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SAMPLE ENTRY

1 2 6

001 Paul, P.R.C.; Xavier, F.; Leena, A. (College of Veterinary and Animal Sciences, Trissur (India), Department, of Livestock Production Management) Dairysoft: A computer programme for dairy farms. Indian Journal of Animal Sciences (India). (Mar 2006).v. 76(3) p. 260-262 KEYWORDS: DAIRY FARMS; COMPUTER SOFTWARE

3 4 5

To exploit the full potential of dairy sector, a computerizd record management system dairysoft was developed. Visual Basis 6.0 was used as front end while MSAccess 97 was utilized as back end for the software. The menu base dairysoft was provided with facilities for obtaining necessary reports along with separate data entry options.

1. Entry number
2. Author(s)
3. Title in English
4. Source
5. Keywords
6. Organisation where work was carried out

C20 Extension

0001. Patil, A.P.; Nagpur Veterinary College, Nagpur (India). Department of Veterinary and Animal Husbandry Extension; Gawande, S.H.; Nagpur Veterinary College, Nagpur (India). Department of Veterinary and Animal Husbandry Extension; Nande, M.P.; Nagpur Veterinary College, Nagpur (India). Department of Veterinary and Animal Husbandry Extension; Gobade, M.R.; Nagpur Veterinary College, Nagpur (India). Department of Veterinary and Animal Husbandry Extension. Constraints Faced by the Dairy Farmers in Nagpur District while Adopting Animal Managenment Practices. Veterinary World (India). (Mar 2009) v. 2(3) p.111-112 KEYWORDS: FARMERS. CONSTRAINTS. DAIRY FARMS. ANIMAL HUSBANDRY.
The present study was carried out to analyse the constraints faced by the dairy farmers in Nagpur district. This study was conducted in 15 villages from 3 talukas of Nagpur district by personally interviewing 225 dairy farmers. Here, majority of the respondents (72.44) stated their constraint as low milk production from the local breeds, 45.33; as shortage of green fodder and 41.33; as lack of clean water while 25.33; stated lack of preservation facility as their constraint. Referring to the financial constraints, 78.22; respondents stated their constraint as delay in milk payment, 63.11; as inadequate money and lack of loan facility whereas high cost of concentrates as the constraint by 56.44; of the respondents. As regards technical constraints, majority of the respondents (68.00;) have stated their constraint as inadequate knowledge of diseases, their prevention and control while 56.89; have referred their constraint as non-availability of veterinary services.

L01 Animal Husbandry

0002. Bidwe, K.U.; Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola (India). Department of Animal Husbandry and Dairying; Chavan, S.D.; Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola (India). Department of Animal Husbandry and Dairying; Nage, S.P.; Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola (India). Department of Animal Husbandry and Dairying; Bansod, P.H.; Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola (India). Department of Animal Husbandry and Dairying. Economic Productive Characters of Buffaloes in Relation to Management Index. Veterinary World (India). (Mar 2009) v. 2(3) p.98-99 KEYWORDS: LIVESTOCK MANAGEMENT. ANIMAL HUSBANDRY. AGRICULTURAL ECONOMICS. MILK PRODUCTION.
On the basis of individual indices, the productive characters of buffaloes was formulated and it was noticed that the dairy farmers had fair management index (between 71 to 80%). As regards quantity and quality of milk it was noticed that the milk yield was 5.27, 6.21 and 7.2 kg in group I, II and III respectively. The corresponding fat and SNF contents of milk were 6.17 and 8.75, 6.8 and 8.8 and 7.2 and 9.0% respectively. It was also noticed that the level of management influenced the production in buffaloes. The production under satisfactory management status was 3 to 4, 4 to 5 and 5 to 7 kg under satisfactory, fair and good management index while it was 10 to 14 kg under very good management index. The milk produced by the buffaloes under all the three herd size groups was meeting out the fat content standard according to PFA rules prescribed for Maharashtra but the milk produced under herd size group I and II did not meet out the standards prescribed for SNF content.

0003. Bidwe, K.U.; Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola (India).Department of Animal Husbandry and Dairying; Chavan, S.D.; Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola (India).Department of Animal Husbandry and Dairying; Nage, S.P.; Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola (India).Department of Animal Husbandry and Dairying; Bansod, P.H.; Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola

(India).Department of Animal Husbandry and Dairying. Path Coefficient Analysis of Buffalo Production in Buldana District of Maharashtra. Veterinary World (India). (Mar 2009) v. 2(3) p.103-104 KEYWORDS: WATER BUFFALOES. STATISTICAL METHODS. ANIMAL PRODUCTION. MILK PRODUCTION. ANIMAL FEEDING. ANIMAL HOUSING.

To ascertain the technological changes in term of breeding, feeding, housing, milking and calf management practices of buffalo. The path coefficient analysis of this study clearly demonstrated that daily milk production in buffaloes was influenced substantially by a single factor i.e management index. A combination of all the management practices in the form of overall management status on the rearing were responsible to influence the daily milk yield. However, rearing of good potential animals, feeding of sufficient amounts of dry and green fodder with required amount of concentrates to fulfill the nutritional requirements could favour the milk production in buffaloes. All these factors exhibited positive direct effect on milk production. The indirect effects were also found in positive direction, resulting a positive significant correlation for these factors.

0004. Sawaimul, A.D.; M.A.F.S.U., Nagpur (India).Nagpur Veterinary College, Department of Animal Genetic and Breeding. Ghule, S.S.; M.A.F.S.U., Nagpur (India). Nagpur Veterinary College, Department of Animal Genetic and Breeding. Ali, S.Z.; M.A.F.S.U., Nagpur (India).Nagpur Veterinary College, Department of Animal Genetic and Breeding. Sahare, M.G.; M.A.F.S.U., Nagpur (India). Nagpur Veterinary College, Department of Animal Genetic and Breeding. Patil, L.V.; M.A.F.S.U., Nagpur (India).Nagpur Veterinary College, Department of Animal Genetic and Breeding. Preference for breed and feeding practices for dog rearing in Nagpur city of Maharashtra. Veterinary World (India). (Mar 2009) v. 2(3) p.109-110 KEYWORDS: DOGS. ANIMAL HUSBANDRY. ANIMAL FEEDING. MAHARASHTRA.

The present investigation was carried out to study, preference of breeds and feeding practices for dog rearing in Nagpur of Maharashtra. The result reveled that German shepherd is the most popular followed by Great Dane. Mostly mix feeding for 2 and 3 times daily was practiced in the city. Vaccination of dog found to be a routine practice, in city.

0005. Shankar, B.P.; KVAFSU, Bangalore (India).Veterinary College Madhusudhan, H.S.; KVAFSU, Bangalore (India).Veterinary College Harish, D.B.; KVAFSU, Bangalore (India).Veterinary College. Human Safety in Veterinary Microbiology Laboratory. Veterinary World (India). (Mar 2009) v. 2(3) p.113-117 KEYWORDS: VETERINARY SERVICES. LABORATORIES. SAFETY AT WORK.

Laboratory work should be carried out with a minimum of risk to the health of the staff working in laboratory. This requires careful consideration of the risks involved in a particular procedure, followed by appropriate measures to minimise the risk of human disease. This concerned exclusively with risks from infectious agents, but physical and chemical injuries in microbiology laboratories must also be prevented. Risks from infection are reduced by good laboratory techniques and secured facilities which aid in the containment of pathogens. It is important to understand that containment of pathogens can be used for preventing disease in humans and animals. Often the same methods of containment are used for both preventing laboratory-acquired infection in humans and for preventing escape of pathogens that could cause an outbreak of animal disease. Although the methods, techniques and facilities required may be the same, the list of pathogens and categorization into levels of risk will differ depending on whether it is human or animal disease control that is the primary objective. Existing national and international reference laboratories have considerable experience in the operation of safe working practices and provision of appropriate facilities. When new laboratories are being established, it would be prudent to seek advice from the competent authorities at established institutes and it is important to comply with legislative requirements.

0006. Gandhi, R.S.; National Dairy Research Institute, Karnal (India) RAJA, T.V.; National Dairy Research Institute, Karnal (India). Ruhil, A.P.; National Dairy Research Institute, Karnal (India)Amit Kumar; India Veterinary Research Institute, Izatnagar (India). Animal Genetics Division. Prediction of lifetime milk production using artificial neural network in Sahiwal cattle. Indian Journal of Animal Sciences (India). (Oct 2009) v. 79(10) p. 1038-1040 KEYWORDS: LACTATION DURATION. MILK YIELD. MILK PERFORMANCE. DAIRY CATTLE. STATISTICAL METHODS.

First lactation records (1493) of Sahiwal cows spread over a period of 40 years (1966–2005) were used to predict lifetime milk production. Data were divided into two sets namely training set (1120 records) and test set (373 records) to compare the accuracy of prediction for lifetime milk production from artificial neural network and multiple regression analysis. The traits considered were age at first calving (AFC), first lactation 305-day or less milk yield (FL305DMY), first lactation length (FLL), first service period (FSP) and first dry period (FDP). The accuracy of prediction of lifetime production from multiple regression analysis was 25.92% from the training set when all the 5 traits were incorporated in the equation, while it was 28.09% for the test data set. An equation incorporating AFC, FL305DMY and FLL was considered to be optimum with an accuracy of prediction of 25.62% for training data set and 27.00% for test data set. The R2– values for prediction the lifetime production by artificial neural networks from training and test set data were 29.81% and 28.88%, respectively; while for optimum equation the corresponding values were 30.04% and 27.78%, respectively. Further, the root mean square errors of prediction were also lower from artificial neural networks in comparison to multiple regression analysis for all prediction equations developed. Higher estimates of accuracy of prediction of lifetime milk yield from artificial neural networks in comparison to multiple regression analysis from overall and optimum equations in both the data sets revealed that this methodology can be used as an alternate approach to predict lifetime milk production in Sahiwal cattle.

0007. Amit Kumar; National Dairy Research Institute, Karnal (India) Gandhi, R. S.; National Dairy Research Institute, Karnal (India).Haile, Aynalem; National Dairy Research Institute, Karnal (India). Estimation of variance components for milk yield of sahiwal cattle using repeatability animal models. Indian Journal of Animal Sciences (India). (Oct 2009) v. 79(10) p. 1041-1044 KEYWORDS: DAIRY CATTLE. ANIMAL MODELS. LACTATION. MILK YIELD. MILK PERFORMANCE.

Estimates of variance components and genetic parameters for lactation milk yield (LMY) were obtained using single-trait 4 different repeatability animal models based on algorithm of derivative free restricted maximum likelihood (DFREML). These repeatability animal models include; the simple animal model (AM I), animal model with sire×herd interaction effect (AM II), animal model with maternal effect (AM III) and animal model with sire×herd interaction effect and maternal effect (AM IV). The data included 3226 first five lactation records of 1223 cows sired by 45 sires and calved between 1968 and 2006. Using AM I, AM II, AM III and AM IV the direct estimates of heritabilities for lactation milk yield were 0.434, 0.359, 0.357 and 0.315, respectively. Sire×herd interaction explained 8.8% and 8.2% of total variation in LMY using AM II and AM IV, respectively whereas maternal effects explained 7.2% and 4.4% of total variation in LMY using AM III and AM IV, respectively. The results indicated that along with direct genetic effects, both sire by herd interaction effects and maternal effects should be included in a selection programme for lactation milk yield. The impact of interaction effects was more significant and consistent. Although, all the animal models had almost equal efficiency (99%) and accuracy (Log L value) but AM IV helped in proper partitioning of additive genetic variance and prevented the inflation of direct estimate of heritability by keeping almost fixed magnitude of error variance. Cows at Karnal herd had highest LMY (2078.89 kg) whereas cows at Lucknow herd had lowest LMY (1441.83 kg).

0008. Patel, M.; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India).Sharma, R. J.; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India)Kumar, A.; Govind Ballabh

Pant University of Agriculture and Technology, Pantnagar (India).Tiwari, D. P.; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India).Prabakaran, P.; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India)Panja, Anindita; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India). Effect on carcass characteristics of pigs fed with different level of jaggery filter cake alongwith concentrate. Indian Journal of Animal Sciences (India). (Oct 2009) v. 79(10) p. 1054-57 KEYWORDS: SWINE. CARCASSES. CARCASS COMPOSITION. CONCENTRATES. FEED CONSUMPTION. FILTRATION. AGRICULTURAL WASTES.

Farmers often feed Jaggery filter cake (scum/maili) to pigs in sugarcane belt during winter. Jaggery filter cake (JFC) is a good unconventional source of energy as well as minerals. Thus, present study was carried out to study the effect of different levels of JFC feeding on carcass traits in pigs. An experiment was designed using 30 large White Yorkshire piglets (3.5 month old), randomly divided and maintained on 5 dietary treatment groups, viz. group 1:concentrate only, group 2: concentrage + 250g JFC, group 3: concentrate + 500g JFC, group 4: concentrate + 750g JFC and group 5: ad lib. JFC only. Jaggery filter cake supplementation was increased in the ratio of 50:100:150 g in groups 2, 3, 4 respectively, every fortnight during growing stage and every week during finishing stage. Three animals from each group were slaughtered for carcass traits. Highly significant difference was observed in dressed carcass weight between group 5 and other treatment groups. However, no significant difference was found between group 1 to 4. The dressing % was nonsignificant between different treatment groups. The maximum carcass length was observed in group 2 followed by group 4, 1, 3 and 5. There was a significant difference in carcass length between group 5 and others. Supplementation of JFC alongwith concentrate increased the back fat thickness, whereas on sole feeding of JFC, the back fat thickness was reduced. Sole feeding of JFC reduced the loin eye area. However, back fat at 10th rib did not show any particular trend. Back fat thickness at 10th rib was almost same in all groups except group 4 which differed significantly from others. Addition of JFC reduced the percentage of boston butt, picnic shoulder and ham. Maximum edible offal weight was recorded in group 2 followed by group 4, 3, 1 and 5. It can be concluded that supplementation of JFC with concentrate improved the carcass traits.

0009. Murugan, M.; College of Veterinary and Animal Sciences, Mannuthy (India);Mathew, J.; College of Veterinary and Animal Sciences, Mannuthy (India);Sivakumar, T.; College of Veterinary and Animal Sciences, Mannuthy (India);Gnanaraj, P. Tensingh; College of Veterinary and Animal Sciences, Mannuthy (India). Effect of different feeding system on the performance of crossbred pigs. Indian Journal of Animal Sciences (India). (Oct 2009) v. 79(10) p. 1058-60 KEYWORDS: SWINE. ANIMAL FEEDING. LIVESTOCK MANAGEMENT. CARCASS COMPOSITION. GROWTH RATE.

A growth trial was conducted to evaluate the performance of Duroc×(Landrace×desi) pigs under different feeding systems. Weaned piglets (24) were selected at random and they were divided into 4 groups comprising 6 animals each. First group (T1) was maintained on farm concentrate. Piglets belonging to T2, T3 and T4 were fed with swill feed. In addition to this, T3 and T4 group were supplemented with inorganic and organic minerals 1% level on dry matter basis respectively. There was no significant difference in monthly body weights, body measurements, ADG and average daily feed intake between T1 and T2. T4 was significantly better than other treatment groups. Feed efficiency was significantly better on T1 and lower on T2, T3 and T4. T4 attained significantly higher slaughter weight, hot carcass weight and carcass length than the other treatment groups. T3 group attained significantly higher slaughter weight, hot carcass weight and carcass length than the T2 and T1 treatment groups. No significant difference between T1 and T2 was noticed. T1 had significantly higher dressing percentage; lesser back fat thickness and gut weight than other treatment groups. There was no significant difference between T2, T3 and T4 in dressing percentage and back fat thickness. T2 had significantly lesser loin eye area and meat-bone ratio than other treatment groups.It was concluded that swill feed was found to be equally effective compared to concentrate feed in promoting growth of the fattener pig production existing under field conditions. Carcass characteristics and growth can be improved by supplementation of minerals in the diet of fattener pigs.

0010. Akila, N.; Indian Veterinary Research Institute, Izatnagar (India). Mahesh Chander; Indian Veterinary Research Institute, Izatnagar (India). Utilization pattern of draught bullocks by different categories of farmers in Tamil Nadu. Indian Journal of Animal Sciences (India). (Oct 2009) v. 79(10) p. 1061-65 KEYWORDS: BULLOCKS. DRAUGHT ANIMALS. ANIMAL HUSBANDRY. TAMIL NADU.
The extent of dependence of farmers on bullocks, for farming and other activities was assessed in the 7 agro-climatic zones of Tamil Nadu by selecting 1 district from each zone, with the sample of 210 (70 small, 70 medium and 70 large) farmers. The results indicated that 91.43% large farmers and 40% of the medium farmers maintained the animals mainly for their own use. Whereas, the small farmers utilized their bullocks for ploughing in others’ field (28.57%), commercial carting (25.71%) and for both the activities (45.71%), while 35.71% of medium farmers were using their bullocks for commercial carting apart from their own use. The overall average number of days of utilization in agriculture was 36.28 days. The average working days for small farmers were 220.54 days, 156.16 days for medium farmers and 46.61 days for large farmers. The study indicates that still draught bullocks are a main source of farm power for small farmers, to certain extent for medium farmers and for certain operation with large farmers.

0011. Samantray, K. C.; Orissa University of Agriculture and Technology, Bhubaneshwar (India);Rao, P. K.; Orissa University of Agriculture and Technology, Bhubaneshwar (India);Panda, P.; Orissa University of Agriculture and Technology, Bhubaneshwar (India);Dash, S. K.; Orissa University of Agriculture and Technology, Bhubaneshwar (India). Ghumusar cattle–an indigenous germplasm of Ghumusar tehsil in Ganjam district of Orissa. Indian Journal of Animal Sciences (India). (Oct 2009) v. 79(10) p. 1069-70 KEYWORDS: CATTLE. LAND RACES. GERMPLASM. DRAUGHT ANIMALS. BODY WEIGHT. ORISSA.
The native tract of Ghumusar cattle is Ghumusar tehsil of Ganjam district of Orissa, where these cattle population stand as a dependable source of draught power and milk for the resource poor farmers since generations. Ghumusar cattle are usually medium in size compared to other contemporaries in different parts of the state; thrive on grazing alone, very hardy and well adapted to harsh climatic conditions of this region. In view of the important contribution of Ghumusar cattle in the agriculture (rainfed) dominated district, a detailed study of this important indigenous germplasm in its home tract was undertaken.

0012. Mishra, A.K.; Central Sheep and Wool Research Institute, Avikanagar (India). Arora, A.L.; Central Sheep and Wool Research Institute, Avikanagar (India). Prince, L.L.L.; Central Sheep and Wool Research Institute, Avikanagar (India). Gowane, G.R.; Central Sheep and Wool Research Institute, Avikanagar (India). Kumar. S.; Project Directorate on cattle, Meerut (India). Lifetime litter size and ewes productivity efficiency of Garole×Malpura crossbred sheep. Indian Journal of Animal Sciences (India). (Oct 2009) v. 79(10) p. 1075-77 KEYWORDS: SHEEP. CROSSBREDS. LITTER SIZE. ANIMAL PERFORMANCE.
The prolific Garole sheep was crossed with nonprolific Malpura sheep. To evaluate the lifetime (7 years of age) litter size (LLS), number of lambs weaned (LLW) and ewe’s productivity efficiency (LEPE) in Garole×Malpura (GM) crossbred sheep. The majority (53.49%) of GM ewes completed 5 or more parity as against 45.75% of Malpura ewes in their life span. The GM ewes resulted in 67.76 and 54.63% higher LLS and LLW, respectively compared to Malpura. The GM ewes weaned 10.65% higher total litter weight as compared to Malpura ewes and at 12 months age the difference was 13.19% in favour of GM ewes. The study indicated that the LLS, LLW and LEPE of GM ewes were comparatively higher than that of Malpura.

0013. Sharma, M. C.; Central Institute for Research on Goats; Makhdoom (India)Joshi, C.; Government PG College, Dwarahat, (India). Das, G.; Central Agricultural University, Aizawl (India) Tiwari, R.; Indian Veterinary

Research Institute, Izatnagar, (India). Micronutrient status in soil, fodder, serum and haematobiochemical profile in some districts of central Uttar Pradesh . Indian Journal of Animal Sciences (India). (Oct 2009) v. 79(10) p. 1083–1086 KEYWORDS: WATER BUFFALOES. TRACE ELEMENTS. SOIL ANALYSIS. BLOOD COMPOSITION.
A survey was conducted to assess the serum mineral, haemato-biochemical, hormone and vitamin status in buffaloes in some districts of Central Uttar Pradesh. It was observed that the mainly Ca, Mg and P, Cu and Zn were deficient and below the critical levels. Haemoto-biochemical profile showed significant decrease in Hb, TEC, while the values of TLC were slightly higher in deficient buffaloes. The values of serum enzymes, viz. serum aspirate aminotransferase, serum alanine aminotransferase and ceruloplasmin were lower, whereas that of serum alkaline phosphatase was higher. The values of thyroxine hormone (T3 and T4) and vitamin (A and E) were significantly lower in mineral deficient animals. It is concluded that the mineral deficient animals should be substituted by specific minerals for optimum production.

0014. Suman, C.L.; Indian Veterinary Research Institute, Izatnagar (India). Agricultural Research Information System Cell. Lactation trend of milk solid-not-fat in two-breed crosses of cattle at an organized farm. Indian Journal of Animal Research (India). (Mar 2009) v. 43(1) KEYWORDS: CATTLE. CROSSBREDS. LACTATION.
The milk solid-not-fat (SNF) averaged to 8.54±0.01, 8.50±0.01 and 8.65±0.02 per cent respectively in Holstein Friesian x Hariana (FH), Brown Swiss x Hariana (BH) and Jersey x Hariana (JH) crosses of cattle and showed significant (P0.01) effect of month of lactation and season of calving. The observed trend revealed that milk SNF decreased successively after calving to its lowest levels during fifth month and increased thereafter at subsequent months of lactation in two-breed crosses of cattle. The gamma type function in FH and JH groups and quadratic function in BH group were adjudged as best representative nonlinear models explaining lactation trend of milk SNF in two-breed crosses of cattle. The fitted models to least squares means at ten monthly points of lactation described the decreasing trend of milk SNF after calving to lowest levels of 8.40, 8.34 and 8.52 percent at 4.36, 5.78 and 4.89 months of lactation in FH, BH and JH groups respectively and increasing trend thereafter during the lactation in close agreement to its observed trend in two-breed crosses of cattle.

0015. Mohapatra,A.K.; OUAT, Bhubaneswar (India) College of Agricultural Engineering and Technology.; Behera, D.; College of Agricultural Engineering and Technology.; Behra, B.K.; College of Agricultural Engineering and Technology.; Swain,S.; College of Agricultural Engineering and Technology. Goel, A.K. College of Agricultural Engineering and Technology. Effect of dietary energy levels on power output of bullocks in summer season. Indian Journal of Animal Research (India). (Mar 2009) v. 43(1) KEYWORDS: BULLOCKS. ANIMAL POWER. ANIMAL FEEDING. NUTRITIVE VALUE.
Experiments were conducted to find out the effect of energy content of the feed on power output of medium size bullocks in summer season at a draft load of 10% of their body weight. The bodyweight of the bullock pair was 610 kg. Three types of feeds were formulated having metabolizable energy values of 7.25, 8.43 and 9.57 Mcal, which were referred as Feed-I, Feed-II and Feed-III, respectively. Each feed was given to the bullocks for twenty-one days and then they were put to draftability tests. The results indicated that the bullocks got fatigue after 4th hour of work in Feed-I and were on the threshold fatigue limit of 20 in Feed-II. The bullocks sustained the draft load in Feed-III through out the working hours. The average power output was 0.437, 0.444 and 0.449 kW in case of Feed-I, Feed-II and Feed-III respectively. The power output of the bullocks was increased by 1.6 and 2.75% respectively in Feed-II and III over that of Feed-I (farmer's practice). Feed-III with metabolizable energy content of 9.57 Mcal may be recommended for the medium size bullocks to work sustainably in summer season.

0016. Murugan, M.; College of Veterinary and Animal Sciences, Mannuthy (India).Department of Livestock Production Management. Mathew, Joseph; College of Veterinary and Animal Sciences, Mannuthy (India).Department of Livestock Production Management.;Saseendran, P.C.; College of Veterinary and Animal Sciences, Mannuthy (India).Department of Livestock Production Management. Xavier, Francis; College of Veterinary and Animal Sciences, Mannuthy (India).Department of Livestock Production Management.; Kannan,A.; College of Veterinary and Animal Sciences, Mannuthy (India).Department of Livestock Production Management. Growth and carcass traits of duroc x (Large White Yorkhsire x Landrace) pigs under different feeding regimes. Indian Journal of Animal Research (India). (Mar 2009) v. 43(1) KEYWORDS: SWINE. CARCASS COMPOSITION. GROWTH RATE. FEEDING LEVEL.

An experiment was conducted to assess the growth performance and carcass traits of Duroc x (Large White Yorkshire x Landrace) pigs under different feeding regimes. Twenty four weaned piglets were divided into four groups of six animals each. First group (T1) was maintained on farm concentrate. Piglets belonging to T2, T3 and T4 were fed with swill feed. In addition to this, T3 and T4 group were supplemented with inorganic and organic minerals @ 1% of dry matter, respectively. There was no significant difference in monthly body weights, body measurements, ADG and average daily feed intake between T1 and T2. T4 was significantly ($P<0.01$) better than others. There was significant ($P<0.01$) difference in feed efficiency between T1 and T2. T4 attained significantly ($P<0.01$) higher slaughter weight, hot carcass weight and carcass length than other treatment groups followed by T3, T2 and T1. T1 had significantly ($P<0.01$) higher dressing percentage; lesser back fat thickness and gut weight than other treatment groups. T2 had significantly ($P<0.01$) lesser loin eye area and meat-bone ratio than other treatment groups. It was found that swill feed was equally effective compared to concentrate feed in promoting growth of fattener pigs. Carcass characteristics and growth promotion could be improved by supplementation of minerals in the diet of fattener pigs.

0017. Devendran, P.; Veterinary College and Research Institute, Namakkal (India). Department of Animal Genetics and Breeding Gajendran, K.; Veterinary College and Research Institute, Namakkal (India). Department of Animal Genetics and BreedingCauveri, D.; Veterinary College and Research Institute, Namakkal (India). Department of Animal Genetics and Breeding. Growth rate of Madras Red sheep in farmers’ flocks. Indian Journal of Animal Research (India). (Mar 2009) v. 43(1) KEYWORDS: SHEEP. BREEDS (ANIMALS). HERITABILITY. GROWTH RATE.

The absolute growth rate (Average Daily Gain) of Madras Red sheep at different stages of growth from birth to 12 months was analyzed and the influence of non-genetic factors on them was assessed. The mean absolute growth rate for birth-3 months, 3–6, 6–9 and 9–12 months were 73.74 ± 0.14, 60.17 ± 0.27, 42.39 ± 0.20 and 23.81 ± 0.31 g respectively. The average pre-weaning growth rate was high and reduced progressively at post-weaning. The lambs born in off-season grew faster than main-season lambs and males grew faster than females at all stages of growth. The significant influence of ram and ewe weight at lambing was also observed. The heritability estimates of absolute growth rate computed by paternal half-sib analysis indicated the scope for improvement through selection.

0018. Bidwe, K.U.; Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola (India).Department of Animal Husbandry and Dairying.; Padghan, P.V.; Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola (India).Department of Animal Husbandry and Dairying.; Chavan, S.D.; Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola (India).Department of Animal Husbandry and Dairying. Studies on feeding management practices followed by the buffalo owners of Buldana district of Maharashtra. Indian Journal of Animal Research (India). (Mar 2009) v. 43(1) KEYWORDS: FEEDING SYSTEMS. GRAZING SYSTEMS. INDIVIDUAL FEEDING. RESTRICTED FEEDING. MAHARASHTRA.

A study was undertaken to ascertain the feeding status of the buffalo owners of Buldana district, the results indicate that majority of the farmers from group I (1 buffalo) and group II (2 to 3 buffaloes) followed grazing animals throughout the day, while group III (4 and above buffaloes) adopted grazing for limited period

followed by stall feeding. Farmers of all three groups adopted the practice of feeding cereal legume straw mixture to buffaloes and hundred per cent farmers from all three groups fed cotton cake as concentrate to buffaloes. Nearly 95.56, 82.96 and 76.43 per cent farmers from group I, II and III respectively had poor feeding management status. Practically none of the dairy farmers achieved very good status of feeding. Feeding status indicated that the buffaloes received 6.28, 0.434 and 3.84 kg of DM, DCP and TDN respectively for producing 5.27 kg of milk with 6.2 per cent fat in group I, while buffaloes form group II and III received 7.77 and 8.23, 0.510 and 0.660, 4.31 and 4.98 kg DM, DCP and TDN for producing 6.21 and 7.2 kg milk with 6.8 and 7.2 per cent fat respectively.

0019. Bidwe, K.U.; Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola (India).Department of Animal Husbandry and Dairying Chavan,S.D.; Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola (India).Department of Animal Husbandry and Dairying Padghan,P.V.; Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola (India).Department of Animal Husbandry and Dairying. Studies on breeding management practices followed by the buffalo owners of Buldana district of Maharashtra. Indian Journal of Animal Research (India). (Mar 2009) v. 43(1) KEYWORDS: WATER BUFFALOES. FARMERS. BREEDING METHODS. ANIMAL HUSBANDRY METHODS. MAHARASHTRA.
The study on breeding management practices followed by the buffalo owners of Buldana district revealed that rearing of purchased non-descript buffaloes was done by 90, 78.98 and 88.24 per cent farmers from group I, II and III respectively. None of the dairy farmers adopted A.I technique; however 90 to 99 per cent farmers had knowledge of detection of heat in buffaloes. Nearly 10 per cent farmers had no mortality on their farms. Majority of the dairy farmers i.e 56.60 and 60.22 per cent from group I and II respectively had poor breeding management index i.e below 71–80 per cent.

0020. Panda, A.K.; Project Directorate on Poultry, Hyderabad (India) Raju, M.V.L.N.; Project Directorate on Poultry, Hyderabad (India)Rama Rao, S.V.; Project Directorate on Poultry, Hyderabad (India)Shyam Sunder, G.; Project Directorate on Poultry, Hyderabad (India)Reddy, M.R.; Project Directorate on Poultry, Hyderabad (India). Effect of Post-Hatch Feed Deprivation on Growth, Immune Organ Development and Immune Competence in Broiler Chickens. Animal Nutrition and Feed Technology (India). (Jan 2010) v. 10(1) p. 9-17 KEYWORDS: BROILER CHICKENS. STARVATION. WEIGHT GAIN. IMMUNE RESPONSE.
The effect of post hatch feed deprivation on growth, immune organ development and immune competence was studied in broiler chickens. A total of 240 broiler chicks hatched with in a period of 8h were transported to the rearing site within 30 minutes of hatch. The body weight of chicks (41.33±0.24 g) were measured individually and randomly distributed into 4 groups of 60 chicks each with 6 replicates in each group. The treatments included accessed to feed at 0, 12, 24 and 48h post hatching. All the chicks were reared in battery brooder cages under uniform managemental conditions. The body weight gain during 0-7, 0-21 and 0-42 d were significantly lower in the chicks those were deprived of for 48h of hatch compared to the other groups. Feed conversion ratio and mortality was not affected by the duration of post hatch feed deprivation. The development of both bursa and spleen, and cell mediated (LPR) and humoral (SRBC and ND tires) immune responses were affected due to feed deprivation during initial 24h of hatch. Feed deprivation for more duration i.e. 48h after hatch further reduced the immune response. The findings of the present study thus suggested that feed deprivation for 48h after hatch had negative effect on growth; however, feed deprivation for 24h had adverse effect on development of immune system as well as immune competence in broilers.

