Infectious Bronchitis

TECHNICO ECONOMICAL BOOKLET

Cevac IBird®

Cevac IBras®

Cevac IBron™

Together, beyond animal health

ceva

CEVA GLOBAL REFERENCE IN HATCHERY VACCINATION

800
POULTRY PROFESSIONALS

#1
IN HATCHERY VACCINATION

22 BILLION
DOSES OF NEW TECHNOLOGY HATCHERY VACCINES IN 2017

Global coverage

180 VET specialists close to you

GPS Global Protection Services

C.H.I.C.K program

Ceva Animal Health makes available the C.H.I.C.K Program Quality Code of Practice to their affiliates for the control of good hatchery vaccination practices in poultry.

CT814 C.H.I.C.K Program
Quality Code of Practice
CONTROLLED BY BUREAU VERITAS GROUP.

175 HATCHERY SPECIALISTS at your service

FOREWORD

In this booklet you will find an updated technico-economic summary for Ceva's IB solutions in key countries or areas, namely Cevac® IBird® (South East Asia, Europe, Africa, South America), Cevac® IBras® (Brazil), and Cevac® IBron™ (United States).

Each field trial includes an economic calculation, based on a specific and updated scale, which suggests the approximate value of using Ceva's IB solutions. These field trials compare one of Ceva's IB solutions to competitor products, or to weaker vaccination programs (eg, using Mass-type only vaccine).

Ceva Santé Animale is committed to sharing information and updated field data with partners and customers. Enjoy your reading.

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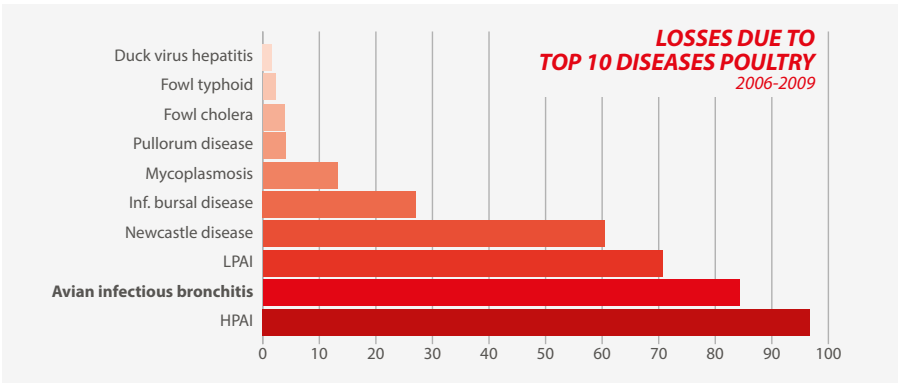
1

What is infectious bronchitis?

Avian infectious bronchitis (IB) is probably one of the most widespread poultry diseases around the world, given its highly contagious nature. It is caused by a gamma coronavirus that affects the respiratory, urinary and reproductive systems of the chickens causing different disorders depending on the tissue tropism characteristics of the invading viral strain.

The induced losses are very costly, because of uneven growth, respiratory distress, high morbidity, secondary opportunistic respiratory infections (*E.coli*, avian metapneumovirus, H9N2 low pathogenic avian influenza virus, etc.) and related medication, egg drops, and/or kidney damage. According to the World Bank[1], it is ranked as the 2nd most costly poultry disease, after highly pathogenic avian influenza.



1 World Livestock Disease Atlas - A Quantitative Analysis of Global Animal Health Data (2006-2009). The World Bank, November, 2011. LSU: Livestock Unit.

2 Economic impact of a poor control of infectious bronchitis[2]

Apparently healthy broilers were monitored for the presence of IBV by serology (Idexx ELISA) and molecular analysis (RT-PCR) at processing age (around 42 days of age). They represented a total of 109 flocks belonging to six Brazilian producing companies in the Southern States (three of them belong to the top 10 in Brazil). Altogether, these 6 companies are producing 49.5 million chickens per month. Companies 1 to 5 used one Mass type vaccine at day-old, whereas company no.6 did not vaccinate at all against IB. In addition, production performances were recorded.

Results

Despite they were apparently healthy, 72% of the flocks showed abnormally high late serological titers and/or molecular detection of IBV. A variant strain was identified to which Mass only provided poor protection.

The production performances could be recorded from companies 2 to 6, representing more than 4.3 million broilers. A comparison was done between IBV-infected and IBV-free flocks per company. The figures are reported in the table below.

	Company 2		Company 3		Company 4		Company 5		Company 6		Mean	
	IBV pos	IBV neg	IBV pos	IBV neg	IBV pos	IBV neg	IBV pos	IBV neg	IBV pos	IBV neg	IBV pos	IBV neg
FCR (adj. 2.7 kg)	1.668	1.638	1.806	1.795	1.678	1.576	1.846	1.750	1.763	1.694	**1.752**	**1.691**
Late mortality (>35d) (%)	1.38	1.12	0.64	0.21	1.71	0.64	2.93	1.12	2.21	1.82	**1.77**	**0.98**
ADG (g/d)	65.0	68.9	58.9	61.8	70.3	73.1	59.2	58.9	59.4	63.1	**62.6**	**65.2**
PI	351.6	374.1	316.8	309.7	387.3	414.7	303.3	339.0	311.0	337.7	**334.0**	**355.0**
Airsacculitis (%)	1.04	0.90	0.56	0.28	1.91	0.63	na	na	na	na	**1.17**	**0.60**

na: data not available

The impact of a poor control of a variant IBV on performances and economic return on investment could be summarized as follows:

Impact of variant IBV on	Performance loss	Economic impact (Euros/1,000 chickens)
FCR	+0.06	36
Late mortality (>35 d) (%)	+0.79	13
Final body weight (ADGx42)(g)	-109	35
Airsacculitis condemnations (%)	+0.57	12*

**Chacon J., pers. comm.*

Conclusion

To conclude, the financial impact of a poor control of variant IBV infection in more than 4 million commercial broilers was calculated to be worth **96 Euros / 1,000 chickens**.

2 Source: Chacon J. et al., 2018. Subclinical losses caused by infectious bronchitis virus in broiler chicken flocks. American Association of Avian Pathologists (AAAP) meeting, Denver, CO, July 13-17.

3

What does a proper vaccination program look like?

