The Indian Animal Sciences Abstracts

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L01 Animal Husbandry

139. Bhosale, S.D.; Narayanakhedkar, S.G.; Sherikar, A.T.; Patil, M.B.; Rande, A.S.; Ahmad, M. (Central Poultry Development Organization Farm, Mumbai (India)).. Carcass evaluation studies of Kadaknath Rhode Island Red and their crosses.. Indian Veterinary Journal (India).. (May 2006) v. 83(5) p.570-571 KEYWORDS: CARCASS; POULTRY FARMING.

140. Goyal, D.; Singh, A.; Sood, N.; Gupta, K.; Sood, N.K. (College of Veterinary Science, Punjab Agricultural University, Ludhiana (India). Veterinary Pathology Dept.). Adenocarcinoma of liver with Marek's disease in poultry.. Indian Veterinary Journal (India). (May 2006) v. 83(5) p.562-563 KEYWORDS: ADENOMA; LIVER; MAREK'S DISEASE; POULTRY

141. Kataktalware, M.A; Pourouchottamane, R; Rajkhowa, J.; Borah, B.K.D.; Borah, S.; Saravanan, B.C.; Sarkar, M. (National Research Centre on Yak (ICAR), Dirang (India)). Physiological performace of yak under varying load carrying conditions. Indian Journal of Animal Sciences (India). (Feb 2008) v. 78(2) p. 231-233 KEYWORDS: YAK; DRAUGHT CAPACITY; PHYSIOLOGY.

Effect of varying load on pack performance of yak was studied. Immediately after exercise, the values for all clinical parameters of animals carrying 30 percent load were significantly higher than 10 and 20 percent load groups and recovery time was maximum in animals carrying 30 percent load. However, in general, no sign of fatigue was observed in any of the groups. The haematological parameters varied nonsignificantly and 35 min post-exercise the values of these haematological parameters reached to almost pre-exercise values in all the groups. On the basis of present study, it could be concluded that there was no adverse effect of load (up to 30 percent) on physiological performance of yak.

142. Dhaliwal, A.P.S.; Nagra, S.S.; Brah, G.S. (Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India) Department of Livestock Production and Management) Effect of cage stocking density and season on laying performance of Japanese quail (*Coturnix coturnix japonica*) Indian Journal of Poultry Science, 2007, v. 42, (3)

Two experiments, one each during summer and winter season, were conducted on Japanese quail to study the effect of varying stocking densities on their laying performance and egg quality. The birds were kept in cages and provided floor areas of 120, 130, 140 and 150 cm^2/bird thus providing stocking densities of 83.33, 76.92, 71.42 and 66.66 birds/m^2. Each stocking density was tested on two replicates. The same stocking density schedule was followed in both the seasons. Other feeding and management conditions were similar for all the birds. Both stocking density as well as season had significant ($p<0.05$) effects on egg production, feed intake, fertility and egg quality. Stocking density above 71.42 birds/m^2

significantly lowered egg production and widened FCR and mortality in birds. Higher stocking density adversely affected egg quality. The season x stocking density interaction was significant for hen day egg production and daily feed intake. The birds produced the highest number of eggs and consumed lowest amount of feed when housed at a stocking density of 66.66 birds/m^2 in both seasons. The interaction for egg weight, shell thickness and fertility rate was not significant. It was concluded that, considering all the economic parameters, quail layers should not be housed at a stocking density over 67 birds/m^2 in summer and 71 birds/m^2 in winter when kept in cages.

143. Moorthy, M.; Viswanathan, K.; Edwin, S.C. (Veterinary College and Research Institute, Namakkal (India). Poultry Science Dept.). Ileal digestibility and metabolizable energy of extracted coconut meal in poultry.. Indian Veterinary Journal (India).. (May 2006) v. 83(5) p.575-576 KEYWORDS: DIGESTIBILITY; INTESTINES; METABOLISM; ENERGY; COCONUTS; POULTRY

144. Mallick, P.K.; Ghosh, A.K. (G. B. Pant University of Agriculture and Technology, Pantnagar (India). Department of Genetics and Animal Breeding). Live stock status and opportunities in western Orissa-A case study. Pantnagar Journal of Research (India). (Jan-Jun 2007) 5(1) p. 119-121 KEYWORDS: LIVESTOCK; CASE STUDIES; STALL; RURAL DEVELOPMENT; INCOME; ORISSAAGROCLIMATIC ZONES.
Fimbristylis miliacea was most dominant weed in zero tilled condition with average contribution 55.3 per cent at 60 days stage. Higher dry weight was observed during the second year of experiment. Anilofos 0.4 kg ha-1 as early post emergence application followed by 2, 4-D at 0.5 kg ha-1 reduced density and total dry weight of weeds at 60 days stage resulting in highest weed control efficiency (91.5 and 55.1 per cent respectively during 2001 and 2002) among herbicidal treatments. Weeds caused complete destruction of rice crop in weedy check plots. Owing to better control of weeds pendimethalin at 1.0 kg ha-1 followed by 2, 4-D at 0.5 kg ha-1 and anilofos 0.4 kg ha-1 as early post emergence application followed by 2,4-D at 0.5 kg ha-1 recorded significantly higher number of panicles m-2 and thus grain yield.

145. Narayanan, K.; Rajendiran, A.S. (Southern Regional Research Centre, Central Sheep and Wool Ressearch Institute, Kodaikanal (India)); Selvaraju, M. (Vetrinary College and Research Institute, Namakkal (India)). Ram effect in pubertal Bharat Merino ewe lambs. Indian Veterinary Journal (India). (May 2006) v. 83(5) p.552-553 KEYWORDS: PARTURITION; LAMBS; EWES; SEXUAL MATURITY

146. Pathania,M.S.; Sharma, S.K.; Sharma, K.D.; Vashist, G.D.V.; Katoch, A. (C S K Himachal Pradesh Krishi Vishwavidyalaya, Palampur (India)). Traditional buffalo rears: A study of migratory Gujjar in Himachal Pradesh. Indian Journal of Animal Sciences (India). (Feb 2008) v. 78(2) p. 207-210 KEYWORDS: WATER BUFFALOES; ANIMAL HUSBANDRY.
With regard to yield of total and transferable embryos. Average livestock holding was 13.76 animals. Buffalo dominated livestock population. Average proportion of both stallfed as well as grazing animals was 95.70 percent. By grazing, 42 to 90 percent of fodder was saved for different categories of animals. Cost of rearing a buffalo was estimated to be Rs 45639.

Average income per annum per household was Rs 101133 out of which livestock rearing accounted for maximum (98 percent) share. There was decrease in diseases, improvement in health and increase in milk production of buffaloes on the higher hills. The maximum buffaloes and young stock were affected with foot-and-mouth disease followed by diarrhoea. The maximum mortality occurred due to diarrhoea in buffaloes. Mortality and morbidity during migration were higher in plains followed by high hills. In fact, migration was a compulsion for Gujjars due to paucity of fodder, adverse climate conditions and family traditions .

147. Singh, S. (Veterinary Asst. srugeon, Standardisation Division of Biological Product (V.B.R.I.), Hyderabad (India)); Rao, A.S.; Danalakhmi, K. (Colege of Veterinary Sciences, Acharya N.G. Ranga Agricultural University, Hyderabad (India)). Immunopotentiating action of Tuftsin on healthy layer chicks.. Indian Veterinary Journal (India). (May 2006) v. 83(5) p.554-556 KEYWORDS: IMMUNOSTIMULATION; LAYER CHICKENS; CHICKS

148. Singh, M.K.; Rai, B.; Sharma, N. (Central Institute for Research on Goats, Farah (India)). Factors affecting survivability of Jamunapari kids under semi-intensive management system. Indian Journal of Animal Sciences (India). (Feb 2008) v. 78(2) p. 178-181 KEYWORDS: GOATS; SURVIVABILITY; ANIMAL HUSBANDRY METHODS.
Factors affecting survivability from birth to weaning were examined in 3099 Jamunapari kids born during 1985 to 2003 at CIRG, Makhdoom, Uttar Pradesh, India. Results revealed significant effect of age, birth weight, season and year of birth, sex of kids, type of kidding, type of disease, age x disease interaction, parity and dam's milk yield in first 90 days. First fortnight of birth was critical for survivability and accounted for 69.03 percent of the total pre-weaning mortality and after that, there was substantial decline in mortality with the advancement in age of kids. Lower birth weight of kids up to 2.5 kg accounted for 51 percent loss of their total birth, which decreased almost linearly with the increase in birth weight. Significantly lower survivability recorded among multiple births, dams with high body weight (55 kg) at kidding and low "40 kg) and high (150 kg) milk yield of dams in first 90 days. Kids born in first parity and kiddings those occurred during spring season were also associated with higher mortality. Major causes of mortality in preweaned kids were pneumonia, pneumo-enteritis, colibacillosis, acidosis, enteritis/gastro-enteritis and diarrhoea. The survivability was 89.29, 96.95 and 97.36 percent of kids' strength in 0 to 30, 31 to 60 and 61 to 90 days, respectively.

149. Sharma, M.C.; Opathodiya, O.P.; Mishra, S.; Gurjar, M.L. (Livestock Research Station, Udaipur (India)). Variation in absolute growth rates in Sirohi goats under field condition. Indian Journal of Animal Sciences (India). (Feb 2008) v. 78(2) p. 222-224 KEYWORDS: GOATS; GROWTH RATE; FIELD CONDITIONS.
Variations in absolute growth rates in Sirohi goats under field condition were studied. Results revealed that in kids of 0-3 months of age, maximum growth occurred, hence they should be given full care during this period. Management condition should be improved to gain profit from goat rearing
3465. Singh, R.C.; Singh, C.D. (Central Institute of Agricultural Engineering, Bhopal (India)). Load distribution on the neck of Malvi breed of bullocks at different draught loads. Indian

Journal of Animal Sciences (India). (Feb 2008) v. 78(2) p. 228-230 KEYWORDS: BULLOCKS; DRAUGHT CAPACITY; ANIMAL BREEDS.
The mean vertical load on the neck of Malvi breed bullocks were higher at the middle planes of Nagpuri and local yoke and decreased towards the left and right side of the neck. The mean loads on the neck of bullocks on contact surface of Nagpuri yoke were significantly less in comparison to local yoke. Thus, the Nagpuri yoke is more efficient and comfortable. The mean vertical loads on the neck of bullocks at different contact points on the surface of top, left and right side pads of Allahabad 3-padded collar double animal harness increased as the draught load increased and it was higher on the contact surface of top pad. On the left and right side pads the mean loads were significantly higher at one point than the other points. Therefore, both the side pads require design improvement for evenly distribution of load.

150. Subba Reddy, C.; Hafeez, Md. (Sri Venkateswara Veterinary University, Tirupati (India)). Studies on certain aspects of prevalence of Culicoides species. Indian Journal of Animal Sciences (India). (Feb 2008) v. 78(2) p. 138-142 KEYWORDS: CULICOIDES; EPIDEMICS
This present experiment was condeucted to study the prevalence of Culicoides species in Chittoor and Prakasam districts of Andhra Pradesh, recording the animal-wise, sex-wise and age-wise occurrence of Culicoides species besides the role of Culicoides species in the transmission of the diseases if any. Out of 100 light trap attempts only in 52 light traps culicoides spp could be captured in the areas where bluetongue disease was endemic from 2001 to 2003, and 1297 Culicoides midges were collected. Out of these 982(75.7 percent) were identified as female Culicoides and 315(24.3 percent) as male species. Flies (1359) were collected during the period by both light traps and aspirators. Out of these 1297 flies were collected by using light traps and 62 by aspirators. C.actoni, C.anophelis, C.inoxius, C.majorinus, C.oxystoma and C.perigrinus were present in catches from April to August 2004. Among the 6 spp. identified, C.oxystoma was the predominant species in number and the least was C.perigrinus.

151. Yasar, A. (Selucuk University, Konya (Turkey). Veterianry Faculty, Veterinary History, Deontology and Ethics Dept.); Pzturl. R. (Erciyes University, Kayseri (Turkey)); Ozen, A. (Firat University, Kelazig (Turkey)). Ainimal ethics committees of veterinary schools in Turkey. Indian Veterinary Journal (India). (May 2006) v. 83(5) p.504-506 KEYWORDS: ANIMALS; ETHICS; VETERINARY SERVICES; EDUCATIONAL INSTITUTIONS; TURKEY.
Analysis of data in this study from the Veterinary schools in Turkey by sending a standard information form including 20 questions revealed that the animal ethics committees in Turkey are not at a sufficient level compared to the norms in the world and available ethics committees should be made more active

152. Yilmaz, B.; Ipek, A.; Sahan, U. (Uludag University, Bursa (Turkey). Agriculture Faculty, Animal Science Dept.). Performance of broilers raised at different altitudes in South Marmara region of Turkey.. Indian Veterinary Journal (India).. (May 2006) v. 83(5) p.525-527 KEYWORDS: BROILER CHIKENS; ALTITUDE; TURKEY; MORTALITY; BODY WEIGHT; FEED CONVERSION EFFICIENCY.

In this study, the performance of broilers in farms, located at different altitudes in the South Marmara region of Turkey, were investigated. In this study it was determined that the altitude above sea level between 0300 m as low altitude, 300-600 m as medium, altitude and 600-900 m as high altitude and 5 farms from each altitude were used. At the end of the production period the highest live weight was found among the broilers raised at a low altitude (2302±37.6 g), lowest live weight was found among the broifers, raised at a high altitude (2107±41.7 g). Different altitudes had no significant effect on feed conversion ration and mortality rate. It is concluded that the rearing of broilers at medium altitudes is more suitable.

