

Growth and Development of Cattle Rearing in India

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Abstract

The role of cattle rearing in poverty alleviation and socio-economic development of poor and marginal farmers has been recognized by various government agencies and scholars. Next to crop production, dairy/animal farming becomes the secondary source of income for a majority of the farming community, especially small and marginal farmers as well as landless labourers. The cattle play a significant role in the life and economy of the people in India where 70% of the total population is dependent on agriculture. The present study has been carried out to find out the historical development of cattle farming in India, its geographical distribution and impact of programmes and policies on the cattle rearing in the country. The results of the study highlights that cattle rearing has been important during pre-vedic period, it was a major source of meat in the vedic period, in the ancient period it became a one of major factor agricultural development while in medieval period it became an integral part of agriculture. In the pre independence era it was major source milk for the Indian masses and cattle farms were established for milk production for military troops but after independence cattle development programmes were implemented in an organized and planned way. After independence number of cattle population rose from 155.3 thousands in 1951 to 190.9 thousands in 2012. The annual growth rate of cattle in India was 0.66 percent which fell to -0.66 percent in 2012. Cattle development was given importance in five year plans and various specific programmes for cattle development were implemented at meso, macro and micro level in the country. The geographical distribution of cattle reveals the sluggish growth of cattle in various states and most of states record negative growth of male cattle in the country.

Keywords: Cattle Farming; Farming Community; Life and Economy; Development Programmes; Sluggish Growth

Introduction

Livestock has been a part of daily life of people since the dawn of civilization directly or indirectly. It has served the human race socially, economically and physically through multipurpose utilities. Humans and their domestic animals are mutually dependent. Human progress depends on the utilisation of animal and natural resources in a balanced way [1]. Integration of livestock with agriculture has increased the productivity and sustainability of agriculture and livestock both. The cattle play a significant role in the life and economy of the people in India where 70% of the total population is dependent on agriculture [2]. Cattle, buffalo, goat

and sheep are most important species of livestock in India and it is mostly practiced in the rural areas. Cattle is one the most important species of livestock in the country it provides nutrition and source of extra income. In India, livestock provides regular, supplementary income to producers engaged in secondary and tertiary forms of economic activities related to livestock business [3]. The role of cattle rearing in poverty alleviation and socio-economic development of poor and marginal farmers has been recognized by various government agencies and scholars. Next to crop production, dairy/animal farming becomes the secondary source of income for a majority of the farming community, especially small and marginal farmers as well as landless labourers [4]. The milk

produced by these farmers are collected and distributed to consumers by various means. In India cattle is mostly reared by poor farmers because its cost is comparatively lower than buffalo. There are socio-religious reasons also which prompt the rearing of cattle in the country by the people of higher class of Hindu community. It is considered sacred animal in the Hindu mythology and so it is not used in the meat industry as government has imposed ban on cow slaughter in some states of India. The bullocks are used as draughting power in the agriculture operations especially by small and marginal farmers but due to mechanization of agriculture its utility has been reduced. They are also often abandoned or sold in meat industry but the recent restrictions on slaughter of cattle have given rise in the number of orphan animals. Female cattle is used for milk production largely and cross breeding has boosted the milk productivity so people are inclined to rear cattle. Animal Husbandry and Dairying activities continue to be integral part of human life [5].

India holds first position in the world in cattle and buffalo population contributing 28 percent of total large ruminant population and she also has largest population of goat in the world. India has 299.6 million bovine population out of which 190.9 million are cattle and 108.7 million are buffaloes. It has become the most important producer of milk in the world too. Since ancient time cattle has contributed significantly in agricultural development and production because cattle is reared in association with agriculture. Small scale mixed crop livestock farming is the common and most dominant form of animal husbandry in India [6]. Fodder and other eatable feed is supplied to cattle from agriculture while manures, draught power, bones and livestock products are used in agriculture. The bovine species is indispensable to agricultural India. It is the chief motive power to agriculture. It is essential to improve our motive forces and save them from the wanton, and deliberate extinction [7]. The livestock sector has emerged as a vital sector for ensuring a more inclusive and sustainable agriculture system [8]. Cattle rearing is an important source of nutrients for poor families who are not able to purchase nutritious food from the market. Livestock contributes significantly to GDP and Agricultural GDP it also provides employment and economic assistance for millions of people [9]. In spite of achieving tremendous success in dairy farming and becoming the largest producer of milk in the world, performance of cattle rearing in India is poor. People do not prefer to rear cattle as has less fat content in the milk than buffalo. Moreover, the productivity of indigenous cattle is only 1.98 litres while

