# Punjab ENVIS Centre

## NEWSLETTER

Vol. 11, No. 2, 2013-14






# INDIGENOUS FARM ANIMALS OF PUNJAB

Environmental Information System
Collect Collate Disseminate
INDIA

PSCST
PUNJAB STATE COUNCIL FOR SCIENCE & TECHNOLOGY

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# EDITORIAL

As per one of the estimates of United Nations, by 2050 hundred percent increase in food production will be required in order to meet the nutritional demands of world. Additional challenges like, ever-increasing malnourished population in developing world and climate change would certainly be the major issues in next 30-40 years of time. Unfortunately, to overcome these and many other unforeseen challenges we would be having virtually the same land resources as of today. Our country having world's highest population growth is also going to face uphill tasks to fulfill the nutritional demand. Animal agriculture as it is today would continue to be the major sector in achieving the country's food security. By 2050, like other fields, the livestock sector would also require major changes to meet future demand of food of animal origin, particularly when the competition for use of land resources is expected to be intensified between human and livestock.

India, a pride possessor of the world's most varied forms of biodiversity has more than 144 breeds of various livestock species which is unparalleled worldwide. The results of the 18$^{th}$ Livestock Census 2007, derived from village level count, has placed the total livestock population at 529.7 millions. These farm animal genetic resources have remained the backbone of Indian agrarian economy through the production of milk, meat, eggs, fibers and manure. More recently, modern breeders have applied the science of genetics and breeding to produce more efficient, high producing farm animals mainly through crossbreeding with exotic germplasm. In the process, the populations and genetic base of several valuable indigenous/native breeds and strains of animals are shrinking rapidly.

As a well known fact, the indigenous or native breeds have been found to have certain unique characters like specific milk protein type which is more beneficial for human health than milk from exotic and cross breed cattle. The native breeds have following merits over exotic breeds viz: better disease resistance than exotic breeds, more suitability for low input management system, better survival in local environment and suitability for draught work. In addition, existence of superior indigenous breeds can provide valuable research inputs for developing superior breeds. It is therefore important that the local/indigenous breeds of cattle are conserved, developed and proliferated.

The Punjab state , rich in domesticated animal diversity, includes three breeds each of buffaloes (Murrah, Murrah Graded & Nilli – Ravi), cows (Sahiwal & Hariana) and sheep (Lohi, Nali & Desi), two breeds of goat (Beetal/Amritsari & Desi, Beetal), and five breeds of horse (Bhutia, Thorough Bred (for stud farm), Grey Sindhi, Marwari, Kithawari). Out of these Murrah and Nili Ravi breeds of buffaloes, Hariana and Sahiwal breeds of cow, Lohi, Nali & Desi breed of sheep and Beetal breed of goat are native to Punjab state. We need to consider the conservation of these native farm animal genetic resources as insurance that our generation and future generations have a healthy and adequate food supply. Realising the growing concern that urgent action is needed on the issue of conservation of farm animal genetic resources, this newsletter has been developed on 'Indigenous Farm/Domestic Animals in Punjab'

This article provides an insight to our readers on indigenous domesticated farm animals breeds in India and with special focus on indigenous breeds in Punjab. The article also touches upon importance of conservation and various initiatives being taken up at state level.

**Editors**

**ENVIS Centre, PSCST is a partner of Regional Centre of Expertise (RCE) Chandigarh. RCE Network is an initiative of United Nations University – Institute of Advanced Studies, Japan, which focuses on Education for Sustainable Development (ESD). This article on conservation of local indigenous farm animal breeds reinstate PSCST's endeavour for creating awareness and capacity building of all stake holders.**

## INTRODUCTION

A species is defined as indigenous (or native/local) to a given region or ecosystem if its presence in that region is the result of only natural processes, with no human intervention. Every natural organism (as opposed to a domesticated organism) has its own natural range of distribution in which it is regarded as native. Outside native range, a species may be introduced by human activity; it is then referred to as an introduced species within the regions where it was anthropogenically introduced. Further, the animal breeds (Box 1) that have been tamed and made fit for human environment are termed as domestic. Thus, indigenous or native domesticated breeds consist of animals belonging to the particular region and the human settlements are benefited by them.

### Box 1. Categories of domestic animals on the basis of origin

On the basis of utility, domestic animals can be categorized as milk yielding, meat yielding, fibre, hide and skin yielding and drought animals. They can be further grouped in to following three categories on the basis of their origin:

- **Native/indigenous Breeds:** includes some high yielding varieties of Indian milk yielding animals
- **Exotic Breeds** (Imported breeds): includes some of the high yielding varieties that have been imported from abroad and reared widely in India
- **Improved breeds of Native/ indigenous animals:** Certain improved breeds have been developed by making a cross between two desired breeds.

Indigenous domesticated breeds form the backbone of relevant and sustainable livestock production when compared with their exotic counterparts. They are better adapted to survive and reproduce under the region's harsh environments. They often possess valuable traits such as disease tolerance/resistance, high fertility, good maternal qualities, longevity, and adaptability to harsh conditions and poor-quality feeds, all qualities that form the basis for low-input, sustainable agriculture. Indigenous cattle are vital to subsistence and economic development (Jahnke, 1982). In addition, they play an important role in the culture as they are used in various rituals particular to a culture.

The productive indigenous breeds of domestic animals are now subjected to fast genetic degradation and dilution. It is estimated that 15 percent of the world's livestock and poultry breeds are extinct, and another 35 percent are endangered (Geerlings *et al*., 2002). Various factors responsible for the declining genetic diversity of domestic animals are listed in Box 2.

Thus, the decline in genetic diversity under changing environmental and economic climate make conservation needs more urgent. The conservation of indigenous domesticated animal diversity would enable farmers to deal easily with changing environmental conditions and consumer demands.

## INDIAN PERSPECTIVE

India, endowed with varied forms of animal genetic resources, is traditionally considered as an important rearing centre for domesticated animals. The genetic resources of domestic or farm animals in India are represented by a broad spectrum of native breeds of cattle, buffaloes, goats, sheep, swine, equines, camel and poultry.

According to National Bureau of Animal Genetic Resources, the country possesses largest population of cattle and buffaloes and is the second largest for the goat, third for the sheep and seventh for the poultry population in the world. This livestock wealth reflects huge biodiversity with varying number of breeds in each species. India accounts for about 57.3 per cent (www.nbagr.ernet.in) of the world's buffalo population and 14.7 percent of the cattle population.

India has vast resource of livestock and poultry, which play a vital role in improving the socio-economic conditions of rural masses.

## Box 2. Factors responsible for declining genetic diversity of domestic animals

Various factors responsible for declining genetic diversity of domestic animals are:

- **Development results:** Due to commercial interests preference being given to high-input and high-output breeds in developing countries.
- **Specialization:** Emphasis on a single productive trait, e.g. dairying, leading to exclusion of multipurpose animals.
- **Genetic introgression:** Crossbreeding and accidental introgression (movement of a gene from one species into the gene pool of another) leading to loss of indigenous breeds
- **Changing land use pattern:** Conversion of rangelands (land suitable for grazing livestock) and mixed farming systems for agriculture, parks, and industrial use.
- **Environmental change:** With time there are natural climatic changes leading to change in vegetation which further breeds different strains of fauna in that particular habitat.
- **Changes in knowledge:** The idea that "modern/imported is best" has led to the loss of knowledge about traditional livestock husbandry practices and to the erosion of domestic animal diversity.
- **Technical change:** Development of new technologies have lead to rapid replacement of indigenous breeds e.g. animal draught & transport by mechanization leading to permanent change of farming systems and artificial insemination & embryo transfer.
- **Economic change:** To earn more economic benefits the traditional livestock production systems have declined.
- **Intensification:** Multipurpose local species and breeds replaced by those with higher milk, meat, egg production (including cross-breeds and pure-bred exotics) are being intensified.
- **Cross-breeding:** Predominance of superior breeds from a few selected breeds in widespread cross-breeding programmes leading to loss of features expressed by specialized breeds.
- **Storage:** Failure of cryopreservation equipment (used to freeze semen, ova and embryos) or lack of refrigerant, inadequate maintenance of frozen semen from breeds those are not in demand.
- **Conflicts:** Wars and other forms of socio-political instability leading to livestock owners moving their stock out of their usual area, thus increasing the possibility of mixing with other breeds thereby potentially losing a location-specific breed.
- **Natural Disasters:** Floods, drought and epizootics(an outbreak of disease affecting many animals of one kind at the same time) preferentially affect remote or isolated human and livestock populations.

***Source: Intermediate Technology, 1996 & www.fao.org***

As per 18th Livestock 2007 Census, total livestock population (Table 1) has been estimated to be 530 million and poultry population 649 million. Data shows that there had been growth of 9.22 percent in livestock population and 3.22 percent increase in poultry population. Further, annual increase was 2.33 percent and 7.33 percent in livestock and poultry, respectively.

The data in Table 1 shows that from 17th Livestock Census to 18th Livestock Census i.e. 2003-2007, data indicates that cattle and buffalo population has increased @1.5 per cent per annum each while sheep increased @3 percent, goat @2.5 percent and chicken @8.6 percent per annum. Population of horses, camel, donkey, mule, pig, mithun and duck has decreased. The livestock and poultry wealth of India includes 199.08 million cattle, 105.34 million buffalo, 71.56 million sheep, 140.54 million goat, 11.13 million pigs, 0.44 million donkey, 0.61 million horses and ponies, 0.14 million mules, 0.52 million camel, 0.08 million yak and 0.26 million mithun besides 617.60 million chicken and 27.60 million ducks.