153. Das, S.K.; Das, A.; Bujarbaruah, K.M. (ICAR Research Complex for NEH Region, Barapani, (India)) Productive performance, reproductive performance and carcass traits of broiler rabbits in different generations under agro climatic condition of Meghalaya. Indian Journal of Animal Research 2006, v. 40 (1)

197 rabbits consisting of 100 Soviet Chinchilla (SC) and 97 New Zealand White (NZW) belong to third and fourth generation were studied in low cost housing system with 50% Congo signal and 50% pellet feeding. Analysis of data revealed that in NZW live weight at 1m, 2m, and 3m was significantly ($P<0.05$) higher in 3^{rd} generation crops than that of 2^{nd} generation crops, whereas live wt at 6m was significantly ($P<0.05$) higher in the crops of 2^{nd}generation. In SC rabbit generation difference was not significant ($P>0.05$). Breed wise analysis revealed that live weight at lm and 2m was significantly ($P<0.05$) higher in NZW than that in SC, whereas 6m live weight of SC was significantly ($P<0.05$) higher than that of NZW. Litter size and litter weight at weaning were significantly ($P<0.05$) higher in 2^{nd} generation does than 1^{st} generation does and inter kindling period (IKP) was significantly ($P<0.05$) lower in 2^{nd} generation mothers than 1^{st} generation mothers in NZW. Litter weight at birth (LWB) was significantly ($P<0.00$) higher in 1^{st} generation crops and service per conception was significantly ($P<0.05$) lower in 1^{st} generation crops in SC. Breed effect ($P<0.05$) was found in case of litter size at weaning (LSW) and litter weight at weaning (LWW). Both were significantly higher in NZW than its counter part. Carcass traits revealed that breed effect was significant ($P<0.05$) only in inedible offal weight.

154. Sivakumar,T.(Livestock Research Station, TANUVAS Kattupakkam (India.)); Gopi, H. (VUTRC, Pudukottai (India.)); Senthilkumar,S. (Division of Veterinary Extension Education, IVRI, Izatnagar (India)). Strategies for enhancing the economic status of pig farmers in Kancheepuram district of Tamil Nadu. Indian Journal of Animal Research 2006, v. 40 (1)

Pre-assessment of the socio-economic status of pig farmers through the pre-tested comprehensive interview schedule showed that most of the farmers were from rural area (87.78 per cent) and mostly belonged to scheduled tribes (50 per cent) and were mostly illiterates (57.78 per cent). The comparative studies on growth performance of desi and crossbred pigs observed improved body weights (kg) right from birth (0.61±0.05 vs 0.91±0.01) to 8 months of age (29.34±1.00 vs 41.54±0.41). The study on providing low cost rations (replacing maize with hotel waste and sugar dough upto 20%, 50% and 100% level) to Large White Yorkshire boars revealed that swill and sugar dough could be included considerably to reduce the feed cost without affecting their growth for economic pork production. Impact study revealed that their socio-economic status have undergone significant changes

155. Chauhan, D.S.; Kamble, V.J.; Padghan, P.V.; Khandare, N.O.; Kamble, R.R. (Marathwada Agricultural University, Parbhani (India) Department of Animal Husbandry and Dairying)Dairy farming practices adopted in tribal area of kinwat tehsil (district - Nanded). Indian Journal of Animal Research 2006, v. 40 (1)
The villages and farmers were selected by stratified random sampling technique and categorized according to size of land holding. The data revealed that the size of land holding had positive and highly significant relationship with adoption of dairy farming practices, which included improved feeding practices, adoption of improved breeds, improved managements, improved housing and veterinary aids. It showed that as the size of land holding increased farmers inclination towards adoption of improved dairy farming practices was also increased.

156. Prasad, T.; Singh, D.V.; Sharma, R.J. (G.B. Pant University of Agriculture and Technology, Pantnagar (India) College of Veterinary and Animal Sciences) Association between morphometric and production traits in rural H.F. crossbred cows of tarai region. Indian Journal of Animal Research 2006, v. 40 (1)
A total of 75 HF crossbreds belonging to first and second parity with rural farmers of Tarai region of India were studied for the association between morphometric traits and production traits (estimated lactation milk yield and average lactation fat per cent). The morphometric traits included 11 biometric and 7 derived traits, measured at 15 days apart for three months pre and post-partum period. For the first lactation, significant association was observed between BL, EBW, HWBL, BS, TFT with milk yield and with BS for fat per cent. The traits like BL, GIR, EBW, HWBL, HWGR and HWPG and PGIR had their significant association with milk yield and like BL and HWBL with fat per cent in second lactation in rural H.F. crossbred cows. All these correlation coefficients were suggestive of their usefulness in selecting the animals for milk and fat.

157. Vijayakumar, P.; Xavier Francis; Anil Leena (College of Veterinary and Animal Sciences, Mannuthy (India) Department of Livestock Production Management)Housing management practices of pet dogs in central Kerala. Indian Journal of Animal Research 2006, v. 40 (1)
A study was conducted to evaluate the housing management practices for pet dogs followed by the dog owners in Central Kerala. A high proportion (79.3%) of the dog owners kept their dogs in a kennel made up of cement concrete floor, wall and roof and had raised platform. Daily cleaning of the kennel was also practiced by most of the dog owners. Respondents having small breeds provided adequate kennel length, width and height for their dogs.

158. Khan, H.M. ; Bhat, A.S.; Singh, P.K.; Islam, R.; Sarkar, T.K. (Sher-e-Kashmir University of Agricultural Sciences and Technology ,Srinagar (India) Sheep Breeding Farm) Effect of dam-lamb relationship on body weight gain of corriedale lambs during pre-weaning period. Indian Journal of Animal Research 2006, v. 40 (1)
Twenty eight (28) healthy pure bred Corriedale lambs of 15 days age were randomly selected and divided into two equal groups of 14 lambs each (A and B) with average body weight of 4.13±0.25 and 4.13±0.14 kg, respectively. Group A lambs were allowed to graze on sub-alpine pasture of the farm land separately without their dam whereas group B lambs were allowed to

graze along-with their dams in same area. The group A were allowed to suckle their dams only on their return from grazing area for three months period. The lambs in each group were provided with concentrate mixture as per their requirement. The body weight of under trial lambs was recorded at weekly interval. The results indicated significantly ($P<0.05$) higher daily body weight gain group B than group A, thereby, achieving 3.99 kg more body weight during 45 days trial. Mortality in group A and B was 7.12% and 0%, respectively. The better performance was also reflected during post weaning period, wherein, the 6 month body weight was 16.22 and 19.96 kg in group A and B, respectively. Wool yield was 900 and 1125 g in group A and B, respectively. The study indicated favourable effect of lamb-dam association on growth of lambs during pre-weaning suckling period.

L02 Animal Feeding

159. Barman, K.; Rai, S.N. (National Dairy Research Institute, Karnal (India)). Utilization of tanniniferous feeds.5 effect of supplementation of Acacia nilotica pods on productive performance of crossbred cows. Indian Journal of Animal Sciences (India). (Feb 2008) v. 78(2) p. 197-202 KEYWORDS: CROSSBRED COWS; FEEDS; SUPPLEMENTATION; ACACIA NILOTICA. Crossbred lactating cows (15) were divided into 3 groups of 5 animals each in randomized block design on the basis of milk yield, fat percent and body weight, and supplemented with concentrate mixture containing 0, 20 and 40 percent Acacia pods as a source of tannin to study its effect on productive performance of cows. Dry matter (DM) intake (kg/d) was decreased with increased level of pods in the diet. However, DM intake (kg/100 kg body weight) was found similar across all supplemental level of Acacia pods. Dry matter intake (kg/kg milk yield) was increased at 20 percent supplemental level of pods, but found similar at 0 and 40 percent level of supplementation. Milk yield was reduced at both 20 and 40 percent supplemental levels of Acacia pods in the concentrate mixture. It is concluded that the dry matter intake is reduced and protein content of milk is increased with increased levels of pods in the diet. Acacia pods may be supplemented up to 20 percent level in the concentrate mixture of lactating crossbred cows.

160. Pailan, G.H.; Mahanta, S.K.; Verma, N.C. Indian Grassland and Fidder Research Institute, Jhansi (India). Evaluation of sorghum stover based diets in cattle, sheep and goats. Indian Journal of Animal Sciences (India). (Feb 2008) v. 78(2) p. 225-227 KEYWORDS: CATTLE; SHEEP; GOATS; SORGHUM; FEEDING.
An experiment was conducted to study the nutrient utilization from sorghum stover based diets in cattle: sheep and goat. DM, TDN and DCP intake per kg metabolic body size was higher in cattle than that in sheep and goats. Digestibility of DM, OM, EE, CF, NFE, NDF and ADF was similar in all the species; however, CP digestibility was higher in cattle in comparison to sheep and goats. N retention (as percent of intake N) was higher in cattle and sheep than in goats. The TDN and DCP contents of the diets were higher in cattle than in sheep and goats. The experimental results revealed that the nitrogen utilization was poor in goats fed sorghum stover based diets in comparison to cattle and sheep; however, this roughage source can be used as maintenance diets along with supplementation of concentrate mixture (l percent of body weight) in cattle, sheep and goats.

161. Chaturvedi, V.B.; Singh, K.S. (G.B. Pant University of Agriculture & Technology, Pantnagar (India) Department of Animal Science).Effect of aflatoxin adsorbent incorporation in chicken diets containing aflatoxin Indian Journal of Poultry Science 2007, v.42 (2)

A biological trial was conducted for testing the effect of indigenously prepared aflatoxin adsorbents (Hydrated sodium bentonite, hydrated sodium multani M and a commercial product) in feed (premix) included @ 0.5 Kg/100 Kg feed, on the performance of broiler chicken. Eight diets were prepared for the trial using a basal diet containing 22.75 percent crude protein, 1.5 percent calcium and 0.82 percent phosphorus. 3.0 ppm aflatoxin was added to the diet containing without and with 0.5 percent adsorbents (hydrated sodium bentonite, hydrated sodium multani M and commercial product). Performance of broiler chicken was observed in terms of weight gain, feed intake and feed conversion ratio (feed/gain) for 0–7 days, 0–14 days and 0–21 days. Maximum weight gain (440.0 g) was recorded in broiler chicken fed on the diet D_1 during 0–21 days. Weight gain of broiler chickens was minimum on the diet D_5 during 0–21 days (325.7 g). Weight gains on the diet D_6, D_7 and D_8 for 0–21 Days was 420.8, 371.7 and 358.3 g, respectively. Protection was occurred from the aflatoxin by the addition of all the adsorbents in broiler chicken diet containing 3.0 ppm aflatoxin however the protection was better in case of commercial product than hydrated sodium bentonite and hydrated sodium multani M.

162. Kalita, D.J.; Sarmah, B.C.; Goswami, S. C (Assam Agricultural University, Khanapara (India) College of Veterinary Science) Effect of mineral supplimentation on seminal plasma of Assam local goat. Indian Journal of Animal Research 2006, v. 40 (1)

Eight to ten months old, 10 healthy male Assam local goat have been selected. Two groups (Gr-1 and Gr-II) were made, five in each keeping approximately equal average body weight in each group. The animals were let loose in the morning for grazing and in the evening restricted amount of two different types of concentrate were offered to each group, individually as per the body weight. The ration for the Gr-1 was incorporated with mineral mixture at 2% level and no mineral mixture was added in the ration of Gr-II. This feeding practice was continued till the end of the experiment. When the animals attained the age of 12 months and above, semen was collected from each buck, twice weekly, for a period of 4 weeks for analysis of different macro and microminerals. The apparently higher concentration of Ca, P and Mg and significantly ($P<0.05$) higher concentration of Fe, Cu and Zn was recorded in Gr-1.

163. Das, S.K.; Das, A (ICAR Research Complex for NEH Region, Umium (India) Division of Animal Production) Growth and feed utilisation of broiler rabbit on probiotic supplemented ration. Indian Journal of Animal Research 2006, v. 40 (1)

Sixty grower male rabbits of New Zealand White (NZW), Soviet Chinchilla (SC) and Meghalaya Local (LC) breed were considered to study the performance on probiotic-supplemented ration. All the rabbit were 12-week of age having uniform size and body weight. Under each breed 20 animals were divided into two groups, one group was provided with pelleted ration and another group was provided with same ration same quantity fortified with 0.2% probiotic

i.e.Biovet YC. After six weeks of experiment it was found that probiotic supplementation had significant (P<0.05) effect on final live weight, average daily gain and FCR in Soviet Chinchilla, on average daily gain in Local breed only. In case of NZW breed effect was non-significant in all traits. Probiotic supplementation had no significant (P>0.05) effect on average daily DM intake in any of the breed. It was found that final live weight, average daily gain and feed conversion ratio were improved in treated group i.e. probiotic supplemented group

L10 Animal Genetics and Breeding

164. Gaur, G.K.; Kumar, Arun; Beniwal, B.K; Parveen Project Directorate on Cattle, Grass Farm Road, Uttar Pradesh (India). Genetic evaluation of frieswal bulls under farm and field conditions. Indian Journal of Animal Sciences (India). (Feb 2008) v. 78(2) p. 218-221 KEYWORDS: BULLS; GENETIC EVALUATION.
The present investigation was undertaken to determine the genetic worth of Frieswal bulls under farm and field conditions and to assess their rankings in both production systems. The average of first lactation milk yield in crossbred cows was 2818±47 kg at Military Farms (Frieswal) and 2489±66 kg at field units. Best linear unbiased prediction (BLUP) estimates of the sires ranged from 2664±72 to 3076±99 kg (accuracy from 0.50 to 0.95) under farm conditions and from 2422±130 to 2633±117 kg (accuracy from 0.53 to 0.88) under field. conditions. The product moment correlation (-0.098±0.23) between breeding values of bulls for first lactation milk yield· under farm and field conditions was negative, very low and nonsignificant. The corresponding rank correlation (-0.12) was also negative, low and nonsignificant. The results revealed that bulls with higher ranks for milk production under farm conditions did not retain their superiority under field conditions. Therefore, top ranked Frieswal bulls tested under farm conditions cannot be recommended for their use in field conditions.

165. Bais, R.K.S.; Kataria, M.C.; Johari, D.C.; Sharma, D.; Hazary, R.C., Nischal Central Avian Research Institute, Izatnagar (India).Division of Avian Genetics and Breeding) Performance evaluation and heterosis for economic traits of White Leghorn under reciprocal recurrent selection Indian Journal of Poultry Science , 2007, v.42 (2)
The mean performance of pure lines and per cent heterosis for production traits in reciprocal crosses between two lines (IWH & IWI) of White Leghorn undergoing reciprocal recurrent selection for part period egg production up to 280 days of age were studied over six consecutive generations. The crosses were, in general, superior to their mid-parent values over the generations for egg production, 20 and 40 week body weights, but inferior for egg weight and age at sexual maturity. The average heterosis for egg production to 280 days of age, egg weight, age at sexual maturity, 20 and 40 week body weight varied from 1.24 to 19.00%, −4.85 to 6.11%, −6.01 to 0.13%, −0.26 to 9.38% and −8.47 to 12.01%, respectively over the generations. The reciprocal crosses differed in performance for all the traits suggesting the existence of maternal/sex-linked effects. The superiority of HI cross over

respective IH crosses consistently across the generations suggested the use of IWH as sire and IWI as dam line for the production of a commercial layer strain.

