

Vision 2030

DUVASU, Mathura



Uttar Pradesh Pandit Deen Dayal Upadhyaya Pashu Chikitsa
Vigyan Vishwavidyalaya Evam Go Anusandhan Sansthan,
Mathura-281001 (U.P.), India

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Preamble

Livestock sector plays an important role in economy of developing country like India, where agriculture is the major source of income for landless and marginal farmers and rural youth. Uttar Pradesh has endowed with largest livestock population in the country and most of these animals lie with landless and marginal farmers, therefore this sector can address poverty and rural upliftment concern of the state. For social engineering and poverty alleviation in the country, it is imperative to concentrate on animal husbandry, poultry farming and allied activities including fisheries. Uttar Pradesh Pandit Deen Dayal Upadhyaya Pashu Chikitsa Vigyan Vishwavidyalaya Evam Go Anusandhan Sansthan, Mathura has basic objective of generating competent and trained human resource, undertake basic and need based research, offer extension and advisory services to farmers and livestock owners of the state and the country. University made tremendous efforts and has been successful in developing facilities for catering to the requirements of students, faculty, farmers and the society. Vision 2030 DUVASU, Mathura offers compiled information regarding the university's future programmes of education in veterinary and allied sciences, research, technology development and extension activities after retrospectively the past achievements and re-identifying the priorities areas.



DUVASU, Mathura: Historical background and present scenario

Brij area is known since time immemorial for lord Krishna and its animal wealth, particularly cows. There are large numbers of Gau-shalas in and around Mathura having hundreds and thousands of milch cows. The whole of Brij Kshetra is famous for its milk and milk products (doodh, dahi, makhan, pera etc.). Recognizing the importance of livestock in this area, the erstwhile U.P. College of Veterinary Science and Animal Husbandry was established in Mathura by Government of U.P. in 1947. It was said to be the first Veterinary College in Asia to confer the degree in Veterinary Sciences. This College contributed significantly not only in terms of number of graduates and post-graduates of high scholastic order, but also quality research of national and international standards in several disciplines of veterinary and animal sciences in 1950s and distinguished itself as one of the best veterinary colleges in the country within the few years of its establishment. The alumni of this college steered many veterinary colleges in India and abroad as teachers, research workers, policy makers, consultants and administrators. When the institution was at its peak, government of U.P. started Chandra Shekhar Azad University of Agricultural Sciences and Technology, Kanpur and this college was transferred to the newly established Kanpur agricultural university in 1975 with new and recognized name as College of Veterinary Science and Animal Husbandry. It is one of the oldest veterinary colleges in India which has seen various ups and downs with the passage of time mainly due to non filling up of teaching positions and non



availability of adequate financial support atleast for two decades. In spite of these constraints the institution came up as torch bearer for improving quality education in veterinary and allied sciences, undertake need based and basic research, integrated education and research and offer excellent extension and advisory services. The Government of U.P. established Uttar Pradesh Pandit Deen Dayal Upadhyaya Pashu Chikitsa Vigyan Vishwavidyalaya Evam Go Anusandhan Sansthan, Mathura by Government of Uttar Pradesh vides U. P. Act. No. 27 of 2001 on 25.10.2001 with the College of Veterinary Science & AH as its main constituent college, to promote livestock production and productivity, and address animal health through integrated teaching, research and extension programmes. Krishi Vigyan Kendra Mathura which was earlier the part of CS Azad University, Kanpur was also transferred to this university with it's all assets in 2004. This was the first veterinary university in the state and fourth in country.

Presently, there are two colleges: College of Veterinary Science and Animal Husbandry as it's main constituent and College of Biotechnology from the academic session 2010-11 under self-finance scheme. To cater to the need of trained and competent human resource in the field of animal husbandry and allied sectors, university act envisaged to establish College of Fisheries, College of Livestock Products Technology and College of Animal Industry and Business management in near future.

The University is located on Mathura-Agra road and is about 5 km from Mathura Junction railway station and 4 km from new bus stand. The main campus of the University is spread over a vast land area of 782.32 acres in Mathura Cantt and about 1400 acres at Madhurikund, about 20 km from the main campus, out of which 770 acres is under cultivation, 145 acres under social forestry, 80 acres under building, roads and irrigation system while 400 acres is uncultivated area.