0021. Kumar, S.; Birsa Agricultural University, Ranchi (India).Ranchi Veterinary College. Department of Animal Nutrition.; Sinha, A.P.; Birsa Agricultural University, Ranchi (India).Ranchi Veterinary College. Department of Animal Nutrition.; Thakur, S.; Birsa Agricultural University, Ranchi (India).Ranchi Veterinary College. Department of Animal Nutrition.; Singh, R.N.; Birsa Agricultural University, Ranchi (India).Ranchi Veterinary

College. Department of Animal Nutrition Singh, S.K.; Birsa Agricultural University, Ranchi (India).Ranchi Veterinary College. Department of Animal Nutrition. Growth Performance of Indigenous Pigs Reared on Kitchen Waste. Animal Nutrition and Feed Technology (India). (Jan 2010) v. 10(1) p. 139-142 KEYWORDS: SWINE. GROWTH RATE. FOOD WASTES. FEEDING.
The study was conducted on 45 weaned indigenous pigs of 2 to 3 month (B.W. 7.55±0.07 kg) divided into 5 equal groups (2 male and 7 female) and maintained on standard grower ration as per NRC (1988). The control ration (T1) was replaced with kitchen waste at 75 per cent level in T2, kitchen waste and rice fermented waste (1:1) combined at 75 per cent in T3, kitchen waste at 100 per cent level in T4, kitchen waste and rice fermented waste (1:1) combined at 100 per cent level in T5 group in a 238 day feeding trial. Pigs fed kitchen waste (T4) as sole feed achieved highest daily weight gain compared to pigs in other groups. The feed intake was almost similar among the five groups but feed conversion efficiency was significantly (p0.05) better in kitchen waste fed group (T4) as compared to groups T3, T5 and T1. Cost of feed (Rs.) per kg gain in body weight was minimum (25.24) in T5 followed by T4 (28.56), T3 (34.50), T2 (36.61) and maximum (61.95) in T1 group. Reduction of cost against the control diet was also highest in T5 (59.26%) followed by T4 (53.90%), T3 (44.31 %) and T2 (40.90%), respectively. It was concluded that replacement of concentrate mixture with kitchen waste as well as kitchen and rice fermented waste increased the growth performance of pigs and thereby reduced the cost of feeding.

0022. Dixit, V.B.; Central Institute for Research on Buffaloes, Hisar Bharadwaj, A.; Central Institute for Research on Buffaloes, Hisar.; Sharma. R.K.; Central Institute for Research on Buffaloes, Hisar.; Sethi, R.K.; Central Institute for Research on Buffaloes, Hisar. Impact of technological interventions on buffalo based farming systems. Indian Journal of Animal Sciences (India). (Jan 2010) v. 80(1) p. 63-66 KEYWORDS: WATER BUFFALOES. DAIRY FARMS. FAMILY FARMS. INNOVATION. TECHNOLOGY TRANSFER.
The study was conducted in 4 adopted villages of the institute and 200 respondents constituted the study sample. The sample had 100 adopters and 100 non-adopters of different technological interventions. A new approach was followed to identify different farming systems on the basis of buffalo herd size and land holding size. By taking into account these 2 criteria simultaneously, 9 groups of farming system were identified. Out of 9, only 3 groups of farming systems were having orientation towards dairy with buffalo as main enterprise. Three new technological interventions, viz artificial insemination, area specific mineral mixture and balanced feeding were introduced and their impact was examined. The study indicated that adopters differed significantly with regard to their attitude, knowledge and adoption about these 3 innovations from non-adopters. The study also revealed that buffalo oriented farming systems differed significantly with regard to their attitude, knowledge and adoption about these interventions than other farming systems merged together.

0023. Mehta, S.C.; National Research Centre on Camel, Bikaner (India) Bapna, D.L.; National Research Centre on Camel, Bikaner (India).;Bhure, S.K.; National Research Centre on Camel, Bikaner (India). Mathematical functions for the prediction of growth in Indian dromedary genotypes. Indian Journal of Animal Sciences (India). (Feb 2010) v. 80(2) p. 148-151 KEYWORDS: CAMELS. GENOTYPES. GROWTH RATE. GROWTH. MATHEMATICS. STATISTICAL METHODS. INDIA.
Growth of Bikaneri, Jaisalmeri, Kachchhi and Arabcross (Arab×Bikaneri) camels from birth to 20 years of age was analyzed for the year 1984 to 2005. The average annual body weights in the Indian dromedary were recorded as 37.1±0.3, 208.6±2.2, 269.1±3.5, 346.1±4.3, 403.4±4.3, 460.2±6.6, 510.2±7.4, 541.8±7.7, 569.8±8.3, 576.0±9.0, 575.9±9.4, 585.7±9.8, 569.8±9.6, 571.0±11.2, 566.5±11.2, 569.7±12.4, 547.6±12.3, 576.2±13.9, 569.8±16.6, 558.9±16.6 and 548.0±18.4 kg, respectively from birth to 20 years of age. The male sex was differentiated from the female sex at 24 months of age but the genetic groups were nonsignificantly different from each other except the Arabcross camels at some stages. It was observed that the camels attain their

adult weight at 8 years of age but the growth phase continues up to 11 years of age. The linear, quadratic, cubic, exponential and Gompertz functions were derived to explain the age, weight relationship in Indian dromedary genotypes and the respective R2 values were 0.661, 0.964, 0.994, 0.45 and 0.967. It is quite evident from the analysis that the cubic function explains the growth of camel for the entire life time to the extent of 99.4%, hence the cubic equation Y = 73.2592 + 9.9072X– 0.0631X2 + 0.000128 X3 can be utilized for the estimation of body weight of camels of different sexes and genetic groups.

0024. Nagamani, B.; College of Veterinary Science, Rajendranagar (India). Department of Pathology,Kumar, A. Anand; College of Veterinary Science, Rajendranagar (India). Department of Pathology,. Cytological and bacteriological studies of lymph nodes of slaughtered sheep in and around Hyderabad. Indian Journal of Veterinary Pathology (India). (Jun 2009) v.33(1) p.103-104 KEYWORDS: CYTOLOGY. BACTERIOLOGY. LYMPHATIC SYSTEM. SLAUGHTERING. SHEEP. LYMPH.
Lymph nodes in sheep brought for slaughter in and around Hyderabad were analysed on the basis of bacteriological and cytological examinations. Of 2266 lymph nodes collected, 247 (10.90%) lymph nodes were found to be abnormal and in the impression smears the kind of cells observed included plasma cells, mast cells, neutrophils, red blood cells, lymphoblasts, epithelioid cells, eosinophils, bipolar organisms and acid–fast bacilli in 26, 20, 11, 18, 20, 11, 23, 8 and 5 cases respectively and 56 (22.67%) lymph nodes were positive in bacterial culture and smear examination. Mycobacterium sp. (5 cases), Pseudomonas sp. (1), Pasteurella sp. (8), E.coli (37) and Staphylococcus aureus (5) were identified both by cultural isolation and cytological smear examination.

L02 Animal Feeding

0025. Naik, P.K.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India).;Saijpaul, S.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India)Sirohi, A.S.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India) Raquib, M.; SKUAST-K, Srinagar (India). Department of Livestock Production and Management. Lactation response of cross bred dairy cows fed on indigenously prepared rumen protected fat-A field trial. Indian Journal of Animal Sciences (India). (Oct 2009) v. 79(10) p. 1045–1049 KEYWORDS: LACTATION DURATION. DAIRY CATTLE. CROSSBREDS. RUMEN. CONCENTRATES. SUPPLEMENTARY FEEDING.
A field trial was conducted to study the effect of supplementation of an indigenously prepared rumen protected fat (PF) on lactation response in crossbred dairy cows. High yielding multiparous (2nd to 3rd lactation) crossbred cows (15) were randomly divided into 3 groups of 5 animals in each, based on parity, date of parturition and previous lactation milk yield. During early lactation i.e. up to 90 days of post partum period, the animals were offered 6.5 kg CM1, 25 kg green berseem and 2 kg wheat straw (WS) daily. During the mid lactation i.e. from 90 to 150 days post partum period, the feeding schedule was 6.5 kg CM2, 35 kg green maize and 1 kg WS daily. Besides, the animals in 3 groups were randomly supplemented without (control) or with 200 g RBO (RBO200) or 200 g PF (PF200) on fat equivalent basis. The CP and EE contents of the total ration during early (TMR1) and mid (TMR2) lactation were 16.2 and 3.5% , and 14.1 and 3.5%, respectively. In the treatment groups, due to the supplemental fat, the EE content of the TMR1 and TMR2 was 5.2% and 5.0%, respectively. There was consistently higher milk yield (MY) and 4% fat corrected milk yield (FCMY) in the PF200 group over the control and RBO200 group throughout the lactation period. During early lactation, the MY increased 3.2 kg/day (19.6%) and the FCMY increased 2.8 kg/day (22.3%) in the PF200 group over the control group. However, the RBO200 group had no beneficial effect on MY and FCMY over the control group. The milk composition (fat, SNF, protein and lactose) remained similar among the groups, but the total yield of milk fat, SNF and protein was higher in PF200 group over the control. The milk urea nitrogen (MUN)% was similar

among the groups and was within the normal range. During mid lactation, although the MY and FCMY in PF200 group were higher than the control group, it could not pass the statistical test and the RBO200 group had no effect on the MY and FCMY. Besides, both RBO200 and PF200 groups had no effect on the milk composition. The MUN% was also similar among the groups and was within the normal range. In early lactation, the initial, final and changes in body weight (BW) and body condition score (BCS) were similar ($P<0.05$) among the groups. There was initial fall in both BW and BCS in all the groups followed by gradual recovery after the peak yield, however, the recovery of the BW and BCS in RBO200 and PF200 groups was better than the control group. Also, in the mid lactation, the initial, final and changes in BW and BCS were comparable ($P<0.05$) among the groups. The number of artificial inseminations required per conception in PF200 group (1.2) was lower than the RBO200 group (1.4), indicating better reproductive performance. Due to supplementation of the PF, there was net profit of Rs 34.50/cow/day over the control group during early lactation. It was concluded that the daily supplementation of 200 g PF (Ca-LCFA) increased MY (3.2 kg/day; 19.6%) and FCMY (2.8 kg/d; 22.3%) with improved reproductive performance and BCS in cross bred cows over the control group during early lactation, however, the supplementation had no significant beneficial effect in mid lactation.

0026. Bohra, H.C.; Central Arid Zone Research Institute, Jodhpur (India).;Patel, A.K.; Central Arid Zone Research Institute, Jodhpur (India). Kaushish, S.K; Central Arid Zone Research Institute, Jodhpur (India. Palatability, digestibility of various constituents and nitrogen retention in Marwari sheep offered Salicornia bigelovii biomass and Cenchrus ciliaris straw mixed diet. Indian Journal of Animal Sciences (India). (Oct 2009) v. 79(10) p. 1050–1053 KEYWORDS: SHEEP. SALICORNIA. CENCHRUS CILIARIS. STRAW. DIGESTIBILITY. DIGESTIBLE NITROGEN. FEED INTAKE.

Feeding and metabolism trials were conducted to assess palatability of Salicornia bigelovii biomass (SB) and digestibility of its various constituents in sheep. SB (50%) diet was fairly palatable in sheep. When the sheep was offered different diets having SB and Cenchrus ciliaris (CC) straw using cafeteria system, the sheep always preferred the diet that contained minimum level of Salicornia biomass. Daily dry matter intake in SB (75%) and CC diet did not vary. However, daily water intake as well as urine output was considerably high in SB (75%) fed animals due to high sodium chloride content of the SB diet. Dry matter, cell contents and crude protein digestibility of SB (75%) diet was high, whereas, in CC diet the digestibility coefficients for organic matter, cell-wall constituents, acid detergent fibre and hemicelluloses were on the higher side. Incorporation of SB (75%) in CC diet increased salt load, resulted in high water intake. The major advantage of SB incorporation in the CC based diet was seen in the form of high crude protein intake and its digestibility. This was also apparent in the nitrogen balance where the sheep fed on SB (75%) showed a positive (+1.22±0.150 g day–1) nitrogen balance whereas the animals fed on CC alone exhibited a negative balance (–4.71±0.874 g day–1). The findings emanated from this study show the prospects of using Salicornia diet in future for increasing protein status of the animals foraging upon salinity affected desert rangelands.

0027. Jinturkar, A.S.; Marathwada Agricultural University, Parbhani (India). Department of Animal Husbandry and DairyingGujar, B.V.; Marathwada Agricultural University, Parbhani (India). Department of Animal Husbandry and DairyingChauhan, D.S.; Marathwada Agricultural University, Parbhani (India). Department of Animal Husbandry and DairyingPatil, R.A.; Marathwada Agricultural University, Parbhani (India). Department of Animal Husbandry and Dairying. Effect of feeding probiotics on the growth performance and feed conversion efficiency in goat. Indian Journal of Animal Research (India). (Mar 2009) v. 43(1) KEYWORDS: GOATS. PROBIOTICS. FEED ADDITIVES. ANIMAL GROWTH PROMOTERS. GROWTH RATE. FEED CONVERSION EFFICIENCY.

An attempt was made to study the effect of supplementation of Lactobacillus acidophillus and Saccharomyces cerevisiac individually and combination of both to feed, on growth performance and feed conversion

efficiency in goats. Sixteen of similar age and body weight were randomly allotted to four treatments viz, T0: concentrate (without probiotics), T1: 2gm Lactobacillus acidophillus per kg feed, T2: 2gm Saccharomyces Cerevisiac per kg feed, and T3: mixture of 1g Lactobacillus acidophillus + 1g Saccharomyces cerevisiac per kg feed was fed to the Osmanabadi goats. Observations on the body weight gain showed the significant (P0.05) differences among the treatments means. The kids fed under treatment T3 showed higher average daily weight gain (88 gm) over the other treatments, whereas the lowest average daily weight gain was recorded under treatment T0 i.e. control group (26 gm). The mixture of probiotics (T3) was found most effective in reducing the feed requirement, which was only 2.96 kg of weight gain. It is concluded that the use of probiotics either single or in combination was useful for higher weight gain in goats.

0028. Nagalakshmi, D.; Sri Venkateswara Veterinary University, Hyderabad (India). College of Veterinary Science.Department of Animal NutritionNarsimha Reddy, D.; Sri Venkateswara Veterinary University, Hyderabad (India). College of Veterinary Science.Department of Animal Nutrition. Effect of Feeding Expander Extruder Processed Complete Diet Containing Sugarcane Bagasse on Performance of Murrah Buffaloes. Animal Nutrition and Feed Technology (India). (Jan 2010) v. 10(1) p. 1-8 KEYWORDS: WATER BUFFALOES. COMPLETE FEEDS. BAGASSE. SUGAR BYPRODUCTS. EXTRUSION. DIGESTIBILITY.

A complete diet was formulated with sugarcane bagasse as sole roughage source (28.5%) and processed with expander-extruder. The extruded diet was compared with a traditional system of feeding comprising concentrate mixture, ad libitum chopped sorghum straw and limited quantity of green hybrid Napier (10kg/animal/day) in terms of nutrient utilization and milk characteristics in 12 lactating Murrah buffaloes (6 in each group) for 180 days. The buffaloes consumed less (P<0.01) dry matter (DM) per kg metabolic body weight when fed processed complete diet than those fed conventional ration. However, the DM intakes in both the groups were higher than the standard recommended requirements (Kearl, 1982). The water intake/kg DM intake was higher (P<0.01) in expander extruder processed complete diet fed animals. Blending of bagasse with concentrates and expander extruder processing complete diet resulted in higher (P0.01) crude protein digestibility. The digestibility of other nutrients and fibre fractions remained comparable among the groups. The digestible crude protein of complete ration was higher (P<0.05) than the conventional ration. The higher (P<0.01) intakes of total digestible nutrients and metabolizable energy by buffaloes fed conventional ration was a reflection of more roughage consumption (61.9% Vs 28.5%) by these animals. Milk yield, fat corrected milk (FCM) yield, fat and SNF % was similar between both the groups. The DMI/kg FCM production was significantly (P<0.05) lower on processed complete diet compared to conventional diet. The cost of feeding/kg milk production was lower (P0.01) and reduced by 31.53% when expander extruder pellet complete diet containing sugarcane bagasse was fed to animals.

0029. Shakhar, C.; Indian Veterinary Research Institute, Izatnagar (India). Centre of Advanced Studies in Animal Nutrition, Clinical and Pet Nutrition Laboratory.; Pattanaik, A.K.; Indian Veterinary Research Institute, Izatnagar (India). Centre of Advanced Studies in Animal Nutrition, Clinical and Pet Nutrition Laboratory.; Kore, K.B.; Indian Veterinary Research Institute, Izatnagar (India). Centre of Advanced Studies in Animal Nutrition, Clinical and Pet Nutrition Laboratory Sharma, K.; Indian Veterinary Research Institute, Izatnagar (India). Centre of Advanced Studies in Animal Nutrition, Clinical and Pet Nutrition Laboratory. Appraisal of Feeding Practices and Blood Metabolic Profile of Pet Dogs Reared on Homemade Diets. Animal Nutrition and Feed Technology (India). (Jan 2010) v. 10(1) p. 61-73 KEYWORDS: PET ANIMALS. DOGS. FEEDING HABITS. BLOOD COMPOSITION.

A survey was carried out covering 494 pet dogs along with collection of 251 blood samples to gather first-hand information on prevailing feeding practices and its effects on metabolic profile of dogs. Data pertaining to feeding management along with components of their diet were recorded through questionnaire at the time of sample collection to asses its effects on metabolic profile of dogs. Most (~80%) of the dogs surveyed were

reared on homemade diets with about 42% of the population receiving vegetarian diets. There was wide variation in the dietary composition of the homemade diets which comprised of varied combinations of bread, vegetables, meat and egg, however milk was found to be an indispensable part of all the dietary combinations. Commercial pet foods were used mainly to supplement the basal homemade diets and limited to 17.2% dogs. The metabolic profile of the surveyed population revealed wider prevalence of calcium and phosphorus malnutrition. Further, a total of 30.3 and 45.4% of the plasma samples exhibited higher cholesterol and lower blood urea-nitrogen values compared to the respective normal physiological ranges. The metabolic profile of the dogs were interpreted in relation to type and source of diet as well as basal dietary combinations. Overall, the study revealed that homemade diets constitute the mainstay of feeding pet dogs in India, but these diets seem to be nutritionally inadequate and/or imbalanced especially with respect to protein, energy and minerals especially calcium and phosphorus.

0030. Das, K.C.; NRC on Mithun, Jharnapani (India). Prakash,B.; NRC on Mithun, Jharnapani (India). Dutta,P.; NRC on Mithun, Jharnapani (India). Rajkhowa, C.; NRC on Mithun, Jharnapani (India). Performance of Male and Female Mithun (Bos frontalis) Reared in Captivity and Fed Mixed Tree Leaves and Straw Based Ration. Animal Nutrition and Feed Technology (India). (Jan 2010) v. 10(1) p. 75-80 KEYWORDS: BOVINAE. ANIMAL HUSBANDRY METHODS. WEIGHT GAIN. FEEDING. STRAW.
Growth performance, nutrient utilization and some of the biochemical characteristics of rumen liquor and blood of male and female mithun were studied under captive condition. Five nos of each male and female mithun (Bos frontalis) of 1 year age were reared in captivity and fed concentrate mixture, mixed tree leaves and paddy straw to meet nutrient requirement. The tree leaves consisted of temechiedie (Ficus hirta), Pedu (Debrogesia longifolia), thenha (Litsea sps) and thumero (Legroestromea spaciosa). The experiment was continued for 24 weeks of age. The body weight of animals was recorded fortnightly where as DM intake through concentrate and roughage was recorded daily. At the completion of 24 weeks of age, a digestibility trial was conducted to know the digestibility of individual nutrients and nutritive value of the ration. Rumen liquor samples were collected and analysed for pH, TVFA, ammonia N and total nitrogen where as blood was collected and analysed for total protein, albumin and globulin. The average daily gain of male and female mithun was recorded to be 602 g and 554 g respectively. Total DMI per 100 kg body weight was 2.74 and 2.71 for male and female, respectively. There was no significant difference in digestibility of DM, OM, EE, CF and NFE between male and female mithun except CP, NDF and ADF which was higher in male mithun compared to female. The DCP and TDN% of the ration were 8.97, 60.31 and 8.25, 59.63 for male and female respectively. The pH, TVFA (meq/ L), NH3N (mg/100ml) of rumen liquor were 6.27, 132.5 and 12.03 for male and 6.25, 127.8 and 20.20 for female mithun respectively. The NH3N level of rumen liquor in male animal is significantly less compared to female animals. The serum biochemical parameters like serum total protein, albumin and globulin varied from 5.95, 2.50 and 3.45 g/dl for male and 5.80, 2.84, 2.97 g/dl for female respectively. The values of total protein, albumin and globulin of serum did not differ significantly between male and female animals. The present study indicated that mithun can be reared in captivity on tree leaves and straw along with concentrate mixture. There was also difference in the performance of male and female mithun for the above period.

0031. Das, A.; Indian Veterinary Research Institute, Izatnagar (India). Centre for Wildlife. Effect of Different Levels of Concentrate Supplementation on Performance of Sikkim Local Kids Fed Mixed Jungle Grass Based Diet. Animal Nutrition and Feed Technology (India). (Jan 2010) v. 10(1) p. 87-97 KEYWORDS: GOATS. FEEDING.
Fifteen Sikkim local kids of about 9 months of age and average body weight of 16.1±1.19 kg were randomly distributed into three groups of five each in an experiment based on Randomized block design. Mixed jungle grass was offered ad libitum to all the animals. A balanced concentrate mixture was supplemented 0, 0.5 and 1% of BW in groups I, II and III, respectively. As supplementary concentrates did not reduce the consumption

of mixed jungle grass, total dry matter intake (DMI) increased (P<0.05) with increased level of supplementation. Digestibility of CP increased (P<0.05), and that of ADF and hemicellulose decreased (P<0.05) in Group III in comparison to other groups, however, overall digestibility of DM and OM was not significantly different among the groups. Ruminal pH was not significantly different among the groups. However, concentration of rumen ammonia-N, plasma urea nitrogen and blood glucose increased (P<0.01) with increased level of supplementation. The TVFA concentration increased only up to 0.5% level of supplementation. Balance of nitrogen increased (P<0.01) with increased level of supplementation. Average daily gain (ADG) was 23.6, 43.9 and 54.00 g/d in groups I, II and III, respectively. ADG and DMI/kg gain increased only up to 0.5% level of supplementation beyond which there was no further improvement. From the results of this experiment it was concluded that maximum response in terms of feed consumption, nutrient digestibility, balance of nutrients and average daily gain could be obtained in Sikkim local goats when mixed jungle grass is supplemented with concentrate mixture at the rate of 0.5% of body weight.

0032. Dubey, M.; College of Veterinary Science & Animal Husbandry, Durg (India). Department of Animal NutritionMathur, M.M.; College of Veterinary Science & Animal Husbandry, Durg (India). Department of Animal Nutrition.; S.K. Singh,; College of Veterinary Science & Animal Husbandry, Durg (India). Department of Animal Nutrition.; Dubey, D.D.; College of Veterinary Science & Animal Husbandry, Durg (India). Department of Animal NutritionTiwari, S.P.; College of Veterinary Science & Animal Husbandry, Durg (India). Department of Animal Nutrition. Effect of Dietary Replacement of Cereal Maize with Rice Polish on Nutrient Utilization and Laying Performance of White Leg Horn Layers. Animal Nutrition and Feed Technology (India). (Jan 2010) v. 10(1) p. 99-105 KEYWORDS: LAYING PERFORMANCE. RICE POLISHINGS. RICE. MAIZE. FEED CEREALS. NUTRITION PHYSIOLOGY.
To evaluate non-cereal ration for layer birds an experiment was conducted on 72 WLH pullets which were raised on three different dietary treatments i.e. cereal based control (C), non-cereal low energy (NCLE) and non-cereal iso-caloric to control (NCIC) diet from 9 to 20 weeks of age. For present investigation at 20 weeks of age pullets each of the three groups were divided into two equal subgroup and were fed either the C diet or NCLE diet (for C and NCLE group) or C and NCIC diet (for NCIC group). The study was continued up to 40 weeks to see the dietary effect on nutrient utilization and laying performance of the birds. The ME intake of the birds fed on control diet was significantly (P<0.05) high than the birds fed NCLE diet. The birds on NCLE diet though tried to compensate energy deficit best to their capacity but failed to come to the level of the layers fed on C and NCIC diet. Egg production was significantly (P<0.05) low in layers fed on NCLE diet. Feed intake and egg weight did not show any significant (P<0.05) variation. The feed efficiency (kg feed/12 eggs) was significantly (P<0.05) better in pullets fed on C and NCIC diet. Feed consumption in kg/kg egg was significantly (P<0.05) better in pullets fed on C and NCIC diet. No significant effects of dietary treatments were observed on egg quality traits like shape index, yolk index and shell thickness, however, the albumen index of eggs under control group was significantly (P<0.05) higher than other groups. Cost of feed per 12 eggs was significantly (P<0.05) low in control group. It may be concluded that after 20 weeks layers should not be raised on low energy diet, since egg production goes down by over 20%.

0033. Yadav, C.M.; Maharana Pratap university of Agriculture and Technology, Udaipur (India).; Chaudhary, J.L.; Maharana Pratap university of Agriculture and Technology, Udaipur (India). Effect of feeding formaldehyde treated groundnut cake on dry matter intake, digestibilty of nutrients and body measurements in crossbred heifers. Animal Nutrition and Feed Technology (India). (Jan 2010) v. 10(1) p. 107-113 KEYWORDS: HEIFERS. CROSSBREDS. FEEDING. FORMALDEHYDE. GROUNDNUT MEAL. DRY MATTER CONTENT. DIGESTIBILITY. BODY MEASUREMENTS.
Eighteen crossbred heifers were divided into 3 groups of 6 heifers each as uniformly as possible with regard to their age and body weight and maintained on 3 respective isonitrogenous and isocaloric rations. Each animal

in all the groups were fed standard ration, comprising 5 kg green berseem (Trifolium alexandrinum) and wheat (Triticum aestivum) straw ad lib. and in treatment T1 heifers were given untreated GNC, while in treatment T2 and T3 formaldehyde (FA) treated 0.5 g FA/100 g CP and FA treated 1.0 g FA/100 g CP, respectively, as a source of protein in the concentrate mixtures as per their requirements. The crude protein (CP) intake per 100 kg body weight was significantly (P<0.05) higher in T1 as compared to T3 group. The voluntary water intake (VWI) and total water intake (TWI) were significantly (P<0.05) influenced by the treatments. The differences in digestibility coefficient for dry matter (DM), organic matter(OM), crude protein (CP), crude fibre (CF) and nitrogen free extract (NFE) except ether extract (EE) were non significant among different groups. However, ether extract (EE) digestibility was significantly (P<0.05) higher in T3 than T1 group, but at par for T3 and T2 and T1 and T2. Body measurement parameters were significantly (P0.05) higher in T3 group as compared to T2 and T1 except height in crossbred heifers.

0034. Galkate, U.V.; Nagpur Veterinary College, Nagpur (India). Department of Animal NutritionRokde, S.N.; Nagpur Veterinary College, Nagpur (India). Department of Animal Nutrition. Effect of Dietary Aflatoxin on Certain Egg Production and Quality Parameters in White Leghorn Layers. Animal Nutrition and Feed Technology (India). (Jan 2010) v. 10(1) p. 121-126 KEYWORDS: LAYER CHICKENS. AFLATOXINS. EGG CHARACTERS.

The present investigation was carried out to investigate the effect of graded levels of aflatoxin AFB1 [0.5(T1), 1.0 (T2), 2.0 (T3) and 0.0 (T4 - control)] incorporated in the basal diet of fifty two White Leghorn pullets on certain egg production and quality parameters. The result revealed that there was significant (P<0.05) decline in the egg weight, whereas, significant increase (P<0.05) in egg shell thickness in pullets given aflatoxin at all levels tested. The percent nitrogen retained was highest (52.89) in group T4 (control) as compared to T1 (51.30), T2 (49.86) and T3 (48.73). The differences in the egg production, egg mass, Haugh Unit, yolk index and albumin index of pullets in the four treatment groups were non- significant (P<0.05). It was concluded that inclusion of dietary AFB1 from 0 to 2.0 ppm resulted in lowered egg weight and nitrogen retention. There was significant increase in shell thickness. However, it had nonsignificant effect on egg production, egg mass, haugh unit, albumin index and yolk index.

0035. Shukla, Saraswati; G.B. Pant University of Agriculture and Technology, Pantnagar (India). College of Veterinary and Animal Sciences. Department of Animal NutritionTiwari, D.P.; G.B. Pant University of Agriculture and Technology, Pantnagar (India). College of Veterinary and Animal Sciences. Department of Animal Nutrition Mondal, B.C.; G.B. Pant University of Agriculture and Technology, Pantnagar (India). College of Veterinary and Animal Sciences. Department of Animal NutritionAnil Kumar; G.B. Pant University of Agriculture and Technology, Pantnagar (India). College of Veterinary and Animal Sciences. Department of Animal Nutrition. Mineral Inter-relationship among Soil, Plants and Animals in Pithoragarh District of Uttarakhand. Animal Nutrition and Feed Technology (India) . (Jan 2010) v. 10(1) p. 127-132 KEYWORDS: FEED CROPS. FORAGE. MINERAL CONTENT. BLOOD COMPOSITION. INDIA.

Samples of soil, feeds and fodder and blood serum of animals (cattle and buffaloes) in four villages, two from each tehsils (Pithoragarh and Gangolihat) of Pithoragarh district of Uttarakhand were collected and analysed for different macro and micro mineral contents to establish the mineral correlation among soil, plants and animals. The macro and micro mineral contents in soils of Pithoragarh district were higher than their respective critical levels except Ca. Average daily macro and micro mineral intake per animal through different feed ingredients were found optimum except calcium and copper which were deficient with an average value of 11.4 g and 48.16 ppm, respectively. The soil and plants (r=-0.07) and soil and animal (r=-0.34) showed non-significant negative correlations while, significant (P<0.05) negative correlation (r=0.08)between plants and animals for Ca was observed.