166. Kumar, R.A.; Lyue, M. (Sheep Breeding Research Station, Nilgris (India)); Murugan, M. (Madras Veterinary College, Chennai (India). Livestock Production and Management Dept.); Thiruvenkadan, A.K. (Vetrinary University Training and Research Centre, Coimbatore (India)). Reproductive and productive traits of broiler rabbits as influenced by breed and season. Indian Veterinary Journal (India). (May 2006) v. 83(5) p.577-579 KEYWORDS: REPRODUCTIVE PERFORMANCE; RABBITS; SEASONS; BREEDS (ANIMALS).

167. Kumar, A.; Singh, J.; Dhaliwal, G.S.; Singh, Pawan (Guru Angad Dev Veterinary and Animal Science University, Ludhiana (India)) . Incidence and factors associated with poor libido in breeding buffalo bulls. Indian Journal of Animal Sciences (India). (Feb 2008) v. 78(2) p. 143-145 KEYWORDS: BULLS; ANIMAL BREEDING
Studies were conducted to find out the incidence and associated factors with poor libido in breeding buffalo bulls. Association of testosterone level and semen quality with poor libido was also investigated. The results of incidence and associated factors with libido in breeding bulls were analyzed as very poor, poor and good. Scrotal circumference, testicular volume, semen volume and sperm concentration differed non significantly between very poor, poor and good libido bulls. Individual sperm motility and livability were significantly lower and abnormal sperm were significantly higher in very poor and poor libido bulls. Wide variation in testosterone level (0.02 to 27ng/ml) with respect to libido was observed. It was concluded that almost one-fourth (23.7 percent) of the breeding buffalo bull population were affected with poor libido primarily associated with lameness, scrotal dermatitis and or wide scrotal neck. Semen quality and freezability were also poor in very poor and poor libido bulls. Testosterone level was not associated with poor libido.

168. Mallik, B.K.; Ahmad, M.; Bangar, N.P.; Bhosle, S.D. (Central Poultry Development Organization , Mumbai (India). Expected response and rate of inbreeding in a flock of White Leghorn under long term selection Indian Journal of Poultry Science 2007, v. 42 (2) Abstract
A population of White Leghorn selected for a period of 15 consecutive generations to improve part period (141–280 days) egg production was evaluated for response to selection. Regression analysis showed that there was an increase in the trait though not significant (1.432±0.527). The magnitude of selection differential (SD), phenotypic standard deviation (δP) and intensity of selection (i) varied from 10.9 to 17.00 eggs, 10.95 to 24.52 eggs and 0.469 to 1.097, respectively over generations. The average effective number of parents (Ne) over generation were 243.837 and increase in the rate of inbreeding (ΔF) per generation was 0.21%. The cumulative inbreeding over 15 generations of selection was 3.22%. The inbreeding co-efficient would not probably have any effect on response to selection. However, the down ward trend of heritability estimate of the trait (EP140) has shown that expected response was higher in earlier generation in this population.

169. Nagawade, P.P; Jagta, D.Z.; Kamble, S.S College of Agriculture, Puene (India). Effect of non-genetic factors on colostrum and production trairts of Phule Triveni (triple crossbred) cattle. Indian Journal of Animal Sciences (India). (Feb 2008) v. 78(2) p. 215-217 KEYWORDS: CATTLE; COLOSTRUM PRODUCTION.

170. Narayanan, K.; Rajendiran, A.S. (Southern Regional Research Centre, Central Sheep and Wool Research Institute, Kodaikanal (India); Selvaraju, M. (Veterinary College and Research Institute, Namakkal (India)).. Effect of norgestomet-eCG treatment induced multiple births on productiviy in Bharat Merino sheep.. Indian Veterinary Journal (India). (May 2006) v. 83(5) p.516-519 KEYWORDS: MULTIPLE BIRTH; PRODUCTIVITY; SHEEP; EWES; SYNCHRONIZATION; BODY WEIGHT.
Fifteen Bharat Merino ewes were treated with 6 mg norgestomet ear implants for 10 days at 55 to 63 days postpartum. period and 500 IU eCG was administered at the time of implant withdrawal. Six ewes served as untreated control. In treated ewes, estrus synchronization response was 86.7 per cent. Lambing per cent of estrus synchronized ewes was lower (53.3) than that of ewes bred during breeding season. Incidence of twins, triplets and multiple birth rates in treated group was 7, 20 and 36.4 percent, respectively. Weight at birth, 3 month and average daily gain of lambs was lower in treated ewes than that of control. However, live weight produced per ewe (kg) at 90 days based on ewes available basis with numerically higher in treated ewes (16.59 kg) than that of control (11.12 kg)

171. Saini, S.; Brah, G.S.; Chaudhary, M.L. (Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). College of Veterinary Sciences Department of Animal Breeding and Genetics) Effect of selection for 4-week body weight on growth, haematocrit and thermoregulation in Japanese quails Indian Journal of Poultry Science, 2007, v. 42 (2)
Effect of selection for 4-week body weight on juvenile growth, packed cell volume (haematocrit) and thermoregulatory ability of birds was studied in a selected and a control line of Japanese quails. Juvenile body weights at day old, 1, 2, 4 and 6 weeks of age were higher in growth selected line compared to control line and females have higher body weights than males at all stages except at 1-week of age. Relative growth rate (%) was highest for period 0–1 week. There were little differences between males and females for relative growth rate (%). Packed cell volume (PCV) was studied at four stages viz; 1, 3, 5 and 9-weeks of age. Average PCV at 1, 3, 5 and 9 weeks of age was 42.5, 42.6, 42.6 and 44.7 percent, respectively. The differences between growth selected and control line were non-significant at 1, 3 and 5 weeks of age while they were significant at 9-weeks of age. Males were having higher packed cell volume as compared to females. Growth-selected and control line quails were used for recording of cloacal and surface temperatures (foot pad). The core and surface temperatures were significantly higher in the afternoon than the morning by about 1.2 to 2.6% while the increase in the environmental temperature from morning (31°C) to afternoon (33°C) was 2°C (6.5% increase). However, the surface to core temperature ratio, which is indicative of maintenance of warmth in extremities in relation to body temperature, declined from morning to evening by 2.4%. The genetically improved line quails had significantly lower core as well as surface temperatures than the control line.

172. Singh, P.K; Pundir, R.K National Bureau of Animal Genetic Resources, Karnal (India); Ahlawat, S P S IVRI, Izatnagar (India); Kumar, S. Naveen Livestock Research & Information Centre (Sheep), Nagmangala (India); Govindaiah, M.G Veterinary College, Shimoga (India); Asija, Karuna National Bureau of Animal Genetic Resources, Karnal (India). Phenotype charachterization and performance evaluation of Hallikar cattle in its native tract. Indian Journal of Animal Sciences (India). (Feb 2008) v. 78(2) p. 211-214 KEYWORDS: CATTLE; PHENOTYPES.
The study revealed that efforts should be undertaken for improving the milk production of the breed without affecting its draught efficiency through a well planned breeding programme and the artificial insemination coverage of Hallikar breed needs to be increased so as cover more number of females.

173. Vedapathak, C.P.; Deshpande, A.D.; Madke, P.K.; Dhole, P.T. (College of Veterinary and Animal Sciences, Marathwada Agricullture University, Parbhani (India). Animal Genetics and Breeding Dept.). Potassium types ad its correlation with economic traits in Red Kandhari cattle.. Indian Veterinary Journal (India). (May 2006) v. 83(5) p.509-511 KEYWORDS: POTASSIUM; CATTLE; BLOOD SAMPLING; GENE EXPRESSION; AGE; LACTATION DURATION. Blood samples were analysed for high and low potassium type in Red Kandhari cattle. Gene frequency for high potassium and low potassium were 0.87 and 0.13 respectively. Analysis of various economic traits under potassium type revealed that potassium type showed significant effect on age at maturity and lactation length.

174. Ekambaram, B.; Rao, V. P.; Murthy,A. S.; Satyanarayana, A.; Gupta, B. R. (College of Veterinary Science, Department of Animal Genetics and Breeding, Hyderabad (India) Genetic and non genetic factors affecting the litter traits of broiler rabbits. Indian Journal of Animal Research 2006, v. 40 (1)
The data on pre-weaning and post weaning litter weights and litter size at birth and weaning age of 4 weeks of 512 bunnies born in 109 kindlings of New Zealand White (NN), Soviet Chinchilla (SS), Grey Giant (GG) and Flemish Giant (FF) were analyzed. Genetic group had significant effect on litter weights at 1, 2, 3, 8, 10 and 12 weeks of age. Litter size influenced the pre-weaning and post weaning litter weights significantly, while the month of birth affected the litter weights of bunnies from 3 to 12 weeks of age. The effect of sex of bunny was not significant. The milk yield up to 18 days in NN, SS, GG and FF does averaged 1267.34±23.78, 1043.67±23.95, 1534.34±56.34 and 1423.67±118.44 g, respectively. The phenotypic correlations among the pre-weaning and post weaning litter weights were positive and ranged from moderate to high in magnitude. The R^2-values of the multiple regression equations developed to predict the weaning weight of bunnies based on the litter size at birth, milk yield during first week of lactation and dam weight of kindling ranged from 58 to 72 per cent.

175. Balaji, R.; Gupta, B. R.; Rao,G. Narasimha; Reddy,G.V. Narasa (College of Veterinary Science, Hyderabad (India.) Department of Animal Genetics and Breeding) Cytogenetic characterization of deoni cattle. Indian Journal of Animal Research 2006, v. 40 (1)
The cytogenetic characterization using 10 purebred Deoni cattle (5 males and 5 females) revealed the diploid chromosome number to be 60. All the 29 pairs of autosomes and Y-chromosome were acrocentric, while the X-chromosome was sub metacentric. The relative length of the autosomes varied from 1.792 to 5.354 per cent. The X-chromosome was the longest and contributed 5.592 per cent to the total genome. The Y-chromosome had a relative length of 1.903 per cent and was similar to that of the 28^{th} autosome. The arm ratio, centromeric index and morphological index of the X-chromosome were 2.03, 0.33 and 3.80 per cent, respectively. The present study revealed that the chromosome architecture of Deoni cattle was similar to that of the other breeds of Zebu cattle.

176. Ghosh, N. (Bidhan Chandra Krishi Viswavidyalaya, Mohanpur (India) Department of Animal Science);Sil, B.K. (Indira Gandhi Agricultural University, Raipur (India) Department of Animal Science); Mandal, L. (Bidhan Chandra Krishi Viswavidyalaya, Mohanpur (India) Department of Animal Science) Reproductive performance of *Soviet chinchilla* and grey giant rabbits reared under hot humid conditions of West Bengal. Indian Journal of Animal Research 2006, v. 40 (1)
Reproductive performance of *Soviet Chinchilla* and *Grey Giant* rabbits was studied under hot humid conditions of West Bengal. Puberty and age at 1^{st} mating were apparently earlier in *Soviet Chinchilla* (169.39 and 215.30 days, respectively) as compared to *Grey Giant* (185.60 and 228.94 days, respectively) but the differences were statistically non-significant. The female rabbits of both the breeds were significantly ($P<0.05$) heavier at puberty and 1^{st} mating than their male counterparts because the males attained these stages earlier than females of both the breeds. The average values of some reproductive traits such as gestation period (days), litter size at birth (no.), litter weight at birth (g), litter size at weaning (no.), litter weight at weaning (g), individual weight (g) at birth and weaning were 31.58, 5.89, 336.69, 4.26, 2788.61, 58.85 and 654.00 in *Soviet Chinchilla*, and 30.73, 6.71, 362.63, 5.36, 3241.02, 54.77 and 621.96 in Grey Giant, respectively. Breed had a significant effect ($P<0.05$) on all these traits except individual weight at birth and weaning.

177. Das, S.K.; Das, A.; Bujarbaruah, K.M. (ICAR Research Complex for NEH Region, Umium (India) Division of Animal Production) Productive performance of different half bred rabbits under agro climatic condition of Meghalaya. Indian Journal of Animal Research 2006, v. 40 (1)
4454 progenies developed over a period of four years were analyzed to find the productive performance of si5f halfbreds i.e. SN (SC x NZW), NS (NZW x SC), SL (SC x LC), NL (NZW x LC), LS (LC x SC) and LN (LC x NZW), developed through diallel crossing involving Soviet Chinchilla, New Zealand White and indigenous rabbit of Meghalaya. Rabbits were maintained in indoor cage housing and 50% roughage feeding was practiced replacing concentrate pelleted feed. It was found that SN showed highest live weight at 42, 60, 90 and 120 days of age and average daily gain, whereas LS expressed highest body weight at 150 days of age. There was highly significant ($P < 0.01$) difference among the genetic groups at all ages i.e. 42, 60, 90, 120 and 150 days of age. However non-significant difference ($P > 0.05$) was found in average daily gain.

Average live weight of halfbreds at 42 days age was found to be 621 g ranging from 655.95 in SN to 581.49 g in SL. 60 days live weight varied from 1.048 kg to 0.930 kg with an average of 0.974 kg. 90 days live weight varied from 1.669 to 1.526 kg with an average of 1.581 kg. Average daily gain ranged from 21.10g in SN to 19.15 g in NL with an average figure of 19.99 g.

178. Das, A ; Das, S.K.; Naskar, S. (ICAR Research Complex for NEH Region, Umium (India) Division of Animal Production) Reproductive performance of halfbred rabbits under agroclimatic condition of Meghalaya. Indian Journal of Animal Research 2006, v. 40 (1)
Highly significant ($P < 0.01$) difference between the six genetic groups in respect of litter size at birth, litter weight at birth, litter size at weaning and litter weight at weaning were found. Litter size at birth varied from 5.20 in LN to 6.00 in LS with an average of 5.68. Litter size at birth of LS, SN and NS were significantly ($P < 0.05$) higher than that in SL and LN. Litter weight at birth in LS, SN and NS were significantly higher than that in SL, NL and LN. The litter weight at birth ranged from 465 g in LS to 391g in NL with an average of 429g. The highest litter size at weaning was observed to be 5.51 in NS with an overall mean value of 4.99. Litter weight at weaning was highest in SN i.e. 3.362 kg with an average value of 3.078 kg.

