Some factors affecting milk production in cattle

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5-SUMMARYThe present study was carried out on the dairy cattle flock belonging to the Agriculture Research Center, Department of Animal production, Faculty of Agriculture, Banha University to point out the most important nutritional, physiological, managerial and seasonal factors that may considered to have direct or indirect effect on milk yield and composition under Qualiobia Governorate condition. Dietary protein sources, season of calving, number and stage of lactation were suggested to be seasonal, nutritional and managerial factors that have a significant effect in these aspects. Plasma total protein and its fractions, total lipids, cholesterol, GOT and GPT were estimated as the most metabolic parameters that are closely related to milk yield and composition. On the other hand, it may be of considerable economic importance for milk production and selection for maintaining high productive efficiency to study the effect of applying new dietary protein sources that compared to one of traditional one in rations of dairy cattle.A number of 24 crossbred (Friesian X Balady) cows were used in this study. The experimental period started from May (1999) to Feb. (2001).Dietary protein was applied from Black seed meal, Roquette seed meal, undecorticated sunflower meal and undecorticated cotton seed meal in the ration of animals of 1st , 2nd , 3rd , and 4th groups respectively. Each protein source- 215 -SUMMARYwas substituted with 50% of the ration’s protein ingredient. Milk yield was daily recorded, milk samples were collected after 7 days from calving then at weekly intervals till the 44th weeks.Chemical assays for milk samples were performed in Laboratory of Animal Production Reseach Institute, Agriclture Reseach Center, Ministry of Agriclture, Egypt. Blood samples were collected at the 7th day after calving then at biweekly intervals till the 43th weeks of lactation. Blood plasma samples were exposed to chemical colorimetric analysis in Laboratory belonging to Department of Animal Production, Faculty of Agriculture, Banha University.Results obtained could be summarized as follows: I — Effect of dietary protein sources on: A: Milk yield and its Constituents :Dietary protein sources had highly significant effect ($P<0.001$) on average actual daily milk yield, 4% fat corrected milk yield, fat yield and percentage, protein yield, and total solids yield and percentage, solids-not-fat yield and percentage, lactose yield and percentage and ash percentage ($P<0.01$). On the other hand, protein percentage and milk PH value were not affected by dietary protein source. The higher average of actual daily milk yield (9.09 kg/cow/day), 4% fat corrected milk yield (8.23 kg/cow/day) and yields of fat (305.8 g/cow/day), protein (288.2 g/cow/day), total solids (1091.97 g/cow/day), solids-not-fat (786.1 g/cow/day) and lactose (433.98 g/cow/day) was observed in cows fed ration containing black seed meal.- 216 -SUMMARYHowever the milk from cows fed ration containing cotton seed meal had the highest average of fat (3.7%), total solids, Solids-not-fat (8.72 %), lactose (4.78%) and ash (0.717%). B:Rectum temperature and body weight:The rectal temperature was significantly affected ($P<0.05$) by dietary protein sources. Its highest average (39.0 °C) was observed in cows fed ration containing sunflower seed meal. However, the lowest average (38.95°C) was observed in cows fed ration containing cotton seed meal. Highly significant variation ($P<0.00$ I) was found in body weight of cows due to dietary protein source. Its highest average (445.6 kg) was observed in cows fed ration containing sunflower seed meal. However, the lowest average (416.6 kg) was observed in cows fed ration containing black seed meal. C:Blood plasma constituents:Dietary protein source had highly significant effect ($P<0.001$) on blood plasma total proteins, albumin, globulin, total lipids and total cholesterol. On the other hand, plasma GOT and GPT showed no significant variation due to dietary protein source. Cows fed ration containing cotton seed meal had the highest average of

