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Use of protected benzoic acid in weaned piglets: results from a field trial in Spain

Zero Zinc Summit, June 2019

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Objective of the trial

To study the effect of protected benzoic acid (PROVENIA™) feed supplement on piglet growth and gut health in field conditions.

Compared results with current solution being applied.

- Protected benzoic acid: a complementary feed for piglets
- Protective vegetable oil matrix embedding the components

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Diets and location

LOCATION: Four commercial farms in Spain

- Medium-sized commercial farms

ANIMALS (2610 piglets)

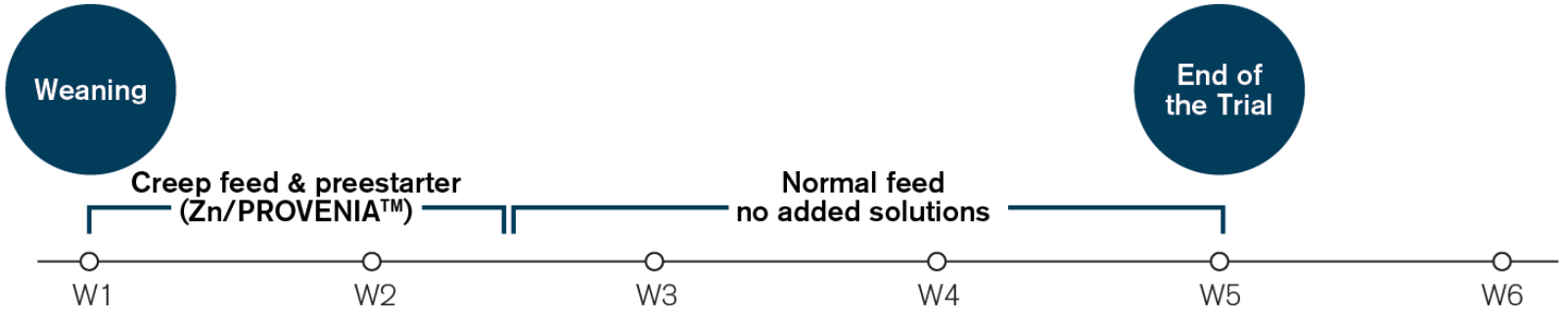
- Initial body weight: 6.0-6.5 Kg PV
- Piglets weaned at 22-25 d
- End of trial body weight: 17-20 Kg
  (60 days old: 5 weeks)
- Average historical mortality in the farms used: 2-4%
- ZnO was used at all farms (2500 ppm)
- All with similar health status and feeding

Diets and location

DIETS

- All the weaned piglets on the four farms were divided in two experimental groups (protected benzoic acid or ZnO (2,5 kg/MT - first 10 days after weaning: creep feeding and pre-starter feed)
- Protected benzoic acid was added in the first (creep feeding) and second diet (pre-starter), at 2,5 kg/MT

- No other antibiotics used in feed



Controls and samplings

- Performance until the end of transitional period
- Incidence of diarrhea and medication costs
- Feces were taken at the end of the trial and were analyzed by molecular methods in Università di Bologna (UNIBO)