L40 Animal Structure

179. Bansal, N.; Uppal, V.; Kumar, A. Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India)). Histomorphometrical and histochemical studies on the ovaries of domectic cat (Felis catus). Indian Journal of Animal Sciences (India). (Feb 2008) v. 78(2) p. 175-177 KEYWORDS: ANIMAL MORPHILOGY; CATS; OVARIES.
Effect of supplementation of Saccharomyces cerevisiae on microbial population of buffalo calves, was studied. The treated animals were given Yea Sacc 1026 one bolus (consisting 25 billion live yeast cells)/animal/day for 21 days. The oral supplementation improved the digestive efficiency of ruminants

180. Gupta, S.K.; Prakash, A.; Raja Ram (College of veterinary Science and Animal Husbandry, U.P. Pt. Deen Dayal Upadhyaya Pasu Chikitsa Vigyan Vishwavidyalaya Evam Go Anusandhan Sansthan, Mathura (India). Anatomy Dept.). Histochemistry of the primordial and primary follicles in goat ovary.. Indian Veterinary Journal (India). (May 2006) v. 83(5) p.568-569 KEYWORDS: GAOTS; OVARIES; REPRODUCTIVE PERFORMANCE.

181. Saadatfar, Z. (School of Veterinary Science, Ferdowsi University of Mashhad (Iran). Anatomical Science Dept.); Shahsavani, D. (Ferdowsi University of Mashhad (Iran). Clinical Science Dept.). Histology of gills of white fish.. Indian Veterinary Journal (India). . (May 2006) v. 83(5) p.539-541 KEYWORDS: TISSUE ANALYSIS; GILLS; RUTILUS; EPITHELIUM; CARTILAGE. This study was on gills of white fish (Rutilus, Frissi Kutum Kamenski). The epithelia of arches were stratified epithelia, that had columnar, squamous and mucous cells. Taste buds were observed in the epithelial arches. Smooth muscle fibers were in submucosa. Cartilage and striated muscle fibers were in different directions in deep submucosa. Filaments had central cartilaginus supports, afferent and efferent arterioles and central vein sinuses. Filaments were

covered with a thin epithelium which contained squamus, mucous and chloride cells. Pillar cells, squamous and mucous cells were found on lamellae. The thickness of lamellae was 10 µm, the distance between lamellae was 30 µm and the number of lamellae was 24/mm.

182. Mandage, S.T.; Kapadnis, P.J.; Bhosle, N.S.; Mamde, C.S. (MAFSU, Parbhani (India) College of Veterinary and Animal Sciences) Age related changes in connective tissue fibres in skin of deccani sheep. Indian Journal of Animal Research 2006, v. 40 (1)
Study was conducted on twenty four Deccani sheep of different age groups to know the connective tissue fibres in the skin of Deccani sheep. Dermis presented upper papillary and deeper reticular layer, however, there was no clearcut demarcation between these layers. The collagen fibres were thin running parallel to the epidermis in papillary layer, but running horizontal to oblique direction to epidermis in reticular layer. Elastic fibers were found horizontal, vertical and oblique directions to epidermis in reticular layer. The reticular fibers in papillary layer were found in horizontal directions where as reticular layer, they were arranged in vertical.

183. Baruah, C.K.; Biswas, R.K.; Deka, B.C.; Borgohain, B.N.; Bhattacharya, M. (Assam Agricultural University, Khanapara (India) College of Veterinary Science) Histoenzymic reactivity of lactic dehydrogenase in spermatozoa during cryopreservation of crossbred goat (Beetal x Assam local) semen. Indian Journal of Animal Research 2006, v. 40 (1)
A total of 36 ejaculates collected from four adult crossbred (Beetal x Assam Local) goats were used to record the Lactic Dehydrogenase(LDH) reactivity in mid piece of spermatozoa during different stages of cryopreservation. Seminal ejaculates were divided equally and extended in Tris-egg yolk-citric acid-glycerol extender containing either fructose, sucrose or lactose and frozen in liquid nitrogen using French medium straw after allowing glycerol equilibration period of either $1_{1/2}$, 1 or 1/2 hour before freezing. The study revealed that the LDH reactivity of spermatozoa was comparable when frozen after different glycerol equilibration periods suggesting that out of the three, any convenient glycerol equilibration period could be adopted without affecting the quality of frozen semen. The reactivity of LDH in spematozoa was higher when frozen using Tris containing fructose which might be indicative of better cryopreservation provided by the extender.

L50 Animal Physiology and Biochemistry

184. Patra, B; Das, S.K.; Mishra, P.K.; Panda, N. (Orissa University of Agriculture and Technology, Bhubaneshwar (India)). Evaluation of physio-biochemical traits of growing turkeys in hot and humid climate of Orissa. Indian Journal of Animal Sciences (India). (Feb 2008) v. 78(2) p. 203-206 KEYWORDS: TURKEYS; CLIMATE; PHYSIOLOGY.
Studies on evaluation of physiobiochemical traits of growing turkeys in hot and humid climate of Orissa revealed that there was progressive increase in haemoglobin concentration along with increase in age. Similar observations were also recorded for PCV, ESR, TEC and TLC values. The MCV values during the entire period did not show significant changes. The MCH values were in the decreasing order along with increase in age of turkeys. The MCHC values differed significantly age-wise. The values for total serum protein, serum cholesterol, blood

glucose, blood urea, blood urea nitrogen, serum calcium and serum phosphorus showed progressive increase along with increase in age and changes l' were significantly different between different periods and between male and female turkeys. Blood enzyme estimations during different periods of growth showed significant changes between different periods and also between male and female turkeys, The values of ALAT, ASAT and ACP showed increasing trend along with increase in age of the birds whereas the values for ALP showed decreasing trend.

185. Uppal, V.; Bansal, N. (Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India)). Histoenzymic studies on thyroid gland of neonatal buffalo calves. Indian Journal of Animal Sciences (India). (Feb 2008) v. 78(2) p. 154-155 KEYWORDS: CALVES; THYROID GLANDS.
The present study was conducted on thyroid glands of4 buffalo calves below I month of age to study the histoenzymic localization in thyroid glands. The cryostat sections of 10-20 fll1l thickness from fresh unfixed thyroid tissues were cut at -20°C and incubated with different substrates to demonstrate the histochemical localization of various phosphatases, oxidoreductases and esterase. The study revealed a moderate to strong localization of acid phosphatase in the follicular cells whereas alkaline phosphatase and adenosine triphosphatase were localized in the blood vessels. The activity of dehydrogenases (succinate dehydrogenase, lactate dehydrogenase and glucose-6-phosphate dehydrogenase) was moderate to strong and of diaphoreses (NADH and NADPH) was strong to intense in the follicular and parafollicular cells. The 17B hydroxy steroid dehydrogenase, monoamine oxidase and cytochrome oxidase were weakly localized whereas acetyl cholinesterase was only localized in the nerve endings. The moderate to strong activity of these enzymes reflects the physiological activity of the follicular and parafollicular cells of the thyroid gland during neonatal period.

186. Singh, R.; Bansal, B.K.; Randhawa, S.S.; Sudhan, N.A. (Punjab Agricultural University, Ludhiana (India). College of Veterinary Science) Biochemical profile of milk: A comparative study of health and mastitic buffaloes. Indian Journal of Animal Research 2006, v. 40 (1)
A study carried out to compare the compositional quality of milk from healthy and mastitic buffaloes revealed mean ± S.E. content of sodium, potassium, chloride, protein, lactose and SNF in milk of healthy quarters as 40.00±1.19 mg/dl, 102.00±0.06 mg/dl, 0.126±0.006 per cent, 3.33±0.03 gm/dl, 5.92±0.01 gm/dl and 8.77±0.05 gm/dl, respectively. The milk from clinically infected quarters showed 85.00, 36.50 and 10.51 per cent higher ($P<0.01$) levels of sodium, chloride and protein; the actual values being 74±1.66 mg/dl, 0.172±0.012 per cent and 3.68±0.02 gm/dl, respectively. The levels of potassium (65.00±2.40 mg/dl), lactose (3.80±0.02 gm/dl) and SNF (8.36±0.02 gm/dl) in milk from mastitic quarters revealed significant ($P<0.01$) decrease of 36.27, 35.81 and 4.67 per cent as compared to the corresponding levels in milk from healthy buffaloes.

187. Kalita, D.J.; Sarmah, B.C (Assam Agricultural University, Khanapara (India) College of Veterinary Science). Mineral profile and serum enzyme activities of normal cycling and repeat breeding cows. Indian Journal of Animal Research 2006, v. 40 (1)

Blood samples were collected from twenty five normal cycling and twenty five repeat breeding cows of Rangia subdivision, under Kamrup district of Lower Brahmaputra Valley to study the mineral profile and enzyme activities. The animals were maintained under similar nutritional status and management. Different elements *viz*., Ca, P, Mg, Fe, Cu, Zn and Mn and certain enzymes like ALP, ASAT and ALAT were studied. Among minerals P, Cu, Zn and Mn was observed significantly (P <0.05) higher in normal cycling cows from repeat breeder. The other elements like Ca, Mg and Fe were also observed apparently to be higher in normal cycling cows. The ALP activity was observed significantly (P<0.05) low in normal cycling cows while ASAT and ALAT was observed significantly (P<0.05) high in normal cycling cows from repeat breeding cows.

188. Chaudhary, S.; Vadodaria, V.P. ; Tajne, K.R. (Gujarat Agricultural University, S.K. Nagar (India) College of Veterinary Science and Animal Husbandry) Variation in serum calcium, inorganic phosphorus and magnesium concentration in relation to age, season and genetic groups in sheep. Indian Journal of Animal Research 2006, v. 40 (1)
Variation in macrominerals *viz*., calcium, inorganic phosphorus and magnesium in serum were studied at six and twelve months age, during winter and summer seasons in different crosses of Patanwadi with Merino and Rambouillet. The serum calcium did not vary significantly between the genetic groups, age and seasons. Variation in inorganic phosphorus and magnesium levels were found to be significantly affected by genetic groups. Significantly high concentration of Pi and Mg was recorded at six months of age. Pi and Mg levels were higher in winter season.

189. Kalita, D.J.; Sarmah, B.C.; Bhattacharyya, B.N.; Milli, D.C. (Assam Agricultural University, Khanapara (India) College of Veterinary Science) Serum mineral profile of Assam local goat of hills zone during different physiological stages. Indian Journal of Animal Research 2006, v. 40 (1)
Mineral profile of Assam Local Goat of Hills Zone have been studied during pre-puberal, puberal post-puberal and pregnancy. The level of macro minerals *viz*., Ca, P and Mg were significantly (P<0.05) higher in pregnant goat. The level of these three macro minerals were apparently higher in pre-puberal stages followed by puberal and post-puberal stages. Fe and Zn concentration was significantly (P <0.05) low in pre-puberal stages from the rest of the three groups. Significantly (P<0.05) high concentration of Cu was observed in pre-puberal and pregnant from puberal and post-puberal group. Mn and Mo concentration did not differ significantly among the groups.

L51 Animal physiology – Nutrition

190. Barman, K.; Rai, S.N. (National Dairy Research Institute, Karnal (India). Utilization of tanniniferous feeds. 3 effect of ferrous sulphate treatment of babul pods (Acacia nilotica) on nutrient utilization and tannin degradation. Indian Journal of Animal Sciences (India). (Feb 2008) v. 78(2) p. 186-190 KEYWORDS: ACACIA NILOTICA; NUTRIENT UTILIZATION.
Ferrous sulphate ($FeS0_4$) was used at 0, 0.5, 1.0, 1.5, 2.0, 2.5 and 3.0 percent levels at 30 and 40 percent moisture level for 1, 3 and 5 days reaction period to inactivate the tannin of babul

pods. Treatment was ineffective in increasing the in vitro nutrient digestibility. However, in vitro DM, OM and gas production were improved at 30 percent moisture level for 3 days reaction period. Reaction period can be reduced to 1 day by increasing the moisture level from 30 to 40 percent with a similar effect. It is inferred that ferrous sulphate is ineffective fro inactivation of babul pods tannins.

191. Barman, K; Rai, S.N. (National Dairy Research Institute, Karnal (India)). Utilization to tanniniferous feeds. 4 effect of supplementation of Acacia nilotica pods on nutrient utilization and extent of tannin degradation in cattle. Indian Journal of Animal Sciences (India). (Feb 2008) v. 78(2) p. 191-196 KEYWORDS: CROSSBRED COWS; FEEDS; SUPPLEMENTATION; ACACIA NILOTICA; NUTRIENT UTILIZATION.
Crossbred (Karan Fries and Karan Swiss, 205 to 223 kg body weight) male cattle (12) have been grouped into 4 of 3 animals each in a randomized block design. Four concentrate mixtures containing 0, 31, 62 and 93 percent Acacia pods (w/w), equivalent to 0, 4,8 and 12 percent tannins in total diets were used to evaluate the supplementation of Acacia pods on nutrient utilization and extend of tannin degradation. Animals were supplemented with concentrate and oat hay at the ratio of 70: 30. The dry matter (DM) intake was not affected by supplementation of Acacia pods up to 62 percent in the concentrate mixture. The digestibility of DM was not affected by supplementation of Acacia pods up to 31 percent but reduced there. Similarly, organic matter (OM), crude protein (CP), ether extract (EE), nitrogen free extract (NFE) and hemicellulose digestibility was not affected by inclusion of Acacia pods up to 31 percent in the concentrate mixture but reduced thereafter. Crude fiber (CF), acid detergent fiber (ADF) and cellulose digestibility remained similar for all levels of supplementation of pods in the concentrate mixture. Digestible crude protein (DCP) and total digestible nutrient (TDN) intake (kg/d; g/kg wn,75) remained unaffected by Acacia pods supplementation up to 31 percent level in the concentrate mixture but reduced thereafter. The absorbed nitrogen as percent intake and biological value of dietary protein remained similar at 0 and 31 percent level of Acacia pods supplementation but reduced thereafter. The nitrogen balance showed declined in trend with increased level of Acacia pods in the diet. However, N balance remained similar at 0 and 31 percent supplementation of pods. The extent of tannin degradation was ranging from 89.75 to 96.37 percent in different diets. It is concluded that Acacia pods can be incorporated safely in the concentrate mixture of cattle up to 31 percent without affecting the nutrient intake and their utilization.

