

Body mineral content of reproductive sows

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Context and objective

- ✓ **Determination of mineral requirement of sows is generally based on a factorial approach**
 - Guéguen & Perez (1981), Jongbloed et al. (2003)
InraPorc (2008), NRC (2012), Bikker & Blok (2017)
- ✓ **Determination of requirements for :**
 - Maintenance $f(\text{BW})$
 - Reproduction $f(\text{litter growth, milk production})$
 - Maternal retention $f(\text{BW or protein gain})$
 - => but limited data on sow mineral content
 - => use of data “extended” from fattening pigs

Objective => Evaluate body mineral content of reproductive sows



Material and methods

✓ Cutting and complete dissection of 189 sows from 4 studies

- Primiparous : 44 at farrowing, 66 at weaning
 - Multiparous : 25 at mating, 56 at farrowing
- ⇒ **Carcass : lean, fat, skin, bones, organs**



✓ Grinding and chemical analysis of a sub-sample

- 23 sows : farrowing & weaning
- ⇒ **protein, fat, minerals, water, energy**



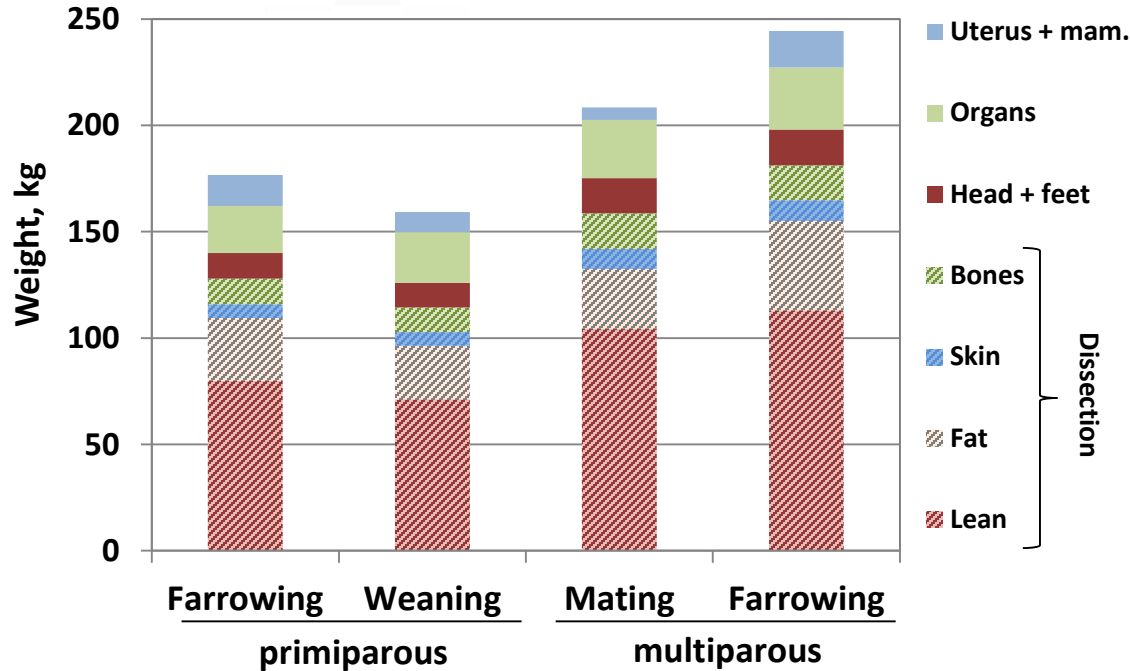
✓ Feed dP : 2.6 g/kg in gestation, 3.8 g/kg in lactation

✓ Calculations

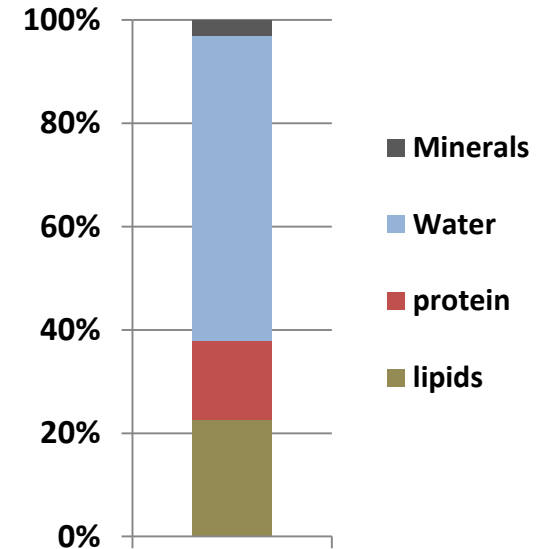
- Double regression technique (Causeur & Dhorne, 1998)

