



Cow Universe



From the Editor's desk:

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Plain speak: Time to Give Back:

Now the time has come for us to give every thing back to Gou Matha. I hope everybody knows the great story of Shibi. Lets have an Look again into it.

The Gods, wanting to test the compassionate nature of King Shibi, took the form of a hawk and a pigeon. The pigeon chased by the hawk fell on King Shibi's lap seeking his protection. The hawk argued that the pigeon is its food. Shibi offered to compensate with his own flesh. Finally he offered himself to be eaten and the Gods showed him their true form and blessed him.

What a great "samarpane" . In Life if we take anything from others we have to give some thing back to them and that is humanity.

Gou matha is does not offer little but her whole thing to the world. So how big our return offer be? If there one way in which we can pay her back it is "Swyam samarpana".

We are not only utilizing her, but also harassing to get every thing out of her, what a great shame to man. It will be bad if we don't talk a single word in this situation. So Lets start a "Andolana" (revolution) "Save Gou Save the World".

Vande Gou matharam.

(Excerpt from His Holiness Shri Raaghaveshwara Bharathi Swamiji's speech at "Samarpane" held at Kaggalipura on Feb 2008.)

Hail Mother Cow

Cowpathy Part –IV

Products from Cows are useful to man in all its forms. After we elaborately discussed the medicinal properties of Cow's Urine, dung and milk in the first three parts of this series, its time that we draw light upon the two most common products from Cow; Curd and Ghee. Curd and ghee is already a part of staple diet in India. It's only worthwhile that we understand their medicinal value.

Curd is known to cure gastrointestinal ailments by checking and controlling the growth of harmful organism. It also acts as a digestive and nutritive agent. Known as a blood purifier, when taken with sugar it helps in fighting "Pitta" induced disorders and blood related problems. Whey of cow (Buttermilk) is again useful in piles and gastrointestinal disorders. Whey is very low in fat but has a large amount of beneficial bacteria or their breakthrough products in the form of amino acids, peptides, vitamins, minerals etc, which are enrich nutrition value in our daily diet. In India there is a practice of consuming whey after food and known to help in digestion. Use of whey is not limited to human health. It is also used in controlling animal diseases, by improving intestinal microbial balance. Whey is given to neonatal calves to treat diarrhea and in fighting intestinal parasites. In milched buffaloes it enhances production and in bullocks along with concentrate increases their draught power.

Though research has not yet got intensive, there are indications that curd and whey can be used as Probiotics. Probiotics are dietary supplements containing potentially beneficial bacteria or yeasts. According to the currently adopted definition by FAO/WHO, probiotics are: 'Live microorganisms which when administered in adequate amounts confer a health benefit on the host'. The use of Probiotics in animal husbandry will reduce drug use. Also the residues of antibiotics in milk, egg or poultry only leads to several deleterious infections in man. Hence such problems can be reduced by using curd and whey as probiotics.

Scientific research claims a long list of beneficial uses of Cow's Ghee. While traditional wisdom professes that use of ghee can improve memory, voice, intelligence and body's resistance to infections, recent attempts at understanding ghee tells us that they exhibit anticholesteric and immunostimulant activity (Fulzele et al). Ghee is used in combination with other bases and serves as an excellent material for preparation of suppositories.

- A formulation containing cow ghee, honey, vitamins and a non-fat fraction of cow milk is being attempted as micronutrient.
- Cow's ghee does not increase cholesterol and has no bad effect on heart.
- Being a derivative of Curd, it also acts as a blood purifier.
- Promotes healing of wounds.
- Also helps in preventing and controlling paralysis and asthma.
- Improves eye sight.

A Panchgavya Ayurvedic formulation that contains *E.officinalis*, *G.glabra* and cow ghee have been evaluationf or its effect on pentobarbital-induced seizures, maximal electroshock-induced seizures, spontaneous motor activity, rota-rod performance (motor coordination) and antagonism to amphetamine in mice. The formulation also didn't show any neurotoxicity.

An interesting study has revealed that 10gm of cow ghee used in fire sacrifice produces one ton of oxygen. When ghee is burned with rice it produces Etholine oxide, propylene oxide, ethelene oxide and formaldehyde which offer immunity against bacteria (Achliya et al).

Cow ghee also protects human body from ill effects of radioactive waves.