Pictures of each one of the farms used in the trial

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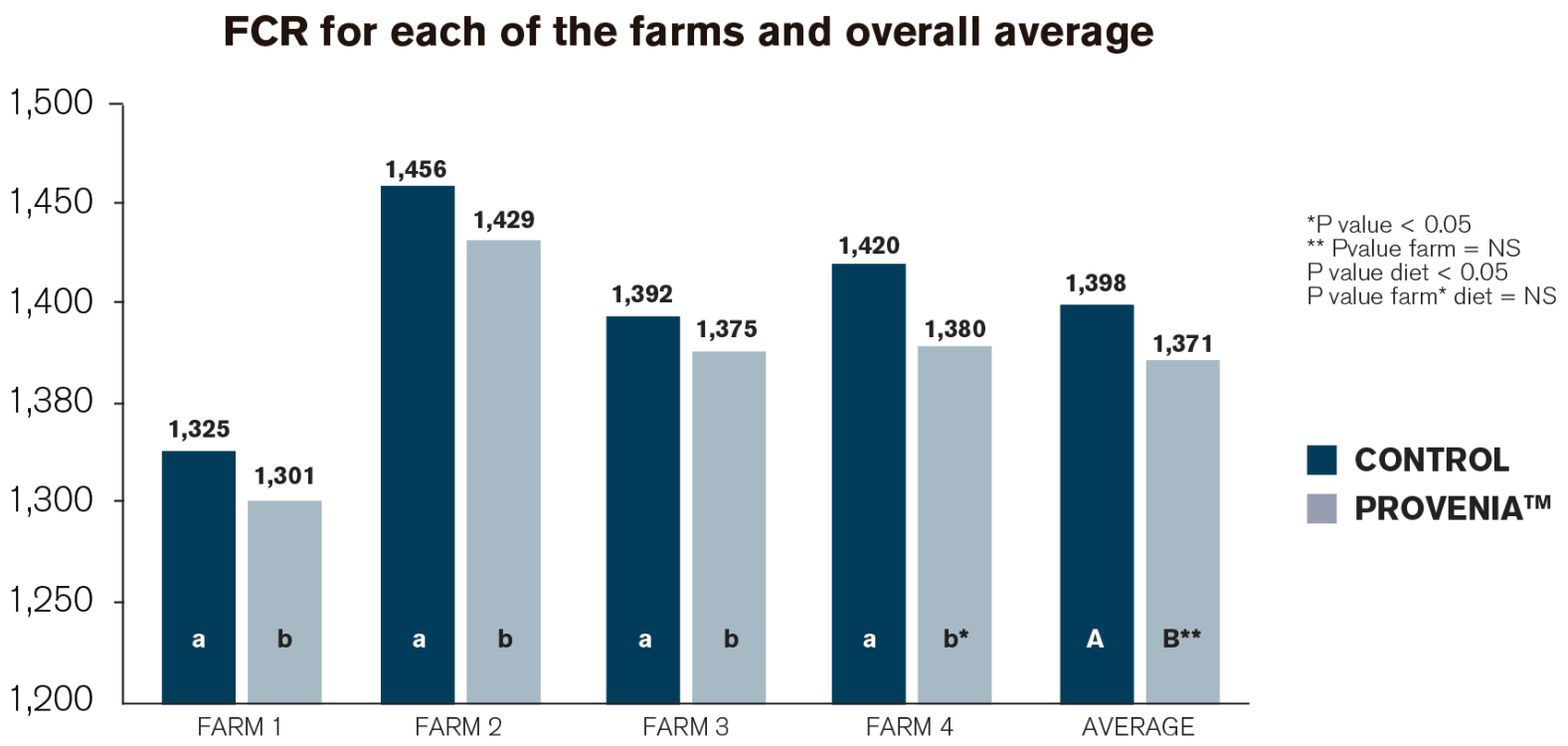
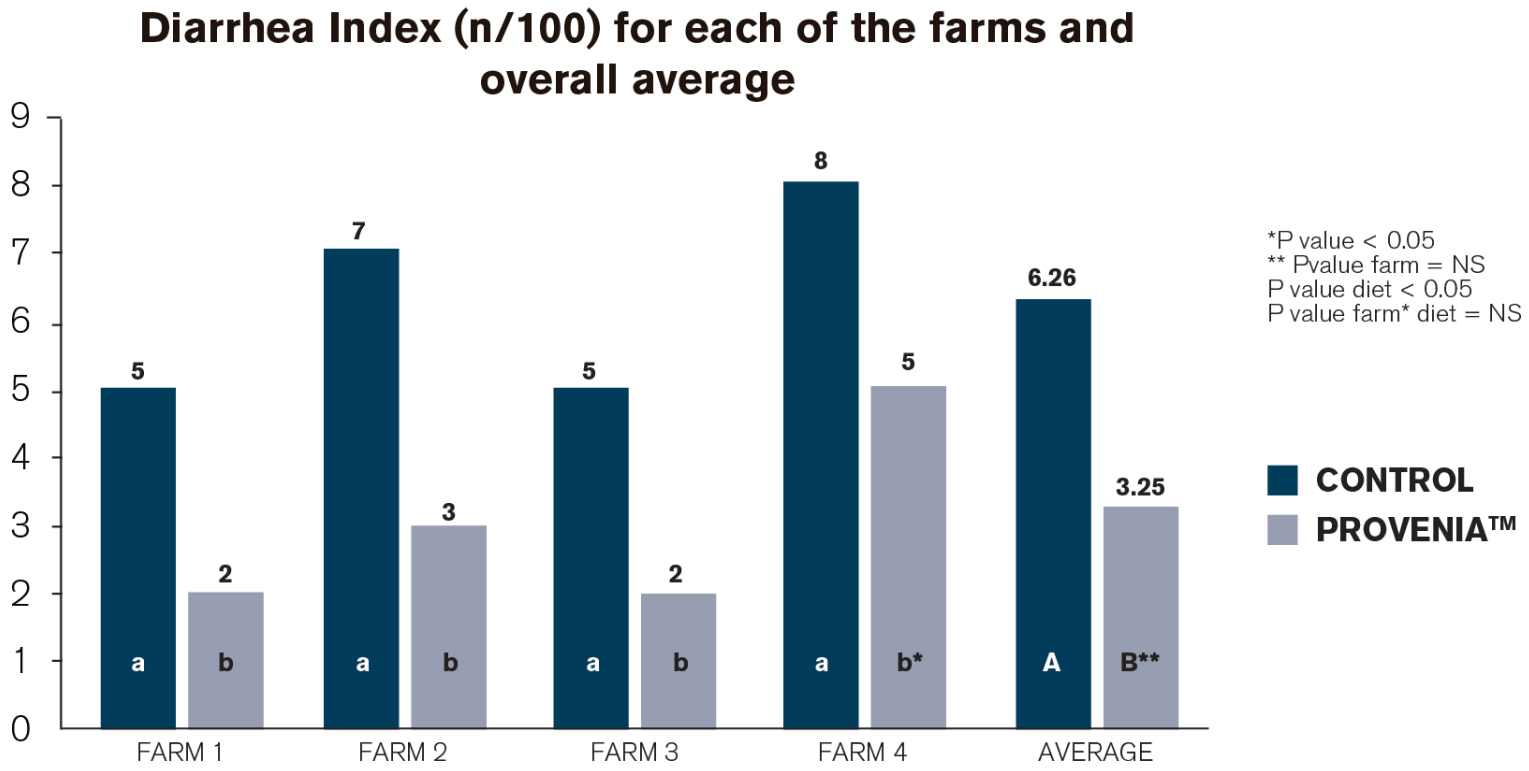
Trial Results

