

**Summer Training at
Rajasthan Livestock Development Board
(May 1, 2013 – June 20, 2013)**

**Study of Animal Husbandry Activities of Rajasthan Livestock Development
Board (RLDB)”**

**By
Ashish Singh
Deepal Solanki
Chandra Bhushan Chaturvedi
Bhawani Shankar Sharma**

**Under the guidance of
Prof. Rahul Ghai
Dr. Susmit Jain
Dr. Tanjul Saxena
Dr. Alok Kumar Mathur**

**Post Graduate Diploma in Rural Management
2012-2014**



**Institute of Health Management Research,
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2014

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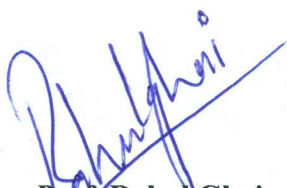
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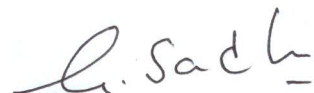
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This is to certify that, **Ashish Singh Baghela**, student of Post Graduate Diploma in Rural Management (PGDRM) from Institute of Health Management Research, Jaipur, batch 3rd (2012-2014) has undergone summer internship training at **"RAJASTHAN LIVESTOCK DEVELOPMENT BOARD"** and has done study on **"Study of Animal Husbandry activities of Rajasthan Livestock Development Board (RLDB)"**

The candidate has successfully carried out the work assigned to him during his summer internship training from **13th May 2013 to 13th July 2013** and his approach has been sincere, scientific and analytical.

I wish him success in all his future endeavors.


Prof. Rahul Ghai
Associate Professor
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Dr. Goutam Sadhu
Associate Professor
Cum Dean
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राजस्थान पशुधन विकास बोर्ड Rajasthan Livestock Development Board

Registered body of Dept. of Animal Husbandry, Govt. of Rajasthan under the Rajasthan Societies Registration Act 1958 (Act 28 of 1958)
(Registration No. 638/Jaipur/1997-98 dt. 25.03.1998)

Ref. No. 4097

Date:- 13/09/13

TO WHOM IT MAY CONCERN

This is to certify that Mr. Ashish Singh a student of IIHMR-Jaipur, Rajasthan has successfully completed two months (from May-13 to July-13) summer training in this office. During the period of his internship with us we found him to be punctual, hardworking and inquisitive.

We wish him every success in life.

Chief Executive Officer

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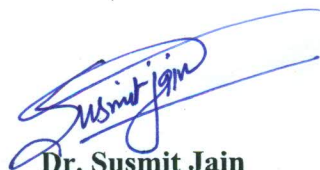
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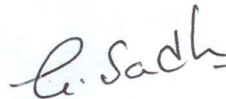
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The candidate has successfully carried out the work assigned to her during her summer internship training from **13th May 2013 to 13th July 2013** and her approach has been sincere, scientific and analytical.

I wish her success in all her future endeavors.



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This is to certify that Miss Deepal Solanki a student of IIHMR-Jaipur, Rajasthan has successfully completed two months (from May-13 to July-13) summer training in this office. During the period of her internship with us we found him to be punctual, hardworking and inquisitive.

We wish him every success in life.

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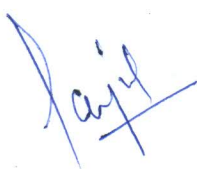
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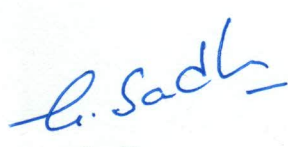
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This is to certify that, **Chandra Bhushan Sharma** student of Post Graduate Diploma in Rural Management (PGDRM) from Institute of Health Management Research, Jaipur, batch 3rd (2012-2014) has undergone summer internship training at **Rajasthan Livestock Development Board, Rajasthan** and has completed the study on “**Study of Animal Husbandry Activities of Rajasthan Livestock Development Board (RLDB)**”

The candidate has successfully carried out the work assigned to him during his summer internship training from **May 2013 to July 2013** and his approach has been sincere, scientific and analytical.

I wish him success in all his future endeavors.


Dr. Tanjul Saxena
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TO WHOM IT MAY CONCERN

This is to certify that Mr. Chandrabhushan a student of IIHMR-Jaipur, Rajasthan has successfully completed two months (from May-13 to July-13) summer training in this office. During the period of his internship with us we found him to be punctual, hardworking and inquisitive.

We wish him every success in life.


Chief Executive Officer



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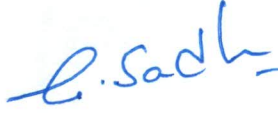
This is to certify that, **Bhawani Shankar Sharma** student of Post Graduate Diploma in Rural Management (PGDRM) from Institute of Health Management Research, Jaipur, batch 3rd (2012-2014) has undergone summer internship training at **Rajasthan Livestock Development Board, Rajasthan** and has completed the study on “**Study of Animal Husbandry Activities of Rajasthan Livestock Development Board (RLDB)**”

The candidate has successfully carried out the work assigned to him during his summer internship training from **May 2013 to July 2013** and his approach has been sincere, scientific and analytical.

I wish him success in all his future endeavors.


Dr. Alok Mathur
Associate Professor
Faculty and Mentor
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23/1/2014


Dr. Goutam Sadhu
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(Registration No. 638/Jaipur/1997-98 dt. 25.03.1998)

Ref. No. 4096

Date: 13/09/13

TO WHOM IT MAY CONCERN

This is to certify that Mr. Bhawani Shankar Sharma a student of IIHMR-Jaipur, Rajasthan has successfully completed two months (from May-13 to July-13) summer training in this office. During the period of his internship with us we found him to be punctual, hardworking and inquisitive.

We wish him every success in life.

Chief Executive Officer

Acknowledgement

“It is necessary to acknowledge all those persons who have directly shaped our work as well as lives”

We are extremely thankful to our **Institute of Health Management & Research Centre**, for giving us an opportunity to get hands on experience in the rural part of India. We also owe a great deal to our Organization “**Rajasthan Livestock Development Board**” **Shri Brijindra Singh Soopa** to help us in our endeavour. We would like to express our gratitude to Rajasthan Livestock Development Board team for designing the study format.

We are also thankful to **Dr. Prakash Sharma** and **Dr. Umesh Agrawal**, who assigned us this study & also helped us immensely in our project and ensured that our visit turns more meaningful.

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Last but not the least, from the bottom of my heart I wish to thank my family and my friends for being a constant support all through this period of time.

Ashish Singh
Deepal Solanki
Bhushan Chaturvedi
Bhawani Shankar Sharma

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Acronyms/Abbreviation

ADLSD	Assistant Director Livestock development
AHD	Animal Husbandry department
AI	Artificial Insemination
BAIF	Bartiya Agro Industries Foundation
CB	Cross Breeding
DRDA	District Rural Development Authority
FAO	Food and Agriculture Organization
FSB	Frozen Semen Bank
GOI	Government of India
ILD Centres	Intensive Livestock Development Centers
LN	Liquid Nitrogen
LSA	Livestock Assistant
MIS	Management Information System
MOET	Multiple Ovulation & Embryo Transfer Centre
NDDB	National Dairy Development Board
NGO	Non Government Organization
NPCBB	National Project for Cattle & Buffalo Breeding
RLDB	Rajasthan Livestock Development Board
SIA	State Implementing Agency

