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# **Assessment of Livestock Feed and Fodder in the State of Uttar Pradesh**

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## Foreword

Presently about seventy percent of the livestock in India are reared by the marginal and small farmers as well as landless agricultural labourers. Though, India has the best breed of buffaloes in the world yet, the productivity of buffaloes is much less as compared to that with some other Asian countries. This is merely due to the fact that the rearers of bovine animals are widely dispersed in the areas with poor infrastructure having limited access to the markets and services. Livestocks are closely linked to the social and cultural lives of millions particularly resource poor farmers for whom animal ownership ensures varying degree of sustainable farming and economic stability. Livestocks are also the living bank for many farmers and play a critical role in the process of agriculture intensification through manure, biofertilizer, fuel and draught power. The importance of livestock as a source of income at the farm level vary across ecological zones and production system which in turn determines the species raised and the products and services generated. Therefore, a comprehensive assessment of the status of livestock development in eastern and backward regions of northern states of India was to be done for livestock development to fulfill the recommended dietary levels of livestock products stated by the I.C.M.R. In view of this the study entitled “Assessment of Livestock Feed and Fodder in the State of Uttar Pradesh”, was conducted by AERC, Prayagraj.

This study reveals that the area under fodder crops grown by the farmers was meagre in the area under study. During the Kharif season Paddy, Sugarcane, Bajra and Maize and in Rabi season Wheat and Berseem were the main crops and in Zaid season no crop was grown. It was evidently clear that in all the four categories of animals under this study, the value of female animals was comparatively higher than male animals. The value of milking buffaloes was much higher than other milking bovine animals. Pregnant heifers were fed larger quantity of feeds and fodders than that to non-pregnant heifers. The majority of sample households rearing animals were facing all sorts of constraints in production of fodders in the area under study in Uttar Pradesh.

This study has been conducted by Dr. Rajendra Singh, Ex. R.O., AERC, Allahabad who after discussion with state level officers and collection of required secondary information,

supervised sampling and field survey after testing the schedules. Checked the schedules during scrutiny and supervised posting of data, compilation and analysis and drafted the report and executive summary. Dr. H.C. Malviya assisted in the collection of secondary data, sampling, conducted field survey, posting of data and analysis. Sri R.S. Maurya and Mr. Gaurav Prajapati also conducted field survey, posting of data and analysis. Sri Ovesh Ahmad typed the report and correspondence letters. Our thanks are due to the Director, Animal Husbandry & Dairying, Uttar Pradesh who provided required secondary information and itinerary for the completion of this study. Our thanks are also due to all others who assisted and cooperated to complete this study.

Any comments or suggestions for improvement in the report of this study will be acknowledged thankfully.

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# Executive Summary

## Introduction

In India where mixed farming system still prevails, livestock reduce the risk through diversification of production and income sources and therefore, there is much greater ability to livestock to represent liquid asset which can be realized at any time adding further stability to the production system. The importance of livestock as a source of income at the farm level varies across ecological zones and production systems, which in turn determines the breeds reared and the products and services generated. Livestock rearing in India is practiced largely by small and unorganized farmers who generally rear one or two buffaloes or cows on crop residues and by-products with the help of underemployed and unemployed family labourers particularly the women work-force. Livestock rearing has also assumed momentous dimensions in the context of decreasing operational land holding due to subdivision and fragmentation and ever increasing population, as the rural economy of our country is mainly characterized by subsistence agriculture and gross unemployment. Feed being the major item of cost constitutes about 60 percent of the total cost of the milk production. Thus, for maximizing feed availability and minimizing the cost of feed will certainly increase the margin of profits to livestock rears in the state of Uttar Pradesh. There is high pressure of livestock population on the available feed and fodder due to acute shortage of land for feed and fodder production. Therefore, a comprehensive assessment of the status of livestock development in the backward regions of Uttar Pradesh was barely needed to be done. Keeping this in view, the study entitled, “Assessment of Livestock Feed and Fodder in the State of Uttar Pradesh”, was conducted with following main objectives:

### Objective of the study:

1. To estimate the area, production and productivity of major green and dry fodder crops.
2. To study the growth pattern of major livestock production.
3. To assess feed and fodder availability, requirement, deficit/surplus to improve productivity.



### **Methodology of Study:**

(Detailed procedures for estimation of demand and supply of feed and fodder are given in the report).

### **Sampling Framework**

The proportionate sampling technique was applied to undertake sample livestock rearers from the distinct selected districts, one each from the western eastern and central agro-economic regions of the state of Uttar Pradesh. These districts were chosen based on the size of the population of buffalo, cattle and goats by ranking the individual districts. Therefore, districts having top three ranks were selected representing different regions of the state of Uttar Pradesh. Such districts were namely (1) Agra from western region, (2) Baharaich from eastern region and (3) Lakhimpur Khiri from central region. From these districts thus, selected, 120 cattle rearing farmers, 120 buffalo rearing farmers and 120 goat rearing farmers were chosen making a total of 360 sample farmers from the state. Villages were selected based on the density of animal population. Cattle rearing farmers include both cross bred and indigenous cows. Farmers rearing all kinds of animals were considered more than one sample farmers. The sampling design is given in Table.

**Table**  
**Sampling Design**

<b>Sl. No.</b>	<b>State</b>	<b>Regions</b>	<b>Districts</b>	<b>Sample Farmers</b>			
				<b>Cattle Rearers</b>	<b>Buffalo Rearers</b>	<b>Goat/Sheep Rearers</b>	<b>Total</b>
1.	Uttar Pradesh	Western	Agra	18	29	31	78
		Eastern	Baharaich	46	47	46	139
		Central	Lakhimpur Khiri	56	44	43	143
1	1	3	3	120	120	120	360

## Major Findings of the Study:

The main findings of the present study are as follows:

- The population of crossbred female cattle in the state of Uttar Pradesh were dominant, wherein, the maximum were in milk.
- Obviously the majority of adult female buffaloes were in the milk and the number of female buffaloes under the age of one to three years as well as up to one year were considerable in the whole state of U.P.
- The population of both female as well as male goats under the age of one year were maximum in the state of U.P. The numbers of female goats in milk were also considerable in the state of U.P.
- Regarding the growth pattern of livestock, the growth in population of exotic cows was tremendous by 3 times more till the 20<sup>th</sup> census in the state U.P.
- Among the buffaloes the number of female buffaloes had increased considerably in the state as a whole.
- As regards the availability of green fodder, there was a deficit of total green fodder as - 681.50 lakh metric tonnes till 19<sup>th</sup> census in the state of U.P.
- The educational level among the sample respondents was deplorably poor as 41.70percent of them were illiterates in the present era of cyber age.
- Regarding gender of respondents, the majority i.e. 90.64 percent were males and only 9.31 percent were females among the total sample respondents.
- Regarding average experiences in respective occupations of farmers, it was found that crop-grower had 27 years, livestock rearer had 17 years and a goat rearer had 11 years' experience generally in the area under study.
- The average income per household from different occupations was estimated as from agriculture Rs. 1,45,143, from dairying Rs. 1,03,149, from goat rearing Rs. 13,640 and from other occupations, it was Rs. 98,826 per household in the area under study.
- Regarding average family member engaged in different occupations it was found that in farming (growing crops). 1.44 members, in dairying 1.92 members and in goat rearing only 1.26 members were engaged in the area under the study generally.
- Accordingly among the total 247 sample households adopting as their primary occupation 134 had adopted agriculture, 22 had adopted animal husbandry and

dairying, 62 had adopted agricultural labour, 22 had adopted non-farm labour, none had opted trade, 1 had opted private employment, 1 had opted other job.

- As their secondary occupation out of 247 households, 23 had opted agriculture, 122 opted animal husbandry and dairying, 56 opted agricultural labour, 27 non farm labor, none opted trade, 4 opted private employment and 5 opted other job in the area under study.
- The average land owned was estimated as 2.04 acres per farmer in the area under study.
- The area under fodder crops was estimated as 0.33 acre per farm among sample animal rears.
- Regarding sources of irrigation it was found that the maximum i.e. 153 sample farmers had used bore wells and 22 had used cannel as source of irrigations in the area under the study.
- The main kharif crops were paddy, sugarcane, bajra and maize and rabi crops were wheat and barseem in the under study.
- The return from paddy was Rs. 35,328/- per acre, from sugarcane rs. 1,54,507/- from bajra Rs. 16,386/- from maize Rs. 12,456, fodder Rs. 9,824 wheat Rs. 42,136 and berseem Rs. 5,709/- respectively.
- Age-group wise classification of buffaloes showed that up to 1 year there were 4, in 1 to 2 years there were 35 and in the age-group of above two years there were 198 buffaloes on an overall.
- The age wise classification of crossbred cattle indicated that up to 1 year the number was nil, in 1-2 years the number was 15 and in above 2 years group the number was 165 on an overall.
- The age-wise classification of indigenous cattles showed that up to 1 year the number was nil, in 1-2 years group the number was only 3and above 2 years group the number was 28 on an overall.
- The age wise of classification of goats showed that in up to 1 year group there were 53, in 1-2 years group there were 234 and in above 2 years group there were 242 on an overall.
- The value of milking buffaloes was comparatively much higher than the other milking bovine animals of other categories in the area under study.

- Among pregnant heifers the value of heifers of crossbred cattle was higher. But among the non pregnant heifers the value of buffalo heifers was higher.
- As the regards the feed and fodder, fed to buffaloes it was found that the milking buffaloes were fed comparatively larger quantity of feed and fodder than that to the dry buffaloes in the area under study.
- Thus milking animals and pregnant heifers were fed larger quantity of feeds and fodders than that to other animals in the area under study.
- The total requirement of green fodder during 2019 was higher for the milking buffaloes followed by cattles. But for adult males of cattles and buffaloes the requirement of green fodder was lower. For goats it was considerable.
- The requirement of dry fodder for buffaloes in milk, young stock of buffalo and cattle in milk was found to be higher. But for goats and adult male cattles and buffaloes it was lower in the state U.P.
- The total requirement of concentrates was found to be higher for the milking buffaloes. But for goats it was found to be lowest in the state U.P.
- Crop residues were received maximum from wheat and paddy crops and the minimum from other cereals and small millets. From other fodder crops also it was received considerably.
- Regarding availability of grains it was received maximum from paddy and wheat and the minimum from small millets and other cereals in state as a whole.
- Grazing land, feed preservation and storage as well as legumes grown as hedge were the major sources of livestock feed in the area under the study in U.P.
- Maximum of cattle sheds mentioned by sample households were kaccha cattle sheds and the average value of such cattle sheds was slightly higher than that of puccha cattle sheds in the state of U.P.
- As regards labour and other charges it was found that buffaloes and crossbred cattles both males as well as females had required comparatively more human labour than other live stocks in the area under study in U.P.
- About returns from livestock rearing the return from milk by buffaloes was Rs.10,92,469 against the minimum i.e. Rs. 1,86,115 from goats.
- The return from dung was higher in case of buffaloes against the minimum in case of goats in the area under study.

- Almost all the sample livestock rearers had expressed their views that due to the lack of land they could not put required area of land under fodder seed as well as crop production in the state of U.P.
- Also all the livestock rearers had complained about unsuitability of land for fodder cultivation, high cost of cultivation/ production, low prices and returns and quality seed in the markets.
- Also majority of sample livestock rearers had complained about lack of grazing land, livestock extension services, awareness of govt. programmers and training facilities in the state of U.P.
- 100 percent of sample livestock rearers had reported that they had not adopted any post harvest techniques of fodder preservation etc. in the state of U.P.
- Almost all the sample livestock rearers had reported that stored/ preserved fodders were found much inferior than to have fresh fodders in the area under the study.
- Also majority of sample live stock rearers had told fodder production to be much expensive and more labourious and acute shortage of post harvest management of fodders.
- Regarding benefits from the government almost all the sample livestock rearers had told not to get any benefit from government for livestock rearing in the area under study in the state U.P.
- Majority of livestock rearers had suggested the concerned state and union government to supply adequate and proper fodder seeds for sustainable and vulnerable market facilities for the improvement of fodder related crops in the state of U.P. They also suggested for providing effective extension services and training facilities.

### **Policy Suggestions**

Based on the main findings of this study the following suggestions are being prescribed for policy implications:-

1. For improving the quality of milk the tremendous growth of exotic cattle population in the state of U.P. should be checked and shifted to increase the population of improved breeds of buffaloes as well as indigenous cattles.
2. The huge deficit of total green fodders in the state of U.P. must be fulfilled through more intensification in fodder cultivation throughout the year in all the seasons.

3. Educational level of livestock rearers must be upgraded as this occupation has been opted by the poorer where in about 42% are still illiterates in the present cyber age.
4. Female members of livestock rearing households must be encouraged for opting this occupation independently throughout the state of U.P. like the women dairy cooperatives of Gujrat state for increasing females share and gainful employment.
5. Since dairying has emerged as second higher income providing occupation among majority of landless and marginal farmers, there must be any sound policy by government so that it may be opted as their primary occupation.
6. Due to small holdings the farmers must be encouraged to shift to animal husbandry and dairying from crops raising.
7. The farmers rearing animals must be facilitated and be provided subsidy to grow more fodder crops for improving quality of milk.
8. Source of irrigation must be increased with improved avenues in the area under study in U.P.
9. During Rabi season more fodder crops must be grown and during Zaid season too suitable varieties of fodders must be grown in the state of U.P.
10. The numbers of improved breeds of buffaloes must be increased curtailing the number of crossbred cattles.
11. The number of goats up to age of 1 year must be increased as it was less.
12. For improving the quality of milk the pregnant heifers, milking cattles and buffaloes must be cared properly during feeding, watering etc. in winter and summer seasons in the state of U.P.
13. For increasing the milk yields of buffaloes as well as indigenous cattles in the state of U.P. the quantity of green fodders, concentrates etc. and supplements must be increased undoubtedly.
14. For higher returns remunerative prices of both mahishvanshiya as well as govanshiya animals must be paid to the respective livestock rearers based on the fat percentage in their milk produced in the state of U.P.
15. Suitable post harvest techniques must be provided to needy livestock rearers particularly to those who consider preserved/stored fodders and feeds inferior than fresh fodders and feeds in the area under study.
16. Government must provide incentives/ benefits to potential livestock rearers for sustainable and vulnerable processing and marketing facilities in the state of U.P.

# Chapter-I

## Introduction

### I.1.: Background of the Study

Livestocks are closely linked to the social and cultural lives of millions particularly resource poor farmers for whom animal ownership ensures varying degree of sustainable farming and economic stability. Livestocks are also the living bank for many farmers and play a critical role in the process of agriculture intensification through manure, biofertilizer, fuel and draught power. Presently about seventy percent of the livestock in India are reared by the marginal and small farmers as well as landless agricultural labourers. Through, India has the best breed of buffaloes in the world yet, the productivity of buffaloes is much less as compared to that with some other Asian countries. This is merely due to the fact that the rearers of bovine animals are widely dispersed in the areas with poor infrastructure having limited access to the markets and services.

Livestocks provide increased economic stability to farm households acting as a cash buffer, a capital reserve and as a hedge against inflation. In India where mixed farming system prevails, livestock reduce the risk through diversification of production and income sources and therefore, there is a much greater ability to livestock to represent liquid asset which can be realized at any time adding further stability to the production system. The importance of livestock as a source of income at the farm level vary across ecological zones and production systems, which in turn determines the species raised and the products and services generated.

Livestock rearing in India is practiced largely by small and unorganized farmers who rear one or two buffaloes or cows on crop residues and by-products with the help of underemployed and unemployed family labourers, especially the woman work force. Also livestock rearing has now become an important secondary source of income for millions of rural families and has assumed the most important role in providing employment and income generating opportunities particularly for marginal and women farmers. The role of livestock rearing has also assumed momentous dimensions in the context of decreasing operational land holding due to sub-division and fragmentation and ever increasing population, because

the rural economy of our country is mainly characterized by subsistence agriculture and gross unemployment.

We all know that farming is the single largest private sector economic activity in India. The growth potential in this key sector is immense in view of the changes taking place in food consumption and there is growing demand for high value processed products. Successes in such endeavours will require innovation and partnerships. Private agri-business provides first market for the farm sector and growth depends mainly on private initiatives. A significant portion of agri-business activity is the result of small and medium enterprises. Such enterprises are necessarily wide spread in location to capture opportunities that arises all along the farm to table supply chain. Key constraints that impede development of new agri-business projects are access to information and access to credit. The policy of agriculture diversification in tune with the emerging demand pattern for livestock products in accordance with diet diversification would facilitate livestock rearers significantly. The demand for livestock products gives an opportunity to increase incomes and employment and to reduce poverty in rural areas. If flexibility on the supply side is facilitated, production will adjust to the market forces and generate higher incomes in the rural areas and help to meet the target of doubling farmer's income.

Feed is a major item of cost which alone constitutes about 60 percent of the total cost of the milk production. To reduce the cost of quality livestock products, there was urgent need for assessment of feed and fodder availability. Thus, attempts for enhancing feed availability and minimizing the cost of feed will certainly increase the margin of profits to livestock rearers in the state of U.P. There is high pressure of livestock population on available feed and fodder due to acute shortage of land for feed and fodder production. To fulfill the required production of livestock products and balance the growth in livestock population and the deficit in green fodder, dry fodder, crop residues and feed, the land area and productivity of fodder crops will have to be increased accordingly. Though, with the increase in the production of food grains, the crop residues and concentrates feed ingredients availability has also increased. However, the crop diversification in recent past years has, replaced the coarse cereals which has certainly affected the availability of crop residues and feed concentrates.



Coarse cereals play a major role in livestock feed supply, particularly the coarse cereals such as maize, sorghum, barley and pearl millet which account nearly 44 percent of the total cereals. Production of these cereals has also stagnated these days. Therefore, there is urgent need to improve the productivity of these cereals to meet-out the requirement of animals feeds in the state and the country.

## **I.2.: Details of Major Livestock Population in the State of Uttar Pradesh**

### **I.2.1: District-wise Exotic/Crossbred Cattle Population as per 20<sup>th</sup> Livestock Census, 2019 in Uttar Pradesh**

The district-wise exotic/crossbred cattle population according to 20<sup>th</sup> livestock census during 2019 in the state of Uttar Pradesh worked-out in Table-I-2.1 indicates that the total population of crossbred cattle in the whole state of Uttar Pradesh in 2019 was enumerated as 61,22,628 of which the maximum i.e. 57,19,466 were female cattle and the remaining 4,03,162 were accounted as male cattle on an overall. Among the female cattle 22,66,937 were in milk and 6,84,344 were reported to be dry. 14,75,945 were reported to be under one year and 11,08,118 were under one to two and half years 1,14,073 were not even calved once and 66,049 were reported as other cattle in the state of Uttar Pradesh. Thus, the population of female crossbred cattle in the state of Uttar Pradesh were dominating and maximum of which the maximum were in milk. While among the male cattle the maximum i.e. 2,38,743 were under one and half years, 82,366 were used for agriculture only, 32,189 male cattle were used for bullock-cart and farm operation, 24,589 males were used for breeding only and 11,900 were used for other works. Thus, it was very well clarified that still a considerable number of male cattle are used for agriculture in the state of Uttar Pradesh.