Feed conversion ratio (FCR)

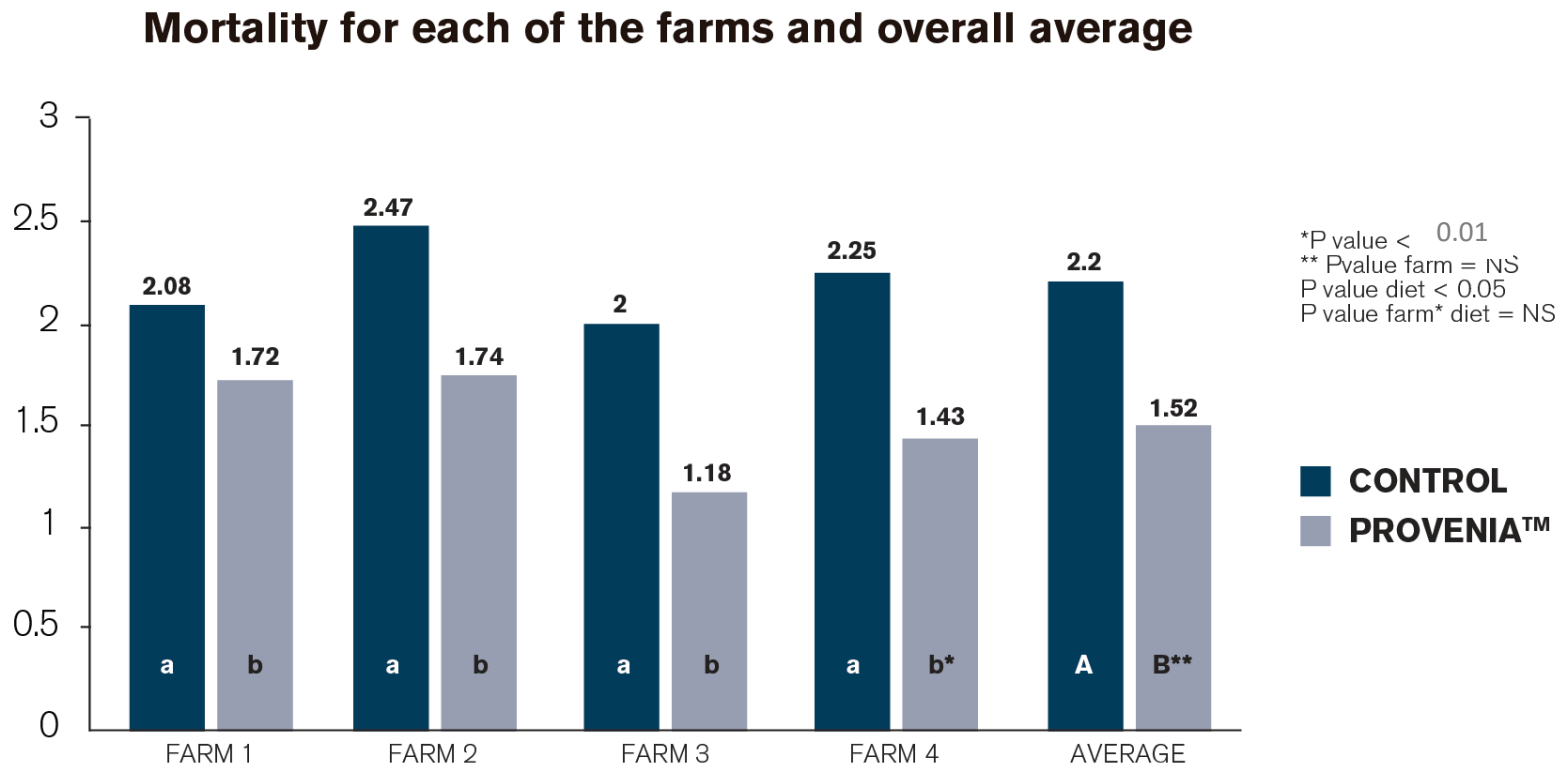


No observable differences on FI but piglets fed with PA showed better ADG.