productivity of crossbreed cattle is 6.75 litres and it has increased since independence but is much less than European countries. The cost of crossbreed cattle is also high than indigenous cattle so poor farmers are unable to rear crossbreed cattle are compelled to rear indigenous cattle. Cattle rearing in India have huge importance in economy of households of farmers. It generates necessary income for the daily expenditure of the family. It is a reliable source of nutrition supply for the poor and marginal farmers. In many states of India it is an important contributor of meat production also.

Objectives of study

The present study aims to:

- Find out the historical development of cattle rearing in India.
- Highlight the geographical distribution of Cattle in India.
- Assess the impact of programmes and policies on the cattle rearing in India.

Historical development of cattle rearing in India

From the ancient times cattle rearing has been an integral part of Indian agriculture but its importance as source of milk, meat, draught power and techniques of rearing have changed with time. The great Indian epics Ramayana and Mahabharatha mention that cattle rearing practiced by all and an important occupation [10]. Cows were donated for the Brahmins and their religious gurus as they did not have other occupations. During the times of Ryan cows were considered as wealth and they were considered sacred and not meant to be killed. Aryans fought wars with the tribes to acquire cows as they considered them as wealth. They knew the importance of forest and pastures and they used to take cattle for grazing in pasture in the morning and bring them back in the evening. Your worshippers express with the stone fast flowing exhilarating Soma-juices for you. You drink them. They roast bulls for you, you eat them when you are invoked, Maghavan, to the sacrificial food [11]. During the Mauryans and post Mauryan age cattle breeding was wide spread it was an important source of milk, meat, draught power and the herd size was extensive. Kautilya's Arthashastra describes that veterinary surgeons were employed to treat the animals with necessary amount of medicine in accordance with the nature of disease [12]. Ain-e-akbari written during Akbar's time mentions the taxation on cattle and the cattle farming was imposed on farmers and it was a major occupation with agriculture during medieval period. The pastoral communities sent dairy products especially ghee to the town market while they must also have supplied cows and draught cattle to villages of the ag-

ricultural zone [13]. In the Vijayanagar kingdom a captain called Lepapayque, who is lord of Vimgapur, a land very rich in seed-plots and cattle-breeding farms, has a revenue of three hundred thousand PARDAOS; and is obliged to furnish twelve hundred horse and twenty thousand foot and twenty-eight elephants, and he pays to the King every year eighty thousand PARDAOS [14]. Several other books were written like 'Tuzak-i-Baburi' (Memories of Babur), 'Humayunnama', 'Tuzuk-i-Jahangiri' etc. during the reign of various emperors of medieval time highlights the importance of cattle rearing for milk production, draught power, meat, manures, bones skin etc. The early colonial rule adversely affected the cattle rearing as fragmentations of land holding, use of land for food grain and cotton production resulted in reduction of grazing space. Although during early 20th century witnessed the rise rearing of cattle in an organized way as an imperial dairy expert was appointed in 1920 to analyze the status of dairy sector and propose the plans for growth of this sector. Other reasons for organized cattle rearing were the demand of milk for British military troops stationed in India and growth of urban milk market like Bombay, Madras and Kolkata. After the independence of India cattle rearing grew up in a planned way because government started various programmes and given importance for cattle development in the five year plans. The government of India started Key Village Scheme for developing the cattle at village level during the first five year plan (1951-52-1955-56). Intensive Cattle development Project during 2nd five year plan was initiated to invigorate the Key Village Scheme and develop the quality of cattle in the country. So, new goals and objectives have always been set for cattle and dairy development in every five year plan and some specialized programs have also been launched by government for cattle farming but it was Operation Flood program which had made India self sufficient in dairy production and improved the per capita availability of milk in the country. In rural India majority of farmers is marginal and small and livestock is main source of livelihood generation.

