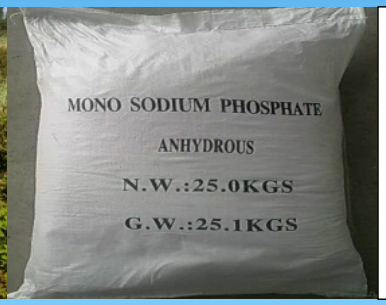
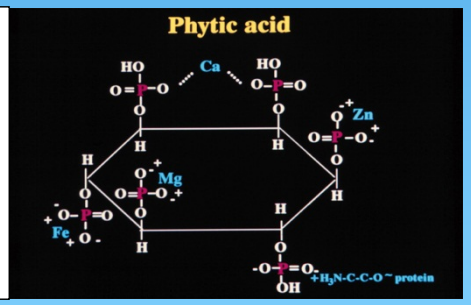
Decreasing the phosphorus excretion from growing and finishing pig systems

V. Symeou, S.A. Edwards and I. Kyriazakis





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Introduction/Value to Industry

Low P digestibility creates PROBLEMS

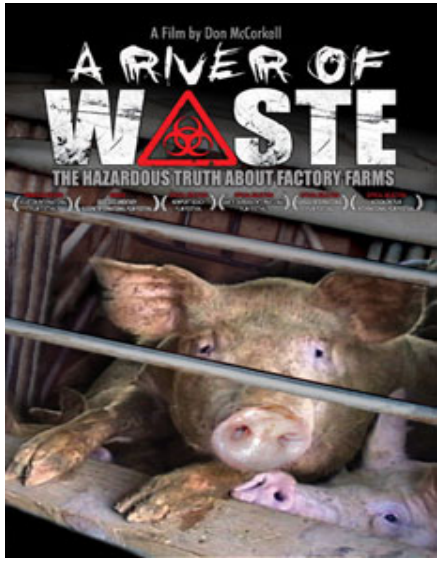
Supplementation of inorganic P is:

(1)**Expensive**

(2)Non-renewable nutrient

Eutrophication

Environmental degradation causes **bad publicity**



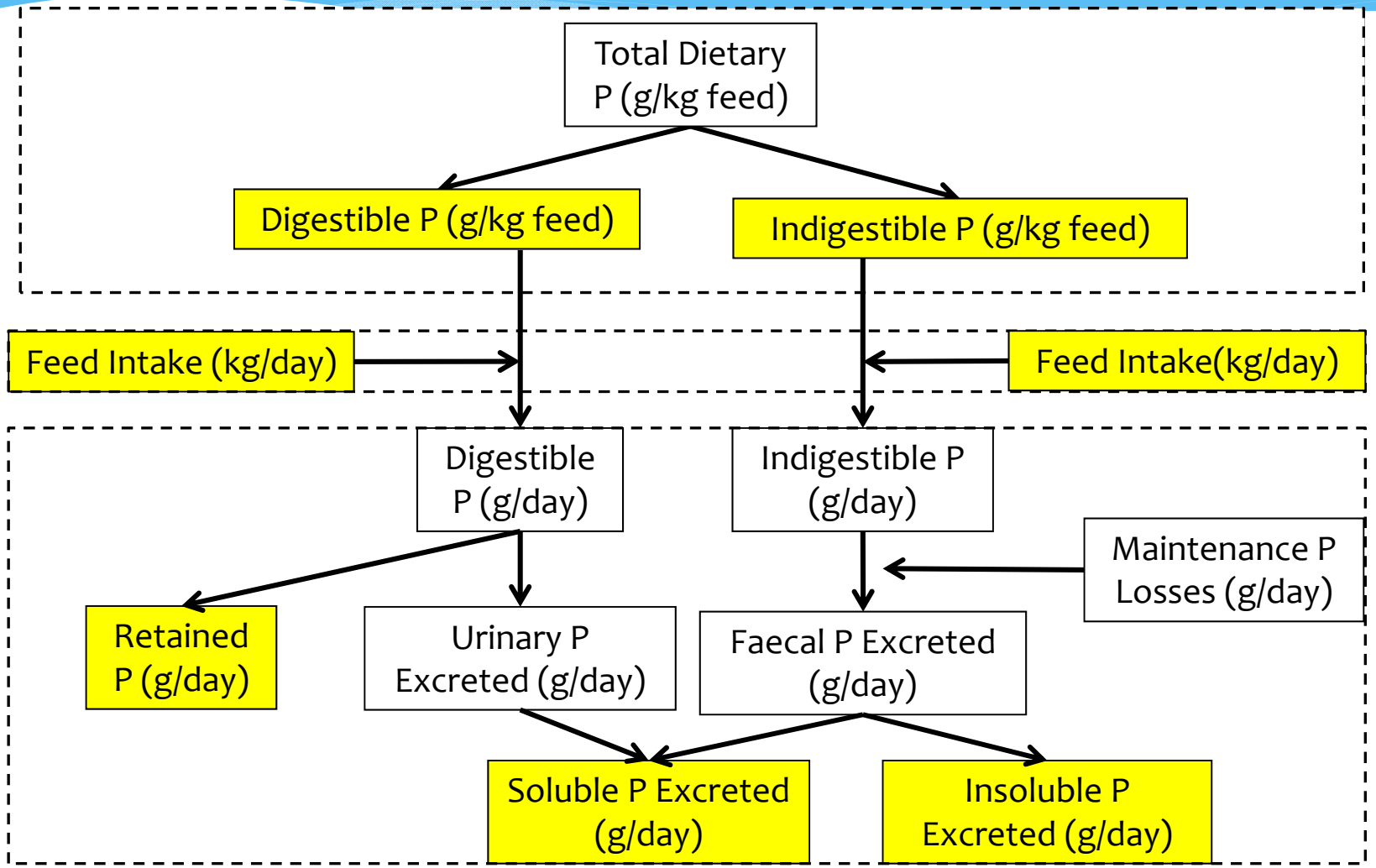
Aim

Predict the P digestibility, retention and excretion of different pig genotypes under different dietary conditions through a simulation model.