0036. Ganai, A.M.; Sher-e-Kashmir University of Agricultural Sciences and Technology-Kashmir, Srinagar (India). Faculty of Veterinary Sciences and Animal HusbandryAhmad, H.A.; Sher-e-Kashmir University of Agricultural Sciences and Technology-Kashmir, Srinagar (India). Faculty of Veterinary Sciences and Animal HusbandryBilal, S.; Sher-e-Kashmir University of Agricultural Sciences and Technology-Kashmir, Srinagar (India). Faculty of Veterinary Sciences and Animal Husbandry. Nutritional Evaluation of Green Mulberry (Morus multicaulis) Leaves in Sheep. Animal Nutrition and Feed Technology (India). (Jan 2010) v. 10(1) p. 133-138 KEYWORDS: SHEEP. FEEDING. MORUS. LEAVES. NUTRITIVE VALUE.

Mulberry (Morus multicaulis) leaves were analyzed for chemical composition and nutritive value. The leaves contained 16.57% CP, 7.38% EE, 15.50% CF, 33.10% NDF, 23.04% ADF, 2.10 % calcium and 0.20% phosphorus. These leaves were fed to six healthy Corriedale rams of about 2 years age (45 kg BW) for 28 days followed by a 5-day metabolism trial. The leaves contained 10.16% digestible crude protein (DCP), 66.10% total digestible nutrients (TDN). The percent dry matter (DM) intake was 3.44 kg. Average digestibility of coefficient of CP, EE, CF,NFE, NDF, ADF, cellulose and hemicellulose were 61.32, 58.33,76.74, 76.60, 62.88, 52.65, 70.55 and 55.39, respectively. All the animals were in positive nitrogen, calcium and phosphorus balance. Blood parameters and rumen metabolites were within the normal range. But there was decrease in blood urea level and increase in creatinine, alkaline phosphatase activity and rumen ammonia nitrogen (NH3-N) after feeding of mulberry leaves. Total volatile fatty acids (TVFA) and TCA-Ppt.N remained unchanged after feeding. It was concluded that green mulberry leaves are palatable and can be used as an alternative source for maintenance diet of sheep.

0037. Saxena, P.C.; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India)Tiwari, D.P.; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India).;Anil Kumar; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India)Mondal, B.C.; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India). Effect of dietary supplementation of copper and phosphorus on nutrient utilization and growth in crossbred heifers. Indian Journal of Animal Sciences (India). (Jan 2010) v. 80(1) p. 37-42 KEYWORDS: HEIFERS. CROSSBREDS. NUTRIENTS. SUPPLEMENTS. COPPER. PHOSPHORUS. NUTRITION PHYSIOLOGY. GROWTH.

Growing crossbred heifers (16) of 12 to16 months age with an average body weight 155 kg were divided into 4 groups of 4 animals each in a 2 × 2 factorial completely randomized design. Heifers of 4 groups were provided 4 respective feed mixtures/dietary treatments, viz. control group 1, without copper and phosphorus supplementation, (treatment 1); group 2, copper supplemented (treatment 2); group 3, phosphorus supplemented (treatment 3); and group 4, copper and phosphorus supplemented (treatment 4). Feed (mineral) mixture containing copper sulphate to supply copper and dicalcium phosphate to supply phosphorus were supplemented as top dressed after offering the concentrate mixture to the heifers as per the requirement along with ad lib. mixed fodder (green oats + oats hay). Feeding trial lasted for 90 days. Average total dry matter intake, dry matter intake per 100 kg body weight and per kg metabolic body weight, average daily TDN and DCP intakes per 100 kg body weight and per kg metabolic body size and digestibility coefficient of different nutrients did not differ significantly amongst different groups of heifers. There was also no significant effect of copper and phosphorus supplementation on these parameters, however, numerically the values were increased due to interaction of copper and phosphorus in the heifers of group 4. The crossbred heifers in group 2 fed ration supplemented with copper gained highest body weight (56.84 kg). The average daily body weight gain was 552.8, 631.5, 551.9 and 567.1 g in heifers of groups 1, 2, 3 and 4, respectively, and did not differ significantly amongst the different groups. The heifers supplemented with copper gained numerically 8.5% higher weight but interaction effect of Cu and P was not significant. It was concluded that under farm condition and existing feeding practices, dietary supplementation of copper and also phosphorus is essential for improvement in the growth and nutrient utilization.

0038. Saxena, P.C.; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India).;Tiwari, D.P.; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India).;Anil Kumar; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India).;Mondal, B.C.; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India). Effect of dietary supplementation of copper and phosphorus on blood mineral status and biochemical profile in growing crossbred heifers. Indian Journal of Animal Sciences (India). (Jan 2010) v. 80(1) p. 43-48 KEYWORDS: HEIFERS. CROSSBREDS. NUTRIENTS. SUPPLEMENTS. COPPER. PHOSPHORUS. GROWTH. BLOOD COMPOSITION. MINERAL CONTENT.
Crossbred heifers (16) of 12 to 16 months age and an average body weight of 155 kg were divided into 4 groups of animals each in a 2 × 2 factorial completely randomized design. Four respective dietary treatments in the form of mineral (feed) mixture containing copper sulphate to supply copper (Cu) and dicalcium phosphate to supply phosphorus (P) along with the concentrate mixture and ad lib. mixed fodder (green oats + oats straw) were provided to all the animals to discern the effect on feed intake, weight gain and blood mineral status and certain serum biological constituents. The heifers in treatment group 1 were fed ration without Cu and P supplements, whereas heifers in treatment groups 2 and 3 were supplemented with Cu and P, respectively, and in treatment group 4 were supplemented with Cu and P both. Feeding trial lasted for 90 days. Blood samples collected at 0, 45 and 90 days of feeding trial were analyzed for Cu and P and certain biochemical constituents in the blood serum. Cu concentration in blood serum was significantly highest in treatment group 2 (Cu supplemented) amongst all the groups at 45 and 90 days. The overall mean Cu concentration in blood serum of heifers was significantly improved due to dietary supplement of Cu. The serum P concentration at 45 and 90 days of feeding trial, differed significantly among the different groups. The overall mean P concentration significantly improved in the heifer due to dietary supplementation of P. The feed intake and weight gain were not significantly influenced due to dietary supplementation of either Cu or P or their interaction; however, heifers supplemented with Cu gained more weight than other groups. The SGPT and SGOT activities were significantly higher in heifers of group 4 (Cu and P supplemented) than other groups. The dietary Cu and P had significant effect in improving the SGPT and SGOT activities. The blood serum total protein, albumin and globulin and blood glucose concentrations were in the normal range and did not differ significantly among the groups and were not influenced due to Cu and/or P supplementation. Serum total cholesterol concentration was higher in heifers of treatment group 2 supplemented with Cu and lowest in the control group but there was no significant effect of Cu or P supplements. Thus Cu and P supplementation is inevitable for ruminant animals in Plain region of Uttarakhand to maintain the blood biochemical constituents and Cu and P status under field as well as under farm condition.

0039. Tyagi, Amrish; National Dairy Research Institute, Karnal (India)Harjit Kaur; National Dairy Research Institute, Karnal (India) Kewalramani, Neelam; National Dairy Research Institute, Karnal (India)Singhal, K.K.; National Dairy Research Institute, Karnal (India). Effect of monensin supplementation on conjugated linoleic acid content in the milk of cows and buffaloes. Indian Journal of Animal Sciences (India). (Jan 2010) v. 80(1) p. 49-52 KEYWORDS: WATER BUFFALOES. MONENSIN. SUPPLEMENTS. LINOLEIC ACID. COWS. COW MILK. BUFFALO MILK.
Multiparous Murrah buffaloes (16) and cows (16) in their early stage of lactation were randomly divided into 2 groups of 8 animals each (groups 1 and 2 for buffaloes and groups 3 and 4 for cows) to study the effect of monensin supplementation on conjugated linoleic acid content in their milk. Animals in groups 1 and 3 were offered maize forage, wheat straw and concentrate mixture and animals in groups 2 and 4 were supplemented with ionophore, i.e. 200 mg monensin sodium/d. Nutritional requirements of the animals were fulfilled as per standard requirements for 90 days of experimental period. Concentrate mixture contained more linoleic acid as compared to maize fodder (14.22 vs 3.54 mg/ g dry sample); whereas linolenic acid was more in maize as compared to concentrate mixture (6.82 vs 1.32 mg/g dry sample). After an adaptation period of 30 days, the milk samples were collected at fortnightly intervals and analyzed for milk fat, solid not fat, total

solids and milk protein. Milk sample (100 ml) from each buffalo (morning and evening milking) and cow (morning, afternoon and evening milking) was collected at fortnightly interval and pooled for fatty acid analysis including CLA. Daily milk yield averaged 7.19 and 6.91 kg in buffaloes and 10.96 and 10.67 kg in cows, in the two respective groups. There was no effect of monensin supplementation on the milk yield of cows and buffaloes. Broad milk composition was not affected by monensin supplementation in both the species. Total CLA content averaged 6.2 and 7.1 mg/g fat in buffaloes and 6.8 and 8.1 mg/g fat in cows in the 2 two respective groups showing an increase of 14.51 and 19.11% due to monensin supplementation in the two species, respectively, indicating the beneficial effect of monensin supplementation on CLA content.

0040. Mahanta, S.K.; Indian Grassland and Fodder Research Institute, Jhansi (India).;Karnani, L.K.; Indian Grassland and Fodder Research Institute, Jhansi (India). Performance of growing crossbred female calves fed different ratios of JHB–146 variety of green berseem and straw. Indian Journal of Animal Sciences (India). (Jan 2010) v. 80(1) p. 53-56 KEYWORDS: CALVES. FEED CROPS. TRIFOLIUM ALEXANDRINUM. STRAW. ANIMAL PERFORMANCE. WEIGHT GAIN. FEED CONVERSION EFFICIENCY.
Growing female calves (15), divided into 3 groups of 5 each, were fed a mixed ration of barley straw and green berseem (JHB–146, a new variety) with limited supplementation of wheat bran (0.3% of live weight) to record their nutritional and growth performances. Three different combinations of barley straw and green berseem were 50:50, 30:70 and 15:85 (on dry matter basis) and fed to the animals of G1, G2 and G3 group, respectively. Average daily DM intake was 2.47, 2.38 and 2.29% of live weight in calves of G1, G2 and G3 groups, respectively, and the differences were nonsignificant. The digestibility of DM, OM, EE and cellulose were also comparable among the groups ranging from 58.3 to 60.7, 60.1 to 62.1, 46.7 to 48.6 and 53.7 to 59.2%, respectively. However, the digestibility of NDF and ADF was lower and of CP was higher in calves of G3 group than that in G1 group. All the animals were in positive nitrogen balance and retained 20.6, 28.5 and 33.9 g N/animal/day in G1, G2 and G3 groups, respectively. Average daily CP and DCP intakes were low in G1 group than G2 and G3 groups. However, average TDN intakes were comparable among the groups, ranging from 2.28 to 2.36 kg/day. Higher intakes of nitrogen and its balances in G2 and G3 groups also resulted in higher live weight gain in calves of these 2 groups when compared to G1 group. Variation in green berseem to barley straw ratio also had no influence on the blood biochemical constituents. It was inferred that the feed intake and nutrient utilization were better and calves sustained around 500 g ADG when fed barley straw and JHB–146 variety of green berseem in 30: 70 ratio.

0041. Soren, N.M.; Central Sheep and Wool Research Institute, Avikanagar (India).;Sastry, V.R.B.; Indian Veterinary Research Institute, Izatnagar (India).;Goswami, T.K.; Indian Veterinary Research Institute, Izatnagar (India)Saha, S.K.; Indian Veterinary Research Institute, Izatnagar (India). Blood biochemical profile, immune response and rumen fermentation pattern in growing lambs fed processed karanj (Pongamia glabra) cake based diets. Indian Journal of Animal Sciences (India). (Jan 2010) v. 80(1) p. 57-62 KEYWORDS: LAMBS. PONGAMIA PINNATA. BLOOD COMPOSITION. IMMUNE RESPONSE. RUMEN DIGESTION. OILSEED CAKES.
Effect of feeding of detoxified karanj (Pongamia glabra) cake was studied on rumen fermentation, blood biochemical and immune response in lambs. Male lambs (n=24) of body weight (12.9±0.15 kg) were divided into 4 groups and treatment groups were fed on concentrates, containing solvent extracted karanj cake (SKC) washed with water (WW), treated with 2.5% lime (LT) and 0.4% binder (BT) to replace 50% CP of soybean meal of control diet for a period of 196 days. Blood was collected at 150 d of feeding. Humoral immune (HI) response was studied by sensitizing lambs with Brucella abortus Strain–19 antigen and antibody (Ab) titre was determined at 0 and 21 d. Cell-mediated immune (CMI) response was assessed by intra dermal inoculation of phytohaemagglutinin–P and changes in skin thickness (mm) was measured. Intake of DM, CP and TDN was lower in treatment diets than in control. Body weight was lower in LT and BT than in CON and WW groups. Concentration of haemoglobin, glucose, urea nitrogen, albumin and globulin was similar in all diets but total

protein was lower in LT, while cholesterol was higher in BT group. Ab titre was lower in BT group after 21 d. CMI response at 0, 24, 48, 72 h was similar. In rumen liquor drawn on 180 days of experimental feeding pH, total N and ammonia N was identical among the groups but TVFA and TCA-ppt nitrogen were lower in BT group. Thus, water washing and lime treatment of SKC were better than its treatment with binder.

0042. Pandey, Poonam; NDRI, Karnal (India).Dairy Cattle Nutrition Division.Anil Kumar; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India). College of Veterinary Sciences.. Exploitation of paddy straw varieties to improve nutritive value and digestibility in ruminants. Indian Journal of Animal Sciences (India) . (Jan 2010) v. 80(1) p. 75-77 KEYWORDS: IN VITRO EXPERIMENTATION. RUMEN DIGESTION. RICE STRAW. NUTRITIVE VALUE. DIGESTIBILITY. DIGESTION. Irrespective of plant height and grain yield significant variation exists in the chemical composition and in situ degradability of paddy straws. Plant breeding programmes could be aimed for simultaneous improvement in grain yield and straw quality traits so that higher productivity in terms of quality straw and grain may be obtained.

0043. Jitender Kumar; Sher-E- Kashmir University of Agriculture and Technology, Jammu (India)Yashwant Singh; Sher-E- Kashmir University of Agriculture and Technology, Jammu (India); Pawan; Sher-E- Kashmir University of Agriculture and Technology, Jammu (India)Verma, K.; Sher-E- Kashmir University of Agriculture and Technology, Jammu (India)Nazki, A.R.. Effect of dietary supplementation of Emblica officinalis on biochemical indices in Vanaraja chicks. Indian Journal of Animal Sciences (India). (Jan 2010) v. 80(1) p. 78-80 KEYWORDS: CHICKS. FEEDING. SUPPLEMENTS. BIOCHEMISTRY.
Effect of dietary supplementation of amla on different biochemical parameters was studied in Vanaraja chicken during summer season. Significant decrease in albumin, A/G ratio, creatinine, total cholesterol and bilirubin was observed in amla treated birds as compared to control. However, nonsignificant reduction in globulin was observed in amla treated as compared to control chicks. Amla supplementation does not affect the plasma Ca+2 concentration of Vanaraja chickens. Observation from present study suggests that dietary supplementation have the protective role on different biochemical parameters.

0044. Rikhari, K.; Indian Veterinary Research Institute, Izatnagar (India). Animal Nutrition Div.Tiwari, D.P.; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India)Anil Kumar; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India). Effect of dietary supplemental chromium on nutrient utilization, rumen metabolites and enzyme activities in fistulated crossbred male cattle. Indian Journal of Animal Sciences (India). (Feb 2010) v. 80(2) p. 156-161 KEYWORDS: CATTLE. CROSSBREDS. SUPPLEMENTS. CHROMIUM. METABOLITES. RUMEN DIGESTION. NUTRITION PHYSIOLOGY.
The experiment was conducted to ascertain effect of different levels of dietary supplementation of chromium (Cr) on nutrient utilization, ruminal enzyme activities and fermentation pattern. Adult fistulated male crossbred cattle (3) were supplemented with chromium as chromium picolinate in a 3x3 latin square switch-over design, viz. treatment 1, control (without chromium supplementation), treatment 2 (0.5 mg chromium/kg diet dry matter as chromium picolinate), and treatment 3 (1.0 mg chromium/kg diet dry matter as chromium picolinate). There was no significant effect on dry matter, total digestible nutrients and digestible crude protein intakes and digestibility of different nutrients due to supplementation of chromium. The mean concentration of total nitrogen and non-protein nitrogen in SRL was significantly higher in T2 supplemented with 0.5 mg Cr/kg DM than in T3 supplemented with 1.0 mg Cr/kg DM, while TCA precipitable protein nitrogen and ammonia nitrogen concentrations did not differ significantly among the treatments. No significant difference was observed in TVFA concentration among the treatments. However, all the rumen biochemical parameters differed significantly due to time interval of sampling of rumen liquor. The different fractions of whole rumen content, viz. particulate material (PM), cellular fraction (C) and extra cellular fraction (EC)

exhibited no significant effect on activity of carboxymethyl cellulase, α-amylase, xylanase, α-glucosidase and β-glucosidase in rumen content with different levels of chromium supplementation. Activity of all enzymes was higher in particulate material fraction as compared to cellular fraction and extra cellular fraction. It is concluded that 0.5 to 1.0 mg chromium supplementation per kg diet dry matter as chromium picolinate had no effect on feed intake, nutrient utilization, ruminal metabolic profile and enzyme activities in crossbred male cattle.

0045. Bugalia, H.L.; Maharana Pratap University of Agriculture and Technology,Livestock Research Station, Vallabhnagar (India)Chaudhary, J.L.; Maharana Pratap University of Agriculture and Technology,Livestock Research Station, Vallabhnagar (India). Effect of feeding different levels of formaldehyde treated sesame cake on nutrients intake, milk production and economic returns in lactating crossbred cows. Indian Journal of Animal Sciences (India). (Feb 2010) v. 80(2) p. 152-155 KEYWORDS: COWS. CROSSBREDS. FORMALDEHYDE. SESAME. OILSEEDS. OILSEED CAKES. NUTRIENT INTAKE. MILK PRODUCTION.
Lactating crossbred (Holstein Friesian × Tharparker) cows (15), randomly divided into 3 equal groups were allotted to 3 dietary treatments, viz. T1, green berseem and concentrate containing untreated sesame cake (control); T2, green berseem and concentrate containing 1.0% FA treated (1.0g FA/100g CP) sesame cake; and T3, green berseem and concentrate containing 1.5% FA treated (1.5g FA/100g CP) sesame cake to discuss the effect of feeding formaldehyde treated sesame cake as a bypass protein on nutrients intake, milk production and economic returns in lactating cows. Sorghum stover was fed ad lib. in all the groups. The experiment lasted for 90 days. The DM, DCP and TDN intake per kg metabolic body size were 117.79, 9.66 and 72.78 in T1, 120.95, 9.89 and 75.28 in T2 and 140.81, 10.97 and 87.11 in T3, respectively, which were significant in T3 as compared to T2 and T1. However, DM, DCP and TDN intake in T2 and T1 groups did not show any significant difference. The average milk yield was significantly higher in T3 and T2 (10.21 and 9.80) as compared to group T1 (8.73). The total milk yield during 90 days period was also higher in T3 and T2 (918.90 and 882.0kg) as compared to group T1 (785.70 kg). The average feed cost per kg milk production was Rs.6,32, 5.92 and 6.15 in T1, T2 and T3 groups, respectively, indicating that feeding of formaldehyde treated sesame cake can have beneficial effect in lactating crossbred cows, it may be concluded that FA treated sesame cake @ 1.5g/100g CP in place of untreated sesame cake in the concentrate mixture of lactating crossbred cows can prove economically beneficial.

0046. Kumar, Dinesh; DUVASU, Mathura (India). Department of Pathology,Srivastava, A.K.; DUVASU, Mathura (India). Department of Pathology,Kumar, Sanjiv; DUVASU, Mathura (India). Department of Pathology,. Effect of arsenic poisoning on antioxidative enzymes in the experimental guinea pigs. Indian Journal of Veterinary Pathology (India). (Jun 2009) v.33(1) p.88-89 KEYWORDS: ARSENIC. CATALASE. FREE RADICALS. SUPEROXIDE DISMUTASE. GUINEA PIGS.
Arsenicosis is a global health problem affecting many millions of people and animals. In the present study Arsenic toxicity was induced in Guinea pigs by feeding 1% aqueous solution of Arsenic trioxide 10mg/kg and 1mg/kg to produce acute and chronic toxicity, respectively. The estimation of antioxidative enzymes in the liver samples was carried out to evaluate the release of free radicals due to Arsenic toxicity which caused significant increase in the production of Superoxide Dismutase in early phase of toxicity and Catalase in later phase of toxicity.

L10 Animal Genetics and Breeding

0047. Pankaj, P.K.; National Dairy Research Institute, Karnal (India) Raina, V.S.; National Dairy Research Institute, Karnal (India); Roy, B.; College of Veterinary Science and Animal Husbandry, Rewa (India) Mohanty, T.K.; National Dairy Research Institute, Karnal (India) Gupta, A.K.; National Dairy Research Institute, Karnal (India). Critical control points at the level of collection, processing and preservation of Sahiwal bull semen. Indian Journal of Animal Sciences (India). (Oct 2009) v. 79(10) p. 992-1000 KEYWORDS: DAIRY COWS. BREEDS (ANIMALS). SEMEN. SEMEN PRESERVATION. QUALITY CONTROLS.

The present investigation was conducted on Sahiwal bulls to study the various critical control points in frozen semen processing. On each collection, 2 ejaculates were taken in succession and examined for various standard laboratory tests (mass activity, individual motility, non-eosinophilic count, sperm abnormalities, acrosomal integrity, microbial load etc.). The various critical control points under study were sterilization method for glassware or collection tube of artificial vagina, treatment of water to be used for making extender, sterilization method for buffer to be used for making extender, processing room temperature and osmolality of extender. Microwave oven method of sterilization was superior to hot air oven taking into account the time saving. The Resin based water purification system was better than triple distilled water and water obtained from this system should not be stored for more than 3 days. Both methods of buffer treatment (autoclaving/filtration) were equally effective in terms of semen quality and microbial count. Osmolality of extender should be kept between 240 to 260 mOsmol/kg to maintain optimum quality semen. Processing room temperature should be kept in the range of 22 to 24°C for quality semen production. The results indicated that critical control points monitoring should be made mandatory for all semen processing laboratories. Further in vivo study with various treatments should be carried out to test its real field applicability.

0048. Sharma, R.C.; National Research Centre on Equines, Bikaner (India);Mehta, S.C.; National Research Centre on Equines, Bikaner (India);Bansal, R.S.; National Research Centre on Equines, Bikaner (India);Pathak, K.M.L.; National Research Centre on Equines, Bikaner (India). PCR-RFLP profile of MHC-DRB 3 class II genes in Marwari horses. Indian Journal of Animal Sciences (India). (Oct 2009) v. 79(10) p. 1036-1037 KEYWORDS: PCR. RFLP. HORSES. LAND RACES.

Blood samples (24) of Marwari horses were collected and the DNA was isolated. The PCR amplification of MHCDRB3 gene was carried out using LA31 and LA32 primers and a fragment of 309 bp was amplified. The RFLP analysis of ELA-DRB3 locus was carried out in the samples. Digestion with restriction enzyme Hin f 1 resolved homozygous allelic status in 10 (2 fragments of 241 and 68 bp) and heterozygous status in 14 Marwari horses (three fragments of 309, 241 and 68 bp). The ELA-DRB3 fragment was also digested with restriction enzymes Hae III and Rsa I that resolved the fragments of 221 and 88 and 170 and 139 bp with Hae III and fragments of 238 and 71 and 190 and 119 bp with Rsa I. Results revealed that RFLP analysis at this locus using above restriction enzymes has the potential to group the animals into different classes, which may be of great significance from diseases resistance or susceptibility point of view.

0049. Shive Kumar; CCS Haryana Agriculture University, Hisar (India) Singh, R. P; CCS Haryana Agriculture University, Hisar (India). Expected and realized response in various traits of broiler dam and sire lines. Indian Journal of Animal Sciences (India). (Oct 2009) v. 79(10) p. 1066-68 KEYWORDS: BROILER CHICKENS. MOTHERS. SIRE EVALUATION. LAYING PERFORMANCE.

A study was conducted on 7672 cockerel and pullet birds of dam line and 3223 cockerel and pullet birds of sire line to know the expected and realized response in various traits of broiler dam and sire lines. The Age at first egg was expected to decrease by–0.20 days and the realized response was found to be similar–0.19 days. The

egg number was expected to increase 15.29 eggs and the realized was found to be 11.0 eggs over four generation of selection. The present results pointed out that egg number was improved with negligible decline in egg weight. In most of the broiler traits discrepancies between expected and realized responses were observed in all generations. The possible reason for the discrepancies may be that natural selection might have played its role. Simultaneous selection for several antagonistic traits could minimize selection progress. In over all generation the similar response were observed between expected and realized response for reproductive traits viz. age at first egg and egg number. It means we can judge the egg number and age at first egg through expected response in further generation of commercial broiler dam line.

0050. Jain, Anand; National Bureau of Animal Genetic Resources, Karnal (India).Gurmej Singh; National Bureau of Animal Genetic Resources, Karnal (India).Yadav, D. K.; National Bureau of Animal Genetic Resources, Karnal (India). Chokla-an endangered sheep genetic resource. Indian Journal of Animal Sciences (India). (Oct 2009) v. 79(10) p. 1071-72 KEYWORDS: SHEEP. ENDANGERED SPECIES. LAND RACES. GENETIC RESOURCES. RAJASTHAN.
Chokla breed is endowed with the unique characteristics of fine carpet quality fleece production and survival on scarce grazing resources especially during drought conditions, which is a regular feature of physical environment of Chokla breeding tract. The sheep farmers are crossing their Chokla ewes with the rams of heavier breeds like Jaisalmeri. The dwindling population and dilution in purity render Chokla sheep an endangered one and warrant its in situ conservation.

0051. Ranjan, R.; Central Institute for Research on Goats, Mathura (India) Ramachandran, N.; Central Institute for Research on Goats, Mathura (India)Jindal, S.K.; Central Institute for Research on Goats, Mathura (India) Sinha, N.K; Central Institute for Research on Goats, Mathura (India). Hypo osmotic swelling test in frozen thawed goat spermatozoa. Indian Journal of Animal Sciences (India). (Oct 2009) v. 79(10) p. 1022-23 KEYWORDS: GOATS. SPERMATOZOA. SEMEN. SEMEN PRESERVATION.
nder the conditions of this study, HOST proved to be a suitable technique for testing membrane status of goat spermatozoa. It could be a valuable and practical tool for accurate assessment of the individual sperm cell rather than the population as a whole. The concentration of 75 mOsm/l hypo osmotic solution appeared to be the most adequate for use in HOST for goat frozen-thawed goat spermatozoa and it could aid the routine analyses of goat semen.

0052. Yash Pal; National Research Centre on Equines, Bikaner (India) Legha, R.A.; National Research Centre on Equines, Bikaner (India) Tandon, S.N.; National Research Centre on Equines, Bikaner (India). Comparative assessment of seminal characteristics of horse and donkey stallions. Indian Journal of Animal Sciences (India). (Oct 2009) v. 79(10) p. 1028-29 KEYWORDS: HORSES. ASSES. SEMEN. SPERMATOZOA.
The study was undertaken to establish the variation in seminal characteristics viz. macroscopic, microscopic and biochemical indices in the horse and donkey stallions if any. Semen was collected from 4 Marwari stallions and 6 French donkey stallions at regular intervals. Fresh semen was subjected to macro-and microscopic examinations, while seminal plasma was used for biochemical estimations. Gel volume, gel free semen volume, total semen volume and pH were not significantly different in both the species. Initial and progressive motility and spermatozoa concentration were observed significantly higher in donkeys than horses. GOT, LDH, total protein and triglycerides were significantly (P0.01) high in seminal plasma of donkeys as compared to horses. It may be concluded that the variations do exist between some of the microscopic and biochemical indices in donkey and horse semen.

0053. Dixit, S.P.; National Bureau of Animal Genetic Resources, Karnal (India)Singh Gurmej; National Bureau of Animal Genetic Resources, Karnal (India)Kant Neel; National Bureau of Animal Genetic Resources, Karnal (India) Dhillon, J.S.; National Bureau of Animal Genetic Resources, Karnal (India). Contribution of genetic and phenotypic parameters affecting fleece traits in 3/4th bred Bharat Merino Sheep. Indian Journal of Animal Research (India). (Mar 2009) v. 43(1) KEYWORDS: SHEEP. WOOL. GENETIC PARAMETERS. PHENOTYPES.
The contribution of genetic and phenotypic parameters affecting fleece traits in 3/4th bred 2425 Bharat Merino Lambs sired by 154 rams over period of 1982–96 was evaluated. The year and season of shearing, sex of lamb, type of birth, age and weight of lamb contributed 8 to 42% of the phenotypic variability in the fleece traits. The least square means for the first and second six monthly greasy fleece weights were 0.874±0.015 and 1.010±0.017 kg, and those of staple length, fibre diameter and medullation percentage were 3.32±0.07 cm, 18.89±0.15 microns and 4.39±0.49 per cent, respectively. Correspondingly, the heritability estimates were 0.54±0.13, 0.31±0.09, 0.76±0.15, 0.46±0.13 and 0.15±0.10, respectively.The estimates of genetic correlation among the fleece traits ranged from low to high in magnitude. The wool yield had desirable and significant genetic association with the body weight but undesirable association with the fibre diameter. These estimates revealed the scope for the genetic improvement of these traits through appropriate selection index.

0054. Singh, S.; G.B. Pant University of Agriculture and Technology, Pantnagar (India) College of Veterinary and Animal Sciences.Gupta, H.P.; G.B. Pant University of Agriculture and Technology, Pantnagar (India) College of Veterinary and Animal Sciences.; Misra, A.K.; G.B. Pant University of Agriculture and Technology, Pantnagar (India) College of Veterinary and Animal Sciences.; Saxena, M.S.; G.B. Pant University of Agriculture and Technology, Pantnagar (India) College of Veterinary and Animal Sciences.. Determination of suitable concentration of caffeine and incubation period for in vitro capacitation of bovine spermatozoa. Indian Journal of Animal Research (India). (Mar 2009) v. 43(1) KEYWORDS: BOVINAE. SPERMATOZOA. IN VITRO FERTILIZATION.
In order to determine the optimum concentration of caffeine and incubation period for in vitro capacitation of frozen bovine spermatozoa, washed spermatozoa were incubated in sperm-TALP (Tyrode's albumin, lactate and pyruvate) having bovine serum albumin 6mg/ml along with supplementation of caffeine 0, 5, 10 and 20 mM for 0, 30, 60 and 90 min. In vitro capacitation was evaluated on the basis of hyperactive motility, head to head agglutination and acrosome reaction of spermatozoa. The highest rate of capacitation was observed with 20 mM caffeine at 90 min. of incubation.