After the independence government of India started the cattle development programmes in an organized way to boost the cattle production and quality of cattle stock. Table 1 shows the growth of cattle and annual growth rate for every livestock census since independence. It shows that number of cattle was 155.3 thousands at the time of independence which rose to 190.9 thousands in 2012 on the other hand the annual growth rate was 0.43 percent during 1951-56 which declined to -0.66 percent during 2007-12. It is clear from the table 1 that during three census years i.e. 1992-97 (-0.56), 1997-03 (-1.18) and 2007-12 (-0.66) annual cattle growth rate

was negative. The negative growth rate during last three decades has been caused due to green revolution equipped with high-tech and mechanized form of agriculture which reduced the demand of cattle draught power in agriculture [15].

Year	No. of Cattle (000)	Plan Duration	Annual Growth Rate (%)
1951	155.3	1951-56	0.43
1956	158.7	1956-61	2.04
1961	175.6	1961-66	0.07
1966	176.2	1966-72	0.24
1972	178.3	1972-77	0.19
1977	180	1977-82	1.35
1982	192.45	1982-87	0.74
1987	199.69	1987-92	0.49
1992	204.58	1992-97	-0.56
1997	198.88	1997-03	-1.18
2003	185.18	2003-07	1.83
2007	199.08	2007-12	-0.66
2012	190.9		

Table 1: Growth of Cattle vis-a-vis Annual Growth Rate of Cattle During Livestock Censuses in India (1951-2012).

Source: Department of Animal Husbandry and Dairying, Govt. of India, 2019.

Spatio-temporal pattern of cattle distribution in India

Spatial distribution of cattle is largely affected by geographical factors like climate, physiography, availability of pastures, cropping system and socio-economic attributes of the population. India is vast country which has variations in climate from north to south and east to west and the people of different regions possess their unique social, cultural, religious and economic identities. Cows reared in larger number for milk production and for religious obligation of Hindu community. The meat cattle (cows) are decreased due to state prohibitions of cow slaughter [15]. Government policies also play an important role in the rearing of cattle. Various Spatial distribution of cattle is largely affected by geographical factors like climate, physiography, availability of pastures, cropping system and socio-economic attributes of the population. India is vast country which has variations in climate from north to south and east to west and the people of different regions possess their unique social, cultural, religious and economic identities. Cows reared in larger number for milk production and for religious obli-

gation of Hindu community. The meat cattle (cows) are decreased due to state prohibitions of cow slaughter [15]. Government policies also play an important role in the rearing of cattle. Various state governments has emphasized on cattle rearing while others have not given much importance for this enterprise. Cattle rearing did not grow like the buffalo rearing because in some states there is ban on cow slaughter so when they become non productive for milk production they can not be used in meat industry which has caused huge loss of capital of primary cattle rearer. Table 2 and figure 1 shows the variations in the growth rate of cattle in India during (2003-2012) and highlights that for the whole country the growth rate was 3.09 percent. It is evident fro the table 2 that Gujarat has recorded the highest growth of 34.48 percent while Nagaland has highest negative growth 47.89 percent.

States/UTs	No. of Cattle (000)		Growth (%)
	2003	2012	
Andhra Pradesh	9300	9596	3.18
Arunachal Pradesh	458	464	1.31
Assam	8440	10308	22.13
Bihar	10729	12232	14.01
Chhattisgarh	8882	9815	10.50
Goa	76	57	-25.00
Gujarat	7424	9984	34.48
Haryana	1540	1808	17.40
Himachal Pradesh	2236	2149	-3.89
Jammu and Kashmir	3084	2798	-9.27
Jharkhand	7659	8730	13.98
Karnataka	9539	9516	-0.24
Kerala	2122	1329	-37.37
Madhya Pradesh	18913	19602	3.64
Maharashtra	16303	15484	-5.02
Manipur	418	264	-36.84
Meghalaya	767	896	16.82
Mizoram	36	35	-2.78
Nagaland	451	235	-47.89
Orissa	13903	11621	-16.41
Punjab	2039	2428	19.08
Rajasthan	10854	13324	22.76
Sikkim	159	140	-11.95
Tamilnadu	9141	8814	-3.58
Tripura	759	949	25.03
Uttar Pradesh	18551	19557	5.42
Uttaranchal	2188	2006	-8.32
West Bengal	18912	16515	-12.67
Andaman and Nicobar Islands	64	46	-28.13
Chandigarh	6	9	50.00
Dadra and Nagar Haveli	50	42	-16.00
Daman and Diu	4	2	-50.00
Delhi	92	86	-6.52
Lakshadweep	4	3	-25.00
Pondicherry	78	60	-23.08
India	185181	190904	3.09