Livestock provides milk, eggs, meat as nutritious food, draught power for agriculture, wool, fibre, manure and domestic fuel, hides & skin. In 2012-13, the animal husbandry sector contributed 133 million tonne milk, 63.02 billion eggs, 44.7 million kg wool, and 5.5 million tonnes of meat. Milk is the main output of livestock sector

**Table 1. Livestock Population in India**

(In Millions Nos.)

| Speeles | Livestock Census | | Growth Rate (%) | |
|---|---|---|---|---|
| | 2003 | 2007 | 2007 Owner 2003 | Annual |
| Cattle | 185.2 | 199.1 | 7.50 | 1.83 |
| Buffalo | 97.9 | 105.32 | 7.58 | 1.84 |
| Yaks | 0.1 | 0.1 | 27.95 | 6.35 |
| Mithuns | 0.3 | 0.3 | -4.92 | -1.25 |
| **Total Bovines** | **283.4** | **304.8** | **7.52** | **1.83** |
| Sheep | 51.5 | 71.5 | 15.41 | 3.87 |
| Goat | 124.4 | 140.5 | 13.01 | 3.10 |
| Pigs | 13.5 | 11.1 | -17.65 | -4.74 |
| Other Animals | 2.2 | 1.7 | -22-93 | -5.30 |
| **Total Livestock** | **485.0** | **529.7** | **9.22** | **2.23** |
| Poultry | 489.0 | 648.9 | 32.69 | 7.33 |

***Source: Department of Animal Husbandary, Dairing & Fisheries, GoI, 2011.***

**Table 2. Livestock Breeds in India**

| Group | Indigenous Breeds (Number) |
|---|---|
| Cattle | 37 |
| Buffalo | 13 |
| Sheep | 39 |
| Goat | 23 |
| Pig | 2 |
| Camel | 8 |
| Horse | 6 |
| Donkey | 1 |
| Poultry | 18 |
| **Total** | **144** |

***Source: NBAGR, 2012***

accounting around two third (67percent) of the total output by livestock sector. Meat and egg share was 17.5 percent and 3.6 percent of the value of livestock output (Department of Animal Husbandary, Dairing & Fisheries, 2012).

Over the years, animal husbandry has strengthened in India with widespread introduction of exotic breeds. There is a perceptible increase in the population of limited specialized breeds which has led to the reduction in total genetic variability and population size of many local breeds. The majority (85 percent) of the domestic livestock in India is reared under low input production systems. As per National Bureau of Animal Genetic Resources, Kanrnal (NBAGR), the total number of indigenous livestock and poultry (Table 2) breeds in the country is 144, which includes 37 for cattle, 13 for buffalo, 23 for goat, 39 for sheep, 6 for horses & ponies, 8 for camel, 2 for pig, 1 for donkey and 15 for chicken (NBAGR, 2012). Of the indigenous breeds, 14 of cattle, 3 of buffalo, 9 of sheep, 4 of goat and almost all breeds of horse and poultry are showing declining trends in the country. Estimates indicate that 50 percent of indigenous goat, 30 percent of sheep, 20 percent of cattle and almost all poultry breeds are threatened (MoEF, 2009).

In India, few indigenous breeds of cattle and buffalo, which are relatively well-known and economically important, are maintained at state-owned organized farms where information on growth, production & reproduction parameters is recorded and maintained. For other species, there are very few farms where performance parameters are recorded regularly. Systematic surveys, database and programmes need to be undertaken on conservation and genetic enhancement w.r.t. domesticated animal genetic diversity. India's diversity in buffaloes and cows is multifarious with 13 buffalo breeds (Table 3). Murrah is a distinguished milch breed with Jaffarabadi and Nili-Ravi close-by (Sadana, 2010).

## Table 3. Indian breeds of Buffaloes and its distribution

| Name of Breed | Distribution in India |
|---|---|
| Murrah | Punjab, Haryana & Uttar Pradesh |
| Nili-ravi | Punjab |
| Surti | Gujarat |
| Jaffarabadi | Gujarat |
| Mehasana | Gujarat |
| Bhadawari | Uttar Pradesh & adjoining Madhya Pradhesh |
| Tarai | Uttar Pradesh |
| Nagpuri | South Maharashtra |
| Pandharpuri | North Karnataka and West A.P. |
| Kalahandi | Hilly region of Andhra Pradesh |
| Sambalpur | Orissa |
| Toda south | Nilgiri Hills |
| Kanara | West coast in Kerala |

*Source: http:www.buffalopedia.cirb.res.in*

Murrah

Surti

Jaffarabadi

Nagpuri

Pandharpuri

Bhadawari

*Photos source: http://www.buffalopedia.cirb.res.in*

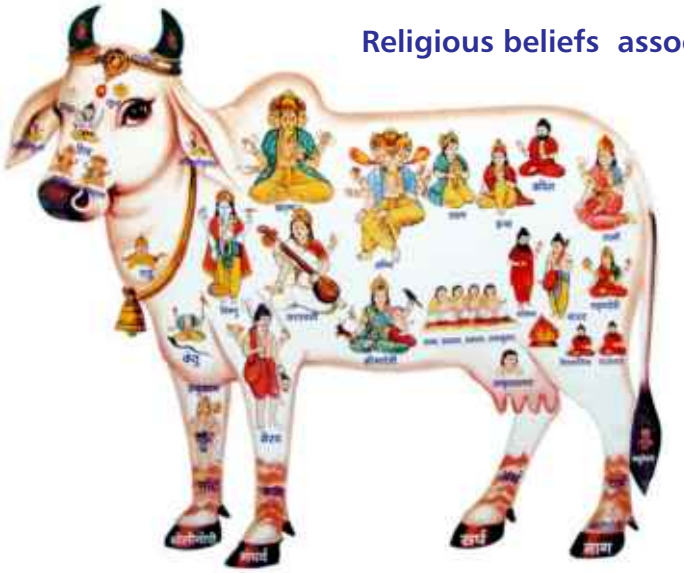
Indian cattle breeds are crucial part of the country's ecological heritage. The cattle are venerated in Hindu and Sikh society and occupy a postition of special religious significance. Statues of zebu (Box 3) bulls or Nandi can be seen at the entrance to many temples. Most Indian cattle are considered nondescript and represent an admixture of different "village breeds". These animals are called Desi and are well-adapted to a harsh climate, long migrations and a poor supply of feed and water. As human population pressures have increased, there has been a move towards more efficient and structured breeding programmes and this in turn has led to the characterisation and development of distinct breed groups. There are about thirty seven recognized breeds of cattle in the country, in addition to large number of non-descript cattle. However, 10 breeds are the important milk yielding breeds with Red Sindhi, Sahiwal and Gir breeds widely distributed in the various states of the country (Table 4). The main significance of rearing indigenous cow breeds & its comparison with exotic breeds is given in Box 4.

Sheep is the second largest species reared for wool, meat, milk & hide having eighteen important breeds and Nali breed is extensively found within the country. However, Rajasthan has maximum type of breeds namely, Chokla, Nial, Marwari, Jaisalmeri, Pugul, Malpura and Nali (Table 5).

In the country goats are used for milk, meat and hide. Apart from a number of local non descriptive breeds that are scattered throughout the country, there are twenty important breeds of goats (Table 6). Further, the horse has fast movement, great stamina and endurance with its body well suited for ride, load pulling, mountain climbing and forest travelling. They learn fast and can be maintained easily in various climatic conditions and the indigenous breeds of horses/ponies include Marwari, Kathiawari, Manipuri, Spiti, Bhutia and Zanskari (http://nrce.nic.in/) as mentioned in Table 7.

Though India processes 20 well defined native chicken breeds (Table 8), their proportion in the backyard chicken is very small. Most of the indigenous chicken breeds like Kadaknath and Nicobari fowls are common in tribal areas of their origin. Among native breeds, Aseel has special place in Indian culture. These birds are specially bred for cock fighting. It is known for heavy body size, long shanks, endurance and aggressive behaviour. It has also contributed in evolution of major broiler breeds. It is important to note that the native chicken breeds were never selected for higher production and are limited to certain pockets only. Thus, native breeds are not contributing much in backyard poultry production (http://www.agritech.tnau.ac.in).

**Religious beliefs associated with Cow in India**



*Source: www.harekrsna.de*


*Source: www.agritech.tnau.ac.in*

## Box 3. Zebu Cattle

Zebu is a term which is synonymous with "*Bos indicus*," the scientific name for the humped cattle of the world. Zebu cattle originated in India, and is thought to be the world's oldest domesticated cattle. Wild Asian aurochs (the ancestor of domestic cattle, is an extinct type of large wild cattle that inhabited Europe, Asia and North Africa) disappeared during the time of the Indus Valley Civilization from its range in the Indus basin and other parts of the Indian subcontinent possibly due to inter-breeding with domestic zebu and resultant fragmentation of wild populations due to loss of habitat. They were introduced into the United States as early as 1849. The Zebu Association was formed in the US in 1946. The first importations of Zebu were bullocks for draft purposes, but they later interbred with other cattle breeds and produced hybrids which were bigger, faster growing and thriftier. These cattle often did better than the cattle which the colonists had brought from Europe.

There are some 75 known breeds of zebu, split about evenly between African breeds and South Asian ones. The major zebu cattle breeds of the world include Gir, Guzerat, Kankrej, Indo-Brazilian, Brahman, Nelore, Ongole, Sahiwal, Red Sindhi, Butana, Kenana, Boran, Baggara, Tharparkar, Kangeyam, Chinese Southern Yellow, Philippine native, Kedah - Kelantan, and Local Indian Dairy (LID). Other breeds of zebu are quite local, like the Hariana of Haryana and eastern Punjab or the Rath of Alwar in eastern Rajasthan. In India it is considered as the contemporary representation of Nandi, the sacred bull of Shiva.

