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## **MORTALITY PATTERN IN HOLDEO (HF X DEONI) CROSSBRED CATTLE UNDER ORGANISED HERD MANAGEMENT CONDITIONS IN INDIA**

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The present study was carried out to analyse mortality pattern in crossbred cattle reared under organised herd management conditions in India. The post mortem reports of total 1053 Holdeo crossbred cattle (HF x Deoni) maintained at organised livestock farm of Vasantrao Naik Marathwada Agriculture University, Parbhani, Maharashtra were used to study over thirty five years (1976 to 2010) period and analysed statistically by SAS 9.3 software for evaluation of Chi- square analysis. The overall mortality in Holdeo cattle was 20.44 %. There was very little variation in seasonal mortality rate which averaged 7.07 %, 6.82% and 6.56 % in monsoon (July- October), summer (March- June) and winter (November-February), respectively. The highest mortality rate was observed in the age group of 0- 3 months (13.69 %). The mortality was highest due to digestive problems (7.13 %) followed by anaemia/ debility/ senility (4.37 %) and respiratory disorders (3.17 %) together accounted for 71.70 % of total deaths. There was non-significant effect of sex on mortality pattern; however, higher mortality was seen in female calves (10.95 %). The mortality rate did not vary significantly between period of study, seasons, age categories, sex and causes of disease. However, the trend indicated appreciable difference in mortality rate. Study of mortality pattern provides an important tool for determining the health status and guidelines for management practice of crossbred cattle, which will ultimately help in increasing the milk production and improve the economic status of livestock owners.

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## **INDIAN MINOR CARP *LABEO BATA* (HAM.) ELICITS MORE CELLULAR IMMUNE EFFECTOR ACTIVITIES THAN INDIAN MAJOR CARP *LABEO ROHITA* (HAM.) AND *CATLA CATLA* (HAM.)**

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With the aim of revealing basic cellular immune-characteristics of popular Indian major and minor carps, neutrophil, macrophage and lymphocyte functional tests were performed. The blood leucocytes of bata, *Labeo bata* produced significantly ( $p < 0.01$ ) high superoxide anion production ( $0.31 \pm 0.01$ ) *in vitro* than rohu, *L. rohita* ( $0.192 \pm 0.02$ ) and catla, *Catla catla* ( $0.156 \pm 0.02$ ). *In vitro* phagocytic activity (%) of splenic macrophages was found to be  $17.56 \pm 0.10$ ,  $17.93 \pm 0.15$  and  $18.34 \pm 0.87$ , respectively for catla, rohu and bata. *In vitro* nitrite production ( $\mu\text{M}$  of  $\text{NaNO}_2$ ) by splenic macrophages of catla was more than rohu and bata. *In vitro* lymphoproliferation (expressed as stimulation index) of bata was significantly ( $p < 0.01$ ) higher ( $0.490 \pm 0.080$ ) than rohu ( $0.346 \pm 0.010$ ) and catla ( $0.154 \pm 0.040$ ) upon mitogenic stimulation. Among the tested carps, the minor carp bata elicited significantly more immune-effector activities than the Indian major carps, *viz.* rohu and catla. Perhaps these properties of bata contribute to its increased resistance to common infectious diseases in culture conditions.

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## **A COMPARATIVE STUDY ON SENSORY QUALITY OF SAUSAGE PREPARED FROM SPENT DUCK AND SPENT HEN MEAT**

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Spent ducks and hens are unutilized, but its meat can be very efficiently utilized for the preparation of comminuted meat product like sausage. Formulation of chicken sausage from lean meat of spent ducks and hen and spice mix formulation which is to be used in the preparation of sausages has been standardized. Incorporation of 10% fat (visceral + skin) and 4.3% refined wheat flour as a binder were found to be optimum for chicken sausage smoked at  $72 \pm 1^\circ\text{C}$  for 7-8 hr. There was significant decrease in scores of organoleptic evaluation of sausages with the increase in storage periods at chilling temperatures. It may be concluded that the experimental sausages were consumable up to 14 days when stored at chilling temperature ( $4 \pm 1^\circ\text{C}$ ). Thus, comparatively low cost chicken sausage with good to very good acceptability were developed utilizing spent duck and hen meat.

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### **EVALUATION OF SARCOCYST INFESTED BOVINE CARCASSES**

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The study was conducted to evaluate the prevalence of sarcocysts in bovine carcasses. A total number of 120 buffaloes (60 males and 60 females) and beef (60 males and 60 females) of age group 5-15 yrs were randomly taken from the Tangra Slaughter House, Kolkata. Oval shaped macrocyst were observed in oesophagus, heart, skeletal and intercostals muscle, tongue, diaphragm. 29.2% buffaloes and 23.3% beef carcasses showed sarcocysts infection. The prevalence of sarcocysts was highest in oesophagus (65%) in buffaloes, and lowest in diaphragm (10%). In beef, also found highest in oesophagus(55%) and lowest in tongue (20.1%). But no infection was recorded in intercostal muscles of either carcass. Animals when slaughtered during pre monsoon and post monsoon period showed 20% of infection in male, 18.3% of infection in female in buffaloes and 18.3% of infection in male, 15% of infection in female in beef and the work emphasized to know organ wise prevalence and economic loss from such infection of Sarcocystosis in slaughtered bovines.