Table 2: Spatial Variation in the Growth of Cattle in India (2003-2012).

Source: Department of Animal Husbandry and Dairying, Govt. of India, 2019.

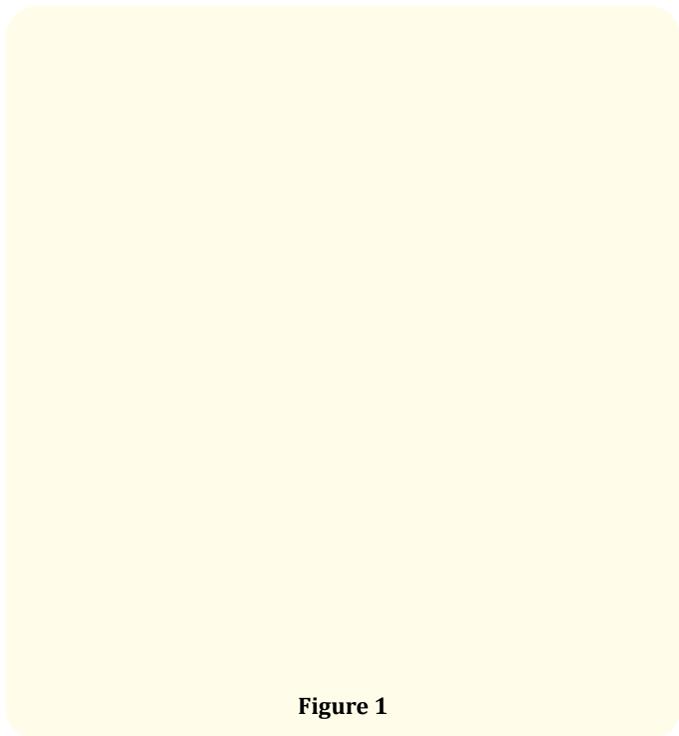


Figure 1

All the Union territories have recorded negative growth of cattle except Chandigarh (50.0) percent. The major reasons for the decline in number of cattle in these states are the use of cattle in meat industry but people are not also rearing cattle due to low productivity of milk, less fat content in the milk, diminishing pastures and lack of labour to manage them.

The growth and spatial distribution of male and female cattle highlights contrasting feature in different states and union territories. Table 3 shows that male cattle have decreased by -23.70 percent while female cattle have increased by 11.53 percent during 2003-2012. It is apparent from the table that only Assam, Chhattisgarh, Jharkhand, Meghalaya and Tripura have shown positive growth while rest of the states have registered negative growth. All the union territories excluding Chandigarh and Delhi have shown decline in male cattle (Figure 2). On the other hand female cattle have shown positive growth 11.53 percent in the country although Andhra Pradesh, Goa, Jammu and Kashmir, Kerala, Manipur, Nagaland and Orissa have shown negative growth and all the union territories registered positive growth during 2003-2012 (Figure 3). In the states that have registered negative growth in female cattle are used in meat industry after they become non-productive and in these states prohibition on cow slaughter are not imposed. The main reason behind the decline of male cattle is mechanization of agriculture because use of bulls as draught power in agriculture has declined. In Assam, Chhattisgarh, Jharkhand, Meghalaya and Tripura mechanization of agriculture has not taken place substantially so bulls are used in agriculture and terrain also presents hindrances in mechanization also, so male cattle have increased in these states. This system is mostly adopted by the resource poor, marginal and small farmers for crop production with few animals in their herd to enhance cash income, increase quantity and quality of food production and meaningful utilization of unexploited resource [16-19].

