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Some Aspects of Livestock Development in India - A Critical Appraisal

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Development programmes are launched in a country with the ultimate aim to improve the economic status of the people. Livestock development programmes in India are in progress since more than fifty years. The expenditure on Animal Husbandry and Dairying was of the order of Rs. 16 crores during the First Five Year Plan (1951-56) and steadily increased to Rs. 1655 crores in the 8th Five Year Plan (1992-97). The improvement on each aspect of a programme may not be at desired level. Quantitative assessment of such programmes provides the measure of their effectiveness.

India possesses about 11 per cent of the livestock population in the world. About one-fifth of the bovines and one-tenth of ovines in the world are in India. Within the country cattle constitute about 70 per cent and buffaloes 30 per cent of the total bovines and among ovines goats and sheep are also in the above proportion. This ratio of cattle and buffaloes is, however, not observed in all the regions. The concentration of each species varies from region to region depending on agro-climatic conditions and purpose for which they are kept.

The contribution of India is only one-eighth of the World's milk production, although the share of buffalo milk is highest, accounting for about 67 percent of the World's buffalo-milk production. The milk production in the country was about 47 million tonnes in 1987, 58 million tonnes in 1992 and 67 million tonnes in 1997. Of the total production, cow milk was about 41%, buffalo milk 55% and goat milk 4 per cent. Not only the proportion of cattle and buffaloes varies in different states in the country but also the level of milk production, per capita availability of milk and other related aspects. There are different indicators to show the imbalance in livestock development in different states and also over time. Some of these aspects are discussed in this paper. Such a study is likely to be useful in formulating livestock improvement plans in different regions.

2. Ranking of States Based on a Livestock Development Indicator

Quinquennial livestock census is the main source of getting livestock number as well as their classifications according to age, sex and use. Estimates of milk production are obtained through sample surveys. Proportion of milch animals as well as percentage contribution of milk production by each state are worked out. In some states the production percentage was more than the

Table 1 : Livestock development indicator : Percentage of milch animals and milk production

States	1987			1992			1997		
	Milch Animal % to total	Milk Prod % to total	Diff.	Milch Animal % to total	Milk Prod % to total	Diff.	Milch Animal % to total	Milk Prod % to total	Diff.
Andhra Pradesh	7.4	6.0	–1.4	7.0	5.4	–1.6	6.7	6.5	–0.2
Assam	2.3	1.3	–1.0	3.0	1.1	–1.9	3.6	1.1	–2.5
Bihar	7.5	5.7	–1.8	7.6	5.5	–2.1	8.7	4.9	–3.8
Gujarat	4.5	6.4	1.9	5.1	6.6	1.5	4.9	7.0	2.1
Haryana	2.6	5.5	2.9	2.7	6.4	3.7	2.98	6.1	3.2
Himachal Pradesh	1.2	1.0	–0.2	1.1	1.0	–0.1	1.1	1.0	–0.1
Jammu & Kashmir	1.2	0.9	–0.3	1.3	1.6	0.3	1.3	1.3	0.0
Karnataka	5.8	4.7	–1.1	6.0	4.5	1.5	6.1	5.0	–1.1
Kerala	1.8	3.1	1.3	1.7	3.3	1.6	1.6	3.2	1.6
Madhya Pradesh	12.7	9.2	–3.5	12.2	8.4	–3.8	11.1	7.6	–3.5
Maharashtra	8.4	5.7	–2.7	8.4	7.1	–1.3	7.6	7.4	–0.2
Orissa	4.6	0.9	–3.7	4.4	0.9	–3.5	4.2	1.0	–3.2
Punjab	4.3	9.4	5.1	4.3	9.6	5.3	4.3	9.8	5.5
Rajasthan	7.8	8.4	0.6	8.2	7.9	–0.3	8.4	8.5	0.1
Tamil Nadu	4.6	6.6	2.0	4.4	6.0	1.6	4.8	5.8	1.0
Uttar Pradesh	15.6	18.4	2.8	16.1	18.4	2.3	16.3	17.9	1.6
West Bengal	6.4	5.7	–0.7	5.4	5.2	-0.2	5.1	4.9	–0.2
Other States & UTs	1.2	1.2	—	1.2	1.1	—	1.3	1.0	—
Total	92.0 Million	46.7 Mill.T	—	98.1 Million	58.0 Mill.T	—	105.4 Million	67.2 Mill.T	—