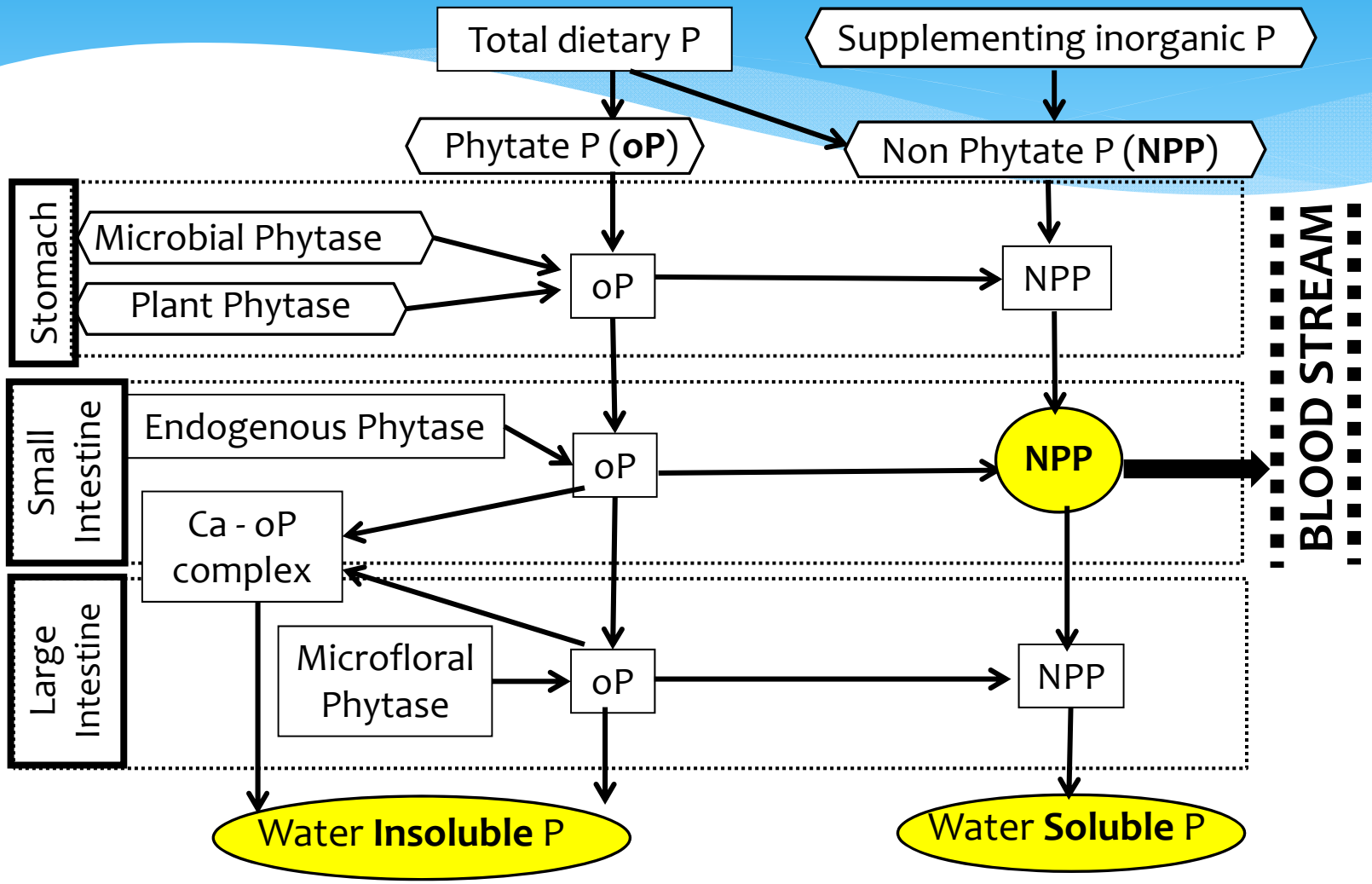
Presentation Objectives

- Model description
- Model validation against independent experimental data
- Potential model use