States/UTs	Cattle (male)		% Change	Cattle (Female)		% Change
	2003	2012		2003	2012	
Andhra Pradesh	4979	3993	-19.80	10407	3353	-67.78
Arunachal Pradesh	216	199	-7.87	471	487	3.40
Assam	4000	4293	7.33	8480	10704	26.23
Bihar	4401	3137	-28.72	12003	15707	30.86
Chhattisgarh	4470	4834	8.14	9135	9993	9.39
Goa	34	19	-44.12	88	75	-14.77
Gujarat	3404	3217	-5.49	8063	11911	47.72
Haryana	524	471	-10.11	2113	2897	37.10
Himachal Pradesh	939	729	-22.36	2913	3133	7.55
Jammu and Kashmir	1100	830	-24.55	4404	4268	-3.09
Jharkhand	4210	4536	7.74	7804	8986	15.15
Karnataka	3816	2977	-21.99	11141	12429	11.56
Kerala	182	149	-18.13	3857	2580	-33.11
Madhya Pradesh	9160	8225	-10.21	19230	20443	6.31
Maharashtra	8148	7224	-11.34	19079	19135	0.29
Manipur	214	97	-54.67	487	308	-36.76
Meghalaya	349	356	2.01	790	1231	55.82
Mizoram	14	11	-21.43	45	46	2.22
Nagaland	164	88	-46.34	694	364	-47.55
Orissa	7166	871	-87.85	14966	12927	-13.62
Punjab	563	434	-22.91	3570	4492	25.83
Rajasthan	3616	3262	-9.79	11318	15060	33.06
Sikkim	57	43	-24.56	239	267	11.72
Tamilnadu	2592	1623	-37.38	14281	15169	6.22
Tripura	325	346	6.46	816	1082	32.60
Uttar Pradesh	8698	4907	-43.58	20185	23136	14.62
Uttaranchal	929	704	-24.22	1310	2504	91.15
West Bengal	8167	5326	-34.79	10968	19311	76.07
Andaman and Nicobar Islands	26	16	-38.46	41	62	51.22
Chandigarh	0	1	100.00	6	16	166.67
Dadra and Nagar Haveli	33	27	-18.18	18	43	138.89
Daman and Diu	3	1	-66.67	2	2	0.00
Delhi	10	14	40.00	88	147	67.05
Lakshadweep	1	0	-100.00	4	4	0.00
Pondicherry	12	8	-33.33	76	117	53.95
India	82522	62968	-23.70	199092	238569	11.53

Table 3: Species-wise Growth and Distribution of Cattle in India (2003-2012) (in 000 Number).

Source: Department of Animal Husbandry and Dairying, Govt. of India, 2019.

Figure 2

Figure 3

Impact Assessment of programmes and policies on the cattle rearing

Government of India realised the role of cattle farming in the national economy since independence and it included develop-

ment of programmes and fund allocation in almost every five year plan. The plan wise objectives, programmes and fund allocation for the cattle development are discussed below:

Cattle rearing during five year plans

During the first five year plan (1951-56) the key village scheme was launched 146 key village blocks having the facility of artificial insemination was established. 650 veterinary hospitals and 25 gosadans were also established. In the second five year plan (1956-61) existing key village were expanded, 34 new gosadans, 248 goshalas, 1900 veterinary hospitals were established. In the 3rd five year plan (1961-66) 4 cattle feed compounding factories were set up while the 4th five year plan (1969-74) envisaged the establishment of frozen semen stations for the cross breeding of exotic dairy breeds on a large scale. In the 5th five year plan (1974-79) a programme on cattle breeding, farm forestry and food for work was started for the benefit of farmers of weaker sections of Gujarat, Maharashtra, U.P. and Orissa. During 6th five year plan (1980-85) a new development project was started in Sikkim, 3 integrated cattle-cum-dairy development projects were started in Rajasthan, MP and Karnataka. In the 7th five year plan (1986-91) technology was launched for dairy cattle improvement (through embryo transfer technology). During 8th five year plan (1992-97) emphasis given on productivity enhancement of milch cattle and Frozen semen technology based upon progeny bulls is a major part of the programme. In the 9th five year plan (1997-02) out of total fund Rs. 1,965 crores allocated for animal husbandry Rs. 151 crores were allocated for cattle development. In the 10th five year plan (2002-07) emphasis was given on conservation of threatened indigenous breeds and in 11th five year plan (2007-12) the National Cattle and Buffalo Breeding Project (NCBBP) would continue to the major initiative in cattle and buffalo development.

