



CIRG news



केन्द्रीय बकरी अनुसंधान संस्थान
Central Institute for Research on Goats



Straight talk....



Goat rearing is acclaimed as the best choice for the rural people in developing countries because of the high fertility and fecundity, low feed and management needs, low investment, wide adaptability, high feed conversion efficiency, quick pay-off and the low risk involved. The significance of goats in these countries is reflected by the fact that over 80% of global goat population dwells in this region and India ranks first in the world in number of goats as well as in production of goat milk. In India, with annual growth rate of 4%, the goat farming is one of the main sources of revenue for millions of rural and periurban population. The goat rearing offers a very suitable and viable option for small scale farmers under the current scenario of declining availability of natural resources. Under the prevailing socio-economic settings in the country where per capita land holding is hardly 0.2 Ha, goat rearing can become an intimate component of mixed farming system. Goat is a multipurpose animal that plays an important role in improving household nutrition, employment generation, generating income and capital storage. It is an ATM (All Time Meat, All Time Milk and ALL Time Money) for resource-poor people. Presently, goats produce about 4.3 million MT of milk and 586.5 thousand MT meat per year. All these facts lead to the conjecture that the importance of goats in human food chain is increasing day by day and it is inching towards being the food animal for the future. But, the goat

industry in India has yet to be firmly laid down on scientific lines due to few constraints like non-availability of elite breeding sires, reluctance in applying modern techniques, lack of proper health care and nutrition, lack of knowledge of silvi-pastoral system and lack of organized marketing machinery for goat milk and meat.

As you know that my term as a Director of CIRG is ending on 31st December 2012. It was really a worthwhile experience to head the CIRG, one of the most vibrant and valuable institute of NARS. There are many examples during my period showing how essential and helpful our scientists and other staff are for effective and successful operations/activities of our organization to serve the goat keepers of this great country. I really owe all of you for your help and supports. In addition, I also like to express my sincere appreciation to our scientific staff, because of their volunteering work, invaluable suggestions/ideas and absolute supports; I could smoothly accomplish my duty. I hope all is well with you. First of all, I would like to take this opportunity to thank you to let me serve as the Director for a period of about three years and especially to thank all my scientific colleagues and staff at CIRG for making contribution in building of positive mind set of goat farmers of this country along with me. I am especially grateful to Dr S. Ayyappan, Secretary DARE and Director General ICAR and Dr KML Pathak Deputy Director General (AS) ICAR for their unqualified support towards progress of CIRG. I wish a very happy new year 2013 for readers and prosperous life for millions of goat farmers in the country.

Before ending this message, I'd like to take this opportunity to thank the contributors to the current and previous issues of the Goat News and to express my appreciation particularly to the team of Dr. V. K. Gupta for bringing to life this important channel of communication between us and our goat-keepers.

Goat Genome Project: Future goat research may find new avenues

Goat breeds represent an important world heritage and a scientific resource for understanding the genetic basis of complex traits. Despite their agricultural and biological importance, genomic studies of goats have greatly been hindered by the lack of a good reference genome. As we find the complete genome sequence of important livestock such as cattle and sheep for the genomic research, but it is not available for goats. Worldwide, this megaproject is undertaken at different places to accomplish this mega task. The International Goat Genome Consortium (IGGC) is one such body which was created in March, 2010 in Shenzhen (Hongkong) <http://www.goatgenome.org>. The main aim of this consortium is to provide information to the public domain about the available goat genomic database and to collaborate on goat genomic research. The consortium membership will be open to any individuals interested in goat genome research. There are three ongoing projects by IGGC namely; *de novo* goat genome assembly and re-sequencing; development of a Goat Radiation Hybrid Panel and Mapping; and production of a high-density SNP chip. The average depth of sequencing is around 60X and optical mapping has been used to increase the scaffold size. Collection of samples for re-sequencing around the world is now underway and once completed may provide information.

