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Effect of plastic slatted flooring on growth performance of kids and lambs maintained under stalled semiarid conditions of India

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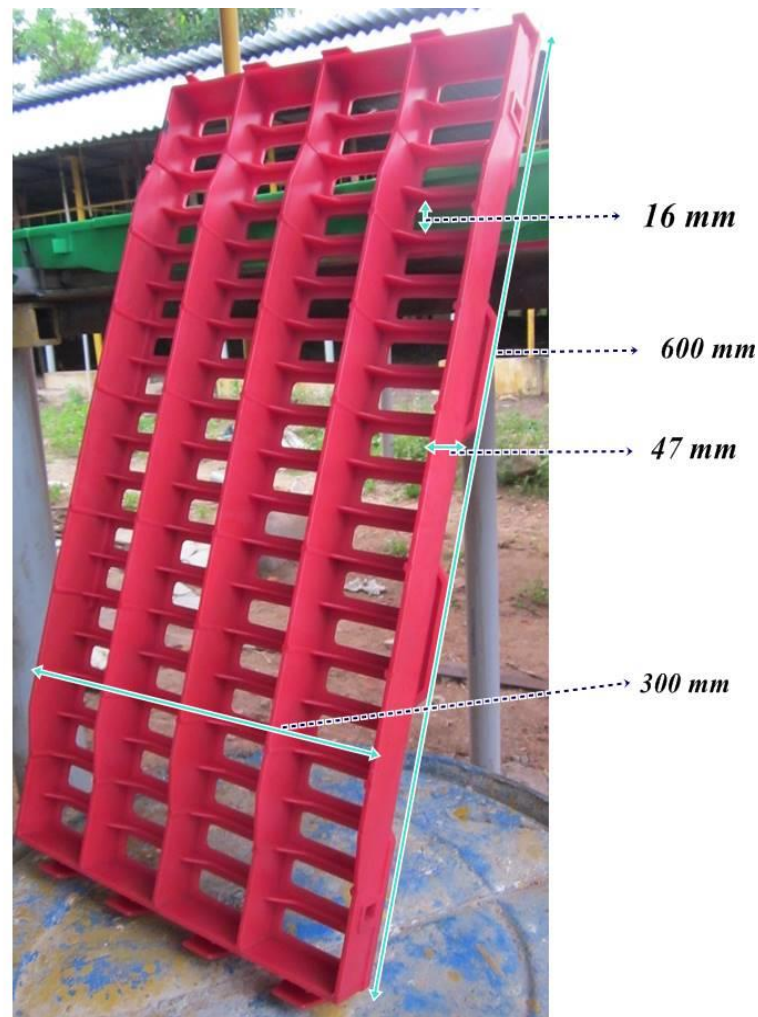
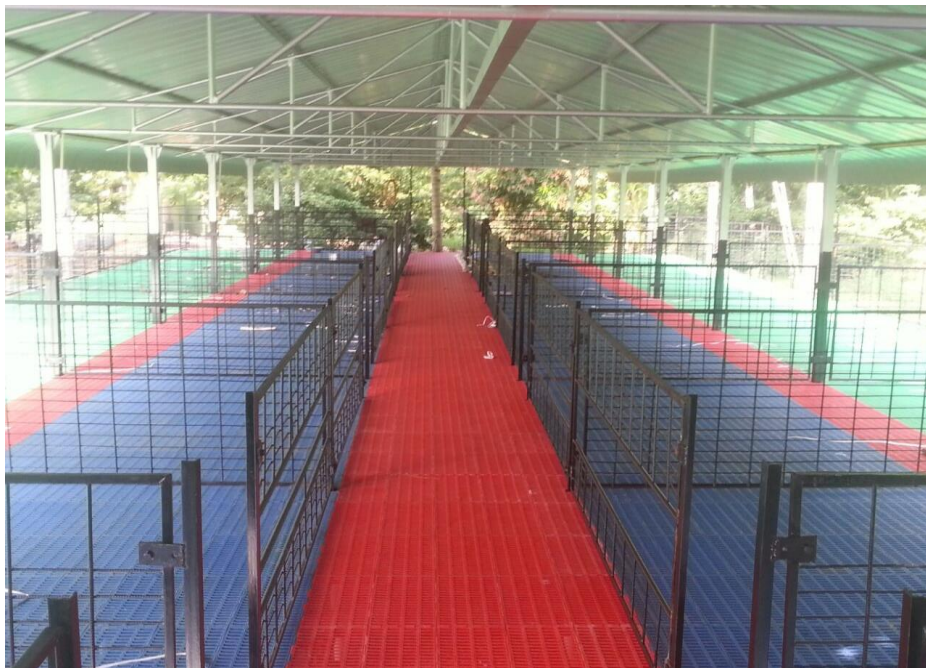
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Topics to be covered