Key Village scheme (KVS)

After Independence the first organized attempt to develop village cattle on an effective scale was initiated with the launch of key village scheme (KVS) in 1950 during first five year plan. KVS is a general comprehensive scheme drawn up by Government of India for development of cattle population in India by employing scientific methods for improvement of cattle viz., Artificial insemination, Grading and selective breeding, Formulation of co-operative societies for marketing the pure breed cattle and development of feed and fodder.

Intensive cattle development project (ICDP)

ICDPs were to be started in breeding tracks of indigenous breeds of cattle and buffaloes and in the milk sheds of large dairy

projects so that established dairy plants can procure sufficient quantity of milk for processing. (upto their installed capacities). It was emphasized to associate each ICDP with either liquid milk plant or any milk product factory. Each ICDP was to cover 1 lack breedable cow and she buffalo population. Thus area having good potential for milk production and where appropriate response to cattle development can be there, were chosen. In the chosen area, the target of covering 70 percent of cattle population for breeding purpose and increasing milk production by 30 percent in a period of 5 years was kept. The government of Indian extended 100 percent central assistance for the project during the 3rd five year plan. After implementation and on completion of 2 years, these protects were transferred to plan scheme of the state government.

Rashtriya gokul mission (RGM)

RGM was launched government of India in December 2014 to conserve and develop the indigenous cattle breed through scientific approach because India has 190.9 million cattle and out of them 151 million are indigenous. Under the RGM the government has allocated INR 500 crores to develop, conserve and maintain the quality of indigenous breeds and increase their productivity. Indigenous cattle breed are much tolerant to heat and they survive through malnutrition in comparison to exotic/crossbreed cattle but their productivity is much less in terms of milk production. This scheme will be implemented through State Implementing Agency (SIA) and livestock development boards. RGM is intended to establish the Integrated Indigenous Cattle Centres and Gokul Gram to develop the indigenous and non-descriptive cattle breeds and disease free bulls will be supplied. These centres are supposed to self sustaining in nature and generate their own income through Public Private Partnership.

These cattle development programmes were initiated by the government and the various departments of state government to enhance the productivity of dairy cattle, draught cattle, better management of the stock, better feeding, improved breeding, effective disease control measures and quality of stock during the decade of 1951 and 1971 but these programmes seen limited success because the milk production remained more less stagnant in the absence of stable and remunerative market for milk. The limited access of organized marketing to milk producing areas paved the way for middle (private vendors) to control the marketing. The lack of dissipation of technology to the primary producers did not let them take advantage of various schemes and programmes. It was operation flood programme based on Anand Pattern of milk

marketing and co-operative structure that revolutionized the dairy farming as well as cattle rearing in the country. The artificial insemination facilities and cross breeding programmes that reached the door of primary producer played the catalytic role in the growth of cattle rearing in the country.

Conclusion

Livestock has been an integral part of evolution of the human civilizations and different species have perceived differently by these civilizations depending on their uses or importance in the prevalent geo-climatic conditions. Cattle has been the utmost importance for the sustenance of agriculture, nutrition supply and religious practices in India. Frequent reference of cattle farming are found in Indian mythological books and historical writings regarding their utilization in agriculture as draught power, for meat production, milk production, source of manure and supply of skin and hides. In India special emphasis was given on the development of cattle farming especially for milk production so various programmes policies have been implemented through government and quasi-government agencies but the results were not as expected. During mid 20th century India has been termed as land of cow because they were reared by majority of farmers but change in the demand of milk, reduction in pasture land, low productivity and lack of adaptability of new cattle breeds in the given geo-climatic conditions forced the farmers to rear the buffalo; now there is rule of buffalo in the land cow in the last of 20th century.

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