EXECUTIVE SUMMARY

1. Livestock make a major, although largely underestimated, contribution to rural development in developing countries. They produce food, enhance crop production and provide additional economic goods and services as well as cash income. The inclusion of livestock diversifies and increases total farm production and income, provides year-round employment and disperses risk. Sales of livestock products provide funds for purchasing crop inputs and for financing farm investments. Livestock often form the major capital reserve of farming households and, in general, enhance the economic viability and sustainability of a farming system.
2. The state of Rajasthan is largest in India having vast geographical area and diverse agro climatic zones. The present coverage by AI is only 16.97% in cattle and 12.22% in buffalos (overall average 14.52%). For covering 10% more breedable animals, the state requires more additional AI centres, which will require huge investment.
3. The indigenous cattle population is more than 90% of the total cattle population in most of the districts.
4. The major institution involved in AI work in the state are AH department, RCDF and NGOs (BAIF, JK Trust, Indiagen, Hiteshi Sansthan).
5. About 6 major agencies are providing AI facilities to the farmers in the state through 5201 AI centres, however, no information is available for other agencies.
6. There are 863 non functional AI centres of AH department and proper plan may be drawn to make them functional.
7. A natural service centres is covering 60-70 females every year, however, only 20% of them are maintaining the record. The owner is getting surplus of Rs. 2000/- to 2500/- per year and charge more to improve the viability of the centre.
8. All the AI centres must display breeding policy of their area outside their office and it should clearly indicate the type of Bull/ Semen to be used in a particular area, with a view to create awareness among farmers.
9. Farmers must be given proper training and regular guidance for maintenance & optimum use of bulls for natural service. The record keeping and its use are also to be included under such a training programme.
10. The state has 7 training institutes/ centres, which are with DAH and are satisfactorily managed.
11. Type of livestock is different in different Agro climatic Zones. In north and south Rajasthan, cross breed animals were more preferred and in western Rajasthan indigenous cattle were popular.

12. About 54% farmers were availing AI services, 26% were availing Natural services and 20% were availing both.
13. Women entrepreneurs should also be given preference in Dairy training program as they actually maintain the animals and the training may be organized at block level to ensure full participation.
14. Training program for young dairy farmers for a short duration of a week or so duration with an emphasis on practical and demonstrations may be taken on a massive scale.
15. Suitable scheme may be prepared with necessary incentives and buy back arrangements, under private sector, with facilities of MOET, to promote production of bulls for frozen semen centre and NS.

Foreword

Livestock have remained an integral part of the socio-economic fabric of rural India since time immemorial, as a source of livelihood and a provider of draught energy, manure and fuel. These functions, however, are changing in importance with economic development. Sustained rise in income and urbanization are now fuelling rapid growth in demand for animal food products, and the livestock are coming under pressure to produce more. India's livestock responded well to these changes.

Over the last three decades livestock production grew faster than crop sector as a whole and made significant contribution to agricultural growth, which is considered to be an important factor in poverty reduction in most developing countries.

Therefore, in rural India a growing livestock sector predict well for the low income households to augment their income and escape poverty. Though the small farmers have more opportunities in demand-driven livestock production, they have a formidable challenge of improving scale of production, its efficiency and quality to face the competition from large commercial producers in the market place, which is likely.

This study makes an important contribution to the understanding of the ground level realities of the livestock services delivery in the state of Rajasthan. It documents the relative's accessibility and performance of public and private service providers (NGOs, & etc), from the farmer perspective and estimates farmer's demand and willingness to pay for these services.. In this context especially the Department of Animal Husbandry, Rajasthan play an important role to provide and distribute the liquid nitrogen to the ground level for doing artificial insemination. Through this Department of Animal Husbandry, Rajasthan provide the room to participate for the other potential service provider so they can more easily provide the services needs to poor and non- poor livestock farmers. The study provides a foundation to understand the current scenario regarding the livestock and all its related activities.

Livestock needs development in some section as it facing challenges in the new era.

CHAPTER- 1

Introduction

1.1 Back ground

1.1.1 India is predominantly an agricultural economy with more than 70% of its population dependent on income from agriculture and allied activities. Next to crop production, Animal Husbandry is the most important activity in rural India. Resource poor small and marginal farmers and landless labourers maintain majority of the livestock. Marginal and small land holders own 71 % of cattle % of buffaloes, 66% of small ruminants, 70% of pigs and 74% of poultry. About 70 million rural household own livestock of one species or the other and 60 million among them own cattle and or buffaloes.

1.1.2 India stands first in terms of the bovine population having 19% of the world population. In spite of India's position as the highest producer of milk in world, it's productivity per-animal is very poor. It is only 1214 Kgs/lactation as against the world average of 2104 Kgs/lactation (FAA Statistics). This is mainly due to low genetic potential for milk production.

1.1.3 Genetic improvement is a long term activity and Government of India has initiated a major programme "National Project for Cattle and Buffalo Breeding (NPCBB) from October 2000 over a period of ten years, in two phases of five years each, with an allocation of Rs 402 crore for Phase-I and Rs920 crore for Phase-II.

1.2 Title: “Study of Animal Husbandry activities of Rajasthan Livestock Development Board (RLDB)”

Rajasthan covers an area of 342,239 sq km which is 10.43 % of total land area of the country. The human population of Rajasthan is 58 million. About three- fourth of our state's population an almost three-fourth of the rural population is Rajasthan live in rural areas, and over 70 percent of rural households, livestock. In addition to being an important source of income for poor households, livestock has many other important roles.

Livestock sectors of Rajasthan play an important role promotion of rural livelihood, closely, interwoven into the socio-economic fabric of the rural society, making investments in –development of this sectors the critical pathways for rural prosperity. Rajasthan is rich in agro-ecological diversity, and this diversity begins with the choice of species reared; breeds that have evolved, management and feeding practices, healthcare systems that are closely linked to the natural flora and local marketing systems.

Animal Husbandry in Rajasthan contributing to the tune of 13% in the state GDP, is not a mere adjunct or subsidiary to agriculture, rather it is developing as a major economic activity. It forms an important livelihood activity for most of the farmers, supporting agriculture in the form of critical inputs, offering informal opportunities, and finally being a dependable “bank on hooves” in times of need. It acts as a supplementary and complementary enterprise.

The value of livestock output has grown by over 4.5 percent per year from 1990-91 to 2011-12, there are expectations of even faster growth in demand for livestock product due to expected increase in income combined with the high income elasticity of demand for livestock product. This sector plays a crucial role in rural economy. The contribution of livestock to the GDP increased from less than 5 % in 1980-81 to approx 9 % in 2011-12. Keeping in view the importance of Animal Husbandry in economy of Rajasthan, Govt. of Rajasthan established Rajasthan Livestock Development Board as SIA for implementation of National project for Cattle and Buffalo Breeding.

1.3 Animal husbandry:

Animal husbandry is one of the most important and basic occupation for famers all across India. The profession is as old as the history of the place itself and has primarily been the main occupation of people in the village. Mainly cattle rearing are as a benefiting occupation in the most of the village of India. Animal husbandry and dairy development play a significant role in rural development. Animal husbandry accounts for a large share of agricultural income as well as employment.

1.4 Livestock:

Livestock is important part of the rural family this section needs development so it can sustainably provide the livelihood to the rural family in the 21st century which is standing with the new challenge. The growth in livestock sector is demand-driven it maintain biodiversity, promote the rural livelihood, and develop socio-economic of rural family and it's also preserving the cultural heritage. Provide the employment to people within their native place with the food security which reduces the rural-urban migration. Livestock remains the best way not only to improve farm incomes and accelerate growth, but also to reduce stress on natural resources which form farmers' production base. This needs better infrastructure and emphasis on integrated farming systems, combining crops and livestock, for different location-specific.

1.5 Artificial insemination:

Artificial insemination is the technique in which semen with living sperms is collected from the male and introduced into female reproductive tract at proper time with the help of instruments. This has been found to result in a normal offspring. In this process, the semen is inseminated into the female by placing a portion of it either in a collected or diluted form into the cervix or uterus by mechanical methods at the proper time and under most hygienic conditions. The first scientific research in artificial insemination of domestic animals was performed on dogs in 1780 by the Italian scientist, Lazzaro Spallanzani. His experiments proved that the fertilizing power resides in the spermatozoa and not in the liquid portion of semen. Few further studies under research station conditions helped this technique to be used commercially all over the world including India.

