**ANIMAL An International Journal of Animal Bioscience - Invited Review: Improving feed efficiency of beef cattle; current state of the art and future challenges**

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**Supplementary Table S1** Description of studies used for meta-analyses\* on the association between residual feed intake\*\* and feeding duration, change in back fat depth, final *longissimus* muscle area and carcass *longissimus* muscle area in growing beef cattle offered an energy dense diet

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Study |  |  | Study details | Meta-analysis |
|  | n | Animal type | Breed type1 | Start age2 | BW (kg)3 | Test duration (days) | Feeding duration (min/d) | ΔBF8 (mm/d) | LMA9 (cm2) | CLMA10 (cm2) |
| Basarab *et al.* (2003) | 148 | Steers | Beef | 235 | 291 | 112 | X | X |  | X |
| Nkrumah *et al.* (2004) | 150 | Steers | Beef, BxD | 248 | 325 | 70 |  | X |  | X |
| Kolath *et al.* (2006b)4 | 12 | Steers | EM | 262 | 262 | - |  |  |  | X |
| Kolath *et al.* (2006a)4 | 17 | Steers | EM | 325 | 325 | - |  |  |  | X |
| Nkrumah *et al.* (2006)5 | 27 | Steers | Beef | - | 509 | 70 | X |  |  |  |
| Castro Bulle *et al.* (2007) | 24 | Steers | Beef | 14-18 mo | 403 | 122 |  |  |  | X |
| Nkrumah *et al.* (2007a)6 | 464 | Steers | Beef | 252 | 459 | 70 | X |  |  |  |
| Nkrumah *et al.* (2007b)5 | 464 | Steers | Beef | - | 353 | 70 |  | X | X | X |
| Dobos and Herd (2008)5 | 70 | Steers | EM | - | 494 | 72 | X |  |  |  |
| Golden *et al.* (2008)5 | 12 | Steers | EM | - | 328 | 123 |  |  |  | X |
| Golden *et al.* (2008)5 | 17 | Steers | EM | - | 332 | 123 |  |  |  | X |
| Lancaster *et al.* (2009b) | 341 | Bulls | EM | 310 | 371 | 84 | X |  | X |  |
| Lancaster *et al.* (2009a) | 468 | Heifers | Brangus | 231 | 271 | 70 |  |  | X |  |
| Cruz *et al.* (2010) | 60 | Steers | EM | 12 mo | 296 | 120 |  |  |  | X |
| Kelly *et al.* (2010a) | 86 | Heifers | BxD | 247 | 192 | 82 | X | X |  |  |
| Kelly *et al.* (2011) | 58 | Bulls | EM + LM | 431 | 493 | 70 |  | X |  |  |
| Santana *et al.* (2012) | 46 | Bulls | Nellore | 22 mo | 409 | 84 |  | X | X |  |
| Bonilha *et al.* (2013) | 49 | Bulls | Nellore | 5407 | 343 | 74 |  |  | X |  |
| Fitzsimons *et al.* (2014a) | 67 | Bulls | EM | 426 | 431 | 105 |  | X |  |  |
| McGee *et al.* (2014) | 58 | Bulls | Wagyu | 474 | 420 | 70 | X |  |  |  |
| McGee *et al.* (2014) | 36 | Bulls | Wagyu | 423 | 364 | 70 | X |  |  |  |
| McGee *et al.* (2014) | 34 | Heifers | Wagyu | 433 | 299 | 70 | X |  |  |  |

\* Meta-analysis conducted using Comprehensive Meta-Analysis Software (version 3) using a random effects model.

\*\* Residual feed intake = RFI. Base model (dry matter intake (DMI) regressed on live weight and average daily gain) used to calculate predicted DMI.

1 Breed type; Beef = mixture of EM and LM beef cross-bred; BxD = Beef x Dairy cross-bred; EM = early maturing breed types; LM = late maturing breed types.

2 Days of age unless otherwise specified (months of age; mo).

3 BW (kg) = Initial BW.

4 Test duration not reported.

5 Start age not specified in the study.

6 Final BW reported in this study.

7 Age at slaughter, no start age specified.

8 ΔBF = Change in back fat depth measured in the live animal at the end of the RFI measurement period.

9 LMA = Final *longissimus* muscle area measured in the live animal at the end of the RFI measurement period.

10 CLMA = *longissimus* muscle area measured in the carcass following slaughter after the RFI measurement period.

**Supplementary Material S1** References listed in Supplementary Table S1 and Tables 1, 2, 3, 4 and 5

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