The zebu is one of the smallest species of cattle in the world with adult zebus reaching a height of just over a meter. The zebu is also about half the weight of a typical cow as the zebu is considered to have less meat Zebu-type cattle are much more adapted to thrive and with stand very hot and humid or arid environments.

The small size of the zebu, thick & loose skin (containing sweat pores that enable the animal to perspire and cool off more easily) and large ears are such adaptations that these animals have against extreme environments. It has a large flap of skin below its lower jaw, known as a dewlap. The thick hide is also a natural defense against various insects and external parasites that are found in such hot environments. The large hump over a Zebu bull's shoulders really has no purpose other than as a way to show off his masculinity to other bulls and cows. It is comprised of fat tissue, just like in a camel's hump.

**Zebu Cattle**

***Source: http://cowsrgreat.webs.com***

**Table 4. Indian Breeds of Cows and its distribution**

| Name of Breed | Distribution in India |
|---|---|
| Gir | Gujrat, Rajasthan & Maharastra |
| Red Sindhi | Andhra Pradesh & in all parts of India |
| Sahiwal | Haryana, Punjab, Uttar Pradesh, Bihar & M.P. |
| Kankrej | Gujrat |
| Tharparkar | Rajasthan |
| Mewati | Rajasthan |
| Ongole | Andhra Pradesh |
| Hariana | Gujrat, Rajasthan |
| Hallikar | Karnataka |
| Kangayam | Tamil Nadu |
| Umblacherry | Tamil Nadu |
| AmritMahal | Karnataka |
| Deoni | North Western & Western parts of Andhra Pradesh |

*Source: www.agritech.tnau.ac.in*

Red Sindhi

Gir

Tharparker

Kankrej

Kangayam

Amrit Mahal

*Photos source : http://www.agritech.tnau.ac.in*

## Box 4. Comparison between Indigenous and Exotic Cattle

### Indigenous Breed

1) The Hump is found in native cow and bulls. This is useful and necessary for animals which cary load on their back.
2) The Dewlap is developed below the neck in large extent. Due to this their heart resistance capacity is increased.
3) The oxen of these cows are very active and useful in all respect for agriculture activities. they cover the distance of 2 km in 18.2 minutes. It means there horse-power is more.
4) The maintenance expenditure per indigenous cow is Rs. 4517.73.
5) The mid cycle estrus during menstrual period is less. The spill heart or estrus is found 0.7 per cent in these cows.
6) The indigenous breed is less susceptible to the diseases like Thanaila, Parjivi, Harpies, etc. bout 21.4 percent. The frequence of getting sick is 21.4 percent less than the cross breed. Thilairia disease is found 9.88 percent in these cows.
7) The native cows grow in Indian atmosphere and tolerate the temperature variation from 0.4 to 48-50°C without affecting their productivity. It does not affect their milk production capacity at all.
8) The maintenance of these cows is less expensive and no separate arrangement for their dwelling is required. They can live nearby owner's house or in a small cottage. Under abnormal living conditions their productivity decreases 5 to 10 percent.
9) Due to the disease resistance power the native cows are not suffered frequently from small diseases and the financial losses are less. In rural area the survival rate is 80-90 percent. The globulin level is more in native cows which helps to maintain their health. The creatinin level is less.
10) The milk of native cows is more nutritious. Some active ingredients are found in their milk which are responsible to fight against any disease.
11) The calves of native cows when grown up become best bullocks which are used in agricultural work. They remain strong and active in any atmosphere/climate.

### Exotic Breed

1) The back of exotic breed is straight. Due to this they are nor useful to carry the load.
2) The development is not to that extent and their hear resistance power in less.
3) The bulls of exotic breed are lazy and not useful for agricultural work. They cross 2 km in 19.4 minutes and their H.P. is also less.
4) The maintenance expenditure per exotic cow is Rs. 7437.57.
5) Mid cycle estrus is more, the split heat is found about 1.33 percent nearly double.
6) This breed is more susceptible to these diseases about 72.7 percent.
7) This breed can live in cold climate only and can not tolerate hot climate. In hot climate their productivity is reduced. The chances of their illness are more due to which even death can occur.
8) The maintenance expenditure is much more. They require separate living arrangement in cold climate. In abnormal living condition their productivity decreases to 70.80 percent.
9) The exotic breed cows are susceptible to even small diseases as they do not have adequate resistance power. Even they die due to small diseases. In rural areas their survival rate is 40-50 percent. The Globulin level in exotic breed is inadequate. The creatinine level is more.
10) The milk yield is more in exotic cows. Due to this their milk is less nutritious and water percentage is more in their milk as compared to native cows.
11) The calves of exotic breeds are lazy and their working capacity is less. The grown up bullocks are also not very much useful in agricultural and other work.

*Refer Box 5 for Body Parts of Cow

***Source: http://govigyan.com***

**Table 5. Indian breeds of Sheep and its distribution**

| Name of Breed | Distribution in India |
|---|---|
| Chokla | Rajasthan |
| Nial | Haryana & Rajasthan |
| Marwari | Rajasthan & Gujarat |
| Magra | Rajasthan |
| Jaisalmeri | Rajasthan |
| Pugul | Rajasthan |
| Malpura | Rajasthan |
| Potanwadi | Uttar Pradesh & Delhi |
| Muzaffararanagar | Haryana |
| Hissardale | Himachal Pradesh & Haryana |
| Nellore | Andhra Pradesh |
| Nali | Rajasthan, Haryana & some parts of Punjab. |
| Bellary, Hassan, Mandya | Karnataka |
| Mecheri, Kalikarsal, Vembur | Tamil Nadu |
| Neelagiri | Tamil Nadu |

*Source: www.nios.ac.in, www.fao.org & www.arritech.tnau.ac.in*

Vembur

Neelagiri

Mercheri

Keezhakaraisal

Nellore

Mandya

*Photo source: www.agritech.tnau.ac.in*

## Table 6. Indian breeds of Goat and its distribution

| Breeds | Distribution |
|---|---|
| Changra or Changthangi Gaddi | Himachal Pradesh |
| Pashmina | Himachal Pradesh, Ladakh, Lahul and Spiti valley of Jammu and Kashmir. |
| Chegu | Mountainous ranges of Spiti, Yaksar & Kashmir region of J&K. |
| Jamunapari | Uttar Pradesh, Madhya Pradesh and in the tract lying between Jamuna and Chambal river. |
| Beetal | Gurdaspur, Firozpur and Amritsar districts of Punjab. |
| Barbari | Delhi, UP & Haryana. |
| Marwari, Mehsana and Zalwadi | Rajasthan, Gujarat & Madhya Pradesh. |
| Kutchi or Kathiawar | Gujarat and Rajasthan. |
| Berari | Maharastra & Madhya Pradesh |
| Surti | Gujarat |
| Deccani( Osmanabadi) | Osmanabad region of Maharashtra |
| Malabari | Calicut, Cannanore and Mallapuram districts of Kerala |
| Sangamneri | Pune and Ahmednagar districts of Maharashtra |
| Black Bengal | West Bengal |
| Ganjam | Puri district of Orissa, Andhra Pradesh and Madhya Pradesh |
| Assam hilly breed | Khasi, Nagar Lushai hills of Assam. |
| Gohilwadi | Gujarat |
| Konkun Kanyal | Konkan of Maharastra |
| Attappady Black | Palakkad district of Kerala |
| Malabari /Tellicherry | Cutch/Tellicherry of Kerala |
| Kanni-Adu/Pullaiadu /Karapuadu | Tamil Nadu |

*Source: www.nddb.org & www.fao.org*

Jamnapari

Changra or Changthangi

Gaddi

Chegu

Marwari

Barbari

Mehsana

Jamunapuri

*Source: www.agritech.tnau.ac.in*

## Table 7. Indian breeds of Horse and its distribution

| Breed | Distribution |
|---|---|
| Kathiawari or Kaunchi | Rajasthan and Gujrat |
| Marwari or Malvi | Rajasthan |
| Bhutia | Tarai Belt of Himalayan region (Punjab-Bhutan) |
| Manipuri Pony | Eastern Hill Region |
| Sipti Pony | Himachal Pradesh |
| Zanskari | Zaskar region of Ladak in eastern J & K |

*Source: www.nios.ac.in & www.dahd.nic.in*

Kathawari

White Kathawari

Marwari

Manipuri Pony

Spiti

Zanskari

*Photos source: http://houseindian.com*

## Table 8. Indian Poultry breeds & its distribution

| Name of Breed | State |
|---|---|
| **Phulbani** | Orissa |
| **Kalahandi** | Orissa |
| **Dumasil** | Orissa |
| **Vezaguda** | Orissa |
| **Gujuri** | Orissa |
| **Hansli** | Orissa |
| **Harringhata black** | West Bengal |
| **Chittagong** | North Estern states bordering Bangladesh |
| **Tellicherry** | Kerala, Pudicherry |
| **Red Jungle Fowl** | East Arunachal Pradesh, Orissa & Forests of Chattisgarh & foothills of Himalayas |
| **Punjab Brown** | Punjab (Gurdaspur), Harayna( Ambala & Yamunanagar) |
| **Nicobari** | Nicobar Islands |
| **Miri** | Assam |
| **Kalasthi** | Andhra pradesh |
| **Kadaknath** | Tribals in Jhabua & Dhar districts of Western Madhya Pradesh |
| **Ghagus** | Adjoining locations of Karnataka & Andhra Pradesh |
| **Daothigir** | Assam |
| **Danki** | Parts of Andhra Pradesh bordering Orissa |
| **Busra** | Maharashtra & Gujarat |
| **Aseel** | most parts of Andhra Pradesh |
| **Ankleshwar** | Gujarat |
| **Kashmir favorolla** | Kashmir |

*Source : http://sapplpp.org*

Phulbani

Kalahandi

Dumasil

Vezaguda

Gujuri

Hansli

Harringhata Black

Chittagong

*Source : http://sapplpp.org*

## INDIGENOUS DOMESTIC BREEDS OF PUNJAB

Livestock production and agriculture are intrinsically linked, each being dependent on the other, and both crucial for overall food security. Punjab an agricultural state has vast resource of livestock and poultry, which play a vital role in improving the socio-economic conditions of rural masses. Livestock has contributed 7.2 percent to the Gross State Domestic Product (GSDP) at constant (2004-05) prices in 2011-12. Livestock can also be an effective instrument to cope with the problem of low income related to agriculture by supplementing the same and providing employment to small and marginal farmers and land-less agricultural labourers.

