

# IMPACT OF PROBIOTIC SUPPLEMENTATION ON PERFORMANCE AND ECONOMIC VIABILITY DURING THE NURSERY PHASE

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## INTRODUCTION

The nursery phase, especially in the days following weaning, is the most challenging time for piglets. Improving intestinal health is one important strategy to minimize the impacts of this phase. Supplementation with probiotics can be a nutritional strategy which can ensure better intestinal health and, as a consequence, piglet performance. The aim of this study was to evaluate the effects of an in-feed probiotic supplementation formed by specific strain of *Bacillus sp. PB6* (ATCC PTA-6737).

## OBJECTIVES

The objective of this work was to evaluate the effects of a in feed probiotic supplementation (*Bacillus sp. PB6*) on body weight (BW), average daily gain (ADG), average daily feed intake (ADFI), feed conversion ratio (FCR) and the feeding program costs.

## MATERIALS AND METHODS

### EXPERIMENTAL DESIGN

Two hundred and forty piglets, of 23 days of age, were divided in two treatments, each with 10 replicates and 12 animals per experimental unit. The treatments were: control (without additives) and probiotic diet (treatment with 500g/ton of probiotic PB6). The test was conducted in an experimental facility located inside a commercial farm.

### MEASUREMENTS

The animals were weighed at 0, 7, 14, 21 and 49 days of the experiment. The feed provided and leftovers were evaluated daily to calculate average daily gain (ADG), average daily feed intake (ADFI), and feed conversion ratio (FCR). Feeding program costs were calculated according to table 1. Statistical analysis was performed using the program SAS 9.4 model.

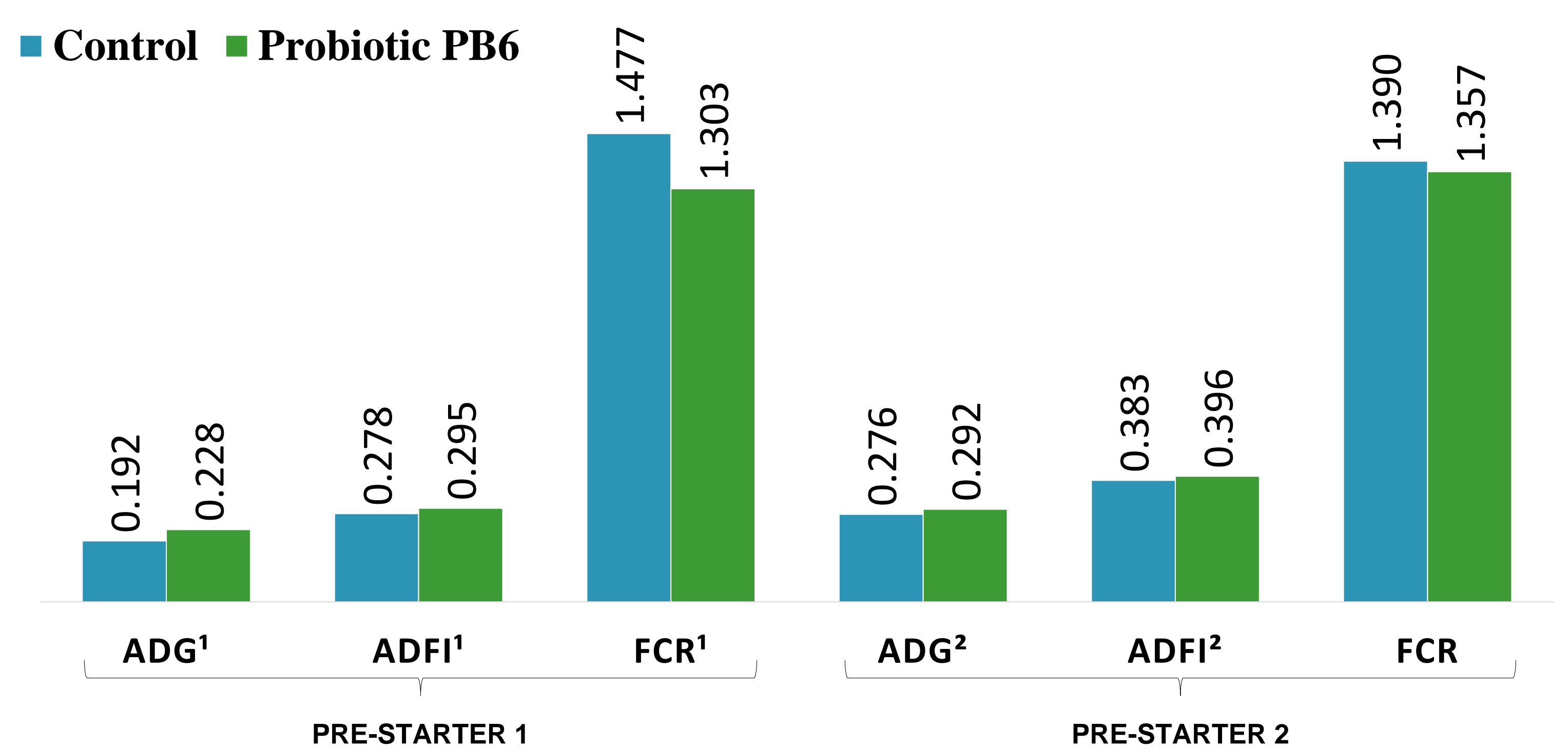
Table 1 – Variables of the feeding cost evaluation.