The district-wise analysis of female cattle shows that the maximum number of female cattle i.e. 2,36,711 were reported in Muzaffarnagar district against only 4,838 female cattle in Chitrakoot district of Uttar Pradesh and in other districts it was varying in between these numbers. The data are contained in Table-I-2.1.

**Table-I-2.1**  
**District-wise Exotic Cattle Population in 20<sup>th</sup> Livestock Census, 2019 in Uttar Pradesh**

S. No.	Districts Name	Exotic														Total
		Male							Female							
		Upto one & half year	Used for breeding only	Used for agriculture only	Agriculture & breeding	Bullock cart farm operation	others	Total male	Under one year	One to two & half years	In milk	Dry	Not calved once	Others	Total female	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	Agra	1624	1078	812	92	110	235	3951	30884	18223	48613	8263	3231	1317	110531	114482
2	Aligarh	8731	416	2446	257	6232	198	18280	35707	18802	66334	17259	942	631	139675	157955
3	Allahabad	5372	597	1001	265	223	328	7786	43205	34669	66617	24289	3794	2381	174955	182741
4	Ambedkar Nagar	6318	1620	1798	551	151	639	11077	30823	33393	30167	18475	1588	3723	118169	129246
5	Amethi	2792	321	453	244	45	148	4005	14917	10009	17227	8129	1144	1133	52559	56564
6	Amroha	9455	189	3976	249	1410	157	15436	20990	17125	37788	10052	1299	527	87761	103197
7	Auraiya	298	44	89	31	15	2	479	7632	6216	10366	3666	696	289	28865	29344
8	Azamgarh	6785	254	377	110	57	248	7831	55767	47174	75078	27556	4644	2868	213087	220918
9	Baghpat	4471	122	2759	366	1304	117	9139	25801	14179	44787	9783	806	225	95581	104720
10	Bahraich	884	81	563	137	8	66	1739	5754	4461	6692	3570	459	189	21125	22864
11	Ballia	4634	150	112	54	20	297	5267	53982	50191	82991	19996	3195	1577	211932	217199
12	Balrampur	812	103	368	65	85	97	1530	4271	3551	5497	2020	575	232	16146	17676
13	Banda	622	443	127	7	18	43	1260	1533	1320	1056	310	72	85	4376	5636
14	Barabanki	2067	106	356	48	65	55	2697	13869	13292	20488	9767	998	387	58801	61498
15	Bareilly	2421	260	621	118	119	123	3662	8613	7315	15246	4325	643	695	36837	40499
16	Basti	2429	56	77	42	37	202	2843	15166	13896	20421	7439	950	623	58495	61338
17	Bijnor	11295	440	8099	450	2453	385	23122	47795	28682	72555	18623	5640	848	174143	197265
18	Budaun	5232	2706	3751	770	2386	428	15273	13132	9583	20017	7191	1520	906	52349	67622
19	Bulandshahr	7542	686	5465	1221	6689	261	21864	34542	24381	74757	12808	2856	1059	150403	172267
20	Chandauli	3309	99	72	27	9	44	3560	47447	32049	55563	16101	2600	3099	156859	160419
21	Chitrakoot	240	17	58	31	0	3	349	1053	922	1497	745	217	55	4489	4838
22	Deoria	4518	200	185	64	56	344	5370	52560	44432	64110	16404	3254	1766	182526	187896
23	Etah	1453	108	474	20	255	117	2427	12754	7644	20310	5570	1540	539	48397	50824
24	Etawah	1474	75	324	27	36	7	1943	10010	6434	18985	3526	820	439	40214	42157
25	Faizabad	2359	254	628	57	14	90	3402	12865	15697	13879	6445	1246	867	51003	54405

26	Farrukhabad	1448	136	619	88	72	17	2380	9345	6431	16450	5340	1082	330	38979	41359
27	Fatehpur	1639	97	1057	192	69	87	3141	7615	4977	17260	4075	715	206	29848	32989
28	Firozabad	2380	81	247	108	15	297	3128	21749	17822	39262	8254	1529	955	89571	92699
29	Gautam Buddha Nagar	2326	326	899	133	686	123	4493	11127	6668	24696	3467	873	303	47134	51627
30	Ghaziabad	3149	396	1040	67	673	42	5367	17936	10868	38156	6601	935	417	74913	80280
31	Ghazipur	2867	72	58	35	21	177	3230	27154	27092	35473	16502	1559	728	108508	111738
32	Gonad	3287	343	718	174	88	135	4745	29782	20087	47346	15132	3258	1401	113006	117751
33	Gorakhpur	5080	277	319	112	64	634	6681	46343	40978	69373	25326	3002	2161	187183	193864
34	Hamirpur	220	10	15	27	5	1	278	1800	882	2287	441	140	16	5566	5844
35	Hapur	3969	68	2068	82	434	197	6818	14840	9391	30925	6621	666	190	62633	69451
36	Hardoi	2694	499	2299	303	1233	558	7586	10193	7831	16721	5654	980	754	42143	49729
37	Hathras	1185	148	272	135	479	139	2358	12358	7302	22338	3781	1030	712	47521	49879
38	Jalaun	788	12	21	6	12	10	849	6086	3269	7428	1389	948	200	19320	20169
39	Jaunpur	7757	343	345	166	104	305	9020	42815	35069	65555	30880	5415	4051	183785	192805
40	Jhansi	212	19	22	8	59	55	375	2482	1692	2820	1024	209	83	8310	8685
41	Kannauj	676	170	193	98	40	77	1254	9677	8009	15578	3240	413	548	37465	38719
42	Kanpur Dehat	2676	221	220	37	30	48	3232	12070	10141	20860	3662	545	370	47648	50880
43	Kanpur Nagar	1736	142	234	18	36	529	2695	13009	7744	23255	5519	660	319	50506	53201
44	Kasganj	851	59	1164	37	136	83	2330	3587	2309	5993	1907	470	157	14423	16753
45	Kaushambi	3736	758	304	58	46	25	4927	9429	6762	13033	3711	336	269	33540	38467
46	Kheri	5749	576	5622	398	391	139	12875	18664	16018	24887	12368	2005	1203	75145	88020
47	Kushi Nagar	4409	94	390	110	103	199	5305	32356	19559	35475	14865	1275	630	104160	109465
48	Lalitpur	63	17	11	8	2	2	103	2670	4592	2792	2351	406	196	13007	13110
49	Lucknow	2100	857	497	949	517	108	5028	13590	7771	22962	7503	1632	929	54387	59415
50	Maharajganj	1735	180	269	114	100	99	2497	10606	6580	13456	6489	893	318	38342	40839
51	Mahoba	125	3	31	5	3	2	169	555	307	759	241	14	20	1896	2065
52	Manipur	2402	233	645	98	99	137	3614	19355	14406	27165	6231	680	835	68672	72286
53	Mathura	1811	144	527	87	334	43	2546	14479	7839	19963	6652	2646	2007	50586	53532
54	Mau	2354	81	75	15	14	48	2587	15340	11151	18213	8105	1302	866	54977	57564
55	Meerut	7989	353	3149	437	775	191	12854	48208	26816	92352	12895	3858	1192	185321	198215
56	Mirzapur	4184	2264	2274	46	18	62	8848	46481	36391	73066	24309	3499	1360	185106	193954
57	Moradabad	7185	989	5162	616	309	101	14362	16017	11306	29635	7712	1123	302	66095	80457
58	Muzaffarnagar	10187	352	3374	299	912	337	15421	52516	42182	100212	21842	2720	1818	221290	236711
59	Pilibhit	2088	75	597	50	141	143	3054	8124	6849	11685	3791	718	441	31608	34702
60	Pratapgarh	3553	661	699	375	101	183	5572	31144	28401	38027	13366	4375	1911	117225	122797
61	Rae Bareli	3340	298	1092	50	73	104	4957	15342	12156	21602	10044	1675	1019	61838	66795

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62	Rampur	1961	115	577	67	322	101	3143	9420	6956	14069	3398	916	867	35626	38769
63	Saharanpur	7345	161	2095	202	477	93	10373	43533	26460	66409	21041	1239	1072	159748	170121
64	Sambhal	3424	155	1019	199	259	36	5092	9164	5800	16240	3991	1316	197	36708	41800
65	Sant Kabeer Nagar	2533	658	1119	1080	54	89	5533	13053	11165	17008	6931	808	558	49523	55056
66	Sant Ravidas Nagar	893	66	100	33	6	13	1111	11952	9314	16440	7630	1553	750	47699	48810
67	Shahjahanpur	609	116	408	129	102	26	1390	3019	2643	5227	2433	838	350	14510	15900
68	Shamli	3849	50	918	63	368	47	5295	23309	13723	40509	12316	715	211	90784	96079
69	Shravasti	249	59	85	24	12	4	433	7307	1917	5215	1370	235	42	16086	16519
70	Siddharth Nagar	410	47	39	8	1	41	546	4187	3603	5394	878	613	178	14853	15399
71	Sitapur	1791	236	1423	163	129	154	3896	10541	7271	14378	4599	773	619	38181	42077
72	Sonbhadra	1559	99	611	32	4	18	2323	7384	5407	10415	3790	809	1063	28868	31191
73	Sultanpur	4096	298	548	100	113	311	5466	30095	22716	44990	17545	2296	1483	119125	124592
74	Unnao	1387	199	1383	148	45	241	3403	9462	6490	14710	4018	792	382	35854	39257
75	Varanasi	3550	556	519	323	304	455	5707	44562	33365	66558	20727	2853	2600	170965	176672
	<b>Total</b>	<b>238743</b>	<b>24589</b>	<b>82366</b>	<b>13375</b>	<b>32189</b>	<b>11900</b>	<b>403162</b>	<b>1479945</b>	<b>1108118</b>	<b>2266937</b>	<b>684344</b>	<b>114073</b>	<b>66049</b>	<b>5719466</b>	<b>6122628</b>

Source: Dte. of Animal Husbandry & Dairying Uttar Pradesh, Lucknow, U.P.

### **I.2.2: District-wise Indigenous Cattle Population as per 20<sup>th</sup> Livestock Census, 2019 in Uttar Pradesh**

The district-wise Indigenous cattle population as per 20<sup>th</sup> livestock census during 2019 in Uttar Pradesh worked-out in Table-I-2.2 shows that the numbers of total indigenous cattle in the state of Uttar Pradesh were enumerated as 1,28,97,013 on an overall of which the maximum i.e. 1,12,29,207 were female indigenous cattle and 16,67,806 were male cattle. Among female cattle the maximum i.e. 39,37,367 were in milk, 28,02,047 were under one year 23,51,830 were in the age of one to two and half years, 16,51,807 were reported as dry, 2,81,619 were found as not calved once and 2,04,537 were reported as others in the whole state of Uttar Pradesh. Thus, among the indigenous female cattle too the maximum were in milk.

While among the total male indigenous cattle i.e. 16,67,806, the maximum i.e. 7,88,591 were used for agriculture only, 1,04,820 were used for the bullock cart and farm operation, 62,061 were used for breeding only, 6,13,504 were under the age of one to two and half years and 40,795 were reported as other indigenous male cattle in the whole state of Uttar Pradesh. Therefore, it is safely concluded that among the total male indigenous cattle the maximum were still used for agriculture only in these days of mechanized farming system in the state of Uttar Pradesh.

The district-wise distribution of total indigenous cattle shows that the maximum indigenous cattle i.e. 5,18,878 were accounted in Sonbhadra district against the minimum i.e. 28,952 only is Sant Kabir Nagar district. While the maximum female indigenous cattle i.e. 3,55,264 were reported in Sitapur district against the minimum i.e. 26,725 in the Sant Kabir Nagar district. The related data are given in Table-I-2.2.

**Table-I-2.2**  
**District-wise Indigenous Cattle Population in 20<sup>th</sup> Livestock Census, 2019 in Uttar Pradesh**

S. No.	Districts Name	Indigenous														Total
		Male							Female							
		Upto one & half year	Used for breeding only	Used for agriculture only	Agriculture & breeding	Bullock cart farm operation	others	Total male	Under one year	One to two & half years	In milk	Dry	Not calved once	Others	Total female	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	Agra	1470	359	753	125	123	61	2891	42901	38926	65913	10390	4478	2807	165415	168306
2	Aligarh	7436	379	5477	608	6166	329	20395	32251	23255	56224	16815	3648	755	132948	153343
3	Allahabad	11713	1730	8656	1041	1419	1103	25662	82643	78225	118598	48597	11772	12218	352053	377715
4	Ambedkar Nagar	4309	225	2470	87	106	507	7711	33181	32707	34803	18799	2463	3929	125882	133593
5	Amethi	13931	586	4899	618	960	681	21670	59379	55943	73482	37177	5469	5970	237420	259090
6	Amroha	8418	232	8335	234	2968	152	20339	21299	19964	39662	9583	2018	587	93113	113452
7	Auraiya	2276	174	941	90	103	155	3739	22309	16624	30066	9148	1441	503	80091	83830
8	Azamgarh	7492	361	2745	186	33	331	11148	6065	54699	74374	32377	2714	3613	228392	239540
9	Baghpat	925	104	940	149	507	21	2646	11172	6776	15986	3943	439	248	38564	41210
10	Bahraich	16375	2096	26119	2468	1748	1010	49816	68021	52942	83912	52808	7864	5038	270585	320401
11	Ballia	3703	196	436	58	103	315	4811	49646	54109	68295	27114	7852	5676	212892	217703
12	Balrampur	10424	1383	23288	2902	3933	1220	43150	34645	34077	38717	19786	5574	4121	136920	180070
13	Banda	22350	3014	52831	2378	4175	1147	85895	42998	28974	59562	25495	4418	2517	163964	249859
14	Barabanki	13211	1324	6438	645	712	542	22872	54352	52402	77247	50728	3755	1908	240392	263254
15	Bareilly	15813	724	9886	518	1911	573	29425	39149	34873	65113	20586	3061	2273	165055	194480
16	Basti	2389	111	832	59	273	264	3928	17584	16913	18369	6272	856	443	60437	64365
17	Bijnor	15734	921	21798	1343	5997	1698	47491	36458	23861	54042	15065	2560	1518	133534	181025
18	Budaun	17968	2940	23223	3455	2269	694	5099	40354	35372	61441	20157	2783	1962	162069	212166
19	Bulandshahr	5685	343	6380	638	5475	236	18757	26760	18644	51945	11189	3356	1403	13297	132054
20	Chandauli	2179	142	3466	33	14	94	5928	45339	39851	57139	24777	2808	2132	172046	177974
21	Chitrakoot	18223	2399	27161	2558	2226	300	52867	53185	37838	73728	38966	4023	2295	210035	262902
22	Deoria	2030	977	646	456	499	2344	6952	25166	24631	28835	8023	1381	4959	92995	99947
23	Etah	1503	65	1866	69	441	23	3967	9313	6876	14460	3993	524	227	35393	39360
24	Etawah	1497	83	603	73	54	31	2341	14308	11037	26184	5898	1538	1314	60279	62620
25	Faizabad	11318	628	8630	355	186	231	21348	49188	52685	57789	31877	4747	2487	198773	220121

26	Farrukhabad	1852	257	3684	232	378	57	6460	17739	18189	23546	8115	1605	652	66846	73306
27	Fatehpur	8373	412	22946	803	334	532	33400	23641	18621	3694	14023	2172	1063	96424	129824
28	Firozabad	1711	93	1052	37	52	154	3099	17336	11607	30622	6104	2196	650	68515	71614
29	Gautam Buddha Nagar	2514	115	641	125	751	98	4244	7899	4915	16982	4079	856	265	34996	39240
30	Ghaziabad	768	159	454	11	469	39	1900	4320	1893	9521	1937	147	202	18020	19920
31	Ghazipur	6047	203	689	166	84	213	7402	65874	68060	80565	42823	7017	2789	367132	274534
32	Gonad	20314	576	9122	335	913	446	21706	56824	48777	86180	37671	7308	2203	238963	260669
33	Gorakhpur	2840	135	428	158	157	423	4141	24593	21433	27108	13711	1797	784	89426	93567
34	Hamirpur	6679	397	9310	574	2232	252	19444	37410	15766	46878	12420	2644	745	115863	135307
35	Hapur	2174	71	1127	140	383	96	3991	6971	4795	13363	3212	259	73	28673	32664
36	Hardoi	19737	4101	43585	2559	4200	2075	76257	65217	56850	114568	44809	6819	5747	294010	370267
37	Hathras	2079	181	960	292	937	234	4683	17816	11523	30769	6898	1175	1704	69885	74568
38	Jalaun	6997	524	1283	141	161	151	9257	53214	26076	74256	15409	4216	1601	174772	184029
39	Jaunpur	15177	1208	2976	580	181	586	20708	74226	65136	100328	65906	7889	9942	323427	344135
40	Jhansi	7163	711	6903	937	3816	696	19486	57160	37273	69652	24826	7392	2315	198618	218104
41	Kannauj	4060	743	2380	426	464	498	8571	37701	47238	58874	31401	5327	6686	187227	195798
42	Kanpur Dehat	4594	343	1677	277	185	212	7288	32075	25038	53387	9985	1697	881	13063	130351
43	Kanpur Nagar	4366	211	2755	153	222	651	8358	27828	1935	51874	12974	1171	825	113707	122065
44	Kasganj	3163	419	8444	699	4448	168	17341	12251	9001	18582	4726	613	399	45572	62913
45	Kaushambi	5438	1695	6501	1545	282	2456	15706	32990	27630	41525	15206	2957	2014	122322	138028
46	Kheri	24715	2597	40184	1804	6101	1142	76543	68502	69346	97827	49744	11903	6723	304045	380588
47	Kushi Nagar	2034	99	1154	135	759	44	4225	15103	10838	16346	7916	669	662	51534	55759
48	Lalitpur	19118	2171	12492	864	288	296	3229	84537	65159	99061	59615	4606	3197	316175	351404
49	Lucknow	6062	1821	5981	530	1142	1246	16782	31864	23799	58441	18413	3665	1967	138149	154931
50	Maharajganj	976	120	1384	35	311	176	3002	6904	6147	7643	3773	569	225	25261	28263
51	Mahoba	7091	186	13630	840	1693	209	23649	30713	17132	42738	18085	2016	2571	113255	136904
52	Manipur	2944	671	1737	143	231	330	6056	17631	11789	20472	6443	2156	2806	61297	67353
53	Mathura	8463	847	2405	457	2415	877	15464	36589	19247	65876	17442	2741	3345	145240	160704
54	Mau	3235	145	303	22	57	90	3857	30761	25488	33586	18125	1652	2271	111883	115740
55	Meerut	2616	202	2248	158	344	68	5636	9508	6739	18998	3931	1227	331	40734	46370
56	Mirzapur	10771	2716	17885	1704	1051	1402	35529	66262	57465	96817	48283	7260	5618	281705	317234
57	Moradabad	7999	669	8232	783	2212	121	20016	18241	15336	31735	8405	2163	581	76461	96477
58	Muzaffarnagar	2982	156	4620	237	716	115	8826	9836	10879	19467	4621	578	306	45687	54513
59	Pilibhit	9710	288	6088	301	458	519	17364	25984	25281	38288	14615	2793	1260	108221	125585
60	Pratapgarh	13513	983	4975	915	459	626	21471	116226	100181	136428	64209	24630	18261	459935	481406

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61	Rae Bareli	22804	1002	31038	1215	4094	627	60780	60894	47633	88751	53644	10380	2981	264283	325063
62	Rampur	3552	296	3025	744	953	448	9018	14056	12727	23378	5696	661	1791	58309	67327
63	Saharanpur	3857	114	3885	189	530	402	8977	26014	14305	34075	11676	661	675	87406	96383
64	Sambhal	11921	454	8569	743	7908	221	29816	2475	20960	41190	12689	2755	951	103297	133113
65	Sant Kabeer Nagar	1276	112	507	103	132	97	2227	6956	6569	9141	3569	298	192	26725	28952
66	Sant Ravidas Nagar	3996	232	858	83	21	97	5287	37276	38562	48908	24438	3543	5641	158368	163655
67	Shahjahanpur	11282	1316	15545	2725	1982	787	34037	50192	44875	72497	37683	3797	2162	211206	245243
68	Shamli	1030	10	944	16	157	17	2174	5343	3116	8318	2700	125	36	19638	21812
69	Shravasti	4890	2260	26801	879	625	1283	36738	26770	17914	42503	13454	3642	2502	106785	143523
70	Siddharth Nagar	2672	143	1049	89	48	246	4247	20991	23362	24123	5364	1660	1918	77418	81665
71	Sitapur	20095	1866	43925	2878	2708	1918	73390	91816	69114	121696	58336	6970	7332	355264	428654
72	Sonbhadra	42016	3720	110204	4701	811	1967	164419	83483	71994	109814	75838	8491	4839	354459	518878
73	Sultanpur	9801	1004	4703	439	348	554	16849	52096	52366	71747	31780	4172	6104	218265	235114
74	Unnao	16058	2000	38446	2760	3099	1831	64194	54202	45776	80503	31711	5814	1718	220734	284928
75	Varanasi	1607	261	425	152	117	151	2714	33040	29671	45630	13811	3193	2118	127463	130177
	<b>Total</b>	<b>613504</b>	<b>62061</b>	<b>788591</b>	<b>58035</b>	<b>104820</b>	<b>40795</b>	<b>1667806</b>	<b>2802047</b>	<b>2351830</b>	<b>3937367</b>	<b>1651807</b>	<b>281619</b>	<b>204537</b>	<b>11229207</b>	<b>12897013</b>

Source: Dte. of Animal Husbandry & Dairying Uttar Pradesh, Lucknow, U.P.