- ✓ Introduction
- ✓ Goat Production Systems
- ✓ Hypothesis
- ✓ Experimental Design
- ✓ Recoding of Observations
- ✓ Statistical Analysis
- ✓ Results
- ✓ Interpretation
- ✓ Conclusion

- ✓ **Goat is “Future Animal”.**
- ✓ **High demand for Chevon and goat milk.**
- ✓ **Shift in rearing systems.**
- ✓ **Rise in Specialised Goat Production. Eg. Broiler kid, Dairy goat, meat goat etc.**
- ✓ **Shelter requirements vary as per production systems**

**Two shelter components:
Floor and Roof can impact
animal performance and
welfare**



Hypothesis

- ❖ **Can we use plastic slatted floor in modern goat shelter in dry regions of India?**
- ❖ **Is the provision of plastic slatted floor augment performance and welfare of goats?**

Installation of plastic slatted floor in goat shelters



Perforated plastic floor materials of 2' x 1' size of grade-A quality was installed in conventional goat shelter.

Size: 20' x 14'

M/S Murthy Agro Traders, Villupuram DT, Tamilnadu.



Experimental Design

Six months old Male animals (48)

Adjusted for BW, age, TOB, parity

Jamunapari (12)

Barbari (12)

Jakhrana (12)

Muzaffarnagari (12)

PF (6)

SF (6)

PF (6)

SF (6)

PF (6)

SF (6)

PF (6)

SF (6)

PF- Plastic Floor SF-Soil Floor

Trial period :

April 2017 – October 2017 (6 -12 months age).

i.e. Marketing age



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- ❖ **Body weight – Fortnightly**
- ❖ **Stress assessment: Physiological responses in mid of each season.**
- ❖ **Faecal Oocyst count – start and end of trial in summer and rainy seasons.**

❖ **Data were analysed using Independent t-test.**

Results

Mean body weight gain (kg) of growing kids and lambs (N=48) raised on two floors

Age group	Breed	Floor type		Pooled Mean	P value
		Plastic floor	Soil floor		
6-9 m	Jamunapari kids	5.58 ^a ± 0.92	4.55 ^a ± 0.74	5.06 ^a ± 0.38	0.400
	Barbari kids	7.48 ^a ± 0.48	6.53 ^{ab} ± 0.87	6.37 ^b ± 0.71	0.575
	Jakhrana kids	6.97 ^a ± 1.14	7.93 ^b ± 0.61	7.15 ^b ± 0.67	0.359
	Muzaffar. lambs	12.61 ^c ± 0.57	12.51 ^c ± 0.46	11.37 ^c ± 0.92	0.398
9-12 m	Jamunapari kids	4.82 ^a ± 0.63	4.12 ^a ± 1.02	4.47 ^a ± 0.65	0.475
	Barbari kids	4.47 ^a ± 0.57	5.20 ^a ± 0.48	4.52 ^a ± 0.32	0.798
	Jakhrana kids	5.55 ^a ± 0.64	5.32 ^a ± 0.57	4.83 ^a ± 0.72	0.837
	Muzaffar. lambs	9.45 ^b ± 1.04	11.17 ^b ± 0.75	9.84 ^b ± 0.84	0.210
Pooled Mean	Jamunapari kids	5.20 ^a ± 0.66	4.33 ^a ± 0.75	4.77 ± 0.43	0.296
	Barbari kids	5.98 ^a ± 0.44	5.86 ^a ± 0.49	5.44 ± 0.43	0.889
	Jakhrana kids	6.26 ^a ± 0.74	6.63 ^b ± 0.30	5.99 ± 0.66	0.677
	Muzaffar. lambs	11.03 ^c ± 0.59	11.84 ^c ± 0.53	10.60 ± 0.85	0.366

