The Frustrations of Free-Range **Egg Drops** with **No Mortality** in First Opinion Practice

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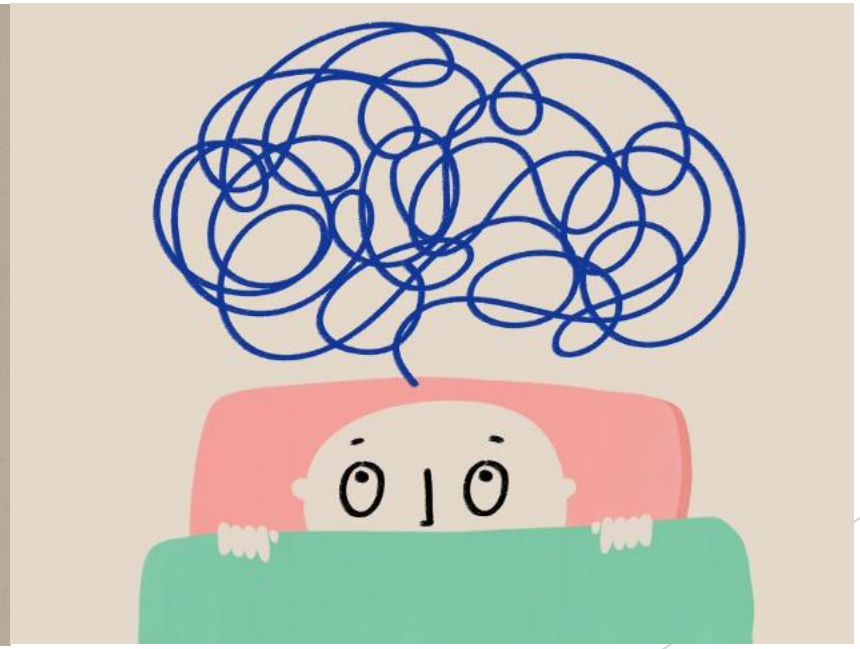


Early April

45-week-old Lohmann, all-in-all-out, 8k birds/house, staggered intake, doing fine

Drop in production ~10% H3+4 only

Increase in seconds- ~10%, pale+thin shells, breaking/cracks

No significant mortality

IB vaccinated in-water ~8 weeks previously (Mass + 793b Variant)

Not been wormed or treated for Red Mite (present)

Worm them in-feed, Exzolt them, 10x Cloacal Swabs IB PCR, Multivitamins, Visit ASAP arranged

PCR IBV #1

Sample	ID	Result	C.q. value	Sequence type	Sequence match
10x cloacal swabs	House 3+4 pooled	Positive	38.63	Unable to sequence	-

My Interpretation:

- Inconclusive
- Possibly lingering live vaccine strain?

Visit mid-April

~15% drop in egg production

2nd Class eggs + reject eggs =~12% total production

No significant mortality

- Exzolt (no PRM seen) and in-feed wormer done
- VitD3 and in-water acidification (consultant advice)
  - Started (left over) OTC course…
- No obvious clinical signs in birds, no change in feed/water, NAD on clinical inspection, shed felt comfortable
- 4x fresh culls, 1x dead bird PMd onsite- NAD, all in lay
  - **10x cloacal swabs taken- IBV PCR**
  - **10x acute bloods for storage**

Highly suspicious of infectious cause (IBV, ART, MG/MS?)

Consider IBV vaccination across site (*!*)?