While we come to an end of an informative discussion on the beneficial properties of Panchgavya, it also brings us to another interesting discussion on the institutes that are involved in Panchgavya, the products that are made and methods that can be employed in the promotion of Panchgavya.

The Love-Cow trust, New Delhi propagates and promotes virtues of cow and its traditional place in Indian Culture and economy with the objective to document the scientific and traditional knowledge and encourage research and development in the area of Panchgavya. The trust also runs a quarterly journal titled "The Indian Cow".

Go-Vigyan Anusandhan Kendra in Nagpur is a registered research and development organization working in the field of health, agriculture and cattle protection. The main R&D activities involves formulation and development of medicines from Panchgavya and their clinical trials and animal experimentation; physicochemical and microbiological analysis of Panchgavya and related products; field trials of organic manure made of cow dung and urine; studies on pest repellent activity of products derived from plant and Panchgavya products and other activities related to benefits of Panchgavya.

The Cow Urine Therapy and Research Institute in Indore promotes cow urine as medicine to cure several diseases. The cow urine distillate is sold as "Kamadhenu Ark".

Gau Seva Ayog, Gujarat hopes to improve cow reverence and promote the benefits of Panchgavya.

Kanpur Gaushala society manufactures different products from Panchgavya that includes toothpaste, hair oil, porridge, tonics, fertilizers, insecticides, 'beauty' soap, antidandruff shampoo and incense sticks.

Cow Therapy Society in Pantnagar, UP was established in the year 2003 with an aim of serving the cow and promoting Panchgavya. The society is actively engaged in research and extension activities in the field of Panchgavya. To popularize this scientific endeavor for the benefit of common people, the society has launched an International Journal of Cow Sciences (IJCS) with an aim to publish research workds and technical articles of high standards on cowpathy, Panchgavya and the cow.

Panchgavya can be promoted by several means one of them include educating

farmers on the benefits of different manures/bio-fertilizers, composts, pest-repellants, pesticides and biogas to understand the economic prospects of their own resources and as a long term measure for sustainable and healthy agriculture production and reduced costs. It is high time that centers and established to promote the use of Panchgavya as an alternative source of energy, such as gobar gas. It should also be emphasized as an alternative farming method so as to initiate, undertake and promote research in this field. Attention also needs to be given to promote Panchgavya therapy and there should be a drive for the verification of clinical and medicinal claims made in ancient literature related to health sciences of Panchgavya products. Drug control authorities can include such products in Indian pharmacopeias after thorough examination so that their production and quality may be suitably standardized. There is also a growing need to publish literature, research, books and periodicals, films and documentaries so that it reaches a wide mass quickly and efficiently.

With all the discussion we had in this series it can be inferred that Panchgavya therapy is a new version of ancient science and is definitely a promising formulation for years to come. Educating people on cow and Panchgavya can provide solution to problems of shortage of food grains, fuel and improve health and nutrition. Cow is central to our life and bio diversity and it should remain so.

Due to some technical errors , the article which was published Cowpathy Part –III in [Volume 1 - No.3](#) got republished under the heading of Cowpathy Part IV in [Volume 2- No.1](#) we really apologize for the inconvenience caused -editor

Cow Insight - Ongole Part II

Ongole Cattle Breeding:

Before organized efforts of the colonial rule, the institution of Brahmini Bull system in the ongole area has substantially improved the breed by avoiding inferior breeding and inbreeding. It has been the custom in the area that dedicating a young bull selected by a village committee funded by village rich men or the local diety and the bull being branded at a ceremony either with Sanku, Chakra, Trisul, then becomes common property and Brahmini bull is the property of the village and covers the village herd, this is how a small farmer provided the stud services. The changes in cropping pattern from cereals to commercial crops like chillis, and Tobacco during the 1930's and cotton during 1960's have badly affected the breeds feed resources.

With the introduction and expansion of artificial insemination programs rapidly has resulted in affecting the distribution of breeding bulls under various schemes have been stopped and there is decay in the institution of Brahmini Bull system which primarily supported the breed for centuries. During 1960's introduction of Taurus breeds through aid programs has helped large scale indiscriminate breeding in the valuable Ongole herds. Like all other resources, the livestock wealth should also to be carefully and properly utilized and preserved. Planners in an attempt to improve milk production in Ongole cattle did many mistakes. One major error was the perception that output reflects efficiency, Hence the use of exotics on Ongoles to improve indigenous stock. Output was very often the main criteria for which a breed was imported. Finally after sinking in a lot of money and time, we could learn that genetics is only one and often not the main tool that can ensure greater efficiency of output. Husbandry, survival, health, reproduction efficiency of feed utilization parameters becomes important. In a craze for cross breeding the excellent government herds built up for decades were also not spared by the planners. The saying that breeding policy should depend on animal, existing production potential, anticipated,

goals, environment, man and economic development rather than prejudice, taste and trivial dictates.