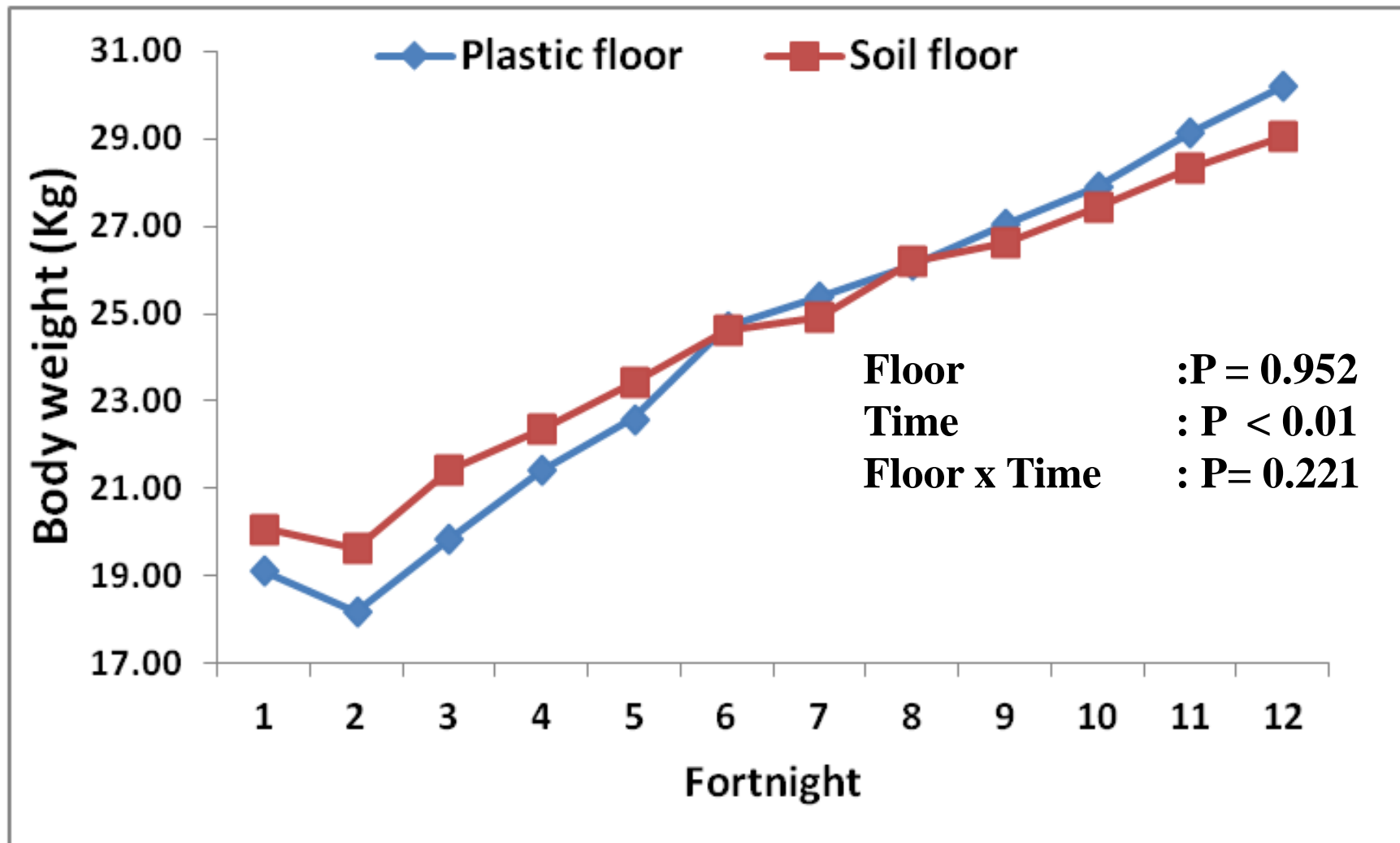
Values with different superscript in each column *within each age group* differed significantly (P<0.01)