### **I.2.3: District-wise Buffalo Population as per 20<sup>th</sup> Livestock Census, 2019 in Uttar Pradesh**

The district-wise buffalo population as per 20<sup>th</sup> livestock census, 2019 in the state of Uttar Pradesh worked-out in Table-I-2.3 indicates that the total numbers of buffaloes were enumerated 3,30,16,785 in the state of Uttar Pradesh of which 3,05,35,154 were females and remaining 24,81,631 were reported as males in the whole state of Uttar Pradesh. Among the female buffaloes the maximum i.e. 1,13,19,229 were in milk, 77,96,396 were under the age of up to one year, 70,07,141 were under the age of one to three years, 33,01,376 were reported as dry, 6,91,365 had not calved once and 4,19,648 were reported as other buffaloes in the state of Uttar Pradesh. Thus, it was obviously clear that maximum of the female buffaloes were in milk in the state of Uttar Pradesh. The number of female buffaloes under age of one to three years as well as upto one year was also considerable in the whole state of Uttar Pradesh.

While among the total male buffaloes i.e. 24,81,631 the maximum i.e. 16,83,992 were in the age group of up to two years, 3,65,380 were used for agriculture, 1,35,729 were used for breeding only 1,27,578 were used for bullock-cart and farm operation and 84,099 were reported as other male buffaloes in the state of Uttar Pradesh. Thus, the number of male buffaloes was used considerably in agriculture and bullock-cart form operation in the state of Uttar Pradesh as a whole.

The district-wise distribution of buffalo population in the state of Uttar Pradesh shows that the maximum population of buffaloes i.e. 11,07,170 was reported in Budaun district against the minimum i.e. 1,37,867 buffaloes in Mahoba district. While the population of female buffaloes was maximum i.e. 10,30,312 in Agra district against the minimum i.e. 1,29,811 female buffaloes in Mahoba district. In case of male buffaloes the maximum population i.e. 1,07,711 was reported in Bulandshahar district against the minimum i.e. 5,086 in Ballia district of Uttar Pradesh. The related data are given in Table-I-2.3.

**Table-I-2.3**  
**District-wise Buffalo Population 20<sup>th</sup> Livestock Census 2019 in Uttar Pradesh**

S. No.	Districts Name	District wise Buffalo Population in 2019														Total
		Male							Female							
		Upto one & half year	Used for breeding only	Used for agriculture only	Agriculture & breeding	Bullock cart farm operation	others	Total male	Under one year	One to two & half years	In milk	Dry	Not calved once	Others	Total female	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	Agra	12929	7066	7086	3773	3096	2536	36486	265945	228052	415928	68756	34492	17139	1030312	1066798
2	Aligarh	65865	2233	6456	2011	8774	1585	86924	222824	175991	353282	82836	14278	6363	855574	942498
3	Allahabad	24698	2650	2475	784	2076	1624	34307	187655	183580	256514	102901	26685	25416	782751	817058
4	Ambedkar Nagar	13475	1411	1142	582	201	1245	18056	86481	101009	85163	41720	5226	5628	325227	343283
5	Amethi	16656	1150	641	888	558	2096	21989	79500	75652	114151	38160	5755	7457	320675	342664
6	Amroha	47273	773	18008	2283	6531	884	75752	106024	103005	176925	40957	7802	4082	438795	514547
7	Auraiya	14858	933	744	365	287	159	17346	98473	83145	130960	37533	7538	1903	359552	376898
8	Azamgarh	13737	528	303	167	76	343	15154	118297	120476	150245	58596	7956	6839	462409	477563
9	Baghpat	19393	466	8757	2971	3386	205	35178	78215	47625	125317	27144	2342	994	281637	316815
10	Bahraich	25171	2072	12655	2203	927	1050	44078	100681	84594	120066	56879	10981	6986	380187	424265
11	Ballia	4167	214	188	72	34	411	5086	58336	69702	83656	25372	5008	2626	244700	249786
12	Balrampur	9983	971	2988	1156	847	1468	17413	52392	57054	58609	27691	7438	5706	208890	226303
13	Banda	28492	3634	2851	1382	1130	1942	39431	100937	82558	136672	48330	10980	4860	384337	423768
14	Barabanki	29456	3115	933	261	1113	1506	36384	109608	122928	155034	72451	8800	3625	472446	508830
15	Bareilly	57433	3084	11710	2384	2947	2195	79753	149438	142566	240775	61144	16875	17058	627856	707609
16	Basti	15538	5188	4109	4043	4104	3313	36295	80878	108443	82772	26837	5607	2967	307504	343799
17	Bijnor	48598	2295	20263	2490	8470	3090	85206	148541	103572	214187	53917	12365	4617	537199	622405
18	Budaun	67959	9609	12237	5670	4450	3903	103828	241084	240369	364884	118953	21896	16156	1003342	1107170
19	Bulandshahr	57750	4540	19237	4234	20710	1240	107711	200946	178016	391538	65911	21237	6668	864316	972027
20	Chandauli	5516	217	108	62	30	73	6006	88330	78457	104443	35635	4633	5613	317111	323117
21	Chitrakoot	14979	1203	598	331	72	151	17334	64404	45209	84656	32754	4831	2509	234354	251688
22	Deoria	3547	521	144	265	144	1770	6391	52802	52721	58002	14079	2869	4030	184503	190894
23	Etah	16105	586	627	255	247	1189	19009	152542	124641	224091	53875	14219	5173	574541	593550
24	Etawah	20386	691	808	357	384	233	22859	86631	90294	145526	25419	6839	6251	360960	383819
25	Faizabad	15011	601	253	72	74	430	16441	82317	103653	96843	41854	4346	2707	331720	348161

26	Farrukhabad	15595	1693	1801	328	646	160	20223	109760	102714	152783	42600	11585	4036	423478	443701
27	Fatehpur	42497	2178	3214	1245	749	2978	52961	149632	129937	224579	72285	13013	5096	594542	647503
28	Firozabad	18886	973	1352	474	79	918	22682	158208	150150	238713	54610	16495	4700	622876	645558
29	Gautam Buddha Nagar	18076	1498	2875	772	2124	1169	26514	54461	38457	120329	18089	5288	1844	238468	264982
30	Ghaziabad	12791	1257	5460	405	3437	242	23592	44447	24905	97529	20445	1767	1039	190128	213720
31	Ghazipur	8750	347	300	223	130	488	10193	120504	138331	146634	73412	11664	5227	495772	505965
32	Gonad	14059	927	674	161	44	546	16411	98661	101586	144352	59827	13265	4069	421760	438171
33	Gorakhpur	8726	616	292	159	103	2317	12213	60887	64126	77085	32433	3450	2996	240977	253190
34	Hamirpur	10599	653	605	46	74	605	12582	70102	39298	89715	21470	4291	1052	225928	238510
35	Hapur	23021	189	15549	1241	2737	812	43549	49641	36034	96904	17949	1845	864	203237	246786
36	Hardoi	44056	3953	8280	1775	2261	3435	63760	184337	169992	299664	84780	19738	12479	770990	834750
37	Hathras	11908	623	667	509	737	1254	15698	102697	77528	170467	34863	8718	7807	402080	417778
38	Jalaun	13935	844	529	274	67	145	15794	99408	65424	138411	27070	8606	2984	341903	357697
39	Jaunpur	21920	1477	807	461	250	584	25499	134170	120280	185962	93247	13989	11307	558955	584454
40	Jhansi	5619	976	431	129	134	250	7539	83735	52659	118627	32588	9188	2215	299012	306551
41	Kannauj	14724	3564	6166	2338	2304	3121	32217	97755	99366	135742	30766	24481	10627	398737	430954
42	Kanpur Dehat	29701	2931	1637	978	314	1185	36746	153997	133451	230786	37580	7038	3115	565967	602713
43	Kanpur Nagar	19660	1591	872	501	205	1260	24089	121672	95718	199045	44860	5260	3401	469956	494045
44	Kasganj	19118	1109	2040	563	684	1115	24629	129646	135893	181086	44660	7064	4731	503080	527709
45	Kaushambi	23257	3362	2778	1346	427	464	31634	96580	79354	113370	33814	5865	3786	332769	364403
46	Kheri	56027	4939	28697	5082	5196	2346	102287	172333	199097	223643	92142	30888	15968	734071	836358
47	Kushi Nagar	6233	251	194	96	146	332	7252	47329	38237	51847	22056	1463	2010	162942	170194
48	Lalitpur	17639	3216	1054	859	84	257	23109	73935	57860	87128	42633	4219	2859	268634	291743
49	Lucknow	15795	1860	949	333	161	469	19567	64076	52220	110348	30485	6773	3181	267083	286650
50	Maharajganj	6677	677	124	214	85	558	8335	46883	39019	55633	25913	3414	1433	172295	180630
51	Mahoba	6382	1179	252	39	103	101	8056	35784	23252	46806	18935	2350	2684	129811	137867
52	Manipur	28112	3824	4661	915	771	2013	40296	153688	121941	202822	50719	10533	12913	552616	592912
53	Mathura	28204	1844	1943	861	1527	1007	35386	147445	102710	232152	47113	8646	3104	541170	576556
54	Mau	5742	223	91	40	43	158	6297	50992	43736	58345	26355	3464	3522	186414	192711
55	Meerut	39479	1869	28963	2449	6896	1046	80702	106484	69084	216199	31145	8441	3649	435002	515704
56	Mirzapur	7795	2360	2224	362	91	137	12969	64139	57333	100273	42604	7009	3255	274613	287582
57	Moradabad	40328	2892	12884	2812	1902	777	61595	90209	72899	145068	29951	6971	2027	347125	408720
58	Muzaffarnagar	41097	1336	25755	2835	6931	1211	79165	95384	83082	164243	30235	4448	3190	380582	459747
59	Pilibhit	20592	465	4629	577	493	1445	28201	45879	54180	66759	19316	3827	2216	192177	220378

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60	Pratapgarh	19709	2318	1649	1311	841	983	26811	152789	144964	174572	62602	20150	14187	569164	596075
61	Rae Bareli	37298	1768	2189	777	1151	744	43945	100862	95001	141816	62936	13844	5288	419747	463692
62	Rampur	21569	1301	4408	1341	1490	2871	32980	76683	71978	131228	22757	5110	12844	320600	353580
63	Saharanpur	26329	604	10290	1287	2684	444	41638	122314	88673	170506	43781	2880	2181	430335	471973
64	Sambhal	51195	2278	4094	1525	1543	854	61489	161285	155147	246491	64968	16605	5008	649504	710993
65	Sant Kabeer Nagar	6032	1003	1335	1310	88	230	9998	31450	42363	39233	17702	2307	1648	134693	144691
66	Sant Ravidas Nagar	4355	415	261	133	45	123	5332	38381	37406	48264	19181	3512	4527	151271	156603
67	Shahjahanpur	29829	1864	7701	1071	646	939	42050	142051	134425	196607	73502	9970	6782	563337	605387
68	Shamli	18912	172	7244	961	3055	299	30643	63149	44526	88421	23428	2135	984	222643	253286
69	Shravasti	4848	710	4609	281	186	366	11000	41461	30909	62292	18122	7270	3325	163379	174379
70	Siddharth Nagar	5405	405	253	134	147	452	6796	47198	57959	52090	10563	3975	4371	176156	182952
71	Sitapur	34699	3206	7598	1836	1515	1859	50713	177941	137543	219124	75462	10652	11938	632660	683373
72	Sonbhadra	9082	1012	1349	241	48	137	11869	32227	28578	45317	24840	3684	2117	136763	148632
73	Sultanpur	12512	1274	581	398	360	959	16084	73158	78111	99994	37144	6529	7765	302701	318785
74	Unnao	52381	3405	7260	1616	1137	3176	68975	147060	133191	220914	68627	12800	4925	587517	656492
75	Varanasi	3807	529	489	168	39	117	5149	60245	53202	89086	29116	3888	2999	238536	243685
	<b>Total</b>	<b>1683992</b>	<b>135729</b>	<b>365380</b>	<b>84853</b>	<b>127578</b>	<b>84099</b>	<b>2481631</b>	<b>7796395</b>	<b>7007141</b>	<b>11319229</b>	<b>33013769</b>	<b>691365</b>	<b>419648</b>	<b>30535154</b>	<b>33016785</b>

Source: Dte. of Animal Husbandry & Dairying Uttar Pradesh, Lucknow, U.P.

### I.2.4: District-wise Population of Goat during 2019 (20<sup>th</sup> Livestock Census) in Uttar Pradesh

The district-wise population of goat during 2019 (20<sup>th</sup> livestock census) in Uttar Pradesh worked-out in Table-I-2.4 shows that the total population of goat in Uttar Pradesh was enumerated as 1,44,80,025 of which the maximum i.e. 1,19,51,214 were female goats and remaining 25,28,811 were male goats in the state of Uttar Pradesh as a whole. Among total female goats the maximum i.e. 45,17,709 were under one year age, 42,28,656 were in milk, 26,88,926 were reported as dry and 5,14,923 had not calved once in the whole state of Uttar Pradesh. While among the total male goats the maximum i.e. 14,27,408 were under the age of one year and the remaining 11,01,403 were reported as one year and above in whole state of Uttar Pradesh. Thus, it is safely concluded that the population of both female as well as male goats under the age of one year was maximum in the state of Uttar Pradesh. Also among the female goats the population of females in milk was considerable in the state as a whole.

The district-wise distribution of goats shows that the maximum i.e. 5,81,585 goats were reported in Baharaich district against the minimum i.e. 16,948 in the Bagpat district of Uttar Pradesh. The related data are given in table-I-2.4.