The existing breeds of main domestic animals consist of four breeds of buffaloes, three of cow, four of sheep, three of goat and five breeds of horse within the state (Table 9).

The pure desi/ indegenous breeds of cattle are not available in most districts except the Sahiwal and Hariana as it has been cross bred with Jersey and Holstein breeds (exotic) in an effort to increase the fat & milk content respectively. The Sahiwal breed has been reported to be threatened. However, a survey conducted by scientists at the NBAGR, Karnal, have succeeded in identifying a new migratory cattle breed, "Belahi" (also known as Desi, Morni, and Gujari ) in Mohali and Roop Nagar districts of Punjab. These animals are reared by pastoralist Gujjar communities from Haryana and Punjab. Belahi animals possess unique physical charactistics. They are under migration for about 8-9 months a year and can sustain themselves on pastures along the roadside forests/fields in the twin states. The animals of this breed are of medium stature and the cows of this breed have good milk potential under low input system while the bullocks are being used for ploughing the fields in hilly regions in Himachal Pradesh and parts of Punjab (NBAGR, 2011).

Three out of eight native breeds of buffaloes reported from India are found to exist in Punjab. These include Murrah , Nili Ravi and Desi breed. Desi breed has been bred with Murrah to develop Murrah graded (found in Ropar, Hoshiarpur, Nawanshehar, Fatehgarh Sahib, Ludhiana, Jalandhar & Kapurthala. Districts. Three local breeds of sheep namely Lohi, Nali- Ravi and Desi are found in the state. Lohi has been reported as a threatened breed (MoEF, 1998). However, the best carpet wool is still obtained from Desi Breed which is one of the reasons of its propagation in the state. Two local breeds of goat namely Desi & Beetal/ Amritsari breeds are being bred in the state. Beetal breed of goat and Bhutia breed of horse are native being reared within the state In

**Table 9. Indigenous and threatened Domesticated Breeds in Punjab**

| Domestic Animal | Existing Breeds | Indigenous Breeds | Threatened breeds |
|---|---|---|---|
| Cattle Breeds | Hariana, Sahiwal, Jersey, Holstein | Hariana, Sahiwal | Sahiwal* |
| Buffalo | Nili Ravi, Murrah, Murrah Graded | Nili Ravi, Murrah, | Nili Ravi |
| Sheep | Lohi, Nali, Desi, Cross bred* | Lohi, Nali, Desi, | Lohi |
| Goat | Desi, Beetal | Beetal | Beetal |
| Horse | Bhutia, Thorough Bred (for stud farm)*, Grey Sindhi*, Marwari, Kithiwari* | Bhutia | Bhutia, Grey Sindhi* |
| Poultry | White leg horn, Desi | Punjab brown | — |

***Source: MoEF, 1998 and *Department of Animal Husbandary, Govt. of Punjab, 2007 as cited in Tiwana et al., 2007.***

addition to Barhari breed which is native to Uttar Pradesh. In addition, according to Department of Animal Husbandary, 2 breeds of pigs (Desi and cross-bred), 5 breed of horse and 2 breeds of Poultry (White leg horn and Desi) are also being reared in the state. The Punjab Brown breed of Poultry is the indegenous breed but White leghorn enjoys a better market and is reared in large poultry farms due to its high meat content and larger egg size. The Desi breed is usually reared in rural areas basically due to the local belief that the eggs of this breed have medicinal properties (Source: Jerath, *et al*., 2002). The summarized information on indigenous domestic breeds of Punjab is discussed in the succeeding text.

**A) Buffalo breeds**

**1) Murrah Breed**

**Native tract:** The Murrah breed is most versatile and has exhibited comparable performance throughout the country irrespective of the agro-ecological conditions. The Murrah among all breeds of buffalo has, therefore, been recognized as the most appropriate breed. It is the most important breed of buffaloes occupying southern part of Haryana, Punjab and Delhi, where pure breed animals are found. In Punjab, the breed is native of Mansa, Bathinda, Sangrur, Patiala, Faridkot, Moga and Amritsar districts.

**Characteristics:** The breed characteristics are massive wedge shaped body, with white markings on face, neck & head comparatively long, udder well developed, broad hips and fore - & hind-quarters drooping. The colour is usually jet black. Long reaching tail upto fetlock joint (I.C.A.R, 1990, Banerjee, 1996, Sharma and Tantia, 1999) with black or white switch upto (maximum) 8.0 inches. Horns are short, tight, turning backward and upward & finally spirally curving inward and look different from other breeds of buffaloes. As the age advances the horns get loosened slightly but spiral curves increases. The average body weight of males is 550 Kg and the females, 450-Kg. First calving age is usually 3 years and inter-calving period is 400 to 500 days.

**Production Traits:** The Murrah buffalo is good milk producer, not only in India but also probably in the world. Murrah buffaloes are one of the most efficient milk producers with 1360 to 2270 kg per lactation. Animals under good management conditions have even yielded around 3,175 kg in a single lactation and 19.1 kg a day. Otherwise average milk yield of these animals is 6.8 kg per day (http//:pragatipedia.in). The breed is used for the grading up of inferior local buffaloes in the south and elsewhere in the country. The bulls are extensively used to upgrade the non-descript buffalo stock (Banerjee, 1996, Singh and Rana, 1991).

**2) Nili- Ravi Breed**

**Native tract:** The home tract of Nili - Ravi buffaloes range in the belt between the Sutluj and Ravi rivers of the Punjab Province. Actually Nili & Ravi were two different breeds long ago, but with passage of time and with intensive

**BUFFALO BREEDS**

**Murrah**

**Nili-Ravi**

crossbreeding, the two breeds have converted into single breed named Nili-Ravi. The breed is found in almost all the districts, with major concentration in Amritsar, Gurdaspur and Ferozepur districts of Indian Punjab. The estimated population of Nili-Ravi type of buffaloes in their breeding tract (Ferozepur, Amritsar and Gurudaspur districts of Punjab) is around 0.2 million (Vij and Tantia, 2005). As per 2007 Census, Ferozepur district, which was otherwise considered as a breeding tract of Nili-Ravi have more than 50 percent buffaloes of Murrah type. Ferozepur and Amritsar districts have only 10.8 percent and 8.7 percent of Nili-Ravi type buffaloes respectively. On the contrary, Gurudaspur district not known earlier as major breeding tract of Nili-Ravi, has the highest proportion 14 percent of Nili-Ravi type buffaloes (www.buffalopedia.cirb.res.in).

**Distinguished Characters**: Animals has black colour with massive appearance and has white markings (at forehead, face, nostrils/ muzzle, legs with shank region and switch of tail) on the body and is also known as "Panj Kaliyani" in local language. The head is elongate, bulging at top and depressed between eyes. The muzzle is fine. The frame is medium sized. The peculiarity of the breed is the wall eyes. The horns are small and coiled tightly. The neck is long, thin and fine. The navel is very small. The udder is well developed. Their average weight at maturity is 800 kg for the male and 525 kg for the female. The inter-calving period is 500 to 550 days. The age at first calving is 45 to 50 months. The bullocks are good for heavy trotting work.

**Production**: These animals are good milkers with an average of 1586 - 1955 kg milk in lactation and fat percentage ranges from 6.5 percent to 7.0 percent. Military farms maintain herds of these animals along with Murrah. The milk yield is 1,500 to 1,850 kg per lactation.

### B) Cow breeds

It includes two breeds of cows, Hariana and Sahiwal. Only one Desi breed of cow has been reported by the Animal Husbandry Department in the state. However, the pure Desi breed is now not available in most of the districts (except the breed 'Sahiwal' which is still reported in certain areas of districts Bathinda, Mansa, and Moga) as it has been cross bred with Jersey and Holstein breeds (exotic) in an effort to increase the fat and milk content respectively (Tiwana *et el.*, 2007). The indigenous breeds of cows in Punjab are discussed in the following text.

### 1) Hariana

**Native tract**: Hariana breed originally belongs to Montgomery district of Pakistan and now pure animals of it are found in the border areas of Punjab, Haryana, Rajasthan and Uttar Pradesh.