share of milch animals and in other states reverse was the case. Based on the magnitude of the difference between the share of milch animals and share of production named as a livestock development indicator, the major 17 states are ranked. These states cover about 94% of the total geographical area, 98% of the human population and more than 98% of the total milch animals as well as milk production in the country. Then the states were formed into three groups viz. (A) high (> +1), (B) medium (between – 1 and + 1) and (C) low (< –1) for 1987, 1992 and 1997 when the livestock census were conducted. The results are presented in Table 1 and Table 2.

Table 2 : Classification of states according to ranks

Rank	1987	1992	1997
(A) 1	Punjab	Punjab	Punjab
2	Haryana	Haryana	Haryana
3	Uttar Pradesh	Uttar Pradesh	Gujarat
4	Tamil Nadu	Tamil Nadu	Uttar Pradesh
5	Gujarat	Kerala	Kerala
6	Kerala	Gujarat	
(B) 7	Rajasthan	Jammu & Kashmir	Tamil Nadu
8	Himachal Pradesh	Himachal Pradesh	Rajasthan
9	Jammu & Kashmir	West Bengal	Jammu & Kashmir
10	West Bengal	Rajasthan	Himachal Pradesh
			West Bengal
			Maharashtra
			Andhra Pradesh
(C) 11	Assam	Maharashtra	Karnataka
12	Karnataka	Karnataka	Assam
13	Andhra Pradesh	Andhra Pradesh	Orissa
14	Bihar	Assam	Madhya Pradesh
15	Maharashtra	Bihar	Bihar
16	Madhya Pradesh	Orissa	
17	Orissa	Madhya Pradesh	

(A) > + 1
(B) – 1 to + 1
(C) < – 1

It is observed that in all the three years, the states Punjab, Haryana, Uttar Pradesh, Gujarat and Kerala are in 'High' group, the states of Rajasthan,

Himachal Pradesh, Jammu & Kashmir and West Bengal are in 'medium' group and the states of Assam, Bihar, Karnataka, Orissa, and Madhya Pradesh are in 'Low' group. Although Tamil Nadu was in A-group in 1987 and 1992, it was marginally shifted to group (B) in 1997. Maharashtra and Andhra Pradesh improved their position from lower (in 1987 and 1992) to medium category in 1997.

Development indices based on 14 indicators considering agricultural, industrial, social and banking developments for the period 1971-72 and 1981-82 for major 17 states were worked out by Narain *et al.* [10]. Based on the composite index, the states were ranked and classified into three development groups as high, low and medium. Ranking of the states as per composite index are compared with those based on the livestock development indicator (Table 3).

Table 3 : Comparison of ranks based on composite index and livestock development indicators

State	Composite Index Ranks		Livestock Development Indicator Ranks		
	1971-72	1981-82	1987	1992	1997
Andhra Pradesh	09	11	13	13	12
Assam	13	16	11	14	14
Bihar	17	17	14	15	17
Gujarat	04	06	05	06	03
Haryana	02	01	02	02	02
Himachal Pradesh	11	09	08	08	09
Jammu & Kashmir	12	08	09	07	08
Karnataka	08	07	12	12	13
Kerala	05	03	06	05	05
Madhya Pradesh	16	13	16	17	16
Maharashtra	06	04	15	11	11
Orissa	14	14	17	16	15
Punjab	01	02	01	01	01
Rajasthan	15	15	07	10	07
Tamil Nadu	03	05	04	04	06
Uttar Pradesh	10	12	03	03	04
West Bengal	07	10	10	09	10

There was close agreement between the two rankings in a majority of cases. The rank correlation between the sets varied between 0.56 to 0.77 which were significant.