Composition of empty body weight

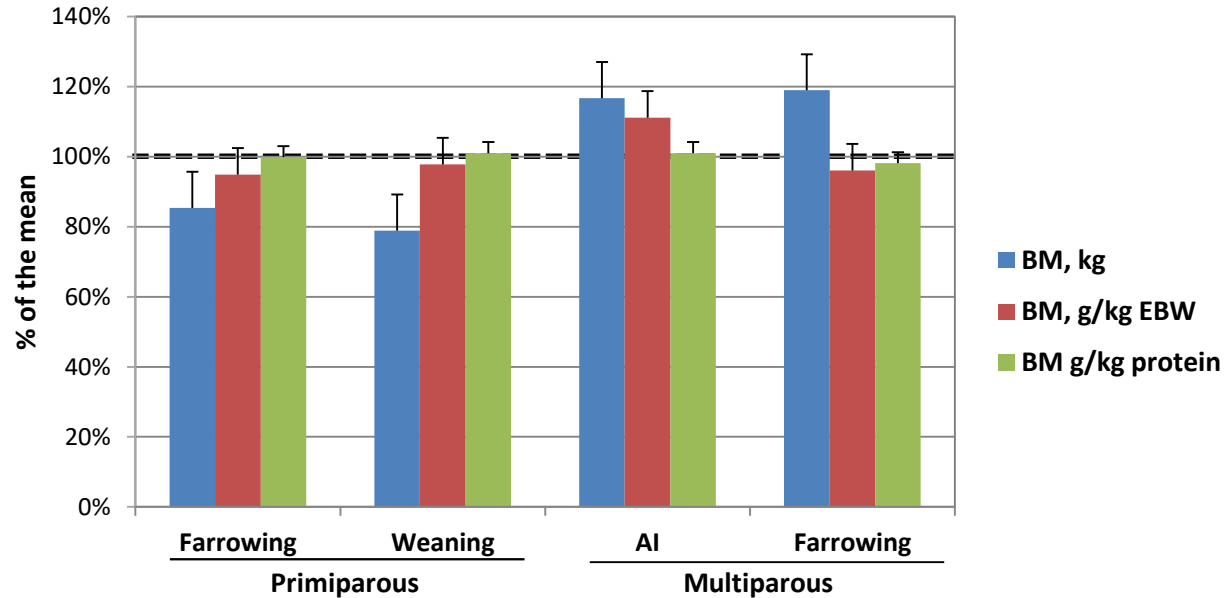
Body composition (cutting & dissection, 189 sows)



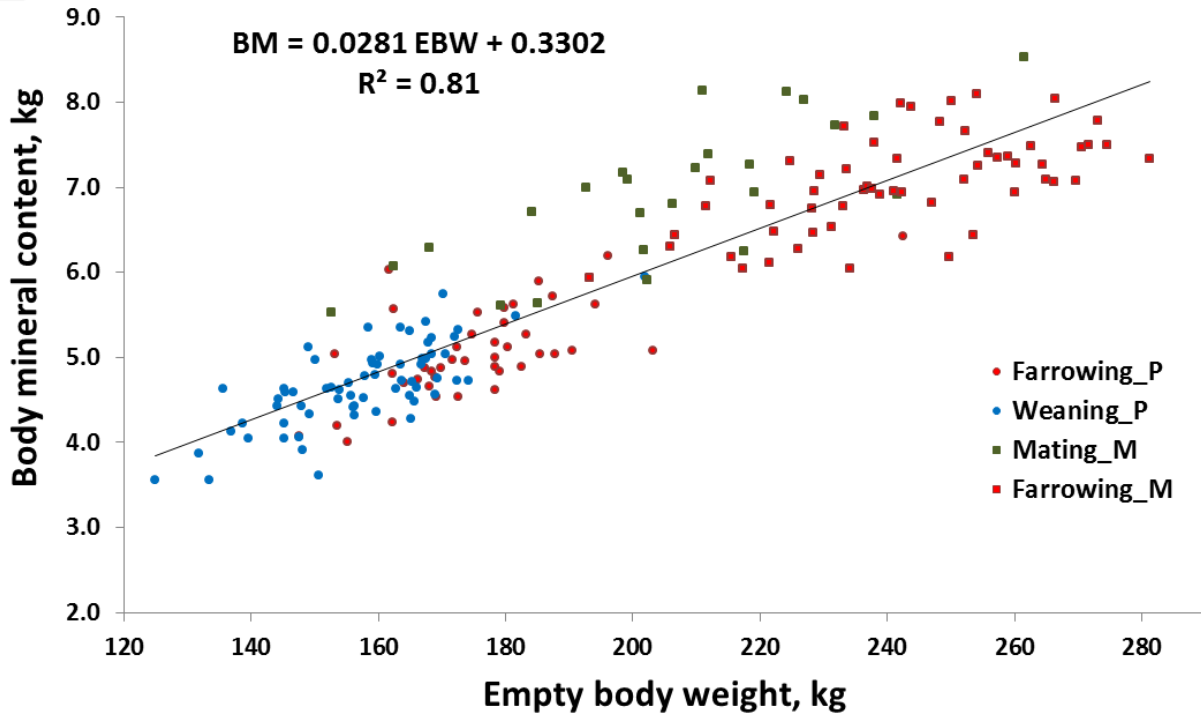
Chemical composition (25 sows)