Material and Methods



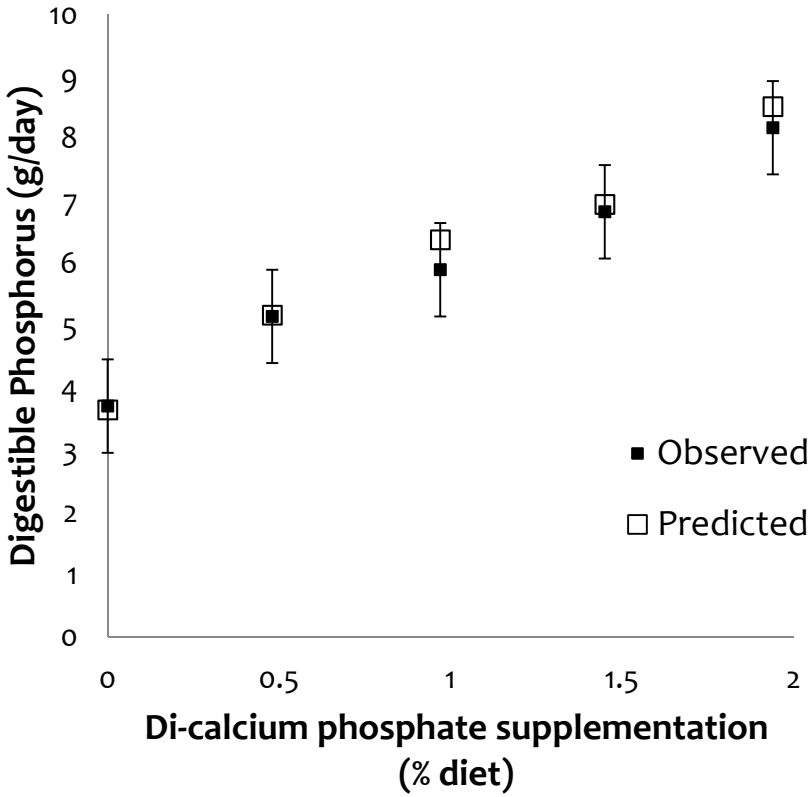
Overview of P digestibility model

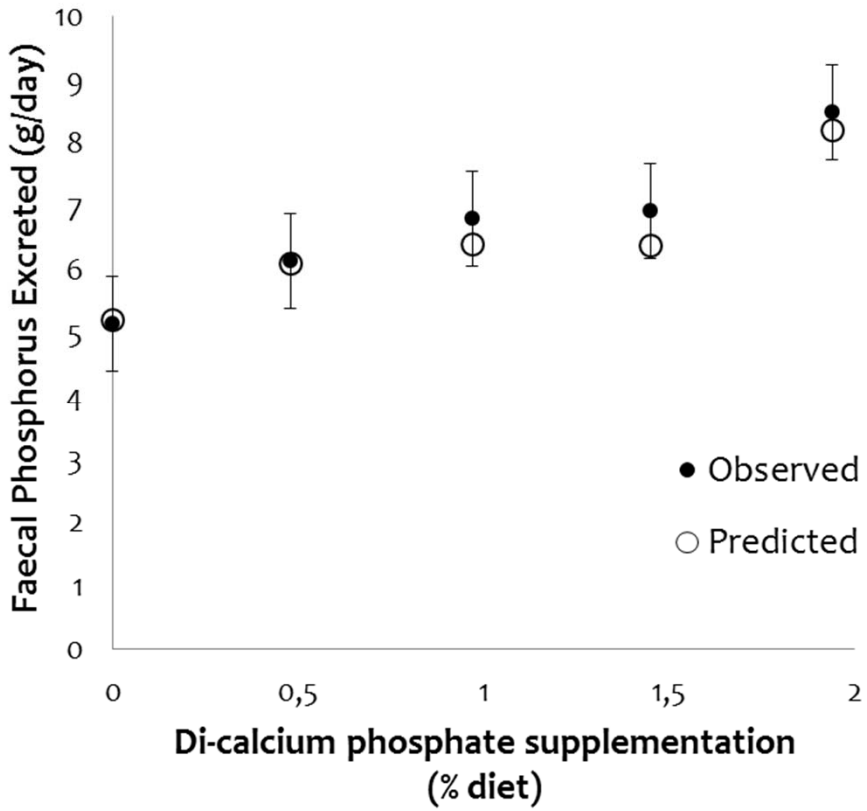


Results

Effect of increasing supplemented inorganic P