1.5 Liquid nitrogen:

Liquid nitrogen is in a liquid state at an extremely low temperature. It is produced industrially by fractional distillation of liquid air. Liquid nitrogen is a colourless clear liquid with density of 0.807 g/ml at its boiling point and a dielectric constant of 1.43. At atmospheric pressure, liquid nitrogen boils at -196°C (77 K; -321°F) and is a cryogenic fluid which can cause rapid freezing on contact with living tissue. When appropriately insulated from ambient heat, liquid nitrogen can be stored and transported, for example in vacuum flasks. Here, the very low temperature is held constant at 77 K by slow boiling of the liquid, resulting in the evolution of nitrogen gas. Depending on the size and design, the holding time of vacuum flasks ranges from a few hours to a few weeks.

Income from livestock production accounts for significant percentage of total farm household's income in different states. Thus, an increase in demand for livestock products can be a major factor in raising the income and living standards of the rural household. With its large livestock population, India also has vast potential for meeting the growing needs of teeming millions, particularly in respect of livestock products such as milk, eggs, meat and wool.

1.6 Objectives

- To understand the activities done under the RLDB for the livestock development.
- To understand current scenario of livestock in Rajasthan.

Chapter- 2

Methods and Data

2.1 Research Methodology:

2.2 Type of Study: Descriptive & Exploratory

The research is descriptive in nature.

2.3 Data Collection:

The present study was taken up from RLDB, Jaipur.

2.4 Data Collection techniques:

Personal Interviews & Discussions (with RLDB Officials). Discussions were held with officials of these departments, experts, executives, program implementers, elites, farmer groups, progressive farmers, etc to elicit their views, ideas and opinion on the important issues.

Few success cases relating to community organization were studied.

2.5 Data Source:

RLDB annual Reports, Report on NPCBB (by NABCONS), Books, Journals, Internet and other online resources.

Chapter-3

Organizational Profile

Organizational Profile:

RLDB was set up as an autonomous body by Government of Rajasthan in 1998 with the prime objective of promoting breeding & development of all livestock of economic importance and to introduce, promote and adopt appropriate technology for improving all aspects of Livestock production.

RAJASTHAN LIVESTOCK DEVELOPMENT BOARD (RLDB) is located in Jaipur district it's an autonomous body approved "Memorandum of Association, Rules & Regulations and registered (on 25.03.1998) under the Rajasthan Societies Act 1958, has been setup by the State Government. Mainly the RLDB activities are to promote the breeding & development so they adopt the appropriate technology in all the aspect of the livestock production and their productivity in Rajasthan.

It is the State Implementing Agency for the Centrally Sponsored scheme - National Project for Cattle and Buffalo Breeding (NPCBB) which was the year 2000, for genetic up gradation and conservation of important indigenous cattle breeds. The important components of the program were Introduction of superior bulls for breeding, Quality control of semen banks, Promotion of private mobile AI service at the doorsteps of farmers, Streamlining the distribution of liquid nitrogen and Restructuring of the institutional infrastructure.

RLDB Objectives:

- To arrange, delivery of vastly improved artificial insemination services at the farmer's doorstep.
- To progressively bring 80 % breed able females among cattle's and buffalo under organized breeding through artificial insemination or natural services high quality bull within the period of 10 years.
- To undertake the breed improvement programs for indigenous cattle and buffalo breeds so as to improve their genetic quality as well as their availability.
- To provide quality breeding inputs in the breeding tracts of indigenous breeds so as to prevent the breeds from deterioration and extinction.

Staff in Department Of Animal Husbandry, Rajasthan

Post Name	Number
Gazaetted	2660
Subordinate	12071
Ministrial	482
Fourth Class	193
Total	15406

(Source: Annual Report, Department of Animal Husbandry, Rajasthan)

The RLDB have their eleven indenting office in the different district as Ajmer, Alwar, Bharatpur, Bhilwara, Bikaner, Jaipur, Jalore, Jodhpur, Kota, Sikar and Udaipur.

Participating Agencies:

The participating agencies in the state are as follow:

1. Animal Husbandry Department.
2. Co-operative Milk Federation.
3. State Agriculture/ Veterinary University.
4. Non-Government Organization (NGO's)
5. Breeders Association
6. Gaushalas
7. Any other agency engaged in the activity related to livestock development

Thrust Area

1. Animal husbandry department is mainly focused on livestock improvement through scientific breeding, balanced feeding and proper health care management
2. Scientific breeding activities are providing by RLDB by which productivity of animals can be increased through Artificial Insemination.

Schemes:

Following are the schemes providing by RLDB:-

1. Providing inputs to private workers to increase the AI coverage
2. AI services at farmers door step
3. Distribution of LN for preservation of semen
4. Acquisition of bull for natural service
5. Organisation of Animal infertility camp.
6. Assistance to participating agencies for conversion of stationary centre in to Mobile centre
7. Quality Bull production Programme
8. Training programs for private AI workers
9. Livestock insurance scheme "DUGDH AKSHAY"

The major activity which is performed by the participating agency in the state are scientific breeding, balanced feeding and proper health management. Through Scientific breeding respective breeds can be preserve which are fighting with the new challenges for their existence. Although form many years natural service is opted to get the offspring but in this era & it's difficult to handle the bull for natural service in monetary term and due to many



causes i.e lack of shelter, fodder, human resources & etc..

CHAPTER -4

Features of Rajasthan

2.1 Geographical Features of Rajasthan:

Rajasthan, lying between 23°30' and 30°11' North latitudes and 69° 29' and 78 ° 17' East longitudes at the northwestern part of India is one of the biggest states in the country. The state shares its north-western and western boundary with the Indo-Pakistan international border that extends about 1,070 km and touches the major districts Barmer, Ganganagar and Jaisalmer.

Rajasthan is edged by Pakistan in the west and northwest, the states of Punjab, Uttar Pradesh and Haryana in the north and northeast. The state of Madhya Pradesh lies in the southeast and Gujarat in the southwest. The Tropic of Cancer passes across the southern point of the state in the Banswara district. The capital city of Rajasthan is Jaipur.

Rajasthan has an area of 3, 42,239sq.km comprising of the 11% of the total geographical area of India. The extensive topography includes rocky terrain, rolling sand dunes, wetlands, barren tracts of land filled with thorny scrubs, river-drained plains, plateaus, ravines and wooded regions .A massive portion of the state of Rajasthan(about 70% of total landmass) is desiccated and encloses the biggest Indian desert- the Thar Desert known as the 'Maru-kantar'. This desert region embraces the districts of Jaisalmer, Barmer, Bikaner and Jodhpur.

- Consistent growth rate of over 6% per annum.
- Round the year employment opportunities with more than 50% of total household income in arid regions as against national average of 22.5%.
- Highly equitable distribution.

As per the 18th Livestock census 2007, there are 566.63 lacs Livestock (which include Cattle, buffalo, Sheep, Goat, Horse & Ponies, Mules, Donkeys, Camel, Pig) and Poultry 49.94 lacs.

