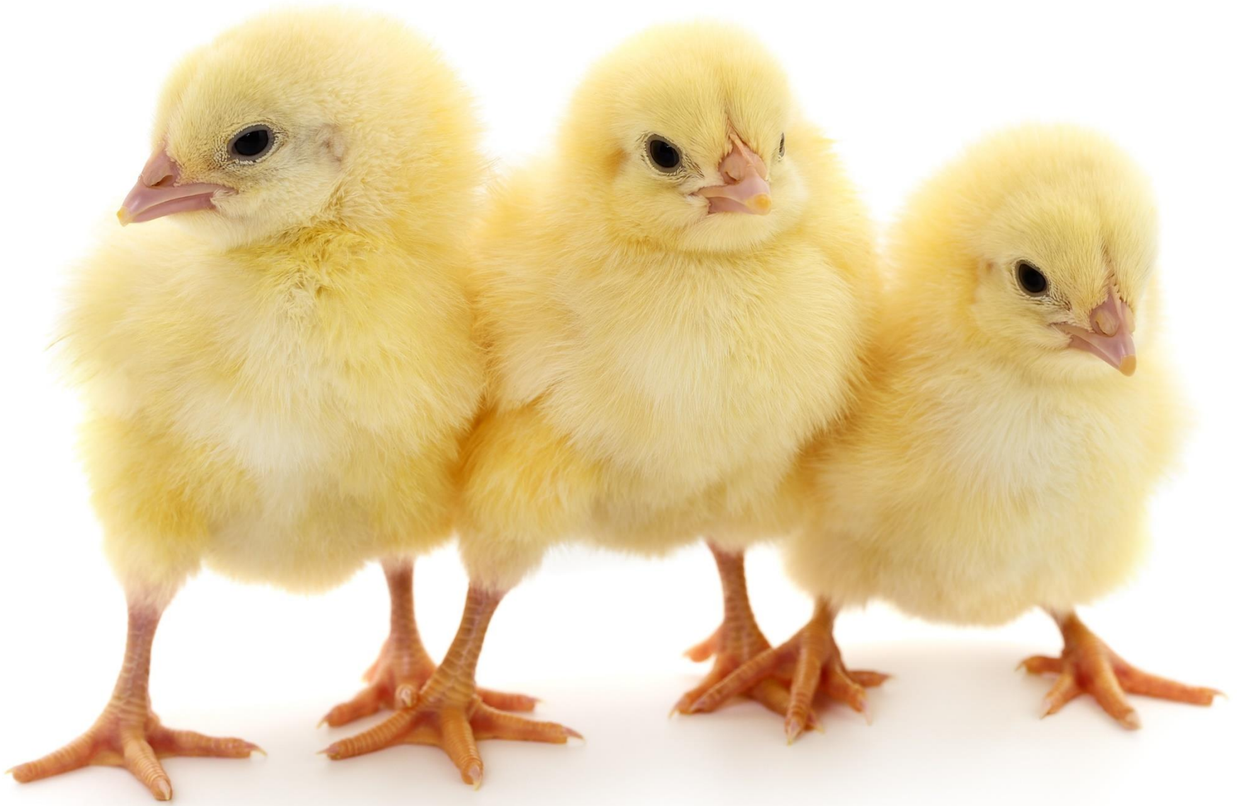
Avian Pathology

ISSN: 0307-9457 (Print) 1465-3338 (Online) Journal homepage: https://www.tandfonline.com/loi/cavp20

A study on risk factors for macroscopic gut abnormalities in intensively reared broiler chickens

Nele Caekebeke, Moniek Ringenier, Fien De Meyer, Richard Ducatelle, Nikolai Ongena, Filip Van Immerseel & Jeroen Dewulf

Thank you for your attention!



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Nele Caekebeke

MVetMed, PhD-student

DEPARTMENT OF REPRODUCTION,
OBSTETRICS AND HERD HEALTH

E nele.caekebeke@ugent.be
T +32 9 264 75 48

Ghent University
@ugent
Ghent University

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