Working Group Report

on

Development of Animal Husbandry in Haryana

Haryana Kisan Ayog

Government of Haryana

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on

Development of Animal Husbandry in Haryana

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FOREWORD

The State of Haryana has made commendable progress in the field of agriculture, education, industry and sports. It is a leading State with highest productivity of wheat and also highest production of buffalo milk in the country. However, in the present scenario of decreasing land holdings, due to population pressure, degradation of soil and water resources, and impending climate change, the existing agricultural practices need to be reoriented to ensure accelerated agricultural growth through promotion of other sectors such as livestock, fishery and horticulture. Hence, innovations in farming system are needed to help small holder farmers for improving their livelihood.

To accelerate agricultural growth in the State, sectors like dairying, poultry, fishery and horticulture need more space and policy support. Currently, the livestock sector contributes almost 30% of the State GDP, which can be doubled in the next decade provided innovative practices, new technologies and enabling policy environment are adopted for transforming Haryana into 'Dairying Hub' on lines similar to those of New Zealand and Denmark with Murrah Buffalo Brand niche products, namely Mozzarella cheese and A2 milk. Since bovines are blamed for methane production, efforts should also be made to practice green and clean animal husbandry and adopting innovative feeding, animal sheds and health management practices.

It gives me immense pleasure that this Working Group Report on Animal Husbandry led by Dr. M.L. Madan has done thorough analysis of various factors and issues affecting livestock development including development related efforts to increase production and profitability, new research priorities and policy support for integrated/diversified farming systems mode for higher income. The Working Group has also conceptualized “Livestock Mission”, Livestock Development Goals-Vision 2020, and has made several valuable recommendations. It had series of meetings with the livestock farmers, entrepreneurs, researchers, field functionaries, line departments and policy planners.

I congratulate Dr. Madan and his team consisting of Drs. N.K. Khurana, Arun Varma and M.P. Yadav for their sincere efforts in bringing out this valuable report. I am sure, the Department of Animal Husbandry & Dairying, Govt. of Haryana, LLRUVAS, Hisar, Farm Advisory Agencies and the farmers will take full advantage of these recommendations. This important publication will also be of immense use to the planners, administrators, scientists and all other stakeholders. I do hope that implementation of various recommendations by all concerned will accelerate livestock development in Haryana.

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PREFACE

Livestock sector in Haryana is the most vibrant contributor to agriculture as well as to the state economy. The state has about 1.8 % of Indian livestock and occupies an important place in the dairying map of India as it contributes 5.5% of the Nation's milk production with just 2.79% of the country's adult bovines. The state has a livestock population of 90.50 lakh along with 287.00 lakh poultry. Its annual milk production has increased to 66.61 lakh tons, egg production to 4.11 billion and meat to 3.24 lakh tons. The per capita availability of milk has increased from 660 gm to 708 grams per capita per day and eggs from 60 to 160 per capita per annum.

As the performance of Agriculture as well as Industry (primary and secondary sectors) is posing serious challenges to the development strategy of the State, the contributions from Livestock sub sector to the economic growth of the state, in fact, has enabled the agriculture and allied sector achieve an overall growth of 3.4%. During the past decade, monetary contribution from livestock to the state has surpassed that of food grains. The growth from agriculture sub-sector alone being even negative for some years during the 11th plan. Lately, the most vital agriculture component for food and nutritional security and economic profitability among the population, with or without land, has been identified to be the "livestock".

This report of the Working Group on Livestock development has assessed the present status of livestock and its stakeholders in Haryana, identified the opportunities as well as challenges for further development and provided appropriate technological, developmental and policy options for the future growth and development of the state as outlined in the terms of reference. The report in particular has examined in detail the Farmers' perspective of growth as well as economic development of the livestock sector and has made recommendations for not only providing answers/solutions to their concerns but also developing policy options for the state animal husbandry department and the state government to bring a qualitative and quantitative change in the state of functioning of the live stock sector.

In this report an attempt has been made to deliberate on all the aspects of livestock production as set forth in the terms of reference for the working group. I feel highly thankful to the Haryana Kissan Ayog, Government of Haryana under the Chairmanship of Padma Bhushan Dr R.S. Paroda for providing me an opportunity to Chair the working group and being associated with

eminent colleagues namely Dr Arun Verma Ex- Assistant Director General (AS) ICAR, Dr N K Khurana, Secretary Haryana Livestock Development Board, as Member and Dr M P Yadav, Ex Vice chancellor, Agricultural University, Meerut and former Director IVRI Izatnagar, Nodal Officer of the working group. We express our gratitude to Dr Paroda for the support and active interactions we had during the development of the report.

The working group had extensive and in depth discussions with the FC and Secretary to Haryana Government in the Departments of Animal Husbandry, Agriculture, Cooperatives, senior Officers in other concerned departments, Director General Animal Husbandry Dr. K. S. Dangi and other senior administrative and field officers in the department, Director and senior officers in Animal Husbandry and Dairy department in Punjab. Several interactions were held with Farmers particularly farm women in kisan melas and specially convened meetings in different sub-divisions and districts. The members also visited progressive farmers in the state and private institutions and dairies in Punjab and Haryana. Consultations were also held with dairy cooperatives and different livestock industrial units, banks and feed and fodder agencies/departments in the universities. The draft recommendations were also sent to 42 experts for their comments and the modified report on the basis of valid suggestions were discussed at a National Brain Storming session held at the National Academy of Agricultural sciences involving eminent livestock experts, Dairy Managers, State AH and Central government DAHDF officials, Directors of Animal Science Institutions, Livestock Consultants and academicians. A special expert consultation was held for Pricing of Milk at NDRI Karnal.

The report in 21 chapters deliberates and makes recommendations on different aspects of livestock improvement, research and development including major initiatives on breed and elite animal identification and registration, developing Brand Haryana for buffalo products, buffalo spots for meat, a 'Govardhan' program for indigenous cattle development, production incentives and subsidiaries, feed and fodder availability program 'Charamani', comprehensive rural backyard poultry production system, breeding and genetic improvement, using sexed semen and biotechnological application, animal conservation, control of stray animals, pricing of milk and animal products, marketing facilitation, hygienic animal slaughter and slaughter houses of different capacities and species including poultry; animal welfare, environment management and ecological sustainability, and Institutions and policies for quality control regulations and evaluation. Critical parameters for such growth process have been enumerated, a road map prepared and their quantitative and qualitative role with a time frame identified in the developmental scenario.

These set of recommendations are being made to translate the aspiration of the Haryana Farmers. The working group strongly feels that in case the state has to achieve a growth rate of plus 5% in agriculture, there is a need to push up livestock sector through the immediate launch

of State Livestock Development Mission, with well defined objectives, goals and action plan, detailed in the report, to achieve rapid growth and development of livestock sector.

The programs, projects and the policy issue recommendations together if implemented, in the indicated time frame in a Mission Mode will ensure a status of a front line standing for the farmers of the state, simultaneously increase the economic standing of the livestock owners, potentiate the Primary sector growth in the GDP and transform the state of Haryana as a model state for agriculture growth and development in the country.

This report would not have been possible without the unflinching support of the Haryana Kisan Ayog secretariat particularly its secretary Dr R S Dalal who spared no effort to facilitate the deliberations, visits, meetings and interactions with officials, institutions and agencies. I express my hearty thanks to the Kisan Ayog for all the organization and help.

(M L Madan)

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Words are inadequate to express our gratitude to Padma Bhushan Dr. R.S. Paroda, Chairman, Haryana Kisan Ayog for his visionary approach in identifying Animal Husbandry as one of the key sectors for rural prosperity and nutritional security. Constitution of an independent Working Group for the development of livestock sector and spearheading the establishment of "Livestock Mission" in the State of Haryana show his commitment towards the welfare of the farming community in the state. The study of this dimension and preparation of a comprehensive report would not have been possible without the invaluable support and valuable suggestions of Shri Hardeep Kumar, IAS, and Shri P.K. Das, IAS, both Principal Secretaries to Govt. of Haryana, Animal Husbandry and Dairying Department; Dr. K.S. Dangi, Director General, Animal Husbandry and Dairying, Haryana; Dr. H.S. Sandha, Director, Animal Husbandry, Punjab; Dr. A.K. Srivastava, Director, NDRI, Karnal; Dr. R.K. Sethi, Ex.Director, CIRB, Hisar; Dr. R.K. Singh, Director, NRCE, Hisar; Dr. B.K. Joshi, Director, NBAGR, Karnal; Dr. A.K. Pruthi (Ex Dean), Dr. S.C. Arya, Dean, College of Veterinary Sciences, LLRUVAS, Hisar; Senior management of HDDCF and many more .

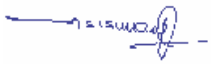
The working group takes immense pleasure in thanking Lakshya Dairy, Jind; and the progressive farmers and entrepreneurs from Haryana and Punjab who shared their success stories and / or participated in various interactive meetings and workshops held at Hisar, Rohtak, Kurkshetra, Gurgaon, Karnal, Chandigarh, Delhi and Ambala etc.

An honourable mention goes to the senior officers of the Department of Animal Husbandry & Haryana Livestock Development Board; Faculty, Veterinary College, LLRUVAS, Hisar; Officers from various departments of Govt of Haryana, NABARD, bankers, industry representatives, and experts representing various fields for their valuable inputs and sharing their experiences.

Our special thanks and appreciation go to Dr. R.S. Dalal, Member Secretary, and the entire team of Haryana Kisan Ayog for their excellent cooperation, effective and prompt organization of all meetings with livestock farmers, other stakeholders and Govt. officials as also for providing necessary logistic support.

Dr. M.L. Madan

Dr. Arun Varma



Dr. N.K. Khurana

Dr. M.P. Yadav

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ABBREVIATIONS

Ag GDP	:	Agricultural Gross Domestic Product
AH & D	:	Animal Husbandry and Dairying
AI	:	Artificial Insemination
AICRP	:	All India Coordinated Research Project
AnGR	:	Animal Genetic Resources
ATMA	:	Agricultural Technology Management Agency
AWBI	:	Animal Welfare Board of India
BIS	:	Bureau of Indian Standards
BQ	:	Black Quarter
BSE	:	Bovine Spongiform Encephalopathy
BSL	:	Biosafety Level
CCSHAU	:	Chaudhary Charan Singh Haryana Agricultural University
CSO	:	Central Statistical Organization
CSSO	:	Centre for the Study of Social Organization
ET	:	Embryo Transfer
FAA	:	Fertility Associated Antigen
FAD	:	Food and Agriculture Division
FMD-CP	:	Food and Mouth Disease Control Programme
GDP	:	Gross Domestic Product
GHG	:	Green House Gas
GI	:	Geographical Indicator
gm	:	Gram
HACCP	:	Hazard analysis and critical control points
HCN	:	Hydrocyanic Acid
HS	:	Haemorrhagic Septicemia
IBD	:	Infectious Bursal Disease
ICT	:	Information and Communication Technology
IPR	:	Intellectual Property Right
IT	:	Information Technology

KCC	:	Kisan Credit Card
Kg	:	Kilogram
KVK	:	Krishi Vigyan Kendra
LLRUVAS	:	Lala Lajpat Rai University of Veterinary and Animal Sciences
LS	:	Livestock
LSU	:	Livestock Unit
MMPO	:	Milk and Milk Product Order
MSP	:	Minimum Support Price
NAAS	:	National Academy of Agricultural Sciences
NBAGR	:	National Bureau of Animal Genetic Resources
NCA	:	National Commission on Agriculture
NGO	:	Non Governmental Organization
NSS	:	National Sample Survey
OIE	:	Office International des Epizooties
ONBS	:	Open Nucleus Breeding Scheme
PFA	:	Prevention of Food Adulteration Act
PPP	:	Public Private Partnership
PPR	:	Peste des Petits Ruminants
PUFA	:	Poly Unsaturated Fatty Acid
R & D	:	Research and Development
SFA	:	Saturated Fatty Acid
SHG	:	Self Help Group
SMS	:	Short Message Service
SNF	:	Solid Not Fat
SVU	:	State Veterinary University
UP	:	Uttar Pradesh
UT	:	Union Territory
VAT	:	Value Added Tax
WHO	:	World Health Organization
WTO	:	World Trade Organization

EXECUTIVE SUMMARY

1. Livestock Scenario

Constituting just 1.3% of the country's land area, Haryana Agriculture is endowed with a strong indigenous livestock based production system and is the home track of the best breeds of Cattle and Buffalo in the Country.

Animal production system in Haryana continues to be rural based, spread over millions of tiny/ solitary units throughout the state with 95% of the livestock reared in rural areas. More than two thirds of the 32 lakh rural house-holds keep animals.

The state has a livestock population of 90.50 lakh along with 287.00 lakh poultry. Its annual milk production has reached 66.61 lakh tons and egg production has increased to 4.11 billion and meat to 3.24 lakh tons. The per capita availability of milk has increased from 660 gm to 708 grams per day and eggs from 60 to 160 per annum.

The most vital agriculture component for food and nutritional security as well as economic profitability among the population, with or without land, has been identified to be the "livestock".

Future scenario of Livestock and Animal Husbandry is very significantly impacted by the demography, environment, disease, technology and economic changes, and demands utilization of 'foresight technology' to identify the challenges.

2. State of Economy and Sectoral Growth

The livestock sector in Haryana has, of late, become the most vibrant contributor to agriculture as well as to the state economy. Monetary contribution of livestock surpassed that of food grains in 2005-06.

The livestock sector contribution to the total output of Agricultural and Allied sector (GDP) increased from 15% in 1981-82 to nearly 50% of crop agriculture in 2009-10.

For the state's economic growth, the performance of Agriculture as well as Industry (primary and secondary sectors) is posing serious challenges to the development strategy of the State. In fact, the contributions from Livestock and Fisheries sub sectors to the economic growth of the state has enabled the agriculture and allied sectors achieve an overall growth of 3.4%. The growth from agriculture sub-sector alone was even negative for some years during the 11th plan.

In spite of its significant contribution to the GDP, the livestock sector in Haryana received only 8.2% of public outlay of agricultural sector (11th Plan) and only 0.38% of the approved total outlay of the 11th Plan.

The livestock sector has far reaching implications as regards rural poverty, rural employment, women empowerment, youth involvement, female and child nutrition, protein hunger, soil quality management and production system sustainability as well as ecosystem stability. Further, as the livestock is mostly owned by poverty affected population with limited resources; inclusiveness in growth, development and empowerment amongst poor people is possible at a faster pace through livestock only. If the economy grows rapidly, it helps the underprivileged. Therefore, the state should focus on increasing growth in those sectors of the economy which impacts the poorest most, livestock being one.

3. Present Status of Animal Husbandry

The state has about 1.8 % of Indian LS and possesses a rich wealth of domestic bovines. Haryana occupies an important place on the dairying map of India as it contributes 5.5% of the Nation's milk production with just 2.79% of the country's adult bovines. Buffaloes produce 84% of the total milk (66 lakh tons) in the state. Average milk production of Indigenous cow is 4.9 Kg, Exotic/ cross 7.9 Kg, Buffaloes 7.1Kg and Goats 0.8 Kg per day/animal.

Poultry continues to be one of the fastest growing segments of the sector averaging between 6 to 9% annual growth. Milk, meat and egg production have recorded very high growth among the agriculture commodities during the past decade. However, wool production has decreased due to fall in sheep population.

Through gainful utilization of surplus family labour and locally available crop residues, grasses and weeds for rearing of animals, livestock rearing has emerged as an important means of subsistence as it provides a regular flow of income in addition to ensuring nutritional security and providing the most sustainable livelihood for the resource poor animal owners and farmers.

Incentive based field performance recording programme for identification of elite Murrah buffaloes and Foot and Mouth Disease Control Programme are the success stories of the livestock development.

4. Livestock Production

The state is well known for its rich livestock wealth particularly the world famous Murrah buffaloes now named "Black Gold" of India. Almost seventy six percent of 59.53 lakh buffaloes in the state are of Murrah breed. The cattle population of 15.52 lakhs consists of 6.27 lakh Hariana, 5.66 lakh exotic & their crosses.

The density of animals, expressed as livestock units per Sq. Km, at 141 (in Haryana State) is higher than in Punjab (113 LSU/ Sq.Km), more than double the density in Rajasthan (64 LSU/ Sq.Km) and almost three times the density in Himachal Pradesh (49 LSU/ Sq.Km). The average daily milk production of 5.10 liters per adult bovine in the state is almost twice of the national

average of 2.61 liters. The animal productivity in the neighboring states except Punjab (6.67 liters) is no better with 1.61 liters in Himachal, 2.31 liters in Rajasthan and 2.99 liters in U.P.

The major reasons for low performance of the sector are not hard to visualize. In addition to poor genetics, a majority of the animals are reared under sub-optimal conditions. Non-Inadequate availability of quality feed and fodder remains the major constraint due to high density of animal wealth and the ever increasing human population. There have been minimal scientific/ technological interventions and changes in the age-old, traditional husbandry practices. Value addition and organized marketing are at a very low scale.

In Recent years have witnessed welcome shift in dairy production system. The traditional, family based, low-input, extensive, resource-driven system is being replaced by an intensive, high-input, demand- driven, commercially viable milk production.

The state has given top priority to the quality of semen production and over 29 lakh inseminations were performed in 2011-12. The State also runs an incentive based field performance testing program for elite animals having a minimum daily milk production of 13 liters of milk.

The state has a Milk Cooperative Dairy Federation, constituted of Milk Unions, selling milk to the Plants run by the Federation. The Average Milk Procurement during 2011-12 was 5.32 lakh litre per/day most of which was sold as liquid milk and only surplus converted into products.

Though the state has got two distinct agro ecological zones, traditionally associated with regional preferences for livestock species, however, the inter-district differences in total milk production could be attributed to the number of animals rather than the differences in animal productivity. The different districts cannot be grouped into the low or high productivity areas based on the milk production data available. The small ruminants are more in numbers in low water availability arid areas as they are preferentially associated with resource poor non-irrigated districts of the state. The highest concentration of poultry is around the large cosmopolitan towns due to obvious marketing advantage.

The meat production in the state during 2011-12 was 3.24 lakh tons, 96% of which was contributed by poultry. The per capita annual availability of meat in Haryana stood at 12.60 kg. The population of poultry has more than doubled from 13.60 million in 2003 to 28.70 million in 2007. Current annual wool production has come down to 12.87 lakh Kg after attaining a maximum production of 25.18 lakh Kg during 2003-2004.

5. Feed and Fodder

The annual requirement of compounded (balanced) cattle and livestock feed in the state is around seven million tones and may continue to increase as the production and productivity of milk goes up. Haryana is one of the food surplus states in the country. However, the diversion of

grains from human to animal feed depends upon matrices of man, animal and environmental factors. There is inadequate Feed and Fodder due to disappearing community pastures/grazing lands. Coupled with this there is no Govt. Agency owning responsibility for fodder seed production. Also there is lack of effective feed and fodder development strategy for the state.

6. Analysis of Livestock Sector in Haryana

On the basis of the issues raised by the farmers and discussions with the experts and stake holders, an analysis of the current performance vis-a-vis farmers' perspective has been drawn. Due to poor animal genetics, productivity of the state livestock remains a concern. Dairy cooperatives and dairy federation are having limited presence in terms of LS improvement. The structural functioning of the three major wings of dairying, namely production, processing, and marketing are flawed and there is hardly any proactive role of state for cattle, sheep and goat, pigs and poultry development.

Health cover is limited to stationary Veterinary Hospitals, providing curative (fire-fighting/ reactive role) treatment with inefficient Prophylaxis and Herd health management (i.e. proactive role) at the farmer's door step. Infertility is causing at least 25% of the production losses.

There is limited processing and value addition in milk; and meat sector remains most neglected being handled in an unorganized manner.

Inadequate budgetary support for LS, as it has always been considered a low priority sub-sector of agriculture, and little availability of institutional credit continue to be the major stumbling blocks.

The Veterinary and Animal Husbandry Extension services had been almost non-existent till a few years ago. Skill up-gradation, capacity building, training and development of human resources have also not received desired emphasis.

Several departments/agencies are working towards one common goal but without any convergence or co-ordination leading to poor harvesting of benefits with more expenditure.

There is a lack of strong policy initiatives in the absence of lobbying body (as forum) associations /breed societies. Also, there are no incentives for fodder production in preference to cereal crops. Compensation is not available for loss to LS breeders on equal footing vis-à-vis that of agriculturists and in case of sudden disease or calamity, or onset of epidemic when groups of animals are affected, especially among small ruminants and birds.

7. Livestock Improvement

Several issues and concerns have been identified and deliberated upon regarding improving the LS production in the state. These include promotion of cattle in Haryana, animal identification and record keeping and dealing with stray and male cattle population.

The Buffalo and its gene excellence have to be taken advantage by recognizing as a Brand for Haryana and Buffalo milk taken advantage of in terms of quality and composition, particularly for the manufacture of products which can only be produced from buffalo milk and have a world market.

Male buffalo needs to be promoted as a meat animal and squandering of male buffalo, through neglect of lakhs of the calves born every year needs to be done away with through pragmatic policy of organized rearing of these calves for male production as also for meat. Nutrition, nutrient partitioning and conversion efficiency advantage among buffaloes should be exploited (as a solution to) the productivity dilemma of this species.

Milk pricing is a vital issue for farmers since the existing standards for fat content in milk (4%) do not address the low fat of cow milk and puts crossbred cattle, with large liquid volume to disadvantage. In most of the other states, this standard is 3.5% i.e. lower and matches the fat content in milk of cross bred cattle. There is an urgent need to lower this standard for fat content in the cow milk to 3.5% from the existing 4.0% in the State. The Government may issue a notification and complete necessary legal formalities (if any) in this regard to encourage cross breeding in the state as well as to boost milk production.

Livestock sector should also take advantage of information technology to host a dedicated portal for providing required information in real time to animal owners.

Feed and nutrient requirement also needs to take care of the rural and urban demand change in food and feed of both animal and human populations especially future LS production increase will also imply greater grain and nutrient demand.

Associative role of genetic variability in milk casein in terms of A2/A1 gene and its health correlates need elucidation.

Preferential pricing of cow milk and providing subsidized concentrate mixture along with cash incentive for elite cattle and buffalo should be ploughed in programs promoting LS production. All the incentives available for crop agriculture should be available to livestock (on equal basis).

The major issues and concerns for genetic improvement have been delineated and elaborated.

In spite of the fact that the State has a larger Animal Husbandry presence in the economy and total agriculture production system, the services are grossly inadequate in professional personnel numbers, particularly in critical areas of growing specialist/ expert demand; infrastructure for hospitals, clinical diagnosis, indoor care, super specialization, state-of-art clinical hospitals and funds.

Special R&D efforts are required to produce cheaper, new combined/ polyvalent/ thermo-resistant animal vaccines that are safer, more effective and easy- to- administer with long lasting immunity. Effective and cheaper diagnostics/ diagnostic kits/ pen side tests/ biologicals are in great demand and need to be evolved on priority.

Except for the FMD-CP, there is no specific control program against any animal disease in the State. Similar control programmes need to be undertaken for other dreadful diseases like HS, PPR, Swine Fever and Brucellosis etc. As the success of the disease control measures depends upon reliable and strong epidemiological data base, forecast of disease pattern, trained and highly skilled manpower, and quality of inputs; the State needs to put in extra efforts on these lines for better and continued success.

8. Animal Health

The report recommends that animal health, disease monitoring, zoning, vaccination and control, and veterinary care be taken up by the State and also that possibilities of Private Health Management system at least for large commercial herds be explored. It also identifies virtue in outsourcing activities which are routine and repetitive. There is an urgent need for training manpower for special managing cadre for health management in the state and restructuring of State Veterinary Services, Dairy Development & Dairy Federation.

9. Animal Industry and Post Harvest Handling

Exploitation of animal production in terms of industry for Milk, Meat, Poultry (egg, broiler), Feed, Drugs and Vaccines offer great scope but has not been exploited to its inherent capacity of revenue generation, value addition and marketing. This results into great disadvantage to the LS producers as they do not get the right price and also do not share the profits pocketed by the middle men. Under optimal running conditions, only 35% of the surplus (16.2% of total) milk in the state can be handled by the dairy plants. The bulk of the surplus milk continues to be handled by the unorganized sector (sweet shops, vendors etc.). Shifting of handling and processing of surplus milk, from the unorganized to the organized sector, holds key to sustained profitability of dairy farming. Buffalo meat production holds an unparalleled opportunity for the state and will serve to fast track the animal improvement. This will also ensure high revenue returns to investment, greater profit margins to farmers, higher economic growth and human development. Rural broiler and egg production can serve as a transforming agent for the poor in terms of health and nutrition.

Chronic deficiency of essential nutrients / micronutrients has almost eclipsed the genetic potential of our stock. The practice of feeding compounded cattle feed, mineral mixture and supplementation with micronutrients has yet to become popular among the animal farmers. The disappearing common grazing grounds and pastures due to intensive crop husbandry, rapid urbanization accompanied with industrial growth, and disinterest of the educated youth in animal rearing have further added to constraints.

Insufficient institutional credits along with inadequate budgetary support continue to be the limiting factors. Technology intervention and adoption by the end user has been minimal. The low levels of value addition and unorganized marketing structure are responsible for poor

returns to the primary producers. The sector has failed to attract private investment. Self help groups, cooperatives and producer companies for value addition and forward linkages on the lines of crop husbandry still remain a dream.

10. Research and Development Activities

To address the issues and concerns of the farmers, animal owners, animal husbandry professional and the stakeholders, a series of suggestions have been made for undertaking R&D for enhanced production and productivity in different specified areas. The major areas have been identified and a road map of strategies and action points as follows has been suggested;

- *Intensive livestock production*
- *Semi intensive peri-urban or rural integrated live stock production system*
- *Augmentation of feed resources and alternate resource livestock nutrients*
- *Genetic Improvement strategies and policies for sheep, goat and pigs*
- *Efficient reproductive management through assisted technologies*
- *Product Development/value addition for buffalo brand; primary processing, packaging and marketing of LS produce*
- *Health protection against Trans-boundary and emerging diseases*
- *Climate change impact on fodder, feed, breeds, livestock behaviour, health and production*
- *Traditionally proven wisdom/knowledge documentation and testing for cost effective, ecofriendly and green livestock production*
- *Biotic and abiotic stress (humidity, temperature) on animal health, physiology, production, reproduction and behavior.*
- *Processing and conversion of Livestock waste generated at farm units, dairy farms, poultry farms, dairy and meat plants, tanneries, feed mills, etc.*

11. Convergence of Programs

There is a need to develop synergies and convergence of public sector programs particularly for the large number of schemes, detailed in the report, financed and managed in agriculture, rural development, animal husbandry and other departments.

12. Assisted Reproductive Technologies

For faster genetic improvement and augmentation of animal productivity and health, there is an urgent need to apply the available reproductive biotechniques for overcoming the inherent limitations of the traditional technologies. Acute shortage of quality germplasm, both among cattle and buffaloes, can be effectively addressed through these technologies. The preference for the progeny of the desired sex can be effectively translated through these technologies.

13. Policy Issues

The report identifies a series of issues and activities regarding livestock (Chapter XVIII) which need policy interventions at the level of the Government and the State Department of Animal Husbandry and Dairying. These include identification and registration of all animals, Breed and Breeding Policy for all livestock species and a comprehensive Cattle Centric Development Scheme/Program "Goverdhan". Implementation of "GOVERDHAN" and "CHARAMANI" (program for fodder production) schemes will give a new thrust to cattle development programme (as strongly requested by farmers). These have also been found essential for economy of the livestock animal owners / farmers. These schemes envisage developing BUFFALO AS A BRAND FOR THE STATE.

The policy imperatives also address the issues of germplasm development and distribution, stray cattle population, livestock/ breed conservation, formation and support system for women self help groups, Climate change impact on fodder, feed, breeds, livestock health and production and animal insurance.

14. Environment and Bio-Safety

There is a need to shift from extensive rural to semi-intensive and intensive peri-urban and rural livestock production system involving bio-safety, food hygiene and environmental considerations; and quality control of the produce and products as well as the inputs required for livestock production. Influence of climate needs quantification and strategies need to be developed for amelioration. For environment sustainability, pollution and carbon foot print need monitoring

15. Livestock Mission

The primary focus in any developmental strategy should be the poor landless rural population who, to a large extent, mostly earn their livelihood through livestock, and thus there is a need for major shift in the departmental programmes dispensation. A coordinated approach under the LIVESTOCK MISSION for the State, should be to streamline all the Animal Husbandry programmes, highlight the convergence of the State department in programme implementation and lay criteria (among other things), for evaluation and monitoring of these programmes. If we have to achieve a growth rate of plus 5% in agriculture in Haryana state, there is a need to push up livestock sector through the establishment of State Livestock Development Mission. This Mission should plan and oversee various development schemes related to livestock and poultry namely feed and fodder development, prevention and control of diseases, biodiversity conservation, breeding policy and strategies; and processing, value addition and marketing of livestock produce.

LIVESTOCK MISSION should also examine sectoral/departmental perspectives for current and future prospects of livestock as an industry in the state with reference to its unique animal

resource and gene excellence as also niche livestock products. It should brand equity for the State livestock and animal products, agro ecology, geographic location, livestock excellence, rural food preference, agri-economy and socio-religious beliefs should also be considered. The mission should also bring in the concepts of feed, milk and milk products, meat and meat products, veterinary drugs, dairy farming etc.

Such a LIVESTOCK MISSION will also examine what incentives and support need to be introduced in Animal Husbandry and other departmental programmes so that they will result in an inclusive and sharper dent in poverty alleviation, quick response benefits and faster augmentation of profit, increased rural and urban employment, boost local and small scale industry and entrepreneurship, potentiate crop productivity, generation of women remunerative employment, better health for children and families through better nutrient and protein availability- considerations which all root to and emerge from livestock and animal husbandry propositions.

16. Livestock Development Parameters and Targets- Vision 2020

The report develops a Quantified Vision for 2020 in terms of targets and goals for livestock development. Based on understanding of the 'State and Status of livestock' in Haryana, a road map has been developed, as a part of this report, to lay the path for an all round development of the most vibrant sector of the state economy.

17. Summary Recommendations

The programs, projects and the policy issue recommendations together are summarized and presented. If implemented, in the indicated time frame, they will ensure a status of a front line standing for the farmers of the state, simultaneously increase the economic standing of the livestock owners, potentiate the primary sector growth in the GDP and establish the State of Haryana as a model state for agriculture growth and development in the country. Critical parameters for such growth process have been enumerated and their quantitative and qualitative role identified in the developmental scenario.

Chapter-I

1.0 Introduction

1.1 Preamble

The state of Haryana has a pre-eminent position in the country in livestock production and contributions to agriculture productivity. Constituting just 1.3% of the country's land area, Haryana Agriculture is endowed with a strong indigenous livestock based production system and is the home track of the best breeds of Cattle and Buffalo in the Country. The livestock population as per census 2007 is 90.50 lakh along with 287.00 lakh poultry. The annual milk production in the state during 2011-12 has reached 66.61 lakh tones compared to a production of 52.21 lakh tons during 2003-04. During the same period the egg production increased from 1.28 billion to 4.11 billion and meat from 1.60 lakh tons to 3.24 lakh tons. The per capita availability of milk increased from 660 gm per capita per day to 708 grams per capita per day and eggs from 60 to 162 per capita per annum. The growth rate of production from livestock has been far ahead of the growth recorded from the crop group (eggs 321%, meat 203 %, milk 28% between 2004 and 2012) and has been sustaining the total agriculture growth.

Potentiating the agricultural production in a sustainable mode and ensuring greater profits from livestock (LS), therefore, implies a thorough understanding of the production system and the environment under which it operates.

1.2 Livestock – Perceived Future Scenario

Indian agriculture, and what surrounds and influences it, is in profound change. The rural and urban populations are under tremendous strain born out of diverse reasons mostly rooted in food, agriculture and economy. Lately, the most vital agriculture component for food and nutritional security and economic profitability among the population, with or without land, has been identified to be the “livestock”. Animal husbandry, veterinary medicine, animal health as well as veterinary medical education are very significantly impacted by the demography, environment, disease, technology and economic changes. Some of the major perceptible changes consist in:

- Economic influences forcing the society for allocation of fertile productive land for non agricultural purposes.
- The human and animal population pressure limiting the resources available for sustaining production increase; the competition among populations straining the production system.
- Population demography - ethnic, social and caste- exerting socio-economic pressures,

often one against the other offsetting and negating the developmental gains (Diversity in society will continue to increase, with associated impact on values).

- Shrinking land holding, fatigue of the production system, acute nutrient mining from soil, scarce water resource considerably flawing the crop production system, limiting factor return and annual production increase in crop sector.
- Livestock bringing in greater profitability and sustainability in agriculture operations; youth feeling more attracted to business propositions in livestock enterprises with regular returns than land operations with uncertain semi-annual/seasonal returns.
- For poverty alleviation, women empowerment, child nutrition, health of nursing mothers and neonates, livestock a vital link.
- The livestock sector showing a sustained annual growth of over 3.5% with potential sub sectors growth touching a high of over 8 to 11 % annually.
- Information technology bridging gaps in information and communication system; information becoming prized and its access equalizing proposition for economically challenged individual groups.
- Changes in the climate, weather and rainfall situations causing powerful shifts in crop production, crop yields and predictive profits- conditions not occurring at similar frequencies in animal operations in optimally managed conditions.
- Consumers' spending powers, in urban as well as rural situation, distinctly increasing, greater than ever before, attracting greater use of value added animal products of milk, meat, eggs and special meat and dairy preparations.
- Urban populations showing a distinct food shift towards consumption of animal protein and animal food products.
- The gap between the rich and the poor across rural and urban populations increasing, thus creating hurdles for technology absorption particularly among the rural poor who hold the maximum livestock critical for livelihood, poverty alleviation and food security consideration.
- Farmers, with land or with limited land drawn to intensive livestock production particularly in peri-urban situation for greater profitability; powerful shifts occurring in crop production towards alternate agriculture spearheaded by livestock (dairying, piggery, poultry, and ancillary industry) operations.
- Emergence of pathogens endangering animal and human health to continue- during last 25 years, 38 pathogens have emerged globally out of which 75% originated from animals.
- The threat of new zoonotic diseases affecting rich and poor, rural or urban population irrespective of holding livestock unit or not.

- Food hygiene and food safety issues override price and market consideration.
- Disease information, diagnostics and prophylactics becoming more pertinent and valuable and highlighting the problem of access and application.
- With greater profitability, animal owners' capacity to pay for animal health care through professional help by private sector compared to the current situation of dependence on state or public sector.

1.3 Foresight on Livestock Perspectives

The livestock sector needs to be examined and analyzed in relation to the components of society and its sub sectors as part of a total agriculture. There is a need to depart from the traditional methodology of extending thinking from the present to future. Instead, "Foresight Technology" needs to be brought which seeks perspective from the future rather than extending the present. This involves working with distinguishing tools – challenge questions and scenario development. This methodology has been applied in developing the livestock sector document. A group of following challenges, questions and their corresponding scenario needs to be explored.

- The scenario for livestock in Haryana 2020-2030 can be envisaged as a sector with fragmented land holding, depleted soil nutrients, low productivity with water scarce agriculture.
- With population increase, human and animal - differential growth, variation in human and animal numbers, ratio variation (between species/breeds), and brand new world of modified species, a new competitive animal agriculture born.
- "Resource" crunch for extensive livestock production and "Technology" crunch for intensive livestock production.
- Peri-urban livestock activity shifting to rural base due to skyrocketing of land prices in peri-urban areas.
- Rural livestock production as a viable economic agriculture option, with corresponding environmental issues and demands.
- Limited human willingness or participation in livestock activity among rural animal/ land holding population.
- Per animal production/economics of milk and /or meat a more potent consideration for livestock farming than any love for breed or animal, value addition and marketing as key for profitability of animal produce.
- Animal produce and product biosafety/hygiene outpacing production criteria of development and economic returns.

- Production emphasis and remunerate economics key issues for the farmers under the umbrella/criteria for public funding; treatment and curative medicine (Health) shift to private enterprise.
- Veterinary education and research to respond to the changing needs - re-creating areas of professional focus, greater demand in number of Professionals, and Veterinarians capable to deliver " one world one health one medicine" concept for animal and human needs.
- Academic Veterinary curriculum to reflect existing and anticipated diversity in society, implicating productivity, product variety, consumer preference for animal/its products and delivery of quality professional services at a price.

Chapter-II

2.0 State of Economy and Sectoral Growth

2.1 The State of Haryana Agriculture

The economic survey of Haryana 2011-12 indicates that the State GDP growth recorded during 2011-12 at 8.1 percent is better than 6.0 recorded for the country. Between 2005-06 and 2011-12, the Haryana State growth kept on fluctuating between 8.1 and 11.2 percent. However, when we look at the growth of agriculture sector in the 11th Plan 2007-2008 to 2011-12, the agricultural and allied sector growth has fluctuated between –1.3 and 7.3 with an average of 3.4%. Considering the agricultural growth (crop) alone, the performance has been negative and evolves concern (-1.1, -1.8, 0.0, -1.3 percent for 2002-03, 2005-06, 2007-08 and 2009-10, respectively).

In fact the contribution from allied sectors namely livestock and fisheries during the corresponding year registered growth rates as high as 15% enabling the agricultural and allied GDP growth to touch the overall GDP growth of 3.4 for agriculture as a whole.

Other parameters for agricultural performance in the State have also shown limited growth in the survey. It has been illustrated that gross fixed capital formation in agriculture has declined from 9.6 to 8.1%. The index of Area, Yield and Production in Haryana as well as the agriculture production indices show a marginal increase in cereals' production and decrease in pulses, oilseed and fiber. In spite of several special inputs, which have ensured greater productivity between the years 2006 and 2011, the gains are marginal for both total food grain and total non-food grain production.