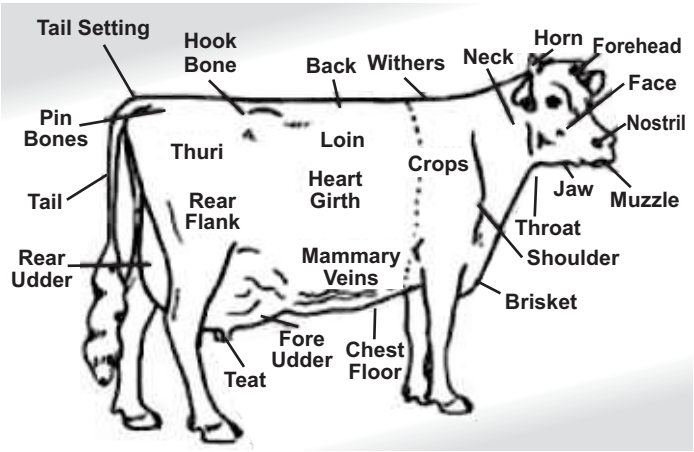
**Characteristics**: It is most popular dual-purpose breed of the Indo-Gangetic Plains. This breed is well suited to fast road work and is being able to pull load and cover 20 miles a day. Females are kept primarily for breeding of oxen and also milked. These animals are white or light grey in colour having small heads with long, narrow faces from which emerge short and somewhat horizontal horns, which grow longer and curve

**COW BREED : Hariana**

**Male**

**Female**

**Box 5. Body Parts of Cow**




upwards and inwards in bullocks. The barrel is long and compact. Legs are sturdy and long with well-shaped hoofs. The tail is thin, short and tapering towards the end with a black switch reaching just below the hocks. The udder is well developed with prominent teats (Box 5). These cattle are generally white or light grey **(**www.dahd.nic.in**).**

**Production**: The cows are fairly good milkers. The breed yield 1400 kg of milk per lactation but high producing animals will produce over 2300 kg in a single lactation. However, good specimens of cows yield up to 1500 kg of milk per lactation.

**2) Sahiwal**

**Native tract**: **Sahiwal** is a breed of Zebu cattle (Box 3) which primarily is used in dairy production. It originally belongs to Montgomery district of Pakistan and now pure animals of this breed are found in the border areas of Punjab, Haryana, Rajasthan and Uttar Pradesh. However, among the indigenous cattle breeds, Sahiwal is the most prominent dairy breed which originated in the dry Punjab region lying along the Indo-Pakistan border.

**Characteristics**: Sahiwal cattle are considered the "best zebu milch breed in the tropics" (Maule, 1990) and are well known for their disease resistance, heat tolerance and adequate performance at low quality roughages (Nay and Hayman, 1956 & Dahlin *et al*.,1998). It has deep body, loose skin (Syn. Lola), short legs, loose stumpy horns not exceeding 3 inches, broad head. Body colour varies from reddish greyish brown to pale red. It has whitish ring around eyes, massive hump (esp. in males), voluminous dewlap, and long whip like tail almost reaching the ground with prominent navel flap.

**Production:** It is the best cattle breed of subcontinent. In a lactation period of 305 days, average milk yield of this breed has been noted between 2725 to 3175 kg. Certain high producers of this breed produce as much as 4535 kg of milk in a lactation. Bullocks of this breed are lethargic but are useful in slow work. Pedigree Sahiwal bulls are in great demand in other tropical countries for breeding purposes. Due to their heat tolerance and high milk production they have been exported to other Asian countries as well as Africa and the Caribbean. Sahiwal oxen are generally docile and lethargic, making them more useful for slow work (Rahway & Mason, 1996 and Australian Meat & Livestock Corporation, 1989).

**C) Sheep Breeds**

There are three breeds of sheep, Lohi, Nali and Desi. Lohi has been reported as a threatened

**COW BREED : Sahiwal**

**Male**

**Female**

breed (MoEF, 1998). However, the best carpet wool is still obtained from Desi breed which is one of the reasons of its propagation in the state.

**1) Lohi Breed**

**Native tract**: Lohi is also known as Parkanni and it was once the pride of India, now occurs in Ganganagar, Churu & Jhunjhunu districts of Rajasthan and southern parts of Hissar & Rohtak districts of Haryana.

**Lohi ewe (Female)**

**Characteristics**: The body is medium-sized white and the head is usually tan, black or brown with pink skin. The very large lop ears, which are usually also tasseled, are the most distinctive feature of the breed. Both sexes are polled. Tail is short to medium in length and thin; Fleece is white, coarse, dense and long-stapled. It is used for its carpet quality wool and meat production. Forehead, legs and belly are covered with wool. The mature animal weighs 65 kg and 45 kg in males and the females, respectively.

**Production**: The average annual wool clip (the total yield of wool shorn during one season from the sheep of a particular region) is 3.0kg of medium wool (39.8m fiber diameter). Average daily milk production from the Lohi ewes is 1.2 liters (http://www.ansi.okstate.edu).

**2) Nali Breed**

**Native tract**: The Nali is a hair sheep native breed of Punjab and also well adapted to the arid and semi-arid regions of Rajasthan & Haryana and is also found in large numbers in Uttar Pradesh.

**Characteristics**: Nali is mainly a wool and meat producing breed. It has good carpet-quality wool with the densest and heaviest fleeces. Fleece is white, coarse, dense and long-stapled. The animal's forehead, belly and legs are covered with wool. They are medium-sized animals with light brown face colour and pink skin. Their ears are medium and tubular and tail is short to medium and thin. The males are horned and the females are naturally hornless. Mature male and female are on an average 34 kg and 24 kg with a height of 65 and 64 inches, respectively.

**Production**: The age at first breeding for ewes is 18 months and for rams it is 12 months; the lambing percentage is 67 and the litter size is mainly single. These animals are not milked. Males not retained for breeding are usually sold between the ages of 6 to 9 months. The annual average fleece weight ranges from 1.5 to 3 kg.

**D) Goat Breeds:** Punjab has one indigenous breed of goat, Beetal/Amritsari, beside one Desi breed of goat. Following are the features of Beetal breed:

**Nali ewe (Female)**

**Nali ram (Male)**

**Beetal / Amritsari**

**Beetal Doe**

**Beetal Buck**

**Beetal**

**Native tract**: Beetal, a dual purpose goat is well distributed throughout Punjab and Haryana. Beetal is the native breed of Gurdaspur, Amritsar and Ferozepur districts of Punjab (www.fao. org). The goat was the first wild herbivore to be domesticated and could have triggered livestock domestication. India is bestowed with 23 different recognized breeds distributed throughout the country.

**Characteristics:** This breed is large in size but slightly smaller than Jamunapari (Largest breed) and is good dairy type animal. The coat colour is variable but 90 percent of animals are black and approximately 10 percent having brown, tan colour with white spots of different size. It has convex face line i.e. Roman nose and long, flat ears which are curled at base and drooping in nature. Horns in both sexes, are medium sized (11-13 cm), thick, flat and carried horizontally with a single twist directed backward and upward. Tail is small (20 cm) and thin which is generally straight and slightly curled up. Males sometime posses marked beard which is absent in females. The udder is large, well developed with large (14 cm) conical teats.

The skin of these goats is considered to be of high quality because of larger size and yield finest leather such as Velour, Suede and Chamois for manufacturing clothes, shoes and gloves. Beetal goat has been widely used for improvement of local goats throughout the country. These goats are also adapted to stall feeding and thus preferred for intensive goat farming.

**Production**: Beetal is a good dairy type animal whose yield varies from 150-190 kg during the lactation period of 170-180 days. Average peak milk yield is about 2.0 kg but some may produce up to 4.0 kg or more. This breed is also known for higher growth rate and twinning (50-60 percent). So, this is also suitable for meat production whose marketable weight ranges between 25-35 kg.

There is immediate need for conserving the Beetal breed as it is superior to Jamunapari with regards to prolificacy, adaptability to various agro-climatic conditions and stall feeding (http:// www.kvafsu.kar.nic.in).

**E) Horse Breeds**

Bhutia is the indigenous breed of Punjab. The Bhutia Pony is found in Nepal, Bhutan and the

**Bhutia Pony breed of Horse**

Sikkim and Darjeeling regions of India also (Fig.11.). This breed is also known as Bhote Ghoda, Bhutan Pony, Bhutani, Bhutua Pony. They are a riding and pack animal, similar to the Tibetan Pony but less broad (Rahway and Mason, 1996). They are most often white/gray in color. Due to a lack of any regimented breeding programs and poor nutrition, these animals tend to be small and not as robust as breeds in lush areas.

**F) Poultry Breeds :** Punjab Brown is the only indigenous breed of Poultry in Punjab. It has the following features:

**Punjab Brown**

**Native Tract :** Found in rural areas of Gurdaspur in Punjab, and in Ambala and Yamunanagar in Haryana.

**Punjab Brown Male & Female**

**Characteristics:** Average flock size is nine. Plumage colour is mostly brown and the pattern is usually solid but is sometimes spotted or striped. Males, in particular, have black spots/stripes on their neck, wings and tail. The comb is red, of single type and erect in position. The average weight of cocks and hens is 2.15±0.94 and 1.57±0.04 kg respectively. Hens start laying eggs at the age of about five to six months (www.sapplpp.org).

**Production:** A multi-purpose breed, yielding good quality meat and eggs. The annual egg production is 60 - 80.

## CURRENT STATUS OF INDEGENOUS DOMESTIC BREEDS IN PUNJAB

According to the latest 18th Livestock Census, 2007, Punjab contributes 0.50 percent cows, 4.74 percent buffaloes, 0.29 percent sheep, 0.20 percent goats, 4.9 percent horse and 0.23 percent pigs towards the total livestock population within the country. However, the poultry population contributes 2.91 percent to the country's total poultry population. In numerical terms total livestock population stands 7.3 million and total poultry population including ducks stand out as 18. 8 million. In the state, the total livestock population has decreased by 14 percent in the past decade i.e from 9.8 million in 1997 to 7.3 million in 2007. The number of buffloes has decreased by 68 percent, cows by 10 percent & sheep by 34 percent. However, the population of goat have increased by 1.4 percent & horses/ponies by 0.5 percent. The poultry population has increased by 24 percent during this period. (Table 10).

