

Improve chicken feeding with local resources in the Gambia

Context & Research Site

The Gambia

- Low-income country in West Africa
- Limited access to resources and a strong reliance on imports
- Agriculture: 17.8% of GDP
- Poultry farming: Widely practiced at the household level with feed costs up to 63% of production costs

Tanji Education Centre for Permaculture (TEC)

- 1.5-hectare permaculture farm founded by Förderverein Humanitas
- Activities: Gardening, poultry keeping and employment, training, and knowledge sharing for youth



Objective

To evaluate the impact of two own-formulated, balanced and low-cost rations and one commercial feed (control), on body weight, feed intake, feed conversion ratio (FCR), feed costs per kg body weight and body conditions score (BCS) of poultry in the Gambia.

3 Rations tested

Astra layer mash (commercial feed) = Control (C)

50kg bag
Price: GMD 2100
Transportation Costs: GMD 150
Total Costs: GMD 2250

Ration RB (with bloodmeal)

Ingredients	Quantity (kg) for 50 kg	Price [GMD] with opportunity costs	Price [GMD] without opportunity costs
Millet	20.00	667 + 80 = 747	667 + 80 = 747
Maize	11.00	440 + 44 = 484	440 + 44 = 484
Rice Bran	5.00	67 + 25 = 92	67 + 25 = 92
Groundnut Cake	2.50	125 + 15 = 140	125 + 10 = 140
Pigeon Pea	3.00	No market for these beans	0
Moringa Leave (dried)	1.00	2000	0
Cassava Leave (dried)	1.00	400	0
Oystershell	3.50	70 + 11 = 81	70 + 11 = 81
Fishmeal	1.25	23 + 4 = 27	23 + 4 = 27
Eggshell	1.25	Is waste	0
Bloodmeal	0.50	25 + 38 = 63	25 + 38 = 63
Total	50.00	4034 + 300 + 708 = 5042	1634 + 300 + 708 = 2642

Ration RTE (without bloodmeal)