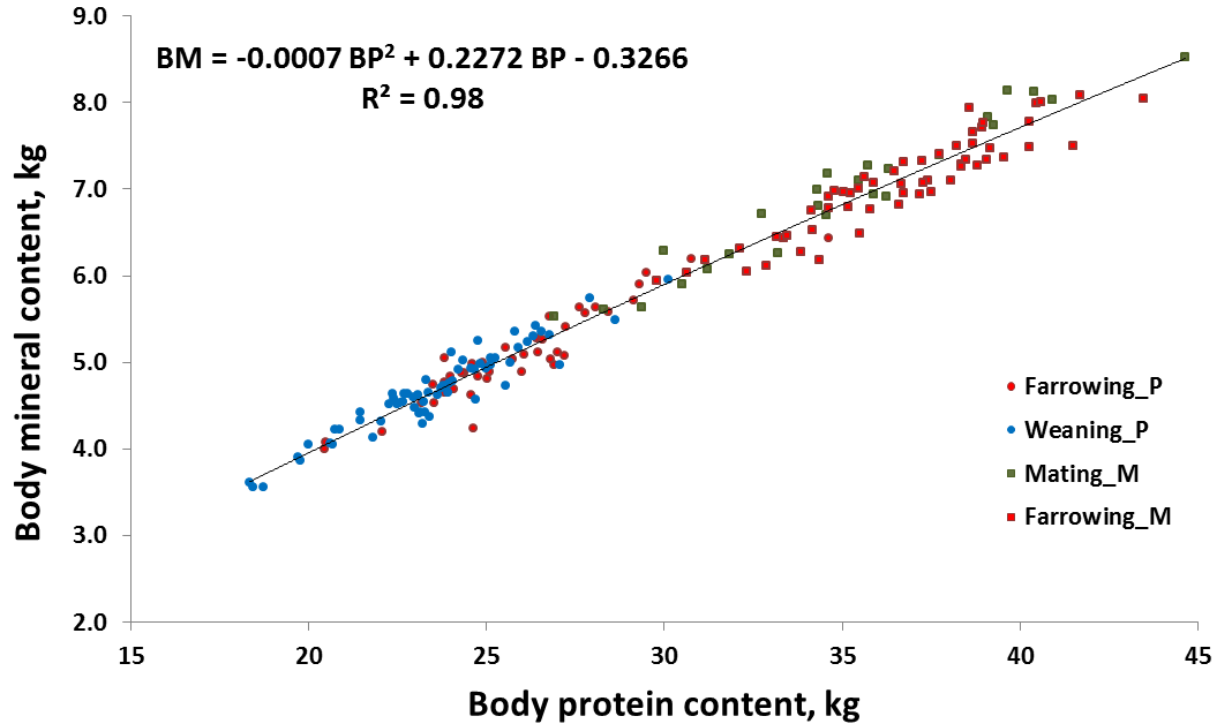
Effect of group on body mineral content, in % of the mean expressed in different units