The Census 2007 shows that cow breeds in punjab have 76 percent of female cows with

**Table 10. Livestock & Poultry ( in '000) in Punjab**

| Year | Buffaloes | Cattle | Sheep | Goat | Horses & Ponies | Total Livestock | Poultry |
|---|---|---|---|---|---|---|---|
| 1977 | 3312 | 4110 | 498 | 722 | 76 | 8996 | 5539 |
| 1990 | 2832 | 5578 | 508 | 537 | 33 | 9678 | 15276 |
| 1997 | 2639 | 6171 | 436 | 414 | 34 | 9858 | 11456 |
| 2003 | 2038 | 5994 | 220 | 278 | 29 | 8607 | 10534 |
| 2007 | 1761 | 5001 | 211 | 286 | 30 | 7331 | 18899 |

***Source: Director, Department of Animal Husbandry, Punjab as cited in Statistical Abstract, Punjab, 2012***

**Table 11: Male and female breeds of Cow and Buffalo in Punjab (District-wise)**

| | Cow Breeds | | | Buffalo Breeds | | |
|---|---|---|---|---|---|---|
| District | Male | Female | Total | Male | Female | Total |
| Gurdaspur | 20943 | 122110 | 143053 | 27758 | 53636 | 281394 |
| Amritsar | 9658 | 92136 | 101794 | 26788 | 271219 | 298007 |
| Tarn Taran | 13503 | 61030 | 74533 | 36148 | 254957 | 291105 |
| Kapurthala | 6693 | 46581 | 53274 | 14070 | 126877 | 140947 |
| Jalandhar | 15385 | 105145 | 120530 | 24013 | 24952 | 248965 |
| Nawan Shahar | 8493 | 32504 | 40997 | 11118 | 19953 | 131071 |
| Hoshiarpur | 31251 | 95252 | 126503 | 26538 | 06407 | 232945 |
| Ropar | 10479 | 25216 | 35695 | 8919 | 45975 | 154894 |
| Mohali | 10068 | 17385 | 27453 | 10732 | 37074 | 147806 |
| Ludhiana | 41226 | 112250 | 153476 | 34379 | 70712 | 505091 |
| Ferozepur | 34377 | 149646 | 184023 | 45383 | 46724 | 392107 |
| Faridkot | 11185 | 36015 | 47200 | 8261 | 17707 | 125968 |
| Moga | 21426 | 70535 | 91961 | 26876 | 217651 | 244527 |
| Muktsar | 21794 | 74742 | 96136 | 13442 | 133828 | 147270 |
| Bathinda | 36558 | 68914 | 105472 | 33842 | 240186 | 274028 |
| Mansa | 23475 | 32199 | 55674 | 26501 | 206596 | 233097 |
| Patiala | 23864 | 69031 | 92895 | 33801 | 303555 | 337356 |
| Fatehgarh Sahib | 10016 | 32991 | 43007 | 10096 | 137505 | 147601 |
| Sangrur | 54381 | 68514 | 122895 | 45744 | 440589 | 486333 |
| Barnala | 18851 | 25500 | 44351 | 18221 | 163039 | 181260 |
| **Total** | **423626** | **1337296** | **1760922** | **482630** | **4519142** | **5001772** |

***Source: 18th Livestock Census , 2007 as cited on http://www.husbandrypunjab.org***

maximum number in Ferozepur district whereas maximum number of bulls in Sangrur district. The buffalo breeds in the state have 90 percent females with maximum number in Ludhiana district and maximum number of bulls in Sangrur district.

The Census survey, 2007, reports that the State has 28 percent of Desi breeds of cow with maximum number (0.6 million) in Sangrur district followed by Ferozepur district (Table 12). Desi breeds consist of Sahiwal , Hariana and other breeds. An estimated population of 0.1 million Sahiwal cows and 0.2 million Hariana cows are present in the state. Sahiwal breed is maximum in Sangrur district i.e. 0.009 million. Hariana cow is maximum in Sangrur district i.e. 0.04 million followed by Bathinda district. The other Desi cow breeds are 0.13 million in different districts, being 7.5 percent of the total cattle breeds in the state. Among the desi breeds maximum number of Sahiwal breed of cows are present in Ferozepur district and maximum number of Hariana is present in Sangur district. However, more than 0.004 million Sahiwal cows are present in Sangrur, Gurdaspur, Ludhiana & Bathinda districts. Further, lowest number of Sahiwal cows have been reported in Nawanshahr district. Sahiwal and Hariana cows are absent in Hoshiapur and Ropar districts (Table 12).

The buffalo being the major milk producer of the state has a population of about 5 million buffalo breeds (Murrah, Nilli-Ravi, Murrah graded and others). As per 18th Census, the estimated population of Nili-Ravi type of buffaloes in their breeding tract (Ferozepur, Amritsar and Gurudaspur districts of Punjab) is around 0.11 million.

## COW BREEDS : EXOTIC

Jersey

Holstein Friesian

*Photo source : http://dahd.nic.in*

### Table 12. Cow Breeds in Punjab (District wise)

| | CROSS BRED | | | | | DESI | | | |
|---|---|---|---|---|---|---|---|---|---|
| District | Exotic | Jersey | Holstein Friesian | Others | Total | Sahiwal | Hariana | Other | Total |
| Gurdaspur | 0 | 38391 | 54741 | 23090 | 116222 | 4121 | 1159 | 21551 | 26831 |
| Amritsar | 0 | 18868 | 54763 | 14279 | 87910 | 2582 | 0 | 11302 | 13884 |
| Tarn Taran | 0 | 14629 | 48633 | 6386 | 69648 | 1644 | 0 | 3241 | 4885 |
| Kapurthala | 205 | 7485 | 41776 | 2326 | 51792 | 661 | 171 | 650 | 1482 |
| Jalandhar | 94 | 7993 | 99065 | 3757 | 110909 | 1895 | 11 | 7715 | 9621 |
| NawanShahr | 0 | 1504 | 36147 | 667 | 38318 | 24 | 525 | 2128 | 2677 |
| Hoshiarpur | 0 | 30883 | 69611 | 0 | 100494 | 0 | 0 | 26009 | 26009 |
| Ropar | | 0 | 0 | 0 | | 0 | 0 | 0 | 0 |
| Mohali | 506 | 3712 | 11729 | 1544 | 17491 | 449 | 4331 | 5182 | 9962 |
| Ludhiana | 327 | 4647 | 93982 | 17091 | 116047 | 4644 | 18504 | 14281 | 37429 |
| Ferozepur | 2500 | 7207 | 70829 | 39637 | 120173 | 9914 | 10585 | 43359 | 63858 |
| Faridkot | 581 | 1627 | 25048 | 4290 | 31546 | 1813 | 8489 | 5352 | 15654 |
| Moga | 580 | 3110 | 56452 | 5310 | 65452 | 2113 | 9476 | 14920 | 26509 |
| Muktsar | 94 | 4096 | 54720 | 3331 | 62241 | 5494 | 18925 | 9476 | 33895 |
| Bathinda | 1005 | 2593 | 48292 | 2575 | 54465 | 4356 | 34029 | 12622 | 51007 |
| Mansa | 630 | 882 | 15138 | 1790 | 18440 | 2083 | 25239 | 9912 | 37234 |
| Patiala | 1766 | 5141 | 48043 | 7325 | 62275 | 1671 | 14889 | 14060 | 30620 |
| Fatehgarh Sahib | 0 | 1817 | 32875 | 3360 | 38052 | 182 | 3854 | 919 | 4955 |
| Sangrur | 1122 | 1394 | 44147 | 2994 | 49657 | 4636 | 48156 | 20446 | 73238 |
| Barnala | 196 | 176 | 18013 | 1173 | 19558 | 282 | 19394 | 5248 | 24924 |

*Source : 18th Livestock Census, 2007 as cited on http://www.husbandrypunjab.org*

The Ferozepur district has maximum population of Nili-Ravi i.e. 0.05 million. Gurdaspur, Sangrur Taran tarn & Hoshiarpur districts have about 0.03 million of its population. The perusal of the Census data reveals that the Murrah Bufalo breed constitutes 16 percent of the total cow breeds present in the state. Maximum number cow is present in Ludhiana district i.e. about 0.1 million followed by Sangrur and Patiala districts i.e. 0.1 million and 0.09 million. Data reports absence of Murrah type Buffalo in Nawanshar and Ropar (Table 13).