plasma total proteins and globulin (11.16 and 5.16 g/100m1, respectively). While, the highest average of plasma albumin (6.53 g/100m1), total lipids (410.8 mg/100m1) and GOT (41.88 U/1) was observed in cows fed ration containing roquette seed meal. The highest value of total- 217 -SUMMARYcholesterol (211.2 mg/100m1) was observed in cows fed ration containing sunflower seed meal. II — Effect of season of calving on: A:Milk yield and its Constituents :Season of calving had highly significant effect (P<0.001) on actual daily milk yield, 4% fat corrected milk yield, protein yield, total solids percentage and yield, solids-not-fat percentage and yield, lactose percentage and yield, and ash percentage. Significant variation (P<0.05) was also found in fat yield and protein percentage. On the other hand, milk fat percentage and PH value were not significantly affected by season of calving. The highest average of actual daily milk yield (8.82 kg/cow/day), 4% fat corrected milk yield (7.97 kg/cow/day) and yield of fat , protein, total solids, solids-not-fat (295.7, 274.1, 1050.0 and 754.5 g/cow/day, respectively) and ash percentage (0.738%) were observed in cows calved during spring months. However, cows calved during summer months had the highest average of protein (3.3%), total solids (12.41%), Solids-not-fat (8.87%) and lactose percentage (4.85) and yield (419.4 g/cow/day) and PH value of milk (6.62). B:Rectal temperature and body weight:Highly significant variation (P<0.001) in rectal temperature and body weight of the cows were observed due to season of calving. The highest average (39.18 °C) of rectal temperature was observed in cows calved during winter season.- 218 -SUMMARYLactation number had highly significant effect (P<0.001) on blood plasma total proteins, albumin, globulin, total lipids and total cholesterol. On the other hand, lactation number did not affect plasma GOT and GPT. The higher averages of plasma total proteins (11.59 g/100m1), albumin (6.79 g/100m1), total lipids (475.4 mg/100m1), and GOT (40.47 U/1) were found in cows having 2 lactation. While, the highest average of plasma globulin (4.96 g/100m1) was observed in cows having 3 lactation. The highest total cholesterol level (218.0 mg/100m1) was observed in cows having 4 lactations and higher plasma GPT level (20.34 U/1) was recroded in cows having 5 lactations. IV — Effect of state of lactation on: A: Milk yield and its Constituents :Stage of lactation had highly significant effect (P<0.001) on average of average daily milk yield, 4% fat corrected milk yield, milk fat, protein, total solids, solids-not-fat and lactose percentage and yield and ash percentage. On the other hand, milk PH value was not affected by stage of lactation. The highest averages of average daily milk yield, 4% fat corrected milk yield (12.32 and 10.93 kg/cow/day, respectively) and yields of fat, protein, total solids, solids-not-fat and lactose (400.4, 406.1, 1481.0, 1081.3 and 584.4 g/cow/day, respectively) were observed at the first week of lactation period. On the other hand, the highest values of fat, total solids, and solids-not-fat percentage (4.16, 13.11 and 9.00%, respectively)- 221 -SUMMARYand milk PH value (6.56) were found at the end of lactation period. B: Rectal temperature and body weight:Highly significant variation (P<0.001) was observed in rectal temperature of cows due to stage of lactation. The highest rectal temperature average (39.54 °C) was recorded at the end of lactation period. While, the lowest average (38.70 °C) was noticed at the 12th week of lactation. Body weight was not affected by the stage of lactation. The highest average of body weight (449.4 kg) was found at the 1st week of lactation. While, the lowest average (426.1 kg) was observed at the 16th week oflactation. C: Blood plasma constituents:The stage of lactation had insignificant effect on all blood plasma constituents studied except plasma total cholesterol which was significantly affected (P<0.05) by this factor. The highest averages of plasma total proteins and albumin (11.11 and 6.98 g/100m1), respectively) were estimated at the end of lactation period. While, the highest averages of plasma globulin (5.07 g/1 00m1), total cholesterol (219.1 mg/100m1), total lipids (426.5 mg/100m1), GOT (44.33 U/1) and GPT (20.98 U/1) were observed at the 13th, 17th, 33th • 37h and 33th week of lactation period, respectively.- 222 -SUMMARY