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### LIST OF ABBREVIATIONS

0-W	Period from birth to weaning
W-6m	Period from weaning to 6months
0-6m	from birth to 6 months
ADMY	Average daily milk yield
Alb	Albumin
BW6m	Body weight at 6th months of age
BWB	Body weight at birth
BWW	Body weight at weaning
Cho	Cholesterol
CI	Calving interval
DO	Days open
G	grams
g/dL	Grams Per Decilitre
Glb	Globulin
Glu	Glucose
IgG	Immunoglobulin
Kg	Killo gram
LP	Lactation period
mg/dl	Milligrams per Deciliter

Ν	Number of milk samples
Pa	Parity
S	Sex
TL	Total lipids
ТМҮ	Total milk yield
ТР	Total protein

#### **5. SUMMARY**

The present study was carried out in experimental farm of El Nataf El Kadeem in Kafr El-Sheikh Governorate, Buffalo Breeding Research Department, Animal Production Research Institute, Agriculture Research Center, Ministry of Agriculture, Egypt. The field work of the experiment lasted from November 2015 to April 2016.Samples of blood, and milk were analyzed in Buffalo Breeding Research Department, Animal Production Research Institute.

Forty native lactating buffalo cows were taken randomly after parturition and used in this study. Buffaloes dam (in both groups) were balanced in parity and the quota of nutrition. They were under the same veterinarian control and free from reproductive diseases.

The experimental animals were divided into two maine categories, each group had buffalo cows having different parities (1, 2, 4 and more). Two sex of calves (male and female) and first category had Fence-line weaning buffalo cows with their newborn and the second had the separated weaning calves after parturition which stayed with their mothers and took colostrum throw the first three days after birth then, separated from their mothers.

Milk production and components were recorded during eight months after calving. Milk and blood samples were taken weekly after calving till eighth week for analizing. Behavoural changed and days open were recorded after calving till the end of the experiment.

#### The results obtained in this study can be summarised as follows:

**<u>1-Lactation Curve:</u>** Observation of lactation curve shows improve of fence-line weaning system in Egyptian buffaloes milk production than traditional weaning system.

**<u>2-Milk yield</u>**: Buffalo that weaned their calves by fence-line weaning system tended to have significantly higher (P<0.001) daily and total milk yield (6.13 and 1889.90 kg, respectively) than that weaned their calves by traditional weaning system (5.32 and 1488.90 kg, respectively). First parity buffalos had lower (P<0.001) average daily and total milk yield (5.49 and 1570.46 kg, respectively) than buffalos at second (5.51 and 1596.87 kg, respectively) and finaly fourth or more parities (6.19 and 1601.07 kg, respectively). Buffalos that born female calves had a higher (P<0.001) total milk yield (1733.15 kg) than those born male calves (1645.79 kg).

<u>3-Milk components</u>: Buffalo that weaned their calves by fence-line weaning system tende to have the higher (P<0.001) milk components (lactose, total solids and solids not fat) than that weaned their calves by traditional weaning system, except for protein and fat. Fourth and more parity buffalos had a higher (P<0.001) milk fat (9.15%) than buffalos at first (8.69%) and second (8.04%) parities. Buffalos that born male calves had a higher (P>0.01 and P>0.001) milk protein , total solids

and solids not fat (4.15, 18.63 and 10.03%, respectively) than that born female calves (3.82, 18.46 and 9.81%, respectively).

#### 4-Calf growth performance:

a. <u>Calves body weight:</u> Buffalo calves that weaned by fence-line weaning system had a higher (P<0.001) body weight at weaning and 6th month of age (109.36 and 153.52 kg, respectively) than that weaned by traditional weaning system (99.61 and 145.93 kg, respectively). Male buffalo calves almost had heavier body weight at birth, weaning and 6th month of age (34.73, 104.69 and 150.06 kg, respectively) than female buffalos calves (34.59, 104.28 and 149.38 kg, respectively). Buffalo calves from fourth and more parities had the heaviest (P<0.01- P<0.001) body weight at birth, weaning and 6th month of age (35.44, 110.34 and 155.44 kg, respectively) than buffalos calves from first parity (33.44, 101.04 and 146.36 kg, respectively).

