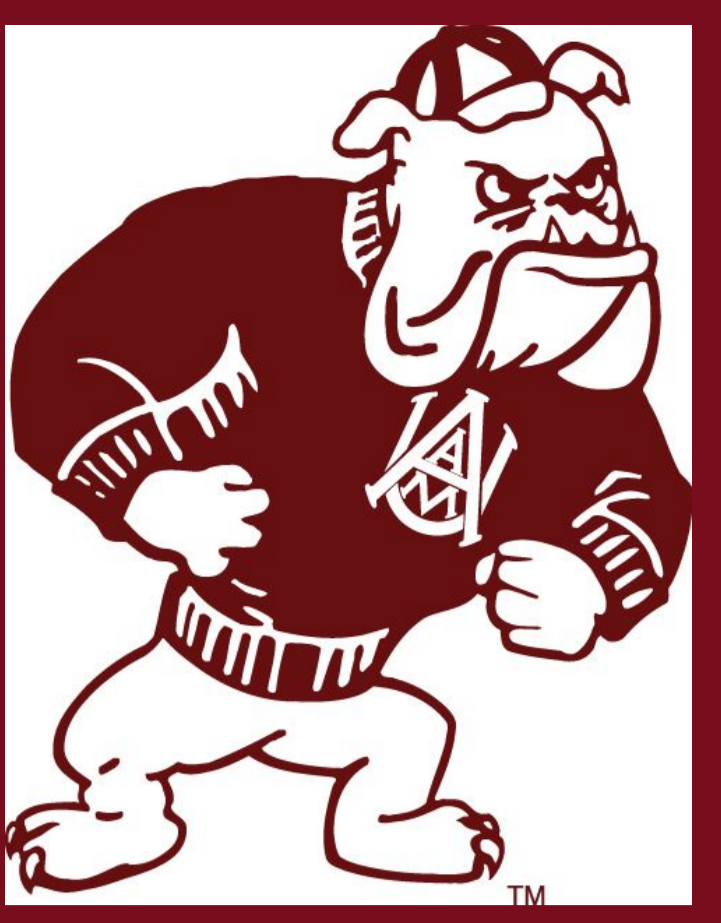




Effects of backgrounding systems on growth performance, chute score and inflammatory markers of weaned beef calves