18th Cattle Census 2007

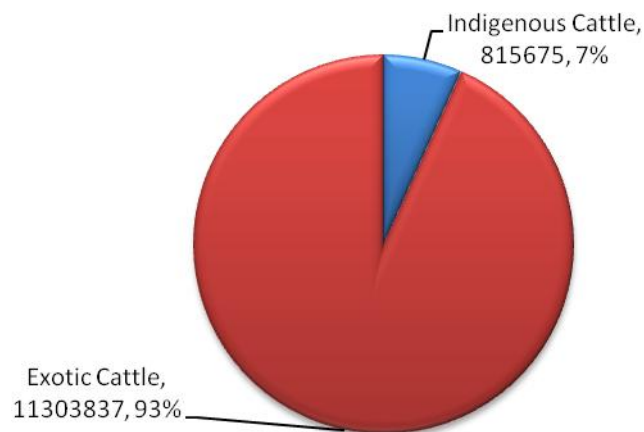


Figure.1 Cattle Census 2007

Census shows that there are maximize number of exotic available with the livestock owner compare to indigenous. As the productivity of the exotic cattle are more which give them more profitability. About the expert says that there is benefit if the owner goes with the indigenous cattle as they are comfortable to the nature in which their genes is living form hundreds of year which cost the less for the shelter, feed & fodder & etc. The important thing is that the productivity of the indigenous cattle should be increased with the germplasm of high productivity bull.

Geographical Map of Rajasthan:



Capital	Jaipur
Area(km ²)	342,239
Number of District	33
Population	68,621,012
Sex Ratio	883

3.3 Agro-Climatic condition of Rajasthan:

➤ Arid western plain:

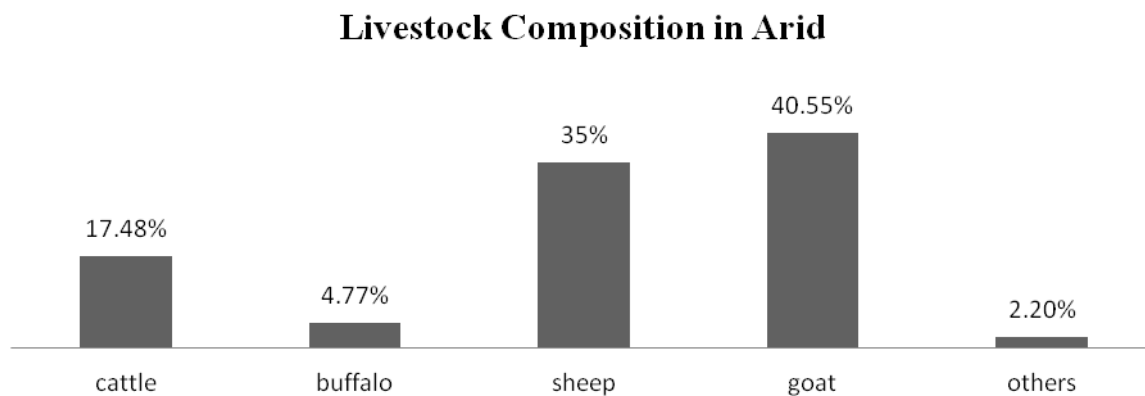


Figure.2

The hot and arid region of India is situated in mostly in western part of Rajasthan state. The arid region received less than 450mm rainfall, which contains the dominantly sandy Thar Desert. The arid western plain mainly includes the district of Jodhpur and barmer which is 39 % of the state landmass, zone is mainly earning their livelihood at most form goat (40.55%) & sheep (35%). Mainly the livestock owner owned the Kankrej breeds, Tharparkar breeds of cow. Due to desert region there is only 25 bovine survive per square kilometre. There 527 existing institute in the arid western region of state.

➤ **Internal Drainage:**

Livestock composition in Internal Drainage

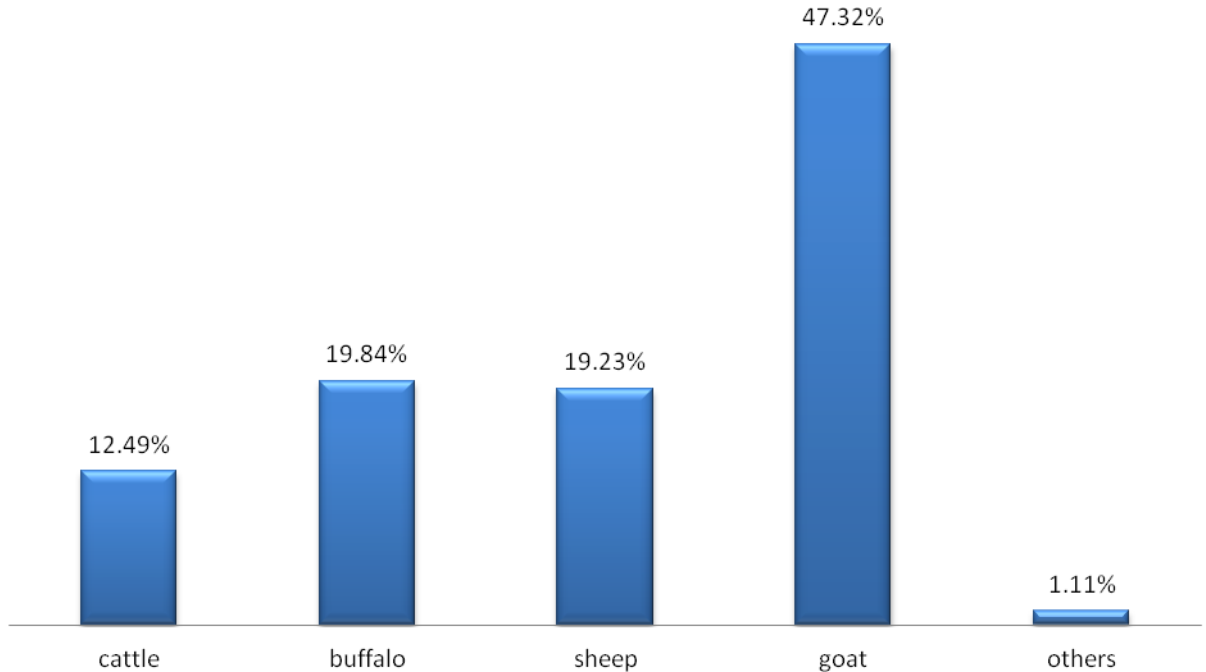


Figure.3

This zone comprises all tehsils of Nagour, Sikar and Jhunjhunu districts and Taranagar, Churu and Rajgarh tehsils of Churu district. The area is covered with sand dunes and interdunal sandy plains. Climatically, this zone is slightly better as compared to the adjoining zone of the Arid Western Plain. Rainfall is slightly higher, temperatures in summer months do go very high but the winters are very cold. The goats are mainly source of earning as they can produce more milk and meat also. This is followed by the buffalo (19.84%), sheep (19.23 %) and cattle (12.49 %) in the row. Zone is a Buffalo rich belt that why buffalo is the second most bovine used by livestock owners, Nagori cattle and Nagori cattle are used for draught purpose in this zone.

