

Animal Production 2018
Fostering innovation through the value chain
32nd Biennial Conference of the
Australian Society of Animal Production
Category: Meat Science

ABSTRACT

Carcass attributes of crossbred Wagyu steers

S. Connolly^{A,B,C}, D. Hamblin^B, M. J. D'Occhio^A and L. A. González^A

^ASchool of Life and Environmental Sciences, The University of Sydney, Camden, NSW 2570, Australia.

^BHamblin Pty Ltd, 'Strathdale', Blue Mountain, Sarina, Qld 4737, Australia.

^CEmail: samantha.connolly@sydney.edu.au

Wagyu cattle have become a globally recognized breed in premium beef markets. The attributes of Wagyu beef can be utilized in crossbreeding programs to increase the value of other beef and dairy breeds. In the present study, purebred Wagyu bulls were mated to Angus, Brahman-cross, dairy-cross and Shorthorn cows to produce F1 progeny. F1 females and subsequent generations were mated to fullblood Wagyu bulls to produce F2, F3 and F4 genotypes with 75%, 87.5% and 93.75% Wagyu, respectively. 3695 steers entered a commercial long-fed (approx. 450 days) feedlot production system over multiple years. Hot standard carcass weight (HSCW) and marble score (AUS-MEAT) were recorded at slaughter and used to calculate a carcass index (CI). Data were analyzed using a mixed-effects linear model with % Wagyu, initial dam breed, and their interaction as fixed factors, and year as a random factor.

Linear regression was used to determine the effect of marbling and HSCW on CI ($CI = -2425 + 420 \times \text{Marbling Score} + 5.8 \times \text{HSCW}$; $P < 0.001$; $R^2 = 0.989$) and carcass index on carcass value in AU\$ ($\text{Carcass Value} = -11238 + 0.95 \times \text{CI}$; $P < 0.001$). All fixed effects were significant ($P < 0.001$; Table 1). Dairy cross steers showed no response to grading up Wagyu content ($P > 0.05$) in contrast to the other breeds. Shorthorn showed larger CI compared to Angus for F1 and F2 ($P < 0.05$). Dairy animals had the greatest variance within the dataset due to the low number of animals. Shorthorn had the greatest positive response from F1 to F2 ($P < 0.0001$) whereas Angus had greater response to the grading up process from F1 to F4 compared to Brahman and Dairy. Brahman cross animals showed significantly higher CI for F3 and F4 compared to F1 and F2 ($P < 0.05$) however their response to crossbreeding was lower than Angus or Shorthorn.

Results indicate that Carcass Index, and therefore Carcass Value can be significantly increased with the inclusion of Wagyu bulls however the magnitude of this increase depends on the breed of the dam. The limitations of the study included limited numbers of dairy animals and only two generations of Shorthorn animals as generations F3 and F4 had not been reached yet. Shorthorn responded the most to increasing Wagyu content from F1 to F2 and Angus from F1 to F4. However, dairy crosses showed the greatest Carcass Index for F2 and F3 and this could also be a valuable crossbreeding program to increase the value of dairy animals.

Continues on Page 2...

Table 1. Carcass value index (mean \pm SEM) of crossbred steers with increasing Wagyu content

Dam Breed	F1	F2	F3	F4
Angus	3225 \pm 106 ^{A, X} (n = 108)	3610 \pm 73 ^{A, X} (n = 228)	4125 \pm 95 ^{B, C, X} (n = 134)	4617 \pm 115 ^{C, X} (n = 91)
Brahman Cross	3548 \pm 65 ^{A, XY} (n = 286)	3658 \pm 41 ^{A, X} (n = 722)	4071 \pm 61 ^{B, X} (n = 320)	4221 \pm 77 ^{B, X} (n = 201)
Dairy	4056 \pm 450 ^{A, XY} (n = 6)	4268 \pm 121 ^{A, Y} (n = 82)	4775 \pm 154 ^{A, Y} (n = 51)	4738 \pm 235 ^{A, X} (n = 22)
Shorthorn	3975 \pm 33 ^{A, Y} (n = 1086)	4543 \pm 102 ^{B, Y} (n = 115)	-	-

^{A-C}Means within rows without a common superscript differ ($P < 0.05$).

^{X, Y}Means within a column without a common superscript differ ($P < 0.05$).

END