A critical issue is the high mutation rate and recombination ability of the IB virus. This is why there is no one single IB virus, but many IB viruses. Continuous efforts to characterize field isolates of infectious bronchitis virus (IBV) strains emerging from broiler, layer or breeder operations in different countries enable to draw epidemiological maps on the geographical distribution of the numerous IBV strains present in the world.

Facing these IBV constant changes and the need to protect susceptible poultry populations, it would be ideal to have homologous vaccines to induce a strong protection against the circulating virus. However, most of these viruses disappear and it is a very challenging task and virtually impossible to develop an IBV vaccine against each one of them. Developing and licensing a vaccine is a time consuming process and an expensive operation, which may be lost if the virus is no longer present in the field.

However, it is possible to combine different IB viruses with different antigenic characteristics to obtain a synergistic effect and therefore broaden the spectrum of protection. In fact, it has already been demonstrated that combining antigenically different strains, such as those from the 793B group with a Mass type strain, acts synergistically thus increasing the protection spectrum of the two single vaccines if applied separately.

Lastly, accurate hatchery vaccine application using advanced spray equipment is of paramount importance for successful immunisation of day-old chicks, batch after batch.

Source: Cook JK et al. Breadth of protection of the respiratory tract provided by different live-attenuated infectious bronchitis vaccines against challenge with infectious bronchitis viruses of heterologous serotypes. 1999. Avian Pathology 28: 477–485.

4 What are Ceva's IB solutions?

Ceva Animal Health developed several live variant IB vaccines to address many different epidemiological situations. As a result, each of them is positioned in its relevant geographical area(s).

Cevac IBird®

Cevac® IBird® is a recently licensed IBV vaccine which contains the attenuated V1-1/96 IBV strain, classified within the 793B genetic group. Applied together with a live Mass-type vaccine, Cevac® IBird® provides a strong protection against Mass, 793B, QX, Q1, variant-2 (IS/1494), Italy-02, IS/885, D1456, Tunisian, Taiwanese and Malaysian IBV strains, including a reduction of the field virus shedding.

Cevac IBras®

Cevac® IBras® is a recently licensed IBV vaccine which contains the attenuated BR (Brazilian variant) IBV strain. Cevac® IBras®, which can be applied together with a live Mass-type vaccine, provides a strong protection against BR, Mass and 793B IBV strains, including a reduction of the field virus shedding.

Cevac IBron™

Cevac® IBron™ is a recently licensed IBV vaccine which contains the attenuated GA08 (US variant Georgia 08) IBV strain. Cevac® IBron™, which can be applied together with a live Mass-type vaccine, provides a strong protection against GA08, Mass, GA13, DMV/1639/11, and Ark IBV strains, including a reduction of the field virus shedding.

Through numerous laboratory and field trials, the safety and the efficacy of these vaccines, in combination with a Mass type live vaccine were demonstrated. Proper spray application protocols using Desvac® In Line Spray, and well defined post-vaccination monitoring procedures, help to achieve a high vaccination rate and a proper quality of application.

5 Improvements in performance: FIELD & PROCESSING DATA

Recent trials have been performed in 12 countries worldwide, which compare Ceva's IB solutions (Cevac® IBird®, Cevac® IBras®, Cevac® IBron™) (administered by spray) versus competitor vaccines, or weaker vaccination programs (eg. using Mass-type vaccines only).

In the present document, economic calculations were done by taking the following market prices assumptions into account:

Final body weight of 2kg • FCR 1.6 • Feed price: 0.30€/kg • Live bird price: 0.80€/kg

By doing so, it was possible to calculate value related to the major production performance parameters.

Technical Parameters	Value/1,000 Birds	Value/100 M. Birds
0.01 FCR	6€/1,000 birds	600 K€
10 g. BW	3.2€/1,000 birds	320 K€
1% Mortality	11€/1,000 birds	1,100 K€

**average figure between 6 (1% early mortality), and 16 euros (1% late mortality).*

The table below summarizes the range of improvement points that were provided by Ceva's IB solutions (Cevac® IBird®, Cevac® IBras®, Cevac® IBron™) in field trials that are displayed hereafter.

	Mortality (%)	Body weight (g)	FCR	Income (€/1,000 birds)
One of Ceva's IB solutions	-0.1 to -3.08	+10 to +290	0 to -0.18	+12.00 to +185.70

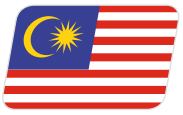
Cevac IBird® Cevac IBras® Cevac IBron™

GLOBAL EXPERIENCE

In the following pages, several experiences covering the displayed geography will be described.

Cevac
IBird®

Malaysia(1)

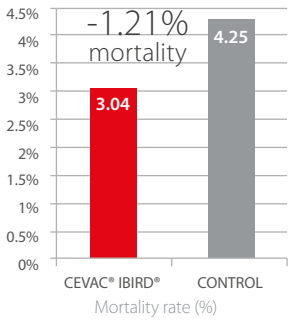


- *13,640,000 DAY-OLD CHICKS, 1 FARM, 2 GROUPS UNDER MALAYSIAN TYPE 1 VARIANT IBV CHALLENGE, HISTORICAL COMPARISON*
- *GROUP 1: 9,520,000 BIRDS, CEVAC® IBIRD®, AT DAY 1 BY SPRAY (DESVAC IN-LINE SPRAY)*
- *GROUP 2: 4,120,000 BIRDS, ROUTINE VACCINATION PROGRAM*
- *SLAUGHTER AT 36.6 DAYS OF AGE (GROUP 1) 35.1 DAYS OF AGE (GROUP 2)*

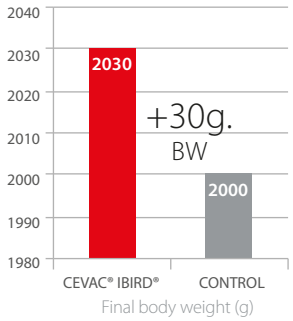
VACCINATION PROGRAMS

	GROUP 1 - CEVA PROGRAM	GROUP 2 - CONTROL
D1 (Hatchery)	Mass (B48)+ **Cevac® IBird® (spray)**	Mass (B48) (drinking water)
D10-14	Mass (B48) (spray)	Mass (B48) (drinking water)