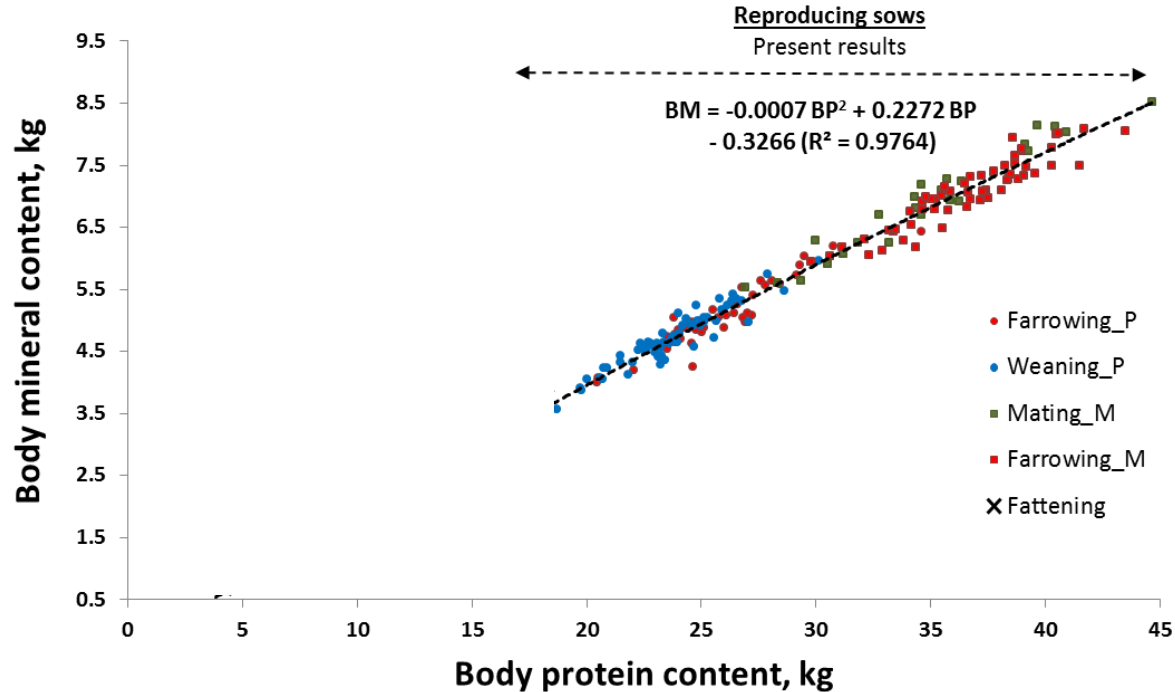
Relationship between body minerals and EBW



Relationship between body minerals and body protein



Relationship between body minerals and body protein - comparison with results on fattening pigs -



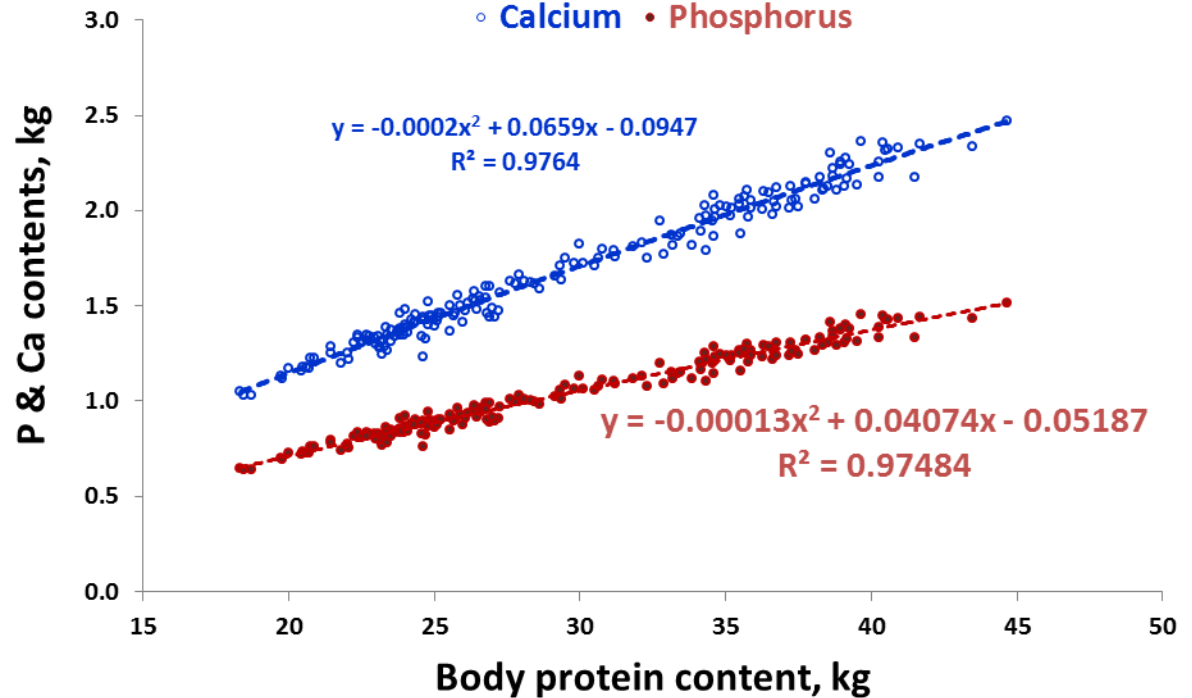
Estimation of P and Ca, relation to body protein