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Introduction

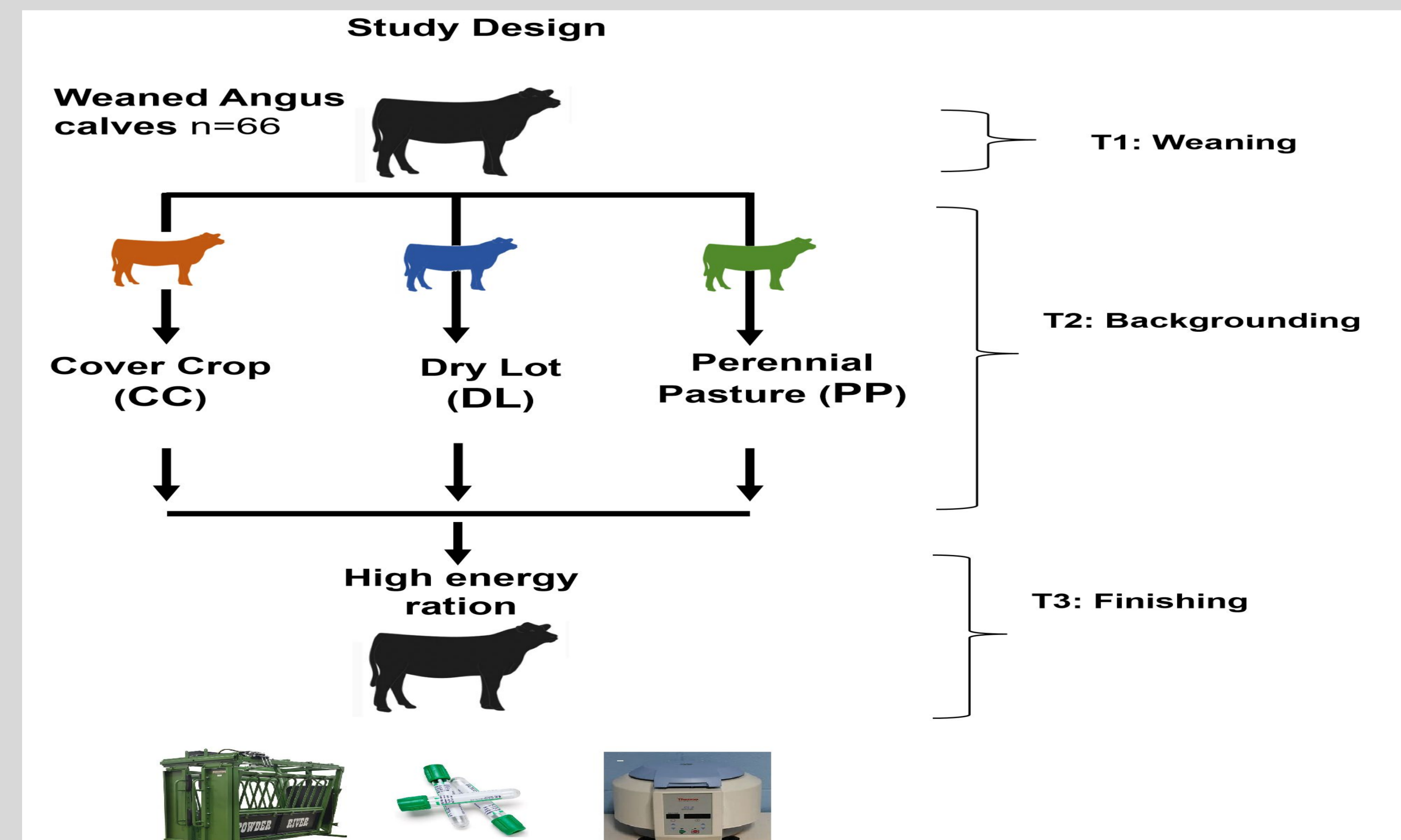
- Backgrounding (BKG) allows cattle producers utilize a variety of feedstuff to support growth and development of calves before they enter the feedlot. However, information on the impacts of BKG systems on average daily gain (ADG), and the assessment of activity patterns as an indicator of health and welfare impairment in beef calves in different BKG systems is limited.

Objective

- This study was designed to evaluate the effects of backgrounding on behavior and physiological responses of weaned beef calves

Materials and Methods

- Experimental site: This study was conducted at the North Central Outreach Research Station (NCROC), University of Minnesota, Grand Rapids, MN.
- At weaning (d 0), Black Angus calves (n = 66) were stratified by dam parity, body weight and sex into one of three groups for 40 days; DL; a high roughage diet within a dry lot and CC; annual cover crop within a strip and PP, while a third group, PP: remained on perennial pasture vegetation within rotational paddocks, Blood samples, body weight (BW) and hip height (HH) measurements were collected on d 0, 28, 40, and 54. Data were analyzed using ANOVA with repeated measures over time.



Results

Table 1. Nutrient composition of backgrounding diets (% of DM)

Item	Backgrounding			Finishing
	DL	PP	CC	ALL
Moisture	41.2	80.3	91.7	37.9
Dry matter	58.8	19.7	8.3	62.1
NE _m , Mcal/kg	1.6	1.5	1.6	1.9
Neg, Mcal/kg	1.06	0.9	0.97	1.4
Starch	31.4	-	-	39.6
NDF	33.4	47.7	28.1	25.3
CP	12.6	21.3	19.5	13.4
Fat	4.3	3.6	2.6	4.9

