

## Genetic Variations in Some Reproductive Traits of Egyptian Buffaloes

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In general, genetic analysis studies and genetic improvement strategies for reproductive traits in Egyptian buffaloes are limited due to limitation of availability of stock data. The objectives of the present study were to investigate some genetic effects on the reproductive performance of Egyptian Buffaloes using completed and uncompleted lactation records in Ismailia region.

Data of reproductive performance traits (age at calving: AC, days open: DO; calving interval: CI; and number of services per conception: NOS) of 2289 Egyptian Buffaloes. The statistical animal model was  $Y_{ijklmn} = u + F_i + S_{ji} + P_k + Se_l + Y_m + b_{1AC} + b_{2AC} + e_{ijklmn}$ . Where:-  $Y_{ijklmn}$ : is the days open, calving interval, and number of services per conception, and age at calving,  $u$ : Population mean,  $F_i$ : fixed effect of  $i$ th farm,  $i= 1$  to 4;  $S_{ji}$  is the effect of  $j$ th sire nested within  $i$ th farm  $P_k$ : fixed effect of  $k$ th order of lactation;  $Se_l$ : is the effect of  $l$ th season of calving,  $Y_m$ : is the effect of  $m$ th year of calving;  $b_{1AC}$ : is the partial linear regression of DO, NOS, CI on age at calving,  $b_{2AC}$ : is the partial quadratic regression of DO, NOS, CI on age at calving;  $e_{ijklmn}$ : is the residual (MTDF-REML Boldman (1997)

Heritability estimates of all reproductive traits were ranged from 0.10 to 0.44. These results were higher than that computed by Khalil et al., (1991). Differences in estimates of  $h^2$  of all reproductive traits among  $LP_{<305}$  and  $LP_{>305}$  data sets were very little. This result suggested the possibility of using all available data for completed or uncompleted lactation period in breeding programs. Moderate level of pooled heritability estimates indicated the possibility of genetic improving most reproductive traits in buffaloes. The highest estimates of  $h^2$  (0.37 & 0.44) were obtained for age at calving in  $LP_{<305}$  and  $LP_{>305}$ , respectively. The current results for overall heritability estimate for age at calving was in agreement with Basavaiah et al., (1983). Genetic and phenotypic correlations (Table 2) among DO, NOS, and CI were higher for  $LP_{>305}$  than for  $LP_{<305}$ . This suggested that, genetic correlated response for different 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 .

**Table 1. 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	<b>0.27±0.21</b>	0.41±0.28	0.45±0.21	<b>0.29±0.11</b>	0.49±0.33	0.51±0.17
CI	0.75±0.11	<b>0.19±0.10</b>	0.32±0.16	0.79±0.15	<b>0.17±0.19</b>	0.37±0.18
NOS	0.66±0.14	0.45±0.12	<b>0.14±0.11</b>	0.96±0.19	0.51±0.17	<b>0.19±0.07</b>

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