Another significant agricultural growth scenario is that sectoral contribution from agriculture to total GDP is not only decreasing but the net growth deceleration in the agricultural sub-sector is greatly noticeable. The share of services sector in State GDP further strengthened to 54.6% in 2011-12 with the decrease in the share of agriculture and allied sectors to 16.3% resulting in the economic growth becoming more vulnerable to the performance of industry and service sectors.

In fact, it is the service sector, which has been responsible for the GDP growth. The performance of industry as well as agriculture is posing serious challenges to the development strategy of the State. In fact in the service sub sector, real estate dominating the growth does not auger well for the agrarian developmental model of the state dominated by crop and livestock dependence of almost 70% of its population. Since the share of industrial sector to the state GDP reduced from 33% in 2004-05 to 28% in 2011-12, fundamentals of developing economy to agriculture based rural industry is putting development under acute stress.

Services led growth and their over domination, which is faster than agriculture and industry growth is a blow to the farming sector.

To keep the momentum of the structural transformation of economy, investment needs to be concentrated in those sectors which are strongly integrated with the rest of economy and have greater multiplier effect on growth and development. Because of the robust performance of the livestock sector, this sector has been identified as growth engine for rural economy and livestock has to be supported to the utmost extent of its inherent capacity so as to funnel returns to the rural agricultural economy. One percentage point growth in agriculture is, to the least, two to three times more effective in reducing poverty than the same magnitude of growth emanating from non-agriculture sector.

The livestock sector in Haryana has, of late, become the most vibrant contributor to agriculture and thus to the state economy. Monetary contribution of livestock surpassed that of food grains in 2005-06. However this significant signal has been ignored by policy makers in developing the agricultural and livestock sector in the state.

Both livestock and fisheries components have been growing faster than crops components for over a decade now and livestock provide stability and cushion to articulate growth and GDP. The total output from livestock has, of late shown, a higher value than food grains, fruits and vegetables together. The livestock sector's contribution to the total output of agricultural sector increased from 15% in 1981-82 to nearly 50% of crop husbandry in 2009-10, (crop = Rs. 37000 crore; livestock= Rs. 18000 crore). At current prices in 2011-12, livestock is contributing Rs. 21313 crore. The contributions from milk, eggs and meat amounted to Rs. 18600 crore, Rs. 1585 crore and Rs. 1123 crore, respectively during the year 2011-12 (output from dung/manure, hair, hides, horns, hooves, draught power and incremental stock etc has not been accounted for).

In spite of significant contribution to the GDP, livestock sector received only 8.2% of public outlay of agricultural sector (11th Plan) and only 0.38% of the approved total outlay of the 11th Plan. Government financing the livestock sector flags the issue and brings forth the neglect this sector has suffered for program formulation and budgetary allocation. Any future policy document should accept the shift in quantum increase in livestock contribution to GDP and recognize that agriculture growth stems from the livestock growth.

The livestock sector has far reaching implications for the rural poverty, rural employment, women empowerment, youth involvement, female and child nutrition, protein hunger, soil quality management and production system sustainability as well as ecosystem stability. Further, as the livestock is mostly owned by limited resource and poverty affected population, inclusiveness in growth and development and empowerment amongst poor people is possible at a faster pace through livestock only.

2.2 Present State of Animal Husbandry

2.2.1 Livestock Resources, Population and Production in India

2.2.1.1 Livestock Population

National livestock census from 1951 to 2007 showed that cattle population in the country was increasing till 1992. However, cattle population decreased from 204.58 million in 1992 to 198.88 million in 1997 and further decreased to 185.18 million in 2003. This increased to 199.08 million in 2007. During the inter-censual period from 2003 to 2007, cattle population increased by 7.5%; buffalo by 7.6%; sheep, goat and yak by 16.4%, 13.0% and 28.0%, respectively (Table 2.1).

Table 2.1. Trends of Livestock Population in India from 2003-07 (In Million)

S.No.	Species	Livestock Census 2003	Livestock Census 2007	Growth Rate (%) over 2003	Growth Rate (%) Annual
1	Cattle	185.2	199.1	7.50	1.83
2	Buffalo	97.9	105.3	7.58	1.84
3	Yaks	0.1	0.1	27.95	6.36
4	Mithuns	0.3	0.3	-4.92	-1.25
	Total Bovines	**283.4**	**304.8**	**7.52**	**1.83**
5	Sheep	61.5	71.6	16.41	3.87
6	Goat	124.4	140.5	13.01	3.10
7	Pigs	13.5	11.1	-17.65	-4.74
8	Other animals	2.2	1.7	-22.93	-6.30
	Total Livestock	**485.0**	**529.7**	**9.22**	**2.23**
9	Poultry	489.0	648.9	32.69	7.33

The population of Mithun and Pigs has declined by 4.9% and 17.6%, respectively. The population of camels, horses and ponies, mules and donkeys decreased by 18.2%, 18.6%, 22.1% and 32.6%, respectively. Population of exotic and crossbred cattle registered a significant increase of 33.9% whereas the indigenous cattle increased by only 3.4%.The exotic and crossbred milch cattle increased by 28.3%, indigenous milch cattle increased by 2.5% and milch buffaloes increased by 3.0%. The proportion of in-milk animals to the total milch animals has increased from 72.8% to 74.4% for crossbred cattle, from 59.0% to 63.9% for indigenous cattle and from 70.6 % to 73.3% for buffaloes.

India has vast resource of livestock and poultry, which play a vital role in improving the socio-economic conditions of rural masses. Animal Husbandry sector provides large self-employment

opportunities. According to National Sample Survey (NSS 66th round; July 2009-June 2010), total number of workers in casual status, engaged in farming of animals were 13.6 million in rural areas and 14.9 million in rural and urban areas combined. Total number of workers engaged in farming of animals and fishing were 14.9 million in rural area and 16.5 million in rural and urban areas combined.

2.2.1.2 Livestock Production

Livestock Sector not only provides essential proteins and nutritious human diet through milk, eggs, meat etc., but also plays an important role in utilization of non edible agricultural by-products. Livestock also provides raw material/by products such as hides and skins, blood, bone, fat etc. The contribution of milk alone (Rs. 2, 62, 214.51 crore) was higher than paddy (Rs. 1,51,634 crore), wheat (Rs. 99,667 crore) and sugarcane (Rs. 58, 470 crore) during 2010-11. The value of output from meat group as per estimates of Central Statistical Organization (CSO) at current prices in 2010-11 was Rs. 72,444.22 crore. Total export earnings from livestock, poultry and related products were Rs. 25,408.86 crore during 2010-11.

According to estimates of the Central Statistical Organization, the value of output from livestock and fisheries sector together at current prices was about Rs. 4,61,434 crore during 2010-11 (Rs. 3,88,370 for livestock sector and Rs. 73,064 crore for fisheries) which is about 28.4% of the value of output of Rs. 16,23,968 crore from total agricultural and allied sector. Milk production is anticipated to have reached 127.3 million tons by 2011-12. The per capita availability of milk increased to 281 gram per day in 2010-11. The share of milk production in 2010-11 by exotic/crossbred cows, indigenous/nondescript cows, buffaloes and goats was 24.3 %, 20.8 %, 51.2 % and 3.8 % of total milk production respectively. Egg production is anticipated to reach 65.5 billion in number and the per capita availability of eggs increased to 53 eggs per annum in 2010-11.Wool production at the end of 2011-12 was anticipated to be 44.4 million kilograms. Meat production including poultry meat was estimated at 4.9 million tonnes.

2.2.1.3 Livestock Revolution

It is not inappropriate to use the term “Livestock Revolution” to describe the course of events in the world of agriculture and also in Indian context during the past decade and the future perspective of livestock sector. Like the well known “Green Revolution” the label is simple and convenient expression that summarizes the complex series of interrelated processes and outcomes in production, consumption and economic growth through livestock. The revolutionary aspect comes from the fact that during the past decade it was the livestock growth and its contribution to the national GDP which sustained the total agricultural growth, even when the net crop based agricultural growth was negative. Over these years, a large scale transformation occurred in the Country in the food basket and calorie intake of the population based on livestock. World Agriculture has also gone through this change with contributions from livestock reaching to more than 40% of total agriculture GDP. The two revolutions

however, differ in one fundamental aspect that the green revolution was supply driven whereas the livestock revolution is demand driven.

The livestock revolution has amply demonstrated the urgency of change in the agriculture policy environment. This revolution has simultaneously also stretched the capacity of existing production and distribution systems and brought about certain comparisons and contradictions along with environmental and public health concerns. It is, therefore, important that all concerned scientists, researchers, government and the industry prepare for the transformation in terms of innovative and meaningful approaches based on production facts, statistics and critical analysis available today.

It is here the first conflict situation takes shape, as government is still working on its old model of sectoral support to land based crop agriculture and the industry too has not awakened to recognize the critical demand situation of the livestock sector. The academic institutions, the government and the industry must prepare for such long term policies and investments for this continuing transformation as it will satisfy the needs of the landless and marginal animal keepers, ensure quality animal production units, improve nutrition and direct income growth opportunities to the people below poverty line who are sustained by livestock.

The composition of agriculture economy is indicative of a strong synergy in the crop and livestock sub-sectors, as both are complementary to each other. However, over the years there have been significant compositional changes in the agricultural economy. There was a quantum jump in the share of the livestock sector during 1980s, which escalated from about 17 percent in 1981 to 22 percent in 1991 and further went up to 26 percent in 2011.The value of the fisheries sub-sector grew to about 5 percent in 2005 from 3 percent in 1991. This implies that agricultural diversification is in favor of high value livestock and fisheries.

2.2.1.4 Demand and Availability of Feed and Fodder in India

The demand, availability and shortage for green and dry fodder, and concentrate at national level is depicted in Table 2.2.

Table 2.2. Demand and Availability of Feed and Fodder (Dry matter in million tones)

S.No.	Feed	Demand	Availability	Gap
1	Dry Fodder	416	253	163(40%)
2	Greens	222	143	79(36%)
3	Concentrate	53	23	30(57%)

2.3 Livestock Growth

Growth rate of milk, eggs and wool production in the country from 1950-51 to 2010-11 indicated steady rise in milk and egg production after 1973-74, whereas wool production declined after 1990-91 (Table 2.3).

Table 2.3. Annual Growth Rates of Major Livestock Products – All India

Year	Annual Growth Rate (%)		
	Milk	Eggs	Wool
1950-51 to 1960-61	1.64	4.63	0.38
1960-61 to 1973-74	1.15	7.91	0.34
1973-74 to 1980-81	4.51	3.79	0.77
1980-81 to 1990-91	5.48	7.69	2.32
1990-91 to 2000-01	4.11	5.67	1.62
2000-01 to 2010-11	4.22	5.58	-1.18

The trends of growth rate estimates of milk, egg, meat and wool from 10th Plan onward are given in Table 2.4.

Table 2.4. Growth Rate in Estimate of Major Livestock Products at Current Prices

MLP	10th plan (2002-03 to 2006-07)	11th plan (2007-08 to 2011-12)	2011-12
Milk	3.64	4.5	5.0
Egg	5.61	5.6	5.4
Meat*	3.9	7.0	13.2
Wool	-1.77	-1.2	4.05

*Growth rate of Meat Production is for the last four years of 11th Plan

Livestock contribution to the Ag GDP has been increasing consistently. In fact, the growth in the livestock sector at national level has always been higher than the growth in the crop sector since 1970. This was the case even during the heydays of green revolution (1970s and 1980s); when the policy emphasis was highly tilted towards crop sector. The compound annual growth rate for the livestock sector is presented in Table 2.5.

Table 2.5. Compound Annual Growth Rates of Agricultural and Allied Sectors and National GDP

Year	Crop Sector	Livestock	Forestry	Fisheries	Agriculture	GDP
1950-60	3.1	1.4	0.3	5.8	2.6	3.68
1960-70	1.7	0.4	3.3	4.0	1.7	3.29
1970-80	1.8	3.9	-0.6	2.9	2.0	3.45
1980-90	2.2	4.9	-0.3	5.6	2.8	5.17
1990-00	3.0	3.8	0.9	5.3	3.2	6.05
2000-07	2.7	3.7	1.2	2.9	2.9	6.88

State of Agriculture. NAAS. 2009

The State of Agriculture Document **(NAAS 2009)** states that: "Rapid growth in livestock sector has led not only to boost agricultural growth but also to reduce rural poverty and promote rural equity. The distribution of livestock is more egalitarian than that of land. The smallholders and landless rural population together control 75 percent of the livestock resources. Livestock is thus an important source of livelihood for smallholders and the landless and the sector's rapid growth benefits the poorest households the most. Evidence shows that livestock contributes nearly half of the total income of the smallholders." It further documents, "Livestock sector also seems to promote gender and social equity. About 70 percent of the total workers engaged in the livestock sector are women. The participation of women in other activities including agriculture is low compared to that of animal husbandry. Further, a majority of workers engaged in livestock sector belongs to socially and economically backward communities. Scheduled Tribes (STs), Scheduled Castes (SCs) and other Backward Castes (OBCs) together constitute about 70 percent of the persons employed in livestock sector."

2.4 Livestock Resources of Haryana

The population trends of buffalo, indigenous and cross bred cattle, goat, sheep, and poultry in Haryana and India from 1992 to 2007 are given in Table 2.6. District wise livestock population in Haryana from 1992 to 2007 has been given in Tables 2.7, 2.8 and Figures 2.1, 2.2 and 2.3. The state has about 1.8 % of Indian LS and possesses a rich wealth of domestic bovines including the world famous Murrah buffalo, popularly called as "Black Gold" of India. Seventy six percent of 59.53 lakh buffaloes in the state are of Murrah breed. The cattle population of 15.52 lakhs consists of 6.27 lakh Hariana, 5.66 lakh exotic & their crosses, 34721 Sahiwal, and 5896 Tharparkar animals in addition to 3.18 lakh non-descript, low-yielding indigenous cattle. Haryana occupies an important place in the dairying map of India as it contributes 5.5% of the Nation's milk production with just 2.79% of the country's adult bovines.

Table 2.6. Livestock Population (Millions) – Haryana vis-a-vis India

Species	Haryana				India			
	1992	1997	2003	2007	1992	1997	2003	2007
Buffalo	4.37	4.82	6.04	5.95	84.21	89.91	97.92	105.34
Indigenous Cattle	1.72	1.55	0.97	0.99	189.37	178.78	160.50	166.01
Crossbred Cattle	0.42	0.85	0.57	0.57	15.22	20.10	24.69	33.10
Goat	0.80	0.97	0.46	0.54	115.28	122.72	124.36	140.54
Sheep	1.04	1.28	0.63	0.60	50.78	57.49	61.47	71.56
Poultry	8.58	9.23	13.62	28.79	307.07	347.61	489.01	648.70

Table 2.7. District-wise Livestock Population in Haryana (in 000s)

District	Buffalo			Cattle		
	1997	2003	2007	1997	2003	2007
Ambala	128	242	223	92	70	61
Bhiwani	351	442	472	99	94	94
Faridabad	221	413	358	117	53	69
Fatehabad	347	304	300	136	83	82
Gurgaon	206	351	132	128	63	31
Hisar	538	427	486	205	163	168
Jhajjar	154	256	238	44	37	40
Jind	683	502	502	116	130	121
Kaithal	277	400	384	126	92	85
Karnal	500	447	394	301	125	123
Kurukshetra	132	272	257	118	85	83
Mahender garh	220	227	226	54	31	32
Mewat	0	0	295	0	0	48
Panchkula	34	69	68	36	36	28
Panipat	155	286	260	61	45	41
Rewari	87	205	174	28	22	28
Rohtak	171	304	277	74	62	55
Sirsa	210	307	324	233	177	191
Sonepat	559	403	365	320	63	70
Yamunanagar	164	178	216	112	109	106
Haryana	4823	6035	5953	2400	1539	1552

Table 2.8. District-wise Livestock Population in Haryana (in 000s)

District	Sheep			Goat			Poultry		
	1997	2003	2007	1997	2003	2007	1997	2003	2007
Ambala	28	17	19	15	6	7	595	556	622
Bhiwani	112	88	90	103	74	90	315	280	795

Faridabad	51	20	16	45	25	24	148	84	66
Fatehabad	70	39	32	32	14	16	467	248	290
Gurgaon	115	26	6	129	77	14	931	953	935
Hisar	107	66	82	45	26	31	250	678	2373
Jhajjar	27	26	26	21	11	14	43	104	140
Jind	137	48	44	49	10	10	1131	47	4241
Kaithal	35	23	22	17	5	6	193	230	653
Karnal	46	22	24	24	9	11	1303	2335	5097
Kurukshetra	38	12	13	17	4	5	246	655	1439
Mahender garh	89	39	44	47	70	79	108	198	395
Mewat	0	0	22	0	0	83	0	0	124
Panchkula	5	4	2	19	8	14	2012	4449	5730
Panipat	34	12	9	14	5	6	158	122	1581
Rewari	28	26	11	39	35	31	75	333	496
Rohtak	53	47	24	31	12	11	103	141	419
Sirsa	213	87	87	86	50	61	287	102	271
Sonepat	87	18	15	34	6	10	187	935	1567
Yamunanagar	31	14	14	31	12	14	676	1169	1551
Haryana	1275	633	601	969	460	538	9225	13619	28785

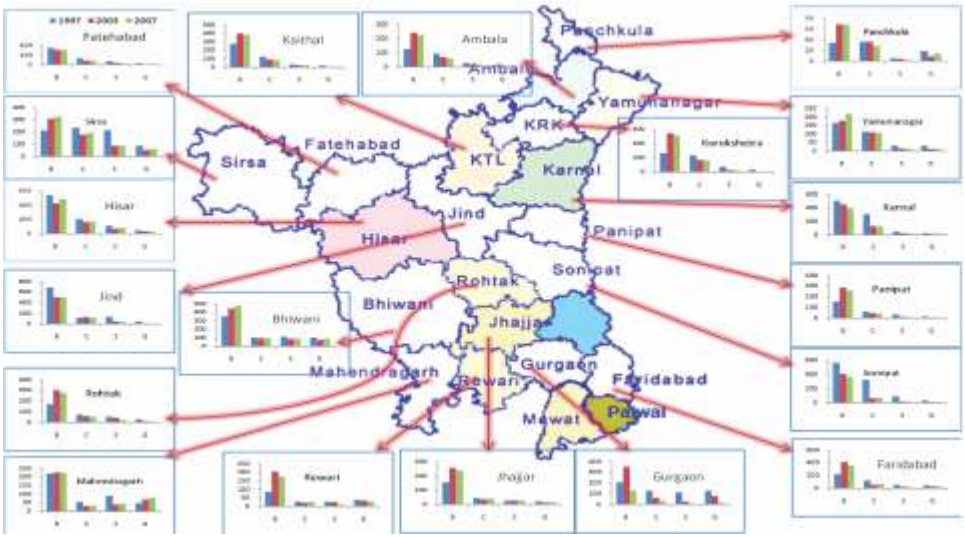


Figure 2.1 Buffalo(B), Cattle(C), Sheep(S) & Goat(G) Population of Haryana (in 000s)

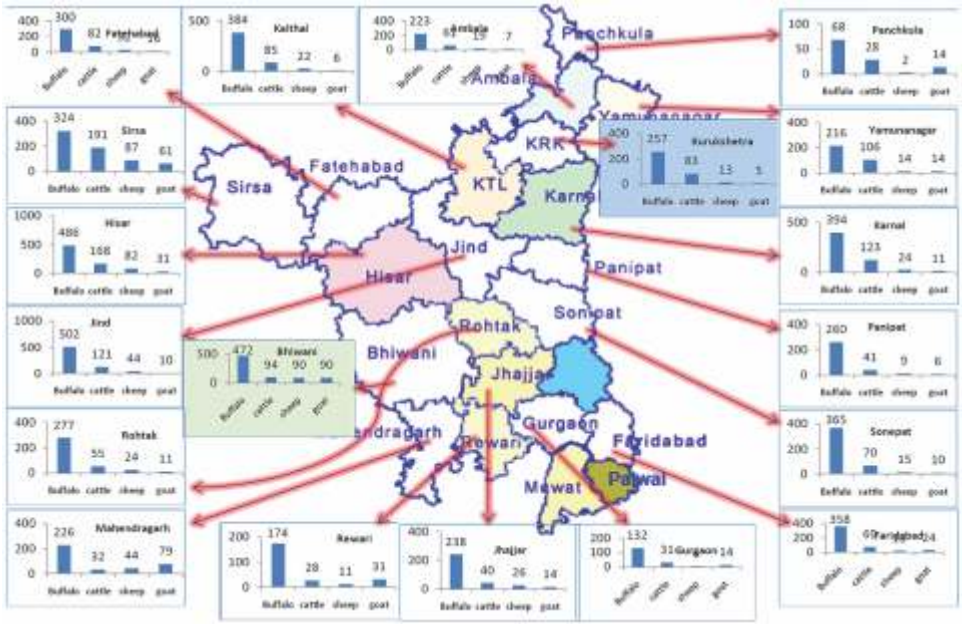


Figure 2.2 Livestock Population (2007) of Haryana (in 000s)

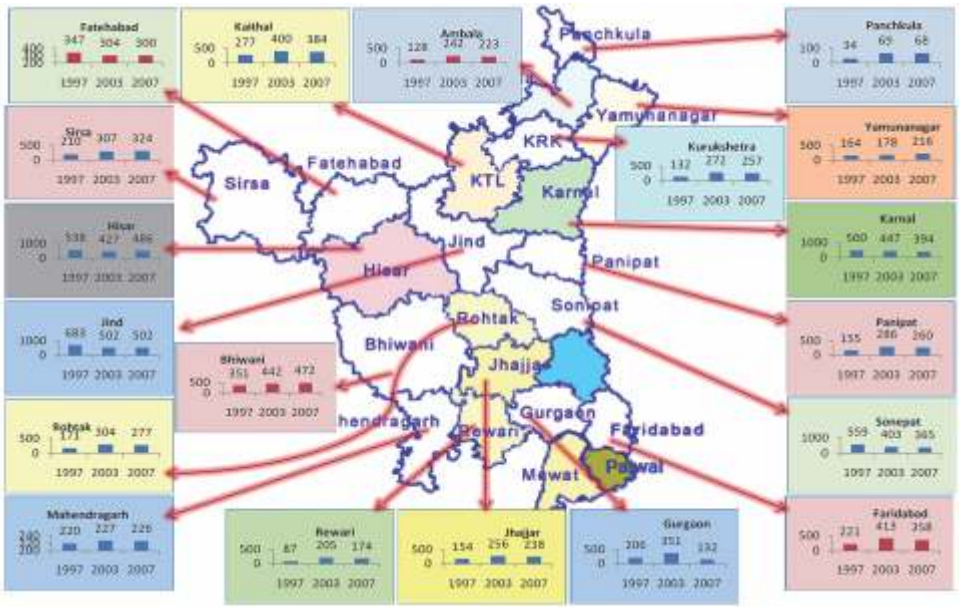


Figure 2.3 Buffalo Population of Haryana (in 000s)

Chapter III

3.0 Present Status of Livestock Sector in Haryana

3.1 Animal Husbandry

3.1.1 Production Systems

Animal production system in Haryana continues to be cottage based, spread over millions of tiny/ solitary units throughout the state. Almost 95% of the livestock is reared in rural areas. More than two thirds of the 32 lakh rural house-holds in the state keep animals. Since, livestock is the only asset and a source of livelihood for thousands of families, animal husbandry is recognized as an instrument for socio-economic development.

As described in the previous chapter, the state is well known for its rich livestock wealth particularly the world famous Murrah buffaloes nick named as "Black Gold" of India. Seventy six percent of 59.53 lakh buffaloes in the state are of Murrah breed. The cattle population of 15.52 lakhs consists of 6.27 lakh Hariana, 5.66 lakh exotic & their crosses, 34721 Sahiwal, and 5896 Tharparkar animals in addition to 3.18 lakh non-descript, low-yielding indigenous cattle. Haryana occupies an important place in the dairying map of India as it contributes 5.5% of the Nation's milk production with just 2.79% of the country's adult bovines. Buffaloes produce 84% of the total milk in the state. Thus the buffalo continues to have a pivotal and pre-eminent importance in the livestock sector. The buffalo attributes have found great acceptance among animal keepers and today this animal has taken the role of sheet anchor in the livestock sector.

Haryana has been a source of quality Murrah germplasm for other states and abroad. The per capita availability of milk at 708 gm is the 2nd highest (Punjab 944 gm) and almost two and a half time of the national average. Animal rearing has been a resource-driven activity utilizing the locally available crop residues, weeds, grasses, byproducts and the surplus family labour, and is invariably undertaken as an adjunct to crop husbandry. The density of animals expressed as livestock units per Sq. Km in the state at 141 is higher than in Punjab with 113 LSU/ Sq.Km, more than double the density in Rajasthan (64 LSU/ Sq.Km) and almost three times the density in Himachal Pradesh (49 LSU/ Sq.Km). The livestock density in the state matches the highest density of 145 LSU/ Sq.Km in Uttar Pradesh.

In spite of rich livestock wealth and its significant contributions towards prosperity, welfare and economic development of the society, the performance of the sector in terms of productivity does not compare well with the developed nations. The huge potential of livestock sector remains largely unexploited and is often referred to as 'the Sleeping Giant'. The average daily milk production of 5.10 liters per adult bovine in the state is almost twice of the national average of 2.61 liters. The animal productivity in the neighboring states too except Punjab (6.67

liters) is below the Haryana State average at 1.61 liters in Himachal, 2.31 liters in Rajasthan and 2.99 liters in U.P.

Sheep and goat rearing continues to be in the hands of poorest of the poor using traditional feeding and breeding knowledge which has been passed from generation to generation. Similarly, organized pig farming is also missing in the state. It is limited to backyard/ street rearing mostly under unhygienic conditions.

The major reasons for low performance of the sector are not hard to visualize. In addition to poor genetics, a majority of the animals are reared under sub-optimal conditions. Availability of quality feed and fodder remains the major constraint due to high density of animal wealth and the ever increasing human population. There have been minimal scientific/ technological interventions and changes in the age-old, traditional husbandry practices.

Low reproductive efficiency, inadequate budgetary support, insufficient institutional credit facilities and lack of strong policy initiatives have also been hampering the growth and performance of this sector. The tiny cottage units mainly serve as a source of subsistence or extra income and are not in a position to adopt new technologies.

Animal identification, a basic pre-requisite for any improvement programme is not practised and farmers do not maintain records of breeding, health, production and pedigree etc.

Value addition and organized marketing are at a very low scale.

Rapid urbanization accompanied with industrial growth, intensive crop husbandry practices, disappearing common grazing grounds/ pastures, poor economic returns, low priority and disinterest of the educated youth in animal rearing are some of the other challenges being currently faced by this sector.

However, in recent years, there has been a welcome shift in dairy production system. The traditional, family based, low-input, extensive, resource-driven system is being replaced by an intensive, high-input, demand- driven, commercially viable milk production. More than 1000 hi-tech commercial dairies (> 20 animals) have already been established and more are in pipe line. Fifteen dairy units have more than 100 animals. Most of these dairies maintain high yielding crossbred cows either alone or in combination with elite Murrah buffaloes. The demand for high yielding animals suitable for commercial production is fast increasing. The state Department of Animal Husbandry and Dairying has been encouraging and supporting such commercial dairies through various incentives, subsidies, trainings and other promotional

The integrated milk production and processing venture at Jind in the name of "Lakshya Dairy" and various commercial dairy farms (> 100 animals) located at Sohna, Sahu, Siharhwa, Bugana, Ahirka, Singpura, Nirjan, Taraori, Singhra, PanchhiGujran and Lahli etc are some of the recent success stories.

schemes. Unfortunately, there are no perceptible changes in sheep, goat and swine farming. Poultry sector is almost fully commercialized in the peri-urban areas and the industry has recorded a dramatic growth in the last three decades.

More recently, efforts have been made to strengthen animal husbandry and veterinary services in the state through improved infrastructure, skilled manpower and enhanced budgetary support etc. As a result, Haryana is now better placed in providing quality animal health and breeding services. Establishment of Haryana Livestock Development Board has greatly improved the quality of breeding services as well as the extent of coverage under artificial insemination. During 2011-12, a total of 27.96 lakh inseminations (cows: 8.28 lakh, Buffaloes: 19.68 lakh) were performed as compared to only 9.25 lakh A.I. (cows: 2.71 lakh, Buffaloes: 6.54 lakh) in 2003-04, (Table 3.1 and Figure 3.1) a phenomenal growth of 300% in 8 years.

Table 3.1. Progress in Breeding Through Artificial Insemination

NO OF INSEMINATIONS (IN LAKHS)			
YEARS	**COW**	**BUFFALO**	**TOTAL**
2003-04	2.71	6.54	9.25
2004-05	3.32	8.81	12.13
2005-06	3.73	10.49	14.22
2006-07	4.33	13.06	17.39
2007-08	4.73	13.72	18.45
2008-09	5.17	14.31	19.48
2009-10	5.85	14.52	20.37
2010-11	6.53	15.78	22.31
2011-12	8.28	19.68	27.96

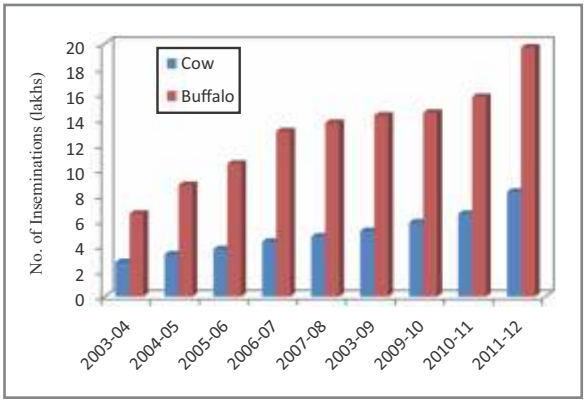


Figure 3.1 Progress of AI in cows and buffaloes in Haryana (2003-04 to 2011-12)

Simultaneously, the state has given top priority to quality of semen production. All the three sperm stations have been awarded "A" grade by the Central Monitoring Unit, Govt. of India. The proportion of breeding bovines covered through artificial insemination has increased to 60% from under 10% a decade ago as compared to less than 25% at the national level. The corresponding figures for the neighbouring states are 11.8% (U.P), 10.9% (Rajasthan), 33.5% (Himachal) and 65% (Punjab).

Animal deaths due to diseases have been brought down to a minimum level. No serious outbreaks of any disease has occurred in the state for more than a decade. The FMD control programme is a great success (Box-1).

The state has been running a highly successful field performance recording programme for conservation of superior germplasm and production of quality Murrah bulls (Box-2).

An extensive Field Progeny Testing programme to evaluate Murrah Sires, Controlled Breeding Scheme to minimize huge economic losses due to infertility and establishment of Haryana Veterinary Training Institute for mid-career skill up-gradation of the field functionaries are some of the recent initiatives undertaken by the Department to deliver quality services to the farmers towards advancement of this sector.

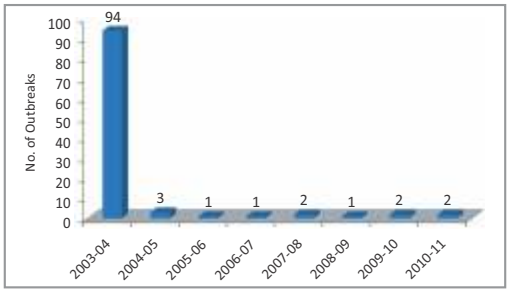
BOX- 1 Success story

Foot and Mouth disease (FMD) had been causing heavy economic losses to livestock sector because of decreased productivity and poor working capacity in addition to adverse effects on international trade of animal products. The estimated global losses from FMD exceed 5 billion US dollars per annum despite the fact that several advanced countries have already eradicated FMD. The direct losses in India resulting from FMD are estimated to be Rs. 20,000 crores.

The FMD- Control Programme (FMD – CP) was launched in Haryana in January 2004. Systemic mass vaccination of all susceptible animals in the state at recommended intervals had been undertaken under this control programme. Surveillance studies as well as pre- and post- vaccination sero-monitoring continue to be performed by the Regional Foot and Mouth Disease Centre at Hisar. Mass vaccination had greatly helped to reduce the incidence of FMD cases. As is evident from the Figure 3.2, there have been hardly one or two outbreaks in a year since 2004- 05 as compared to 94 outbreaks in 2003-04 i.e. before the launch of FMD-CP. By the 4th phase of vaccination, the animals in Haryana had developed > 80% herd immunity against the prevalent FMD virus serotypes which continues to be maintained. Simultaneously, a significant reduction in anti-NSP antibody profile indicates that circulation of FMD virus in the state has come down as a result of mass vaccination programme. The great success achieved so far suggests that the dream of "FMD – Free Haryana" may soon come true.

Foot and Mouth Disease- Control Programme

Fig.3.2. Effect of FMD- CP on the incidence of FMD outbreaks in Haryana



BOX- 2 Success Story

Murrah Bull Production Programme

The Department of Animal Husbandry and Dairying has been running an incentive based field performance recording programme for identification of elite Murrah buffaloes. The owners of such recorded buffaloes are given cash incentives ranging from Rs. 5000/- to Rs. 25000/- depending upon the peak yield of the animal. In return, the owner is under obligation to retain his buffalo at least for one year and breed it through artificial insemination. The owners are also required to properly rear the progeny, particularly, the male calf (in situ conservation). The best among these identified male calves are purchased by the Department and reared under scientific management at Young Murrah Bull Rearing Centers as future bulls. So far, more than 4000 of these elite calves have been procured, reared and supplied for breeding to different states including Semen Stations. This programme has been highly successful and has greatly helped to slow down the exodus of elite buffaloes to other states where these invariably end up in slaughter houses after the current lactation.

In addition, the scheme has inculcated the spirit of competition among the livestock breeders to rear good quality animals. So far, 76084 Murrah buffaloes with a peak yield of 13 Kg or more, including 2476 elite buffaloes with a peak yield exceeding 19 Kg and 25 super- elite buffaloes with a peak yield of 25 Kg or more have been identified under this programme leading to production of 22825 meritorious young bulls for use in the entire country. Dams as well as their male progenies are properly identified with ear tags and their details are displayed on the departmental web site to help the potential buyers. This unique programme has helped to a great extent in minimizing the menace of propagation of inferior germplasm, as the breeding bulls earlier purchased through brokers/ middlemen used to be of unknown pedigree with doubtful performance.

Elite Murrah buffalo identified

Buffaloes with a peak yield of	**13 Kg or more= 76084**
Elite buffaloes with a peak yield of	**19 Kg or more= 2476**
Super- elite buffaloes with a peak yield of	**25 Kg or more= 25**

Production of **22825 meritorious young bulls** for use in the entire country.

3.1.2 Poultry

Poultry continues to be one of the fastest growing segments of the LS sector in Haryana. The annual growth rates during last two to three years for eggs and poultry meat are averaging at nearly 6% and 9%, respectively. Poultry sector growth may be attributed to many factors like

rising incomes and a rapidly expanding middle class, together with the emergence of vertically integrated poultry producers that have reduced consumer prices by lowering production and marketing costs. Integrated production, market transition from live birds to chilled and frozen products, and policies that ensure supplies of competitively priced corn and soybeans are keys to future poultry industry growth in the state.

The state support, very limited at present, has to come strongly in disease surveillance; monitoring and control. This support will give a new dimension to growth and also decide the fate of this sector due to zoonotic implications. Concurrently, state has to make a serious effort to develop programs and support unorganized and backyard poultry sector as one of the potent tool for subsidiary income generation for many landless/ marginal farmers and also provide nutritional security to the rural poor.

3.1.3 Infrastructure

Haryana has an augmented infrastructure in the country to provide breeding, animal health care, diagnostic and specialist clinical services for the livestock. Providing 24 x 7 facilities for breeding and basic health care at the farmers' doorstep has become a priority. As many as 1145 Livestock Development Centres manned by 'Gopals' (specially trained local youth) have already been established in Private – Public – Partnership mode for this purpose. As is evident from the data in Table 3.2 below, almost every second village has a Veterinary Institution, serving on an average 2300 heads of livestock under its jurisdiction:

Table 3.2. Details of Veterinary Institutions

S. No.	Type of Institution	Numbers
1.	Govt. Veterinary Hospitals	942
2.	Govt. Veterinary Dispensaries	1809
3.	Veterinary Polyclinics	4
4.	Sperm Production Stations	3
5.	Semen Banks	10
6.	Bull Mother Breeding Farms for H.F. & HF crosses, Hariana, Sahiwal and Tharparker, Murrah Buffaloes	One each
7.	Sheep and Goat Breeding Farm	One
8.	Pig Breeding Farm	2
9.	Young Murrah Bulls Rearing Centres	2
10.	Pet Animal Medical – cum – Training Centre	One
11.	Haryana Veterinary Vaccine Institute	One
12.	Haryana Veterinary Training Institute	One
13.	Hatcheries (Small Scale)	Two
14.	Quality Testing Laboratory for Milk and Cattle Feed	One each
15.	Artificial Insemination Centres run by HDDCF/other agencies	112
16.	Livestock Development Centres (P-P-P mode)	1145

The state is proud to have the historically important Govt. Livestock Farm, Hisar. It was established in 1809 by Major James Lumsdaine over an area of 40,000 acres. Recently, several central and state Government institutions have been established over the farm land. Presently, it has more than 7000 acres of land including 708 acres exclusively earmarked for production of fodder seeds (Seed Farm). The farm continues to be an important livestock germplasm centre. It is organized into different sectors and units with specified objectives.

Sector-I maintains indigenous breeds of Hariana, Sahiwal and Tharparkar cattle in addition to a small equine section consisting of Kathiawari Horses and Potou Donkeys. The major objective is to produce bulls of indigenous cattle breeds and provide stud services at nominal cost.