Diarrhea incidence



Mortality


Mortality for each of the farms and overall average
3
2.5
2
1.5
1
0.5
0
2.08
1.72
2.47
1.74
2
1.18
2.25
1.43
2.2
1.52
a
b
a
b
a
b
a
b*
A
B**
FARM 1
FARM 2
FARM 3
FARM 4
AVERAGE
*P value < 0.01
** Pvalue farm = NS
P value diet < 0.05
P value farm* diet = NS
CONTROL
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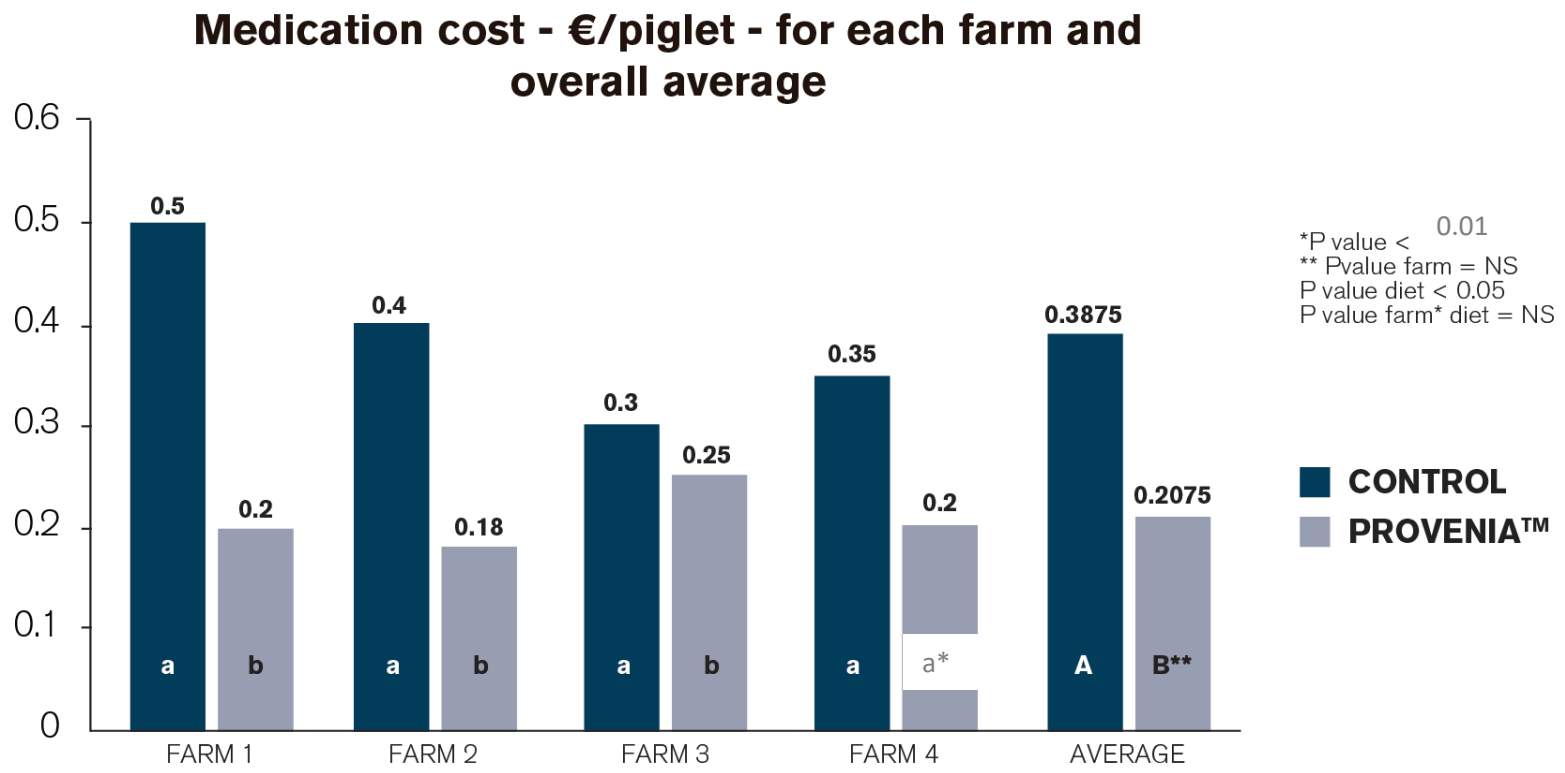
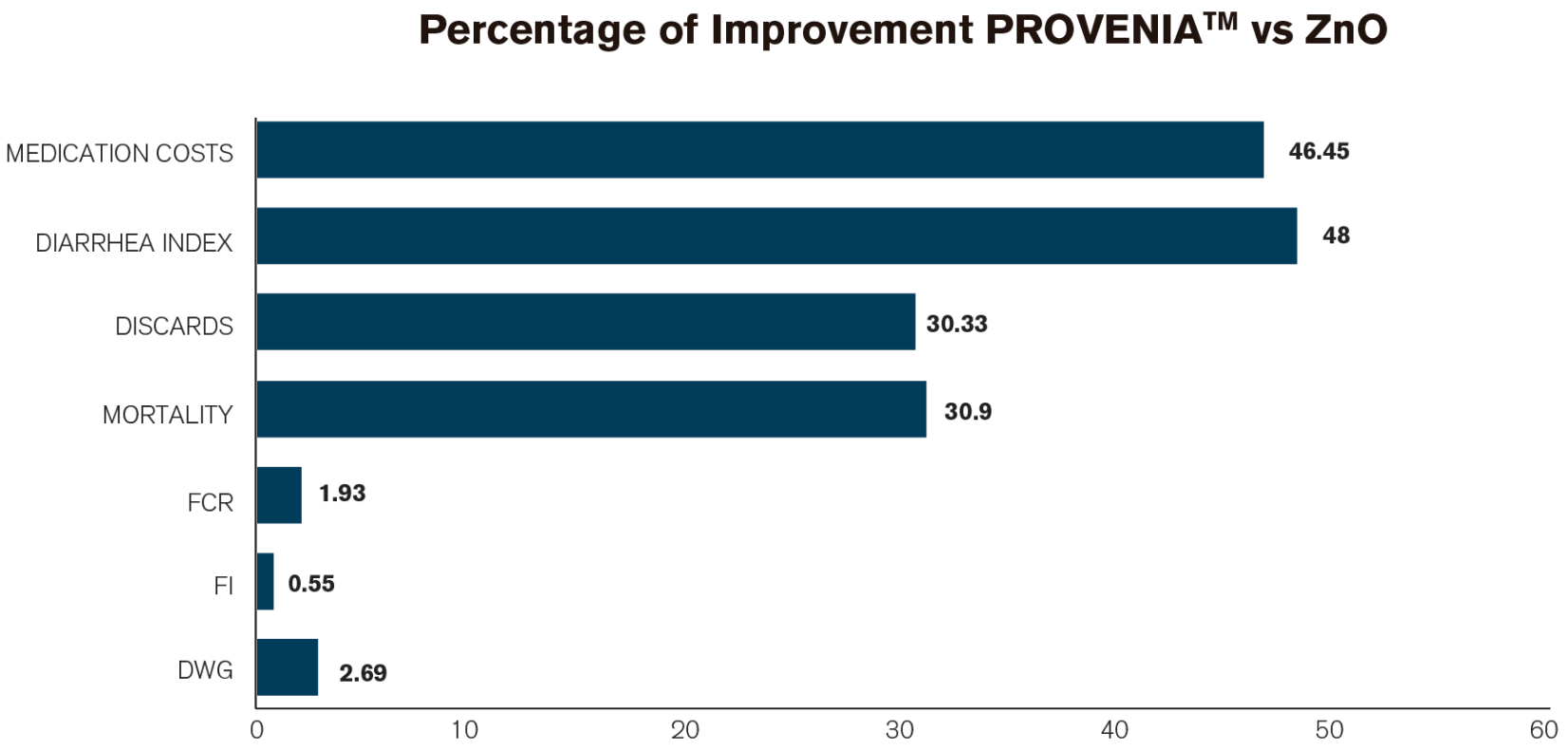
Medication cost