192. Singh, G.; Kulkarni, S.; Singh, R. (Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India)). Effect of Saccharomyces cerevisiae (Yea Sacc 1026) supplemenataion on rumen profile in buffaloes. Indian Journal of Animal Sciences (India). (Feb 2008) v. 78(2) p. 172-174 KEYWORDS: WATER BUFFALOES; RUMEN; SACCHAROMYCES CEREVISIAE.
Effect of supplementation of Saccharomyces cerevisiae on microbial population of buffalo calves, was studied. The treated animals were given Yea Sacc 1026 one bolus (consisting 25 billion live yeast cells)/animal/day for 21 days. The oral supplementation improved the digestine efficiency of ruminants

L52 Animal physiology - Growth and development

193. Pawar, R.S.; Tajane, K.R.; Joshi, C.G.; Rank, D.N.; Brahmkshtri, B.P. Indian Journal of Animal Sciences, (India) v.77 (9). p. 884-888. Growth hormone gene polymorphism and its association with lactation yield in dairy cattle. KEYWORDS: DAIRY CATTLE; GENE POLYMERIZATION

Kankrej, Gir and Holstein were typed for 3 growth hormone loci to identify the expected RFLP (restriction fragment length polymorphisms) markers in exon fifth (GH1 locus), intron third (GH2 locus) and 3' region (GH3 locus) of the gene with AluI MspI and HaeIII restriction enzymes, respectively. The Kankrej breed was monomorphic at GH1 locus. The alleles A, D and F at 3 GH loci were more frequent in Kankrej and Gir cows, while the frequencies of their alternative alleles were comparatively more in Holstein cows. B and C alleles of GHI and GH2 loci, respectively, appeared to be significantly associated with higher lactation milk yield. The cows with AB and BB genotypes at GHI and CD and DD genotypes at GH2 locus yielded more or less same first lactation milk indicating complete dominance of B and D alleles over A and C alleles, respectively. The genotypes at GH3 locus were independent of lactation yields. The phylogenie tree based on genetic distances indicated that Kankrej and Gir belonged to close cluster while Holstein belonged to different cluster.

L53 Animal physiology – Reproduction

194. Das, D. (Colllege of Veterinary Science, Assam Agricultural University, Guwahati (India)).. Studies on age at first calving and first lactation traits of swamp buffalo of Assam.. Indian Veterinary Journal (India).. (May 2006) v. 83(5) p.566-567 KEYWORDS: AGE; PARTURITION; LACTATION; WATER BUFFALOES; ASSAM.

195. Gunasekaran, M.; Singh, C.; Gupta, A.K. (Nationa Dairy Research Institute, Karnal (India). Dairy Cattle Breeding Div.). Effect of species, party and diurnal pattern of oestrus on oestrus behaviour in cattle and buffaloes.. Indian Veterinary Journal (India).. (May 2006) v. 83(5) p.528-532 KEYWORDS: SEXUAL BEHAVIOUR; OESTURS DETECTION; CATTLE; WATER BUFFALOES.

Scoring of oestrus symptom helped in knowing the type of oestrus exhibited. For crossbred cattle, 49.26 percent oestruses were weak, 44.85 percent were moderate and 5.88 percent were intense, whereas in Murrah buffaloes the same were 73.24, 25.35 and 1.41 percent respectively. The crossbred cattle had an average score of 12.26±0.43 which was significantly higher than in Murrah buffaloes (10.14±0.60). There was no significant effect of parity on oestrus symptom score in both crossbred cattle and Murrah buffaloes. The effect of diurnal pattern of oestrus on oestrus symptom score was non-significant in crossbred cattle whereas it was found significant in Murrah buffaloes. The buffaloes whose oestrus onset was during 00-06h, had the lowest oestrus symptom score of 8.29±0.89, and those whose onset was from 12-18h had a score of 11.27±1.37, the highest.

196. Gupta, S.K; Prakash, A.; Ram, R. (College of Veterinary Science and Animal Husbandry, U.P. Pt. Deen Dayal Upadhayaya Pashu Chikits Vigyan Vishwavidyalaya Evam Go Anusandhan Sansthan, Mathura (India). Anatomy Dept.). Histochemistry of tertiary follicle of ovary in goat. Indian Veterinary Journal (India). (May 2006) v. 83(5) p.536-538 KEYWORDS: OVARIAN CYSTS; OVARY; GOATS; OVA.
Histochemical observations in the tertiary follicles of ovary in goat revealed moderate to intense PAS positive substances in granulosa cells and zona pellucida. The minimum reaction for these substances was observed within the oocyte. The glycogen was absent in the tertiary follicle except in the cells of membrana granulosa and oocyte, which revealed a mild reaction. The AMPS were moderate to intensely positive in the liquor folliculi. The cells of the membrana granulosa exhibited maximum reaction for alkaline phosphatase and bound lipids where the reactions for these substances were moderate to intense and intense, respectively. The feulgen reaction was maximally observed in the nuclei of the granulosa cells.

197. Kharache, S.D.; Majumdar, A.C; Tyagi, S.; Sharma, D; Taru (ndian Veterinary Research Institute, Izatnagar (India)). Superovalatory response and embryo production efficiency in goats following pretreatment with hCG and estradiol-17B. Indian Journal of Animal Sciences (India). (Feb 2008) v. 78(2) p. 150-153 KEYWORDS: GOATS; SUPEROVULATION; EMBRO PRODUCTION.
The yield of transferable embryos following superovulation were investigated in adult (age 2-4 years; body weight 25-35 kg) cycling goats (48) under semi arid environmental conditions of the India, by administering different superovulatory regimens. Goats were reared under intensive system of management in established farm conditions. Cyclic goats received decreasing doses of total 20IU FSH over 3 days (4+4, 3+3, 3+3 IU). The prostaglandin F2X (1.25ml) was administered i/m at 60h after the first FSH injection. Four different pretreatments were carried out (groups 2-5). Pretreatment (groups) consisted of (2) 5OO IU hCG i/m and 1 mg estradiol-17B s/c for the next 2 days, (3) 5OO IU hCG i/m and 6 h later 2 mg estradiol-17B s/c, (4) as (3) but with 1 mg estradiol-17B s/c, and (5) as (4) but with 250 IU hCG i/m. Goats were observed for the onset of oestrus with an aproned buck twice a day at 12h interval. The animals of group I and 2 were administered 5OO IU hCG i/m at the synchronized estrus, numbers of visible corpora lutea (CL) and large unovulated follicles were counted and their genitalia were flushed using a standard collection procedure. The mean number of total and transferable embryo recovery in groups I-5 were statistically significant indicating that pretreatment with low doses of hCG and estradiol-17B may enhance superovulatory response in goats with regard to yield of total and transferable embryos.

198. Markandeya, N.M; Patil, A.D. (Maharashtra Animal and Fishery Science University, Udgir (India)). Corpus luteum development and efficacy of GnRH treatment in non-infectious cyclic non-breeder animals. Indian Journal of Animal Sciences (India). (Feb 2008) v. 78(2) p. 170-171 KEYWORDS: LIVESTOCK; CORPUS LUTEUM; GNRH.
The present study revealed that GnRH treatment in non. infectious cyclic non-breeder cases 105mg intramuscularly during first phase of oesturs is effective in 83.33 percent cows with 1.44 services/conceptions and in 81.81 percent buffaloes with 1.33 services/conceptions.

GnRH treatment, only if succeeds in better development of corpora lutea of grade ill or N size, in: conceptions in non- infectious repeat breeder

199. Saini, S.; Chaudhary, M.L.; Brah, G.S. (Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana , (India) Department of Animal Breeding and Genetics, College of Veterinary Sciences) Inheritance of immune response to sheep red blood cells and its relationship with other production traits. Indian Journal of Poultry Science, 2007, v. 42, (3)
Inheritance of immune response to sheep red blood cells and its relationship with other egg production traits was studied in a selected strain of White Leghorn. Immune response to sheep red blood cells in terms of total, MER and MES titres at 5 days post primary inoculation (PPI) of sheep red blood cells had low heritability (0.04 to 0.18). Total titre at 5 days PPI had negative phenotypic and positive genetic correlations with body weights at 12, 24, 28 and 40 weeks of age while it had positive genetic correlations with all egg production traits except with age at sexual maturity. The phenotypic correlation of total titre at 5 days PPI with all the egg production traits were negative except very low correlations with specific gravity at 28 weeks and age at sexual maturity. The genetic correlations of MER titre at 5 day PPI were low with other traits but were positive only with specific gravity at 28 weeks, egg number upto 40 weeks and egg weight at 28 and 32 weeks of age. The total, MER and MES antibody titres were positively associated with age at sexual maturity, body weights and egg production traits except for MES titre at 5 days PPI. The low h2 of immune responsiveness compared with low but desirable genetic correlations does not justify the inclusion of immune responsiveness in selection for genetic improvement of layer chickens.

200. Shridhar, N.B.; Narayana, K. (Veterinary College, BAngalore (India). Pharmacology and Toxicology Dept.). Pharmacological induction of lactation in infertile heifers.. Indian Veterinary Journal (India).. (May 2006) v. 83(5) p.582-583 KEYWORDS: PHARMACOLOGY; LACTATION; HEIFERS; INFERTILITY

201. Yadav, E.N.; Kharche, S.D.; Goel, A.K.; Jindal, S.K.; Sinha, N.K.; Johri, D.K. (Central Institute for Research on Goats, Makhdoom (India)). Effect of serum source on in vitro maturation and fertilization of pre pubertal goat oocytes. Indian Journal of Animal Sciences (India). (Feb 2008) v. 78(2) p. 146-149 KEYWORDS: GOATS; OOCYTES; FERTILIZATION; MATURATION.
Oocytes were recovered from pre-pubertal goat ovaries of abattoir origin using puncture technique; washed in TCM-199 containing gentamicin (50 µg/ml) and divided into 4 groups. Group 1 oocytes (160) were matured in a medium TCM-199 supplemented with 20 percent estrous goat serum (EGS); group 2 oocytes (194) were matured in a medium TCM-199 supplemented with 20 percent estrous sheep serum (ESS); group 3 oocytes (154) were matured in a medium TCM-199 supplemented with 20 percent fetal bovine serum (FBS); and group 4 oocytes (123) were matured in a medium TCM-199 without serum supplementation as a control. After 27h culture, 80.70 and 83.12 percent maturation rates were obtained based on cumulus cell expansion in EGS, ESS and FBS, respectively. A non significant difference was observed between EGS and FBS but both differed significantly with ESS. Conversely a very low maturation rate (*.94 percent) was observed in the medium lacking serum (control). Oocytes

were separated from cumulus cells by treating with 0.1 percent hyaluronidase, passed through a fine pipette and co-cultured with capacitated spermatozoa with final concentration 1x10-6 sperm/ml in Fert TALP medium. After 18h of co-culture, oocytges were separated from adhered sperm cells and transferred in embryo development medium (EDM). At 48h post insemination cleavage rates was observed as 70.89, 38.69, 72.66 and 36.36 percent in oocytes matured in different maturation media supplemented with EGS, ESS, and control, respectively. A significant difference was observed between EGS and ESS, FBS and ESS supplementation. In conclusion the EGS and FBS sera can be substituted from one and other for in vitro maturation of prepubertal goat oocytes. However EGS in superior to FBS with respect to cost economy, therefore, EGS can be used routinely for the IVM and IVF of pre-pubertal goat oocytes.

202. Uysal, O.; Korkmaz, T.; Bucak, M.N.; Yavas, I. (Ankara University, Ankara (Turkey). Veterinary Medicine Faculty, Reproduction and Artificial Insemination Dept.). Evaluation by hypoosmotic swelling-eosine test of cryopreserved bovine spermatozoa. . Indian Veterinary Journal (India).. (May 2006) v. 83(5) p.557-559 KEYWORDS: OSMOTIC STRESS; SWELLING; BIOLOGICAL PRESERVATION; BOVINAE; SPERMATOZOA.

203. Yilmaz, Z.; Senturk, S.; IIcol, Y.; Golcu, E. (University of Uludag, Bursa (Turkey). Veterinary Medicine Faculty, Internal Medicine Dept.). Periparturient recumbency in cows.. Indian Veterinary Journal (India). (May 2006) v. 83(5) p.550-551 KEYWORDS: DAIRY COWS; HYPOCALCAEMIA; HYPOPHOSPHATAEMIA; MALNUTRITION; BLOOD; FEEDING. Periparturient recumbency in cows found to be due to phosphorous deficiency by biochemical tests were successfully managed by change of feed and calcium phosphorous supplements.

204. Virmani, M.; Gupta, A.K.; Garg, S.K. (National Research Centre on Equines, Hisar (India). Determination of gestation period of mare with maximum eCG concentration by bioassay Indian Journal of Animal Research 2006, v. 40 (1)
The concentration of eCG in pregnant mare serum at different days of gestation has been determined by bioassay (A-Z test). The studies revealed that 0.2 ml volume of pregnant mare serum (PMS) is good enough for inoculation in immature mice to produce sexual maturity. It has also been depicted that the concentration of equine chorionic gonadotrophin (eCG) in serum of pregnant mares is nil till 30^{th} day of gestation. The eCG level rises in serum by 45^{th} day of gestation, reaches a peak of 62.5 IU/ml serum by 90^{th} day and declines thereafter to a concentration of 15.0 IU/ml by 135^{th} day of gestation. The eCG activity is maximum during 60–90 days of gestation in PMS.

205. Arora, R. (NBAGR, Karnal (India)); Lakhchaura,B.D (GBPUA&T, Pantnagar (India) College of Veterinary Sciences, Animal Biotechnology Centre) Microsatellites - Molecular markers of choice - A review. Indian Journal of Animal Research 2006, v. 40 (1)
The advent of DNA technology over the recent years has led to the development of molecular markers that are highly precise, convenient and cost effective for detection of polymorphism among individuals and also for individual identification. These molecular marker techniques *viz*., Restriction fragment length polymorphism, Random amplified polymorphic DNA, Amplified fragment length polymorphism, DNA fingerprinting, microsatellites and the most

recent, microarrays are advantageous over other conventional techniques like protein polymorphism and immunogenetic techniques. As these techniques directly assess the sample at the DNA level the probability of their accuracy is much greater. Among these marker systems the ideal marker should have many scorable and highly polymorphic loci with codominant alleles and should be densely distributed throughout the genome. Microsatellite markers meet these requirements and have therefore become the markers of choice for a variety of analyses related to linkage mapping, forensic investigations, paternity and kinship determination and population genetic studies.