The important countries which have contributed goat genome data are France, China, Netherlands, Canada and Malaysia. Whole genome sequencing of 13 Alpine, Saanen and Creole breeds of goats is being done at National Institute for Agricultural Research (INRA), France and assembly of the goat genome is now taking place in the Beijing Genome Institute (BGI), China. There are more than 6 million SNPs were detected in the goat genome. To complete this mega project, there are four steps namely, Alignment of the different sequences on *de novo* assembled goat contigs, ordering of contigs on bovine genome reference sequence, SNP discovery and annotation using public and private expressed sequence tags and Determination of the final SNP panel. Illumina high

density 50K goat SNP chips will be available soon to carry out polymorphism and SNP detection studies and this can be used in our Indian goat breeds. Further contributions are required from our side to generate complete genome sequence of Barbari, Jamunapari, Jakhrana, Sirohi and other important breeds. Other interesting part of IGGC is that, Cashmere goat is selected for fibre growth trait studies and to generate transcriptomes. There are many studies carried out in India about the detection of SNPs and polymorphism of important candidate genes such as kappa casein, SRY, beta- lactoglobulin, CAPN, prolactin, and GH gene of Indian goat breeds. Complete gene sequence of Indian goat TLR 1-10 is available. Polymorphism has been detected and sequence characterization is done in TLR-7 gene of Indian goat breed. A total of 271 candidate genes have been detected worldwide in goats which have an effect on the physiological pathway, metabolism and expression of phenotypes. For growth traits, growth hormone (*GH*), growth hormone receptor (*GHR*), insulin like growth factor I (*IGF-I*), leptin (*LEP*), caprine pituitary specific transcription factor-1 (*POU1F1*), caprinemyostatin (*MSTN*) and bone morphogenetic protein (*BMP*) genes are necessary for bone formation, birth weight, weaning weight, body condition and muscle growth. For reproduction, forkhead box L2 (*FOXL2*), melatonin receptor 1A (*MTNR1A*), sex determination region of Y chromosome (*SRY*) and amelogenin (*AMEL*) genes influence sex determination and proliferation. The major candidate genes for milk yield and milk composition traits are the casein gene and their family. Keratin associated protein (*KAP*) and melanocortin-1 receptor (*MC1R*) genes are candidate genes for wool traits. The major histocompatibility complex (*MHC*) gene is important for the immune system and disease resistance. Studying the variation in these genes would provide better understanding in selection and breed improvement. All this is possible when the complete goat genome is available for reference. For this, we need to actively participate in the IGGC programmes and genome project.

Shivasharanappa N, V.K. Gupta, Nitika Sharma, A.K. Mishra and Souik Paul

Current Status of Caprine Arthritis-Encephalitis (CAE) in Indian Goats

Caprine arthritis-encephalitis (CAE) is an economically important viral disease of goats, caused by caprine arthritis encephalitis virus (CAEV), a lentivirus of *Retroviridae* family. The CAE virus has a predilection to infect mononuclear cells, specifically tissue macrophages of the lung, central nervous system, synovium and mammary gland. Infection with CAE results in a persistent, lifelong infection. Although most infections are subclinical, a minority of animals develops progressive, untreatable disease syndromes including polyarthritis in adults and encephalomyelitis in kids. CAE has been recognized worldwide as a source to inflict heavy economic losses to goat industry on account of poor meat and milk production and culling of infected animals. The problem is further aggravated by the fact that all efforts to develop effective vaccine against CAE have failed.

The only one authentic documentation on prevalence of CAE in Indian goats which reported 18% seropositive cases out of 1134 goat sera screened from

Ajmer-Avikanagr-Ramsar, Agra-Mathura and Bhopal-Itarasi zones and 13 clinical cases out of 2000 physically examined goats confirmed on the basis of characteristic clinical, gross and histopathological features, isolation of CAE virus from clinical samples in GSM cell culture and PCR of *gag* sequences. Earlier data recorded in the proceedings of conferences/workshops showed a solitary case of CAE viral genome demonstration by PCR in a Barbari goat and a report of about 2% sero-positive reactors from Rajasthan. Current status of prevalence of the disease in Indian goats is unknown since CAE has not been investigated adequately. In the time when goat rearing is being increasingly encouraged with special emphasis to alleviate the poverty and augment the livelihood security among poor farmers as well as small and large commercial scales, checking such slow progressing disease causing direct impact on goat production becomes even more vital.