**Table 13. Buffalo Breeds in Punjab (District wise)**

| District | Murrah | Nilli Ravi | Graded | Others | Total |
|---|---|---|---|---|---|
| Gurdaspur | 45325 | 37706 | 185332 | 13031 | 281394 |
| Amritsar | 45004 | 22498 | 220155 | 10350 | 298007 |
| Tarn Taran | 29339 | 28278 | 218963 | 14525 | 291105 |
| Kapurthala | 9698 | 6950 | 102924 | 21375 | 140947 |
| Jalandhar | 39501 | 15889 | 191843 | 1732 | 248965 |
| NawanShahr | 0 | 0 | 131071 | 0 | 131071 |
| Hoshiarpur | 23162 | 29240 | 180543 | 0 | 232945 |
| Ropar | 0 | 0 | 0 | 0 | 0 |
| Mohali | 27885 | 11858 | 100103 | 7960 | 147806 |
| Ludhiana | 124173 | 13980 | 362018 | 4920 | 505091 |
| Ferozepur | 72981 | 56376 | 246357 | 16393 | 392107 |
| Faridkot | 49316 | 5505 | 68241 | 2906 | 125968 |
| Moga | 21928 | 4998 | 208847 | 8754 | 244527 |
| Muktsar | 39086 | 8680 | 98546 | 2958 | 149270 |
| Bathinda | 10531 | 11437 | 157017 | 4043 | 183028 |
| Mansa | 52624 | 3915 | 173428 | 3130 | 233097 |
| Patiala | 93260 | 23819 | 199063 | 21214 | 337356 |
| Fatehgarh Sahib | 27734 | 5643 | 112858 | 1366 | 147601 |
| Sangrur | 108839 | 34910 | 297990 | 44594 | 486333 |
| Barnala | 24289 | 3719 | 154394 | 0 | 182402 |

***Source : 18th Livestock Census, 2007 as cited on http://www.husbandrypunjab.org***

As per latest livestock Census, Beetal goat is 0.06 million in Punjab state which is 22 percent of the total population within the country as shown in Table 14. Beetal goat has been reported in 11 districts in the state however, about 0.10 to 0.11 million is present in Amritsar, Gurdaspur & Jalandhar districts (www.sapplpp.org).

The indigenous sheep breed Lohi and Nali type of breeds within the state are only 185 in number. However, 2007 survey shows an increase of 5.28 percent increase in its population since 2003. Further, Census reports 0.003 million and .001 million Bhutia Horses /Ponies, respectively in the state (http://horseindian.com).

## CONSERVATION INITIATIVES IN PUNJAB

India is losing its wealth of indigenous genetic resources in domesticated animals. Lack of capacity or limited advancement in breeding strategies in many regions has prevented farmers, locals and indigenous communities to fully realize the potential of their locally adapted breeds and the potential to optimize the use of all available production environments. For the conservation of indigenous domestic breeds, there is need to reorient towards conserving the indigenous diversity rather than replacing diversity with uniformity. Considering the importance of recognized indigenous breeds in the National economy, Government has undertaken special steps like National Project for Cattle and Buffalo Breeding has focus on development and conservation of indigenous breeds. In addition to this, strengthening of field AI network, semen stations, establishment of private AI workers and organization of fertility camps etc have also lead to development of indigenous breeds (Department of Animal Husbandary, Dairing & Fisheries, 2012).

**Table 14. Sheep, Goat & Horse Breeds in Punjab (District wise)**

| | Sheep | | | Goat | | | Horses & Ponnies | | |
|---|---|---|---|---|---|---|---|---|---|
| District | Male | Female | Total | Male | Female | Total | Male | Female | Total |
| Gurdaspur | 1409 | 2916 | **4325** | 3119 | 7522 | **10611** | 1935 | 1834 | **3769** |
| Amritsar | 2258 | 5925 | 8183 | 2962 | 8303 | 11265 | 1539 | 934 | 2473 |
| Tarn Taran | 3102 | 8890 | 11992 | 4333 | 11307 | 15640 | 811 | 632 | 1443 |
| Kapurthala | 60 | 237 | 297 | 1036 | 2971 | 4007 | 356 | 366 | 722 |
| Jalandhar | 654 | 1798 | | | | | | | |
| NawanShahr | 0 | 1504 | 36147 | 667 | 38318 | 24 | 525 | 2128 | 2677 |
| Hoshiarpur | 0 | 30883 | 69611 | 0 | 100494 | 0 | 0 | 26009 | 26009 |
| Ropar | | 0 | 0 | 0 | | 0 | 0 | 0 | 0 |
| Mohali | 506 | 3712 | 11729 | 1544 | 17491 | 449 | 4331 | 5182 | 9962 |
| Ludhiana | 327 | 4647 | 93982 | 17091 | 116047 | 4644 | 18504 | 14281 | 37429 |
| Ferozepur | 2500 | 7207 | 70829 | 39637 | 120173 | 9914 | 10585 | 43359 | 63858 |
| Faridkot | 581 | 1627 | 25048 | 4290 | 31546 | 1813 | 8489 | 5352 | 15654 |
| Moga | 580 | 3110 | 56452 | 5310 | 65452 | 2113 | 9476 | 14920 | 26509 |
| Muktsar | 94 | 4096 | 54720 | 3331 | 62241 | 5494 | 18925 | 9476 | 33895 |
| Bathinda | 1005 | 2593 | 48292 | 2575 | 54465 | 4356 | 34029 | 12622 | 51007 |
| Mansa | 630 | 882 | 15138 | 1790 | 18440 | 2083 | 25239 | 9912 | 37234 |
| Patiala | 1766 | 5141 | 48043 | 7325 | 62275 | 1671 | 14889 | 14060 | 30620 |
| Fatehgarh Sahib | 0 | 1817 | 32875 | 3360 | 38052 | 182 | 3854 | 919 | 4955 |
| Sangrur | 1122 | 1394 | 44147 | 2994 | 49657 | 4636 | 48156 | 20446 | 73238 |
| Barnala | 196 | 176 | 18013 | 1173 | 19558 | 282 | 19394 | 5248 | 24924 |

***Source : 18th Livestock Census, 2007 as cited on http://www.husbandrypunjab.org***

In Punjab, Department of Animal Husbandry is functioning and is supplementing efforts in the development & management of livestock. The state is implementing (amongst the 28 states in the country & U.T.) the National Project for Cattle and Buffalo Breeding (NPCBB), a major programme launched in October 2000 for development of indigenous breeds on priority basis.The Department has allocated two research projects to Guru Angad Dev Veterinary and Animal Sciences University (GADVASU) for conservation of indigenous breeds of Punjab namely:

i) Conservation and improvement of Sahiwal cattle to Department of Animal Breeding and Genetics

ii) Conservation and improvement of Beetal goat under stall-fed conditions to Department of Livestock Production Management.

The Department is also promoting the indigenous breeds by providing subsidies like it is giving for Beetal goat (25 percent) and promoting for propagation of Sahiwal cattle. With a view to improve the genetic potential of the livestock breeds through scientific breeding and to provide efficient and effective health cover to the livestock of the State, the Punjab government has chalked out an extensive work plan across the state under National Dairy Plan (2010-2017) to strengthen and upgrade the Nabha and Ropar semen banks. The adequate steps have been taken by the government to accelerate genetic progress, the proportion of milch animals (Sahiwal & Nili ravi) are bred through Artificial Insemination (AI) to raise it substantially. Besides,

expanding the AI network the production of quality disease free semen doses of the required breeds in adequate number is being ensured. The department is also ensuring proper health cover to the animals in the state. For providing specialized multi-disciplinary services for diagnosis and treatment of complicated diseases of animals, well equipped Polyclinics are functioning.

Further as per Department of Animal Husbandry (Personal Communication), the Sahiwal breed of cow is being protected and conserved by two major sects Vishav Namdhari Sangat at Bhaini Sahib (Box 6), Ludhiana and Divya Jyoti Jagrati Sansthan (Divine Light Awakening Society) an (NGO), Nur Mahal, Jalandhar (Box 7).

### Box 6. Conservation of Sahiwal Cattle breed by Vishav Namdhari Sangat, Sri Bhaini Sahib in Ludhiana

Vishav Namdhari Sangat members belong to Namdhari Community sect who played an active role in the freedom of the country are well known for the protection of cows. The seeds of Indian non-cooperation and Swadeshi movements were laid by Namdhari movement and They attacked kine (cow) slaughter houses at many parts of Punjab during British rule.

Presently, Vishav Namdhari Sangat (Regd) is a society registered under Societies Registration Act, and is responsible for the management of the affairs of their headquarter situated at Sri Bhaini Sahib in Ludhiana, Punjab. One of their ethics is to protect cows and all other animals from slaughter and do not castrate bulls. They are conserving Sahiwal cattle breed in their Gaushala.

**Sahiwal at Sri Baini Sahib**

The Gaushala was established in 1857 and since then they maintain Sahiwal cows. They are maintaining proper statistical data of these cows since 1950.They presently maintain 250 animals of pure Sahiwal breed. All the expenses of Gaushala are borne by Vishav Namdhari Sangat. No dairy product is sold in the market from Gaushala. They define breed based on phenotypic characters such as colour of breed; dewlap, size of hump etc. Good breeding bulls are selected on the basis of breed character of cow; milk yield of cow; phenotypical characters of bull; performance of dam and sire; growth rate of bull calves. The animals are fed with berseem, maize, oats, Dalia (wheat porridge) and they are stall fed.

Milk Production from the farm on an average is 6 quintals daily. The milk is not sold but is consumed by the Namdharis of the sangathan. They sell male calves on an average of 20-25 to Animal Husbandry Department at a cost of Rs.1800-2000/- per calf. But the rest are supplied/ donated to other Gaushala free of cost. Dung is used as manure in field for organic farming. Annually 300 trolleys of dung are applied in filed. Because of importance of Sahiwal milk, milk products was known by their Gurus Sri Satguru Ram Singhji. Their Gurus never consumed milk of any other breed except Sahiwal, Haryana and Tharperkar, They believe that rearing of cow is equal to service to God.