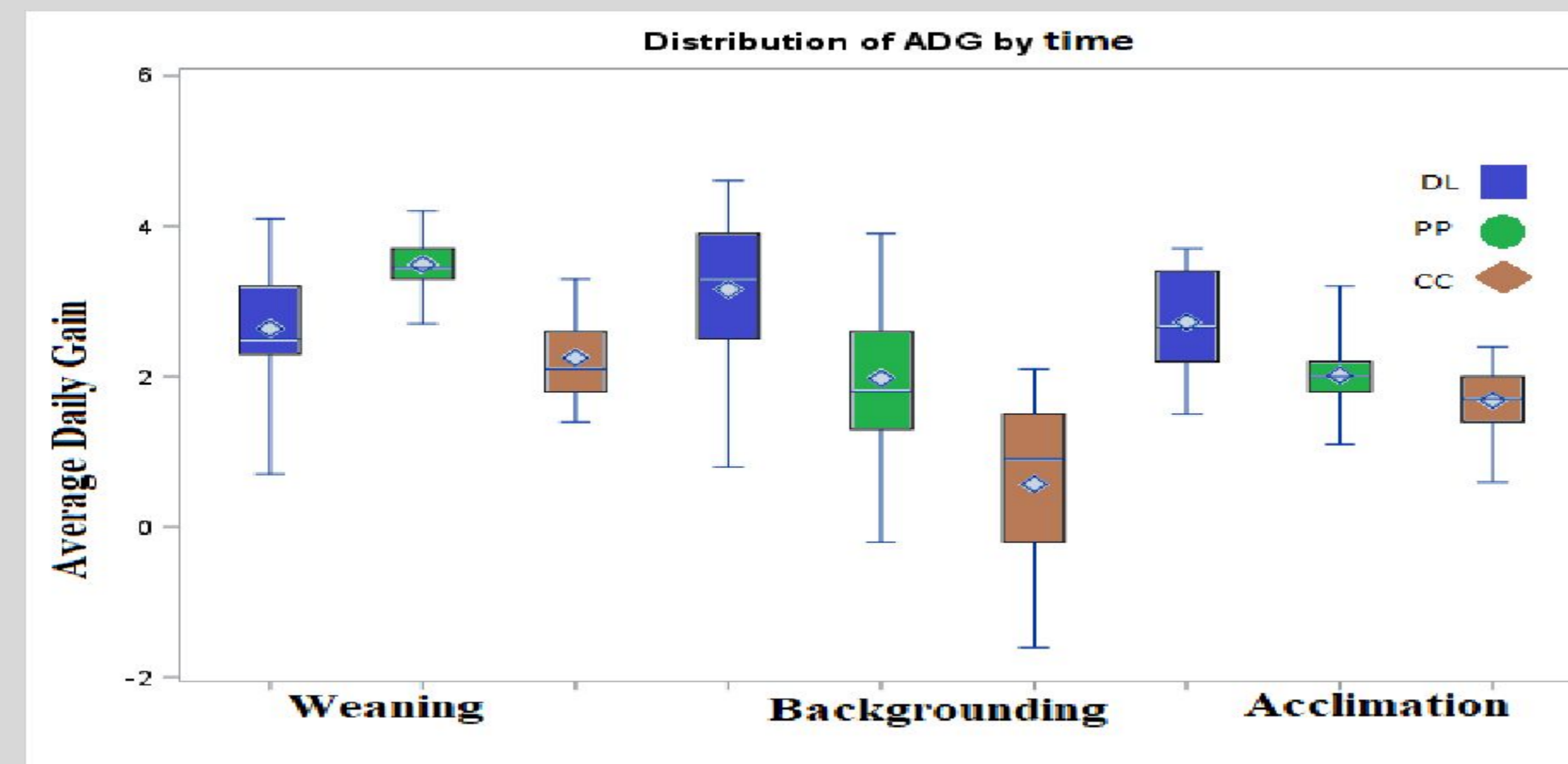


Figure 1: Effect of backgrounding (PP, DL, CC) on average daily gain of beef calves by time