R.V.S. Pawaiya

Goat Pox



Goat pox is a serious disease with high mortality rate, characterized by skin eruption on whole body. In India, goat pox is frequently observed in West Bengal, Bihar, Maharashtra, Orissa, Rajasthan and adjoining areas of these states. The causative agent of the goat pox is double stranded DNA belonging to the genus Capri pox virus and family Poxviridae. Contact is the

main means of transmission of virus. Inhalation of aerosols from acutely affected animals and direct contact through skin abrasions are the natural means of transmission.

Goats of all ages can be affected but more severe in young animals. Black Bengal breed of goat is highly susceptible to this disease. The first signs may include fever, depression, conjunctivitis, lacrimation, and rhinitis. Pox lesions are more easily observed on the hair free parts of the body such as the perineum, inguinal area, scrotum, udder, axilla, and muzzle. Lesions present on the tongue and gums tend to ulcerate and high mortality rates occur when lesions develop in the respiratory and alimentary tract. Secondary bacterial pneumonia is the common cause of death. In susceptible lambs and kids under 1 month of age, morbidity may approach 100 per cent, and mortality may be as high as 95 per cent. Infection results in solid immunity. There is no specific treatment to this diseases but antimicrobial therapy helped in recovery.

Ashok Kumar and V.K. Gupta

Looking to the future of food traceability- DNA Barcoding

DNA barcoding is a taxonomic method in which a short genetic marker in an organism's DNA pool is used to identify it as belonging to a particular species. The main difference between molecular phylogeny and DNA barcoding lies in the fact that the former deals with classification whereas, the later deals merely with identification of an unknown sample.

The inception of DNA Barcoding occurred in the University of Guelph in 2003, later the thrust in momentum of the DNA barcoding initiative occurred due to international participation under International Barcode of Life Project (iBOL). Thus it attracted the attention of scientific community, govt. agencies and general people. This worldwide initiative is supported by sequencing facilities at Canadian Centre for DNA Barcoding (CCDB), located in the Biodiversity Institute of Ontario (BIO). This centre develops laboratory protocols and maintains the Barcode of Life Data System (BOLD), an online data management system which is central to the global barcoding community for maintaining barcode records and providing a resource to identify unknown animals. DNABarcode sequences are very short and can be obtained reasonably, quickly and cheaply. The cytochrome c- oxidase subunit-1 mitochondrial region (COI) has emerged as the standard barcode region for higher animals. Mitochondrial DNA (mtDNA) has a relatively fast mutation rate, which results in significant variation in mtDNA sequences between species and, in principle, a comparatively small variance within

species. A 658-bp region of the COI gene was proposed as a potential 'barcode'. DNA barcodes vary among individuals of the same species (to a very minor degree). If the DNA barcode region is effective, the minor variation within species will be much smaller than the differences among species.

There are many applications of DNA barcoding as far as food security, food hygiene and food traceability is concerned.

- Identifying such DNA barcodes can help wildlife officials crack down on illegal meat trafficking. It will also aid in addressing biosecurity and animal quarantine issues.
- An accurate barcoding method would improve species identification, which is essential in determining associated hazards, addressing economic fraud issues, and aiding in food-borne illness outbreak investigations.
- Identification and authentication of animal based food products in commerce. Barcoding can identify a species from bits and pieces. It will quickly identify undesirable animal material in processed foodstuffs and detect commercial products derived from regulated species.

(<http://www.dnabarcoding.ca/>;
<http://ibol.org/about-us/what-is-dna-barcoding>;
[http://barcoding.si.edu/DNABar Coding.htm](http://barcoding.si.edu/DNABarCoding.htm),
http://en.wikipedia.org/wiki/DNA_barcoding)

Souvik Paul, Arun Kumar Das, P.K. Rout

Here are 6 reasons goat milk is better than cow milk.

1. Goat's milk is less allergenic.
2. Goat's milk is naturally homogenized.
3. Goat's milk is easier to digest.
4. Goat's milk rarely causes lactose intolerance.
5. Goat's milk matches up to the human body better than cow's milk.
6. Goat's milk consumption by individuals with iron deficiency anemia improves their recovery, since it enhances the nutritional use of iron and enhances the regeneration of hemoglobin.