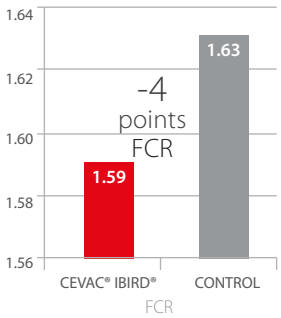
RESULTS & CONCLUSIONS



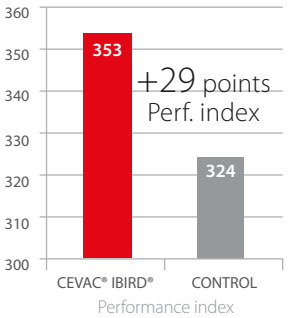
Mortality rate (%)



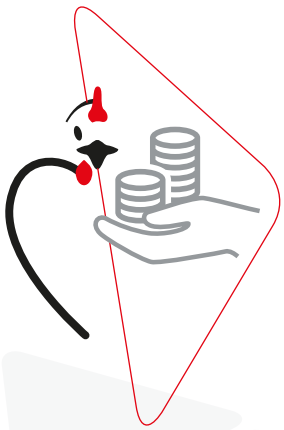
Final body weight (g)



FCR



Performance index



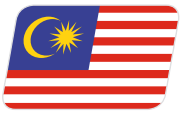
ECONOMIC EVALUATION

In group 1 (Ceva Program), -45% antibiotic cost was reported.

the extra revenues per 1,000 birds would be +67.20€

Source: Lee J.e. et al., 2018. A comprehensive approach to diagnose and control Malaysian variant infectious bronchitis virus. 4th World Veterinary Poultry Association (WVPA) Asia meeting, Kuala Lumpur, Malaysia, October 1-2.

Malaysia(2)

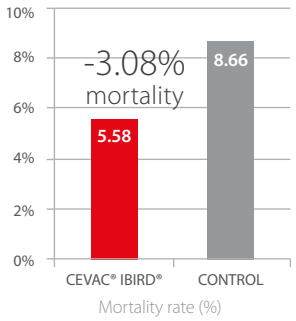


- *170,000 DAY-OLD CHICKS, 2 GROUPS, UNDER MALAYSIAN TYPE 1 VARIANT IBV CHALLENGE, CONTEMPORANEOUS*
- *GROUP 1: 61,600 BIRDS CEVAC® IBIRD®, AT DAY 1*
- *GROUP 2: 108,100 BIRDS, COMPETITOR 793B AT DAY 1*

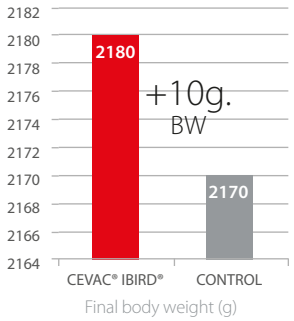
VACCINATION PROGRAMS

	GROUP 1 - CEVA PROGRAM	GROUP 2 - CONTROL
D1 (Hatchery)	IBD Immune-complex (subcutaneous) Live ND + IB Mass (H120) (spray) Killed ND (subcutaneous)	IBD Immune-complex (subcutaneous) Live ND + IB Mass (H120) (spray) Killed ND (subcutaneous)
D1 (farm)	**Cevac® IBird® (spray)**	**Competitor 793B (spray)**
D10	Live ND (drinking water)	Live ND (drinking water)
D21	Live ND (drinking water)	Live ND (drinking water)

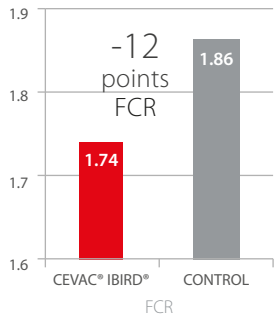
RESULTS & CONCLUSIONS



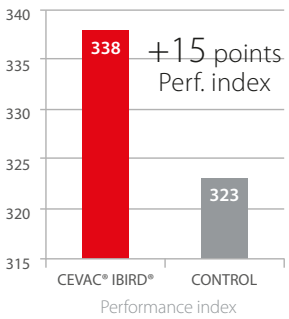
Mortality rate (%)



Final body weight (g)



FCR



Performance index

ECONOMIC EVALUATION

The extra revenues per 1,000 birds would be +105€

Source: Lee J.-e. 2016. Asian Veterinary Services meeting, January.

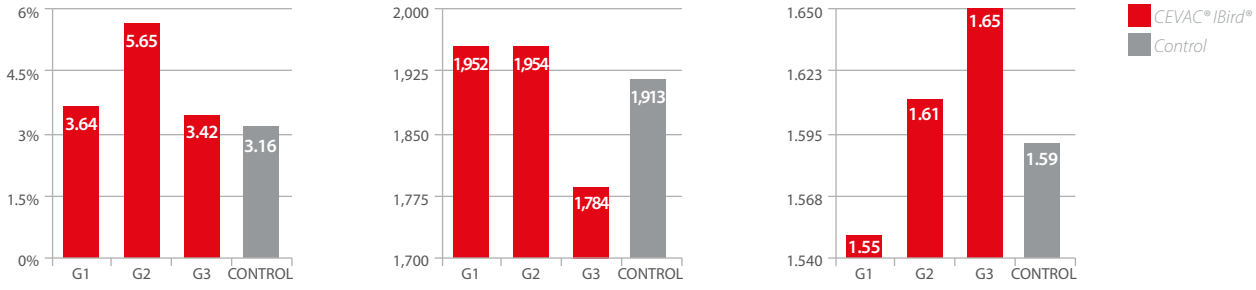
Sri Lanka

- *600,000 DAY-OLD CHICKS, 1 COMPANY, 4 GROUPS, HISTORICAL CONTROL*
- *GROUPS 1,2,3 : 462,000 BIRDS , 3 CYCLES, CEVAC® IBIRD® + IB MASS (H120) AT DAY 1*
- *GROUP 4: 150,000 BIRDS, LIVE IB MASS (H120) AT DAY 1*
- *SLAUGHTER BETWEEN 38.8 AND 41.2 DAYS OF AGE*

VACCINATION PROGRAMS

	GROUPS 1, 2,3 - CEVA PROGRAM			GROUP 4 - CONTROL
	(n=135,000 birds)	(n=161,000 birds)	(n=166,000 birds)	(n=150,750 birds)
D1 (Hatchery)	Mass (H120), **+ Cevac® IBird® (spray)**			Live Mass (H120) (spray)

RESULTS & CONCLUSIONS



Some management issues did significantly impact the results, since a ventilation failure was reported in cycle 2, and poor chick quality was delivered in cycle 3.
Interestingly, when comparison is made versus the starting phase without any IB vaccination, the recorded improvement was 165 g. more final weight (day 28), 0.13 lower FCR, and 1.46% lower mortality.