➤ **Transitional Plain of Luni Basin:**

Livestock composition in Transitional plain of Luni Basin

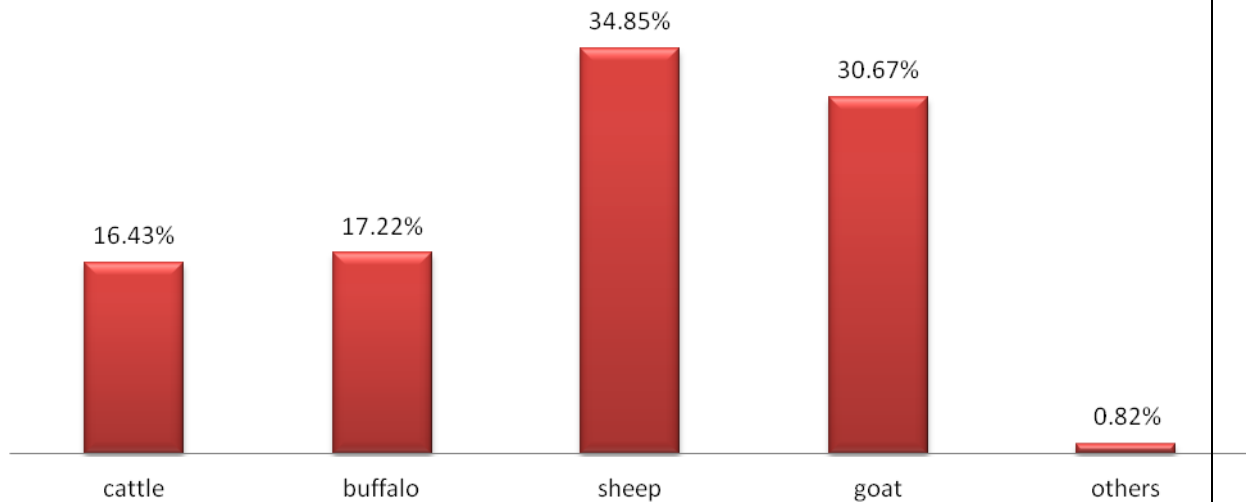


Figure.4

This area lies between the Aravalli ranges and western arid region which is only 7 % of state. The region has semi-arid climate with an annual rainfall of 30 to 50 cms. It is drained by the river Luni which is seasonal and flows only during rainy season. The climatic conditions are almost the same as in the western arid region except that the rainfall is slightly higher. The zone is mainly focused on sheep (34.85 %) and goat (30.67 %) form earning their livelihood followed by the buffalo (17.22%) & cattle (16.43 %). Non descriptive animal rich buffalo breed and Surti breed are found here in their livestock owners herd.

➤ **Semi-arid Eastern Plain:**

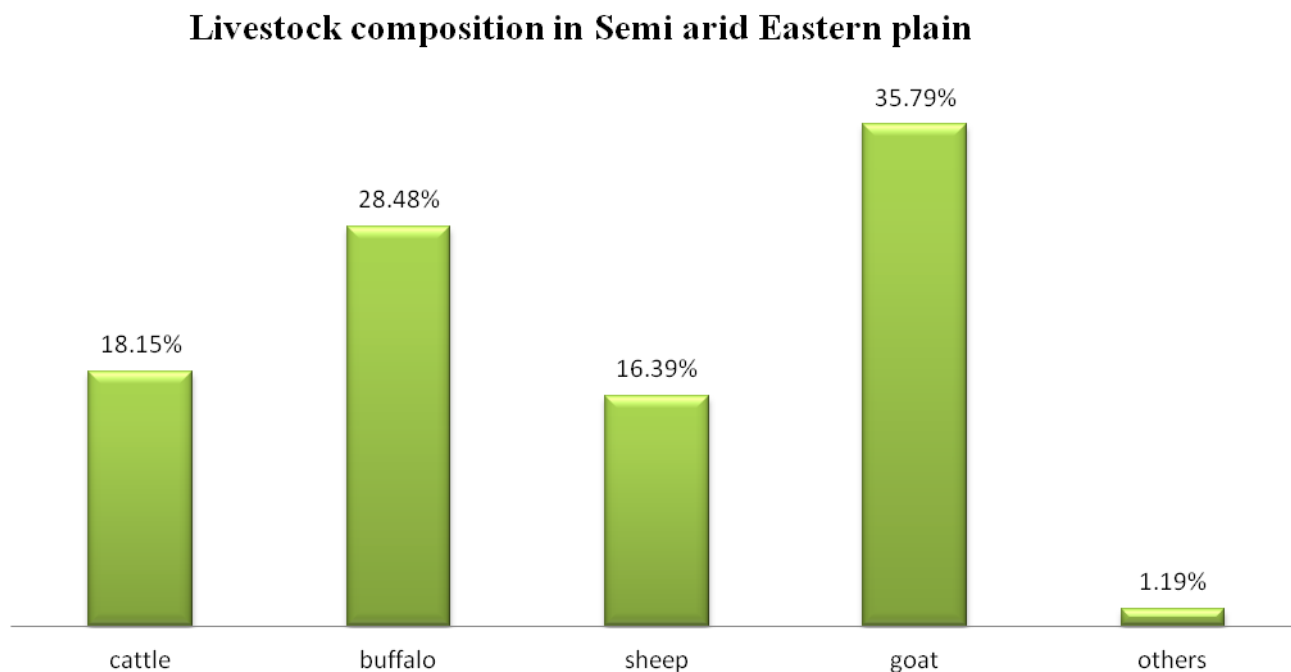


Figure.5

This region comprises four districts namely, Jaipur, Dausa, Tonk and Ajmer. Banas, with its several tributaries, forms a rich fertile plain. The annual rainfall of the region varies from 50 to 60 cms. There are mainly goat & buffalo which are source of earning here. Haryana cattle breed are in Jaipur district, Dausa district and Gir breed cattle are in Tonk and Ajmer district. In this region the good quality of fodder is available.

➤ **Flood Prone Eastern Plains:**

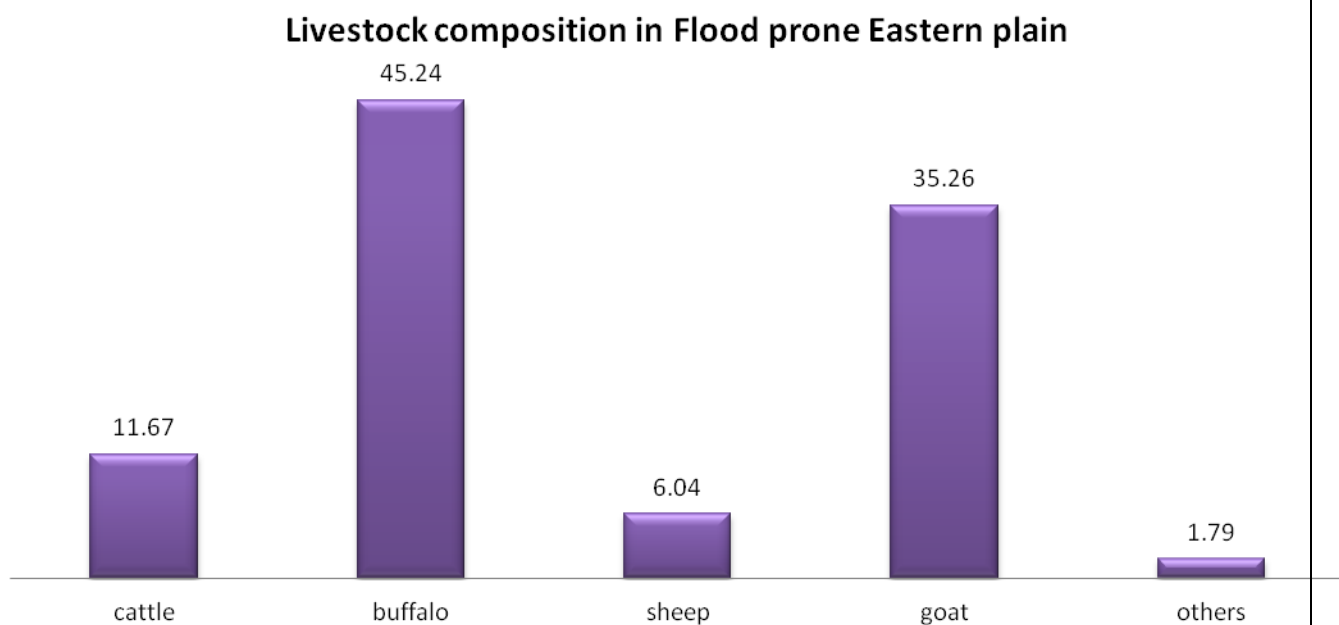


Figure.6

This region comprises the districts of Alwar, Bharatpur and Dhaulpur and the northern part of Sawai Madhopur (Mahuwa, Todabhim, Hindon, Nadauti, Bamanwas, Gangapur, Karauli, Sapotra and Bonli tchsils). Here the main livestock animal is buffalo (45.24%) which is high in the number for the source of learning and followed by the goat (35.26%). Alwar mewati breed cattle for draught purpose, this is a buffalo belt with the maximum buffalo in numbers and cross bred animal are high in population which lead the productivity high, this region is known as the milk pocket of Rajasthan.

