

# **ANNEXURE –XC**

## **SHEEP**

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## **Anatomy and Histology**

Specialization: **Anatomy and Histology**

Subject: **Histology and histochemistry of Von Ebner's and lingual glands in sheep and goat.**

Year of publication: **2000**

Journal: **The Indian Journal of Animal Sciences** (India). (Sep **2000** ). v. 70(9) p. 906-908.**AB:**

Country of Origin: **India**

**Author's name:** Biradar, R.B.; Ramkrishna, V.

### **Content:**

The Von Ebner's glands of sheep were tubuloalveolar serous type. They showed moderate intensity of P A S reaction with no effect after diastase digestion. It had intense and weak reaction for sulphated and acid mucopolysaccharides respectively. Whereas in goat, the Von Ebner's glands were mucous type and had strong P A S reaction, Sulphated acid mucopolyaccharides were negative. The lingual glands were seromucous both in sheep and goat. In sheep, the P A S reaction was strong in mucous adenomeres as compared with serous, whereas, in goat both serous and mucous adenomeres showed same intensity of P A S -positive even after diastase digestion. The alcian-blue staining at 1.0 pH showed strong reaction in sheep, whereas in goat it was negative. At 2.5 pH the reaction was weak in sheep but negative in goat. Hence, the inference can be drawn that the sheep Von Ebner's and lingual glands are rich in sulphated acid mucopolysaccharides than goat.

Specialization: **Anatomy and Histology**

Subject: **Anatomy of the skull of dum pig of Assam.**

Year of publication: **2002**

Journal: **Indian Veterinary Journal** (India). (Jul **2002**). v. 79(7) p.708-711.**AB:**

Country of Origin: **India**

**Author's name:** Sarma, K.; Sarma, M.

### **Content:**

Morphological characteristics of the skull have been reported in pig ox goat, sheep and yak. The present study was aimed to describe the gross features of the skull of dum pig (sue scrofa) of Assam.

Specialization: **Anatomy and Histology**

Subject: **Localization of argentaffin granules in developing liver cells of sheep foetus.**

Year of publication: **2003**

Journal: **Indian Veterinary Journal** (India). (Nov **2003**). v. 80(11) p.1158-1159.**AB:**

Country of Origin: **India**

**Author's name:** Mandal, A.K.; Dass, R.K.

### **Content:**

A study was carried out to elucidate the localization as well as the nature of the silver-reducing (Argentaffin) granules in the hepatoblasts of some sheep foeti. Such granules were demonstrated in the cytoplasm of the hepatoblasts of

120+/-3 days sheep foeti old. Bile canaliculi were also observed in the livers of these foeti. Such type of granules are either the secretory products of the liver cells (Hepatoblasts) or may be other compounds like biogenic amines, aldehydes, peptides, phenols, pigment, etc.

Specialization: **Anatomy and Histology**

Subject: **The ultrastructure of blood islets in foetal sheep**

Year of publication: **2002**

Journal: **Indian Veterinary Journal** (India). (Jun **2002**). v. 79(6) p.560-565.

**AB:**

Country of Origin: **India**

**Author's name:** Linman, N.; Kurtdede, N.; Polar, F.; Colak, A.

**Content:**

The endocrine pancreas is an effective organ in the carbohydrate metabolism of the ruminant more than that of non-ruminant animals. The effect of glucagons is minimum in foetal carbohydrate metabolism. While the effect of insulin is important in glucose homeostatis. Different type of the Langerhans islets have been found in the foetal pancreas of sheep. The history of blood islets is older, however the ultrastructural differentiation of endocrine cell is not known. The purpose of the present study was to define growth of endocrine blood islets in the foetal sheep and to determine the relation between the structural maturation of B cells and the insulin hormone with glucose levels in the foetal blood.

Specialization: **Anatomy and Histology**

Subject: **Anatomical and correlative biometrical study of head and pituitary gland of gaddi sheep (Ovis aries).**

Year of publication: **2003**

Journal: **Indian Journal of Animal Sciences** (India). (Feb **2003**). v. 73(2) p. 128-130.**AB:**

Country of Origin: **India**

**Author's name:** Archana; Paramasivan, S.; Sharma, D.N.

Institution:

Organization:

**Content:**

Studies were conducted on 36 heads of adult female pleuriparous Gaddi sheep of 2.5-3.5 years of age. The sheep has long head (cephalic index 66.1) with a prominent nose bridge; the dorsal and ventral length of the head being equal and the cranial cavity almost rectangular and flat. The pituitary was elongated pyriform in shape. Its length, width and thickness were affected by interorbital distance. The skull base length affected length and width while the cranial width affected thickness and width of the pituitary gland. The given regression equation can be utilized to predict the size of the pituitary gland on the basis of known external parameters of head within the safe limits ( $P \leq 0.05$ ).

Specialization: **Anatomy and Histology**

Subject: **Seasonal histomorphological studies on the thyrotrophs of gaddi sheep.**

Year of publication: **2003**

Journal: **Indian Journal of Animal Sciences** (India). (Feb **2003**). v. 73(2) p.

126-127.**AB:**

Country of Origin: **India**

**Author's name:** Paramasivan, S.; Sharma, D.N.

**Content:**

The cytoplasm i.e. granules of large, round or polyhedral TSH cells stained mildly or intensely with aniline blue, periodic acid Schiff and Gomori's aldehyde fuchsin stains. The number of thyrotrophs increased significantly during winter (210n12.74 cells/mmy) when compared with summer (126n12.24 cells/mmy). The average diameter of TSH-cells varied from 9.14n0.11 aem during winter to 8.35n0.20 aem during summer. Its nucleus measured 4.59n0.09 aem during summer but enlarged to 4.86n0.08 aem during winter. This physiological increase in size of the TSH cell and their population during winter might be associated with the increased BMR.

Specialization: **Anatomy and Histology**

Subject: **Scanning electron microscopic studies on the tongue papillae of sheep.**

Year of publication: **2003**

Journal: **Indian Journal of Animal Sciences** (India). (May **2003**). v. 73(5) p. 488-490.**AB:**

Country of Origin: **India**

**Author's name:** Kumar, P.; Sagar, D.; Ganganaik, S.; Jain, R.K.; Gupta, A.N.

**Content:**

The scanning electron microscopy was carried out in 5 young sheep of local mixed breed. The filiform papillae present on dorsal surface were conical with blunt tips whereas, those on ventral surface were smaller and had sharp pointed free tips. These papillae had 3-4 secondary papillae originating from their basal portions. Round to oval shaped fungiform papillae presented taste pores mainly towards their centre. The vallate papilla had a vallum papilla separated from annular pad by sulcus papilla. The papilla possessed taste pores mainly towards the periphery. The different types of lenticular papillae were identified. All types of papillae except the filiform presented different arrangements of microplacae system.

Specialization: **Anatomy and Histology**

Subject: **Gross anatomy of the nasal cavity in sheep (Ovis aries).**

Year of publication: **2004**

Journal: **Indian Journal of Animal Sciences** (India). (Jun **2004**). v. 74(6) p. 605-608. **AB:**

Country of Origin: **India**

**Author's name:** Ganganaik, S.; Jain, R.K.; Kumar, P.

**Content:**

Six sheep heads of either sex and approximately 1-1 1/2 year old of local mixed breed were examined. The nasal cavity in sheep was completely divided into 2 compartments by a median nasal septum. The dorsal nasal turbinate was the longest and extended from the ceribriform plate of ethmoid bone to the level of second transverse ruga of hard palate. It continued rostrally as straight fold and contained a sinus. The ventral nasal turbinate was fusiform in shape and extended from the second molar tooth to the third transverse ruga of hard palate. The middle nasal turbinate was triangular in

outline and extended upto the first molar tooth. The ethmoturbinate had 5 endoturbinates and 6 ectoturbinates.

Specialization: **Anatomy and Histology**

Subject: **Postnatal study on the sweat glands of Patanwadi and Marwari sheep.**

Year of publication: **2004**

Journal: **Indian Journal of Animal Sciences** (India). (Jan **2004**). v. 74(1) p. 7-10. **AB:**

Country of Origin: **India**

**Author's name:** Bhayani, D.M.; Vyas, K.N.; Patel, A.M.; Vyas, Y.L.

**Content:**

The postnatal changes in the sweat glands of the Patanwadi and Marwari sheep were investigated. The biopsies were collected at birth, 1,2,3 and 4 weeks as well as 11/2,2,21/2,3,4,6,9 and 12 months of age, from right and left midside region alternately of the same animals. The density of sweat gland decreased with increase in age. The density was more in Patanwadi than that in Marwari. The sweat gland length, volume and depth were less at birth and more at 9 months, but were nonsignificantly less at 1 year than those observed at 9 months. All the characteristics studied showed higher value in Marwari as compared to Patanwadi. The sweat glands were long tubular with wide diameter in both the breeds. The sweat gland shape did not show significant age or breed differences.

## **Biochemistry**

Specialization: **Biochemistry**

Subject: **Arginine residues involved in binding of tetrahydrofolate of sheep liver serine hydroxymethyltransferase.**

Year of publication: **1992**

Journal: **The Journal of Biological Chemistry** (USA). (5 May **1992**). v. 267(13) p. 9289-9293. **AB:**

Country of Origin: **India**

**Author's name:** Usha, R.; Savithri, H.S.; Appaji Rao, N.

**Content:**

The arginine residue(s) necessary for tetrahydrofolate binding to sheep liver serine hydroxymethyltransferase were located by phenylglyoxal modification. The incorporation of [7-<sup>14</sup>C]phenylglyoxal indicated that 2 arginine residues were modified per subunit of the enzyme and the modification of these residues was prevented by tetrahydrofolate. In order to locate the sites of phenylglyoxal modification, the enzyme was reacted in the presence and absence of tetrahydrofolate using unlabeled and radioactive phenylglyoxal, respectively. The labeled phenylglyoxal-treated enzyme was digested with trypsin, and the radiolabeled peptides were purified by high-performance liquid chromatography on reversed-phase columns. Sequencing the tryptic peptides indicated that Arg-269 and Arg-462 were the sites of phenylglyoxal modification. Neither a spectrally discernible 495-nm intermediate (characteristic of the native enzyme when substrates are added) nor its enhancement by the addition of tetrahydrofolate, was observed with the phenylglyoxal-modified enzyme. There was no enhancement of the rate of the exchange of the alpha-proton of glycine upon addition of tetrahydrofolate to

the modified enzyme as was observed with the native enzyme. These results demonstrate the requirement of specific arginine residues for the interaction of tetrahydrofolate with sheep liver serine hydroxymethyltransferase.

Specialization: **Biochemistry**

Subject: **Sheep uterus dual lipoxygenase in the synthesis of 14,15-leukotrienes.**

Year of publication: **1994**

Journal: **Archives of Biochemistry and Biophysics (USA)**. (Dec **1994**). v. 315(2) p. 362-368. **AB:**

Country of Origin: **India**

**Author's name:** Sailesh, S.; Kumar, Y.V.K.; Prasad, M.; Reddana, P.

**Content:**

Lipoxygenase was purified to homogeneity from sheep uterus cytosol using a combination of ion exchangers, ammonium sulfate fractionation, and gel filtration. The purified enzyme was found to be a homodimeric protein with monomer molecular weight of 66 kDa. When incubated with arachidonic acid, the enzyme showed two lipoxygenase activities producing both 12- and 15-HETEs at the optimum pH of 5.5. The relative concentration of 12- and 15-HETEs, however, changed with the pH of the reaction, 12-HETE being higher in the alkaline range and 15-HETE being higher in the acidic range. Furthermore the enzyme showed the expected dual lipoxygenase based 14,15-LTA<sub>4</sub> synthase activity as evidenced by the formation of 8,15-diHETEs, the hydrolysis products of 14,15-LTA<sub>4</sub>. Isolation of 14,15-LTC<sub>4</sub> from the homogenates of sheep uterus gave further evidence on the formation of leukotrienes. This is the first report of the formation of 14,15-series leukotrienes in mammalian reproductive tissue.

Specialization: **Biochemistry**

Subject: **Interaction of sheep liver apo-serine hydroxymethyltransferase with pyridoxal-5'-phosphate: a physicochemical, kinetic, and thermodynamic study.**

Year of publication: **1996**

Journal: **Archives of Biochemistry and Biophysics (USA)**. (15 Jun **1996**). v. 330(2) p. 363-372. **AB:**

Country of Origin: **India**

**Author's name:** Brahatheeswaran, B.; Prakash, V.; Savithri, H.S.; Appaji Rao, N.

**Content:**

Sheep liver serine hydroxymethyltransferase (EC 2.1.2.1) is a homotetramer of Mr 213,000 requiring pyridoxal-5'-phosphate (PLP) as cofactor. Removal of PLP from the holoenzyme converted the enzyme to the apo form which, in addition to being inactive, was devoid of the characteristic absorption spectrum. Upon the addition of PLP to the apoenzyme, complete activity was restored and the visible absorption spectrum with a maximum at 425 nm was regained. The interaction of PLP with the apoenzyme revealed two phases of reaction with pseudo-first-order rate constants of 20  $\pm$  5 s<sup>-1</sup> and 12.2  $\pm$  2.0  $\times$  10<sup>-3</sup> s<sup>-1</sup> respectively. However, addition of PLP to the apoenzyme did not cause gross conformational changes as evidenced by circular dichroic and fluorescence spectroscopy. Although conformationally apoenzyme and holoenzyme were indistinguishable, they had distinct apparent melting

temperatures of 51 +/- 2 and 58 +/- 2 degrees C, respectively, and the reconstituted holoenzyme was thermally as stable as the native holoenzyme. These results suggested that there was no apparent difference in the secondary structure of holoenzyme, apoenzyme, and reconstituted holoenzyme. However, sedimentation analysis of the apoenzyme revealed the presence of two peaks of S<sub>20,w</sub> values of 8.7 +/- 0.5 and 5.7 +/- 0.3 S, respectively. A similar pattern was observed when the apoenzyme was chromatographed on a calibrated Sephadex G-150 column. The first peak corresponded to the tetrameric form (Mr 200,000 +/- 15,000) while the second peak had a Mr of 130,000 +/- 10,000. Reconstitution experiments revealed that only the tetrameric form of the apoenzyme could be converted into an active holoenzyme while the dimeric form could not be reconstituted in, an active enzyme. These results demonstrate that PLP plays an important role in maintaining the structural integrity of the enzyme by preventing the dissociation of the enzyme into subunits, in addition to its function in catalysis.

Specialization: **Biochemistry**

Subject: **Study of serum enzymes activities of black bengal goat after injecting anabolic steroid.**

Year of publication: **2000**

Journal: **Indian Veterinary Journal** (India). (Jun 2000 ). v. 77(6) p.483-485.

**AB:**

Country of Origin: **India**

**Author's name:** Kalita, D.J.; Bisoi, P.C.; Mohapatra, M.

**Content:**

Exogenous administration of anabolic steroid should not have any adverse affect on the normal function of the body and this can be confirmed by study of the serum activity. Increase in growth rate and carcass quality in lambs were recorded by exogenous administration of testosterone. The present experiment is designed to know the physiological status of Black Bengal kid by studying serum enzymes activities after injecting testosterone as growth promoter.

Specialization: **Biochemistry**

Subject: **Effects of Haemoglobin and transferrin polymorphisms on the performance of Awassi and crossbred Ewes under subtropic environment.**

Year of publication: **2001**

Journal: **Journal of Applied Animal Research** (India). (Jun 2001). v. 19(2) p. 187-192.**AB:**

Country of Origin: **India**

**Author's name:** Darcan, N.; Guney, O.

**Content:**

Performance (lactation milk yield, prolificacy, fertility and litter size) and polymorphisms of two biochemical systems (haemoglobin and transferrin) of pure Awassi and Cukurova Assaf (C. Assaf, 5/8 Awassi + 3/8 East Friesian) and influences of Hb, Tf titred groups on performances of two genotypes were examined. Performance of Awassi and C. Assaf ewes were significantly different. Furthermore, there was significant difference between lamb weights at birth and weaning (P<0.01), while no significant differences between

haemoglobin and transferrin types of pure Awassi and C. Assaf ( $P>0.05$ ) were found. It was confirmed that haemoglobin and transferrin polymorphisms were found to be effective on the performances of Awassi and Cukurova Assaf breeds.

Specialization: **Biochemistry**

Subject: **Traits influencing tri-iodothyronine levels in sheep.**

Year of publication: **2001**

Journal: **Indian Veterinary Journal** (India). (Nov **2001**). v. 78(11) p.1000-1002. **AB:**

Country of Origin: **India**

**Author's name:** Eswari, S.; Viswanathan, S.; Leeta, V.; Nayeem, M.; Gajendran, K.

**Content:**

Thyroid hormones play an important role in regulation of basal metabolic rate, growth, tissue differentiation, reproduction and lactation. Among the two hormones namely thyroxine (T<sub>4</sub>) and tri-iodothyronine (T<sub>3</sub>), the latter is obtained by de-iodination of the former and is more active. In Tamil Nadu, Madras red sheep has been developed as the ideal breed to suit the needs of the farmers and the understanding the thyroid hormone levels especially T<sub>3</sub> will be of immense use. In the present study, the different traits namely, age, sex, season, pregnancy, parturition, postpartum and lactation and their influence on the T<sub>3</sub> level is evaluated.

Specialization: **Biochemistry**

Subject: **Biochemical alterations in rumen liquor, blood cerebrospinal fluid and urine in experimental acute ruminal lactic acidosis in sheep.**

Year of publication: **2003**

Journal: **Indian Veterinary Journal** (India). (Jan **2003**). v. 80(1) p.36-39. **AB:**

Country of Origin: **India**

**Author's name:** Nikolov, Y.; Trachia University, Stara Zagora.

**Content:**

Experimental acute ruminal acidosis was induced on ten adult sheep, fed with beet molasses (20 ml per kg), containing 540 g per litre saccharose. Rumen liquor, blood, serum, cerebrospinal fluid and urine were collected before (-24 and 0 hr) and thereafter at 12, 24, 48, 72, 96 and 120 hr molasses administration. A significant decrease in pH of rumen, associated with decreased pH in blood, CSF and urine was noted. Total lactic acid concentration in rumen liquor, blood and CSF increased significantly. Significantly increased level of glucose, inorganic phosphorus, sodium and decreased levels of calcium and potassium were observed in the blood (serum) of acidotic sheep.

Specialization: **Biochemistry**

Subject: **Haematological and biochemical profile of Mecheri sheep during winter and summer.**

Year of publication: **2004**

Journal: **Indian Journal of Animal Sciences** (India). (Jul **2004**). v. 74(7) p. 718-720. **AB:**

Country of Origin: **India**

**Author's name:** Selvaraj, P.; Mathivanan, R.; Nanjappan, K.

**Content:**

Influence of seasonal effect on hemato-biochemical parameters of Mecheri sheep was studied. No change in hematological values of RBC, WBC, Hb and ESR were observed during winter between preweaning, postweaning, 1-2 years and adult groups except for PCV. PCV values were significantly ( $P < 0.05$ ) higher in adult animals in winter compared to other groups. However, RBC levels were significantly higher in preweaning and in adult male compared to other groups during summer. Similarly, PCV(%) values were higher in preweaning compared to postweaning group and males of 1-2 years and adult group had higher PCV than females of the respective group. There was no significant variation in serum glucose, total protein and albumin concentrations in all the groups during both the seasons. However, total cholesterol content increased significantly as age advanced during both the seasons. Similarly, HDL concentrations were lower in preweaning and postweaning groups compared to 1-2 years and adult groups in both the seasons.