Mean ADG (kg) of growing kids and lambs (N=48) raised on two floors

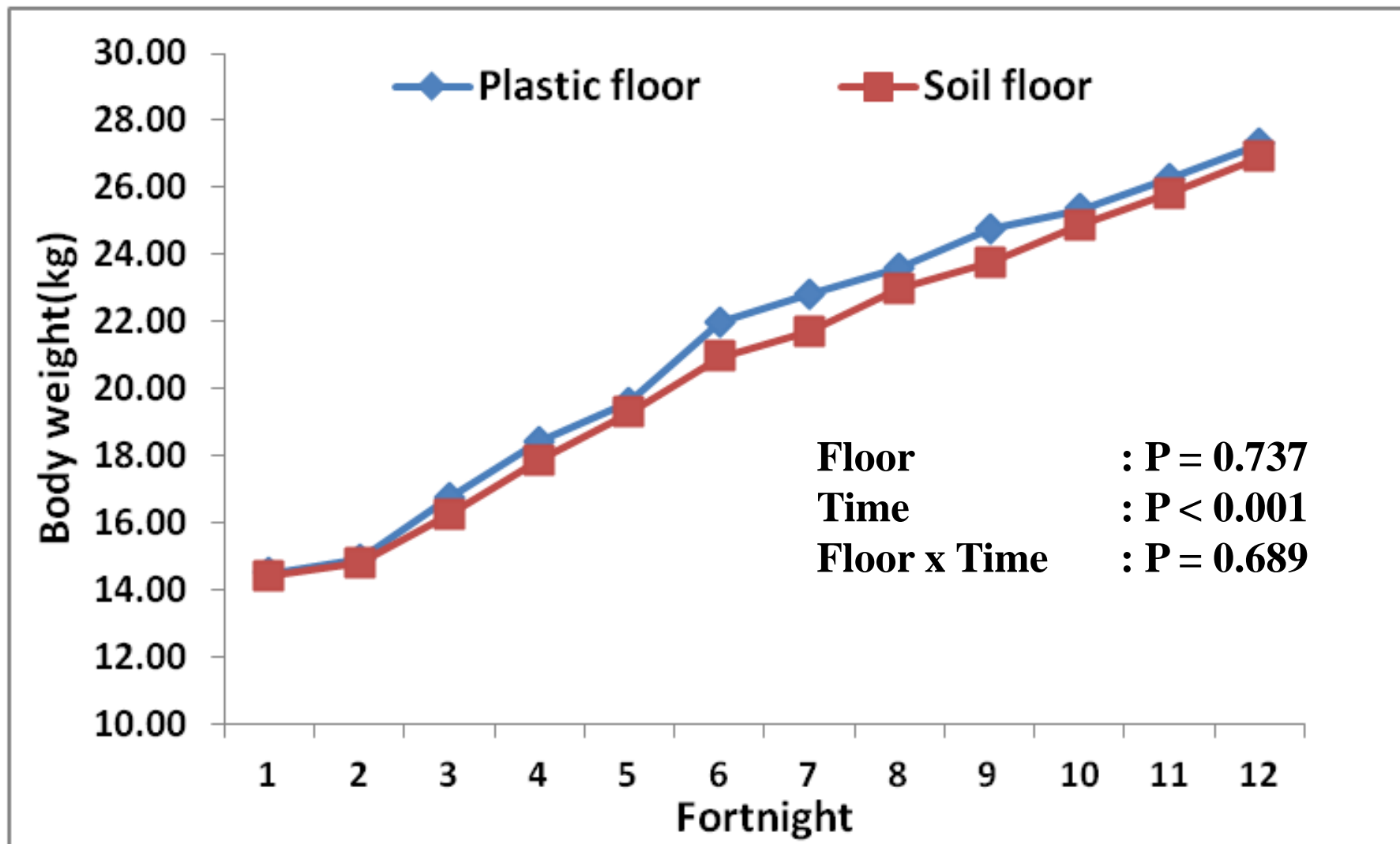
Age group	Breed	Floor type		Pooled Mean	P value
		Plastic floor	Soil floor		
6-9 m	Jamunapari kids	71.58 ^a ± 11.75	58.28 ^a ± 9.46	64.93 ^a ± 4.85	0.399
	Barbari kids	95.44 ^a ± 6.20	83.71 ^{ac} ± 11.13	81.62 ^b ± 9.06	0.573
	Jakhrana kids	89.37 ^a ± 14.59	101.66 ^{bc} ± 7.83	91.64 ^b ± 8.59	0.360
	Muzaffar. lambs	161.70 ^b ± 7.31	160.36 ^d ± 5.95	145.73 ^c ± 11.83	0.351
9-12 m	Jamunapari kids	63.36 ^a ± 8.28	54.17 ^a ± 13.36	58.76 ^a ± 6.81	0.475
	Barbari kids	58.79 ^a ± 7.51	68.42 ^a ± 6.35	59.44 ^a ± 4.16	0.799
	Jakhrana kids	72.98 ^a ± 8.48	70.01 ^a ± 7.54	63.58 ^a ± 9.44	0.890
	Muzaffar. lambs	124.38 ^b ± 13.73	146.98 ^b ± 9.85	129.46 ^b ± 11.04	0.211
Pooled Mean	Jamunapari kids	67.47 ^a ± 8.55	56.22 ^a ± 9.72	61.85 ± 5.59	0.295
	Barbari kids	77.37 ^a ± 5.66	76.06 ^a ± 6.34	70.53 ± 5.52	0.895
	Jakhrana kids	81.17 ^a ± 9.51	85.83 ^b ± 3.83	77.61 ± 8.54	0.675
	Muzaffar. lambs	143.04 ^b ± 7.77	153.67 ^c ± 6.95	137.60 ± 11.09	0.344