Livestock scenario

India is an agriculture based country and Livestock sector is one of the important components of agricultural economy. India's international trade in livestock and livestock products is mainly because of meat and meat products (82%), live animals (17%), dairy products and eggs (1%). The livestock sector has emerged as one of the key components of agricultural growth as India occupies a significant place numerically in respect of livestock wealth. Country maintains Plus 530 million livestock which is about 11% of the world livestock population. This includes 199.10 million cattle, 105.30 million buffaloes, 71.6 million sheep, 140.50 million goats, 11.34 million pigs, 0.61 million horses and ponies, 0.57 million mules and donkeys, 0.52 million camels, 0.08 million yaks, 0.26 million mithun along with 648.88 million poultry (18th Livestock census, 2007). India has the largest number of livestock population (first in buffalo, second in cattle and goats, third in sheep and fifth in poultry population in comparison to world livestock and poultry population), with foremost position in milk production , 5th in Meat Production and 3rd in egg and fish production.



Species	Population in 2007 (millions)	Av. annual growth rate (%)	% of world population	World ranking
Cattle	199.10	1.83	14	2 nd
Buffalo	105.34	1.84	57	1 st
Sheep	71.56	3.87	6	3 rd
Goat	140.54	3.10	16	2 nd
Pig	11.13	(-)4.74	1.50	-
Total livestock	529.70	2.23	11.00	-
Poultry	648.88	7.33	-	5 th

Data source: BAHS-2007

Livestock contribution in economy

Livestock sector provides an important source of income and employment to millions of farmers and other people engaged in allied activities. The sector contributes approximately 4% to National GDP and 25% to Agricultural GDP. The value of output from current prices (2010-11) was found to be Rs.4.61 crore which is about 28.40% of value of output of Rs.16.23 crore from total Agriculture and allied sector. Livestock sector not only ensures nutritional security and eliminates hunger via milk, meat and eggs, but also provides raw material/by products such as hides and skin, blood, bone and fat etc. for the production of many valuable goods. The efficient utilization of these agricultural by products can increase 7-11% economy of an abattoir business.



Status of major livestock products

Year	Milk (million tones)	Eggs (Billion Nos.)	Meat ** (million tones)
2011-2012	127.30	65.5	5.10
Rank in World	1 st	3 rd	5 th
% Growth in 2011-12 over 1999-2000	63.0	115.0	28.0

In India, Buffalo contributes about 30% of total meat production where as the contribution by cattle, sheep, goat, pig and poultry is 30%, 5%, 10%, 10.2% and 11.5%, respectively. Meat industry has been growing very fast at the rate of 27% annually since last five years and has bright future due to present initiatives undertaken by the Government and interest shown by Private Entrepreneurs (FAO, 2007). An impressive progress has been made by poultry industry evolving from backyard venture to a fully fledged commercial agro industrial business in India. Today, Poultry industry is highly integrated and managed by a number of corporates. India has achieved annual growth of 10-15% in broiler and 8-10% in poultry egg industry with the annual production of 2.2 million tones broilers and 1.61 million eggs in 2007 (Poultry India, 2007).



Meat Production and percent contribution by various livestock species

S.No.	Species	Meat Production (millions tones)	% Contribution total meat production
1	Buffalo	1.489	24.09
2	Cattle	1.086	17.57
3	Goat	0.586	9.48
4	Sheep	0.289	4.68
5	Pig	0.333	5.39
6	Poultry	2.223	36.00
7	Others	0.175	2.83
Total = 6.18			

Data source: FAO STAT (as on 7th September, 2012)

The country with its vast dairy animal resources is poised to become leading player in the world arena particularly after its emergence as world's leading milk-producing country accounting for 15.6% of the estimated 671.3 million tones of the world milk production in the year 2007. India is the top milk producing nation in the world contributing about 15% to the global milk pool. The decade-wise rate of growth in milk production in India (3.6%) is substantially higher than the world average of 1.5%.

During the year 2009-10, the total wool production was 43.2 million kg as compared to 27.5 million kg in 1950-51. India contributes 2.2% of total world's wool production and Rajasthan



is the highest contributor (29%) to the wool production in the country.

By products industry plays an important role for improving the economy of meat sector by the production of various edible and non edible by products. Among the byproducts, 9.17 lakh tones of hides and 1.89 lakh tones skins were produced during the year 2008-09, which is 10.53 and 6.36% respectively, of total world production.

Disease control and livestock health

Livestock productivity is dependent on the availability of high-quality and regular animal health services. Disease control is of utmost importance and is the most critical factor in the productivity of livestock. Due to the intensive animal husbandry practices bacterial, viral as well as parasitic diseases spread much more rapidly. So in order to keep livestock healthy, management practice of keeping surrounding healthy and the hygiene play a vital role. Supply of safe drinking water, proper ventilation, drainage and disposal of excreta is very important. Simultaneously in order to prevent bacterial and viral diseases timely vaccination is of paramount importance along with the provision of improved and sustainable services to the individual livestock producer at affordable prices.