Some observations are as follows :

- Punjab, Haryana, Tamil Nadu, Gujarat and Kerala, which are well developed in agriculture etc. (in 1971-72), are also ranked 'high' in respect of livestock development indicator (in 1987 and 1992).
- Assam, Bihar, Orissa and Madhya Pradesh are ranked 'low ' under both the studies.
- West Bengal is ranked in 'medium' category in both the cases.
- Other states differ in their classification as per two studies.
  Similar comparisons can be made for other sets.
  The states having higher proportion of buffaloes and/or crossbred cows are better developed.

3. Breedable Females not Calved Even Once

Examining the data from 1966 to 1992, it was observed that the number of breedable females not calved even once steadily decreased from 9.6% in 1966 to 7.8% in 1992 for cows and 8.4% to 6.7% for buffaloes during the same period. This shows that development measures taken have shown some improvement. There was, however, considerable variation among states, although steady reduction in the number both for cows and buffaloes was noticed. For example, in Andhra Pradesh the number of such cows was reduced from 14.6% in 1977 to 8.4% in 1992. Similarly in Maharashtra it reduced from 12.6% to 8.7%, in Orissa from 14.8% to 7.8% and in Uttar Pradesh from 11.7% to 8.4% during the period. In the case of buffaloes, the number reduced from 10.6% to 5.5% in Andhra Pradesh, 8.4% to 4.6% in Gujarat and 13.3% to 6.7% in Uttar Pradesh. Further improvement is necessary as delayed calving reduces the life time production and becomes uneconomical.

4. Bovines used Neither for Breeding nor for Work

The number of cattle and buffaloes used neither for breeding nor for work remained almost same i.e. 1.2% to 2.1% during the period 1966 and 1992. There was, however, some variation in different states. For example, according to 1992 census, the number of cattle neither used for breeding nor for work was 5.6% in Andhra Pradesh and 8.4% in Karnataka. The buffaloes under this category were 13.4% in Tamil Nadu and 5.8% in Madhya Pradesh. In Gujarat the number was less than one per cent both for cattle and buffaloes whereas in Uttar Pradesh, it was 2.6% for cattle and less than one per cent for buffaloes. These bovines are maintained for getting dung used for manure and fuel or kept on religious grounds. Such animals should be eliminated or reduced to the minimum.

5. Draught Animal Power

One pair of draught animals, on an average, was being utilized for 4 hectares of cropped area in 1972 and 5.6 hectares in 1997 indicating better utilization of draught power. The gross cropped area steadily increased from 166 million hectares to 188 million hectares and number of draught animal-pair decreased from 41 to 34 million during this period. Increase in mechanization for agricultural operations may be one of the reasons for reduction in number of draught animals. The extent of utilization of draught power varies in different states. In Bihar, Orissa and Himachal Pradesh the utilization was only 2 to 4 hectares per pair and more than 5 hectares in other states, and highest being in Kerala. Such variation is bound to occur as it depends on a number of factors such as soil type, climatic conditions, capacity of draught animals, intensity of cultivation, extent of mechanisation etc. In Punjab and Haryana mechanization, particularly use of tractors, was more prevalent. There was use of camels in Rajasthan both for cultivation and carting operations.

6. Bovine Deaths and Veterinary Facility

Data on bovine deaths due to various diseases during the years 1995 to 1998 was examined. It was observed that only 7 to 11 per cent bovines died due to attacks by different diseases. However, if one would see the disease-wise deaths, it is alarming to note that major toll of life was due to diseases Haemorrhagic Septicaemia (H.S.) (33%), Black Quarter (46%) and Anthrax (56%).