## **Biotechnology**

Specialization: **Biotechnology**

Subject: **Cloning and sequencing of an interspersed repetitive dna element in sheep (*Ovis aries*) genome.**

Year of publication: **2001**

Journal: **Indian Journal of Animal Sciences** (India). (Apr **2001**). v. 71(4) p.388-390. **AB:**

Country of Origin: **India**

**Author's name:** Ghosh, S.K.; Choudhuri, G.; Gupta, P.

**Content:**

A repeat DNA fragment was observed in PstI digested sheep DNA around 500 bp region which was also found in buffalo, cattle and goat. This sheep DNA fragments were eluted, purified and cloned in PstI site of M 13 mp 18/mp 19, screened with the probe prepared an aliquot of the DNA fraction used in this cloning strategy. Five different clones were identified and one of such clone (OAIIRDNA 1) was selected for detailed analysis. Southern revealed that the clone was interspersed throughout the genome. Single stranded DNA was prepared from the recombinant clone and sequenced by Sanger's dideoxy chain termination method. Nucleotide sequence analysis of 414 bp PstI repeat out of 500 bp revealed duplication/triplication of some penta and hexa-nucleotide sequences, viz. AAAGGA at residues 15-21 and again at 392-397, CTTCCC at residues 42-47, 55-50 and 75-80, and AAAGA at residues 155-160 and 215-220; and several tri- as well as tetra-nucleotide were also observed in the sequence. The portion of the PstI repeat sequenced so far appeared to be slightly GC rich. Computer analysis using microgenic sequence programme showed the sheep PstI repetitive DNA to have several open reading frames (ORF). A 318 nt stretch of uninterrupted sequence coding for 106 amino acids was observed in the third ORF of the strand. The computer predicted RNA structure showed a squiggle of discontinuous stem and loop.

## **Breeding**

Specialization: **Breeding**

**Subject: Sheep production and development in Asia.**

**Year of publication: 1988**

**Journal: Coop,-I.E.Workshop on Sheep Production in Asia. Los Banos, Laguna (Philippines). 18-23 Apr 1988.AB:**

**Country of Origin: India**

**Author's name:**

**Content:**

Improvement in nutrition, disease control, and management yields short-term gains. By comparison, breed improvement creates permanent gains. This paper concentrates on breeding. It elaborates on breeding season, seasonal variation in ovulation rate, time, and frequency of breeding, and controlled versus noncontrolled breeding. The main emphasis of this paper is on genetic improvement through selection. The arguments for and against selection within indigenous breeds and in cross-breeding are discussed. To date, indigenous breed improvement has been very limited; success has been unmeasured. Crossbreeding using imported temperate breeds has many failures but likewise has some notable success. Successes have been achieved on breeds that yield wool such as the Merino types (including the Rambouillet) sheep, and on breeds that come from cool or temperate climate as in the grass lands or mountains of China, India, and Pakistan. In the hot arid regions, less Merino-type blood can be introduced but some new breeds have already been developed from the half-breeds. In the humid tropics, growth rate, not wool, is wanted. Along this line, crossbreeding has yet to be tried. There is a continuing need for improvement through selection and for the development of large scale multiplication and distribution of superior sires be it pure, indigenous or new composite breed.

**Specialization: Breeding**

**Subject: Genetic cost of restriction and restricted selection indices for genetic improvement in Marwari sheep.**

**Year of publication: 2000**

**Journal: Indian Journal of Animal Sciences (India). (Sep 2000 ). v. 70(9) p. 947-952.AB:**

**Country of Origin: India**

**Author's name: Ganai, N.A.; Yadav, S.B.S.Y.; Kachwaha, R.N.; Singh, V.K.**

**Content:**

Based on growth, wool production and wool quality records of 482 Marwari sheep, maintained at the Central Sheep and Wool Research Institute's Arid Zone Campus, Bikaner, Genetic cost of imposing restriction on these traits while constructing selection indices were estimated. For body weight at 3, 6, 9 and 12 months (W3, W6, W9 and W12), the cost of restriction was greater than that on wool traits, viz. greasy fleece weight at first and second clip (GFW1, GFW2), fibre diameter (FD) and medulation% (Med.%). The body weights were of fairly equal importance (35% cost of restriction) when present singly. However, in combination, W3 was more important than W6 (45 vs 14%). Restrictions on GFW1 were costlier than on GFW2. Restriction on FD was observed to be less costly than on Med% when indices contained both of them. The undesirable genetic change in FD was checked through a series of restrictions (25,50,75 and 100%) on this trait and 10 such restricted indices were evaluated. In general, a decrease in reliability and expected gain in aggregate breeding value was observed on account of restrictions on FD. The

restricted index:  $1.113W3 - 0.287w6 + 0.5994GFW1 + 0.341FD$  was the most useful restricted index on terms of expected gain in aggregate breeding value.

Specialization: **Breeding**

Subject: **Multi-stage selection strategy for genetic improvement of Marwari sheep.**

Year of publication: **2000**

Journal: **Indian Journal of Animal Sciences** (India). (Sep **2000** ). v. 70(9) p. 957-960. **AB:**

Country of Origin: **India**

**Author's name:** Ganai, N.A.; Yadav, S.B.S.; Kachwaha, R.N.; Pant, K.P.; Singh, V.K.

**Content:**

Four multi-stage selection indices were constructed for genetic improvement using information on body weight at 3 (W3), 6(W6),9(W9) and 12 (W12) months; greasy fleece weight at first (GFW1) and second (GFW2) clips; medullation percentage (Med%) and fibre diameter (FD) of 482 Marwari sheep maintained at the arid region campus of CSWRI, Bikaner. Single-stage indices were more accurate and expected to produce higher genetic gain than their corresponding multistage indices. However, considering the cost of rearing animals for a long period, it has been proposed that 3 stage selection strategy with 50% selection at 6 months, next 50% selection at 9 months and further 80% selection at 12 months would be more practical and economic with an acceptable rate of genetic improvement. The recommended selection indices at 3 stages were: First stage index (S1):  $0.956 W3 - 0.121 W6 + 6.342 GFW1$ ; second stage index (S2):  $1.030 (S1) + 0.327 W9 - 0.070 FD - 0.09 Med\%$  and third stage index (S3):  $0.072 S2 + 0.963 W12 + 1.993 GFW2$ .

Specialization: **Breeding**

Subject: **Comparative study on pre weaning and post weaning growth performance in two strains of nellore sheep.**

Year of publication: **2002**

Journal: **Indian Veterinary Journal** (India). (Dec **2002**). v. 79(12) p.1315-1316. **AB:**

Country of Origin: **India**

**Author's name:** Rao, S.T.V.; Reddy, Y.R.; Veerabramahiah, K.

**Content:**

Nellore breed of sheep are widely distributed in the entire state of Andhra Pradesh. This is the country's tallest breed of sheep having three strains namely Jodpi, Palla and Brown. However, information on comparative performance of these strains is very scanty. Hence an attempt is made in the present study to compare the growth of Jodpi and Palla strains maintained in an organised farm.

Specialization: **Breeding**

Subject: **Performances of Mecheri sheep in its breeding tract.**

Year of publication: **2003**

Journal: **Indian Journal of Animal Sciences** (India). (Aug **2003**). v. 73(8) p. 909-912. **AB:**

Country of Origin: **India**

**Author's name:** Jagatheesan, P.N.R.; Arunachalam, S.; Sivakumar;

Selvaraju, M.

**Content:**

Body measurements (cm) such as body length, height at withers, face length, ear length and tail length, body weight (kg) at birth, 3,6,9 and 12 months and 2 tooth, 4 tooth, 6 tooth and full mouth age groups, mean daily weight gain and reproductive performances were recorded in Mecheri sheep in its breeding tract. Chest girth in adult sheep significantly and positively influenced the body weight. A highly significant ( $P < 0.01$ ) difference between age groups and a significant ( $P < 0.05$ ) difference between sexes in mean daily body weight gain was also observed. A multiple linear regression equation was drawn for adult male and female sheep. The major and minor breeding and lambing seasons were July to September and March to May and December to January and August to October respectively. The lambing percentage was 76-78. The average litter size was always single and practically no twinning was recorded. The mean life time number of lambing was 6.00n81. The mean age at first mating in male and females was 13.65n0.11 and 18.76n0.08 months respectively. The mean age at first lambing in ewes was 23.66n0.09 months.

Specialization: **Breeding**

Subject: **Mutton production potentiality and meat quality traits of cross-bred wool strains.**

Year of publication: **2003**

Journal: **Indian Veterinary Journal** (India). (Nov **2003**). v. 80(11) p.1149-1152.**AB:**

Country of Origin: **India**

**Author's name:** Sen, A.R.; Karim, S.A.; Sharma, R.C.

**Content:**

Twenty four sheep of three breeds groups: Avikalin (GC), A Vimaans x Avikalin (CM) and higher cross (CCM) were used to study factors affecting carcass and meat characteristics. There was no significant difference in the pre-slaughter weight of three genetic groups. However, dressing yield was significantly ( $P < 0.05$ ) lower in CM lambs as compared to other two groups. The total separable lean content was significantly ( $P < 0.05$ ) more in CCM lambs followed by GC and CM. meat from all the genetic group was much tender (Shear force  $< 5.5$  kg). In organoleptic evaluation, meat from GC lambs was more preferred than the meat from other lambs. The results indicated that there was no advantage in crossing Avikalin with Avimaans for mutton production. However, as per organoleptic evaluation the meat from surplus animals of these three strains had similar and acceptable quality attributes.

## **Byproducts**

Specialization: **Byproducts**

Subject: **Effects of manure-fertilizer schedules on the yield and uptake of nutrients by cereal fodder crops and on soil fertility.**

Year of publication: **2000**

Journal: **Journal of the Indian Society of Soil Science** (India). (Sep **2000** ). v. 48(3) p. 510-515. **AB:**

Country of Origin: **India**

**Author's name:** Vasanthi, D.; Kumaraswamy, K.

**Content:**

In field experiments conducted during 1993 and 1994 on a clay loam soil, three cereal crops of sorghum (Co. 27), maize (African tall) and pearl millet (Co.8) were grown in main plots with eighteen subplots treatments involving four manures (poultry manure, sheep-goat manure, biogas manure and FYM) at 5 and 10t ha<sup>-1</sup> and NPK at 50 and 100 per cent recommended levels (60-40-20 kg of N, P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O ha<sup>-1</sup>). The green and dry fodder yields of the cereal fodders, the soil fertility status, and the content and uptake of N, P and K were significantly higher in the treatments that received poultry manure or sheep-goat manure at 10t ha<sup>-1</sup> with 50 per cent of the recommended NPK schedule than the yields in the treatment that had received NPK alone. Among the manures, poultry manure and sheep-goat manure seemed to be more efficacious than the other two.

Specialization: **Byproducts**

Subject: **Evaluation of lustre and physical attributes of wool in Marwari and Nali sheep breeds.**

Year of publication:

Journal: **Indian Journal of Animal Sciences** (India). (Apr 2000 ). v. 70(4) p. 423-425. **AB:**

Country of Origin: **India**

**Author's name:** Sharma, M.K.; Singh, V.K.; Beniwal, B.K.; Mehta, S.C.; Gahlot, R.S.

**Content:**

Marwari and Nali are two important carpet wool producing breeds of sheep in India. The wool of Nali breed was more lustrous and finer than that of Marwari. The least-squares means for wool quality traits i.e. tenacity, extension, reflectance, fluorescence, total, ratio, diameter and medullation of wool fibre have been estimated to be 6.480.167 g/tex, 23.370.53%, 176.433.899 T, 111.202.664 T, 287.796.402 T, 1.080.103, 32.90.528 and 51.422.052% in Marwari and 6.420.144 g/tex, 21.550.464%, 215.673.359 T, 140.082.295 T, 355.675.516 T, 0.60.088, 28.330.455 and 50.801.768% in Nali. The heritability estimates for tenacity, extension, reflectance, fluorescence, total (r+f) and medullation revealed that all the traits had moderate to high heritability, indicating that phenotypic selection for individual trait would be quite effective. The phenotypic correlations among the quality traits indicate that the selection index would be a better choice if simultaneous selection in quality traits is desired.

## **Economics**

Specialization: **Economics**

Subject: **Making sheep rearing profitable.**

Year of publication: **2002**

Journal: **Indian Farming** (India). (Dec 2002). v. 52(9) p. 40-42. **AB:**

Country of Origin: **India**

**Author's name:** Mann, J.S.; Dhaka, B.L.

**Content:**

The large demand for animal protein and fiber, the future for sheep meat and wool seems to be assured. But demand will remain unsatisfied unless the sheep producer is able to operate profitably. The job of the farmer is to ensure enterprise profitable for long-term where his farm shows a steady

improvement with safeguarding his capital assets. The profit can be made by a careful control of inputs and a sustained endeavour to increase output.

## **Epidemiology**

Specialization: **Epidemiology**

Subject: **Epidemiological studies on lambs mortality in certain sheep farms in Andhra Pradesh.**

Year of publication: **2000**

Journal: **Indian Veterinary Journal** (India). (Jun **2000**). v. 77(6) p.542-543.

**AB:**

Country of Origin: **India**

**Author's name:** Reddy, M.P.; Choudhuri, P.C.

**Content:**

Lamb mortality should be minimized to achieve maximum returns in sheep husbandry. This study was undertaken to find out various factors responsible for lamb mortality in eleven organized sheep farms in Andhra Pradesh during the period from 1985 to 1994.

Specialization: **Epidemiology**

Subject: **An investigation on pox like outbreak in goats in Kailali district of Nepal.**

Year of publication: **2000**

Journal: **Veterinary review: a yearly Nepalese publication on animal health and production. Kathmandu (Nepal). Animal Health Research Division. 2000 .AB:**

Country of Origin: **India**

**Author's name:** Nirmal, B.K.

**Institution:** Animal Health Research Division, Kathmandu (Nepal).

**Content:**

Sheep and goat pox is one of the notifiable disease in Nepal. The outbreak of goat pox occurred in Rajeeपुर of Kailali district during May 2000 . The study on epidemiology and clinical features was carried through several visits to the outbreak sites with intervals. This disease was observed first time in far western region of Nepal. The disease was reported in local goats after some Ajmeri breed of goats were imported from Rajasthan, India. Clinical features of goatpox were quite evident, though mortality was very low (2-3 percent) but it caused abortion in pregnant goats. Secondary bacterial infection and maggot infestation caused heavy production loss in goats. Pneumonia was quite common in affected animals. Laboratory examinations revealed almost all animals were having parasitic infestation and increased leucocyte counts. Secondary bacterial infection was treated with antibiotics like Oxytetracycline, Fortified Penicillin and Gentamycin and topical dressing of wounds as well as with corticosteroids and analgesics. The disease spread through neighbouring villages but with mild severity.

Specialization: **Epidemiology**

Subject: **Incidence of parasitic diseases among domestic animals in Namakkal district of Tamil Nadu.**

Year of publication: **2001**

Journal: **Indian Journal of Animal Sciences** (India). (Apr **2001**). v. 71(4) p.

340-341. **AB:**

Country of Origin: **India**

**Author's name:** Balasubramaniam, G.A.; Rao, G.V. Sudhakar; Balachandran, C.; George, V. Titus; Airamuthu S.V.

**Content:**

Faecal samples of dogs, sheep, goats and cattle were processed for identification of ova of helminth and oocysts of coccidia. Highest infection was found in sheep followed by goats, dog and cattle.

Specialization: **Epidemiology**

Subject: **Bluetongue in sheep a disease of economic importance.**

Year of publication: **2002**

Journal: **Indian Farming** (India). (Jul **2002**). v. 52(4) p. 27-29.**AB:**

Country of Origin: **India**

**Author's name:** Krishna, L.

**Content:**

Bluetongue - list A disease - also known as catarrhal fever or sore muzzle is one of the economically most important, insects transmitted viral diseases of livestock specially of sheep and goats. It is characterized by severe illness, fever, leucopenia, erosive inflammation of mouth, tongue, lips, coronitis and myositis besides vesicular lesions. Economic losses are mainly attributed to high morbidity and mortality? abortions, stillbirths, prolonged incapacitation of animals specially young ones, foetal deformities, damage to wool, milk meat and fleece loss and trade barrier on movement of livestock.

Specialization: **Epidemiology**

Subject: **Migratory sheep Affections in migratory sheep of Himachal Pradesh.**

Year of publication: **2002**

Journal: **Indian Veterinary Journal** (India). (Dec **2002**). v. 79(12) p.1299-1301.**AB:**

Country of Origin: **India**

**Author's name:** Sharma, A.; Negi, A.S.; Bisht, V.B.

**Content:**

Affections in migratory animals are unique in nature and typical to the difficult terrain, topography, climate, soil and vegetation. Surgical and gynaecological problems are encountered in the animals. Surgical affections in ruminants of Himachal Pradesh and in migratory sheep and goats of J and K have been reported. Reports of various affections in sheep at high altitude alpine pastures were scanty in India. Hence an attempt is made to put on record a 4-year survey of various affections recorded in sheep at alpine pastures.

Specialization: **Epidemiology**

Subject: **Prevalence and pathology of oesophagostomiasis in sheep and goats in Bidar.**

Year of publication: **2002**

Journal: **Indian Veterinary Journal** (Indian). (Dec **2002**). v. 79(12) p.1244-1245.**AB:**

Country of Origin: **India**

**Author's name:** Thangathural, R.; Rao, D.G.K.

**Content:**

In this paper observations made on the prevalence and pathology of Oesophagostomiasis in sheep and goats in the Bidar region have been documented.

Specialization: **Epidemiology**

Subject: **Incidence of an explosive outbreak of peste despetits ruminants (ppr) in black bengal goats in bankura district of West Bengal.**

Year of publication: **2002**

Journal: **Indian Veterinary Journal** (India). (Jul **2002**). v. 79(7) p.739-740.

**AB:**

Country of Origin: **India**

**Author's name:** Jana, D.; Ghosh, M.

**Content:**

Outbreaks of peste des petits ruminants (PPR) in goats have been reported from more than 15 states in India from 1992 to 1998. This has posed a great threat to the farmers economy. The disease has seriously limited goat and sheep production in several countries of the globe. In recent year emergence of PPR in the wake of eradication of rinder pest (RRP) is most alarming The present communication reports an explosive outbreak of PPR (goat plague) in Ranibandh Block of the District of Bankura in West Bengal that occurred in the month of May 1999.

**Extension**

Specialization: **Extension**

Subject: **Factors related with adoption level of farmers about improved sheep rearing practices.**

Year of publication: **2001**

Journal: **Indian Veterinary Journal** (India). (May **2001**). v. 78(5) p.440-441.

**AB:**

Country of Origin: **India**

**Author's name:** Sharma, G.R.K.

**Content:**

Sheep rearing in India today has emerged as a full-fledged and viable industry. The potential of this sector in income generation and providing employment and nutrition for rural masses of India is realised. The gap between per capita availability and requirement of meat can be reduced substantially by motivating the sheep farmers to adopt the recommended improved sheep rearing practices. The present study was undertaken with the objective of identifying the factors related with the adoption level of sheep farmers about improved farming practices. Further, the relationship between socio-economic, socio-psychological and communicational variables with adoption level of sheep farmers was also sought to be established.

**Immunology**

Specialization: **Immunology**

Subject: **Humoral and cell-mediated immune responses of lambs against bluetongue virus.**

Year of publication: **2000**

Journal: **Indian Journal of Animal Sciences** (India). (Apr **2000** ). v. 70(4) p.

337-339.**AB:**

Country of Origin: **India**

**Author's name:** Deshmukh, V.V.; Gujar, M. B.

**Content:**

The bluetongue virus (BLU-1) was isolated from field outbreaks in Maharashtra. The virus was adapted on BHK-21 cell lines. Humoral immune responses of lambs were evaluated by using competitive enzyme linked immunosorbent assay (cELISA) and complement fixation test (CFT). The cell-mediated immune response (CMI) was evaluated by using leucocyte migration inhibition test (LMIT). The cell culture adapted BLU-1 virus was a strong immunogen. The antibody to BLU-1 was produced on seventh day post-inoculation which persisted at high level after challenge infection. The CMI was developed from seventh day post-inoculation and persisted at high level after challenge infection.