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### **EFFECT OF GUTTING AND FILLETING ON KEEPING QUALITY OF ROHU (*LABEO ROHITA*) AT REFRIGERATED TEMPERATURE ( $4 \pm 10\text{C}$ )**

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In the present study, periodical microbial (TPC), chemical (pH, total volatile basic nitrogen, peroxide value, free fatty acid), and sensory characteristics were analysed in gutted and filleted Rohu (*Labeo rohita*) samples stored under refrigeration. Initially during storage, there were no significant differences ( $P > 0.05$ ) evident in TPC between the gutted and whole samples. No significant differences ( $P > 0.05$ ) were observed on day 0 among the three samples. Among the three samples, no significant differences ( $P > 0.05$ ) in TVB-N values were detected on day 0. There was a gradual increase in peroxide value ( $P < 0.05$ ) during the storage period as was detected in whole, gutted and filleted samples. The storage life of whole, gutted and filleted Rohu sample stored under refrigeration ( $4 \pm 1^\circ\text{C}$ ) was found to be 12, 10 and 8 days respectively.

## **PREVALENCE OF FASCIOLIASIS IN DISTRICT SRINAGAR OF KASHMIR VALLEY**

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The present study was aimed to determine the prevalence of Fascioliasis in herbivorous, in Srinagar district, Kashmir valley by analysing the one year (2001-2002) recorded data of Disease-Investigation Centre (CVH). Out of total 693 faecal samples examined during the period, 361 samples were detected positive for Liverflukes. Highest prevalence were recorded in May and lowest in January, i.e. highest in wet season in comparison to dry season. Females and young animals were detected more prone to Fascioliasis.

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## **EARLY POSTNATAL GROWTH OF THE SPLEEN OF KHAKI CAMPBELL DUCK (ANAS PLATYRHYNCHOS)**

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The present study was conducted on the spleen of Khaki Campbell ducks from day old to 4th week of age. It was located over the dorsal surface of the right lobe of liver, in relation to the junction of the proventriculus and the gizzard. The correlation between the weights of spleen and body weight in different age groups was highly significant. It was enclosed within a thin fibrous capsule. There was predominancy of collagen and elastic fibers. Sparse trabeculae entered in to the splenic tissue. The splenic tissue consisted of a network of reticular cells and fibers and was arranged into red pulps and was scattered within the white pulps. Red pulp of the spleen was formed by venous sinuses and anastomosing cord of reticular cells, macrophages, lymphocytes and blood cells. Occasionally plasma cells were also seen within this region from the 2nd week of age onwards. Remarkable development of the periellipsoidal lymphoid tissue was noticed from 3rd week onward.

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## **MANAGEMENT OF LIVESTOCK IN NATURAL DISASTER : PERCEPTIONS AND EXPECTATIONS OF “PHAILIN” AFFECTED FARMERS**

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The present study was conducted in Khalikote block of Ganjam district of Odisha to record the perception of livestock farmers regarding the management of their livestock by different organizations at time of cyclone “Phailin” which affected the state during October, 2013. Data revealed that it was the ARD department, Government of Odisha who was the only organization to take actions in this regard but the farmers were interested to get many fold assistance from both the Government as well as NGOs.

**GROSS BIOMETRICAL STUDY ON GROWTH PARAMETERS  
IN LAYER GROWER CHICKEN FED WITH MAGACAL AND  
HERBAL-C SUPPLEMENTED DIET**

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The present study was designed to assess some growth attributes like body weight, sternal weight, chest girth, shank length and vertebral column length of layer grower chicken fed with MagaCal and Herbal-C supplemented diet. The beneficial effect of MagaCal and Herbal-C supplemented diet either singly or in combination at the recommended dosage was reflected conspicuously in the increased body weight and sternal weight gain of the treated birds as compared to those of the control ones (A1T4 and A2T4 groups). The maximum weight was noticed in the groups (A1T3 and A2T3) fed on both MagaCal and Herbal-C, followed by those supplemented with only Herbal-C (A1T2 and A2T2 group) and those receiving only MagaCal (A1T1 and A2T1 groups). In consistent with this trend in body weight and sternal weight increase, the other growth attributes like chest girth, shank length and vertebral column length of the treated birds showed almost similar variation in comparison to the control birds. Consequently, the values for these growth parameters were maximum in A1T3 and A2T3 groups, moderate in A1T2 and A2T2 groups, less in A1T1 and A2T1 groups, and the least in A1T4 and A2T4 (control) groups.