



## WORLD VETERINARY YEAR: THE RENEWED MISSION FOR THE PROFESSION

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The year 2011 is being observed as the World Veterinary Year in recognition of the 250th year of the foundation of the world's first veterinary school (modern system) in Lyon, France, in 1761. The second school was the Alfort veterinary school, near Paris, in 1764. Both schools were established at the initiative of the French veterinarian Claude Bourgelat. FAO, together with the European Union, is one of the principal institutional partners for this year of commemoration organized by the VET 2011 committee, a body that brings together all the national veterinary organizations that have adhered to World Veterinary Year.

The slogan adopted for this year of celebration is "Vet for health". "Vet for food" & "Vet for the planet!" The motto evokes all the important roles that veterinarians in the community. When we get closer, we find that each of the components is dependent on the other two. For example, Good Food and environment are essential elements of good health. Food production would be optimal only if it is from healthy animals grown in good environment. Harmony among man, animal and nature is essential to sustain the planet [we essentially discuss only the biosphere] But principle managing the motto may vary from region to region. Mass production is the system of food production in the west while in India it is production by the masses. The issues that concern the western world and India are different. In the "south" the primary cause of environmental degradation is poverty and under-development whilst in the "North" it is unsustainable life-style and over-development.

### VET FOR FOOD

Food security exists when all people at all times have access to the staple food for a healthy active life. Staple food is the food that is eaten regularly in such quantities as to constitute dominant part of diet. In the Indian sub-continent the staple crops are Rice, Banana, bean, and cow pea, citrus, cucumber, egg plant, mango, mustard, and sugar cane.

Growing awareness on protein need, complimented by the rising cost of food grains and vegetables, has shifted the preference of the consumer in India to animal products like milk, eggs, fish and meat. Food safety is an integral part of food security and can be influenced by production and method of collecting/ harvesting, processing etc.. Method for hazard analysis and identification of critical control points (HACCP) is important. Such methods must be feasible, relevant and affordable to the end user. The cost of safety, disproportionate to the risk involved may not find favour among the community especially the poor. Unfavourable factor is productivity in animal production or processing may tempt adulteration of food. Apart from being a source of protein rich food animals in India ensure a regular income to the poorest and marginalized for whom seasonal labour demand is a major economic handicap (available only for 90-100 days in a year). Measures like 'free bees' or food grains at nominal cost may enhance access but could never enable economic production or empowerment. It is alleged that it tends to reduce the survival skill of the

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low economic strata and makes them lethargic if not irresponsible. Another major handicap of the present 'food for all' policy is that it has at no stage has it considered food or feed of animals as part of food security. This often leads to diversion of food grains to feed animals as subsidized food grains. These food grains are far cheaper than compounded feed or other feed components like oil cakes. The advantage of traditional AH system of "animals not competing with man for food" is often lost sight of in a haste to adopt the western system of animal production 'as such'. The western system where hardly 3% of the population is involved in food production may not be comparable to Indian system where 64-70% of the population is involved. Animal husbandry has the involvement of the poor economic class and their perspective may have to be considered in framing our food policies.

#### VET FOR HEALTH

Apart from providing protein rich food for a healthy living (physical health), livestock in India are a source of indulgence and companionship (mental health) for the community who raise animals in millions of small holdings in their backyards. "Studies show that people of all ages who own pets are more likely to exercise and to be more involved socially. Raised essentially on crop residues and common property resources animal products are close to being organic, which has a higher market. However, since animals in India are reared in close human proximity, it is important to keep animals free from diseases especially the ones transmissible to man.

Frequent trans-global transportation of animals & biologicals (semen, embryo, vaccines etc.) necessitate stringent technical regulations to ward off exotic disease from entering the country. In developed countries the major thrust of livestock production has taken place when most of the contagious and infectious disease had been eradicated by rigorous laws and regulations and by adopting a mass slaughter and burial policy. But, import of animals and transport of biomaterials from across the world has introduced newer diseases to India

Though veterinary public health does not find a mention in the "Food Safety Act" recently enacted by the Parliament, there is scope to include it in the regulations that may get approved soon. Close man animal interaction in built in Indian animal rearing system need be identified and considered in the context of regulation as diseases transmissible from man to animal can be a potential threat to community. Similar risk involved in processing and storing of dried fish, fish meal etc.