Summary of results



FCR: Feed conversion rate; FI: Feed Intake; DWG Daily weigh gain

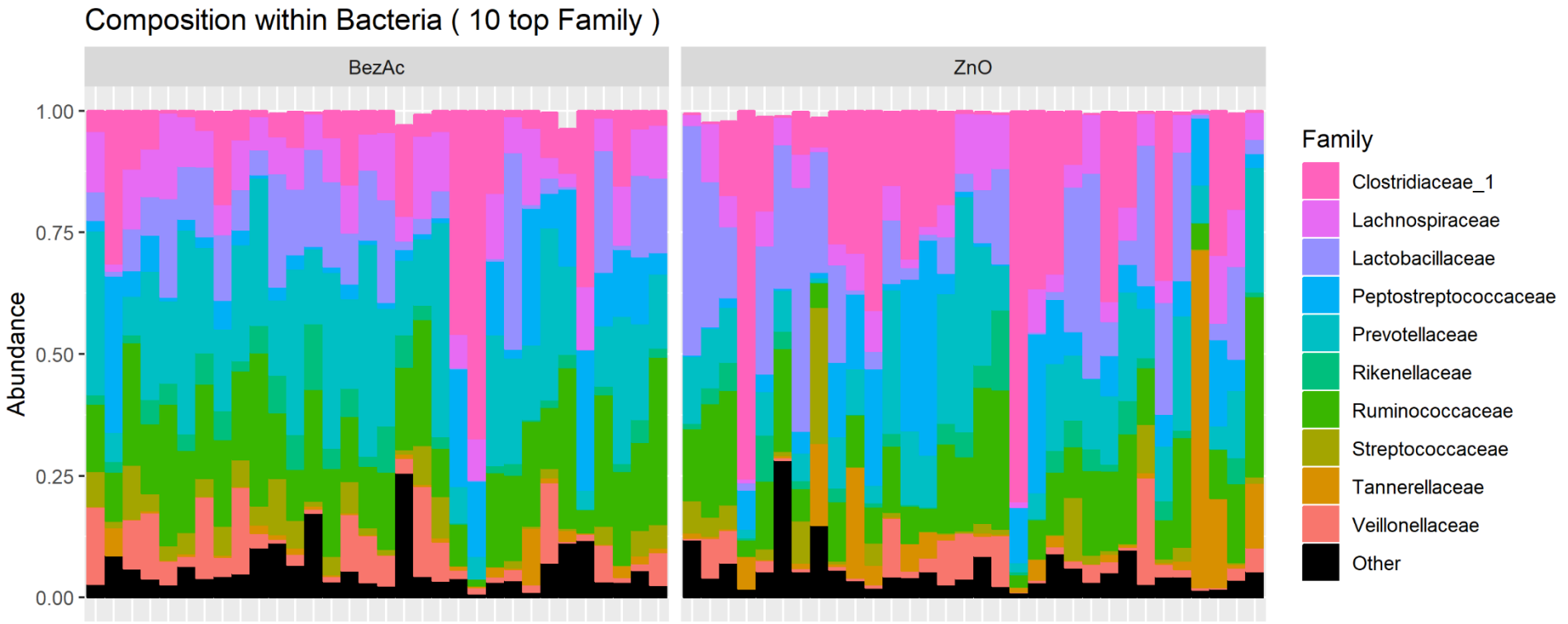
Feces molecular analysis

Eight samples of feces from each group at each farm (64 samples in total) were collected. The samples were shipped to the University of Bologna to perform the analyses of the microbial profile.