## **Management**

Specialization: **Management**

Subject: **Sheep production and development in India.**

Year of publication: **1988**

Journal: **Workshop on Sheep Production in Asia. Los Banos, Laguna (Philippines). 14-23 Apr 1988.AB:**

Country of Origin: **India**

**Author's name:** Pathayak, B.C.

**Content:**

This paper presents the status of sheep and wool production, and research, and development programs in India. In addition to breed improvement programs, research results on feed resource development, nutrition, reproduction, adaptation, health, and wool utilization are also highlighted in this paper. Apparel wool production is being achieved by upgrading the medium carpet wool breeds through crossbreeding with fine wool breeds like Merino and Rambouillet. Improvements in fineness and medullation have been achieved, but staple length needs to be improved further for use in the wasted sector. For carpet wool production, selective breeding is being undertaken within medium wool type sheep. Hairy and coarse carpet wool breeds are being crossbred with fine wool rams to produce carpet wool producing sheep. For meat production, Dorset and Suffolk rams have been used to upgrade local mutton type animals. A body weight of 30 kg has been observed at six months of age, while a live weight of 25 kg has been achieved at 135 days of age with a feed conversion efficiency of 17 to 18% and a dressing percent of about 50%. Research on pelt production has been undertaken. The paper also discusses ongoing development programs and the constraints to these programs.

Specialization: **Management**

Subject: **Research priorities for animal agriculture by agro-ecological zone in Nepal.**

Year of publication: **1995**

Journal: **Global agenda for livestock research. Proceedings of the consultation for the South Asia Region. Nairobi (Kenya). ILRI. 1995. p. 85-101. AB:**

Country of Origin: **India**

**Author's name:** Shrestha, H.R.; Pradhan, D.R.(eds.) Devendra, C.; Gardiner, P.

**Institution:** International Livestock Research Institute, Nairobi (Kenya).

**Content:**

Livestock are an integral part of farming systems in Nepal. They provide high quality food like milk, meat, eggs, and draft power and dung for crop production. Livestock and poultry are also the major sources of cash income of farming families. Most of the livestock and poultry breeds are indigenous types and are characterised by low productivity. Due to the rapid deterioration of the forests in recent years, feed and fodder shortages are an acute problem. There are several constraints to livestock production. In the past, several exotic breeds of animals and several exotic species of grasses and legumes have been introduced in the country. Despite all these efforts, livestock and poultry production are not well developed. There is an urgent need for research in livestock production to identify suitable breeds, improved management systems and suitable technologies to produce feeds and fodder that can fit into the farming systems. The mid-hills have the highest concentrations of livestock and human populations. This agro-ecological zone requires the highest priority in livestock research. The major research areas are smallholder dairy production, integration of food and forage crop, sheep and goat production and draft power. In the high mountain areas, pasture and yak production need to be studied and in the Tarai, crop-livestock production systems should have priority.

Specialization: **Management**

Subject: **Research methodology for crop and animal systems in humid regions of India.**

Year of publication: **1996**

Journal: **Crop-animal interaction: proceedings. Los Banos, Laguna (Philippines). 1995. p. 421-431. Received Aug 1996. (IRRI Call No. SB207 D5 No. 6)AB:**

Country of Origin: **India**

**Author's name:** Palaniappan, Sp.; Manickam, R.(eds.) Devendra, C.; Sevilla, C.

**Institution:** International Rice Research Inst., Los Banos, Laguna (Philippines).

**Content:**

Crop and animal production systems play a significant role in improving the Indian rural economy. Most of the small and marginal farmers still practice traditional agriculture integrating crops and animals in mixed farming systems. Types of crops and animals in mixed farming systems vary from place to place depending upon the existing agroclimatic zones. To augment farm income, an optimum blend of farm resources is felt increasingly important in all sizes of landholdings. Successful on-station findings need to be tested through on-farm research mainly to enhance adoption. Integrated farming systems is an effective methodology and is being adopted by the majority of small and marginal farmers. These generate not only income but also increases labor-day employment. The role of large ruminants (cows and buffalo) and small ruminants (goats and sheep) in different humid regions is discussed.

Specialization: **Management**

Subject: **Livestock research and production in south Asia.**

Year of publication: **1995**

Journal: **Global agenda for livestock research. Proceedings of a consultation.** Nairobi (Kenya). ILRI. **1995.** p. 41-48.**AB:**

Country of Origin: **India**

**Author's name:** Singh, K.(eds.) Gardiner, P.; Devendra, C.

**Institution:** International Livestock Research Institute, Nairobi (Kenya).

**Content:**

Livestock farming is primarily a small-scale unorganised rural activity closely associated as an integral part of a sound system of diversified agriculture. Cattle, buffalo, sheep, goats, horses, camels, pigs, poultry, yak, mithun etc. It is only poultry farming and to some extent dairy farming which recently have been developed as an industry with large units involving high-producing genotypes provided with adequate housing, feed and health cover. This paper highlights resources and trends in India with partic. ref. to priorities for research and development, constraints, researchable areas and issues, and national agricultural research systems (NARS) capacity.

Specialization: **Management**

Subject: **Slametans and sheep: savings and small ruminants in semi-subsistence agriculture in Indonesia. Slametan dan domba: tabungan dan ruminansia kecil pada pertanian semisubsisten di Indonesia.**

Year of publication: **2000**

Journal: **Indonesian Agricultural Research and Development Journal** (Indonesia). (1999). v. 21(2) p. 27-35. Received **2000**; available in CD format 688/CD/2000. **AB:**

Country of Origin: **India**

**Author's name:** Nerlove, M.; Soedjana, T.D.

**Content:**

In Indonesia, India and throughout Africa and elsewhere in poor rural societies, livestock have frequently been used as a store of value. It is shown that in general small-ruminant husbandry undertaken in part to satisfy the need for a store of value is inefficient compared with production solely for the purpose of generating the maximum discounted net revenue, but that this inefficiency becomes negligible when herd size is constrained by sharply rising costs of holding additional animals such as might arise if the farmer faces a binding labor constraint, and it is argued that this is the case in Indonesia.

Specialization: **Management**

Subject: **Layout for farm models of sheep and goat.**

Year of publication: **2002**

Journal: **Indian Farming** (India). (May **2002**). v. 52(2) p. 19-20.**AB:**

Country of Origin: **India**

**Author's name:** Tomar, A.K.S.

**Content:**

Optimum production of mutton/chevon, milk, wool, etc, from sheep/goat farm rests on various important factors like genetic potential of the breed, overall management of the farm etc., besides scientific layout of the farm\* The scientific layout of the farm enhances the efficiency of manager as well as

animals maintained, which in turn, is reflected through higher production/profit from the sheep/goat farm.

Specialization: **Management**

Subject: **Efficient sheep and goat production.**

Year of publication: **2002**

Journal: **Indian Farming** (India). (Sep **2002**). v. 52(6) p. 31-33. **AB:**

Country of Origin: **India**

**Author's name:** Kumar, A.; Kushwaha, B.P.; Sharma, R.C.; Kumar, S.

**Content:**

Sheep and goat management is different in field conditions when compared with organized farm. The poor graziers adopt conventional ways and means to manage their flocks. They do not pay proper attention in extreme conditions which lead animals to stress and finally death, incurring heavy economic losses. Commercial viability depends upon the type of management provided at the farm. One can bring tremendous improvement in productivity by adopting scientific management practices. So, it is essential to adopt management practices by sheep and goat farmers and will result in better productivity of the farmers flock.

Specialization: **Management**

Subject: **The sheep farming structure and its income in certain parts of Tamil Nadu.**

Year of publication: **2002**

Journal: **Indian Veterinary Journal** (India). (Nov **2002**). v. 11(79) p.1160-1163.**AB:**

Country of Origin: **India**

**Author's name:** Arunachalam, S.; Thiagarajan, M.; Ramesh, V.

**Content:**

In Tamil Nadu different combination of sheep farming structure are being noticed and its income varied depending upon the combination of sheep farming structure. So for no systematic study has been carried out regarding the sheep farming structure and its income. So the present study was undertaken to find out the sheep farming structure existing in Tamil Nadu and its income per cattle unit, and the predominant sheep farming structure.

Specialization: **Management**

Subject: **Effect of management systems on age and body weight at maturity in Madras Red ewe lambs.**

Year of publication: **2003**

Journal: **Indian Veterinary Journal** (India). (May **2003**). v. 80(5) p.460-461.**AB:**

Country of Origin: **India**

**Author's name:** Sundaram, S.M.; Sivakumar, T.; Gnanaraj, P.T.; Ramesh, V.

**Content:**

Among the various management practices, the systems of rearing and supplementation of growth promoters influence the growth and reproduction in sheep. Present experiment was therefore, undertaken to know the influence of management systems and supplementation of probiotics on the age and body weight at maturity in Madras Red ewe lambs.

Specialization: **Management**

Subject: **Evaluation of mutton type sheep in farmers' flocks of Rajasthan.**

Year of publication: **2003**

Journal: **Indian Journal of Animal Sciences** (India). (Jul **2003**). v. 73(7) p. 785-787.**AB:**

Country of Origin: **India**

**Author's name:** Sharma, R.C.; Arora, A.L.; Kumar, A.; Kumar, R.

**Content:**

Data on growth profile traits and greasy fleece yield (GFY) pertaining to Malpura and Kheri sheep collected from several farmers' flocks during the year 2000 were utilized in the present study. Certain observations on management practices being adopted by the farmers were also collected. Least-squares means for birth, 3,6, and 12-month weight were 3.50,13.50,18.94 and 24.66 kg, respectively, in Malpura whereas corresponding figures for Kheri lambs were 3.25,13.54, 17.46 and 22.81 kg respectively. Malpura lambs were significantly heavier at all the ages except 3-month weight over their contemporary Kheri lambs (non-descript sheep). Overall least-squares means for 1st GFY, adult GFY and annual GFY were 462.71, 390.95 and 1184.52 g respectively. Kheri produced significantly more adult GFY and annual adult GFY than Malpura sheep. In general, farmers disposed off most of the male lambs at about 5-6 months of age and female lambs were retained for increasing breedable ewes and for replacement. The marginal farmers and landless labourers maintain sheep and flocks only on grazing of 8 to 10 hr with seasonal tree lopping. Special treatment was given to breeding rams particularly in breeding seasons. Kheri sheep in the area from where production data were collected is replacing Malpura sheep. Farmers having Kheri sheep are of opinion that these animals are good enough for traveling long distances and can better sustain the lean periods. Further, body weights of these animals go down at lower rate compared to Malpura/crossbred sheep during vegetation scarcity.

Specialization: **Management**

Subject: **Physiological responses and growth of native (Malpura) and crossbred (Bharat Merino) female lambs born in autumn season under semi-arid ecology of India.**

Year of publication: **2003**

Journal: **Indian Journal of Animal Sciences** (India). (Aug **2003**). v. 73(8) p. 916-919.**AB:**

Country of Origin: **India**

**Author's name:** Maurya, V.P.; Naqvi, S.M.K.; Mittal, J.P.

**Content:**

The study was undertaken to adjudge the relative physiological adaptability and growth performance of Malpura (native) and 8 crossbred (Bharat Merino) lambs were utilized for this study. All the lambs were reared under standard farm management practices throughout the study. The various physiological responses were recorded at 8:00hr and 14:00hr at monthly interval right from birth to 180 days of age. The respiration rate and pulse rate in crossbred lambs were significantly ( $P<0.05$ ) higher in morning and in afternoon than native lambs. The mean birth weight of crossbred lambs was significantly ( $P<0.05$ ) higher than the native lambs. The crossbred had comparatively higher body weights from 1 to 6 month of age but did not attain level of significance. The

values of heart girth, height at wither and pin shoulder length of native and crossbred lambs were comparable throughout the study.

Specialization: **Management**

Subject: **Re-look at existing farming systems of Sikkim for sustainable agriculture under hills ecosystem.**

Year of publication: **2003**

Journal: **Asian-Agri History** (India). (Jul-Sep **2003**). v. 7(3) p. 203-218.**AB:**

Country of Origin: **India**

**Author's name:** Patiram

**Content:**

Although sikkim is the smallest northeastern himalayan state of India with a geographical area of 7096 km, it has all the agroclimatic zones (from tropical to alpine) with permanent snow covered mountain ranges above 6000 in elevation. Agriculture is mainly confined below 1800 m altitude and two-third of the agricultural land is terraced. Most of the people practice mixed farming irrespective of elevation. The developed farming systems are divided into two categories: Dhankheti(irrigated terraced rice) and Sukhabari (dry upland). Maize-based cropping is the most important system in sukhabari while in dlhankheti, the maize-based system is followed by rice. Other important lsystems in sukhabari are ginger+maize on raised beds, mandarin intercrops, large cardamom plantation on hill slopes, potato cualtivation, zero tillage cabbage cualtivation in Lachung, bamboo groves, fodder trees, broom grass as a component of agricultural holdings, homestead gardening, vegetables, and transhumance at higher hills,. Among the livestock, cattle, sheep goat, pig, and poultry are most common in every household and yak is reared at higher elevations. The hill agriculture system of Sikkim hills has been transformed from shifting cultivation to terraced sedentary agriculture and is mostly based on organic farming and aother indigenou systems of maintain the soil productivity. The ecological complexity of the mountain agriculture can be tackled on watershed basis with a holistic view to develop and conserve the natural resources on sustainable basis to a great extent. The development of hill farming systems would have to take into account perennial crops, annual crops, and livestock, depending upon elevation topography, infrastructure, and socioeconomic feasibility.

Specialization: **Management**

Subject: **Variability in replacement rate and its components in Sirohi goats of Rajasthan.**

Year of publication: **2003**

Journal: **Indian Journal of Animal Sciences** (India). (Jul **2003**). v. 73(7) p. 789-801.**AB:**

Country of Origin: **India**

**Author's name:** Kumar, A.; Tomar, A.K.S.; Mehta, B.S.; Arora, A.L.

**Content:**

The study comprised data on 868 kidding records of 305 Sirohi goats maintained during 1992 to 1999. All the animals were reared under semi-intensive system. The results indicated that out of 868 kiddings, 31 (3.5%) kiddings were terminated as abnormal (abortion, still birth, dystocia). The sex ratio among the normal kids born was 49.8% (440 male births). Out of total female kids born, 16.1% died, 12.8% were culled up to age at first kidding,

while rest 71% female kids attained the milking age. The abnormal kidding, sex ratio and mortality were significantly affected ( $P < 0.01$ ) by year of birth, season of milking age. The abnormal kidding, sex ratio and mortality were significantly affected ( $P < 0.01$ ) by year of birth, seasons of birth, weight of female kids and their dam's weight at service, while type of birth did not affect any trait. Birth weight of female kids showed a continuous increasing trend with increase in replacement rate and expressed decreasing trend with their mortality and culling up to age at first kidding. Mortality and culling was highest with low birth weight. The abnormal kidding, mortality and culling of female kids decreased with increase in dam's weight at service.

Specialization: **Management**

Subject: **Social dominance-subordinate relationship in a flock of Marwari goats.**

Year of publication: **2004**

Journal: **Indian Journal of Animal Sciences** (India). (Feb **2004**). v. 74(2) p. 216-219.**AB:**

Country of Origin: **India**

**Author's name:** Shinde, A.K.; Verma, D.L.; Singh, N.P.

**Content:**

Social dominance-subordinate behaviors of 20 Marwari goats maintained under group stall-feeding was studied over 10 consecutive days. All the agonistic interactions were pooled to determine dominance value and dominance ranks. From the ranks the flock was divided into 3 groups of high (DV, 60-90), medium (DV, 30-60) and low (DV, 0-30) ranking goats. High rank goats were first to occupy the trough after feed offer and also spend more time in eating feed and fodder than medium and low rank animals. Low rank goats generally preferred to consume feed when dominant animals were idling so as to avoid any conflict with them. Dominance was not related to time spent eating dry ( $r=0.12$ ) and green ( $r=0.12$ ) fodder, height ( $r=0.30$ ) and age ( $r=0.10$ ) of animals. It was, however, positively associated with girth ( $r=0.88$ ) and weight ( $r=0.90$ ) of the animals and with time spent ruminating ( $r=0.72$ ), eating concentrate mixture ( $r=0.97$ ) and idling ( $r=0.81$ ). Agonistic interactions were 7.33 times higher ( $P < 0.01$ ) in the feeding than the idling time. During the 1 hr each of feed offer frequency of agonistic behaviour was higher during concentrate (46%) and green (36%) than dry (18%) fodder feeding. High rank animals initiated most but received few, agonistic interactions. Amicable behaviours were altogether absent in the flock. The present study concluded that dominance value of animals was the most important factor influencing the use of feed resources especially when resources are offered under group feeding and also in short supply.

## **Medicine**

Specialization: **Medicine**

Subject: **Effect of immunotherapy with a saline phenol extract of allogeneic tumour on E-rosette counts in horn cancer-affected cattle [India].**

Year of publication: **1986**

Journal: **Australian Veterinary Journal** (Australia). (Aug **1986**). v. 63(8) p. 251-253. **AB:**

Country of Origin: **India**

**Author's name:** Batra, U.K.; Sadana, J.R.; Gupta, R.K.P.

**Content:**

The mean percentage of cells forming rosettes with 2-aminoethyl isothiuronium bromide-treated sheep erythrocytes, E(AET).RFC, in the peripheral blood of 10 cattle with horn cancer was significantly lower than in unaffected controls. Immunotherapy with a saline phenol extract of allogeneic tumour tissue resulted in a gradual increase in the mean percentage of E(AET).RFC on each subsequent week. The increase was statistically significant from the second week onwards and, on the sixth week, the percentage of E(AET).RFC in cattle with cancer closely approximated the value in unaffected controls.

Specialization: **Medicine**

Subject: **Bilateral carpal hygroma in a ram [sheep].**

Year of publication: **1986**

Journal: **Australian Veterinary Journal** (Australia). (Apr **1986**). v. 63(4) p. 132. **AB:**

Country of Origin: **India**

**Author's name:** Purohit, N.R.; Chouhan, D.S.; Choudhary, R.J.; Saraswat, S.K.

**Content:**

Clear fluid withdrawn from the swellings did not yield pathogens. Recovery was uneventful after surgery. The lesions may have arisen through repeated trauma from contact with the hard floor of the pen.

Specialization: **Medicine**

Subject: **Pathogenicity of Acholeplasma oculi for the sheep udder.**

Year of publication: **1993**

Journal: **Australian Veterinary Journal** (Australia). (Jun **1993**). v. 70(6) p. 227-228. **AB:**

Country of Origin: **India**

**Author's name:** Sadhana, O.P.; Gupta, P.P.; Banga, H.S.; Rana, J.S.

**Content:**

Sheep inoculated into the udder with A. oculi were clinically examined for up to 23 days. At necropsy, udder and supramammary lymph nodes were examined grossly and microscopically. The observations indicated that A. oculi is pathogenic to the udder of sheep and can cause mastitis and agalactia. Except neutrophilia, there was no systemic reaction.

Specialization: **Medicine**

Subject: **Pathology of Mycoplasma serogroup 11 induced mastitis in sheep. [Short contribution].**

Year of publication: **1993**

Journal: **Australian Veterinary Journal** (Australia). (Feb **1993**). v. 70(2) p. 70-71. **AB:**

Country of Origin: **India**

**Author's name:** Kumar, D.; Gupta, P.P.; Rana, J.S.; Banga, H.S.

**Content:**

Six lactating sheep aged 2-3 years were inoculated with a culture of Mycoplasma ovine-caprine serogroup 11 (2-D). Sheep were examined daily

for changes in udders and their secretions, and milk was tested. Observations indicated high pathogenicity, causing mastitis leading to agalactia. There was a rapidly developing, purulent mastitis with about 90 percent loss of milk yield within the first 4-5 days followed by agalactia due to extensive fibrosis.

