

Sustainable Livestock Production for Livelihood Improvement



Livestock sector of India is one of the largest in the world and provides significant contribution to the national economy and socio-economic development of the country. It plays an important role in providing employment, nutritional and livelihood security to majority of the rural farming community. The vast genetic diversity of livestock provides better scope for increasing the productivity and so continuous efforts are being made for the genetic improvement of various livestock species of the country. It is well understood that the traditional livestock production system being followed in the country for a long period, now needs to be modified according to the availability of farm and natural resources. For this, the scientific and technical advancements made in the fields of breeding, nutrition, reproduction and health management need to be applied under field conditions holistically to overcome the constraints faced by the farmers in livestock rearing. This book deals with the major and important aspects of advancements made in the field of animal nutrition and management, breeding and reproduction, health management for animal welfare and biotechnological approaches for productivity enhancement. The chapters given in the book are contributed by the eminent teachers/ scientists / experts in the respective fields who have prepared in a simple and organized manner. Hope this book will be very useful to the students, scientists, researchers, teachers, development agencies, policy planners and other workers engaged in cattle research and development programme in the country.



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For Livelihood Improvement

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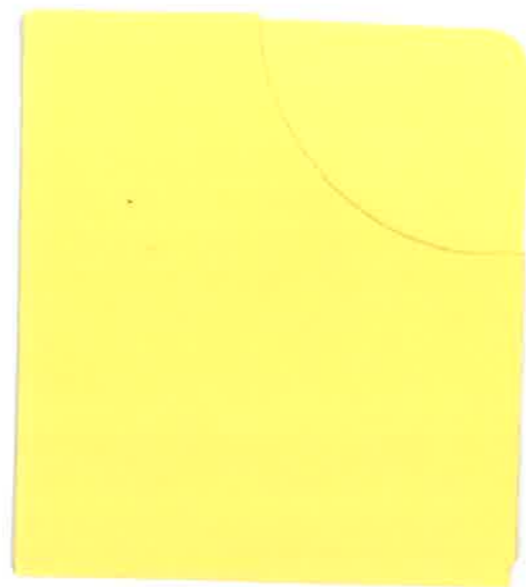


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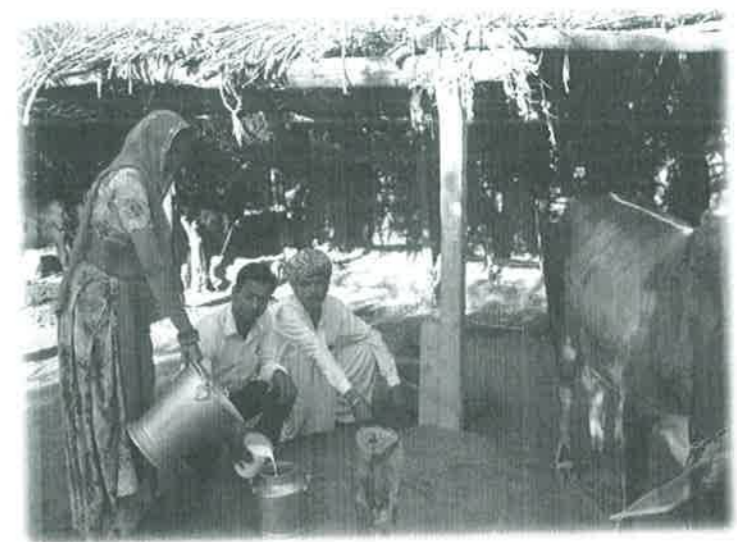
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Preface

Livestock farming in India has a long tradition and is rooted as an inseparable and integral part of the majority of small and marginal farmers as it contributes significantly to their livelihood in terms of employment opportunity, steady income and nutritional security. Livestock rearing in general is practiced as a subsidiary enterprise to agriculture under mixed farming systems providing power for various agricultural operations and dung to enrich soil fertility and biogas for energy generation. Livestock sector is one among the important sectors contributing around 5.1% to the national GVA and 29.8% to Agricultural GVA during 2018-19 (National Accounts Statistics-2020, Central Statistical Organization, GoI). It is also expected to emerge as the growth engine of agricultural sector in the near future. The ever increasing human population, changing lifestyle and food pattern, increase in purchasing power, etc. increase the demand for food of animal origin and the livestock sector is forced to increase its production and productivity to fulfill the nutritional requirement of the country.