Reassess after Abx

2nd Visit two weeks later
End of April

Very similar picture

Slight increase in production following abx

Drop in production again now

- No obvious clinical signs in birds, no change in feed/water, NAD on clinical inspection, shed felt comfortable

  - **10x <u>convalescent</u> bloods**

Support with multivitamins/egg-shell-specific supplements

ART by ELISA*

House	Tested	Mean	CV	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
4 (48wks)	10	23897.0	33.4	1												1	8					
4 (50wks)	10	24199.2	21.7									1				2	7					

IBV by ELISA*

House	Tested	Mean	CV	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
4 (48wks)	10	17935.0	37.7								1	2		1	2	2	1	1				
4 (50wks)	10	16704.8	58.0	1							1		1	3	2		1		1			

Mg/Ms by ELISA*

House	Tested	Mean	CV	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
4 (48wks)	10	300.6	87.3	9	1																	
4 (50wks)	10	803.9	148.3	7	1		1	1														

Serology results

My Interpretation:

- Inconclusive
- IBV+ART relatively high at both time points, live IB vaccines in lay
- No clear seroconversion- hard to interpret
- Cross-reaction for MG/MS- need to repeat to confirm
- Only 10x samples

PCR IBV #2

Sample	ID	Result	C.t. value	Sequence type	Sequence match
10x cloacal swabs	House 3+4 pooled	Positive Field virus mutations	28.40	793b	98% homologous to 4/91

My Interpretation:

- We have something to go with!
- Why isn't it spreading to H1 and H2?
- Disappointing with in-lay live vaccinations…

Mid-May

- Still poor production in H3 and H4
- At worst point dropped by 25% production
- Mortality still low

- Advised by an external consultant to increase the light intensity to give the birds a “boost”

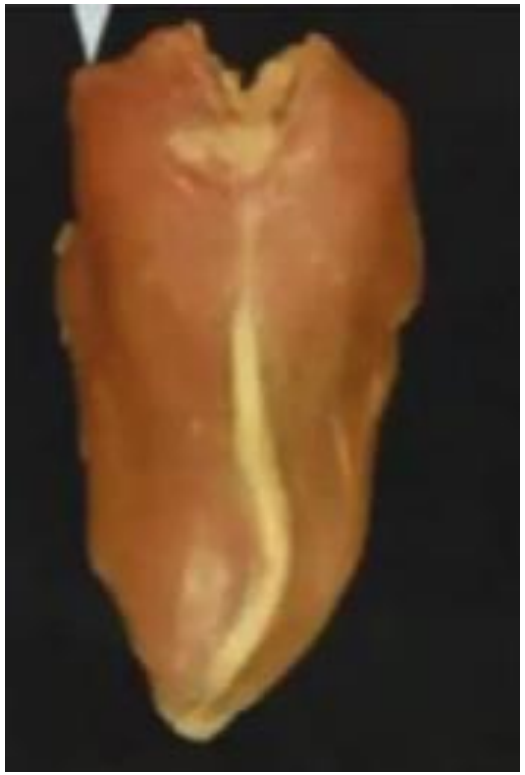
- I advised to discuss with the feed mill as to whether there could be additional support given in the diet – adjusting the spec and using additional Calcium/VitD3 supplements to support egg-shell formation

  - No specific advice on diet spec from ourselves…

Early JUNE- 3rd site visit

- H1 and H2 now- copy and paste clinical picture from 2 months previously
- Nothing much to go on clinical inspection/PMs on site
- Bloods and 2x PCR samples collected

MORTALITY SPIKE H3 ad 4, 15-20birds/day



- PMs submitted following day
- 13 dead birds: 7x cannibalistic vent pecking, 6x E coli peritonitis syndrome
- Coincided with light intensity increase
- Dim lights, magnesium supplement, increase enrichment
- Consider antibiotics if no improvement
- High incidence of keel bone deviation

ART by ELISA*

House	Tested	Mean	CV	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1+2	10	25441.4	15.2											1	1		8					

IB793 by HI*

House	Tested	Mean	CV	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1+2	10	9.7	7.0										4	5	1							

IBV by ELISA*

House	Tested	Mean	CV	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1+2	10	17345.0	16.5										1	3	4	2						

Mg Ab by ELISA*

House	Tested	Mean	CV	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1+2	10	80.2	148.6	10																		

Ms Ab by ELISA*

House	Tested	Mean	CV	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1+2	10	132.3	126.1	10																		

Serology results

My Interpretation:

- Inconclusive
- Need paired result… £££
- Similar to the H3/4 acute samples previously

PCR IBV #3

Sample	ID	Result	C.t. value	Sequence type	Sequence match
10x cloacal swabs	House 1+2 pooled	Positive	32.32	**Ark**-Type	97.11
10x cloacal swabs	House 1+2 pooled	Negative for aMPV A and B			

My Interpretation:

- Ark?!?!
- Makes sense to be positive, low CT value
- Wondering vaccine strain, or PCR anomaly?