Sector-II is ear- marked for buffalo breeding. In addition to an elite herd of Murrah Buffaloes (Bull Mothers), young Murrah calves born to high yielding buffaloes under the field performance recording scheme are also being reared in this sector.

The erstwhile Indo- Australian Cattle Breeding Project, later renamed as State Cattle Breeding Project now constitutes Sector-III of the Farm. Now this sector rears Holstein Friesian and their crosses for production of quality bulls. In addition, the largest sperm station of the state with a production capacity of 4.0 million doses of frozen semen is also located on its premises.

The Sheep and Goat breeding unit maintains a flock of more than 2000 heads including Nali and Hisar Dale sheep and Beetal goats. Rams and bucks are supplied to bonafide breeders at concessional rates.

The Piggery unit is engaged in breeding of Large White Yorkshire swine. The nucleus breeding stock is supplied to poor pig- farmers for up-gradation and genetic improvement of the non-descript, desi stock having a low growth rate. The Hatchery unit is maintaining native poultry breeds/ lines and supplying day-old chicks mainly for backyard rearing on a limited scale.

The state is in the process of establishing/ strengthening disease diagnostic laboratories at each district headquarter. Provision of necessary equipment and training of manpower are being undertaken on priority. The Veterinary University has also been rendering disease investigation/diagnostic services at several places in the state including its main Campus at Hisar.

3.1.4 Manpower

The category wise sanctioned strength of the manpower in the Department of Animal Husbandry & Dairying is as below:

Supervisory Veterinary Officers	:	100
Veterinary Surgeons	:	1003
Veterinary Livestock Dev. Assistants	:	2930
Animal Attendants	:	6354

In addition, 90 private A.I. workers and 1145 Gopals have also been providing their services to the farmers.

3.1.5 Budgetary Support

Inadequate funding by the state Government along with lack of support and investment by the private sector have been the major constraints in the development and growth of livestock sector. As is evident from the figures given below, the plan allocation for the sector had been around just 0.55 % of the total outlay for the state (Table 3.3). As a result, the sector remains starved of funds. The allocation is no where proportionate to its contribution towards GDP (~5%), and its inevitable role in ensuring nutritional security and socio-economic development of the society at large.

Table 3.3. Share of Animal Husbandry & Dairying in State Plan Outlay (Rs. Crores)

Year	State outlay	Allocation AH &D	Percent share of AH&D of the total
2007-08	5500	22.00	0.40
2008-09	7130	58.63	0.82
2009-10	10400	60.00	0.57
2010-11	11100	60.50	0.54
2011-12	13200	70.00	0.53
2012-13*	16608	125.50	0.75

*Provisional figures

There is an urgent need to provide adequate funds to this sector, generally referred to as the "Sleeping Giant", to exploit its full potential. The major livestock developmental activities need to be taken up in a mission mode. Launching of **"State Livestock Mission"** ought not to be delayed any more.

3.2 Haryana Dairy Development Coop. Federation Ltd

The main objective of the Haryana Dairy Development Coop. Federation is to promote economic interests of milk producers of Haryana State, particularly belonging to economically weaker section, by purchase and processing of milk into milk products and marketing thereof, through Milk Unions and by undertaking allied activities as are conducive for the promotion of Dairy Industry such as improvement of milch cattle and promotion of milk production.

The Dairy Corporation was formed in 1970 which continued till 1977. Thereafter its job was taken over by Federation to set up a three tier system based on AMUL Pattern. Milk Unions combine to form State Dairy Federation which is managed by a Board of Directors of which apart from Govt. nominees, the Chairmen of all Milk Unions are members. As of 2012, the structure of Dairy Federation is indicated in Table 3.4.

Table 3.4. Structure of Dairy Federation in Haryana (2012)

No. of Villages in Haryana	6781
No. of Societies	4688
No. of Villages covered	4017
No. of Milk Unions	6
No. of Milk Plants	5
No. of Chilling Centers	27

Dairy Cooperatives in the state function on three tier system, namely Federation level (Haryana Dairy Federation at State level), Milk Union and milk societies at Village level. The Milk Cooperative Societies of one or more districts come together to form Milk Unions. These are managed by the representatives of milk producers elected from amongst the Chairman of Cooperative Societies. There are six Milk Unions, namely; Ambala, Kurukshetra- Karnal, Hisar-Jind, Ballabgarh, Rohtak and Sirsa. Milk producers in a village join together to form a village Dairy Cooperative Society. The Society is managed by the producers themselves. It buys milk from producers and then sells it to Milk Unions. The profit earned by the Societies is distributed amongst producer members as per their bye-laws.

The village level societies collect milk from milk producers and sell it to Milk Union. Earlier Milk Unions used to sell milk to the Plants run by the Federation. Since 1992, the Federation has leased out the Plants to the Milk Unions. So now Milk Unions process the milk and convert it into products at Milk Plants taken on lease by them from Federation, and market the same. However, the federation takes royalty from Milk Unions for **VITA** BRAND being used by them.

The average daily Milk Procurement during 2011-12 was 5.32 lakh liters per/day, most of which was sold as liquid milk. The surplus milk (after Marketing Liquid Pasteurized Milk) is being utilized for manufacturing of Milk Powder and other Dairy Products like Ghee, Table Butter, and White Butter etc. As part of the marketing system 354 milk booths and milk bars have been setup in different cities and towns selling VITA brand products. The capacity of different milk plants in Haryana, dairy products manufactured and certification status has been given in Table 3.5

Table 3.5. Capacity, Products and Certification Status of Milk Plants in Haryana

S. No.	Milk Plants	Year of establishment	Products	Registered capacity (TLPD)
1.	Jind	1970-71	Liquid Milk Powder, Ghee, Paneer, Jaljeera, Mango Drink, Dahi	150.0
2.	Ambala	1973-74	Liquid Milk, Paneer, Dahi, Lassi, Milk Cake, SFM, Kheer	120.0

3.	Rohtak	1976-77	Powder, Ghee, Table Butter, Liquid Milk, Dahi, Paneer	250.0
4.	Ballabgarh	1979-80	Liquid Milk, Dahi, Ghee, Paneer	250.0
5.	Sirsa	1996-97	Powder, Ghee, Liquid Milk, Milk Cake, Paneer, Pinni	110.0

Progress in terms of milk procurement, number of societies, average milk price and net profit earned from 2006-07 to 2011-12 is given in Table 3.6.

Table 3.6. Milk Procurement, Average Price and Net Profit by Dairy Federation in Haryana

S.No.	Particulars	2006-07	2007-08	2008-09	2009-10	2011-12
1.	Milk Procurement ('000' Kgs/day)	460	514	540	522	532
2.	No. of Functional Societies (average)	5028	5979	6167	5194	4160
3.	Avg. milk price paid per kg. of milk to producer (Rs.)	14.5	16.44	17.64	19.79	25.01
4.	Net Profit (Rs. In Lacks)	203	359.58	465	188	807

Schemes for the welfare of the farmers/milk producers of Haryana state. The Haryana Dairy Federation has introduced various schemes for the welfare of the farmers /milk producers of Dairy Cooperative Societies of Haryana State which include Accidental Death Insurance Scheme, Micro Insurance Scheme, Resource Persons Scheme, IDDP Project, STEP Project, Assistance to Women Cooperatives.

Veterinary. First Aid Centers: There are 153 Veterinary First Aid Centers being run by different Milk Unions providing services to the animals of milk producers. These Veterinary First Aid Centres are supervised by VLDAs. Milk Union wise A.I. Centers with details for the year 2009-10 are given in Table 3.7.

Table 3.7. Details of AI Centers Run by Various Unions in Haryana

S.No.	Milk Union	A.I. Centers	AI done during the year 2009-10	Village Covered by A.I. Centers
1	Ambala	40	23618	178
2	Karnal- Kurukshetra	38	19229	99
3	Sirsa	20	10040	20
4	Ballabgarh	7	2234	20
5	Jind- Hisar	8	1212	18
6	Rohtak	6	483	14
	Total	122	56816	349

Mineral Mixture Plant: Mineral mixture plant at Rohtak was commissioned during 2004 and since then mineral mixture with brand name VITA is being manufactured. About 200 tons of mineral mixture is produced annually.

Despite the above mentioned activities, the Federation does not seem to have established itself enough to attract participation of the milk producers. In fact, several farmers during our interactions mentioned that society formation, support for milk collection, providing support services, pricing and milk processing are major bottlenecks in the growth and functioning of the Dairy Cooperatives and the Federation has little proactive role in Milk collection and pricing.

3.3 Punjab Dairy Development Corporation (Milk Fed. Punjab)

Milkfed, the dairy federation in the neighboring state Panjab has achieved an impressive sales growth of 13% during the year 2009-10 in comparison to the previous year by increasing this from Rs.1110.32 Crores to Rs. 1253.20 Crores. Milk Fed was able to procure, on an average 9.49 lac Kg. of Milk per day during the year 2009-10 against 9.21 lac Kg. per day during 2008-09. Similarly, Milkfed marketed 7.27 lac ltrs. of packed milk per day in different variants during the year 2009-10 against 6.58 lac Ltrs. per day during 2008-09 achieving an annual growth of 10.4%.

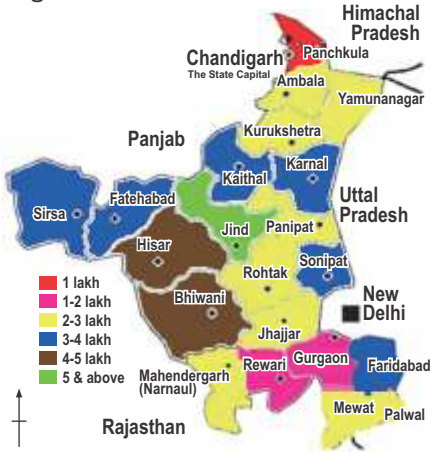
Milkfed as an Apex Body earned a net profit of Rs.628.02 Lacs during the year 2009-10 in comparison to profit of Rs.558.78 lacs during previous year. For Milkfed & its affiliated Milk Unions together there was a net profit of Rs.2021.49 lacs during 2009- 10. The Federation claims that the profit has been possible by adopting various strategies to increase sales turnover, milk procurement, aggressive marketing, efficient fund management, costs drive and mobilization of additional resources.

Chapter-IV

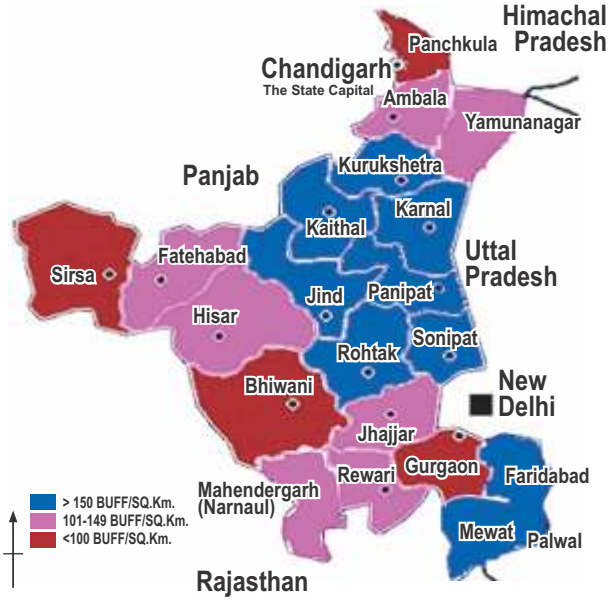
4.0 Livestock Production

4.1 Milk Production

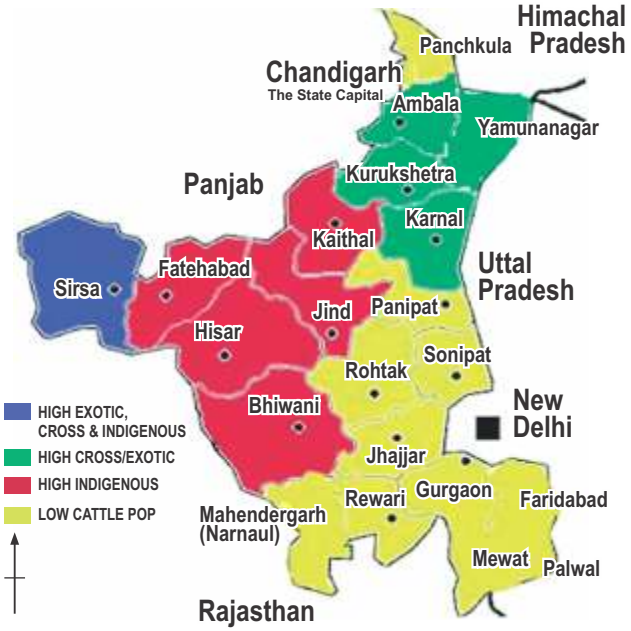
The estimated milk production in the state during 2011-12 was 66.61 lakh tons including 0.6 lakh tons produced by goats. This milk is being produced by tiny/ solitary dairy units spread over 22 lakh households, 1000 commercial dairies and more than 15000 small units established during the last five years. The district and species wise distribution of livestock population is given in para 2.4. The districts of Hisar, Bhiwani, Jind, Sirsa and Karnal had the highest number of livestock. Jind is the only district with more than 5.00 lakh buffaloes, closely followed by districts of Hisar and Bhiwani. The districts of Panchkula, Rewari and Gurgaon had each less than 2.00 lakh buffaloes. The distribution of Buffalo population is depicted in Map-4.1 while the density of Buffalo per Sq Km is shown in Map-4.2. The districts of Panipat, Sonipat, Karnal, Kurukshetra, Kaithal, Jind, Rohtak, Faridabad and Mewat had a density of more than150 buffaloes while the districts of Bhiwani, Sirsa, Gurgaon and Panchkula had a density of less than 100 buffaloes. The distribution of Indigenous, exotic and cross bred cattle population is shown in Map-4. 3. Almost 45% of the cross bred/ exotic population is being reared in the north/ north east region consisting of Ambala, Yamunanagar, Kurukshetra and Karnal districts due to better availability of green fodder. In addition, Sirsa also had a sizeable number (15%) of cross bred animals. The majority of the indigenous cattle (57%) was being kept in the region consisting of Sirsa, Fatehabad, Hisar, Bhiwani, Jind and Kaithal districts. The total bovine population in the state was 75.05 lakhs including 60.84 lakh females as per 2007 census. The distribution of goat population which contributed 1% of the total milk, is shown in Map-4.4. Mewat and Bhiwani districts have more than 80,000 goats each.



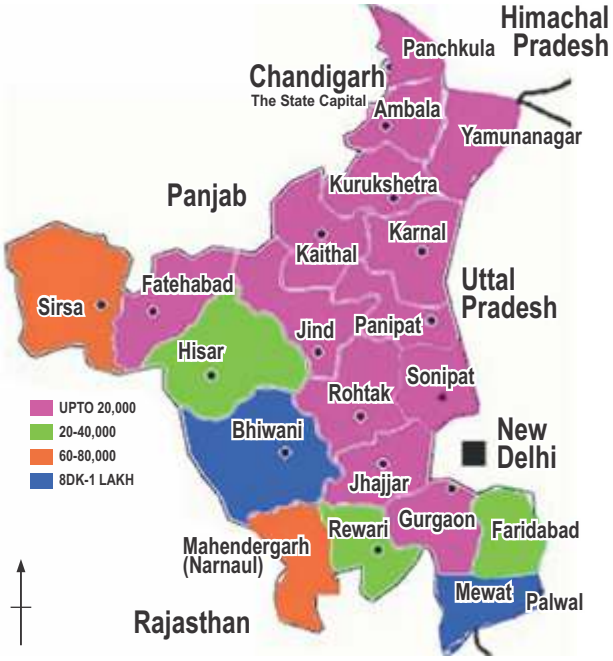
Map-4.1. District wise Distribution of Buffalo Population in Haryana



Map-4.2. District wise Density of Buffalo Population in Haryana



Map-4.3. District wise Distribution of Indigenous, Exotic and Cross Bred Cattle Population in Haryana



Map-4.4. District wise Distribution of Goat Population in Haryana

The district wise distribution of animals in milk along with total milk production is presented in Table-4.1. The five districts with maximum livestock population produced more than 37% of the total milk. Each of Hisar and Bhiwani district contributed more than 0.5 million tonnes of milk per annum. Rewari recorded the highest (per animal) annual productivity at 3043 kg, followed by Hisar with 2899 kg. However, the inter-district differences in total milk production could be attributed to the number of animals rather than the differences in animal productivity. The different districts cannot be grouped into the low or high productivity areas based on the data available.

The season, species and category wise details of the estimated milk production are given in Table-4.2. The buffaloes contributed 84% of the total milk while share of the goat milk is limited to just 1%. The cows produced the remaining 15% milk including 9.4% share of exotic and their crosses. Slightly more milk was produced during winter season (34.9%) but the inter-seasonal differences were not significant. Out of a total breedable population of 35.63 lakh, more than 24.10 lakh animals were in milk including 19.87 lakh buffaloes, 2.27 lakh indigenous cows and 1.95 lakh exotic/ crossbreds. The average daily productivity for the animals- in- milk was a modest 7.57 kg. Almost 2.0 lakh bovines, in spite of having reached the breeding age, had never calved. The ratio between in- milk and dry animals was 68:32 (for buffaloes as well as exotic/ crossbred cows) as compared to 60 :40 in indigenous cows. The neighboring Punjab state has higher milk production as also per animal productivity. It has particularly done well in

commercial dairy production using modern husbandry practices and automation of farm operations along with quality fodder production, the essential input for dairy farming. Feeding of silage is widely practiced. Better irrigation facilities, well- informed and innovative farmers appear to be behind this success.

Quality control of milk in the State is limited to checking of adulteration by measuring the Fat and Solid- Not- Fat (SNF) contents of milk samples. The Department of Animal Husbandry and Dairying has its own milk quality control laboratory at Rohtak. Earlier, the samples collected from bulk milk handlers registered under MMPO-92 Act were analyzed in this laboratory. Clean milk production and quality control of milk with respect to microbes, contaminants, residues of drugs and pesticide and other adulterants have never been on the agenda. Recently, Government of Haryana has established a new department of Food and Drug Administration as required under the Food Safety and Standards Act – 2006. The existing acts such as PFA, MMPO etc. stand repealed after the commencement of this Act. The major objective of this new legislation is to ensure availability of safe food and quality drugs by establishing a unified line of command to replace the existing multi-level and multi-departmental controls.

Table 4. 1. District wise Annual Milk Production in Haryana (2010-11)

S.No.	District	Milk production (tons)	No. of animals in milk	Average annual production per animal (kgs)
1.	Ambala	225826	102178	2210
2.	Bhiwani	501105	175155	2860
3.	Fatehabad	284046	112345	2528
4.	Gurgaon	175084	66000	2652
5.	Hisar	535982	184874	2899
6.	Jhajjar	253646	95956	2643
7.	Jind	444348	168576	2635
8.	Kaithal	311819	137927	2260
9.	Karnal	414188	158049	2620
10.	Kurukshetra	287079	110466	2598
11.	Mahendergarh	242140	89686	2699
12.	Panchkula	84407	34918	2417
13.	Panipat	236422	96234	2456
14.	Rewari	215489	70795	3043
15.	Rohtak	279460	105344	2652
16.	Sirsa	428461	160951	2662
17.	Sonepat	349745	143333	2440
18.	Yamunanagar	279559	105458	2650
19-21	Mewat/ Palwal/ Faridabad(Pooled)	718635	292217	2459

Table 4. 2. Estimated Season and Species wise Milk Production in Haryana (2011-12)

Species / Category	Per day/ animal production (kg)	No. of animals in milk (000)	Milk production (000 tons)
SUMMER (MARCH – JUNE)			
i) Indigenous cows	5.233	205.4	131.236
ii) Cross Bred cows	7.867	215.2	206.535
Subtotal cows:			**337.771**
iii) Buffaloes	6.935	2139.4	1810.092
iv) Goats	0.926	209.3	23.640
Subtotal of season (% of total milk production)			**2171.503 (32.6%)**
RAINY (JULY-OCTOBER)			
i) Indigenous cows	4.844	206.5	123.057
ii) Cross Bred cows	8.101	215.1	214.329
Subtotal Cows:			**337.386**
iii) Buffaloes	6.891	2128.7	1804.179
iv) Goats	0.801	212.7	20.963
Subtotal of season (% of total milk production)			**2162.527 (32.5%)**
WINTER (NOVEMBER-FEBRUARY)			
i) Indigenous cows	4.658	207.6	117.027
ii) Cross Bred cows	7.752	219.7	206.072
Subtotal Cows :			**323.099**
iii) Buffaloes	7.478	2190.3	1981.863
iv) Goats	0.795	228.7	22.003
Subtotal of season (% of total milk production)			**2326.965 (34.9%)**

Species wise milk share, average per day per animal milk production and total milk production in the State is given in Table 4.3.

Table 4.3. Animal Species wise Milk Production in Haryana

Animal Species	Total Milk (000 tons) (% of Total)	Animal Species/ Category	Per day/animal Milk (Kg)
Cow (% of total)	998.256 (15 %)	Indigenous cow:	4.911
Buffalo (% of total)	5596.134 (84%)	Exotic/ cross :	7.907
Goat (% of total)	66.606 (1.0%)	Buffaloes:	7.103
		Goats:	0.839
Total annual milk production:	6660.996		

4.2 Meat Production

The meat production in the state during 2011-12 was 3.24 lakh tons, 96% of which was contributed by poultry. The per capita annual availability of meat in Haryana stood at 12.60 kg against the national average of 4 kg and the recommended allowance of 11 kg. Cattle and buffalo are not slaughtered in the state in spite of the fact that there is no legal ban on slaughter of the buffalo. Only small animals like sheep, goat and pigs are used for meat production. Excluding the major contribution of poultry, goat contributed 42%, the shares of sheep and swine being 28 and 30 per cent, respectively. The average per animal yield of meat was estimated to be 19 kg for sheep and goat and 42 kg for pigs. These animals are mostly slaughtered by butchers in small, corner shops to produce fresh meat for local consumption. There are no proper slaughter houses or meat processing plants. In the name of abattoirs, local bodies in 29 towns have earmarked- premises for slaughter of animals. These premises are grossly unhygienic and poorly maintained with no facilities for disposal of waste products and processing of uneatable parts for value addition. Quality control and food safety are almost missing. These premises and the butcher shops do not have even the basic facilities of cold storage and power back up. Sale of processed frozen meat by a few super markets in large towns is a recent phenomenon.

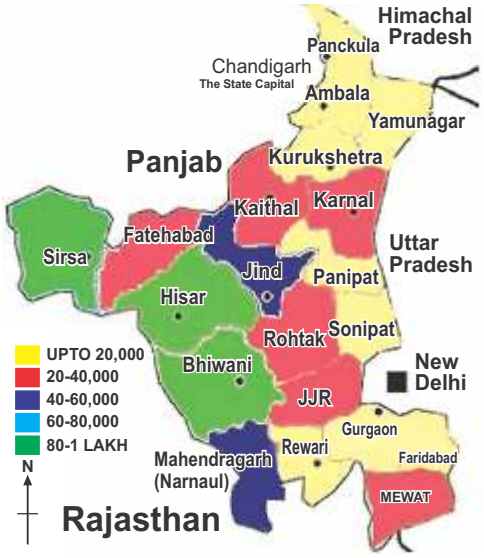
Increased earnings and general prosperity have led to a considerable rise in demand for quality meat and its products. In addition, Haryana can also take advantage of the flourishing market of the National Capital Territory situated next door. Livestock in Haryana is dominated by the buffalo as it constitutes 80% of the bovine population and 67% of total livestock in the state. The buffalo meat is lean, low in cholesterol and possesses outstanding blending quality for production of various products. The buffalo meat is also tender and juicy if the animals are raised on high protein and energy diet. Similarly, there have been no reports of BSE in buffaloes from any part of the world. The success of the ongoing FMD-CP along with slaughter under FAD 18 guidelines may open new doors for export of the buffalo meat to high-end markets with great potential.

Feed lots should be established to raise quality meat animals. Technical know-how and liberal credit facilities need to be arranged by the state. Local bodies should be made responsible to ensure hygienic slaughtering facilities. Regular trainings and health checkups of butchers should be mandatory. Sale of meat should not be allowed unless the quality is certified by the authorized veterinarian. The meat- shops must have cold storage facilities with adequate power back-up.

There is a need to develop and propagate mutton type sheep breeds as demand for wool fibre has considerably declined. Similarly, dual type goat breeds (milk and chevon) which are easy to rear in-doors would have better future under the changed circumstances.

4.3 Wool Production

Wool has lost its shine to synthetic fiber. Current annual wool production has come down to 12.87 lakh Kg after attaining a maximum production of 25.18 lakh Kg during 2003-2004. In comparison, wool production in Punjab is less than half of Haryana state. Fine wool type breeds are being replaced with mutton type breeds (Munjal). Wool production may continue to be a byproduct rather than the primary objective of sheep rearing in the foreseeable future. Sheep population is on decline because of intensive crop husbandry practices that involve quick removal of the residues from the fields and the disappearing natural pastures and grazing lands. The sheep population is more concentrated in west- southern Haryana (Map-5). The districts of Bhiwani, Hisar and Sirsa had more than 80,000 sheep each. Wool Grading Centre at Loharu being operated by the Department of Animal Husbandry and Dairying for purchase and grading of wool is providing remunerative prices to producers at their doorstep. It is running much below its capacity.



Map-4.5. Distribution of Sheep Population in Haryana

4.4 Egg Production

The population of poultry has more than doubled- from 13.60 million in 2003 to 28.70 million in 2007. During 2011-12, a total of 4114.21 million eggs were produced as compared to 3543 million eggs in the neighboring state of Punjab. Against the recommended per capita annual

requirement of 180 eggs, the availability in the state had been ~160 eggs for the last five years. There are no facilities for value addition through processing of eggs into egg powder or other products. Price of table eggs varies seasonally being 10-20% lower during summer months due to decline in the demand. A majority of the population in the state is vegetarian and do not prefer to include an egg in their daily diet. The surplus stock of eggs is being mainly sold in Delhi.

4.5 Livestock and Livelihood

Most of the livestock is being reared by the resource-poor, landless and marginal farmers. They gainfully utilize surplus family labor and locally available crop residues, grasses and weeds for rearing of animals. Livestock rearing is an important means of subsistence as it provides a regular flow of income in addition to ensuring nutritional security. The unfortunate suicides by farmers in the recent years has been minimal in the states with a strong livestock component such as Haryana. Many of the 858389 rural BPL households depend upon livestock for their livelihood and nutritional security. Almost 21 lakh of the 32 lakh total rural households are engaged in animal rearing and having a comparatively better quality life.

4.6 Investment Returns from Livestock

Livestock production continues to be cottage- based rather than a commercial activity. In most cases, animal farming is undertaken as an adjunct to crop husbandry. Being a 24 x 7, labour intensive activity with a minimal automation of farm operations, the youth and entrepreneurs are not getting attracted to animal farming. Returns are slow and delayed as progeny takes 3 to 4 years to reach maturity and come into production. As opposed the agricultural crops, there is no minimum support price (MSP) for animal products. This remains a major concern of the farmers. Poor genetic make up with low productivity is another hindrance to better returns for investments.

4.7 Impact of Livestock Technologies

Technologies such as artificial insemination, new bio-techniques, effective vaccinations against most of the dreadful diseases, improved health care, availability of quality equipment for automation of farm operations, hygienic milk production and increased processing of milk by the organized sector have a significant impact on animal productivity in the recent years and have helped in partial commercialization of this sector.

4.8 Comparative Status of Animal Husbandry in Neighboring States

Comparative figures for total livestock and poultry population, livestock units per square Km, total milk production, average daily milk production per animal; annual meat, wool and egg production in Haryana and adjoining states of Punjab, Himachal Pradesh, Rajasthan and U.P. are given in Table 4.4.

Table 4.4. Present Status of Livestock Sector in Haryana and Adjoining States

Sr.	Parameter	Haryana	Himachal	Punjab	Rajasthan	U.P.
1.	Total Livestock (000)	8859	5217	7408	56663	60272
2.	Livestock units/ SqKm	141	49	113	64	145
3.	Total Poultry (crores)	2.87	0.073	1.06	0.49	0.87
4.	Total Milk Production (2010-11 MT)	6.27	1.10	9.42	13.43	21.03
5.	Average daily milk production per animal in milk (Kg)					
	a) Overall	6.75	3.30	9.10	4.68	4.01
	b) Exotic/ cross	7.58	4.66	10.95	7.53	7.07
	c) Indigenous Cow	4.77	1.53	6.50	3.77	2.56
	d) Buffalo	6.87	3.55	8.59	5.20	4.43
6.	Annual meat production (000 tons)	319	3.0	175	107	845
7.	Annual wool production (000 Kg)	1287	1642	5061	2277	1543
8.	Annual Egg Production (lakh nos)	39644	1021	35449	6679	10991

Chapter-V

5.0 Factor Analysis of the Livestock Sector in Haryana

5.1 Farmers' Perspectives and Livestock Sector Performance

Series of interactions were held with the farmers and livestock entrepreneurs of the state across all revenue divisions of the state at which individual farmers put forth their problems and suggestion for improving livestock economy of the state. Consultations were also held and emergent relevant issues deliberated upon with experts in the areas of agriculture, animal husbandry, dairying, fodder production, cooperatives, economics and other related and relevant areas of livestock health and production. On the basis of these discussions and the points raised by the farmers, an analysis of the current performance vis-a-vis the farmer's perspective has been drawn and a condensed summary of the same is presented below:

5.1.1 Poor animal Genetics: Productivity of the state livestock remains a concern.

5.1.2 Inadequate Feed and Fodder along with disappearing community pastures/grazing lands.

5.1.3 No Government Agency owning responsibility for fodder seed production.

5.1.4 Lack of effective feed and fodder development strategy for the state.

5.1.5 Dairy a household enterprise consisting of tiny dairy units with little technological interventions, and out-dated husbandry and management practices.

5.1.6 Dairy cooperatives and dairy federation having limited presence. The structural functioning of the three major wings of dairying, namely production, processing and marketing flawed.

5.1.7 Low targeting of the critical animal improvement criteria.

5.1.8 Production activity a low priority for professionals.

5.1.9 Inadequate proactive role of the State for cattle, sheep and goat, pigs and poultry development.

5.1.10 Rural poultry development, a potent instrument for better economy, poverty alleviation and nutritional security among poor land less rural population not addressed.

5.1.11 Health cover limited to stationary Veterinary Hospitals, providing curative (fire-fighting/reactive role) treatment. Inefficient Prophylaxis and Herd health management (i.e. proactive role) at the farmers' door step.

5.1.12 Low reproductive efficiency: Infertility causing at least 25% of the production losses.

5.1.13 LS sector not close to one cow/buffalo - one year-one calf motto/theme.

5.1.14 Availability of institutional credit continues to be the major stumbling block.

5.1.15 Limited processing; and value addition confined to milk only.

5.1.16 Meat sector remains most neglected being handled in an unorganized manner.

5.1.17 Inadequate budgetary support for LS as it has always been considered a low priority sub-sector of agriculture.

5.1.18 The growth so far had been resources driven i.e. by increasing numbers where agricultural by-products, crop residues, grazing lands and cheap/surplus (family) labor were available without much consideration of quality of stock or commercial viability. There had been insignificant scientific intervention or sincere efforts to enhance productivity.

5.1.19 Minimal emphasis on skill up-gradation capacity building, training and development of human resources.

5.1.20 The Veterinary and Animal Husbandry Extension services almost non-existent.

5.1.21 The state agriculture/ veterinary university having limited presence for the low resourced animal keepers/farmers.

5.1.22 Compensation not available for loss on equal footing to crop husbandry in case of sudden disease or calamity, or onset of epidemic when groups of animals are affected, particularly among small ruminants and birds.

5.1.23 No incentives for fodder production as compared to cereal crops

5.1.24 Lack of integrated convergent approach: Many departments/agencies working towards one common goal but without any convergence or co-ordination leading to poor harvesting of benefits with more expenditure.

5.1.25 Lack of strong policy initiatives in the absence of lobbying body/forum/associations/ breed societies.

5.1.26 The following major issues in stall-fed buffaloes (which otherwise also are seasonal and shy breeders) and other bovine (cattle) species are identified:

(a) Feed & Fodder: Major component of input in dairy farming.

(b) Support for Commercial dairy farming

(c) Institutional credit: Non availability of credit especially to those who need the most (landless, asset-less, marginal farmers) remains the main impediment in

accelerating growth of livestock sector.

(d) Animal Insurance

(e) Budgetary Support

(f) Processing, value addition and Marketing interventions

(g) Reoriented and efficient Animal Husbandry Extension Services.

(h) Subsidy for all dairy machines and fodder production machines

5.1.27 **Policy Initiatives** needed for changing scenario of livestock production include breed and elite animal identification and registration, production services delivery, production incentives, quality feed and fodder availability, animal marketing, health support, vaccinations and trans boundary disease control, movement of animals within and from outside the state, calf rearing, male rearing for breeding and genetic improvement, using semen of only high genetic merit, animal conservation, control of stray animals, pricing of milk and animal products, marketing facilitation, hygienic animal slaughter and slaughter houses of different capacities and species including poultry, rural poultry programme, state health/disease surveillance monitoring, control and data management, goods and services delivery systems, bio safety of products, quality control for production inputs, animal welfare, environment management and ecological sustainability, regulation and evaluation

5.2 SWOT Analysis

The major strength of the sector is its rich livestock wealth particularly the world famous Murrah buffalo popularly called "Black Gold" in addition to the dual purpose Hariana cattle and the high yielding as well as docile Sahiwal cows. Murrah is a multipurpose animal with unique qualities of milk, meat, muscle (draught) and Mozzarella cheese. About one lakh quality Murrah buffaloes are exported every year to other states bringing wealth to the farmers. This exodus of good quality buffaloes has been continuously draining the superior germ plasm from the state. On the other hand, it also works as an incentive and the driving force for further improvement of the buffalo. Progressive, hard-working and forward-looking farmers of the state constitute an inevitable strength of this sector.

Haryana has an augmented infrastructure to provide breeding, animal health care, diagnostic and specialist clinical services for its stock. Efforts to provide 24 x 7 breeding and basic health care services at the farmers' doorstep have already been initiated through Livestock Development Centres manned by 'Gopals' (specially trained local youth). Almost every second village in the state has either a Veterinary institution or a service provider, each serving on an average 2300 heads of livestock. The on-going FMD control programme has been a great

success**.** The disease diagnostic laboratories at each district headquarter and the Haryana Veterinary Training Institute with the responsibilities for mid-career skill up-gradation and capacity building of the field functionaries provide further strength to the sector.

Poor genetics accompanied by slow pace of genetic improvement and sub-optimal rearing conditions appear to be the serious weaknesses/ constraints being faced by the sector. Inadequate quality and quantity of feed and fodder remain the major stumbling blocks for higher productivity. Chronic deficiency of essential nutrients / micronutrients has almost eclipsed the genetic potential of our stock. The practice of feeding compounded cattle feed, mineral mixture and supplementation with micronutrients has yet to become popular among the animal farmers. The disappearing common grazing grounds and pastures due to intensive crop husbandry, rapid urbanization accompanied with industrial growth, and disinterest of the educated youth in animal rearing have further added to its constraints.

Insufficient institutional credits along with inadequate budgetary support continue to be the limiting factors. Technology intervention and adoption by the end user have been minimal. Dissemination of knowledge and transfer of technology from the creator to the end user is either delayed or altogether lost in transmission. The majority is still using the age- old, traditional, out-dated feeding and husbandry practices. The tiny cottage units mainly serve as source of subsistence or extra income and have poor capacity to absorb/ adopt new technologies.

The low levels of value addition and unorganized marketing structure are responsible for poor returns to the primary producers. The shifting from the extensive low input- low output production system to an intensive system involving high inputs and better returns is slow and continues to be a challenge. The sector has failed to attract private investment. Self help groups, cooperatives and producer companies for value addition and forward linkages on the lines of crop husbandry remain a dream.

Since, Haryana is one of the major grain producing states of the country, there are plenty of cheap crop residues and roughages available at hand providing an ideal opportunity for economic rearing of the local livestock as almost 70% of the input cost goes towards feeding. The geographical proximity to Delhi provides Haryana an extra advantage in the form of vast marketing opportunities.

Chapter-VI

6.0 Issues and Concerns

6.1 Promotion of Cattle in Haryana

Considering the decline in the population and production of indigenous Hariana and Sahiwal cattle in the State in recent decades, it has been felt that the government must provide higher incentives / inputs for cattle rearing than are being provided for buffalo rearing. Similar rates should be applicable for cow milk with 3.5% fat and buffalo milk having 6% fat with normal SNF considerations. The milk from HF and their crosses have around 3.5 % fat content which is below the current minimum standard of (legally permissible) 4% fat for cow milk. The minimum standard for fat in the cow milk therefore needs to be revised to 3.5%, as is the case in most of the other states. The State Govt needs to take up this matter on priority and lower the standards to 3.5% through a notification for the benefit of the farmers and to promote cross breeding.

6.2 Animal Identification and Record Keeping

No animal improvement is possible without having all animals identified. For proper record keeping; animal health cards, animal ration cards and animal identification card or Passport should be issued to all animals.

