

IMUNEO

Stress compensator
Immune enhancer



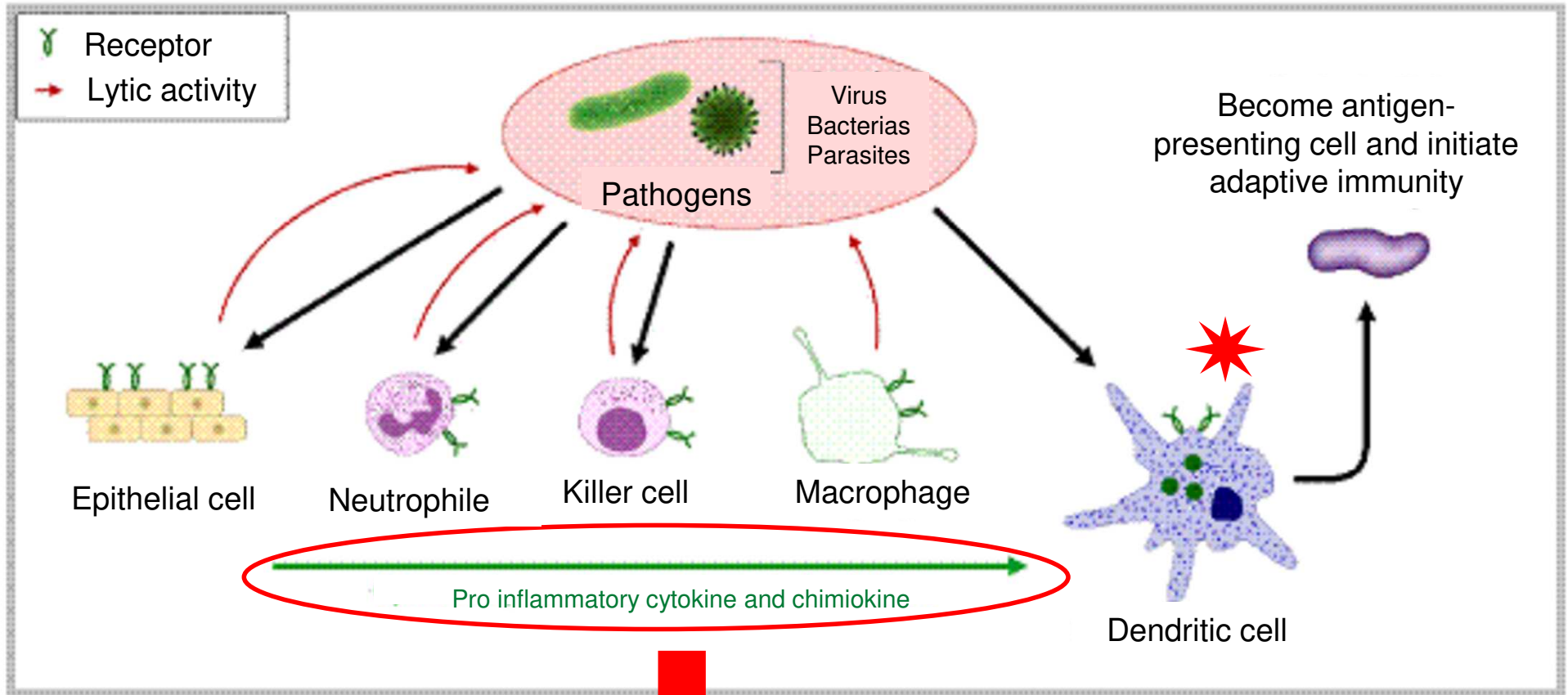
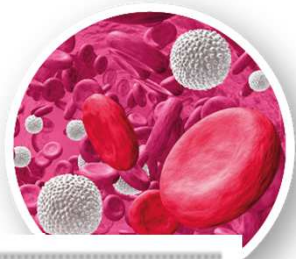
Natural

By TECHNA



IMUNEO, natural solution to improve production performance in livestock

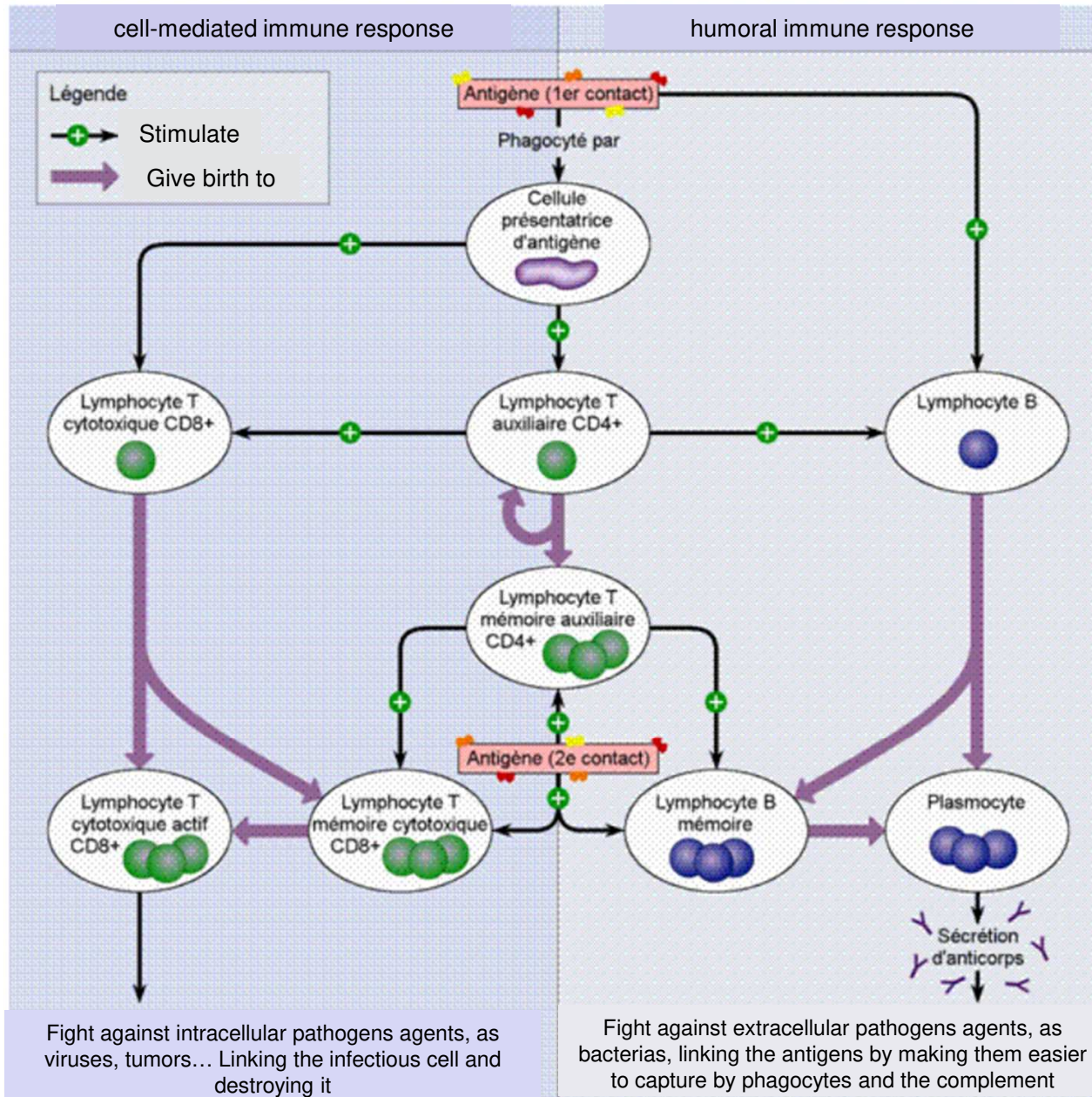
Immune system and stress reaction: Innate immunity