GENCODE: a Fortran Program for estimation of generation number from pedigree of an animal

Most natural and artificial populations have overlapping generations. When generations overlap, the generation interval differs from the cohort interval. In quantitative genetics, generation number/intervals are generally defined as the average age of parents at birth of their offspring. In this definition, generation interval is based on the contributions of parental age classes to newborn offspring and this approach is adopted in the well-known gene flow procedure. The estimation of generation number of animals in the flock/herd helps to predict the genetic changes/progress of economically important traits in the population over a period of time/generation.

The GENCODE is a single program, written in FORTRAN77. Its main purpose is to calculate the generation number of each animal from pedigree of animals where population have overlapping generations and selection is generally practiced. This program generally runs under Windows 95/98/2000/NT versions, but it can also be run in other operating system like UNIX with some modifications. The program requires a pedigree file consisting of animal number, sire and dam number. Any numeric system for animal identification number will work. Parents must appear before offspring in the pedigree file. Founder animals should be designated by numeric number with parent ID's equal to 0. Basically, the program reads the pedigree file into memory and set all generation number to 0. Then it reads the pedigree again. When it finds an animal with parents that were

born in the flock, it goes back through the pedigree to find the parents. A generation number was calculated for each animal born in the program using the method described by Brinks and co-workers in the year 1961, where generation coefficient of the animal (GC) is the average generation coefficient of the parents plus 1. Thus the program GENCODE measures the number of generations between each animal in the flock and the foundation animals. Foundation animals and animals with unknown parentage were assigned a GC of 0. The results obtained by this program were validated with the results of other program like ENDOG v3.0.

Data on 5818 Muzaffarnagari sheep, collected from 1976 to 2004 at the Central Institute for Research on Goats, Makhdoom, Mathura, U.P., India were used to calculate the generation number of each animal of the flock using the GENCODE program with an aim to further estimate the genetic changes in birth weight, weaning and post-weaning body weights of this breed. The generation number of animals in the flock varied from 1 to 8. Year-wise generation coefficient (GC) of animals showed an increasing trend i.e. greater generation number from 1976 to 2000 and thereafter it reduced or became smaller generation number as compared to previous years due to introduction of some proven rams in the flock in the year 2000. Further, there was a significant ($P < 0.01$) generation effect on birth weight, weaning and post-weaning body weight in Muzaffarnagari sheep.

Ajoy Mandal, N.K. Dahiya, D.K. Sharma and P.K. Rout

Jakhrana - a Breed having higher Potential for Milk and Multiple Kidding

Jakhrana breed is a one of the best breed of goat in terms of milk and multiple kidding. In the current season (October – November, 2012) multiple kidding of Jakhrana goats was 62.16 % which is higher than other breeds known for multiple kidding. Ninety and 150 days milk production of Jakhrana were

126.06 ± 8.07 kg and 192.01 ± 4.59 kg. Milk production of Jakhrana goats were higher than many other breeds of goats which are known for milk production. It was concluded that Jakhrana breed has higher potential for milk and multiple kidding.

S. Bhusan

Muzaffarnagari Sheep: Best choice for commercial mutton production

Muzaffarnagari, a mutton producing sheep breed, has its breeding tract in Muzaffarnagar and its adjoining districts of Western Uttar Pradesh. The breed is mainly reared for mutton production as wool production is low with course quality, thus not suitable for manufacturing any kind of carpets. At CIRG, Makhdoom, a research project has been in progress since 1985 to improve the breed for higher mutton production through selective breeding. The selection of breeding rams is based on their 6 month body weight and this selection has improved the overall flock average of 6 and 12 month body weights from 20.0 to 24.0 (4.0 kg or 20.0%) and 25.0 to 31.0 kg (7.0 kg or 24.0%), respectively. Being large sized, the twinning rate is low in this breed but due to proper screening of ewes having prolific records and extensive use of those rams responsible for multiple births, a significant improvement (from 5.0 to 12.0%) has been achieved. Not

only twinning, the cases of birth of triplet lambs have also been observed. Triplet lambs born during year 2011 attained a total of 46.2 and 79.4 kg live weight respectively at 6 and 12 month age, which showed additional gain in body weights of 25.1 kg (118.9%) and 49.0 kg (161.2%) over single born lambs.