According to the 20th Livestock Census, total livestock population of the India was 535.78 million, one of the largest countries in the world. It possesses 192.49 million cattle, 109.85 million buffaloes, 74.26 million sheep, 148.88 million goats, 9.06 million pigs and the rest covered by mithun, yak, horse and ponies, mules, donkey and camel. The huge livestock population with broader genetic diversity helps to feed the large human population with self-sustenance. However, it is always argued that the poor livestock productivity limits the profitability of integrated farming system. Hence, to ensure better economic returns, there is need to practice scientific animal husbandry and farming for better sustainability. Majority of the rural poor has more access to livestock rearing rather than crop production as the land availability is not accessible to all of them and so livestock wealth provides comparatively better return to poor farmers to overcome the poverty. Thus, improvement in livestock productivity will in turn ensure the livelihood security of farmers and the economy of the country.

Presently, livestock production system in the country faces lots of constraints viz., shortage in quality feed and fodder, low production potential of animals, higher disease incidence and reproductive failures, lack of marketing infrastructure, poor remuneration for farm produce, changing climatic conditions, etc. Animals are often raised on poor quality crop residues from agricultural lands and concentrate feeding is limited

only to productive animals. The above facts are the major reasons for the lowered productivity of indigenous animals.

These constraints need to be overcome for improving the production potential of livestock to meet the future demand of the country. Various technological advancements in terms of improvement of genetic potential, nutritional interventions, better health and reproductive measures are available presently to optimize the production. This book covers various aspects of the livestock farming enabling for sustainable livestock production which will in turn help in the livelihood improvement of the farmers. Editors express their sincere thanks and acknowledgement to the authors of various chapters for providing valuable information in different areas of livestock farming covering nutritional and management interventions to improve animal productivity, breeding and reproductive management, health management for animal welfare, biotechnological approaches for productivity enhancement and livestock farming and gender issues for socio-economic improvement of livestock farmers.

We express our sincere thanks to the Director, ICAR-Central Institute for Research on Cattle for providing necessary permission and encouragement in publishing this book. We sincerely hope that this book will act as a useful reference material to the researchers, teachers, students and farmers associated with animal husbandry and livestock farming.

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Chapter 1

Indigenous Livestock Diversity and its Conservation Under Indian Context

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Introduction

Livestock husbandry is an integral component of Indian agriculture supporting livelihood of more than two-thirds of the rural population. These sectors also play a significant role in supplementing family incomes and generating gainful employment in the rural sector, besides providing cheap nutritional food to millions of people. Livestock provides milk, egg and meat as nutritious food; draught power for agriculture; fibre; manure and domestic fuel; hides & skin besides possessing social, cultural, environmental values, etc. Livestock are the best insurance against the vagaries of nature like drought, famine and other natural calamities. Estimates for 2013-14 indicate that this sector contributed 137.7 million tonnes of milk, 74.75 billion eggs, 47.9 million kg wool, and 6.2 million tonnes of meat. The value of output from livestock sector at current prices was about Rs. 537535 crore during 2012-13 which was about 25.63% of the total value of output from Agricultural, Fishing and Forestry (AFF) at current price and 26.02% at constant prices (2004-05). During 2012-13, percentage share of GDP of livestock sector to GDP in agriculture was 27.25 and to total GDP was 4.1 at current prices. Milk is the main output of livestock sector accounting around two third (65%) of the total output by livestock sector. Meat and egg share 19.8% and 3.8% of the value of livestock output.