Specialization: **Medicine**

Subject: **Agnathia in sheep.**

Year of publication: **2003**

Journal: **Indian Veterinary Journal** (India). (Feb **2003**). v. 80(2) p.183-183.**AB:**

Country of Origin: **India**

**Author's name:** Mandal, A.; Rout, P.K.; Singh, M.K.; Roy, R.

**Content:**

The present communication present a case of agnathia in sheep. Agnathia is relatively rare in man but is more common in other species especially in sheep.

Specialization: **Medicine**

Subject: **Nephrolithiasis of sheep in Turkey.**

Year of publication: **2003**

Journal: **Indian Veterinary Journal** (India). (May **2003**). v. 80(5) p.409-411.**AB:**

Country of Origin: **India**

**Author's name:** Guven, A.; Marasli, N.; Kamiloglu, N.

**Content:**

Kidneys of sheep from Kars (228), Ardahan (280) and Igdir (299) were examined, 5.70% the kidney stones were seen in the sheep of Kars region, Ardahan (7.02%) and Igdir (3.92%). There was differences between regions in relation to the formations of calculi while there were similarities between the general structure of stones and their characters.

Specialization: **Medicine**

Subject: **Spear grass awns as a cause of physical injury in Bharat merino lambs.**

Year of publication: **2003**

Journal: **Indian Veterinary Journal** (India). (Aug **2003**). v. 80(8) p.821-822.**AB:**

Country of Origin: **India**

**Author's name:** Narayanan, K.; Balachandran, C.; Rajapandi, S.; Murali Manohar, B.; Rajendiran, A.S.

**Content:**

The present report places on record trauma and abscess due to bristles of spear grass (*Heteropogon Contortus*) awns in Bharat Merino lambs.

Specialization: **Medicine**

Subject: **Fluorosis in sheep around an aluminium factory.**

Year of publication: **2003**

Journal: **Indian Veterinary Journal** (India). (Jul **2003**). v. 80(7) p.617-621.**AB:**

Country of Origin: **India**

**Author's name:** Sahoo, N.; Singh, P.K.; Ray, S.K.; Bisol, P.C.; Mohapatra,

H.K.

**Content:**

Increased concentration of fluoride in the urine, teeth and bones and pathognomonic clinical signs of fluorosis were observed in sheep near the aluminium smelter plant, Angul, Orissa. In addition, haematobiochemical alterations as well as histopathological changes in the tissues have been recorded.

## **Microbiology**

Specialization: **Microbiology**

Subject: **A study on the immune response of sheep to foot and mouth disease virus vaccine type 'O' prepared with different inactivants and adjuvants.**

Year of publication: **1992**

Journal: **Acta Virologica (CSFR)**. (Oct **1992**). v. 36(5) p. 473-478.**AB:**

Country of Origin: **India**

**Author's name:** Nair, S.P.; Sen, A.K.

**Content:**

Foot and mouth disease virus (FMDV) type 'O' was inactivated either with formaldehyde or binaryethyleneimine (BEI). Vaccines were prepared with inactivated virus incorporating aluminium hydroxide gel or mineral oil as an adjuvant. The antibody response in sheep was monitored by serum neutralization and ELISA test for a period of six months. Significant difference in antibody response was not observed between vaccines inactivated with formaldehyde or BEI. On the other hand significant difference in antibody response was noticed between alhydrogel and oil vaccines. The high titre of antibodies stimulated by oil adjuvant vaccines persisted longer than those of alhydrogel vaccines within the period of study.

Specialization: **Microbiology**

Subject: **Studies on the immune response of foot and mouth disease vaccine type Asia-1 in pregnant ewes, lambs and evaluation of type O vaccine by challenge.**

Year of publication: **1994**

Journal: **Acta Virologica (Slovak Republic)**. (Oct **1994**). v. 38(5) p. 257-261.

**AB:**

Country of Origin: **India**

**Author's name:** Nair, S.P.; Sen, A.K.

**Content:**

Seven pregnant ewes at the 10th to 12th week of pregnancy were vaccinated with foot-and-mouth disease (FMD) vaccine type Asia-1. All pregnant animals responded well with antibody production without any adverse effects. The maximum antibody titre was noted 3 to 4 weeks after the vaccination. In the colostrum a high level of maternal antibodies persisted from 12 hrs to 6 weeks after birth. Irrespective of the presence of the maternal antibodies, the vaccinated lambs responded with antibody production within the first week of vaccination. The antibodies persisted up to the 12th week of vaccination. In another experiment five sheep were vaccinated with FMD type O vaccine and challenged with 10,000 TCID<sub>50</sub> of virulent type O cell culture-adapted virus. The antibody titres in the vaccinated animals prior to challenge ranged

between 1.26 to 1.65, while the four control sheep remained free from detectable antibody against virus type O. Pyrexia and viraemia developed present in all the control sheep but were absent in the vaccinated ones. Characteristic primary lesions on the dorsum of the tongue were observed after 48 hrs of virus challenge in the control sheep but were absent in the vaccinated ones.

Specialization: **Microbiology**

Subject: **Sequence of ovine adenovirus homologs for 100K hexon assembly, 33K, pVIII, and fiber genes: early region E3 is not in the expected location.**

Year of publication: **1995**

Journal: **Virology (USA)**. (1 Jun **1995**). v. 209(2) p. 400-408. **AB:**

Country of Origin: **India**

**Author's name:** Vrati, S.; Boyle, D.; Kocherhans, R.; Both, G.W.

**Content:**

Ovine adenovirus OAV287 was previously isolated from sheep in Western Australia. As a first step in characterizing the genome of this virus we have determined the sequence of its genome between map units 65 and 81. This region was expected to contain the nonessential E3 region which, in other adenoviruses, lies between the genes encoding the pVIII and fiber proteins, although its size and complexity varies. OAV287 genes coding for the hexon assembly, 33K, pVIII, and fiber proteins were identified by their homologies with human Ad2. These genes lie in the same relative positions in the OAV287 genome, but the intergenic region between the pVIII and the fiber genes is only 197 nucleotides and these appear to be incapable of coding for any protein. Thus, the ovine adenovirus E3 region is not present in the expected location. In addition, using cDNA synthesis, PCR amplification, and nucleotide sequencing we determined the location of splice junctions and transcription termination signals in mRNA species encoding these proteins. This showed that a family of variably spliced L4 RNAs is produced and that the region between the pVIII and the fiber genes contains several signals for RNA synthesis and processing. As the E3 region in human adenoviruses is nonessential for replication, in many instances it has been replaced with foreign DNA during the construction of recombinants. Because of this unexpected difference in the organization of Fe OAV287 genome further experimentation will be required to determine whether potential vaccine recombinants can be constructed for this adenovirus by making insertions into the pVIII/fiber intergenic region.

Specialization: **Microbiology**

Subject: **Association of enterotoxigenic escherichia coli with haemorrhagic enteritis in najdi lambs.**

Year of publication: **2000**

Journal: **Indian Veterinary Journal (India)**. (Jun **2000**). v. 77(6) p.468-471.**AB:**

Country of Origin: **India**

**Author's name:** Elfaki, E.G.

**Content:**

Infection with E.coli accounts for most cases of diarrhoeal diseases in both humans and animals world-wide. In lambs, the clinical manifestations of the

disease is characterized by anorexia, intestinal tympany and diarrhoea often tinged with blood. The exact mechanism of the disease pathogenesis is not fully understood. However, based on serotyping of E.coli, it is likely that various virulence factors are implicated including capsular(K), cell wall or somatic (O), flagellar (H), and fimbrial (F) antigens. Moreover, E.coli also produces both heat-labile(LT) and heat-stable(ST) enterotoxins which may cause intestinal secretion and diarrhoea. Thus, the expression of surface antigens and/or enterotoxin production are the two most crucial factors used in identifying E. coli infection. As haemorrhagic enteritis (HE) prevalence is on the increase in central Saudi Arabia, delineation of the causative organism and its relationship to the disease process are imperative for future control of HE in this and other regions. In this report, the characterization of enterotoxigenic E.coli (ETEC) K99 and O78 strains and their involvement in the induction of HE are described.

Specialization: **Microbiology**

Subject: **Studies on the prevalence of antibodies to BHV 1 in sheep.**

Year of publication: **2000**

Journal: **Indian Veterinary Journal** (India). (Jun **2000**). v. 78(6) p. 467-470.

**AB:**

Country of Origin: **India**

**Author's name:** Singh, R. P.; Bhat, M. N.; Sastry K.N.V.

**Content:**

A total of 667 serum samples of sheep comprising of 363 samples from Slaughter house, Bangalore and 304 samples from two farms (156 from Guttaal farm and 148 from Challakere farm) were screened for antibodies to BHV1 by passive haemagglutination test. Two Hundred and forty six (67.7%) of the serum samples from slaughter house were positive for antibodies to BHV1 with PHA titres ranging from 8 to 512 while two hundred nine (68.7%) of the serum samples from the two farms were positive for antibodies to BHV 1 with PHA titres ranging from 8 to 256.

Specialization: **Microbiology**

Subject: **Characterization of lipid pattern of Mycobacterium paratuberculosis isolates from goats and sheep.**

Year of publication: **2000**

Journal: **Indian Journal of Animal Sciences** (India). (Sep **2000**). v. 70(9) p. 899-903.**AB:**

Country of Origin: **India**

**Author's name:** Singh, S.V.; Singh, P.P.; Singh, N.; Gupta, V.K.

**Content:**

lipid pattern of 18 wild type Mycobacterium paratuberculosis isolates were determined and compared with standard M.paratuberculosis (taps) strain used for commercial Johnin production. Fourteen of these isolates had typical pattern of alpha and keto mycolates in the ratio of 30: 70% which resembled the lipid pattern of M.avium, therefore providing evidence of their identity as M.paratuberculosis. Additional band of methoxy mycolate present in the M.paratuberculosis (Taps) strain and 3 other isolates, suggested major differences in their identity as M.paratuberculosis. PDIM patterns of these isolates were also determined.

Specialization: **Microbiology**

Subject: **Seroprevalence of a new species of mycoplasma in sheep and goats.**

Year of publication: **2000**

Journal: **Indian Veterinary Journal** (India). (Jun **2000**). v. 77(6) p.539-539.**AB:**

Country of Origin: **India**

**Author's name:** Chaturvedi, V.K.; Singh, P.P.

**Content:**

An array of mycoplasmas causing various disease conditions have been ascribed in the sheep and goats. Since isolation and characterisation is a cumbersome process for finding out the prevalence of an individual species of mycoplasma, the serosurveillance studies are commonly followed using various serological tests based on their sensitivity and specificity. In the present, a study was planned to investigate the prevalence of antibodies against a new species of mycoplasma, which was isolated from a goat which died of pneumonia.

Specialization: **Microbiology**

Subject: **Microbiology Serological evidence for the distribution of akabane virus.**

Year of publication: **2001**

Journal: **Pakistan Journal of Biological Sciences** (Pakistan). (**2001**). v. 4(2) p. 171-172.**AB:**

Country of Origin: **India**

**Author's name:** Taylor, W.P.; Gumm, I.D.; Hussain, M.

**Content:**

Prevalence of Akabane virus infections in different countries was determined by analyzing animal sera using micro-neutralization test. The results indicated that on the basis of neutralizing antibodies with titres exceeding 1:80, Akabane virus was recorded in Pakistan, India, Kenya, Malawi, Malaysia, Nepal, Oman, Paraguay, Singapore, Sudan, Thailand, Tanzania and the Yemen. Apparently, it did not occur in Libya or Nigeria. The incidence of infection was higher in cattle and buffaloes than sheep and goats. These findings contribute new information on the distribution of this virus.

Specialization: **Microbiology**

Subject: **Determination of sheep pox circulating neutralizing antibodies in immunized sheep and goats in the north region of the kingdom of Saudi Arabia.**

Year of publication: **2001**

Journal: **Journal of Applied Animal Research** (India). (Jun **2001**). v. 19(2) p. 233-235.**AB:**

Country of Origin: **India**

**Author's name:** Rashwan, S.M.; Al-Khalaf, H.N.; Al-Hammad, M.I.; Abdel Baky, M.H.; Azab, A.H.

**Content:**

Determination of sheep pox circulating neutralizing antibodies in immunized sheep and goats in the North Region of the Kingdom of Saudi Arabia. J. Appl. Anim. Res., 19: 233-235. As a first field trial to evaluate the sheep pox vaccine efficacy under farm conditions, sheep pox virus-neutralizing

antibodies were determined in vaccinated sheep and goats of different breeds, ages and sexes in one of the biggest mutton farms in the north region of the Kingdom. The results exhibited 100% post-vaccinal serum neutralizing antibodies with a titre range of 1.2 to 2.1 log<sub>10</sub> in sheep and 1.2 to 1.8 log<sub>10</sub> in goats.

Specialization: **Microbiology**

Subject: **Production of polyclonal antibodies to bluetongue virus (BTV) and its utilization for detection of group specific antibodies.**

Year of publication: **2002**

Journal: **Indian Veterinary Journal** (India). (Aug **2002**). v. 79(8) p.858-860.**AB:**

Country of Origin: **India**

**Author's name:** Dayakar, S.; Sreenivasulu, D.; Rao, M.V.S.; Sreenivasulu, P.

**Content:**

Bluetongue (BT) is one of the economically important viral diseases established in India. Caused by BTV, a member of the genus Orbivirus, of the family Reoviridae. It affects wide range of domestic and wild ruminants including cattle, sheep, goats, deer and antelopes. However, clinical disease has been mainly confined to sheep. It is more of a problem to exotic sheep than to cross bred sheep. Diagnosis of BT in India is mostly based on symptoms, which is often misleading. Furthermore, cattle and goats act as virus reservoirs. Though, agar gel immuno diffusion (AGID) test is widely used for the detection of BTV antibodies, it also has its own demerits. To overcome these problems, ELISA-based assays using virus protein (VP7) specific monoclonal antibodies were standardized for the estimation of group specific antibodies. Monoclonal antibodies are expensive and needs importation. In this study we describe the production of polyclonal antibodies to purified BTV and showed its utility in estimating the BTV group specific antibodies by cELISA.

Specialization: **Microbiology**

Subject: **Seroepidemiological study of bluetongue virus using AB-ELISA.**

Year of publication: **2002**

Journal: **Indian Veterinary Journal** (India). (Dec **2002**). v. 79(12) p.1237-1240.**AB**

Country of Origin: **India**

**Author's name:** Bhalodiya, M.B.; Jhala, M.K.

**Content:**

Bluetongue (BT) is an insect transmitted viral disease of several species of domestic and wild ruminants. In many countries like India having considerable sheep population, the disease has become endemic. Several tests have been developed for the detection of antibodies to BTV serogroup antigen including agar gel immuno diffusion (AGID) test, Indirect ELISA and competitive ELISA. Although, no reports were found in literature in employing Avidin-Biotin ELISA (AB-EKUSA) for BT antibodies, its usefulness in detecting antibodies to other viral pathogens have been well documented. BT has been recognized as a disease entity in India for more than 30 years. Subsequent to many wide spread epidemics during the after 1981, the disease has now established in India as a predominant sheep disease. Although many serosurveys indicated the presence of BTV antibodies in cattle, buffaloes,

goats and camels, clinical disease has not been observed in these species. However, these animals may play an important role in maintenance of the virus in nature. The presence of BTV group specific antibodies in cattle becomes a serious impediment to the export of the products from these animals. The absence of vaccination programme against BT in India implies that the occurrence of BTV antibodies in the sera of ruminants has arisen as a consequence of natural exposure to the virus. Although Charidel and Hinsu have confirmed existence of BTV in Gujarat, South Gujarat region and some areas of Saurashtra regions remained untouched in their studies, so also the cattle population. Hence, these areas were particularly targeted in the present study along with equal/more emphasis on cattle population.

Specialization: **Microbiology**

Subject: **Sero-surveillance of chlamydiosis among gaddi sheep and goats of Himachal Pradesh.**

Year of publication: **2002**

Journal: **Indian Veterinary Journal** (India). (Jul **2002**). v. 79(7) p.645-647.

**AB:**

Country of Origin: **India**

**Author's name:** Paul, R.; Katoch, R.C.; Chahota, R.; Pathania, D.; Sharma, M.

**Content:**

In Himachal Pradesh, majority of the farmers are small land holdings farmers and animal husbandry especially rearing of sheep and goats is their main supplementary occupation particularly in tribal areas. Occasional outbreaks of various infectious diseases continue to impede development of sheep and goats husbandry and farmers have to bear heavy economical losses. Chlamydiosis, which is caused by *Chlamydia psittaci*, is one of such diseases. It causes different disease syndromes viz. abortion, pneumonitis, enteritis, keratoconjunctivitis, mastitis, arthritis etc. In this region enzootic abortions; pneumonia and endometritis have been reported earlier based on isolation studies and its seroprevalence has also been recorded. The present study was planned to ascertain the overall seroprevalence of chlamydiosis among Gaddi sheep and goats, reared under different system viz. organised farms, migratory flocks and animals which are usually brought for slaughter.

Specialization: **Microbiology**

Subject: **Clinical manifestations and necropsy finding of caprine mycoplasmal pneumonia.**

Year of publication: **2002**

Journal: **Indian Veterinary Journal** (India). (Nov **2002**). v. 79(11) p.1132-1135.**AB:**

Country of Origin: **India**

**Author's name:** Mondal, D.; Pramanik, A.K.

**Content:**

Mycoplasma are prokaryotic host specific microorganisms causing many disease conditions in animals and man. In goat and sheep 20 different species of mycoplasmas occur, most of them are pathogenic and few are saprophytes. Mycoplasma causes various clinical conditions in ovine and caprine, of which pneumonia is major problem. But clinical signs on mycoplasma infection are not always similar, it differs in different geoclimatic conditions. Moreover,

the clinical conditions of mycoplasmal pneumonia differ from classical contagious caprine pleuropneumonia (CCPP), caused by *Mycoplasma capricolum* subsp. *capricolum*. The present study attempts to assess the incidence, clinical signs and necropsy findings of mycoplasmal pneumonia in goats.

Specialization: **Microbiology**

Subject: **Bluetongue disease in a spotted deer (*Axis axis*).**

Year of publication: **2003**

Journal: **Indian Veterinary Journal** (India). (May **2003**). v. 80(5) p.462-463.**AB:**

Country of Origin: **India**

**Author's name:** Sivaseelan, S.

**Content:**

Bluetongue disease is caused by Orbivirus in sheep and occasionally in cattle. The disease is reported world wide and wide spread in India and it was first reported from Tamil Nadu by Jankiraman.

Specialization: **Microbiology**

Subject: **Potassium thiocyanate extract vaccine of *Pasteurella multocida* and its comparison with conventional bacterin vaccine in mice and goats.**

Year of publication: **2003**

Journal: **Indian Journal of Animal Sciences** (India). (Jun **2003**). v. 73(6) p. 583-586.**AB:**

Country of Origin: **India**

**Author's name:** Sharma, R.K.; Rahman, H.

**Content:**

Crude potassium thiocyanate (KSCN) extract of *Pasteurella multocida* serotype A was prepared and used as vaccine in goats and mice. KSCN extract consisted of 7 detectable proteins with molecular weight (MW) ranging from 29 - 205 KDa. The vaccine conferred 100% protection in mice against homologous (*Pasteurella multocida* A) challenge, but it could protect only 66.67% mice against heterologous (*Pasteurella haemolytica* A2) challenge. The bacterin vaccine could protect 66.67 and 50.00% of mice against homologous and heterologous challenges, respectively. The serum antibody titre expressed in log<sub>2</sub> scale reached the peak at the third week in goats vaccinated with KSCN (7.33) and bacterin preparation (5.16) respectively. Difference in antibody titre developed by the 2 vaccines was statistically significant ( $P < 0.05$ ).