ECONOMIC EVALUATION

Based on 2018 cost-benefit calculations (mortality, body weight and FCR),

the extra revenues per 1,000 birds would be +146.86€

Source: de Silva N. pers. comm.

Philippines

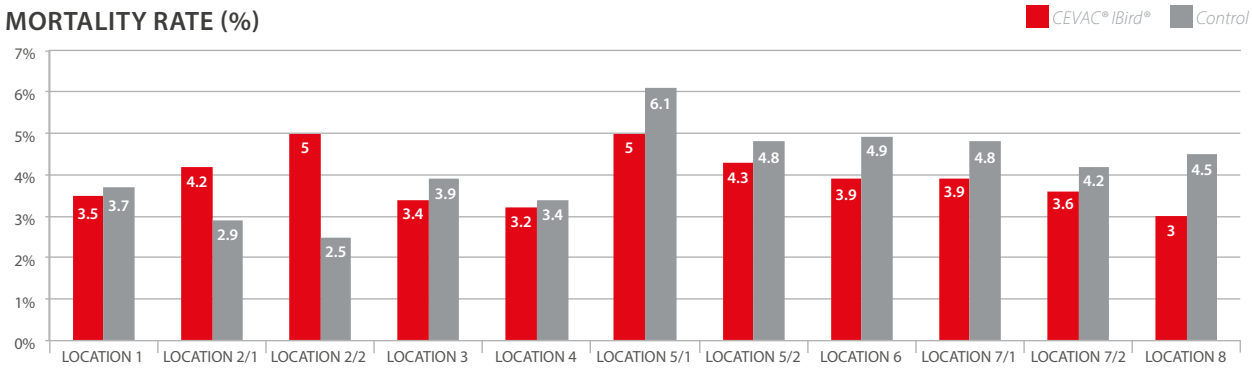
- *650,000 DAY-OLD CHICKS, 1 COMPANY, 10 LOCATIONS, HISTORICAL COMPARISON*
- *GROUP 1: 376,000 BIRDS, CEVAC® IBIRD® AT DAY 1*
- *GROUP 2: 277,000 BIRDS, COMPETITOR 793B AT DAY 9*
- *SLAUGHTER BETWEEN 32 AND 36 DAYS OF AGE*

VACCINATION PROGRAMS

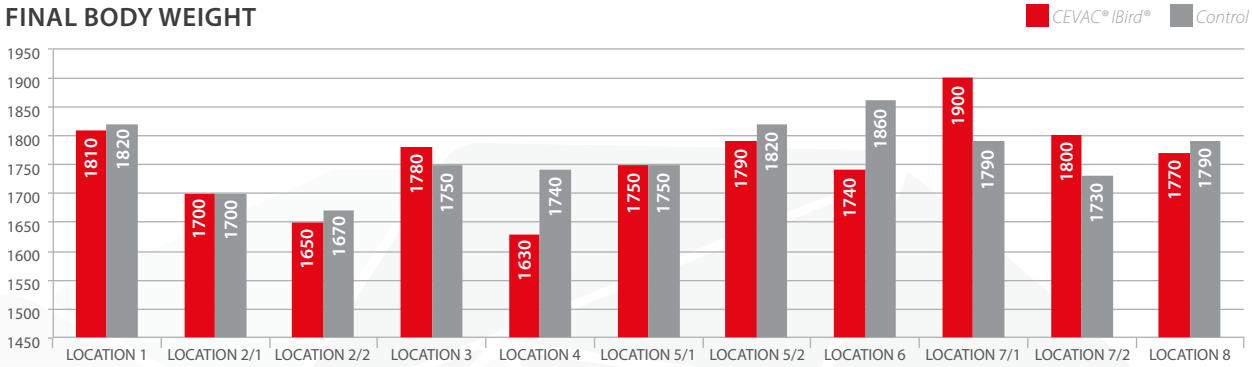
	GROUP 1 - CEVA PROGRAM	GROUP 2 - CONTROL
D1 (Hatchery)	IBD Immune-complex + rHVT-F (subcutaneous) Live ND + IB Mass (H120) **+ Cevac® IBird® (spray)**	IBD Immune-complex + rHVT-F (subcutaneous) Live ND + IB Mass (H120) (spray)
D9	-	**Competitor 793B (spray)**
D14	Live ND (spray)	Live ND (spray)

RESULTS & CONCLUSIONS

MORTALITY RATE (%)