Calculations

P and Ca contents in minerals: from the review of Bikker and Blok (2017)

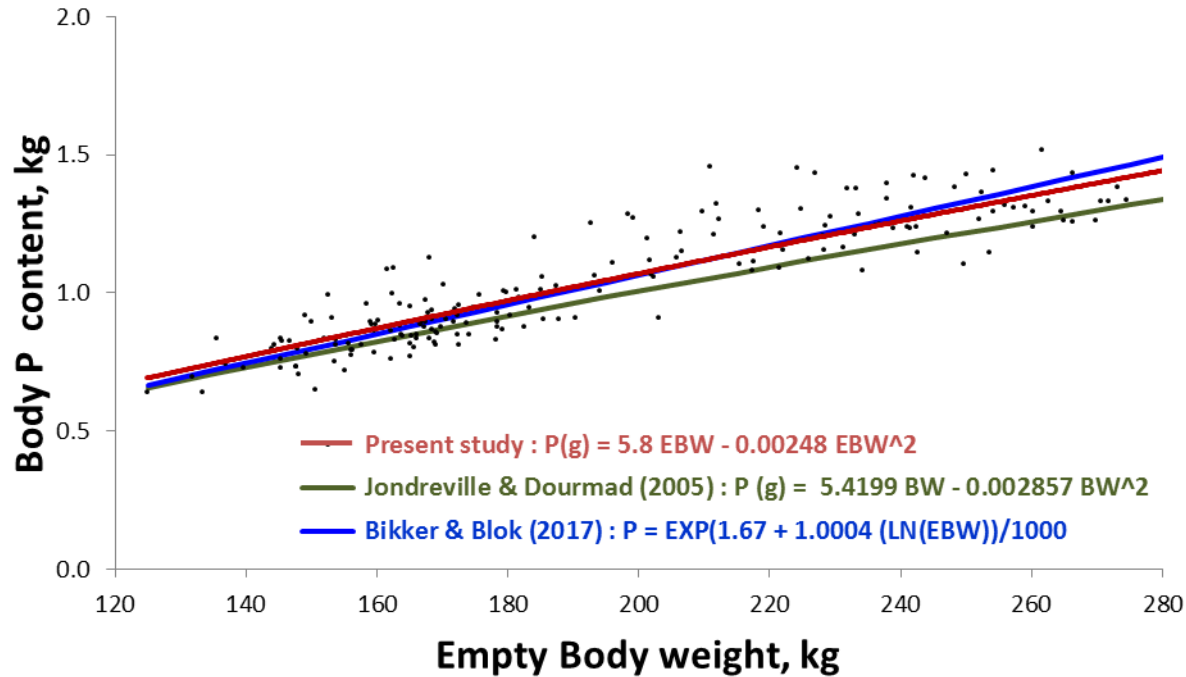
Ca = 0.29 x Minerals

$$\text{Ca/Pa} = \frac{e^{(2.06 + 1.018 \times \text{LN}(\text{EBW}))}}{e^{(1.67 + 1.0004 \times \text{LN}(\text{EBW}))}}$$