There are veterinary hospitals, veterinary dispensaries and veterinary aid-centres for treatment of animals and for implementation of various disease control measures. According to 1998 records, there are 51 thousand veterinary hospitals in the country. The number of centres is increasing every year, 38 thousand in 1987-88 increased to 51 thousand in 1997-98. Of the total veterinary centre, about 15% are veterinary hospitals, 31% veterinary dispensaries and 54% veterinary aid centres. Excepting in Kerala, Punjab, Madhya Pradesh, Rajasthan and Himachal Pradesh majority are having veterinary aid-centres which are operating without any qualified and competent veterinary doctors. Such veterinary aid-centres are more than 80 per cent in each of Orissa and West Bengal and more than 70 per cent in each of Assam, Bihar and Tamil Nadu. The number of bovines per veterinary centre steadily decreased from 7 thousand in 1987-88 to about 6 thousand in 1997-98 which showed some improvement. Since there are about six lakh villages in the country it is worked out that on an average, each veterinary centre caters to the needs of about 12 villages and each village is having about 500 bovines. In some states like Uttar Pradesh

and Madhya Pradesh the number of villages per hospital is more than 20. There is a veterinary centre for 3 to 5 villages in Kerala, Haryana, Punjab and Tamil Nadu. Better veterinary facilities need to be ensured in most of the states.

7. Availability of Grazing Area

Village pastures in the country play a major role as a source of sustenance to large livestock population. Table 4 gives the area available for grazing per 100 bovines along with the area under permanent pastures and other grazing land, culturable waste and total bovines for the period 1972 to 1997. The area steadily decreased from 5.6 hectares to 3.8 hectares per 100 bovines when only permanent pastures and other grazing land was considered. Since culturable waste land is generally used for grazing, this area is added to the regular category of grazing area. Considering all these categories, the area available for grazing for 100 bovines decreased from 13 hectares in 1972 to 8.6 hectares in 1997. The extent of grazing area is even less than one hectare per 100 bovines in some states. Steady decrease in total pastures and culturable waste coupled with increase in bovine population are the main reasons for decrease in the availability of area for grazing. It is likely that pasture land and culturable waste land are partly being brought under cultivation or used for other use. Decrease in the availability of grazing area is an indicator of retarded development for livestock.

Table 4 : Availability of grazing areas

Year	Permanent Pastures (mill. hect.)	Culturable Waste (mill. hect.)	Total (mill. hect.)	Total Bovines (mill.)	Area (hect.) available for grazing per 100 bovines	
					(2)/(5) × 100	(4)/(5) × 100
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1972	13.26	17.50	30.76	235.7	5.62	13.05
1977	11.97	16.74	28.71	242.0	4.95	11.86
1982	11.40	15.00	26.40	262.2	4.35	10.07
1987	11.30	14.99	26.29	275.7	4.10	9.54
1992	11.10	14.59	25.69	288.8	3.84	8.90
1997	11.24	14.21	25.45	296.1	3.79	8.59

8. Fodder Crops

In addition to pastures, very little support is provided through a meagre area devoted to cultivated fodders. Area under fodder crops was 8.9 million hectares during 1994-95 which was about 4.7 per cent of the cropped area

in the country. The area was 7.9 million hectares during 1984-85 which means there was increase of only one million hectare during 10 years. State-wise examination of data for 1994-95, revealed that maximum area under fodder crops was in Rajasthan accounting for about 33 percent of cropped area followed by Gujarat (14%), Maharashtra (13%) and Uttar Pradesh (11%). More areas need to be utilised for growing fodder crops to improve the nutritional status of livestock.

