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**DOUBLE SUCKLING IN
BEEF x DAIRY ONCE-BRED HEIFERS**

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

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Double suckling beef production systems are a strategy to increase annual output of suckled beef cows. This study compared the effect of single and double suckling on the performance of dams and their calves on pasture with an average sward surface height of 11.5 cm.

Thirty eight spring-calving, 2-year old Hereford x Friesian (H x F) and Hereford x Jersey (H x J) heifers mated to Angus sires were randomly allocated to either single or twin rearing treatments as they were calving. Nineteen Friesian male calves were used as foster calves for the twin rearing treatment. Individual calf 90-day weaning liveweight gain (adjusted) and liveweight gain from weaning to 11 months of age were recorded. Individual heifer liveweight changes from calving to weaning, and weaning to slaughter were recorded. Heifer productivity was estimated as kilograms of weaner calf produced per heifer present at weaning. Heifer efficiency was estimated as the ratio of heifer productivity to average liveweight of the heifer from calving to weaning. Results are presented as least square means \pm standard error (LSM \pm SE).

Calf daily liveweight gains were 1.00 ± 0.02 , 0.90 ± 0.03 , 0.70 ± 0.03 kg/hd ($P < 0.05$) for single calves, heifers' own twin reared calves and twin reared foster calves respectively. At weaning, heifers' own twin reared calves were 8.1 kg lighter than single reared calves ($P < 0.05$). From weaning to 11 months of age, heifers' own twin reared calves had greater daily liveweight gains (0.50 ± 0.02 kg/hd) than single reared calves (0.44 ± 0.02 kg/hd, $P < 0.01$) and tended to be heavier (244.12 ± 4.8 versus 236 ± 5.3 kg).

Double suckling did not affect heifer daily liveweight gain from calving to weaning (0.7 ± 0.05 and 0.6 ± 0.04 kg/hd for single and double suckled H x F heifers respectively, and 0.3 ± 0.06 and 0.3 ± 0.06 kg/hd for single and double suckled H x J heifers, respectively) or from weaning to slaughter (0.3 ± 0.05 and

0.3 ± 0.04 kg/hd for single and double suckled H x F heifers respectively, and 0.2 ± 0.06 and 0.3 ± 0.06 kg/hd for single and double suckled H x J heifers, respectively).

Double suckled H x F and H x J heifers were 44.7 and 55.5 % more productive ($P < 0.05$) than single suckled H x F and H x J heifers respectively. Double suckled H x F heifers were 45.1 % more efficient than single suckled H x F heifers ($P < 0.05$) and double suckled H x J heifers were 58.1 % more efficient than single suckled H x J heifers.

It was concluded that although twin reared calves were 8.1 kg lighter than single reared calves at weaning, twin reared calves were able to surpass these liveweight differences through compensatory liveweight gain after weaning. Therefore, heifer productivity and efficiency can be significantly enhanced through the use of foster calves in double suckling beef production systems.

Keywords once-bred heifers; double suckling; foster calves; liveweight gain; cow productivity.

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