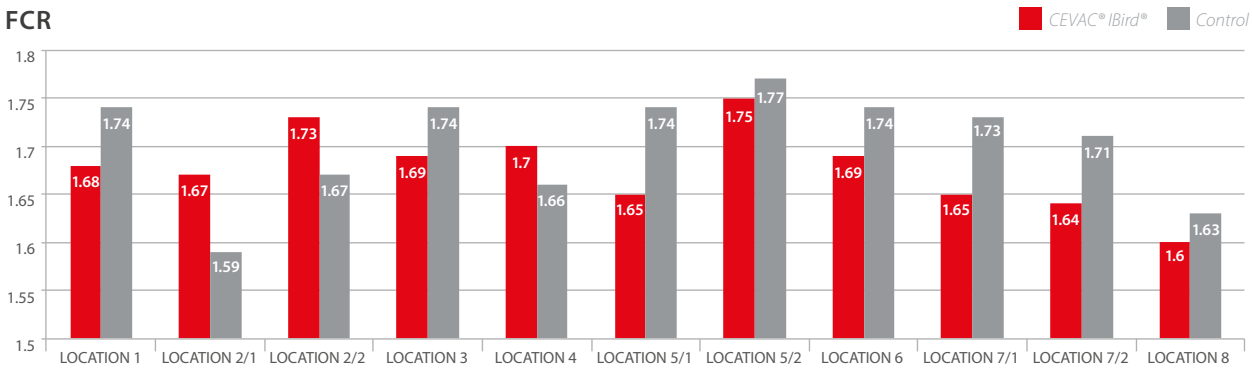


FINAL BODY WEIGHT



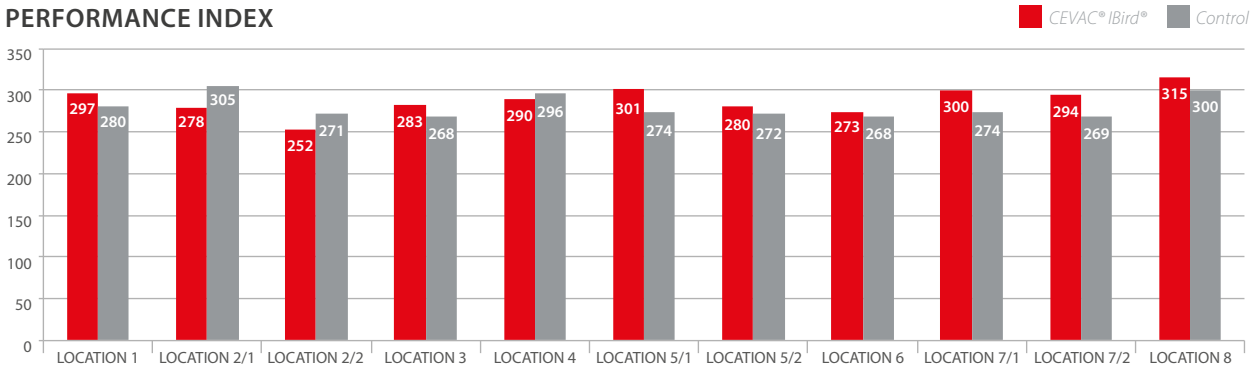
Better livability in Cevac® IBird® on average

FCR



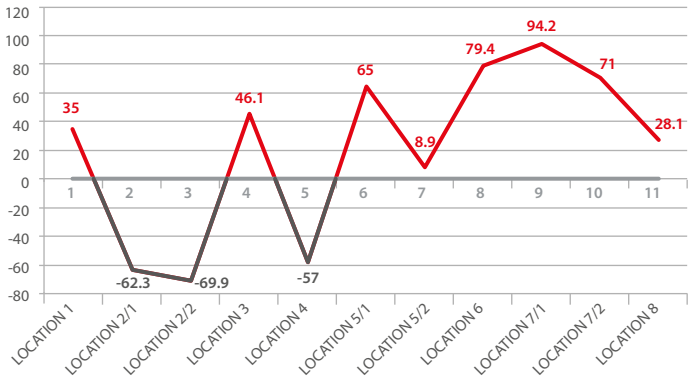
Lower FCR rate in Cevac® IBird® group on average

PERFORMANCE INDEX



Better performance index in Cevac® IBird® group on average

EXTRA INCOME USING CEVAC® IBIRD®



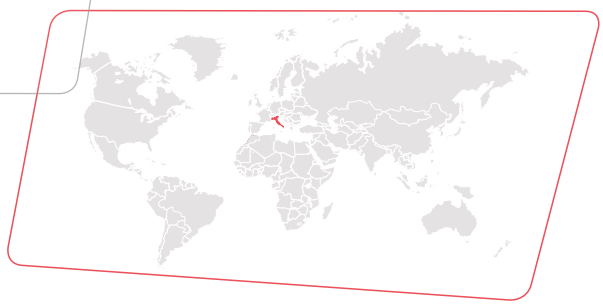
ECONOMIC EVALUATION

Based on 2018 cost-benefit calculations (mortality and FCR),

the extra revenues per 1,000 birds would be +21.68€

Source: Gacad E. 2013, pers. comm.

Italy

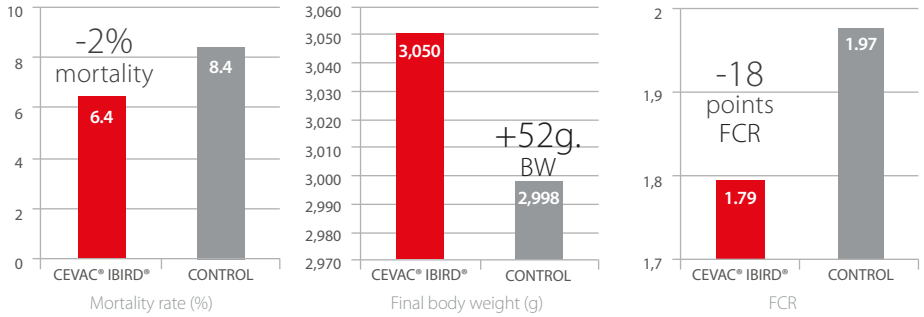


- *10,000,000 DAY-OLD CHICKS, 1 COMPANY, HISTORICAL CONTROL*
- *GROUP 1: 5,000,000 BIRDS, CEVAC® IBIRD® AT DAY 1*
- *GROUP 2: 5,000,000 BIRDS, COMPETITOR VACCINE AT DAY 1*

VACCINATION PROGRAMS

	GROUP 1 - CEVA PROGRAM	GROUP 2 - CONTROL
D1 (Hatchery)	**Cevac® IBird® (spray)**	Competitor IB vaccination

RESULTS & CONCLUSIONS



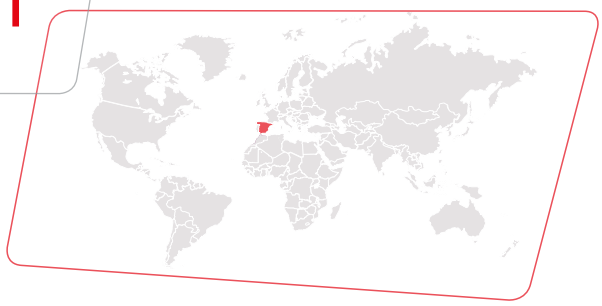
IN GROUP 1,
-50%
ANTIBIOTIC USE WAS REPORTED.

ECONOMIC EVALUATION

The extra revenues per 1,000 birds would be +146.65€

Source: Berto G. 2016. Europe Poultry Franchise meeting, Vienna, Austria, April 11-13.