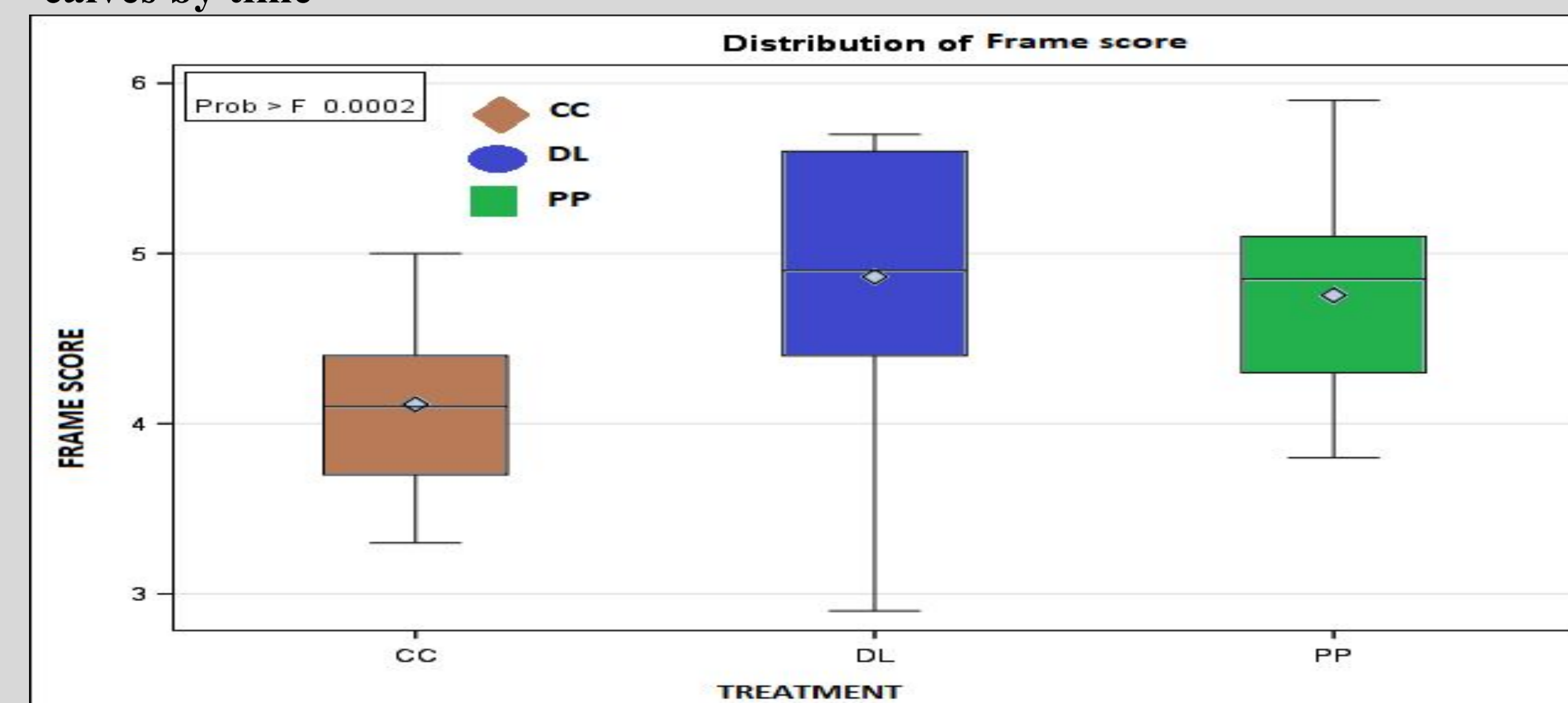


Figure 2: Effect of backgrounding systems (PP, DL, CC) on frame score of beef calves

- Our results showed that BKG systems influenced ADG ($P = 0.001$), frame score ($P = 0.002$) and BW/HT ratio ($P < 0.01$). Calves backgrounded with CC had the smallest ADG compared with DL and PP ($P < 0.04$). Although there was no effect of BKG on chute score and serum haptoglobin concentration, there was a BKG, time and BKG treatment interaction on serum cortisol ($P = 0.03$).

Results (continued)