6.3 Stray and Male Cattle Population

One of the acute problems of the cattle population in the state is the conspicuously large number of the stray cattle. A large proportion of the dry cows, heifers (yet to calve) and other unproductive cattle remain uncared for and are left unattended by their owners. These are let loose to roam free on streets and roads in search of food, both in rural and urban areas. The situation is further worsening with continuous fragmentation of land resulting into small holdings accompanied with better guarding of the crops against illicit grazing in the rural scenario and shortage of space for animal housing in the urban areas. Proper care of such animals during the critical phases of growth, development and freshening etc. becomes a causality with serious losses to the economy. The owners of these animals play pranks with the production system by taking these animals back under their fold once they become productive. The situation becomes more complicated as the numbers of unproductive animals go on swelling further as considerable numbers of sterile, male and spent animals keep on joining this population. The non existence of an exit /window for these animals burdens both a conscious farmer as well as the society at large as detailed elsewhere under Gaushalas. The size of this animal population is so large that even more than 256 Gaushalas in the State are not able to take care of these roaming animals, obviously due to limitations of space, feed and resources. This group of animals brings down not only livestock production, animal productivity and societal

loss, but is also directly responsible for major economic debility to the State as below:

(a) Genetic improvement is impeded as pregnancies result from stray bulls of poor genetic make- up.

(b) These animals remain the source of infections and contribute to spreading of many diseases including zoonoses as they hardly get any veterinary health care.

(c) Animal improvement programmes including control of infectious diseases become slashed and difficult to implement.

(d) A significant number of road accidents are attributed to these freely roaming animals.

(e) The efforts of the state Animal Husbandry Department are dented in performance.

Thus this problem of large population of stray cattle and male cattle having adverse affects on livestock health and introduction / spread of diseases needs to be dealt with effectively through appropriate administrative and policy interventions. This issue has been elaborated under policy imperatives separately.

6.4 Buffalo – As a Brand for Haryana

Of all the indigenous animals, buffalo holds the greatest promise and potential for production. Buffalo did not receive the attention it deserved in the post independent era but the economic advantage has swayed the attention of the scientists as well as the policy makers towards this bovine **Black Gold**. Unfortunately the approaches to reveal the mechanisms have all been comparative and this species had to suffer under the cloud of the animal sciences dominated by thought of cattle breeding and management.

It is only in recent years that buffalo has been on its way to get the star performer status as the premier DAIRY animal of our country with high potential for Milk, Meat and Draught. The commodity products in terms of milk , meat, hides/leather, economic contributions in terms of draught, employment, women empowerment and export earnings in terms of meat and leather propels this animal as the sheet anchor of our animal agriculture and the greatest single contributor to the National Economy.

Though efforts, of late, have tried to promote buffalo production but no attempt has been made to project buffalo as a "**brand".** The advantage of its milk and other animal products are lost in the shadow of total bovine animal products**. This needs to be reversed particularly for the buffalo rich region of Haryana.**

6.5 The Buffalo Advantage and Productivity Dilemma

The demographic picture is illustrative enough and numerically satisfying to show that the buffalo as an animal species is preferred by animal owners/farmers. Over the past animal censuses' records, the animal has shown an increase/growth of 7 to 13%. This growth in

numbers becomes more ominous when simultaneously considering the other dominant large ruminant species, cattle, whose number has distinctly lowered. This growth in buffalo numbers has occurred not only in those parts of the country where buffalo rearing has been practised for several centuries and is inter-woven with the ethos, culture and economy of the people and the region, as in Haryana, but in other parts too where buffalo rearing has been taken up only in recent times.

A perusal of the buffalo population figures (census figures) clearly shows that there is a distinct advantage with respect to buffalo as an animal of choice. This animal obviously is having several advantages to be reckoned as a true dairy animal with large contributions in terms of milk and meat besides being a major component to give sustainability to agricultural production system. **Haryana as a front line state,** with the best breed of this species has thus to lead the animal improvement program and the emphasis should be on having a comprehensive program to increase net productivity per animal and have a characterized system and strategy to enhance production per animal.

This requirement is neither met through our research agenda for bringing out improvement among buffaloes nor through support from the public and private sector to harness the superiority of this animal.

6.6 Nutrition, Nutrient Partitioning and Conversion Efficiency Advantage of Buffaloes

It is well known that the buffalo is remarkable for its feed conversion ability, but we do not yet understand how, or why, or whether that capacity can be further improved. The young buffalo calf can daily gain a weight of 800 grams without any supplement feed. The available data recognizes the rumen–intestinal efficiency in partitioning of nutrients in a manner that the milk synthesis process in the mammary system is capable of delivering milk of different composition. While higher acetate production is related to more fat in the milk, the easily digested carbohydrates bring in more lactose and more volume of milk. Genetically programmed higher fat in milk needs to be looked at not only in terms of gene action at mammary level but also in terms of the metabolic partitioning of the nutrients.

Unfortunately all our feeding schedules, based on cattle model, have not taken a reckoning of this important biological fact. Commercial rations or even our feed standards recognize the production levels to calculate the nutrient requirement and not the biophysical or the biochemical requirements. This is a conflict needing resolution so that the natural advantage which the buffalo system enjoys could be harnessed for augmenting production and reproduction.

6.7 Conservation and Improvement Conflicts

The National Register (NBAGR classification and data) presents a comprehensive view of the available breeds of buffaloes in their eco-region and the respective population size of each of

these breeds. However, whether we follow the natural service or AI programmes for breeding, the breed and the quality of the male have no certified identification or a regularized procedure for ensuring the specific breed application. All organized programmes of buffalo improvement (especially through AI) invariably involve, Murrah. Tested buffalo semen with identified superiority (progeny tested or pedigreed) is available for Murrah animals and hence it is this semen which be extensively used. Transboundary, the major agencies using buffalo males/semen for reproduction/AI are sourcing the semen from places where the quality leaves much to be desired and hence creates acute conflict in improvement programmes.

The efforts to improve these breeds are thus in conflict with or on cross roads with respect to sound improvement programmes. The resolution should be in using only approved males/progeny tested semen till a policy procedure is in place and is adopted.

6.8 Lost Buffalo Milk Advantage

In spite of the development and incentive programs for Murrah buffalo in the State most of the time our focus in the State has been on the animal and not on bringing in the concept of superiority of its special milk, its processing and manufacture of **niche products**. We handle "buffalo milk" taking cow milk as the reference, even when 84% of the available milk is from buffalo.

Most of the available techniques, processes and procedures have not exploited this special milk with distinct compositional advantage in terms of its fat, protein and SNF. Our research and educational institutes have spent considerable time to enlist the differences of this milk to that of cow milk but exploiting the excellence has eluded our R&D. The State as well as the R&D focus has never been to exploit the strength of buffalo milk. The large volume of this distinct commodity has never been addressed to develop a niche product line and/or market franchise.

It is high time that when we are endowed with competitive global environment, buffalo milk should be marketed as "**buffalo milk**" to hold its own ground in terms of its advantage in terms of fat, protein quality, Mozzarella cheese and product manufacture nationally and globally. A technological fusion will bring in much higher financial returns to the producer as well as the industry. The coagulated milk products have a ready world market. The conflicting situation needs to be redeemed to work for buffalo excellence and not waste the milk volume and quality advantage.

6.9 Male Buffalo Squandering

For the buffalo male calf from the day of its birth, existence is a question mark and it presents an abject picture of neglect resulting into male wasting. The calves are inadequately fed and virtually kept alive just to support the milking process. Over 22 lakh female buffaloes are supposed to have around 13 lakhs calves annually (considering 70% breedable population, 60%

calving) out of which the birth ratio (50% to each sex) would give a frequency of 6.5 lakh to each of these sexes In fact the available census analysis (2007) shows over 6.4 lakh buffalo male calf population of less than one year of age (Table 6.1).

Table. 6.1. Buffalo Male Population in Haryana as per 2007 Census

Age	Buffalo	Cattle	
		Indigenous	Cross Bred
Under 1 Year	637100	75873	50058
1 to 3 Year	139922	48280	14634
Over 3 Years			
a) Breeding	10616	7395	1738
b) Agriculture and Breeding	22896	75660	6542
c) Bullock Cart	98114	100726	20842
d) Others	7619	86931	6159
Total	**916267**	**394865**	**99973**

Corresponding number of males in the age group of 1-3 years gets reduced to just 1.39 lakh and by 3 years of age, the numbers are further reduced to only 1.0 lakh. This clearly indicates that over 5 lakh calves are annually wasted (neglected and/or allowed to die). This is a colossus loss for the farmers who could otherwise be benefitted to the tune of at least Rs 100.00 crores annually (5 lakh animals with a body mass of 70 kg each @ Rs 70 per kg).

Besides the number loss, there is an energy loss, economic loss and biological loss because a rich bio-resource, the female animal has built over 10 months of energy investment in gestation, the nutrient regimentation and built up and the incubation energy input, all comes to a naught. Even if the farmers are able to rear/bring up just 50% of the male animals (calves) up to 16 months post birth, we would have a high quality buffalo meat available with great potential for profits and export earnings. Additionally this will lay foundation for a profitable Leather Industry for the State bringing in employment and additional cash to the livestock owners.

Developing infrastructure for hygienic slaughter for export of quality meat, will propel the demand in this sector which will result in an almost 80% increase in growth and export earnings. The available model of male buffalo calf rearing have taken the economic returns from this animal beyond all previous calculations even when not considering the milk producing ability of the mother. The management conflict in the gender rearing is acutely denting the animals' economy.

Intensive male rearing programme, defined as **Buffalo Spots (BS)** should involve a feeding regime using roughages and concentrates, health care, disease prophylaxis and control,

address traceability and quality control issues and have a facility for recycling of animal waste. These buffalo spots will serve as export units linked to central slaughtering facilities where optimum carcass utilization is practiced with maximum profitability. The buffalo spots could be an entrepreneurship in terms of a rearing proposition and returning the profits to the stake holding animal owners who pledge their male calves to the programme on percentage basis or this could be a cooperative venture or a straight purchase feed lot enterprise.

6.10 Buffalo as a Meat Animal

Buffalo is referred to as backbone of Indian Dairying and Meat exports .Out of the total national Buffalo population of 105 million, only about 11 million buffaloes are slaughtered annually. Buffalo meat production potential (boneless meat) is around 8.00 million tons. There are about 12 modern abattoirs cum meat processing plants in the states neighboring Haryana viz., Punjab and Uttar Pradesh, leading to an export of 4.62780 MT of meat. Buffalo meat was exported to 60-75 countries in the past years and the value of the meat exported in 2009 was 48400 million rupees.

Buffalo meat with lower intramuscular fat, cholesterol and calories; higher units of essential amino acids, greater biological value & iron content and residue free status becomes one of the healthiest meat for consumption. Buffalo meat is excellent for producing a variety of meat products including emulsion products, smoked and cured products, restructured products and traditional meat products.

With the qualities mentioned above it is not understood why buffalo meat is priced so low in comparison to other meats (Table-6.2). With the slaughter facilities being created in the state , the price advantage and the revenue for the farmers should not be lost sight of.

Table 6.2. Retail Price of Different Meat Categories (Price Rs/Kg)

Category of Meat/ Year	2006	2007	2008	2009	2010
Poultry	58	60	52	65	75
Goat	150	160	170	180	190
Mutton/Sheep	140	160	165	175	190
Pork	55	60	55	65	75
Beef	45	45	50	55	65

6.10.1 Buffalo Meat Characteristics

Researchers in a number of countries have compared quality of meat from buffaloes and cattle and reported that quality characteristics of meat from buffaloes are comparable or superior to beef from cattle. Buffalo grew faster than cattle when reared in same condition. Buffaloes have lower dressing % (by about 3%) than cattle due to heavier hide and head but the amount of

meat is comparable with that of cattle. In general buffalo carcass has a higher proportion of muscle and a lower proportion of bone and fat than beef. Buffalo meat contains about 17-21% protein, 1-3% fat, 1% ash and 74-75% moisture. Amino acid composition of buffalo meat was found to be almost identical to that of beef. Buffalo fat is white and buffalo meat darker than beef because of more pigmentation or less intramuscular fat. Buffalo fat is richer in oleic and stearic acid that have been shown to be neutral in human cholesterolemia. The ratio of PUFA to SFA was reported to be 0.22 and 0.91 for beef and buffalo meat, respectively.

6.11 Land use Conflict and Livestock Production

In irrigated agriculture where the large ruminants, crossbreds and buffaloes, are having almost complete sway as the Dairy animal of choice, are managed intensively, stall fed, given green fodder and concentrates; the land resource has to be suitably shared with grain/crop production, thereby making a dent on the total land availability, thus cutting on grain producing land mass. Since the dairy proposition is having a better economic return, a serious land use conflict has arisen in irrigated agriculture. Growing green fodder round the year for commercial sale has become more profitable than grain production.

Several farmers have innovatively approached the problem of fodder for intensive cattle and buffalo production by utilizing the land between the rabi and kharif crops. After wheat harvest they produce maize fodder crop and make silage to have green fodder available all the year round. Certain farmers in Punjab are having large dairy units of buffaloes and pure exotic and cross breds (200 to 300 head units) exclusively reared on silage produced from hired land during an intercropping period of 79 to 80 days without any agriculture land of their own.

6.12 Rural Livestock and Common Property Struggles

With the shrinking of agricultural land holdings and misuse of common property land, the feed, fodder and pasture availability has come under acute strain and stress. Majority of the landless animal owners are finding it very difficult to find common land, grazing areas and wallowing ponds. Where common property rules have broken down and failed to evolve in changing conditions, several outcomes have been observed. One is increased resource degradation as property slips towards open access, another is spontaneous enclosure or privatization and the third is the capture of common lands by groups of commercial producers pursuing private accumulative strategies in the name of community development. None of the above is a solution to the problem of common property management particularly when the common property management involves grazing of animals, access to water ponds and availability of forage. The forced solutions lead to social, economic and political pressures resulting into total resource loss. Though high producing large ruminants are preferred to be individually fed but under the rural conditions in the states where large livestock population exists, the non availability of common property lands is a serious setback to the LS production. The economic

returns of livestock production from communal herds are higher than that from commercial ranges. LS herds within village economies are often multi purposes in character and yield high rate of economic return per hectare when all their functions are valued.

Where extensive LS production is a central component of the livelihood system, there is a distinct economic and ecological advantage in common property institutions. There is need to evolve a consensus formula for the use of forest and grazing areas especially for small ruminants in districts where we have large presence of livelihood important sheep and goat population.

6.13 Portal for all Livestock Needs- Information for Animal Owners

IT in agriculture is not something new. There are more than 80 Web sites and portals run by Governments and organizations providing information to farmers on soil, plant protection, diseases, weather forecast, fertilizer use and farm and crop management. The number could be much more in the private sector. However there is no exclusive one-stop portal for the Animal owners. Even the information on Agricultural portal is likely to confuse the farmer with specific needs of animal health and management. Further the information needs of an animal owner are often not only species/breed specific but also animal specific.

To tackle this, the State Government has to come up with a unified portal, to provide information on all programs/schemes/farming needs including reproduction, AI, breeding, nutrition, health, disease, management, drugs, LS products, input resources and, lead animal owners to goods, services and interventions. The **portal** www.pashugyan.gov.in or www.pashukhabar.gov.in needs to be started in right earnest incorporating answers to the farmer needs including the feed, fodder, nutrient, quality, hygiene, value addition and marketing in a live interactive manner. The basic version should be integrating all relevant information from various Web sites. The portal should also integrate the convergence technologies to offer latest information to farmers, instead of uploading dated information. For example, the information on milk or compounded feed dealers uploaded through SMS would be updated automatically. The Government should make it available to the livestock owners/farmers in the next few months.

6.14 Changes in Income and Dietary Habits

The recent trends clearly show changing patterns of food consumption. While grain consumption is decreasing, the non-grain products consumption in the daily diet is increasing in both the rural and urban areas.

With increasing income and urbanization, the non-grain crops and the animal products (dairy and poultry egg and meat in some selected state pockets) would dominate the consumption basket during the next two decades

The contribution of grain products to the total calorie supply, as per national estimates, is projected to decrease from 65 percent in 2000, to 55 and 48 percents by 2025 and 2050, respectively. However, the total calorie supply is projected to increase to about 2770 and 3000 kcal per person per day by 2025 and 2050, respectively. This level of average calorie supply is sufficient for providing adequate nutritional security to even the people in the lowest income percentiles.

Another implication of the changing food consumption patterns is the high level of consumption of non-grain crops (including pulses, edible oil, vegetables and fruits) and such crops which are important for the growing feed industry. It is a challenge to meet the increasing demand of grains, especially for feed. Even greater challenge in the future will be as to how the loss of straws due to less emphasis on food grains will be compensated for.

The crop demand projections also show that future expenditure on food would significantly enhance the livelihood opportunities for the agriculturally dependent population and LS would offer best economic propositions.

6.15 Feed Grain Demand

A major implication of the changing consumption pattern is the increasing feed grain demand. The total grain demand will also thus increase. Unlike at present, a major part of increasing total grain demand will be to meet the increasing feed demand. The feed demand is expected to increase 6 to 8 times given the sectoral growth and the demand of the sector in terms of the projections by 2020 and 2030.

The feed demand projections will outpace the food demand in the coming years as illustrated by the current trends of food preferences and the market demands. Contrary to the current concepts of national planning, we strongly feel that feed demand projections will be significantly different from the currently prevalent projections.

The nutritional demand of food grains in the future will also show a shift implying that livestock products will, in a significant manner, fulfill the nutrient needs and will have an impact on the projected food grains need. The 66th round data of the CSSO is clearly suggestive of the same (see illustrations and the Tables).

6.16 Consumer Expenditure Among Haryana and Neighboring States

The average monthly consumer expenditure per person on milk and milk products, egg, fish and meat in Haryana for the years 2006-07, 2007-08 and 2009-10 has been depicted in Figure 6.1 and 6.2. The proportionate of expenditure on livestock origin and cereals in Haryana, Punjab, Rajasthan, U.P. and at all India level is shown in Figure 6.3 and Table 6.3, 6.4, 6.5 and 6.6.

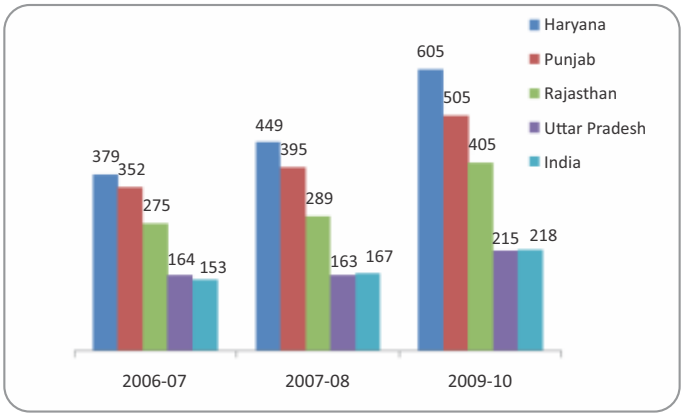


Figure 6.1 Average Monthly Consumer Expenditure per Person on Milk & Milk Products

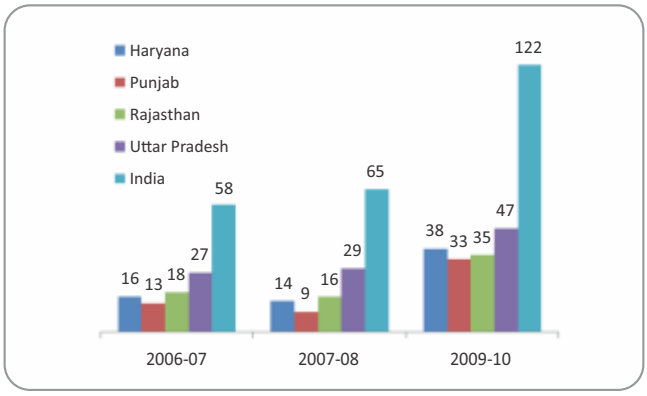


Figure 6.2 Average Monthly Consumer Expenditure (Rs.) per Person on Egg, Fish & Meat

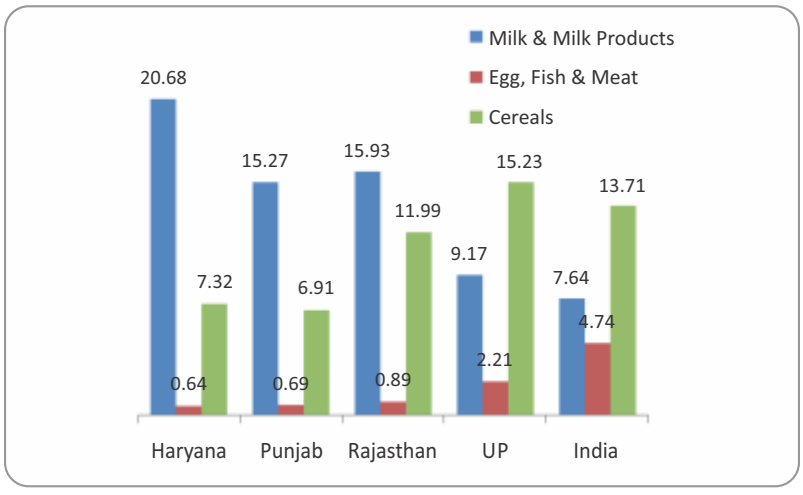


Figure 6.3 Percentage Distribution of Monthly Expenditure per Person over Different Groups of Items of Consumption (Rural)

Table 6.3. Average Monthly Consumer Expenditure per Person on Milk & Milk Products

(In Rs.)

	2006-07	2007-08	2009-10
Haryana	379	449	605
Punjab	352	395	505
Rajasthan	275	289	405
Uttar Pradesh	164	163	215
India	153	167	218

Table 6.4. Average Monthly Consumer Expenditure per Person on Egg, Fish & Meat

(In Rs.)

	2006-07	2007-08	2009-10
Haryana	16	14	38
Punjab	13	9	33
Rajasthan	18	16	35
Uttar Pradesh	27	29	47
India	58	65	122

Table 6.5. Percentage Distribution of Monthly Expenditure per Person over Different Groups of Items of Consumption (Rural)

	Milk & Milk Products	Egg, Fish & Meat	Cereals
Haryana	20.68	0.64	7.32
Punjab	15.27	0.69	6.91
Rajasthan	15.93	0.89	11.99
UP	9.17	2.21	15.23
India	7.64	4.74	13.71

Table 6.6. Percentage Distribution of Monthly Expenditure per Person over Different Groups of Items of Consumption (Urban)

	Milk & Milk Products	Egg, Fish & Meat	Cereals
Haryana	12.64	1.23	5.79
Punjab	11.99	1.04	6.16
Rajasthan	13.04	1.46	8.45
UP	8.45	1.72	9.27
India	3.63	6.9	8.12

6.17 Livestock and Water Economy

The national water scenario shows that in the state of Haryana, the water availability and use will put a serious question mark on rice /wheat production system. Livestock being a potent means for water economy can address the water problem with a modest increase of water efficiency through animal husbandry.

6.18 Genetic Improvement Through Conservation and Casein Gene Profile

Genetic improvement of our prized indigenous breeds and their conservation will continue to be the major issue in the development of animal husbandry of the state. The gene excellence of the breeds of livestock has partially eroded during the past decades. The absence of any selection criteria/options for either of the sexes in the LS breeds, lack of any choice for farmers in the availability of elite germ plasm, feed and fodder deficiency, prevalence of diseases inflicting morbidity and mortality in young and productive animals, poor resource base among animal owners have all contributed to the genetic erosion.

The recent controversies in terms of the genetic makeup of protein casein in milk namely A2 or A1 gene expression need elaboration among our Zebu and Buffalo breeds particularly, since the association of A1 milk has been linked to several diseases in human.

Through efforts of some enterprising animal owners and public supported programs in other countries, specialized milk plat- forms have been created and brand marketed across the species and breeds. Such screening and gene profiling needs to be done for our animals too. High producing exotic breeds with varying A2/A1 gene profile have been introduced as also among those produced through cross breeding. Indigenous breed difference among the crosses and the indigenous buffaloes needs mapping. No improvement among the breeds regarding this trait is sustainable unless there is a vigorous conservation strategy of domestic animals in place.

6.19 Perspectives on Women and Child Health

Given the fact that human population in Haryana mostly consumes vegetarian food, there is a high demand for non-meat animal protein particularly among the pregnant women, nursing mothers, neonates and growing children. To bridge the nutrition gap for women and children, the state needs to invest heavily in such areas as would directly lead to a reduction of anemic mothers and children through augmented animal protein availability. Human health strategy for nutritional security and Human Development Index (HDI) elevation can only be possible if provisions are made for greater availability of animal protein.

6.20 Subsidizing Concentrate Mixture

The department of Animal Husbandry & Dairying, Haryana has been running the Field Performance Recording Programme for Murrah buffaloes for the last several years to identify high yielding buffaloes. Such buffaloes are given cash incentives and are duly identified along

with their suckling calves. The scheme has helped to establish an in-situ Murrah Germplasm Bank. Undoubtedly, the calves born to these high yielding elite Murrah buffaloes are the future bulls/ bull mothers and are in a way national asset since Murrah continues to be the breed of choice for upgrading the local buffaloes in the entire country. Experience shows that due to limited resources, the farmers pay more attention and resort to preferential feeding of the animals in lactation because of immediate returns, generally at the cost of non-producing animals. The young growing stock remains a neglected lot as far as feeding and care is concerned. It results into poor growth, delayed puberty and poor life time production. A subsidy to the extent of 50% should be provided on the purchase of concentrate ration from the approved sources for feeding of the young stock born to the identified elite buffaloes. The male calf may be entitled to get the subsidy between the age of 4 and 12 months while the female progeny should be eligible for the subsidized feed from 4 months to 30 months of age. It will ensure proper growth and development of the stock during the most crucial stage of their life. The body weight of each calf should be monitored and recorded on quarterly basis by the area veterinarian. The feed subsidy to a calf needs to be stopped if its body weight does not match its age. Each eligible progeny may be issued an ANIMAL RATION CARD for an effective implementation of this programme.

6.21 Preferential Pricing of Cow Milk

Contribution of the cow to the total milk production in the state is limited to 15%. It needs to be increased to at least 30% for a more balanced approach. Presently, the milk is being marketed by the organized sector as Toned, Double Toned, Standard, Full Cream or Skimmed Milk etc. based on the fat content regardless of its origin i.e. cow or buffalo, and is priced accordingly. The vendors are selling cow and buffalo mixed fresh/ raw milk. Because of the low fat content, the cow milk remains at a disadvantage as far as price is concerned, as compared to its counterpart, the buffalo milk. The low market price of the cow milk is one of the important reasons for decreasing importance of cows and their dwindling population. On the other hand, a sizeable number of consumers, particularly the young children, senior citizens and the persons with health problems or due to religious beliefs would prefer to have cow milk. But it is hardly available in the market.

In order to promote rearing of cows, increase the share of cow milk in the total milk pool and to regain cows their lost importance, it is suggested that the cow and buffalo milk should be treated at par as far pricing is concerned but sold separately as cow or buffalo milk, followed by its further category such as double toned cow milk or double toned buffalo milk. The cow milk needs to be given preferential pricing. **The cow milk with 3.5% Fat and 8.5% SNF should get the same price/ value as the buffalo milk with 6% Fat and 9.0% SNF.** The milk plants handling only the cow milk may be given special financial support, subsidy or incentives. Similarly, the commercial dairy units keeping cows only may be given extra support/ subsidy for the purchase of refrigerated vans of small capacity to help in transportation and marketing of milk.

Chapter-VII

7.0 Feed and Fodder

7.1 Feed and Fodder Availability

Haryana is one the main grain producing states in the country. It produces 17.621 million tons of grain out of which wheat contributes 12.4 and rice 3.98 million tons. Production of oil seed in the state is 0.942 million tons in which cotton and rape oilseed are the most common. Sugar cane production in the state is 7.5 million tons. (Haryana Economics Survey-2012-13). All these contribute in generation of energy and protein rich supplements for compounded feed industry.

Haryana farmers use a range of crop by-products as straights or as homemade mixes which include by-products like oilseed-cakes, grains and brans of wheat, rice, maize, pulses and gram and byproducts available from the processing mills. An interaction with the farmers from different corners of the state revealed that 70 percent of livestock farmers still are using homemade feed grains crop by -products and crop residue. Only 25% of the farmers have adopted feeding of balanced concentrate ration. The homestead farmers offer soaked, split and crushed grains (churi), bran and oil cakes etc, to livestock, the quantity depends upon the productivity status. Practice of chaffing to make the crop residues more palatable as well as nutritious is also followed by most of the households. However, there is an urgent need to popularize the use of compounded feed through appropriate extension strategies and demonstration.

Estimates of Requirements: The annual requirement of compounded (balanced) cattle and livestock feed in the state is around seven million tonnes and may continue to increase as the production and productivity of milk goes up. Haryana is one of the food surplus states in the country. However, the diversion of grains from human to animal feed depends upon matrices of man animal and environmental factors. Vision 2030 estimates a target increase in production of milk from 6.7 million tons to 12 million tons and meat from 324 thousand tons to 700 thousand tons. To realize these targets, the availability of compounded feed needs to be increased to over 10 million tons. The state needs to have a concrete policy for increasing production of compounded feeds with an enabling environment to bring in private enterprise for a win-win situation. This should include technology for feed improvement (use of by-pass protein/fat in buffalo and cattle, area specific mineral, feed supplements etc.), subsidies on purchase of feed industry machinery, assured electricity at remunerative rate etc.

In terms of the total requirement of dry fodder for the state , keeping in view the Livestock strength, the state is surplus with reference to crop residues (mostly cereals), it is acutely short in cultivated green fodder to the extent of 40% i.e around 27 million tones.

7.2 Encouraging Fodder Cultivation:

- An incentive be given to farmers for cultivation of fodder crops (including cereal and legume fodders) in preference to rice-wheat system and generating high nutrient supplement for their livestock.
- Increasing the area under fodder crops through various incentives, promotional schemes, assured economic returns by ensuring MSP.
- Popularising fodder banking and silage making. The subsidy already available under various state/ national programmes for silo-pits, silo-towers, storage sheds and related machinery / equipment etc., be further increased by at least 25%.
- Promotion of contract farming of energy rich cereal fodders, fodder crops, at par with grain crops and ensured and remunerative price of produce, ie. assured quality fodder seeds with availability to marginal/ small farmers at concessional price,
- Awareness training and extension programme on fodder production through the department.

7.3 Establishment of Feed, Fodder and Feed Security Monitoring Cell

It is suggested that a cadre of fodder cum pasture development officers in the state be established to address fodder production and conservation programming in both irrigated and arid Haryana.

To better organize the availability of balanced ration to livestock there is a need of a policy on feed and fodder assessment and management by establishing 'State Feed and Fodder Assessments and Management Cell'-SFFAMC under the Directorate of Animal husbandry and Dairying Department. This cell should draw and implement the policy and programmes on strengthening the availability of feed and fodder for farmers and also for those interested in starting feed and fodder industry in the state. The cell should work in three phases - planning, implementation and updating through R&D backing. The cell should manage forage, crop residue and ingredients used (energy and protein supplements) in compounded feed mixtures; and supplement with vitamins, major and minor minerals, probiotics, prebiotics etc.

Chapter-VIII

8.0 Livestock Genetic Resources

8.1 Animal Genetic Resource scenario

8.1.1 National resource.

Presently, there are 144 registered breeds of livestock and poultry in India which includes 37 breeds of cattle, 13 of buffalo, 39 of sheep, 23 of goat, 6 of horse and ponies, 8 of camel, 2 of pig, 1 of donkey and 15 of poultry in addition to many more not characterized and accredited so far, besides populations/breeds of other species like mules, yaks, mithuns, ducks, quails etc which are yet to be classified into well descript breeds.

8.1.1.1 Cattle

Majority of the indigenous **cattle** breeds are low producers and are reared primarily for bullock production which are used for agricultural operations and transport purposes. Cattle breeds can be broadly classified into 3 major types according to their utility: (i) milch breeds – Sahiwal, Red Sindhi, Gir and Rathi; (ii) draught breeds – Amritmahal, Bachaur, Bargur, Dangi, Hallikar, Kangayam, Kenkatha, Kherigarh, Khillari, Malvi, Nagori, Nimari, Ponwar, Red Kandhari and Siri; and (iii) dual purpose breeds – Deoni, Gaolao, Hariana, Kankrej, Krishna Valley, Mewati, Ongole and Tharparkar. The recognized breeds of the state are Hariana, Mewati, Sahiwal and some animals of Tharparkar breed. Haryana has been known also for Hissar breed but the animals of this breed are no longer available in the state, though mention is found in literature regarding the existence of a herd in Pakistan.

Hariana: Hariana is a famous dual-purpose breed of northern India. It is known more for draught potential rather than milk production. Though the original breeding tract lies in Rohtak, Hisar and Gurgaon districts of Haryana; this breed is distributed throughout Indo-Gangatic plains. Animals are white or light grey. Face is long and narrow, and forehead flat. Hump is well developed in males. Horns are small. Udder is well developed. Cows produce about 1,000 kg milk in a lactation period of about 270 days.

Mewati: These are white-coloured animals found in Mewat area of Rajasthan, Haryana and Uttar Pradesh. Mewati cattle are similar to Hariana in appearance. These have long face and narrow forehead. Horns are medium in size, and are carried upwards and backwards. Dewlap is medium sized. Sheath is loose. Cows have good udders.

Sahiwal: Sahiwal is one of the best dairy breeds of zebu cattle. Its original breeding tract lies in Pakistan, but some herds are found in India along the Indo-Pak border in Ferozpur district of Punjab and Sri Ganganagar district of Rajasthan. Sahiwal animals have been imported by many

countries to exploit its production potential. Animals have usually reddish dun colour but some animals have pale red or brown colour. It is a heavy breed having long and deep body. Horns are short and stumpy. Hump is large in males. Dewlap is large. Navel sheath is pendulous. Cows have large udder and produce around 2,300 kg of milk in a lactation of 320 days.

8.1.1.2 Buffalo

The richest source of germplasm of **buffalo** and the best dairy breeds are domesticated in north-western region of the country. There are 10 recognised breeds of riverine buffaloes (2N = 50) in India. These include large sized breeds – Murrah, Nili-Ravi and Jaffarabadi; and medium sized – Mehsana, Marathwada, Nagpuri, Pandharpuri, Bhadawari, Surti and Toda. Almost all the important breeds of buffaloes are present in India. In addition to these breeds, there is a large population of buffaloes which is of mixed type – mostly Murrah grades. Buffalo milk is preferred over cow milk resulting in buffaloes gradually replacing cattle, especially in northern parts of the country. The Murrah is the most sought after breed, and is replacing all others. The important breeds of buffaloes of the state are described below.

The main reasons for low productivity of these indigenous breeds are poor exploitation of genetic potential of indigenous animals, low absorption of available technology, inadequate resources of feed and fodder, insufficient health cover, inadequate marketing and credit support etc.

Murrah: Murrah is one of the best dairy breeds of buffaloes. Its home tract lies in Rohtak, Hisar, Jind and Gurgaon districts (old) of Haryana. This breed can be seen throughout the length and breadth of India. Murrah animals have been imported by many countries, and are at centre stage of dairy production in those countries. Usual colour is jet black. Animals are massive in size. Horns are short and tightly curved in a spiral fashion. This shape is typical of Murrah breed. Tail is long. Udder is capacious. Murrah buffaloes produce around 2,000 kg of milk in about 320 days. The Murrah breed is being used for upgrading local buffaloes in many parts of Asia and other parts of the world.

Nili-Ravi: Originally Nili and Ravi were two separate breeds but were later on classified as one breed due to similarity in appearance. The home tract of this breed lies in Pakistan, but these buffaloes are also found in India in Amritsar and Ferozpur districts of Punjab along the Sutlej river on the Indo-Pak border. These buffaloes are similar to Murrah except for some white markings on extremities and walled eyes. Nili-Ravi buffaloes are black with white markings on forehead, face, muzzle, legs and tail. Horns are slightly less tightly curved than those of Murrah. Nili-Ravi buffaloes produce about 1,800 kg of milk in a lactation of about 290 days.

8.1.1.3 Goat

Diversity in **goats in India** is represented by 23 breeds, and is related to the geography and ecology of the region, as also environmental variations, production system and genetic

potential of the breed. Goats of temperate Himalayan region (Changthangi and Chegu) possess the finest quality under-coat called cashmere or pashmina. The goat breeds found in north and north-western region viz. Jamunapari, Marwari, Zalawadi, Beetal, Kutchi, Sirohi, Mehsana, Surti, Jhakrana and Gohilwadi are large in size and are primarily used for meat and milk purpose. In the southern and peninsular part of India, goats with dual production of meat and milk viz. Sangamneri, Osmanabadi, Kanai Adu and Malabari are found. The highly prolific meat breeds (Ganjam and Black Bengal) are found in the eastern region.

Beetal: Beetal goats are distributed throughout the states of Punjab and Haryana. However, animals true to the breed characteristics are found in the bordering areas of Pakistan, viz. Gurdaspur and Amritsar districts of Punjab in India. Beetal goats are tall animals. They have the features typical of the Jamunapari breed, viz. Roman nose and long ears, but are comparatively smaller in size. Black coat is quite common. Brown coat with white spots of different size is also found. The Beetal is a dual-purpose breed reared both for milk and meat production. Milk yield is 157 kg in a lactation period of 161 days. Milk fat and SNF percentages are 4.98 and 8.88, respectively. Beetal is a good dairy breed, second to Jamunapari in size but is superior to it as it is more prolific and more easily adaptable to different agro-ecological conditions and to stall feeding.

8.1.1.4 Sheep

There are 39 registered **Sheep** breeds in India. Haryana does not have any specific breed but sheep flocks from Uttar Pradesh, Himachal Pradesh and Rajasthan are reared chiefly in the districts of Bhiwani, Hisar, Sirsa, Rewari, Jind. The major breeds in these areas are Bikaneri, Hisar Dale, Munjal, Gaddi, Chokla, Nali, and Muzaffarnagri. These sheep breeds are well adapted to specific environments and manifest a sustainable production in specific agro-climatic regions of the state. Sheep husbandry is an important enterprise in the ecology characterized by sparse vegetation, marginal land and a high incidence of poverty. Sheep are reared mainly by the poorest people in the lower strata of society and serve as the main or supplementary source of income for this category. The sheep are valued for mutton and wool production.