Character associated with disease resistance:

- Premunity high.
- Reticulo endothelial system well developed.
- Resistant to eye cancer.
- Through their coating, insulating, secretary characters are more resistant to tick born diseases.
- Zebum secretion is fly repellent.
- Flexible tail tip, having cartilage in place of last 3 or 4 vertebrae helps as a brush to repel vectors.

The effects of climatologically variables on Ongoles are varied. High external heat load due to both radiant and high air temperature exposure depends on degree, and duration. On acute exposure the animal tries to accommodate rather than combat. As a routine the metabolic heat and the catabolic heat produced with in the body also needs to be eliminated. When heat loss mechanism reaches its maximum values the animal resorts to methods of reducing heat production in an effort to achieve homoeothermic. Reduction in calarogenic hormones accompanies decrease in Basal Metabolic rate, voluntary feed intake, muscular and ruminal activity and changes in release of gonadotrophic hormone and thus reduced sexual activity. Ability of animals to maintain core temperature in physiological adaptability and the ability to maintain production/reproduction/growth rates in productive adaptability. These two are often at variance. Thus selection of traits of physiological adaptability is often incompatible with improvement of production and consequently they are undesirable. Mere reproductive opportunism is generally short lived, if the adaptive ness of the organism is not maintained and almost invariably proves self-limiting. This is not the case with the Ongoles. Long range fitness of ongole cattle population depends on adaptation, through the stability, variability and the rate of environmental changes helped through domestication by the farmers as they are

treated as family pets. Selection of Ongoles, which attain homeothermy mostly by heat loss mechanism without resorting to reducing the heat production would be those of choice from economic view point.

Soil pH:

No larger breeds of livestock were ever bred in acid pH soils. The soil pH being 7.2 in tract most favorable for legumes. So it increased muscle protein and skeletal size. Cattle in acid pH soils are small in size and are shade lovers.

Feeding:

The fodder crops, grasses and trees that supported the breed for centuries need to be enlightened. The fodder crops either grain or crops or crop residues available from sorghum, zeamays, crotalaria, macrotylma, vigna, cicer, pennisetum, sataria, oryza, kollaganjeru, fodder trees like acacia, azaridachta and fiscus are also used to shade trees. The fodder grasses that were grown naturally on rivers and rivulets banks, private grazing lands and common grazing lands include andropogan, iseilema, indigofera grasses species has maintained this breed for centuries. After formation of ayacut the Ongole cattle need to go to forest for grazing from June/July and return only after December/January, surviving predation and theft later attending to threshing operations of cereals. The migration of population from rural to urban areas, changes in society and pressure on land working against the interest of Ongole cattle, since they are located specific the available poor, scanty, sparse, and seasonal fodders which are low in protein and high in fiber need to be improved by inter-cultivation of legumes, intercropping, chaffing, treatment by way of extensive use of agro industrial bye products should be extensively used.

Characters associated with self-reliance:

- Enduring and estimable.
- Docile but alert.
- Intelligent and respond well for treatment if handled with love, skill, and care.
- Athletic in nature, with majestic appearance, head high, square walk

and quick step, giving noble but heavy look.

- Try to move in groups to avoid predators.
- Highest ability to self-preserve and longevity is more than 15 years.
- Long bodied with big skeletal size and with ability to gain weight more perceptible after 2 years of age and massive.
- Lack in heart girth due to preponderance of draught type.
- Vitality and Vigor unique in young ones.
- Outstanding Mothering ability.
- Highest combining ability for cross breeding and formation of new breeds.
- Highest rustling ability to walk long distances in search of food and water and to pace with the herds.
- Marked tolerance to direct sunlight and radiation.
- Loose skin, hump, dewlap and other appendages contribute 12% excess surface area per unit weight over Taurus breeds.
- Outward disposition of horns helps defend from predators.
- Have highest coetaneous and lowest respiratory heat loss as such panting is less.
- Have highest multiple ability of adaptation for climate fodder and pathogens.
- Sensitiveness, intelligence and shyness make them more independent and less dependent on man, more energetic and resourceful.
- Reproductive uniqueness, higher reproduction rates and more number of lifetime calves high calf survival rates.
- Calving ease and minimum dystokias, with more birth weight of cattle.