Specialization: **Microbiology**

Subject: **Comparative study of immune responses against *Clostridium perfringens* beta and epsilon toxins in domestic and laboratory animals using neutralization test.**

Year of publication: **2004**

Journal: **Indian Journal of Animal Sciences** (India). (Jul **2004**). v. 74(7) p. 697-700.**AB:**

Country of Origin: **India**

**Author's name:** Huque, A.K.M.; Rahman, M.S.; Lee, J.H.

**Content:**

The immune responses against the *Clostridium perfringens* beta and epsilon

toxoids were investigated comparatively in domestic and laboratory animals using the neutralization test. Apparently healthy 12 animals each of cattle, buffalos, sheep, goats, rabbits and guinea pigs were subcutaneously inoculated with the beta and epsilon toxoids. The blood was collected at days 0,14,21 for sera, and the neutralizations tests were performed with the sera. Single dose with the beta and epsilon toxoids induced the immune responses in the animals on days 14 and 21 post inoculation, and there were no adverse reactions after the injection in any of the animals. Statistically significant ( $P<0.01$ ) rise of neutralizing antibody titre production from the 14th day to 21st day post inoculation of toxoids was observed. The highest toxoid neutralizing antibody titre was produced in the sheep. Similar titres were observed between rabbits and cattle, and between guineapigs and buffalos. The neutralizing antibody titres did not vary significantly due to interaction between day of inoculation and toxoid used. It was evident that the *Clostridium perfringens* beta and epsilon toxoids produced the maximum immune response in sheep and the implementation of mouse neutralization test provided the rapid and sensitive results making it the procedure of choice for determining the immune responses of clostridial toxoids in the domestic and laboratory animals.

Specialization: **Microbiology**

Subject: **Ovine pneumonia due to *Mycoplasma agalactiae*.**

Year of publication: **2004**

Journal: **Indian Journal of Animal Sciences** (India). (Mar **2004**). v. 74(3) p. 253-255.**AB:**

Country of Origin: **India**

**Author's name:** Mondal, D.; Srivastava, M.K.

**Content:**

Nasal swab samples (40) collected from pneumonic lambs, aged between 5-10 weeks and bacteriologically cultivated in PPLO broth and agar. Biochemical characterization and growth inhibition test of the 6 isolates were conducted which identified the causative agent as *Mycoplasma agalactiae*. Antibiotic disc sensitivity test with 12 different antibacterials revealed that the isolates were highly sensitive to enrofloxacin, oxytetracycline, ciprofloxacin, gentamycin and furazolidone. Experimental inoculation with the pure culture provided similar clinical signs to lambs.

Specialization: **Microbiology**

Subject: **Molecular detection and characterization of Indian isolates of *Pasteurella multocida* serogroup 'A'.**

Year of publication: **2004**

Journal: **Indian Journal of Animal Sciences** (India). (Mar **2004**). v. 74(3) p. 244-247.**AB:**

Country of Origin: **India**

**Author's name:** Dutta, T.K.; Gautam, R.; Singh, V.P.; Kumar, A.A.

**Content:**

*Pasteurella multocida* (serogroup 'A') isolates (18) from different animal hosts were tested for molecular detection and characterization. All the isolates were identified by polymerase chain reaction (PCR) using primer pair KMTISP6-KMTIT7 giving approximately 460 bp amplified products. All the isolates were characterized by restriction endonuclease analysis (REA) and

random amplified polymorphic DNA (RAPD)-PCR assays. Out of 7 isolates of serotype A: 1,5 and 6 different REA patterns were observed after digestion the enzyme Hpa I and Hpa II respectively. Similarly, out of 9 isolates of serotype A: 3,4 different REA patterns were produced by enzyme Hpa I and Hpa II respectively. RAPD-PCR was performed using singly primer OPG-13. Three different banding patterns were found from both A:3 and A:1 serotypes. Both the techniques were highly effective for characterization of *Pasteurella multocida* isolates.

## **Nutrition**

Specialization: **Nutrition**

Subject: **Climatic variability and agronomic management in Mediterranean barley-livestock farming systems.**

Year of publication: **1987**

Journal: **International Symposium on Climate Variability and Food Security in Developing Countries.** New Delhi (India). 5-9 Feb **1987**.**AB:**

Country of Origin: **India**

**Author's name:** Joves, M.J.; Harris, H.C.

### **Content:**

The demand for livestock products in the Middle East and North Africa is increasing rapidly. The major sources are sheep and goats, many of which are found in dry areas, subject to wide variability in rainfall and therefore feed supply. This paper considers a livestock production system in northern Syria, its built in buffers against variability, and current pressures on these buffers from increasing population. Decreased access to natural grazing is increasing the dependence on annually sown fodder crops, principally barley. It has been shown that the use of fertilizers and the replacement of alternate years of bare fallow with a fodder legume can greatly increase productivity, but this is likely to be coupled with an increasing variability in annual carrying capacity. Already many dry-area farmers buffer their flocks against local shortages by supplementary feeding, but few countries can afford large imports of feed grains. Any intensification of livestock production in dry areas through improved agronomic practices will therefore require increased support from wetter and irrigated areas, in the form crop residues and by-products and probably bulk feed production and large fodder banks.

Specialization: **Nutrition**

Subject: **Nutritive value of faba bean (*Vicia faba* L.) seeds, fodder, and silage.**

Year of publication: **1990**

Journal: **FABIS-Newsletter (ICARDA). Faba Bean Information Service.** (Aug **1990**). (no. 26) p. 38-41. **AB:**

Country of Origin: **India**

**Author's name:** Akbar, M.A.; Gupta, P.C.

### **Content:**

Four feeding experiments were conducted at the Haryana Agricultural University in Hisar, India to find out the nutritive value of faba bean (*Vicia faba*) seed meal, green fodder, and silage for sheep and cattle. Faba bean seed meal can be fed to ruminants as protein supplement without any adverse effect, but green faba bean as sole source of feed was not suitable. An

effective utilization of green faba bean in ruminants could be achieved either by ensiling or by mixing it with other forage like oat. Feeding of green faba bean oat mixture at 2:1 ratio gave optimum growth in lambs.

Specialization: **Nutrition**

Subject: **Effect of feeding faba bean seed meal on growth rate, rumen, and blood parameters of buffalo (*Bos bubalus*) calves.**

Year of publication:

Journal: **FABIS-Newsletter (ICARDA). Faba Bean Information Service.** (Aug 1990). (no. 26) p. 37-38.**AB:**

Country of Origin: **India**

**Author's name:** Akbar, M.A.; Gupta, P.C.

**Content:**

In a study undertaken on the effect of faba bean seed meal on growth, rumen, and blood parameters of 16 growing one year old male Murrah buffalo calves, it was concluded that faba bean seeds can be safely incorporated into the conventional mixture to replace about 60 of the groundnut protein without any adverse effects on the animals.

Specialization: **Nutrition**

Subject: **Nutritional potential of faba bean for improved productivity in ruminants - a review.**

Year of publication: **1996**

Journal: **FABIS-Newsletter (ICARDA). Faba Bean Information Service.** (Jan-Dec **1996**). (no. 38-39) p. 2-11.**AB:**

Country of Origin: **India**

**Author's name:** Tewatia, B.S.; Virk, A.S.

**Content:**

This review article presents the potential of faba bean for growing and lactating ruminants, including the role and effects of antinutritional factors and their detoxification procedures. As a rich source of protein and vitamins, faba bean holds good nutritional potential to replace some conventional protein supplements in ruminant feed. The nutrient composition of faba bean is favorable compared with other pulses. Although the lipid content of faba bean is low (0.9-4.2 percent), linoleic acid constitutes more than 50 percent of total lipids. Faba bean protein is highly soluble in the rumen, highly degradable, and is comparable to urea. Extrusion of faba bean at 120 centigrade significantly reduced the rumen degradation of protein for its efficient utilization. Protection of faba bean protein using 1.0-1.5 g formaldehyde per 100 g faba bean protein significantly improved the nitrogen retention and body weight gains of growing kids. High levels of formaldehyde improved feed conversion efficiency and nitrogen balance. The presence of antinutritional factors like tannins, trypsin inhibitors and favism-inducing agents in faba bean sometimes limit its use as animal feed; however, no adverse effect on animal health or production was observed. Further, these antinutritional factors can be reduced either by breeding or by various processing techniques. Faba bean can successfully replace 45-60 percent of conventional protein sources in the diets of growing and lactating ruminants.

Specialization: **Nutrition**

Subject: **Effect of supplementation on live-weight changes in ruminants.**

Year of publication: **1999**

Journal: **Indian Journal of Dairy Science** (India). (Sep **1999**). v. LII(5)  
p.289-293.**AB:**

Country of Origin: **India**

**Author's name:** Murdia, P.C.; Sharma, V.V.; Taparia, A.L

**Content:**

Sole feeding of dry grass (*Apluda mutica*, *Themeda quadrivalvis* and *heteropogon contortus*) failed to maintain live-weight in cattle, buffalo, sheep and goat. Supplementation with 7.5 g CP/Kg W0.75 through GNC resulted in moderate weight gains in bovines and ovine on feeding long as well as chopped grass. However, loss in body weight was noted in caprine fed either long or chopped grass alongwith protein source. Supplementation with concentrate mixture @ 40 or 60 g containing 7.5 of CP/kg W0.75 resulted in moderately high weight gains in all the species. The rate of gain was lower when animals were fed long grass as compared to chopped grass.

Specialization: **Nutrition**

Subject: **Comparative utilization of urea and fungal treated mustard straw by sheep.**

Year of publication: **2000**

Journal: **Indian Journal of Animal Sciences** (India). (Aug **2000** ). v. 70(8) p.  
854-856.**AB:**

Country of Origin: **India**

**Author's name:** Mishra, A.S.; Chaturvedi, O.H.; Misra, A.K.; Karim, S.A.

**Content:**

The present study was conducted to determine relative efficacy of urea and fungal treated mustard straw in maintaining adult sheep. Mustard straw (MS) treated with urea (UTMS) and fungus (FTMS) was fed ad lib. to ewes in G1 and G2, respectively, along with 200 g concentrate mixture/head/day. Urea treatment of MS increased its CP content from 3.7 to 7.2% which further increased to 7.7% in FTMS. hemicellulose and cellulose content decreased in FTMS. Daily DMI in unit body weight or metabolic body size was higher ( $P<0.01$ ) in FTMS fed animals. Digestibility of DM, NDF and ADF increased ( $P<0.01$ ) and hemicellulose decreased ( $<0.01$ ) in G2 compared to G1. Although nutritive value of the test diets was similar, DE intake in metabolic body size was higher in G2. Both G1 and G2 were in positive N balance, however, per cent N retention was comparatively lower (13.2%). Feeding of UTMS or FTMS along with 200 g concentrate maintained sheep, whereas treatment of MS with *Corpinus fimetarius* did not add advantage over the urea treated MS.

Specialization: **Nutrition**

Subject: **Urea ammoniated wheat straw as value added straw in complete feed of sheep.**

Year of publication: **2001**

Journal: **Animal Nutrition and Feed Technology** (India). (Jul **2001**). v. 1(2)  
p. 125-130. **AB:**

Country of Origin: **India**

**Author's name:** Tumbare, S.M.; Shah, A.A.; Deshmukh, S.V.

**Content:**

Two complete feeds containing untreated (CR1) and urea treated (CR2) wheat

straw each at 60% level were evaluated for their nutritive value in Mutton Synthetic x Deccani Sheep. The DM intake was 0.841 and 0.763 kg for CR1 and CR2, respectively. The nutrient digestibility except for crude fibre was similar in both the groups. The per cent DCP and TDN content of CR1 and CR2 diets were 5.35 and 56.10 and 6.93 and 54.49, respectively. Both the rations could maintain the sheep with an average gain in body weight of 60-70 g/d. The feed efficiency and cost of feeding was superior on CR2 diet.

Specialization: **Nutrition**

Subject: **Seasonal dynamics of dry matter, crude protein and cell wall digestion in total plant, leaves and stems of common buffelgrass (*Cenchrus ciliaris*).**

Year of publication: **2001**

Journal: **Journal of Applied Animal Research** (India). (Jun **2001**). v. 19(2) p. 209-218.**AB:**

Country of Origin: **India**

**Author's name:** Ramirez, R.G.; Foroughbackhch, R.; Hauad, L.; Alba Avila, J.; Garcia Castillo, C.G.; Espinosa Vazquez M.

**Content:**

Seasonal dynamics of dry matter, crude protein and cell wall digestion in total plant, leaves and stems of common buffelgrass (*Cenchrus ciliaris*). J. Appl. Anim. Res., 19: 209-218. This study was conducted to estimate and compare, seasonally, the nutrient content and the rate and extent of digestion of dry matter (DM), crude protein (CP) and cell wall (CW) of total plant (TP), leaves (L) and stems (S) of buffelgrass (*Cenchrus ciliaris* L). Plants were sampled in a four-ha pasture at Marin, N.L. County, Mexico, during fall of 1998, winter, spring and summer of 1999. The in situ technique was used to estimate effective degradability of DM (EDDM), crude protein (EDCP) and cell wall (EDCW), using rumen fistulated sheep. Crude protein content in forage was significantly higher in summer than in other seasons; however, cell wall and its derivatives (cellulose, hemicellulose and lignin) were significantly lower in summer. Crude protein content was higher in L than S, but CW was lower in L than in S. Moreover, EDDM, EDCP and EDCW were significantly higher in summer than in other seasons and also were higher in L than in S. Highly significant correlation coefficients between CP, CW and effective degradability data, may indicate that when CP increased and CW decreased, EDDM, EDCP and EDCW increased. The nutrient content and digestion parameters of digestion of buffelgrass varied among seasons, being summer and fall higher in nutrient digestion and spring and winter lower. Furthermore, leaves of buffelgrass should be considered different entities than stems when determining nutritional quality.

Specialization: **Nutrition**

Subject: **Effect of graded levels of concentrate and nitrogen replacement on dry matter digestibility of untreated and alkaline hydrogen peroxide treated mustard (*Brassica campestris*) starw in vitro.**

Year of publication: **2002**

Journal: **Animal Nutrition and Feed Technology** (India). (Jan **2002**). v.2(1) p.49-56. **AB:**

Country of Origin: **India**

**Author's name:** Misra, A.K.; Mishra, A.S.; Tripathi, M.K.; Prasad, R.;

Jakhmola, R.C.

**Content:**

In vitro dry matter digestibility (IVDMD) of untreated (UMS) and alkaline hydrogen peroxide (1.0% NaOH+1.5% H<sub>2</sub>O<sub>2</sub>; w/w) treated mustard straw (AHPMS) was assessed at various inclusion levels of concentrate (0, 20, 30, 40 and 50 per cent of substrate on DM basis), replacing 0, 14, 28, 42 and 100 per cent CP or equivalent nitrogen (N) content of substrate through urea. Substrate having various combinations of concentrate (5 levels) and N replacement (5 levels) with UMS and AHPMS (2 straw type) were incubated for 48 h in an in vitro fermentation system. Effect of all the three factors (straw type, levels of concentrate, levels of N replacement) on IVDMD of UMS and AHPMS were significant (P<0.01). The AHP treatment of mustard straw (MS) improved IVDMD of MS by four units. A significant (P<0.01) linear correlation (r<sup>2</sup>=0.81) was observed with IVDMD and the levels on concentrate additions in the substrate incubated with UMS or AHPMS. Within the straw type, the response of AHPMS was higher (P<0.05) to every incremental level of concentrate inclusion in the substrate. The N replacement levels and IVDMD of UMS and AHPMS was negatively correlated (r<sup>2</sup>=-0.79). Whereas, the IVDMD of straw portion of UMS and AHPMS showed a different pattern and it was higher at 20 to 30 per cent concentrate inclusion with 14 to 28 percent N replacement levels respectively in UMS and AHPMS. There was no associated effect of concentrate levels vs N replacement levels, straw type vs N replacement levels and concentrate level vs N replacement levels vs straw type. It is concluded that a mustard straw (untreated or treated) based diet containing 20-30 percent concentrate mixture is suitable to support optimum rumen fermentation in vitro. The urea can be used to replace 14 to 28 percent dietary nitrogen without any adverse effect on in vitro fermentation of mustard straw based diets. The study suggests that a mustard straw based complete diet can be formulated with 20 to 30 per cent concentrate and 0.59 to 1.18 per cent urea in total diet.

Specialization: **Nutrition**

Subject: **Improved feeding practices for lactating goats.**

Year of publication: **2002**

Journal: **Indian Farming** (India). (Jan **2002**). v. 51(11) p. 17-19.**AB:**

Country of Origin: **India**

**Author's name:** Bhatta, R.; Shinde, A.K.; Sankhyan, S.K.

**Content:**

Feeding of goats during lactation stage is very important to harvest maximum milk production. Depending on the availability of resources, different feeding systems are in practice. The best feeding system is the one, which meets all the requirement of goats and helps to produce maximum milk yield.

Specialization: **Nutrition**

Subject: **Mineral-metabolism Utilization of mineral and their content in Longissimus dorsi muscle of lambs maintained on groundnut or mustard meal diets.**

Year of publication: **2002**

Journal: **Animal Nutrition and Feed Technology** (India). (Jan **2002**). v.2(1) p.65-74.**AB:**

Country of Origin: **India**

**Author's name:** Tripathi, M.K.; Misra, A.K.; Misra, A.S.; Karim, S.A

**Content:**

Twenty four weaner Avivastra (Russian Merino X Nali) male lambs were divided into two equal groups and fed concentrate mixtures containing groundnut meal (GN) or mustard meal (MM) to meet protein requirements. Ground cencrus (*Cenchrus ciliaris*) was fed free choice to meet energy requirement. A digestibility trial of 7 days was conducted to assess mineral utilisation. Animals were slaughtered after 90 days of experimental feeding to estimate mineral content of muscles. The content of Na was 1.25, 2.4 and 2.6; K 15.0, 19.9 and 2.6; Mg 3.4, 3.3 and 3.1 g/kg Dm, respectively, in mustard meal, groundnut meal, cencrus hay. The absorption of K and Mg was higher in MM fed lambs and while Na absorption was higher in Gn fed lambs. The Cu content was similar in groundnut and mustard meal. The Zn content was higher (45.36 mg) in groundnut meal, however, Mn was higher (87.5 mg/kg DM) in mustard meal. The absorption of Cu was higher in GM fed lambs than MM fed lambs. The Zn absorption was higher in Gn fed lambs, while MM absorption was higher in MM fed lambs. Muscle contents (g/kg) of Na, K and Mg were 7.1, 5.6 and 1.1 in Gn group and 4.8, 6.6 and 4.7 in MM Group, respectively. The Cu, Zn and Mn contents (mg/kg) were 2.76, 229.95 and 2.89 mg in GN group and 0.44, 189.25 and 2.36 mg in MM groups, respectively. The Na, Cu and Zn contents were higher in muscle of GN compared to that of MM fed lambs. It is concluded that macro (sodium, potassium and magnesium) and micro (copper and manganese) minerals were adequate in diet except zinc which was higher. Copper absorption was positive and muscle copper content was lower in lambs fed mustard meal containing concentrate mixture, this needs further investigations. Other minerals studied in muscle were adequate for human consumption.

