**Carlos Oliveira**
Technical manager
Vetanco México

**Rodrigo Morales**
Technical/Commercial Advisor
Vetanco México

**Justino Hernandez**
Commercial manager
Vetanco México

Artículo científico

# *Result of a treatment combining a* ***phytobiotic***[(1)]*,* *a* ***prebiotic***[(2)] *and* ***organic acids with yeast wall***[(3)] *for clostridiosis control in laying hens.*

(1) Herbanoplex® CP
(2) Gamaxine®
(3) Uniwall® MOS

***The TREATMENT lot produced up to week 32 of age 60 eggs per housed bird, while during the same period the CONTROL lot produced only 50 eggs.***

## INTRODUCTION

Necrotic Enteritis (NE) is caused by Clostridium perfringens (CP). It is characterized by the sudden appearance of signs, which are rapid weakness followed by death; Confluent areas of necrosis can be observed in the mucous membrane of the small intestine. The raw materials used in the feeds, mainly in feather, meat and offal meals, have been identified as sources of CP contamination. High levels of fiber and undigested protein in the intestine and concurrent infection with Coccidia can predispose to the development of EN in laying hens despite being raised in cages.

The use of Growth Promoter Antibiotics (APC) such as Bacitracin or Virginiamicin, among others, has been the main strategy for the control of NE. Due to the emergence of antimicrobial resistance in bacteria to these APCs, their use has been restricted and new alternatives are offered to control CP such as probiotics, prebiotics, phytobiotics, organic acids, yeasts, enzymes, plant extracts and vaccines (Dahiya et al. 2006).

The objective of this work was to evaluate the efficacy in the field of a combined treatment with a phytobiotic (1), a prebiotic (2) and organic acids with yeast wall (3) to control CP in a laying hen farm with a characteristic repeated history of NE outbreaks.

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## MATERIALS AND METHOD

A commercial farm with a characteristic history of EN was selected, where two lots of 45,000 birds each with similar characteristics (age, origin, genetics, diet, etc.) were designated:

**CONTROL group:** conventional management without preventive therapy

**TREATMENT group:** preventive therapy with the combination of:

**Phytobiotic (1):** continuous administration during the whole period evaluated at a dose of 1 kg/ton of balanced feed;

**Prebiotic (2):** the first dose was administered via drinking water at week 21 of age and the second dose at week 23 of age;

**Organic acids with yeast wall (3):** continuous administration throughout the period evaluated at a dose of 2 kg/ton of balanced feed;

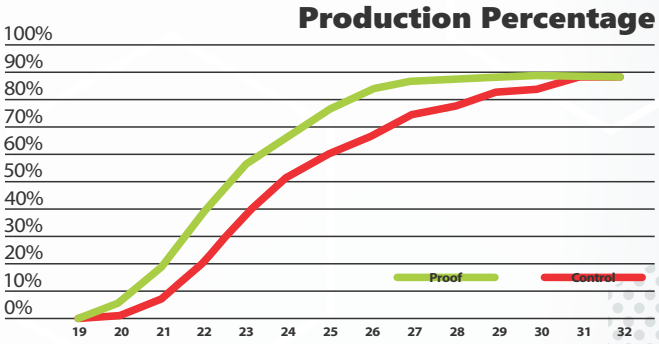
***The treatment with additives significantly improved the zootechnical performance and the productivity of the lot evaluated.***

The evaluation period was extended until the 32nd week of age of the birds. During this period, food consumption, live weight, mortality and egg production were recorded: eggs per bird, egg mass, laying %, broken and dirty eggs %.