**Table-I-2.4**  
**District-wise Population of Goat in 2019 (20<sup>th</sup> Livestock Census) in Uttar Pradesh**

Sl. No.	Name of Districts	Male			Female					Grand total
		Under one year	One year & above	Total male	Under one year	In milk	Dry	Not calved once	Total female	
1	2	3	4	5	6	7	8	9	10	11
1	Agra	9215	8212	17427	48316	55675	21371	5148	130510	147937
2	Aligarh	16184	17191	33375	30834	49589	19956	2753	103132	136507
3	Allahabad	23165	20580	43745	78633	75830	53256	9589	217308	261053
4	Ambedkar Nagar	10007	8140	18147	61685	41335	36906	6771	146696	164844
5	Amethi	20225	12587	32812	76586	50964	43786	10059	181395	214207
6	Amroha	8108	8309	16417	20123	24339	12523	2340	59325	75742
7	Auraiya	29226	17089	46315	79141	82829	43860	6271	212101	258416
8	Azamgarh	27535	21336	48871	104050	77880	59496	9356	250782	299653
9	Baghpat	1557	1854	3411	4902	5486	2936	213	13537	16948
10	Bahraich	52489	44830	97319	200043	146430	117526	20267	484266	581585
11	Ballia	14767	11233	26000	54963	43363	27650	5514	131490	157490
12	Balrampur	36815	34464	71279	83282	57150	48020	11059	199511	270790
13	Banda	31290	17956	49246	85994	89748	45119	11285	232146	281392
14	Barabanki	19957	15319	35276	70325	60673	56331	6601	193930	229206
15	Bareilly	16640	17284	33924	33016	39412	20692	3489	96609	130533
16	Basti	16388	13923	30311	57717	34366	26006	4097	122186	152497
17	Bijnor	10460	11002	21462	25182	26578	16111	2556	70427	91889
18	Budaun	23864	22576	46440	47679	51283	25679	5321	129962	176402
19	Bulandshahr	12827	13992	26819	33569	46241	17820	3526	101156	127975
20	Chandauli	7610	6483	14093	31921	26167	14808	2102	74998	89091
21	Chitrakoot	13161	7152	20313	51627	61494	38353	4186	155660	175973
22	Deoria	26788	21221	48009	102563	58135	3875	8681	207554	255563

23	Etah	13672	10046	23718	27561	30165	14876	2187	74789	98507
24	Etawah	22754	14048	36802	66360	92909	37452	9906	206627	243429
25	Faizabad	13036	10744	23780	69602	47649	43580	4692	165523	189303
26	Farrukhabad	9488	9239	18727	33269	43711	20123	3528	100631	119358
27	Fatehpur	40776	33611	74387	124706	131920	90992	16162	363780	438167
28	Firozabad	1228	10139	27367	55377	69042	25386	5338	155143	182510
29	Gautam Buddha Nagar	2205	2114	4319	4298	6652	2469	376	13795	18114
30	Ghaziabad	1653	1665	3318	3994	7487	2245	353	14079	17397
31	Ghazipur	15318	11682	27000	4778	36376	35441	4785	124400	151400
32	Gonad	26991	20725	47716	91383	69656	67649	14217	242905	290621
33	Gorakhpur	18538	11640	30178	58756	39258	38657	6168	142839	173017
34	Hamirpur	25052	10048	35100	100236	110561	46029	7404	264230	299330
35	Hapur	3345	3275	6620	7775	10326	5522	447	24070	30690
36	Hardoi	44356	44540	888896	101016	108513	65709	14144	289382	378278
37	Hathras	5298	4987	10285	25868	31779	13440	2843	73930	84215
38	Jalaun	28275	15515	4379	102851	115523	48139\	12304	278817	32260
39	Jaunpur	25198	15052	40250	83041	69675	71653	11924	236293	276543
40	Jhansi	15126	12076	27202	85871	87688	45834	13801	233164	260396
41	Kannauj	13766	9733	23499	41453	51503	28790	6844	128590	152089
42	Kanpur Dehat	52286	33244	85530	128321	147652	47316	12028	335317	420847
43	Kanpur Nagar	24632	18530	43162	86090	106980	47704	8205	248979	292141
44	Kasganj	10210	10267	20477	23533	26403	12328	1809	64073	84550
45	Kaushambi	29664	20676	50337	93754	93727	63214	11739	262434	312771
46	Kheri	58997	48207	107204	132516	121175	98424	27172	379287	486491
47	Kushi Nagar	36747	19875	56622	119666	69143	47214	5272	241295	297917
48	Lalitpur	13394	7559	20953	55243	58206	41731	4056	159236	180189
49	Lucknow	15492	15977	31469	41915	49302	29841	8192	129250	160719
50	Maharajganj	25950	15887	41837	89813	63712	49638	7829	210992	252829
51	Mahoba	13867	8483	22350	61300	68607	47911	5898	183716	206066
52	Manipur	30139	22302	52441	81113	87413	38205	7507	214238	266679
53	Mathura	4430	3966	8396	18397	24597	11080	2211	56285	64681
54	Mau	15983	13978	29961	62303	43336	31002	5360	142001	171962
55	Meerut	4529	4211	8740	11735	17123	5152	720	34730	43470
56	Mirzapur	11109	9979	21088	37673	36145	27729	4242	105789	126877
57	Moradabad	12107	11790	23897	26422	30345	14319	1949	73035	96932
58	Muzaffarnagar	3108	2596	5704	9217	9939	4409	524	24089	29793
59	Pilibhit	4952	3857	8809	14475	12500	9053	2053	38081	46890
60	Pratapgarh	22666	23572	46238	109549	96033	69927	18919	394428	340666
61	Rae Bareli	22091	14895	36986	85805	67912	70113	16522	240352	277338
62	Rampur	10915	9323	20238	22359	24013	11799	2421	60592	80830
63	Saharanpur	5249	3916	9165	21531	18879	10535	1572	52517	61682
64	Sambhal	13419	9243	22662	22080	24499	12558	2910	62047	84709
65	Sant Kabeer Nagar	19698	12281	31979	49029	30740	24814	6519	111102	143081
66	Sant Ravidas Nagar	4505	4178	8683	15830	10871	11256	1098	39055	47738
67	Shahjahanpur	11393	10871	22264	30946	30887	25704	3901	91438	113702
68	Shamli	2062	1831	3893	6109	7009	3750	798	17666	21559
69	Shravasti	10040	8314	18354	37174	30848	21246	3866	93134	111488
70	Siddharth Nagar	38558	26577	65135	109513	68931	30601	10346	219391	284526
71	Sitapur	41647	34745	76392	141797	132380	101004	16955	392136	468528
72	Sonbhadra	24745	19657	44402	73631	62569	48742	10739	195681	240083
73	Sultanpur	16580	21213	28893	59875	55707	43035	8190	166807	195700
74	Unnao	33049	23994	57043	87140	98525	65727	11964	263356	320399
75	Varanasi	12842	10700	23542	38489	38188	21479	2830	100986	124528
	<b>Total</b>	1427408	110140	2528811	4517709	4229656	2688926	514923	11951214	14480025

Source: Dte. of Animal Husbandry Uttar Pradesh, Lucknow, U.P.

### **I.3: Growth Pattern of Major Livestock Population in the State**

Table-I-3.1 indicates the growth pattern of major livestock population in the state of Uttar Pradesh during the last five consecutive livestock censuses i.e. 16<sup>th</sup> to 20<sup>th</sup> in the time span of 1997 to 2019. The total population of bovines in the state of Uttar Pradesh had increased from 39,013 thousand in 16<sup>th</sup> livestock census to 52,037 thousand in 20<sup>th</sup> livestock census, wherein the population of total cattle had decreased from 20,016 thousand in 16<sup>th</sup> livestock census to 19,020 thousand in 20<sup>th</sup> livestock census. While the population of total exotic/crossbred cows had increased from 2,105 thousand in 16<sup>th</sup> census to 6,123 thousand in 20<sup>th</sup> livestock census. Thus, the growth in the population of exotic cows was tremendous by three times till the 20<sup>th</sup> census in the state as a whole. The population of total female exotic cows had increased from 1,176 thousand in 16<sup>th</sup> census to 6,123 thousand in 20<sup>th</sup> census. The population of exotic cows in milk had increased from 414 thousand in 16<sup>th</sup> census to 6,123 thousand in 20<sup>th</sup> census. The number of milch exotic cows increased from 638 thousand in 16<sup>th</sup> census 2,951 thousand in 20<sup>th</sup> census. While the number of total males in exotic cattles had decreased from 929 thousand in 16<sup>th</sup> census to 578 thousand in 20<sup>th</sup> census. Thus, the number of exotic cows in milk had increased considerably by more than 5 times in the state as a whole.

In case of total indigenous cows, the total number had decreased from 17,911 thousand in 16<sup>th</sup> census to 12,897 thousand in 20<sup>th</sup> census showing a significant decrease in the state as a whole wherein the total females increased from 8,298 thousand in 16<sup>th</sup> census to 11,229 thousand in 20<sup>th</sup> census. The number of indigenous cows in milk also increased from 2,797 thousand in 16<sup>th</sup> census to 3,937 thousand in 20<sup>th</sup> census. The number of milch indigenous cows had increased from 4,633 thousand in 16<sup>th</sup> census to 5,589 thousand in 20<sup>th</sup> census. But the number of total male indigenous cattle had decreased from 9,614 thousand in 16<sup>th</sup> census to 5,661 thousand in 20<sup>th</sup> census. Thus, among the indigenous cattle the number of female had increased but number of males had decreased considerably.

In case of buffaloes the total number had increased from 18,996 in 16<sup>th</sup> census to 33,017 in 20<sup>th</sup> census, wherein the number of total females increased from 14,109 thousand in 16<sup>th</sup> census to 33,017 thousand in 20<sup>th</sup> census. The number of buffaloes in milk increased from 5,532 thousand in 16<sup>th</sup> census to 11,315 thousand in 20<sup>th</sup> census. The number of milch buffaloes also increased from 8,429 thousand in 16<sup>th</sup> census to 14,620 thousand in 20<sup>th</sup>

livestock census. The number of male buffaloes also increased from 4,887 thousand in 16<sup>th</sup> census to 5,150 thousand in 20<sup>th</sup> census. Thus, the numbers of female buffaloes had increased considerably in state as a whole. The related data are contained in Table-I-3.1.

**Table-I-3.1**  
**Livestock Census-wise Livestock Population (1997 to 2019) in Uttar Pradesh**

(Figures in 000)

Major Livestock Population	Five consecutive livestock census (1997 to 2019)				
	16 <sup>th</sup> 1997	17 <sup>th</sup> 2003	18 <sup>th</sup> 2007	19 <sup>th</sup> 2012	20 <sup>th</sup> 2019
Total Bovines	39013	41464	42695	50182	52037
Total Cattle	20016	18551	18883	19557	19020
Total Exotic/ Crossbred Cows	2105	1634	1945	3579	6123
Total Female	1176	1175	1421	2947	6123
Under 1 year	226	266	337	672	1480
1 to 2.5 year	220	194	211	447	1108
In milk	414	493	6300	1215	2267
Dry	224	149	161	445	684
Milch	638	642	791	1660	2951
Not even calved once	69	47	52	136	3065
Others	24	25	29	32	66
Total Males	929	459	524	632	578
Total Indigenous Cows	17911	16917	16938	15978	12897
Total Female	8298	8678	9892	11702	11229
Under 1 year	1499	1693	2153	2763	2802
1 to 2.5 year	1580	1512	1594	1698	2352
In milk	2797	3336	4011	4668	3937
Dry	1835	1565	1526	1927	1652
Milch	4633	4901	5537	6595	5589
Not even calved once	467	443	424	517	5871
Others	119	129	185	129	204
Total Males	9614	8239	7046	4276	5661
Total Buffaloes	18996	22914	23812	30625	33017
Total Female	14109	17751	18427	25711	33017
Under 1 year	2549	3739	4198	5719	7796
1 to 2.5 year	2321	2817	2746	4559	7007
In milk	5532	7952	8385	10538	11319
Dry	2898	2426	2180	3412	3301
Milch	8429	10379	10565	13950	14620
Not even calved once	691	646	641	1154	15311
Others	119	170	278	329	4196
Total Males	4887	5163	5385	4915	5150

Source: 16<sup>th</sup>, 17<sup>th</sup>, 18<sup>th</sup>, 19<sup>th</sup> and 20<sup>th</sup> Livestock Census Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture and Farmers Welfare, Govt. of India



#### **I.4: Status of the Availability and Requirement of Feed and Fodder in the State of Uttar Pradesh**

The status of the availability and requirement of feed and fodder in the state of Uttar Pradesh during 19<sup>th</sup> livestock census, 2012 analyzed in Table-I-4.1. Shows that the requirement of green fodder per year during 19<sup>th</sup> livestock census, 2012 was estimated as 1587.44 lakh metric tonnes in the state as whole. While the availability of green fodder from all sources was estimated as 905.94 lakh metric tonnes during the same span of time. Thus, there was a deficit of total green fodder estimated as (-)681.50 lakh metric tonnes. Accordingly there were some districts where the availability of green fodders was in excess such as Muzaffernagar, Meerut, Saharanpur and Bijnore. While in some of the districts such as Agra, Allahabad, Fatehpur, Unnao, Hardoi and Baharaich etc. there was deficit of green fodders during the 19<sup>th</sup> livestock census, 2012. The data on availability and requirement of feed and fodder during the 20<sup>th</sup> livestock census, 2019 could not be available in Directorate of Animal Husbandry, hence it could not be included in the analysis. The Directorate regretted for the same and hence we become helpless. Moreover the draft report on the study has to be submitted by March, 2020. Therefore the required figures of 20<sup>th</sup> census, 2019 may be added by the coordinator of the study himself. The related data are given in Table-I-4.1.

**Table-I-4.1**  
**District-wise Requirements/Availability/Deficit per year (as 19<sup>th</sup> cattle Census) in the state of Uttar Pradesh**

Sl. No.	Name of the Districts	No. of Animals Buffalo/ Goat/Sheep	Green Fodder Requirement per year (Lakh Metri Tonnes)	Green Fodder availability from all sources (Lakh Metri Tonnes)	Green Fodder Exceed Deficit (Lakh Metri Tonnes)
1	Meerut	894070	21.20	53.22	32.02
2	Baghpat	541739	12.80	35.01	22.21
3	Bulandshahr	1670524	39.50	42.33	2.83
4	Gaziabad	390665	9.20	13.47	4.27
5	Hapur	408843	9.50	19.93	10.43
6	Gautam Buddha Nagar	358394	8.50	8.67	.17
7	Muzaffarnagar	816845	19.30	63.67	44.37
8	Saharanpur	1017224	24.10	54.27	30.17
9	Shamli	422864	10.00	25.92	15.92
10	Moradabad	927829	22.00	18.94	-3.06
11	Sambhal	880452	20.80	11.21	-9.59

12	Amroha	883179	20.80	36.43	15.63
13	Rampur	734768	17.40	10.67	-6.73
14	Bijnor	1111803	26.30	56.72	30.42
15	Agra	1493595	35.40	12.28	-23.12
16	Firozabad	853740	20.20	6.18	-14.02
17	Mathura	1176051	27.90	21.20	-6.70
18	Mainpuri	810238	19.20	3.24	-15.96
19	Aligarh	1516861	35.70	16.86	-18.84
20	Hathras	618905	14.50	5.74	-8.76
21	Etah	1159326	27.50	6.69	-20.81
22	Kasganj	1082475	25.50	4.81	-20.69
23	Bareilly	1101169	26.00	24.16	-1.84
24	Budaun	1283494	30.20	9.06	-21.14
25	Shahjahanpur	987218	23.42	15.33	-8.09
26	Pilibhit	518713	12.30	19.07	6.77
27	Etawah	724799	17.19	2.64	-14.55
28	Auraiya	629918	14.94	1.66	-13.28
29	Farrukhabad	544192	12.90	5.50	-7.40
30	Kannauj	720533	17.10	1.96	-15.14
31	Kanpur nager	822598	19.50	6.51	-12.99
32	Kanpur dehat	945408	22.42	4.12	-18.30
33	Allahabad	1712398	40.62	3.92	-36.70
34	Kaushambi	628973	14.92	1.43	-13.49
35	Fatehpur	1436079	34.07	8.05	-26.02
36	Pratapgarh	1016943	24.12	2.43	-21.69
37	Jhansi	943157	22.37	1.61	-20.76
38	Jalaun	778058	18.45	2.37	-16.08
39	Lalitpur	882929	20.90	1.90	-19.00
40	Hamirpur	777288	18.40	2.16	-16.24
41	Mahoba	541244	12.84	1.02	-11.82
42	Banda	918775	21.79	2.10	-19.69
43	Chitrakoot	750130	17.79	1.82	-15.97
44	Lucknow	739412	17.50	2.66	-14.84
45	Unnao	1270727	30.00	4.42	-25.58
46	Rae Bareli	975125	23.00	4.96	-18.04
47	Sitapur	1392905	33.00	34.98	1.98
48	Hardoi	1500007	35.50	11.48	-24.02
49	Lakhimpur	1687568	40.00	62.46	22.46
50	Faizabad	865776	20.50	8.36	-12.14
51	Barabanki	1071557	25.40	6.15	-19.25
52	Ambedkar Nager	672291	15.90	4.31	-11.59
53	Amethi	891268	21.00	3.34	-17.66
54	Sultanpur	867150	20.50	5.74	-14.76
55	Gonad	1134874	26.90	17.34	-9.56
56	Balrampur	621667	14.70	8.64	-6.06
57	Bahraich	1424549	33.70	9.61	-24.09
58	Shravasti	475960	11.20	2.12	-9.08
59	Basti	669354	15.80	9.90	-5.90

Contd..

60	Sant Kabeer Nager	333418	7.90	1.50	-6.40
61	Siddharth Nager	673238	15.90	1.15	-14.75
62	Gorakhpur	772005	18.30	2.10	-16.20
63	Maharajganj	531662	12.40	4.50	-7.90
64	Deoria	678083	16.00	2.06	-13.94
65	Kushi Nager	765730	18.00	14.30	-3.70
66	Azamgarh	1304228	30.80	6.30	-24.50
67	Mau	517656	12.20	1.80	-10.40
68	Ballia	685505	16.20	1.54	-14.66
69	Varansi	713934	16.80	2.94	-13.88
70	Gajipur	1224947	29.00	7.97	-21.03
71	Chandauli	555760	13.00	2.39	-10.61
72	Jaunpur	1246750	29.50	4.18	-25.32
73	Mirjapur	933984	22.10	3.40	-18.70
74	Sonbhadra	1023457	24.20	6.23	-17.97
75	Bhadhohi	466716	11.00	.83	-10.17
	Tortal	67121669	1587.44	905.94	-681.50

### **I.5.: Review of Literature**

This section of chapter-I mainly deals with the findings of the research studies conducted in the past years on livestock/bovines economy as well as characteristics of livestock rearing in India and various other countries of the world. Also the findings on the constraints of livestock rearing as well as various factors contributing to bovines income have been recorded in support of the present study entitled “Assessment of Livestock Feed and Fodder in Uttar Pradesh”, which are as follows in chronological order

**Amrik et al. (IPSO)**, suggests that income and employment could be increased with the adoption of integrated crop and milk production in Punjab. Linear programming technique was used to develop the optimum and integrated crop and milk plans with the existing and improved level of farm technology. The adoption of improved technology had a much higher impact on increasing farm income. Similarly, the integrated crop and milk production showed much scope for generating employment on small categories of farms. The optimum plans developed required that both short and medium term credit should made available to the farmers for harvesting the benefit of improved crop and milk production.

**Naresh Dayal (1981)** points out that the main thrust of dairy development is to provide employment opportunities and to generate more income for the betterment and improvement of weaker sections in the society in particular and to improve the nutritional standard of human beings by providing milk to the women consumers in general. Dairy development

helps to stimulate development of the weaker sections. While studying the crucial role of dairy development in Indian economy, It would be worth while to study the actual impact of dairy development on the beneficiary groups. Viz. Marginal, small, medium, big farmers and landless labourers.

A study conducted by **Paruthi (1986)** for estimating the contribution of the livestock enterprise in agricultural economy of the Hariyana state reveals that their contribution to the gross income of small, medium, large and overall average farms was about 33,27,20 and 20 percent respectively.

**Bhagal. T,S. and J.S. Sharma (1987)** view that milk production requires less land to generate a given level of income as compared to crops which is labour intensive in nature. Owing to these characteristics of milk production, our Government is giving major emphasis on dairying in its rural development programmes to improve the economic conditions of rural poor who are small and marginal farmers and landless agricultural labourers. In order to achieve the desired success in the above mentioned area, it is essential to generate some basic information regarding the contribution of milch animals to the income and employment of rural poor. Since all these information vary from area to area, area based studies are needed on these economic aspects of milch animals. Keeping these facts in mind, the study was conducted for small and marginal farmers and landless agricultural labourers in Meerut district of Uttar Pradesh.

**Moran (1987)** has analysed the role of cattle and buffalo in the agriculture of South East Asia, in providing both milk and meat and also traction for ploughing and transport. The native breeds vary considerably in their characteristics, not only in their inherent qualities but also in their response to varying systems of management, some of them very primitive. Improvement is clearly possible by crossbreeding, but it appears that this is most likely to be achieved with existing native breeds than by introducing exotic ones.

**Bhanja (1989)** states that the most significant positive point in favour of animal husbandry programme is its employment potential for illiterate rural poor. Animal husbandry does not demand complex skill and is well suited to our landless rural agricultural labourers. The employment opportunity in crop cultivation being increasingly low due to modernization and pressure on land, the alternate source to provide employment in rural area is animal husbandry for which the base resource is already available with the people.