8.2 Genetic Improvement Challenges

The priority of state animal husbandry department is more on improving the productivity of only few economically important breeds rather than conservation and development of the AnGR which are in the process of genetic dilution and degradation. Programmes for identification, evaluation and selection of genetically superior breeding males of indigenous breeds are inadequate. Moreover, it is also difficult to implement the breeding programmes at farmers' level, as breeding at farmers' herds or flocks is mostly uncontrolled which results in dilution of genetic purity of the breeds. There is no regular system of monitoring of the breeds at risk. Lack of farmer awareness about the long-term impact of conservation of biodiversity

and no or negligible immediate financial benefit also make them less interested in conservation programme. Insufficient trained manpower and infrastructure also hinder the implementation of the programmes. Almost all the conservation programmes on AnGR are funded and implemented by government agencies and participation of farmers and private sector is negligible. Absence of breeders' organization barring few and lack of awareness, participation and motivation of the livestock keepers make the implementation of breed conservation programme more difficult and unsustainable. Social changes have also greatly influenced AnGR especially small ruminants because present generation is not keen to continue their ancestral occupation of rearing livestock in migratory system of grazing. Squeezing grazing lands; and lack of policies for animal grazing in forest areas as also for development of pastures are some other factors affecting indigenous AnGR.

8.3 Biodiversity Conservation

Small-scale livestock keepers and pastoralists have developed animal breeds over centuries that are well suited to their local conditions and have co-evolved with economies, cultures, knowledge systems and societies. This has endowed them with unique qualities of tolerance to abiotic and biotic stresses. They may continue producing meat, milk, egg, wool etc in areas where imported modern breeds succumb in the absence of proper housing, feeding and veterinary care. They enable people to earn a living in otherwise inhospitable areas, and embody valuable genetics for future breeding efforts. Nevertheless, these breeds are in danger of disappearing, pushed out by modern production techniques and out-competed by exotic breeds. Modern agriculture has developed specialized breeds with optimized specific production traits. This small number of high producing breeds account for an ever-increasing share of total production. This process leads to narrowing of the genetic base, as native breeds and species are neglected in response to market forces. The diversity of animal genetic resources is essential to satisfy basic human needs for food and livelihood security. Genetic diversity defines not only animal breeds' production and functional traits, but also the ability to adapt to different environments, including food and water availability, climate, pests and diseases.

Crossbreeding with different high yielding exotic farm animal species was introduced in India to enhance the milk, wool, egg and meat production in the country. It involved crossing of females of indigenous breeds with males/semen of exotic breeds. The official breeding policy recognized crossbreeding of only non-descript cattle with exotic breeds as a tool for improving milk production and recommended to limit the exotic inheritance from 50 to 75%.

8.3.1 Conservation Strategies

The best way of conservation of the genetic resources of the cattle and buffalo breeds is to sustainably utilize them in their ecological niches so that these are continuously evolved to

produce while adapting to the changing environments. Long term breeding plans need to be implemented for continuous genetic improvement of indigenous breeds of farm animals. The important role of livestock keepers, pastoralists, and local communities in the use and development of livestock resources needs to be recognized. The unique features of domestic animals need to be taken into account in ensuring the fair and equitable sharing of benefits deriving from them, and in tailoring the development of future policy and regulatory measures

Conservation strategies can be categorized either as *in situ* conservation (in which animals are maintained within the environments or production systems in which they were developed) or as *ex situ* conservation (all other cases). The latter can be further divided into *ex situ – in vivo* maintenance and management of genetic diversity within livestock populations that are actively contributing to the livelihoods of their keepers or that are maintained in small numbers on research or demonstration farms, and *ex situ – in vitro* storage of genetic material that can be used at a later time to increase diversity in live populations or re-establish a population. Haryana has to pursue both the procedures to improve the productive performance of the breeds. Cryo-conservation methods also need to be used for the major breeds to ensure the preservation of the excellent gene pool available.

8.3.2 Breeding Programmes Combining Conservation and Sustainable Use

Livestock production with rearing native farm animal breeds is mostly subsistence oriented system and performs multiple functions. The conventional productivity evaluation criteria are inadequate because they fail to capture non-marketable benefits of the native livestock. Thus animal genetic resource management programs including genetic improvement should always take into consideration the multiple breeding goals of the communities, cultural preferences and the local production system. It requires careful understanding of breeding goals, planning, establishment and maintenance of effective performance recording; and breeding strategies so that the well adapted local breeds should sustain and remain a functional part of production systems. Bull mother farms should be established in the breeding tract for each breed to produce genetically superior germplasm to be used for frozen semen production and breeding the farmers' animals for bringing genetic enhancement as well as conservation and sustainable utilization of indigenous breeds. All livestock farms of state/centre government should be declared in-situ conservation centres of indigenous breeds. Each farm should maintain animals of breed(s) native to that area.

The population of some of the pure bred ruminant animals has come down considerably and such breeds have come to the category of threatened breeds in the country. The farms or the farmers unit in their respective breeding tract are to be established with 100% central assistance for breeds of these animals. Though the central govt. restricts their support to populations of less than 10,000, the state govt. can introduce an improvement on the scheme to cover prized Sahiwal animals which total around 30,000 in the state.

8.3.3 Involvement of Breeders/Breed Societies/Communities/NGOs

Livestock keepers, practically being the exclusive custodians of farm AnGR, are the real and most important stakeholders at the grass-root level. Livestock owners are responsible for the practical breeding work and the day-to-day management of each and every animal. Much of the practical work to be performed within the different measures is performed by the individual livestock owners. Breed associations can be made responsible for the breeding targets of the breeds, breeding plans and advice on breeding, and can guard the interests of the breeds/breeders. Conservation and utilization of AnGR can be best achieved through a joint approach by involving livestock keepers, farmers, NGOs, Gaushalas, Breed Societies and all other stakeholders. Breed societies/associations should patronize the participation of livestock keepers in sustainable management and judicious utilization of indigenous breeds in the face of growing food demand and climate change. These societies should become active partners in all activities relating to management of AnGR like implementation of improvement and conservation programmes, animal identification, performance recording, marketing and branding of animal products, development of pasture lands, fodder production, etc.

8.3.4 Recognizing Role Model Breeders for their Contributions

Activities and contributions of outstanding/innovative farmers for breed development and conservation need to be identified and should be appreciated and formally acknowledged. Award programmes can be beneficial, not only for rewarding existing Role Model Breeders for their contributions to breed sustainability, but also to encourage novice breeders to apply new techniques and become Role Model Breeders in the future.

8.3.5 Value Addition for Conservation

Economic worth of the indigenous breeds (Hariana and Murrah) should be enhanced through value addition by propagating environmentally important attributes of these animal breeds and useful pharmaceutical and nutritional properties of their animal products (A2 milk and Mozzarella cheese). Isolation and identification of active bio-molecules for their nutritional or therapeutical properties (Cholesterol free milk) from animal genetic products would be of great significance. This will add value to indigenous animal genetic resources and will ultimately help in their conservation and utilization. The outcome of such programme will also add to the income of farm animal keepers.

8.3.6 Conservation Through Niche Markets

Globally there are several examples of breeds that produce high quality and distinctive products, with the products contributing to effective breed conservation. Efforts to enhance the value of breed-specific products are as valid as efforts to enhance levels of production in a breed and may be a more realistic scenario for breeds of species where a few extremely

productive breeds dominate the market. When breed-specific products obtain a premium in the marketplace, the result is the increased monetary returns to the producers, with an increase in breed security that comes from that.

8.4 Issues in Genetic Improvement

- Animal registration and identification
- Performance recording under field conditions.
- Tracking of movement of animals especially elite Murrah buffaloes (both within and outside state) and elite Hariana and Sahiwal animals
- Utilization of surplus buffalo males for meat production (buffalo broiler commercialization)
- Bull evaluation – progeny testing programme
- Removal of scrub bulls in progeny testing areas
- Parentage confirmation
- Karyotyping for elimination of bulls with genetic defects
- Breed society formation and their involvement in breed improvement programmes
- Popularization of Hariana cow – Dual purpose to milch breed
- Breed wise census
- Animal cards

Chapter-IX

9.0 Animal Health

The livestock health care system in the State consists mostly of public sector providers of livestock health services run mainly by the state government. In spite of the fact that the State has a quite large Animal Husbandry presence in the economy and total agriculture production system, the services are grossly inadequate in professional personnel numbers, particularly in critical areas of growing specialist/ expert demand; infrastructure for hospitals, clinical diagnosis, indoor care, super specialization, state-of-art clinical hospitals and funds. The weaknesses and inadequacies, once addressed, will go a long way in reducing mortality and morbidity among animals, boosting profits of farmers and animal industry, generating income through employment and improving the health of the human population through effective disease control in animals and human beings. Further it will ensure availability of quality food protein and steer the state economy towards better performance. Livestock health strengthening should involve the following :

a) Quantitative adequacy of vaccines and diagnostics for preventive and diagnostic interventions

b) Programmed interventions to combat communicable and non-communicable diseases

c) Regulations for disease control

d) Availability of goods to go along with services

e) Accessibility of services, particularly for health protection, reproduction-breeding and AI

f) Affordability of medicines

g) Dedicated State-of-the art regional and central disease investigation laboratories

h) Health care infrastructure

i) Targeted Disease control programs

j) Information technology ICT, skill introduction

k) New-born mortality and parasitic control.

l) Optimum fertility rate/services per conception, calving and post partum intervals.

m) Setting up secondary health care services

n) Research and Extension interphase in public sector and PPP mode for deliverables.

o) Well defined health goals and identifying milestonesInclusive Agenda for Livestock Health

- Access to services
- Door step facilities for treatment & AI
- Community Medicine and Health clubs
- Health cards for individual animals
- Monitoring and evaluation of programs
- Training of woman and LS workers to serve as second level intermediaries
- Parasite infestation control
- Mineral and nutrition deficiencies
- Health insurance

Health Spectrum:

- Communicable and infectious diseases
- Non- infectious diseases
- Reproductive disorders
- Nutritional deficiencies
- Metabolic diseases/ disorders
- Injuries and critical care

9.1 Incidence and Status of Major Livestock Diseases

Investigative diagnostics and sero- surveillance are least practiced in animal health care in the country as a whole with Haryana being no exception. In routine, a veterinarian treats the illness/ ailment as per clinical manifestations and identification of the disease or the causative agent is not a priority due to very limited access to the modern diagnostic facilities and tools. Financial considerations may be further augmenting this problem. As a result the situation has remained almost unchanged for the last few

decades. Investigations are generally undertaken whenever there is some serious outbreak involving heavy morbidity with significant mortality and/ or if the same becomes a threat to the human health particularly in the case of emerging zoonosis. In such emergencies, disease investigations are performed with the help of regional/ national laboratories and in most cases help of the Veterinary University/College is also sought for speedy diagnosis and containment. Under these circumstances, most of the diseases are grossly under reported. The data of outbreaks reported by the disease investigation (DI) laboratories or the department of Animal Husbandry & Dairying itself may not reflect the true picture of the incidence, status and the epidemiological dimensions of diseases in livestock and poultry.

Based on the interactions of the Working Group with the faculty of the Veterinary University, field functionaries, animal farmers and other stake- holders, it emerged that the important diseases affecting the livestock in the State included Haemorrhagic septicaemia (HS), Mastitis, Rabies, Brucellosis, Blood protozoan infections, metabolic disorders, Enterotoxaemia, Sheep Pox, Swine fever, and a number of ecto- and endo-parasitic infections/ infestations in addition to a few of the poultry diseases. Foot and Mouth disease which had been causing heavy losses in the past has now been effectively controlled. Torsion of uterus and prolapse of vagina in buffaloes and infertility due to repeat breeding in exotic and their crosses are the important reproductive problems. In general the incidence of the disease as a whole is said to be higher during and after the monsoon, particularly if there has been flooding; and during the winter season when the temperature dips considerably. Farmers are advised to take additional measures accordingly.

It is therefore, of utmost importance that state-of-the-art diagnostic laboratories be established at suitable locations with mobility to cover the entire State and a Central Referral Centre should be there at Hisar in the Veterinary University. Sero-surveillance of the important diseases and compiling of epidemiological data should be a continuous process. Simultaneously, the disease reporting system needs to be up-dated and modernized taking advantage of the fast communication means being available.

9.2 Vaccines, Diagnostics and Biologicals

Prophylactic vaccination against the commonly occurring diseases is the main stay of animal health care as the curative treatment becomes very expensive and many of the

farmers may not be able to afford the same in addition to being an economically unwise practice. The Department of Animal Husbandry and Dairying has been producing veterinary vaccines for more than 65 years at the Haryana Veterinary Vaccine Institute, Hisar. The state is self-sufficient in H.S., B.Q., Enterotoxaemia, Sheep pox, Swine fever and PPR vaccines. The Vaccine Institute is currently producing the above six vaccines as per the following annual targets:

1. H.S. Alum and Oil Adjuvant vaccine: 130 lakh doses
2. Enterotoxaemia vaccine: 6 lakh doses
3. Sheep Pox vaccine: 6 lakh doses
4. P.P.R vaccine: 6 lakh doses
5. Swine Fever vaccine: 0.90 lakh doses
6. B.Q.vaccine: As per need ~ 1.0 lakh doses

There is a separate quality control section in the institute as per the Drugs and Cosmetics Act. Vaccines for Foot and Mouth disease, Brucellosis and other diseases as well as biologicals/ diagnostics are being purchased from the market and the Indian Veterinary Research Institute, Izatnagar. The Vaccine Institute should strive to manufacture the remaining of the required vaccines, diagnostics and biologicals, presently being procured from outside, by associating the Veterinary University or in P-P-P mode.

The poultry vaccines earlier manufactured by the Vaccine Institute have since been discontinued in view of the increasing commercialization of this sub-sector. These vaccines are now being produced by private biological units including Indovax Pvt. Ltd at Hisar. The latter is engaged in development, manufacture and marketing of poultry vaccines and claims to be producing more than four billion doses of different poultry vaccines.

Special R&D efforts are required to produce cheaper, new combined/ polyvalent/ thermo-resistant animal vaccines that are safer, more effective and easy- to- administer with long lasting immunity. Effective and cheaper diagnostics/ diagnostic kits/ pen side tests/ biologicals are in great demand and need to be evolved on priority.

9.3 Control Measures

“Prophylaxis is better than cure” is the basic concept in animal health care. Timely disease control measures may cost less than 1% of the curative treatment of the same

disease. In addition, the success rate is better and more assured with preventive control measures while it remains uncertain in case of therapeutic treatment. Except for the FMD-CP (described else where), there is no specific control programme against any animal disease in the State. Similar control programmes need to be undertaken for other dreadful diseases like H.S., PPR, Swine Fever and Brucellosis etc. However, regular clinical monitoring and sero- surveillance for avian influenza is being undertaken by the State as per the Government of India guidelines.

The Department of Animal Husbandry has an extensive network of 2789 Veterinary Institutions that are responsible for prophylactic vaccinations against some of the infectious diseases including H.S., B.Q., Enterotoxaemia, Sheep pox, Swine fever and PPR in addition to FMD and occasionally Brucellosis. Each veterinary institution is given targets depending upon the strength of livestock under its jurisdiction. The department claims to have had no serious outbreak of any disease for more than a decade. Effective monitoring by supervisory staff and evaluation of post- vaccination titres can help to exclude any possibility of vaccination failure. The cooperation of village panchayats may greatly help in this regard. The village panchayats ensuring 100% successful vaccination (no out break) may be suitably rewarded in the form of cash incentives and extra developmental grants etc. Continued efforts in animal health protection and promotion will help to make the Haryana state free from major diseases of livestock and poultry.

The other disease control measures being undertaken by the State include regular de-worming of the stock. It is accomplished through the veterinary institutions and by organizing special animal health care camps. On an average, more than 33 lakh animals have been de-wormed annually during the past decade. During the same period, almost 6800 animal health care camps per annum were organized throughout the State, occasionally involving specialists also. Mineral mixtures, dewormers, medicines and infertility treatment are given free of cost in these camps. This platform is also used to educate the farmers about the significance of various disease control measures and advantages of regular supplementation with mineral mixture. Special infertility camps are also organized to augment fertility and minimize production losses due to infertility.

As the success of the disease control measures depends upon reliable and strong epidemiological data base, forecasting of disease pattern, trained and highly skilled manpower and quality of inputs, the State needs to put in extra efforts on these lines for better and continued success.

9.4 Major Programmes /Solutions

The Department of Animal Husbandry & Dairying has the responsibility to protect and promote the health of livestock and poultry throughout the State. These measures include treatment of diseased animals, prophylactic vaccination against the prevalent contagious diseases and breeding services through its network of Veterinary institutions and service providers. The department also organizes Animal Health Care as well as Reproductive Health Management Camps (under Zero Infertility Programme) in the areas with no veterinary institutions in order to provide services to the livestock keepers at their doorsteps. Presently, there are no major programmes except the FMD-CP and other health care programmes being funded by the central Govt under its scheme - Assistance to States for Control of Animal Diseases (ASCAD).

All future Veterinary health care and related programmes including diagnostics, clinical and breeding services have to be necessarily mobile and farmers' door step focused, as transportation of animals on the busy roads is becoming difficult and unsafe. Major programmes need to be undertaken for the control, prevention and eradication of diseases, causing great economic losses in the form of quantitative and qualitative decline in livestock production, human health and are of concern in export of animal produce.

9.5 Veterinary Drugs

There are 291 units in the State manufacturing generic drugs, formulations and parentrals etc for medical and veterinary use. However, there is no independent Veterinary Drug Controller. Most of the 3215 drug retail outlets in state deal in both human and veterinary medicines. The veterinary medicines in general are quite expensive. However, department provides free medicines for basic treatment. All medicines except the vaccines are being purchased from the local market. Stringent quality control of the veterinary medicines is lacking.

Special R&D efforts are required to produce cheaper and efficient drugs, feed supplements and diagnostics for veterinary use. Keeping in view the present volume of production and marketing of veterinary drugs, medicines, vaccines and biologicals etc, an independent Veterinary Drug Controller has become essential to ensure effective monitoring of quality and to check the manufacture and circulation of sub-standard drugs, vaccines, feed supplements, etc. Veterinary graduates should be eligible to get the license for chemist shops/ drug sale outlets.

9.6 Zoonotic Diseases Incidence, Monitoring and Control

Amongst other zoonotic diseases, data is available for Brucellosis, Salmonella and Tuberculosis for the year 2007-08 and 2008-09. Out of 14,387 animals tested in 2007-08, 5 were detected positive for Brucella antibodies, while during 2008-09 there were 2 sero reactors among 393 animals tested. For Tuberculosis and Salmonella, no positive rector was detected out of 4780 and 2160 animals tested, respectively.

9.7 Trans Boundary Diseases: Incidence Monitoring and Control

No specific information is available pertaining to transboundry diseases in the State except avian influenza (H_5N_1) which has not been reported so far from Haryana. Various measures taken by the Government against avian influenza include containment of the disease at source (infected birds) through active surveillance, differentiation between normal and unusual mortality in poultry and other avian species, proper dispatch of samples from suspected birds, culling of affected and in contact birds, cleaning and disinfection of premises, and surveillance. As and when necessary, the Department of Animal Husbandry & Dairying works in close collaboration with district administration, Departments of Health, Public Health, Forest, Police, local bodies, Panchayats, PWD etc.

Chapter -X

10.0 Livestock Industry

10.1 Dairy Industry

In general, the people of Haryana, are fond of milk and milk products. But there is no authenticated data for the same. Assuming a moderate per capita consumption of 0.35 liters, the daily requirement of milk for home consumption comes to about 89 lakh liters i.e. almost 50% of the total milk produced (182 lakh liters) in the state. There are 27 private milk plants having a total installed capacity of 23.40 lakh liters per day. In addition, there are five plants in co-operative sector with an installed capacity of 8.80 lakh liters and the Model Dairy plant of the National Dairy Research Institute, Karnal having a handling capacity of 0.60 lakh liters. Under optimal running conditions, only 35% of the surplus (16.2% of total) milk in the state can be handled by the dairy plants. During the last decade, 12 new dairy plants, all in private sector, have been established in the state having an installed capacity of 7.00 lakh liters with a range between 0.15 and 2.20 lakh liters. However, the daily milk production in the state during this period went up by 42 lakh liters. The bulk of the surplus milk continues to be handled by the unorganized sector (sweet shops, vendors etc.). Sweet shops (Halwais) are selling unbranded ethnic Indian products with hardly any benefit to the producers. A significant proportion of the surplus milk is also being sold as fresh raw milk in the adjoining National Capital Territory.

The position of handling the surplus milk by the organized sector is no different in the neighboring states except Punjab with 77 milk plants having a capacity to handle almost one third of the total milk being produced in the state. Only 16% of 362 lakh liters of milk being produced daily in Rajasthan can be handled by its 38 plants. As is evident from Fig.10.1, the situation is better in U.P. where more than 43 % of the total milk produced can be handled by its 251 dairy plants.

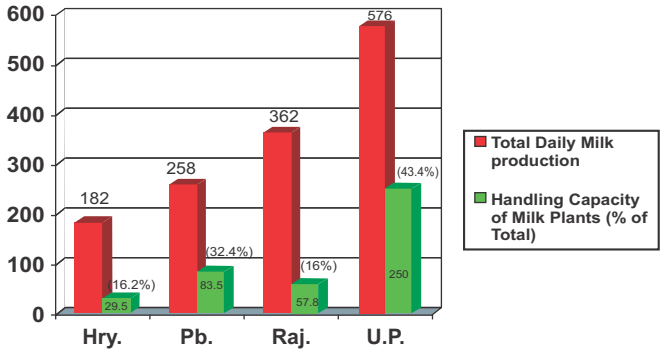


Figure 10.1 Milk Production & Handling Capacity of Milk Plants (Lakh Litres)

As milk is being produced by millions of tiny units, the milk plants find it difficult, unattractive and uneconomical to procure milk in very small quantities from millions of house-holds. In addition, the farmers are not happy with the pricing formula for milk. The farmers keeping HF and their crosses are, in particular, at disadvantage since the cow milk is required to have a minimum of 4% fat as per the existing laws. The fat percent in the milk of HF cows/ crosses is invariably around 3.5% i.e. below the legal standards. The state needs to issue a notification and complete all legal formalities in this regard to lower the standards for fat content in the cow milk to 3.5% to bring it at par with many other states. The matter being urgent, should be addressed on priority to promote rearing of cross bred animals. Undoubtedly, remunerative pricing of milk is a vital component for sustainability of dairy farming. Presently, the pricing of milk is based on the market value of the fat and other solids in the milk and not based on its production cost. The base price of the milk should be based on its production cost plus a profit margin of at least 30% to the producer. The price may be revised from time to time to neutralize the rising cost of various inputs. If need be, the dairy cooperatives could be assisted by the Government through grant in aid/ subsidies to support the implementation of the basic price at least during the initial phase. A special 'Milk Price Formulation Body', representing different stake-holders with an active involvement of experts from dairy institutions may be constituted in the State.

As more and more commercial dairies producing milk in bulk are established, the procurement level is likely to improve. During the last 5 years, almost 15000 mini dairies (3/5/10 milk animals) and 1000 medium to large sized (more than 20 milk animals) hi-tech dairy units have been established. This trend needs to be promoted through various incentives including technical support, soft loans and extra subsidies etc. In addition, the dairy farming should be given the status of an agricultural activity with all accompanying benefits such as cheap electricity, water, credit facilities and subsidies etc to give the long-awaited impetus. Value addition may also be promoted at the local level to make it more remunerative and to meet the demand of quality produce.

The following issues need urgent attention to boost dairy industry and to meet obligations under the Food Safety and Standards Act-2006:

a) Clean milk production at the producer level; no contamination with residues of pesticides, antibiotics, drugs, hormones, heavy metals and other adulterants etc by following the appropriate practices.

b) Hygienic and safe practices during collection and transportation of milk using cold chain.

c) Good manufacturing practices at plant.

d) Strict quality control and hazard analysis by accredited laboratories using accurate, fast and cost-effective state-of-the-art technologies.

e) Designing new health- oriented dairy products to suit taste and needs of the target consumers.

f) Encouraging commercial dairy enterprises through transfer of technology and other promotional means.

g) Building of community houses or hostels for animals in each village may prove to be highly beneficial for dairy industry. In addition to improving the hygiene and sanitation of rural house-holds and streets, such community animal houses may help in pooling of resources, automation of farm operations, adoption of scientific husbandry practices and processing of milk for value addition. Undoubtedly, the productivity of animals vis-à-vis economic returns will go up. Control of zoonotic disease would become a reality.

h) Shifting of handling and processing of surplus milk from the unorganized to the organized sector holds key to sustained profitability of dairy farming.

The recent efforts by Haryana Dairy Development Co-operative Federation through various centrally sponsored schemes such as clean milk production, intensive dairy development and special incentives to all women dairy co-operatives need to be continued and expanded extensively to get appreciable benefits. Existing dairy plants should be up-graded with enhanced handling capacity.

10.2 Poultry Industry

Poultry farming is one of the fastest growing sub- sectors of animal husbandry. It has grown from backyard activity to a well organized industry with a prominent position in the national map of poultry farming. The introduction of hybrids like Hyline, Shaver, Babcock, Ross and Cobb etc., a few decades ago led to a paradigm shift in structure and activity of this sub-sector recording unprecedented growth. The poultry population has more than doubled during the last decade. Continuing robust economic growth along with general prosperity had led to changes in food habits of the expanding middle class. The demand for chicken meat and eggs is on rise. A section of the population considers egg as a part of vegetarian diet and values it as a good source of essential nutrients. There are suggestions that egg may be included in mid-day meal of school children. It cannot be adulterated and is unmatched in its nutritive value for the growing children.

Poultry industry in the state is entirely in the hands of private entrepreneurs. All three forms of poultry production namely commercial layers for egg production, broiler farms and hatcheries have recorded a tremendous growth during the last few decades. Layer farming is primarily located in Barwala area of Panchkula and along the grand trunk road up to Panipat. Broiler breeder farms and hatcheries are located mainly in Safidon, Jind and Panipat area. The numbers of hatcheries had increased dramatically and are also meeting the demands of neighbouring

states. The broiler farms are more widely spread and are present all over the state. Diversified poultry farming is yet to pick up in the state. Farming of quails, turkeys, guinea- fowls and emus is in initial stages of development. Punjab is somewhat better placed than Haryana in this regard. There are no organized facilities for marketing of poultry. It is predominated by sale of table eggs and live birds locally as well as in the National Capital Region. Value addition is missing since there are no organized slaughter houses or processing plants for poultry in the state. Fresh chicken meat is the preferred choice and is also the cheapest.

The monitoring and surveillance of the poultry diseases is the responsibility of the state Department of Animal Husbandry and Dairying. Due to more intensification of Poultry farming and heavy concentration of farms in certain locations, the chances of spread of infectious diseases have increased manifold. Regular vaccination must be ensured. The hygiene, manure management and sanitary practices at most of the poultry farms are, in general, inadequate. Poultry farms are associated with very high fly density in their vicinity (up to 18 times of the control area) and high infectious morbidity. There is an urgent need to enforce bio-security measures at all poultry farms including pits for disposal of dead birds, boundary walls, restricted entry, manure management and regular disinfection etc. In the absence of these minimum essential regulations, the industry is at the risk of being wiped off, if the dreadful disease like Bird Flu finds its way in the area. Presently, disease investigation services are rendered by the Veterinary University at Hisar.

Poultry feed is not covered under the Cattle Feed Order- 1999. It remains the major cost component of production. Most of the cattle feed plants also manufacture poultry feed. Quality control of poultry feed is lacking. If the poultry industry is to maintain its tempo of growth, the production of soya and maize, the two important ingredients of the poultry feed will have to be enhanced at the rate of 15% per annum. Quality control laboratories for poultry feed and supplements may pay rich dividends in the form of increased efficiency and productivity. There needs to be a regulatory authority for this purpose.

It may be appropriate to give poultry farming the status of an agricultural activity with all accompanying benefits such as cheap electricity, water, credit facilities and subsidies etc. at least to small poultry farms having a population of less than 20,000 birds to promote self employment.

10.3 Rural Backyard Poultry Development

Rural poultry development components consist in assistance to State Poultry/Duck Farms and entrepreneurship skills need to be improved through the pilot project, 'Poultry Estates'. It is meant primarily for educated, unemployed youth and small farmers with some margin money, for making a profitable venture out of various poultry related activities in a scientific and bio-secure cluster approach.

The 'Rural Backyard Poultry Development' component is envisaged to cover beneficiaries from rural families to enable them to gain supplementary income and nutritional support. This scheme component aims at supporting BPL beneficiary families with tapering assistance, wherein 4-week old chicks, suitable for rearing in the backyard, reared at the 'mother units' are distributed amongst the beneficiaries in three batches of 20, 15 and 10 birds. Further, to raise the birds in a bio-secure manner, a provision of Rs. 750/- per beneficiary for night-shelter etc. is made in the scheme.

Rural poultry production

Provision for financing of components like establishment of poultry breeding farm with low input technology birds, establishment of feed go-down, feed mill, feed analytical laboratory, marketing of poultry products, egg grading, packing and storage for export capacity, retail poultry dressing unit, egg/broiler carts for sale of poultry products should help in rural poultry production.

10.4 Meat Industry

Meat processing in the state remains totally unorganized, neglected and in the hands of small-time butchers who run corner shops to produce fresh meat of small ruminants and pigs for local consumption. Animals are slaughtered under unhygienic conditions without the supervision of qualified Veterinarians. There are no cold chain facilities. Being a perishable commodity meat could be a potential source of food born diseases and environmental pollution.

Presently, Al-Nafees- Proteins Private Ltd is the only modern, automated, integrated slaughter house for Sheep & Goat in the state. It was established in 2006 in Satakpuri village of Mewat district with a rated capacity of 3000 animals daily. It is a 100% export oriented plant slaughtering 1500 animals per day. It has been sourcing animals from Rajasthan as well. The plant has been recently permitted by the State Government to undertake slaughter of buffaloes for which the necessary infrastructure and facilities are being created. There are no integrated slaughter houses for pigs and poultry in the state. Live birds are sold to meet the demand for the fresh chicken meat in the state and the national capital.

Marketing of meat animals is in the hands of private agents. An animal changes several hands before it reaches the slaughter house. Almost 15-20% cost is added at each stage. The practice is highly remunerative or beneficial to the middlemen/ agents, but the animal owners remain lowly paid. Weekly markets with weighing facilities could be arranged for a cluster of villages for sale of meat animals. The animal owners should be paid on live weight basis. The Veterinarian on duty may also conduct preliminary pre-slaughter health check up at the same time.

A modern slaughter house should be established for a cluster of 2-3 districts with facilities for processing of the non-eatable parts such as digesta, bones and glands etc. for value addition and to produce by-products for the allied industries. Leather production needs to be developed

along with meat production. The area around each slaughter house should serve as a production base for disease- free animals, particularly male buffalo calves, which should be reared scientifically under intensive feeding conditions. Intelligent marketing without involving too many agents and middlemen should provide remunerative prices to meat animals and thus result in long awaited kick start to this industry. Infrastructure such as cold chain facilities with proper power back-up and laboratories for certification of quality and safety of meat along with aggressive marketing strategy is essential to boost meat production as also to create employment opportunities. Once these basic requirements are in place and disease- free zones are created, the slaughter houses will be in a better position to implement the essential sanitary and phyto-sanitary measures for export of meat. The buffalo which had helped to bring about white revolution in the state can well pave the way to pink revolution. The male buffalo calves which have been a neglected lot and considered a liability so far, may prove to be an asset and bring huge economic benefits to the farmers.

In the meantime, all the butchers in the state must be trained in hygienic production, storage and sale of meat using incentives as well as punitive measures. The Veterinary University in the state has made a modest beginning in this direction by training 240 butchers during the last five years. A special course may be started for training the skilled workers for slaughter houses. Similarly, qualified Veterinarians should have opportunities to get their knowledge refreshed for ante-mortem, post mortem and quality control for certification of whole some and good quality meat.

10.5 Feed Manufacturing

Availability of quality feed in full quantity is the key to sustainable animal production particularly for high yielders. Indeed, inadequate and poor quality feed continues to be one of the primary constraints in enhancing livestock productivity in India with Haryana being no exception. Traditionally, animals have been fed with crop residues such as wheat straw and “karbi” with a dressing of seasonally available green fodder, flour, soaked cakes and surplus grains etc. Mineral supplementation and feeding of balanced concentrate ration are generally not practised. Chronic deficiency of essential nutrients has almost eclipsed the genetic potential of our stock. The ever increasing demand of grains for feeding the human population accompanied by slowing down of growth in cereal production has been negating all efforts to spare grains for animal feeding. Low cost- benefit ratio has also been affecting the diversion of grains to cattle feed. Similarly, unchecked export of oil-seed cakes had been adversely affecting the availability of this important protein source for livestock industry in the state. Position is no better with respect to bran, another important ingredient of the animal feed.

The annual requirement of balanced cattle feed at the present level of production is about 7.0 million tonnes. It may increase to 10 million tonnes by 2022 if the milk production is doubled

and there are no changes in the livestock population. There are more than 1400 feed manufacturers/ dealers registered in the state, under Cattle Feed Order 1999. These manufacturers and dealers manufacture/ sell different ingredients like split grains, crushed grains, oil cakes and bran as well as branded or unbranded mixed cattle feed. The problems remain the quality of such feeds available in the market and lack of trust by the animal owners.

The state has not been able to ensure quality of feed as per BIS. There is no independent regulatory body for monitoring and ensuring the quality of animal feeds. Poultry feed is not covered under the Cattle Feed Order- 1999. For efficient utilization of scarce resources and to cut the feeding cost which constitutes 70% of the total production cost, by- pass protein and by-pass fat technologies need to be intensively popularized. In addition, export of oil-seed cakes should be banned and import of oil-seeds rather than the oil itself may be encouraged. Second grade grains should be made available for use in animal feeds at subsidized rates. Stringent quality control of animal and poultry feeds being manufactured and sold in the market may help to win trust of the farmers leading to its increased use and the resultant higher productivity.

10.6 Intensive Livestock Production

The prevailing scenario of high market demand for livestock produce/products, increasing purchasing power, scarce land, availability of high producing animals have all combined to pull the livestock production to a intensive production mode and encouraged enterprising entrepreneurs' to intensive production systems, be it dairying, meat, egg or livestock input needs. While intensive poultry production has significant foot make in the state, other areas are picking up and need all encouragement from the State to nurture this nascent industry with incentives, concessions and tax holidays. A State sponsored boosting shall lift the sector and create a positive livestock production environment in the state.

Chapter-XI

11.0 Biotechnology Applications

11.1 Biotechnology Applications in Animal Production and Health

Livestock Biotech applications have found great impact around the world, and are not simply weaving around "genetically modified organisms" or "genetically engineered crops and animals". Assisted reproductive technologies have revolutionized the breeding and animal health and production improvement programs. The technologies of semen freezing, cryopreservation of gametes, capacitation procedures, semen fertility augmentation and testing, embryo transfer, in-vitro fertilization, semen and embryo sexing, reproductive cycle control and cycle regulation among other things have found use in the country in Animal improvement programs. Through ONBS and ET high potential bulls have been generated in India. In fact, if the state has to look for animal improvement in production and productivity, we have no better alternatives than quick adoption of these biotechniques. It is high time that the benefits of the technologies in terms of quick high potential bull production, quality semen generation, semen production with proven fertility, sexed semen, etc. reach the farmers. The state has to implement these techniques as there can be no other route to achieve our targets in a time bound fashion. Similarly new biotech diagnostics, drugs, biologicals, vaccines, have altered the scenario of animal health with more efficient disease control.

As the demand for LS products is growing due to increase in human population as well as the purchasing power and health standards of the people, we need to equip ourselves for new biotechnologies (techniques, technologies, infrastructure, manpower and financial allocation) to meet the demands of the growing population since the old system/traditional animal husbandry cannot serve to hold the growth.

Fertility in a livestock enterprise is five to ten times more important economically than any other production measure. Means to identify bulls on the basis of fertility potential can result in higher pregnancy rates, leading to larger calf crops. Research shows that bulls with FAA (fertility associated antigen) on their sperm are 17 percent more fertile than herd mates lacking FAA over a breeding season.

This is equally essential that awareness about the great advantage of implementation of biotech programs comes now; and it must come from everyone — scientists, politicians, government agencies, educators, and the general public. Non-implementation of these technologies, absence of any programs and lack of commitment on the part of the state functionaries have led to significant delays in animal improvement particularly among indigenous animal species. And for action to take place, all the stake holders, the government the department of AH&D, and livestock keepers need to understand what is at stake and commit themselves to time bound targets.

Chapter XII

12.0 Education and Research

12.1 Research and Education Setup

Research and education set up with respect to LS health and production in the state is inadequate and fragmented. R&D is limited to the newly created veterinary university which is chronically starved due to inadequate funds, faculty and programs. In spite of the importance which the livestock sector has in the state, there is no dedicated State institution dealing exclusively with the cause of total LS development. The only State institute focused to LS has been devoting most of the time for education of veterinary professionals and has over the years not been endowed with resources to push a strong R&D program or to address a comprehensive canvas of all the issues with respect to LS health, production management, transfer of technology including milk, meat and LS products and to be a repository of all the information regarding LS.

The institute, therefore, has to create a niche for itself to take leadership in totality of livestock R&D. What is seriously lacking is not the availability of innovative technology but the "delivery" of technology, which is a great stumbling block to faster growth and development of the LS species. There is also a need for education and research particularly for the buffalo milk cheese, indigenous milk products, neutraceuticals, meat, leather and animal waste handling. The resources for handling these areas are very meager currently and need to be adequately funded. There is, thus, a great need for the convergence of efforts, funds and goals by all the agencies involved.

