

reproductive traits should be considered. This would be very effective and useful when the completed reproductive traits for  $LP_{>305}$  are not available. The highest  $r_p$  were 0.66, and 0.96 for DO with NOS of  $LP_{>305}$ , and  $LP_{>305}$ , respectively using model 1. Correlation between DO with NOS, either genetic or phenotypic showed a great reduction using model 2 especially for  $LP_{>305}$ . Genetic and phenotypic correlations for DO, CI, and NOS with AC were negative and ranged from  $-0.18$  to  $-0.32$  and  $-0.11$  to  $-0.37$ . This might indicate that, early age at first mating in young buffaloes might had unfavorable effect on DO, NOS, CI in the subsequent lactations. Also, Phenotypic correlation between AC with NOS were  $-0.37$  and  $-0.31$  for  $LP_{>305}$ , and  $LP_{>305}$ , respectively (Table 6).

Table (6)  
Multiple lactations heritability (on diagonal), genetic (above diagonal) and phenotypic (below diagonal) correlation estimates

Model 1	Lactation length less than 305 days			lactation length more than 305 days				
	DO	CI	NOS	DO	CI	NOS		
DO	0.27±0.21	0.41±0.28	0.45±0.21	0.29±0.11	0.49±0.33	0.51±0.17		
NOS	0.66±0.14	0.45±0.12	0.14±0.11	0.96±0.19	0.51±0.17	0.19±0.07		
Model 2	DO	CI	NOS	AC	DO	CI	NOS	AC
DO	0.22±0.27	0.32±0.32	0.31±0.23	-0.29±0.14	0.19±0.20	0.45±0.27	0.39±0.20	-0.32±0.12
CI	0.85±0.17	0.14±0.15	0.27±0.11	-0.18±0.11	0.81±0.17	0.10±0.15	0.22±0.10	-0.22±0.14
NOS	0.45±0.17	0.55±0.19	0.10±0.17	-0.20±0.04	0.72±0.17	0.59±0.14	0.11±0.17	-0.20±0.09
AC	-0.11±0.04	-0.27±0.09	-0.37±0.10	0.37±0.17	-0.29±0.04	-0.32±0.11	-0.31±0.15	0.44±0.17

These results may indicate that, young buffaloes for ages at first calving need phenotypically more NOS for conception. The corresponding genetic estimates were moderately low. This may be indicate that, enhancing the environmental conditions such as systems of estrous detection, accurate recording of reproductive examinations, using artificial insemination and estrous synchronization treating hormones will be very effective for reducing this unfavorable relationship. Days open is more correlated with AC either genetically or phnotypically for  $LP_{>305}$ . This is could be due to silent heat, which is more frequent with longer lactation period, and consequently would increase length of CI. Therefore, might be more appropriate to use restricted selection index in genetic improvement for DO, NOS and CI to prevent increasing age at calving.