**Uma Shankari (1989)** points out that sheep and goat keeping is traditionally a common practice with the farmers. Goats and cattle graze in the hillocks where there is some grass for the sheep and cattle for most of the year in the croplands since. Cultivation being largely rain fed and in the wastelands and gardens.

**Pandey (1995)** states that the animal husbandry in India is closely interwoven with agriculture since ages and plays an important role in the rural economy. Besides having vast employment potential, this sector provides milk, egg, meat, wool, hides and skins, dung, bones, hooves and draught power and also stabilizes farm incomes.

**Ajit Kumar Singh (1997)** points out that animal husbandry is an important component of the rural economy in the zone next only to agriculture. In Uttar Pradesh income from animal husbandry contributed about one-fourth of agricultural income and one-sixth of total income of the state. The importance of animal husbandry is not likely to be any less in Madhya Pradesh as compared to Uttar Pradesh.

**Francis D.K. Anim (1997)** points out that the ownership of livestock (cattle, goats and sheep) is an important social factor in the rural areas of South Africa. Reference to the so called 'traditional attitude' of livestock owners abounds in state planning documents and attempts to limit stock ownership have always been intensely resisted by rural households. In particular, this refers to the use of livestock as a store of wealth and security rather than as a production resource to be sold. It is however not clear how strongly this attitude still applies in rural areas of South Africa.

**Shelander Kumar and Khem Chand (1999)** in their observed study that goat is unique among other ruminants by virtue of its small size, sustenance on low grade, high cellulose and top feed which is usually left unutilized by the other livestock species and for converting such roughages into high quality protein food (milk and meat). Forty per cent of rural population especially the economically and socially backward classes, maintain goats for assured income. Therefore, it provides security to the weaker section of rural population. The goat enterprise is primarily in the hands of weaker sections of rural population. This system of goat production is carried on by uneducated and poor, and there are very few regulated markets for livestock; hence major portion of profit is taken away by middlemen and marketers.

**Hemalatha and Reddy (2001)** in their study points out that unlike the agricultural activities which are strenuous in nature and riddled with uncertainties, dairy enterprise provides constant and assured income to the poor farmer. It provides gainful employment and thus prevents migration of rural youth to the cities. If maintained on sound scientific lines it can be an effective medium to generate regular employment for the millions of rural poor.

**Gopal Lai Jain (2001)** in his article he concludes that rearing of sheep, goats and pig is almost exclusively in the hands of weaker sections of the rural community having small or no land holdings. Several group of nomadic people are engaged in raising sheep. Introduction of exotic superior inheritance into the indigenous stock can bring about significant improvement in production even in the very first generation. But along with genetic improvement in stock, modern technology of husbandry concerning feeding, watering, housing, health cover etc. must also be ensured.

**Visweswara (2002)** in his study observes that the livestock though very important to the rural economy of India, is unfortunately a neglected sector. There can be no agriculture without livestock and the system is interdependent. There is a growing concern amongst the planners about the decline in livestock sector, which obviously is the result of negligent attitude. Livestock is the backbone of economic strength of poor and marginal farmers, who form the majority in the rural community. Maintaining livestock health is important in the national perspective as it contributes considerable revenue to the national exchequer.

**Mansur Mulla (2002)** makes an attempt to study the progress of cattle feed manufacturing units as the main strategy to promote animal husbandry development, more particularly through the generation of employment opportunities and income to sustain the levels of development of the people engaged in dairying activities and thereby, bring about a transition in the development and growth of feed market and infrastructural facilities.

**Amita Patel (2004)** in his study observes that the livestock rearing including dairying is not only a source of employment and income but it is also a storehouse of wealth, an asset that often helps to tide over unforeseen demands for liquid cash. Further, it also provides for the household fuel and farm traction power. Waste products such as dung and urine of cow have been used from time immemorial for their medicinal and sanitizing values. Income from dairying contributes nearly a third of the rural household's gross income, and in the case of

landless wage earning households, nearly a half. Dairying is an economic activity, which evens out cash flows to households, in contrast to income from crops, which comes only at the end of a season. Further dairying provides for an indirect income insurance against risks from crops, such as crop failure due to drought or pests.

**Ramachandra. T. (2004)**, analyses the income and employment potential of dairy farming in different stages in Kanyakumari district of Tamil Nadu. Primary data were collected from 100 farms engaged in farming activity. Dairy farming is an activity with great potential and has offered considerable scope for employment and generation of income in Kanyakumari district. Dairy farming gives employment opportunities in the form of collecting dung, cleaning shed, watering and feeding animals, grazing and cutting grass, milking, sale of milk, processing of milk and marketing of milk and milk products to a large number of people in the villages of Kanyakumari district. Further it is found that the income is generated in the form of sale of milk and manure and sale of cattle. It may be concluded that dairy constitutes the major proportion of the cattle population, cattle rearing occupies a pivotal place among women folk of the rural areas. Thus, dairy farming is the main source of employment and income generation in the study area.

**Nirmala. L. (2004)** in her study observes that the livestock industries have the ability to improve the income of the poor and can be used during crisis to improve, the economic status of women and consequently the poor family. The rural women constitute 71 percent of the labour force in livestock farming. In dairying, 75 million women are engaged as against 15 million men, while in the case of small ruminants, the sharing of work with men is almost equal. Livestock products are high sources of proteins and micronutrients such as vitamin A and iron-which are essential in preventing malnutrition.

**Gangil and Y.P.S. Dabas (2005)** has carried out a study in Udham Singh Nagar district of Uttaranchal to ascertain the socio-economic profile of livestock farmers and assess the effect of the socio-economic factors on their level of knowledge and training needs in improved livestock practices. The study revealed that level of knowledge of livestock farmers was positively and significantly associated with age, education, land holding, herd size, milk production, milk consumption, milk sale, mass media exposure and extension worker's contact while non - significant association was observed between level of knowledge and size of family of respondents. Their training needs showed positive and significant relationship

with their herd size. The authors are of the opinion that these variables should be considered at the time of organizing training programmes for livestock farmers.

**Rupasi Tiwari and R.P. Singh (2005)** have observed that our extension approaches should emphasis on developing educational programmes for farmers with regard to proper housing, feed and water management, disease prevention and control along with upgradation of nondescript cattle for increasing per animal productivity.

**Jayaweera et al. (2007)** have identified factors affecting the cost of milk production in Ratnapura district. The study concludes that the uppermost portion of the cost of production of milk is owed for labour service. The share of labour cost in total cost of milk production has been to be 44.1 percent and that of feed cost is 41.7 percent. They maintain that when the family labor cost is not included as an opportunity cost in the calculation, the profit per liter of milk rises. When family labour costs are included in the total cost of production. The cost of production of a liter of milk is estimated to be Rs. 25.50 and when family labour costs are excluded, the cost of production of a liter of milk reduce to Rs. 14.60, therefore, it is always recommended to use family members who can not get employment in any other business as labour suppliers to the dairy industry. The study further maintains that is also possible to increase the profit margin by increasing the productivity of cows, by decreasing the price of animal feed stuffs and also by making available a better veterinary service for dairy farmers with effortless access as well as at an affordable cost. The study suggests reasonable and appropriate price of Rs. 30 for per liter of milk in the districts but it fails to explain the logic behind this rate and the mechanism through which this figure of Rs. 30 has been arrived at.

**Sarkar and Ghosh (2008)** have examined that the variable cost constitutes about 85% of total cost for all categories of cooperative and non-cooperative dairy farms. Out of the total variable cost for all categories of cooperative and non-cooperative dairy farms, feed cost is the major cost component (54%), in which concentrate feed has a share of 55%. Labour cost has the second highest share in the total variable cost with a share of 28.5%. Similarly, out of fixed cost component, which has a share of 14-15% in the gross cost., interest of capital has the major contribution for all types of farms. The study uses financial evaluation measures like net present value (NPV), benefit-cost ratio(BCR), average annual margin(AAM), and internal rate of return (IRR) to analysis the relative profitability of different categories of cooperative and non-cooperative farms.



**Bardhan and Sharma (2012)** reported that in the plains the member group incurs relatively higher net maintenance cost of Rs. 156.34 per SAU per day than the non-member group, which incurs Rs. 148.25 per SAU per day. On the other hand, in the hills, the average maintenance cost per SAU is higher for non-member group than that for member group. In the hills, for non member group, it is Rs. 147.04 per SAU per day and for member group, it is Rs. 141.79. The study also reveals that only when family labor charges are ignored dairying becomes more or less profitable. If cost of milk production is calculated without considering the imputed cost of family labor, the existing price is sufficient to cover the costs. However, if family labour charges are included in total cost. The price has to be increased substantially to cover this cost so as to substantially to cover those cost so as to subsequently ensure a positive net return from dairying for farmers.

**Pandian et al. (2013)** found the concentrates, green fodder and labor have significant influence on milk production in the study area, dry fodder and veterinary charges do not have significant influence on milk production in the study area. The study shows that concentrates, labor and veterinary charges are being under-utilised in the region. More of these, resources may further increase milk production in the area. On the other hand, green fodder and dry fodder are being over-utilised and there is need for rationalizing the use of these resources. The study calls for optimal utilization of labor in milk production system as it is relatively a scarce resource in urban areas.

**Sharma et al. (2014)** concluded that resource-use efficiency of green fodder for all types of dairy animals is negative and significant. It indicates over utilisation of green fodder. It maintains that this result might occur due to the fact that the data were collected in winter season when plenty of green fodder was available. The study finds that the concentrates are being under-utilized in case of local cows while they are being over-utilised in case of buffalos in favour of local cattle which will increase milk production without spending more on concentrates. The concentrates are optimally used in case of crossbreed cattle.

**Tanwar et al. (2015)** concluded that concentrate and green fodder are the major explanatory variables affecting milk production as well as returns from dairy farming across categories in member families. In the group of non-member families, concentrate in all categories and green fodder in landless and marginal household categories are the significant contributors to milk production. Dry fodder contributes significantly only in case of small families in

member class. The study concludes that concentrates in all categories of member and non-member households, green fodder in case of all categories of member families and landless and marginal categories in non-member households are being underutilized. The study maintain that in order to get higher return from buffalo milk production, the use of concentrate and green fodder by all categories of member and non-member households should be increased and dry fodder in most of the categories must be reduced as its use has been found excessive expect in small categories in member families.

### **I.6.: Need of the Study**

Adequate emphasis on livestock development is still most important not only in terms of products but also in terms of by-products and waste-products, the latter for integrated nutrients management for the health of the soils. However, the productivity of livestock products per unit of animal in India is still much lower than in many other countries. There is thus, a need for even more intensive efforts to improve productivity of animals as part of integrated farming system. India has comparative advantages in livestock development and it must exploit the opportunities now presented under the new world trade agreement for quantum leaps in the livestock development. This is urgent and necessary as a part of our efforts at accelerating economic activities as well as creating employment opportunities in rural areas of the country. For sustainable livestock development concerted efforts are required to ensure the sustainability of the advances animal production, productivity and livestock-products technologies. Special consideration must be given in the major issues such as (1) Large animal population in relation to the limited availability of feeds and fodders of good quality and the poor transfer of technology services are hampering the growth of livestock development, (2) Technologies developed so far to enrich crop residues and bagasse and to treat non conventional feed resources. Mainly agricultural by-products have still not reached the take-off stage. The machinery for transfer of such technologies will have to be geared-up and (3) There is an immediate need to enhance livestock products procurement, processing stage and marketing facilities to eliminate non-acceptance of producers livestock products in flush season.

The western, southern and part of northern region of India have made significant progress in livestock development. But the eastern along with the part of northern region of the country

have lagged still far behind in livestock development. The production of livestock products can be boosted through increase in productivity and linking small livestock rearers to Self Help Groups (SHGs), Milk producer Groups (MPGs) and dairy cooperatives with forward linkages and livestock products processing units. Therefore, a comprehensive assessment of the status of livestock development in the regions of the eastern states and backward regions of northern states of India is barely needed to be done for the required livestock development to fulfill the recommended dietary levels of the livestock products as stated by I.C.M.R. keeping the above cited statements in view, the present study entitled “Assessment of Livestock Feed and Fodder in the State of Uttar Pradesh”, was conducted with the following objectives:

### **I.7.: Objectives of the Study**

1. To estimate the area, production and productivity of major green and dry fodder crops.
2. To study the growth pattern of major livestock production.
3. To assess feed and fodder availability, requirement, deficit/surplus to improve productivity.

### **I.8.: Methodology of Study**

Estimation of Demand and Supply of Feed and Fodder

#### **I.8.1.: Availability from Land use**

Respective land use\* Green Fodder Production (tones/ha/year)

The total fodder availability from all the categories of classification was calculated by the following formula:

**Total Green fodder availability**= (A\* 40.93) + (B\* 1.50) + (C\*5.00) + (D\*1.00) + (E\*1.00) + (F\*1.00) + (G\*1.00).

**Table-I-5.1**  
**Green fodder yields for land use classification**

Sl. No.	Land use category	Green fodder (tones/ha/year)
1.	(A) Area under fodder crop	40.93
2.	(B) Forest area and on assumption that only 50% area was accessible for grazing	3.00 (1.50 if considered whole forest area )
3.	(C) Permanent pastures and other grazing lands	5.00
4.	(D) Cultivable wastelands	1.00
5.	(E) Current fallows	1.00
6.	(F) Other fallows	1.00
7.	(G) Misc. Tree Crops and Groves not Included in Net Area Sown	1.00

*Source:* FAO (2012), Ramachandra et al, 2007

### **Dry Fodder and Concentrates**

The dry fodder and concentrates feed to the livestock from the crop production data would be calculated by using the following formulation:

$$\sum_{ij} (QC_{ij})^{mm} = Y_{ij} \text{ or } ER_{ij}$$

where,

QC<sub>ij</sub>, = Quantity of crop residues (dry fodder) and concentrates obtained from crop i in district j

Y<sub>ij</sub>,= Yield of crop i in district j

H<sub>ij</sub> or ER<sub>ij</sub>=Estimated conversion factor (harvest indices or extraction rate) for crop i

**Table-I-5.2**  
**Conversion factors in terms of harvest indices and extraction rates used in the calculation of feed resources such as crop residues, oil cakes, grains, brans and chunnies of various crops from crop production data in India.**

Crop	Harvest indices (HI)*		Extraction Rate(ER)	
	Crop residues	Oil Cakes	Grains	Brans and Chunnies
Paddy	1.30		0.02	0.08
Wheat	1.00		0.02	0.08
Sorghum	2.50		0.05	
Bajra/Pearl millet	2.50		0.05	
Barley	1.30		0.10	
Maize	2.50		0.10	
Ragi	2.00		0.05	
Small Millets	2.50		0.10	
Other cereals	2.00		0.10	
Pulses	1.70			0.03
Ground nut	2.00	0.70		
Oilseeds		0.70		
Sugarcane	0.25			

Source: Harvest indices is the ratio of tones of utilized crop by-product to tones of primary crop harvested

### **I.8.2.: Requirement of Feed and Fodder (Demand)**

The following conversion factors were used for calculating the RLUs as given in Table-I-5.3

**Table-I-5.3**  
**Conversion factors for calculating Ruminant Livestock Unit (RLUs)**

Sl. No.	Species	Age (Years)	Conversion factor
A	Buffalo	>2.5	1.14
		1.0-2.5	0.50
		< 1.0	0.17
B	Cattle	>2.5	1.00
		1.0-2.5	0.34
		<1.0	0.11
C	Sheep/goat	>1.0	0.10
		<1.0	0.03

**Table-I-5.4**  
**Quantities of feed fed to different species within household premises**  
(kg/animal/day)

Animal category	Feed types			Nutrients		
	Green fodder*	Dry fodder	Concentrates	Dry matter (DM)	Total digestible nutrients (TDN)	Digestible crude protein (DCP)
<b>Cattle</b>						
In-milk	4.75	5.50	0.64	6.71	3.44	0.27
Dry	3.40	4.02	0.40	4.83	2.46	0.18
Adult male	4.06	6.03	0.33	6.74	3.36	0.21
Young stock	2.18	2.13	0.18	2.62	1.33	0.10
<b>Buffalo</b>						
In-milk	5.96	6.34	1.05	8.14	4.25	0.37
Dry	5.44	4.95	0.52	6.28	3.21	0.25
Adult male	4.04	7.47	0.36	8.06	3.99	0.24
Young stock	2.29	2.22	0.19	2.74	1.39	0.10
Goat	1.04	0.20	0.06	0.49	0.27	0.03
Sheep	1.01	0.20	0.04	0.46	0.24	0.03
Others	2.35	6.72	0.49	7.08	3.54	0.22

*Source:* NATP project database

### I.8.3.: Surplus / deficit/ gap of feed and fodder

The percent gap between the requirement and availability has been computed as:

$$\text{Percent of gap} = \frac{\text{Requirement of fodder} - \text{availability of fodder}}{\text{Requirement of fodder}} \times 100$$

### I.8.4: Sampling Framework

The proportionate sampling technique was applied to undertake sample livestock rearers from the distinct selected districts one each from the western eastern and central agro-economic regions of the state of Uttar Pradesh. These districts were chosen based on the size of the population of buffalo, cattle and goats by ranking the individual districts. Therefore, districts having top three ranks were selected representing different regions of the state of Uttar Pradesh. Such districts were namely (1) Agra from western region, (2) Baharaich from eastern region and (3) Lakhimpur Khiri from central region. From these districts thus,

selected, 120 cattle rearing farmers, 120 buffalo rearing farmers and 120 goat rearing farmers were chosen making a total of 360 sample farmers from the state. Villages were selected based on the density of animal population. Cattle rearing farmers include both cross bred and indigenous cows. Farmers rearing all kinds of animals were considered more than one sample farmers. The sampling design is given in Table-I-6

**Table-I-6**  
**Sampling Design**

Sl. No.	State	Regions	Districts	Sample Farmers			
				Cattle Rearers	Buffalo Rearers	Goat/Sheep Rearers	Total
1.	Uttar Pradesh	Western	Agra	18	29	31	78
		Eastern	Baharaich	46	47	46	139
		Central	Lakhimpur Khiri	56	44	43	143
1	1	3	3	120	120	120	360

# Chapter-II

## Socio-Economic Characteristics of Sample Households

### II.1.: General Characteristics of Sample Households

General characteristics of sample households worked-out in Table-II-1 shows that in case of educational level, out of the total sample respondents i.e. 247 about 41.70 percent (103) were illiterates. Among the literates, 15.39 percent (38) were primary passed, 22.67 percent (56) were reported as higher primary (Middle) passed, 10.93 percent (27) were matriculates, no one was reported as pre university / higher secondary among the total sample respondents. 4.05 percent (10) were graduates, 0.81 percent (2) were post graduates and above and 4.45 percent (11) were reported as diploma holders. Thus, the educational level among the sample respondents was deplorably poor as 103 (41.70 percent) were illiterates in this cyber age.