Values with different superscript in each column *within each age group* differed significantly (P<0.01)

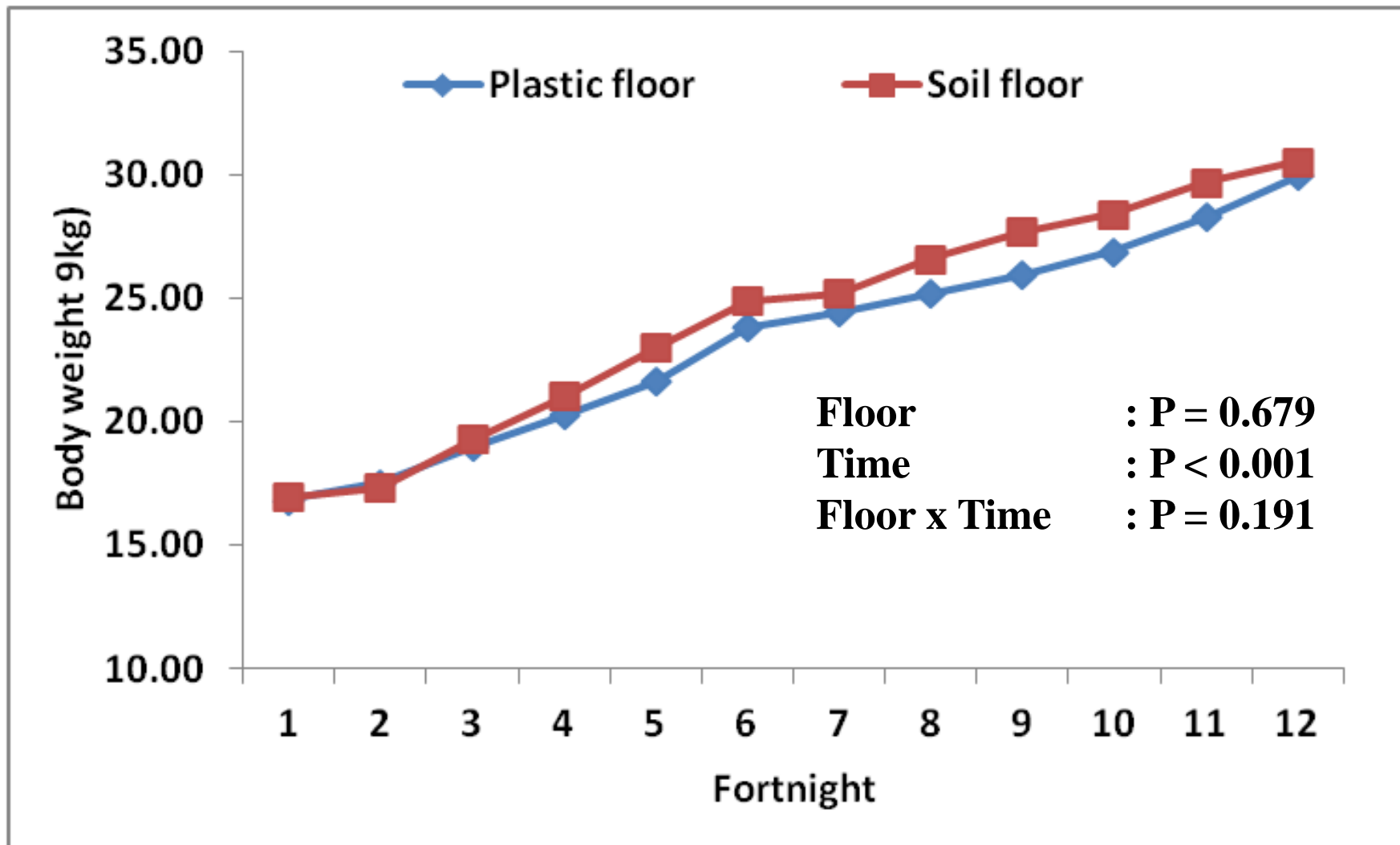
Body weight trend in Jamunapari grower kids on two floors