At CIRG, a case of heterosis has been observed in which a ram has attained 85.00 kg live weight at three years of age, the 20% extra growth than its contemporaries. It had 5.0, 24.0, 34.4, 37.0 and 48.0 kg live weight respectively at birth, 3, 6, 9 and 12 month age. To multiply its superiority, it has been extensively used for breeding and has produced 22 progenies (12 males and 10 females) in one season. The average birth and 3 month body weight of its progenies also showed significant improvement over contemporaries. In comparison, it was found that the average weight of these super



weight ram progenies at birth and at 3 months of their age were higher (100g; 2.7% and 1.4 kg; 8.2%) than the progenies produced from other rams in the same season. The performance of Muzaffarnagari sheep is fulfilling all characteristics of an excellent mutton breed like heavy birth weight, higher average daily weight gain, twinning rate, hardiness etc and moreover continuous improvement is being observed in the performance. Therefore, this breed may be recommended for commercial mutton production as it also performs well in intensive feeding management.

Gopal Dass

What is GOATEE ?

Goatee refers to a style of facial hair incorporating hair on a man's chin. The exact nature of the style has varied according to time and culture. Goatee refers solely to a beard formed by a tuft of hair on the chin—likes on the chin of a goat, hence the term 'goatee'. Since the late 1990's, the term has been misused to refer to the style of facial hair called the Vandyke, a combination of a goatee and a mustache. This does not typically include the tuft just under the lip, more commonly referred to as the soul patch. The style dates back to Ancient Greece and Ancient Rome, where the god Pan was traditionally depicted with one. When Christianity became the dominant religion and began coopting imagery from pagan

myth, Satan was given the likeness of Pan, leading to Satan traditionally being depicted with a goatee in medieval and renaissance art, an image which persists into the modern era. The goatee became popular again in the late 19th century, becoming one of the characterizing physical traits of the bohemians in Paris. In America, Abraham Lincoln wore a goatee at various points in his presidency. The goatee would not become popular again until the 1940s, when it became a defining trait of the beatniks in post-World War II America. The style remained popular amongst the counter culture until the 1960s and then fell out of popularity again. Since the 1990s goatees are popular to this day.

Metabolomics : New tool to analyse metabolic profile

Metabolomics is the scientific study of chemical processes involving metabolites. The word origin is from the Greek meta meaning change and nomos meaning set of laws. Metabolome refers to the complete set of small-molecule metabolites such as metabolic intermediates, hormones and other signaling molecules and secondary metabolites found within a biological sample. Metabolites are the intermediates and products of metabolism. A metabolite is defined as any molecule less than 1 kDa in size. Thus, metabolome represents the collection of all metabolites in a biological cell, tissue, organ or organism, which are the end products of cellular processes. Metabolomics is defined as “the quantitative measurement of the dynamic multiparametric metabolic response of living systems to pathophysiological stimuli or genetic modification”. This approach was pioneered by Jeremy Nicholson at Imperial College London and has been used in toxicology, disease diagnosis and a number of other fields. Historically, this approach was one of the first methods to apply in systems biology to studies of metabolism.

The concept of “metabolic profile” was introduced by Roger Williams in the late 1940s, who used paper chromatography to suggest that characteristic metabolic patterns in urine and saliva were associated with diseases such as schizophrenia. On January 23, 2007, the Human Metabolome Project, led by Dr. David Wishart of the University of Alberta, Canada, completed the first draft of the human metabolome, consisting of a database of approximately 2500 metabolites, 1200 drugs and 3500 food components. The objective of metabolomics is to quantitatively analyze complete profiles of small molecules in biological samples. There are many technologies that may be used for the study of metabolomics. The analytical technologies include separation methods e.g. Gas chromatography (GC), High performance liquid chromatography (HPLC), Capillary electrophoresis (CE) etc. and detection methods are mass spectrometry (MS), used to identify and to quantify metabolites after separation by GC, HPLC, or

CE and Nuclear magnetic resonance (NMR) spectroscopy. NMR is the only detection technique which does not rely on separation of the analytes, and the sample can thus be recovered for further analyses. All kinds of small molecule metabolites can be measured simultaneously. So, NMR is close to being a universal detector. Although NMR and MS are the most widely used techniques, other methods of detection that have been used include electrochemical detection (coupled to HPLC) and radiolabel (when combined with thin-layer chromatography). Metabolomics data are most often analyzed by statistical projection (chemometrics) methods such as principal components analysis and partial least squares regression.