Skin:

The skin covers body and provides protection literally a thermostat for the body. Heat flows from core organs like brain, heart, liver, spleen, intestines, and lungs to surface

of body and from surface it should be sent out to environment through radiation, conduction and convection. Skin contains sebaceous and sweat glands, muscles, roots of hair, fallacies and capillaries. When all nine blacks are present, the whole skin is pigmented and black. The presence of subcutaneous "panniculus carnosus" muscle helps in repelling vectors through twitching. When sweating/respiratory heat loss is 6 in zebus where as it is only 4 in Taurus breeds. Water resorption in kidney and colon is double that of the Taurus. Though skin studies were done in 10 indigenous breeds in India no work was done in Ongoles, but the skin type may lie between type 1 and type 3. Skin being highly vascular more heat is sent out as sensible heat loss or diffusion heat loss. In Ongoles evaporative and sweat contribute much heat loss.

Ongoles cattle skin secretes zebum, which filters ultraviolet rays. Due to high vascular they bleed profusely if punctured and wounds will heal quickly. Being black in color the 15% of solar heat allowed by coat to pass on is at once absorbed by the skin. Our farmers are so intelligent that umbrellas are black in color but in villages they used to stitch white cloth over the black cloth on the analogy of the structure of Ongole cattle i.e. white external coat and black underlying skin. During evolutionary process the body temperature has been increased, at the same time tolerance for that temperature failed to take place in male gametes. This was circumvented through effective thermoregulation mechanism of tests.

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Article extracted from

<http://www.ansi.okstate.edu/breeds/cattle/ongole/>

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NATIVE CATTLE OF INDIA - VERSATILE ASSET FOR MANKIND

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Domestication of native cattle (*Bos indicus*) appears to have taken place around 7000 to 8000 years ago, in the Indus valley region of present Pakistan. The seals from Sivikotada in Gujarat and Kalibanga in Rajasthan in India show images of domestic animals probably reared by Harappans (2000 BC to 1600 BC). Fossils of *Bos acutifrons* have been discovered in Siwaliks, which are regarded as possible wild ancestors of cattle. These findings suggest that domestication of cattle in Indian Subcontinent antedates Europe and North Africa. In Hindu mythology Nandisvara (king among bulls) is venerated as vehicle (Vahana) of Lord Siva. In Hindu temples Nandisvara is seen opposite the Siva Linga. Since Siva is believed as the protector of the universe, his vehicle (Vahana) seems to have shared his responsibility in providing nutritional security by being farmers' friend. During the medieval centuries bull was sculptured in majestic postures and installed in Siva temples as seen in "Chamundesvari" temple in Mysore, "Lepakshi" temple in Andhra Pradesh and Tanjavur in Tamil Nadu. Even today Hindus consider it a meritorious deed to perform "Vrishotsarjana" ceremony in which young and energetic bull is selected and set free for the benefit of the community. The practice of "Brahmini bull system" in Andhra Pradesh (when a well-to-do man dies a good stud bull selected by a special committee is dedicated to the local deity) helped in the development of Ongole (Nellore) breed of cattle. Nobody obstructs its free movements and becomes property of the community and this serves as breeding bull to the cows. Even now cattle herders particularly in parts of Rajasthan, Andhra Pradesh, Karnataka and Tamil Nadu maintain their separate identity and lead a pastoral life. Earlier times they were in-fact the transmitters of culture and commerce along with their cattle wealth (Godhana).

Native cattle biodiversity: A prominent hump, a long face, upright horns, drooping ears, a dewlap and slender legs characterize the indigenous cattle. They