➤ **Sub-humid Southern Plains & The Aravalli Hills:**

Livestock composition in Sub humid southern plain

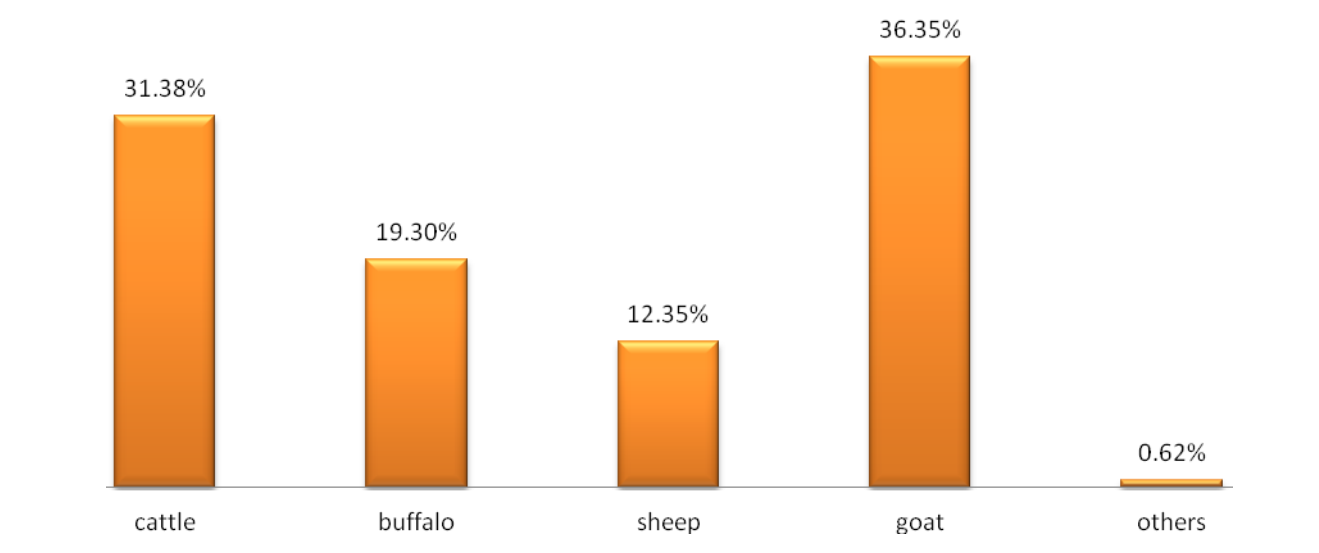


Figure.7

Bhilwara district, all tehsils of Udaipur district, except Dharyiawad, Salumber and Sarada, all tehsils of Chittaurgarh district, except Chotti Sadri, Pratapgath, Arnod and Bari Sadri and Abu Road and Pindwara tehsils of Sirohi district form this agro-climatic zone. Here also the goat is the main livestock on which the people have to stay for their livelihood. Non descriptive cattles, surti buffalo and Marwari goat are found in the herd of the livestock owners.

➤ **Humid Southern Plains**

Livestock composition in Humid southern Plains

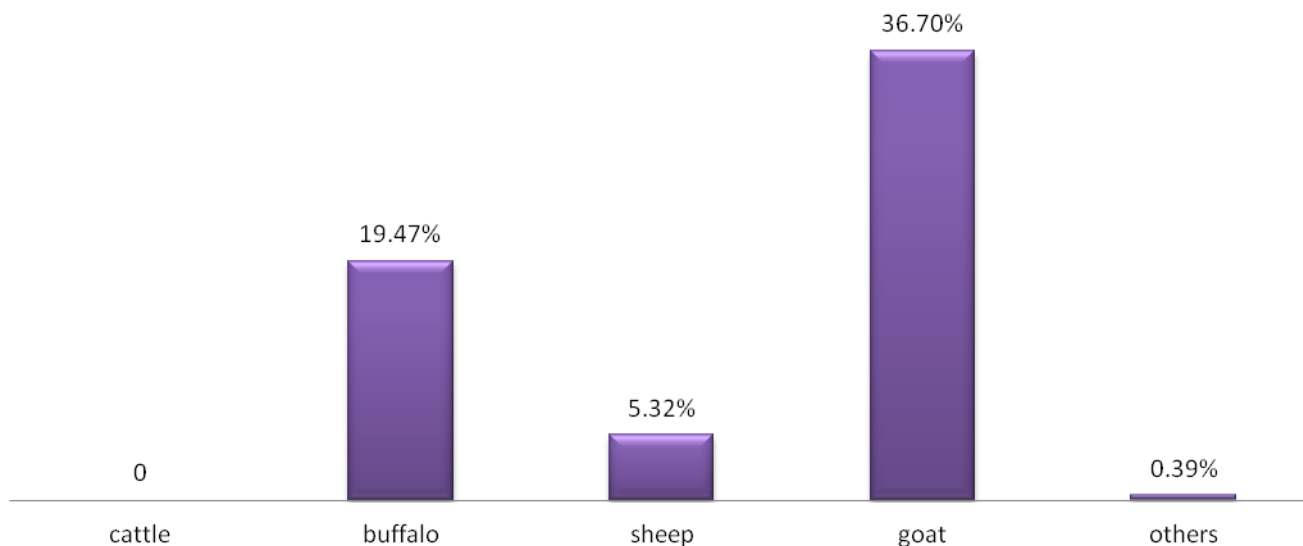


Figure.8

The districts of Dungarpur and Banswara, parts of Udaipur (Dhariyawad, Salumber and Sarada tehsils) and Chittorgarh (Chotti sadri, Bari Sadri, Pratapgarh and Arnod tehsils) are included in this region. The temperature regimes do not fluctuate much in summer and winter so the area has mild winters and mild summers. Here the goat and cattle are the major source of livelihood.