A number of emerging diseases of livestock and poultry especially Zoonotic diseases have been introduced, diagnosed and established in India during the last four decades. Studies of Zoonoses generally focus on man, with diseases transmitted from man to animal being discussed less. In India animals are cultural elements essential for life and the rearing system is different from the west where livestock are in organized farms away from human dwelling. Development in those countries began, after STAMPING OUT. So, the measures of food safety of east and west are not comparable. But control of zoonoses has to be pragmatically planned through a synergy among veterinary, plant and medical scientists. For the effective control of rabies, Animal Birth Control (ABC) program need be undertaken as a part and parcel of it

Since zoonotic pathogens are a constant threat and make up nine of **the top 10 germ warfare agents**, a special monitoring system is needed. With the trans-boundary barriers being pulled down (following a new World Trade Order WTO) many diseases of animals including zoonotic ones could be introduced to any country from any country (through man or animals) if public health, veterinary preparedness and bio-safety measures are not effective

#### Mental Health

Ethologists, psychiatrists and psychologists feel that veterinary professionals who are accountable to the community for their decisions,



actions and consequence thereof, will also have to play a role to ensure that animal rights and sustainability are taken care of scientifically (not merely by human perception). For this, one has to address (ie. by monitoring and balancing) the needs and behavior of man, animal and environment, so that a harmony can be maintained.

Here there is an urgent need to reckon the critical control points that inadvertently subject animals to behavioural stress. Management of post duty (post performance) stress in elephants, police dogs or army dogs and frequent isolation of domestic pets are not discussed as commonly as grooming, good food and comfort, within the shelter/room. Working elephants or dogs which are called to perform in the midst of crowd, search, reconnaissance or combat, need the same opportunity for mental relaxation, Comfort and indulgence as the mahout, cop or soldier who handle them during the work. While the owner, handler or mahout hurries to his cubicle or family to relax after a strenuous day's work the elephants/dogs/pets are "dumped" in their chains/ kennels/ pens in isolation, impeding any opportunity for their mental or behavioral relaxation.

### **VET FOR THE PLANET**

As already stated that Harmony among man, animal and nature is essential to sustain the planet. This harmony being among the living beings we may discuss only the biosphere and not the entire planet. BIOSPHERE consists of Atmosphere (a layer of 8Km of air on the earth surface, Lithosphere (solid earth/ land and hydrosphere up to 80,000 meters deep. This is in fact a thin layer of earth where life is observed so far(?). We mentioned that it is a harmony of needs of Man, animal and nature that sustains life. Though hunting and animal rearing were the first vocation of mankind, it is in agriculture and the settled life that man started exploiting nature. The emission of Green House Gases (GHG) as a result of deforestation and / or crop agriculture has already been identified during Kyoto conference. Therefore

it may no more be possible perpetually to ensure a minimum net income by adopting a production system based on higher use or abuse of primary inputs like land, water and energy.

Recently news papers published in front page that India's population is exploding!!!! Population rise is an indication of positive scientific and human development. Over the years, professions have developed specialties and super-specialties, supporting and complementing the generalist professionals and technocrats at grass root level. The system benefitted a large section of the community. Knowledge explosion in science in the past 2-3 decades has created insurmountable information that opened innumerable opportunities for the professional service, science and technology. Libraries crammed with books could benefit from hybrids between science and technology viz. information technology (IT). Digital net work have developed search engines that sort and supply knowledge around the world at the click of a mouse. Synergy with technology enabled man to discharge her/his professional task quick, efficient and in a cost effective manner. Convergence of knowledge from meditation to nano technology is reducing or is intended to reduce death rate and increase life span and therefore the population. Naturally demand for professional service increased manifold. Management tools are now available to sort and optimize the use of time, men and material, so that the benefits of advancement and achievements are accessible by more clients without affecting efficiency. IT and management has also made ready to use soft wear and created many job opportunities including BPO's. [www.nano.org.uk/nano.htm](http://www.nano.org.uk/nano.htm) - 26k