0055. Bindu; Madhuri, S.; Indian Veterinary Research Institute, Izatnagar (India). Livestock Production Management Section; Suman,C.L.; Indian Veterinary Research Institute, Izatnagar (India). Livestock Production Management Section; Pandey, H.S.; Indian Veterinary Research Institute, Izatnagar (India). Livestock Production Management Section. Reproduction and production performance of three-breeds crosses in cattle. Indian Journal of Animal Research (India). (Mar 2009) v. 43(1) KEYWORDS: CATTLE. F3 HYBRIDS. REPRODUCTIVE PERFORMANCE. ANIMAL PRODUCTION. MILK PRODUCTION.
The reproduction and production performance of three-breeds crosses of Holstein Friesian (F), Jersey (J) and Hariana (H) breeds of cattle (1/2F 1/4J 1/4H) maintained during 1976 to 1996 at Indian Veterinary Research Institute Izatnagar was studied. The mean age at first fertile service (AFFS) and age at first calving (AFC) were 772.07±25.12 and 1053.59±24.86 days respectively and both these traits showed significant ($P<0.01$) effect of periods of study. The first service period (FSP) averaged to 166.61±11.11 days and showed significant effect of seasons and periods. The first lactation length (FLL) averaged to 317.72±6.87 days and showed significant ($P<0.01$) effect of periods. The first dry period (FDP) averaged to 127.98±12.70 days did not show any effect of generations, seasons and periods of study. The first lactation milk yield (FLMY) and first standard lactation milk yield (FSLMY) averaged to 1851.69±114.70 and 1741.78±96.13 kg respectively. The present investigations revealed that parent crosses of Holstein Friesian, Jersey and Hariana breeds had significantly higher first

standard lactation milk yield than inter-se crosses of cattle. The cold environment of winter season had significant effect in improving first service period of crossbred cows in three-breeds crosses.

0056. Kharat, A.S.; Livestock Development Office, Pune (India).Department of Animal Husbandry; Kuralkar, S.V.; Post Graduate Institute of Veterinary and Animal Sciences, Akola (India).Department of Animal Genetics and Breeding; Ali, S.Z.; Post Graduate Institute of Veterinary and Animal Sciences, Akola (India).Department of Animal Genetics and Breeding. Relationship between sires estimated breeding values for first lactation and lifetime traits in Holstein Friesian Crossbred cows. Indian Journal of Animal Research (India). (Mar 2009) v. 43(1) KEYWORDS: COWS. CROSSBREDS. BREEDING VALUE. ANIMAL PERFORMANCE. SIRE EVALUATION. LACTATION. LACTATION DURATION.
Data of 432 lactation records of 96 crossbreds cows sired by 5 bulls extending over a period 1980–1997 from Cattle Breeding Farm, Borgaon Manju, Akola (M. S.) were collected. The first lactation traits are first lactation milk yield (FLMY) and first lactation length (FLL) while lifetime traits are lifetime milk yield (LTMY) and productive life (PL). Best linear unbiased prediction (BLUP) and Least Square (LS) was used to estimate sires breeding values and the model included sire as random effect, season and period of calving as fixed effect. The FLMY showed very high and significant rank correlation with FLL (0.99) and LTMY (0.99) by BLUP. The product moment correlation of FLMY with FLL and LTMY were also high and significant by BLUP. The rank correlation of FLMY with LTMY and PL is high and significant by LS methods also. The high positive and significant rank correlation and product moment correlation between FLMY and LTMY indicated that sire can be selected on the basis of FLMY for improvement in LTMY.

0057. Hadge, M.R.; Post Graduate Institute of Veterinary and Animal Sciences, Akola (India).Department of Animal Genetics and Breeding; Kuralkar, S.V.; Post Graduate Institute of Veterinary and Animal Sciences, Akola (India).Department of Animal Genetics and Breeding; Ali, S.Z.; Post Graduate Institute of Veterinary and Animal Sciences, Akola (India).Department of Animal Genetics and Breeding; Kharkar, K.P.; Post Graduate Institute of Veterinary and Animal Sciences, Akola (India).Department of Animal Genetics and Breeding. Performance of Sahiwal and its Jersey Crosses for reproductive traits in different lactations. Indian Journal of Animal Research (India). (Mar 2009) v. 43(1) KEYWORDS: CATTLE. CROSSBREDS. ANIMAL PERFORMANCE. LACTATION. LACTATION DURATION. LACTATION NUMBER.
The data on the 267 lactation records including 192 records of Sahiwal cows and 75 records of Sahiwal x Jersey crossbred cows maintained at Bull Mother Farm, Wadsa dist. Gadchiroli (M. S.) from 1989 – 2007 on basis of first, second and third more than three lactation were considered for study. The mean age at first calving in Sahiwal cows and Sahiwal x Jersey crossbred cows were 1241.36 ± 24.81 and 984.93 ± 33.13 days respectively. Decreasing trend of service period and calving interval occurs with increasing lactation number in Sahiwal and Sahiwal x Jersey crossbred. High repeatability estimates of the studied traits indicated the possibility of selecting cows based on first lactation.

0058. Hatkar, D.N.; College of Veterinary Science, Nagpur (India). Faculty of Animal Genetics and BreedingPrince, L.L.L.; Central Sheep and Wool Research Institute, Avikanagar (India)Sirothta, A.R.; College of Veterinary Science, Nagpur (India). Faculty of Animal Genetics and BreedingPaswan, C.; Central Sheep and Wool Research Institute, Avikanagar (India). Study of Genetic Relatedness among Meat Producing Indian Sheep Breeds by RAPD-PCR. Journal of Applied Animal Research (India). (Sep 2010) v. 38(1) p. 129-133 KEYWORDS: SHEEP. LAND RACES. RAPD. PCR.
To estimate the genetic variability and phylogenetic relationship among four breeds (Sonadi, Madgyal, Deccani and Nellore) of sheep adapted in the semi-arid. climatic conditions of Rajasthan and part of Deccan plateau RAPD technique was applied. This analysis kept the four breeds in three groups i.e. Deccani and Nellore were

kept in same group, Sonadi and Madgyal were kept in entirely different groups but Madgyal has more closeness to Deccani and Nellore. This RAPD marker study revealed that Madgyal, Deccani and Nellore are closer genetically as compared to Sonadi breed.

0059. Rana, Ranjeet Singh; Indian Veterinary Research Institute, Izatnagar (India). Livestock Production and ManagementTriveni Dutt; Indian Veterinary Research Institute, Izatnagar (India)Amit Kumar; Indian Veterinary Research Institute, Izatnagar (India). Animal GeneticsMukesh Singh; Indian Veterinary Research Institute, Izatnagar (India). Livestock Production and Management. Estimation of Direct Additive Genetic and Maternal Variance for Growth Traits in Vrindavani Cattle. Journal of Applied Animal Research (India). (Sep 2010) v. 38(1) p. 145-48 KEYWORDS: CATTLE. GENETIC PARAMETERS. ANIMAL MODELS. STATISTICAL METHODS.
The growth records of Vrindavani calves were analyzed to estimate the variance components and genetic parameters using two univariate and a multivariate animal model based on algorithm of derivative free restricted maximum likelihood. These univariate animal models were simple animal model (AM I) and animal model with additional random maternal effect (AM II). The multivariate animal model (AM III) included all the traits under investigation by considering their relationship. For all growth traits (Birth weight and body weight at 3, 6 and 9 month) the estimate of additive genetic variance was highest in the simple animal model (AM I). The direct estimates of heritabilities were also inflated towards higher side for all the four traits using AM I. The multivariate animal models revealed lowest magnitude of direct additive genetic variances and thus direct estimate of heritabilities for all the traits. The direct estimates of maternal heritability ranged from 0.064 (Birth weight) to 0.197 (body weight at 6 month) and it was zero in 6 and 12 month body weights. The genetic correlations of birth weight with 3, 6 and 12 month body weights were low and non-significant because of significant impact of maternal effect on birth weight. However, the phenotypic correlations between traits were found to be positive and significant.

0060 Mishra, B.P.; National Bureau of Animal Genetic Resources, Karnal (India); Prakash, B.; National Bureau of Animal Genetic Resources, Karnal (India); Kataria, R.S.; National Bureau of Animal Genetic Resources, Karnal (India)Kathiravan, P.; National Bureau of Animal Genetic Resources, Karnal (India); Sadana, D.K.; National Bureau of Animal Genetic Resources, Karnal (India); Das, G.C.; College of Veterinary Science and Animal Husbandry, Guwahati (India;)Joshi, B.K.; National Bureau of Animal Genetic Resources, Karnal (India);Bhasin, V.; ICAR, New Delhi (India); Rasool, T.J.; ICAR, New Delhi (India); Bujarbaruah, K.M.; Assam Agricultural University, Guwahati (India). Cytogenetic profiling and mitochondrial DNA analysis reveal existence of swamp buffalo population in Manipur state. Indian Journal of Animal Sciences (India). (Jan 2010) v. 80(1) p. 31-36 KEYWORDS: WATER BUFFALOES. KARYOTYPES. MITOCHONDRIAL GENETICS. CYTOGENETICS. MANIPUR.
India is the home of best milch buffalo breeds in the world. Majority of them are riverine type found in almost the entire country extending from north to south and west. However buffalo populations in the eastern and north-eastern region are yet to be precisely classified, though these have been generally considered to be swamp type based on their phenotypic resemblance to swamp type buffaloes. Manipuri buffaloes, essentially reared for draught and meat purposes have been characterized phenotypically and cytogenetically in this study. Morphometric data collected from 56 adult buffaloes from hilly and plain areas revealed differences in their body measurements. Cytogenetic analysis of 40 randomly selected animals (7 males and 33 females) from both the locations revealed diploid chromosome count of 48, twentythree pairs of autosomes and a pair of sex chromosomes, typical of swamp type buffaloes. Most distinctive karyotypic feature of swamp buffalo observed in all the animals was the size of the fourth pair of metacentric chromosome. Comparison of mitochondrial D-loop sequence of these buffaloes with representative riverine and swamp type buffaloes further corroborated this conclusion. This report, thus, is the first confirmed documentation of existence of pure swamp type buffaloes in Manipur state.

0061. Tayade, U.D.; Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola (India)Zinijarde, R.M.; Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola (India)Rokde, S.N.; Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola (India)Ingole, A.S.; Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola (India). Phenotypic characteristics of Gaolao strain of Nagpuri buffaloes in Wardha district of Maharashtra. Indian Journal of Animal Sciences (India). (Jan 2010) v. 80(1) p. 67-68 KEYWORDS: WATER BUFFALOES. LAND RACES. PHENOTYPES. MAHARASHTRA. BIOMETRY.

Phenotypic characterization of Gaolao strain of Nagpuri buffaloes in Wardha district of Maharashtra was carried out in its native tract. Out of 500 Gaolao buffaloes surveyed, majority (93.80%) exhibited black body coat colour, while remaining (6.20%) buffaloes exhibited brown body coat colour. Variation was observed in colour of muzzle and tail switch. But, no variation was observed in colour of patch on their legs, shape of horns, ear orientation and shape of udder.

0062. M.S. Sahani,; Central Sheep and Wool Research Institute, Bikaner (India). Arid Region Campus; D.L. Bapna,; Central Sheep and Wool Research Institute, Bikaner (India). Arid Region Campus; Mehta, S.C.; NRC on Camel, Bikaner (India). Impact of selection on growth of Marwari lambs. Indian Journal of Animal Sciences (India). (Jan 2010) v. 80(1) p. 69-71 KEYWORDS: SHEEP. SELECTION. BODY WEIGHT. GROWTH RATE.

The growth of Marwari lambs was analysed to see the effect of selection for increasing greasy fleece yield and decreasing medullation and that of sex and month of lambing on the growth of lambs. The effect of selection for increasing greasy fleece yield and decreasing medullation on growth was nonsignificant and males were significantly superior to females throughout the growth phase. The analysis of effect of month of lambing indicated significantly better growth in the lambs born in January and February. Therefore, breeding should be scheduled in a manner to concentrate lambing in January and February.

0063. Bhusan, S.; Central Institute for Research on Goats, Makhdoom (India)Sharma, Deepak; Central Avian Research Institute, Izatnagar (India). Genetics and Breeding DivisionRajkhowa, C.; Central Avian Research Institute, Izatnagar (India). Genetics and Breeding Division . Estimation of genetic relation of mithun (Bos frontalis) with other livestock species through RAPD-PAGE. Indian Journal of Animal Sciences (India). (Jan 2010) v. 80(1) p. 72-74 KEYWORDS: BOVINAE. CATTLE. WATER BUFFALOES. SHEEP. GOATS. GENETIC DISTANCE. RAPD. ELECTROPHORESIS.

Six individuals (included both sex) in each of cattle (Bos indicus), buffalo (Bubalus bubalis), sheep (Ovis aries) and goat (Capra hircus) were utilized in the present investigation. The genetic similarity estimates, pooled over the primers ranged from 0.295 to 0.452. Mithun and goat (BS=0.295) followed by buffalo and sheep (BS=0.300) showed the minimum genetic similarity. Maximum genetic similarity was observed between goat and sheep (BS=0.452), followed by mithun and buffalo (BS=0.418. The genetic distances, based on band sharing (DS) among the livestock species with RAPD markers pooled over the primers ranged from 0.795 to 1.227. Goat and sheep (DS=0.795) followed by mithun and buffalo (DS=0.877) showed the minimum genetic distance. Maximum genetic distance was observed between mithun and goat (DS=1.221) followed by buffalo and sheep (DS=0.204).

0064. Suresh Kumar; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India)Jhamb, Dinesh; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India)Maurya, S.N.; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India). Post vitrification survivability of 2-cell stage IVP buffalo embryos: effect of concentration. Indian Journal of Animal Sciences (India). (Feb 2010) v. 80(2) p. 99-103 KEYWORDS: WATER BUFFALOES. EMBRYO PRESERVATION. CRYOPROTECTANTS. VITRIFICATION.

Good quality cumulus oocyte complex (COCs) aspirated from follicles2 mm in abattoir buffalo ovaries were cultured in TCM-199 with 10% FCS, hormones, and antibiotics in 5% CO2; 95% humidity at 38.5°C for 24–26 h for in vitro maturation (IVM). In vitro capacitation of bubaline spermatozoa was achieved using heparin. In vitro matured oocytes and in vitro capacitated spermatozoa were coincubated in pre-equilibrated fertilization drops for in-vitro fertilization (IVF) and further cultured for cleavage and 2-cell in-vitro produced bubaline embryos were obtained, which were used for cryopresevation by vitrification. The 2-cell stage embryos were exposed to different mole concentrations (0–4 M) of dimethyl sulphoxide (DMSO) or 1, 2- propanediol (PROH) or the combination of DMSO and PROH in serially ascending concentrations grouped at 0.5 M interval along with 0.25 M sucrose with 2 min equilibration at each step. The embryos were vitrified and stored in liquid nitrogen for 7 or more days and then warmed and cryoprotectants were removed by placement of embryos in medium with serially descending concentrations of the cryoprotectants containing 0.5 M sucrose. The embryos were co-cultured with oviductal cells in TCM -199. The post vitrification developmental competence or cleaving ability was used for assessing suitability of the concentration of cryoprotectants. The results indicated that 1.5 M DMSO provided best cryoprotection (35.71%) to 2-cell stage buffalo embryos, whereas PROH performed better at 2.0 M (30.76%). When a combination of PROH and DMSO (1:1) was used the optimum concentration was found to be 1.0 M (33.33%).

0065. Thakur, S.S.; Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur (India)Parmar, S.N.S.; Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur (India)Ghosh, C.G.; Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur (India)Thakur, M.S.; Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur (India)Sharma, Rakesh; Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur (India)Chaudari, M.V.; Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur (India). Genetic characterization of Malvi cattle using microsatellite markers. Indian Journal of Animal Sciences (India). (Feb 2010) v. 80(2) p. 138-141 KEYWORDS: CATTLE. GENETIC CORRELATION. MICROSATELLITES.
Microsatellite markers offer great potential for genetic comparisons within and between populations. They are the best available molecular tools for characterization of breeds. Microsatellite markers (25) were used to screen 70 Malvi cattle. The mean number of alleles was 9.08 per microsatellite locus with the range of 4 (ILSTS011, ILSTS054) to 18 (CSSM663). The range in the allele size was from 88 bp (CSRM60) to 297 bp (ILSTS006). The microsatellite loci deviated significantly from Hardy-Weinberg equilibrium. Sign test and Wilcox on revealed no Bottleneck in recent past in Malvi population. The mean polymorphic information content was 0.71 ranging from 0.41 to 0.91. The overalls means for observed and expected heterozygosity were 0.54 and 0.75 respectively. The overall observed heterozygosity, PIC and Shannon index values were 0.54, 0.71 and 1.67 indicating high gene diversity. The markers used in the present study were highly informative.

0066. Mishra, B.P.; National Bureau of Animal Genetic Resources, Karnal (India)Prakash, B.; National Bureau of Animal Genetic Resources, Karnal (India)Kataria, R.S.; National Bureau of Animal Genetic Resources, Karnal (India)Sadana, D.K.; National Bureau of Animal Genetic Resources, Karnal (India)Kathiravan, P.; National Bureau of Animal Genetic Resources, Karnal (India)Das, G.C.; Assam Agricultural Univ., Guwahati (India)Goswami, R.N.; Assam Agricultural Univ., Guwahati (India)Joshi, B.K .; National Bureau of Animal Genetic Resources, Karnal (India)Bhasin, V.; ICAR, New Dehi (India). Animal Science Div; Rasool, T.J.; ICAR, New Dehi (India). Animal Science Div.Bujarbaruah, K.M.; Assam Agricultural Univ., Guwahati (India). Genetic diversity analysis and cytogenetic profiling of Assamese buffaloes from North-East India. Indian Journal of Animal Sciences (India). (Feb 2010) v. 80(2) p. 142-147 KEYWORDS: WATER BUFFALOES. GENETIC VARIATION. KARYOTYPES. MICROSATELLITES. ASSAM.
In the present study cytogenetic profiling and genetic characterization using microsatellite genotyping was carried out on Assamese swamp buffalo population. Microsatellite data analysis for 23 markers indicated

substantial genetic variation existing in the buffalo population. Sufficient allelic diversity was observed with 133 alleles present across different loci. The genetic diversity analysis of Assamese buffaloes displayed moderate to high level of within population variability in terms of mean number of alleles per locus (5.78) and heterozygosity estimates, viz. mean observed (Ho = 0.618) and expected heterozygosity (He = 0.665). The Assamese buffalo population showed low heterozygote deficiency (FIS=0.029). Mean polymorphic information content (PIC) across the 23 loci was 0.611, which indicated suitability of the marker panel for diversity analysis in these buffaloes. Bottleneck analysis indicated no recent genetic bottleneck in the Assamese buffalo population. Further, cytogenetic screening of 46 Assamese buffaloes indicated riverine (2n=50) or hybrid (2n=49) status. None of the animals had a typical pure swamp karyotype (2n=48). Thus, majority of the investigated animals were characterized as riverine type, which is in contrast to the general classification of Assamese buffaloes as swamp type derived from their morphological and behavioral similarity to swamp buffaloes.

L40 Animal Structure

0067. Usha Kumary S.; Tamil Nadu Veterinary and Animal Sciences University, Chennai (India);Venkatesan, S; Tamil Nadu Veterinary and Animal Sciences University, Chennai (India)Geetha Ramesh; Madras Veterinary College, Chennai (India). Dept. of Veterinary Anatomy and Histology. Microanatomical studies on the caecum of Japanese quail. Indian Journal of Animal Sciences (India). (Oct 2009) v. 79(10) p. 1011-1014 KEYWORDS: QUAILS. INTESTINES. ANIMAL MORPHOLOGY.
Microanatomical studies on the caecum of Japanese quail were done in different age groups. The villi were present in the mucosa of proximal part of the caecum and their height was more in the attached wall of the mucosa. The middle and the distal parts of the caecum possessed mucosal folds instead of villi. The shape of villi of the proximal part of the caecum was distorted by the underlying caecal tonsils. These caecal tonsils were noticed in the lamina propria of birds of 6 and 8 week age groups but absent in day-old birds. Numerous crypts of Liberkuhn were seen in the lamina propria of the caecum. The surface epithelium of villi, mucous folds and crypts of Liberkuhn were lined by the enterocytes along with goblet cells. Goblet cells were more in the proximal part of the caecum. The muscularis mucosa was very thin. Submucosa was narrow at the proximal part and wider at middle and distal part of the caecum. The tunica serosa was more distinct at attached wall.

0068. Opinder Singh; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India); Anoop Kumar; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). Histoenzymic distribution pattern in liver of buffalo fetuses during prenatal development. Indian Journal of Animal Sciences (India). (Oct 2009) v. 79(10) p. 1030-32 KEYWORDS: WATER BUFFALOES. EMBRYONIC DEVELOPMENT. FOETUS. LIVER. ANIMAL MORPHOLOGY.
Histoenzymic distribution of oxidoreductases and phosphatases was studied in liver of buffalo fetuses ranging from 5 cm to 75 cm CRL (crown rump length). The succinic dehydrogenase (SDH), lactic dehydrogenase (LDH), reduced nicotinamide adenine dinucleotide diaphorase (NADHdiaphorase), reduced nicotinamide adenine dinucleotide phosphate diaphorase (NADPH-D) and monoamine oxidase (MAO) exhibited variable activity in parenchyma of liver which may be attributed to developing histoarchitecture and activity of liver. Since the hemopoiesis took place during early prenatal period, the hemopoitic areas were weekly reactive. The activity of alkaline phosphatase, acid phosphatase and glucose–6–phosphatase was also recorded.

0069. Pathak, Virender; CSK Himachal Pradesh Krishi Vishwa Vidyalaya, Palampur (India));Sudhakar, L. S.; CSK Himachal Pradesh Krishi Vishwa Vidyalaya, Palampur (India); Bhardwaj, R. L.; CSK Himachal Pradesh Krishi Vishwa Vidyalaya, Palampur (India). Histomorphological studies on the pineal gland of Gaddi Goat. Indian Journal of Animal Sciences (India). (Oct 2009) v. 79(10) p. 1033-35 KEYWORDS: GOATS. ENDOCRINE GLANDS. ANIMAL MORPHOLOGY.

The pineal gland of Gaddi goat was enclosed in a thin capsule composed of collagen and reticular fibers. The parenchyma of the pineal gland consisted of pinealocytes and glial cells. The pinealocytes were arranged in irregular groups, cords or follicles and were distributed more densely at the periphery than at the centre. They had large and round nuclei. Their cytoplasm showed strong reaction for protein. Pineal gland of Gaddi goat showed four types of glial cells. In the interstitial connective tissue of the pineal gland nerve fibers were also observed surrounding the blood capillaries corpora arenacea were observed as large concentric lamellar structures in the central part of the pineal gland.

0070. Sudhakar, L.S.; Choudhary Sarwan Kumar Himachal Pradesh Krishi Vishvavidyalaya, Palampur (India);Bhardwaj, R.L.; Choudhary Sarwan Kumar Himachal Pradesh Krishi Vishvavidyalaya, Palampur (India); Pathak, Virender; Choudhary Sarwan Kumar Himachal Pradesh Krishi Vishvavidyalaya, Palampur (India). Effect of the season on the histology and histochemistry of the male genital organs of Gaddi goat and Gaddi sheep. Indian Journal of Animal Sciences (India). (Jan 2010) v. 80(1) p. 27-30 KEYWORDS: GOATS. SHEEP. ANIMAL MORPHOLOGY. MALE GENITAL SYSTEM.

Histological and histochemical studies were conducted in the testis, epididymis and vas deference of Gaddi goats and Gaddi sheep in different seasons (spring, summer, autumn and winter) of the year. In each season, 6 animals of each species were utilized. The studies of these organs in both the species of Gaddi breed were more or less, similar. The capsular thickness, diameter of the seminiferous tubules, density of the Leydig cells, epithelial height of the epididymis and vas deferens were maximum in autumn and minimum in summer. The cytoplasm of the interstitial cells showed strong reaction for the glycogen whose intensity did not vary in the different seasons. The Leydig cells also exhibited reaction for cholesterol whose intensity was maximum in autumn and minimum in summer. The glycogen histochemistry of the epididymis and vas deferens was similar to that observed in the Leydig cells. The cholesterol reaction of the epididymis also resembled that observed in the cytoplasm of the interstitial cells but no seasonal variation was found for this component in the vas deferens (being of moderate reaction in all the seasons).

0071. Naik, S. Ganga; Karnataka Veterinary, Animal and Fisheries Sciences University, BidarAnanda, K.J.; Karnataka Veterinary, Animal and Fisheries Sciences University, Bidar (India). Rani, B. Kavitha; Karnataka Veterinary, Animal and Fisheries Sciences University, Bidar (India). Khandare, S.M.; Karnataka Veterinary, Animal and Fisheries Sciences University, Bidar(India). Gross anatomy of the nasal cavity of buffalo calves. Indian Journal of Animal Sciences (India). (Feb 2010) v. 80(2) p. 113-116 KEYWORDS: CALVES. NOSE. ANIMAL MORPHOLOGY.

In the present study the local crossbred buffalo calves of approximately 6 to 12 months old were examined to document the gross anatomy of the nasal cavity. The study revealed that the nasal cavity of calves was completely divided into two compartments by a median nasal septum. The dorsal nasal turbinate was the longest and extended from the cribriform plate of ethmoid bone to the level of third tranverse rugae of the hard palate. It continued rostrally as straight fold and contained a sinus. The ventral nasal turbinate was cylindrical in shape and extended from the first molar to the fourth transverse rugae of the hard palate. The middle nasal turbinate/ethmoturbinate was triangular in outline and extended up to the Third premolar tooth. The ethmoidal labyrinth composed of 6 endoturbinates and 8 ectoturbinates.

0072. Singh, N.D.; Indian Veterinary Research Institute, Izatnagar (India). Division of Pathology; Sharma, A.K.; Indian Veterinary Research Institute, Izatnagar (India). Division of Pathology; Dwivedi, P.; Indian Veterinary Research Institute, Izatnagar (India). Division of Pathology; Telang, A.G.; Indian Veterinary Research Institute, Izatnagar (India). Division of Pathology; Patil, R.D.; Indian Veterinary Research Institute, Izatnagar (India). Division of Pathology; Kumar, M.; Indian Veterinary Research Institute, Izatnagar (India). Division of Pathology. Ultrastructural pathology of kidney and liver in citrinin and endosulfan treated pregnant rats. Indian Journal of Veterinary Pathology (India). (Jun 2009) v.33(1) p.18-24 KEYWORDS: ULTRASTRUCTURE. PATHOLOGY. KIDNEYS. LIVER. CITRININ. ENDOSULFAN. RATS. GESTATION PERIOD.

In the present investigation, citrinin (CIT) (10 mg/kg feed) and endosulfan (1 mg/kg bw) were administered orally alone and in combination to pregnant Wistar rats from gestational day 6 to 20 to evaluate the ultrastructural alterations in renal and hepatic tissues. In CIT fed group, the consistent renal changes, chiefly recorded in the proximal convoluted tubule (PCT) lining epithelial cells, included mitochondrial damage, denudation and loss of microvilli, degenerating nuclei with margination of chromatin and loss of nucleoli. Depletion of cytoplasmic organelles was also recorded. Distal convoluted tubules (DCT) also revealed mitochondrial pleomorphism and damage. Glomeruli showed loss of nuclei in the podocytes and presence of proteinaceous material in the urinary spaces. In liver, mitochondrial swelling with indistinct cristae was noticed in CIT treated animals. In endosulfan group, liver was predominantly affected showing enlarged, swollen and pleomorphic mitochondria, cytoplasmic vacuolations, frequent presence of lipid droplets, indistinct nuclear membrane, chromatin margination and at times nuclear condensation and fragmentation in hepatocytes. The renal changes were mitochondrial damage in PCT epithelial cells. In the combination group, the hepatic and renal ultrastructural alterations, though of similar nature to those of the individual groups were more severe. It may be concluded that simultaneous exposure with both, CIT and endosulfan, the severity of ultrastructural changes in renal and hepatic tissues were enhanced possibly due to their additive interaction in pregnant Wistar rats.

0073. Sirisha, P.; Sri Venkateswara Veterinary University, Tirupati (India). College of Veterinary Science, Department of Pathology; Kumar, A. Anand; Sri Venkateswara Veterinary University, Tirupati (India). College of Veterinary Science, Department of Pathology; Anjaneyulu, Y.; Sri Venkateswara Veterinary University, Tirupati (India). College of Veterinary Science, Department of Pathology; Madhuri, D.; Sri Venkateswara Veterinary University, Tirupati (India). College of Veterinary Science, Department of Pathology. Pathological changes in Jatropha (Jatropha curcas) deoiled seed cake induced toxicity in broiler chicken and its amelioration. Indian Journal of Veterinary Pathology (India). (Jun 2009) v.33(1) p.25-29 KEYWORDS: PATHOLOGY. JATROPHA CURCAS. JATROPHA. BROILER CHICKENS. FEED CONSUMPTION. BODY WEIGHT. ADSORBENTS. RICINUS COMMUNIS. RICINUS. DETOXIFICATION.

The effect of quantitatively replacing 5 percent of sunflower meal with Jatropha deoiled seed cake [JSC] for 6 weeks was evaluated in broiler chicken. JSC was fed to two groups for 6 weeks at different intervals and ameliorative agents, activated charcoal 0.1% and gentian violet 0.05% were fed to four groups at different intervals for 6 weeks. JSC in diet reduced average feed intake, body weight gain and feed conversion ratio. The clinical signs of inappetance, depression, loss of body weight, lower feed consumption, profuse greenish diarrhoea, pasty vent and restricted movement were observed in birds of JSC fed groups which were well correlated with the pathological findings and same were improved in diets with ameliorative agents. The gross and histopathological changes in various organs of chicks of JSC fed group varied with duration of toxicity. Incorporation of ameliorative agents had considerable ameliorating effects on the histopathological lesions in various organs, with minimal to mild lesions at different intervals of the study. However, complete amelioration of toxicity could not be observed.