PCR IBV #4

Sample	ID	Result	C.t. value	Sequence type	Sequence match
10x cloacal swabs	House 1+2 pooled	Small quantity of RNA	34.80	Untypable	

My Interpretation:

- Same birds sampled, different PCR, different result
- Essentially interpret as negative
- Unlucky with timing of sampling?

Late JUNE- 4th site visit

Production issues and H3/4 mortality still ongoing. Still 50:50 cannibalism + EPS

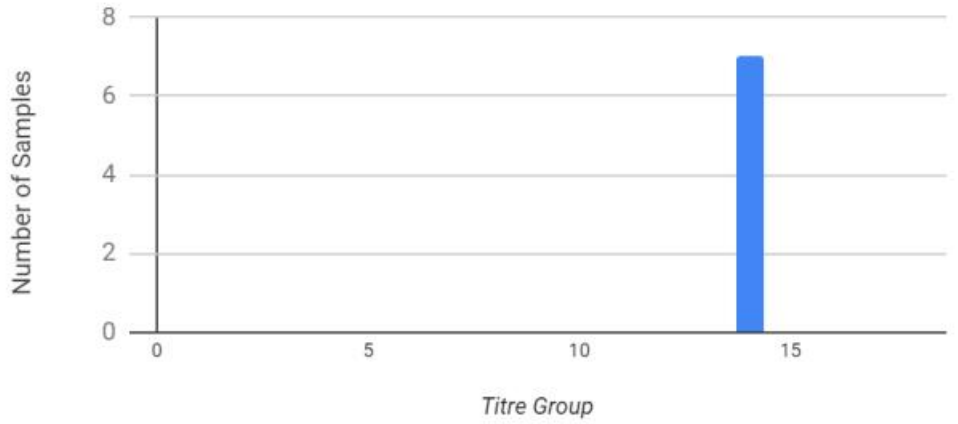
"Diet Change"= back up to layer 1 diet at same time as light intensity increase

OTC + vaccination, light adjustment/pop holes, Worms+red mite, enrichment

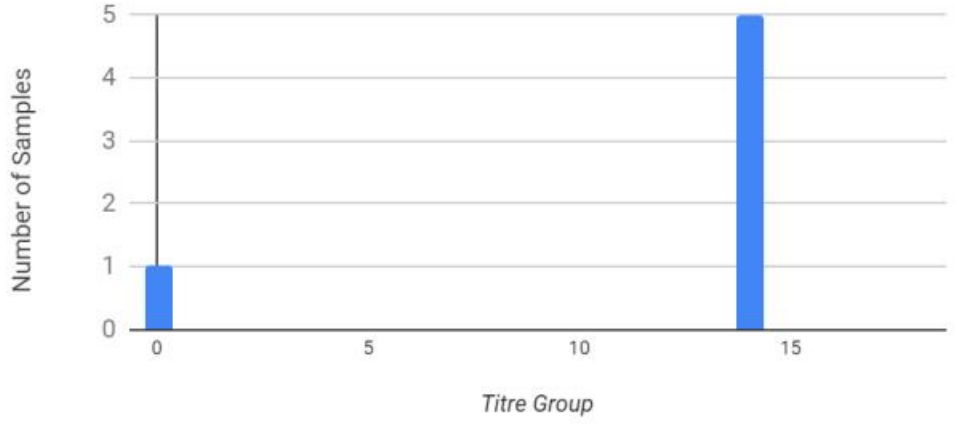
Consultant concerns…

- IB vaccinate?!…
- Erysipelas…
- EDS…

Adeno ELISA Biochek
Site: Risdon
House: 4 (48wk)
Samples: 7
Mean Titre: 25643
% CV: 0