206. Bahga, C.S.; Kathpalia, K.; Parmar, O.S. (Punjab Agricultural University, Ludhiana (India) Department of Animal Breeding and Genetics) Serum enzyme levels in fertile and infertile buffalo and cattle bulls. Indian Journal of Animal Research 2006, v. 40 (1)
Serum transminases and phosphatases were assayed in fertile and infertile cattle and buffalo bulls. Serum glutamate pyruvate transaminase (SGPT) did not differ significantly in relation to fertility and species. Serum glutamate oxaloacetate transaminase (SGOT) was higher in infertile than fertile bulls in both the species. The values were higher in cattle than buffalo bulls. The differences were non-significant. Acid phosphatase did not differ significantly in relation to fertility though the value was 20.28 per cent higher in infertile buffalo bulls. Higher values were obtained in buffalo (3.85±0.68 KA units) compared to cattle 1.91±0.51 KA units). Alkaline phosphatase was higher by 90.99 per cent in cattle and 44.67 per cent in buffalo infertile bulls. The values were significantly ($P<0.01$) higher in buffalo bulls (9.53±0.93 KA units) compared to that in cattle (4.84±0.74 KA units). It is concluded that serum acid- and alkaline phosphatase activities were elevated in infertile bulls and relatively more in buffalo compared to cattle bulls. The role of this enzyme in male reproduction and in different species of livestock needs further elucidation.

L70 Veterinary science and hygiene

207. Aktas, M. (Istanbul University, Istanbul (Turkey). Veterinary Medicine Faculty, Surgery Dept.); Firat, I.; Arun, S.S. (Istanbul University, Istanbul (Turkey). Veterinary Medicine Faculty, Pathology Dept.); Yatkin, E.; Bozkure, H.H. (Istanbul University, Istanbul (Turkey). Veterinary Medicine Faculty, Histology Dept.). Comparison of three wound closure techniques on tissue healing in rats.. Indian Veterinary Journal (India).. (May 2006) v. 83(5) p.512-515 KEYWORDS: WOUNDS; HEALING; TECHNOLOGY; RATS; TISSUE CULTURE LESIONS.
It can be concluded that a faster healing has occurred in tissue glue group compared to the other two groups. It has the advantages like ease of application and antibacterial effects. The silk caused comparatively greater tissue reaction. Although the stapler was very efficacious, but it caused local trauma. The tissue glue could be used for wound closure compared to the two other methods, but the animal should be restrained since the wound may get opened due to self created trauma.

208. Harikrishnan, V.S.; Shenoy, S.J.; Umashankar, P.R. (Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram (India)). Biomedical Technology Wing). Anaesthetic regimen for coronary stenting in porcine model.. Indian Veterinary Journal (India).. (May 2006) v. 83(5) p.486-489 KEYWORDS: ANAESTHETICS; HERT DISEASES; SWINE; MODELS; ATROPINE; KETAMINE; XYLAZINE; ANIMALS.
An anaesthetic protocol comprising of premedication with atropine sulphate xylazine and ketamine and maintenance with thiopentone and pancuronium bromide in porcine coronary artery stenting has been found quite effective. The proposed procedure could be undertaken promptly without any complication. Recovery was quick and smooth. All the animals recovered completely in 90±12 minutes after extubation.

209. Karabulut, E.; Durgun, T.; Kom, M. (Firat University, Elazig (Turkey). Veterinary Faculty, Surgery Dept.). Generalized subcutaneous emphysema in Kangal dog.. Indian Veterinary Journal (India).. (May 2006) v. 83(5) p.548-549 KEYWORDS: DOGS; BITES; INJURIOUS FACTORS; SURGICAL OPERATIONS; LESIONS; TRACHEA.
Generalized subcutaneous emphysema in a Kangal dog caused by a lesion in the trachea was successfully corrected surgically.

210. Konwar, B.; Saikia, B. (College of Veterinary Sciences and Animal Husbandry, Central Agricultural University, Aizawl (India). Surgery and Radiology Dept.). Ketamine and its combination with diazepam for baanced anaesthesia in swine. Indian Veterinary Journal (India). (May 2006) v. 83(5) p.507-508 KEYWORDS: KETAMINE; ANAESTHESIA; SWINE; MEDICINAL PROPERTIES.
Ketamine alone and its combination with diazepam were injected intra muscularly 0 mg/kg and 15 mg/kg + 2 mg/kg intravenously respectively into 12 piglets of 2 different groups. Anaesthesia was produced for 20.12±0.32 and 25.27±0.49 minutes and the animal recovered after 90.47±2.52 and 63.53±2.91 minutes respectively. Significant (P<0.01) increase of heart rate and decrease of rectal temperature was observed in both the groups and non-significant (P0.05) increase of respiratory rate was recorded in both the groups. The surgical anaesthesia was attained in group II only.

211. Mukherjee, R. (Indian Veterinary Research Institute, Izatnagar (India). Medicine Div.). Antibacterial and therapeutic potential of Ocimum sanctum in Bovine sub clinical mastitis.. Indian Veterinary Journal (India).. (May 2006) v. 83(5) p.522-524 KEYWORDS: MASTITIS; BACTERICIDES; DRUGS; OCIMUM; BOVINAE; SOMATIC CELL COUNT; BACTERIA; CELL COUNTING; ANIMALS; EXTRACTS.
Antibacterial and therapeutic potential of aqueous extract of Ocimum sanctum (O. sanctum) leaf in bovine sub clinical mastitis (SCM) was investigated. Somatic Cell count (SCC) and total bacterial count (TBC) were evaluated after intramammary infusion of aqueous leaf extract of O. sanctum. The results revealed that the aqueous extract of O. sanctum treatment reduced the SCC and TBC significantly in animals treated with the extract. The results suggest that the crude aqueous extract of O. sanctum (leaf) possesses some biologically active principles that are antibacterial and immunomodulatory in nature.

212. Narang, G.; Jindal, N. (College of Veterinary Sciences, CCS Haryana Agricultural University, Hisar (India). Veterinary Epidemiology and Preventiave Medicine Dept.). Effect of levamisole along with HVT vaccine against Marek's disease.. Indian Veterinary Journal (India).. (May 2006) v. 83(5) p.483-485 KEYWORDS: MAREK'S DISEASE; VACCINES; ANTHELMINTICS; CELL MEDIATED IMMUNITY; CHICKS.
Effect of levamisole (15 mg/kg body weight) on HVT vaccinal immunity against Marek's disease (MD) was studied. Cell mediated immune (CMI) response was observed by delayed type hypersensitivity (DTH) reaction dinitrochlorobenzene. One hundred and twenty. White Leghorn chick were divided into eight groups and three birds were tested from each group at 31, 45, 59, 73 and 87 days of age. It was observed that levamisole alone could not help in reducing the immunosuppressive effect of Marek's disease. However, levamisole along with HVT vaccine improved CMI response during early stages of MD infection as evidenced by DTH was significantly better 28 days post infection.

213. Pawaiya, R.V.S.; Kumar Ram (Indian Veterinary Research Institute, Division of Pathology, Izatnagar, (India) Indian Journal of Veterinary Pathology (India) v.31(2)Ovine pulmonary adenocarcinoma: Evaluation of molecular tumour markers
Ovine pulmonary carcinoma (previously pulmonary adenomatosis) is characterized by Jaagsiekte sheep retrovirus-induced progressive alveolar epithelial proliferation, resulting into papillary ingrowths and associated fibroplasia of alveolar septa. The diagnostic efficacy of certain molecular tumour markers was evaluated by immunohistochemistry on formalin-fixed paraffin-embedded sections using specific monoclonal antibodies. Out of total nine cases, one was found to be metastasized in the mediastinal lymph node and liver. Histopathologically, papilliform alveolar epithelial cells assuming large cuboidal to columnar appearance, obliterating partially or completely the alveolar spaces, associated fibrosis of alveolar septa and infiltration of inflammatory cells were seen. AgNOR staining revealed many small AgNOR dots (mean value 11.64±0.94 per nucleus) and mean PCNA index was 73.90±29.39, suggesting proliferative activity of the alveolar epithelial cells. The cells were positive for p53, c-Myc, PCNA and hTERT, showing specific nuclear staining. The proliferating cells showed reduced expression of cadherin. Strong fibronectin presence was seen in the stroma and connective tissue while proliferating alveolar epithelial cells revealed relatively weak pericellular fibronectin expression. The results showed the successful use of the tumour markers in characterizing the neoplastic properties of the alveolar epithelial cells in the ovine pulmonary adeno-carcinoma.

214. Sharma, A. (Veterinary Polyclinic, Kangra (India). Animal Husbandry Dept.). Caesarian section in animals under field conditions: a retrospective study of 50 cases.. Indian Veterinary Journal (India).. (May 2006) v. 83(5) p.544-545 KEYWORDS: CEASARIAN SECTION; ANIMALS; COWS; WATER BUFFALOES; GOATS; SHEEP; DOGS; FEMALES; FIELD EXPERIMANTATION.
A retrospective study of caesarian sections performed under field conditions in 30 cows, 10 buffaloes, 5 goats, 3 sheep and 2 bitches was presented and discussed.

215. Tamuly, S.; Saxsena, M.K.; Sonal; Ambwani, T.; Lakhchaura, B.D. (Govind Ballabh Pant University of Agricultural and Technology, Panthnagar (India)). Multiple drug resistance and plasmid profiling in Salmonella Galiema, Salmonella, Typhimurium, Salmonella Virchow and Salmonella Heidelberg. Indian Journal of Animal Sciences (India). (Feb 2008) v. 78(2) p. 156-158 KEYWORDS: SALMONELLA ;DRUG RESISTANCE

In the study reported here, 30 isolates of Salmonella enterica (6 Galiema, 9 Virchow, 6 Typhimurium and 9 ,Heidelberg) obtained from poultry fecal and egg samples were analyzed for plasmid pattern and susceptibility to a panel of antimicrobial agents namely carbenicillin, aztreonam, ampicillin, fosfomycin, cefprozic, piperacillin, meropenem, ticarcillin, levofloxacin, cefepime, cefpodoxime, cefdinir, cefixime, chloremphanicol and gentamicin. Intermediated sensitivity was found in I isolate of Salmonella Galiema against levofloxacin and in 2 isolates of Salmonella 'JYphimurium against fosfomycin. While the rest 28 isolates were resistant against all the 15 antibiotics. On plasmid profiling, 85 kb plasmid was common in all the isolates. While this plasmid was absent in the 4 control Salmonella isolates of Salmonella Gallinarum with known sensitivity against all the tested antibiotics. From our preliminary study we have concluded that this plasmid in the Salmonella carries the genes that resulted in multiple drug resistance.

216. Sharma, A.K.; Shahi, Apra; Kumar, Naveen; Maiti, S.K. Indina Veterinary Reseach Institute, Uttar Pradesh (India). [Romifidine alone and in combination with ketamine in sheep]. Indian Journal of Animal Sciences (India). (Feb 2008) v. 78(2) p. 163-167 KEYWORDS: DRUGS; SHEEP.

Healthy sheep (10) were divided into equal groups 1and 2. The onset of action of after administration of romifidine (10 μg kg^{-l}) occurred within 1.5 min. It induced sedation (mild to moderate), analgesia (mild) and motor incordination, which was sufficient to perform non-invasive procedures in sheep. In group 2, romifidine-ketamine combination produced anaesthesia of l7.25±4.60 min. Muscle relaxation and analgesia was excellent during peak effect. Bradycardia was recorded in both groups which was significant up to 20 min in group 1. Rapid, shallow and apneustic breathing pattern was observed during maximum effect of drugs. Changes in hemato-biochemical parameters were transient. Initial significant increase in mean arterial pressure and central venous pressure was seen in both groups. Electrocardiograms revealed sino atrial block in 3 sheep (3060 min), II degree AV block, sinus arrhythmia (90-120 min), increase PR interval and increase QT interval. Recovery was smooth and uncomplicated in both groups

L72 Pests of Animals

217. Saravanan, B.C.; Bandyopadhyay, S.; Pourouchottamane, R.; Kataktalware, M.A.; Ramesha, K.P.; Sarkar, M. National Research Centre on Yark (ICAR), Dirand (India). Incidence of ixodid ticks infesting on yak (Poephagus grunniens L.) and its hybrids in Arunchal Pradesh and Sikkim. Indian Journal of Animal Sciences (India). (Feb 2008) v. 78(2) p. 158-160 KEYWORDS: YAK; TICKS; EPIDEMICS.

The overall incidence of ticks in organized farm, in field condition of Arunachal Pradesh and Sikkim was 7.31, 28.93 and 18.26 percent respectively. The incidence of tick infestation was

more in yak hybrids than that in yaks. The ticks infesting yaks and its hybrids were identified as Boophilus, Ixodes, Haemaphysalris, Rhipicephalus, Amblyomma and Dermacentor. The incidence of tick infestation was less in organized farm which could be attribute to better managemenl practices

218. Yadav, N.K.; Mandal, A.; Sharma, D.K.; Rout, P.K.; Roy, R. Central Institute for Research on Goats, Makhdoom (India). Influence of reproductive stage on gastrointestinal nematodes of sheep. Indian Journal of Animal Sciences (India). (Feb 2008) v. 78(2) p. 161-162 KEYWORDS: SHEEP; NEMATODES
The study revealed that Muzaffarnagari ewes in lactating stages are more susceptible to parasitic infection as compared to dry and pregnant ewes. The significant variation in faecal egg count also exists between dry and pregnant animals. The lactating ewes had lower packed cell volume than dry and pregnant ewes during the infection stage.