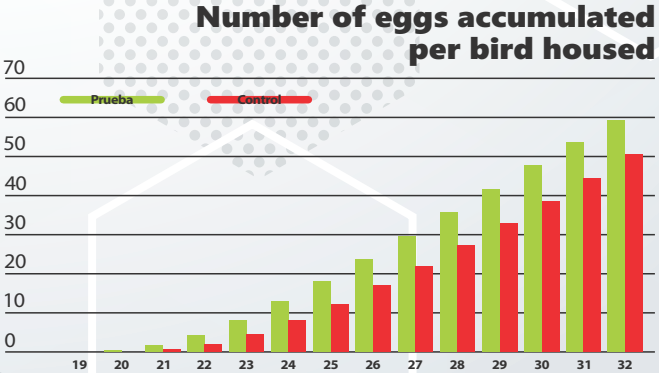
## RESULTS AND DISCUSSION

In this evaluation, no significant differences in mortality between the lots were observed; however, all dead birds were necropsied and in the TREATMENT lot no dead birds with characteristic lesions of EN were identified.

The main and significant differences between treatments were observed in the parameters of productive performance Laying % (Fig. 1), eggs per housed bird (Fig. 2), egg weight (Fig. 3) and egg mass (Fig. 4).




The TREATMENT lot of birds started production early according to their genetic potential and maintained its position above the values recorded in the CONTROL lot throughout the evaluation period. The laying peak in the lot TREATMENT registered 88.4% in week 32 of age, which meant a historical record in the farm.



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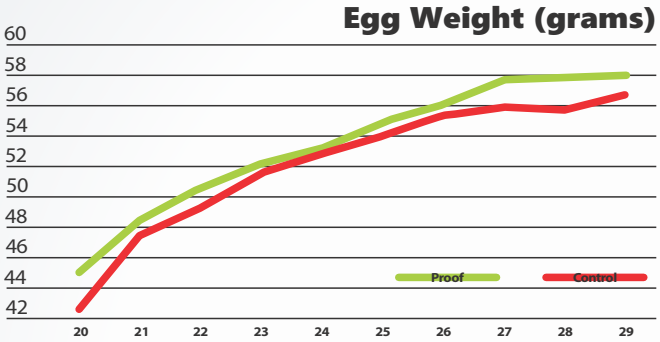
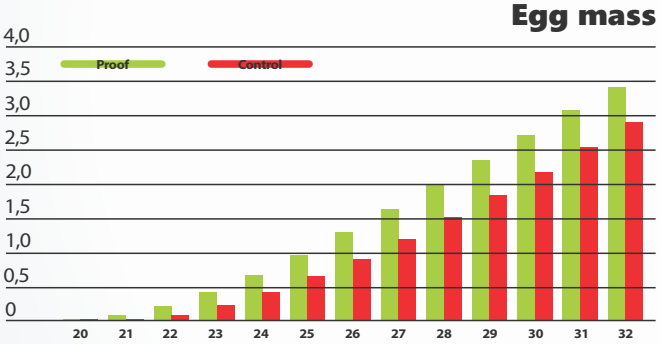
The eggs laid by the housed bird are an indicator that accurately portrays the efficiency of a laying plant. The TREATMENT lot produced up to week 32 of age 60 eggs per housed bird, while during the same period the CONTROL lot produced only 50 eggs. This difference of 10 more eggs produced by the TREATMENT lot has a fundamental economic impact on the company's equation.




The TREATMENT lot also produced eggs that were 2 grams heavier on average. By week 32 of age, the birds of the TREATMENT lot had accumulated a production of 3.42 kg of egg/bird compared to the production of only 2.90 kg of egg/bird from the CONTROL lot.

Taking as a reference a price of MXN$ 16.00/kg per egg, we can estimate that each bird of the TREATMENT lot contributed to the economic result of the company in MXN$ 8.00 extra during the period evaluated with 0.52 kg of eggs produced on the result of the CONTROL lot. This represents an additional income of MXN$ 374,000 for the TREATMENT lot.

## CONCLUSIONS

In the present evaluation the treatment with a phytobiotic [1], a prebiotic [2] and organic acids with yeast wall [3] proved to be effective to control CP and thus avoid the presentation of NE in laying hens.

The treatment with additives significantly improved the zootechnical performance and the productivity of the lot evaluated.

Additionally, these additives are an alternative to APC. They are safe and have no withdrawal period, neither present risks for the consumer of leaving residues in the egg.

The economic benefit is fully demonstrated and justified by corroborating the improvement in productive performance compared to investment in the treatment.

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