***Source : www.sapplpp.org***

## Box 7. Conservation of Sahiwal by Divya Jyoti Jagrati Sansthan at Nurpur, Jalandhar, Punjab



Divya Jyoti Jagrati Sansthan is an international non-profit organization which is engaged in multi-facet social and spiritual initiatives and programs to benefit millions of people. Under one of the social initiatives, Bovine Conservatory: 'Kamdhenu Gaushala' the Sansthan is promoting Desi Cows (Indigenous Cattle or Zebu Cattles) which are positioned as number one cows among all world's cattle breeds.

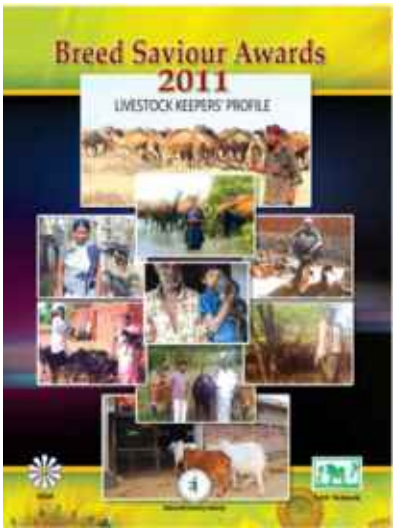
The Sansthan has in its bovine conservatory, situated at Nurmahal, District Jalandhar. Here 5 native breeds of Indian cows are being conserved namely, Sahiwal (the Punjab region native breed), Gir (Gujarat native breed), Rathi (Rajasthan), Tharparkar (Rajasthan) and Kankrej (Gujarat). All these five breeds give more quantity of milk than other Indian breeds. There are about 150 Sahiwal cows being reared at their conservatory.



***Source : www.djjs.org***

Article 8 (i) of Convention on Biological Diversity (CBD) recognizes indigenous knowledge and it also proposes incentives for communities under Access and Benefit Sharing regime of CBD for conservation of genetic diversity. In India, National Biodiversity Authority (NBA) has taken a step in this direction by recognizing and encouraging the contributions of local communities in management of indigenous breeds through the 'Breed Saviour Awards'. Since 2009, Breed Saviour Award are given by NBA in association with Sustainable. Agriculture and Environment Voluntary Action (SEVA), a Tamil Nadu based non Profitable organization and Local Livestock for Empowerment of rural people Network (LIFE Network), which is an international network of non-government organizations and individuals who are concerned about the future

of local livestock breeds at national level pastoralists livestock keepers and association.




For "Breed Saviour Award 2011", Vishav Namdhari Sangat, Punjab was selected among 20 awardees from country on 10th January 2012 at workshop on Community Conservation of Local Livestock Breeds at Chennai. The Vishav Namdhari Sangat, Punjab was recipient of this prestigious award for their exemplary working for conserving 'Sahiwal breed', which is an indigenous cow breed of Punjab (Box 6).

## CHALLENGES & WAY FORWARD

It is quite challenging to predict the future scenario in terms of resources owing to environmental, social and economical uncertainties. In livestock sector, the change in production scenario and preferences for highly specialized breeds would result in imminent loss of genetic diversity in near future. It would be a major challenge to maintain the animal genetic diversity which is necessary for sustainable development, improvement and adaptation to changing climatic conditions and production systems.

The use of traditional breeding being largely practiced today in developing countries like India is likely to become redundant and replaced by newer approaches like genomic selection and modern reproductive technologies of faster multiplication, to enhance production, both in terms of quality and quantity. But to be globally competitive, superior traits of invaluable genetic resources of our animals like heat tolerance, production under lowinput system, ability to resist tropical diseases, medicinal and therapeutic values their products/byproducts need to be explored, exploited and finally conserved for the benefit of future generations. Therefore, it has become imperative to protect and conserve the indigenous breeds of animals to have sustainable development so as to meet the needs of mankind at present and times in future.

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# NEWS

## TTD's dairy farm to become a research centre for indigenous cows

**National Dairy Research Institute (NDRI - Karnal) has reportedly agreed to provide Sahiwal breed of cows from Punjab and Gir cows of Gujarat to the Tirupati Centre.**

The TTD's Sri Venkateswara Gosamrakshanashala is all set to become a hub for native cows, as it will be used as a one-stop-point to share the rare breeds among similar organisations, besides disseminating information on the need to protect indigenous varieties.

It may be recalled that the ICAR Director-General had recently called on the TTD officials in this direction, while National Dairy Research Institute (NDRI - Karnal) has reportedly agreed to provide Sahiwal breed of cows from Punjab and Gir cows of Gujarat to the Centre.

### Developmental works highlighted

The farm already has a large stable of animals of distinctive high-worth breed, including a 400-strong contingent of Ongole breed of cows. This apart, a senior Minister from Karnataka has also agreed to provide 100 cows to the farm, including the Tharparker and Kankrej varieties.

It is in this backdrop that the announcement by TTD Executive Officer M.G. Gopal to develop the dairy farm as a premier research centre assumes significance.

Mr. Gopal, who took part as the chief guest at the 'Go Pooja' organised as part of Gokulastami at the dairy farm, highlighted the developmental works in progress.

### Prayers offered

He offered prayers to the deity of Sri Venugopala and also offered fruits to a cow, after smearing turmeric and kumkum on its forehead.

The Executive Officer urged people to follow the teachings of Lord Krishna to Arjuna and pass it on to posterity.

"If the people own up the responsibilities on the lines of the teachings in Bhagavad Gita, they are sure to achieve God's grace," was his advice.

He stressed the need to protect cows, considered an embodiment of Gods. Dairy Farm Director K. Haranath Reddy, SVIMS Director B. Vengamma and other officers were present.

***Source: The Hindu, August 29, 2013***

## Peacocks return to sanctuary as farmers cut down on pesticides

Dhani Balbir Singh Dhelu, an open wildlife sanctuary in this village of Abohar district, was one of the few places where peacocks were found in abundance. In the last several years, peacocks and peahens had deserted the place inhabited by the animal and bird lover community of Bishnois.

The extensive farming in the area with intensive usage pesticides in the fields is said to be the cause behind the shrinking population of peacocks. The natural habitat for the bird also shrank as irrigation channels penetrated deep into the belt bordering Rajasthan making dry and barren land fertile, increasing farmland.

But, thanks to the introduction of Bt cotton, which requires fewer sprays of insecticides and

pesticides, peacocks have returned. The community has also tried its best to save the green cover.

But the people still complain about the low number of peafowls as compared to the pre-1980 period when extensive spraying of pesticide in fields started. The process had driven the birds away.

However, the birds may again desert the place as more land is being brought under paddy cultivation. As per the 2011 census, there were 58 peacocks and 59 peahens in the sanctuary.

Their population could also have been more had the state government implemented a proposal of breeding the birds or procuring eggs from other states such as Rajasthan where peacocks are found in good numbers.

Abhimanyu, who lives in the Dhani Baldev Singh, said: "The birds perch up on the rooftop or settle peacefully on the trees around his house. We feed them regularly. We try to avoid spraying pesticides as much as possible."

Sanjeev Godara, Wildlife board member and former sarpanch of Sito Guno village, said the board had decided to bring eggs from Rajasthan to hatch them here in captivity. "We tried increasing the bird population, but the scheme could not produce the desired results," he added.

Chief Wildlife Warden Dhirendra Kumar said breeding birds in captivity was not a healthy trend. "The birds do not develop fully nor do they adjust in the open habitat when released. But, we are trying every possible way to increase their population," he said.

The Wildlife Department is now trying to provide natural habitat to the birds by growing wild vegetation on panchayat land in the sanctuary.

Gurmit Singh, former wildlife warden, said other countries had succeeded in saving and multiplying some of the birds hit by industrialisation and extensive cultivation.

"But due to lack of coordination between various departments and little help from people, the number of birds is dwindling," he added.

***Source: The Tribune, May 5, 2013***

## EVENTS

### 2013 : 2nd International Conference on Biodiversity and Climate Change (ICBCC 2013)

**17th to 18th November 2013**

**Venue:** Abu Dhabi, United Arab Emirates

**Website:** http://www.icbcc.org/

**Contact person:** Mr Issac Lee

**Organized by:** CBEES

### 4th International Conference on Agriculture and Animal Science (CAAS 2013)

**23rd to 24th November 2013**

**Venue:** Phuket, Thailand

**Website:** http://www.cbees.org/caas/

**Contact person:** Ms Sophia Du

**Organized by:** CBEES

### Conference of Natural Resources and Development

**25th to 28th November 2013**

**Venue:** Viña del Mar, Valparaíso, Chile

**Website:** http://confnrd2013.info/

**Contact person:** Daniela Serrano

**Organized by:** Center for Natural Resources and Development + UNEP

### International Conference on Bio-Diversity 2013

**16th to 17th December 2013**

**Venue:** Colombo, Sri Lanka

**Website:** http://futureevents.org/biodiversity

**Contact person:** Prabhath Patabendi

**Organized by:** International Center for Research & Development (ICRD).


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**Published by**
Punjab ENVIS Centre
Punjab State Council for Science & Technology, Chandigarh

**Sponsored by**
Ministry of Environment & Forests, Government of India



**Acknowledgment**

We are thankful to Dr. Harpal Singh Sandhu, Dean and Dr. Chandrahas, Assistant Professor, College of Veterinary Science, Guru Angad Dev Veterinary & Animal Sciences University, Ludhiana for providing information for the development of this article. ENVIS team also owes special thanks of gratitude to Dr. S.K. Saxena, Principal Scientific Officer (Environment) Punjab State Council for Science and Technology for providing inputs during the development of this Newsletter.


## Invitation for Articles

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