have lower basal metabolic rate, better capacity for heat dissipation through cutaneous evaporation and thus adaptation to tropical heat and resistance to diseases specially the tick-borne diseases than *Taurus* cattle. Majority of crop growing and livestock rearing areas in India are dry land areas with low and medium input production systems which favor conservation of animal genetic diversity while intensive systems of animal agriculture with high input practised in industrialized countries erode genetic diversity. India has contributed richly to the international livestock gene pool and improvement of animal production in the world. Brahman cattle are found in 45 countries while Sahiwal breed is found in 29 countries. Many cattle breeds of Indian origin have made major contribution to the development of composite breeds elsewhere in the world. The cattle in India are broadly categorized into three groups, milch breeds, draught breeds and dual-purpose breeds. There are thirty three breeds of cattle in addition to a large number of non-descript cattle, which are generally small in size and low producing. It is estimated that only about 18 per cent of the total cattle in India belong to well defined breeds. The northern and western region is the home tract for milch breeds like Sahiwal, Tharparkar, Gir and Red Sindhi. Gujarat is the home tract of Kankrej, the heaviest breed of India. The southern region is the home tract of many indigenous breeds including world famous draft breeds like Amrithmahal, Hallikar, Khillari and Kangayam and dual purpose breeds like Ongole, Deoni and Krishnavalley. Besides these, small sized breeds like Punganur, Malnad Gidda and Vechur and other minor varieties like Bargur, Umblacherry, Alambadi are also found in southern India.

Special characteristics of Indigenous cattle: Indigenous breeds are well known for heat tolerance, hardiness and ability to survive and perform even under stressful conditions and low input regimes. Different breeds of indigenous cattle (*Bos indicus*)

were evolved over centuries to suit to different agro ecological situations. The general superiority of indigenous cattle with respect to heat and insect resistance, adoptability to tropical environment, disease resistance is well recognized (Ramesha et al., 2007). Most of the indigenous cattle can withstand and graze even at atmospheric temperatures of 40°C. The extensive area covered by the dewlap, loose body skin, more sweat glands and hair coat play a vital role in its heat tolerance. The Indigenous breeds of cattle generally have more number of bigger, functional, sweat glands per unit area of the skin which helps them to survive under higher temperature. They have highest cutaneous and lowest respiratory heat loss, as such panting is less. Their low level of metabolism also contributes to their ability to withstand for long without food and water, which makes them more suitable for drought prone areas. Indigenous cattle consume food frequently but less at a time, generating less internal heat which makes them more resistant to heat. They can switch its body skin and drive away flies, fleas and mosquitoes. Indigenous cattle possess natural resistance to various insects, as their skin has a dense texture, making it difficult for blood sucking insects to penetrate. They also have a well-developed subcutaneous muscle layer, which enables them to remove insects simply by shaking their coat. The sweat also acts as a repellent to these insects due to its peculiar smell.

Zebu cattle have the ability to convert low protein, high fiber roughage materials into high-grade foodstuffs with the aid of omasal symbionts, so thrive and performs well on inferior fodders. They have the ability to reverse down metabolism during extremes of scarcity but show quick response in the form of better reproductive and productive efficiency when nutrients are plenty. This will be of great use in situations like drought, famine etc. Case study conducted in Gulbarga and Bidar districts of Karnataka during 1999 to 2002 indicated that indigenous cattle are able to conceive after drought, while exotic and crossbreds once

they exposed to lack of feed and water, thereafter they conceive seldom. Zebu cattle are efficient forager and their tight sheath and small teats avoid injuries during grazing. The sloppy rumps in draft breeds make them suitable for quick and hard work. The white or light colored, short, sleek, densely, reflecting and glistening coat in indigenous cattle will not attract vectors and dislodge them. Their pigmented, mellow, loose, thick skin and presence of subcutaneous panniculus carnosus muscle help to repel vectors by twitching. Flexible tail tip helps as a brush to repel vectors. Premunity is high and reticulo endothelial system well developed in zebu cattle. They have highest ability to self-preserve and longevity is more than 15 years, while many animals survive up to 20 years with high reproduction rates and more number of lifetime calves. Many cows have given even 15 calves in their life time. They have outstanding mothering ability. They calve with ease and dystokia is rarely reported. There is a great degree of genetic variation in indigenous breeds with respect to size, productivity, growth rate, reproductive efficiency which can be made use for the improvement of cattle worldwide.