Nutritional requirements, climate changes and livestock health

Animal nutrition plays an important role in livestock production as it accounts for more than 70% of total recurring cost of production. Nutritional problems not only cause economic loss, even also responsible for various metabolic and deficiency



diseases. There is need for precision and accurate feeding method to avoid wastage of nutrients and making the livestock production more economic and eco friendly. The search for newer unconventional feeds including herbal and microbial feed additives, organic mineral supplements for better bio-availability and improved health are very much required for improved health of animals.

The environmental threats like climatic changes causing global warming may lead to scarcity of water and food resources and may cause spread of infectious diseases and heat stroke. Climate changes are also expected to increase the risk of vector borne diseases which may further lead to have an impact on heat related mortality and morbidity. These conditions provide an immense opportunity to researchers to produce such livestock population which are sustainable to climate change and global warming.

Technology advancement for market intelligence activities

An impressive progress has been made by livestock industry evolving from backyard venture to a fully fledged commercial agro industrial business in India. It has been possible due to urbanization, changing life style and improved socio-economical status of people. India's international trade in livestock and livestock products is mainly in meat and meat products (82%), live animals (17%), dairy products and eggs (1%). But at the global level, India's exports and imports account for only 0.17% of each. So there is challenging task for technologists to produce useful and money fetching technologies for beneficiaries and end users. Now a days, various sero-surveillance and nucleic acid based technologies have also been



developed for animal disease diagnosis and prophylaxis. Biotechnology tools are also being used to improve various livestock indigenous breeds (transgenic and stem cell technology), nutritional security (biosensors and active packaging) and livestock products technology (fermentation and bacteriocins) etc.

Common bottlenecks

With a huge livestock population and immense opportunities, livestock sector is growing at satisfactory level in India, but has not achieved the targets upto the mark due to:

- Poor productivity of livestock, shortage of quality feed and fodder, wide Livestock diseases prevalence and poor access to modern livestock services to counter them
- Research on socio-economic and policy aspects has also not received due attention. Linkage among research scientists, extension personnel and farmers has been poor
- Least priority given by the states due to controversies involved with the livestock products except milk
- Lack of credit and extension support and quality human resource.

Future aspects

India has 1.21 billion human populations which is more than 18% of world's human population. With this continuously increasing population, the livestock services can grow to many folds due to availability of ample resources, improving standard



of living and changing life styles, government policies, increasing demand etc. As per ICAR –vision 2030, projection for high value livestock product commodities by 2030 (in million tones) is as follows:

Commodities	Year		Expected increase
	2000	2030	
Meat	4.5	15	3.30 times
Fish	6	16	2.67 times
Eggs	17	57	3.35 times
Milk	76	182	2.40 times

Meeting the growing demand is a challenge as well as opportunity for researchers, technologists and scientists. It is possible through improving the productivity rather than number of livestock, better health, feed and fodder availability, producing superior germplasm, improving infrastructure, handling adaptation to adverse climatic conditions along with efficient utilization of livestock resources for value addition, processing and marketing. It would help to overcome the problem of unemployment as well as poverty alleviation.



DUVASU, Mathura 2030

University is the premier veterinary and animal science institution and is known for its quality education and research on various aspects of animal health and production including disease diagnosis, providing advisory and extension services through scientific knowledge and expertise. University is moving forward with missionary zeal and excellent performance to tackle the constraints and challenges in livestock sector to ensure optimum returns to farmers and rural youth. The institution would play leading role to be the global leader in the spheres of manpower development, basic veterinary education and allied subjects, research and transfer of technology for animal and human welfare.

Vision

Imparting quality veterinary and allied education, undertake need based and applied research with holistic approach, promoting high quality education and training for better animal health care and production, developing various technologies and transfer them to the end users to alleviate poverty, employment generation and to improve socio-economic status of the farmers/ animal rearers.



Mission

- To produce competent and technical manpower in the area of veterinary science and allied areas.
- Reinforcement in animal health services through research, development and veterinary health services.
- Generation and transfer of demand driven and basic technologies to farmers and organizations to improve animal health and management
- Interface industry and stakeholder in the newer perspectives of open global market
- Validate indigenous traditional knowledge on scientific basis.