oP=2.6 g/kg diet
Ca= 9.0 g/kg diet

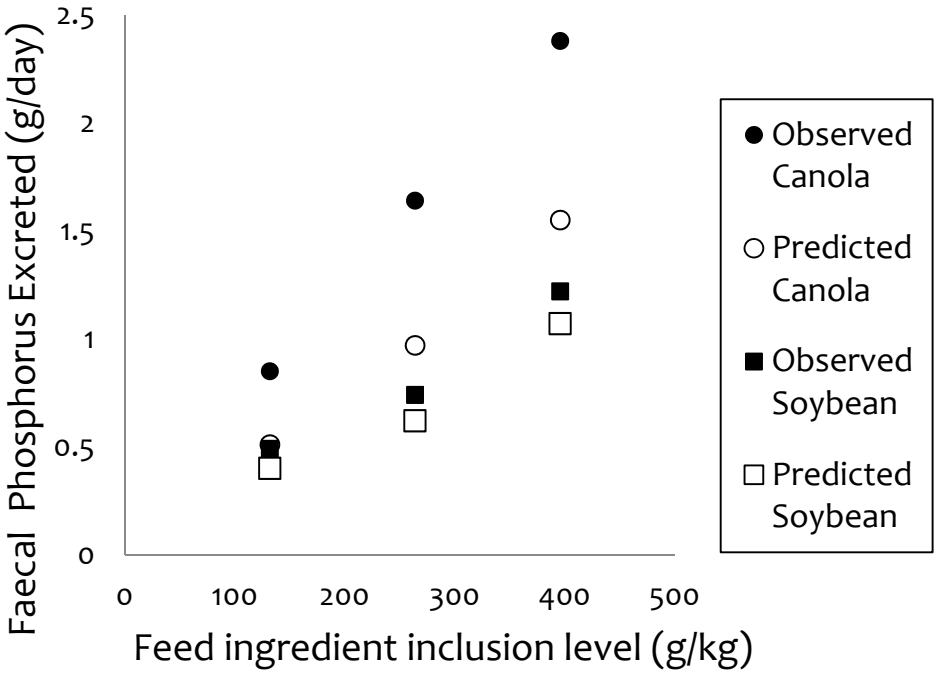




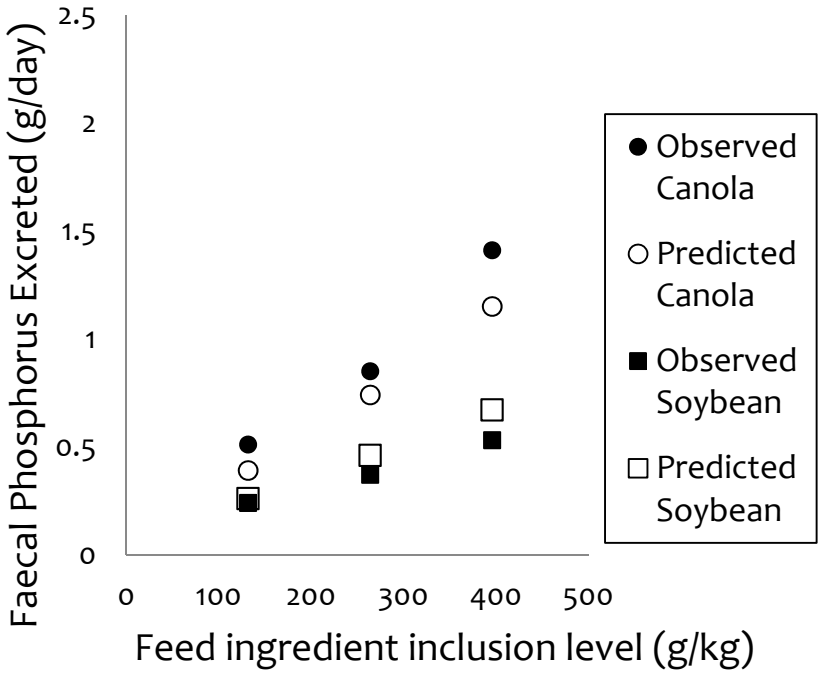
Ekpe E. D., R. T. Zijlstra, and J. F. Patience. **2002**. Canadian J. Anim. Sci.