Nonspecific innate immunity causes inflammation

Immune system and stress reaction:

Adaptive immunity



Set up: 5 to 7 days

Immunity acquired



Stress: definition



Set of responses of an organism subjected to aggression by a physical, metabolic, psychic, emotional agent that creates an imbalance.

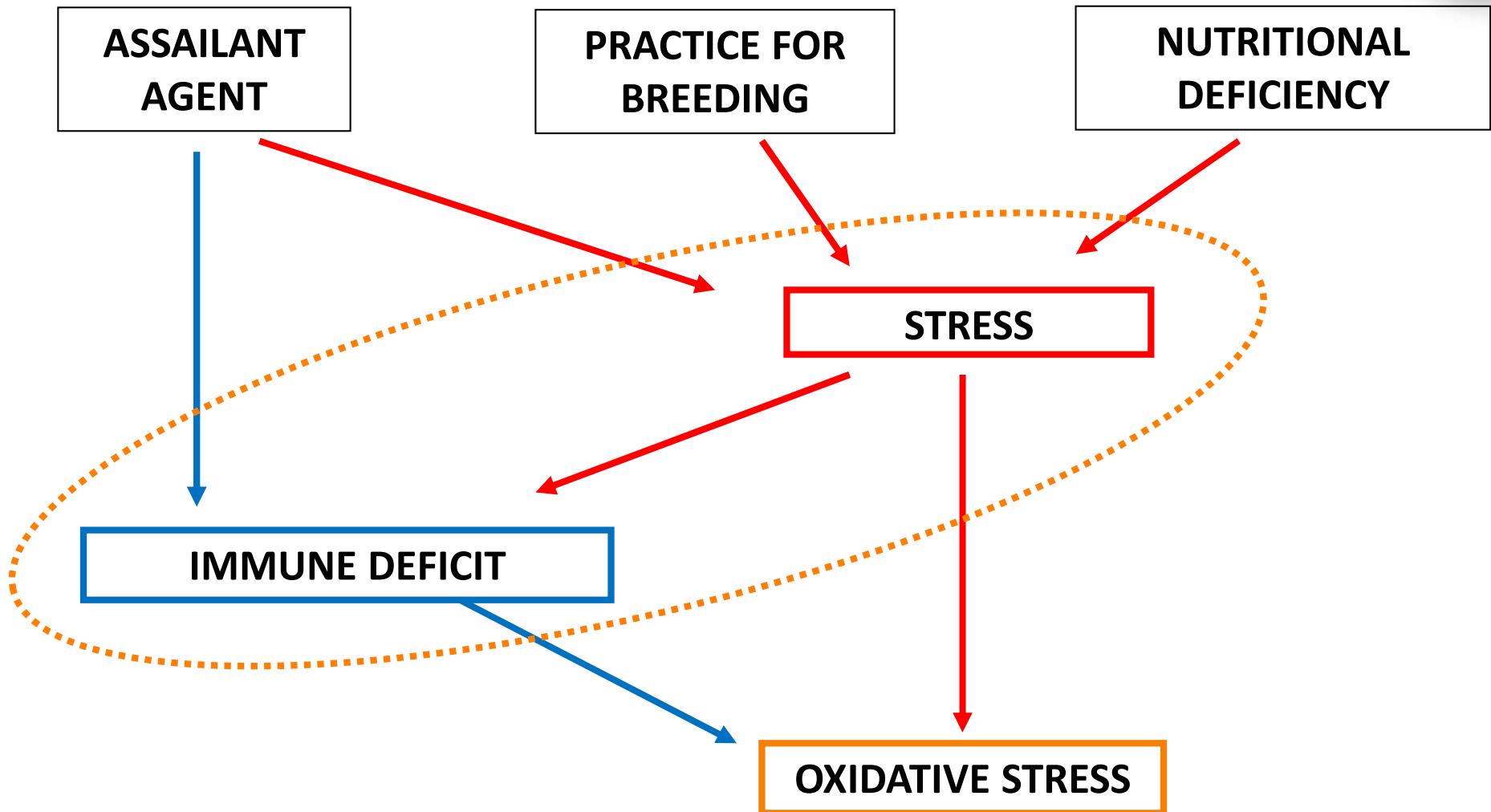
This response can be quick or long term and participate in the coping mechanism

The organism tries to adapt to maintain the internal balance:

Stress causes hormonal discharges (adrenaline, cortisol, oxytocin) modifying the physiology :

- Mecanic reaction (heat, heart rate ...)
- Cell reaction (immune cells, enterocytes, oxidation)

Stress<>immunity relation





Set of natural defence mechanisms of the organism against aggression.