Specialization: **Nutrition**

Subject: **Effect of various treatments on in situ degradability of wheat straw in the rumen of sheep.**

Year of publication: **2002**

Journal: **Animal Nutrition and Feed Technology** (India). (Jan **2002**). v.2(1) p.57-63. **AB:**

Country of Origin: **India**

**Author's name:** Dhuria, R.K.; Mathur, O.P.; Purohit, G.R.; Dhuria, Deepik

**Content:**

An experiment was conducted with three adult male rumen fistulated sheep by incubating samples of wheat straw untreated (T1), liquid ammonia (T3) and urine (T4) in the ventral sac of rumen in duplicate for 2, 4, 8, 12, 24, 48 and 72 hr, to determine effect of various treatments of degradation rate of wheat straw in the rumen. The treatment of wheat straw with various nitrogen sources increased the crude protein content from 3.31 per cent in T1 to 9.24, 8.75 and 10.20 per cent in T2, T3 and T4, respectively. A significant ( $P < 0.01$ ) improvement in dry matter, nitrogen and cellulose degradability was noticed due to effect of treatment in all the three (T2, T3 and T4) treatments. Maximum average degradability was observed for dry matter in T3, nitrogen in T2 and cellulose in T4. The effective degradability of dry matter, nitrogen and cellulose was found to be maximum in T3, T4 and T2 groups, respectively at 12, 24 and 48 hr of incubation. The RDN values of untreated and treated wheat straw were found to be 23.02, 52.91, 55.33 and 59.60 percent for T1,

T2, T3 and T4 treatments respectively. It was concluded that nutrients locked-up in wheat straw could be effectively used in ruminants by applying any of the aforesaid nitrogen sources.

Specialization: **Nutrition**

Subject: **Nutrient digestion of common bermudagrass (*Cynodon dactylon* L.) pers growing in northeastern Mexico.**

Year of publication: **2003**

Journal: **Journal of Applied Animal Research** (India). (Mar **2003**). v. 23(1) p.93-102. **AB:**

Country of Origin: **India**

**Author's name:** Ramirez, R.G.; Gonzalez Rodriguez, H.; Garcia Dessommes, G.

**Content:**

The rate and extent of nutrient digestion of total plant, leaves and stems of common bermudagrass were estimated using the nylon bag technique in rumen fistulated Pelibuey x Rambouillet sheep fed alfalfa hay. The crude protein (CP) content of common bermudagrass during spring was higher and lower during winter. Leaves resulted with higher ( $P < 0.05$ ) CP than stems. The neutral detergent fiber (NDF) and its derivatives (hemicellulose, cellulose, lignin and insoluble ash) were lower ( $P < 0.05$ ) in NDF between leaves and stems; however, lignin was lower ( $P < 0.05$ ) in leaves than that in stems. Dry matter, crude protein and cell wall of common bermudagrass were better digested during spring by rumen microbes in sheep and to a lower extent in winter. Leaves resulted in higher nutrient degradabilities than stems. In general, during spring mineral contents were higher and lower in winter. During spring when precipitation was high (417 mm out of 613 mm), nutrient content of common bermudagrass was higher than that in other seasons.

Specialization: **Nutrition**

Subject: **Comparative study of PMSG treatment and different levels of concentrate supplements prior to mating on twinning rate of Horro ewes.**

Year of publication: **2003**

Journal: **Indian Journal of Animal Sciences** (India). (Aug **2003**). v. 73(8) p. 851-853.**AB:**

Country of Origin: **India**

**Author's name:** Galmessa, U.; Prasad, S.

**Content:**

Mature, cyclic Horro ewes (60) were divided into 5 equal groups by random sampling technique on the basis of body weight, condition score (0 to 5), age, parity and type of birth (single, twin or purchased). Oestrus and ovulation were synchronized in all ewes using 2 dosages of prostaglandin F2 alpha 12 days apart. At the second prostaglandin injection 1 group of ewes were injected with 300-IU PMSG. More uniform exhibiting oestrus is observed in PMSG treated group ( $P < 0.05$ ). For 300, 450 and 600 g/head/day, the significant difference was observed ( $P < 0.05$ ) only between PMSG group and control. According to this result concentrate supplementation above 300 g/head/day is not evident. The use of PMSG is recommended as it enhances the production of more lambs, especially in the area where grain shortage is apparent.

Specialization: **Nutrition**

Subject: **Nutritional value and effective degradability of crude protein in Browse species from northeastern Mexico.**

Year of publication: **2003**

Journal: **Journal of Applied Animal Research** (India). (Mar **2003**). v. 23(1) p.33-41.**AB:**

Country of Origin: **India**

**Author's name:** Rodriguez, J.G.M.; Ramirez, R.G.; Foroughbakhch, R.

**Content:**

Leaves from the shrubs *Acacia wrightii*, *Bumelia celastrina*, *Castela texana*, *Forestiera angustifolia*, *Karwinskia humboldtiana*, *Larrea tridentata*, *Schaefferia cuneifolia* and *Zanthoxylum fagara* were evaluated to determine their chemical composition and degradability parameters. The in situ technique was used to estimate effective degradability of crude protein (EDCP), using rumen fistulated sheep. The crude protein (CP) content varied within range of 15 to 22 per cent. The NDF content (annual means) in all evaluated browse plants was lower than *Medicago sativa* hay (49 per cent). However, the lignin content in browse plants was high. In general, during autumn were low. With exception of *B. celastrina* and *L. tridentata*, all the shrubs had EDCP values higher or comparable to *M. sativa*. Thus, the rest of the evaluated shrubs may be termed as important protein sources for small grazing ruminants.

Specialization: **Nutrition**

Subject: **Weight gain and body conformational changes in weaner lambs fed high concentrate diets containing graded levels of sodium bicarbonate.**

Year of publication: **2003**

Journal: **Indian Journal of Animal Sciences** (India). (Jun **2003**). v. 73(6) p. 668-673. **AB:**

Country of Origin: **India**

**Author's name:** Chaturvedi, O.H.; Santra, A.; Tripathi, M.K.; Jayashankar, J.; Karim, S.A.

**Content:**

This study was conducted to assess the body weight (BW) gain, body conformational changes and to develop the equation to predict the body weight base on body measurements in lambs fed high concentrate roughage ratio. (75.25) diets containing graded levels of sodium bicarbonate ( $\text{NaHCO}_3$ ). Forty Malpura lambs (90 day old), divided into 4 equal groups were fed on a composite feed mixture (CFM) supplemented with either 0(G1), 7.5(G2), 15.0(G3) or 22.5(G4)g  $\text{NaHCO}_3$  per kg CFM. The lambs feeding experiment was continued for 90 days. Dried pala (*Zizyphus nummularia*) leaves were used as roughage. The mean pH of rumen fluid increased linearly ( $P < 0.05$ ) with increasing levels of  $\text{NaHCO}_3$  from G1 (6.03) to G4 (6.44). Intake of DM and other nutrients did not differ among the 4 treatments. Digestibility of DM, CP, NDF, ADF and GE was higher in G2, G3 and G4 than that in G1, but the differences were not significant. However, cellulose digestibility was higher ( $P < 0.05$ ) in G3 (25.8 and 73.6) lambs followed by G4 (24.3 and 72.9), G2 (24.0 and 70.3) and G1 (22.2 and 68.8) lambs, whereas, the paunch girth was higher in G4 (82.0) followed by G3 (81.2), G2 (77.6) and G1 (76.6). Total BW gain and ADG were highest ( $P < 0.05$ )

with 15g NaHCO<sub>3</sub> fed lambs (11.5kg and 127.8g) lambs than G<sub>2</sub>(104.5g)and G<sub>4</sub>(112g). Total feed intake (kg)during the experiment was higher (P<0.05) in G<sub>2</sub>(61.3)and G<sub>3</sub>(63.7) than in G<sub>1</sub>(46.4) lambs. The group-wise regression coefficients (R<sub>y</sub>) for predicting the body weight using the body conformations ranged from 85.2(G<sub>2</sub>) to 91.0% (G<sub>4</sub>), whereas the overall R<sub>y</sub> was 86.0%. It is concluded from the study that incorporation of NaHCO<sub>3</sub> to high concentrate (75%) composite feed mixture fed to weaner lambs did not affect feed conversion efficiency. However, growth of the lambs improved to the tune of 35% by 15.0g NaHCO<sub>3</sub> inclusion per kg diet than non-supplemented diets. Feed intake was lower in lambs fed the diet without NaHCO<sub>3</sub> compared to those fed the NaHCO<sub>3</sub> supplemented diet. The body height, length, heart girth and paunch girth together can be used in predicting the body weight of intensively fed lambs with 86% confidence.

Specialization: **Nutrition**

Subject: **Effect of intensive stall feeding of three different planes on growth pattern of Muzaffarnagari lambs and its economics under adverse agro-climate conditions of Ladakh.**

Year of publication: **2004**

Journal: **Indian Journal of Animal Sciences** (India). (Jan **2004**). v. 74(1) p. 88-90.**AB:**

Country of Origin: **India**

**Author's name:** Joshi, V.K.; Attrey, D.P.

**Content:**

Intensive stall feeding of 3 different rations was tried on 9 Muzaffarnagari lambs of 3 months of age for 3 months i.e. 3 to 6 months of age to see the growth pattern and economics of ration in cold desert high altitude conditions of Ladakh. It was found that there was a higher weight gain in male lambs (11.96 kg) than the female lambs (7.2 kg). One male lamb attained the body weight of 30.4 kg ie. a gain of almost 19 kg in 3 months, which is exception, but it indicates that this breed has the capability to attain higher weight gain with only 3 months of feeding to develop in to an economically viable broiler sheep. It is also observed from the above study that the concentrate ration @ of 125 g/animal/day (costing Rs 0.90/day with composition of MOC (mustard oil cake)-20%, barley-38%, wheat bran-40%, mineral mixture-1% and salt-1%), and hay lucerne @ 1/2 kg/animal/day (costing Rs 4.12/day), and total expenditure of Rs 5.02/animal/day, was the cheapest and quite adequate to maintain reasonable growth for Muzaffarnagari lambs in cold desert high altitude conditions.

Specialization: **Nutrition**

Subject: **Changes with time after feeding in ruminal pool sizes of cellular contents, crude protein,cellulose, hemicellulose and legnin.**

Year of publication: **2004**

Journal: **Indian Journal of Animal Sciences** (India). (Feb **2004**). v. 74(2) p. 205-210.**AB:**

Country of Origin: **India**

**Author's name:** Fadel El Seed, A.N.M.A.; Sekine, J.; Kamel, H.E.M.; Hishinuma

**Content:**

The rate and extent of contribution by particle fractions to the total pool size

reduction were evaluated for the digesta pools in the rumen of 16 mature sheep using a slaughter method. Orchard grass first-cut hay chopped to 2 cm was offered once a day @ 1.5% of live weight. After 7 day preliminary period, behaviour of active prehension and rumination was recorded for 24 hr. Four animals were slaughtered at 2, 8, 16 and 24 hr after feed offered. digesta in the rumen was divided into 4 fractions remaining particles on sieves with apertures of 1.18 (LP), 0.30 (MP) and 0.045 mm (MP), and fine particles passed through sieve with aperture of 0.045 mm (FPL). Orchard grass hay contained 83 g/kg DM of crude protein (CP), 728 g/kg DM of neutral detergent fibre, 447 g/kg DM of acid detergent fibre, and 67 g/kg DM of acid detergent lignin (ADL). Mean dry-matter (DM) intake by sheep was 3207785 g/2 hr period, mean quantity of ruminal contents was 6.0n1.4 kg on as is basis, and 560n185 g on DM basis. Pool sizes of DM and other nutrients in the rumen were significantly decreased with the time elapsed after feeding (P<0.01). The reduction rates as of LP pools of fibrous fractions significantly contributed to that of total pool size, but pools of particles less than 1.18 mm have not contributed to the total pool size reduction. The extent of contribution was from 66% for ADL to 82 and 81% for cellulose and hemicellulose. The difference in contribution has suggested to be the difference in digestion among fibrous fraction. For soluble fractions such as cellular contents and CP, the pool reduction of LP and FPL comprised about 80% of the total reduction rate. It is concluded that the rates of pool size reduction for particles larger than 1.18 mm (LP) is attributed to the pool size reduction of fibrous fraction. For soluble fractions, the pool size reduction appears to be controlled by the degradation of LP pool and the passage and/or digestion of the fraction less than 0.045 mm in the rumen of sheep given hay once a day.

Specialization: **Nutrition**

Subject: **Effect of feeding non-conventional creep mixtures on growth performance of pre-weaned lambs.**

Year of publication: **2005**

Journal: **International Journal of Agriculture and Biology** (Pakistan). (Mar 2005). v. 7(2) p. 175-179.**AB:**

Country of Origin: **India**

**Author's name:** Trivedi, M.M.; Parnerkar, S.; Patel, A.M.

**Content:**

Twenty four farm born lambs of Marwari, Patanwadi and Merino x Patanwadi breeds were divided into three groups of eight each based on weight at three weeks of age and assigned to three treatments. In addition to suckling, the lambs were offered ad libitum conventional creep mixture (T1: Maize 43%, GN Cake 15%, Rice polish 29%) or non conventional creep mixture I (T2: GN Cake 17%, Rice polish 17%, P.J. pods 23%, babul pods chuni 14%, Mango seed kernel 16%) or non conventional creep mixture II (T3: P.J. pods 22%, babul pods chuni 22%, Mango seed kernel 19% boiled Cassia tora seeds 9%, Corn steep liquor 15%). Jaggery solution and mineral mixture were incorporated at the rate of 10 and 3%, respectively, in all the three creep mixtures. Lambs of all the three treatments were fed limited quantity of green NB21 fodder (200 g/h/d) and ad libitum mature pasture grass (*Dicanthium annulatum*). The lambs were weaned at 15 weeks of age. Initial average body weight was 5.63 plus minus 0.47 and 5.80 plus minus 0.45 kg in T1, T2 and T3, respectively. The corresponding body weights at weaning were 13.65 plus

minus 0.06 (T1), 13.69 plus minus 0.92 (T2) and 13.95 plus minus 0.88 (T3) kg. The lambs of three treatments registered an overall average daily body weight gain (g) of 95.46 plus minus 3.48 (T1), 94.64 plus minus 4.01 (T2) and 97.03 plus minus 5.19 (T3). The differences between the three groups were statistically non-significant. The gain in skeletal growth in terms of linear body measurements viz., Body length, heart girth and height at withers was statistically similar in the three treatment groups. The cost of feeding solid feeds and the total cost of rearing were significantly (P less than 0.05) lowest in lambs given non- conventional-II (T3) creep mixture. The feed cost per kg weight gain and per kg dressed weight as well as the total cost per kg weight gain and per kg dressed weight were the lowest in T3. The lambs of T3 group provided maximum return over feed cost as well as maximum return over total cost of rearing. It was concluded that both conventional and non- conventional creep mixtures were equally effective for enhancement of weaning lamb growth and therefore, the later could safely be used for economical raising of the lambs.

## **Nutrition rumen**

Specialization: **Nutrition rumen**

Subject: **Rumen fermentation characteristics, ciliate protozoa and utilization of nutrients in sheep fed sodium hydroxide treated mustard straw.**

Year of publication: **2000**

Journal: **Indian Journal of Animal Sciences** (India). (Aug **2000** ). v. 70(8) p. 850-853.**AB:**

Country of Origin: **India**

**Author's name:** Mishra, A.S.; Santra, A.; Chaturvedi, O.H.; Misra, A.K.; Prasad, R.; Jakhmola, R.C.

### **Content:**

Mustard straw (MS) was treated with sodium hydroxide (2% w/v) by soaking (6 hr) method. Malpura ram (8) were divided into 2 groups. One group (G1) was offered untreated MS (UMS) ad lib. along with concentrate (1% common salt) @ 250 g/head/day, and group (G2) was offered treated MS (TMS) ad lib. along with concentrate (without common salt) @ 250 g/head/day. Daily intakes of DM and OM between groups did not differ significantly. However, rams in G2 consumed 12% higher amount of straw. The rumen pH increased and TVFA (meq/dl SRL) decreased in G2 as compared to G1. However, the concentration (mg/dl SRL) of total-N, NH<sub>3</sub>-N and TCA-N was similar in G2 and G1. The population (x10<sup>4</sup>/ml SRL) of spirotrichs was lower in G1 than that in G2 while of holotrichs higher in G1 than that in G2. Digestibility coefficients of DM, OM, NDF, ADF and cellulose were higher in G2 than that in G1 and the respective means were 45.8 and 52.9, 51.3 and 58, 38.1 and 47, 31.4 and 39.6 and 36.8 and 54.0. However, CP, Hemicellulose and gross energy digestibility did not show much variation. Rams in both the groups were on positive N balance and N retention (% of N intake) was 37.7 and 47.1 in G1 and G2 respectively. The DCP (%) of the ration was higher in G1 (7.0) than that in G2 (5.6), whereas DE (Mcal/kg) of the ration did not differ significantly in G1 (2.4) and G2 (2.5). It is concluded that on feeding of sodium hydroxide treated mustard straw-based ration, the number of holotrichs protozoa decreased while spirotrichs increased in the rumen of

sheep. The soaking of mustard straw in 2% sodium hydroxide solution for 6 hr improved its palatability and digestibility and thus feeding value.

Specialization: **Nutrition rumen**

Subject: **In vitro gas production and nylon bag rumen degradation as predictors of the in vivo apparent digestibility and voluntary intake of tropical hays feed to sheep.**

Year of publication: **2003**

Journal: **Journal of Applied Animal Research** (India). (Mar **2003**). v. 23(1) p.103-116. **AB:**

Country of Origin: **India**

**Author's name:** Mendoza Nazar, P.; Sandoval Castro, C.

**Content:**

The ability of the chemical composition, in situ degradation and manual in vitro gas production techniques (Pressure transducer) to predict voluntary intake (I), apparent digestibility (D) of DM, OM, NDF and ADF and live weight gain was compared. Seven hays were individually offered ad libitum to growing male sheep. Gas production was determined up to 168 h and in situ degradation up to 96h of incubation. Gas and degradation profiles were fitted to the equation  $p = a + b(1 - e^{-ct-TI})$  (without log phase for the gas production). Neither of the measured variables (chemical fractions, in situ and in vitro profiles) nor its combinations were able to predict live weight gain. From the chemical composition only NDF was able to predict DMI ( $P < 0.01$ ). In situ DM rumen degradation and gas production profiles had significant relationship ( $P < 0.05$ ) with DMI and DOMI, which were improved by inclusion of NDF or OM on the equations. DMD, NDFD and ADFD were best predicted by the gas production data, without the chemical composition or in situ degradation data. The in situ technique was a better DMI predictor but, the in vitro gas production technique predicted more accurately the apparent digestibility of tropical grasses.

## **Parasitology**

Specialization: **Parasitology**

Subject: **Ixodid ticks infesting rodents and sheep in diverse biotopes of southern India**

Year of publication: **1997**

Journal: **The Journal of parasitology** (USA). (Aug **1997**). v. 83(4) p. 766-767. **AB:**

Country of Origin: **India**

**Author's name:** Saxena, V.K.

**Content:**

A total of 127 rodents were trapped in southern India. Examination of these rodents revealed the presence of 2 species of ticks, *Haemaphysalis spinigera* and *Rhipicephalus ramachandrai*. The former species is the principal vector of Kyasanur Forest Disease (KFD) in India, and the latter's role, if any, is unknown. Sheep grazing in 1 of the study areas were infested with another ixodid tick, *Haemaphysalis intermedia*, which is a vector of Bhanja virus in India. The presence of *H. spinigera* on domestic rats is important from the standpoint of KFD enzootiology. This tick shows a narrow habitat preference but a wide host range. In peridomestic situations, the field rodent *Bandicota*

bengalensis did not harbor any tick species. Contiguity of feral and domestic biotopes in some areas contributed to the transfer of *R. ramachandrai* from its preferred wild rodent host, *Tatera indica*, to domestic rats *Rattus* sp.

