



Established and supported under the Australian Government's Cooperative Research Centres Program

Pork CRC Research Summary

Subprogram 2D: Extend and enhance the productive life of the breeding female through novel management and system design

Project Number & Title:

2D104-0506- Predicting body composition of sows from live animal measurements

Principle Investigators:

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Background:

The aim of this study was to develop new equations to estimate body composition from a variety of linear fat and muscle measures and body dimensions on weaned sows and unmated gilts varying in body condition.

Methodology:

Fifty eight gilts and sows were selected prior to culling from a commercial F1 Large White x Landrace herd at Corowa, NSW. Measurements taken on the live animal included live weight, ultrasound P2, P4, leg fat, loin depth, shoulder height, girth measurements and parity. The carcass weight of slaughtered animals was measured and viscera collected for chemical analysis. Half the carcass was analysed for lean, fat and ash using the dual energy x-ray absorptiometry (DXA). The viscera was emptied and frozen for subsequent mincing and chemical analysis of fat, protein, ash and water.

Key Findings/Conclusions:

Multiple regression equations were developed using the live animal measurements and body tissue masses:

Body protein (kg) = $6.13 - a(\text{parity group}) + 0.145 \text{LWT} - 0.180\text{P2} - 0.132\text{LEG}$,
where $a = -2.16$ for parity 0; -0.83 for parities 1-2; 0.33 for parities 3-5; 0 for parities >5

Body fat (kg) = $a(\text{parity group}) + 0.237 \text{LWT} + 1.071\text{P2} + 0.496\text{LEG} - 37.3$,
where $a = 12.7$ for parity 0; 4.51 for parities 1-2; 1.69 for parities 3-5; 0 for parities >5

Regression coefficients were high (R^2 0.96 body protein and 0.79 for body fat) but as the model equations were only based on weaned sows and heavy unmated gilts, there will be limitations in using these equations for the prediction of body composition at different periods of gestation and lactation, as well as for gilts at mating ages 29-35 weeks of age.

Potential Users of Information: Researchers

