Evaluation of the effectiveness of a HVT-IBD vector vaccine on broiler farm performance in France

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> INTRODUCTION

The objective of this field study was to assess the outcome of the recent use, in 2018, of a HVT-IBD vector vaccine (VAXXITEK HVT+IBD) in broilers, in an integration of the East of France. In France, "standard broilers" (slaughtered at 35-50 days of age) are traditionally vaccinate against IBD with classical modified live vaccines, either intermediate or hot strain, depending on the field pressure. The recent increase of the use of HVT vector vaccines made necessary to investigate the benefits and return of investment of such vaccination, considering its higher cost for the farmer.

> MATERIAL & METHODS

In a first study, production performances were monitored in 5 farms, before and after the switch from drinking water (MLV, intermediate IBD plus strain, around 18 day-old according to maternal antibodies) to subcutaneous (SC) vaccination (vHVT-IBD vaccine) in the hatchery. Performance data of 2,627,173 chickens were included in the control group (MLV), and 1,738,670 in the HVT-IBD vector group.

A second study was conducted, comparing production performance in all the integrator's farms vaccinating either by drinking water (MLV) or SC day-old (HVT-IBD vector vaccine), for a period of 6 months. A total of 1,700,000 and 1,350,000 slaughtered broilers from 22 (HVT-IBD vector) and 21 flocks (MLV live) were included into the study, respectively. In addition, return on investment at farm & integration level was calculated according to usual field costs of vaccination (0,4€/m² for MLV, 1€/m² for vHVT) and average live chicken market price (885€/t).

> RESULTS

In the first study, improved performances were observed, in particular with regards to mortality (-0.78%; p=0.05) and condemnation rate (-0.06%; p=0.05). Results are presented in **table 1.**

	N chickens	Margin / m²	% mortality	% condemnation	AB costs € / batch
vHVT-IBD	1,738,670	9,69	4,93	1,01	283,32
Hot MLV	2,627,173	8,88	5,71	1,07	426,99
Difference		0,81	-0,78	-0,06	-143,67
		NS	p<0,05	p<0,05	NS

Table 1. Study 1: Difference of performances after the switch to vHVT-IBD vaccination

For the second study, performances of the HVT-IBD flocks were significantly more favorable than those of the MLV group: FCI (-0.37; – p=0.03), ADWG (+2.68g; – p=0.02), mortality (-1.03%; -p<0.001), productivity/m² (+3.21 kg; - p=0.05), leading to increased gross margin for the farmer (+1.57€/m²; - p<0.001) (table 2).

	N chickens	N batches	FCR	ADWG	% mortality	% condemnation	Kg/m²	Income / m²
vHVT-IBD	1,700,000	22	1,652	58,62	4,76	0,92	44,3	10,11
Hot MLV	1,350,000	21	1,689	55,94	5,79	1,05	41,1	8,54
Difference			-0,04	2,68	-1,03	-0,13	3,2	1,57
			p<0,05	p<0,05	p<0,05	NS (p<0,06)	p<0,05	p<0,05

Table 2. Study 2: Compared performances between vHVT-IBD vaccinated flocks and hot MLV vaccinated flocks (1-2Q2018)

Overall return on the investment (ROI) was evaluated: it represented a gain of +0.6€/m² for the hatchery vaccination, as compared to the field vaccination. At the farm level, the vHVT-IBD vaccinated flocks generated an additional 0.9€/m², as compared to the MLV vaccinated flocks. At the integrator's level, the increased productivity generated an average gain of 1906€ per 1500 m² house (average house size in the study), and 1 ton of filet at the slaughterhouse. ROI results are summarized in **figure 1.**

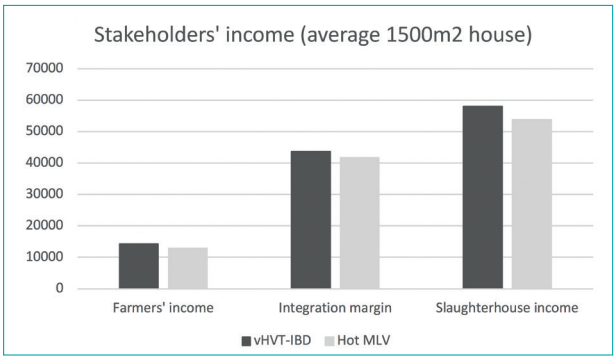

Figure 1. Stakeholders' income for an average 1500 m2 poultry house

> DISCUSSION & CONCLUSION

The first study showed that vHVT-IBD vaccine can be useful in improving broiler farms performance, especially in a supposed field strain pressure context. The second study showed that despite a higher investment in vaccination program, the benefits of vHVT-IBD vaccination can lead to a positive return of investment, shared among the different industry stakeholders. Additional work can be done in this integration in order to determinate the reality of the field strains pressure through IBD serologies, which could not be done through this retrospective analysis if data. Additionally the replication of this type of study is ongoing in other areas of France, in order to confirm the results.

> KEYWORDS

Vector vaccine, MLV, IBD, Farm performance, Return on Investment.