Technology has made the world small but crowded and busy. By 2010 population in urban areas of developing countries like India was estimated to rise from the present 30% level (31.2%) to > 46% (46.2%). Pressure on land, water and energy, along with increasing opportunities in cities has given way to high rise buildings, where reduced indulgence set a trend of isolated living. Our contention/ perception of



development could be misleading if, we do not identify the new life-style problems of man, animal and nature. The key board/ mouse linked painful musculo-skeletal problems (ergometric injuries) is just one of them (visit [www.microsoft.com/hardware](http://www.microsoft.com/hardware)). Opportunities to involve in the “*virtual world*” of electronics, combined with life within satellite families, scheduled work, lack of time, cracking communication (with real world) etc. are slowly giving way to helplessness, relating, self criticism, cynicism, stress seeking, sleeplessness and other primary symptoms of stress and depression (even lead to suicides). Quick relief through Calming drugs; disco's and drinks are adding health hazards to the mechanical life. Counseling, holistic health and the stress relief clinics are available to those who can afford to adopt them on a regular basis.

Aging is both a mental physical handicap. Old age population is growing. India has 70 million people who are aged. 60 plus and 90% of them are in unorganized sector. Loneliness can cause high blood pressure in older adults. Dementia/ Alzheimer's disease is not uncommon among the aged. In the busy, but isolated life, companion animals or pets are increasingly sought as partners for diversion and relaxation (behavioral indulgence or diversion). There are many opportunities to use animals viz. (a) to help the blind, epileptic, differently able, (b) to alleviate stress, loneliness, low security perception or (c) for the feel good (wellness) of man. This close man animal contact necessitates maintenance of health and wellness in animals to ensure the same in man. Animal and environment activist groups supporting (reasonable) issues like animal rights and sustainability, often bring use of animal and implementation of development programs to flash a point. Today professionals who are independently accountable to the community for their decisions, actions and consequence thereof, can not work in isolation oblivious of sustenance of life and the harmony among man, animal and environment. Economic development and Human development can go hand in hand if we plan to convert our population into power in the sphere of our development. It is time we discuss “Gandhiji's” production by the masses in place of mass production

In the Indian context related topics that cover the motto include,-

### **Animal Welfare**

Animals had been part of Indian culture since epic era. Possibly because, animals played significant role as work force during ancient Indian civilization, slavery never became part of Indian (Indus valley) culture. From an ethologist's point of view, India's system of animal husbandry provide adequate opportunity for indulgence between man and animals. Therefore, all the animal welfare issues of the west may not uniformly be relevant to In. naturally Indian veterinarians may have an altogether different role to play in animal welfare.

Animal welfare is the human perception of what is good for animals. The range of feeling of man towards animals varies from recognition of pain to the negative aspect of it, that consider animal as a source of inconvenience. There can be several intermediate levels within the positive or negative attitude. Such attitudes need not always result either in welfare or cruelty.

Since Veterinary ethology encompasses the study of animal behaviour viz-a-viz human behavior, it has a good scope to observe and measure animal welfare in a professional sense To study human component of man animal interaction one has to understand needs and behaviour of man. Need is the motivation (driving force) for a function. Behaviour is the way an organism reacts to its immediate environment. A good basis for understanding people's need is the theory of Maslow and for that of animals there are the animal's freedoms like freedom from hunger & thirst, freedom from Pain & Suffering, freedom from fear & stress, freedom to express natural behaviour pattern. Freedom to indulge is a new dimension added.

Indulgence is an interaction that is emotional in addition to being physical. The concept of well-being must go beyond clinical health or high performance. Study of animal behaviour help



veterinarians to identify and (to an extent) measure animal's comfort or suffering. Whether in animal rearing, stray animal control, animal experiment, zoo management or treatment, a tendency to assume that an animal is under stress, pain or its basic needs remain uncompensated can be subjective, if such observations are not supported by observable and/or measurable facts, based on ethological criteria.

The Indian sub-continent has immense scope to develop veterinary ethology to the benefit of animal kingdom and to the human community. Experience has now proved beyond doubt that animals can provide mental diversion and an opportunity for indulgence to man. Presence of animals provides a positive environment to the children, the aged, and the handicapped and can hasten the recovery and rehabilitation of soldiers recuperating from incapacitating war wounds.