L73 Animal Diseases

219. Bhupal, Gramsci (Masters thesis) (College of Veterinary Science and Animal Husbandry, Anand Agricultural University, Anand (India)). Cytokines expression in milk somatic cells during mastitis in cattle and buffaloes. 2007 KEYWORDS: CATTLE; WATER BUFFALOES; MASTITIS

The present study was carried out to investigate the role of inflammatory cytokines viz. interleukins (IL)-6, IL-8, IL-12, granulocyte macrophage-colony stimulating factor GM-CSF, interferon IFN–γ and tumour necrosis factor TNF-α in immune response of clinical cases of mastitis in HF crossbred cattle (n=4) and indian buffaloes (n=6) and subclinical cases of mastitis in HF crossbred cattle (n=14), Indian buffaloes (n=6) and Kankrej cattle (n=6) using quantitative real time PCR. The mRNA abundance of these target genes was calibrated with that of a reference gene (GAPDH) and expressed as fold of induction over the unstimulated bovine WBCs. Only IL-8, IL-12 and IFN-γ genes were transcribed in unstimulated WBCs in low amounts. All cytokines were up regulated in concavalin- A stimulated, cultured bovine polymorph-nuclear cells which served as positive control. In clinical mastitis all genes were more transcribed than subclinical mastitis except TNF–α, which was seen more in subclinical mastitis in HF crossbreds. In buffaloes the overall expression of cytokines was lower than HF crossbreds. IL-8 gene was down regulated in subclinical mastitis in buffaloes and IFN-γ gene was observed to be down regulated in both clinical and subclinical mastitis in buffaloes. In Kankrej, the expression of cytokines was significantly higher in subclinical stages than the expression of cytokines in other breeds. When Pearson`s correlation coefficient was determined between cytokine transcripts and SCC, it revealed correlation between SCC and transcriptional activity of IL-6, IL-8 and TNF-α in HF crossbreds during subclinical mastitis. The transcriptional activity of IL-8 was found to be correlated with GMCSF and IFN-γ in HF crossbreds. Transcriptional activities of IFN-γ were observed to be correlated with that of GM-CSF in buffaloes during clinical mastitis and in Kankrej cattle during subclinical mastitis. In Kankrej cattle, IL-6 and TNF-α activity were found to be correlated with each other during

subclinical mastitis. The findings of this study indicated the distinguishable pattern of cytokine transcription during clinical and subclinical stages of mastitis as well as breed and species variation in cattle and buffalo. Specific preventive and therapeutic strategies are required for each type of mastitis. Understanding the inflammatory responses elicited by these cytokines is fundamental to developing such strategies. This study may form the basis for the development of interventions that can mimic the cytokine response that leads to eradication of intramammary pathogens.

220. Chatterjee, S.; Kashyap, S.K. (Colege of Veterinary and Animal Science, Bikaner (India). Veterinary Microbiology Dept.). Serogroups of Escherichia coli isolated from camel, cattle, sheep and poultry.. Indian Veterinary Journal (India). (May 2006) v. 83(5) p.479-482 KEYWORDS: ESCHERICHIA COLI; CAMELS; CATTLE; SHEEP; POULTRY; FAECES; SAMPLING; DIARRHOEA; PATHOGENES.

221. Dhar, P; Rai, A.; Verma, R. (Indian Veterinary Research Institute, Izatnagar (India)). Adaptation of classical swine fever virus (lapinized strain) in PK-15 cells and confirmation by reverse transcription-polymerase chain reaction (RT-PCR) and fluorescent antibody technique (FAT). Indian Journal of Animal Sciences (India). (Feb 2008) v. 78(2) p. 135-137 KEYWORDS: The lapinized swine fever vacine was adapted to grow in a porcine kidney cell line (PK15). An RT-PCR was developed for detection of viral RNA in infected cells. FAT was also standardized for detection of infected foci in the infected cells cultured in vitro. Adaptation of the virus in the PK-15 cells was confirmed by detection of viralo infection in infected cells by RT-PCR and FAT. Titre of the virus in PK-15 cells was found to be 10-5.5TCID50/ml as determined by FAT. The cells adapted classical swine fever virus developed in the present study provides a scope to undertake further research on swine fever virus in India towards development of cell culture vacine for use in the country.

222. Nair, M.G.; Kumar, R.; Lakkawar, A.W.; Varshney, K.C. (Rajiv Gandhi College of Veterinary and Animal Sciences, Kurumbapet (India). Pathology Dept.). Slaughter house and necropsy based study of lesions in bovines.. Indian Veterinary Journal (India).. (May 2006) v. 83(5) p.490-493 KEYWORDS: ABATTOIRS; POSTMORTEM EXAMINATION; LESIONS; BOVINAE; ANIMALS; LIVER DISEASES; KIDNEY DISEASES; HAEMORRHAGE; HEPATITIS; ECHINOCOCCUS. A slaughterhouse and necropsy based study was conducted between May 2001 to June 2002 to assess the diseases I pathological conditions prevalent in animals at Pondicherry. Hepatosis (49.6 percent), nephrosis (71.5 percent) and myocardial degeneration (49.6 percent) along with agonal haemorrhages in various organs were observed. Microgranulomas accounted for most of the cases of hepatitis (19.6 percent). Hydatid cysts in the liver, lung and spleen were observed in 14.5 percent 5 percent and 4.3 percent of the cases respectively.

223. Yildiz, H.; Kaygusuzoglu, E. (University of Firat, Elazig (Turkey). Veterinary Faculty, Obstetrics and Gynaecology Dept.); Simsek,H. (University of Firat, Elazig (Turkey). Veterinary Faculty, Physiology Dept.). Somatic cell count, electrical condctivity and biochemical parameters in mastitis milk in cows.. Indian Veterinary Journal (India). (May 2006) v. 83(5)

p.498-500 KEYWORDS: SOMATIC CELL COUNT; ELECTRICAL CONDUCTIVITY; BIOCHEMISTRY; MASTITIS; MILK; COWS; BLOOD; SODIUM; POTSSSIUM.
Na and K values of blood and milk serum of the healthy and subclinical mastitis cows and EC and SCC values of subclinical mastitis milk were comparatively investigated. EC, SCC and Na levels in the mastitis milk were established to be higher but K level was lower than those of healthy milk. EC, SCC and Na of the CMT +1 milk were determined lower than CMT +2 milk while K level was similar. Additionally, there was no difference between subclinical mastitis and healthy cows with regard to blood serum Na and K levels.

224. Mode, S.G.; Bijwal, D.L.; Raut, N.S. (Post Graduate Institute of Veterinary and Animal Science, Akola (India). Veterinary Medicine Dept.). Chronic alkaline indigestion in a cross bred cow.. Indian Veterinary Journal (India).. (May 2006) v. 83(5) p.542-543 KEYWORDS: COWS; CROSSBREDS; DIGESTIVE DISORDERS; PARTURITION; EATING DISORDERS; ALKALINITY; FAECES.
A seven year old cross bred cow was presented with history of recent parturition, anorexia, passage of semisolid faeces. The case was diagnosed as chronic alkaline indigestion and successfully treated with parenteral and oral medications.

225. Pal, M. (College of Veterinary Science and Animal Husbandry, Anand Agricultural University, Anand (India). Veterinary Public Health Dept.); Patil, D.B.; Kelawala, N.H.; Parikh, P.V. (College of Veterinary Science and Animal Husbandry, Anand Agricultural University, Anand (India). Veterinary Surgery Dept.); Barvalia, D.R. (College of Veterinary Science and Animal Husbandry , Anand Agricultural University, Anand (India). Clinics Dept.). Chronic generalized trichophytosis in an adult cattle.. Indian Veterinary Journal (India).. (May 2006) v. 83(5) p.546-547 KEYWORDS: TRYCHOPHYTON; CATTLE; POTASSIUM; TECHNOLOGY.
Chronic generalized trichophytosis in an adult cattle confirmed by potassium hydroxide technique and Narayan stain is described and discussed.

226. Rao, T.B. (Veterinary Biological Research Institute, Samalkot (India)); Patro, R.D. (Animal Heath Centre, Kakinada (India)); Srilatha, C. (College of Veterinary Science, Tirupathi (India). Pathology Dept.). Lymphoid leucosis in a turkey.. Indian Veterinary Journal (India). (May 2006) v. 83(5) p.560-561 KEYWORDS: NEOPLASM; AVIAN LEUKOSIS VIRUS; RETROVIRIDAE; TURKEY; LYMPH.

227. Goz, Y. (University of Yuzuncu Yil, Van (Turkey).Veterinary Faculty, Parasitology Dept.); Ceylan, E. (University of Yuzuncu Yil, Van (Turkey). Veterinary Faculty, Internal Medicine Dept.); Aydin, A. (Hakkari Meslek Yusekokulu, University of Yuzuncu Yil, Van (Turkey)). . Prevalence of cryptosporidiosis in goats of Van province Turkey.. Indian Veterinary Journal (India). (May 2006) v. 83(5) p.564-565 KEYWORDS: CRYPTOSPORIDIUM; GOATS; TURKEY.

228. Kumar, R.R.; Vatsya, Stuti; Yadav, C.L.; Garg, R. (G. B. Pant University of Agriculture and Technology, Pantnagar (India). Department of Parasitology). A note on the efficacy of combined anthelmintics against natural Ancylostoma caninum infection in dogs. Pantnagar Journal of Research (India). (Jan-Jun 2007) 5(1) p. 122-124 KEYWORDS: ANTHELMINTICS; DOGS; CANINE; ANCYLOSTOMA CANINUM; ZOONOSES.

A trial was conducted to evaluate the efficacy of three combined anthelmintics in eighteen dogs naturally infected with Ancylostoma caninum. They were divided into three groups (G-I, G-II and G-III) of 6 animals each and were administered with Cestal Plus (containing Praziquantel 50 mg, Pyrantel pamoate 144 mg and Fenbendazole 200 mg) in G-I, Prazivet (consisting of Praziquantel 50 mg, Pyrantel embonate 144 mg and Fenbendazole 200 mg) in G-II and Praziplus (containing Praziquantel 50 mg and Albendazole 300mg) in G-III dogs one tablet/10 kg body weight. Eggs per gram (EPG) of faeces values and larval cultures were performed on 0, 3, 5, 7 and 10 days post treatment (DPT). Based on EPG values, an efficacy of hundred per cent was recorded on 3 DPT following treatment with Prazivet, 7 DPT with Cestal Plus and 10 DPT with Praziplus.

229. Sood, S.; Verma, P.C. (CCS Haryana Agricultural University, Hisar (India) Pathology of Pasteurella multocida infection in chickens. Indian Journal of Animal Research 2006, v. 40 (1)
The present study was conducted on 42, 12–15 weeks old birds to study the gross and histopathological changes induced by *Pasteurella multocida* infection. The birds were divided into two groups *viz*., control and infected consisting of 21 birds each. The birds in infected group were administered with LD_{50} of local isolate of *Pasteurella multocida* A:1. Three birds from each group were randomly sacrificed and subjected to thorough post mortem examination. Tissues were collected in 10% buffered formalin for histopathological studies. Initially pathological lesions were of acute septicaemic nature, congestion, hemorrhage and presence of bacterial colonies. Later on fibrinous pericarditis, necrosis of liver and kidney and lymphoid depletion and RE cell hyperplasia in the spleen were observed.

230. Ghosh, A.K.; Pani, P.K. (Indian Veterinary Research Institute, Izatnagar (India)). The target organ for virus induced cellular transformation in subgroup A and C rous sarcoma virus infection in layers. Indian Journal of Animal Research 2006, v. 40 (1)
White leghorn (IWJ, IWG and IWC) embryos of 11-day-old were inoculated via the chorioallantoic membrane (CAM) route with 0.2 ml of subgroup A and C Rous sarcoma viruses (RSVs), separately containing 10^3 pfu/ml. Eggs were further incubated for hatching. The distribution of tumour lesions in different organs was categorized in accordance with the pock count ranges (PCRs) and days of survival. The liver was the target organ for the virus-induced cellular transformation for the avian species because of the higher frequency and first appearance. The study conducted to investigate the distribution pattern of visceral metastasis in subgroup A and C viral infection revealed that liver was the most affected visceral organ followed by heart, lungs, spleen, kidney and gonads. The bursa of Fabricius and thymus were found to be tumour negative.

231. Wani, S.A.; Samanta, I.; Bandey, M.T.; Bhat, M.A. (Sher-e-Kashmir University of Agricultural Sciences and Technology ,Srinagar (India) Division of Microbiology and Immunology, Faculty of Veterinary Sciences and A.H.) Isolation of acinetobacter Iwoffii from broiler chicken with septicaemia in Kashmir valley. Indian Journal of Animal Research 2006, v. 40 (1)
Present communication describes the isolation of *Acinetobacter iwoffii* from two cases of broiler chickens, which died of respiratory distress, diarrhoea and leg weakness. The organism

was found resistant to ampicillin, cloxacillin, amoxicillin, doxycycline and cotrimoxazole while as, it was sensitive to gentamicin, ciprofloxacin and pefloxacin. The consumption of undercooked meat from such infected chicken may lead to human infection.

232. Sridhar, M.; Kumar, D. ; S, Anandan; Prasad, CS ; Sampath, KT (Current Science (India) v. 92 (10). p. 1356-1358. Occurrence and prevalence of Cyllamyces genus: a putative anaerobic gut fungus in Indian cattle and buffaloes. KEYWORDS: CATTLE; WATER BUFFALOES; Cyllamyces

The DNA sequence of the Internal transcribed spacer region of one of the Cyllamyces sp. isolate CB3B1 is deposited in Genbank (Accession No: EU043229)

L74 Miscellaneous Animal Disorders

233. Mekala, P.; Punniamurthy, N.; Hariharan, P. (Veterinary College and Research Institute, Nammakal (India). Veterinary Pharmacology and Toxicology Dept.). Protective effect of curcumin and silymarin against aflatoxicosis in broiler chicken.. Indian Veterinary Journal (India).. (May 2006) v. 83(5) p.501-503 KEYWORDS: DYES; FLAVONOIDS; AFLATOXIN; BROILER CHICKENS; DRUGS; PRODUCTION DATA.
Aflatoxicosis was induced in commercial male broiler chicken and the ameliorative effects of curcumin and silymarin alone and in combination was studied by assessing production parameters. Curcumin and silymarin produced dose dependent improvement in the production parameters studied and they were more or less similar in their hepatoprotective effect. The drugs in combination produced better results comparable to that of the control birds indicating synergistic effect of the two flavonoids.

234. Mishra, N.; Dubey, R.; Galav, V., Tosh, C.; Katherukamem, R.; Pitale, S.S.: Pradhan, H.K. (Indian Veterinary Research Institute, High Security Animal Disease Laboratory, Bhopal (India)), CURRENT SCIENCE, v. 93(1), p. 97-100 Identification of bovine viral diarrhoea virus type 1 in Indian buffaloes and their genetic relationship with cattle strains in 5'UTR. Bovine viral diarrhoea (BVD) caused by either bovine viral diarrhoea virus type 1 (BVDV 1) or BVDV 2 is responsible for significant economic losses in cattle and buffaloes. We recently established prevalence of BVDV 1b viruses in Indian cattle. Detection and typing of BVDV in Indian buffaloes is yet to be reported, though buffaloes and cattle contribute equally to livestock production systems in India. In this study, we report identification of BVDV 1 in Indian buffaloes and their genetic relationship with cattle strains. The 5'untranslated region (UTR) of 15 BVDVs amplified directly from clinical samples of buffaloes and cattle by RT–PCR during 2001–05 was sequenced. Phylogenetic analysis revealed that 11 samples from cattle and three from buffaloes clustered with BVDV 1b, whereas one buffalo sample clustered with BVDV 1c, which may be its true representative. The study established prevalence of BVDV 1b and 1c subtypes in Indian buffaloes and close relationship among cattle and buffalo 1b viruses. Detection of BVDV 1b in cattle serum used as nutrient component recognized the need for mandatory testing of bovine sera before using for cell culture and manufacturing of veterinary vaccines.