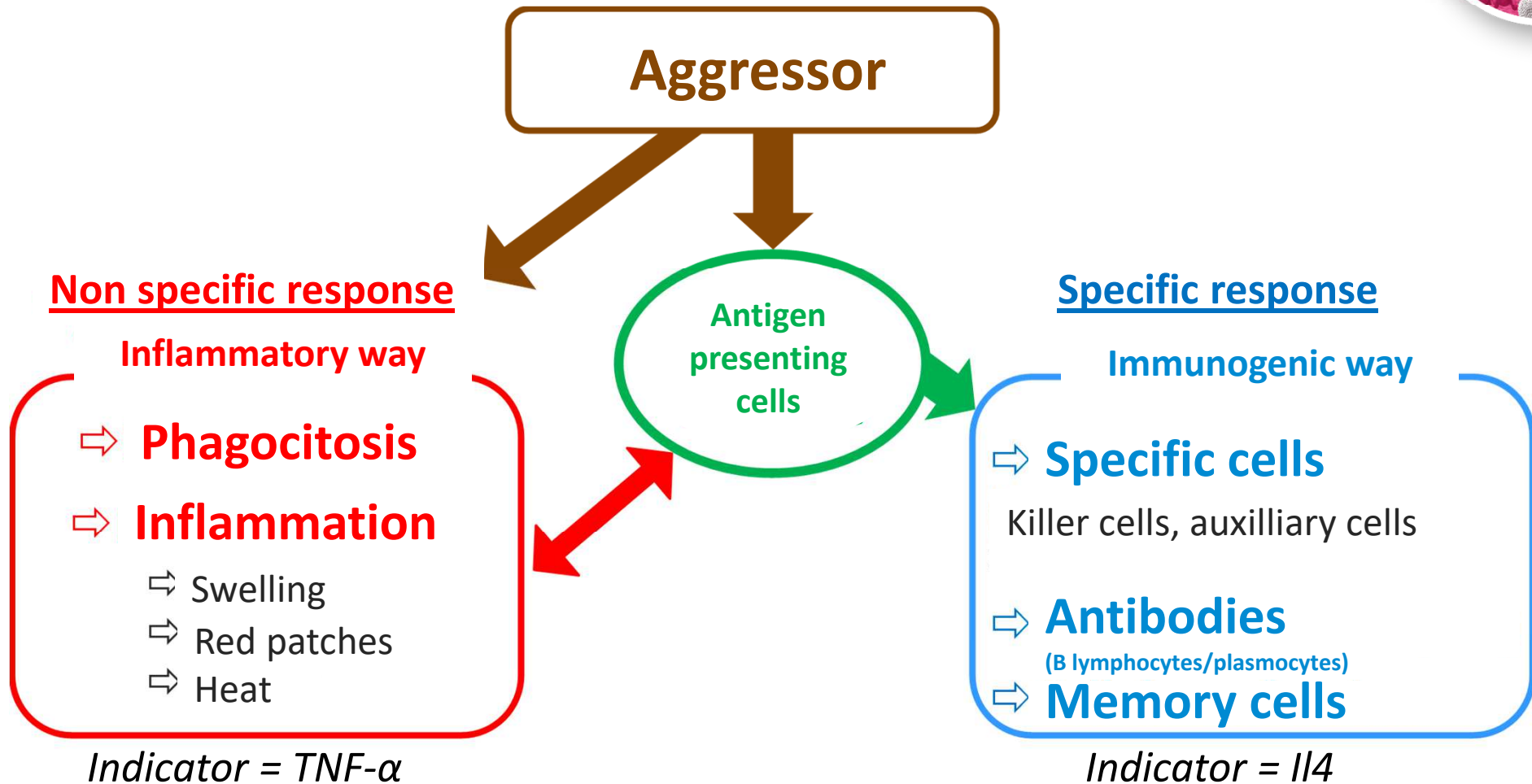
Different actors:

- Physical barriers (skin, mucous membranes)
 - Cells (Leucocytes, white blood cells,...)
 - Molecules (Cytokine, Complement, **Antibodies**, ...)
- + Interactions between actors: recognition, activation, inhibition**

Different levels:

- Structural
- Innate
- Adaptive

Cellular cooperation



IMUNEO: stress compensator and immune enhancer



- Composition :

- Vitamines: wide range of vitamins (A - D3 - B1,2, 6,12, C, E): helping to cope with various stresses and sub-deficiencies
- Amino acids: methionine as methyl donor, liver protection and muscle building & lysine to improve muscle deposition.
- Macerated plants of Menyanthe (support general metabolism & tonic properties), Oat Straw (restorative properties), Cinnamon (immune stimulant, antibacterial and antiviral) and Common Marigold (anti-inflammatory, anti-oedema and cicatrising properties, stimulant immunitaire, immune stimulant, inducing granulocyte creation and increasing phagocyte index).



- ✓ Improve **vaccine uptake** and **antibody titers**
- ✓ Limit **inflammatory side-effects**
- ✓ Favor **compensatory growth or lay after stress** (starting period transfer, manipulations, vaccinations or any interventions)





Product description & application



IMUNEO is a nutritional speciality in liquid form

PURPOSE: immunity enhancement – stress compensation

MAIN USE: during environmental or viral stresses – to enhance vaccine uptake

TIMING: to use 3 days during vaccinal, viral stress or environmental stress. To use 5 days during starting period.