Commenting on the draft animal welfare Bill that was presented in Britain to replace the century old Protection of Animals Act 1911, BVA President Tim Greet said "... this major review is certainly not before time. By the very nature of our work, with our scientific and practical expertise, vets are in the front line of Animal welfare. Indeed at present successful prosecution relies almost entirely on the evidence from a vet. For this reason we welcome the imposition of a 'duty to care' on the keeper of any animal and the decision to modernize and re-define the offence of cruelty. No vet should ever again need to stand in the witness box trying to re-define concepts such as 'cruelty' or 'suffering'

We also welcome the decision to impose ban on mutilations, but will need to see what limited exceptions the government has in mind with regard to tail docking of dogs. "it is often been said that owning an animal is a privilege, not a right. With the publication of this bill, and the recent launch of the animal health and welfare strategy, the government has provided the opportunity for society to this fact.

## Disaster Management

Vulnerability and impact of disaster are high, on the weaker sections of the community. In India there are a good number of people who can not earn "a dollar a day" (D.A.D). When developing countries are in disaster, the poor suffer the impact acutely. Many of the poor are landless or small holders. They largely depend on animals, for livelihood.. It is apparent that even though animals are the main source of livelihood to the poorest of the poor, disaster management of animals do not figure anywhere in preparedness, mitigation or rehabilitation.. In fact animals can play a major role in all the components of disaster management of these countries. There is a significant participation of women in conventional animal husbandry system where a large array of indigenous breeds of domestic and semi-domestic animals live in absolute harmony with man and nature; a situation that can prevent at least some disasters.

Animals can play a significant role during a disaster. They are specifically used for search & rescue operations. Animals are the means of transport of injured and invalid people when no other transport is possible. Animals are also used for clearance of debris in inaccessible areas. Animals are movable assets of the farmer, which can be salvaged and used during response period or while victims live in shelters. Even in their death animals serve the community by providing material gains, with their hide, bone, lard and carcass. Damaged crops & grains unfit for human consumption can be used as animal feed and fodder. Animal rearing is a major diversion from shock for disaster victims and help them tide over their depression. In flood duck rearing and fish farming help in clearing pests that can cause epidemics. Pigs and free living animals clear garbage & waste materials. Dogs (pets and community animals) keep wild animals and reptiles that stray into camps at bay. In war, a man made disaster, animals play a key role in transport, reconnaissance, tracking, guarding, combat etc.



## Biodiversity

Animal Genetic Resources exist in the form of a vast array of breeds and livestock populations which have evolved and adapted over many centuries, to the range of environmental conditions encountered throughout the world. The pressure of selection imposed by climate, soil type, altitude, available food supply, endemic diseases and parasites, management techniques and market demands have resulted in thousands of breeds, types of strains, each with their own genetic make-up, and each adapted to its own specific niche.

The animal genetic resources available throughout the world are in a dramatic state of decline. The development of artificial insemination and other techniques that facilitate easy transfer of breeding material from one geographical region to another have resulted in widespread cross breeding and the replacement of local stocks through prolonged dilution. In many cases this has been carried out without initial characterization or evaluation of indigenous breeds and with no effort to conserve local strains. It has resulted in the disappearance of a substantial number of local populations, with the consequent loss of their inherent genetic adaptation to their local environments. This increasing loss of identifiable diversity in animal genetic resources has been recognized for many years. Particular concern has been growing with respect to the speed, at which uncharacterized breeds are disappearing in some rapidly developing regions of the world where climatic, parasitic or disease pressures could have produced important genetically adapted breeds. (Hodges, 199c; Office of Technology Assessment, 1987; Weiner, 1989)

Asia has immense diversity of genetic resources in respect of animals and birds but these are fast vanishing because no systematic effort has been made in the past to conserve them. In an attempt to provide a drastic improvement in production performance many developing countries had adopted cross breeding programmes using exotic genetic material. The impact of cross breeding over 3-4 decades

has not resulted in a wide spread improvement in performance at grassroots level. In comparison to 61.00 Million breedable indigenous cows, we have 3.50 Million crossbred cows and 40 Million she-buffaloes. Though the level of production of exotic/crossbred animals are relatively superior, the total intake nutrient level is high and survival low under the prevailing (practiced) conditions. Under certain environmental conditions (foraging, supplemented by kitchen waste) the improved exotic breeds had genotypic value of zero for most production traits (Bhat, P. N "Breeding plans for the improvement of indigenous breeds and species." Proceeding of the Expert Panel Meeting, Oct. 1983 Part I; FAO/UNEP 1984.)