235. Pawde, A.M.; Gupta, O.P.; Singh, G.R; Kinjavdekar, P.; Aithal, H.P.; Amarpal Indian Veterinary Research Institute, Uttar Pradesh (India). [Haematological and serum electrolyte changes in arthritic buffalo calves treated with electro acupuncture]. Indian Journal of Animal Sciences (India). (Feb 2008) v. 78(2) p. 168-169 KEYWORDS: WATER BUFFALOES; ARTHERTIS. The study was conducted to evaluate the efficacy of acupuncture in the treatment of aseptic arthritis in buffalo calves. Male buffalo calves (24) were divided in 4 groups of 6 animals each. Animals of group A were kept as control. Electrostimulation of acupoints was done using electroacupuncturoscope. The different groups were compared on the basis of haematological and serum electrolyte change. In treated groups early improvement in electrolyte levels was observed.

236. Sato, T. (Japan International Cooperation Agency, Nepal Office, Lalitpur (Nepal)); Mandal, S.L. (Ministry of Agriculture and Cooperatives, Kathmandu (Nepal). Livestock Services Dept.); Kaneko, K. (Azabu University, Kanagawa (Japan). Vetrinary Obstetrics and Gynecology Dept.). Effect of HCG-A1 combination therapy on cystic ovaries in cows.. Indian Veterinary Journal (India). (May 2006) v. 83(5) p.520-521 KEYWORDS: THERAPY; COWS; OVARIES; PREGNANCY.
HCG-AI combination therapy was tried to treat cystic ovaries in cows. According to the results. the combined hCG-AI therapy applied to cows with cystic ovaries on the earliest day of diagnosis may produce about a 50 percent pregnancy rate within three weeks.

237. Vathsala, M. (Livestock Research Station, Kancheepuram (India)).. Urethral calculi in a stall fed goat.. Indian Veterinary Journal (India).. (May 2006) v. 83(5) p.572 KEYWORDS: URINARY TRACT DISEASES; GOATS.

238. Sarkar, T.K.; Bhat, A.S.; Islam, R.; Singh, P.K ; Khan, H.M. (Sher-e-Kashmir University of Agricultural Sciences and Technology ,Srinagar (India) Sheep Breeding Farm) A note on the incidence of entropion in new born lambs in an organized farm of Kashmir. Indian Journal of Animal Research 2006, v. 40 (1)
A study was conducted to find out the incidence of entropion in different breeds of Sheep and to correct the entropion by a simple technique. The incidence of entropion was found highest in Corriedale (7.28%), followed by Polled dorset x Corriedale (1.08%) and Polled dorset (0.63%). No entropic lambs were found in South down breed. The lower eyelid involvement was more common than upper eyelid involvement. A fold of skin on the affected lid was removed using a crush and cut approach. No anaesthesia and suture was applied during the operation. The bloodless surgery corrected the defect without an open wound and healing occurred within 5–6 days and the affected eyelid was functioning normally.

M11 Fisheries Production

239. Duman, E.; Pala, M.; Yuksel, F. (Firat University, Elazig (Turkey). Fisheries Faculty, Fishing and Fish Processing Technology Dept.). Study on the effect of hanging ratio in gill nets.. Indian Veterinary Journal (India).. (May 2006) v. 83(5) p.573-574 KEYWORDS: GILLNETS; FISHING.

M12 Aquaculture Production and Management

240. Sharma, R. (College of Fisheries, Central Agricultral University, Tripura (India)). Chromosomal studies on two endangered catfishes-Ompok bimaculatus (Bolch) and Ompok pabda (Hamilton_Buchanan). Indian Journal of Animal Sciences (India). (Feb 2008) v. 78(2) p. 234-236 KEYWORDS: CATFISHES; CHROMOSOPMES; ENDANGERED SPECIES.
Chromosomal studies are the basic requisite for genetic improvement program and for conservation of wild gene pool. The catfishes Ompok bimaculatus and Ompok pabda are being endangered due to the habitat destruction and lack of proper management of the stock. For the present karyotypic study on these 2 freshwater endangered catfishes, 25 samples of each species were examined and 307 and 330 chromosome spreads of O. bimaculatus and O. pabda, respectively, were screened. The study revealed the presence of diploid chromosome number as 42 with the chromosome formula of 12 metacentric, 14 submetacentric and 16 subtelocentric and telocentric in both the species. The karyotype is characterized by the fundamental arm number (NF) of 68.

Q01 Food Science and Technology

241. Jain, S.; Brahmbhatt, M.N.; Rank, D.N.; Joshi, C.G. and Solanki, J.V. Indian Journal of Animal Sciences,(India) v. 77 (9). p. 880-881. Use of cytochrome b gene variability in detecting meat species by multiplex PCR assay.
Adulteration of costly meat with a cheaper one has become a matter of concern for research workers and has prompted the researchers to find a suitable method for the detection of the species origin of meat in food products (Rao et al. 1995). Meat adulteration in ground and comminuted products has been a wide spread problem in retail markets. Identification of the species origin in meat samples is relevant to consumers for several reasons: (a) possible economic loss from fraudulent substitutions or adulterations, (b) medical requirements of individuals who might have specific allergies, and (c) religious reasons (Miguel et al. 2004). The conventional methodology used for the determination of species origin in meat products had been predominantly based on immunochemical and electrophorectic analysis of protein. Additionally, through the acquisition of sequence data, DNA can potentially provide more information than protein, due to the degeneracy of the genetic code and the presence of many non-coding regions. DNA hybridization (Wintero et al. 1990) and PCR methods (Chikuni et al. 1994) have been used for the identification of meats and meat products. DNA hybridization methods are complicated and generally inadequate, but PCR easily amplifies target regions of template DNA in much shorter time (Saiki et al. 1988). Multiplex PCR, in which many primers were used together for amplification of multiple target regions, is a hopeful technique for meat species identification. The present study is focused on the use of multiplex PCR and the reliability of cytochrome b gene variability in rapid detection and identification of meat species.

242. Kumari, Rajni. (Masters thesis, (2007) College of Veterinary Science and Animal Husbandry, Anand Agricultural University, Anand (India) Meat species identification by real time PCR

A reliable and sensitive method for identification and differentiation of buffalo meat from mixed meats, particularly containing cattle meat is not currently available and is highly warranted. Present study was carried out to develop a Real Time PCR based test for identification and differentiation particularly of cattle and buffalo meat. DNA extraction from meat samples (ten each) from cattle , buffalo, sheep, goat and chicken procured from slaughter house /market or obtained through biopsy were utilized for molecular study . Mitochondrial cyt b gene was amplified by conventional PCR using primers reported by Rea et al. (2001). PCR was optimized with respect to annealing temperature and primer concentration to give species specific amplification. A common forward and cattle specific reverse primer amplified 113 bp fragment on cattle DNA while common forward with buffalo specific reverse primer amplified 152 bp fragment. PCR did not produce any cross specific amplification. Further, it did not produce any amplification from other meat species studied. When the primers were used in duplex PCR, it amplified only the target species DNA i.e. either cattle or buffalo, while it amplified both the species DNA on cattle buffalo mixed meats. The optimized PCR was converted to the Real Time PCR using SYBR green Dye. In Real Time PCR the common forward primer with cattle specific reverse primer showed melting peak at 76.2 0C on cattle DNA while the common forward primer with buffalo specific reverse primers showed melting peak at 78.2 0C on buffalo DNA. Even in duplex PCR it showed only species specific melting peaks in respective species DNA. But when duplex PCR was evaluated on cattle- buffalo mixed DNA template in equal proportion it exhibited two peaks, a major buffalo specific and a minor cattle specific, merging into one broader peak at 78.2 0C coinciding with buffalo specific melting point. However it was possible to know presence of mixed DNA by Real Time PCR using duplex primers. The duplex Real Time PCR showed only a single broader peak at 78.2 0C at 1: 10 and all further ratios. Hence an independent cattle specific Real Time PCR was run on mixed DNA which produced cattle specific melting peak at 76.2 0C upto 1: 1000 ratios. At 1: 10,000 ratio it did not showed any cattle specific melting peak. Thus, it was possible to detect and differentiate cattle meat mixed in buffalo meat upto 1: 1000 fraction i.e. 9 pg of cattle DNA adulterated in buffalo DNA by running a duplex PCR followed by cattle specific Real Time PCR. Duplex Real Time PCR did not produce any amplification and melting peaks on DNA templates from sheep, goat and chicken. Thus, Real Time PCR was found to be successful in differentiating cattle and buffalo mixed meat samples. Consequently, Real Time PCR assay developed in the present study was found to be very sensitive and specific to detect adulteration of cattle meat in buffalo meat such that it can be adopted in an advanced lab like forensic lab.

Q02 Food Processing and Preservation

243. Dokuzlu, C. (Technical Vocational School of Higher Education, University of Uludag, Karacabey, Bursa (Turkey). Food technollogy Dept.); Gunsen, U. (Central Institute of Food

Control and Research, Bursa (Turkey)). Bacteriological quality in some frozen seafood products. Indian Veterinary Journal (India). (May 2006) v. 83(5) p.494-497 KEYWORDS: SEAFOODS; FROZEN FOODS; MICROBIOLOGICAL ANALYSIS; ESCHERICHIA COLI; STAPHYLOCOCCUS AUREUS; SALMONELLA; PRODUCTS; SAFETY.
Pikeperch fillet (Sander lucioperca), cooked and peeled shrimp (parapenaeus longirostris) , and atherine (Atherina boyeri) samples, were analysed on account of total aerobic mesophilic bacteria, total coliform bacteria, Escherichia coli, Staphylococcus aureus, Salmonella spp. and Vibrio parahaemolyticus. Particularly coliform bacteria counts exceeded the indicated levels of Turkish Manual of Seafood Quality Control due to the contaminations and insufficient hygienic conditions. It was concluded that frozen seafood processing plants should apply strict hygiene and sanitary conditions during processing and storage of the frozen products and should establish a HACCP based program for obtaining the high-quality product safety for consumption.

244. Malek, M.A.; Khan, M.J.; Islam, K.M.S. (Bangaladesh Agricultural University, Mymensingh (Bangaladesh)). Nutritive value of rice straw as affected by ensiling with urea and urease sources at various moisture levels. Indian Journal of Animal Sciences (India). (Feb 2008) v. 78(2) p. 182-185 KEYWORDS: RICE STRAW; NUTRITIVE VALUE; UREA.
An experiment was conducted to study the effect of urease sources on proximate composition, NH3-N production, energy value, in situ disappearance of dry matter (DM), crude protein (CP) and digestibility of organic matter of urea ensiled rice straw. Rice straw (RS) was ensiled with the combination of urea, soybean seed meal (SSM), cowpea seed meal (CSM) Qf midden soil (MS) at different moisture levels. Ensiling with urease sources resulted in improvement of CP, organic matter (OM), ether extract (BE), and decrease in crude fiber (CF) and ash. All the treatments had significantly higher CP than untreated straw. Similarly, OM and EE content for urease treated straws were higher over untreated. In sacco disappearance ofDM and CP were also higher in treated group than untreated straw. But all the treatments were lower in CF and ash contents than control. The interaction between additive sources and moisture levels were significant for OM, CP, CF and NFE (nitrogen free extract) content but nonsignificant for ash. It may be concluded that nutritive value of rice straw can be improved by adding 5 percent urea and 5 percent urease containing plant sources like SSM, CSM and preserved for at least 4 days under anaerobic condition at 40 percent moisture level.

245. Sangwan, R.; Khanna, N. (CCSHAU, Hisar (India) College of Veterinary Sciences, Department of Livestock Products Technology). Effect of certain additives on the quality characteristics of immersion chilled broiler cut up parts. Indian Journal of Animal Research 2006, v. 40 (1)
Broiler leg and breast cuts were treated with 5% tetrasodium pyrophsophate + 2.5% sodium chloride (T_1) and (2%) lactic acid + (2%) potassium sorbate (T_2) or without any additive (control) during immersion chilling. The per cent moisture uptake and drip loss were significantly lower ($P<0.05$) and per cent cooking yield was higher in T_1 group followed by T_2 and control groups. Organoleptic scores in relation to appearance, tenderness, flavour, juiciness and overall acceptability of the cooked samples of both the cuts were also superior in T_1 followed by T_2 and control samples.

Q03 Food Contamination and Toxicology

246. Korukluoglu, M.; Sahin, I. (University of Uludag, Bursa (Turkey). Agricultural Faculty, Food Engineering Dept.). Campylobacter contamination in raw milk and white cheese. Indian Veterinary Journal (India). (May 2006) v. 83(5) p.580-581 KEYWORDS: CAMPYLOBACTER; CONTAMINATION; MILK; CHEESE.

247. Rafiei, S.R.; Sireli, U.T. (University of Ankara, Ankara (Turkey). Veterinary Medicine Faculty, Food Hygiene and Technology Dept.). Contamination level of cattle carcass and offals with Yersinia Enterocolitica. Indian Veterinary Journal (India). (May 2006) v. 83(5) p.533-535 KEYWORDS: CONTAMINATION; CATTE; CARCASS; YERSINIA ENTEROCOLITICA; OFFAL; LIVER; KIDNEYS; SPLEEN.
In all 9.5 percent (19/200) samples obtained from 50 carcasses were found contaminated with Yersinia species. Results obtained from this study indicated that 24 percent of carcasses (12/50), 8 percent of spleens (4/50), 4 percent of livers (2/50) and 2 percent of kidney (1/50) samples were contaminated with Yersinia species. Among the positive carcass samples 33.3 percent (4/12) were found contaminated with Yersinia entrocolitica. Numercial evaluation indicated that cattle carcasses were contaminated at a mean value of 4.6x10 MPN/g of Y enterocolitica. It is concluded that there is a risk for cattle offals and particularly carcasses to be contaminated with different Yersinia species at slaughterhouses.