REASON: Birds can be affected to various stresses. All of these stresses affect negatively the immune status and can have strong incidence on the recovery and the final performance of the birds. Also, a deficient immune status leaves the door open to secondary infections that can be very costly for the farmer

APPLICATION: incorporation in drinking water at 1 ml/l

4 main applications



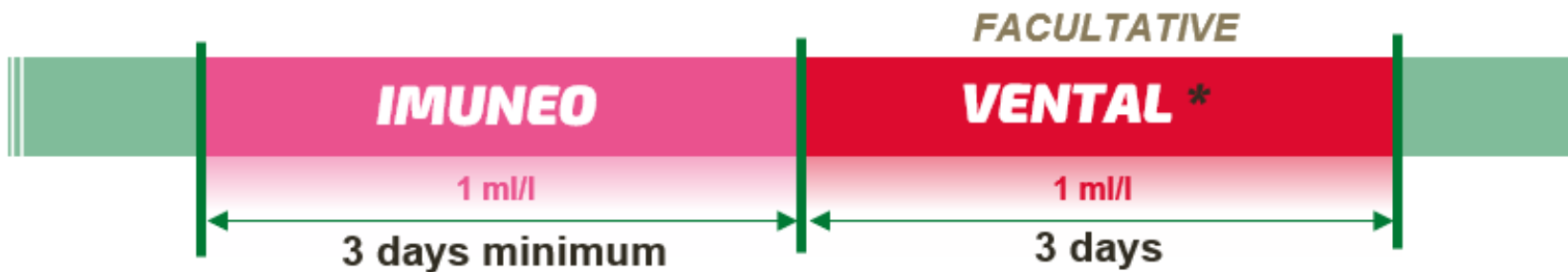
Case 1 Vaccine support

Preceded by **BACI 50** following the estimation of a possible colibacillary disorder



Case 2 Wild virus infection

Intervene as soon as the infection is observed. In the event of viral stress with respiratory tropism and observation of significant symptoms, use **VENTAL** to improve production recovery



4 main applications



Case 3 Environmental stress

Use as soon as **the stress is noticed**, whether it is undergone (ventilation/equipment defect, wild animals intrusion etc.) or planned (outdoor release, handling, leg/beak treatment etc.).

Preceded by **BACI 50** following the estimation of a possible colibacillary disorder



Case 4 Starting period

To promote a good robustness of the chick





Natural

By TECHNA



IMUNEO, trials and field data

Trial and test results – BROILER BLOOD



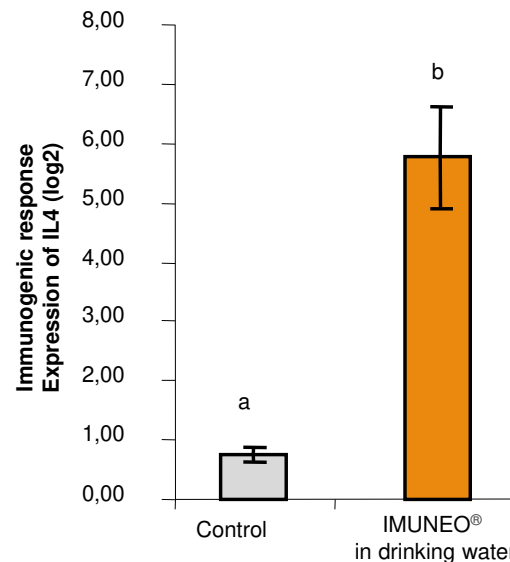
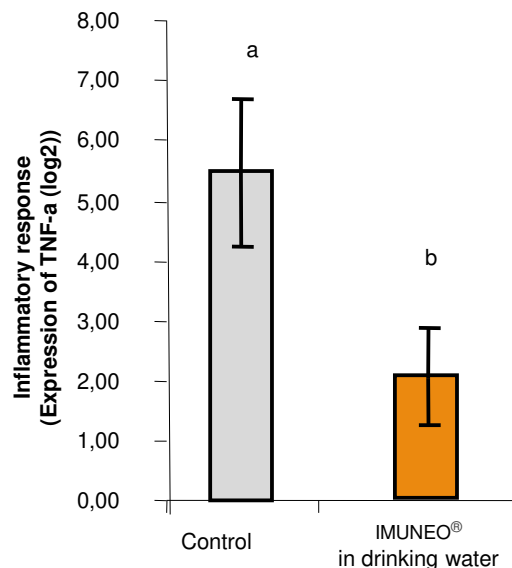
EX VIVO TRIAL: In vitro trial on 28 days old broiler blood. Blood cells placed in solution with inflammatory or immunogenic factors. Factor dosage with PCR analysis

MEASUREMENT: Modulation of the pro-inflammatory response (TNF alpha cytokine) and immune response (IL4 cytokine) in relation to an antigen

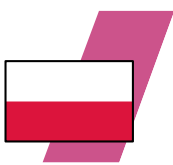
RESULTS:

Imuneo flocks have better inflammatory status (2,75 time lesser)

Imuneo flocks have better immunogen response in case of aggression (6 time better)



a,b Significant difference at the 5% level



1

Wrocław Agricultural
University, Poland,
2008

Trial and test results – BROILERS



EXPERIMENTAL STATION TEST: 42 days old broiler, 3*10 broilers per repetition, 3 treatments tested

GROUP 1: Control non vaccinated

GROUP 2: Control vaccinated

GROUP 3: Control vaccinated + IMUNEO

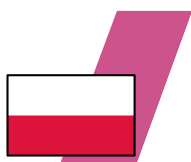
Vaccination performed:

- D1: Mareck HTV, IB, NDV
- D14: Gumboro, IB (booster), NDV (booster)
- D21: Gumboro (booster)

Measurement performed:

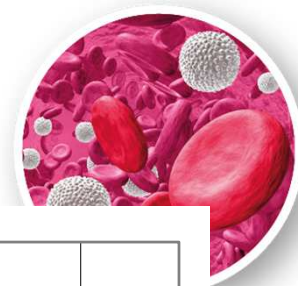
- Lymphocyte T & B count
- Circulating antibodies titers in blood