Emphasis need be laid on their improvement, conservation of their germplasm and identification of their germplasm and identification of their role in region's economy. An important factor yet to be forthcoming is the quantification of the benefit from genetic manipulation. In other words even though it is proved beyond doubt that higher milk yield, finer wool or better yield can be achieved through introduction of superior exotic germplasm, we are yet to assess whether these have factually improved the income of the live-stock owner or our export potential.

## Biotechnology Relevant to Animal Sciences

Before birth of Microbiology and cellular biology man did selection of breeds of animals or plants they feed on, fermentation of milk etc. With discoveries in Microbiology and Cellular biology, he produced Vaccine, Sera, Antibiotics, Vitamins and did selection, Cross breeding, Artificial Insemination (A.I) etc. (frozen semen technology is a later development.

After development of Molecular biology major step was made by understanding genetic code which 'programme' cell, bacteria or virus, extracting and modifying these coded message and by transferring them from one cell to another. This led to



modifying existing genotype & create new combination of genes, Mutation, Hybridomas and DNA probes. Later, new genotypes were created by DNA manipulation and DNA recombination. "A number of discoveries relevant to veterinary science place this field in the forefront of such progress. The responsibilities of Veterinarians are considerable, because these discoveries (be it medicine or vaccine) have first to be tested in animals whether in the form of products administered or feed given to them". (C.M.Singh, 2001)

In the Veterinary field many scientific inroads have been made in the past few decades. Conservation of germplasm, DNA finger printing, ETT (Embryo Transfer Technology), ONBS (Open Nucleus Breeding System) MOET ( Multiple Ova Embryo Transfer) are some examples. Unfortunately many of these are now confined to specific laboratories in India. Some of them may need considerable modifications, trials, quality control & risk assessment. There is an urgent need to explore their use in field Veterinary Practice to the benefit of the livestock owner and in turn to conservation.

Other fields that benefitted are

- Disease diagnosis (Hybridoma, Monoclonal DNA probes),
- Prophylaxis (Sub-unit vaccine, recombinant vaccine),
- Nutrition (Probiotics, Rumen microbe manipulation),
- Pharmacology (Insulin from cell culture, target oriented drugs),
- Genetics (Restricted Fragment Linked Polymerisation ie. RFLP ; Polymerase Chain Reaction ie. PCR etc.)

Even though with the advancement of molecular Biology and biotechnology some progress had been made in vaccine production, no new

technology had found field application in India, except the production and application of cell culture vaccines. There too the quality control and cold chain maintenance, acceptability among small holders are problems to be addressed. Mentionable among applied usage are ETT and ONBS that has already been put to practical use in a limited way in India and is waiting for man power development and infrastructure for their wider use. These have already been developed primarily under mode mission project of Dept. Biotechnology during the past 20 years. However, the user Ministry is stepping in to try and implement it at farmer's door during the Five Year Plan. With the hi-tech and newer technological interventions developed over the years in livestock reproduction & development, there is a need felt to regulate reproduction technology that can now be implemented at field level. A dependable epidemiological data, early, quick & dependable diagnosis, effective and cheap and risk free vaccines, establishment of high security animal disease laboratories (P3/P5) etc. are priority areas so far as India is concerned. Though we have through decades of efforts established a High Security laboratory, the first in Asia, details like meeting its maintenance cost does not seem to have been considered in budget plans of the organization responsible in the budget demands or in the 9<sup>th</sup> Five Year Plan. Some commendable inroads had been made in the field of molecular epidemiology especially for foot & mouth. But wider utilization of this information for action as a part of national eradication plan is desirable. Dovetailing research with service is the need of the hour.

The most important new technology that can be a force multiplier in a farmers' situation is information relevant to his environment. The livestock owner has already optimised his use of feed and fodder, breeding and care within the constraints he faces in his environment. She/ he needs the information to cope with changes in economy and society he now has to rapidly contend with. (Maru 1997)