Animal Genetic Resource Scenario in the Country

India has traditionally been a mega biodiversity center and rearing of domesticated animals of different species viz. cattle, buffalo, sheep,

besides duplication of efforts they are also compromising on the quality of training. Therefore, to do it more professionally different agencies should jointly prepare a training calendar looking into the strengths of each other. While developing such a training schedule, care should be taken in identifying relevant topics and matching these with appropriate institutions to impart training to the farmers and other stakeholders. For example, CIRB should focus on improved animal/buffalo husbandry, NDRI on dairy processing and entrepreneurship while LUVAS on health aspects so that their efforts are complemented. Areas of trainings should be determined on the basis of training needs of the farmers. Agencies like ATMA may provide funding for this purpose.

All the agencies of dairy development like research institutions, development departments, NGOs financial institutions, etc. are engaged in performing one or the other task. In this process it becomes imperative for these agencies to interact within and with different agencies through some modes in the formal setting. Any agency working in isolation would not be helpful in enhancing the milk production of the state. These must move in a coordinated manner and for which their basic pre-requisite is their close interaction among themselves.

The effectiveness of these elements in increasing milk production is also influenced by the overall government policies, plans and programmes, agroclimatic conditions of the areas as well as socio-cultural milieu of the farmers. Thus, all the subsystems interact with one another and work under the environment created by the government policies, agroclimatic conditions and socio-cultural milieu.

Since the farmers are the ultimate people who are responsible for adoption of recommended technology, increasing the milk production and thereby dairy development of the state. Thus, the model envisages that these agencies interact within and between in an open environment and influence farmers. Ultimately, most important modes of interaction may be identified and those used more frequently may be used for convergence.