0074. Rajesh, A.; G.B. Pant University of Agriculture & Technology, Pantnagar (India). College of Veterinary and Animal Sciences. Department of Veterinary Pathology; Agrawal, D.K.; G.B. Pant University of Agriculture & Technology, Pantnagar (India). College of Veterinary and Animal Sciences. Department of Veterinary Pathology,. Pathomorphological studies on battery industry effluent treated mice. Indian Journal of Veterinary Pathology (India). (Jun 2009) v.33(1) p.39-42 KEYWORDS: WASTEWATER. MICE. NECROSIS. LABORATORY EQUIPMENT.
The present investigation was conducted to study the impact of battery industry effluent on gross and histopathological changes on various organs of mice. For the purpose of study, two weeks old 256 mice were randomly divided into four equal groups viz. control (group I), vaccinated (group II), effluent treated (group III) and vaccine+effluent treated (group IV). Groups II and IV mice were immunized with Ranikhet disease vaccine (R2B) at every 15 day up to 120 days of experimentation. Group I was kept as control, while groups III and IV mice were given battery industry effluent daily orally ad libitum instead of drinking water. The gross and microscopic changes were primarily seen in brain, liver, kidneys and spleen of groups III and IV mice. Histopathological examination revealed mild to moderate hypermedia, degeneration of hepatocytes, more commonly the vacuolar degeneration in liver; vascular changes and degeneration of neurons in the brain; protienaceous casts, vascular changes and mononuclear infiltration in kidneys; degeneration and depletion of lymphocytes in lymphoid follicles of spleen of battery industry effluent treated mice. So, it may be concluded that heavy metals in the effluent have toxic effect on the vital organs.

0075. Selvaraj, J.; Madras Veterinary College, Chennai (India). Department of Veterinary Pathology, Balachandran, C.; Madras Veterinary College, Chennai (India). Department of Veterinary Pathology,. Splenic rupture with its explants in abdominal viscera in a dog. Indian Journal of Veterinary Pathology (India). (Jun 2009) v.33(1) p.116-117 KEYWORDS: DOGS. SPLEEN. POSTMORTEM EXAMINATION.
A rare case of splenic rupture with its explants in different abdominal organs (splenosis) in a 14 years-old non-descript dog is reported. The deposits varied in size from 1-10 mm in diameter. Histologically, the deposits appeared like normal splenic tissue.

L50 Animal Physiology and Biochemistry

0076. Randhawa, C.S.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India); Pal, Heigo; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India); Randhawa, S.S.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India); Uppal, S.K.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). Influence of age, season, lactation on haematology and iron biochemistry of crossbred cattle. Indian Journal of Animal Sciences (India). (Oct 2009) v. 79(10) p. 1007-1010 KEYWORDS: CATTLE. CROSSBREDS. BLOOD COMPOSITION
Hematology and iron metabolism profile was determined in crossbred cattle in relation to age, season and lactation. Mean values of PCV and MCV were significantly higher in heifers (1–3 years) and PCV in old (9 years) cattle. The plasma iron concentration was lowest in heifers. The values of Hb, PCV, TEC, plasma iron and total iron binding capacity were lower in lactating and MCHC was higher in lactating than non-lactating cows. Mean PCV and MCV was high during winter and spring season as compared to summer and rainy season. Mean MCH value was the lowest in rainy season whereas MCHC was the highest in summer. Season did not affect plasma Fe, total iron binding capacity and per cent transferrin saturation. Plasma Fe concentration varied from 87–269.6 ìg.dl–1, total iron binding capacity varied widely from 181.6 to 887ìg.dl–1 and transferrin saturation from 18.2 to 80% in cattle.

0077. Pandey, P.; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India); Mishra, A.; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India); Agrawal, I. S.; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India). Influence of dietary supplementation of antibiotic and probiotic on rumen nitrogen metabolism, blood glucose and certain hematological parameters in crossbred bullocks. Indian Journal of Animal Sciences (India). (Oct 2009) v. 79(10) p. 1081-82 KEYWORDS: BULLOCKS. SUPPLEMENTS. PROBIOTICS. RUMEN DIGESTION. BLOOD.
Rumen fistulated crossbred bullocks (3) were provided 3 dietary treatments viz. T1 (control), T2 (antibiotic) and T3 (probiotic) in a latin square switch over design. In T2, the concentration mixture was supplemented with antibiotic kanamycin 0ppm/head/day and in T3, it was supplemented with probiotic7 g/head/day. There was no change in ruminal pH in T2, where as pH was increased significantly in T3. In the T2, ruminal NH3–N concentration decreased significantly, where as TCA-ppT-N concentration increases significantly in T2 and T3. Blood glucose, hemoglobin, total erythrocyte count, total leukocytes count and packed cell volume percentage were not affected with antibiotic or probiotic supplementation. It was concluded that dietary supplementation of antibiotic and probiotics may provide a favorable rumen environment and improvement in rumen nitrogen metabolism which will lead to overall improvement in production efficiency of animals.

0078. Reddy, I.J.; National Institute of Animal Nutrition and Physiology, Bengaluru (India); Ravi Kiran, G.; National Institute of Animal Nutrition and Physiology, Bengaluru (India); Mondal, S.; National Institute of Animal Nutrition and Physiology, Bengaluru (India); Anandan, S.; National Institute of Animal Nutrition and Physiology, Bengaluru (India). Pulsatile secretion of luteinizing hormone and its relation to pause days and egg production in dual purpose hens treated with antiprolactin agent. Indian Journal of Animal Sciences (India). (Oct 2009) v. 79(10) p. 988-91 KEYWORDS: HENS. LH. PROLACTIN. EGG PRODUCTION.
Objective of this study is to investigate the amplitude and frequency of luteinizing hormone (LH), in backyard birds treated with antiprolactin agent and its effects on plasma prolactin (PRL), LH, estradiol (E2©¬), progesterone (P4), intersequence pause days and egg production. Birds were divided in 2 groups (control and treated) of 12 birds each. Birds in treated group were administered s/c with anti PRL agent (2-bromo-¥á-ergocriptine) solution containing 00 mg/kg body weight/hen/week (treated group) from 72 to 82 weeks of age. And controls were placebo. Inter sequence days and egg productions were recorded daily from both the groups. Plasma PRL concentration was lower in bromocriptine treated birds with high concentrations of LH, its 3 h LH surges, E2©¬ and P4 in plasma. Treated birds showed higher egg production, less pause days with concomitant increase in plasma concentration of LH, its amplitude and frequency, besides steroid hormones required for egg formation and oviposition. It is hypothesized that control of PRL secretion with antiprolactin agent, caused enhanced steroid hormone profile; and LH surges required for egg formation and egg lay with lower incidence of pause days in backyard birds enabled the birds to lay more eggs even later in the productive period with under normal husbandry conditions.

0079. Randhawa, C.S.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India); Randhawa, S.S.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India); Uppal, S.K.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). Plasma mineral status of buffaloes in Punjab. Indian Journal of Animal Sciences (India). (Oct 2009) v. 79(10) p. 1024-27 KEYWORDS: WATER BUFFALOES. BLOOD COMPOSITION. MINERAL CONTENT. MINERAL DEFICIENCIES. PUNJAB.
A base-line survey was conducted to assess plasma concentrations of calcium, phosphorus, magnesium, iron, zinc, manganese and cobalt in buffaloes. Per cent buffaloes with plasma calcium concentration below 2.0 mmol/l were 78.2 and 87.3% at the organized and rural dairy units, respectively. Hypophosphatemia was detected in 26.7% animals of rural dairy units compared to 11.1% of the organized farm. Prevalence rate of hypophosphatemia was highest (31.2%) in mature buffaloes (6 years). The plasma concentrations of manganese and cobalt were low in 48.4 and 19% of the animals of rural dairy units, respectively. The

concentrations of iron and zinc were within normal limits in all the animals. Hypophosphatemia was most common in Ferozepur district. The proportion of buffaloes showing low plasma concentrations of calcium was maximal in Ludhiana, and of manganese and cobalt in Jalandhar.

0080. Bobade, S.P.; Post Graduate Institute of Veterinary and Animal Sciences, Akola (India).Department of Poultry Science; Sarag, A.N.; Post Graduate Institute of Veterinary and Animal Sciences, Akola (India).Department of Poultry Science; Rekhate, D.H.; Post Graduate Institute of Veterinary and Animal Sciences, Akola (India).Department of Poultry Science; Dhok, A.P.; Post Graduate Institute of Veterinary and Animal Sciences, Akola (India).Department of Poultry Science; Joge, .V.; Post Graduate Institute of Veterinary and Animal Sciences, Akola (India).Department of Poultry Science; Raut, A.E.; Post Graduate Institute of Veterinary and Animal Sciences, Akola (India).Department of Poultry Science. Effect of vitamin E and selenium on haemo-immuno-biochemical profile of broilers. Indian Journal of Animal Research (India). (Mar 2009) v. 43(1) KEYWORDS: BROILER CHICKENS. SELENIUM. CELL MEDIATED IMMUNITY. HUMORAL IMMUNITY. VITAMIN E.

One hundred ninety two day old broiler chicks, randomly distributed into eight groups of two replications in each were reared upto 6 weeks on standard managemental conditions. The powder of vitamin E and selenium was added to the basal diet 0, 20 mg and 40 mcg, 25 mg and 50 mcg, 30 mg and 60 mcg, 20 mg and 40 mcg, 25 mg and 50 mcg, 30 mg and 60 mcg, 0 in treatment groups T1 to T8 respectively. The vaccination of RD and IBD was done in treatment groups T1, T2, T3 and T4 while the groups T5, T6, T7 and T8 remains unvaccinated. The significant ($P<0.01$) increase in TEC and heterophil and significant ($P<0.01$) decrease in phosphorus level was seen in excess vitamin E and selenium treated groups. The humoral and cell mediated immune response was higher in vaccinated groups, which were supplemented with excess vitamin E and selenium than control and non-vaccinated groups. It was concluded that the supplementation of vitamin E and selenium in diet improves immuno status of broilers.

0081. Malik, V.S.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India).Department of Veterinary Physiology; Nayyar, Shashi; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India).Department of Veterinary Physiology; Jindal, Rajesh; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India).Department of Veterinary Physiology. Trace element levels in reproductive organs of Murrah buffaloes. Indian Journal of Animal Research (India). (Mar 2009) v. 43(1) KEYWORDS: WATER BUFFALOES. GENITALIA. TRACE ELEMENTS.

Eight female genitalia of Murrah buffaloes were obtained from Saharanpur abattoir and the reproductive organs were separated as ovaries (left and right), oviduct (left and right), uterine horns (left and right), uterus, cervix and vagina. The concentrations of iron, copper, zinc and manganese were estimated with the help of atomic absorption spectrophotometer. The results revealed that the ovaries contained the highest concentration of iron. Zinc and manganese were higher in the oviduct. The cervix had higher levels of iron and copper as compared to the vaginal tissue. Uterine and vaginal tissues exhibited the lower concentrations of iron, copper, zinc and manganese.

0082. Singh, T.; Veterinary College, Mhow (India). Department of Animal NutritionMehta, M.K.; Veterinary College, Mhow (India). Department of Animal NutritionJain, R.K.; Veterinary College, Mhow (India). Department of Animal NutritionJain, A.; Veterinary College, Mhow (India). Department of Animal Nutrition. Effect of supplementing deficient trace minerals on haematologicals parameters and plasma micro mineral status in kids. Animal Nutrition and Feed Technology (India). (Jan 2010) v. 10(1) p. 115-119 KEYWORDS: KIDS. FEEDING. SUPPLEMENTS. TRACE ELEMENTS. BLOOD COMPOSITION.

A feeding trial of two months duration was conducted on ten male kids, randomly divided into two equal groups. Group-I was supplemented with mineral mixture containing Mn, Cu and Zn which were deficient in their feeds. While group-II was un-supplemented control. Animals of both the groups were grazed eight hours daily, without any concentrate supplementation. Hematological parameters and trace mineral status of blood in animals of supplemented and un-supplemented groups were estimated. The hematological values were within the normal range in both the groups before and after the experiment. Mineral supplementation significantly ($P<0.01$) improved the hemoglobin concentration and Packed cell volume. There was significant ($P<0.05$) improvement mean corpuscular volume, mean corpuscular hemoglobin concentration values in the supplemented group after the experiment. Status of Mn, Cu and Zn in blood was within the normal range in both the groups. The concentration of trace minerals in plasma tended to increase upon supplementation.

0083. Sivakumar, G.; Indian Veterinary Research Institute Izatnagar (India). Division of Pathology; Dwivedi, P.; Indian Veterinary Research Institute Izatnagar (India). Division of Pathology; Sharma, A.K.; Indian Veterinary Research Institute Izatnagar (India). Division of Pathology; Kumar, M.; Indian Veterinary Research Institute Izatnagar (India). Division of Pathology; Nimalesan, S.; Indian Veterinary Research Institute Izatnagar (India). Division of Pathology. Fumonisin B1 and ochratoxin A induced biochemical changes in young male New Zealand White rabbits. Indian Journal of Veterinary Pathology (India). (Jun 2009) v.33(1) p.30-34 KEYWORDS: FUMONISINS. OCHRATOXINS. RABBITS.
The present study was designed to study the serum biochemical changes induced by Fumonisin B1 10 ppm and ochratoxin A 2 ppm in feed, alone and in combination in male rabbits. A significant decrease in total protein, albumin, globulin and glucose levels and an increase in serum ALP, ALT, AST and LDH levels were recorded in both individual and combination groups. In combination group the effect of these two toxins was additive.

0084. Padmaja, B.; College of Veterinary Science, Rajendranagar (India). Department of Pathology; Madhuri, D.; College of Veterinary Science, Rajendranagar (India). Department of Pathology; Kumar, A. Anand; College of Veterinary Science, Rajendranagar (India). Department of Pathology; Anjaneyulu, Y.; College of Veterinary Science, Rajendranagar (India). Department of Pathology. Ameliorative efficacy of Emblica officinalis in arsenic induced toxicity in broilers: A haemato-biochemical study. Indian Journal of Veterinary Pathology (India). (Jun 2009) v.33(1) p.43-45 KEYWORDS: ARSENIC. HETEROCYCLIC COMPOUNDS. HAEMOGLOBIN. PROTEINS. ANTIOXIDANTS. DNA.
A total of 75 sexed male broiler chicks of day old age belonging to Vencobb strain were randomly divided into five groups consisting of fifteen chicks in each group. Group I was maintained on basal diet and group II on arsenic 100 ppm in feed for 6 weeks. Group III was maintained on Emblica officinalis 500 ppm for 6 weeks. Group IV was given with arsenic 100 ppm along with Emblica officinalis 500 ppm for 6 weeks. Group V was given arsenic 100 ppm containing diet for the first 4 weeks and subsequently treated with Emblica officinalis 500 ppm for the remaining 2 weeks. Haemato- biochemical parameters were studied at fortnightly intervals. Haematological studies revealed significant decrease in hemoglobin, PCV and TEC in arsenic toxicated chicks. Similarly biochemical assays revealed hypoprotenemia, hypoalbuminemia and hypoglobulinemia and increase in levels of GGT, Creatinine and BUN in arsenic fed chicks. However, Emblica officinalis supplementation in diet counteracted the haemato-biochemical alterations induced by arsenic.

L51 Animal physiology – Nutrition

0085. Pandey, P.PANDEY, A.K.; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India). Effect of different antibiotics and probiotics on in vitro dry matter digestibility and methane production. Indian Journal of Animal Sciences (India). (Oct 2009) v. 79(10) p. 1078-80 KEYWORDS: IN VITRO EXPERIMENTATION. ANTIBIOTICS. PROBIOTICS. METHANE.
The efficiency of 5 antibiotics and 2 probiotics was evaluated on the basis of in vitro DMD, TVFA, NH3–N and methane production. The concentrate mixture was supplemented with respective antibiotics @ 20 mg/kg of concentrate and probiotics @ 5 g/kg of concentrate mixture. It is concluded from the experiment that kanamycin acid sulphate (locally available and non ionophore antibiotics) and Lactobacillus sporogense + Saccharomyces cerevisiae SC 47 improve the in vitro DMD% and TVFA concentration, and significantly reduce ammonia and methane production. These antibiotics and probiotics can be further tested and incorporated in ruminants ration as feed additives.

L52 Animal physiology - Growth and development

0086. Lucy, K.M.; College of Veterinary and Animal Sciences, Mannuthy (India). Department of Veterinary Anatomy and Histology; Harshan, K.R.; College of Veterinary and Animal Sciences, Pookot (India); Chungath, J.J.; College of Veterinary and Animal Sciences, Mannuthy (India). Department of Veterinary Anatomy and Histology; N. Ashok; College of Veterinary and Animal Sciences, Pookot (India). Early histomorphogenesis of metencephalon in goats. Indian Journal of Animal Research (India). (Mar 2009) v. 43(1) KEYWORDS: MORPHOGENESIS. GOATS. ANIMAL MORPHOLOGY.
Early development of the metencephalon was studied using six goat foetuses up to one month of gestation. By 24 days of age (1.4cm CRL), the neural tube was completely fused and the brain vesicles started developing. The metencephalon was distinguished from the more posterior myelencephalon by its much thicker roof and by the presence of the isthmus and the pontine flexure. It was circular in cross section and distinct basal and alar plates representing the motor and sensory areas were found on each side of the midline and were united by the floor and roof plates, respectively. A prominent sulcus limitans divided the alar and basal laminae. The walls bore the prominent scalloping of neuromeres. Near the beginning of the hindbrain were the large semilunar ganglia. Junction between metencephalon and myelencephalon was demarcated by the sharply defined otocyst. All the metencephalic parameters showed a significant positive correlation with the parameters of the other brain vesicles. Histologically, wall of the metencephalon showed an inner ependymal, middle mantle and outer marginal layers bounded by the inner and outer limiting membranes.

0087. Bhullar, Preetinder; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India); Nayyar, Shashi; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India); Sangha, S P S; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). Antioxidant status and metabolic profile of buffalo during different growth stages. Indian Journal of Animal Sciences (India). (Mar 2009) v.79(3) p.251–254 KEYWORDS: ANTIOXIDANTS. METABOLISM. WATER BUFFALOES. ENZYMES. VITAMINS. DEVELOPMENTAL STAGES.
The metabolic profile and the erythrocytic levels of lipid peroxidation, glutathione peroxidase and superoxide dismutase activities were determined along with the plasma levels of vitamin E, ß-carotene and vitamin E in different growth stages of female buffalo, viz. calves (neonatal, transitional and ruminant), heifers (prepubertal and pubertal), pregnant (early, mid and late), postpartum lactating and dry buffaloes. The lipid

peroxidation level decreased with age and increased during pregnancy. The superoxide dismutase activity was higher during late pregnancy than early pregnancy. The levels of ß-carotene, vitamin E, vitamin C, cholesterol and HDL-cholesterol were higher in heifers than the calves. During pregnancy, ß-carotene and vitamin E levels decreased whereas lipid peroxidation increased.

L53 Animal physiology – Reproduction

0088. Rajhans, Rajib; Indian Veterinary Research Institute, Izatnagar (India); Sai Kumar, G.; Indian Veterinary Research Institute, Izatnagar (India)Chandra, Vikash; Indian Veterinary Research Institute, Izatnagar (India); Mishra, Ashish; Indian Veterinary Research Institute, Izatnagar (India); Sharma, G. TARU; Indian Veterinary Research Institute, Izatnagar (India). Total RNA content in buffalo oocytes and different stages of preimplantation embryos produced in vitro. Indian Journal of Animal Sciences (India). (Oct 2009) v. 79(10) p. 1004-1006 KEYWORDS: WATER BUFFALOES. OVA. EMBRYO CULTURE. EMBRYO TRANSFER. RNA.
Total RNA content can be used as a preliminary indicator of intrinsic quality of in vitro matured (IVM) oocytes and preimplantation stage embryos. The present study was conducted to assess the total RNA content of different preimplantation stage buffalo (Bubalus bubalis) embryos and to study the effect of vitrification on the total RNA content of in vitro matured buffalo oocytes. The amount of total RNA in the pools of immature oocytes (IM, 120), in vitro matured oocytes (MO, 120), preimplantation stage embryos 8–16 cell (8–16,47), morula (M, 13), blastocyst (B,7) as well as in the in vitro matured and vitrified oocytes (MV, 120) was quantified spectrophotometrically. Total RNA content (ng/oocyte or embryo) was reduced slightly from immature (2.24±0.40) to matured oocyte (1.66±0.53) followed by a significant (P0.01) decline from 8–16 cell (1.03±0.19) to morula (0.72±0.04). At the blastocyst stage (4.73±1.09) there was a significant (P0.01) increase in the total RNA content. There was no significant difference between total RNA content of in vitro matured control oocytes and vitrified oocytes, indicating that vitrification had no effect on the RNA content of in vitro matured oocytes.

0089. Mishra, Ashish G.; Indian Veterinary Research Institute, Izatnagar (India)Sharma, Taru; Indian Veterinary Research Institute, Izatnagar (India)Sai Kumar, G.; Indian Veterinary Research Institute, Izatnagar (India). Expression Profile of Connexin 43 and Poly A Polymerase Genes in Buffalo (Bubalus bubalie) Oocytes and Developing Embryos Produced in vitro. Journal of Applied Animal Research (India) . (Sep 2010) v. 38(1) p. 29-32 KEYWORDS: WATER BUFFALOES. IN VITRO SELECTION. OVA. EMBRYONIC DEVELOPMENT.
To find out the expression pattern of Connexin 43 (Cx43) a gap junction protein and Poly A polymerase (PAP) necessary for synthesis of poly (A) tail in mRNA, genes in buffalo (Bubalus bubalis) oocytes and developingembryos produced in vitro,pools of immatured oocytes (n=200), in vitro matured oocytes (n=200), embryos of 2-4 cell (n=83), 8-16 cell (n=80), morula (n=77) and blastocyst (n=40) were collected in vitro fromslaughter house ovaries for mRNA isolation. RT-PCR was carried out by using mRNA as the template and peR was carried out by using cDNA as template for amplification of 425 bp Cx43 and 252 bp PAP. Cx43was expressed in all except blastocysts stage, whereas, PAP was expressed in all. It is concluded that expressionpattern of Cx43 and PAP in oocytes and developing embryos can be used as a marker of developmental potential for embryos derived from oocytes.

0090. Ahmed, S.U.; Central Avian Research Institute, Izatnagar (India). Genome Mapping Laboratory; Sharma, Deepak; Central Avian Research Institute, Izatnagar (India). Genome Mapping Laboratory. Allele Specific PCR for Genotyping the Probable SNPs Mitochondrial Genome in Red Jungle Fowl and Domestic Chicken. Journal of

Applied Animal Research (India). (Sep 2010) v. 38(1) p. 49-53 KEYWORDS: CHICKENS. GENOTYPES. PCR. GENOMES. MITOCHONDRIAL GENETICS.
Allelespecific PCR was used for genotyping the identified probable SNP in mitochondrial genome in red junglefowl and domestic chicken. Out of the total 67 nucleotide substitutions identified on sequence homology comparisonof eight complete mitochondrial genome sequences (four each from domestic chicken breeds and redjungle [oio! subspecies), 19 were found to be specific for domestic chicken. For six SNPs primers with goodscore could be designed hence, used for genotyping of the RJF and domestic chicken populations. Allelicfrequency nf allele specific to domestic fowl and RJF population were 0.94 and 0.89 at CO/-l14-C / .TSNP; 0.83 and 0.89 at CO/-255-0 /A SNP; 0.78 and 0.94 at COII-279-C / T SNP; 0.94 and 0.83 at ATP6-294-G /A SNP; 0.83 and 0.94 at ND4-969-C / T SNP; and 0.94 and 0.78 at CYTB-543- T/C SNP, respectively. Thoughthe frequency of specific alleles in respective populations was uery high, but these alleles were not fixed in the populations hence these SNPs could not be used as population specific markers.

0091. Gorti, Ravi Kiran; National Institute of Animal Nutrition and Physiology, Bengaluru (India); David, C.G.; National Institute of Animal Nutrition and Physiology, Bengaluru (India); Reddy, I.J.; National Institute of Animal Nutrition and Physiology, Bengaluru (India). Relationship between nitric oxide and luteinizing hormone concentration during non-breeding season in Mandya ewes. Indian Journal of Animal Sciences (India). (Jan 2010) v. 80(1) p. 21-23 KEYWORDS: SHEEP. REPRODUCTIVE PERFORMANCE.
This study examined the reproductive activity, synchrony of estrus, its relationship between nitric oxide (NO), LH surges during non-breeding season. Multiparous female Mandya ewes (12) were divided into control group (6 ewes) and treated group (6 ewes). Ewes in treated group were exposed to ram for 3 h in the morning (from 6 AM to 9 AM) and 2 h in the evening (4 PM to 6 PM) for 30 days during non-breeding (May-June) season. Controls were exposed to ram for 15 min in the morning and evening to detect the estrus. Ram introduction advanced the onset of seasonal ovarian activity in the treated ewes compared to controls. Mean occurrence of estrus in treated ewes is 100%; compared to controls with higher incidences of estrus during morning hours than the evening hours after the ram introduction. Profiles of NO, LH, P4 and E2 varied between the animals in both the groups. LH surge occurred 8 h after the onset of estrus with high NO and E2ß in treated ewes as against the controls with LH surge of 17 h after the onset of estrus. It is concluded that, NO plays a positive role on LH surges thereby shortening the estrous cycle, improving the occurrence of estrus for breeding of Mandya ewes in non-breeding season.

0092. Mondal, S.; National Institute of Animal Nutrition and Physiology, Bengaluru (India); Nandi, S.; National Institute of Animal Nutrition and Physiology, Bengaluru (India); Reddy, I.J.; National Institute of Animal Nutrition and Physiology, Bengaluru (India); Suresh, K.P.; National Institute of Animal Nutrition and Physiology, Bengaluru (India). Isolation, culture and characterization of endometrial stromal cells in buffalo. Indian Journal of Animal Sciences (India). (Jan 2010) v. 80(1) p. 24-26 KEYWORDS: WATER BUFFALOES. PROSTAGLANDINS. REPRODUCTIVE PERFORMANCE. UTERUS.
Isolation and characterization of endometrial stromal cells were carried out in order to investigate the role of stromal cells in implantation and pregnancy in buffalo. The stromal cells were found to attach within 36–48 h after plating and exhibited fibroblastic shapes as well as contact inhibition at the stage of confluence. Protein concentrations have been found to increase progressively with the time in culture.DNA concentrations increased from day 3 to day 5 and then decreased to day 7 of culture. This is the first isolation,culture and characterization of endometrial stromal cells in buffalo.

0093. Deka, Ilakshy; Assam Agricultural University, Guwahati (India) Goswami, J.; Assam Agricultural University, Guwahati (India) Chakravarty, P.; NRC Yak, Dirang (India)Baruah, K.K.; NRC Mithun, Nagaland

(India)Sarmah, B.C.; Assam Agricultural University, Guwahati (India). Synchronization of oestrus with PGF2α analogue and ear implant and serum oestradiol–17ß and progesterone profile in Asom local cows. Indian Journal of Animal Sciences (India). (Feb 2010) v. 80(2) p. 104-106 KEYWORDS: COWS. SYNCHRONIZATION. OESTRUS SYNCHRONIZATION. OESTROGENS. OESTROUS CYCLE. PROSTAGLANDINS.
A PGF2α analogue (5 ml) injection and ear implant (3 mg norgestomet, 5 mg Estradiol valerate) were used to synchronize oestrus in 2 different groups of Asom local cows, 5 in each group. The treated cows evinced oestrus after 99.00 ±3.00 and 29.80±0.01 h of hormone application in 2 groups, respectively, the respective response to treatment being 100 and 80% .Oestradiol 17–ß reached peak level in the 2 treated groups (145.66±7.89 and 99.00±1.99 pg/ml respectively) on the day of oestrus. On the contrary, the peak level of serum progesterone was recorded on day 14 and 16 of oestrous cycle in the 2 treated groups of animals respectively. The lowest serum progesterone level of 0.19±0.02 ng/ml and 0.24±0.13 ng/ml in PGF2α analogue and ear implant treated cows, respectively, was obtained on the day of induced oetrus. The present study indicated that while response in inducing synchronized oestrus was high, the variation in oestradiol 17–ß and progesterone profile in blood of Asom local cows with PGF2α analogue and ear implant application was similar to that in normal cycling cows.

0094. Arangasamy, A.; National Research Centre on Equines, Bikaner (India). Effect of stallion seminal plasma proteins on in-vitro capacitation of equine spermatozoa. Indian Journal of Animal Sciences (India). (Feb 2010) v. 80(2) p. 107-109 KEYWORDS: EQUIDAE. SPERMATOZOA. IN VITRO. ACROSOME.
This study was undertaken to see the capacitation response with the group of heparin (HBPs) and gelatin binding (GBPs) stallion seminal plasma proteins. Frozen thawed stallion spermatozoa were incubated with heparin (10 ìg/ml) in the presence of HBPs and GBPs 20, 40 and 60 ìg/ml. The percentage of capacitated sperm was evaluated after the induction of acrosome reaction with progesterone (100 ìg/ml) from 0 and 4 h. Significant differences were observed in the percentage of acrosome reacted spermatozoa at 4 h incubation between HBPs treated and control groups. The GBPs treated group showed non significant difference. The highest value of acrosome reacted sperm was seen in HBPs 40 ìg, and in GBPs 60 ìg. It can be concluded that the addition of HBPs enhanced the capacitation responses, and best dose level was 40 ìg of protein in HBPs groups for induction of acrosome reaction.

L70 Veterinary science and hygiene

0095. Singh, R.D.; Anand Agricultural University, Anand (India).College of Veterinary Science and Animal Husbandry; Sarita Devi; Anand Agricultural University, Anand (India).College of Veterinary Science and Animal Husbandry; Gondaliya, S.R.; Anand Agricultural University, Anand (India).College of Veterinary Science and Animal Husbandry; Bhavsar, S.K.; Anand Agricultural University, Anand (India).College of Veterinary Science and Animal Husbandry; Thaker, A.M.; Anand Agricultural University, Anand (India).College of Veterinary Science and Animal Husbandry. Safety of Ketoprofen in Cow calves following repeated intravenous administration. Veterinary World (India). (Mar 2009) v. 2(3) p.105-107 KEYWORDS: CALVES. DRUGS. ANALGESICS. ANTIPYRETICS.
Ketoprofen is a non steroidal anti-inflammatory drug (NSAID) used for its anti-inflammatory, analgesic and antipyretic properties in Veterinary Medicine. The present study was planned to assess safety of ketoprofen (3 $mg.kg^{-1}$) after repeated intravenous administration at 24 hours interval for five days in six crossbred cow calves (6-12 months age and weighing between 60-122 kg). Ketoprofen in calves was found safe based on evaluation of haematological (Hb, PCV, TLC and DLC), blood biochemical (AKP, ACP, AST, ALT, LDH, Total bilirubin, Serum Creatinine, BUN, Serum total protein, Serum albumin and Blood glucose) parameters.