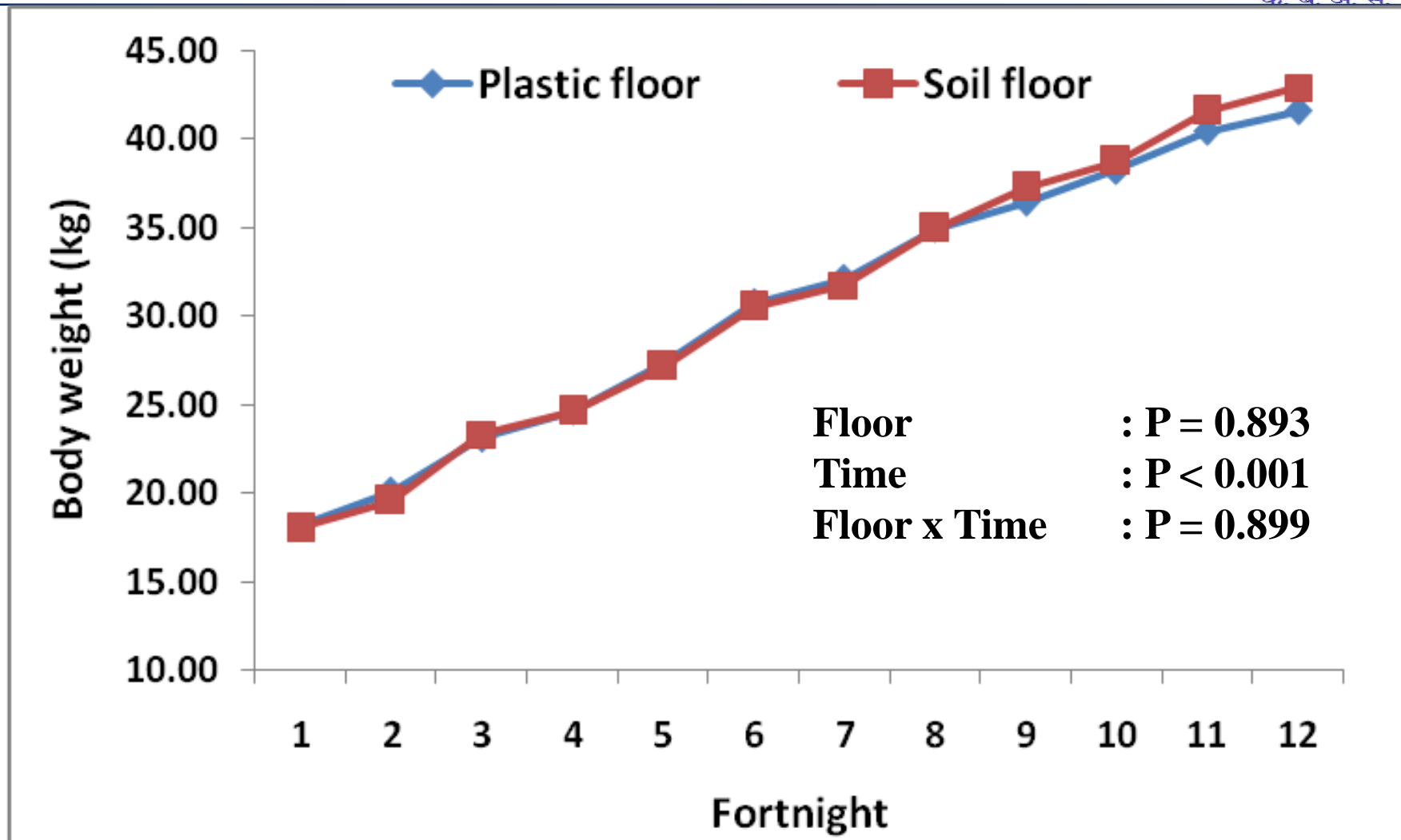
Body weight trend in Barbari grower kids on two floors