2

Trial and test results – BROILERS

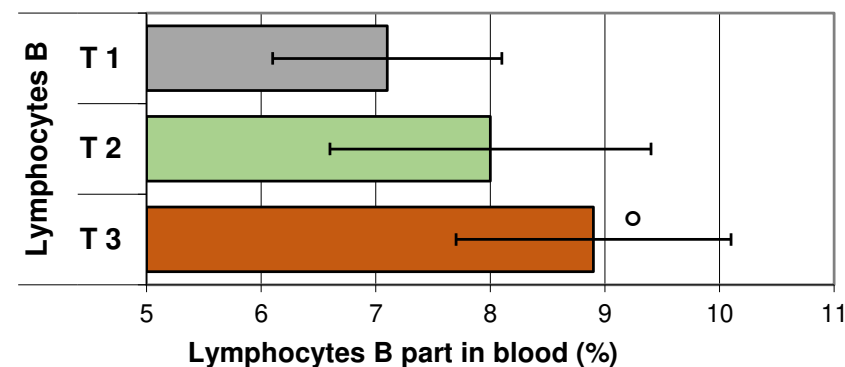
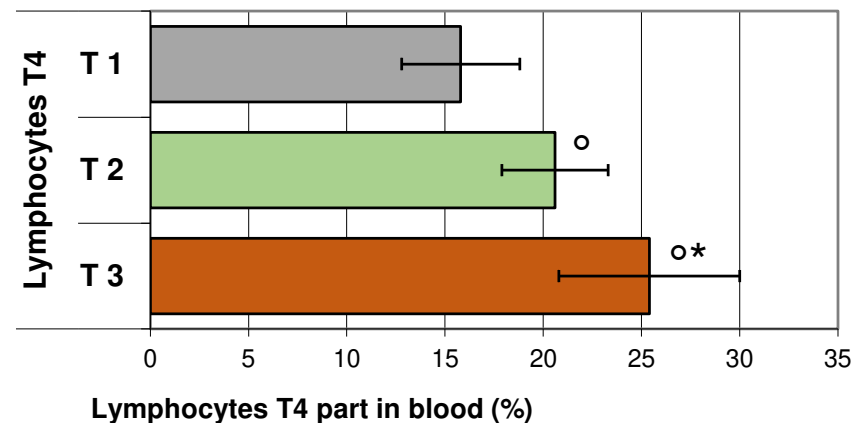
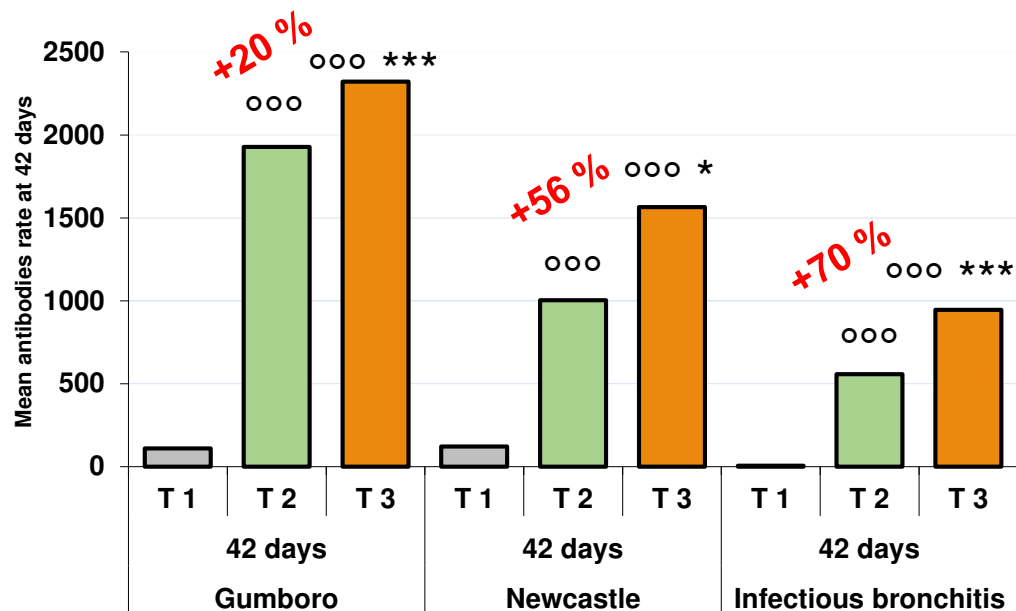


Wroclaw Agricultural
University, Poland,
2008

RESULTS:

- Imuneo flocks have better lymphocyte B production
- Imuneo flocks have better lymphocyte T4 (helpers production)
- Imuneo flocks have better blood circulating antibodies production for the considered vaccines

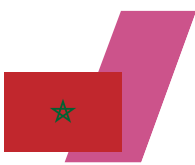
- ✓ Enhancement of the immune status, better viral aggression response, better vaccine uptake



- × T 1: Control non vaccinated
- × T 2: Control vaccinated
- × T 3: Vaccine + IMUNEO®

° Significant difference compare to non vaccinated control ($p \leq 0.1 / 0.05 / 0.01$)

* Significant difference compare to vaccinated control ($p \leq 0.1 / 0.05 / 0.01$)