As regards the castes, the general castes hold 19.43 percent, OBCs 61.54 percent, S.Cs. 18.22 percent and S.Ts. were only 0.81 percent. Thus, among the castes OBCs were the dominating castes on an overall in the area under the study. Regarding gender of respondents the majority i.e. 90.64 percent were males and only 9.31 percent were reported to be females among all respondents. Regarding average experience in the occupation of respective respondents, it was found that a farmers (crop grower) had an average experience of 27.10 years, a livestock rear had an average experience of 16.79 years, a goat rearer had an experience of 10.55 years generally in the area under study. The average family size among the sample households was estimated as 5.01. the average income per household from different occupations was estimated as from agriculture it was Rs. 1,45,143 from dairying it was Rs. 1,03,149 from goat rearing it was Rs. 13,640 and from the other occupation it was Rs. 98,826 in the area under study.



On the other hand the average number of family members engaged in different occupations were estimated as in farming (growing crops) 1.44 members, in the dairying 1.92 members and in goat rearing only 1.26 members were engaged generally in the area under study. Thus, dairying had emerged as employing the higher members occupation in the area under study. Accordingly among the total sample households of 247, as the primary occupation, 134 had opted agriculture, 22 had opted animal husbandry and dairying, 62 had opted agricultural labour, 27 had opted non-farm labour, none had opted trade, 1 had opted private employment and 1 had opted other job. While as secondary occupation out of the total 247 sample households, 23 had opted agriculture, 122 had opted animal husbandry and dairying, 56 had opted agricultural labour, 27 had opted non-farm labour, none had opted trade, 4 had opted private employment and 5 had opted other jobs. As regards the membership of social and cooperative organizations out of the 247 sample households, only 2 members from 2 sample households had been reported as members of cooperatives in the area under study. Thus, maximum of the sample households were found to be engaged either in agriculture or in allied agriculture in the area under study in the state of Uttar Pradesh. The concerned data are contained in Table-II-1.

**Table-II-1**

**General Characteristics of the sample Households**

Sl.No	Particulars	Number / Percentage	
<b>1</b>	<b>Education level (%)</b>		
	Illiterate	103	41.70
	Primary (1 to 4)	38	15.39
	Higher primary (5 to 9)	56	22.67
	Matriculation (10)	27	10.93
	Pre- university (10+2)	0	-
	Graduate	10	4.05
	Post Graduate & above	2	0.81
	Diploma holders	11	4.45
<b>2</b>	<b>Caste (%)</b>		
	General		19.43
	OBC		61.54
	SC		18.22
	ST		0.81
<b>3</b>	<b>Gender (%)</b>		
	Male		90.69
	Female		9.31
<b>4</b>	<b>Average Experience (Years)</b>		
	Farming		27.10
	Dairying		16.79
	Sheep & Goat rearing		10.55

<b>5</b>	<b>Average family Size (No.)</b>	5.01	
<b>6</b>	<b>Average Income (Rs)/farm</b>		
	a) Agriculture	1,45,143	
	b) Dairy	1,03,149	
	c) Sheep & Goat farming	13,640	
	d) Other	98,826	
<b>7</b>	<b>Average No. of family members engaged</b>		
	Farming	1.44	
	Dairying	1.92	
	Sheep & Goat rearing	1.26	
<b>8</b>	<b>Occupation</b>	<b>Primary</b>	<b>Secondary</b>
	Agriculture	134	23
	Animal Husbandry & dairy	22	122
	Agri Labour	62	56
	Non- Farm labour	27	27
	Trade	-	-
	Employee (private)	1	4
	Other (Specify)	1	5
<b>9</b>	<b>Member of Social &amp; Cooperative Organization</b>	<b>Yes</b>	<b>No</b>
		2	245
	Total	247	237

## Chapter-III

### **Estimation of Area, Production and Productivity of Feed and Fodder Crops Being Fed to Livestock by Sample Households**

The present chapter mainly deals with the land use pattern and sources of irrigation cropping pattern by sample household, classification of animals reared by the sample households based on their age, average value of the animals based on their age in rupees average value of the milch, dry and heifer animals (Rs.) details of the feeds and fodders fed to major animals per day per animal category-wise, total feed and fodder requirement as per the NATP Standards in the state Uttar Pradesh, green fodder yield for land use classification during 2018 in the state of Uttar Pradesh, conversion factors in terms of harvest indices and extraction rates used in the calculation of feed resources such as crop residues, oil cakes, grains, brans, and chunnies of various crops from crop production of the state of Uttar Pradesh during 2018, major sources of livestock feed, details about cattle shed, details of labour and other maintenance charges and returns from livestock rearing which are discussed in the following paragraphs:

#### **III.: Estimation of area, production and productivity of feed and fodder crops being fed to livestock by sample households:**

##### **III.1.: Land use pattern and source of irrigation**

Table-III-1 shows the land use pattern and sources of irrigation used by sample households, wherein the land owned by a farmer was estimated as 2.04 acres and the total land was reported to be irrigated. While the area of the leased-in land per farmer was accounted as 1.55 acres and the area of leased-out land was found to be 1.00 acres per farmer. Accordingly the net operated area per farmer was accounted as 2.92 acres and the total operated area was irrigated. The area under fodder crops was estimated as 0.33 acre per farm. Thus, it was clarified that the area under fodder crops was meagre per farmer in the area under the study. The practices of leasing-in and leasing-out both were common in the area under study. Regarding sources of irrigation in the area under the study only canal and bore-wells were reported as main sources of irrigation wherein 22 sample farmers were using canal and 153 sample farmers were using bore-wells other irrigation resources were nil in the area. Data are given in Table-III-1

**Table-III-1**  
**Land use Pattern and Sources of irrigation**

(Area in acres/farms or H.H.)

Sl. No	Particulars	Irrigated	Un-irrigated	Total
1	Owned Land (Acres)	2.04	--	2.04
2	Leased in Land (Acres)	1.55	--	1.55
3	Leased out Land (Acres)	1.00	--	1.00
4	Uncultivated land (Acres)	--	--	--
5	Net operated area (Acres)	2.92	--	2.92
6	Area under Fodder crop (Acres)	0.33	--	0.33
7	Village Agro forestry (Acres)	--	--	--
8	Village Grazing land (Acres)	--	--	--
9	Other (specify)	--	--	--
10	<b>Sources of irrigation used by farmers (In number)</b>	No. of farmers who used		
	Canal	22		
	Bore well	153		
	Dug well	--		
	Tank	--		
	Other	--		
	Total	175		

Source: Field survey

### **III.2.: Cropping pattern, Production, cost and return on the farms of sample households**

The cropping pattern, production, cost and return on the farms of sample households analyzed in Table-III-2 shows that during kharif season paddy on 1.04 acre, sugarcane on 2.25 acres, bajra on 1.13 acres, maize on 0.94 acre and fodder on 0.35 acre were grown on average by a farmer / sample household and during rabi season wheat on 1.09 acre and berseem on 0.28 acre were grown by him in the reference year 2018-19. Thus, during the kharif season main crops were paddy, sugarcane, bajra and maize and in rabi season wheat and berseem were the main crops in the area under study. Accordingly the main product per acre was estimated as from paddy 17.04 qtls, sugarcane 464 qtls, bajra 4.89 qtls and maize 3.35 qtls respectively along with the by-product from paddy 30.14 qtls, sugarcane 107.23 qtls, bajra 25.84 qtls, maize 17.81 qtls and fodder 41.00 qtls respectively from kharif crops. in rabi season from wheat the main product was 16.5 qtls and by-product 26.19 qtls and berseem 14.39 qtls in 2018-19. The cost per acre were estimated as Rs. 17,102 for paddy, Rs. 44,234 sugarcane, rs. 3,640 bajra, Rs. 4,088 maize and Rs. 1802 for fodder in kharif and Rs. 1,449 for berseem in rabi season. The return from paddy was Rs. 25,328, sugarcane Rs.

1,54,507, bajra Rs. 16,686, Maize Rs. 12,456, fodder Rs. 9,824, wheat Rs. 42,136 and berseem Rs. 5,709 respectively. Thus, the return per acre was maximum from sugarcane, wheat and paddy on the farms of sample households during 2018-19. The related data are contained in Table-III-2.

**Table-III-2**  
**Cropping Pattern on the farms of sample households**

(Area in Acre/farm or H.H.)  
(Production in Qtl/Acre)  
(Cost & return in Rs./Acre)

Name of crop	Area (acre)	Production (Qtl/acre)		Total cost (Rs.)/Acre	Total return (Rs.)/Acre
		H.H. or Farm	Main Product		
<b>Kharif/Rainy</b>					
Paddy	1.04	17.04	30.14	17102	35328
Sugarcane	2.25	464	107.23	44234	154507
Bajra	1.13	4.89	25.84	3640	16686
Fodder	0.35	-	41.00	1802	9824
Maize	0.94	3.35	17.81	4088	13456
<b>Rabi/Winter</b>					
Wheat	1.09	16.50	26.19	18930	42136
Barseem	0.28	-	14.39	1449	5709

Source: Field survey

### III.3.: Classification of animals reared by the sample households based on their age.

Table-III-3 indicates that the number of buffaloes on age-group of upto 1 year was accounted as 4 on an overall. The number of crossbred cattles as well as indigenous cattles of the age upto 1 year were found to be nil among the sample rearers of animals in the area under study. While the number of goats of the age upto 1 year was reported to be 53 on an overall. While in the age-group of 1-3 years the number of buffaloes was 35, crossbred cattles was 15, indigenous cattles was only 3 and the number of goats was accounted as 234 on an overall. In the age-group of above 2 years the number of buffaloes was accounted as 198, crossbred cattles was 165, indigenous cattles was 28 and goats was 242 on an overall in the area a under study. Thus, the number of animals above 2 years of age was considerable in the area under study. The related data are given in Table-III-3.

**Table-III-3****Classification of Animals Reared by the sample households Based on their Age**

Age groups	Buffalo	Crossbred Cattle	Indigenous cattle	Sheep	Goat
<1 year	4	0	0	-	53
1-2 Year	35	15	3	-	234
> 2 Years	198	165	28	-	243

Source: Field survey

**III.4.: Average value of the animals based on their age (Rs.)**

Table-III-4 indicates the average value of the animals based on their age in Rs. per animal, wherein, the value of a female buffalo above 2 years was estimated as highest i.e. Rs. 41,707 against the lowest i.e. Rs. 3,000 of a female buffalo upto 1 year. While, the value of a male buffalo varied from Rs. 2,000 for upto 1 year to Rs. 12,500 for above 2 years. In case of crossbred cattle, the value of female cattle above 2 years was estimated as Rs. 19,325 against Rs. 16,886 of a female cattle of 1-2 years. The value of male cattle varied from Rs. 7,813 of the male cattle of 1-2 years to Rs. 5,000 of a male cattle of above 2 years. While, in case of indigenous cattle the value of a female cattle of above 2 years was Rs. 23,852 against Rs. 16,000 of a female cattle of 1-2 years. Among male cattle it varied from Rs. 2,500 for a male of 1.2 years to Rs. 3,500 for a male cattle of above 2 years. In case of goat, the value of female goat of above 2 years was estimated as Rs. 4,701 against Rs. 2,727 of female goat of upto 1 year. While, among the male goats it varied from Rs. 3,537 for above 2 years to Rs. 2,553 for upto 1 year. Thus, it was evidently clarified that the value of females in all the four categories of animals was comparatively higher than males. The related data are given in Table-III-4.

**Table-III-4****Average Value of the animals based on their Age (Rs)**

(Value in Rs./Animal)

Age group	Buffalo		Crossbred Cattle		Indigenous cattle		Sheep		Goat	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
<1 year	2000	3000	0	0	0	0	-	-	2553	2727
1-2 Year	2750	15143	7813	16886	3500	16000	-	-	3300	3741
> 2 Years	12500	41707	5000	19325	3500	23852	-	-	3537	4071

Source: Field survey

### III.5.: Average value of the milch, dry and heifer animals among buffalo, crossbred animals based cattle, indigenous cattle and goat in Rs./animal.

The average value of milch, dry and heifer animals among buffalo, crossbred cattle, indigenous cattle and goat in Rs. per animal analysed in table-III-5 shows that the value of a milking buffalo was Rs. 41,916, crossbred cattle was Rs. 29,975 indigenous cattle Rs. 24,842 and of a goat was Rs. 4,018 respectively. While the value of a dry buffalo was Rs. 22,240, dry crossbred cattle was Rs. 31,522, dry indigenous cattle was Rs. 30,000 and of a dry goat was Rs. 3,904. On the other hand the value of a pregnant heifer of buffalo was Rs. 44,194, pregnant heifer of a crossbred cattle was Rs. 47,141, pregnant heifer of an indigenous cattle was Rs. 21,846 and of a pregnant heifer of goat was Rs. 3,903. While the value of a non-pregnant buffalo heifer was Rs. 40,948, a non-pregnant crossbred cattle heifer was Rs. 33,115, a non-pregnant heifer of indigenous cattle was Rs. 25,864 and of a non-pregnant heifer of goat was Rs. 3,738 respectively. Thus, the value of milking buffalo was comparatively much higher than the other milking bovine animals. Among dry animals the value of crossbred cattle was comparatively higher. Among pregnant heifers the value of crossbred cattle was higher. But among the non-pregnant heifer the value of buffalo heifer was higher. The related data are given in Table-III-5.

**Table-III-5**  
**Average Value of the animals Milch, Dry and Heifer animals (Rs.)**  
(Rs./Animal)

Particulars	Buffalo	Crossbred Cattle	Indigenous cattle	Sheep	Goat
<b>Milching</b>	41916	29975	24842	-	4018
<b>Dry</b>	22240	31522	30000	-	3904
<b>Heifer Pregnant</b>	44194	47141	21846	-	3903
<b>Heifer non-pregnant</b>	40984	33115	25864	-	3738

Source: Field survey

### III.6.: Details of feed and fodder fed to animals

#### III.6.1: Average feed and fodder fed to buffalo per day per animal

Table-III-6.1 shows the average quantity and value of feed and fodder fed to buffalo per day per animal, wherein, to a milking buffalo green fodder 2.70 kgs (Rs. 9.73), dry fodder 6.85 kgs (Rs. 44.83), concentrates 1.47 kgs (Rs. 7.75) and supplements 1.58 kgs (Rs. 7.10) per day was fed and no grazing was reported. In case of a dry buffalo, 0.65 Kg. (Rs. 7.25) green

fodder, 4.33 kgs. (Rs. 39.05) dry fodder, 0.73 kg. (Rs. 20.37) concentrates and 0.044 kg. (Rs. 1.27) supplements per day was fed. Thus, milking buffaloes were fed comparatively larger quantity of feeds and fodders than the dry buffaloes in the area under study. While among the buffalo heifers, the pregnant heifer was fed 3.33 kgs. green fodder costing Rs. 11.63, 7.78 kgs. dry fodder of Rs. 43.49, 1.66 kgs. concentrates of Rs. 28.10 and 0.12 kg. supplement of Rs. 3.02. The non-pregnant heifer was fed 2.86 kgs. green fodder of Rs. 9.85, 6.05 dry fodder of Rs. 46.71, 1.21 kgs. concentrates of Rs. 23.40 and 0.09 kg. supplements of Rs. 2.35 per day and no grazing was there in the area. Thus, it was crystal clear that pregnant heifers were fed larger quantity of feeds and fodders than that to non-pregnant heifers. The related data are given in Table-III-6.1.

**Table-III-6.1**  
**Average feed and Fodder Fed to Buffalo (per day per animal)**

Particulars	Green fodder		Dry fodder		Concentrates		Supplements		Grazing (hrs/day)
	Quantity (Kg)	Value (Rs.)	Quantity (Kg)	Value (Rs.)	Quantity (Kg)	Value (Rs.)	Quantity (Kg)	Value (Rs.)	
<b>Milching</b>	2.70	9.73	6.25	44.83	1.25	23.89	0.110	2.75	-
<b>Dry</b>	0.65	7.25	4.33	39.05	0.73	20.37	0.044	1.27	-
<b>Heifer Pregnant</b>	3.33	11.63	7.78	49.49	1.66	28.10	0.12	3.02	-
<b>Heifer non-pregnant</b>	2.86	9.85	6.55	46.71	1.21	23.40	0.09	2.35	-
<b>&gt;1 year</b>	-	-	-	-	-	-	-	-	-
<b>1-2 Year</b>	-	-	-	-	-	-	-	-	-

Source: Field survey

### **III.6.2: Average feed and fodder fed to crossbred cattle per day per animal**

The average feed and fodder fed to crossbred cattle per day per animal worked-out in Table-III-6.2 shows that on an average a milking crossbred cattle was fed 1.35 kgs. green fodder of Rs. 5.68, 4.82 kgs. dry fodder of Rs. 32.92, 0.80 kg. concentrates of Rs. 14.48 and 0.12 kg. supplements of Rs. 2.25 per day. While a dry crossbred cattle was fed 1.17 kgs. green fodder of Rs. 6.00, 5.91 kgs. dry fodder of Rs. 34.84, 0.82 kg. concentrate of Rs. 17.04 and 0.25 kg. supplements of Rs. 6.56 per day. Thus, the milking crossbred cattles were fed comparatively larger quantity of feeds and fodders than that of dry crossbred cattles. In case of heifers the pregnant heifer was fed 1.96 kgs. of green fodder of Rs. 9.15, 8.21 kgs. dry fodder of Rs. 53.62, 1.17 kg. concentrates of Rs. 22.60 and 0.32 kg. supplements of Rs. 6.78 per day. While, the non-pregnant heifer was fed 1.31 kg. green fodder of Rs. 5.35, 5.28 kgs. dry



fodder of Rs. 34.17, 0.86 kg. concentrates of Rs. 17.24 and 0.15 kg. supplements of Rs. 2.81 per day. Thus, pregnant heifers were fed comparatively larger quantity of feeds and fodders as compared to that to non-pregnant heifers. The concerned data are given in Table-III-6.2.