Body weight trend in Jakhrana grower kids on two floors



Body weight trend in Muzaffarnagari grower lambs on two floors



Mean physiological responses kids (N=36) raised on two floors

Biochemical parameters	Breed	Floor type		Overall floor	P value
		Plastic floor	Soil floor		
RR (Breath/min)	Jamunapari	65.17 ^a ± 5.95	56.42 ^a ± 4.62	60.79 ^a ± 3.80	0.259
	Barbari	78.83 ^a ± 7.71	69.17 ^b ± 4.29	74.00 ^b ± 4.43	0.250
	Jakhrana	95.00 ^b ± 5.00	72.17 ^b ± 5.34	83.58 ^c ± 5.14	0.024
	Overall	79.67 ± 4.50	65.92 ± 2.91	72.79 ± 2.78	0.001
HR (Beats/min)	Jamunapari	119.17 ± 5.88	111.75 ^a ± 2.89	115.46 ^a ± 2.56	0.152
	Barbari	131.42 ± 5.27	130.58 ^b ± 4.26	131.00 ^b ± 3.32	0.507
	Jakhrana	127.17 ± 3.12	133.58 ^b ± 6.42	130.38 ^{cb} ± 3.55	0.382
	Overall	125.92 ± 2.53	125.31 ± 3.12	125.61 ± 2.00	0.697
RT (°C)	Jamunapari	39.41 ^{ab} ± 0.13	39.44 ^a ± 0.09	39.43 ^{ab} ± 0.08	0.834
	Barbari	39.27 ^a ± 0.09	39.35 ^a ± 0.04	39.31 ^b ± 0.05	0.541
	Jakhrana	39.67 ^b ± 0.17	39.48 ^b ± 0.05	39.57 ^a ± 0.09	0.306
	Overall	39.45 ± 0.08	39.42 ± 0.04	39.34 ± 0.04	0.744

Mean physiological responses of lambs (N=12) raised on two floors

Physiological responses	Floor type		Pooled Mean	P value
	Plastic floor	Soil floor		
RR (Breath/min)	99.42 ± 7.76	71.75 ± 7.65	85.58 ± 6.06	0.019
HR (Beats/min)	129.50 ± 6.99	125.67 ± 4.48	127.58 ± 4.08	0.650
RT (° C)	39.98 ± 0.08	39.94 ± 0.13	39.96 ± 0.07	0.787

**Mean \pm SD for logarithmic faecal oocyst count*
(LFOC) {loge (FOC +100)} of growing kids /lambs
raised on two floors**

Breed	Floor type		P value
	Plastic floor	Soil floor	
Jamunapari	4.84\pm0.30 (6233.33)	5.03\pm0.52 (14533.33)	0.008
Barbari	4.69\pm0.06 (1833.33)	4.84\pm0.30 (6266.67)	0.031
Jakhrana	4.75\pm0.13 (3333.33)	4.76\pm0.14 (3600.00)	0.054
Muzaffarnagari	4.61\pm0.10 (1333.33)	4.76\pm0.12 (2600.00)	0.028

Plastic floor shall be easily recommended for construction of goat shelters with raised floor in semi-arid regions of India for hygienic meat and milk production in goats.



Acknowledgements



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