➤ **Humid South-Eastern Plains:**

Livestock consumption in Humid southern Eastern plain

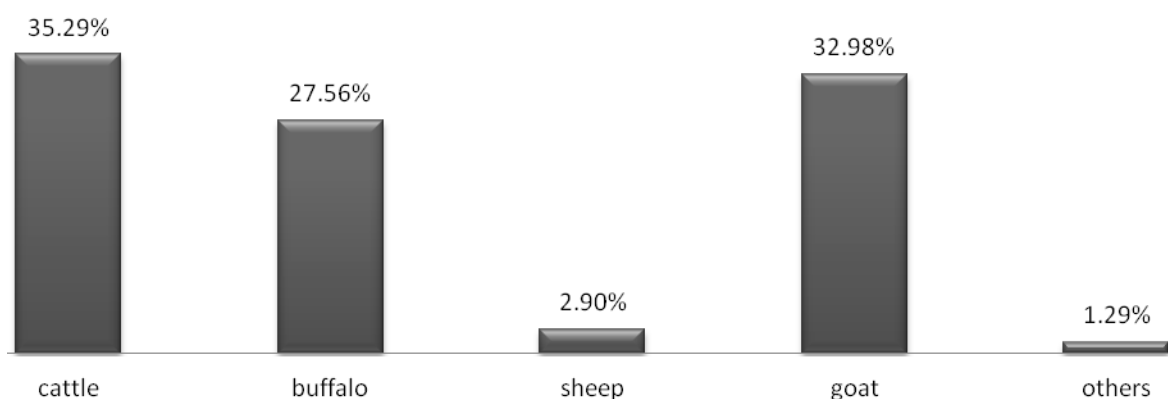
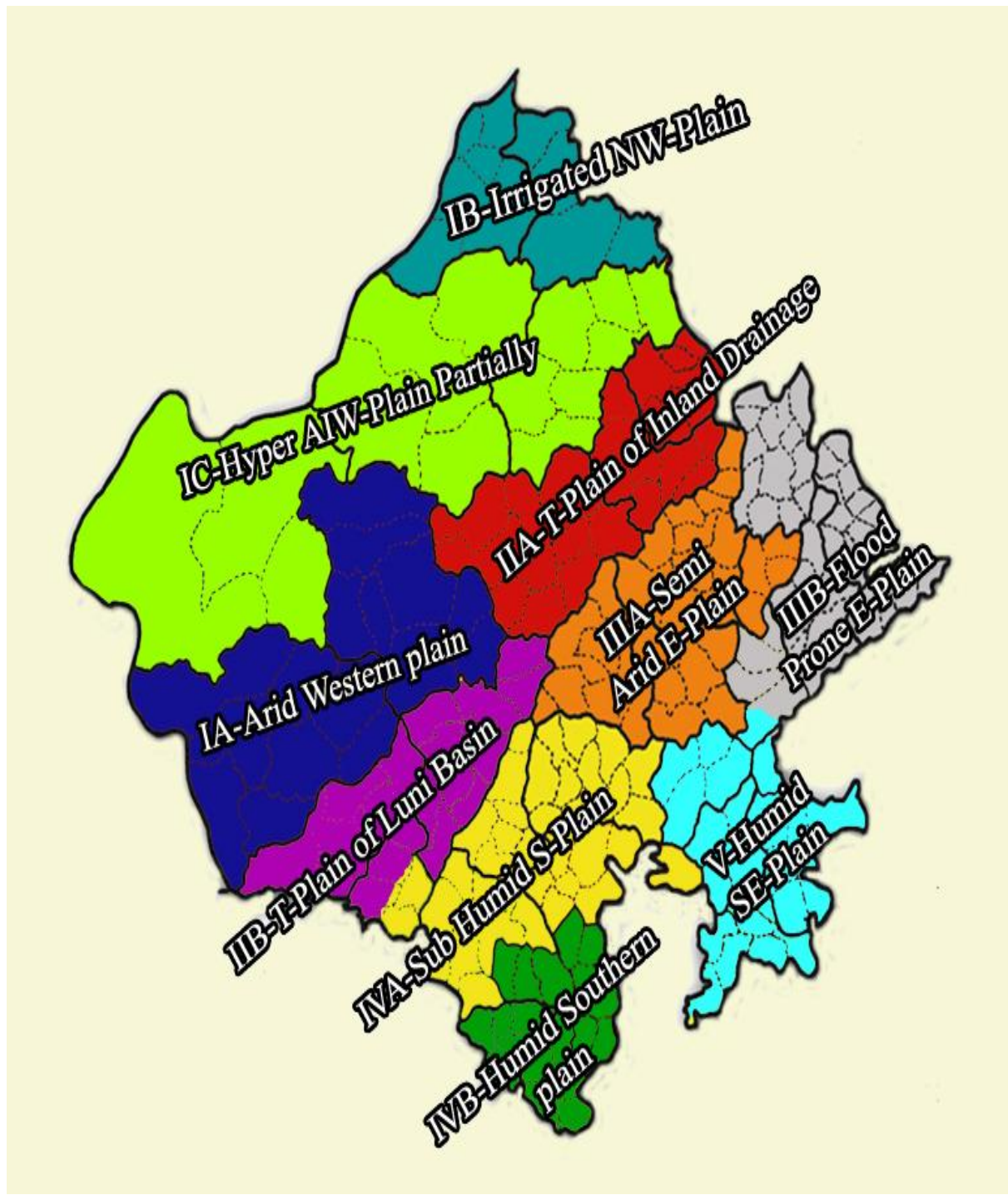


Figure.9

This region includes the districts of Kota, Baran, Bundi and Jhalawar and two tehsils of Sawai Madhopur namely Khandar and Sawai Madhopur. A large number of rivers drain this area. The Chambal is the main river along with its main tributaries like Parvati, Kali sindh, Parwan and Banas. The region has warm summers but mild winters. Summer temperatures sometimes touch 45 °C. The relative humidity is generally high in this zone. This reason has the high number of the cattle for the earning of their livelihood which is followed by goat (32.98%) and buffalo (27.56%) in the row.



Chapter- 5

General Findings

5.1 Finding

1. Animals provide nutrient-rich food products, draught power, dung as organic manure and domestic fuel, and are a regular source of cash income for rural households. They are a natural capital, which can be easily reproduced to act as a living bank with offspring as interest, and an insurance against income shocks of crop failure and natural calamities.
2. Rajasthan is the vast state of the India with the most of part covered under dessert which gives many challenges. In rural areas there is problem for the people to live there & to earn the livelihood so they mainly have to stay on livestock for the occupation primary or secondary whatever.
3. Rajasthan 70 percent of the household own the livestock which is the 35 percent of the country's total animal husbandry population producing over 10 percent of total milk production, 30 percent of meat and 40 percent of total wool produced in India. This sector plays a crucial role in rural economy.
4. Climatic zone play a good role in the livestock development. The zone have their separate temperature as well as quality of fodder which help the cattle to make survive.
5. Cross breeding is not the solution for high productivity there are the indigenous breed which can produce more amount of milk. The indigenous breed has to promote due to less input is need for them as compare to the exotic breeds.
6. Artificial insemination (AI) in livestock is process through which livestock owner get the new type of genes in the bovines which is more productive and healthy with less cost at their nearby center or at doorstep as compare to natural service.
7. Still there is lots of the population who believes that the artificial insemination can cause disease in the bovine. They thought that this causes to infertile the animal.
8. The beneficiary said that there is more need to convert the static center into the mobile center so there is easiness for them to access the benefit at the doorstep. This is mainly because in some far area there is no medium for transportation to reach the centers.
9. There is problem at the center for the skilled worker & also the helping staff.
10. The liquid nitrogen is high pressured gases it need the proper container for the procurement till it reaches the benefecries. So Availability of the utensil will minimize the waste of liquid nitrogen.
11. There should be the agreement between the other state governments for that district which are nearby to the border for the liquid nitrogen supply.
12. The arid western (39 % area of state) hold 25 bovine/ square kms which tell how large this part its which gives challenges to institute for proving the services. This density is low in the state & also the distance between the two centers is huge that they can't provide the service easily.

5.2 Number of AI done

The cumulative average figure shows that there were 10.71548 inseminations in cattle and 858735 inseminations in buffalo, which together put up to 1930283 inseminations (2012-2011).

In cattle category, there were more than 10% of the total inseminations done in area covered under Jaipur distribution centre, while expectedly there was only around 1.00% or even less number of inseminations in areas covered under S.Madhopur, Barmer, Jaisalmer, Jalore, Sirohi, Jhalawar and Dungarpur Centers.

As far as buffaloes are concerned, Jaipur (11.13%), Sikar (10.6%) and Alwar (9.93%) centers constituted more than 30.00% of insemination done during the study period.

5.3 Statues of Liquid Nitrogen

The annual requirement of Liquid Nitrogen of AHD in Rajasthan is about 9.51 Lac liters,

the distribution centers such as Jaipur, Sikar, Alwar which had distributed more number of straws and also distributed/used more amount of LN2 However, as the use and loss of LN2 depend largely on the size and quality of LN2 containers and the frequency with which the LN2 container is opened for picking straws out or for topping with LN2, these variations are not to be unexpected.

