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**Investigating methods to improve the reproductive performance of  
hoggets**

A thesis presented in partial fulfilment of the requirements for the degree of

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Fraser John Mulvaney

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## Abstract

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The first two chapters identified that in comparison to mature multiparous ewes, fewer hoggets are bred, a greater proportion return to oestrus, have a lower proportion that ovulate and of those that do ovulate, the ovulation rate is lower, and there is a greater reproductive loss in early to mid pregnancy, fewer and lighter singleton counterparts lambs at birth, poorer mothering ability and lighter and fewer lambs at weaning.

As a result of these findings, nutritional management experiments were designed to investigate the effects of nutrition on the reproductive performance of hoggets. The results indicate that offering *ad-libitum* levels of herbage prior to ram introduction can increase the proportion of hoggets bred which leads to a better pregnancy rate. However, *ad-libitum* levels herbage immediately after the completion of the breeding period could be associated with hoggets that were bred returning to oestrus. The efficiency of lamb production was reduced when the hoggets were offered *ad-libitum* levels of herbage during pregnancy. However, when twin-bearing hoggets were offered *ad-libitum* levels of nutrition from mid- to late-pregnancy the efficiency of lamb production was similar between nutritional levels. The twin-bearing hoggets may have both been offered a level of nutrition that did not lead to a sufficient nutritional intake restriction in the medium group to allow for hogget live weight differences to occur. Hoggets that were offered *ad-libitum* levels of nutrition during pregnancy were heavier than the hoggets offered medium levels of nutrition. Weaning single

lambs born to hoggets at 10 weeks of age whilst weaning twin lambs at 9 weeks of age did not have an impact on hogget or lamb live weight compared to weaning at 13 or 14 weeks of age.

This thesis has identified reproductive differences between hoggets and mature multiparous ewes and the impact of nutritional management on hogget reproductive performance and the effect of weaning age on lamb and hogget live weight. Implementing the results from the nutritional experiments into farm practice could improve hogget reproductive performance and help alleviate the issue of the negative impact of hogget breeding on subsequent breeding live weight, while also offering options to the farmer when planning the management of weaning lambs born to hoggets.

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