1

Poultry integrator,
Marocco, 2018

Trial and test results – TURKEYS



FIELD TEST: Set up in 2*2 turkey poultryhouse

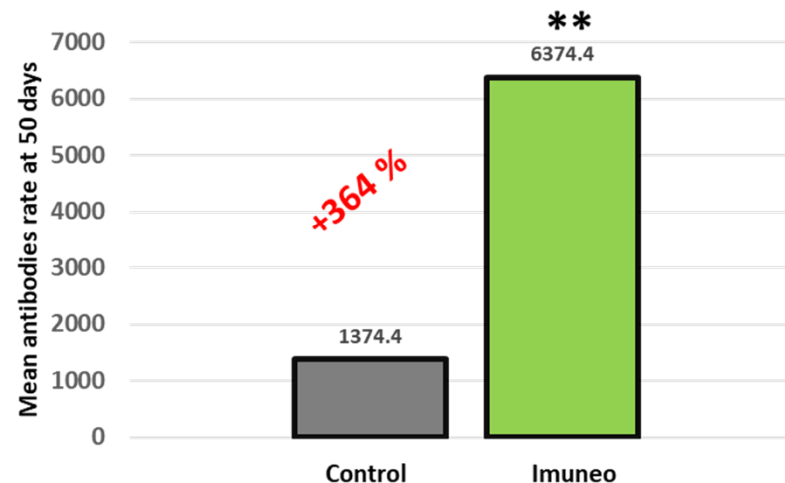
Vaccines performed: Avian Influenza & Swollen Head Syndrome

Measurements: Circulating antibodies titers in blood (ELISA) ; 10 samples per poultryhouse at 50 days old

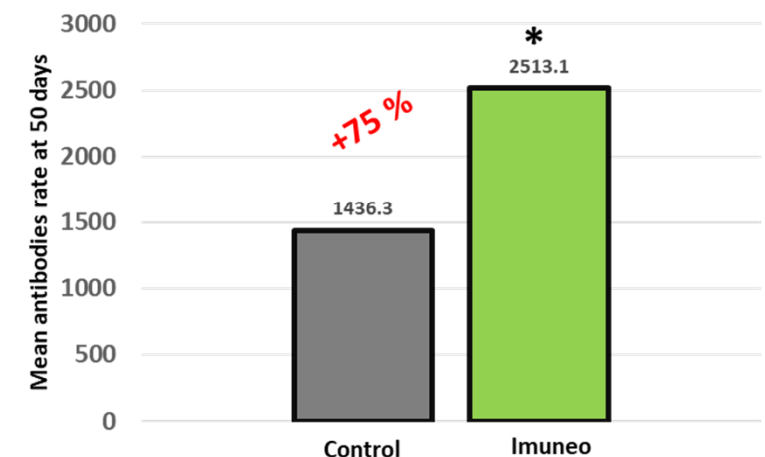
RESULTS:

- Imuneo flocks have better blood circulating antibodies production for the considered vaccines
- ✓ enhancement of the immune status, better viral aggression response, better vaccine uptake