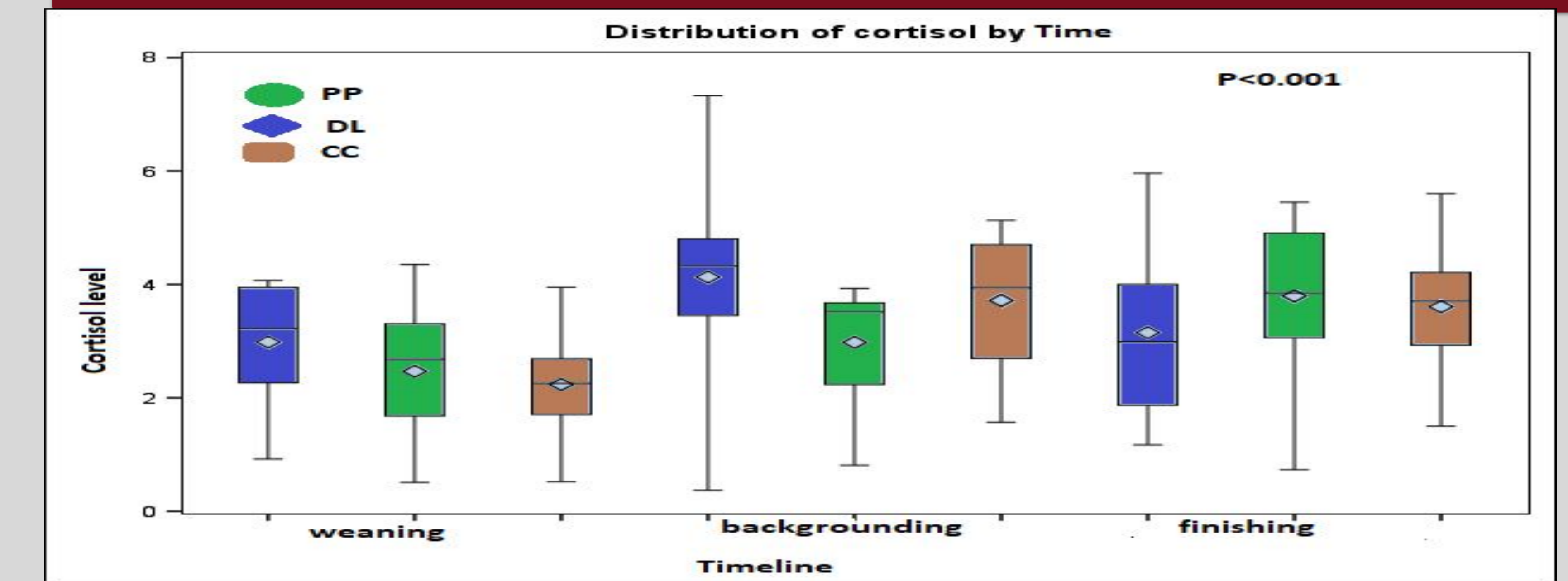


Figure 3: Effect of backgrounding systems (PP, DL, CC) on cortisol level of beef calves