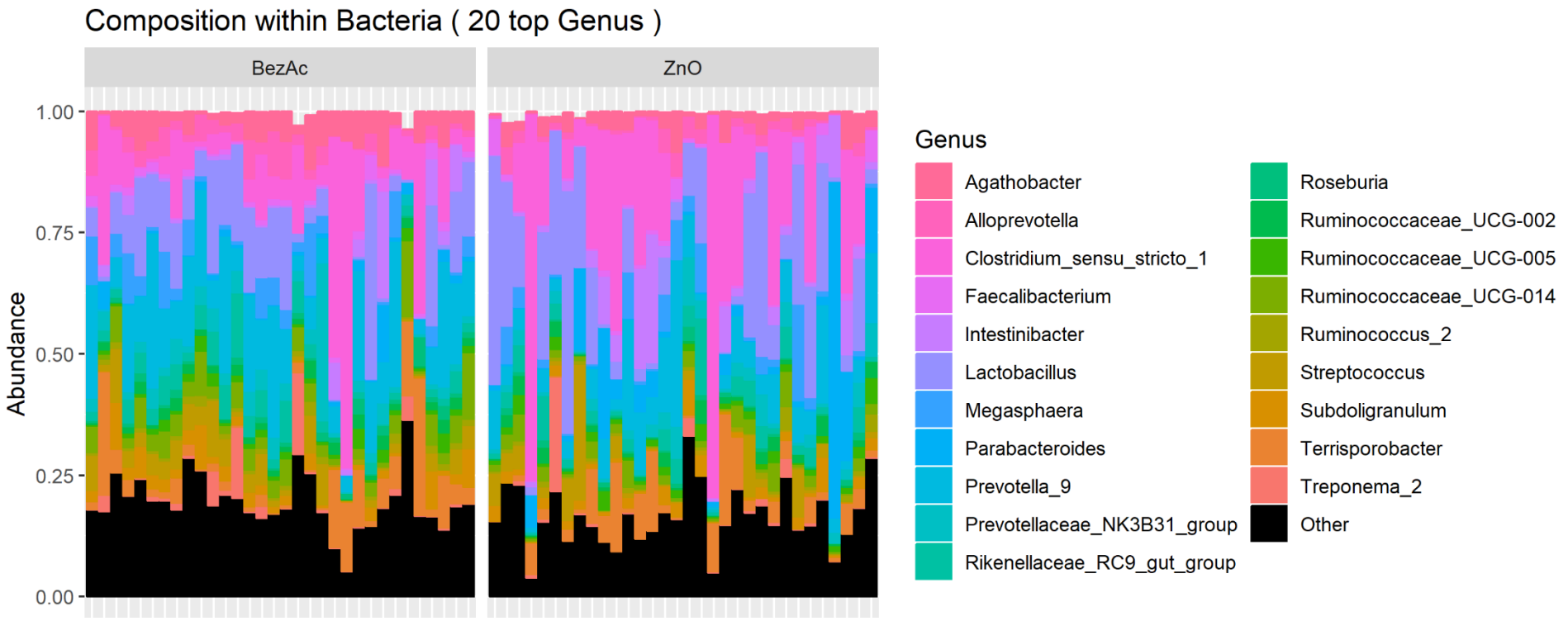
Samples Preparation

Total bacterial DNA will be extracted. The library formation and sequencing of 16S rRNA gene performed with MiSeq® Reagent Kit V3-V4 on a MiSeq-Illumina® platform.

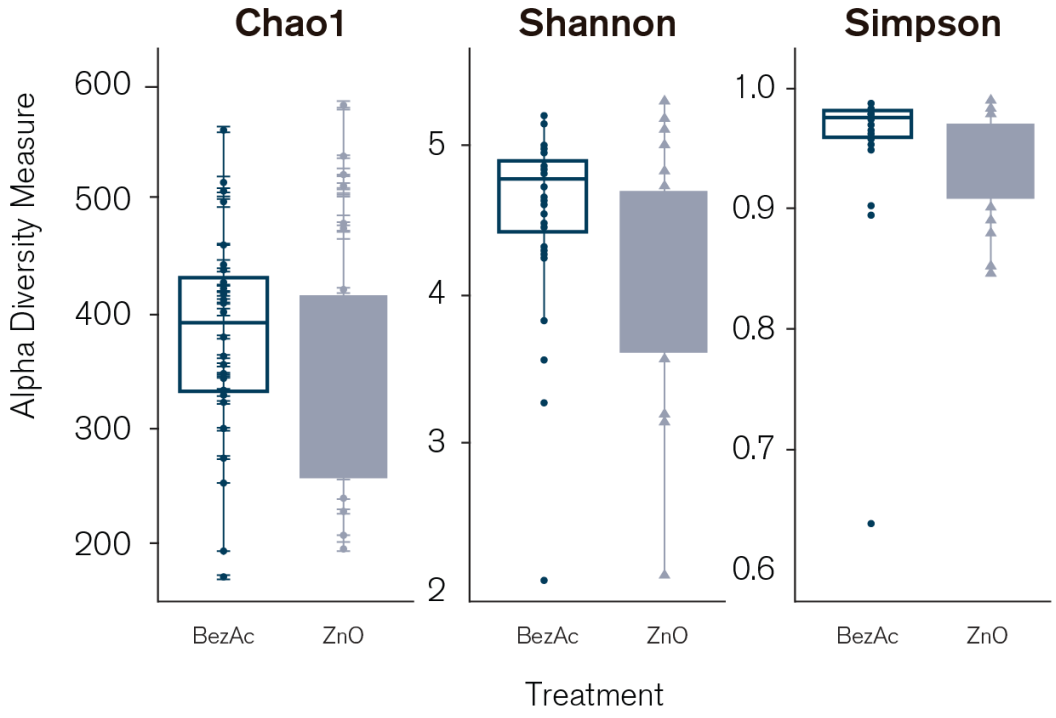
Composition- Family



Composition- Genera



Alpha diversity index



Protected benzonic acid favoured the microbial diversity of weaned piglets. In agreement with Torrallardona (2007) and Halas et al. (2010)

Conclusion

- The use of protected benzoic acid feed in piglets on commercial farms showed a reduction in medication costs and improvement in performance.
- Average daily gain was higher in animals with same feed intake, resulting in a better feed conversion ratio.
- First results on microbiota profiles showed differences on biodiversity and composition.

Questions?

Help piglets boost gut health in the post-weaning period

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