**b.** <u>Calf total weight gain:</u> Calves that weaned by the fence-line system had significantly higher (P<0.001) total weight gain from birth to 6 months of age than traditional weaning system (120.71 vs. 109.35kg). Male buffalo calves had a higher total weight gain from birth to 6 months of age than female buffalos calves (115.29 vs. 114.77 kg). Buffalo calves at fourth and more parities had a higher

(P<0.05-P<0.001) total weight gain than those Buffalos calves from second and first parities (119.90, 112.95 and 112.24 kg, respectively).

c. <u>Calves average daily gain</u>: Calves that weaned by the fence-line system had a higher (P<0.001) average daily gain from birth to 6 months of age than traditional weaning system (670.61 vs. 607.50 grams). Male buffalo calves had exceeded (P<0.001) in average daily gain from 3.5 months to 6 months of age than female buffalos calves (650.00 vs. 600.00 grams/day). Buffalos calves from fourth and more parities had a higher (P<0.001) average daily gain than buffalo calves from second and first parities (670 and 620 grams, respectively).

**d.** <u>Calves total feed intake:</u> Calves that weaned by the fence-line system had a higher (P<0.001) total feed intake from birth to 6 months of age than those weaned by traditional weaning system (539.78 vs. 520.57 kg). Male buffaloe calves consumed higher but not significant total feed intake from birth to 6 months of age than female buffaloes calves (547.55 vs. 536.45 kg). Buffalos calves' from four and more parities consumed higher but not significant total feed intake than buffalos calves from secound and first parity (546.21,540.23 and 531.44 kg, respectively).

e. <u>Calf feed conversion ratio</u>: Calves that weaned by the fenceline system had a higher (P<0.05- P<0.001) feed conversion ratio from birth to 6 months of age than traditional weaning system (4.47 vs. 4.76). Male and female buffalos calves had the same feed conversion ratio from birth to 6 months of age (3.95 vs. 3.83). Buffalos calves from fourth and more parity had a higher but not significant feed conversion ratio than buffalo calves from first and second parity (3.42, 4.02 and 3.66 respectively).

**f.** <u>Calves economical feed efficiency:</u> Calves that weaned by the fence-line system had higher economical feed efficiency of calves than weaned by traditional weaning system (1.07 vs. 0.94). The differences between means of buffalo calves economical feed efficiency due to weaning system effect were significant (P<0.05) except for economical feed efficiency from birth to 3.5 months of age was not significant. Male was louer than female buffalo calves in economical feed efficiency from birth to 6 months of age (1.06 vs. 0.94).

#### 5-Blood metabolites:

a. <u>Calves' blood metabolites:</u> Calves that weaned by the fenceline system had a higher (P<0.001) level of blood metabolites than those weaned by traditional weaning system. Buffalo calves borne from first parity had a higher (P<0.01 and P<0.001) total lipids and cholesterol than buffalo calves from second and fourth and more parities, while, second parity calves had the optimum level of blood glucose than other parities. Male buffalos calves had the higher (P < 0.001) level of blood metabolites than females.

**b.** <u>Dams' blood metabolites:</u> Dams that weaned their calves by the fence-line system a had higher (P<0.001) levels of blood metabolites than that weaned their calves by traditional weaning system. Buffalos dams with second and fourth and more parities had a higher (P<0.05 and P<0.001) blood metabolites than buffalos dams with first parity. Buffalos that born females calves had the higher (P<0.001) levels of blood metabolites than born males.

c. <u>Immunoglobulin of calves and dams</u>: Calves and dams that weaned by the fence-line system had a stronger (P<0.001) immunity defense mechanism than those weaned by traditional weaning system. The differences between means of buffalos calves and dams immunoglobulin, due to parity number and sex of calf effects were not significant.

**<u>6-Behavioral changes:</u>** Calves are having less stress and more viable and able to withstand disease challenges and might have greater weight gains. It could be said that fence-line contact between buffalo calves and their dams at weaning reduces indices of behavioral distress.

<u>**7-Buffalos' days open:</u>** Buffalos that weaned their calves by the fence-line system had insignificant shorter days open (146.89 days) than that weaned their calves by traditional weaning system (168.25 days). Second parity buffalos had the shorter (P<0.05) open days (109.01 days) than fourth and more parities (179.59 days) and first parity (184.11 days) buffalos. Buffalos that born male calves had the shorter (P<0.001) open days (117.92 days) than that born female calves (197.21 days).</u>