Spain

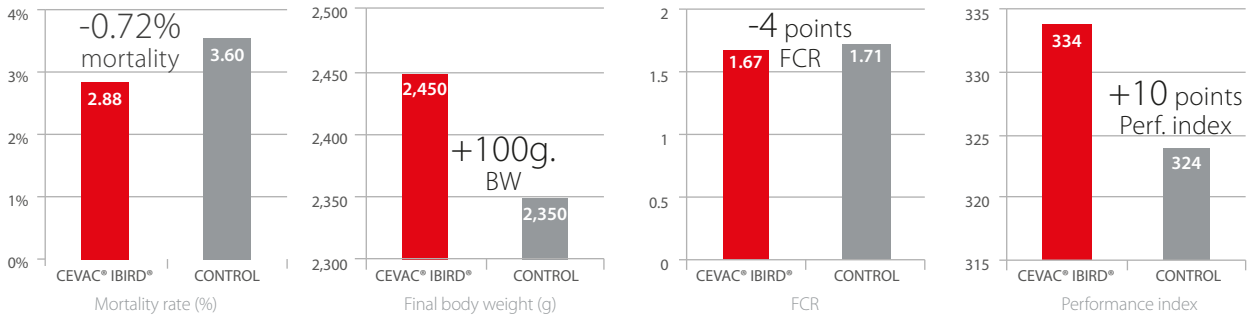


- *1,600,000 DAY-OLD CHICKS, 49 FARMS, 2 GROUPS*
- *GROUP 1: 929,875 BIRDS, 23 FARMS, CEVAC® IBIRD®, AT DAY 1*
- *GROUP 2: 750,545 BIRDS, 26 FARMS, COMPETITOR 793B AT DAY 1*
- *SLAUGHTER AT 40.3 DAYS OF AGE (GROUP 1) 39.5 DAYS OF AGE (GROUP 2)*

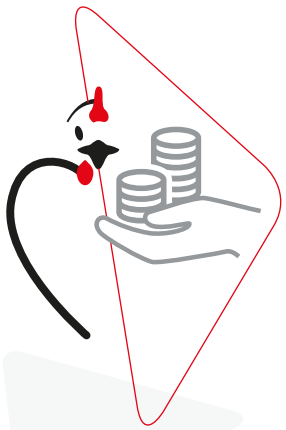
VACCINATION PROGRAMS

	GROUP 1 - CEVA PROGRAM	GROUP 2 - CONTROL
D1 (Hatchery)	**IB Mass + Cevac® IBird® (spray)**	IB Mass + **Competitor 793B (spray)**

RESULTS & CONCLUSIONS



IN GROUP 1, **-0.30€/g.** ON MEDICATION EXPENSES WAS REPORTED.



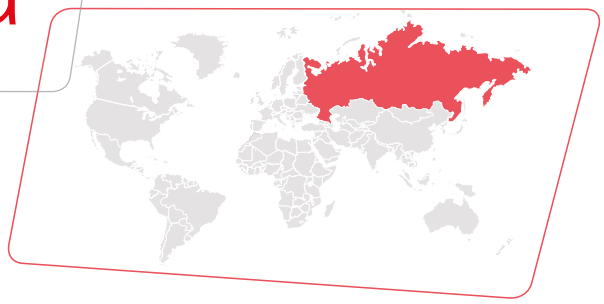
ECONOMIC EVALUATION

Based on 2018 cost-benefit calculations (mortality, body weight and FCR),

the extra revenues per 1,000 birds would be **+38.60€**

Source: Sales R., 2013, pers. comm.

Russia



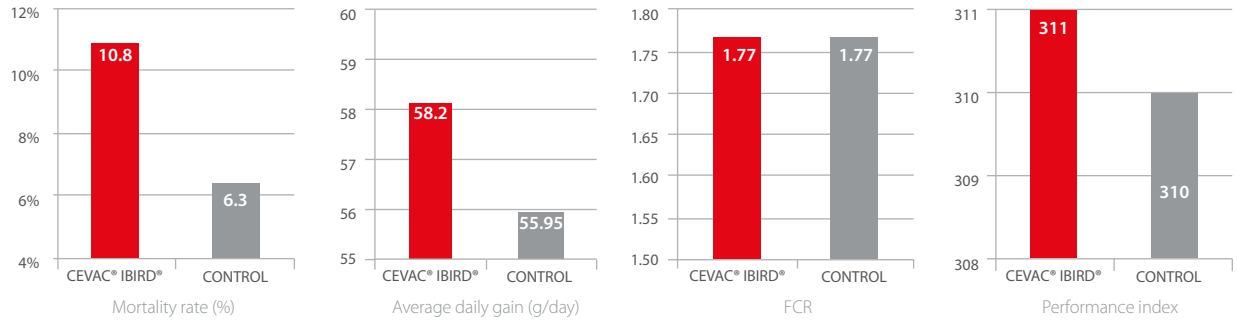
- *3,207,000 DAY-OLD CHICKS, 2 LOCATIONS, 2 GROUPS*
- *GROUP 1: 1,069,000 BIRDS, CEVAC® IBIRD® AT DAY 1*
- *GROUP 2: 2,138,000 BIRDS, COMPETITOR 793B AT DAY 10*

VACCINATION PROGRAMS

	GROUP 1 - CEVA PROGRAM	GROUP 2 - CONTROL
D1 (Hatchery)	IBD Immune-complex + rHVT-F (subcutaneous) Live ND + IB Mass (H120) **+ Cevac® IBird® (spray)**	IBD Immune-complex + rHVT-F (subcutaneous) Live ND + IB Mass (H120) (spray)
D10	-	**Competitor 793B (spray)**
D15	Live ND (drinking water)	Live ND (drinking water)