Variable	Description
Feed cost (€)	Total feed consumption per piglet (kg) x feed price (€)
Cost per kg of weight gain (€/kg)	Feed cost (€) / weight gain (kg)
Gross income (€)	Weaning weight (kg) x piglet kg price (€)
Economic viability (€)	Gross income (€) – feed cost (U\$)

## RESULTS

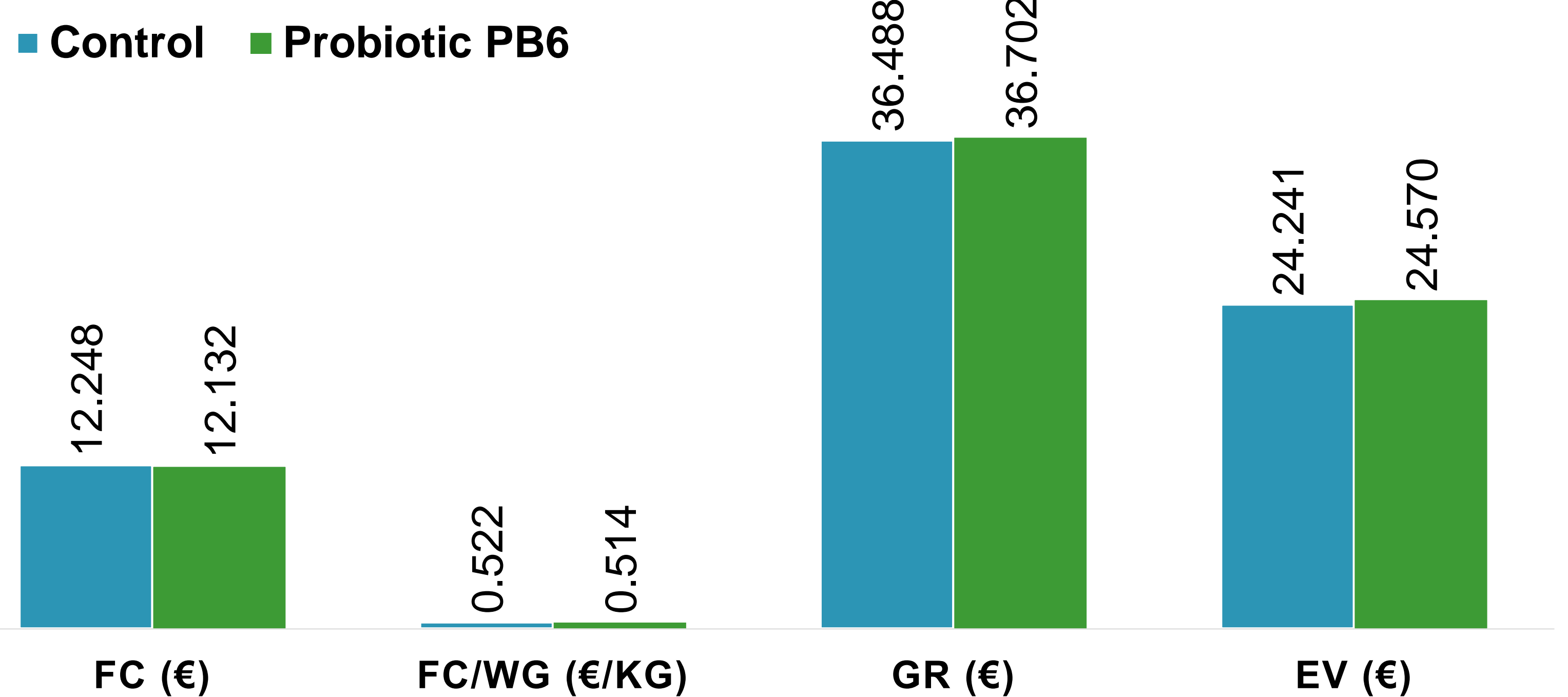
In pre-starter phase 1, the use of probiotic PB6 had better results in body weight, ADG, ADFI and FCR compared to the control (P < 0.05). In pre-starter 2 phase, the probiotic diet had better ADG and ADFI compared to control animals (P < 0.10). These results are shown in figure 1. There were no differences between treatments for performance variables in other periods, nor for diarrhea incidence. Feeding costs, for all four phases, of the diet with probiotic PB6 were cheaper compared to control, as described in figure 2.

Figure 1. Results of average daily gain (ADG), average daily feed intake (ADFI) and feed conversion ratio (FCR) for the different periods of the study.



1: P-value < 0.05; 2: P-value < 0.1; Pre-starter 1: 0 to 7 days; Pre-starter 2: 0 to 14 days.

Figure 2. Economic viability of the evaluated diets.



## DISCUSSION and CONCLUSIONS

The benefits related to modulation of microbiome and inflammatory response resulting from the inclusion of probiotics are well elucidated. The benefits resulting from the inclusion of this type of additive are connected with the physiological challenges faced by piglets in the nursery phase, this stress direct affects intestinal health. Therefore, it is believed that the best performance results presented by piglets treated with probiotic PB6 (CLOSTAT®) arises due to the mechanisms of action of the probiotics related to the improvement of intestinal health by improvement of digestion, utilization of nutrients, better microbiome and intestinal structure

In conclusion, the probiotic diet improves performance variables especially after weaning, a crucial phase for the piglets, and it is more economically viable compared to control treatment.

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