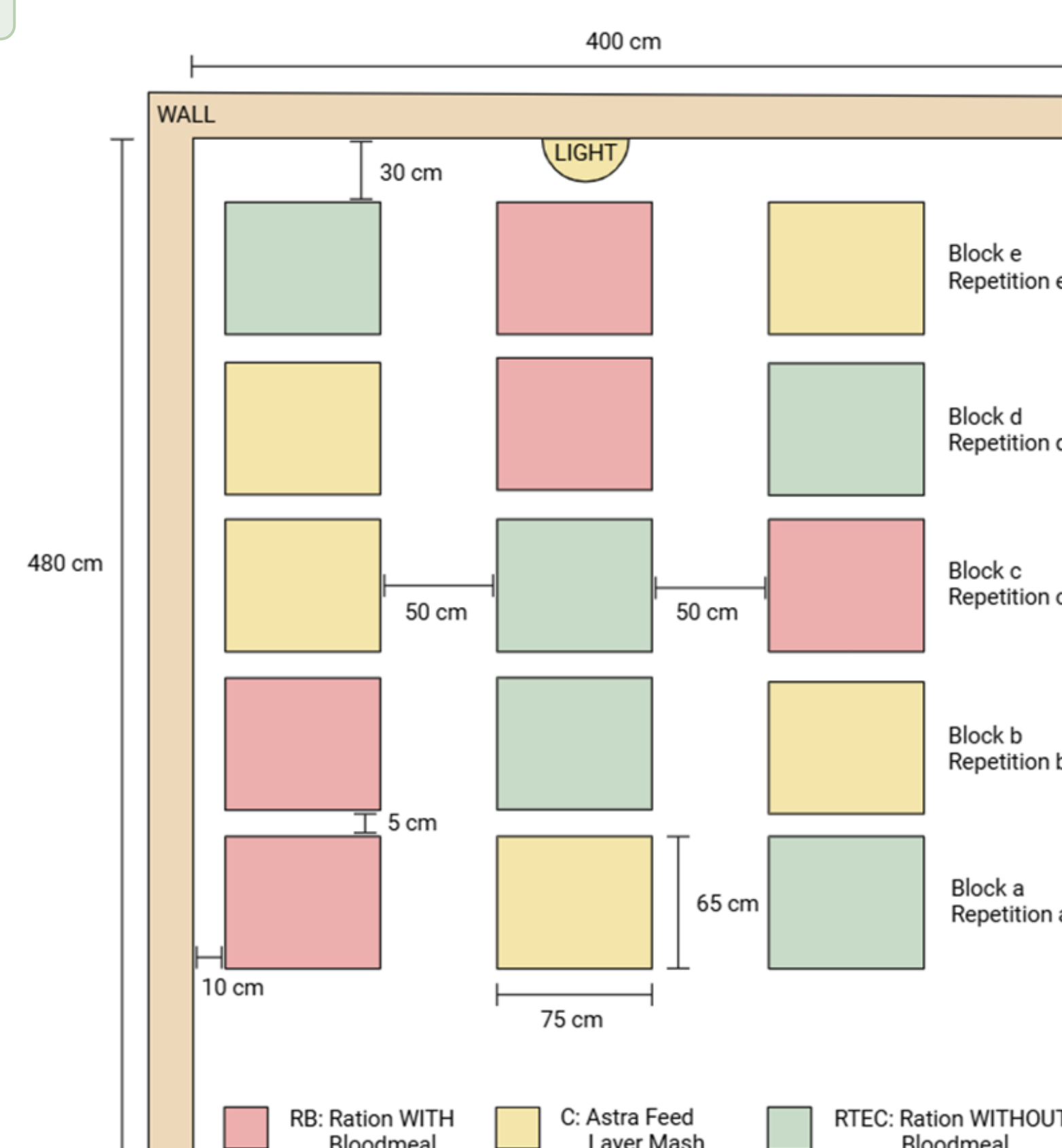
Ingredients	Quantity (kg) for 50 kg	Price [GMD] with opportunity costs	Price [GMD] without opportunity costs
Millet	20.00	667 + 80 = 747	667 + 80 = 747
Maize	10.00	400 + 40 = 440	400 + 40 = 440
Rice Bran	5.00	67 + 25 = 92	67 + 25 = 92
Groundnut Cake	4.00	200 + 24 = 224	200 + 24 = 224
Pigeon Pea	3.00	No market for these beans	0
Moringa Leave (dried)	1.00	2000	0
Cassava Leave (dried)	1.00	400	0
Oystershell	3.50	70 + 11 = 81	70 + 11 = 81
Fishmeal	1.25	23 + 4 = 27	23 + 4 = 27
Eggshell	1.25	Is waste	0
Total	50.00	4011 + 300 + 567 = 4878	1611 + 300 + 567 = 2478

Red: feed costs
Yellow: transportation costs
Green: milling costs
Blue: working costs
CHF 1 = GMD 90

Method

Trial design

- Feeding trial with a randomized block design
- 5 blocks/repetitions à 3 cages
- 1 chicken per cage
- Per treatment 3 young chicken (6-weeks) and 2 older chicken (16-weeks)
- Every chicken got every morning the same amount (200g) of their ration