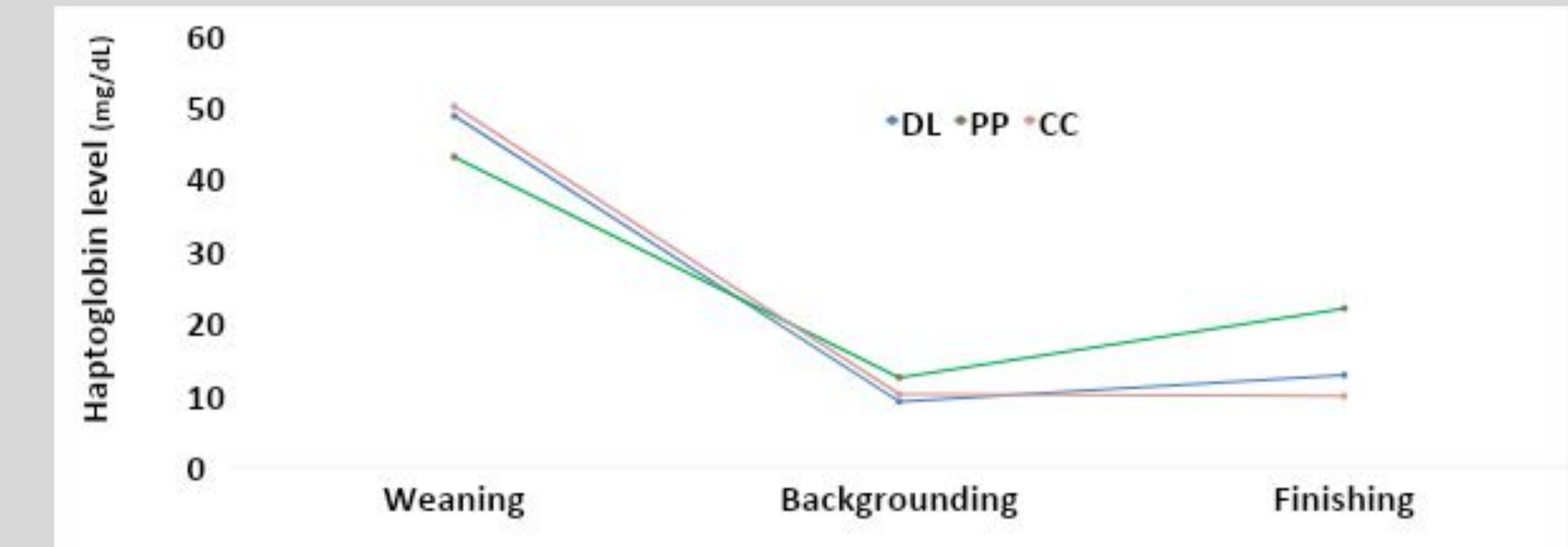


Figure 4: Effect of backgrounding systems (PP, DL, CC) on haptoglobin level of beef calves

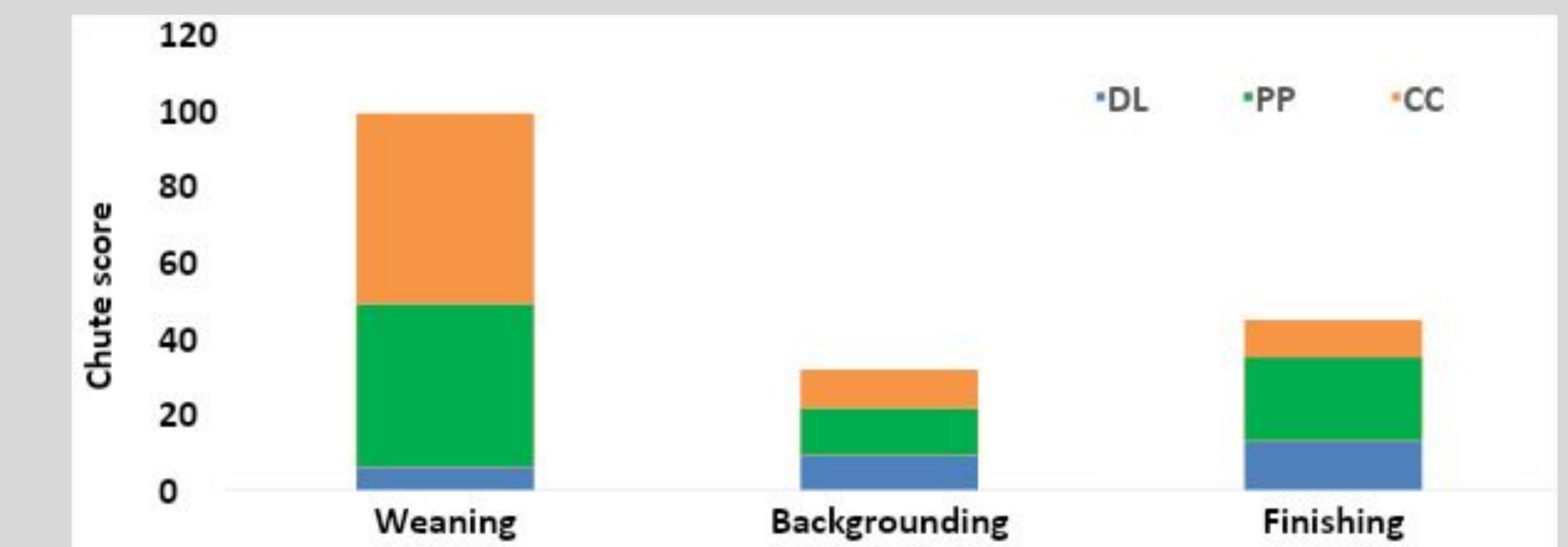


Figure 5: Effect of backgrounding systems (PP, DL, CC) on chute score of beef calves

Conclusion

- Our study suggests that backgrounding systems influence ADG and serum cortisol concentration, thus by implication the growth and health status of weaned calves.