Adeno ELISA Biochek
Site: Risdon
House: 4 (50wk)
Samples: 6
Mean Titre: 21477
% CV: 48



EDS-76 by HI*

House	Tested	Mean	CV	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
4 (48wks)	7	8.1	8.5								1	4	2									
4 (50wks)	5	7.4	31.1					1		1			3									

Take away points

- Lose a lot of money quickly
- Lots of opinions and views complicating the situation
- Communication+ expectation management: clients and non-vets involved
- Choice of diagnostics: cost, time, relevance, interpretation
- Other DDxs?
- Other samples I should have taken
- Unsatisfactory outcomes, what can be achieved in these cases?
- Next flock!

- Being in practice is tricky!(?)

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Thanks for listening

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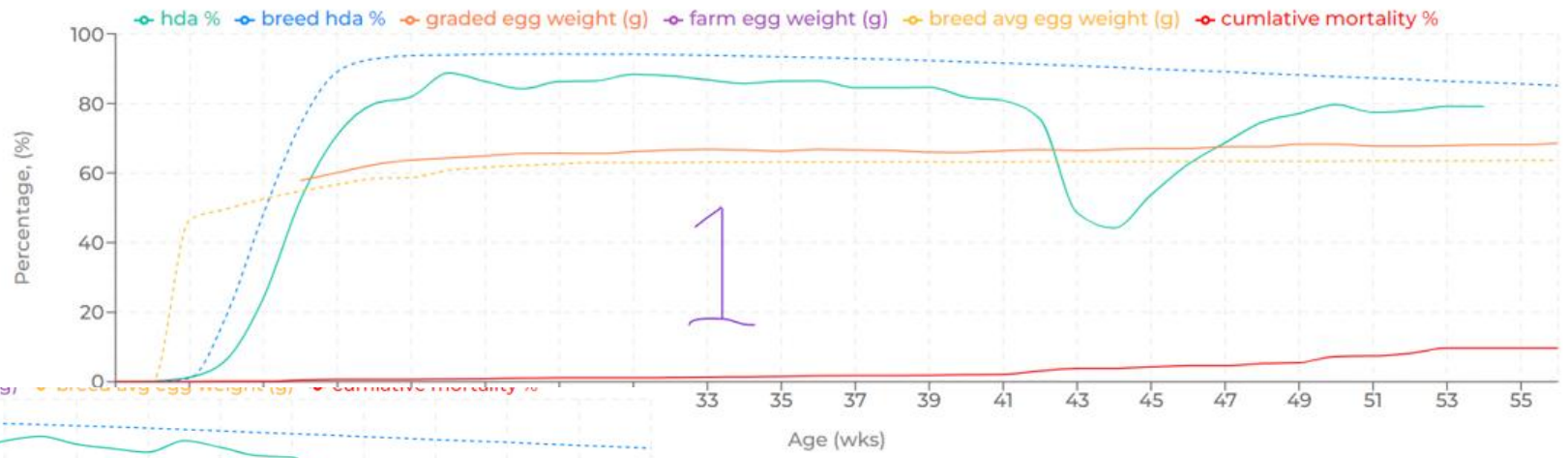
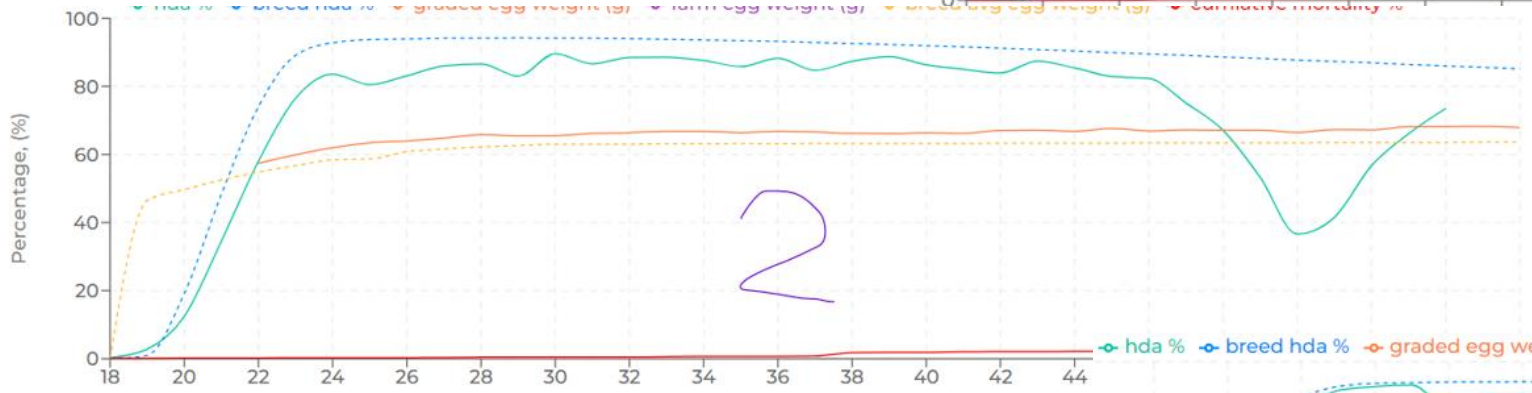
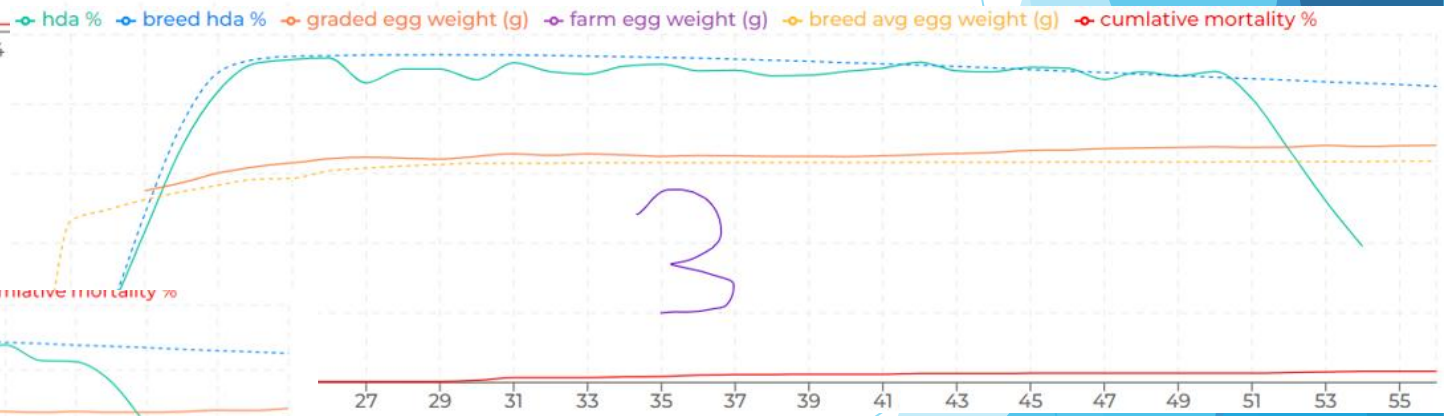
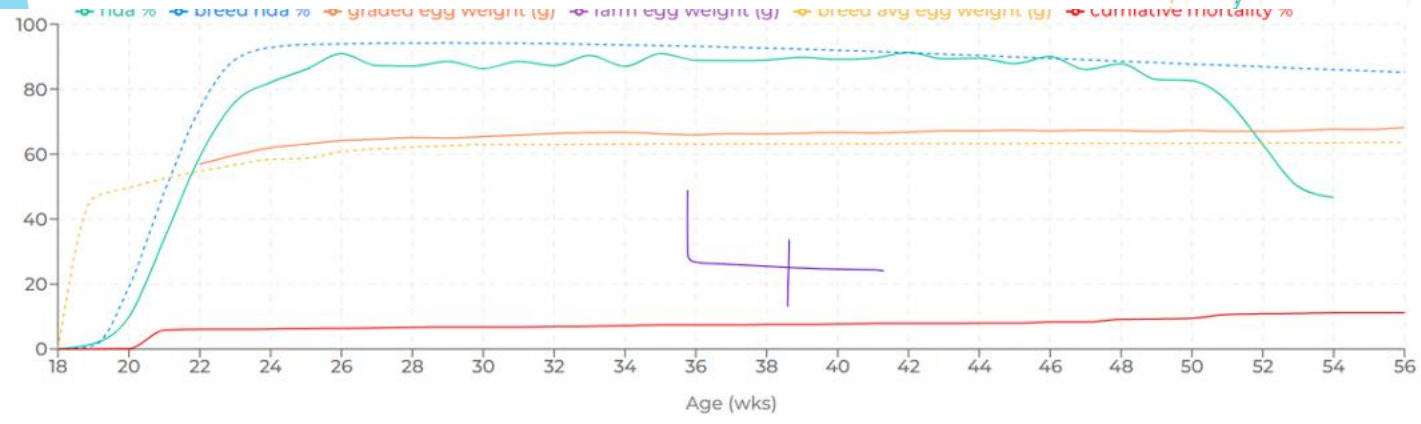