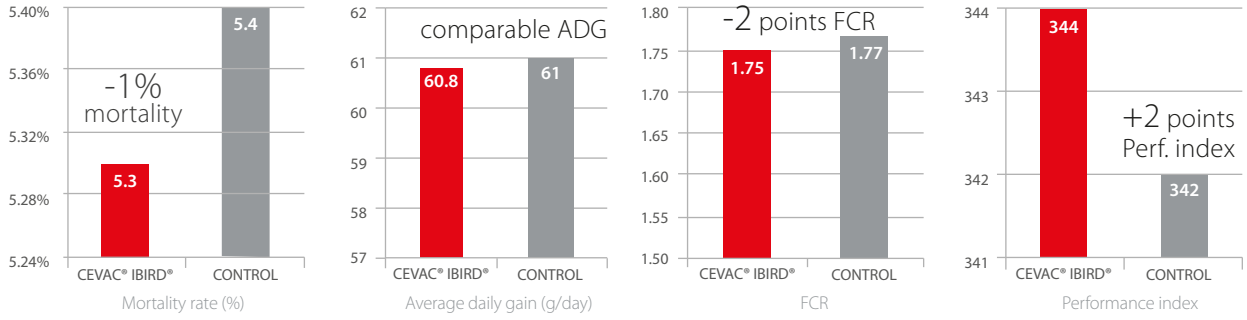
RESULTS & CONCLUSIONS

LOCATION 1

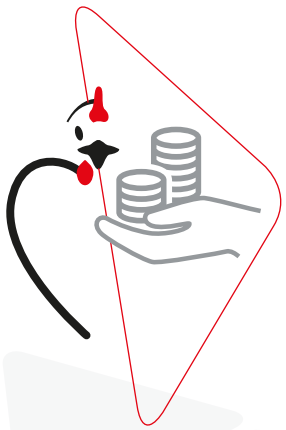


In the first location, the two groups did achieve similar results, and extra-income could not be calculated.

LOCATION 2



In the second location, a better profitability could be demonstrated.



ECONOMIC EVALUATION

Based on 2018 cost-benefit calculations (FCR),

the extra revenues per 1,000 birds would be +12€

Source: Sheshenin D. 2013, pers. comm.

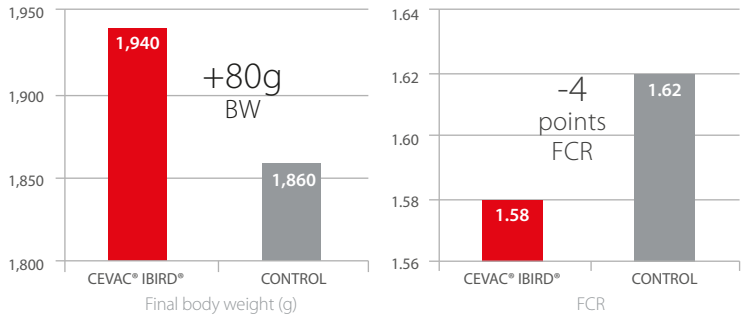
South Africa

- *1,300,000 DAY-OLD CHICKS PER WEEK, 1 COMPANY, HISTORICAL COMPARISON*
- *GROUP 1: 3 CYCLES, CEVAC® IBIRD® AT DAY 1*
- *GROUP 2: 3 CYCLES, COMPETITOR 793B AT DAY 1*

VACCINATION PROGRAMS

	GROUP 1 - CEVA PROGRAM	GROUP 2 - CONTROL
D1 (Hatchery)	IB Mass + **Cevac® IBird® (spray)**	IB Mass + **Competitor 793B (spray)**

RESULTS & CONCLUSIONS



ECONOMIC EVALUATION

Based on local market prices,

the extra revenues per 1,000 birds would be +83.62€

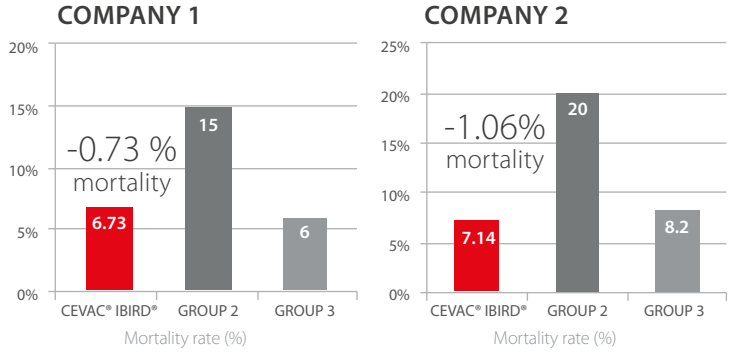
Argentina

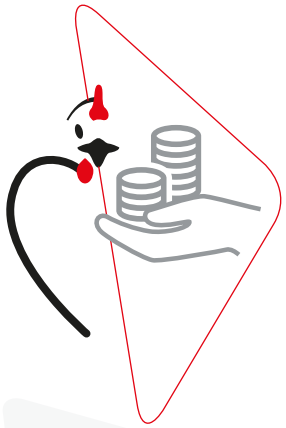
- *3,000,000 DAY-OLD CHICKS, 2 COMPANIES UNDER Q1 IBV CHALLENGE, 3 GROUPS EACH*
- *GROUP 1: 1,317,000 BIRDS, CEVAC® IBIRD® AT DAY 1*
- *GROUP 2: CONTROL, DURING Q1*
- *GROUP 3: 1,770,000 BIRDS, CONTROL, MASS VACCINE ONLY*

VACCINATION PROGRAMS

	GROUP 1 - CEVA PROGRAM n company 1 = 1,100,000 birds n company 2 = 217,000 birds	GROUP 2 - DURING Q1 OUTBREAK	GROUP 3 - BEFORE Q1 n company 1 = 1,600,000 birds n company 2 = 170,000 birds
D1 (Hatchery)	Common vaccination program + **Cevac® IBird® (spray)**	Common vaccination program	Common vaccination program

RESULTS & CONCLUSIONS





ECONOMIC EVALUATION

Based on 2018 cost-benefit calculations (mortality),

the extra revenues per 1,000 birds would be +91.30€ (company 1) and +141.90€ (company 2)

Source: Sesti, L. et al., 2014. Diagnostic, epidemiology and control of the Q1 infectious bronchitis virus (IBV) variant strain in Peru, Colombia, Argentina and Chile. VIII. International Symposium on Avian Corona- and Pneumoviruses and complicating pathogens, Rauischholzhausen, Germany, June 17-20.