0096. Asokan, G.V.; Institute of veterinary preventive medicine, Ranipet (India). Epidemiological assessment of vaccine efficacy. Veterinary World (India). (Mar 2009) v. 2(3) p.118-122 KEYWORDS: VACCINES. EPIDEMIOLOGY.
The success of an epidemiological program against infectious diseases depends on an effective prophylactic vaccine. Although efficacy and effectiveness are used interchangeably, effectiveness depends upon efficacy. Few methods are in use to assess the efficacy of the vaccine, a randomized double blind controlled trial is the least ambiguous method for evaluation. Observational designs for vaccine efficacy include cohort and case control and are useful when comparing vaccines with very large effectiveness. Modeling helps in designing vaccine. Serologic responses to antigens in combination vaccine differ from those obtained with separate administration of the components. Creation of a vaccine advisory and control authority is imminent.

0097. Kavitha, K. Lakshmi; College of Veterinary Science, Tirupati (India).Department of Veterinary Microbiology.Chetty, M. Satyanarayana; College of Veterinary Science, Tirupati (India).Department of Veterinary Microbiology.. Efficacy of inactivated and live attenuated goatpox vaccines. Indian Journal of Animal Sciences (India). (Oct 2009) v. 79(10) p. 1018-19 KEYWORDS: GOATS. CAPRIPOXVIRUS. VACCINES. LIVE VACCINES. VACCINATION.
Vaccination of goats against goat pox is very much essential. In this connection an inactivated and live attenuatedvaccine was prepared and was given experimentally to the goats at the dose rate of 4 ml(1x106/ml) subcutaneously and 1000TCID50/ml intradermally respectively, to know about its efficacy to protect goat pox and was challenge on 28th day which resulted an fool proof protection with both the vaccines where as the control group exhibited clinical signs.

0098. Patel, Jatin H.; Anand Agricultural University, Anand (India) College of Veterinary Science and A.H.;Varia, Rasesh D.; Anand Agricultural University, Anand (India) College of Veterinary Science and A.H.; Patel, Urvesh D.; Anand Agricultural University, Anand (India) College of Veterinary Science and A.H.; Vihol, Priti D.; Anand Agricultural University, Anand (India) College of Veterinary Science and A.H.; Bhavsar, Shailesh K.; Anand Agricultural University, Anand (India) College of Veterinary Science and A.H.; Thaker, Aswin M.; Anand Agricultural University, Anand (India) College of Veterinary Science and A.H.. Safety level of Levofloxacin following repeated oral adminstration in White Leg Horn layer birds. Veterinary World (India) . (April 2009) v. 2(4) p. 137-39 KEYWORDS: LAYER CHICKENS. ANTIBIOTIC PROPERTIES.
Levofloxacin is a fluorinated quinolone which has broad-spectrum antibacterial activity at low plasma/tissue concentration. The present study was designed to investigate safety of levofloxacin (10 mg/kg) after repeated oral administration at 12 hours interval for 14 days in layer birds (30-35 weeks old and weighing between 1.5-2.0 kg) and to determine tissue concentration of the drug following oral administration (10 mg/kg) for 5 days. Drug concentration in tissue was determined using High Performance Liquid Chromatography (HPLC). Repeated oral administration of levofloxacin in layer birds was found safe based on evaluation of haematological (Hb, PCV, TLC and DLC), blood biochemical (AST, ALT, AKP, ACP, LDH, BUN, Serum total protein, Serum albumin, Serum Creatinine, Blood glucose and Total bilirubin) and histopathology of liver, kidney and joint cartilage. Levofloxacin could not be detected in body tissues (liver and skeletal muscle) at 12 hours after the last administration.

0099. Baig, M.I.; Bombay Veterinary College, Mumbai (India) Department of Livestock Production and Management.; Bhagwat, V.G; Bombay Veterinary College, Mumbai (India) Department of Livestock Production and Management. Study the efficacy of Galactin Vet Bolus on milk yield in dairy cows. Veterinary World (India). (April 2009) v. 2(4) p. 140-42 KEYWORDS: CROSSBREDS. COWS. MILK YIELD.

Efficacy study of GALACTIN VET bolus (5 boli once daily for 10 days) was conducted in moderate milk producing Holstein and Jersey crossbred cows. Improved Milk yield, CLR, Fat % and SNF % supported GALACTIN VET bolus to be safe galactogogue in dairy cows.

0100. Lohani, M.; G.B. Pant University of Agriculture and Technology, Pantnagar (India). College of Veterinary and Animal Sciences. Department of Pharmacology and Toxicology; Ahmad, A.H.; G.B. Pant University of Agriculture and Technology, Pantnagar (India). College of Veterinary and Animal Sciences. Department of Pharmacology and Toxicology; Singh, K.P.; G.B. Pant University of Agriculture and Technology, Pantnagar (India). College of Veterinary and Animal Sciences. Department of Pharmacology and Toxicology; Verma, Sheetal; G.B. Pant University of Agriculture and Technology, Pantnagar (India). College of Veterinary and Animal Sciences. Department of Pharmacology and Toxicology. Pharmacokinetics and Residual Studies of Florfenicol Following Multiple Dose Oral Administration in Poultry. Journal of Applied Animal Research (India) . (Sep 2010) v. 38(1) p. 9-12 KEYWORDS: POULTRY. CHLORAMPHENICOL.MEDICINAL PROPERTIES. RESIDUAL EFFECTS. FLUORINE. ORAL ADMINISTRATION
Pharmacokinetics of Florfenicol was established in the plasma of poultry. Florfenicol was given as multiple dose 30 $mg.kg^{-1}$ orally daily for 5 days in poultry. The mean values of half-life ,body clearance (Cl_b) and mean volume of distribution ($Vd_{area)}$ were 8.39 and 7.91 h; 0.5 and 0.29 $l.h^{-1}$ and 4.8 and 2.70 $l.kg^{-1}$ after first and last dose, respectively. On the basis of depletion study for Florfenicol in poultry, a withdrawal time of 72 h was calculated.

0101. Sodhi, M.; National Bureau of Animal Genetics Resources, Karnal (India). Cattle Genomic Lab; Mishra, B.P.; National Bureau of Animal Genetics Resources, Karnal (India). Cattle Genomic Lab; Prakash, B.; National Bureau of Animal Genetics Resources, Karnal (India). Cattle Genomic Lab; Kaushik, R.; National Bureau of Animal Genetics Resources, Karnal (India). Cattle Genomic Lab; Singh, K.P.; National Bureau of Animal Genetics Resources, Karnal (India). Cattle Genomic Lab; Mukesh, M.; National Bureau of Animal Genetics Resources, Karnal (India). Cattle Genomic Lab. Distribution of Major Allelic Variants at Exon-IV of Kappa Casein Gene in Indian Native Cattle. Journal of Applied Animal Research (India). (Sep 2010) v. 38(1) p. 117-121 KEYWORDS: CATTLE. LAND RACES. GENES. VARIANTS. CASEIN.
The present study was aimed to screen the pattern of major allelic variants of kappa casein (K-CN) locus across 744 animals representing 17 Indian native cattle breeds adapted to different agroclimatic regions. A 935 bp fragment of K-CN exon IV region was PCR amplified and digested with HindIII and HaeIII restriction enzymes to reveal the frequency distribution of A, Band E alleles. The digestion with HindIII pattern revealed a single 935 bp fragment or three fragments of 935, 520 and 415 bps, whereas HaeIII digestion displayed a monomorphic pattern of 641 and 294 bps fragments in all the studied samples. On analysis, only two alleles A and B were detected. AA genotype was most commonly distributed (0.818), with predominance of A allele (0.908). The present analysis indicated contrasting allelic pattern at K-CN locus in Indian native cattle in comparison to that reported for Bos taurus.

0102.Gupta,N.;Jawaharlal Nehru Krishi Vishwavidyalay, Jabalpur(India);Katiyar, A.K.; Jawaharlal Nehru Krishi Vishwavidyalay, Jabalpur(India);Swamy, M.; Jawaharlal Nehru Krishi Vishwavidyalay, Jabalpur(India). Effect of cyproheptadine drugs on vascular permeability in the buffalo calf skin. Indian Journal of Animal Sciences (India). (Jan 2010) v. 80(1) p. 19-20 KEYWORDS: CALVES. HISTAMINE. SKIN.
Effect of cyproheptadine drugs on vascular permeability in the buffalo calf skin was studied. Bacterial inflammation (2 i/d infection of Staphylosanthus epidermidis on both sides of thoraco-abdominal region) and chemical inflammation (2 i/d infections of turpentine (0.05 ml)) were caused in buffalo calves. The present

suppression of bluing by cyproheptadine in early phase indicated that bacterial and chemical injury also mediated its permeability through the release of 5-hydroxytryptamine.

0103. Pawaiya, R.V.S.; Indian Veterinary Research Institute, Izatnagar (India). Division of Pathology; Ramkumar; Indian Veterinary Research Institute, Izatnagar (India). Division of Pathology. c-Myc expression pattern in canine mammary and human breast cancer. Indian Journal of Veterinary Pathology (India). (Jun 2009) v.33(1) p.46-51 KEYWORDS: NEOPLASMS. INFILTRATION. CYTOPLASM. CELL DIFFERENTIATION. GENES. CELL CYCLE. ENZYMES. EXHIBITIONS. NECROSIS. COMMUNICATION TECHNOLOGY.
Study on histopathological characterization as well as c-Myc expression pattern was undertaken in 15 canine mammary tumours and two human breast cancers by immunohistochemical method employing monoclonal antibodies. Of 15 canine mammary tumours, 4 were benign and 11 were malignant, while both human breast cancers were diagnosed as malignant. Benign cases included adenomas and benign mixed tumours while malignant neoplasms included mammary adenocarcinomas (acinar/ infiltrative/ papillary/ solid types), squamous cell carcinomas and malignant mixed mammary tumours. Two human breast cancers were diagnosed as infiltrative ductal carcinoma and intraduct cribriform carcinoma. Microscopically, infiltrative acinar adenocarcinoma of bitch mammary gland and infiltrative ductal carcinoma of human breast shared similar histological features. immunohistochemistry for c-Myc oncoprotein generally revealed strong nuclear and cytoplasmic immunolabelling in malignant tumours excepting in an adenoma case where glandular epithelial cells in some localities exhibited strong nuclear signals. The results of strong c-Myc immunolabelling pattern in infiltrative ductal carcinoma of human breast resembled to its canine counterpart, which suggested the involvement of similar molecular and pathological processes in the development and progression of tumours.

0104. Hemalatha, S.; Madras Veterinary College, Chennai (India). Department of Veterinary Pathology; Manohar, B. Murali; Centre for Animal Health Studies, Chennai (India);Balachandran, C.; Madras Veterinary College, Chennai (India). Department of Veterinary Pathology,. Pathological changes in bursa of Fabricius in concurrent infections of infectious bursal disease with Newcastle disease, Escherichia coli infection and aflatoxicosis. Indian Journal of Veterinary Pathology (India). (Jun 2009) v.33(1) p.62-64 KEYWORDS: PATHOLOGY. SEROUS BURSA. GUMBORO DISEASE. NEWCASTLE DISEASE. ESCHERICHIA COLI. ESCHERICHIA. POISONING. AFLATOXINS. IMMUNOSUPPRESSION.
Concurrent infections of infectious bursal disease (IBD) with Newcastle Disease (ND), Escherichia coli infection and aflatoxicosis were studied in five-week-old White Leghorn chicken sequentially. The bursa to bodyweight ratio revealed an early enlargement of bursa of Fabricius (BF) followed by the atrophy of BF in all the three concurrent infections groups with advanced onset of atrophic changes in concurrent infections groups compared to that of IBD infection alone. Histologically, in IBD-ND concurrent infection group, the BF showed very prominent proliferation of lymphoblasts in the follicles at 24 hours post infection (HPI) with increased fibroplasia in the inter follicular areas at 120 HPI. While in IBD-E. coli concurrent infection group, BF revealed prominent lymphoid depletion in the medulla of follicles from 12 HPI to 24 HPI and the interfollicular fibroplasia was observed as early as 72 HPI. In IBD with aflatoxicosis group the BF revealed changes similar to that of IBD group initially and later atrophy started as early as 144 HPI with cystic and glandular transformation of bursal follicles and increased interfollicular fibrosis.

0105. Dahiya, S.K.; CCS Haryana Agricultural University, Hisar (India). College of Veterinary Sciences. Department of Veterinary Microbiology; Tiwari, S.C.; CCS Haryana Agricultural University, Hisar (India). College of Veterinary Sciences. Department of Veterinary Microbiology;Batra, Munish; Govind Ballabh Pant University of Agriculture & Technology, Pantnagar (India). Department of Veterinary Pathology,Sharma, Alok; CSK

Himachal Pradesh Krishi Vishvavidyalaya, Palampur (India). Department of Veterinary and Animal Husbandry Extension. Comparison of capture-ELISA with cultural isolation for detection of Mycoplasma mycoides subsp. mycoides (LC type, M-30) in experimentally infected lambs. Indian Journal of Veterinary Pathology (India). (Jun 2009) v.33(1) p.69-72 KEYWORDS: MYCOPLASMA MYCOIDES. SEPTICAEMIA. LAMBS. CULTURAL METHODS. IMMUNOLOGY. HISTOPATHOLOGY. ELISA.
A capture-ELISA was standardized in order to avoid the time consuming and comparatively less sensitive cultural reisolation for detection of Mycoplasma mycoides subsp. mycoides (LC, M-30) [MmmLC] in the tissues of experimentally infected lambs and compared with results of reisolation of MmmLC. The organism could be recovered from 65.55% of the specimens examined for cultural reisolation. Capture-ELISA detected MmmLC antigens in 73.33% of the examined tissues. Comparison of results of both the techniques revealed a 90% agreement and 10% disagreement. It was concluded from the present studies that capture-ELISA is a more sensitive technique than reisolation of organism for detection of MmmLC in the tissues of the animals.

0106. Rajesh, A.; G.B. Pant University of Agriculture & Technology, Pantnagar (India). College of Veterinary and Animal Sciences. Department of Veterinary PathologyAgrawal, D.K.; G.B. Pant University of Agriculture & Technology, Pantnagar (India). College of Veterinary and Animal Sciences. Department of Veterinary PathologyGupta, Varsha; G.B. Pant University of Agriculture & Technology, Pantnagar (India). College of Veterinary and Animal Sciences. Department of Veterinary Pathology. Effect of battery industry effluent on humoral immune response in mice. Indian Journal of Veterinary Pathology (India). (Jun 2009) v.33(1) p.99-100 KEYWORDS: INDUSTRY. WASTEWATER. HUMORAL IMMUNITY. MICE. INDUSTRIAL POLLUTANTS. WASTEWATER. POLLUTANTS.
The effect of battery industry effluent on humoral immune response in mice was studied in 128 mice of two weeks age procured from Small Animal Experimental House of the University. The mice were randomly divided into two equal groups. The mice of both the groups I and II were immunized with Ranikhet disease vaccine (R2B) at every 15 day up to 120 days. Group I was kept as control while group II mice were given battery industry effluent daily orally ad libitum instead of drinking water. Humoral immune response in mice was measured by enzyme linked immunosorbent assay (ELISA). The results showed significant reduction in antibody titers against Ranikhet disease virus indicating suppression of humoral immune response in battery industry effluent fed mice in comparison to control.

L72 Pests of Animals

0107. Garg, R.; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India);Yadav, C.L.; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India). Diagnosis of benzimidazole resistance in Haemonchus contortus using allele-specific PCR technique. Indian Journal of Animal Sciences (India). (Oct 2009) v. 79(10) p. 982-985 KEYWORDS: HAEMONCHUS CONTORTUS. ANTHELMINTICS. BENZIMIDAZOLES. PCR.
Molecular tools can be of great use in understanding the origin and nature of underlying mechanisms of benzimidazole resistance. In the present study an allele-specific PCR was standardized to diagnose the mutation (Phe to Try) at residue 200 of the isotype 1 beta tubulin gene responsible for benzimidazole resistance in Haemonchus contortus adult and infective larvae. Once standardized, AS-PCR proved to be a powerful tool to detect point mutations at codon 200 of isotype 1 ß-tubulin gene of H. contortus adult worms and infective larvae. The technique can be effectively used for genotyping of benzimidazole susceptible and resistant alleles of H. contortus from sheep.

0108. Salam, M.M.; University of Veterinary and Animal Sciences, Lahore (Pakistan); Maqbool, A.; University of Veterinary and Animal Sciences, Lahore (Pakistan); Naureen, A.; University of Veterinary and Animal Sciences, Lahore (Pakistan); Lateef, M.; University of Veterinary and Animal Sciences, Lahore (Pakistan). Comparision of different diagnostic techniques against Fasciolosis in Buffaloes. Veterinary World (India). (April 2009) v. 2(4) p. 129-132 KEYWORDS: WATER BUFFALOES. FASCIOLA. FASCIOLASIS. DIAGNOSIS.
The present study was conducted to compare different diagnostic tests viz., Direct Smear (DS), Agar gel precipitation (AGP), Sedimentation (Sd), and Zinc Sulfate (ZnSO4) flotation for fasciolosis in dairy buffaloes as well as the economic losses due to fasciolosis. A total of 200 faecal samples were examined and DS, AGP, Sd, and ZnSO4 flotation techniques showed an overall prevalence of 2, 8, 5 and 4%, respectively. The highest agreement was observed between Sd and ZnSO4 (0.88, 95%CI; 0.74-1.02) followed by AGP and Sd (0.75, 95%CI; 0.62-0.88), ZnSO4 and DS (0.65, 95%CI; 0.52-0.78), AGP and ZnSO4 (0.648, 95%CI; 0.51-0.77), DS and Sd (0.55, 95%CI; 0.43- 0.68), and DSM and AGP (0.38, 95%CI; 0.27-0.48). By taking DS as a gold standard, all tests showed 100 percent sensitivity results and same trend was observed in case of negative predictive values (NPV). Highest specificity was shown by ZnSO4, followed by Sd and AGP. Similar trends were observed in the positive predictive values (PPV). Then, by taking AGP as gold standard, all tests showed 100 percent specificity and positive predictive values (PPV) while, Sd showed highest sensitivity followed by ZnSO4 and AGP and similar trend was observed regarding NPV of tests. To this end, most effective test is AGP followed by Sd, ZnSO4 and DS method. Moreover, AGP is the most suitable method for diagnosing the fasciolosis in early stages. Total economic losses due to fasciolosis during three months (Oct. – Dec. 2004) were found very high.

0109. Kumar, M. Udaya; Sri Venkateswara Veterinary University, Hyderabad (India). College of Veterinary Science;Mishra, A.K.; Indian Veterinary Research Institute, Izatnagar (India). Division of Parasitology;Rao, J.R.; Indian Veterinary Research Institute, Izatnagar (India). Division of Parasitology;Tewari, A.K.; Indian Veterinary Research Institute, Izatnagar (India). Division of Parasitology. Analytical Sensitivity of 35 Copy Bl PCR Assay in Detecting Toxoplasma gondii Infection in Mouse. Journal of Applied Animal Research (India). (Sep 2010) v. 38(1) p. 65-67 KEYWORDS: MICE. TOXOPLASMA GONDII. TOXOPLASMA. TOXOPLASMOSIS. PCR.
A 35 copy PCR assay was tested for its efficacy and in amplifying the DNA of theoretically lowest number of tachyzoites of Toxoplasma gondii, R.H. strain in Swiss albino mice. Two ul (20 ng) of tachyzoite DNA with F 5'-GGAACTGCATCCGTTCATGAG3' (BG1) and R 5'-TCTTTAAAGCGTTCGTGGTC3' (BG100)primers yielded an 194 bp product on agarose gel. The PCR assay was found sensitive in detecting as low as 1.21pg of DNA ofT. gondii, R.H. strain. Hence, the assay may be used for the diagnosis of toxoplasmosis in clinical samples.

0110. Ravindran, R.; Indian Veterinary Research Institute, Izatnagar (India). Division of Parasitology; Rao, J.R.; Indian Veterinary Research Institute, Izatnagar (India). Division of Parasitology; Mishra, A.K.; Indian Veterinary Research Institute, Izatnagar (India). Division of Parasitology. Development of de novo PCR Primers Generated from Arbitrary PCR for the Detection of Babesia bigemina in Bovines. Journal of Applied Animal Research (India). (Sep 2010) v. 38(1) p. 109-112 KEYWORDS: BOVINAE. BABESIA. BABESIOSIS. DIAGNOSIS.
A set of de novo oligonucieoude polymerase chain reaction, PCR primers yielding a 480 bp product were developed with an analytical sensitivity of 0.5 ng using the sequence information of á B. bigemina specific monomorphic RAPD fragment. The primers did not amplify any products from DNA templates of bovine & bubaline hosts as well as other common protozoans like Thelieria annulata, trypanosoma evansi & Toxopiasma gondii. These primers will help in detection of this pathogen.

L73 Animal Diseases

0111. Hegde, R.; Institute of Animal Health and Veterinary Biologicals, Bangalore (India);Gomes, Amitha R.; Institute of Animal Health and Veterinary Biologicals, Bangalore (India);Gowda, S.M. Byre; Institute of Animal Health and Veterinary Biologicals, Bangalore (India);Santhosh A.K.; Institute of Animal Health and Veterinary Biologicals, Bangalore (India);Renukaprasad, C.; Institute of Animal Health and Veterinary Biologicals, Bangalore (India). Cytopathic effect of PPR vaccine virus strains in Vero cells. Veterinary World (India). (Mar 2009) v. 2(3) p.93-94 KEYWORDS: PEST OF SMALL RUMINANTS. VACCINES. ELISA.
The present study describes the cytopathic effect of two different Peste des petits ruminants (PPR) vaccine virus strains presently being used in the country,in vero cells. The cytopathic effect (CPE) was visible from 4th day post infection in Sungri vaccine virus strain where as Arasur vaccine virus strain showed CPE, 36-48 hr post infection. With both vaccine virus strains the CPE in vero cells showed initial cell rounding, aggregation and syncytial development. The generalized CPE was noticed by 6th day in Sungri and by 96 hrs post infection in Arasur strain. However complete detachment of the cell monolayer was observed in Arasur strain by 120 hr, post infection. Infected coverslip cultures stained with H & E and May & Grunwald’s Giemsa showed cell vaculation, cytoplasmic extension and syncytia comprising of five to six nuclei. Acidophilic intracytoplasmic and intranuclear inclusion bodies were also observed. Titers, HA activity and detection by s-ELISA of both the vaccine virus strains are also compared.

0112. Barman, N.N.; Assam Agricultural University, Khanapara (India); Gupt, R.S.; Assam Agricultural University, Khanapara (India);Singh, N.K.; Assam Agricultural University, Khanapara (India);Tiwari, A.K.; Indian Veterinary Research Institute, Izatnagar (India);Singh, R.K.; Indian Veterinary Research Institute, Mukteswar (India);Das, S.K .; Assam Agricultural University, Khanapara (India). Comparative evaluation of molecular and antibody based technique for detection of classical swine fever virus infecting pigs of NE Region, India. Indian Journal of Animal Sciences (India). (Oct 2009) v. 79(10) p. 974–977 KEYWORDS: SWINE. SWINE FEVER VIRUS. ELISA. PCR. DIAGNOSIS. INDIA.
In the present study a comparative evaluation was made between antibody-based and nucleic-acid based technique for detection of CSFV. Field tissue and leukocyte samples (120) were collected from CSF suspected outbreaks. The tests showed 64.16% positive in direct FAT, 58.33% in S-ELISA and 75.83% in nested RT-PCR. The viral RNA as well as antigen was mostly detected in the extract of tonsil and mesenteric lymphnodes followed by kidney, spleen, ileum and leucocytes. The study indicated that molecular based technique using E2 specific primer could specifically detect CSFV genome and in higher percentage comparing the polyclonal antibody based techniques like direct FAT and S-ELISA.

0113. Savi, J.; CCS Haryana Agricultural University, Hisar (India) Minakshi, P.; CCS Haryana Agricultural University, Hisar (India) Prasad, G.; CCS Haryana Agricultural University, Hisar (India). Genotyping of field strains of canine parvovirus in Haryana using PCR and RFLP. Indian Journal of Animal Sciences (India). (Oct 2009) v. 79(10) p. 971–973 KEYWORDS: CANINE PARVOVIRUS. ENTERITIS. RFLP. PCR.
Canine parvovirus (CPV) is the causative agent of enteritis and myocarditis in young pups. Since there was no earlier report on the prevalence of CPV in Haryana, the present study was undertaken. The 50 canine parvovirus suspected faecal samples collected from veterinary hospitals were subjected to VP2 gene based PCR. Of these 33 (66%) were positive for canine parvovirus in Haryana. To characterise the canine parvovirus positive samples, PCR-RFLP was done using RsaI. The PCR-RFLP indicated that all the field virus strains detected in our study were either CPV-2a or CPV-2b type which differed from vaccine strain (CPV-2) currently in use. It demonstrated the potential application of RFLP to differentiate the CPV-2 antigenic variants. The presence of CPV even in vaccinated dogs, possibly suggests the vaccination failure.

0114. Malik, P.; National Research Centre on Equines, Hisar (India);Khurana ,S. K.; National Research Centre on Equines, Hisar (India);Singh, B. K.; National Research Centre on Equines, Hisar (India);Dwivedi, S. K.; National Research Centre on Equines, Hisar (India). Recent outbreak of glanders in India. Indian Journal of Animal Sciences (India). (Oct 2009) v. 79(10) p. 1015-17 KEYWORDS: BACTERIOSES. PSEUDOMONAS. EQUIDAE. EPIDEMICS. INDIA.

Glanders, a notifiable highly contagious zoonotic disease primarily of equids, is caused by Burkholderia mallei. The disease in India was restricted to certain pockets with sporadic cases. A major outbreak of glanders occurred in India starting in 2006 from Maharashtra (26 cases). The disease has been reported later on from six other states namely Uttar Pradesh (70), Uttrakhand (21), Punjab (3), Andhra Pradesh (16), Himachal Pradesh (6) and Haryana (1) till 2007. The disease was confirmed among equines based on clinical signs and symptoms, microbiological and serological investigations. A total of 14 isolates indistinguishable from B. mallei were obtained from clinical samples while serum samples of 140 equines were found positive by Complement Fixation Test. Strategies for containment of the disease to other areas and action as per Glanders and Farcy Act, 1899 were suggested. Follow up revealed negative status in various states indicating that the disease was successfully contained in the country.

0115. Shivraj; Institute of Animal Health and Veterinary Biologicals, Bangalore (India);Venkatesha, M.D.; Institute of Animal Health and Veterinary Biologicals, Bangalore (India);Sanjeevkumar; Institute of Animal Health and Veterinary Biologicals, Bangalore (India); Chandranaik, B.M.; Institute of Animal Health and Veterinary Biologicals, Bangalore (India);Sajukta, Rajkumari; Institute of Animal Health and Veterinary Biologicals, Bangalore (India);Giridhar, P.; Institute of Animal Health and Veterinary Biologicals, Bangalore (India);Prasad, C. Renuka; Institute of Animal Health and Veterinary Biologicals, Bangalore (India). Detection of Leptospiral Antibodies in the sera of Captive Elephants. Veterinary World (India). (April 2009) v. 2(4) p. 133-34 KEYWORDS: ELEPHANTS. WILD ANIMALS. DIAGNOSIS.

In the present study, serum samples were collected from 51 captive elephants kept in the three different forest ranges (19-Bandipur, 12-Shimogga, and 20-Mudhumalai). The samples were subjected to screening for leptospirosis by microscopic aggglutination test (MAT). It was found that out of the 51 samples seven elephant sera (13.72%) showed antibody titres against two serovars of Leptospira interrogans (L. australis and L. canicola) by MAT indicating the presence of infection or due to the past exposure of captive elephants to leptospiral antigens.

0116. Chauhan, H.C.; Sardarkrushinagar Dantiwada Agricultural University, Sardarkrushinagar (India). College of Veterinary Science and AH; Chandel, B.S.; Sardarkrushinagar Dantiwada Agricultural niversity,Sardarkrushinagar (India). College of Veterinary Science and AH; Kher, N.; Sardarkrushinagar Dantiwada Agricultural University, Sardarkrushinagar (India). College of Veterinary Science and AH; Dadawala, A.I.; Sardarkrushinagar Dantiwada Agricultural University, Sardarkrushinagar (India). College of Veterinary Science and AH;Agrawal, S.M.; Sardarkrushinagar Dantiwada Agricultural University, Sardarkrushinagar (India). College of Veterinary Science and AH. Pesti Des Petits ruminants virus infection in animals. Veterinary World (India). (Apr 2009) v. 2(4) p. 150-55 KEYWORDS: ANIMAL VIRUSES. RUMINANTS.

For centuries morbillivirus infections have had a huge impact on both human beings and animals. Morbilliviruses are highly contagious pathogens that cause some of the most devastating viral diseases of humans and animals world wide. They include measles virus (MV), canine distemper virus (CDV), rinderpest virus (RPV) and peste des petits ruminants (PPRV) virus. Furthermore, new emerging infectious diseases of morbilliviruses with significant ecological consequences of marine mammals have been discovered in the past decades. Phocid distemper virus (PDV) in seals and the cetacean morbillivirus (CMV) have been found in dolphins, whales and porpoises. Peste des petits ruminants (PPR) is a highly contagious infectious , an acute or

sub acute viral disease of domestic and wild small ruminants characterized by fever, oculonasal discharges, stomatitis, conjunctivitis, gastroenteritis and pneumonia. Goats are more severely affected than sheep. It is also known as pseudorinderpest of small ruminants, pest of small ruminants, pest of sheep and goats, kata, stomatitis- pneumoentritis syndrome, contagious pustular stomatitis and pneumoentritis complex. It is one of the major notifiable diseases of the World Organization for Animal Health (OIE).

0117. Saini, N.S.; National Dairy Research Institute, Karnal(India). Dairy Cattle Breeding Division.; Dandapat, Anjan; National Dairy Research Institute, Karnal(India). Dairy Cattle Breeding Division.. Diagnosis and Molecular Characterization of Chicken Anaemia Virus. Veterinary World (India). (Apr 2009) v. 2(4) p. 156-60 KEYWORDS: CIRCOVIRIDAE. DIAGNOSIS. PCR. IMMUNOLOGICAL TECHNIQUES. CHICKENS.
Chicken infectious anemia (CIA) is an emerging disease especially of young chickens and has proved considerable health problems and economic losses to the poultry industry worldwide. The disease is characterized by aplastic anemia, hemorrhages in the muscle and subcutaneous tissue, thymus atrophy and immunosuppression. CIA infection is relatively easy to identify based on the pathognomic signs and lesions exhibited by the affected flock.Tentatively it can usually be made based on flock history, clinical signs, haematological changes and gross pathological findings in affected birds. For confirmatory diagnosis isolation and identification of the CIAV is done. Reduced haematocrit (PCV) values are the sensitive indicator to identify clinically affected birds with CIAV following experimental exposure. Monitoring of CIAV infection by virus isolation, antigen and CIAVspecific antibody detection by enzyme linked immunosorbent assay (ELISA), virus neutralization test (VNT), immunofluorescent test (IFT) and immunoperoxidase test (IPT), along with application of molecular diagnostic tools such as polymerase chain reaction (PCR), nucleic acid hybridization and sequencing etc. can be used for confirmatory diagnosis of CIAV infection.