hda %
breed hda %
graded egg weight (g)
farm egg weight (g)
breed avg egg weight (g)
cumlative mortality %
Percentage, (%)
Age (wks)
1


Percentage, (%)
2


hda %
breed hda %
graded egg weight (g)
farm egg weight (g)
breed avg egg weight (g)
cumlative mortality %
3


Age (wks)
4

ART by ELISA*

House	Tested	Mean	CV	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1 (10/11/23)	10	13615.5	36.5								4	1		1	4							
1 (26/01/24)	10	12153.6	38.9							1	4		1	3		1						

EDS-76 by HI*

House	Tested	Mean	CV	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1 (26/01/24)	10	2.4	68.6	1	3	1	2	2	1													

IBV by ELISA*

House	Tested	Mean	CV	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1 (10/11/23)	10	9493.0	37.5						1	4		2	1	2								
1 (26/01/24)	10	9482.5	31.2						1	2	3	2	1	1								

Mg Ab by ELISA*

House	Tested	Mean	CV	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1 (10/11/23)	10	2071.0	110.7	5		2			2	1												
1 (26/01/24)	10	1949.3	122.8	3	4		1			2												

Ms Ab by ELISA*

House	Tested	Mean	CV	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1 (10/11/23)	10	6871.2	70.7		1	1		1	3		1	1	1	1								
1 (26/01/24)	10	9602.6	39.5						3	1	2	2	1		1							

ORT by ELISA*

House	Tested	Mean	CV	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1 (10/11/23)	10	36069.3	34.2							1					1		1	7				
1 (26/01/24)	10	16800.2	72.5					1	2	1	1	1		1	1		1	1				

Ref:	House	Sample type	PCR test performed	Result	Cq value	Sequence Type	Sequence % Match
1627	1	Cloacal swabs	*Infectious bronchitis virus*	Positive	35.77	793/B-type	99.67

Ref:	House	Sample type	PCR test performed	Result	Cq value
0123	2	Cloacal swabs	*Infectious bronchitis virus*	Negative	-
0123	3+4	Cloacal swabs	*Infectious bronchitis virus*	Positive	38.29

CT Value	**Sample 1 (H3)** Molecular analysis identified a small quantity of IB viral RNA (Ct = 29) **Sample 2 (H4)** – Negative
Interpretation	**Sample 1** – 793B Field Virus: 99% Homologous to 4/91 Vaccine Vial **Sample 2** - Negative

House 3

Sample	IBV PCR Ct(†)	IBV PCR Result(†)	IBV S1 Genotype(†)
Trachea (pooled)	No Ct	Negative IBV	
Cloaca (pooled)	26.76	POSITIVE IBV	4/91(793/B)