9. Level of Milk Production

There is considerable disparity in the level of milk production of cows and buffaloes in different states. The national average of daily milk yield of a cow in milk during 1996-97 was estimated to be 2.5 kg. The states where the level of production was higher are Punjab (6.7 kg.), Haryana (4.8 kg.), Kerala (4.6 kg.), Tamil Nadu (3.5 kg.) and Gujarat (3.3 kg.) In the case of buffaloes, as compared to the national average of 3.4 kg. per day, the estimated yield was 5.6 kg. both in Punjab and Haryana, 4.8 kg. in Kerala, 4.0 kg. in Rajasthan and 3.9 kg. in Gujarat. The overall average daily milk yield of a cow was 1.9kg. in 1987 and 2.2 kg. in 1992. Some states had better than the national average. There was not much difference in the yield of buffaloes during 1987 to 1997, although increase in level of yield was noticed in some states. A critical examination of data showed that the states where recognized breeds of cows and buffaloes and/or crossbred cows are more, the level of production are higher. According to 1992 Livestock Census, crossbred cows constituted only about 6% of milch animals in the country, although it was of the order of 49% in Kerala, 17% in each of Tamil Nadu and Jammu & Kashmir and 15% in Punjab. Efforts may be made to introduce crossbreeding programmes more effectively in states like Bihar, Orissa, Assam and Madhya Pradesh.

10. Per Capita Availability of Milk

The per capita availability of milk was worked out utilizing the estimates of milk production and human population. The overall per capita availability of milk was 162 gm., 182 gm. and 204 gm. per day in 1987, 1992 and 1997 respectively which means there was an increase of 42 gm. per day during last 10 years. Whereas the per capita per day availability of milk was estimated to be higher than the national average in Punjab, Haryana, Gujarat, Rajasthan, Himachal Pradesh and Jammu and Kashmir, it was less than 100 gm. per day in all the eastern states of Assam, Bihar, Orissa and West Bengal. The per capita availability of milk in the remaining states situated in the central belt, from north to south was closer to the national average. Under this indicator, the western states may be considered as well-developed, eastern states

under-developed and central states as developing ones. The main reason for higher per capita availability of milk in some states was due to higher proportion of milch buffaloes and higher productivity of milch stock as compared to other states.

11. Insurance

National Insurance schemes are taken up to cover farmers for their animals against risk factors and thereby to improve the economic conditions of cattle owners. Cattle Insurance scheme is operated in the country both under IRDP and non-IRDP. Examination of data from 1988 to 1998 shows that under IRDP, the number of cattle covered under insurance have gone up from 31 lakhs to 61 lakhs during this period whereas the number decreased from 40 lakhs to 30 lakhs under non-IRDP. The total number of cattle, however, covered is only about 4.3 per cent of the total cattle. The insurance scheme also covers the animals other than cattle, both under IRDP and non-IRDP. The animals covered were 115 lakhs in 1988 but decreased to 74 lakhs in 1998. It appears, insurance scheme is not progressing satisfactorily. The approach needs to be reviewed. The farmers particularly in Eastern region need to be encouraged to keep high yielding milch stock so that they will feel the necessity of going for cattle insurance.

12. Conclusion

The states particularly in Western region which performed better, possess high yielding buffaloes, crossbred cows and some recognised breeds as well as having better veterinary facilities. The Eastern states are lacking in all these factors and as a result of which they are far behind the development process.

Some measures need to be taken so as to make the development programmes more effective are

- Eastern and north-eastern states may be encouraged to have crossbred cows and high yielding buffaloes.
- Veterinary facilities should be improved. Number of veterinary hospitals may be increased and veterinary-aid-centres be converted to veterinary hospitals and veterinary dispensaries with competent and qualified doctors. Efforts should be made to reduce mortality rates due to diseases, H.S., Black Quarter and Anthrax.
- Acreage under fodder crops may be increased.
- Grazing area need to be increased and improved.

A cent per cent centrally sponsored National Project for cattle and buffalo breeding is being taken up to preserve and improve important indigenous breeds and to upgrade the non-descript ones. The success of this project will improve the level of economy particularly in the North-eastern region where the livestock development is not upto the expectation.

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