Applications

Toxicity assessment / toxicology: Metabolic profiling (especially of urine or blood plasma samples) can be used to detect the physiological changes caused by toxic insult of a chemical (or mixture of chemicals).

Functional genomics : Metabolomics can be an excellent tool for determining the phenotype caused by a genetic manipulation, such as gene deletion or insertion.

Nutrigenomics : It is a generalised term which links genomics, transcriptomics, proteomics and metabolomics to human nutrition. In general a metabolome in a given body fluid is influenced by endogenous factors such as age, sex, body composition and genetics as well as underlying pathologies. Metabolomics is one means to determine a biological endpoint, or metabolic fingerprint, which reflects the balance of all these forces on an individual's metabolism.

The mRNA gene expression data and proteomic analyses do not tell the whole story of what might be happening in a cell but metabolic profiling can give an instantaneous snapshot of the physiology of that cell. One of the challenges of systems biology and functional genomics is to integrate proteomic, transcriptomic, and metabolomic information to give a more complete picture of living organisms.

R. Ranjan

Extension and Farmers Education Programs

Training organised

- Five days training programme on Scientific Goat Rearing to goat farmers of Dumka district of Jharkhand through Gramin Vikas Kendra, Nalanda, Bihar sponsored by NCAP, New Delhi from 2-6 September, 2012. Thirty eight (38) goat farmers were participated in the training programme.
- Ten days 52nd National Training Programme on Commercial Goat Farming during 18-27 September 2012. It was attended by 89 participants (including 2 women) from 16 states.



Health Camps organized

Health camps were organized on 24 August 2012 and 28 September 2012 at the adopted village 'Hayatpur' under TOT programme of the Institute. The goats and sheep were treated for various ailments like diarrhea, pneumonia, parasitic infestation. Animals were vaccinated against FMD, ET and PPR.



Off Campus Training Programme on Integrated Goat Farming organized

An off campus training programme on Integrated Goat Farming sponsored by National Agriculture Innovation Project component-3 at Mahoba of Bundelkhand region was organized on 25-26th September 2012. The training programme was inaugurated by Mr. Y. K. Upadhyay, Chief Developmental Officer, Mahoba. One hundred fifty beneficiaries (46% women) from eight adopted villages (Sudamapuri, Parthania, Bamhorikhurd, Bharwara, Ari, Budhwara, Tikariya and Mahobkanth) of Mahoba district participated in the Training Programme. Another one day training programme was organized at Rath on 30th September 2012 which was inaugurated by CAC members of NAIP component-3 project Sh. L N Singh and Dr. D P Singh. 114 project beneficiaries (26 women) of Etkor, Barrel, Aunta, Sarsai, Chilli, Bihuni-Khurd, Etor, Bakrai were participated in this training programme. Major focus was given on knowledge gaps in the areas of use of high potential breeding bucks, breeding management, kid management, strategic feeding, vaccination and deworming schedule, goat housing and marketing of goats. The importance of Self Help Groups for resources utilization, capacity building and benefits extended by Nationalized banks was also explained to the beneficiaries. Officials from district administration such as Chief Developmental Officer, Deputy Director of Agriculture, Director of Krishi Saudh Sansthan, Chief Manager and development officers from nationalized banks delivered lectures and appraised the farmers with the development programmes and credit facilities available for goat rearing. Dr. M.K. Singh, CPI of NAIP Project on Bundelkhand region co-ordinated the training programme. The joint co-ordinators of the training were Dr. A.K. Dixit and Dr. N. Ramachandran.



M.K. Singh, A.K. Dixit and N. Ramachandran

Extension and Farmers Education Programs

Awareness cum Clinical Camp organized

An Awareness cum Clinical Camp in three villages of Haridwar District of Uttarakhand was organised from 8-10 October 2012. Shri Harish Rawat, Hon'ble Minister of State (Agriculture, Food Processing Industries and Parliamentary Affairs) Government of India appreciated the activities undertaken by CIRG for the benefit of small ruminant keepers, particularly the poor goat farmers of the Uttarakhand State. Speaking on the occasion of inauguration of the awareness-cum-clinical camp organized by CIRG, the minister emphasized the importance of this camp to create awareness amongst farmers to adopt scientific methods for animal husbandry. Institute deputed a team under the leadership of Dr. Ashok Kumar, Principal Scientist to organize the camp. This camp attracted huge response from goat and sheep farmers (457 farmers participated). A total of 1780 sheep and goat were vaccinated for enterotoxaemia and /or PPR, 1935 were dewormed and 133 sheep and goats were treated for various ailments. The Hon'ble MOS lauds the role of CIRG who has recently imparted training to a batch of 25 very poor goat farmers, which has been highly useful to them.