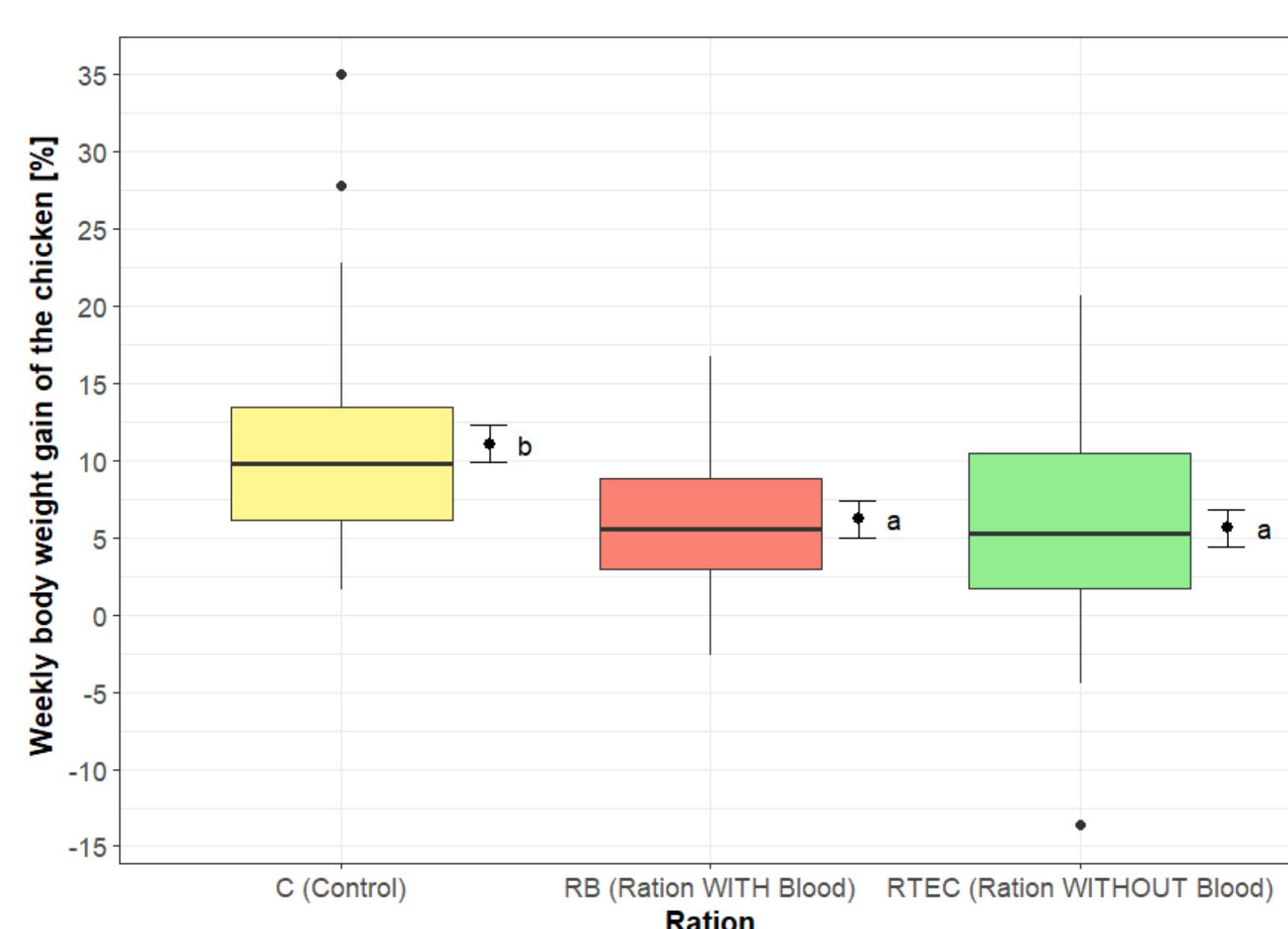


Data collection

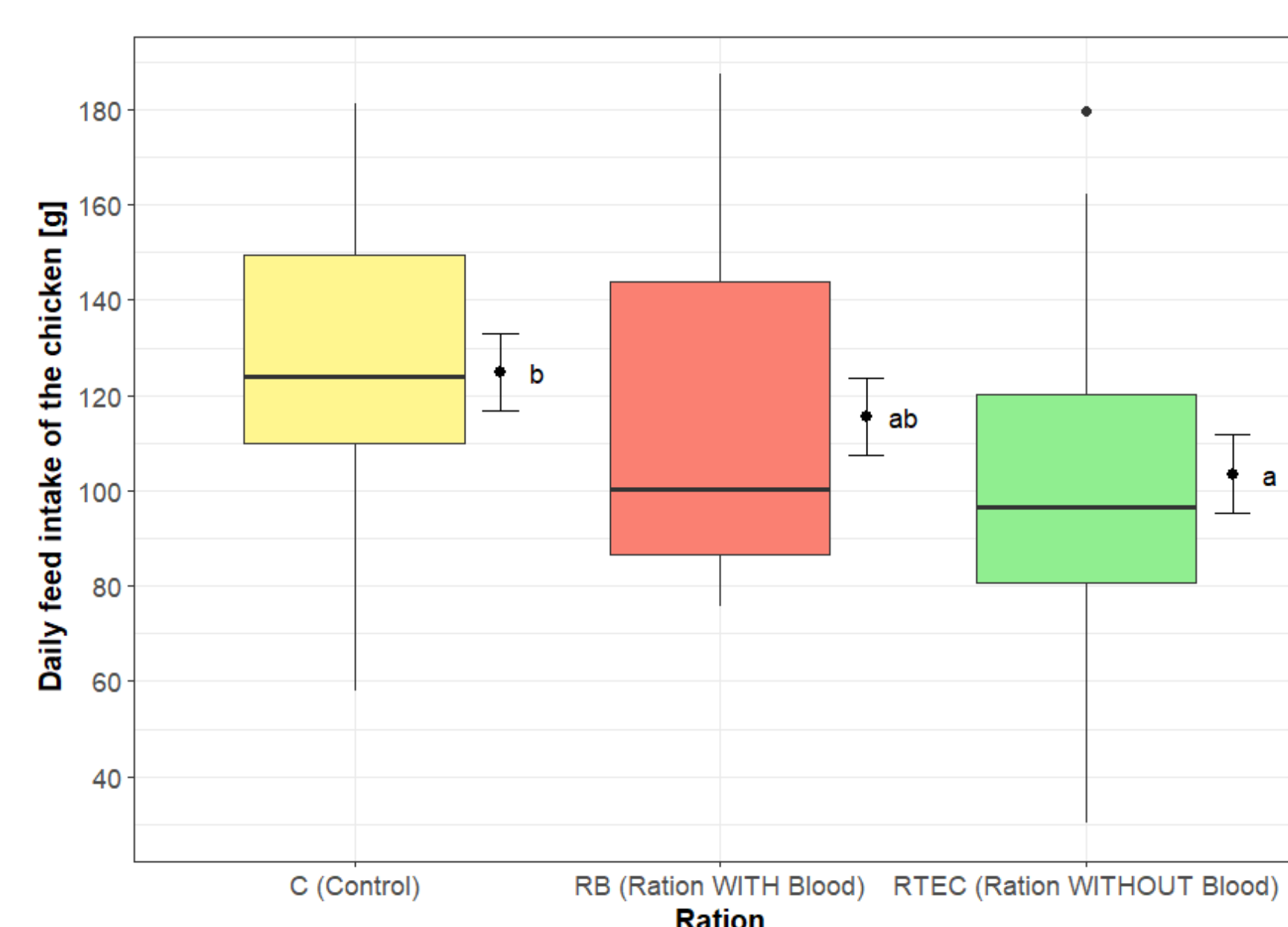
- Residual feed weighed daily (to determine actual feed intake)
- Chickens weighed weekly (to monitor body weight changes)
- Body condition score (BCS) assessed weekly by palpation of the keel bone