Population trend and present status of native cattle: According to the 17th Livestock Census conducted in 2003, India has 185 million cattle population. Despite low productivity of animals, India is the largest producer of milk in the world. In spite of large number of indigenous breeds, majority of Indian cattle belongs to non-descript type. The cattle population grew by less than 1 percent per year between 1951 and 1997. In India decline in the ratio of human: livestock is sharp, the cattle: human ratio has declined from 430 per thousand in 1961 to 278 per thousand in 1981 and is expected to drop to 20 per thousand by the year 2011. In spite many superior characteristics the local breeds of cattle are disintegrating and degenerating both in quality and quantity due to intensive modern breeding methods. The net result is that a few of the well-established breeds such as Punganur have already become extinct, and breeds like Krishna Valley is fast

approaching the stage of extinction (Ramesha et al., 2000). Excellent draft breeds such as Amrithmahal, Hallikar and Khillari and good milch breeds like Sahiwal, Tharparkar and Red Sindhi have reduced in number as well as in quality. The genetic base of native cattle population for future genetic improvement is threatened due to our reliance only on crossbreeds with Jersey and Holstein-Friesian aimed to improve the milk production. The focus on maximizing immediate financial returns has alarmingly threatened the breeds bred for a variety of domestic purposes. The factors responsible include indiscriminate crossbreeding, loss of grazing land, globalization of economy, catastrophes, conflicts, legal restrictions on marketing of livestock products, invasion of chemical inputs into agriculture, large scale mechanization of agriculture and transport, changing cropping patterns, degradation of forests, shrinking grazing and water resources, state driven afforestation and silvipasture programmes (Ramesha et al., 2000).

Role of Indigenous breeds: Indigenous cattle have the function of savings and insurance besides providing a means of livelihood diversification. Most of the agricultural operations and transportation in rural India still depend to a large extent on animals' power. Out of a total of 81.5 million operational land holdings in India, 72 percent are smallholdings whose owners can hardly afford even a single pair of bullocks. Further, the increasing costs and limited availability of fossil fuels make it impossible to completely dispense with draft animal power for agricultural and rural transportation in the near future. Under these circumstances Indian agriculture will continue to depend upon draught animals for a long time to come. Besides these, the animals also provide dung, which is used for fertilizing the fields as well as fuel in the form of dung cakes in villages. It is reported that fermentation of 75 percent of the animal dung collected would yield an estimated 195 million MW energy and nearly 236 million tones of organic manure would provide

around 35 million tones of nitrogen, more than the existing nitrogen chemical fertilizer manufacturing capacity in India. The cow dung and urine increases the soil fertility and maintain soil structure. Cow urine has a good pest repellent property. In view of this the local animals will continue to contribute substantially to the economy of India and there is a need to make use of their capabilities in an effective manner. Even now, cows also have social and ritual roles in some societies. The medicinal properties of milk, ghee, curd, urine and dung of indigenous cattle are well known in Ayurveda system of medicine.

India is signatory to both Convention on Biological Diversity (CBD) and Trade Related Intellectual Property Rights (TRIPS). Maintenance and protection of remaining livestock breeds is mandated by CBD. This legal instrument emphasizes need for the conservation of agro-biodiversity in the surroundings, essential to support the system. It also emphasizes active involvement of indigenous communities, their knowledge and their active participation in conservation. Globalization in trade and investment through harmonization of national laws, particularly dealing with intellectual property rights in different areas including animal agriculture is one of the major impacts of GATT/WTO (Ramesha et al., 2007). Today, Multinational Corporations want to safeguard their claims to animal breeds with patents. The corporations like PIC and Genus are active in filling patent applications in the field of animal breeding.

The production and market requirements will inevitably be different in the future from what they are today because of likely changes in consumer needs, physical environment etc. Presently we are facing the problem of failure to match the genetic resources to the production environment. The challenge of the millennium is to evolve sustainable farming models for the small and marginal farmers who form the largest chunk of Indian farming community. Farmers have to choose animals which can survive and

perform optimally under the existing agro climatic conditions by utilizing the locally available feed and fodder resources in a sustainable way with least health problems. The importance of zebu cattle is likely grow because of global warming and growing emphasis on sustainable and organic agriculture. Inherited resistance/tolerance to disease and parasites in livestock has always been a valued trait among stockowners. Identification of genes for unique characteristics in local breeds will go a long way not only in the advancement of science and livestock production, but also pave way for patenting of gene sequences for these traits. If proper internationally accepted legal system is developed with respect to use of animal genetic resources, patenting of novel genes will bring about economic benefit to the livestock keepers through benefit sharing (Ramesha et al., 2007). Livestock agriculture is the only way to produce food in many of the world's harshest environments—deserts, steppes and mountains. Locally adapted breeds enable these vast areas to be used in sustainable manner. As we cannot change the nature, it is wise to protect and improve them not only for the benefit of the existing population but also for the future generations.

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