Estimation of body P according to EBW

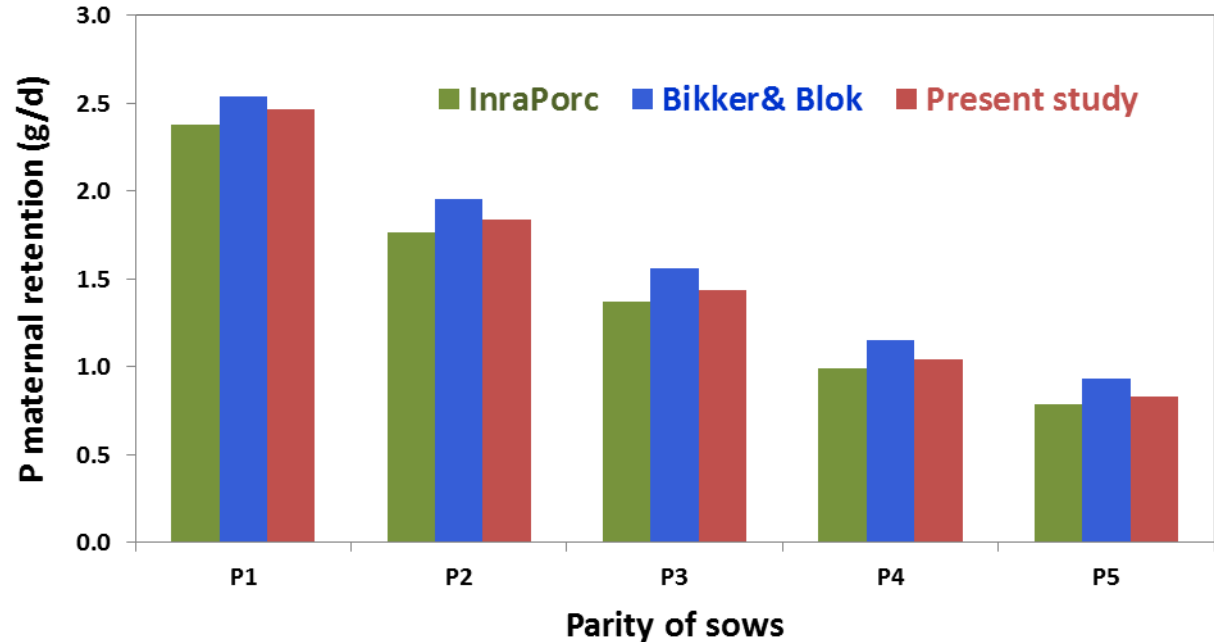
Comparison with previous estimations



Estimation maternal P retention in pregnant sows according to different equations

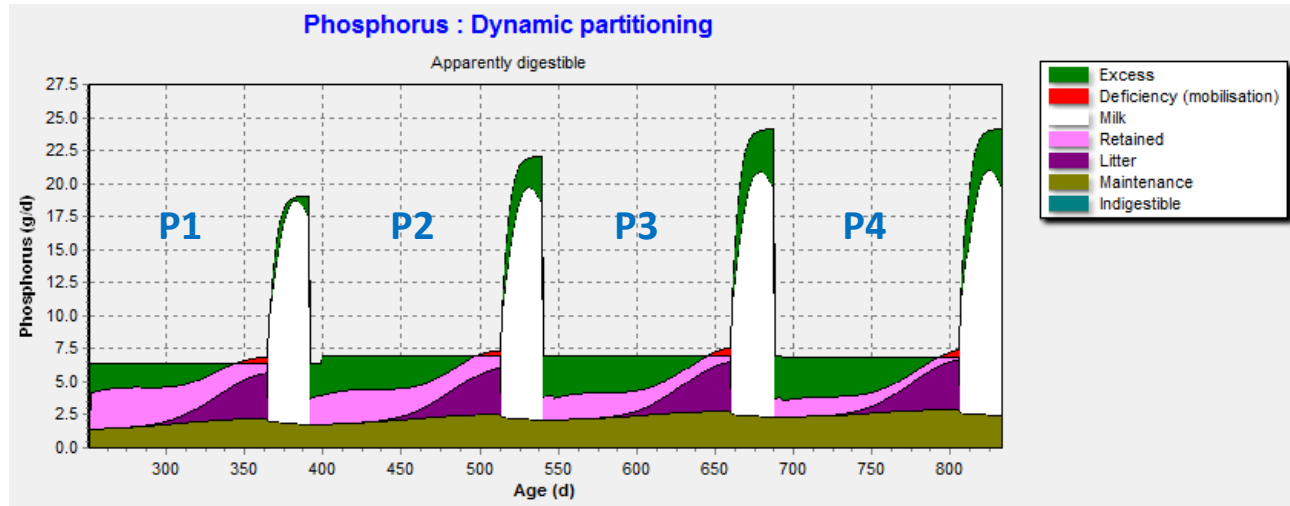
Hypothesis

	BW at mating	Net gain
P1	150	56.6
P2	228	43.5
P3	212	34.7
P4	233	25.6
P5	245	20.7



Conclusion and perspectives

⇒ Integrate the new equations into
InraPorc® Decision Support Tool



Thank you for your attention !