**Table-III-6.2**

**Average feed and Fodder Fed to Cross Breed Cattle (Kg. per day per animal)**

Particulars	Green fodder		Dry fodder		Concentrates		Supplements		Grazing (hrs/day)
	Quantity (Kg)	Value (Rs.)	Quantity (Kg)	Value (Rs.)	Quantity (Kg)	Value (Rs.)	Quantity (Kg)	Value (Rs.)	
Milching	1.35	5.68	4.82	32.92	0.80	14.48	0.12	2.25	-
Dry	1.17	6.00	5.91	34.84	0.82	17.04	0.25	5.56	-
Heifer Pregnant	1.96	9.15	8.21	53.62	1.17	22.60	0.32	6.78	-
Heifer non-pregnant	1.31	5.35	5.28	34.17	0.86	17.24	0.15	2.81	-
>1 year	-	-	-	-	-	-	-	-	-
1-2 Year	-	-	-	-	-	-	-	-	-

Source: Field survey

**III.6.3: Average feed and fodder fed to indigenous cattle per day per animal**

The average feed and fodder fed to the indigenous cattle per day per animal analysed in Table-III-6.3 shows that a milking indigenous cattle was fed 1.84 kgs. green fodder of Rs. 7.28, 1.50 kgs. dry fodder of Rs. 14.50, 1.47 kg. concentrates of Rs. 7.75 and 1.58 kgs. supplements of Rs. 7.10 per day and no grazing was reported in the area under study. The dry indigenous cattle was fed 1.20 kgs. of green fodder of Rs. 5.02, 5.48 kgs. dry fodder of Rs. 38.35, 0.67 kg. concentrates of Rs. 5.47 and 0.15 kg. supplements of Rs. 3.93 per day. Thus, milking indigenous cattle were fed comparatively larger quantity of feeds and fodders than the dry indigenous cattles in the area under study. Among indigenous heifers the pregnant heifer was fed 1.25 kg. green fodder of Rs. 6.37, 8.00 kgs dry fodder of Rs. 49.00, 0.99 kg. concentrates of Rs. 17.10 and 1.24 kg. supplements of Rs. 20.34 per day. While the non-pregnant heifer was fed 0.93 kg. green fodder of Rs. 2.75, 5.02 kgs. dry fodder of Rs. 35.67, 0.63kg. concentrates of Rs. 10.07 and 0.63kg. supplements of Rs. 10.75 perday. Thus, it wa evidently clear that milking animals and pregnant heifers were fed larger quantity of feeds and fodders as compared to that in case of other animals. The related data are given in Table-III-6.3.

**Table-III-6.3**  
**Average feed and Fodder Fed to Indigenous Cattle (kg per day per animal)**

Particulars	Green fodder		Dry fodder		Concentrates		Supplements		Grazing (hrs/day)
	Quantity (Kg)	Value (Rs.)	Quantity (Kg)	Value (Rs.)	Quantity (Kg)	Value (Rs.)	Quantity (Kg)	Value (Rs.)	
Milching	1.84	7.28	7.50	44.50	1.47	7.75	1.58	7.10	-
Dry	1.20	5.02	5.48	38.35	0.67	5.47	0.15	3.93	-
Heifer Pregnant	1.25	6.32	8.00	49.00	0.99	17.10	1.24	20.34	-
Heifer non-pregnant	0.93	2.75	5.02	35.67	0.63	10.07	0.63	10.75	-
>1 year	-	-	-	-	-	-	-	-	-
1-2 Year	-	-	-	-	-	-	-	-	-

Source: Field survey

### III.6.4: Average feed and fodder fed to goats per day per animal

The average feed and fodder fed to goats per day per animal worked-out in Table-III-6.4 shows that a male goat upto 1 year was fed 0.58 kg. green fodder of Rs. 1.80, 0.31 kg. dry fodder of Rs. Rs. 2.09, 0.13 kg. concentrates of Rs. 2.01 and 0.01 kg. supplements of Rs. 0.09 per day and the female goat was fed 1.04 kg. green fodder of Rs. 3.15, 0.46 kg dry fodder of Rs. 4.55, 0.46 concentrates of Rs. 2.49 and 0.003 kg. supplements of Rs. 0.008 per day. Thus, female goat was fed comparatively larger quantity of feed and fodder. While the male goat of 1-2 years was fed 0.71 kg. green fodder of Rs. 2.74, 0.29 kg. dry fodder of Rs. 1.75, 0.29 kg. of concentrates of Rs. 3.55 and 0.003 kg. supplements of Rs. 0.09 per day. The female goat of 1-2 years was fed 0.89 kg. green fodder of Rs. 3.05, 0.46 kg. dry fodder of Rs. 3.01, 0.18 kg. concentrates of Rs. 2.92 and 0.005 kg supplements of Rs. 0.14 per day. While the male goat of above 2 years was fed 1.05 kg. green fodder of Rs. 4.88, 0.44 kg. dry fodder of Rs. 2.74, 0.27 kg. concentrates of Rs. 4.65 and 0.008 kg. supplements of Rs. 0.25 per day. The female goat above 2 years was fed 1.09 kg. green fodder of Rs. 4.09, 0.38 kg. dry fodder of Rs. 2.42, 0.30 kg. concentrates of Rs. 4.24 and 0.007 kg. supplements of Rs. 0.23 per day. The related data are given in Table-III-6.4.

**Table-III-6.4**  
**Average feed and Fodder requirement for Goats (per day per animal)**

Particulars	Gender	Green fodder		Dry fodder		Concentrates		Supplements		Grazing (hrs/day)
		Quantity (Kg)	Value (Rs.)	Quantity (Kg)	Value (Rs.)	Quantity (Kg)	Value (Rs.)	Quantity (Kg)	Value (Rs.)	
>1 year	Male	0.58	1.80	0.31	2.09	0.13	2.01	0.01	0.09	-
	Female	1.04	3.15	0.46	4.55	0.16	2.49	0.003	0.008	-
1-2 Year	Male	0.71	2.74	0.29	1.75	0.29	3.55	0.003	0.09	-
	Female	0.89	3.05	0.46	3.01	0.18	2.92	0.005	0.14	-
< 2 Years	Male	1.05	4.88	0.44	2.74	0.27	4.65	0.008	0.25	-
	Female	1.09	4.09	0.38	2.42	0.38	4.24	0.007	0.23	-

Source: Field survey

### **III.7: Total feed and fodder requirement as per the NATP standards in the state of Uttar Pradesh in 2019.**

Total feed and fodder requirement as per the NATP standards in the state of Uttar Pradesh during 2019 analysed in Table-III-7 indicates that the total requirement of green fodder for cattle in milk was 2,94,70,444 kgs, dry 79,42,913 kgs, adult male 49,48,007 kgs and young stock 1,87,35,328 kg. In case of buffalo in milk it was 6,74,62,605 kgs., dry 1,79,59,485 kgs, adult male 32,22,462 kgs and for young stock 3,77,56,439 kgs. respectively. For goats it was 1,50,59,226 kgs. Thus, the total requirement of green fodder during 2019 was maximum for the milking buffaloes followed by cattle against the minimum for adult males of cattle and buffaloes. For goat it was considerable.

The total requirement of dry fodder for cattle in milk was 3,41,23,672 kgs, dry 93,91,327 kgs, adult male 73,48,888 kgs and young stock 1,83,05,618 kgs. For buffalo in milk it was 7,17,63,912 kgs, dry 1,63,41,811 kgs, adult male 59,58,363 kgs and for young stock it was 3,66,02,312 kgs. For goat it was 28,96,005 kgs. Thus, the total requirement of dry fodder was also maximum for milking buffalo, young stock of buffalo and milking cattle against the minimum for goats and adult males cattles and buffaloes in the state of Uttar Pradesh.

As regards the total requirements of concentrates for cattle in milk it was estimated as 39,70,755 kgs, dry 9,34,460 kgs, adult male 4,02,178 kgs, young stock 15,46,954. For buffalo in milk it was 1,18,85,190 kgs, dry 17,16,716 kgs, adult male 2,87,150 kgs and young stock 31,32,630 kgs. For goat it was 8,68,802 kgs. during 2019 in the state of Uttar Pradesh. Thus, the total requirement of concentrates was found to be maximum for milking buffaloes against the minimum for goats in the state of Uttar Pradesh. The related data are contained in Table-III-7.

**Table-III-7**  
**Total Feed and Fodder Requirement as per the NATP Standards in the State of Uttar Pradesh in 2019**

Animal Category	Number of Animals*	Green Fodder		Dry Fodder (Kg)		Concentrates (Kg)	
		(Kg per animal)	Total (Kg)	(Kg per animal)	Total (Kg)	(Kg per animal)	Total (Kg)
In milk	6204304	4.75	29470444	5.5	34123672	0.64	3970754.56
Dry	2336151	3.4	7942913.4	4.02	9391327.02	0.4	934460.4
Adult male	1218721	4.06	4948007.26	6.03	7348887.63	0.33	402177.93
Young Stock	8594187	2.18	18735327.66	2.13	18305618.31	0.18	1546953.66
<b>Buffalo</b>							
In milk	11319229	5.96	67462604.84	6.34	71763911.86	1.05	11885190.45
Dry	3301376	5.44	17959485.44	4.95	16341811.2	0.52	1716715.52
Adult male	797639	4.04	3222461.56	7.47	5958363.33	0.36	287150.04
Young Stock	16487528	2.29	37756439.12	2.22	36602312.16	0.19	3132630.32
Goat	14480025	1.04	15059226	0.2	2896005	0.06	868801.5
Sheep		1.01		0.2		0.04	

Note:\*Consider 20<sup>th</sup> Livestock Census data, 2019

### **III.8: Green fodder yield according to land use classification during 2018 in the state of Uttar Pradesh.**

The green fodder yield according to land use classification during 2018 in the state of Uttar Pradesh worked-out in Table-III-8 shows that the total area under fodder crops was estimated as 3,09,750 hectares in 2018 and the availability was 1,26,78,068 metric tonnes in the state of Uttar Pradesh. The forest area accessible for grazing was 8,29,076 ha and the availability of fodder was only 20.87 metric tonnes. The area under permanent pastures and other grazing lands was estimated as 65,198 ha and the availability of fodder was 3,25,960 metric tonnes. The area under cultivable wastelands was estimated as 4,05,316 ha. and the availability of fodder was 4,053.60 metric tonnes. While the area under current follows was 11,21,550 ha and the availability of fodder was 11,21,550 metric tonnes. The area under other follows was 5,09,192 ha and the availability of fodder was 5,09,192 metric tonnes. The area not included in Net Sown area and the area under miscellaneous and groves was estimated as 3,05,012 ha and the fodder availability from it was estimated as 3,05,012 metric tonnes in the state of Uttar Pradesh as a whole during 2018. Thus, the maximum availability of fodder was found from the fodder crops and the minimum from the forest area in the state of Uttar Pradesh. The concerned data are contained in Table-III-8.

**Table-III-8**  
**Green fodder yields for land use classification**

Sl.no	Land use category	Green fodder (tones/ha/year)	Total Area(ha)	Total Availability metric tonnes
1	A)Area under fodder crop	40.93	309750	12678068
2	B)Forest area and on assumption that only 50% area was accessible for grazing	3.00 (1.50 if considered whole forest area )	829076.5	24.87
3	C)Permanent pastures and other grazing lands	5.00	65198	325960
4	D)Cultivable wastelands	1.00	405316	405316
5	E)Current fallows	1.00	121550	1121650
6	F)Other fallows	1.00	509192	505192
7	G)Misc. Tree Crops and Groves not Included in Net Area Sown	1.00	305012	305012

*Source:* Statistical Abstract of U.P. 2018

**III.9: Conversion factors in terms of harvest indices and extraction rates used in the calculation of feed resources such as crop residues, oil cakes, grains, brans and chunnies of various crops from crop production data in State of Uttar Pradesh during 2018**

Table-II-9 indicates that the crop residues received from crop such as paddy was 77,89,220 kgs, wheat 98,84,913 kgs, sorghum 4,57,308 kgs , bajra 22,67,933 kgs, barley 8886 kgs, maize 20,16,200 kgs, small millets 7.5 kgs , other cereals 3.4 kgs and pulses 42,63,830 kgs, oilseeds 6,54,844 kgs, and from sugarcane it was 5,39,960 kgs during the year 2018 in the state of U.P. Thus, it was evidently clear that residues were received maximum from wheat and paddy crops and minimum from other cereals and small millets. From other fodder crops also it was received considerably. While the total grains received from the crops such as from paddy was 1,19,834 kgs, wheat 1,97,698 kgs , sorghum 9,146 kgs, bajra 45,359 kgs ,barley 684 kgs, maize 80,648 kgs, small millets 0.3 kgs, other cereals 0.17 kgs pulses 75,244 kgs during 2018 in the state of U.P. Thus, from paddy and wheat the grains were received maximum and from small millets and other cereals it was received in minimum quantity in the state of U.P. About brans and chunnies, it was found that only 0.03 kgs of chunnies from pulses was reported during 2018 in the state of U.P. The related data are given in table-9

**Table-III-9**

**Conversion factors in terms of harvest indices and extraction rates used in the calculation of feed resources such as crop residues, oil cakes, grains, brans and chunnies of various crops from crop production data in State of Uttar Pradesh during 2018**

Sl. no	Crops	Area in the State (ha)	Harvest indices (HI)*				Extraction Rate(ER)			
			Crop residues*	Total (Kgs)	Oil Cakes*	Total (Kgs)	Grains*	Total (Kgs)	Brans and Chunnies*	Total (Kgs)
1	Paddy	5991708	1.3	7789220.4	-	7789220	0.02	1199834.16	-	119834
2	Wheat	9884913	1	9884913	-	9884913	0.02	197698.26	-	197698
3	Sorghum	182923	2.5	457307.5	-	457308	0.05	9146.15	-	9146.15
4	Bajra	907173	2.5	2267932.5	-	2267933	0.05	45358.65	-	45359
5	Barely	6835	1.3	8885.5	-	8886	0.1	683.5	-	684
6	Maize	806480	2.5	2016200	-	2016200	0.1	80648	-	80648
7	Ragi	-	2	0	-	-	0.05	0	-	0
8	Small Millets	3	2.5	7.5	-	7.5	0.1	0.3	-	0.3
9	Other Cereals	1.7	2	3.4	-	3.4	0.1	0.17	-	0.17
10	Pulse	2508135	1.7	4263829.5	-	4263830	-	0	0.03	75244.05
11	Groundnut	94013	2	188026	0.7	65809.1	-	0	-	0
12	Oil Seeds	992634	-	0	0.7	694843.8	-	0	-	0
13	Sugarcane	2159841	0.25	539960.25	-	539960	-	0	-	0

Note:\*refer the Proposal

Source: Statistical Abstract of Uttar Pradesh, 2018

### III.10: Major Sources of livestock feed

Table-III-10 shows that out of total 247 sample households, 200 households had reported that grazing land was also the source of livestock feed, 16 household had told crop residues to be the source of livestock feed, 28 households had reported improved forage and pasture land as source of livestock feed, the maximum i.e. 142 household had reported the feed preservation and storage as major sources of livestock feed, 100 household told free legumes grown as hedge or any other else were source of livestock feed and 5 households had told the household left over as livestock feed in the area of study in U.P. Thus, grazing land, feed preservation and storage as well as legumes grown as hedge were the major sources of livestock feed in the area under study. The related information are given in table III-10.

**Table-III-10**  
**Major Sources of Livestock Feed**

<b>Source of Livestock Feed</b>	<b>Number of households reported</b>
Grazing land	200
Crop residues	16
Improved forage and pasture	28
Household left over	05
Tree legumes grown as hedge or any	100
Feed preservation and storage	142

Source: Field survey

### **III.11: Details about cattle shed**

Table-III-11 shows that among the total sample livestock rearers only 1 pucca cattle shed was reported to be maintained and its average value was estimated as Rs. 20,000. The number of kachcha cattle shed maintained was reported to be 123 and the average value of the kachcha cattle shed was estimated as Rs. 20,787. While the number of mixed cattle sheds maintained by the sample livestock rearers was reported to be 31 and the average value of a mixed cattle shed was estimated as Rs. 14,970. Thus, maximum of the cattle shed maintained by sample households were kachcha cattle shed and the average value of such cattle sheds was comparatively slightly higher than that of pucca cattle sheds in the area under study in the state of Uttar Pradesh. In case of goat sheds by sample households 1 pucca goat shed was reported to be maintained and its average value was estimated as Rs. 18,000. The number of kachcha goat sheds was reported to be 16 and the average value of a kachcha goat shed was estimated as Rs. 13,456. While the number of mixed goat sheds was found to be 2 only and the average value of a mixed goat shed was estimated as Rs. 7,000. Thus, the number of kachcha goat sheds was comparatively higher in the area under the study. The related data are given in Table-III-11.

**Table-III-11**  
**Details about cattle shed**  
(In No. & average value Rs.)

<b>Particulars</b>	<b>Pucca</b>		<b>Kachcha</b>		<b>Mixed</b>	
	<b>Number</b>	<b>Average value (Rs)</b>	<b>Number</b>	<b>Average value (Rs)</b>	<b>Number</b>	<b>Average value (Rs)</b>
<b>Cattle shed</b>	1	20000	123	20787	31	14970
<b>Sheep and Goat shed</b>	1	18000	16	13456	2	7000

Source: Field survey

### III.12: Details of labour and other Maintenance Charges

Table-III-12 indicates that a male buffalo had required 0.38 hours labour per day, male indigenous cattle 0.20 hours labour per day, male crossbred cattle 0.35 hours labour per day and a male goat had required 0.15 hours human labour per day. While a female buffalo had required 0.38 hours human labour per day, a female indigenous cattle 0.20 hours labour per day, a female crossbred cattle 0.28 hours of labour per day and a female goat required 0.30 hours of human labour per day. Thus, it was evidently clear that buffalo as well crossbred cattle both male and female had required comparatively more human labour than other livestock in the area of study in Uttar Pradesh. Accordingly the human labour cost per annum for a male buffalo was estimated as Rs. 27,050, indigenous male cattle Rs. 5,200, crossbred male cattle Rs. 19,700 and the male goat required Rs. 23,140 per annum. While female buffalo required Rs. 20,300, female indigenous cattle Rs. 3,900, female crossbred cattle Rs. 14,950 and female goat required Rs. 18,800 per annum. The veterinary cost varied from Rs. 84,225 for buffalo to Rs. 14,150 for indigenous cattle and the maintenance cost varied from Rs. 86,130 for buffalo to Rs. 33,170 for goat and the other cost varied from Rs. 61,825 for buffalo to Rs. 11,200 for indigenous cattle per annum in the area under study. The related data are given in Table-III-12.

**Table-III-12**  
**Details of Labour and other maintenance charges**

(labours hours per animal per day)

Particulars		Buffalo	Indigenous cattle	Crossbred Cattle	Sheep	Goat
Labor requirement	Male (hrs)	0.38	0.20	0.35	-	0.15
	Female (hrs)	0.30	0.20	0.28	-	0.30
Labor cost* (Rs/ year)	Male (Rs)	27050	5200	19700	-	23140
	Female (Rs)	20300	3900	14950	-	1800
Veterinary Cost (Rs/annum.)		84225	14150	50080	-	46980
Maintenance cost (Equipments, electricity and water charges. (Rs./annum)		86130	8900	47465	-	33170
Any other cost (Rs./annum)		61825	11200	3475	-	27795

Note: \*Convert 8 hours per day as a wage rate

Source: Field Survey



### III.13: Returns from Livestock Rearing

Table-III-13 shows that maximum return of Rs. 36 per litre from 8 litres of milk per animal per day from buffaloes was received by a livestock rearer against the minimum return of Rs. 20 per litre from 0.35 litre of milk per animal per day from goats. In case of production of dung it was also estimated to be maximum i.e. 4.8 tonnes per annum from the buffalo against the minimum i.e. 0.80 ton per annum from the goats. While the sale value of dung was estimated to the maximum i.e. Rs. 500 per ton in case of goats against Rs. 400 per ton in case of buffalo, crossbred and indigenous cattle. The return from the sales of goat animals (3,308 kgs) was estimated as Rs. 11,33,025 and from other animals was estimated as Rs. 1,09,500 from 285 kgs of animals in the area under study in Uttar Pradesh.