Specialization: **Parasitology**

Subject: **Repeatability of faecal egg-count and haematological values in sheep experimentally infected with *Haemonchus contortus*.**

Year of publication: **2000**

Journal: **Indian Journal of Animal Sciences** (India). (Aug **2000** ). v. 70(8) p. 792-796.**AB:**

Country of Origin: **India**

**Author's name:** Swarnkar, C.P.; Khan, F.A.; Jayasankar, J.; Singh, D.; Bhagwan, P.S.

**Content:**

Avivastra lambs (12) were experimentally infected twice with 10 000 infective larvae of *Haemonchus contortus* at 7-week interval. Another 6 lambs of same breed served as infectivity control and 4 lambs were healthy controls. The mean faecal egg count peaked 6-7 weeks after both the infections. The mean packed-cell volume decreased significantly from week 3 while, mean haemoglobin and total erythrocyte count dropped from week 5 onward. The repeatability of mean faecal egg count, haemoglobin, packed-cell volume, mean corpuscular haemoglobin concentration and body weight for each animal between 2 infections were 0.4958, 0.5509, 0.6098 and 0.9410 respectively. Worm burden and faecal egg count were negatively correlated with haemoglobin, packed-cell volume, total erythrocyte count and body weight. Multiple regression analysis revealed that 5 variables - faecal egg count, haemoglobin, packed-cell volume, total erythrocyte count and body weight - together accounted for 86% of the observed variation in worm burden among lambs. It was concluded that under these controlled conditions these markers are reasonably appropriate for detecting the resistance status of sheep against *H. contortus*.

Specialization: **Parasitology**

Subject: **A subacute case of concurrent babesiosis and anaplasmosis in a she-goat.**

Year of publication: **2001**

Journal: **Veterinary Journal** (India). (May **2001**). v. 78(5) p.424-425. **AB:**

Country of Origin: **India**

**Author's name:** Baby, P.G.; David, P.V.; Ravindran, P.; Ravindran, R.

**Content:**

Babesiosis and anaplasmosis are caused by intraerythrocytic protozoan parasites of the genus *Babesia* and *Anaplasma* respectively. They affect wide range of domestic and wild animals and are transmitted by ticks. *Babesia ovis* and *Babesia motasi* are two important species affecting sheep and goats. *Anaplasma ovis* may cause mild to severe disease in goats. Reports about babesiosis and anaplasmosis in goats are rare. A subacute case of concurrent babesiosis and anaplasmosis in a goat is discussed in detail.

Specialization: **Parasitology**

Subject: **In vitro anthelmintic activity of *artemesia maritima* and *butea frondosa* against *haemonchus contortus* in bullock.**

Year of publication: **2001**

Journal: **Indian Veterinary Journal** (India). (Apr **2001**). v. 78(4) p.295-297.

**AB:**

Country of Origin: **India**

**Author's name:** Jangde, C.R.; Maske, D.K.; Shrikhande, G.B.; Sirothia, A.R.; Sirothia, K.A.

**Content:**

The Plant *Artemisia maritima* belongs to family compositae. The volatile oil from *A. maritima* contains santonin an active anthelmintic constituent. The oil from extracts exerts vermifugal activity on larvae of *Haemonchus contortus*. Two to four drachms of *artemisia owa* acts as a good anthelmintic in children against round worms. Santonin was extracted from roots of *A. maritima* and purified chromatographically. *Butea frondosa* belongs to family Papilionaceae. Seeds of *B. frondosa* were found to have anthelmintic action against *Bunostomum trigonocephalum* and *Haemonchus similis* of sheep and goats. Palasonin, the anthelmintic principle was isolated from ethanolic extract of seeds. Seeds have powerful anthelmintic action. An indigenous preparation from *B. frondosa* was tested against *Ascaris lumbricoides* worm infection and found to be quite effective. In present study the efficacy of aqueous extract of roots of *A. maritima* and seeds of *B. frondosa* was tested individually as well as in combination against *Haemonchus contortus*.

Specialization: **Parasitology**

Subject: **A cryptosporidium muris-like parasite in cattle and camels in Iran.**

Year of publication: **2002**

Journal: **Indian Veterinary Journal** (India). (Jun **2002**). v. 79(6) p.558-559.**AB:**

Country of Origin: **India**

**Author's name:** Nouri, M.

**Content:**

In Mice, *Cryptosporidium muris* affecting the 4 gastric glands and *cryptosporidium parvum* in the small intestine. Since 1971 *cryptosporidium* has been found to be associated with bovine diarrhoea which stimulated veterinary interest. Now *cryptosporidium* is recognised as an important parasite with worldwide distribution. Anderson (1991) obtained *C. muris* like oocysts in camel faeces, inoculated them per os into mice and demonstrated acid-fast-positive oocysts in faecal smears as well as colonization of gastric glands, however identical experiments using similar oocysts from cattle produced no evidence of transmission. These findings place in doubt the likelihood that the indistinguishable oocysts from different hosts are the same species of *cryptosporidium*. Following the initial report of human cryptosporidiosis in Iran, another report indicated that healthy people, cows and neonatal calves excreted *C. parvum* oocysts, thus constituting a potential zoonotic problem. And then another report indicated the strong possibility of asymptomatic zoonotic transmission due to prolonged association of shepherds with their sheep. In view of the increasing evidence of pathogenicity of *C. muris* like infection in animals, the present study was undertaken to determine the presence or absence of *C. muris* like oocysts in the faeces of cattle and camel in various towns in Iran. At one of these towns, gastrointestinal samples of mice were also examined to determine the possible role of mice in

transmission of oocysts.

Specialization: **Parasitology**

Subject: **Effect of bursate worm infection on blood profiles in goats and sheep.**

Year of publication: **2003**

Journal: **Indian Veterinary Journal** (India). (Nov **2003**). v. 80(11) p.1116-1119. **AB:**

Country of Origin: **India**

**Author's name:** Arora, N.; Kumar, A.; Sharma, S.D.

**Content:**

The relationship between EPG levels and haematological and biochemical parameters were studied. A negative correlation between EPG and Hb values; and positive correlation between EPG and TLC was observed in both the species: however, the increase in TLC values was observed only above 1200 EPG. The eosinophil count initially declined followed by a gradual increase in both the species. The influence of EPG value on the total protein showed a gradual decline from 6.82 $\pm$ 0.182 g/dl at 400-800 EPG level to 4.06 $\pm$ 0.04 g/dl at 3200-3600 EPG level in goat and from 6.60 $\pm$ 0.02 g/dl at 400-800 EPG to 4.34 $\pm$ 0.052 g/dl at 2000-2400 EPG in sheep. Similarly decline in glucose level appeared to be negatively correlated. These observations suggest that egg count in sheep and goats may be helpful, in prognosis, as the increase in EPG values are responsible for critical changes in some of the important blood profiles.

Specialization: **Parasitology**

Subject: **Comparative efficacy of ivermectin, albendazole, levamisole and rafoxanide against gastrointestinal nematode infections in goats.**

Year of publication:

Journal: **Indian Journal of Animal Sciences** (India). (Feb **2003**). v. 73(2) p. 147-150. **AB:**

Country of Origin: **India**

**Author's name:** Waruiru, R.M.; Ngotho, J.W.; Mutune, M.N.; Munyua, W.K.

**Content:**

A study on the efficacy of 4 anthelmintics was carried out using a faecal egg count reduction test (FECRT) in 107 goats on a breeding farm at Ol'Magogo, Naivasha, Kenya. The goats were randomly assigned to 7 groups; the first acted as untreated controls and the other groups received ivermectin (IVM) @ 0.2 mg/kg bodyweight once orally, albendazole (ABZ) @ 5.0 mg/kg, levamisole (LEV) @ 15 mg/kg and rafoxanide (RFX) @ 15 mg/kg orally as 2 doses 24 hr apart. Other groups received albendazole and levamisole (ABZ+LEV) and, levamisole and rafoxanide (LEV+RFX) at the same doses and schedules as and when used individually. Faecal egg counts were measured at treatment (day 0) and 10 and 21 days afterwards. Decreasing efficacies, as measured by 3 different formulations were recorded at day 21 for IVM, ABZ and ABZ+LEV (>96%), LEV (>54%), RFX (<60%) and LEV+RFX (<65%). Calculations of 95% confidence limits indicated that resistance was present in the LEV, RFX and LEV+RFX groups. The predominant use of LEV on the farm for a long period at dose rates recommended for sheep may have contributed to the development of resistance.

Specialization: **Parasitology**

Subject: **Prevalence of Enteric parasitism in sheep and goats in and around Bidar.**

Year of publication: **2003**

Journal: **Indian Veterinary Journal** (India). (Jan **2003**). v. 80(1) p.72-73.

**AB:**

Country of Origin: **India**

**Author's name:** Thangathurai, R.; Rao, D.G.K.; Reddy, P.M.T.

**Content:**

The information pertaining to the prevalence of enteric parasites in sheep and goat in North Karnataka is lacking. Therefore, a preliminary report is presented here based on examination of slaughter house specimen.

Specialization: **Parasitology**

Subject: **The seroprevalance of toxoplasma gondii in sheep, goats and cattle detected by indirect haemaglutinnation (IHA) test in the region of Van, Turkey.**

Year of publication: **2003**

Journal: **Indian Veterinary Journal** (India). (May **2003**). v. 80(5) p.401-403.

**AB:**

Country of Origin: **India**

**Author's name:** Tutuncu, M.; Ayaz, E.; Yaman, M.; Akkan, H.A.

**Content:**

This study was carried out on sheep, goats and cattle in order to determine the seroprevalence of toxoplasmosis in the province of Van. Indirect Haemaglutination (IHA) test was used to detect Toxoplasma gondii antibodies in 305 ruminants (150 sheep, 104 cattle and 51 goats) obtained from the city center of Van and its region. The sera were tested for Toxoplasma gondii antibodies between 32 and 1024 titres. Samples with titres 64 and greater then this were considered as positive. The prevalance of the positive sera were found to be 52 (34.6%) for sheep, 8 (7.6%) for cattle and 17 (33.3%) for goats. The results indicate that Toxoplasma gondii infection in ruminants in the province of Van is widespread.

Specialization: **Parasitology**

Subject: **Western blot analyses of Cysticercus tenuicollis antigens.**

Year of publication: **2003**

Journal: **Indian Journal of Animal Sciences** (India). (Aug **2003**). v. 73(8) p. 837-839. **AB:**

Country of Origin: **India**

**Author's name:** Mathur, V.C.; Aiyasami, S.S.; Latha, B.R.; John, L.

**Content:**

The protein profiles of dialyzed cyst fluid, cyst membrane and scolex of Cysticercus tenuicollis were carried out by resolving on SDS-PAGE. Altogether 37 bands were observed out of which 3 bands were observed in the cyst fluid, 22 in the cyst membrane and 12 bands in the scolex of the cyst. Western blot analysis using hyperimmune sera raised in rabbits indicated the antigenicity of the different bands. Cyst fluid proteins were least reactive, whereas membrane proteins elicited a consistent reaction with the hyperimmune sera.

## **Pharmacology**

Specialization: **Pharmacology**

Subject: **Pharmacology antiprotozoal-agents Plasma - protein binding of berenil in black bengal goats.**

Year of publication: **2000**

Journal: **Indian Veterinary Journal** (India). (Jun **2000** ). v. 77(6) p.492-494.

**AB:**

Country of Origin: **India**

**Author's name:** Mallick, T.K.; Sardar, K.K.; Parija, M.B.; Misra, S.N.

**Content:**

Berenil (diminazene diaceturate) is used extensively to combat trypanosomiasis and babesiosis in cattle, buffalo, sheep and several other domestic animals. The drug contains strongly basic groups which bind the kinetoplast DNA by non-intercalative interaction in the parasite. Although information available on the interaction of Berenil with proteins is scanty, speculations have been made that berenil enhance protein synthesis in liver and inhibits enzymes involved in phosphorylation and drug detoxification. A recent report shows that the trypanocidal drug binds irreversibly to blood proteins of rabbit. Berenil being the drug of choice for the treatment of trypanosomiasis and babesiosis in domestic animals, a knowledge of the free drug concentration is essential to determine the therapeutic efficacy of the drug. In this investigation, we have studied the binding of goat plasma to various concentrations of Berenil in order to determine the per cent binding and to see whether the binding is plasma concentration dependent.

Specialization: **Pharmacology**

Subject: **Anthelmintic activity of xanthium strumarium against haemonchus contortus infection in sheep.**

Year of publication: **2003**

Journal: **Indian Journal of Animal Sciences** (India). (Apr **2003**). v. 73(3) p.

342-344.**AB:**

Country of Origin: **India**

**Author's name:** Sharma, S.R.; Singh, D.; Khan, F.A.; Swarankar, C.P.;

Bhagwan, P.S.K

**Content:**

Anthelmintic activity of the fresh juice of Xanthium strumarium leaves at different concentration was evaluated in vitro, against benzimidazole resistant Haemonchus contortus strain, using egg hatch assay (EHA) and larval paralysis test (LPT). No anthelmintic activity of the Xanthium strumarium juice was observed at 1: 100 dilution, however, undiluted juice of the leaves showed a 100% inhibition in egg hatching by EHA. The inhibition in egg hatching was 100% at 1:2 and 1:10 dilutions of the juice, whereas at 1:50 dilution, it was only 21.5% after 48 hr of incubation. The control mortality was 12.1%. In LPT, the percentage paralysis of the larvae at concentrations-undiluted, 1:2,1:5,1:10 and 1:100 were 23.8%, 25.5%,21.5%,17.7% and 5.44%, respectively, indicating significant ( $P<0.05$ ) anthelmintic activity up to 1:10 dilution of the juice. The per cent survivability of the larvae in the control group was 97.5.

## **Physiology**

Specialization: **Physiology**

Subject: **Physiological responses of native and crossbred sheep to climate stress under semi-arid conditions.**

Year of publication: **2000**

Journal: **Indian Journal of Animal Sciences** (India). (Aug **2000**). v. 70(8) p. 857-861. **AB:**

Country of Origin: **India**

**Author's name:** Ashutosh; Dhanda, O.P.; Kundu, R.L.

### **Content:**

Rectal temperature, pulse rate and respiration rate in native (Chokla) and Avivastra (Chokla x Rambouiller) sheep were investigated during different seasons kept under semi-arid conditions after following standard procedures. The results revealed that there exists a significant difference in rectal temperature in animals of both the breeds between seasons. However, the rectal temperature in native and crossbred animals did not differ significantly in summer season. Significant diurnal variation was observed in crossbreds in all the seasons' except spring. A significantly higher ( $P < 0.05$ ) respiration rate was observed in crossbred sheep in winter, spring and summer seasons in comparison to the natives without any significant difference in the rainy season. Higher respiration rate was found in the afternoon in native as well as in crossbreds in all the seasons in comparison to that of morning hours pulse rate was thus concluded that native as well as crossbred sheep are equally efficient in thermoregulatory mechanism under semiarid conditions.

## **Reproduction - Female**

Specialization: **Reproduction - Female**

Subject: **Follicular atresia in goat: A review.**

Year of publication: **2000**

Journal: **Indian Journal of Animal Sciences** (India). (Oct **2000**). v. 70(10) p. 1035-1046. **AB:**

Country of Origin: **India**

**Author's name:** Sharma, R.K.

### **Content:**

Follicular atresia causes extensive loss of germ cells during development, and reproductive life in female mammals. The primordial follicles are most affected during embryonic life while antral follicles outnumber in atresia during the active life. Atresia is a fundamental process that modulates the success of folliculogenesis and the number of ovulations. Both morphological and functional events of follicular atresia have been discussed. The morphological (Including ultra structure) and histochemical characteristics of atresia include alteration of extracellular matrix, loosening of cell to cell interactions, pycnosis, chromolysis, hyalinization, appearance of crystalloid bodies, chromophilic granules, pseudocleavage, mitochondrial aggregations, shrinking of plasma membranes, hyalinization of zona pellucida etc. These morphological features are associated with a decline in the sensitivity of granulosa cells to gonadotrophins, Degeneration by apoptosis, loss of cell to cell communication, loss of proliferative and steroidogenic activities. endocrinologically, the estradiol production declines, Progesterone titre changes, FSH-binding receptors decrease, FSH-binding inhibitors increase,

androgen production increase, and LS/LI ratio is altered. These changes activates some cytoplasmic or membrane bound factors that activates apoptotic genes like P53, C-myc, bcr-ab ras, bcl-2, bcl-x, bax and anti-oxidant family of genes causing an elevation in calpains, caspases, p53 suppressor protein, IL-2, BCL-2 and BAX that activates endonucleases leading to apoptosis. Most of the cellular components are endocytosed by the theca interna cells, which hypertrophy and transmutate into steroidogenically active interstitial gland tissue. The information available on atresia in goats and sheep is discussed in relation to other mammalian species to explain the intricacies of this process and to point out the gaps for further studies.

Specialization: **Reproduction - Female**

Subject: **Placental characteristics of different sheep breeds.**

Year of publication: **2002**

Journal: **Indian Veterinary Journal** (India). (Dec **2002**). v. 79(12) p.1297-1298. **AB:**

Country of Origin: **India**

**Author's name:** Jacob, N.; Vadodari, V.P.

**Content:**

Seasonal differences in birth weight of lambs are mediated not by differences in maternal nutrition but rather by a direct seasonal effect on placental size, specially the formation of placentomes and hence on the total placental weight. Gross placental characteristics have been reported in goats. The present study was conducted in patanwadi crossbreds to establish the normal placental weight, length and cotyledon number.

Specialization: **Reproduction - Female**

Subject: **A note on flushing on reproductive performance of Bharat merino ewes.**

Year of publication: **2003**

Journal: **Indian Veterinary Journal**. (Nov **2003**). v. 80(11) p.1187-1188. **AB:**

Country of Origin: **India**

**Author's name:** Narayanan, K.; Rajapandi, S.; Rajendiran, A.S.; Gour, D.

Institution:

Organization:

**Content:**

A trial was conducted to study the effect of increasing the quantum of ration for six weeks before commencement of anticipated breeding season on twinning rate and survivability of twins was studied in Bharat Merino ewes at subtemperate ambience of Kodai hills.

Specialization: **Reproduction - Female**

Subject: **Histological and histochemical studies on the ovarian follicles of the Gaddi sheep.**

Year of publication: **2003**

Journal: **Indian Journal of Animal Sciences** (India). (Jul **2003**). v. 73(7) p. 721-724. **AB:**

Country of Origin: **India**

**Author's name:** Paramasivan, S.; Sharma, D.N.

**Content:**

The primordial follicles (25-35 aem diameter) consisted of an ovum lined by a

single layer of low cuboidal or flattened epithelial cells. The primary follicles (40-55  $\mu$ m diameter ) were surrounded by a single layer of cuboidal type follicular cells, resting on a thin basement membrane. The secondary follicle(70-350  $\mu$ m diameter) had an oocyte surrounded by 2-8 layers of follicular cells and the theca was poorly defined into theca interna and theca externa. Small vesicular follicles (350-750  $\mu$ m diameter) revealed the antrum. Many layers of the follicular cells surrounded a large oocyte (70-4000  $\mu$ m diameter). Antrum appeared as a single or multiple and small or large cavities. The large vesicular follicles (750-4000  $\mu$ m diameter) had single large antral cavity. The oocyte(100-150  $\mu$ m diameter) was placed eccentrically. The antrum contained homogeneous, acidophilic liquor folliculi.