Major agenda for research and education should lay emphasis on "**Deliverance**". Several techniques and technologies are available and need to be delivered to the end user. Their application and scaling up is the challenge for which the industry, animal owners and the science institutions have to join hands.

12.2 Curriculum and New Type of Manpower

Presently, the Veterinary and Animal Husbandry services are State funded. The Government veterinarians play a reactive (fire-fighting) role by treating individual sick animals, handling emergencies or attending to disease outbreaks etc. in addition to providing artificial insemination services. Infrastructure continues to be poor with a little access to diagnostics. Prevention is limited to mass vaccination against a few important diseases prevalent in the area. There is a welcome shift to medium and large sized herds as commercial enterprises with an intensive indoor rearing system. Transporting the sick animals to veterinary hospitals is becoming a traffic hazard as well as risky. Doorstep delivery of basic services is thus becoming inevitable. Similarly, there is an urgent need to create disease- free zones along with facilities

for quality control, diagnostics and epidemiological sero-surveillance meeting the international standards to enable export of animal products to high-end markets. The job requirements of field veterinarians are fast changing. The future veterinarians and field functionaries will have to play a proactive/ advisory role with more emphasis on disease prevention, herd health management and delivery of services at the doorstep. Accordingly, changes in the curriculum have become a necessity. The new type of manpower required in the coming decades will consist of:

- Dairy farm managers
- Dairy nutrition experts
- Veterinary laboratory technician
- Quality Control Officer for animal products
- Export - oriented livestock production managers
- Veterinary nurses
- Door – step service providers
- Public Health Veterinarians
- Animal Farm Machinery mechanics and technicians.
- Veterinary Radiologist
- Disease investigation and sero- surveillance scientists

Special courses/ diplomas/ specializations will have to be initiated to meet the changing requirements of man power for the sector. Future training modules and refresher courses will have to be tailor- made as per the changing needs. The basic curriculum will have to lay more emphasis on herd health management, accurate and fast diagnostic tests, regulatory medicine, food supply veterinary medicine, effective prophylaxis, vaccine production, safety of animal food, designed animal products and balanced feeding of livestock etc.

12.3 Research Facilities

The existing facilities in terms of equipment, skill and manpower available with the Veterinary University and the Department of Animal Husbandry and Dairying do not seem to be adequate to meet the emerging needs and challenges of the sector. New Faculties in the allied fields of Fishery Sciences, Animal Biotechnology, Dairy Technology and an independent Institute for Veterinary Diploma and Refresher courses are need of the hour. Accredited diagnostic as well as quality control laboratories are essential to meet our international obligations (for export) and to ensure quality and safety of animal food from the farm to kitchen. The University must have a state-of-the-art epidemiological/ investigation facilities (BSL-3) to be able to perform as a Reference Centre. There has to be a regional disease diagnostic laboratory at each divisional

headquarter. In addition, one mobile diagnostic laboratory- cum-hospital (on wheels) at block level, connected via internet with the district and regional laboratories as well as the reference centre should help in early and accurate detection of diseases and to take corrective measures without any loss of time. The Veterinary University and the line department can join hands by pooling the existing facilities and resources to work in collaboration.

12.4 Research Focused on State Problems

The University and the other research institutes such as Central Institute for Research on Buffaloes, National Dairy Research Institute and National Research Centre on Equines etc., in general, work in isolation as independent entities rather than focusing their research on the problems being faced by the state livestock and the field functionaries. There is an urgent need of close association and active collaboration among the different stake- holders including scientists, farmers and field functionaries etc to identify problems in the field and to get regular feedback on the technologies already transferred to the end users. A technology, howsoever good, may not be useful unless it is easily adoptable by the majority (value for many) and is cost - effective (value for money). The University should have more frequent meetings/ interactions with the farmers and the field functionaries in the form of Farmers' Workshops, Clinical Conferences, or any other suitable platforms. All research, extension or policy making bodies must have representatives from the line departments and the farmers' bodies. Mandatory research projects need to be undertaken after detailed deliberations among all stake-holders. A bottom- to- top approach, with priority to the needs of animals, animal husbandry, farmers and service providers should be adopted.

Following research priorities have emerged after discussion of the sub-group with various stake-holders:

(a) Safe polyvalent/ combined vaccines with longer immunity against dreadful diseases. Easy to administer oral vaccines to be preferred.

(b) Quick, sensitive, cost effective and pen-side diagnostic tests which can be promptly used at the farmers door step.

(c) Early detection and forecasting of diseases based on strong data base through epidemiological and sero-surveillance studies.

(d) Prevention and Control of zoonotic diseases.

(e) Improvement of reproductive performance in buffaloes through intervention of modern bio-techniques and reproductive health management.

(f) Sexing of buffalo semen.

(g) Technologies for value addition at local level by production of ethnic Indian products.

(h) Creation of disease free state.

(i) Establishing accredited laboratories for diagnosis of diseases and quality control of animal products.

(j) Total Mixed Ration using cheap, unusable by/ waste products along with augmentation of traditional feed and fodder resources.

(k) Genetic improvement of stock to produce high producing animals.

12.5 Number of Professionals

The animal population is expected to remain static during the next 20 years. At present, there is one Veterinarian for 9000 heads of animals against the recommended strength of 5000 animals (as per NCA 1976). In addition, there is an urgent requirement of service providers in all of the 6700 odd villages. At present, there are about 1000 veterinarians against the minimum requirement of 1800 Vets and only 1145 service providers. There are 2700 veterinary diploma holders to man veterinary dispensaries and to help the Veterinary Surgeon in routine activities. The only Veterinary College in the state is not in a position to increase its intake of students. The present number of pass-outs is just enough to fill the vacancies arising out of routine retirement and attrition etc. The short fall in manpower is likely to continue unless the Government encourages opening of new Veterinary Colleges including in the private sector. Similarly, there is a shortage of faculty members in the Veterinary University as there are less than 135 faculty members at present against the required strength of 200.

12.6 Capacity Building for Professionals, Field Staff, Entrepreneurs and Farmers

There are fast scientific developments in all fields, Animal Husbandry and Veterinary Sciences being no exceptions. Adoption of new technologies and useful innovations is essential to increase efficiency and achieve higher productivity. Undoubtedly, the human resources are the best asset for any organization. The Veterinary University and the state Department of Animal Husbandry and Dairying have the responsibility for capacity building of Veterinary professionals, field staff, service providers, farmers and entrepreneurs, through hands-on training, skill up-gradation and refresher courses on a continuous basis. While the University may provide training to Veterinary professionals and Master Trainers, the Department should organize trainings/ skill development courses for field staff, service providers and farmers through its main training institute at Hisar and other training centres at district and sub-divisional level. Short duration, part- time trainings in basic animal husbandry practices such as clean milk production, oestrus detection, feeding, and care of new born calf etc. may be organized for women farmers, who constitute a majority of the work force (70%), in the premises of local Veterinary Hospitals for 3-4 hrs in a day without affecting their routine house-hold chores and child care responsibilities. Training modules and topics should be decided as well as regularly up-dated/ modified in consultations with the stake-holders. The Directorate of Extension of the Veterinary University may work as a nodal agency for capacity building. The Directorate should assess the needs, develop modules with the help of experts and organize

target- focused trainings in collaboration with the state department, KVK's and disease investigation laboratories of the University. Evaluation of the training programmes by an independent agency is desirable.

12.7 Clinical and Diagnostic Services

The Department of Animal Husbandry & Dairying provides clinical services through a network of 2751 Veterinary institutions. Specialist and referral clinical services are available at its four Polyclinics. The department needs to establish more polyclinics to have one polyclinic for every two districts so that farmers do not have to travel long distances to access specialist services. Basic diagnostic facilities are available at the District Disease Diagnostic Laboratories but these need to be strengthened and adequately equipped on priority to meet the emerging needs and challenges. The department also runs a super-specialty Pet Hospital at Panchkula.

The Veterinary University has a large, well equipped, super-specialty referral hospital at Hisar. It provides referral services to the entire state. The University also runs a referral hospital at its Regional Centre, Uchani (Karnal). The animal disease investigation facilities are provided by the Veterinary University through its various departments such as Veterinary Public Health and Epidemiology, Veterinary Pathology, Veterinary Microbiology, Regional Research Centre on Foot and Mouth Disease, Central Laboratory of the College and other research laboratories at its main campus in addition to the disease investigation laboratories located at Ambala, Karnal, Sirsa, Jind, Rohtak, Bhiwani and Bawal.

There is an urgent need for better co-ordination between the Veterinary University and the state Department to pool their resources and provide referral diagnostic, clinical and disease investigation services at each of the Polyclinics. Presently, diagnosis is the weakest area. However, future belongs to diagnostics. All laboratories need to be suitably strengthened, upgraded and accredited by the national body to meet OIE/ WTO requirements.

12.8 Vocational Trainings for Entrepreneurship

Opportunities for training of young entrepreneurs in livestock sector are grossly inadequate. However, the Veterinary University has been operating a 'Business Incubator' under the auspices of Business Planning and Development Unit to provide training and facilities to establish new ventures based on the products and technologies developed by the University scientists.

Short-term Vocational Trainings are also organized by the University for young entrepreneurs engaged in or aspiring to undertake Dairy, Swine or Poultry farming as well as for those interested in milk and meat processing. Similarly, the state department also conducts short vocational trainings at sub -divisional level for the youth who wish to undertake animal farming as a source of livelihood by availing incentives and subsidies provided by the state. Most of these trainings are of preliminary and basic nature only. Vocational trainings need to be more elaborate, practical and well- focused keeping in view the changed circumstances at ground level.

Chapter-XIII

13.0 Extension

13.1 Extension Model for Livestock

An efficient extension system is required to create awareness, educate and motivate animal farmers to adopt new technologies for enhanced productivity and better health care of their livestock. Traditionally, person- to- person contacts with individuals or group of farmers has been practiced to disseminate information despite the fact that the number of extension workers engaged in livestock sector remains woefully inadequate. The field functionaries primarily responsible for providing health care and breeding services have also been undertaking extension activities. Independent extension functionaries have not been there. Extension continues to be neglected and a weak area of the animal husbandry sector.

For an effective transfer of technology from the creator to the enduser, a multi-pronged strategy involving traditional as well as modern means of communication should be adopted to meet diverse information needs of different categories of livestock owners. Extension worker should act as an animator rather than a disseminator of information. He should facilitate interactions, dialogue and discussion among the stake-holders. Similarly, a farmer should not be a passive recipient of information but an active collaborator. The existing husbandry practices, knowledge base and skill level of animal farmers should be the starting point.

Presently, all veterinary hospitals and dispensaries are serving as extension units. The information is disseminated through traditional mode involving in-person contacts. In addition, there are Animal Husbandry Extension Specialists at KVK's operated by the University.

13.2 Pashu Gyan Kendras

Establishing “Pashu Gyan Kendras” within KVK's or as independent units will help to make Animal Extension system more effective. In general, the livestock sector is invariably over shadowed by crop husbandry. The “Pashu Gyan Kendras” must have on -line access to experts in the different fields. In this era of tele-globilization, all these “Kendras” should be connected by internet and mobile telephones. This way, the dissemination of information from the researcher to the enduser will become more efficient and fast. Farmers should be able to receive and seek all types of information through SMS. One cannot imagine of a future extension unit without this type of two way telecommunication facilities. The Toll-Free service being run by the Veterinary University should be extended to make it available for 12 hrs a day and seven days a week. The principles of “learning by doing” and “seeing is believing” are equally, if not more, relevant to livestock sector. Farmers Training Schools for animal keepers may be established at strategic locations preferably in the vicinity of modern (successful)

animal/ dairy farms to use their facilities for capacity building and to inculcate the spirit of out-performing.

ITC hubs using web based technology for dissemination of information and sharing of knowledge and experiences have been successfully used in crop husbandry. Same or similar models can also be adopted for animal husbandry sector. Promotional films and success stories can be shown to the target audience through these hubs. Pashu Gopals or Pashu Sewaks are providing services at the farmer's doorstep. They remain in direct contact with the farmers. These service providers can be trained as basic extension workers/ advisors. They may be connected to extension units/ Pashu Gyan Kendras through web to receive information. Many farmers have requested for a dedicated channel of Door Darshan and a radio station for this sector.

13.3 Paradigm Shift in LS Extension

It has been known for some time and lately established too, that the traditional extension system has not delivered and the clamour of the stake holders and farmers has reached a crescendo. The reasons for the same are many and several studies have identified/established the lacunae. The novelties brought into the national extension program in terms of Krishi Gyan Kendra and ATMA programme have to an extent revamped system to a better delivery, but even this system has not offered a meaningful approach to the problems and solution to the livestock sector. In fact the system in totality lacked an understanding of dynamic animal-man round the clock relationship- a 24x7 expectation. Animal extension needs a man-animal bio-generic relation of goods and services and instantaneous delivery at the farmers' door. The advisory model does work minimally when animals are involved and individual LS owners are critical intermediaries. Most of the services which the farmers' desires are having cost inputs and the traditional methods of reaching a farmer with information have not borne fruit for the LS owner.

Efficient communication system has changed not only the model but also the mode of Extension system in the country. Future extension units are expected to stem from direct communication (internet, telephony) and thus the extension communication methods also need a different approach. IT demands information packages and modules which need to be developed.

Extension, in fact should empower the animal owner's capacity to utilize his resources efficiently and economically for preparing safe animal food products in a sustainable and disease free manner. This will thus require a paradigm shift in the extension methodology.

The LS professional/extension specialist will thus have a relation involving each of the following activities;

- Identification of high potential animals
- Breed and management advisory
- Production strategy
- Input efficiency
- Health and reproduction services
- Input quality control
- Resource generation and conservation
- Environment sustainability
- Bio-conservation, energy/calorie banking
- Local storage or processing of livestock produce
- Local manufacturing and marketing
- Organization of SHG, woman or youth groups
- Facilitation of the schemes, subsidies, loans, etc of the funding organizations

Chapter XIV

14.0 Gaushalas in Haryana

14.1 Structure and Function

In Haryana, there are 256 registered gaushalas and the districts like Sirsa (43), Hisar (29), Bhiwani (26), Fatehabad (21), have a very high number of these institutions (Figure 14.1) mostly established on donated lands and run on charity contributions/ donations. Large infrastructure and the animals possessed by these gaushalas constitute a huge resource of indigenous cattle population. Though some of these have good herds of Sahiwal and Hariana cattle, but the management and the animal rearing practices (breeding, nutrition, health control etc) leave much to be desired in most of these gaushalas.

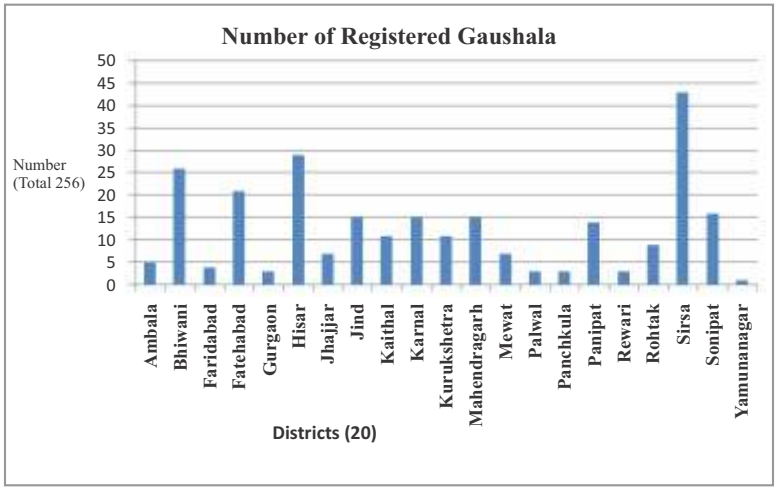


Figure 14.1

Management Committees of many Gaushalas are not only willing but eager to offer their infrastructure, animals, manpower, and land for implementing the government sponsored programmes and schemes provided these do not interfere in their religious and social obligations. Gaushalas have requested the government through the Animal Husbandry Working Group of Haryana Kisan Ayog to grant them similar incentives and subsidies as being given to the dairy farmers in the state. Keeping in view the nature of activities requiring 24x7 attention, the gaushalas have also requested to exclude them from the purview of the labour act. Gaushala workers should be given regular training and made part of the awareness courses.

Gaushalas are recognized and granted financial help through Animal Welfare Board of India (AWBI) and State Animal Welfare Board (SAWBH). From 2011, the SAWBs were to be

established in all the states and UTs of India. The objective of the State Board is to prevent any action resulting in the infliction of pain or cruelty and misuse of animals and humane animal welfare as well as education to Gaushala workers. The AWB Act now authorizes the state Boards to regulate the animal welfare activity in the gaushalas and hence may prove instrumental in better management of these institutions. Because of the indiscriminate (mostly natural) breeding practised in the gaushalas, absence of artificial insemination using high quality/ pedigreed bulls, and limited professional inputs for management, this vast resource of cattle available in these gaushalas, is being deprived of the various animal improvement programmes. However, good herds of Sahiwal and Hariana cattle being maintained by some of the leading gaushalas in Bhiwani, Narnaul, Kurukshetra and Hisar with comparatively better management practices, can be gainfully used for genetic improvement programmes.

As the gaushalas have become the responsibility of State Animal Welfare Board of Haryana, a Coordination Committee may be constituted by the Board to ensure better management and efficient utilization of the resources in all gaushalas. Various programmes should be developed to support gaushalas in water management, land leveling, fodder growing, silage making and skill empowerment etc. Similarly, the schemes in crop residue management and feed processing should be implemented in all gaushalas. Carbon Sequestering and Carbon Foot Print Management programmes involving feed, fodder, agro forestry, manure, gobar gas and slurry management should be introduced in each gaushala. The staff should be given training in the management of the Carbon Foot Print.

Each Gaushala's carrying capacity should be defined and regulated by State Animal Welfare Board of Haryana. The gaushalas may preferably be involved in the following programmes:

- Conservation of indigenous breeds on scientific basis should be done through gaushalas.
- Gaushalas should be involved in State fodder seed production programme. Gaushalas should be encouraged to produce fodder for self consumption.
- The productivity records of good animals in all gaushalas should be maintained.
- Value added products should be encouraged on scientific basis.

14.2 Policy Reforms on Gaushala Management

- Gaushalas should be provided assistance similar to those given to the farmers through the State Government programmes and schemes, in terms of incentives, concessions and subsidies.
- The gaushala activities being a 24x7 management and look- after of animals should not be categorized as a labour activity under the Labour Act.

- The State AH Department and the State Veterinary University should cater to special programme on skill empowerment, and education for gaushala personnels in Organic Food Production.
- Education and training to Gaushala workers should be free of cost and on regular basis.
- Special provisions for Veterinary Health Care should be made in all gaushalas.
- Well defined criteria should be evolved for providing subsidies to gaushalas.

Chapter- XV

15.0 Research and Development Priorities

15.1 Research Areas and Activities

To address the issues and concerns of the farmers, animal owners, animal husbandry professionals and the stakeholders, following suggestions have been made for undertaking R&D for enhanced production and productivity in different specified areas. In the integrated farming system research, component activities in each priority area need to be identified, prioritised and strategies/work plan laid out for the rapid growth of the economy of the state. The major areas identified are:

a. Intensive livestock production

b. Semi intensive peri-urban or rural integrated live stock production system:

c. Augmentation of feed resources and alternate resource livestock nutrients

d. Genetic improvement strategies and policies for sheep, goat and pigs

e. Efficient reproductive management through assisted technologies

f. Product development/value addition for buffalo brand; primary processing, packaging and marketing of LS produce

g. Health protection against transboundry and emerging diseases

h. Climate change impact on fodder, feed, breeds, livestock behaviour, health and production

i. Documentation and testing of traditionally proven wisdom/knowledge for cost effective, ecofriendly and green livestock production

j. Biotic and abiotic stress (humidity, temperature) on animal health, physiology, production, reproduction and behavior.

k. Processing and conversion of Livestock waste generated at farm units, dairy farms, poultry farms, dairy and meat plants, tanneries, feed mills, etc.

l. Birth control practices in Neelgai and stray dogs

15.2 Road Map of Strategies and Action Points

- Programme for increasing milk production should concentrate on indigenous milch breeds of cattle (Sahiwal, Hariana, Tharparkar, as the main breeds), crossbred cows (Holstein and Jersey crosses) and buffalo (Murrah, Nili-Ravi) based organized dairy farming having A2 milk lineage. Major focus should be on poultry for eggs and broiler

including backyard poultry for landless and small holder farmers; Sheep and goat for semi arid districts and fish under Integrated Farming System (IFS) for increasing the productivity and production of milk and high biological value protein of animal origin. A special incentive driven program needs to be implemented for piggery development with focus on the weakest section of the population. For maximizing benefits of different schemes and programs aiming at productivity enhancement, "Livestock Mission" shall be established to ensure desired incentives, policy and funding support for development of feed and fodder resources, health care and protection, wider use of AI, use of certified sexed semen of progeny tested bulls, conservation and development of indigenous genetic resources, IPR protection and GI for Murrah buffalo; promotion of value added milk and dairy products including Mozzarella cheese, ICT based extension services at farmers' door, human resource and entrepreneurship development at all levels, market intelligence and linkages; use of biotechnology tools for improving livestock health, nutrition, reproduction and productivity; proper insurance cover to all milk animals, strict quarantine measures, residue analysis, breed registration and traceability.

Investment for Growth

If the economy grows rapidly, it helps the underprivileged. Therefore, the state should focus on increasing growth in those sectors of the economy that impact the poorest most like livestock.

With this view, the Government must adopt a new Mission on Livestock with an aim of doubling the sector growth in the next five years. The vast allocation in development projects and productive schemes need to be focused to animal sector and new investments could be deployed to livestock improvement with convergence to attack the roots of the problem- low productivity.

The government must partner with non government agencies to implement its livestock program. The few attempts made have succeeded beyond all expectations once properly targeted.

- For enhancing fodder production, the state should launch a special program, incentive policy, technology support and provision of quality seed, production research and human resource development, with diversification from crop agriculture as the key instruments for bringing about a dynamic change to the feed and fodder situation in the state.
- A special drive for R&D for feed and fodder resource inventory and development need to be taken on priority by the state governments involving private sector for evolving better varieties/cultivars of forage crops. Production and availability of quality fodder seeds for rabi and kharif season for growing green fodder round the year need to be taken up with proper incentives.

- Use of certified hygienic semen of progeny tested / pedigreed bulls for breeding of the animals/ herds belonging to the farmers, government, private sector and gaushalas in networking mode should be encouraged.
- Modern biotechnological tools like embryo transfer and marker assisted selection should be employed in superior elite animals of select breeds for specific regions for faster multiplication and desired sex.
- Suitable incentives should be provided to the breeders for conservation and genetic improvement of the cattle breeds.
- The State should identify separate zones for dairy, sheep, goat and pig production. The body mass from buffalo males and spent females be used for special export of quality meat. Programs be initiated for production of bio manure, biogas, pesticides/insecticides from bovine dung and urine for promotion of organic farming and urine distillate etc for medicinal purposes by creating necessary infrastructure. Biogas plants should be made an integral part of medium and large dairies.
- Veterinary services including diagnostic facilities need to be made mobile for effective door step delivery. Each district should have at least one polyclinic. Disease investigation and forecasting system should be strengthened. The state should have a super speciality Hospital with state of art facilities for advanced diagnostics and treatment.
- There should be a state level Disease Diagnostic Laboratory (SDDL) with three regional labs to have a thorough epidemiology and surveillance mandate for disease control programs and monitoring of diseases.
- The FMD vaccination program, should be extended to other diseases like PPR, Brucellosis, HS, Swine fever, Fowl pox, IBD etc. to minimize heavy economic losses in livestock and poultry.
- The state should have a central or a designated Feed Evaluation Laboratory (FEL), possibly in a PPP mode, where the feed industry as well as the private animal owners can have the feed samples tested for quality assertion and nutrient content. This will be a great facility for the farmers (testing at a nominal cost for farmers) which will save them from adulterated feeds both in costs and nutrition value.
- There is a need to strengthen extension services for livestock including poultry in terms of goods and services in PPP mode and using modern ICT tools to ensure 24x7 delivery at farmers door step. A separate cadre of the extension workers with appropriate promotion policy and incentives should be in place for effective and efficient timely transfer of animal husbandry technologies to the livestock keepers.

- To make dairy farming a profitable enterprise, incentives like removal of VAT from feed and feed ingredients; electricity rates for dairy plants to be on par with agriculture; low rate of interest on loan (3-4%) for all animal operations, equipment and implements etc.; enhanced subsidy (50% to 75 %) on dairy equipment, milk and fodder production machines, modern animal housing for dairy animals, cold handling and milk storage equipments; production and supply of area specific mineral mixtures, micro nutrient fortified complete feed blocks; and animal vaccines need to be provided.
- To encourage small holder dairy operations, loans should be advanced to landless animal owners having animal holdings only or having very small holdings of 2-4 bighas of land, at par with land holders.
- Incentive support for setting up Doodh Sangh Kendras (DSK), small and large milk collection centres, as a group activity involving women clubs or dairy clubs or SHGs, should be provided.
- Provision of KCC to landless dairy, poultry and fishery farmers and other livestock keepers should be made so that they can also avail the facilities of credit, subsidy, insurance etc.
- Bull mother farms should be established on priority for producing elite breeding bulls in public/private sector. Well-known NGOs already involved in livestock developmental activities should be involved by providing incentives.
- Reduction in livestock population is envisaged by producing more females in cattle and buffaloes by using sexed semen to save on feed and fodder. Male buffalo calves may be raised for meat purpose.
- Availability of quality semen, elite breeding males in livestock species (cattle, buffalo, sheep, goat, pig, horse), chicks, poultry feed need to be provided to the farmers. AI coverage in cows and buffaloes should be doubled during the next three years.
- Value addition of milk, eggs, meat, in terms of new products following HACCP, improved keeping quality, long shelf life, and nutritional value in the form of health food/designer foods and beverages etc. should be undertaken for more income to the farmers. Since Haryana has the advantage of large buffalo milk production, efforts should be made to manufacture Mozzarella cheese for home consumption as well as for income generation through exports.
- For risk mitigation, all the districts should be covered by the Livestock Insurance Scheme through the Central/State schemes and insurance should be available for all the livestock species with reasonable premium to be paid by the farmer. The condition of the availability of central support for insurance being limited to one or two cows or buffaloes giving milk and purchased against government loan may be done away with. The state

may support the insurance program for all elite animals. The state support may be enhanced to even 75% of the premium for elite Hariana, Sahiwal Cattle and outstanding Buffaloes.

- The incentive programs for buffalo production must be fully and suitably extended to cattle also.
- Capacity building for testing the quality of feed, medicines, fodder seeds, vaccines, residues in livestock products; production of sufficient doses of disease free semen, chicks, vaccines, diagnostics, cold chain, terminal markets for livestock produce, delivery of veterinary services at farmers' door step need to be developed.
- University of Veterinary and Animal Sciences needs to be supported with adequate funding as well as policy and functional autonomy for imparting quality education and undertaking need based location specific research. Vocational training to farm women, school and college dropouts (youths) and retired army personnel should be provided on various aspects of animal husbandry to develop entrepreneurship.
- The SVU should initiate appropriate vocational and other training programmes for making skilled trained manpower available for livestock, dairy and poultry sectors.
- Location specific cluster-based strategies in a decentralised planning mode should be developed for each of the three agro ecological zones of the state. The animal husbandry and poultry programs may be undertaken in partnership with private sector (Private Public Partnership, PPP) to reduce financial burden on the government.

Chapter-XVI

16.0 Synergies and Convergence of Public Sector Programs

16.1 Synergy and Convergence of Livestock Activities

There are several programmes/schemes/projects in agriculture, health, forestry, environment, rural development, education, cooperation, panchayats, finance having appreciable synergy with livestock and livestock development and animal keepers in the State. However, the "State" and "Stage" of their implementation are suffering with impediments in delivery. Some of the major schemes in the departments are listed below which have a clear window and implementation in livestock sector. Since most of these welfare and developmental schemes are oriented towards small, marginal, landless, poor rural population and animal keepers, addressing livestock through these developmental schemes is going to have a direct impact upon rural economy, welfare of below poverty line population, women empowerment and child health etc.

16.2 List of Schemes

1.	RKVY	Rashtriya Krishi Vikas Yojana
2.	NFSM	National Food Security Mission
3.	NHM	National Horticulture Mission
4.	ISOPM	Integrated Scheme for Oil, Pulses & Maize
5.	IWMP	Integrated Water Shed Management
6.	NAIS	National Agriculture Insurance Scheme
7.	WBCIS	Weather Based Crop Insurance Scheme
8.	NRHM	National Rural Health Mission
9.	SGSY	Swaranjayanti Gram Swarozgar Yojana-Self Help Groups
10.	RSETI	Rural Self Employment Training-BPL-rural youth capacity building & skill upgradation
11.	MGNREGS	Mahatma Gandhi National Rural Employment Guarantee Scheme
12.	IWDP	DPP & Integrated Wasteland Development Programme
13.	HWDC	Haryana Women Development Corporation. Urban Women Self Help Groups

16.3 Programs Needing Special Focus Targeted to Livestock

1. Swaran Jayanti Gramin Rozgar Yojana (SJGRY) (Self Help Group) Self Help Group training women beneficiaries- Local Units to act as SHG

- Fodder
- Milking
- Milk
- Sheep & Goat
- Poultry
- Feed
- Health monitoring and prophylactics

2. Rural Self-Employment Training Institute (RSETLs) BPL -Rural youth Capacity building & skill up gradation-To be linked to Veterinary University.
3. IWDP -Backward Region Grant (DPP) Integrated Wasteland Development Project-to be linked for fodder production.
4. HWDC (Haryana Women Development Corporation) - Address self supporting animal owners.
5. SJSRY (Swaran Jayhanti Shehari Rozgar Yojana) urban women SHG for livestock identified activities related to value addition and marketing.
6. MGNR (Employment Guarantee Scheme) Livlihood security in rural areas-100 days of unskilled manual work- work in the livestock sector to be included.

16.4 Convergence Focus

Several changes have taken place within different departments in their allied activities during the last decade, which have direct effect on the economy, societal demand and animal health and production. The identified allied activities of several other departments, which are directly related to livestock, are as follows:

- Public health, disease epidemiology and control
- Zoonotic diseases
- Food safety
- Fodder and feed availability
- Livestock produce management and marketing
- Delivery of respective goods and services to resource poor livestock owners
- Environment- state and control
- Panchayat lands, current fallow, grazing lands, and wallowing ponds
- Agriculture input base, input resource and output price
- Women centric programs and social inclusiveness
- Workforce for agriculture and livestock operations
- Resource management
- Cooperation and rural development schemes

Chapter-XVII

17.0 Environment, Animal Welfare and Food Safety

17.1 Livestock and Health Environment

The concepts of good health for the rural population of the state are getting recast due to greater emphasis on: a) adequate nutrient availability, b) calorie consumption and c) quality and quantity of the available protein. The debate on health has shifted from mere fulfilling the calorie needs through cereals to wholesome nutrition adequate enough to cater to the needs of protein and nutrient hunger on a sustainable basis. The livestock products in terms of milk, meat and eggs ensure to satisfy the health demands of the population. In fact, the health of the producer animal is also equally critical to ensure safe and healthy animal product.

For the state of Haryana, the dominant role which the state livestock is playing in the total economy and has taken the shape of being reckoned as dominant commodity in agriculture, brings in the considerations of good environment. Livestock activity of production of large quantity of milk coupled with meat and eggs production will bring in a major change in the environment and simultaneously invoke concern for green and clean environment. Resource competition for production inputs coupled with environment damage which both intensive animal husbandry and crop production may bring out in changing the production paradigm from a complementary and supportive state for each other to a competitive enterprise will disturb the socioeconomic and environmental balance in the production system. This needs to be mentioned that in the recent past the fabric of integrated production system as it existed traditionally got replaced by monoculture of Rice and Wheat resulting in damage of natural ecosystem and livelihood assets of the masses, with shift away from livestock. This trend is lately being found to be reversing in favor of livestock due to the dietary preferences, and demand of animal products as a result of higher income structure of the society.

Perhaps the most striking feature of the current livelihood system in the state of Haryana and its neighboring states like Punjab and Western U.P., is their dependence on adequate asset base concerning land, water and livestock favorably influenced by climate and robust human manpower. The state of Haryana, however, does not have full endowment of water and climate conditions. The rice-wheat system provides an attractive and stable income to the farm household with minimal risk. The secure and profitable system thrives having both limited market risk (assured market and MSP) and production risk (secure irrigation). The inherent security and profitability also imply that there is a scope for diversification within the current context implying more livestock propositions.

17.2 Peri-urban Livestock (Rural Urban Divide), Urban Dairies and Environment Conflicts

The rapid increase in demand of milk and milk products in the post green revolution period, has also resulted in expansion of livestock production system, both in terms of increased numbers as well as in their potential production, be it milk, meat or eggs, etc. The demand is more in urban environments where the purchasing powers and population concentration are fueling the demand with a higher profit margin. This has contributed to a large concentration of animals particularly buffaloes in peri-urban environments. In the absence of any regulatory frame work, and administrative enforcement setup for managing animals, animal products and environment; there are increased concerns for human health and environmental deterioration. On the one hand, milk and meat business has taken precedence but on the other hand simultaneously, there is an acute conflict with development problems which include:

a) Inadequate disposal of effluents and waste lead to a considerable environmental deterioration, affecting animal and human population and bringing in considerable generic diseases, human health hazards, doubtful quality animal products, repugnant odors and even break-down of already limited public utilities.

b) Public health issues like presence of pesticides and antibiotic in food chain and food safety concerns get into focus with greater risks.

c) Water, drainage, electricity facilities etc. get strained resulting in public disregard for animal activity.

17.3 Environmental Implications of Livestock Production

A combination of environmental implications from LS and the agriculture Rice-Wheat production system may constitute a major threat to livelihood strategies in the state. An international study conducted in the State of Haryana in the year *2005* highlights three major environmental impacts. The widespread use of tube wells particularly in the rice-wheat systems has led to an overexploitation of groundwater which exceeds natural recharge leading to declining water tables. The continuous rice-wheat cultivation has also led to the deterioration of soil and land quality. Thirdly, organic matter management is largely one-way extractive flow from the field leading to depletion of soil organic matter stocks.

The burning of crop residues particularly paddy straw for sowing next crop contributes to significant air quality pollution (smog) in both rural and urban areas in the region. The dominance of agricultural activities is a serious threat in terms of Green House Gases, methane and carbon dioxide built-up. The crop livestock interactions in a rice-wheat system till recently were the savior of livelihood security providing diversified opportunities. It provided stability to family income especially in the arid and semi-arid regions and to landless farmers also. This social fabric maintained as community clusters in rural Haryana were dependent on one

another and had respect for their social values. Fragmented land holdings, input intensive crop production in fatigued lands coupled with diminishing returns from crops has turned farmers more to LS where profits are higher. But this shift in its wake has brought in problems of environmental damage which is getting accentuated by the effects of Climate Change.

In Agriculture, **Paddy and Ruminant Systems** *(Livestock Long Shadow: FAO),*are the two important contributers blamed for GHG accumulation and are also the main stay of Haryana. The state has the lowest percent of area under forest, pastures and grazing land in the country (*Status of Forest in the states: Report-Page 133-137 of MoEF Year-2011*). Thus it has very little opportunity to sequester CO_2, CH_4 and N_2O. This calls for environment based integrated approach on developing mitigation strategy of buffalo and cattle for sequestering CO_2, CH_4 and N_2O.

Status of Forest in Indian States (*Ministry of Environment and Forest 2011*)

State	Forest Percent of geographical area	Rank Among 29 States	Vulnerability on Carbon safe
Haryana	3.53	Last	Most Vulnerable
Punjab	6.12	Last but one	Most Vulnerable
A&N/Sikkim/Mizoram	86.93/82.31/79.30	First/Second/Third	Safe States

17.4 Food Safety and Environment Security

A concern for Green and Clean environment brings in the element of Food Safety and Nutritional Security as the two pillars of the developed civilized society. In the last decade, as the State has shown remarkable growth in poultry and fishery and dairy sectors environmental problems which include land degradation, pollution of water and loss of biodiversity are becoming important. The food safety issues will now have greater bearing on day-to-day production system requiring introduction of safer procedures and regulatory laws.

Food borne diseases are other serious threats to the public in absence of implementation of food safety laws. WHO mission on food safety advises governments (National as well as State) to strengthen their food production programmes from production to consumption so as to ensure food safety. Haryana has to be proactive in formulation and implementation of state laws for local biosafety.

To achieve this goal the department needs to develop a coordinated strategy for the mitigation of food borne diseases. Such an approach relies mainly on the Hazard Analysis Critical Control Point System (HACCP).

Following four areas need to be addressed in a safety net,

- Risk free Clean and Green Animal Production System,
- Risk-free Animal Feed Safety System,

- Food Recall Procedures and Regulations,
- Effective size of monitoring and governance infrastructure.

17.5 Establishment of Green Animal Man Environment Board -"GAME BOARD"

To deal with the environmental issues as related to animal rearing, there is a need to create a Green Animal Environment Board, abbreviated as "GAME BOARD" **in the state.**

Next to food and nutritional security, come the concepts of "environmental safety". The environment impacts of high demand and supply system of animal based food product have their repercussions which include ecological disturbance and public health problems such as unsafe food, pollution and loss of biodiversity and finally the loss of livelihood opportunities in rural sector.

Mandate of Game Board should be to formulate codes and practices as Green and Clean technologies. Game Board will also develop codes and practices for processing, value addition, packaging, labeling and marketing through biosafety evaluations and value chain development in the state.

