

EFFECT OF DIFFERENT SHELTERS ON MILK PRODUCTION AND COMPOSITION IN KANKREJ COWS

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An experiment was conducted on 18 lactating Kankrej cows of first lactation and same level of production. Each group of six cows randomly allotted three treatments of housings viz, (i) RCC shed (ii) Thatched roof shed and (iii) Tree shelter. Milk production and composition of each cow was recorded. Treatment effect was found non-significant. Milk composition was not affected by treatment, season or their interaction.

Key words: Milk production, Housing systems, Cattle

Ideal housing, which is conducive to good health, comfort and protection from the inclement weather conditions in this country is lacking, except on a few organized farms (Dall and Gill, 1993). Most of the information available on cattle housing in rural areas is based on assumption, casual observations, experience and memories of some professional workers. Therefore the present study was undertaken to find out effect of different housing systems on production performance of Kankrej cows.

MATERIALS AND METHODS

Eighteen lactating Kankrej cows of almost same stage of lactation, level of production and body weight were selected for present study. These cows were divided into three groups of six animals each. Each group was randomly allotted to one of the three treatments viz., RCC shed (T₁), Thatched roof (T₂) and Tree shelter (T₃). The experiment was conducted for one year covering all the three seasons as under.

- (i) Summer (February-2009 to May-2009)
- (ii) Monsoon (June-2009 to September-2009)
- (iii) Winter (October-2009 to January-2010)

Daily milk production and composition (Fat, SNF and Total solids) were recorded with electronic weighing balance and Ecomilk total instrument respectively. The collected data were analyzed by standard statistical methods (Snedecor and Cochran, 1994).

RESULTS AND DISCUSSION

Milk Production

Average season wise milk production of cows under different treatments are presented in Table: 1. Analysis of variance (Table: 2) revealed that in winter season, milk yield (584 ± 14.53 lit.) was significantly ($P < 0.05$) higher as compared to summer (560.47 ± 10.52) and monsoon season (576.63 ± 13.57). However, the difference in milk production due to treatment was non-significant.

In winter season, higher milk production observed due to higher feed intake and availability of more green fodders. Non-significant effect of housing on milk production indicates Kankrej cows are hardy and could maintain production in adverse housing conditions.

Present findings are in agreement with the earlier findings of Alim (1953), Konggard (1980), Jasirowski *et al.*, (1991), Muller and Both (1995) and Sharma and Singh (2003).

Table :1 Average milk production (litres/animal/season) of Kankrej cows recorded under different housing systems

Treatment	Season			Overall
	Summer	Monsoon	Winter	
T ₁	566.50 ± 10.50	580.50 ± 14.10	598.80 ± 13.50	579.93 ± 12.70
T ₂	554.40 ± 11.02	575.60 ± 13.02	580.50 ± 15.50	570.17 ± 13.18
T ₃	566.50 ± 10.00	573.80 ± 13.60	575.60 ± 14.60	571.97 ± 12.74
Overall	560.47 ± 10.52 ^a	576.63 ± 13.57 ^b	584.97 ± 14.53 ^c	574.02 ± 12.87

N.B. : Means having different superscripts differ in a particular row.

Table :2 Mean sum of squares of milk production of Kankrej cows

Source	d.f.	M.S.S.	Test
Treatment (T)	2	3153.661	-
Season (S)	2	3639.165	*
T x S	4	2456.462	-
Error	45	1809.796	-

* Significant (P < 0.05).

Table :3 Per cent milk compositions recorded under different housing systems

Treatment	Variable	Season			Overall
		Summer	Monsoon	Winter	
T ₁	Fat	4.49 ± 0.14	4.43 ± 0.16	4.50 ± 0.12	4.47 ± 0.14
	SNF	8.01 ± 0.24	8.72 ± 0.31	8.69 ± 0.20	8.47 ± 0.25
	TS	14.97 ± 0.31	15.05 ± 0.24	15.64 ± 0.28	15.22 ± 0.28
T ₂	Fat	4.29 ± 0.21	4.34 ± 0.13	4.61 ± 0.14	4.41 ± 0.16
	SNF	8.21 ± 0.28	9.12 ± 0.30	7.83 ± 0.26	8.39 ± 0.28
	TS	14.79 ± 0.34	15.53 ± 0.19	15.18 ± 0.24	15.17 ± 0.26
T ₃	Fat	3.86 ± 0.18	4.41 ± 0.11	4.43 ± 0.09	4.23 ± 0.13
	SNF	7.84 ± 0.22	8.80 ± 0.34	8.35 ± 0.24	8.33 ± 0.27
	TS	14.98 ± 0.29	15.12 ± 0.26	16.23 ± 0.22	15.44 ± 0.26
Overall	Fat	4.21 ± 0.18	4.39 ± 0.13	4.51 ± 0.12	4.37 ± 0.14
	SNF	8.02 ± 0.25	8.88 ± 0.32	8.29 ± 0.23	8.40 ± 0.27
	TS	14.91 ± 0.31	15.23 ± 0.23	15.68 ± 0.25	15.28 ± 0.27

Milk composition

Percent of Fat, SNF and Total solids under different housings are presented in table:3 In all three seasons non-significant differences between treatment means were observed (Table:4). Though the animals were under heat stress during summer season, maintained milk production and composition at par with other two treatments indicated heat tolerance of Kankrej cows. It revealed that condition might not have been severe in any season in any housing system to affect milk composition.

These results are corroborated with earlier workers (Zook *et al.*, 1975; Armstrong *et al.*, 1986; Mihina *et al.*, 1988 and Muller and Both ,1995). While, Levin (1965), Puhac *et al* (1969) and Jadav (1979) found higher fat percentage in loose housed cows.

Table 4: Mean sum of squares for milk compositions

Source	d.f.	Milk composition		
		Fat	SNF	Total solids
Treatment (T)	2	0.418	0.308	0.906
Season (S)	2	0.604	0.281	0.896
T x S	4	0.143	0.311	0.620
Error	45	0.242	0.146	0.783

CONCLUSION

Housing system did not affect significantly on milk production and composition of Kankrej cows. So, it can be concluded that kankrej cows are hardy and can maintain production performance in adverse housing conditions.

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