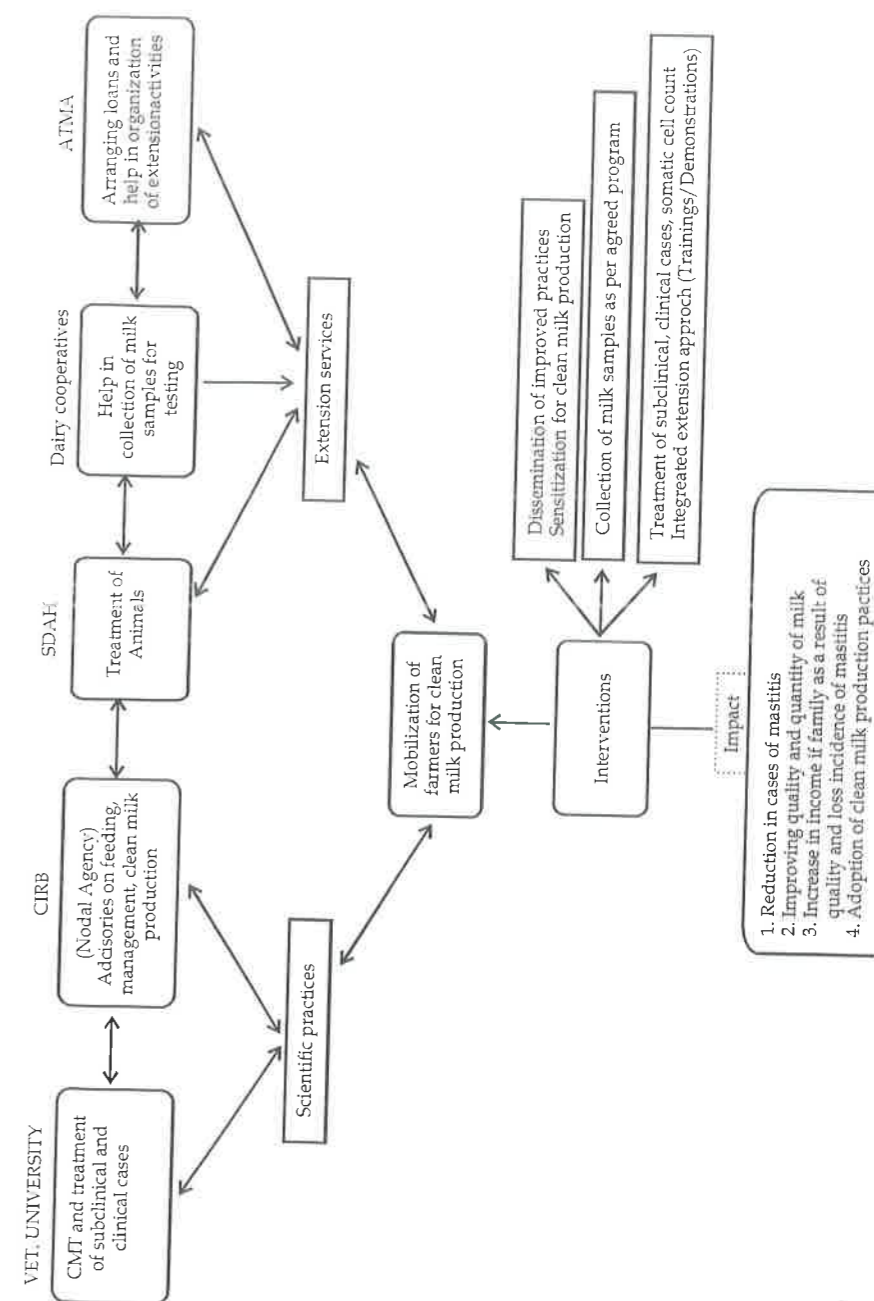


Figure 22.1: Model of convergence for dairy development

Roles and expectations of stakeholders for convergence

In Haryana, there are different stakeholders responsible for generating improved technologies through research. This new technology related to animal husbandry is passed on to the members of information dissemination system. The farmers are supposed to utilize this knowledge as suggested by animal scientists. The administrators and planners of different institutions like university, ICAR institutes and SDAH are responsible for framing the policies, guidelines, etc. The dairy personnel are responsible for milk procurement through milk co-operatives and value addition. The input agencies/organisations are vital for supply of feeds, medicines, etc. Thus, all the agencies/organisations of dairy sector are engaged in performing one or the other essential tasks. Hence, it is imperative for these agencies/organisations to seek each other's expertise for the betterment of farmers. Therefore, they need to understand and appreciate each other's roles and functions so that planning, implementation and evaluation of dairy development programmes can be effectively carried out.

Local needs, problems and other issues

The participatory planning process jointly by different research institutions of dairy development like NDRI, CIRB, LUVAS, development departments like state department of animal husbandry, dairy co-operatives, input agencies, etc. may identify local needs and problems. For example, to meet local needs of fodder, ATMA may be approached for financial support.

Identification of schemes and activities

Annual plan and activities of stakeholders of dairy development like ATMA, DRDA, RKVY may be studied and discussed at the district level consultation to address the identified needs. Since the introduction of appropriate livestock technologies is envisaged as an integral part of convergence planning for dairy development. Therefore, it is an opportunity to the technical institutions to reorient their R & D activities and make them relevant to field problems. ATMA may also allocate funds for convergence at the district level. Quantum of funds may be decided by the group.

Activity mapping

Consultation/workshops with stakeholders at various levels need to be undertaken. They may enable the related agencies departments

to prepare new activity mapping and time-frame for collective actions as per the outcomes/suggestion emerged in the workshop.

To effectively address the issue of convergence, a daylong meeting was held at CIRB to deliberate and delineate the roles and expectations of stakeholder agencies working for Animal Husbandry & Dairy development towards strengthening extension services on convergence mode. Participants represented various research & development institutions like CIRB, LUVAS, CCS HAU, Director ATARI (Zone-I), development departments like Animal Husbandry, HLDB, DRDA, ATMA, Dairy Co-operatives, Financial institutions like banks and private agencies. A few progressive farmers also actively participated and expressed their views. Major recommendations emerged are given as under:

Recommendations

1. Better linkages to be established between sub systems related to dairying through joint planning, implementation and monitoring of relevant programmes and activities.
2. Different sub-systems involved in dairy development should be sensitized to understand each other's roles and expectations on supplementary and complimentary mode.
3. Most frequently used extension methods like trainings camps, melas, interactive meetings, workshops, etc. may be used by different subsystems for interaction with other subsystems.
4. Presently, agencies involved in dairy development are observed to be working in silos and sporadically. Thus, synergistic approach is required in solving altitudinal and operational engagements.

Success stories of convergence in dairy sector may also be developed, documented and shared by the concerned departments to draw lessons and learning for convergence.

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