17.6 Application of Animal Welfare in Organizing Livestock Enterprises

Concerns of green and clean environment simultaneously also address the welfare of animal and man through an approach described as Animal Welfare.

Internationally recognized 'five freedoms' (freedom from hunger, thirst and malnutrition; freedom from fear and distress; freedom from physical and thermal discomfort; freedom from pain, injury and disease; and freedom to express normal patterns of behavior) provide valuable guidance in animal welfare. These are used for production of milk, meat and egg products safe for consumption of both animals and man. These are also used to mitigate the problems of intensive and extensive dairy, poultry and piggery production systems.

Animal welfare means how an animal is coping with the conditions in which it lives. An animal is in a good state of welfare if (as indicated by scientific evidence) it is healthy, comfortable, well nourished, safe, able to express innate behavior, and not suffering from unpleasant states such as pain, fear, and distress. Good animal welfare requires disease prevention and appropriate veterinary treatment, shelter, management and nutrition, humane handling and humane slaughter or killing.) The treatment that an animal receives is covered by other terms such as animal care, animal husbandry, and humane treatment. The use of animals carries with it an ethical responsibility to ensure the welfare of such animals to the greatest extent practicable. The improvement in farm animal welfare can often improve productivity and food safety, and hence lead to economic benefits.

Some measures of animal welfare involve assessing the degree of impaired functioning associated with injury, disease, and malnutrition. Other measures provide information on animals' needs and affective states such as hunger, pain and fear, often by measuring the strength of animals' preferences, motivations and aversions. Others assess the physiological, behavioral and immunological changes or effects that animals show in response to various challenges. The animal welfare procedures and protocols ensure that the handling of animals should foster a positive relationship between humans and animals and should not cause injury, panic, lasting fear or avoidable stress. Owners and handlers should have sufficient skill and knowledge to ensure that animals are treated in accordance with these principles.

Animal welfare is a priority in the OIE Strategic Plan since 2001 and the latest guidelines are published by OIE as Terrestrial Animal Health Code-2012. These guidelines should be a part of the undergraduate and postgraduate education and should be practised under field and farm conditions to ensure healthy and safe food of livestock origin.

17.7 Animal Welfare Codes and Standards: State Animal Welfare Board of Haryana

Hon'ble Supreme Court has issued instructions for establishing State Animal Welfare Boards in States and U.T.s. for implementing provisions of PCA-Act-1960 and using the guidelines on rules and amendments suggested time to time by AWBI MoEF. DG Animal Husbandry and Veterinary is chief of Haryana SAWB.

SAWB-Haryana should apply the codes and standards suggested as above and fill the posts of Veterinarians in SPCA organizations to take care of ABC (Animal Birth Control and Anti-Rabies Vaccination) programme and stray animal problems in the cities.

Chapter- XVIII

18.0 Policy Imperatives

18.1 Breed and Breeding Policy

The present buffalo population consists of nearly 76% of animals that belong to Murrah breed. Breeding policy of the state involves selective breeding of buffaloes with Murrah breed only, with the bulls having a minimum dam's lactation yield of 3200 litrs. Non Murrah buffaloes are implied to be graded up with Murrah germ plasm.

Cattle breeding policy involves selective breeding of pure indigenous breeds of Hariana and Sahiwal with germ plasm having the minimum standards of 2000 litres among Hariana and 3000 liters for the Sahiwal animals. Non-descript indigenous cows are crossed with Holstein Friesian (minimum 6000 liters lactation) to maintain exotic blood at 50% level. High yielding (elite) cows of Hariana, Sahiwal or any other defined cattle breed may not be subjected to cross breeding except with the prior permission at bull mother farms to produce F-1 bulls for 'inter-se' mating. Stray and low pedigreed bulls must be castrated at the earliest opportunity.

Correct implementation of breeding policy will only be possible, when almost 100% of the animals are covered through artificial insemination/ organized breeding.

The breeding policy for other important species of animals such as goat, sheep, pig etc. also needs to be formulated keeping in view the changing circumstances.

The breed and breeding program should be farmer oriented animal husbandry initiative for economic valuation and profitable large ruminant rearing to raise the economic returns to the farmer at lower input costs and should also be a means for job creation and nutrient supplementation for the poor landless rural population. It should also be an agent of women empowerment and youth employment. The major focus of the policy will involve each of the following:

1. Organization of an Association of Breeders/animal owners.
2. Registration of all animals of different breeds to be mandatory. The Haryana Dairy Animal Breed Association (Cattle and buffalo) to be part of this program anchored by the state department of AH&D.
3. Herd book both for dairy and work purpose animals. Tentative data on cattle breeds has been collected in the Cattle Census-2007. The prominent breed groups like (a) Hariana, (b) Sahiwal, (c) Cross breed of different grades, (d) pure exotic *Bos taurus* animals will have separate registers/books and to start with all the animals will be numbered (registered) including non-descript cattle and all *Bos taurus* crosses of different grades with input level of the production system.

Although intermediate grades prevail in all input levels; low-input small farms have tendency to use higher proportion of more resilient low Bos taurus grade cows whereas larger farms use form of higher yielding Bos taurus grade.

4. Among cattle, rotational crossing with purebred sire to keep the heterosis effects : Most effective if semen is used and reproduction is only through A.I. with high potential semen of both parental breeds. The protocol should involve (a) Careful planned design, (b) Comparison of contemporary farmers rearing different genetic groups, (c) Recording of animals both among commercial and small herd operation, (d) Recording of fertility and lifetime performance (for 12 years for most animals, except those whose performance is poor, say below a standard production/yield), (e) Evaluation of performance data under farmer management and analyze the performance vis-à-vis Government farm management data, (f) Selection of male calves born of elite mating from elite animals and reared as young bulls by the farmers.

5. Among buffaloes, breeding pure for Murrah and using only approved progeny tested and/or pedigreed semen and bulls for breeding in the state. Only the approved semen obtained from CMU certified sperm stations to be supplied through the animal husbandry department for breeding in the state.

18.2 Cattle Centric Development Scheme/Program "Goverdhan"

In spite of the fact that the State has a creditable increase in buffalo population and buffaloes are becoming the prominent dairy animal with 80% of the large ruminant population, there is an urgent need to have exclusive cattle oriented large ruminant development programme in the State.

This becomes essential and compelling due to (a) cattle having been proven as being essential component of profitable dairying, (b) farmers' desire of rearing cattle with high production merits giving better economic returns, (c) lessons learnt from the neighboring State (Punjab) where high milk production and greater farmers interest in cattle have shaped superior dairy sector both in terms of milk quantity, per capita availability and farmers profitability from rearing of cattle,(d) the biodiversity implications where dairying should have component of our indigenous cows, (e) conservation perspective of our precious indigenous cattle germ plasm, (f) major several fold enhancement capacity of low producing and non-descript dairy cattle through introduction of elite taurus breeds, (g) need of exploiting the genetic superiority and gene excellence of Bos indicus breeds in terms of known traits of adaptability, disease resistance, climatic resilience for feed, fodder and microorganisms.

The superiority of cattle over buffaloes is also manifest due to several production related parameters among cows enumerated briefly as :

a) Early maturity particularly among indicus animals with different genetic grades of *Bos taurus*.

b) Higher yields and more fluid milk and thus more protein, solids and fat per animal per day especially among the higher crosses, and very much so among the pure exotics and with rich cash returns.

c) Shorter gestation length, greater persistence of lactation, ease of freshening and conception and regularity of calving with little seasonality in calving or milk availability. There is a need to initiate and execute the new cattle development programme under State sponsored new scheme/programme **"GOVERDHAN".** The program has evolved to answer most of the problems addressed by the farmers and also the gaps indentified in livestock programs of the state.

d) Simultaneously feed and fodder scheme/programme **"CHARAMANI"** should also be initiated and executed. This will be an end-to-end program for augmentation of fodder resource and will focus on an inbuilt system of ;

- A definitive fodder production organizational unit/section with targets and departmental responsibility identification.
- Variety identification and fodder seed production
- Fodder demonstration
- Commercial fodder production
- Fodder banks
- Contract farming for fodder crops
- Incentive driven silage production
- Input facilitated feed and fodder augmentation.

(The detailed feed and fodder program is given separately.)

Implementation of **"GOVERDHAN" and "CHARAMANI"** schemes will give a new thrust to cattle development programme as strongly requested by farmers. It is also essential for economy of the animal owners/ farmers and the State if the Haryana farmers have to stay at the forefront in the country and emerge as No. 1 ranking agriculture/livestock state bypassing the neighboring States.

Special Incentives for Cattle Development

The contribution of cows should be increased to 30% from the current 15% to the total milk pool with the following strategy:

a) All programmes and schemes currently being run for the development of Murrah buffaloes should also be extended to cattle.

b) Introduction of sexed semen to check birth of males, the undesired sex, should be immediately taken up.

c) Pockets of elite Hariana (peak yield > 10 Kg) and Sahiwal (peak yield > 15 Kg) cows need to be identified through a special Field Performance Recording programme with cash incentives.

d) Production of elite bulls in situ and at Bull Mother farms along with field progeny testing programme needs to be urgently initiated in local cows of identified breeds belonging to farmers and Gaushalas to improve genetic make- up and productivity of these so far neglected breeds.

e) An increasingly higher proportion of non -descript and low producing local breeds should be subjected to cross breeding.

f) Rearing of good quality progeny of local breeds and cross bred females should be promoted by providing cheap / highly subsidized feed and other inputs. Animal ration cards may be introduced for this purpose.

g) Cow milk may be priced at par with buffalo milk regardless of its low fat content.

18.3 Species and Breed Consideration for Different Districts

As the population of different species and breeds of livestock is not equally distributed among different districts, the programmes and schemes aimed at improvement of a particular species, breed or category should preferably be taken up in the area having high concentration of that group of animals to get a better impact and quick results.

18.4 Animal Identification and Registration

a) In a special mission mode approach, each animal in the state should be identified with good quality ear tags (preferably both ears) using unique numbers.

b) The elite animals may be identified with electronic tags/micro chips.

c) Each identified animal should be issued a document/ card/ animal passport

d) The un-identified animals may not be allowed to participate in cattle shows, fairs, sale 'mandies' and also denied free health care and breeding facilities for effective implementation as well as to control the menace of stray animals.

18.5 Breed Associations/Societies/Unions

The state should promote and help in the formation of associations/ societies/ unions of animal owners for different species/breeds of large and small animals by providing initial hand- holding and logistic support.

The breeding policy for other important species of animals such as goat, sheep, pig etc. also needs to be formulated and notified in view of the changing circumstances.

18.6 Formation and Support System for Women Self Help Groups

As women constitute 70% of the work force in this sector, the state should help to form self- help groups of women engaged in looking after animals by framing rules/ regulations, extending initial financial support and other logistics.

18.7 Germplasm Development and Distribution

a) Production of frozen semen should be doubled.

b) The technology for production of sex-sorted semen for Murrah buffaloes should be immediately introduced.

c) Directly transferable sexed embryos of Holstein Friesian may be imported for production of quality bulls and bull mothers of very high merit under local conditions to meet the chronic shortage of quality germplasm.

d) The import of high merit Friesian semen should be encouraged.

18.8 Buffalo as a Brand for State

The premium products made from buffalo milk with unique qualities be branded with a prefix of "Murrah". The Brand may be popularized and marketed by the Govt. agencies and/or in a P-P-P mode.

Similarly pure buffalo milk products like Mozzerella cheese and/or 'channa' preparation like Paneer be branded 'Murrah-Haryana'. Quality asserted 'Paneer' has a huge national and international market and a great price advantage for the manufacturer.

18.9 Livestock/Breed Conservation

Special conservation programmes may be taken up for breeds with dwindling population or possessing specific characteristics that are of more economic relevance under the changed circumstances. For example- Desi fowls; Munjal sheep and dual purpose goat breeds adapted to intensive farming conditions.

18.10 Stray Cattle Population

There is an urgent need to control this menace and prevent huge losses to cattle productivity by adopting suitable measures including:

1 Compulsory animal registration and identification as detailed elsewhere.

2 Animals untraced in terms of ownership need to be impounded as per the existing laws.

3 Owners of identified/ registered animals found roaming on the roads should be penalized suitably.

4 Cross breeding should be intensively undertaken to get high producing progeny from these low producing animals.

5 All unattended/ stray/ low quality males should be compulsorily castrated at the first instance.

18.11 Climate Change Impact on Fodder, Feed, Breeds, Livestock Health and Production

Climate change due to rising temperatures and emissions of greenhouse gasses poses real threat to livestock health, productivity, production and biodiversity. Given the hot and humid climate, such environmental impinging shall adversely affect animal performance if simultaneous action for amelioration is not taken. An urgent attention is required towards evolving technologies, best practices for adoption and mitigation to minimize the losses and harm.

There is a need to study the effect of biotic and abiotic stress (humidity, temperature) on health, physiology, production, reproduction and behaviour of animals and birds. For maximum hybrid vigor utilization, production of F1 progeny from exotic crosses in livestock species needs to be studied using among other models the clone technology.

Development of cost effective feeds, innovative feeding practices with less emission of methane in ruminants, identification and characterization of breeds with low emission of methane will be a welcome step for further research to mitigate impact of climate change on livestock. There is a need to identify/develop fodder crops / cultivars with tolerance to different stresses (drought, temperature etc) and better response to high CO2 concentration due to climate change.

18.12 Animal Insurance and Micro Financing

There should be a universal insurance scheme for all the registered and duly identified animals in the state with a provision to cover permanent production and reproduction losses in dairy animals. Also disability cover for working animals should be there. A corpus fund may be formed for implementation of this insurance-cum-compensation scheme.

A fixed proportion (30%) of the total lending to the agricultural sector by the public financial institutions needs to be earmarked for this sub sector. Saving linked- SHG's as well as credit linked- SHG's should be promoted to widen the scope of micro-financing to the different activities of livestock sector.

18.13 Health Monitoring and State/Private Health Management

Sound health plays key role in livestock and poultry production through better growth, early puberty, optimal reproduction and breeding, and enhanced production of milk, meat, eggs, wool etc. Infectious and noninfectious diseases result in heavy economic losses in the form of morbidity, mortality, cost on treatment and disease control. For timely detection of disease outbreaks, structural surveillance and monitoring of important diseases is a prerequisite for sustaining livestock health and production. So far, this activity has been undertaken by the State Department of Animal Husbandry & Dairying and/or the College of Veterinary Sciences, Hisar

and Disease Investigation Laboratories of the State. However, in case of poultry, private sector has also come forward for health management in the form of vaccination of chicks, devising suitable technology and practices for clean drinking water and hygienic feeding. Probiotics, antibiotics and other growth promoters, besides binders for mycotoxins in poultry feed, have been used for health management.

Thus, in view of upcoming organized dairy farming, private sector is expected to play increasing role in livestock health management by developing state of the art pen side diagnostics, efficient vaccines as well as rendering diagnostic services at field level.

18.14 Disease Monitoring, Zoning, Vaccination and Control

For effective disease control and prevention, regular surveillance and monitoring, strategic vaccination, interstate check posts to regulate the unauthorized movement of animals from neighboring states need to be in place. As a policy, only those animals which have an identification number tag/chip and properly vaccinated against the diseases which are not prevalent or reported from Haryana, should be permitted entry through check posts. There should also be a provision for quarantine at these check posts. Zoning may also be considered for progressive control of important diseases to be decided by the State from time to time. The available infrastructure with regard to the interstate check posts and quarantine facilities, disease surveillance and monitoring, diagnosis and control of disease outbreaks, availability of vaccines and vaccination policy need to be reviewed and upgraded in line with WTO requirements and OIE guidelines. These policies should also be followed when large numbers of animals gather at one place for sale/competition in various animals fairs organized at different places in the State.

Haryana should aspire to become self sufficient in vaccine production so as to cover at least 80% of population for strategic vaccination campaign including FMD vaccine so that disease control program does not suffer in want of vaccine(s).

18.15 State Support for Enrolment and Compulsory Vaccination of Registered Animals

In order to encourage registration of animals of various breeds, as a policy, compulsory vaccination against important diseases with State support should be provided as incentive. Each animal should be issued pedigree- cum- health card to record the details of date of birth, identification number, performance of dam; records of vaccination, deworming and treatment. Similarly, other records pertaining to the production and reproduction parameters may also be maintained in the card. Those farmers and livestock keepers, who maintain up-to-date records, may be given suitable incentives by the Government.

18.16 Structuring of State Veterinary Services, Dairy Development & Dairy Federation

Presently, there is lack of co-ordination and cohesion between these services as Dairy Federation, State Veterinary Services and Livestock Development Board, being under different

ministries, do not enjoy necessary freedom of working in day-to-day activities and policies, such as resulting in delay in adjusting the milk prices, procurement and processing as per market forces, demands and trends. It would be ideal if the Dairy Federation is given more functional and financial autonomy.

18.17 Restructuring of State Govt. Schemes for Animal Husbandry

The schemes of the State govt. pertaining to animal husbandry, livestock, poultry and dairy development need to be restructured and reoriented in the light of present day requirements, and challenges including likely impact of climate change and global warming on livestock health and production. Prioritization of the schemes for minimizing biotic and abiotic stresses, value addition of livestock produce and products along with appropriate linking with markets should receive adequate attention, funding and policy support by the govt.

18.18 Shift in Livestock Production System

Presently, livestock production in the State involves extensive low input-output rural and semi-intensive peri-urban system. However, in the present scenario, particularly rising demand for animal products, namely milk, eggs, chicken and meat, increased prices of these commodities due to demand supply gap; the farmers and entrepreneurs are taking up medium and large dairies, particularly in towns and cities. While providing fresh and wholesome milk to consumers, these dairies are also contributing to pollution due to improper disposal of animal waste (dung, urine, left out fodder) as well as effluents and wastes from dairy plants. Accordingly, urban and peri-urban dairies need to be regulated by appropriate legislation so as to avoid pollution in the environment. However, the government should provide necessary incentives for switch over to semi-intensive and intensive system of dairy farming to make it more profitable, both to the producers and consumers by reducing the middlemen, transport and processing costs.

18.19 Convergence of Livestock and Poultry Schemes

At present, various livestock development related schemes of the central government are operational under as many as 9 different departments of Haryana government. In the absence of proper liaison and coordination in the implementation, the expenditure being incurred on the schemes, does not get translated into maximum output and outcome. Hence, it would be appropriate to have a convergence of all these schemes under the Department of Animal Husbandry& Dairying of the State through a structural implementation and monitoring plan.

18.20 Quality Control of The Produce, Products and Inputs Required for Livestock Production

In the absence of adequate mechanism in place on the quality control of livestock produce/products and various inputs used for livestock production and health, consumers as well as dairy farmers are at disadvantage. Through proper policies, practices and adequate

infrastructure, both production and profit of livestock keepers may be enhanced considerably. At the same time, the supply of inferior quality feed, medicines and other inputs can be checked. The Department of AH&D should be equipped with state-of-the-art of quality control laboratories for the analysis of feed, fodder, mycotoxins, milk, meat, eggs, wool, compost, vermin-compost etc.

18.21 Reassessment of the Contribution and Allocation to The Sector

The livestock sector inclusive of poultry and fishery has been contributing around 30% of agricultural GDP in India as against 40% average contribution globally and up to 50% of the agricultural GDP in some countries. The contribution from livestock sector to the total agricultural GDP in Haryana exceeds 33% and is almost 50% of the crop GDP. However, the financial support available to this sector from public/and private sectors is grossly in- adequate (0.55% of the total plan outlay), which acts as a major impediment in the development of this prime sector. Considering the vital role played by livestock sector in food and nutritional security, environmental safety, social security, gender equality, inclusive growth, soil health and fertility, there is a need to provide appropriate funding support for livestock R&D programs, commensurate to the contribution from this sector.

18.22 State Livestock Mission Program to Supplement The Potential of The Sector to Push Agriculture Growth to Above 5% Annually

The livestock sector in general has shown higher growth rate during last few decades as compared to the growth of agriculture sector as a whole or the food grain crop sector. Among the components of livestock sector, fisheries and poultry have shown much better growth rate ranging from 10-15% than the other components. Dairy sector has also witnessed a growth of 4-5%. The Planning Commission, Government of India proposed 4% growth rate for agriculture during 9^{th}, 10^{th}, 11^{th}& 12^{th} Five Year Plans. However, in-spite of all the efforts and schemes in operation, 4% growth in agriculture has not been achieved so far. On the contrary, the growth rate in livestock sector has been always above 4% Considering these seminal facts, the Planning Commission has targeted a growth rate of above 6% for the livestock & fisheries so that it can compensate for the lower growth rate (less than 2%) in crop agriculture and to accomplish over all 4% growth rate for agriculture sector. If we have to achieve a growth rate of plus 5% in agriculture in Haryana state, there is a need to push up livestock sector. This can be made possible through the establishment of **State Livestock Development Mission**. This Mission should plan and oversee various development schemes related to livestock, poultry and fisheries, namely feed and fodder development, prevention and control of diseases, biodiversity conservation, breeding policy and strategies; processing, value addition and marketing of livestock produce.

Chapter- XIX

19.0 The Livestock Mission

For effective growth and development, it is very essential that the identified areas be addressed in a quantitative and qualitative mode so that the programmes/schemes/projects that are currently in progress or are being taken up in the near future be considered to have primary or secondary focus for conversion into effective State programmes for rural development in societal agriculture/livestock production system mode.

Under the 12th Plan, it is now being considered nationally as well as at the state level that the primary focus in the developmental strategy should be on the poor landless rural population who mostly earn their livelihood through livestock and hence there is a need for major shift in the departmental programmes dispensation. A coordinated approach under the **LIVESTOCK MISSION** for the State, as envisaged above, should be to streamline all the Animal Husbandry programmes, highlight the convergence of the State departments in programme implementation and lay criteria (among other things), for evaluation and monitoring of these programmes.

Livestock **MISSION** should also examine sectoral/departmental perspectives for current and future prospects of livestock as an industry in the state with reference to its unique animal resource and gene excellence, and niche livestock products. It should develop brand equity for the State livestock and animal products. Agro ecology, geographic location, livestock excellence, rural food preference, agri-economy and socio-religious beliefs, bring in the concepts of feed, milk and milk products, meat and meat products, veterinary drugs, dairy farming etc.

Such a LIVESTOCK MISSION will also examine what incentives and support need to be ploughed in, in Animal Husbandry and other departmental programmes so that they will produce an inclusive and sharper dent in poverty alleviation, quick response benefits and faster augmentation of profit, provide rural and urban employment, boost local and small scale industry and entrepreneurship, potentiate crop productivity, generate women remunerative employment, ensure better health for the children and the families through better nutrient and protein availability- considerations which all root to and emerge from livestock and animal husbandry propositions .

In the current era of subsidized agriculture production certain incentives, though very meaningfully programmed by different departments under State/Central programmes/ schemes, have of late been recognized to be having subtle counterproductive results for total productivity environment or sustainable production. The **LIVESTOCK MISSION** will suggest what corrective manipulations or changes are necessary for sustainable profitability among the animal owners.

The Dairy Sector including the milk cooperative and dairy federation in the state needs a fresh and thorough examination and evaluation in a Mission mode in terms of its performance and structuring particularly in terms of the notable successes in production and productivity recorded in the neighboring state. The farmers of the state are deeply concerned with the issues of cow milk pricing, its marketing and sale; as also of the availability of indigenous, cross bred and pure exotic elite animals/semen.

Hygienic and safe milk and meat production should be a priority exercise for the state. New emphasis should be on clean milk production, transportation and niche milk products manufacture. With a large unorganized sector of meat production, infrastructure and production of safe and healthy meat should come under a state **Abattoir** initiative under the Mission to streamline animal slaughter and salvage the slaughter offal's to the advantage of animal owners and the state economy. Large scale export-dedicated slaughter houses should come under the mission initiative.

Other major issues for the **Livestock Mission** will be manpower development for production and health in the new paradigm of health monitoring and trans-boundary diseases, bio-safety, bio-security and phyto-sanitory concepts, responsibilities and duties. The **Mission** will also address the core development of competent professional cadre for the intensive livestock production programs and for health management services and resolve the conflicting interests of the BVSc&AH in terms of their professional application and the societal demands. The concepts of conservation agriculture are essentially to be extended in livestock production and such areas need to be delineated and programs developed in consonance with economic, environment friendly and sustainable livestock production and health.

19.1 Mission for Integrated Cattle Development Programme

As per 2007 census, the cattle constituted 20.6% of the total bovine population in the state as compared to 65.4% at the national level. The proportion of cattle population in Punjab is only a little higher (26%) but is dominated by high yielding Holstein Friesian and their crosses. The percentage of cattle in Uttar Pradesh (44.2%), Rajasthan (52.2%) and Himachal Pradesh (74.9%) is more than 2 to 3 times higher. The current contribution of cows to the total milk pool in the state is limited to 15.0 % including 9.4% contribution by cross bred cattle as compared to 45.1% share with 24.3% contribution of crossbreds at the national level. The share of cow milk in Haryana is the lowest among the surrounding states - Himachal Pradesh with 60.7% including 46.9 % share of crossbreds, Rajasthan with 38% having just 6.9% contribution of exotic crosses, Punjab with 32.6% including 90% contribution of exotic and their crosses and Uttar Pradesh with 25.4% including 7.8% share of exotic crosses.

The cows constituted 53.5 % of the total bovine population (22.27 lakh out of 41.62 Lakh) contributing 24.9% of the milk produced in the state at the time of its establishment in 1966. In the following decade, the proportion of cattle population came down to 45% in spite of a marginal rise in their numbers to 24.42 lakhs, indicating a preference for buffalo rearing which

continues till date. The cattle population remained almost unchanged up to 1997 but its share to the total milk pool gradually came down to 19%. After, the drastic decline in cattle population (15.6 lakh from 23.9 lakh) recorded between 1997 and 2003, no further changes in cattle or buffalo population occurred until the next census in 2007. As is evident from the Figure below, the share of cattle population gradually decreased from 53.5% in 1967 to 33% in 1997 before reaching a low of 20.3% in 2003. During the same period, the share of buffaloes went up from 46.5% to 79% of the total bovine population as a result of more than 300 % jump (19.35 to 60.35 lakh) in their numbers.

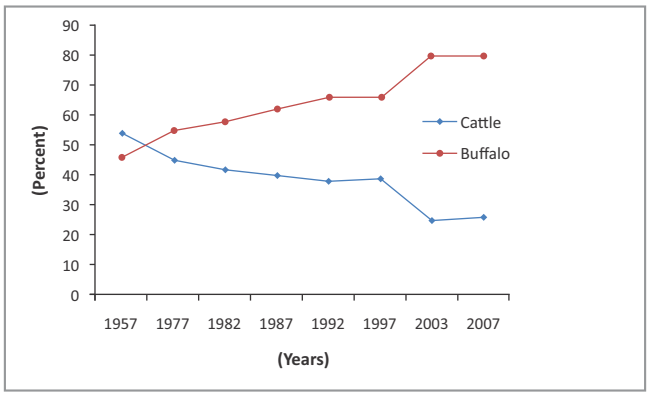


Fig. 19.1 Percent share of cattle and buffalo population in Haryana

Hariana, the native breed of the state, although a poor milker, has been well known for its powerful and sturdy bullocks. The decline in its numbers coincided with the increase in mechanization of agricultural operations in early 1970's depriving the bullocks of their traditional role in crop husbandry. Simultaneously, the general prosperity as a result of the green revolution beginning around this time led to higher demand for milk. Consequently, a preference for buffalo rearing and in particular, the Murrah buffalo, the native breed of the state famous for its good milk yield with high fat content was evident. Lack of concerted efforts towards genetic improvement of the native cattle breeds and/ or low emphasis on cross breeding of the poor producing and the non-descript cows for better economic returns may also have contributed to the decline of cow. Disappearance of grazing lands / community pastures and absence of an exit window for the aged, used, non productive & culled cows and surplus males could be the additional factors for preferring the buffalo over the cow. The cattle population has reached an all time low levels. The disinterest of the farmers in rearing of cattle can be judged from the ever mushrooming Gaushalas and increasing number of stray cattle in public places such as streets, roads, highways, parks, vegetable & grain markets etc. in the state. A small state like Haryana with just 15.5 lakh cattle population has as many as 256 registered and many unregistered Gaushalas.

A multi- pronged strategy for integrated cattle development in the state is urgently required. The various promotional schemes should aim at doubling the share of cow milk (30%) in the coming decade with simultaneous increase in its base population. The promotional strategies may include:

a) Propagation of healthy qualities of cow milk such as easy digestibility and low fat etc. should be taken up.

b) All cattle should be identified and registered and then categorized into different groups depending upon their production performance. Each animal should be issued an identification booklet preferably named **Animal Passport**, with all records related to pedigree, health, production and reproduction etc.

c) Poor yielder and nondescript cows should be subjected to extensive cross- breeding programme by providing free door step delivery of Artificial Insemination and other inputs.

d) Special initiatives for genetic improvement of identified native breeds (Hariana, Sahiwal) including Progeny Testing, Field Performance recording and bull production programmes with cash incentive to high yielding cows need to be undertaken.

e) Free insurance of each cattle along with free of cost door step delivery of health, breeding and advisory services etc will serve as a step in the right direction.

f) Capital investments for purchase of quality cows, scientific housing, milking parlor, milking machine, harvesters, chaff- cutter, silo-towers/ pits etc should be heavily subsidized to promote cattle rearing.

g) Feeding of female progeny and bull calves of high genetic merit, need to be subsidized till they come into production by providing them with good quality compounded feed, mineral supplements and feed additives etc. to achieve proper growth and early maturity. **Animal Ration Cards** for all such eligible progenies may be issued for effective implementation and monitoring of the scheme.

h) There should be a **preferential pricing of cow milk with ensured market.** The cow milk with 4% fat should get the same price as the Buffalo milk with 6.5% Fat. There should be no concession for SNF content to avoid adulteration of buffalo milk.

i) All grants/aids to gaushalas should be linked with their efforts towards organized breeding, genetic improvement and scientific management etc. The willing gaushalas may be included in all schemes aimed at promoting the cattle rearing.

j) Free training and capacity building of farmers including the women farmers engaged in cattle rearing should be given top priority.

19.2 Profitable and Hygienic Production of Meat

The **Livestock Mission** needs to be mandated to lay down programs for the small ruminants, pigs and poultry in a manner that it is proactive in helping those farmers whose livelihood options are better served through these species. It should also facilitate the pig, sheep and goat and poultry meat industry to come up in a profitable environmentally hygienic and safe mode. Such **MISSION** will also examine the possible reasons as to why the livestock holders have escaped the benefit of micro finance, loans, insurance, input allocations (energy, water, machinery, fodder seed etc.) and develop rationale for sector/sub sector allocations for increasing the total agriculture growth and thus stem the total GDP growth of the state.

Chapter-XX

20.1 Livestock Developmental Strategies –A Quantified Vision for 2020

20.1.1 Increasing the Proportion of Animals in Production

As per 2007 census, only 32.1% (24.1 lakh out of 75.05 lakh) of the bovines in the state were in milk production including 2.27 lakh indigenous cattle, 1.95 lakh exotic and their crosses and 19.87 lakh buffaloes which constituted 23.1%, 34.5% and 33.4% of their respective populations. In spite of diminishing role of the bovine males in the agricultural operations because of extensive mechanization, these continue to form a sizeable proportion of the population, apparently due to absence of an exit window. The males constituted 19% of the bovine population including a high of 40% among the indigenous cattle followed by 18% and 15.4% of the exotic & their crosses and buffaloes, respectively. The high proportion of males creates menace of stray bulls (mostly of unknown/low pedigree) which also adversely affects the efforts of the state department for genetic improvement through organized breeding of the stock. The population of males will have to be controlled, if the proportion of females in production is to be increased.

Ideally, a minimum of 50% of the bovine population should be in milk production at any given time. If this target is achieved, 13.4 lakh of additional animals will come into production, provided that the bovine population and its dynamics remain unchanged in the near future. As a result, 3.71 million tonnes of extra milk is expected to be produced.

A multi-pronged strategy, as outlined below, will be required to achieve this target:

(a) Changing the sex ratio in favour of female through wide spread use of sex- sorted semen.

(b) Increasing the number of exotic crosses by 20% through extensive cross breeding of the low producing indigenous and non- descript cattle with Holstein Friesian. Cross bred are considered to be high yielders with early maturity and shorter calving interval as compared to the indigenous cattle.

(c) Reducing the age at first calving (by 5- 6 months) and inter-calving period (by 3-4 months) through better reproductive health care and improved managemental and feeding practices etc. will further help to increase the proportion of females in production.

(d) Selection of breeding bulls for early maturity, high fertility and other related traits through extensive Field Progeny Testing Programme will pay rich dividends.

20.1.2 Increasing the Productivity Between 10 and 25%

Efforts will have to be made to enhance the productivity (per day per animal) from 4.9 to 5.7 Kg;

7.9 to 10 Kg and 7.1 to 8.75 Kg for indigenous cattle, exotic & their crosses, and buffaloes, respectively. This will be possible through:

(a) Genetic improvement using progeny tested bulls, their sons or pedigreed bulls of exceptional merit with a special programme for conservation and propagation of local cattle breeds.

(b) Increasing coverage of A.I./organized breeding to > 90% of the breeding stock and ensuring 24 x 7 door step delivery of high quality breeding services in each village through duly trained and skilled service providers.

(c) Better care, management, housing and husbandry practices through trainings, capacity building, various incentives and promotional schemes.

(d) Efficient use of scarce feed and fodder resources to meet the nutritional requirements which constitutes 70% of the input cost. Interventions like Total Mixed Ration (TMR), by - pass nutrients and regular supplementation with mineral mixture and trace elements should further help to achieve the goal.

(e) The significance of prophylactic vaccination and efficient veterinary health care including regular deworming cannot be undermined.

If the above stated targets with respect to the productivity and increased proportion of females in production are achieved, the annual milk production in the state may increase to more than 12 million tones from the present 6.66 million tones and per capita availability of milk may exceed 1000 gm.

20.1.3 Feed and Fodder Availability

The annual requirement of compounded (balanced) cattle feed in the state is about 7 million tonnes and may continue to increase as the production of milk goes up. Haryana is one of the major grain producing states in the country and is surplus in grains. However, the diversion of grains to animal feed production will depend upon the cost benefit ratio. As the number of high yielding animals increases, the demand for balanced ration is bound to go up to meet their nutritional needs in a cost- effective way. An interaction with the farmers from different corners of the state revealed that a majority of them still followed the traditional feeding practices. Less than 25% of the farmers have adopted feeding of balanced concentrate ration. Soaked split / crushed grains (churi), bran and oil cakes etc. are being used as a dressing ("sani") for the chaffed fodder/ straw to make it more palatable as well as nutritious.

If the stipulated targets for the enhanced productivity and sustained production are to be realized, the above requirement of 7.00 million tones of good quality compounded feed will have to be met immediately. In addition, there is an urgent need to popularize the use of compounded feed with assured economic returns among the farmers through appropriate

extension strategies. Feed and feeding technologies have demonstrated in no uncertain terms that there is no alternative to the by-pass nutrients (protein, fat) technology for efficient and beneficial utilization of the scarce resources. The availability of cost effective, good quality minerals and feed supplements will also have an assured return. The export of oil cakes needs to be stopped to make it available for local use with high returns. Instead of importing oil, preference should be given to import oil seeds. The second grade grains should be exclusively earmarked for production of animal feed. Quality of feed needs to be monitored by establishing state-of-the- art feed testing laboratories.

The total requirement of fodder for the state as reported earlier, suggests that while the state is surplus with reference to cereal crop residues being used as dry fodder, it is short in cultivated green fodder to the extent of 40% i.e. 27 million tones. A focused strategy consisting of the following steps will help to bridge the gap of green fodder:

(a) Increasing the area under fodder crops through various incentives, promotional schemes, assured economic returns by ensuring MSP. As a part of diversification plan out of wheat- rice cycle, fodder production needs to be emphasized as an alternative with good returns while ensuring more sustainable use of land and water.

(b) Fodder banking and silage making need to be popularized. The subsidy already available under various state/ national programmes for silo-pits, silo-towers, storage sheds and related machinery / equipment etc. should be further increased by at least 25%. Community fodder banking through SHG may also be promoted. For efficient utilization as well as easy transport of crop residues/ straws, these may be fortified with grains and supplements and compressed into small blocks to serve as complete food.

(c) More R & D efforts are essential to evolve high yielding varieties of different fodder crops for all agro-climatic zones.

(d) Promotion of contract farming and commercial fodder production at par with grain crops will ensure marketing of produce at good price.

(e) Free distribution of quality fodder seeds to marginal/ small farmers and making available the necessary know-how and technologies will result in higher production of green fodder.

(f) The common lands in villages may be exclusively reserved for cultivation of fodder crops and pasture development.

(g) A separate Feed and Fodder Cell consisting of experienced experts may be established in the directorate of Animal Husbandry & Dairying for planning and effective implementation of various programmes aimed at increasing the availability of feed and fodder.

20.1.4 Commercial Dairying

Demand driven commercial dairies are the future of livestock sector. Such dairies will boost better technological interventions, clean milk production, value addition, higher productivity and efficient use of resources etc. This will also lead to increased demand for high yielding animals, quality feed and fodder, machinery for automation of dairy farm operations, cost effective newer technologies and suitably skilled human resources including managers. The share of milk being handled in the organized sector will also go up as a result. At present, there are about 1000 such dairies (with more than 20 animals) in the state. A target of establishing 500 commercial dairies annually for next 10 years through special promotional schemes and incentives will provide the kick start to the sector. In the process, the tiny house-hold units may not be ignored as these may continue to be source of subsistence for thousands of families.

The existing schemes, incentives and subsidies etc aimed at promotion of high-tech dairies should not only be continued but further improved/ enhanced to establish more and more number of commercial dairies. Production of value added products and suitable marketing strategies should provide the required boost.