**Specialization: Reproduction - Female**

**Subject: Estrus induction and fertility response in acycling Awassi-Malpura ewes treated with progesterone and PMSG in a tropical climate.**

**Year of publication: 2004**

**Journal: Indian Journal of Animal Sciences (India). (Jul 2004). v. 74(7) p. 713-717. AB:**

**Country of Origin: India**

**Author's name:** Das, G.K.; Naqvi, S.M.K.; Gulyani, R.; Pareek, S.R.; Narula, H.K.; Mittal, J.P.

**Content:**

Estrus and fertility response were assessed in acycling crossbred Awassi-Malpura ewes(n=46; maiden=23; parous=23) treated with natural progesterone and pregnant mare serum gonadotropin(PMSG). Progesterone (@ 350 mg/sponge) impregnated intra-vaginal sponges were placed in-situ vagina for 12 days followed by an i/m injection of PMSG (@200 IU/ewe) at sponge withdrawal. Estrus detection was done using approned ram of proven vigour, at an interval of 6 hr, commencing 24 hr of sponge withdrawal and continued up to 72 hr. A fixed time (52-54 hr after sponge withdrawal) insemination was performed by depositing the diluted semen in both the uterine horns with the aid of laparoscope. The overall estrus response was 80.4% and relatively higher in maiden (91.3%) than parous ewes (69.6%),but difference was not significant. Overall the mean interval to onset was 29.8 hr bit earlier in maiden group than parous while the duration of estrus was longer in former than later group. The mean estrus length was 26.8 $\pm$ 1.71 hr irrespective of the groups. Overall, 44.4% ewes lambed at term on insemination basis whereas lambing rate was slightly better(51.4%) with estrus ewes. Parity does not have any significant influence on lambing outcome. The study indicates that intravaginal progesterone (@ 350 mg) sponge in combination with PMSG (@ 200 IU) can be successfully used for estrus induction in acycling crossbred Awassi-Malpura ewes. A fixed time IUA at 50-54 hr after sponge withdrawal may result into a reasonable fertility response.

**Reproduction - Male**

**Specialization: Reproduction - Male**

**Subject: Fertility of the frozen ram semen.**

**Year of publication: 2001**

**Journal: Indian Journal of Animal Sciences (India). (Apr 2001). v. 71(4) p. 328-330.AB:**

**Country of Origin: India**

**Author's name:** EL-Gaafary, M.N.; Axford, R.F.E.; Owen, J.B.

**Content:**

Semen was collected from 5 Welsh Mountain rams by means of an artificial vagina. After evaluation, semen was pooled and diluted with tris-based diluent at 1:2 (semen: diluent). The diluted semen was cooled to 5°C over 2 hr and frozen either in straws or as pellets. Welsh Mountain ewes (217) were synchronized using sponges impregnated with medroxyprogesterone acetate for 12 days. On sponge withdrawal each ewe received a 350 i/u PMSG by subcutaneous injection. Inseminations were carried out 56 hr after sponge withdrawal. In trial 1, thawed semen which was frozen in straws or as pellets (400x10<sup>6</sup> sperm/dose) was introduced into the first fold of the cervix. In trial 2, inseminations were carried out at either cervix, vagina, intrauterine or on the ovary. Higher fertility results were obtained after insemination with semen frozen as pellets than in straws, however, the differences were not significant. Frozen semen exhibited reduced fertility (P<0.5) when compared with fresh semen. Lambing rates showed highly significant (P<0.001) differences due to the sites of semen deposition. The fertility results following intrauterine insemination with frozen semen were significantly higher (P<0.05) than for cervical or vaginal insemination. Lambing results obtained following intrauterine insemination with frozen semen was effective as cervical insemination with fresh semen. The inseminated sperm number into the uterus had no significant effect on lambing percentage. The results following semen deposition on to the ovaries were nil, therefore this treatment was excluded from the data analysis.

Specialization: **Reproduction - Male**

Subject: **Better productivity of garole rams sheep in semi-arid region.**

Year of publication: **2002**

Journal: **Indian Farming** (India). (Jul **2002**). v. 52(4) p. 24-26. **AB:**

Country of Origin: **India**

**Author's name:** Mittal, J.P.; Joshi, A.; Naqvi, S.M.K.; Maurya, V.P.; Dang, A.K.; Bag, S.

**Content:**

There exists a scope for introduction of prolificacy traits of Garole breed into monotonous sheep breeds of our country for enhancing mutton and carpet wool production. For this purpose assessment of reproductive behaviour including libido and semen quality of rams of this breed under semi-arid and arid regions, where sheep husbandry is playing dominant role in agro-economy is essential. Assessment and evaluation are prerequisite for introduction of Garole into comparatively larger breeds of sheep through artificial insemination, which seems to be the only technique for enhancing prolificacy of latter breeds under farm and field conditions.

Specialization: **Reproduction - Male**

Subject: **Effect of extenders and thaw temperature on the acrosomal integrity of ram spermatozoa.**

Year of publication: **2003**

Journal: **Indian Journal of Animal Sciences** (India). (Jun **2003**). v. 73(6) p. 612-614. **AB:**

Country of Origin: **India**

**Author's name:** Mathur, A.K.

**Content:**

Pooled ejaculates of Rambouillet ram semen was extended in egg yolk-raffinose-citrate-glutamic acid-glycerol (EYRCGG), egg yolk lactose-raffinose-citrate-glycerol (EYLRCG) and egg yolk tris glucose (EYTG) extenders @  $1 \times 10^9$  spermatozoa/ml and subjected to equilibration followed by freezing into pellets of 0.2 ml size. Smears were made at extension, post-equilibration and at thawing which were done at 37, 50 and 60°C in a dry test tube. Staioning was done by Giemsa stain and morphology was evaluated. The acrosomal integrity was not affected significantly by diluents at post dilution as well as post equilibration stages. At post-thaw stage, irrespective of thawing regimen, acrosomal integrity of frozen-thawed ram spermatozoa was not influenced by the extenders, however, thaw temperature had a significant effect ( $P < 0.01$ ) on acrosomal integrity with higher values at 50°C. The over all means were  $54.9 \pm 0.43$ ,  $56.6 \pm 0.32$  and  $55.0 \pm 0.38\%$  at thaw temperatures of 37, 50 and 60°C respectively.

Specialization: **Reproduction - Male**

Subject: **Use of spermatozoa from epididymus of slaughtered rams for in vitro fertilization of ovine oocytes.**

Year of publication: **2003**

Journal: **Indian Journal of Animal Sciences** (India). (Feb **2003**). v. 73(2) p. 143-146.**AB:**

Country of Origin: **India**

**Author's name:** Wani, N.A.; Wani, G.M.

**Content:**

The oocytes harvested from the ovaries obtained from a local slaughterhouse were matured in vitro. The oocytes reaching to metaphase II stage were 63.21%. The spermatozoa used in this study were obtained from the cauda epididymus of 2-3 testes collected from local abattoir. The washed sample were having 70-8-% motility, rising up to about 90% after swimup treatment. Sperm motility was maintained throughout the capacitation period in all the 3 media. At the time of insemination above 80% of the spermatozoa exhibited progressive motility in all the 3 media. The oocyte penetration rates were 46.5, 53.4 and 54.5, respectively, for oocytes in TCM-199, Hams F10 and Hams, F10 and Hams F12 respectively. Out of the oocytes incubated further only 7,4 and 5.7% cleaved. It can be concluded that the spermatozoa collected from the epididymus of dead/slaughtered rams can be used successfully for the in vitro fertilization of oocytes in sheep.

**Reproduction physiology**

Specialization: **Reproduction physiology**

Subject: **Day of estrous cycle affects follicular dynamics after induced luteolysis in ewes.**

Year of publication: **1995**

Journal: **Journal of animal science** (USA). (Jul **1995**). v. 73(7) p. 2094-2101.

**AB:**

Country of Origin: **India**

**Author's name:** Houghton, J.A.S.; Liverati, N.; Schrick, F.N.; Townsend, E.C.; Dailey, R.A.; Inskeep, E.K.

**Content:**

Effects of day of estrous cycle and induced luteal regression on follicular dynamics in ewes were examined. In Exp. 1, ewes received PGF2 alpha (i.m.) on d 5, 8, or 11 after estrus (d 0) or saline on d 14 (n = 27, 27, 31, and 29, respectively). Ewes were laparotomized before treatment and again 48 h after induced estrus to record numbers, sizes, and locations of follicles greater than or equal to 2 mm and corpora lutea (CL). The two largest follicles (designated F1 and F2) and any of equal size (F1.5 and F2.5) were marked with India ink in stroma around the follicle. Ewes treated on d 8 ovulated fewer F1 and F1.5 (39%) than ewes treated on d 5 (69%;  $P < 0.05$ ); d 11(51%) and 14 (56%) were intermediate. In Exp. 2, ewes received PGF2 alpha on d 5 or 8 (n = 15/d). Ovaries were examined with transrectal ultrasonography daily from 4 d before PGF2 alpha until ovulation, and on d 5 and 8 after ovulation. Diameters, locations, and ranks (at time of PGF2 alpha) of follicles greater than or equal to 2 mm and CL were recorded. Ewes treated on d 8 ovulated fewer F1 and F1.5 (35%) than ewes treated on d 5 (86%;  $P < 0.05$ ). Ovulatory follicles at time of PGF2 alpha were larger on d 5 (4.7 +/- 0.2 mm) than on d 8 (4.0 +/- 0.2 mm;  $P < 0.05$ ). Of 19 follicles that increased in diameter greater than or equal to 2 mm during luteolysis, 89% ovulated; only 39% of 71 follicles that changed less than or equal to 1 mm and 0 of 12 follicles that decreased in diameter ovulated. During luteolysis initiated on d 5 or 8, the proportion of large follicles increased ( $P < 0.05$ ); the proportion of medium follicles decreased on d 8 ( $P < 0.05$ ). In summary, proportion of ewes that ovulated the largest follicle(s) after treatment with PGF2 alpha varied with day of the cycle, follicle(s) that grew greater than or equal to 2 mm during luteolysis were more apt to ovulate, and follicular dynamics were altered briefly by interrupting the cycle.

Specialization: **Reproduction physiology**

Subject: **Efficacy of various collection methods for oocyte retrieval in buffalo.**

Year of publication: **1996**

Journal: **Theriogenology** (USA). (Dec **1996**). v. 46(8) p. 1403-1411.**AB:**

Country of Origin: **India**

**Author's name:** Das, G.K.; Jain, G.C.; Solanki, V.S.; Tripathi, V.N.

**Content:**

The efficacy of 3 oocyte collection methods and the effect of the presence of a CL on oocyte recovery from buffalo ovaries obtained at an abattoir were assessed. Oocytes were collected slicing (n=131), follicle puncture (n=86) and follicle aspiration (n=80). Slicing yielded significantly ( $P < 0.01$ ) more (5.7) oocytes per ovary than follicle puncture (2.6) or aspiration (1.7). Better quality oocytes (good and fair) were recovered per ovary by slicing (2.6) than by puncture (1.3) or aspiration (0.9). However, follicle puncture took the least time (1.5 min) compared with aspiration (1.6 min) and slicing (2.8 min). The presence of a CL significantly ( $P < 0.05$ ) reduced the recovery rate as well as the quality of the oocytes. Slicing was found to be the overall best oocyte collection method among the 3 tested in this study.

Specialization: **Reproduction physiology**

Subject: **Chromosome configuration during in vitro maturation of goat, sheep and buffalo oocytes.**

Year of publication: **1997**

Journal: **Theriogenology** (USA). (Mar **1997**). v. 47(4) p. 943-951.**AB:**

Country of Origin: **India**

**Author's name:** Yadav, B.R.; Katiyar, P.K.; Chauhan, M.S.; Madan, M.L.

**Content:**

The competence of meiotic chromosome configuration at the time of co-culture of oocytes with spermatozoa is an essential prerequisite for successful in vitro fertilization (IVF). Although this technology has been used in several livestock species, various intrinsic and extrinsic factors affecting the high repeatability of IVF have yet to be understood. The present study was conducted to determine the appropriate time for co-culture of oocytes and spermatozoa in order to optimize the fertilization rate in sheep, goats and buffalo. Oocytes were collected from the ovaries of slaughtered animals. The oocytes were divided into 10 groups and cultured for maturation in TCM-199 supplemented with estrous cow serum for different durations at 38.5. 0.5/C in a CO<sub>2</sub> incubator. Sheep and goat oocytes were removed from culture medium after 0, 6, 12, 22, 24, 26, 28, 30, 32 and 36 and buffalo oocytes after 0, 6, 12, 16, 20, 22, 24, 26, 28, and 36 h. The oocytes were treated with hypotonic solution (0.75M KCl) and fixed in Carony's fixative on glass slides. The fixed oocytes were stained with Giemsa solution, and the meiotic chromosomes were evaluated under a compound microscope at x1000 magnification. Observations were recorded on a total of 1328 oocytes (sheep, 409; goat, 727 and buffalo, 192). The sequential configurations of diffused chromatic, pachytene, diplotene (along with nucleoli), diakinesis and metaphase II (MCI) were analyzed at different durations of culture. Control oocytes (fixed at 0 h without incubation) were mostly at the pachytene stage, and as the duration of culture increased the instances of diplotene, diakinesis and finally MCI increased. Oocytes at the MII stage of meiosis are known to be at the optimal stage of development for co-culture with spermatozoa and successful in vitro fertilization. On the basis of sequential configuration of chromosomes, it was found that the optimal duration of in vitro maturation of oocytes is 32, 30 and 24 h for sheep, goats an.

## **Reproduction-embryo**

Specialization: **Reproduction-embryo**

Subject: **Development of sheep embryo in vitro: Effect of insulin or insulin-like growth factor (IGF-I).**

Year of publication: **2004**

Journal: **Indian Journal of Animal Sciences** (India). (Apr **2004**). v. 74(4) p. 341-344.**AB:**

Country of Origin: **India**

**Author's name:** Goel, S.; Palanisamy, A.; Nainer, A.M.

**Content:**

In the present study, insulin and IGF-I was independently utilized to investigate sheep embryo development in vitro. Although the numbers of oocytes cleaved in both treatment groups were similar, further development of these to morulae or blastocysts required increased supplementation with either insulin(1-10 mg/ml) or IGF-I (2-200ng/ml). Increase in hatched blastocyst number was also observed in these groups. The blastocyst cell number was also higher. Thus supplementation with 1mg insulin/ml or 2ng IGF-I/ml in IVC medium enhanced in vitro development of sheep embryo from 8 to 16

cell stages.

## **Surgery**

Specialization: **Surgery**

Subject: **Vertebral malformation in a pup.**

Year of publication: **2001**

Journal: **Indian Veterinary Journal** (India). (Nov **2001**). v. 78(11) p.1064-1065.**AB:**

Country of Origin: **India**

**Author's name:** Kumar, G.V.; Subramanian, M.; Thirunavukkarasu, P.S.

### **Content:**

Several vertebral malformations and congenital vertebral fusion occur sporadically in dog, cat, cattle, sheep and goat with or without evidence of neurologic defect. A case of vertebral malformation in a pup is presented.

Specialization: **Surgery**

Subject: **Clinical and physiological effects of diazepam and detomidine anaesthesia in bovines.**

Year of publication: **2001**

Journal: **Indian Veterinary Journal** (India). (Apr **2001**). v. 78(4) p.306-308.**AB:**

Country of Origin: **India**

**Author's name:** Yadav, G.U.; Aher, V.D.; Bhokre, A.P.; Sarkate, L.B.

### **Content:**

Detomidine is an alpha - 2 adrenergic agonist and it has sedative, hypnotic, muscle relaxant and anaesthetic property. Detomidine is used as pre-anesthetic, sedative in various species of animals like sheep, goat, buffalo and laboratory animals. Detomidine produces dose dependent sedation and analgesia in bovines. However, its effect cannot be increased beyond certain limits even after increasing the dose. Benzodiazepines like diazepam have been reported to enhance sedation and analgesia produced by detomidine. In the present study clinical and physiological effects of diazepam and detomidine has been investigated in experimental buffalo calves.

Specialization: **Surgery**

Subject: **The use of an external fixator "Maczek" to treat fractures in sheep.**

Year of publication: **2003**

Journal: **Indian Veterinary Journal** (India). (Jul **2003**). v. 80(7) p.642-646.**AB:**

Country of Origin: **India**

**Author's name:** Jalynski, M.

### **Content:**

The usefulness of external fixator "MACZEK" to treat fracture in sheep was assessed Radiographic examinations were conducted to evaluate the process of bone union formation. In these studies 30 sheep: Black head race; both sexes; 1 year, were divided equally into 3 groups. The external fixator "MACZEK" was used in 3 modes such as compression (Group 1), non-compression (Group 2) and dynamic axial (Group 3), and placed on the limb of each sheep. Radiographic examinations revealed that there was complete bone union. The

results of these studies suggest that the external fixator is not difficult to mount, and reposition of fracture can be conducted after its installment and stabilization on the osseous implants.

Specialization: **Surgery**

Subject: **Comparative efficacy of ivermectin and deltamethrin, against Otobius megnini on sheep.**

Year of publication: **2003**

Journal: **Indian Veterinary Journal** (India). (Nov **2003**). v. 80(8) p.733-735.**AB:**

Country of Origin: **India**

**Author's name:** Soundararajan, C.; Kumar, R.A.; Iyue, M.

**Content:**

The efficacy of ivermectin and deltamethrin in controlling the spinose ear tick, *Otobius megnini* in naturally infested sheep was tested, deltamethrin pour on into ear canal at a concentration of 2ml/litter of water has controlled the larvae and nymphs within 14 days after treatment whereas repeated treatment of ivermectin at the dose of rate of 0.02 ml/kg body weight given subcutaneously controlled the larvae and nymphs gradually with total eradication by 21 and 35 days after treatment respectively.

Specialization: **Surgery**

Subject: **Urethral dilatation and its surgical treatment in a lamb.**

Year of publication:

Journal: **Indian Veterinary Journal** (India). (Nov **2003**). v. 80(11) p.1171-1172.**AB:**

Country of Origin: **India**

**Author's name:** Kamiloglu, A.; Atalan, G.; Ozturk, S.; Beytut, E.

**Content:**

A case of dilatation in perineal region and its surgical correction has been described in a two months old male lamb. Urethrostomy under sedative and local infiltrative anaesthesia resulted in a successful outcome of this animal.

## **Toxicity**

Specialization: **Toxicity**

Subject: **Oak poisoning in a cow - a case report.**

Year of publication: **2001**

Journal: **Indian Veterinary Journal** (India). (Nov **2001**). v. 78(11) p.1054-1055.**AB:**

Country of Origin: **India**

**Author's name:** Sharma, R.; Mandial, R.K.; Gupta, V.K.

**Content:**

Oak (*Quercus incana*) toxicity has been reported in cattle, sheep, horses and pigs from many countries. The disease is frequently associated with the ingestion of acorns in the autumn and buds of young leaves in the spring. The present communication describes the clinico biochemical and pathological observation on a natural case of oak poisoning in cattle.

Specialization: **Toxicity**

Subject: **Incidences of Lantana Poisoning in Sheep.**

Year of publication: **2002**

Journal: **Indian Veterinary Journal** (India). (Dec **2002**). v. 79(12) p.1317-1318.**AB:**

Country of Origin: **India**

**Author's name:** Reddy, Y.R.; Rao, S.T.V.; Veerabramhiah, K.

**Content:**

Lantana genus contains many species of plants that are noxious weeds found in tropical, subtropical and warm temperate countries. The toxic compounds in the plants are pentacyclic triterpene acids - Lantadene A, Lantadene B and reduced Lantadene A. Lantana camara is one of the common plants causing toxicity in sheep of this region. The leaves, flower and pods of Lantana camara is one of the common plants causing toxicity in sheep of this region. The leaves, flower and pods of Lantana camara contain Lantadene A which causes hepatic insufficiency and photosensitization.

Specialization: **Toxicity**

Subject: **Relative haemagglutinin titres of faba bean (*Vicia faba* L.) and horse gram (*Dolichos biflorus* L.) against human and animal blood.**

Year of publication: **2001**

Journal: **Indian Journal of Animal Sciences** (India). (Apr **2001**). v. 71(4) p. 338-339.**AB:**

Country of Origin: **India**

**Author's name:** Diwakar, P.; Kushwah, A.; Kushwah, H.S.; Rajawat, P.; Shrotri, S.

**Content:**

Haemagglutinin titres of different varieties of faba bean (*Vicia faba* L.) and horse gram (*Dolichos biflorus* L.) were visualized immunologically against different blood groups of human and different animals. Variations in titres were indicated in all the tested varieties of these legumes when tested against human blood. For a single variety too, groups B and of poultry, goat and horse blood.