Effect of different ingredient with and without phytase

No Microbial Phytase



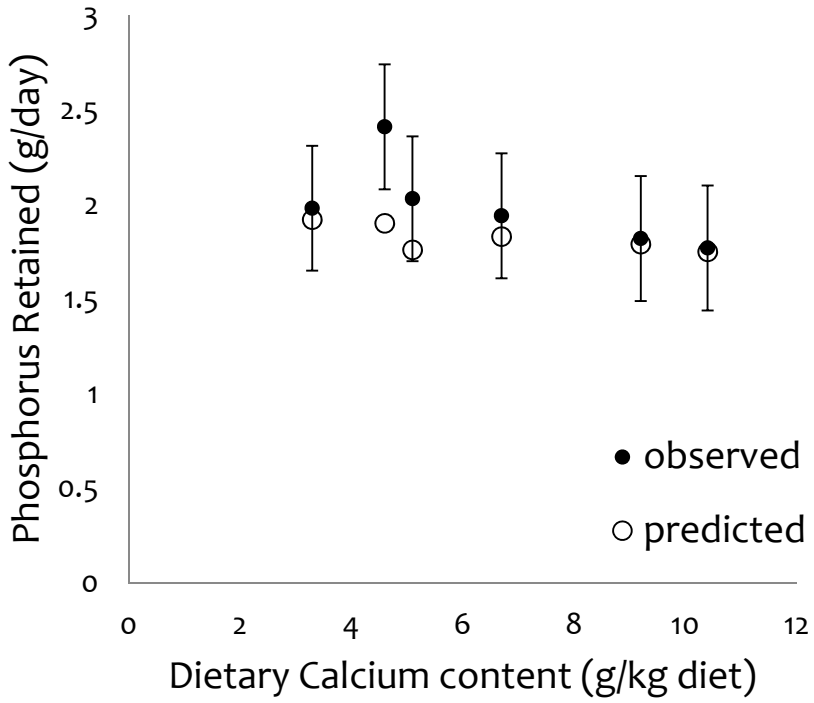
1000 FTU *E. coli* supplementation

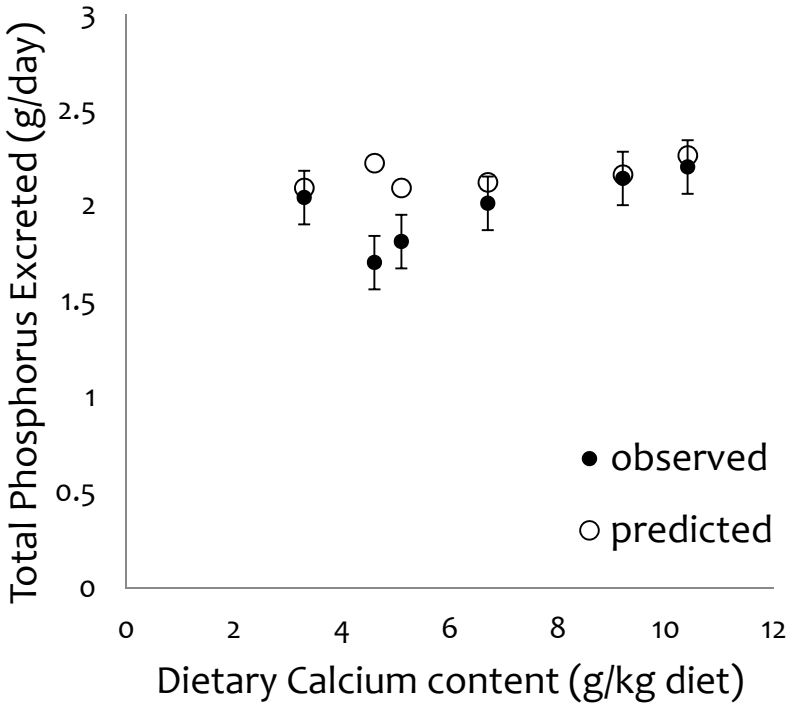


Akinmusire A. S. and O. Adeola. **2009**. J. Anim. Sci.

Effect of different levels of dietary Calcium

NPP=2.6 g/kg diet
oP= 1.6 g/kg diet





Stein, H. H., O. Adeola, G. L. Cromwell, S. W. Kim, D. C. Mahan and P. S. Miller. **2011**. J. Anim. Sci.

Conclusions

* The model provides satisfactorily predictions to variations in:
    1. inorganic P supply a diet
    2. Phytate
    3. phytase
    4. dietary calcium

* A major factor contributing to the systematic differences between observed and predicted values was the source of phytate in the diet.

What is next?

* Development of the model for a population (stochasticity)

* Development of strategies that minimise P excretion by pigs whilst maintaining their performance.

* Framework that trade-off:

  'least cost' **vs** 'least environmental impact' formulation

Thank you

Any questions?

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