0118. Udgata,S.K.; Dash,G.;Parida,S.K.; Mishra,R.; College of Fisheries Berhampur (India). Isolation and identification of human pathogenic Aeromonas hydrophila in seafood of Gopalpur Coast, Orissa. Indian Journal of Animal Research (India). (Mar 2009) v. 43(1) KEYWORDS: PATHOLOGY. AEROMONAS HYDROPHILA. SEAFOODS. ORISSA.
The investigation was carried out in the month of October, 2006 to ascertain the incidence of Aeromonas hydrophila, an emerging human pathogen in the salted and dried finfish species, Trichurus lepturus along Gopalpur coast of Bay of Bengal. Fifteen fish samples were collected, homogenized, and spread plated on Aeromonas hydrophila (Ah) agar. The typical yellow colonies on the selective Ah agar media were then confirmed by biochemical tests. The study revealed that 26.6% of the fish samples were contaminated with Aeromonas hydrophila. Thus, the study indicates that improperly cured and dried products can harbour food borne pathogens.

0119. Kundu, Krishnendu; Remount Veterinary Corps, Jammu & Kashmir (India); Rao, J. Raghavendra; Indian Veterinary Research Institute, Izatnagar (India) Tewari, Anup Kumar; Indian Veterinary Research Institute, Izatnagar (India); Baidya, Surojit; West Bengal University of Fisheries and Animal Sciences, Kolkata (India). Faculty of Veterinary Sciences.; Mishra, A.K.; Indian Veterinary Research Institute, Izatnagar (India). Existence of genetic variability among Indian isolates of Trypanosoma evansi. Indian Journal of Animal Sciences (India). (Jan 2010) v. 80(1) p. 3-6 KEYWORDS: TRYPANOSOMA EVANSI. WATER BUFFALOES. DOGS. HORSES. GENETIC VARIATION. PCR. DNA.
Genetic heterogeneity within Trypanosoma evansi isolates derived from buffalo, dog, horse and camel was studied by polymerase chain reaction (PCR). PCR was carried out using 17 arbitrary decamers with a GC content ranging from 60 to 70% and potentially informative primers on the genome of T. evansi were identified. The data on percentage difference between each pair of parasite isolates and the average

percentage difference value for each of the isolate pairs for a given random oligonucleotide primer were elucidated. Depending upon the T. evansi isolate-primer combination between 3 and 15 reproducible DNA fingerprints of 179 bp to 4039 bp were amplified suggesting minor and major differences in their random amplified polymorphic DNA (RAPD) profiles. One arbitrary primer, 5′-CCCCGGTAAC–3′ was identified as potentially informative for intra-species differentiation of T. evansi.

0120. Rajamuthu, S.; Madras Veterinary College, Chennai (India). Department of Animal Biotechnology.; Parthiban, M.; Tamil Nadu Veterinary and Animal Sciences University, Chennai (India); Senthil Kumar,T.M.A.; Tamil Nadu Veterinary and Animal Sciences University, Chennai (India)Aruni, Wilson; Tamil Nadu Veterinary and Animal Sciences University, Chennai (India);Senthil Kumar, S.; Madras Veterinary College, Chennai (India). Department of Animal Biotechnology. Nucleotide sequence analysis of the viral envelope protein gene (P32) region of sheep poxvirus strains from India. Indian Journal of Animal Sciences (India). (Feb 2010) v. 80(2) p. 91-93 KEYWORDS: CAPRIPOXVIRUS. NUCLEOTIDE SEQUENCE. PCR. TAMIL NADU.
ocal field strains (7) of sheep poxvirus from different districts of Tamil Nadu, India, and 2 vaccine strains were characterized by sequencing studies to find out the marker gene in an attempt to differentiate the field and vaccine strains. The full length viral envelope protein gene (P32) of sheep poxvirus was amplified and sequenced. The sequence studies revealed that the local field strains possessed 100% and 99.31% homology with Ranipet and Roumanian–Fanar vaccine strains respectively. Sheep poxvirus cannot be differentiated based on the envelope protein nucleotide sequence level in any field outbreaks.

0121. Pawaiya, R.V.S.; Indian Veterinary Research Institute, Izatnagar (India). Division of Pathology; Dhama, K.; Indian Veterinary Research Institute, Izatnagar (India). Division of Pathology ; Mahendran, M.; Indian Veterinary Research Institute, Izatnagar (India). Division of Pathology; Tripathi, B.N.; Indian Veterinary Research Institute, Izatnagar (India). Division of Pathology. Swine flu and the current influenza A (H1N1) pandemic in humans: A review. Indian Journal of Veterinary Pathology (India). (Jun 2009) v.33(1) p.1-17 KEYWORDS: SWINE INFLUENZAVIRUS. ORTHOMYXOVIRIDAE. SWINE. INFLUENZAVIRUS. PANDEMIS. VIROSES. EPIDEMICS.
Swine influenza (swine flu) is a highly contagious and an economically important disease of pigs caused by type A influenza viruses of the family Orthomyxoviridae. Mainly H1N1, H1N2, H3N2 and H3N1 subtypes of influenza A viruses are endemic in pig populations worldwide. Pigs can also be infected by human and avian influenza viruses and, acting as ‘mixing vessels’ for them, can give rise to novel reassortants. Human infections with swine flu H1N1 viruses have been earlier reported to be rare. The current swine origin novel influenza A (H1N1) virus is a quadruple-reassortant, which has gene segments from both North American and Eurasian swine lineages along with human and avian influenza viral genes. The virus has gained the capability for human to human spread without affecting pigs. This novel H1N1 virus is causing pandemic infection in humans in several countries around the world, with WHO updated figures as on 6 July 2009 standing at 429 deaths out of 94,512 affected persons in 135 countries. Vaccines, in addition to other protective measures, are one of the most valuable ways to protect people from the current influenza A (H1N1) pandemic. However, presently there are no vaccines against this newly evolved virus. Hence, it is important to develop a vaccine against the circulating virus strain, using the strain itself or exploiting the technique of reverse genetics for developing a novel vaccine candidate. The chemotherapeutic and chemoprophylaxis drug of choice is oseltamivir. Strict implementation of vigilance and monitoring, personal hygiene and quarantine has been considered crucial in prevention and control of current ‘swine flu’ pandemic. Extreme genetic variations exhibited by the influenza viruses are the hallmark, which make the disease difficult to be controlled. This review highlights the flu virus, especially swine flu virus, its epidemiology, viral reassortments and evolution, disease in pigs and man, diagnosis, interspecies transmission, preventive measures and the current pandemic situation in humans.

0122. Madhuri, D.; Ch. Charan Singh Haryana Agricultural University, Hisar (India). College of Veterinary Science. Department of Veterinary Pathology; Verma, P.C.; Ch. Charan Singh Haryana Agricultural University, Hisar (India). College of Veterinary Science. Department of Veterinary Pathology,. Effect of Ochratoxin-A on pathology of hydropericardium syndrome in broiler chicken. Indian Journal of Veterinary Pathology (India). (Jun 2009) v.33(1) p.35-38 KEYWORDS: OCHRATOXINS. SYMPTOMS. BROILER CHICKENS. PATHOLOGY.
A study has been conducted to find out the effect of ochratoxin A on the pathology of hydropericardium syndrome in broiler chicken. A total of 140, day - old broiler chicks were divided into two groups (XC and OC) of 70 chicks each, respectively. The chicks in the group OC were given ochratoxin A in the feed .5 ppm from day 1 to 28 days of experiment. At the age of 21, chicks in the two groups were further subdivided into XC and XH and OC and OH consisting of 25 and 45 chicks, respectively. The birds in groups XH and OH were inoculated subcutaneously with 0.5 ml of hydropericardium syndrome liver inoculum at day 21 of age. Except for decreased growth rate in OC group no other clinical signs were observed in control groups. A high mortality (60.60%) was observed in OH group as compared to (30.30%) the XH group. The characteristic pathological changes in HPS infected birds were hydropericardium, hepatitis, myocarditis, interstitial nephritis and lymphocytic depletion in lymphoid organs. The intensity of lesions was more severe and persisted for longer duration in ochratoxin A fed birds indicating additive effect of ochratoxin.

0123. Naveen, K. A.; Indian Veterinary Research Institute, Izatnagar (India). Division of Pathology, Avian Diseases Section; Singh, S.D.; Indian Veterinary Research Institute, Izatnagar (India). Division of Pathology, Avian Diseases Section; Mohanty, T.R.; Indian Veterinary Research Institute, Izatnagar (India). Division of Pathology, Avian Diseases Section. Pathobiological and molecular characterization of an Indian isolate of pigeon paramyxovirus type-I. Indian Journal of Veterinary Pathology (India). (Jun 2009) v.33(1) p.58-61 KEYWORDS: PATHOGENICITY. NEWCASTLE DISEASE. PARAMYXOVIRIDAE.
The biological and molecular characterization of a pigeon paramyxovirus type-1 (PPMV-1) isolated from pigeon in Bareilly, India, showing typical symptoms of greenish diarrhoea and nervous signs like tremors of head, incoordination, torticollis and paralysis of legs and wings have been described. The MDT, ICPI and IVPI of the isolate were 112hr, 0.42 and 0.00, respectively, suggesting it to be lentogenic. However, pigeons inoculated with the isolate became sick and died. The fusion ‘F’ protein gene of the virus was partially amplified and sequenced. The amino acid sequence at the F1/ F2 cleavage site was 112 RRQKRF117, typical of virulent NDV. These results provide further evidence about the unusual pathogenicity of PPMV-1 for chickens.

0124. Singh, V.; Indian Veterinary Research Institute, Izatnagar (India). Divisions of Pathology and Animal Biotechnology;Somvanshi, R.; Indian Veterinary Research Institute, Izatnagar (India). Divisions of Pathology and Animal Biotechnology; Tiwari, A.K.; Indian Veterinary Research Institute, Izatnagar (India). Divisions of Pathology and Animal Biotechnology. Papillomatosis in Indian cattle: occurrence and etiopathology. Indian Journal of Veterinary Pathology (India). (Jun 2009) v.33(1) p.52-57 KEYWORDS: PAPOVAVIRIDAE. CATTLE. INFECTIOUS DISEASES. BOVINE PAPILLOMAVIRUS.
Bovine papillomatosis (BP) is a contagious disease of cattle as warts/papilloma on skin and mucosa, caused by bovine papilloma viruses (BPV) -1 to -10. Fifty three cases of cutaneous warts (CWs) were recorded in cattle. Grossly, they were cauliflower-like/domeshaped and histopathologically, diagnosed as fibropapilloma and fibroblastic/occult papilloma with presence of koilocytes, keratohyaline granules and intracytoplasmic inclusion bodies. BPV-2 was detected by PCR and confirmed by sequencing. CWs were successfully transmitted to hamsters, cattle and buffaloes. Lesions in hamsters were early fibromatosis to fibroma and those in cattle and buffaloes were identical to those in natural cases. In this paper, we report spontaneous cases of papillomatosis in Indian cattle and its transmission to hamsters and cattle as well as buffaloes. BPV-2 induces

hyperproliferation of keratinocytes, fibroblasts as well as lipocytes. BPV-like particles were demonstrated by negative staining in cattle CWs. Further, this is only second example of interspecies transmission of papilloma viruses in buffaloes, first being equine sarcoids due to BPV-1 and -2.

0125. Kumar, H.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). College of Veterinary Science, Department of Epidemiology and Preventive Veterinary Medicine; Mahajan, Vishal; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). College of Veterinary Science, Department of Epidemiology and Preventive Veterinary Medicine; Singh Bal, Mandeep; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). College of Veterinary Science, Department of Epidemiology and Preventive Veterinary Medicine; Filia, G.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). College of Veterinary Science, Department of Epidemiology and Preventive Veterinary Medicine; Kaur, Kamalpreet; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). College of Veterinary Science, Department of Epidemiology and Preventive Veterinary Medicine; Vasudev, Ashuma; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). College of Veterinary Science, Department of Epidemiology and Preventive Veterinary Medicine; Kumar, Sandeep; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). College of Veterinary Science, Department of Epidemiology and Preventive Veterinary Medicine; Banga, H.S.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). College of Veterinary Science, Department of Epidemiology and Preventive Veterinary Medicine. Epidemiological and clinico-pathological studies of fasciolosis outbreaks in sheep in Punjab (India). Indian Journal of Veterinary Pathology (India). (Jun 2009) v.33(1) p.65-68 KEYWORDS: EPIDEMIOLOGY. FASCIOLA GIGANTICA. FASCIOLA. EPIDEMICS. SHEEP.
Two outbreaks of fasciolosis were investigated in sheep in the district of Ludhiana (Punjab). Out of 675 animals at the farm, 275 were critically ill and 155 reported dead. Clinically, sheep were cachetic and lack of vigour due to partial loss of appetite, mucous membranes were pale with signs of icterus, submandibular edema and some of the animals had diarrhea. Faecal sample examination was positive for fasciola eggs. Necropy reveaed slightly pale carcass, severe hepatic changes including traumatic destruction of the liver parenchyma, haemorrhages and necrosis. Fasciola gigantica immature flukes were seen in the cut surface of theliver. Haematological studies of affected animals revealed decreased in haemoglobin indicating anemia and leucocytosis due to relative increase in neutrophil count. There was significant increase in serum glutamate-oxalate transaminase (SGOT) and serum glutamate-pyruvate transaminase (SGPT) level in serum of affected animals. Total protein was decreased due to decrease in albumin. Histopathological changes included infiltration of polymorphonuclear cells, numerous eosinophils in lamina propria and severe fibrosis content in serum. Total bilirubin was markedly increased in serum of affected sheep.

0126. Velmurugan, B.; Indian Veterinary Research Institute, Izatnagar (India). Division of Pathology, Avian Diseases Section; Dhama, K.; Indian Veterinary Research Institute, Izatnagar (India). Division of Pathology, Avian Diseases Section; Kataria, J.M.; Indian Veterinary Research Institute, Izatnagar (India). Division of Pathology, Avian Diseases Section; Dash, B.B.; Indian Veterinary Research Institute, Izatnagar (India). Division of Pathology, Avian Diseases Section; Singh, S.D.; Indian Veterinary Research Institute, Izatnagar (India). Division of Pathology, Avian Diseases Section; Mahendran, M.; Avian Disease Diagnostic Laboratory, Manjadi (India), Department of Animal Husbandry,. Pathogenicity study of chicken anaemia virus isolated from a poultry flock of Maharashta State, India. Indian Journal of Veterinary Pathology (India). (Jun 2009) v.33(1) p.73-76 KEYWORDS: PATHOGENICITY. CIRCOVIRIDAE.
The present study reports the pathogenic potential of a recent isolate of chicken anaemia virus (CAV) obtained from a poultry flock of Maharashta state, India. In experimentally infected specific pathogen free day old chicks, Maharashtra CAV isolate produced consistent clinical signs, low haematocrit values, bone marrow aplasia and generalized lymphoid atrophy particularly of thymus and bursa along with histopathological

lessions of lymphocyte degeneration and depletion from the lymphoid organs in almost all infected chicks at the peak of anaemic phase, which were typical of CIA virus infection. Mean PCV value was significantly low (15.00±1.2) at 14 day post infection (dpi) compared (31.89±1.08). Lesions were pronounced during the first 2 to 3 weeks of infection and thymus, bone marrow, liver and bursa tissues were positive for CAV-antigen when tested by indirect immunofluorescent test (IIFT) revealing characteristic intranuclear immunofluorescence. Results revealed that Maharashtra CAV isolate is pathogenic and immunosuppressive in nature, thus suitable prevention and control strategies need to be formulated accordingly.

0127. Singh, Ranbir; Orissa University of Agriculture & Technology, Bhubaneswar (India). Orissa Veterinary College, Departments of Surgery and Pathology; Panda, S.K.; Orissa University of Agriculture & Technology, Bhubaneswar (India). Orissa Veterinary College, Departments of Surgery and Pathology; Nath, I.; Orissa University of Agriculture & Technology, Bhubaneswar (India). Orissa Veterinary College, Departments of Surgery and Pathology; Bose. V.S.C.; Orissa University of Agriculture & Technology, Bhubaneswar (India). Orissa Veterinary College, Departments of Surgery and Pathology.. Study of equine foot lesions and experimental cryotherapy for canker and thrush in horse. Indian Journal of Veterinary Pathology (India). (Jun 2009) v.33(1) p.77-81 KEYWORDS: FEET. LESIONS. CANKERS. HORSES.
An attempt has been made to study the different foot affections in four equine stud farms and two most common foot lesions were encountered like canker and thrush. The proliferative lesions in the foot were diagnosed as cases of canker while the degenerative lesions as cases of thrush. Initial survey of the four farms under study showed 389 out of 7991 animals suffering exclusively from foot lesions amounting 4.87% of animals. Incidence of foot lesions was predominated by canker of 249 cases which is 75.5% of the total cases foot lesions followed by 73 cases (18.76%) of thrush. Age-wise distribution revealed highest numbers of foot lesions 23.65% in 13-15 years age group followed by 7-9 years (18.50%). Sex-wise distribution showed that females suffered more (77.12%) than males (22.88%). Gross lesions of canker had shown cauliflower like hypertrophic growth starting from base of the frog and extending laterally and posteriorly. Animals suffering from thrush had shown a degenerative changes and areas of necrosis extending from the central sulcus and to the laterally. The microscopic lesions in canker were characterized by hypertrophy and hyperplasia of the keratinized cells of the tubular horns and intertubular horns. Cryotherapy in 6 horses suffering from canker showed considerable reduction in the size of lesion by seventh day. In case of thrush in 6 horses exposed to cryotherapy there was no offensive smelling and by seventh day, the necrosed and degenerated tissue was sloughed off. These horses showed complete healing after two applications, and two horses showed complete healing after third application. Microscopic changes observed after one week of cryotherapy of the above foot lesions like canker & thrush, consisted of ballooning and hydropic changes and bullae formation of the keratinised cells of the tubular and intertubular horns.

0128. Hemalatha, S.; Madras Veterinary College, Chennai (India). Department of Veterinary Pathology; Manohar, B. Murali; Madras Veterinary College, Chennai (India). Department of Veterinary Pathology; Balachandran, C.; Centre for Animal Health Studies, MMC, Chennai-51. Sequential immunohistochemical detection of infectious bursal disease virus antigen in experimental chicken. Indian Journal of Veterinary Pathology (India). (Jun 2009) v.33(1) p.82-84 KEYWORDS: GUMBORO DISEASE. BIRNAVIRUS. IMMUNOLOGICAL TECHNIQUES. HYDROCARBONS. ANIMAL TISSUES.
The distribution of infectious bursal disease (IBD) virus antigen in experimentally infected lymphoid and non lymphoid formalin fixed paraffin embedded tissues were studied sequentially from 0 hours post infection (HPI) to 28 days post infection (DPI)using immunoperoxidase (IPT) and immunofluoresence (IFT) staining techniques. A scoring pattern was adopted to study the distribution of viral antigen histologically in the tissues.The viral antigen was noticed in the cortical lymphocytes and plical epithelium of bursa of Fabricius, thymus, spleen, caecal tonsils, Harderian gland within 12 HPI. The macrophages present in interfollicular

stromal tissue of bursa, proventriculus and liver showed presence of viral antigen by 24 HPI. The intensity of reaction decreased by 10 DPI to 14 DPI in bursa of Fabricius, thymus and spleen. The antigen started disappearing from Harderian gland, proventriculus, spleen and thymus in that order and persisted for longer time in bursa of Fabricius and caecal tonsils.

0129. Tewari, A.K.; Indian Veterinary Research Institute, Izatnagar (India). Division of Parasitology; Rao, J.R.; Indian Veterinary Research Institute, Izatnagar (India). Division of Parasitology; Singh, R.; Indian Veterinary Research Institute, Izatnagar (India). Centre for Animal Disease Research and Diagnosis; Mishra, A.K.; Indian Veterinary Research Institute, Izatnagar (India). Division of Parasitology. Histopathological observations on experimental Trypanosoma evansi infection in bovine calves. Indian Journal of Veterinary Pathology (India). (Jun 2009) v.33(1) p.85-87 KEYWORDS:CALVES. HISTOPATHOLOGY. TRYPANOSOMA EVANSI. BOVINAE.
Experimental trypanosomosis was produced in 4 cross-bred bovine calves by subcutaneous inoculation of 5x107 Trypanosoma evansi on days 0 and 14. The calves developed pyrexia and generalised weakness with occasional parasitaemia. The gross lesions included paleness of visceral organs, gelatinisation of fat, enlarged spleen and marked congestion of lungs. Microscopic examination revealed lymphoid depletion and necrosis together with moderate haemosiderosis in spleen. The liver lobules showed dilated spaces of Disse and fibrocellular reaction in portal triads. Lungs showed septal thickening, cellular infiltration and engorged capillaries. The interstitial connective tissue between the cardiac muscle bundles was loosened with mild fibrocellular reaction, occasionally with degenerated muscle fibres. Lymphoid depletion in spleen may be correlated to the possible immunosuppression caused by T. evansi.

0130. Goswami, R.; MJP Rohilkhand University, Bareilly (India). Department of Animal Science; Somvanshi, R.; IVRI, Izatnagar (India). Division of Pathology; Singh, S.M.; MJP Rohilkhand University, Bareilly (India). Department of Animal Science; Singh, Sarman; All India Institute of Medical Science, New Delhi (India). Department of Laboratory Medicine, Division of Microbiology. A preliminary survey on incidence of helminthic and protozoal diseases in rats. Indian Journal of Veterinary Pathology (India). (Jun 2009) v.33(1) p.90-92 KEYWORDS: RATS. ANIMAL DISEASES. HELMINTHOSES. PARASITOSES
A total of 78 rats including 50 laboratory rats (LRs) and 28 free living wild rats (WRs) were examined for detailed parasitic and protozoal infections. Of these 36/50 (72%) LRs and 9/28 (32.14%) WRs were found to be infected with helminthic parasitic infections. Out of these 12 (24 %), 7 (14 %) and 17 (21.79%) LRs and 3 (10.71 %), 6 (21.42 %) and 0 (0%) WRs were found positive for Hymenolepis diminuta, Cysticercus fasciolaris and Trichosmoides crassicauda infections, respectively. Sex-wise distribution of helminthic parasite revealed that Hymenolepis diminuta and Trichosmoides crassicauda infections were more in male rats while Cysticercus fasciolaris infection was found slightly higher in females than male rats. In addition, mix parasitic infection of above parasites along with Hepatozoan muris (Hm) protozoan infection was also diagnosed in 10 % LRs and 14.28 % WRs while 18.05% serum samples tested by direct agglutination test (DAT) were positive for antibodies against T. gondii. These helminthic and protozoan parasites were prevalent in rats without causing any apparent clinical symptoms.

0131. Roy, Kabita; Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur (India). College of Veterinary Science and Animal Husbandry. Department of Veterinary Medicine; Quadri, M.A.; Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur (India). College of Veterinary Science and Animal Husbandry. Department of Biochemistry; Datta, I.C.; Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur (India). College of Veterinary Science and Animal Husbandry. Department of Biochemistry; Rakshit, Sabita; University of Michigan, Ann Arbor (USA). Division of Molecular Medicine and Genetics, Department of Internal Medicine, Medical Center. Appearance of Heinz bodies in phenylhydrazine-exposed chicken erythrocytes: an overview of mechanisms. Indian Journal

of Veterinary Pathology (India). (Jun 2009) v.33(1) p.96-98 KEYWORDS: ANAEMIA. CHICKENS. INORGANIC COMPOUNDS. HETEROCYCLIC COMPOUNDS. ORGANIC COMPOUNDS. CELL MEMBRANES. POLYSACCHARIDES.
Heinz bodies were the cytosolic hallmark of in vivo/ in vitro phenylhydrazine-hydrochloride (PHH) exposed chicken erythrocytes. Concomitant morphological aberrations were also discernible. This cytotoxic episode appeared to be the culmination of a cascade phenomenon, triggered by superoxide anion (O_2-). Documented experimental evidence further suggested that, among several toxic oxygen derivatives, reactive hydroxyl radical (OH-) and hydrogen peroxide (H_2O_2) also significantly contributed to the induced micro-architectural anomolies, perceptible in the red blood cells.

0132. Ahamad, D. Basheer; Sher-E- Kashmir University of Agriculture and Technology, Jammu (India). Faculty of Veterinary Science & Animal Sciences, Division of Veterinary Pathology; Azmi, S.; Sher-E- Kashmir University of Agriculture and Technology, Jammu (India). Faculty of Veterinary Science & Animal Sciences, Division of Veterinary Pathology; Sood, S.; Sher-E- Kashmir University of Agriculture and Technology, Jammu (India). Faculty of Veterinary Science & Animal Sciences, Division of Veterinary Pathology; Sharma, A.K.; Indian Veterinary Research Institute, Izatnagar, (India);Kumar, G. Sai; Indian Veterinary Research Institute, Izatnagar, (India). Division of Pathology. An outbreak of classical swine fever (CSF) in Jammu region (India): A pathomorphological study. Indian Journal of Veterinary Pathology (India). (Jun 2009) v.33(1) p.101-102 KEYWORDS: SWINE FEVER. EPIDEMICS. SWINE.
An outbreak of classical swine fever (CSF) in three adjoining commercial pig farms in Gadigarh, R.S.Pura of Jammu region occurred. At necropsy, blotching of skin of ears, snout and ventral abdomen, and muco-conjunctivitis were noticed externally. Vascular lesions (congestion and haemorrhages) were seen in lymphoid organs (lymph node, spleen and tonsils), liver, kidneys, heart, stomach, intestinal mucosa, brain and reproductive organs (testes, ovaries and non-pregnant uterus). Splenic infarcts and presence of appreciable amount of thin, serous fluid in peritoneal and pericardial cavities were observed. On histopathological examination, widespread vascular changes (congestion/haemorrhages) with occasional endothelial cell swelling, variable degree of lymphoid depletion in lymph nodes, spleen, thymus, Peyer’s patches and tonsils; hepatocytic degeneration, acute nephritis, acute bronchopneumonia and degeneration of spermatogonial cells in seminiferous tubules of testes were prominently seen.

0133. Goyal, D.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). Department of Veterinary Pathology; Singh, A.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). Department of Veterinary Pathology; Sood, N.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). Department of Veterinary Pathology;Gupta, K.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). Department of Veterinary Pathology; Sood, N.K.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). Department of Veterinary Pathology. Pathological changes in naturally occurring inclusion body hepatitis and hydropericardium syndrome in poultry. Indian Journal of Veterinary Pathology (India). (Jun 2009) v.33(1) p.105-106 KEYWORDS: HEPATITIS. SYMPTOMS. POULTRY.
Natural cases of inclusion body hepatitis (IBH) and hydropericardium syndrome (HPS) were noticed in broilers of 1-6 weeks of age. Grossly, livers were enlarged and mottled with a few necrotic foci on the surface, and hydropericardium was observed in HPS cases. Intranuclear inclusion bodies i.e. basophilic, eosinophilic or both as well as hyperchromatic nuclei were observed in affected hepatocytes along with degenerative changes, besides marked granular or vacuolar degeneration in mycocardium. IBH and HPS was observed in concurrence with Marek’s disease and aflatoxicosis.

0134. Raju, Ankam; College of Veterinary Science, Hyderabad (India).; Madhuri, D.; College of Veterinary Science, Hyderabad (India). Uterine pathology in buffaloes: a pathomorphological study. Indian Journal of Veterinary Pathology (India). (Jun 2009) v.33(1) p.107-108 KEYWORDS: HISTOPATHOLOGY. ANIMAL TISSUES. LABORATORY EQUIPMENT. INFILTRATION. POLYMORPHISM. UTERINE DISEASES.
In present study, 375 uteri of non-descript and graded murrah buffaloes aged 4-10 years with no breeding history were collected from the slaughterhouses in and around Hyderabad. Gross, histopathological and electron microscopic studies were carried out. The distribution of the lesions into acute, sub-acute, chronic and chronic suppurative endometritis was 11.20, 6.10, 18.10 and 3.20 per cent, respectively. Microscopically, acute endometritis was characterized by severe congestion of blood vessels, enlargement of stromal cells, denudation of surface epithelium and mild to moderate infiltration of polymorphs and lymphocytes in stratum compactum. Severity of some of the lesions observed in acute endometritis was increased in sub acute and chronic endometritis. Dilatation of endometrial glands and necrosis of glandular epithelium in chronic suppurative endometritis cases was recorded. Confirmed chronic endometritis tissues subjected to scanning electron microscopy revealed thickening of endometrium, presence of fibrous tissue and lack of microvilli with complete destruction of glandular structures at few places.

0135. Srivastava, A.K.; UP Pandit Deen Dayal Upadhaya Pashu Chikitsa Vigyan Vishwa Vidhyalaya evam Go Anusandhan Sansthan, Mathura (India). Department of Surgery & Radiology; Sharma, A.K.; Indian Veterinary Research Institute, Izatnagar, (India). Pathology Division; Singh, Bharat; UP Pandit Deen Dayal Upadhaya Pashu Chikitsa Vigyan Vishwa Vidhyalaya evam Go Anusandhan Sansthan, Mathura (India). Department of Surgery & Radiology. Canine mammary tumours: A study on occurrence and distribution pattern. Indian Journal of Veterinary Pathology (India). (Jun 2009) v.33(1) p.109-111 KEYWORDS: MAMMARY GLAND DISEASES. CYTOKINES. HISTOPATHOLOGY. STERILIZATION.
The objective of the study was to record the occurrence of spontaneous canine mammary tumours and their season, breed and agewise distribution. A total of 99 cases of mammary tumours (24.32%) out of 407 dogs presented at polyclinics during the period from February 2003 to November 2007, were recorded and confirmed histopathologically. The highest cases were recorded in the month of September (27.00%), with German Shephered breed being the most susceptible (29.30%) followed by Spitz (20.20%). Majority of the tumour cases were recorded in the age group of 4 to 10 years. Histologically , benign tumours in 64.65 % and malignant types in 35.35% cases were recorded. The vulnerable age group (4-10Years) indicated role of reproductive hormones as predisposing factors in the development of tumours.