Goat Farming Awareness and Treatment Programme organised

A Goat Farming Awareness cum Treatment Programme was organised by KVK, Bichpuri in collaboration with NABARD and HRD Organization-an NGO "Samiti" in Kasauti village, Achhnera, Agra on 29 November 2012. Dr Braj Mohan and Dr Nitika Sharma of CIRG participated in the programme. The goats in the village were administered ecto-parasitocidal and endo-parasitocidal drugs. Farmers were appraised about the benefits of goat farming.

Exhibition / Kisan Mela organized and/or participated and CIRG technologies displayed

1. During the visit of Dr. Charan Das Mahant ji, Hon'ble Minister of State for Agriculture and Food Processing Industries, Govt. of India on 18 August, 2012 at CIRG, Makhdoom.
2. During the visit of Shri. G.C. Pati, Secretary, Department of Animal Husbandry, Dairying and Fisheries on 15 September, 2012 at CIRG, Makhdoom.
3. In *Krishi Avam Gramin Vikas Pradarshani* at Pt. Deen Dayal Dham, Nagla Chandrabhan, Farah, Mathura from 12-14 October 2012
4. In *Krishi Mela, Krishi Avam Pashupalan Pradarshani*, at KVK, Mathura on 26 October 2012.
5. In *Virat Kisan Mela Avam Krishi Vikas Pradarshani* of Agro-climatic Zone-4 (Agra and Aligarh Region) on 23-25 November, 2012.
6. In Agriculture Exhibition during Third International Agronomy Congress at IARI, New Delhi on 26-30 November 2012.



Scientific and Technical Support provided in Organizing Goattery-2012

Increasing goat population, which is presently estimated over 154 million, underlines the increasing significance of goat husbandry in our country. A National Seminar, Goattery-2012 was organized at Coimbatore from 4th to 5th August, 2012 by Royal Net International, Pollachi (Tamilnadu) with the Scientific and Technical support of CIRG, Makhdoom in an endeavor to discuss various issues pertaining to viable goat rearing. More than 300 progressive farmers, goat keepers and entrepreneurs attended the seminar. Director, CIRG inaugurated the seminar and delivered a special lecture on 'Goat-The future hope for livelihood security in India'. The four scientists Dr. S. K. Singh, Dr. P. K. Rout Dr. V. K. Gupta and Dr. N. Ramachandran from the CIRG delivered expert lectures on breeding, feeding, housing and health management. They also provided scientific inputs during different interactive/technical sessions covering preventive health measures, proper housing and breeding strategies, optimum nutrition and reproductive strategies etc. These sessions were supported by experts from other reputed institutions like CSWRI, TANUVAS, NABARD, NARI, KLDA, and other developmental agencies. The event was highly appreciated by different stakeholders including prospective farmers who are interested in goat rearing, realizing the fact that the goat is the 'Future Animal' to provide livelihood and food security for millions of resource poor people in the country. Motivated by the presentation by commercial goat farmers and scientific and technical deliberations made by the experts, several farmers approached CIRG scientists to discuss the about prospect of commercial goat farming and training imparted by the institute to make it viable. It can be expected that the scientific and technical support extended by CIRG in this seminar would go a long way in making the goat husbandry as a sustainable farming option in the southern states of the country. Dr. N. Ramachandran, Scientist coordinated the different activities for the scientific and technical support of the seminar including the display of CIRG technologies and distribution of scientific literature on goat rearing which attracted considerable interest from the participants.



Meeting Organized

Organized a Scientists and Field Investigators/Research Staff Meet for National Center for Agricultural Economics and Policy Research (NCAP), New Delhi on 27 July 2012. A total of 35 researchers were participated in the meet. They were apprised about the recent advances and future prospects of goat husbandry.