20.1.5 Animal Health Care

The target will be zero tolerance against animal diseases. The success story of FMD-CP needs to be repeated for H.S., the dreadful disease causing heavy economic losses quite often. Control and eradication of important zoonotic diseases such as Brucellosis, Rabies and Gastro-intestinal infestations should be targeted as is being undertaken world over as a part of one world one health concept. In addition, a 50% reduction in the incidence of other viral and bacterial diseases affecting the livestock needs to be achieved.

To realize these “dream come true” targets, the state govt. will be required:

a) To ensure high quality mobile disease diagnostic and sero- surveillance facilities adopting “bottom to top” approach in its planning.

b) To undertake intensive control and eradication programme for the above-listed diseases.

c) To involve village panchayats to ensure 100% prophylactic vaccination of the stock in villages. The panchayats may be given incentives/disincentives as per their performance in this regard.

d) To make veterinary health care facilities increasingly mobile in view of the ever rising traffic on the roads making it highly risky for the animals to travel to veterinary hospitals.

e) To undertake intensive R&D efforts to evolve more effective and better polyvalent/ combined vaccines with long lasting immunity against dreadful/ zoonotic diseases.

20.1.6 Reproductive Efficiency

As it is well established that optimum reproductive efficiency is the key to successful dairy farming, the target age at first calving be reduced to 26 and 36 months for exotic & their crosses and indigenous cattle & buffaloes, respectively. Similarly, the target for the calving interval should be lower than 14 months. The number of inseminations per conception should not exceed 2.0.

To achieve these targets, adequate training and capacity building of field functionaries with respect to reproductive health care, along with educating the animal owners particularly the women, for better care at the time of parturition and during the peri- parturient period, heat detection, calf management including monitoring of growth and provision of better quality breeding inputs etc. will prove beneficial. In addition, the feeding of area specific mineral mixtures, ensuring positive energy balance in lactating animals and fertility monitoring at regular intervals will also help to optimize the reproductive efficiency. The zero- infertility programme already in operation in the state may be further expanded and made more effective by providing ultrasound machines at least at the block level institutions for better monitoring of ovarian activity/ cyclicity- a key step in treatment of infertility.

20.1.7 Vaccines and Diagnostics

Timely availability of vaccines and diagnostics is a pre-requisite for control of animal diseases and cost effective animal health care. The target should be to produce all 'the required' vaccines and diagnostics for the state livestock either at its Vaccine Institute, Hisar or alternately there should be an effective arrangement/ collaboration with public private concerns preferably in a PPP mode for this purpose. The modern diagnostics against important diseases such as Brucellosis, H.S. and Trypanosomiasis etc, presently not being produced in the state, may be produced possibly in collaboration with the Veterinary University. As stated above, better vaccines with longer immunity are need of the hour.

20.1.8 Meat Production

In spite of the fact that livestock in Haryana is dominated by buffaloes with no legal ban on their slaughter, there are no modern slaughter houses in the state, except an export- oriented slaughter house in Mewat district. The target is to have at least one modern, automated slaughter house for small as well as large animals for every 3- 4 districts. Each such slaughter house should have adequate facilities for humane slaughter and for processing of all offals, skin and other non-eatable parts etc to get high economic returns. The existing premises run by local bodies for slaughtering small animals in various towns also need to be suitably modified, equipped and renovated to ensure safety of the meat being produced. There should be a target to train 200 butchers every year to meet the demand of skilled man power. Establishment of

new ultra-modern slaughter houses should be promoted through venture capital, subsidies and other incentives. Quality control of meat production to ensure its safety for the consumers, a neglected area so far, needs to be given priority. All these measures will certainly give boost to the meat industry in the state.

On an average, 25% of the buffalo population (~ 15 lakh heads) including almost all males; spent, old, low yielding and infertile females are available for meat production every year. If this available population is properly utilized, the meat production in the state will jump to 7.0 lakh tons from the current production of 3.24 Lakh tons (2011-12). In the coming decade, poultry population is expected to rise to 50 million producing 7500 million eggs. The target is to process, at least 25% of poultry produce, for value addition such as frozen chicken meat, egg powder etc.

20.1.9 Identification of Elite Hariana and Sahiwal Cows

Conservation and propagation of Hariana and Sahiwal cattle should enjoy parity with Integrated Murrah Development Programme as described under "Goverdhan"- the integrated cattle development programme. Hariana cows with a peak yield of 10 liters and Sahiwal cows with a peak yield of 15 liters should be identified through field performance recording and included in cash incentive programmes. A minimum of 100 pockets each consisting of at least 10 elite cows should be targeted for identified breeds. At least one hundred elite bulls of each identified cattle breed should be produced at the bull mother farms/ in situ.

20.1.10 Germplasm Production

There being no alternative to artificial insemination for mass genetic improvement of the stock, the target for production of frozen semen needs to be doubled to 2.00 million and 6.00 million doses for cattle and buffalo, respectively, to achieve the maximum coverage through organized breeding as well as to exploit the flourishing semen market. There is no dearth of meritorious Murrah bulls in the state as the on-going Field Performance Recording programme and the Field Progeny Testing Scheme for Murrah buffaloes are good means to produce quality bulls. Almost more than two hundred bull sheds/ pens and a new ultra-modern sperm station with capability to produce sexed semen if the technology is procured (already in process) need to be constructed to double the production of frozen semen. Exotic bulls are in short supply throughout the country. About twenty bulls will have to be either imported or produced locally by importing quality semen or embryos. Use of Embryo Transfer Technology must be promoted to produce breeding bulls of highest genetic merit to begin with at least, 20% of the total semen doses will have to be elite sex sorted semen to increase the proportion of females. For producing sexed semen for buffaloes, cross-breds and indigenous cattle, the technology (patented) will have to be procured through an agreement.

20.1.11 Niche Marketing for Haryana Livestock Products

Haryana is dominated by Murrah which is well known for its quality products including

Mozzarella cheese, high quality curd, healthy A-2 type milk and lean low cholesterol meat etc. In a P-P-P mode, the state govt. needs to target production and marketing of these special quality products at a premium price achieving a minimum growth increment of 15-20% every year in niche livestock products. Buffalo milk has unique qualities. The milk should be marketed as Buffalo or Cow milk and not based on fat content as is the practice at present.

20.2 SUMMARY- Livestock Developmental Goals –A Quantified Vision for 2020

Based on understanding of the 'State and Status of livestock' in Haryana, a road map has been developed, as a part of this report, to lay the path for an all round development of the most vibrant sector of the state economy. The programs, projects and the policy issues together are drawn up in a manner, that if implemented, they will ensure a status of a front line standing for the farmers of the state, and shall simultaneously increase the economic standing of the livestock owners, potentiate the primary sector growth in the GDP and establish the state of Haryana as a model state for agriculture growth and development in the country. Critical parameters for such growth process have been enumerated and their quantitative and qualitative role identified in the developmental scenario.

Developmental Scenario Targets at A Glance

Sr No	Parameter	Target	Present Status
1.	**Proportion of Females in Production**	50% of population	32%
2.	**Animal Productivity**		
	a) Indigenous cattle	5.7 Kg	4.9 Kg
	b) Exotic/ Crosses	10.0 Kg	7.9 Kg
	c) Buffalo	8.75 Kg	7.1 Kg
3.	**A.I. Coverage** (% of breeding stock)	90%	~ 60%
4.	**AH&D Service Provider 24X7**	All villages	~ 20% villages
5.	**Compounded Large Ruminant Feed** (annual)	7 MT	< 2 MT
6.	**Green Fodder** (annual)	65 MT	38 MT
7.	**New Commercial Dairies**	500 per annum	~ 1000 in all
8.	**Animal Health Care**	i) Zero tolerance against diseases.	No such prog.
		ii) Control prog. for H.S; Brucellosis and Rabies	FMD- CP only
		iii) 100% of the required Vaccines and diagnostics.	Only a few vaccines

9.	**Age at First Calving**		
	a) Ind. Cow & Buffalo	36 months	> 42 months
	b) Exotic/ Crosses	26 months	> 32 months
10.	**Calving Interval**	14 months	~ 18 months
11.	**Insemination/Conception**	1.8	> 2.5
12.	**Meat Production**		
	a) Modern slaughter houses	6 (No)	One only
	b) Meat Production (000 tons)	700	324
13.	**Poultry**		
	a) Population	50 Million	28.7 Million
	b) Egg production	7500 Million	4114 Million
	c) Processing of poultry produce	25% of total	Almost none
14.	**Identification of Elite Cows/ Bulls**		
	a) Hariana & Sahiwal cows	100 pockets of 10 cows for each	No such prog.
	b) Bulls of identified cattle breeds	100 bulls of each breed	~50 bulls of each breed
15.	**Germplasm Production**		
	a) Cattle frozen semen doses	2.0 million	1.0 million
	b) Buffalo frozen semen doses	6.0 million	3.0 million
	c) Sexed semen doses cattle	0.4 million	2,000 doses imported
	d) Sexed semen doses buffalo	1.2 million	None
16.	**Marketing of Niche Livestock Products**	P-P-P mode with annual growth of 15- 20%.	No such Prog
17.	**Total Milk Production***	> 12 MT	6.66 MT
18.	**Per Capita Availability of Milk**	> 1000 gm	708 gm

* Targets as and when programmes Implemented

Chapter-XXI

21.0 Salient Recommendations

The most vital agriculture component for food and nutritional security and economic profitability among the farmers, with or without land, has been identified to be the "livestock".

A set of recommendations is being made to translate the aspiration of the Haryana Farmers having a strong indigenous livestock based production system, to potentiate the livestock production in a sustainable mode and ensure greater profits from livestock.

The recommendations are supposed to significantly impact qualitatively and quantitatively the sectors in terms of agriculture production, economic growth rate, animal production and productivity, veterinary medicine, animal health as well as veterinary medical education.

In summary, the major recommendations' on livestock production include breed and elite animal identification and registration, developing Brand Haryana for livestock products, niche marketing of buffalo brand products, and buffalo spots for meat, indigenous cattle development focus on "Govardhan", production services delivery, production incentives and subsidiaries, feed and fodder availability program "Charamani", comprehensive rural backyard poultry production system, animal marketing, health support, vaccinations and transboundary disease control, movement of animals within and from outside the state, rearing incentives, male rearing for breeding and genetic improvement, use of semen of only high genetic merit, sexed semen and biotechnological applications, animal conservation, control of stray animals, pricing of milk and animal products, marketing facilitation, hygienic animal slaughter and slaughter houses of different capacities and species including poultry, rural poultry program and state health/disease surveillance monitoring control and data management, goods and services delivery systems, biosafety of products, quality control for production inputs, animal welfare, environment management and ecological sustainability, and institutions and policies for quality control regulations and evaluation.

Animal Improvement

1. A **livestock mission** with well defined objectives, goals and action plan, detailed in the report, needs to be launched immediately to achieve rapid growth and development of livestock sector, total agriculture production and economy of the state. P-1
2. Budgetary support to the livestock sector and the sector allocations should be in proportion to its contribution to GDP and the socio- economic benefits. P-1
3. **A State" Pashu Vikas Yojna" (PVY)** should be established on the lines of RKVY bringing convergence and congruence of all the livestock related and community development programs. P-1

4. Universal **identification and registration** of all animals along with generation of data on all aspects of animal rearing- the basic pre-requisites for any improvement programme and future planning must be undertaken at the earliest. P-1

5. For proper record keeping, Animal Health Cards, Animal Ration Cards and Animal Identification Cards or **Animal Passports** should be issued to all animals. This should start in a phased manner with large ruminants as first priority. P-2

6. Considering the decline in the population and production of indigenous Hariana and Sahiwal cattle in the State in recent decades, it is felt essential that the government should extend **incentives / inputs for cattle** rearing at rates higher than being provided for buffalo rearing. P-1

7. The problem of large population of **stray and male cattle** having adverse affects on livestock health and introduction / spread of diseases needs to be dealt effectively with appropriate administrative and policy interventions. P-2

8. **Breed societies/associations/** forums needs to be established for all species of livestock relevant to the state, with the responsibility for maintaining registers for breeds, evolving the breeding targets for the breeds, breeding plans, and guarding the interest of the breeds/breeders. P-2

9. Conservation and utilization of **AnGR** can be best achieved through a joint approach by involving livestock keepers, farmers, NGOs, Gaushalas, Breed Societies and all other stakeholders. P-3

10. Field **performance recording** and field progeny testing programmes should be undertaken for conservation and genetic improvement of indigenous cattle breeds P-1

11. Integrated cattle development program named **GOVERDHAN** must be implemented for a balanced growth of the sector and to increase the share of cow milk to 30% (15% at present) in the next decade. P-1

12. Among buffalo the advantages of its milk and other animal products are lost in the shadow of total bovine animal products**.** Extensive concerted efforts should be made to project buffalo as a "**brand". P-2**

13. Intensive buffalo male rearing program, defined as **Buffalo Spots (BS)** should be introduced involving a feeding regime using roughages and concentrates, health care, disease prophylaxis and control, address traceability and quality control issues and have a facility for recycling of animal waste. These buffalo spots will serve as export units linked to central slaughtering facilities where optimum carcass utilization is practiced with maximum profitability P-3

14. A universal livestock **insurance scheme** with a corpus fund covering losses due to permanent production and reproduction failure, natural calamities and disability in working animals should be introduced. P-1

15. **Pashupalak Credit Cards** similar to Kisan Credit Cards with farmer friendly credit facilities should be provided to animal farmers. P-3

16. The nutritional demand of food grains are showing a distinct shift due to livestock products fulfilling the nutrient needs and thus impacting on the projected food grains need. This also implies a shift in land use planning for grain production and calls for strategic change in selection of special **feed grain crops** production for animal feeding. P-2

17. Efficient **market linkage** should be provided to get better returns for both primary and value added livestock produce. P-2

18. The huge livestock resources and infrastructures owned by the large number of **Gaushalas** in the state need to be rightly channelized through multi-pronged strategy to achieve conservation and improvement of the stock in an environmental friendly way. P-3

Funds and Budgetary Support

1 State financial allocation and future policy document should accept the shift in quantum increase in livestock contribution to GDP and recognize that agriculture growth stems from the livestock growth through appropriate and adequate **financial allocation** in direct proportion to its contribution. P-1

2 A fixed proportion (as per GDP contribution) of the **institutional credit** be earmarked for the fund-starved livestock sector. P-1

3 All **subsidies** should be directly given to livestock owning farmers rather than making these credit-linked. P-2

4 As powerful shifts are occurring in crop production towards alternate agriculture spearheaded by livestock (dairying, piggery, poultry, and ancillary industry) operations and agricultural diversification being in favor of high value livestock, special investment incentives and subsidiary programs should be extended to **intensive livestock production** particularly in peri-urban and rural situations. P-2

5 The **commercial dairy** units with an intensive, high-input, demand-driven milk production system, being the future of livestock sector, should be encouraged through various incentives, liberal subsidies, capacity building and other promotional means. P-1

6 The newly established **University of Veterinary and Animal Sciences be provided adequate funding** and supported through policy initiatives for its expansion to establish the proposed new Faculties and take up the need based mandated research and development work P-1

Animal Production

1. To **upgrade** the genetic benefits of cross breeding program among the nondescript indigenous cattle, it is recommended to extend the limits of exotic inheritance to above 50%. P-3
2. The **share of artificial insemination** using semen of pedigreed/ proven bulls should be increased to > 90% in bovines over the next five years. Simultaneously, the production of high pedigreed, quality Frozen semen should be doubled. P-2
3. The progeny born to high yielding (Elite) cows and buffaloes should be given feed at concessional rates for better growth and early maturity. Special **'yellow' Animal Ration Cards** may be issued for its effective implementation. P-2
4. Milk should be **marketed as cow or buffalo** milk rather than based on fat content such as toned or double toned milk etc. The state needs to issue a notification and complete all legal formalities in this regard to lower standards for fat content in the cow milk to 3.5% from the existing level of 4.0% to bring it at par with many other states and promote cross breeding. P-1
5. The base price of the milk should be based on its production cost plus a profit margin of at least 30% to the producer. The basic price may be supported by the Government through grant in aid/ subsidies to the dairy cooperatives in the initial phase. A special body may be constituted for pricing of milk. P-1
6. The capacity of the organized sector for handling and value addition of **surplus milk** should be at least doubled in next 5 years. P-2
7. Processing and value addition to manufacture **Ethnic Indian products or niche products** at local level need to be supported. Interim processing at farmers' level by using mobile modular processing facilities organized by the Government should be encouraged. In the process, the farmer will be at no risk. P-1
8. The **superiority of Buffalo milk should be exploited** by promoting manufacture and marketing of niche products of the buffalo milk. **Buffalo-based dairy products** should be promoted as Brand Haryana and the products may be named with prefix-**Murrah. P2**
9. The existing level of **support and subsidies** on purchase of animals, modern animal sheds, automation of dairy farm operations, clean milk production, cold chain including bulk coolers and refrigerated vans, TMR mixer, fodder cultivation and fodder banking, harvesters and chaff-cutters etc. should be suitably enhanced. P-1
10. Package of practices for **intensive, in-door rearing of sheep and goat** should be worked out and popularized in view of disappearing pastures and grazing land. P-2

11. **Community Animal Housing** through SHGs, groups of stake holders or interested agencies should be promoted and supported. The small and marginal farmers should be encouraged to go for livestock farming rather than mixed farming of crop and livestock for better returns. P-2

12. **Special managerial cadre** among the Professionals should be created for Hospital Management and Production activity often considered as a low priority. P-3

13. **Farmers be updated** on new livestock technologies, innovations, best practices, weather forecast, market intelligence and input availability through mobile phones, kiosks, community radio programmes, dedicated TV channel, print and multimedia. P-2

14. To **attract private investment**, dairy farming should be provided tax-holiday, if not total tax exemption. VAT should be removed from all dairy inputs. P-2

15. Terms and conditions including the rate of interest on all **loans** should be at par with crop husbandry. P-1

16. Electricity tariff and other **concessions** for dairy and poultry farming must be at par with crop husbandry and fisheries, P-1

17. Soft loans should be advanced to establish **small dairy units** even to those having no land. Livestock should be considered an asset for this purpose. P-1

18. Constitution of Saving and Credit- linked **Women Self Help Groups** should be promoted to widen the scope of micro-financing for different activities of livestock. P-2

Meat Production

1 **Feed-lot concept** with incentives should be established to raise quality sheep and goat meat animals. Technical know-how and liberal credit facilities need to be arranged by the state. P-1

2 There is a need to develop and propagate **mutton type sheep** breeds as demand for wool fibre has considerably declined. Similarly, **dual type goat breeds** (milk and chevon) which are easy to rear in-doors would have better future under the changed circumstances. P-2

3 The state should develop a comprehensive organized slaughter program including construction of modern hygienic abattoirs. Local bodies should be made responsible to ensure **hygienic slaughter** facilities. P-3

4 A **modern slaughter house** should be established for a cluster of 2-3 districts with facilities for **processing** of the non-eatable parts such as digesta, bones and glands etc. for value addition and to produce by-products for the allied industries. P-3

5 Regular **trainings** and health checkups of butchers should be mandatory. P-3

6 Sale of meat should not be allowed unless the **quality is certified** by the authorized veterinarian. The meat- shops must have cold storage facilities with adequate power back-up. P-1

7 **Buffalo** as an excellent source of lean meat with low fat should be popularized. Modern processing units should be encouraged to produce quality meat that meets the food safety standards. P-2

8 Feed-lots for **male buffalo calves** need to be supported and promoted so as to convert them into performing assets rather than being wasted due to negligence. P-3

9 At least 25% of the **poultry produce** should be processed and value added for better returns. P-1

10 Leather production needs to be developed along with meat production and the state should support a **skin and hide processing** unit. Proper carcass utilization must be ensured by the local bodies to protect the environment and prevent spread of diseases. P-2

Poultry Production

1. There is an urgent need for a comprehensive '**Rural Backyard Poultry Development**' program as a potent instrument for better economy, poverty alleviation and nutritional security among poor landless rural population, particularly for including BPL families to enable them to gain supplementary income and nutritional support. P-2
2. To promote poultry production, **Eggs** (Non fertile) may be provided as an alternative/ option in the **mid-day meal** as they cannot be adulterated. P-3

Feed, Fodder and Nutrition

1. Intensive R&D efforts should be made to evolve **fodder varieties** with higher yield, better nutritive value and low water requirement as per the agro-climatic zones. A rolling plan for fodder seed production needs to be put in place. P-1
2. Fodder production requires to be augmented through an end to end programme- **CHARAMANI** involving special incentives and support measures to increase the area under fodder crops, free supply of seeds for new high yielding varieties, demonstration units, fodder banking, fodder preservation and contract farming of fodder crops etc. P-1
3. Special incentives and assured marketing should be provided to promote production of **quality fodder seeds. P-1**
4. Agro-forestry and other **non-conventional** sources ought to be explored for feeding of livestock P-3

5 Export of oil cakes must be banned. Import of oil seeds rather than oil should be preferred. P-2

6 **Import of feed ingredients** for poultry and livestock should be allowed duty-free. P-2

7 A **state-of-the-art feed testing laboratory** should be established for monitoring quality of cattle and poultry feed and to check propagation of poor quality or spurious feeds. P-2

8 The use of **by-pass nutrients, area-specific mineral mixtures** and technologies for fodder enrichment & densification be popularized and promoted. P-2

9 The concept of **Total Mixed Ration** (TMR) needs to be promoted extensively at least among the commercial dairy farms for economical and balanced feeding. P-2

10 **Common lands** should be **leased out** only for fodder production or community pasture development. P-3

11 **Community/ SHG fodder banks** and silage making need to be promoted through special incentives. P-3

12 As the feed demand projections will outpace the food demand in the coming years as illustrated by the current trends of food preferences and the market demands, there should be a policy structure in place for **coarse grain production** as a substitute. P-3

13 An incentive to farmers on **renting land for production of fodders** e.g. Berseem, Lucerne, Maize, Oilseeds (Mustard, Ground Nut and other) is advised because these lands are causing low GHG problem as compared to rice-wheat system and generating high protein supplement for their livestock. P-2

Environment and Animal Welfare

1. Production of **biogas, bio-manure (Vermi compost) and use of solar energy should be mandatory for medium to large sized dairy units. P-2**

2. **Environment friendly** feeding, management and housing practices should be used to reduce risk of biotic and abiotic stresses giving priority to animal welfare. P-2

Health and Reproduction Management

1. There is a need of a **state-of-the-art referral laboratory for SPS certification of animal** products in respect of pathogens, mycotoxins, residues of antibiotics, pesticides, preservatives and heavy metals.P-2

2. Haryana Veterinary **Vaccine Institute** should be further strengthened and fully equipped to produce combined/ polyvalent, easy to administer vaccines against all prevalent diseases and the required diagnostics. P-3

3. Investigative **diagnostics and sero- surveillance** be promoted to build a strong epidemiological data base to take effective and timely preventive/ containment measures. Private or P-P-P mode diagnostic laboratories be encouraged. P-2

4. **State-of-the-art disease diagnostic laboratories should be established** at divisional levels with adequate mobility and a Referral Centre at Hisar. P-2

5. Co-operation of Village Panchayats should be sought for 100% vaccination through incentives and additional developmental grants and animal **vaccinations be included in their work charter**. P-1

6. Creation of **small disease- free area/ zones** with emphasis on export oriented production needs to be encouraged. P-2

7. An independent **Veterinary Drug Controller** should be appointed in view of the fast increasing volume of veterinary drugs, medicines, vaccines and biologicals etc. for an effective monitoring of their quality. P-3

8. One **polyclinic** for every two districts so that farmers do not have to travel long distances to get specialist services. P-2

9. All veterinary services including diagnostic laboratories should be necessarily mobile. A fleet of **mobile vet clinics** should be introduced in each district as per LS population for providing 24x7 vet services at farmers' door. P-1.

10. A State level **Zoonoses Co-ordination Committee** with sub- committees at district level needs to be constituted under the umbrella of Department of Animal Husbandry to bring about close association among Veterinarians, Medical professionals, wild life experts and other related departments focusing on one- world one- health concept for efficient handling of the newly emerging and re-emerging deadly diseases having zoonotic significance. P-3

11. The on-going **zero infertility** program needs to be further strengthened/ expanded to achieve the goal of one cow/ buffalo-one year-one calf. P-1

12. Capacity building of field functionaries in **Assisted reproductive techniques**/ gynaecological skills and controlled breeding through judicious use of hormones and other drugs should be further strengthened. P-1

13. The **success story of FMD-CP** needs to be replicated for H.S., Brucellosis and other dreadful diseases. P-2

14. The Veterinary University should evolve suitable birth control methods that are easy to apply under field conditions for **Blue Bull (Rose/ Neelgai) as well as stray dogs and monkeys. P-3**.

15. The research agenda for the university should be need based and not project oriented and decided/developed in consultation with line departments and stake holders. P-2

16. Veterinary **degree curriculum** should be modified to meet the changing requirements of manpower, to face new challenges and to deliver quality professional services. P-2

17. Modern **Farm to Fork demonstration units** for all relevant livestock species covering rearing, production, processing and marketing etc. should be established for “Hands-on-Training” and to attract potential entrepreneurs. P-2

18. Training, **capacity building and skill up-gradation** of animal farmers, in particular women, and the field functionaries at regular intervals, should be a continuous process with adequate emphasis on cheap (value for money) and easy to adopt (value for many) techniques. P-2

19. The recent controversies in terms of the genetic makeup of protein casein in milk namely **A2 or A1 gene expression** need elaboration among our Zebu and Buffalo breeds particularly since the association of A1 milk has been linked to several diseases in human. P-3

Assisted Technologies

1. The state has to **implement these techniques** as there can be no other route to reach our targets in a time bound fashion in production. Similarly new biotech diagnostics, drugs, biologicals, vaccines, have altered the scenario of animal health with more efficient disease control. P-1

2. Production of **Sex-sorted semen** for buffaloes and cross- bred cattle must be given priority by procuring the technology for this purpose. P-2

3. Modern bio-techniques such as **ETT, IVF/ IVC, ONBS** etc. should be introduced and promoted for conservation and faster propagation of superior germ plasm. P-1

Convergence

1. **Convergence** of various programmes and schemes for livestock with a common goal (rural development) but being run by different departments and agencies needs to be ensured to harvest full benefits through synergistic effects and better utilization of resources by avoiding duplication and over-lapping. P-1

2. There is a need to adopt **integrated convergent approach** for agriculture and LS programs working towards one common goal with convergence or co-ordination leading to better harvesting of benefits with less expenditure. P-1

Extension

1. Extension to empower the animal owner's capacity to utilize his resources efficiently and economically for preparing safe animal food products in a sustainable mode in a disease free manner. This will thus require a paradigm shift in the extension methodology with **delivery of goods and services. P-1**

2. A **Green Animal Environment Board** (GAME board) with a mandate to formulate codes and practices based on the concept of green and clean technologies must be setup. P-2

3. Dissemination of latest information/knowledge to the end-users be given top priority. P-1

4. The **portal** www.pashugyan.gov.in or www.pashukhabar.gov.in needs to be started in right earnest incorporating answers to the farmer's needs including those on feed, fodder, nutrient, quality, hygiene, value addition and marketing, in a live interactive manner. P-1

Websites

Department of Economic and Statistical Analysis Haryana
http://esaharyana.gov.in/

Department of Animal Husbandry & Dairying, Haryana
www.pashudhanharyana.gov.in/

Department of Animal Husbandry, Dairying & Fisheries, Govt. of India
www.dahd.nic.in/

Ministry of Statistics and Programme Implementation
www.mospi.nic.in/

Annexure 1

HARYANA KISAN AYOG

CCS HAU, CAMPUS, HISAR

NOTIFICATION

No. HKA/10/_____ **Dated, Hisar, the:**

The Chairman, Haryana Kisan Ayog is pleased to constitute the following working group on Animal Husbandry for Haryana:

1. **Dr. M. L. Madan, Former DDG(AS) and Vice Chancellor - Chairman**
2. **Dr. N. K. Khurana, Principal, HVTI, Hisar - Member**
3. **Dr. Arun Varma, Former ADG, ICAR - Member**

Terms of Reference :

- To analyse and review the present strengths, weaknesses, threats and opportunities in the Animal Husbandry and Livestock Sector in the State and propose suitable corrective measures.
- To study problems of livestock farmers in Haryana and suggest measures to overcome their problems/constraints.
- The working group to examine the current support available to livestock sector from the state/central governments and suggest further pro-poor policies for all round development and augmentation of livestock production for inclusive growth.
- To suggest appropriate measures for conservation and productivity enhancement of Murrah buffalo, Hariana cattle and other livestock breeds in Haryana.
- To suggest short term and long term measures for augmenting feed and fodder resources for enhanced productivity of livestock.
- To examine current technical support and infrastructure facilities available for livestock health management and suggest further strengthening including disease diagnosis, prevention and control; developing vaccines and diagnostics, preventing transboundry and exotic diseases through quarantine measures and delivery of veterinary services in the state.
- To suggest ways and means for enhancing value addition of dairy products through appropriate processing, including the production of Mozrella cheese, for export/internal consumption and to ensure assured income.
- The working group may also suggest the scope for diversification in livestock sector in the state, particularly development of poultry, rearing of male buffalo calves, sheep, goat and piggery, rearing of Emu etc.

§ The existing infrastructure and policy support for financing, insurance and marketing of livestock and livestock produce may be reviewed and suggestions be given for improvement for minimizing the risk and enhanced income to the farmers.

Other Terms and Conditions:-

1. On submission of report, the members will be entitled for a lumpsum honorarium of Rs. 25000/- each, whereas the chairman will be paid an honorarium of Rs.50000/-.
2. Members of working group will be paid TA for attending meetings on actual basis and an honorarium of Rs. 2000/- for each meeting.
3. The Commission will bear the cost on typing, printing etc. and for conducting the meetings. In case if any meeting is to be held by the group elsewhere, the expenses will be paid on actual basis.
4. The working group should submit its report preferably in four months from the date of this notification.

Note: From Commission side, Dr. M.P. Yadav, Consultant will be the nodal person providing needed Technical backstopping, whereas Dr. R.S. Dalal, Member-Secretary will extend required administrative support.

Member-Secretary
Haryana Kisan Ayog

Endst. No./10/ _____ Dated, Hisar, the:

1. Dr. M. L. Madan, Former DDG(AS) and Vice Chancellor, House No. 842/6, Urban Estate, Karnal-132001, Haryana, Ph. 09896017878; Email: mlmadan@hotmail.com
2. Dr. N. K. Khurana, Principal, Haryana Veterinary Training Institute, Hisar, Ph. 09416627881; 01662-239937; Email: nkumarkhurana@gmail.com
3. Dr. Arun Varma, Former ADG, ICAR (Discipline: Animal Nutrition), H.No. B-4, Sector-12, Noida-201301; Ph. 09313033642 ; 0120-2546233
4. Dr. M.P. Yadav, Consultant HKA, H.No. 365, Sector-45, Gurgaon
   Ph.09810820093; Email: yadav_mp@hotmail.com
5. The Financial Commissioner and Principal Secretary, Govt. of Haryana, Agriculture Department, Chandigarh.
6. PS to Chairman, Haryana Kisan Ayog

Member-Secretary
Haryana Kisan Ayog

Meetings Held / Visits Conducted

Date	Venue	Remark
28 Feb, 2011	HKA Camp Office, Gurgaon	Meeting with farmers of Gurgaon Division
07 April, 2011	Chandigarh	Interactive Meeting with Senior Officers, Animal Husbandry & Dairying and other Development Depts., Haryana Gov.
26 April, 2011	TAAS Office, PUSA, New Delhi	Meeting of Working Group with Dr. R. S. Paroda, Chairman, Haryana Kisan Ayog to discuss Road Map / Action Points for Livestock Sector
22-23 July, 2011	CCSHAU,Hisar	Consultation Meeting with Senior Officers and Scientists CCSHAU & LLRUVAS, Hisar
15 Sep, 2011	Chandigarh	Meeting with Senior Officers of Dept. of Animal Husbandry & Dairying, Haryana
12 Oct, 2011	Ludhiana	Visit to Dairies and Interaction with Punjab Dairy Farmers and Industry
13 Oct, 2011	Chandigarh	Interface Meeting with Director and Senior Officers of Animal Husbandry Department, Punjab
02-03 Jan, 2012	Hisar, Bhiwani, Jind	Working Group Visited Goshalas at Hisar and Bhiwani, and Semen Station Dharauli, Jind
03 Jan, 2013	Jind	Visit to Lakshya Dairy, Jind and Interaction with Senior Officers Dept. Animal Husbandry & Dairying, Haryana
19 April, 2012	HKA Camp Office, Gurgaon	Meeting of the Working Group
13 Aug, 2012	HKA Camp Office, Gurgaon	Meeting of the Working Group
22 Aug, 2012	HKA Camp Office, Gurgaon	Meeting of the Working Group

28 Aug, 2012	TAAS Office, Pusa, New Delhi	Meeting of the Working Group
11 Oct, 2012	TAAS Office, Pusa, New Delhi	Meeting of the Working Group
16 Oct, 2012	TAAS Office, Pusa, New Delhi	Meeting of the Working Group
30 Oct, 2012	TAAS Office, Pusa, New Delhi	Meeting of the Working Group
29-30 Nov, 2012	TAAS Office, Pusa, New Delhi	Meeting of the Working Group
23-24 Jan, 2013	TAAS Office, Pusa, New Delhi	Meeting of the Working Group
26-27 Feb, 2013	TAAS Office, Pusa, New Delhi	Meeting of the Working Group
07 March, 2013	TAAS Office, Pusa, New Delhi	Meeting of the Working Group
06 April, 2013	NASC Complex, New Delhi	Brainstorming Session (BSS) to discuss the draft report on Animal Husbandry Development in Haryana
04 May, 2013	HKA Camp Office, Gurgaon	Working Group Meeting to incorporate the suggestions received during the BSS
25 May, 2013	HKA Camp Office, Gurgaon	Meeting of the Working Group
31 May, 2013	Committee room of Director, NDRI, Karnal	Consultative Meeting on Milk Pricing

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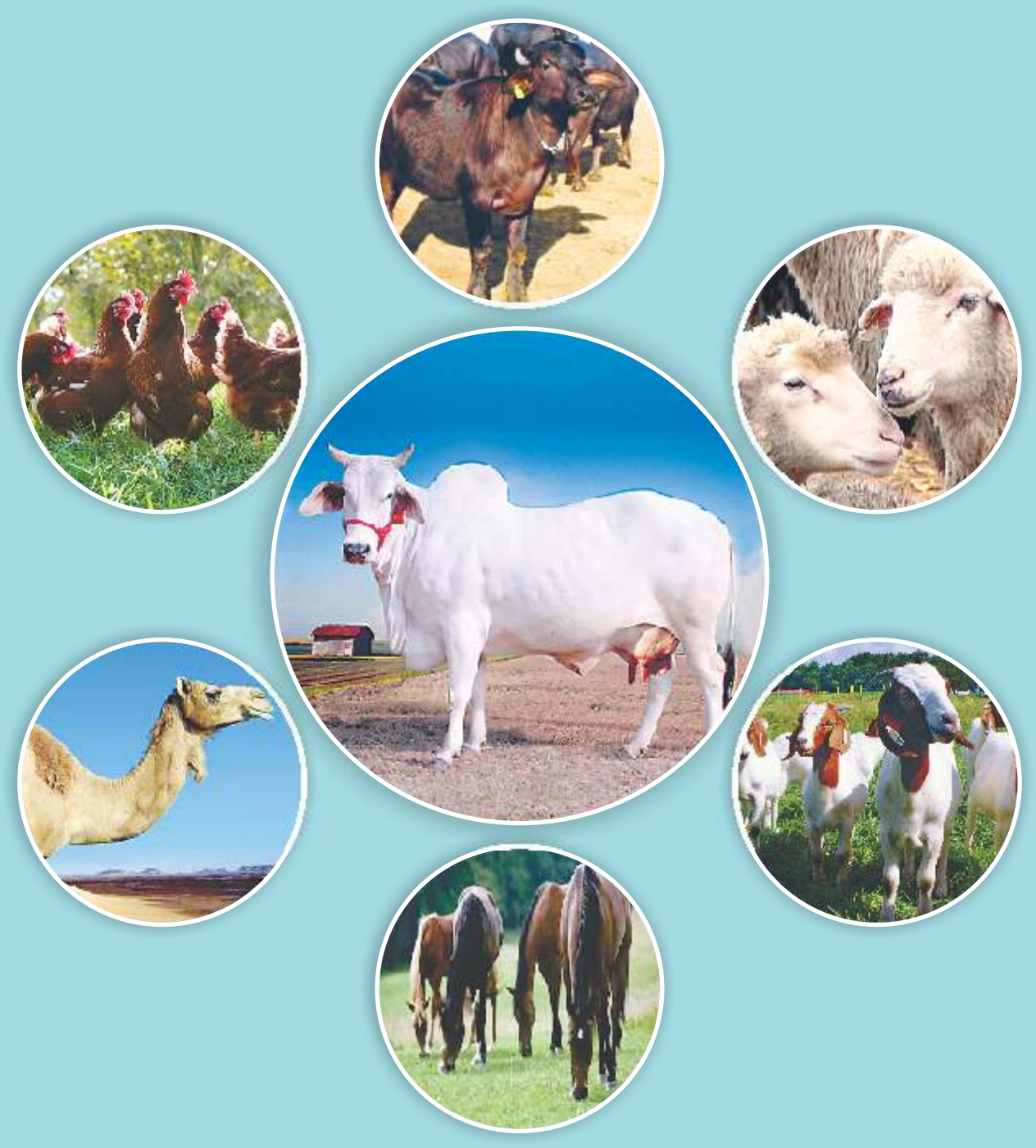

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