0136. Sood, Shilpa; Shere Kashmir University of Agricultural Science & Technology, Jammu (India). Faculty of Veterinary Sciences and Animal Husbandry. Division of Veterinary Pathology; Ahamad, D. Basheer; Shere Kashmir University of Agricultural Science & Technology, Jammu (India). Faculty of Veterinary Sciences and Animal Husbandry. Division of Veterinary Pathology; Azmi, S.; Shere Kashmir University of Agricultural Science & Technology, Jammu (India). Faculty of Veterinary Sciences and Animal Husbandry. Division of Veterinary Pathology; Mohanty, T.R.; Shere Kashmir University of Agricultural Science & Technology, Jammu (India). Faculty of Veterinary Sciences and Animal Husbandry. Division of Veterinary Pathology; Rajat; Shere Kashmir University of Agricultural Science & Technology, Jammu (India). Faculty of Veterinary Sciences and Animal Husbandry. Division of Veterinary Pathology. Carcinosarcoma of bladder in a dog. Indian Journal of Veterinary Pathology (India). (Jun 2009) v.33(1) p.112-113 KEYWORDS: BLADDER. DOGS. EPITHELIUM. CARCINOMA. CYTOKINES.
A semi-hard growth from the urinary bladder of an adult dog was received from Veterinary Hospital to this Division for histopathological diagnosis. Microscopically, the growth was an admixture of malignant epithelial and mesenchymal cells. Epithelial component of the mass showed high grade carcinoma in situ and the mesenchymal component revealed spindle shaped cells forming interlacing bundles. The cells were

hyperchromatic and exhibited pleomorphism with numerous mitotic figures. Based on histological picture, the growth in urinary bladder was diagnosed as a carcinosarcoma.

0137. Devi, V. Rama; Marion, Hewicker-Trautwein; University of Veterinary Medicine, Hannover (Germany). Department of Pathology. Equine cutaneous lymphoma: A case report. Indian Journal of Veterinary Pathology (India). (Jun 2009) v.33(1) p.114-115 KEYWORDS: EQUIDAE. LYMPHOMA. EYES.
The present paper describes a case of equine cutaneous lymphoma of eyelid. The histological and immunohistochemical for CD3, CD70a and myeloid/histiocytic antigen changes were studied. Histologically, in H&E sections, mixed lymphoid cell infiltration was found in the dermis and submucosa of the eyelid. The predominant cells were small, mature well- differentiated T lymphocytes with scanty cytoplasm that reacted with CD3 antibodies on immunostaining . Another group of cells were large, pleomorphic B cells , having large vesicular nuclei and more eosinophilic cytoplasm and reacted with CD79a antibodies. No immunostaining was found with antibodies to myeloid/histiocytic antigen.

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0138. Ahmad, A.H.; G.B.P.U.A.T., Pantnagar (India).College of Veterinary & Animal Sciences; Rekhe, D.S; Ayurvet Limited, Baddi (India). R&D team; Ravikanth, K.; Ayurvet Limited, Baddi (India). R&D team; Maini, S.; Ayurvet Limited, Baddi (India). R&D team. Acute toxicity study of Vilocym Premix (herbal growth promoter for Livestock) in Wistar Albino Rat. Veterinary World (India). (Mar 2009) v. 2(3) p.100-102 KEYWORDS: ANIMAL GROWTH PROMOTERS. ACUTE TOXICITY. RATS. LABORATORY ANIMALS.
An experimental study with the objective of safety evaluation of Vilocym Premix, herbal growth promoter for Livestock (supplied by Ayurvet Ltd., Baddi, India), was done as per standard guidelines of OECD-423 for acute toxicity testing. Vilocym Premix is a scientifically developed combination of herbs that contains herbal ingredients namely Azadirachta indica, Curcuma longa & many more alongwith natural zeolites. The study was done in 3 males and 3 female Wistar Albino rats, which were administered an initial dose of 50 mg/kg body weight followed by dose rates of 300, 500 & 5000 mg/kg body weight of test compound. The animals were observed for signs of convulsions, tremors, circling, depression, excitement and mortality. Body weight was recorded at 0,7th and 14th day and plasma total protein, albumin; AST and ALT were measured after 3rd day of experiment. No abnormal sign of symptoms were observed in any of the animal fed with Vilocym Premix at the dose rate of 50, 300, 500 & 5000 mg/kg. No mortality was observed indicating safety of herbal premix.

0139. Krishna, Saritha; Kerala Agricultural University Mannuthy, Thrissur (India); Usha, P.T.A.; Kerala Agricultural University Mannuthy, Thrissur (India). Hypoglycaemic effect of a combination of Pleurotus ostreatus, Murraya koenigii and Aegle marmelos in diabetic rats. Indian Journal of Animal Sciences (India). (Oct 2009) v. 79(10) p. 986-987 KEYWORDS: RATS. DIABETES. HYPOCALCAEMIA. PLEUROTUS OSTREATUS. MURRAYA KOENIGII. MURRAYA. PLANT EXTRACTS.
This study was conducted to assess the hypoglycaemic effect of a combination of Pleurotus ostreatus, Murraya koenigii and Aegle marmelos in alloxan induced diabetic rats. A combination of P. ostreatus (250 mg/kg), M. koenigii (250 mg/kg) and A. marmelos (250 mg/kg) was administered orally to diabetic rats and the effects were compared with individual plant extracts. The study revealed that the combination produced synergistic effects on lowering of blood glucose levels, serum cholesterol and triglyceride levels when compared to individual plant extracts. The effect of the combination was comparable to the reference drug glibenclamide.

0140. Suresh Kumar, R.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India);Verma, H.K.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India);Umapathi, L.; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India); Gandotra, V.K.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India); Kasrija, Rajesh; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). Plasma Estradiol concentrations during prepartum vaginal prolapse in buffaloes. Indian Journal of Animal Sciences (India). (Oct 2009) v. 79(10) p. 1001-1003 KEYWORDS: BLOOD PLASMA. OESTROGENS. VAGINAL DISEASES. WATER BUFFALOES.
Blood samples were collected from 15 buffaloes having prepartum prolapse of vagina before (Group 1) and after treatment (Group 2) and from five normal pregnant (Group 3) buffaloes to study the estrogen as a possible cause of prolapse. In Group 3, the estradiol concentration remained almost constant during sixth to nine month of gestation with a gradual increase and during nine and tenth month, it increased steadily and reached a peak value of about 515 pg/ ml on the day of calving. There was a significant variation of estradiol before and after treatment with the corresponding stage of normal gestation during 6–8 months, 8–10 months and above 10 months of gestation. It suggests the role of estrogen as a cause of prepartum vaginal prolapse.

0141. Kalaiselvan, A.; Indian Veterinary Research Institute, Izatnagar (India); Pawde, A.M.; Indian Veterinary Research Institute, Izatnagar (India); Kinjavdekar, P.; Indian Veterinary Research Institute, Izatnagar (India);Amarpal; Indian Veterinary Research Institute, Izatnagar (India);Aithal, H.P.;Indian Veterinary Research Institute, Izatnagar (India); Gupta, O.P.;Indian Veterinary Research Institute, Izatnagar (India). Occurrence of ocular affections in domestic animals. Indian Journal of Animal Sciences (India). (Oct 2009) v. 79(10) p. 1020–1021
The occurrence of ocular affections was recorded from 2000 to 2005 for species, breed, age, sex, season and condition wise in different species of domestic animals. Canine was the most affected species followed by equine. Maximum occurrence was recorded in Spitz dogs followed by non-descript breed. All the age groups and both sexes in different species were affected. The cases were distributed throughout the year. Traumatic injuries to the eye constituted the major portion of the affections followed by corneal opacity, ocular worms and conjunctivitis.

0142. Meshram, D.; KNP College of Veterinary & Animal Sciences, Satara (India) Dept. of Veterinary Medicine.; Ravikanth, K.; KNP College of Veterinary & Animal Sciences, Satara (India) Dept. of Veterinary Medicine.; Maini, S.; KNP College of Veterinary & Animal Sciences, Satara (India) Dept. of Veterinary Medicine.; Rekhe, D.S.; KNP College of Veterinary & Animal Sciences, Satara (India) Dept. of Veterinary Medicine. Treatment of Clinical Cases of Bacterial Enteritis in Goat with New Polyherbal Antidiarrhoeal formulation. Veterinary World (India). (Apr 2009) v. 2(4) p. 143-45 KEYWORDS: GOATS. GASTROINTESTINAL AGENTS. DIARRHOEA. ENTERITIS.
A study was conducted in fifty non-descript goats of 1-2 years of age, presented in Veterinary clinics of Shirval Veterinary College Maharashtra, India. Faecal and blood samples were collected from all the goats suffering from enteritis. Confirmative diagnosis of bacterial enteritis was done on the basis of bacteriological and haemato-biochemical tests. Animals were randomly divided into four (Group II to V) groups. Group I constituted of healthy animals (n= 10) (negative control), group II constituted diarrhoeic untreated animals (n=10) and Group III, IV and V (n=10) were the treatment groups. Group III animals were treated with polyherbal antidiarrhoeal formulation AV/ ADC/16 0gm BID for 4 days (coded formulation supplied by Ayurvet ltd. Baddi India), group IV treated with AV/ADC/165gms BID for 4 days and group V was treated with combination of AV/ ADC/16 10 gm and Ofloxacin 00mg BID for 4 days. In addition to clinical observations, haemato-biochemical parameters were recorded before and after treatment. The polyherbal antidiarrhoeal

formulation AV/ADC/16 alone and in combination with antibiotics was found to be effective to treat diarrhoea, regain appetite and improved overall general body condition.

0143. Rode, A.M.; Nagpur Veterinary College, Nagpur (India) Department of Veterinary Medicine.; Mahajan, V.E.; Nagpur Veterinary College, Nagpur (India) Department of Veterinary Medicine.; hrikhande, G.B.; Nagpur Veterinary College, Nagpur (India) Department of Veterinary Medicine.; Khose, K.A.; Nagpur Veterinary College, Nagpur (India) Department of Veterinary Medicine.. Successful Clinical management of Uraemic toxaemia in a bitch. Veterinary World (India). (Apr 2009) v. 2(4) p. 146-47 KEYWORDS: DOGS. FEMALES. URAEMIA. POISONING. DRUGS. THERAPY.
Uraemic toxemia is a condition resulting due to the retention of toxic waste metabolite of urine like urea, creatinine etc. in the blood. Which may prove fatal many a times. The retention of urine may be a sequelee of severe dehydration leading to oliguria followed by anuria or due to the nephritis in a animals. It has been observed that nephritis is oftenly associated with pyometra also. In the present study the elevated levels of urea and creatinine were alarmingly elevated and was life threatening also. However the timely diagnosis & surgical intervention could save and prolong the life of bitch.

0144. Sudhakar G. Bhandare; Border Security Force Camp, New Delhi (India). Chronic Hematuria in a Camel. Veterinary World (India). (Apr 2009) v. 2(4) p. 148 KEYWORDS: CAMELS. URINARY TRACT DISEASES.
The animals suffering from enzootic bovine haematuria had normal temperature, pulse and respiration but they show progressive weight loss Chronic Hematuria in a Camel : A case report Sudhakar G. Bhandare Camel Contingent (Republic Day Parade) Border Security Force Camp, APS Colony, New Delhi – 110 045 (Rajendran et al., 1979). The urine of such animals was light to dark red in colour. Nandi (1969) stated that enzootic bovine haematuria runs a chronic course and there is no febrile reaction and anorexia. The affected animals show marked anemia and cachexia. Diagnosis was confirmed by microscopic examination of urine sample as urine contained intact red blood cells. Teotia et al., (1973) reported the presence of RBCs, few pus cells, epithelial cells, casts and crystals in the urine samples of haematuric cattle. The pH of urine became slightly alkaline. In absence of effective treatment for the disease, symptomatic treatment had been tried for management of disease. Dash (1980) recommended the use of Vitamin B supplement with Iron preparation and mineral mixture as supportive therapy for treating the cases of bovine haematuria. Ravi Prakash (1993) noticed high efficacy of styplon tablets given at the rate of 5 tablets twice daily for 10 days in addition to giving mineral mixture as routine.

0145. Bhoi, D.B.; Veterinary College, Sardarkrushinagar (India). Dept. of Animal Reproduction Gynecology and Obstetrics.; Parekar, S.S.; Veterinary College, Sardarkrushinagar (India). Dept. of Pharmacology and Toxicology. Post-Partum Uterine Prolapse in a Non-descript Buffalo. Veterinary World (India). (Apr 2009) v. 2(4) p. 149 KEYWORDS: WATER BUFFALOES. UTERINE DISEASES. PUERPERAL DISORDERS.
A complication of the retension of fetal membrane along with uterine prolapse in a post-partum nondescript she buffalo is described.

0146. Kulkarni, M.D.; Krantisinh Nana Patil College of Veterinary Science, Shirva (India).;Yadav, G.B.; Krantisinh Nana Patil College of Veterinary Science, Shirva (India).;Samant, S.R.; Krantisinh Nana Patil College of Veterinary Science, Shirva (India).;Khanvilkar, A.V.; Krantisinh Nana Patil College of Veterinary Science, Shirva (India).. Physico-Biochemical aspects of Shock. Veterinary World (India). (Apr 2009) v. 2(4) p. 161-62 KEYWORDS: SHOCK. BLOOD CIRCULATION.
Shock is a clinical condition characterized by decreased blood flow to vital organs due to imbalance between size of vascular bed and effective circulating blood volume and the inability of body tissues to metabolize

nutrients normally. The decreased blood flow to vital organs like kidney, liver, spleen, brain etc. is caused by pulling and stagnation blood elsewhere in circulation. The defective blood flow to tissues implies incomplete oxygen supply to the cells, tissues and organs consequent effect being interference with metabolism. It is very essential to study physicobiochemical aspect of shock because after knowing the pathways involved in various physio - pathological processes, we can undertake effective treatment and there by shock can be satisfactorily treated and prevented. Following are the various physico-biochemical processes stated by various workers to study the shock.

0147. Kulkarni, M.D.; (Krantisinh Nana Patil College of Veterinary Science, Shirva (India)); Yadav, G.B.; (Krantisinh Nana Patil College of Veterinary Science, Shirva (India)); Samant, S.R.; (Krantisinh Nana Patil College of Veterinary Science, Shirva (India)); Khanvilkar, A.V.; (Krantisinh Nana Patil College of Veterinary Science, Shirva (India)) . Clinico-Pathological aspects of Shock. Veterinary World (India). (Apr 2009) v. 2(4) p. 163-65 KEYWORDS: SHOCK. BLOOD CIRCULATION. BLOOD PRESSURE. BLOOD VOLUME.
Shock can be defined as “a common grave medical emergency characterised basically by reduction in the effective circulating blood volume and blood pressure”. (Robbins) or as “Disparity between the volume of blood and the volume capacity of the vascular system” which cause inability of body tissue to metabolise nutrients due to inadequate oxygen supply. Shock can be classified into: Primary and Secondary.Cardiogenic, Vasogenic, Hematogenic, Neurogenic and Electrocution. The therapy includes Blood, Plasma, Saline transfusion, antibiotic, antihistaminic, hyperimmune serum, vasoconstrictor according to the cause of the shock.

0148. Khimta, S.; Veterinary Polyclinic, Kausali (India); Maiti, S.K.; Indian Veterinary Research Institute, Izatnagar (India); Kumar, N.; Indian Veterinary Research Institute, Izatnagar (India); Sharma, A.K.; Indian Veterinary Research Institute, Izatnagar (India). Occurrence of neoplasms in canine – a retrospective study. Indian Journal of Animal Sciences (India). (Jan 2010) v. 80(1) p. 7-11 KEYWORDS: DOGS. NEOPLASMS.
The occurrence of canine neoplasms was recorded in dogs during the period April 2001–March 2007. Among 403 cases of neoplasms 42.93% cases of canine transmissible venereal tumour (CTVT) were recorded followed by mammary gland tumours (33.50%) and skin and other tumours (23.57%). Among different breeds of dogs, Spitz, Mongrel and German shepherd were found more susceptible. In general, more cases were recorded in females (70.72%) than that in males (29.28%) however, in case of skin and other tumours more cases were recorded in males (65.26%) than in females (34.74%). Other dogs were more susceptible for neoplasia except CTVT cases.

0149. Sathya, A.; University of Edinburgh, (UK).;Prabhakar, S; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India); Arora, A.K.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India); Ghuman, S.P.S.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). Alterations in polymorphonuclear leukocyte functions during periparturient period in buffaloes. Indian Journal of Animal Sciences (India). (Jan 2010) v. 80(1) p. 12-16 KEYWORDS: WATER BUFFALOES. DYSTOCIA. PARTURITION. PHAGOCYTES.
The study was planned to evaluate polymorphonuclear leukocyte (PMNL) functions in normally calved and dystocia affected buffaloes. Normally calved buffaloes (6) were blood sampled for 7 days around calving and 14 dystocia affected buffaloes were sampled from the day of delivery by obstetrical means to day 3 post delivery. Plasma cortisol concentration, total and differential leukocyte counts and PMNL phagocytosis and killing abilities were evaluated. In dystocia affected buffaloes, plasma cortisol was significantly higher than of normally calved buffaloes on all the days of observation and the neutrophil counts were significantly lower during the immediate postpartum period. In normally calved buffaloes, the changes in PMNL phagocytosis

around calving were not significant. The percentage extra cellular killing activity decreased from prepartum to postpartum period. In dystocia affected buffaloes, the phagocytic activity was nonsignificantly higher whereas killing capacity was significantly lower as compared to normally calved buffaloes on the day of calving. In conclusion, this study revealed derangement in PMNL functions around calving that predispose the buffaloes to postpartum infections.

0150. Singh, M.; Indian Veterinary Research Institute, Izatnagar (India). ;Singh; D.K.Indian Veterinary Research Institute, Izatnagar (India); Shivaramu, K.V,; College of Veterinary Science, North Carolina (USA). Department of Population Health & Pathobiology.; Biswas, Ripan; Indian Veterinary Research Institute, Izatnagar (India);Rawat, Shriya; Indian Veterinary Research Institute, Izatnagar (India);Boral, Rupa; Indian Veterinary Research Institute, Izatnagar (India);Singh, S.; National Institute of Biologicals, NOIDA (India);Cheema, P.S.; CCSHAU, Hisar (India). Department of Veterinary Epidemiology Disease and Preventive Medicine,. Serum as clinical specimen in PCR for diagnosis of ovine brucellosis. Indian Journal of Animal Sciences (India). (Jan 2010) v. 80(1) p. 17-18 KEYWORDS: BRUCELLOSIS. PCR. SHEEP.
In this study, an attempt was made to use PCR in diagnosis of sheep brucellosis using serum as sample; and the results were compared with those obtained in RBPT. Out of 36 samples tested 19 were found positive for brucellosis by RBPT. PCR detected 13 samples as positive.

0151. Bharathi, P.; Sri Venkateswara Veterinary University, Tirupati (India); Reddy, A.G.; Sri Venkateswara Veterinary University, Tirupati (India); Kalakumar, B.; Sri Venkateswara Veterinary University, Tirupati (India; Madhuri, D.; Sri Venkateswara Veterinary University, Tirupati (India). Experimental evaluation of certain herbs against chlorpyrifos-induced oxidative stress and toxicity in poultry. Indian Journal of Animal Sciences (India). (Feb 2010) v. 80(2) p. 94-98 KEYWORDS: CHICKS. BROILER CHICKENS. CHLORPYRIFOS. STRESS.
Male broiler chicks (1 225), day-old, were randomly divided into 15 groups consisting of 15 chicks in each group. Group 1 was maintained as basal diet control and group 2 on chlorpyrifos (CPS) 100 ppm in feed throughout 6 weeks as iron toxic control without any treatment. Groups 3 to 15 were maintained on CPS 100 ppm in feed for the 4 weeks (28 days) of study and thereafter, administered with different herbs and their combinations for remaining 2 weeks. The blood samples were drawn from wing vein on day 28 and day 42 from the birds in each group for the assay of erythrocytic superoxide dismutase (SOD) and catalase. Sera samples were separated from the blood for the estimation of alanine transaminase (ALT) and serum creatinine. The birds were sacrificed at the end of 6th week and tissues were collected for the assay of GSH and TBARS in liver and brain homogenates. The activity of SOD, catalase and ALT, and the concentration of TBARS and serum creatinine were increased significantly, while the concentration of total proteins and tissue GSH decreased significantly in all the groups as compared to basal diet control and the values showed significant improvement in groups 3–15 that were treated during the last 2 weeks. It is concluded that chlorpyrifos induces toxicity by generating reactive oxygen species and antioxidant herbs are useful in treating the chlorpyrifosinduced toxicity.

0152. Nagamani, B.; College of Veterinary Science, Rajendranagar (India). Department of Veterinary Pathology; Kumar, A. Anand; College of Veterinary Science, Rajendranagar (India). Department of Veterinary Pathology; Madhuri, D.; College of Veterinary Science, Rajendranagar (India). Department of Veterinary Pathology. Pathological changes in the lymph nodes of sheep in and around Hyderabad. Indian Journal of Veterinary Pathology (India). (Jun 2009) v.33(1) p.93-95 KEYWORDS: PATHOLOGY. LYMPHATIC SYSTEM. LYMPH. SHEEP. HYPERPLASIA.
Of 2266 lymph nodes collected, only 247 (10.90%) lymph nodes were found to be abnormal. Various pathological changes in the mesenteric, bronchial, mediastinal and prescapular were 120 (12.90%), 37

(10.78%), 38 (10.16%) and 52 (8.38%) respectively. The incidence of enlarged and edematous lymph nodes was high, followed by haemorrhagic and /or hyperemic, parasitic lymphadenitis and pigmented lymph nodes. Various gross and microscopic lesions in lymph nodes encountered had been described and discussed.

0153. Hajra, S.; Indian Veterinary Research Institute, Izatnagar (India). Division of Pathology; Somvanshi, R.; Indian Veterinary Research Institute, Izatnagar (India). Division of Pathology. Spontaneous metastatic calcification in a Syrian golden hamster (Mesocricetus auratus). Indian Journal of Veterinary Pathology (India). (Jun 2009) v.33(1) p.118-119 KEYWORDS: NATURAL HYBRIDIZATION. CALCINOSIS. HAMSTERS.
A case of metastatic calcification was recorded in a Syrian golden hamster. Most prominent lesions and calcification were seen in kidneys followed by heart and arteries of lungs. Marked calcification was seen in the cortex of kidneys, especially in basement membrane of Bowmen’s capsules and renal tubules. Dilated renal tubules and inflammatory reaction were also seen.

M12 Aquaculture Production and Management

0154. Paul, B.N.; Central Institute of Freshwater Aquaculture, Bhubaneswar (India); Giri, S.S.; Central Institute of Freshwater Aquaculture, Bhubaneswar (India); Sarkar, S.; Central Institute of Freshwater Aquaculture, Bhubaneswar (India); Mohanty, S.N.; Central Institute of Freshwater Aquaculture, Bhubaneswar (India); Sarangi, N.; Central Institute of Freshwater Aquaculture, Bhubaneswar (India). Effect of Varying Protein and Lipid Levels on the Growth of Medium Carp, Puntius gonionotus. Animal Nutrition and Feed Technology (India). (Jan 2010) v. 10(1) p. 81-86 KEYWORDS: PUNTIUS GONIONOTUS. GROWTH. GROWTH FACTORS. GROWTH RATE. LIPID METABOLISM.
A 60 days feeding trial was conducted to evaluate varying levels of dietary protein and lipid on growth of medium carp (Puntius gonionotus) fry (avg. wt. 2.11 g). Nine purified diets having 25% (low protein; LP), 30% (medium protein; MP) and 35% (high protein; HP) protein, and 6% (low lipid; LL), each with either 8% (medium lipid; ML) or 10% (high lipid; HL) lipid were prepared. The net weight gain, feed conversion ratio, specific growth rate and survival rate did not differ significantly among the treatments, but protein efficiency ratio (PER) differed among the treatments. The PER was significantly ($P<0.01$) higher in LPLL diet and it did not differ significantly with MPML diet. The carcass composition of medium carp was significantly influenced by different levels of protein and lipid. Carcass protein and lipid contents were significantly ($P<0.01$) higher in HPHL diet but it did not differ with MPML. It may be concluded that MPML having a combination of 30% protein and 8% lipid was optimum for medium carp.

Q02 Food Processing and Preservation

0155. Ruban, S. Wilfred; Veterinary College, Bangalore (India). Dept. of LPT; Kalaikannan, A; Madras Veterinary College, Chennai (India). Department of Biostatistics; Rao, V. Appa; Directorate of Extension, Chennai (India). Physico-Chemical Characteristics of Pork Sausage during Refrigerated Storage. Veterinary World (India). (Mar 2009) v. 2(3) p.95-97 KEYWORDS: PORK. CHEMICOPHYSICAL PROPERTIES. REFRIGERATION. COLD STORAGE.
A study to compare the effectiveness of Tapioca Starch (TS) and Potato Flour (PF) for preparation of pork sausage with 50 per cent lean and 30 per cent low value meat (Head, Heart and Tongue in the ratio of 70:15:15) was carried out. Sausages were prepared with 5 per cent level of PF and 7 per cent of TS and were subjected to physico-chemical characteristics viz., pH, shear force, TBARS and TV to study the keeping quality

at refrigerated storage (4±10C) for 30 days. Inclusion of 30 per cent low value meat had not much effect compared to full meat sausages. The results revealed that during storage there was a highly significant (P0.01) decrease in pH, shear force, and increase in TBARS and TV with the increase in storage days in both the treatments. Sausages prepared with 5 per cent PF and 7 per cent TS were acceptable upto 25 days of refrigerated storage (4±10C). Sausages with potato flour had lower values of TBARS and hence considered more acceptable compared to TS incorporated sausages.

Q55 Feed additives

0156. Mamen, Delcy; Karpagam University, Coimbatore (India). Department of Biotechnology; Vadivel,V.; Karpagam University, Coimbatore (India). Department of Biotechnology; Pugalenthi, M.; Government Arts College, Coimbatore (India).Department of Botany;Parimelazhagan,T.; Bharathiar University, Coimbatore (India).Department of Botany. Evaluation of Fibrolytic Activity of Two Different Anaerobic Rumen Fungal Isolates for their Utilization as Microbial Feed Additive. Animal Nutrition and Feed Technology (India). (Jan 2010) v. 10(1) p. 37-49 KEYWORDS: MICROBIAL FLORA. FEED ADDITIVES. RUMEN DIGESTION.
In the present study, two different anaerobic fungal organisms namely, Anaeromyces sp. (CTS-67) and Orpinomyces sp. (CTS-91) isolated from the rumen liquor of indigenous breeds of sheep and goat, respectively, were added to the mixed rumen microflora of buffalo to study their effect on the improvement of degradation of fibrous feeds under in vitro conditions. Between two fungal isolates investigated, CTS-67 showed higher level of in vitro gas production (18.65 ml/0.1 g DM) and exhibited highest stimulating effect on the true digestibility (35.28 and 43.31%), apparent digestibility (44.50 and 52.74%) and neutral detergent fiber digestibility (30.11 and 39.43%) of lignocellulosic feed after 24 and 48 h of incubation. The production of certain extra-cellular fibrolytic enzymes such as carboxymethylcellulase, xylanase and â-glucosidase were significantly higher in CTS-67 inoculated medium. Further, the fermentation end products such as total volatile fatty acids as well as the concentration of acetate, butyrate, isobutyrate, isovalerate and valerate were also significantly higher in CTS-67 added group when compared to CTS-91 and control groups. Hence, after conducting extensive in vivo trials, such potential fungal strain Anaeromyces sp. (CTS-67), isolated from the rumen liquor of Indian indigenous breed of sheep (Madras red), could be recommended as a microbial feed additive for improving the fiber degradation in buffaloes.

U10 Mathematical and Statistical Methods

0157. Suman, C.L.; Indian Veterinary Research Institute, Izatnagar (India).Agricultural Research Information System Cell. Algebric functions describing lactation trend of milk protein in two-breed crosses of cattle. Indian Journal of Animal Research (India). (Mar 2009) v. 43(1) KEYWORDS: CATTLE. F2 HYBRIDS. HYBRIDS. STATISTICAL METHODS. MILK PROTEIN. LACTATION. UTTAR PRADESH.
The lactation trend of milk protein in two-breed crosses of indigenous breed of Hariana (H) with exotic breeds of Holstein Friesian (HF), Brown Swiss (BS) and Jersey (J) cattle, namely, ½ HF ½ H (HFH), ½ BS ½ H (BSH) and ½ J ½ H (JH) groups was studied using data available during 1986 to 1989 at Indian Veterinary Research Institute, Izatnagar. The milk protein averaged to 3.27±0.01, 3.22±0.01 and 3.36±0.02 per cent of halfbred cows in HFH, BSH and JH groups respectively and showed significant effect of year of sampling, month of lactation and parity of cow. The observed trend of lactation changes revealed that milk protein decreased successively after calving to its lowest level during fifth month and increased thereafter at subsequent months of lactation in two-breed crosses of cattle. Three measures of fit ranked gamma function as best representative model

explaining 93.77, 95.21 and 98.61 percent trend of milk protein of halfbred cows in HFH, BSH and JH groups respectively. The fitted gamma functions to least squares means also described the decreasing phase of milk protein after calving to its minimum levels of 3.10, 3.05 and 3.10 percent at 4.39, 4.60 and 4.43 months of lactation in HFH, BSH and JH groups respectively and increasing phase thereafter in close agreement to its observed trend in two-breed crosses of cattle. Thus the trend of milk protein was non-linear, best represented by gamma function and opposite to trend of milk production in two-breed crosses of cattle.

0158. Singh, N.O.; Directorate of Coldwater Fisheries Research, Bhimtal (India); Wahi, S.D.; Directorate of Coldwater Fisheries Research, Bhimtal (India); Paul, Amrit Kumar; Directorate of Coldwater Fisheries Research, Bhimtal (India). Performance evaluation of bootstrap strategies on the estimate of standard error of heritability by half-sib method. Indian Journal of Animal Sciences (India). (Jan 2010) v. 80(1) p. 81-84 KEYWORDS: BREEDING METHODS. HERITABILITY. STATISTICAL METHODS. PROGENY.
The bootstrap estimates of standard error of heritability using half-sib model were obtained by drawing independent master samples for optimum family size by 3 different bootstrap strategies. In strategy I, the bootstrapping was done both at sire level as well as at progeny level whereas in strategy II and III, it was done only at the sire level and progeny level, respectively. The strategy II performed better than the other 2 bootstrap strategies for estimating the parameter - heritability and its precision. The bias in the estimates of heritability in strategy II is also found to be minimum as compared to the other two strategies.

0159. Singh, N.O.; Directorate of Coldwater Fisheries Research, Bhimtal (India); Paul, Amrit Kumar; Directorate of Coldwater Fisheries Research, Bhimtal (India). Fitting of allometric model with expected-value parameters for different species of snow trout from Jhelum River, Kashmir. Indian Journal of Animal Sciences (India) . (Jan 2010) v. 80(1) p. 85-88 KEYWORDS: TROUT. GROWTH. MEASUREMENT. STATISTICAL METHODS. JAMMU AND KASHMIR. RIVERS.
In the present investigation, an attempt was made to develop length-weight relationship of snow trout considering its 6 different species from Jhelum River, Kashmir. Analysis of covariance (ANCOVA) results showed that the existing 2 distinct groups of snow trout species regarding its length-weight relationship do not follow isometric growth. Further, the data sets of 2 different groups are meaningfully fitted to allometric models with expected-value parameters.

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