# FACT SHEET

## LYSINE REQUIREMENT IN FINISHER PIGS – COMMERCIAL VALIDATION

### Investigators

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### Why were the Lysine Studies Conducted?

The optimum lysine requirement of the modern Australian finisher pig grown under commercial conditions is poorly defined and may be underestimated. A recent lysine requirement study at the Medina Research Station, W.A. (Moore et al., 2013) using PIC genetics concluded that the requirements were 0.63 gm available Lysine / MJ DE, approximately 10 per cent higher than current industry recommendations. Optimising the dietary concentration of available lysine (relative to digestible energy) is fundamental to achieving maximum growth and profitability of the finisher pig.

To validate the Medina results for the commercial industry, APL commissioned a multisite trial involving the three largest commercial producers in Australia. A lysine titration study, using essentially the same base diets to eliminate the potential distortions of season and diet composition, was conducted. The objective of these studies was to confirm the optimal available Lysine / MJ DE for a modern genotype from 60-100 kg LW.

### Results

*Rivalea Australia*

All animals were sold out after an average of 30.7 ± 0.39 days at an average live weight of 87.9 ± 0.49 kg. Although it was intended for pigs to be sold at an average of 100 kg live weight, the animals grew slower than anticipated. No obvious production factors could be attributed to these slower growth rates. Results indicate that average daily gain (Figure 1), feed efficiency and carcase composition was improved with increasing dietary lysine levels. However, this response diminished from day 21 through to sale. Both immunocastrate and female pigs responded similarly to increasing dietary lysine concentration. Feed intake remained constant. These results indicate that producers may achieve improvements in the rate of gain and feed efficiency with lysine levels closer to 0.70 gm available Lysine / MJ DE for pigs between 58 and 76 kg liveweight (early finisher period).

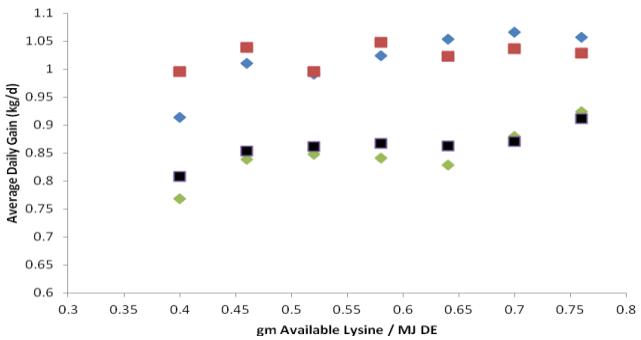


**Figure 1 – Average daily gain of immunocastrate males from day 0-21(◆) and day 0 to sale (■), and female pigs from day 0-21(◆) and day 0 to sale (■)**

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Increasing the level of lysine in the diet from 0.58 to 0.76 gm available Lysine / MJ DE did not affect growth performance of finisher pigs (Figure 2). These results indicated that levels above 0.64 gm available Lysine / MJ DE do not further improve performance and agree with previous research from Medina. Immunocastrated males grew significantly faster than female finisher pigs, however no difference in their FCR was reported.

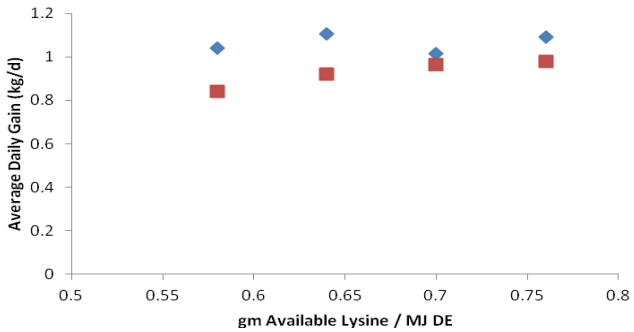


**Figure 2 – Average daily gain of immunocastrate male (♦) and female (■) pigs to increasing levels of lysine in the diet of pigs from 60-90 kg live weight**

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Over the full 42 day period from approximately 60 – 100 kg live weight, performance was optimal at 0.64 g available Lysine/MJ DE (Figure 3) which is in close agreement with the estimate of 0.63 g available Lysine/MJ DE made by Moore *et al*., (2013).

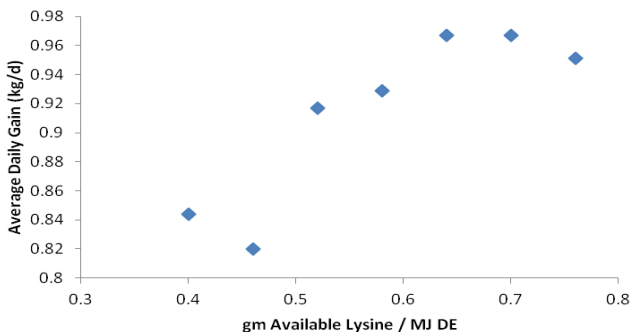


**Figure 3 – Average daily gain of female pigs to increasing levels of lysine from 60—105 kg live weight**

## In Summary

The lysine requirement for finishing pigs of modern Australian genotypes is substantially higher than used commercially to date.

Immunocastrated males had an increased response in terms of ADG to increasing levels of dietary lysine compared to females. Potentially, there may some benefit in separating males and females during the finisher period.

The nominated optimal lysine requirement (as a single value) for the entire range and across the three studies based on

ADG, FCR, carcase gain and profitability was estimated to be 0.62 to 0.64 gm available Lysine / MJ DE.

## Further Information

If you require further information or a full copy of the three studies conducted, contact Robyn Terry at robyn.terry@australianpork.com.au or on 02 6270 8820.

## References

Moore KL, Mullan BP, Campbell RG, Kim JC (2013). The response of entire male and female pigs from 20 to 100-kg liveweight to dietary available lysine. *Animal Production Science* **53**, 67-74.