As expected, the quantity of LN2 used in Jaisalmer and Barmer district was less, owing to the less number of straws distributed/used. On an average, the quantity of LN2 distributed across the State stood at 951572 liters, with 832026 liters, 826612 liters being distributed and used during 2012-2011, 2011-2010 and 2010-2009 respectively.

Jaipur having 193 centers which are maximum in all district as it's the capital city which contain all type resources and having highest population in the state. Jaisalmer having least 17 centers due to causes of less availability of natural resources and a district which having huge desert challenges for the human being as well as for livestock for their survival. This causes the least number of centers and lack of the staff. And through this the consumption of the liquid nitrogen varies from other districts and this directly affects the number of AI done at the district. .

5.3 ADVANTAGES OF ARTIFICIAL INSEMINATION:

- There is no need of maintenance of breeding bull for a herd; hence the cost of maintenance of breeding bull is saved.
- It prevents the spread of certain diseases and sterility due to genital diseases.
- By regular examination of semen after collection and frequent checking on fertility make early detection of inferior males and better breeding efficiency is ensured.
- The progeny testing can be done at an early age.
- The semen collected can be taken to the urban areas or rural areas for insemination.
- It makes possible the mating of animals with great differences in size without injury to either of the animal.
- It is helpful to inseminate the animals that are refuse to stands or accept the male at the time of heat
- Frozen semen can be stored and used long after the donor or sire is dead. It also allows for the use of semen from an injured sire that is unable to breed naturally.
- It helps in maintaining the accurate breeding and cawing records.
- It increases the rate of conception.
- It helps in better record keeping.
- Old, heavy and injured sires can be used.

Disadvantages of A.I:

- Requires well-trained operations and special equipment.
- Requires more time than natural services.
- Necessitates the knowledge of the structure and function of reproduction on the part of operator.
- Improper cleaning of instruments and in sanitary conditions may lead to lower fertility.
- If the bull is not properly tested, the spreading of genital diseases will be increased.
- Market for bulls will be reduced, while that for superior bull is increased.

5.4 Role of Livestock related activities in Rural Development:

Livestock is the important part of the rural area as it's near to the nature as compare to the urban area; this plays an important role to maintain the biodiversity also. In the most part of the world the livestock related activity are done by the woman's this will lead to make the women empowerment as they sale the livestock product in the market this increase their livelihood. Family consumes the livestock product for their own family this completes their nutrition level and also solves the problem of food insecurity. Women spend most of the earning for development of their family and for the education of the children this lead to the socioeconomic development. With increase in the livelihood the rural-urban migration also minimize as people get the employment in the village this show the way to rural development. The animal fair is also held at ever year in which the cultural is also exchange with the livestock this preserve the cultural heritage of society.

5.5 Role of Women in Livestock Related activities:

It may say that the farm women play an important and substantial role in dairy farming. They are actively involved in various aspects of dairy farming activities like livestock management, feeding and breeding the livestock, health care etc. They offer more involvement in following dairy husbandry practices like care of new born calf, cleaning of animal shed, cleaning of utensils, storage of concentrates, feeding young calf, diagnosis of common disease and care at home level, care of sick animals, watering the live stock, offering the concentrate mixture, soaking the concentrate mixture, care during pregnancy, disposal of infected litter materials, grooming, cleaning and bathing buffaloes and cows, compost making, milking of animals. It is also observed that the participation of women was less in enrichment of dry fodder, money transaction like involvement in banking process, purchasing and sell of animals, maintenance of account financial records, maintenance of farm records, involvement in dairy co-operatives and purchasing of equipments.

Chapter-6

Success Story

SL.NO.	Item	Brief content
1	Title	Animal Husbandry is a lifeline for farmers.
2	Location	Village:- Jajia Post:- Deda Tehsil:- Jaisalmer District:- Jaisalmer State:- Rajasthan
3	Name of the farmer/organization	Name:-Sh. Man Singh
4	Background of the case	Livestock are valuable assets of the rural poor and are critical in supporting their livelihoods particularly during unfavorable times. Mr. Man Singh of Jajia village of district Jaisalmer, Rajasthan is a small and traditional dairy farmer for the last twenty years. Livestock based agricultural activity has always been viewed as a lifeline for farmers. If the main crop fails, the farmer can see through the difficult times by selling the animals or birds in his farm. In fact it is comparable to a credit card which helps the farmers when they are in urgent need of money. Also, this type of farming protects the farmers as they need not take loans at high interest rates from private money lenders.
5	Description of owned livestock & projects related to them	At present he is having 80 cows, 25 Buffalo, 80 sheep, 150 goat, 13 horses and 30 poultry. Mr. Man Singh is selling 160 ltrs per day. Project like; Dairy, Goatery, Equine Husbandry & Backyard Poultry.
6	Technology/improved practice adopted	Before the production of his cows was very poor as he was getting only 2-3 kg of milk/cow/day and his expenditure on animal was more. He is now getting 8-12 kg of milk per cow/day. He is selling about 160 Kg milk per day and remaining milk keeping for family consumption. Besides increased milk yield, he is also benefitted by the project in getting scientific guidance on feeding and management of cows, receipt of good quality semen along with door-step AI facility, preventive health care, first aid for his animals and feed supplements.
7	Livestock benefits	Animal husbandry is an integral component of livelihood of the rural population. Animals provide nutrient-rich food products, draught power, dung as organic manure and domestic fuel, hides & skin, and are a regular source of cash income for rural households. They are a natural capital, which can be easily reproduced to act as a living bank with

		offspring as interest, and an insurance against income shocks of crop failure and natural calamities.
8	Project working capital	Working capital managed through his own resources. He does not take any financial support/loan from any bank or financial institutions.
9	The economics of running the project	INCOME: GOATERY:- Rs. 1 to 1.5 lac per year by selling. DAIRY:- Rs. 9 to 10 lac per year POULTRY:- For their own use to get eggs. EQUINE HUSBANDRY:- For their own use.
10	Benefits accrued from the project and future plan	Reviving native cattle breeds, urgent need of the hour Integrated dairying plays an important role in ensuring food security and generating income for small farmers in adverse conditions like; desert. The state possesses well-defined breeds of cattle and buffalo. The best milch and draught cattle breeds of the State have an inherent adaptability to harsh agro-climatic conditions with superior productive performance. Indigenous breeds possess valuable traits like; adaptability to the environment, resistant to number of pathogens and ability to use poor quality food. He is maintaining a native Tharparkar breed of cattle. Breedable bulls and cows of Tharparkar breed. Animal Breeders on cost to promote indigenous breeds. Mr. Man Singh has been awarded by the Department of Animal Husbandry, Govt. of Rajasthan for Progressive Animal Breeder.

Chapter- 7

Recommendations

6.1 Recommendation

1. AI should be done with the semen of elite bull.
2. High genetic bulls to be used for the AI program.
3. In the arid western part of state the doorstep services should be improved to livestock holder.
4. Cost breeding should be preferred in city areas.
5. Indigenous breed should be promoted because of low cost of production as compared to cross breed.
6. Buffalo rearing should be promoted in eastern region of the state.
7. AI worker should provide training programmes for the betterment of AI activities as many of them just did without training
8. There should be animal fair organised with the various bull production programmes to increase the quality of the Calf born
9. LN₂ is to be supplied form the different states to the district which is near to the border as this can reduce the waste of the LN₂
10. Women should also be given training and knowledge's about the Dairy Training programmes as they are engaged more in the livestock activities.

PRIDE OF RAJASTHAN
THE PROGRESSIVE ANIMAL BREEDERS



