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TH274   A survey analysis on comparative growth and reproductive performance of various sheep breeds in alpine pasture and foot hills of northern areas in Pakistan. M. Abdullah*, K. Javed, M. Mudassir, J. A. Bhatti, N. Ahmad, and U. Younas, *University of Veterinary and Animal Sciences, Lahore, Pakistan.*

To investigate perception of pastoralists and adaptation of sheep breeds in their particular environment in northern areas of Pakistan the study was carried out at Kaghan valley of Mansehra district and Haripur by interviewing 150 pastoralists using a pretested questionnaire. The data were analyzed using Epi-info program (version 6.04b) for descriptive statistics. Sheep breeds found in Naran (upland) and Haripur/Attock (lowlands) were Afghani, Kaghani, Ramghani (crossbreed) and Rambouillet (exotic). Average age at puberty for Kaghani, Ramghani, Rambouillet and Afghani breed was found to be 1.36, 1.40, 1.34 and 1.26 years, respectively. Ram replacement was done every 2 years where Afghani breed was given most preference i.e., 44.3% as compared with the other breed rams. Highest twinning rate (9.26%) was found in Afghani breed followed by Ramghani, 6.13%; Rambouillet, 4.2% and 3.81%, in Kaghani breed. Breeding season in all sheep breeds was found to be ranging from September to October with some exceptions during August, November and December with a corresponding lambing season January and February with few lambings during March and April. Average number of ewes conceived, pregnant and parturated per flock per year was higher in Kaghani breed viz. 31.4, 23.0 and 17.2, while lowest in Rambouillet being 19.0, 12.8 and 7.3, respectively. Average weight (kg) of new born lamb was found higher (2.15 kg) in Afghani breed whereas, lowest (1.61 kg) in Kaghani breed. The herders have limited access to health and production extension services and very responsive to these services for improving productive and reproductive performance of their animals.

Key Words: sheep performance, adaptability, northern Pakistan

TH275   Development and comparison of regression models for estimation of live body weight in Lohi and Hissardale sheep using mophometric measurements. M. Abdullah*, K. Javed, U. Younas, M. A. Hassan, N. Ahmad, and J. A. Bhatti, *University of Veterinary and Animal Sciences, Lahore, Pakistan.*

To develop regression models for predicting live animal body weight by linear body measurements for Lohi and Hissardale sheep, data on 762 Lohi, a mutton type and 125 Hissardale, a fine wool crossbred (Merino × Bikaneri) sheep were taken from 2 Livestock Experiment Stations and analyzed for use by small scale farmers of rural areas in Pakistan with no weighing facility. Data on body weight and various body measurements (height at withers, body length, heart girth, neck length, neck width, ear length and ear width) were taken. Animals at each station were divided into 2 groups, i.e., A and B. Group A consisted of the animals of the age of 24 mo and under where as those in group B having having the age over 24 mo. Data were analyzed using SPSS software, version 13.0, to determine the best fitted regression model for prediction of body weight. Step wise multiple regression analysis was used to evaluate these regression models. The body weight for the groups A and B for Lohi sheep was 30.83 ± 3.32, 42.63 ± 5.75 kg, while that of Hissardale in both the groups was 25.57 ± 2.94, 47.10 ± 4.41 kg, respectively. A positive correlation between the body weight and body measurements (height at wither, body length and heart girth) were found ($P < 0.001$) in groups A and B of both the breeds. The correlation coefficients between the body weight and height at withers, body length and heart girth were 0.40, 0.68 and 0.61 for group A and 0.78, 0.86 and 0.81 for group B in Lohi sheep, respectively. The corresponding correlation coefficients for these parameters in Hissardale sheep were 0.73, 0.82, 0.76 and 0.54, 0.46, 0.42 for groups A and B, respectively. All biometrical traits were fitted in the model however combination of height at wither, body length and heart girth ($R^2 = 55.8$) were best suited for the regression model whereas combination of heart girth and body length was the second most suited ($R^2 = 53.9$) for prediction of body weight