Director General, ICAR inaugurated the ISSGPU National Seminar 2012

Indian Society for Sheep and Goat Production and Utilization (ISSGPU) organized a National Seminar and Annual Conference on “Future Challenges and Opportunities to Improve Health and Production of Small Ruminants” from 22-23 December, 2012 at CIRG, Makhdoom, Mathura. The seminar was inaugurated by Dr. S. Ayyappan, Secretary, DARE, Govt. of India and Director General, ICAR, New Delhi. The presidential address was delivered by Sh. G. C. Pati, IAS, Secretary, DAHD&F, Govt. of India. Dr. S.K. Bandyopadhyay, Member, ASRB, New Delhi and Prof. A. P. Singh, Vice Chancellor, DUVASU, Mathura were the guests of Honour on the occasion. Dr. Devendra Swarup, President, ISSGPU and Director, CIRG welcome the delegates and emphasized the need to strengthen the goat farming in the country. Dr. Ayyappan in his inaugural address appreciated the efforts done by ISSGPU to make small ruminants especially goat, the Future Animal. He also emphasized to focus on Productivity, Profit and Prestige in Agriculture. He advised the scientists to actively participate in the Protein Revolution in order to project Goat as a means of livelihood security. On this occasion, Dr. S. A. Karim, Former Director, CSWRI was bestowed upon the Prestigious Life Time Achievement Award of the society. The society also awarded the ISSGPU Fellow to Dr. A.K. Goel and Dr. S.K. Singh, Principal Scientists of CIRG, Makhdoom. In the symposium, a total of 7 scientific sessions on different aspects of small ruminant production and health including a special session on Animal Welfare were conducted. The lead speakers were invited from different ICAR institutions and SAU’s. The seminar was followed by “Industry - Farmers Interactive Session” which was attended by small ruminant entrepreneurs, commercial goat farmers and the stakeholders of the industry. Dr. S.K. Jindal was the organising secretary. Dr. Ashok Kumar and Dr. M.K. Tripathi of CIRG, Makhdoom were the joint organizing secretaries.



AWARDS AND RECOGNITION

Best Paper Awards

- Dr. S. D. Kharche, Senior Scientist on the occasion of an International conference of III World congress in Biotechnology held at Hyderabad during 13-16 September 2012.
- Dr. Anupam Krishna Dixit, Sr. Scientist for the paper published in Agricultural Economics Research Review of Agricultural Economics Research Association of India, on the occasion of XX Annual Conference on Agricultural Inputs and Service Delivery System for Accelerating Growth and Improving Farm Income held at IARI, New Delhi during 9-11 October 2012.
- Dr. Saket Bhusan on the occasion of XXIX All India Scientific and Technical Hindi Essay Competition.



Recognition

Dr. Justin Kouamo, PhD., Senior Lecturer, School of Veterinary Medicine and Sciences, The University of Ngaoundere, Cameroon has been completed his Post-Doctoral programme on the topic entitled “*In-vitro* maturation, *In-vitro* fertilization and culture of oocytes for caprine *in-vitro* embryo production” from May to October, 2012 under the supervision of Dr. S. D. Kharche, Senior Scientist. Dr. Justin Kouamo is recipient of a prestigious CV Raman International Fellowship programme for African Researchers and this programme represents a great opportunity for African researchers to share and collaborate with various research institutions in India on latest research trends thereby developing newer technologies for the improvement of Animal Husbandry activities in their country.



Goats Have Accents: Study

It turns out accents aren't just for people from Long Island: Goats have them as well, a team of British researchers has demonstrated. Until now, experts had assumed that goats' "voices" were dictated entirely by genetics. Genetics do play a role, the researchers found, as siblings had similar calls. "But the calls of kids raised in the same social groups were also similar to each other, and became more similar as the kids grew older," lead author Dr. Elodie Briefer tells the Telegraph. That suggests that goats modify their voices based on their environments, just like humans do. And it might not just be goats. Asked if other mammals might have accents as well, Briefer says it's possible. "We don't know, because people are so sure there's no effect of the environment that no one has checked."

<http://www.newser.com/story/139854/goats-have-accents-study.html>

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