Sample	IBV S1 Similarity %(†)
Cloaca (pooled)	91.43

House 4

Sample	IBV PCR Ct(†)	IBV PCR Result(†)	IBV S1 Genotype(†)
Trachea (pooled)	No Ct	Negative IBV	
Cloaca (pooled)	No Ct	Negative IBV	

All birds from *House 3* were out of lay. They had marked regression of their reproductive tract, which explains the loss of egg production and an early moult. An avian respiratory complex was diagnosed by positive PCR results for IBV, *M. gallisepticum*, and *M. synoviae*. The chronic lymphoplasmacytic tracheitis detected on histopathology confirmed the diagnosis. The vaccinal history, level of virus detected in cloacal swabs, and S1 genotyping results were congruous with an earlier challenge by a field strain of IBV.

ART by ELISA*

House	Tested	Mean	CV	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
H3 66wks	13	8140.4	67.9			1	2	1	3	1	1		2	1		1						
H3 69wks	15	5410.0	71.4	2		3	2	1	2	1	1	2	1									

EDS-76 by HI*

House	Tested	Mean	CV	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
H3 66wks	13	3.5	42.6	1		1	4	4	2	1												
H3 69wks	14	4.4	29.3				4	5	2	2	1											

IB793 by HI*

House	Tested	Mean	CV	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
H3 66wks	13	8.2	12.3								4	3	5	1								
H3 69wks	15	8.1	10.3								3	8	3	1								

IBV by ELISA*

House	Tested	Mean	CV	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
H3 66wks	13	16850.8	29.2									3	1	4	1	3	1					
H3 69wks	15	18031.0	35.8								1	2	2	3	2	2	2	1				

Mg/Ms by ELISA*

House	Tested	Mean	CV	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
H3 66wks	13	295.2	138.8	11	1	1																
H3 69wks	15	303.3	106.7	12	3																	

Ref:	House	Sample type	PCR test performed	Result	Cq value
1434	3	Cloacal/OFG swabs	*Mycoplasma gallisepticum*	Negative	-
1434	3	Cloacal/OFG swabs	*Mycoplasma synoviae*	Negative	-
1434	3	Cloacal/OFG swabs	*Infectious Bronchitis Virus*	Negative	-
1434	3	Cloacal/OFG swabs	aMPV A	Negative	-
1434	3	Cloacal/OFG swabs	aMPV B	Negative	-

CT Value	Molecular analysis identified a small quantity of IB viral RNA (Ct = 34.80)
Interpretation	Strain Untypable

Ref:	House	Sample type	PCR test performed	Result	Cq value	Sequence Type	Sequence % Match
1308	3	Cloacal swabs	*Infectious bronchitis virus*	Positive	34.99	Unable to sequence	-
1308	3	Cloacal swabs	*aMPV-A*	Negative	-	-	-
1308	3	Cloacal swabs	*aMPV-B*	Negative	-	-	-

Ref:	House	Sample type	PCR test performed	Result	Cq value
0044	BBTS	OFG Swabs	*Mycoplasma spp.*	Negative	-

Ref:	House	Sample type	PCR test performed	Result	Cq value
0046	Bovans	OFG Swabs	*aMPV A*	Negative	-
0046	Bovans	OFG Swabs	*aMPV B*	Negative	-

Ref:	House	Sample type	PCR test performed	Result	Cq value	Sequence Type	Sequence % Match
0045	BBTS	Cloacal swabs	*Infectious Bronchitis Virus*	Positive	34.24	793/B-type	94.43

CT Value	Molecular analysis identified a significant quantity of IB viral RNA (Ct = 27.30)

Interpretation	Strain Untypable

Mg Ab by ELISA*

House	Tested	Mean	CV	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
2	10	67.2	175.7	10																		

Ms Ab by ELISA*

House	Tested	Mean	CV	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
2	10	6.4	110.5	10																		

CT Value	Molecular analysis identified a significant quantity of IB viral RNA (Ct = 27.27)

Interpretation	Field Virus: 96% Homologous to 4/91 Vaccine Vial