Mandate

- Producing potent, socially sensitive and responsible professionals in the field of animal health, production and allied sectors.
- Conducting applied and needful research at affordable cost, livelihood security to the producer and profitability to the farmers through adoption.
- Ensuring transfer of technology to door step of farmers and livestock owners and to encourage the marginal farmers and landless laborers to adopt animal husbandry practices for improvement in production and productivity of their livestock and socio-economic status.
- Collaboration with State Agriculture and Animal Husbandry functionaries, Indian Council of



Agriculture Research Institutes related to animal health and production, Livestock industry and NGO's to develop resurgent, sustainable profit-oriented, market based production system for livestock, poultry fishery and allied sectors.

Focus

- Imparting quality education in the field of veterinary sciences and applied sciences.
- Undertake region-based, need-based, and basic research for improving animal health and productivity by adapting modern technologies including value addition.
- To enhance production of rural and urban livestock through effective disease surveillance, diagnosis, management, health care and vaccination programmes.
- To provide efficient extension services at the door step of poor and marginal farmers and livestock owners motivating them to adopt animal husbandry, poultry fishery and related vocations as an engine of economic growth and entrepreneurship.
- Social empowerment of women to become, "Knowledgeable Livestock Stakeholder" giving them economic identity.
- Empower rural youth for self employment by adopting integrated farming and animal husbandry practices.



Harnessing Science

Although institution is around sixty years old, but most of the laboratories and facilities have been recently strengthened and well equipped for better teaching and research programmes. With the advancement of technologies at molecular and cellular level, the College of Biotechnology has also emerged out as one of the important constituents of the university. With due emphasis on capacity building including HRD in the frontier area of technology, strategies researchers, national/ international linkages, extension activities with feedback mechanism, inter-institutional linkages and multi disciplinary approach would lead to the development of suitable technologies and packages of practices for their transfer to ultimate beneficiaries.

Better productivity and health through management and optimized nutrition

There are lots of factors responsible for productivity of animals, like housing and feeding management, climatic adaptation, natural behavior, disease prevention and treatment etc. Development of managerial norms with respect to all these factors is required to enhance production, reproduction, growth and to promote animal welfare.

Animal nutrition is the main input factor for milk production from livestock, constituting 60-70% of total cost of production. Inadequate feed supply coupled with availability of low quality fibrous feeds is major constraint in the productivity



and fertility of livestock. University has started production of the mineral mixture and urea molasses blocks. These products will be commercialized and would be sold at low cost in the market. Newer feed supplements for pets and domesticated animals ensuring health, immunity and productivity will also be produced in near future.

Excellent clinical services for treatment of diseases and reproductive problems

Veterinary clinical services are the foremost and prime duty of veterinary professionals. The university is a major source of practice and hands on training to produce potent veterinary personnel to serve the livestock. The veterinary clinic has been recently renovated with financial assistance from ICAR and has been well equipped with modern diagnostic facilities and tools. Department of Animal Reproduction Gynecology and Obstetrics is proud to have work on hormonal therapy of anestrus in bovines, synchronization of estrus using PGF₂, role of certain biogenic amines and peptides in control of corpus luteum and placental functions in buffaloes. The professionals are involved in treating the problems of infertility in cattle and buffaloes, semen preservation, invitro fertilization, fertility assessment tests under field conditions and synchronization using modern synchronization protocol, targeted breeding etc. University researchers have taken up applied research based on various aspects of animal health including control and treatment of mastitis, ancylostomosis in dogs, post parturient management in dairy animals and herbal based acaricidal, anthelmintics and tickicidal durgs. The focus on the departments related to clinical services like veterinary surgery, veterinary medicine and animal reproduction gynecology and obstetrics would be on



strengthening diagnostic tools, anesthesia, surgical techniques cardiovascular diseases as well as for early detection and treatment of structural, nutritional and functional disorders.

Epidemiological studies and Public health with biotechnological interventions

The epidemiology and microbiology departments of veterinary college serves as apex diagnostic laboratory to the animal husbandry department and has made significant contribution in diagnosis and control of various zoonotic and contagious diseases. Department is a regional centre for epidemiological studies on foot and mouth disease and also taking up research work on impact of vaccination for the control of Brucellosis, along with department of Veterinary Public Health, as a result of which, the incidences of brucellosis in organized farms of state have declined to 1-2%. The various departments are adopting the biotechnological tools and techniques for improving the productivity as well as public health. Biotechnological interventions have gained lots of attention for developing basic valuable information regarding disease diagnosis and prevention via various measures. College of Biotechnology is on its way to generate potent biotechnologists to undertake molecular biology based clinical research and to develop/augment bioinformatics technology.