Cevac
IBras®

Brazil

- *26,400,000 DAY-OLD CHICKS, 9 COMPANIES, 7 LOCATIONS, 2 GROUPS, HISTORICAL COMPARISON*
- *GROUP 1: CEVAC® IBRAS® AT DAY 1*
- *GROUP 2: ROUTINE PROGRAM*

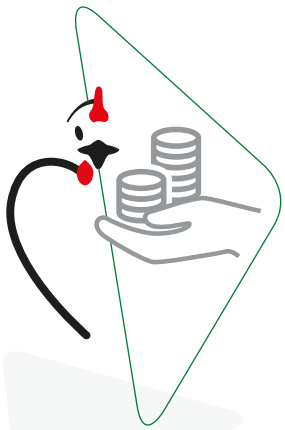
VACCINATION PROGRAMS

	GROUP 1 - CEVA PROGRAM	GROUP 2 - CONTROL
D1 (Hatchery)	Live IB Mass + **Cevac® IBras® (spray)**	Live IB Mass (spray)

RESULTS & CONCLUSIONS

PARAMETER	PERFORMANCE IMPROVEMENT IN CEVA PROGRAM	ECONOMICAL BENEFIT (euros/1,000 birds)
Use of antibiotics	not applicable	+10.00
Total mortality (%)	-2.3	+25.30
FCR	-0.08	+48.00
Final weight (g)	+160	+51.20
Airsacculitis condemnation (partial) (%)*	-0.74	+12.19
Airsacculitis condemnation (total) (%)*	-0.11	+2.31
Colibacillosis condemnation (%)*	-1.38	+36.70

** economical valuation: J. Chacon, pers. Comm.*



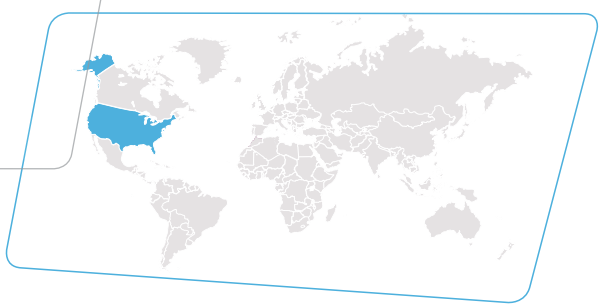
ECONOMIC EVALUATION

The extra revenues per 1,000 birds would be +185.70€

Source: Chacon J. et al., 2018. Farm and slaughterhouse parameters affected by BR strain of infectious bronchitis virus. American Association of Avian Pathologists (AAAP) meeting,Denver, CO, July 13-17.

Cevac
IBron™

United States of America

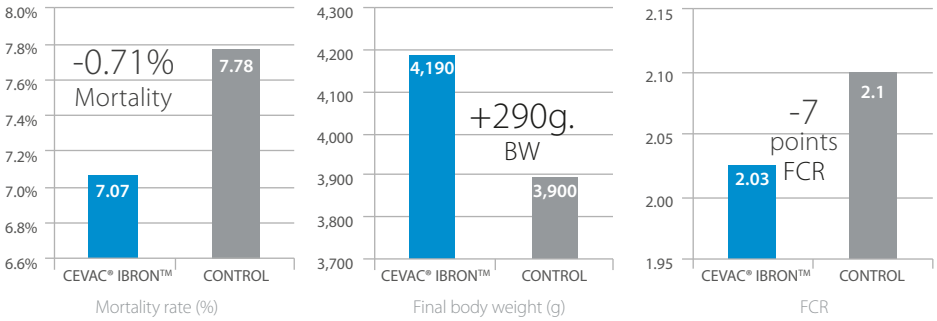


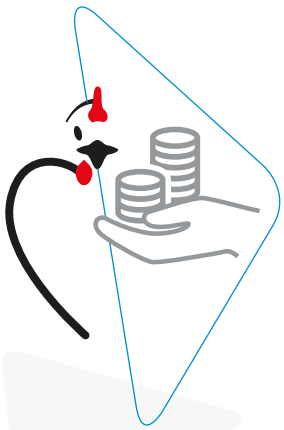
- *17,000,000 DAY-OLD CHICKS, 1 FARM, 2 GROUPS UNDER DVM1639 IBV CHALLENGE HISTORICAL COMPARISON*
- *GROUP 1: 9,268,385 BIRDS, CEVAC® IBRON™ AT DAY 1*
- *GROUP 2: 7,835,800 BIRDS, ROUTINE PROGRAM*
- *SLAUGHTER AT 61.07 DAYS OF AGE (GROUP 1) 62.07 DAYS OF AGE (GROUP 2)*

VACCINATION PROGRAMS

	GROUP 1 - CEVA PROGRAM	GROUP 2 - CONTROL
D1 (Hatchery)	Live IB **+ Cevac® IBron™ (spray)**	Live IB (Spray)

RESULTS & CONCLUSIONS





ECONOMIC EVALUATION

The extra revenues per 1,000 birds would be +143.70€

Source: Linares J.A. et al., 2017. Biology Scientific Forum.

6 Summary of profitability

Cevac IBird®
Cevac IBras®
Cevac IBron™

Country	Mortality (%)	BW (extra g./bird)	FCR	Results (€/1000 birds)	Page
MALAYSIA (1)	-1.21	+30	-0.04	+67.20	15
MALAYSIA (2)	-3.08	+10	-0.12	+105.00	16
SRI LANKA	na	na	na	+146.86	17
PHILIPPINES	na	na	na	+21.68	18
ITALY	-2.00	+52	-0.18	+146.65	20
SPAIN	-0.72	+100	0	+38.60	21
RUSSIA	-0.10	na	-0.02	+12.00	22
SOUTH AFRICA	na	+80	-0.04	+83.62	24
ARGENTINA	na	na	na	+116.60	25
BRAZIL*	na	+160	-0.08	+185.70	27
USA**	-0.71	+290	-0.07	+143.70	29

Table 2. Values used to evaluate the economic return of the field cases previously described: BW: 2Kg. ; F.C.R.: 1,6 ; Feed price: 0,3€/Kg. Live Bird Price: 0,8€/Kg.

*na: non applicable * Cevac® IBras® **Cevac® IBron™*

Cevac

IBird®

HEALTHY CHICKENS

Early and broad protection from the hatchery

Long lasting **immunity**

Reduction of field virus shedding

Cevac IBird®

HEALTHY CHICKENS

Cevac IBird®: infectious bronchitis under control from the hatchery.

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