Swollen Head Syndrome

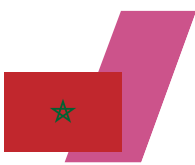


Avian Influenza



* Significant difference at the 5% level

** Significant difference at the 1% level



2

Poultry integrator,
Marocco, 2018

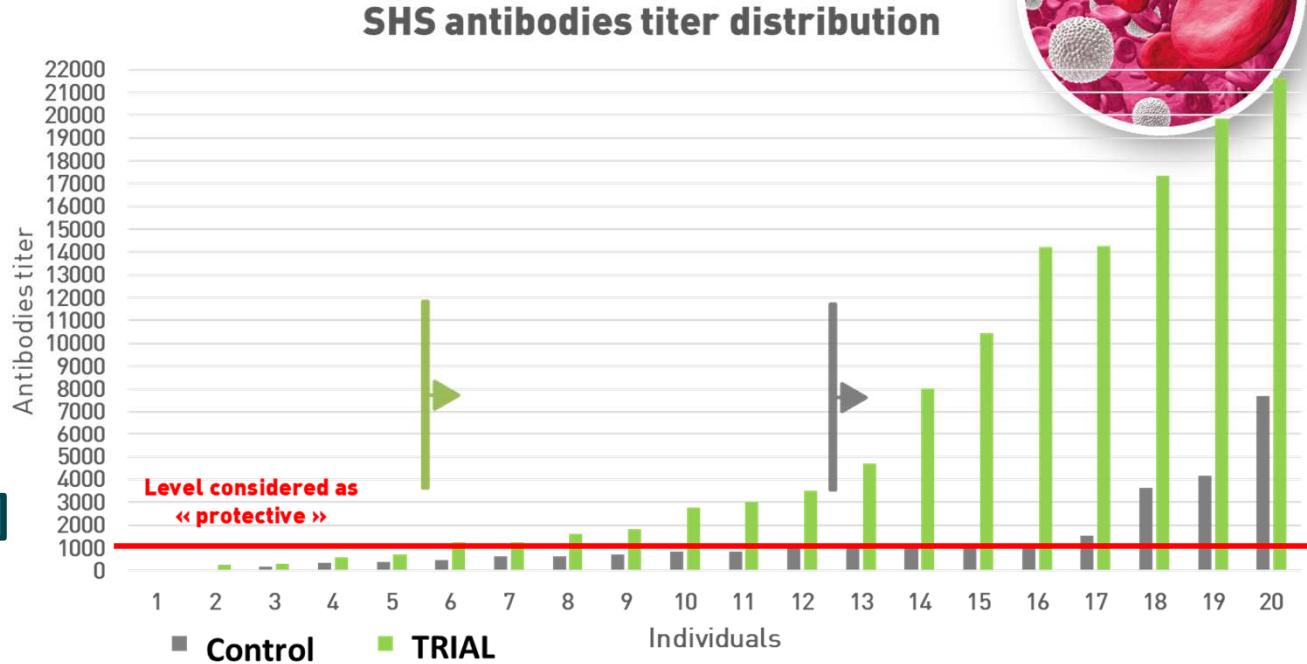
Trial and test results – TURKEYS



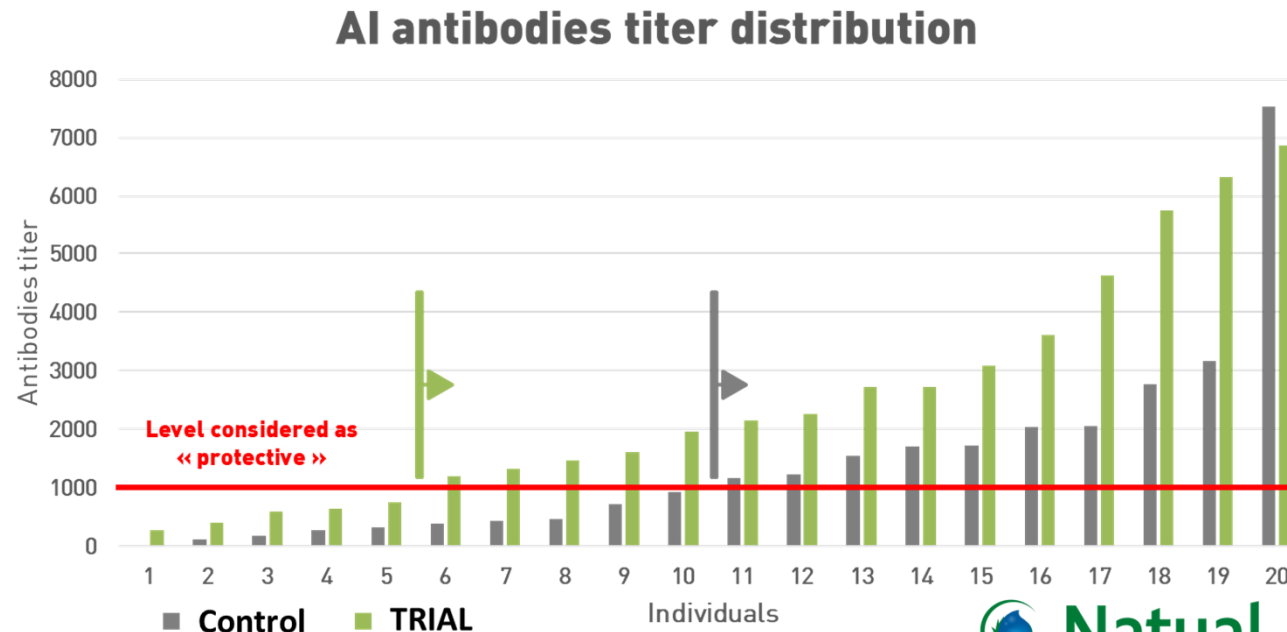
RESULTS: antibodies distribution

- Imuneo flocks have better vaccine uptake within the birds population = better population protection

Trial : 75 % of individuals protected
Control : only 35 % of individuals protected



Trial : 75 % of individuals protected
Control : only 50 % of individuals protected



NB : The level considered as « protective » was given by the farm veterinarian



1

Trial and test results – PULLETS



Poultry farmer,
Marocco, 2018

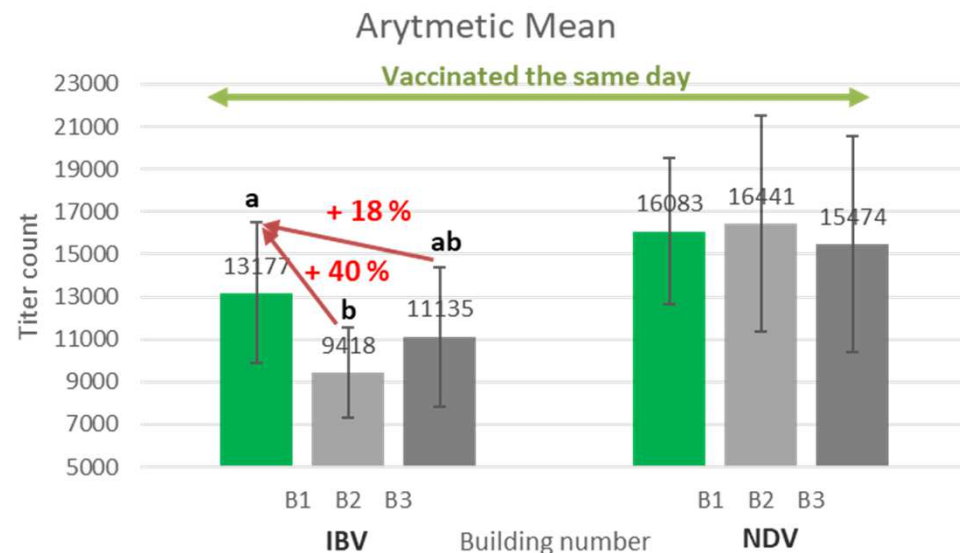
FIELD TEST: Set up in 1*3 pullet poultryhouses

Vaccines performed: IBV & NDV in one inoculation

Measurements: Circulating antibodies titers in blood (ELISA) ; 15 samples per poultryhouse

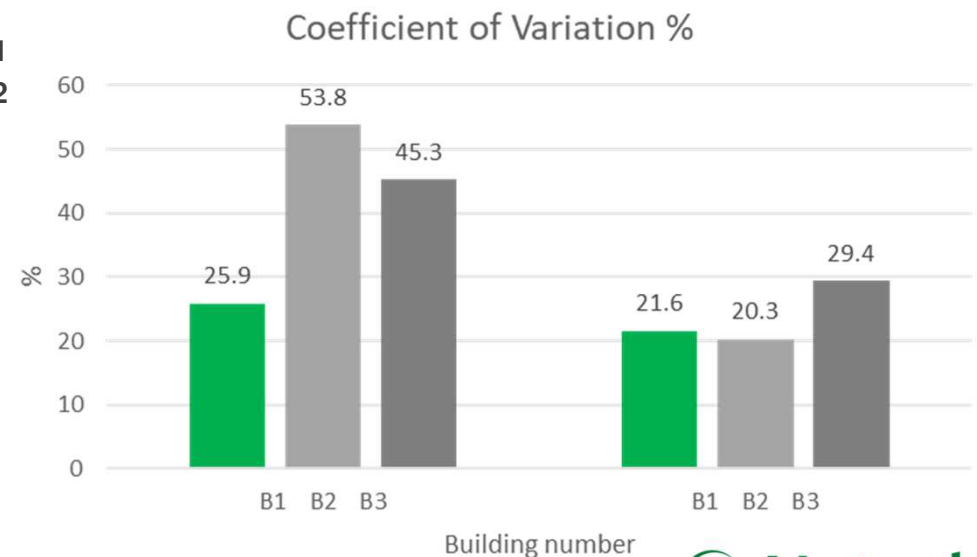
RESULTS:

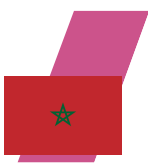
- Imuneo flock tends to have better blood circulating antibodies production for the IBV vaccine
- Imuneo flock tends to have better vaccination homogeneity
- ✓ enhancement of the immune status, better viral aggression response, better vaccine uptake



ab Significant difference at 0.1 level (tendency)

■ B1 Trial
■ B2 Control 1
■ B3 Control 2





2

Poultry farmer,
Marocco, 2018

Trial and test results – PULLETS

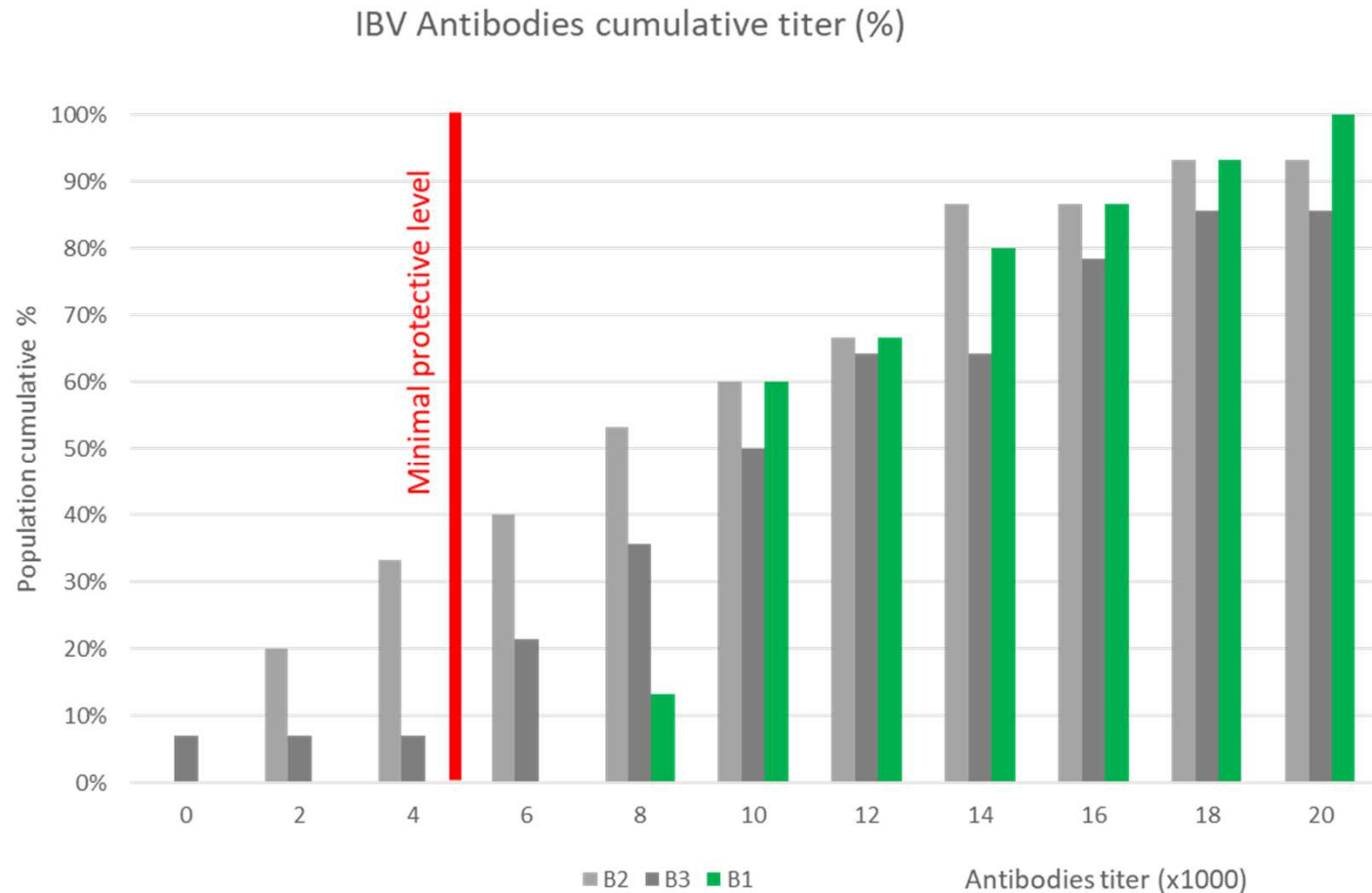


RESULTS:

Better protection level for the IMUNEO flock

Trial : 100 % of individuals protected
B2 : only 77 % of individuals protected
B3 : only 93 % of individuals protected

Minimal titer for individual protection
= 4000 (Loyau, 2015)



Loyau M., 2015, *Suivi de la qualité de la vaccination : Intérêts et limites des contrôles sérologiques*, [actes du RIPPOC 2015](#)



Customer benefit



IMUNEO is easy to use thanks to its liquid form, permitting to use accurately in accordance with the observations in farms

IMUNEO is often use as insurance, enhancing the vaccine uptake and thus increasing the specific viral protection

IMUNEO helps to stimulate immunity and counterbalance the bad effect of inflammation during a stress, helping to avoid secondary infection due to poor immune status

RETURN ON INVESTMENT is difficult to estimate without specific experimental station pattern. Losses during viral or environmental stresses can be far different depending of the farm, the sanitary status, the bird specy...

But we all know how the cost of these problematics can be elevated, especially with long production cycles!!

Thank you for your attention

www.natural-techna.com