Key Words: sheep, body weight, morphometric measurements

TH276   The dairy industry in Malawi—A description of the Malawi milk bulking groups. W. G. Sindani[1,2], S. R. Neba*[1,3], M. T. Correa[1], K. L. Anderson[1], and J. C. Allen[1], *[1]North Carolina State University, Raleigh, [2]Malawi Bureau of Standards, Blantyre, Malawi, [3]Ministry of Agriculture, Salima, Malawi.*

The objective of this research was to describe the milk industry in Malawi (SW Africa) focusing on milk bulking groups (MBGs) to identify areas that need to be addressed to improve the quality and quantity of milk produced by small scale farmers. The Malawi dairy industry (primarily cow milk) is only a very small proportion of the livestock subsector and agricultural sector. Dairy farmers are categorized into large scale producers and small scale producers where small scale makes up a larger proportion and on average keeps up to 10 animals. Small-holder farmers are organized into MBGs that gather milk, store it in cooling tanks, and sell it to processors. Anecdotal evidence suggested that milk produced by farmers and subsequently collected by milk processors is of low quality. Low milk production only meets about 30% of the total capacity of processing plants. In this project, current practices were mapped to desired practices using qualitative data captured through questionnaires that were administered to farmers, representatives of the bulking centers, and participants in a focus group discussion (FGD) in which the MBG participated. The total bacteria count of raw milk was analyzed as an indicator of milk quality and the hygienic conditions under which milk was produced. Results showed that to improve the quality and quantity of milk, the dairy industry needs to move away from use of low quality breeds, lack of extension workers, poor milk marketing that is characterized by low milk prices, lack or absence of insurance on dairy animals and bulked milk, and frequent electric power failures that affect cooling of milk. High bacteria counts (3.4 and 4.7×10^7 cfu/mL in and out of collection centers) indicate that the quality of milk produced by farmers and subsequently collected by processors is of poor quality, which calls for better hygienic measures during milk production and handling. The FGD suggests the following roles for government extension workers: promote breeding to increase yields; improve on-farm milk handling and more rapid cooling; promote mastitis checking to increase milk quality and yield.

Key Words: Malawi dairy industry, milk bulking group, extension goal

TH277   Effects of a new additive on milk performance of water buffalos. M. Lohölter*, A. Lewke, A. Numsri, S. Kirwan, and B. Eckel, *Dr. Eckel GmbH, Niederzissen, Germany.*

Since the early 1990s, the global buffalo population was characterized by a constant growth approximating an annual increase between 1 and 2% and current numbers exceed 180 million head. Traditional systems

comprised draft and meat purposes but currently the production of high solid buffalo milk high increases. Milk fat content is of particular importance for derived products such as mozzarella cheese. Increases in milk yields are accompanied by similar dietary challenges as faced by other high yielding ruminants. In early lactation, energy usage often exceeds energy intake. Meeting the energy demand by an increased use of concentrate is related to a rising risk of subacute ruminal acidosis. The aim of the present study was to investigate the potential of a product based on rumen protected niacin, buffering substances and organic acids on milk yield and composition of lactating buffalos. A total of 24 multiparous lactating water buffalos (*Bubalus bubalis*) were randomly allocated to either a control group or a treatment group fed a nutritionally adequate diet. The treatment group received the basal ration supplemented with 50 g RumenProtect WB per head and day (RumenProtect WB, Dr. Eckel GmbH). In the treatment group, average milk yield was stimulated by 10%. Moreover, the supplementation of the additive was found to increase milk fat content from a high control value amounting 7.01% to 7.7% approximating a 10% rise of the milk solid most susceptible to dietary influences such as higher ruminal acetate concentrations. In conclusion, the present study demonstrated that a combined supplementation of rumen protected niacin, buffering substances and organic acids can increase yield and fat content of water buffalo milk. The inclusion of the evaluated additive in water buffalo diets may be a useful tool to improve milk performance.

Key Words: buffalo, milk yield, milk fat content

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