**Table-III-13**  
**Returns from livestock rearing**  
(Milk yield in litres per animal per day)

Particulars		Crossbred cattle	Indigenous cattle	Buffalo	Sheep	Goat
Milk	Yield in litres	10	3	8	-	0.35
	Sales value (Rs./litres)	22	26	36	-	20
Dung	Tonnes per annum	3.90	3.6	4.8	-	0.80
	Sales value (Rs./ton)	400	400	400	-	500
Sales details of animal	Animal weight kgs	-	-	-	-	3308
	Number of animals	-	-	-	-	-
	Sales value (Rs.)	-	-	-	-	1133025
Any other by-product specify	kgs/animal	-	-	-	-	285
	Sales value (Rs.)	-	-	-	-	109500

Note: - converted milk production according to lactation period

## **Chapter-IV**

### **Constraints, Views and Suggestions Given by Sample Households for Fodder Cultivation**

#### **IV.1.: Constraints faced by sample households for fodder cultivation**

Table-IV-1 indicates the various constraints faced by the sample households for fodder cultivation, wherein, all the 247 sample households had viewed that land was very less, therefore, they could not afford to put more land under the fodder seeds as well as crop production. 90 sample households had reported about no-availability of adequate irrigation water. 90 households had told about non-availability of labor. Also all the 247 households had expressed their views that land was not suitable for fodder production. All the 247 households had complained about the high cost of cultivation/production and low return from fodder production. Also all the 247 sample households had reported about low price prevailing in the market of fodders green fodders, high cost of fodder seed and no provision of quality seed by society on credit and non-availability of quality fodder seed in the market. 157 sample households had complained about the unavailability of grazing lands. 90 sample farmers had told about the lack of training facilities. Also all the 247 households had viewed about poor livestock extension services, lack of awareness about the government programmers about subsidy on seeds and it was more laborious. Also 157 sample households had complained about lack of awareness production and post harvest techniques. Thus, majority of sample households rearing animals were facing all sorts of constraints in production of fodders in the area under study in Uttar Pradesh. The concerned information are contained in table-IV-1

**Table-IV-1**  
**Constraints faced by the sample households for Fodder cultivation**

Constraints		Number of households reported
1	Land is very less therefore cannot afford to put more land under fodder seed/crop production	247
2	Non availability of adequate irrigation water	90
3	Non Availability of labour	90
4	Land is not suitable for fodder production	247
5	High Cost of Cultivation/Production and Low return on fodder production	247
6	Low price prevails for green fodder in market	247
7	High cost of fodder seed	247
8	No provision of quality seed by society on credit& Non availability of quality fodder seed in market	247
9	Availability of Grazing lands	157
10	Lack of training facilities	90
11	Poor Livestock extension services	247
12	Lack of awareness about government programmes on subsidy on seeds	247
13	More Laborious	247
14	Lack of awareness on production and post harvest techniques	157

Source: Field survey

**IV.2:- Total Number of Farmers Adopted Post Harvest Techniques:-**

Table IV.2. shows the out of the total 247 sample farmers rearing the livestock had told no i.e. 100 percent of the sample farmers had not adopted at all any post harvest technique of fodder preservation etc. The related data are contained in table IV.2.

**Table-IV-2**  
**Total number of farmers adopted Post harvest Techniques**

	Yes (%)	No (%)
Adopted Post harvest Techniques	--	247 (100%)
Number of households	--	247 (100%)

Source: Field survey

### **IV.3:- Major Reasons for Not Adopting Post harvest Techniques**

The major reasons for not adopting post harvest techniques worked out in table IV.3 shows that all the 247 sample households rearing livestock had reported that they had considered the post harvest technique inferior than to have fresh fodders. Also all the 247 sample households had put the major reasons such as, highly expensive more laborious and lack of awareness of production and post harvest management of fodders. The related information are given in table IV.3

**Table-IV-3**  
**Major reasons for not Adopting Post harvest Techniques**

<b>Particulars</b>	<b>Number of households reported</b>
Considered inferior in comparison to fresh one	247
Highly expensive	247
Lack of awareness on production and post harvest management	247
More laborious	247

Source: Field survey

### **IV.4:-Benefits getting from the government for livestock production:-**

Table IV.4 very clearly indicates that all the 247 sample households had reported not to get any benefit from the government for livestock production in the area under study in the state of U.P. The related information are contained in Table.IV-4

**Table-IV-4**  
**Benefits getting from the government for livestock Production**

<b>Sl. no</b>	<b>List of Benefits</b>	<b>Number of households reported</b>
	No Benefit got by Govt.	247

#### **IV.5.- Major suggestions to improve production of Fodder related crops**

Table IV-5 shows that out of the total 247 sample households, 157 had suggested the concerned state as well as union government to supply adequate quantity of H.Y.V. seeds of fodder suitable for their area and to create sustainable and vulnerable market facilities to improve production of fodder and fodder related crops in the area under study. 90 sample households had suggested for providing effective extension services as well as required training and training facilities to improve production of fodders and fodder related crops in their area of study. The concerned information and suggestions are contained in Table-IV.5

**Table-IV-5**

#### **Major Suggestions to improve production of Fodder related crops**

<b>Sl. no</b>	<b>List of Suggestions</b>	<b>Number of households reported</b>
<b>1</b>	HYB Seed and Market	157
<b>2</b>	Extensions, Services, Training	90

# Chapter-V

## Major Findings and Policy Suggestions

### V.1.: Major Findings of the Study:

The main findings of the present study are as follows:

- The population of crossbred female cattle in the state of Uttar Pradesh were dominant, wherein, the maximum were in milk.
- Also a considerable population of male cattle were still used for agricultural operations in the state Uttar Pradesh.
- Obviously the majority of adult female buffaloes were in the milk and the number of female buffaloes under the age of one to three years as well as up to one year were considerable in the whole state of U.P.
- Male buffaloes were also used considerably in agriculture as well as bullock cart farm operation in the state of Uttar Pradesh.
- The population of both female as well as male goats under the age of one year were maximum in the state of U.P. The numbers of female goats in milk were also considerable in the state of U.P.
- Regarding the growth pattern of livestock, the growth in population of exotic cows was tremendous by 3 times more till the 20<sup>th</sup> census in the state U.P.
- Among the population of indigenous cattle, the number of female cattle had increased but the number of male cattle had decreased considerably.
- Among the buffaloes the number of female buffaloes had increased considerably in the state as a whole.
- As regards the availability of green fodder, there was a deficit of total green fodder as - 681.50 lakh metric tonnes till 19<sup>th</sup> census in the state of U.P.
- The educational level among the sample respondents was deplorably poor as 41.70percent of them were illiterates in the present era of cyber age.
- Among the castes OBCs were the dominating castes on an over-all in the area under study in Uttar Pradesh.
- Regarding gender of respondents, the majority i.e. 90.64 percent were males and only 9.31 percent were females among the total sample respondents.

- Regarding average experiences in respective occupations of farmers, it was found that crop-grower had 27 years, livestock rearer had 17 years and a goat rearer had 11 years' experience generally in the area under study.
- The average family size among the sample households was estimated as 5.01.
- The average income per household from different occupations was estimated as from agriculture Rs. 1,45,143, from dairying Rs. 1,03,149, from goat rearing Rs. 13,640 and from other occupations, it was Rs. 98,826 per household in the area under study.
- Regarding average family member engaged in different occupations it was found that in farming (growing crops). 1.44 members, in dairying 1.92 members and in goat rearing only 1.26 members were engaged in the area under the study generally.
- Thus, dairying had emerged as the occupation employing higher members of the family in the area under study.
- Accordingly among the total 247 sample households adopting as their primary occupation 134 had adopted agriculture, 22 had adopted animal husbandry and dairying, 62 had adopted agricultural labour, 22 had adopted non-farm labour, none had opted trade, 1 had opted private employment, 1 had opted other job.
- As their secondary occupation out of 247 households, 23 had opted agriculture, 122 opted animal husbandry and dairying, 56 opted agricultural labour, 27 non farm labor, none opted trade, 4 opted private employment and 5 opted other job in the area under study.
- As the regards the memberships of organizations only 2 members of two households were found to be registered as members of co-operatives in whole area under the study.
- The maximum of the sample households were engaged either in agriculture or in allied agriculture in the area under study.
- The average land owned was estimated as 2.04 acres per farmer in the area under study.
- The net operated area was accounted as 2.92 acres peer farmer among the sample rearers of animals.
- The area under fodder crops was estimated as 0.33 acre per farm among sample animal rears.
- The area under agro-forestry and grazing land was reported to be nil in the sample villages undertaken in the study.

- Regarding sources of irrigation it was found that the maximum i.e. 153 sample farmers had used bore wells and 22 had used canal as source of irrigations in the area under the study.
- The main kharif crops were paddy, sugarcane, bajra and maize and rabi crops were wheat and barseem in the under study.
- The yield per acre from paddy was 17.04 qtls, sugarcane 464 qtls, bajra 4.89 qtls, maize 3.35 qtls, wheat 16.50 qtls and berseem 14.39 qtls in the area under the study.
- The return from paddy was Rs. 35,328/- per acre, from sugarcane rs. 1,54,507/- from bajra Rs. 16,386/- from maize Rs. 12,456, fodder Rs. 9,824 wheat Rs. 42,136 and berseem Rs. 5,709/- respectively.
- Age-group wise classification of buffaloes showed that up to 1 year there were 4, in 1 to 2 years there were 35 and in the age-group of above two years there were 198 buffaloes on an overall.
- The age wise classification of crossbred cattle indicated that up to 1 year the number was nil, in 1-2 years the number was 15 and in above 2 years group the number was 165 on an overall.
- The age-wise classification of indigenous cattles showed that up to 1 year the number was nil, in 1-2 years group the number was only 3 and above 2 years group the number was 28 on an overall.
- The age wise of classification of goats showed that in up to 1 year group there were 53, in 1-2 years group there were 234 and in above 2 years group there were 242 on an overall.
- The average value of female animals in all the four categories was found to be comparatively much higher than that of the higher values of male animals in the area under study.
- The value of milking buffaloes was comparatively much higher than the other milking bovine animals of other categories in the area under study.
- Among the dry animals the value of crossbred cattle was comparatively higher than the indigenous cattle and other animals in the area under study.
- Among pregnant heifers the value of heifers of crossbred cattle was higher. But among the non pregnant heifers the value of buffalo heifers was higher.



- As the regards the feed and fodder, fed to buffaloes it was found that the milking buffaloes were fed comparatively larger quantity of feed and fodder than that to the dry buffaloes in the area under study.
- It was cristal clear that pregnant buffalo heifers were fed larger quantity of feeds foddors than that to non-pregnant heifers in the area under study.
- The milking crossbred cattles were also fed comparatively larger quantity of feeds and foddors than that of dry crossbred cattles.
- The pregnant crossbred heifers were also fed larger quantity of feeds and foddors as compared to that to non-pregnant crossbred heifers.
- The milking indigenous cattles were also fed larger quantity of feeds and foddors than the dry indigenous cattles in the area of under study.
- Thus milking animals and pregnant heifers were fed larger quantity of feeds and foddors than that to other animals in the area under study.
- Female goats were also fed comparatively larger quantity of feeds and foddors in comparison of male goats in the area under study in U.P.
- The total requirement of green fodder during 2019 was higher for the milking buffaloes followed by cattles. But for adult males of cattles and buffaloes the requirement of green fodder was lower. For goats it was considerable.
- The requirement of dry fodder for buffaloes in milk, young stock of buffalo and cattle in milk was found to be higher. But for goats and adult male cattles and buffaloes it was lower in the state U.P.
- The total requirement of concentrates was found to be higher for the milking buffaloes. But for goats it was found to be lowest in the state U.P.
- As regards the availability of fodder the maximum was found from the fodder crops and the minimum was found from the forest area in the state of U.P.
- Crop residues were received maximum from wheat and paddy crops and the minimum from other cereals and small millets. From other fodder crops also it was received considerably.
- Regarding availability of grains it was received maximum from paddy and wheat and the minimum from small millets and other cereals in state as a whole.
- Grazing land, feed preservation and storage as well as legumes grown as hedge were the major sources of livestock feed in the area under the study in U.P.

- Maximum of cattle sheds mentioned by sample households were kaccha cattle sheds and the average value of such cattle sheds was slightly higher than that of puccha cattle sheds in the state of U.P.
- The number of kachcha goat sheds was comparatively higher in the area under the study in U.P..
- As regards labour and other charges it was found that buffaloes and crossbred cattles both males as well as females had required comparatively more human labour than other live stocks in the area under study in U.P.
- Accordingly the human labour cost per annum for male and female buffaloes was found to be comparatively higher than other livestock in U.P.
- About returns from livestock rearing the return from milk by buffaloes was Rs.10,92,469 against the minimum i.e. Rs. 1,86,115 from goats.
- The return from dung was higher in case of buffaloes against the minimum in case of goats in the area under study.
- Almost all the sample livestock rearers had expressed their views that due to the lack of land they could not put required area of land under fodder seed as well as crop production in the state of U.P.
- Majority of livestock rearers had complained about non availability of irrigation water as well as labour in the area of under study.
- Also all the livestock rearers had complained about unsuitability of land for fodder cultivation, high cost of cultivation/ production, low prices and returns and quality seed in the markets.
- Also majority of sample livestock rearers had complained about lack of grazing land, livestock extension services, awareness of govt. programmers and training facilities in the state of U.P.
- Majority of sample livestock rearers were facing all sorts of constraints in the process of production of fodders in the area under study in U.P.
- 100 percent of sample livestock rearers had reported that they had not adopted any post harvest techniques of fodder preservation etc. in the state of U.P.
- Almost all the sample livestock rearers had reported that stored/ preserved fodders were found much inferior than to have fresh fodders in the area under the study.

- Also majority of sample live stock rearers had told fodder production to be much expensive and more labourious and acute shortage of post harvest management of fodders.
- Regarding benefits from the government almost all the sample livestock rearers had told not to get any benefit from government for livestock rearing in the area under study in the state U.P.
- Majority of livestock rearers had suggested the concerned state and union government to supply adequate and proper fodder seeds for sustainable and vulnerable market facilities for the improvement of fodder related crops in the state of U.P. They also suggested for providing effective extension services and training facilities.

## **V.2 :- Policy Suggestions**

Based on the main findings of this study the following suggestions are being prescribed for policy implications:-

1. For improving the quality of milk the tremendous growth of exotic cattle population in the state of U.P. should be checked and shifted to increase the population of improved breeds of buffaloes as well as indigenous cattles.
2. The huge deficit of total green fodders in the state of U.P. must be fulfilled through more intensification in fodder cultivation throughout the year in all the seasons.
3. Educational level of livestock rearers must be upgraded as this occupation has been opted by the poorers where in about 42% are still illiterates in the present cyber age.
4. Female members of livestock rearing households must be encouraged for opting this occupation independently throughout the state of U.P. like the women dairy cooperatives of Gujrat state for increasing females share and gainful employment.
5. Since dairying has emerged as second higher income providing occupation among majority of landless and marginal farmers, there must be any sound policy by government so that it may be opted as their primary occupation.
6. Due to small holdings the farmers must be encouraged to shift to animal husbandry and dairying from crops raising.

7. The farmers rearing animals must be facilitated and be provided subsidy to grow more fodder crops for improving quality of milk.
8. Source of irrigation must be increased with improved avenues in the area under study in U.P.
9. During Rabi season more fodder crops must be grown and during Zaid season too suitable varieties of fodders must be grown in the state of U.P.
10. The numbers of improved breeds of buffaloes must be increased curtailing the number of crossbred cattles.
11. The number of crossbred cattles of up to 1 year age must be increased as their number was nil in the area under study.
12. The number of indigenous cattles up to 1 year age must also must be increased as it was less.
13. The number of goats up to age of 1 year must be increased as it was less.
14. For improving the quality of milk the pregnant heifers, milking cattles and buffaloes must be cared properly during feeding, watering etc. in winter and summer seasons in the state of U.P.
15. For increasing the milk yields of buffaloes as well as indigenous cattles in the state of U.P. the quantity of green fodders, concentrates etc. and supplements must be increased undoubtedly.
16. For higher returns remunerative prices of both mahishvanshiya as well as govanshiya animals must be paid to the respective livestock rearers based on the fat percentage in their milk produced in the state of U.P.
17. Suitable post harvest techniques must be provided to needy livestock rearers particularly to those who consider preserved/stored fodders and feeds inferior than fresh fodders and feeds in the area under study.
18. Government must provide incentives/ benefits to potential livestock rearers for sustainable and vulnerable processing and marketing facilities in the state of U.P.

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## Appendix -I

**Comments on the Draft Report received from**  
Agricultural Development and Rural Transformation Centre, Institute for Social and  
Economic Change, Bangalore, Karnataka

### Comments on draft report

- |    |   |   |
|----|---|---|
| 1. | Title of report                                       | Assessment of Livestock Feed and Fodder in the State of Uttar Pradesh   |
| 2. | Date of receipt of the Draft report                   | 17 June 2020  |
| 3. | Date of dispatch of the comments                      | 22 June 2020  |
| 4. | Comments on the Objectives of the study               | : as we finalized during the workshop you have covered all the objectives that required for the study   |
| 5. | Comments on the methodology                           | Methodology followed in the study was good enough to justify the objectives of the study  |
| 6. | Comments on analysis, organization, presentation etc. | In First chapter you have covered entire scenario of livestock in Uttar Pradesh state. The overall analysis, chapter organization and presentation were very good and justified for the objectives that we had framed. Please do some changes as follows<br>In Table III-12 : change the labor requirement as hours per animal per day<br>In Table III-13 milk yield should be liters per animal per day, and sale value as Rs/ liter. And also change the dung quantity per animal per annum and value per ton |
| 7. | References:   | The references are good enough  |
| 8. | General remarks:                                      | You have done excellent work that will very much helpful to write all India report  |
| 9. | Overall view on acceptability of report:              | The entire report you have done has covered all the things that we decided at the time of workshop, the report is accepted sir. Thank you sir for such a wonderful report.  |

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### Action-Taken on the Comments

Comment-wise Action Taken on Draft Report entitled “Assessment of Livestock Feed and Fodder in the State of Uttar Pradesh”

<b>Sl. No.</b>	<b>Issues of Comments</b>	<b>Action Taken</b>
1.	Title of report	Action not required.
2.	Date of receipt of the Draft report	Action not required.
3.	Date of dispatch of the comments	Action not required.
4.	Date of action taken on comments	25 <sup>th</sup> June, 2020
5.	Date of dispatch of the final Report	29 <sup>th</sup> June, 2020
6.	Comments on the Objectives of the study	Action not required.
7.	Comments on the methodology	Action not required.
8.	Comments on analysis, organization, presentation etc.	Required changes in Table-III-12 & III-13 of the report have been incorporated as desired/commented.
9.	References:	Action not required.
10.	General remarks	Thanks a lot.
11.	View on acceptability of Report	Many thanks in anticipation of lucid All India Report. *****