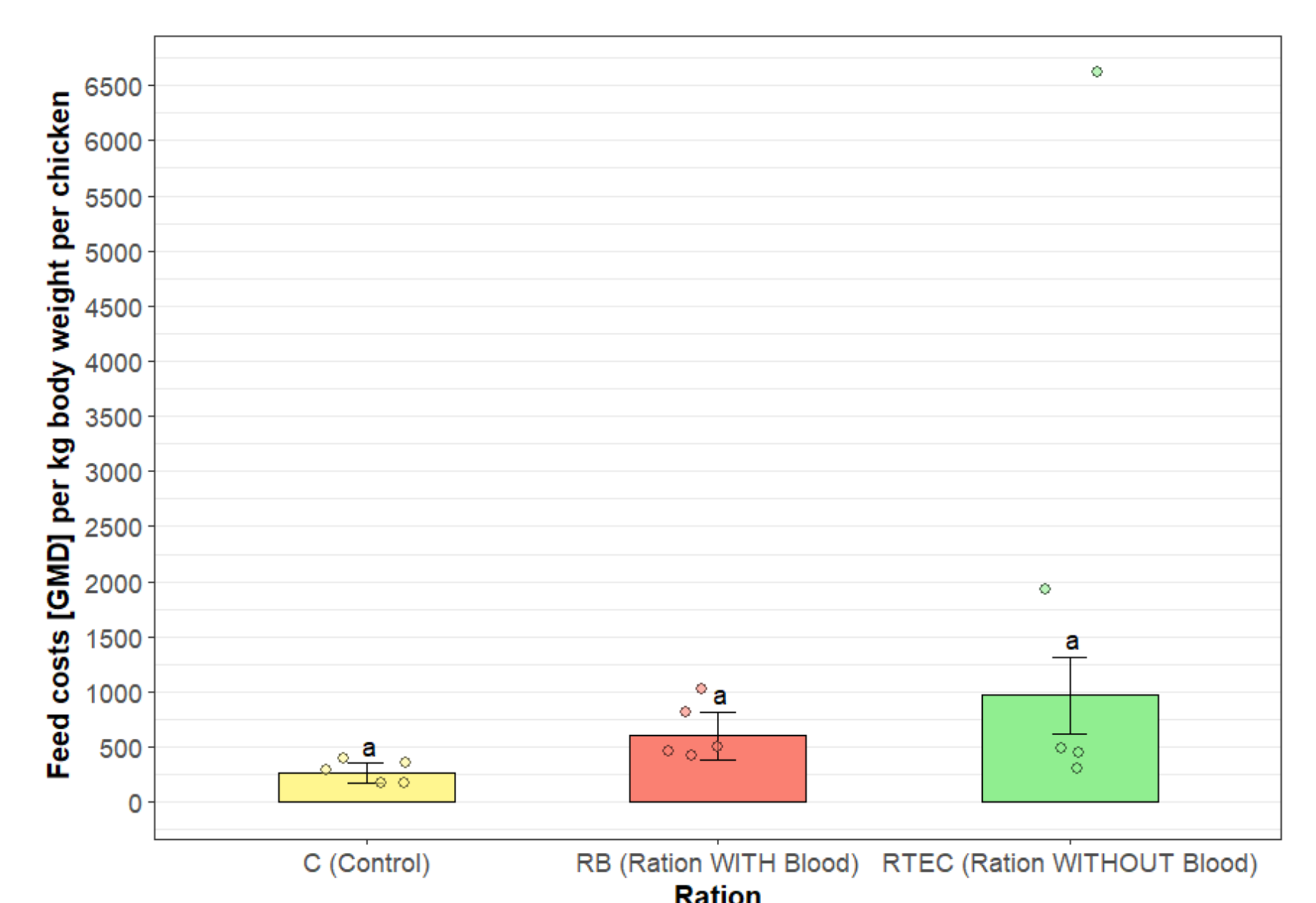
Selected Results



- Significant differences in weekly body weight gain between C - RB and C - RTEC



- Significant differences in daily feed intake between C - RTEC
- Trend towards daily higher feed intake in C than RB



- No significant differences in feed costs between the different rations
- Trend to higher feed costs per kg body weight in RB and RTEC compared to C

Discussion & Conclusion

- Both own formulated rations (RB and RTEC) performed significantly worse than the commercial feed due to inadequate nutrient composition, poor digestibility, and low palatability.
- Despite low ingredient costs, RB and RTEC were economically inefficient due to inadequate nutrient composition.
- Future feeding trials should use young, same-aged birds with no prior exposition to neither of the tested rations, test fully balanced rations based on analyzed ingredients, and include acceptance and preference trials.
- Meanwhile continue using the commercial feed.