Post harvest technology, value addition and utilization of by products

Technology is the skillful application of scientific knowledge by the scientists and researchers with positive attitude for the production of commodities at industrial level for economic purposes. The rapid urbanization and change in



human life style demand consumer friendly livestock products such as low calorie and cholesterol, fortification of products with higher protein and vitamin content. Consumer also requires the wholesome and safe product free from hazards. This can be achieved by assessment of risks and development of rapid screening methods including biosensors, development of simple technologies for quality enhancement of meat from spent animals, field kits for meat speciation, sex determination, protocols for food safety assurance and quality control with special emphasis on HACCP, GMP concepts and modern meat hygiene system. By products can enhance the economy of abattoir business upto 7-11% if efficiently utilized. It also reduces the hazards related to environmental pollution and other taboos related to meat industry. Efficient utilization of edible and inedible by-products at commercial level not only solve the problem of mal nutrition among the people, even also create the employment for technical as well as non technical youth as income source.

Research in extension education and socio-economic development

The veterinary extension directorate along with extension department KVK is undertaking the need based research for micro planning in different farming systems, covering other allied areas like diversification, economic evaluation of prospective technology, institutional reforms, export promotion, agricultural marketing, extension and management, etc. The university is also involved in imparting the trainings to the practicing farmers and farm women on various aspects of agriculture and animal husbandry through newly established Pashu Gyan Chaupal. University also reaches to the farmers and



animal owners through other means of communication like radio-talks, TV, news papers, scientific leaf-lets and also organizes the kisan-mela and various kisan-goshthies.

Human resource development

In the present era of competition and acknowledgement, higher education to enact substantial and sustainable changes in efficiency and productivity, a new way of thinking or paradigm that builds efficiency and desire for continual learning must be integrated into institutional structures. The College of Veterinary Sciences and Animal Husbandry is continuing to perform the important role in the development of trained manpower in various fields of veterinary sciences. New courses and advanced training programmes have been launched in order to develop the required manpower to meet the fast expanding private industry and also for promotion of entrepreneurship. Improvement in quality of education through qualified faculty, need-based curriculum, well-equipped laboratories and strong infrastructural facilities will continue to be the thrust area of the university.



Strategies and framework

The following strategies would be adopted to accomplish the vision 2030 and the goals of DUVASU, Mathura and to enhance efficiency and effectiveness of Human Resource Development in livestock sector.

1. Veterinary education and allied sciences

- Collaboration with advanced educational and research centers at national and international level
- Produce competent and skilled veterinary graduates for livestock sector
- Establishment of the Centers of advanced studies in veterinary and allied sciences
- Improvement in quality of education through qualified faculty and need-based curriculum
- Assisting Veterinary Hospitals of nearby areas and teaching hospitals to improve facilities of disease diagnosis and treatment.

2. Research priorities

- Research on integrated approach for the control of livestock and poultry diseases
- Research on integrated crop–husbandry farming and recycling of animal wastes



- Identification of toxic chemicals and heavy metals contaminating feed, fodder and soil treatments and suggesting remedial measures
- Exploration of non-conventional feeds, detoxification and removal of anti-nutritional factors for new feed development
- Quality improvement through supplementation and complementation of minerals and vitamins
- Process optimization and diversification, by-products utilization, use of non-conventional low-cost ingredients, biotechnological innovation for novel product development.

3. **Transfer of Technology**

- Development of technologies for efficient utilization of by products for economy purpose in organized sector
- Development of various livestock products with higher nutritional values and functional properties
- Development of Veterinary Instructional Technology for training of teachers and veterinarians
- Micro- and nano-technological approaches to develop novel tools for effective and safe delivery of disease diagnosis, prevention and treatment.

4. **Development of infrastructure**

- Developing instructional farms for pigs, goats, sheep, rabbits, equines for practical training of students and farmers
- Strengthening of laboratories for upstream research



- Strengthening of college library with need based facilities, books, periodicals etc
 - Upgrading facilities at college animal hospital for treatment.
5. **Strengthening extension activities and training**
- Organization of training programs for farmers and rural youth
 - Deputation of scientific and technical manpower for training in the frontier areas of animal production
 - Visit and training to the students for improving their in hand knowledge in commercial areas in the livestock sector

Epilogue

DUVASU, Mathura is continuously progressing with commitment to enhance livestock productivity, food safety and nutritional security, efficient utilization of resources, sustaining human and animal health through sanitary and phytosanitary measures, disease diagnosis and treatments, proper management and efficient utilization of livestock. Proper institutional support in terms of infrastructure and administrative back up would be created which would be of immense value in promoting young innovative brains to take up research in the mandated areas. The collaborative research would be carried out with consultancy of national and international research institutes and beneficiaries to make the identified programmes much more effective. These steps towards the success would lead to faster growth of the livestock sector than has been achieved so far and to line the India in the category of developed country in the world.

